

Planetary Gearbox
گیربکس خورشیدی



توکار طرح صفاهان

TOOKATARH
SAFAHAN

DESIGNING & ENGINEERING
OF GEAR BOX PRODUCTS





About us

The technical group of TOOKATARH began activities in 1374 in the factory an area of 1500 m² located at AMIRKABIR Esfahan industrial area. TOOKATARH groups caps that arouse interest of customers effectively with technical knowledge experience use of specialists and brilliant empires, progressive machines and convenient technology and product are market for customers, the group has production of planetary gearbox. the company's commitment to global standard in 1384 has been awarded the certificate ISO 9001:2000. consumption products company in iron and steel industry, copper, cement, power plant production factors (brick, lime, rock), and paper industry, carton factory and etc.

درباره توکا طرح

گروه فنی مهندسی توکا طرح در سال ۱۳۷۴ کار خود را در کارخانه ای به مساحت ۱۵۰۰ متر مربع، واقع در منطقه صنعتی امیرکبیر اصفهان آغاز نمود. این مجموعه پس از سال ها تولید گیربکس های هلیکال شافت مستقیم با کوله باری از تجربه و دانش فنی و نیز بهره گیری از متخصصان و کارشناسان کارآزموده، ماشین آلات پیشرفته و تکنولوژی روز اقدام به تولید گیربکس های خورشیدی نیز نموده است و قصد دارد محصولی از هر حیث کارا و مطمئن را به مشتریان خود عرضه نماید.

این شرکت با تعهد به استاندارد های جهانی در سال ۱۳۸۴ موفق به دریافت گواهینامه ISO 9001:2000 نیز شده است. تولیدات شرکت در صنایع آهن و فولاد، مس، سیمان، نیروگاه ها، کارخانجات تولید آجر، آهک و سنگ، صنایع کاغذ سازی و کارتن سازی و غیره مورد استفاده قرار می گیرد.





Planetary gearboxes

The gears in these gearboxes consists of at least one sun gear, several planetary gears, a ring gear and a retaining case. Solar gearboxes are used for power transmission and usually reduce the output speed. These gearboxes can be directly or indirectly connected to a variety of motors (electric and hydraulic).

In the above figure, a planetary set with the direction of rotation of the parts is shown.

Advantages of planetary gearbox

- ✓ Suitable volume relative to other types of gearboxes
- ✓ Solar gearboxes occupy about half the size of other gearboxes needed volume. This is very important in the installation process and the stylish design of the power transmission system.
- ✓ Other advantages of the low lightness of the solar gearboxes are the convenience of replacing the parts according to the appropriate space
- ✓ Lower weight than other types of gearboxes, which is effective in smaller and lighter supporting structures.
- ✓ The proper weight allows direct connection to the drive shaft
- ✓ The higher efficiency, the efficiency of 90 to 95 percent of the solar gearboxes is very significant compared to the low efficiency of other gearboxes (even at a higher than 1:2000 ratio).
- ✓ Long life and easy maintenance
- ✓ The correct implementation of the installation process ensures long life of the gearbox.
- ✓ Torque 650 to 500,000 Nm

گیربکس خورشیدی یا سیاره ای

مجموعه ی چرخدنده در این گیربکس ها حداقل از یک چرخدنده خورشیدی ، چند چرخدنده سیاره ای ، یک چرخدنده رینگ و یک محفظه نگهدارنده تشکیل شده است. گیربکس های خورشیدی برای انتقال قدرت و معمولا کاهش دور خروجی نسبت به دور ورودی استفاده می شوند. این گیربکس ها می توانند به طور مستقیم یا غیر مستقیم به انواع موتور ها (الکتریکی و هیدرولیکی) متصل شوند. در شکل زیر یک مجموعه سیاره ای به همراه جهت چرخش قطعات نشان داده شده است.

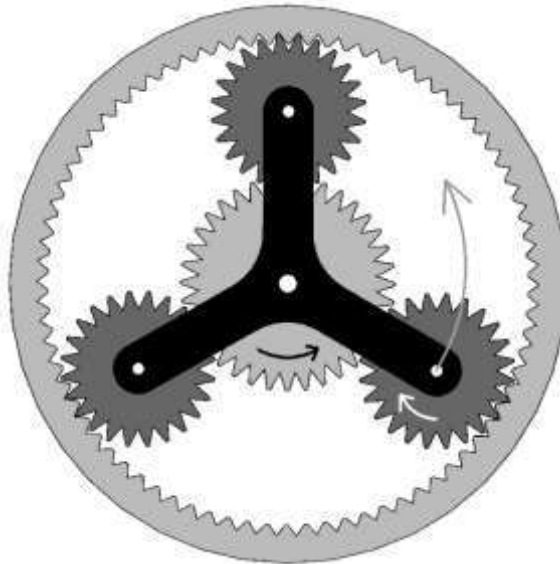
مزایای گیربکس خورشیدی

- ✓ حجم مناسب نسبت به دیگر انواع گیربکس ها
- ✓ گیربکس های خورشیدی تقریبا نصف حجم گیربکس های دیگر، فضا اشغال می کنند. این امر در فرآیند نصب و شکل بودن طراحی سیستم انتقال قدرت بسیار حائز اهمیت است.
- ✓ امتیاز دیگر کم حجم بودن گیربکس های خورشیدی راحتی در تعویض قطعات با توجه به فضای مناسب موجود است.
- ✓ وزن کمتر نسبت به دیگر انواع گیربکس ها که در کوچک تر و سبک تر شدن سازه پشتیبان موثر است.
- ✓ وزن مناسب امکان اتصال مستقیم به محور محرک را فراهم می کند.
- ✓ راندمان بالاتر، راندمان ۹۰ تا ۹۵ درصدی گیربکس های خورشیدی در مقایسه با راندمان پایین برخی گیربکس ها دیگر بسیار قابل توجه است (حتی در نسبت دورهای بالاتر از ۱:۲۰۰۰).
- ✓ عمر طولانی و تعمیر و نگهداری آسان
- ✓ اجرای صحیح فرآیند نصب تضمین کننده عمر طولانی مجموعه است.
- ✓ گشتاور ۶۵۰ الی ۵۰۰۰۰۰ نیوتن متر
- ✓ سر و صدای کم
- ✓ تنوع دور خروجی ۰.۲ تا ۵۰۰ دور در دقیقه
- ✓ تحمل بار عمودی و افقی بسیار زیاد بر روی شافت





- ✓ Low noise
- ✓ Output speed from 0.2 to 500 rpm
 - ✓ Tolerance extremely high
- vertical and horizontal load on the shaft



Applications

- ❖ Food industry, chemical industry and plastic
- ❖ Turbines and generators
- ❖ Wood, Ceramic and Tile industries
- ❖ Material handling equipment (crane, conveyor ...)
- ❖ Metal forming and packaging equipment
- ❖ Batching machines and crusher

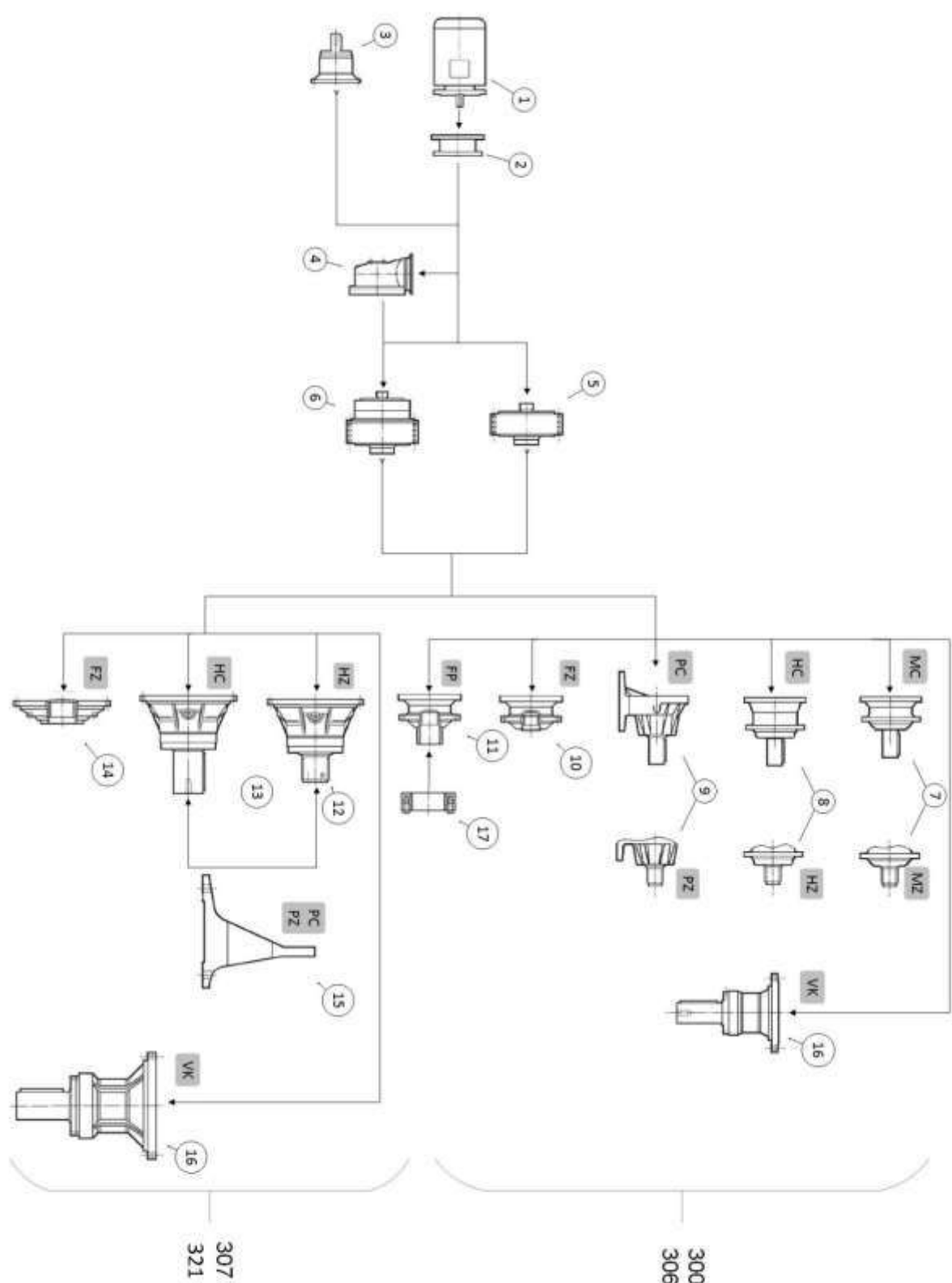
کاربرد

- ❖ صنایع غذایی ، صنایع شیمیایی و پلاستیک
- ❖ توربین ها و ژنراتور ها
- ❖ صنایع چوب، کاشی و سرامیک
- ❖ تجهیزات انتقال مواد (جرثقیل ، نوار نقاله و ...)
- ❖ تجهیزات فرم دهی فلزات و بسته بندی
- ❖ دستگاه های بچینگ و سنگ شکن ها





Assembly system





- | | |
|---|---|
| 1) IEC electric motor | (۱) موتور الکتریکی IEC |
| 2) Adapter for electric motor | (۲) آداپتور موتور الکتریکی |
| 3) Solid input shaft | (۳) شافت ورودی |
| 4) Right-angle reduction stage | (۴) استیج کاهش زاویه |
| 5) Single planetary reduction stage | (۵) کاهش یک مرحله ای |
| 6) Two or more planetary reduction stages | (۶) کاهش دو یا چند مرحله ای |
| 7) MC/MZ - Keyed or splined solid shaft output | (۷) MC / MZ - شافت خروجی تک خار یا هزار خار |
| 8) HC/HZ - Keyed or splined heavy duty solid output shaft | (۸) HC / HZ - شافت خروجی سنگین تک خار یا هزار خار |
| 9) PC/PZ - Output with support bracket and keyed or splined solid shaft | (۹) PC / PZ - شافت خروجی پایه دار تک خار یا هزار خار |
| 10) FZ - Splined hollow output shaft | (۱۰) FZ - شافت خروجی توخالی هزار خار |
| 11) FP - Hollow output shaft for shrink disc | (۱۱) FP - شافت خروجی توخالی برای شیرینک دیسک |
| 12) HC - Parallel solid output shaft | (۱۲) HC - شافت خروجی تک خار |
| 13) HZ - Splined solid output shaft | (۱۳) HZ - شافت خروجی هزار خار |
| 14) FZ - Splined hollow output shaft | (۱۴) FZ - شافت خروجی توخالی هزار خار |
| 15) PC - Foot mount | (۱۵) PC - پایه |
| 16) VK - Reinforced output with parallel shaft for stirrers and mixers | (۱۶) VK - خروجی تقویت شده با شافت موازی برای همزن ها و میکسر ها |





SYMBOLS AND UNITS

نماد ها و واحد ها

Symb.		Description	شرح
Ac2	[N]	Calculated thrust load at gearbox output shaft	بار محوری محاسبه شده در شفت خروجی گیربکس
Ar2	[N]	Thrust load at gearbox output shaft	بار محوری در شفت خروجی گیربکس
An2	[N]	Rated thrust load at gearbox output shaft	بار محوری مجاز در شفت خروجی گیربکس
fL		Lifetime factor	ضریب طول عمر
fm		Adjusting factor	فاکتور تنظیم کننده
fn1, fn2		Speed factor referred to input and output shaft loading	فاکتور سرعت در مواجهه با بار ورودی و خروجی محور
fs		Service factor	فاکتور خدمات
ft		Thermal factor	فاکتور حرارتی
fh1, fh2		Load corrective factor on shafts	فاکتور اصلاح بار در شفت
h	[h]	Lifetime in hours	طول عمر در ساعت
i		Gear ratio	نسبت دنده
Ka		Axial load duty factor	فاکتور وظیفه بار محوری
Kr		Radial load factor	فاکتور بار شعاعی
l		Intermittence factor	عامل وقفه
Mb	[Nm]	Rated brake torque	نرخ گشتاور ترمز
Mc2	[Nm]	Calculated output torque	گشتاور خروجی محاسبه شده
M2	[Nm]	Torque delivered to output shaft	گشتاور تحویل داده شده به شفت خروجی
Mn2	[Nm]	Gearbox rated output torque	گشتاور خروجی مجاز گیربکس
M2max	[Nm]	Gearbox max. output torque	حداکثر گشتاور خروجی گیربکس
Mr1	[Nm]	Required torque at input shaft	گشتاور مورد نیاز در شفت ورودی
Mr2	[Nm]	Required torque at output shaft	گشتاور مورد نیاز در شفت خروجی
n1	[min-1]	Speed of input shaft	سرعت شفت ورودی
n2	[min-1]	Speed of output shaft	سرعت شفت خروجی
P1	[kW]	Max. power that can be applied to input shaft	حداکثر قدرتی که می تواند به شفت ورودی اعمال شود
P2	[kW]	Power delivered to output shaft	قدرت تحویلی به شفت خروجی
Pn	[kW]	Motor rated power	قدرت موتور مجاز
Pr1	[kW]	Required input power	قدرت ورودی مورد نیاز
Pr2	[kW]	Output power at n2 max	قدرت خروجی در حداکثر دور خروجی
Ps	[kW]	Power to be dissipated	توان منجر به تخریب
Pt	[kW]	Gearbox thermal capacity	ظرفیت حرارتی گیربکس
Rc1	[N]	Calculated radial load at gearbox input shaft	بار شعاعی محاسبه شده در شفت ورودی گیربکس
Rc2	[N]	Calculated radial load at gearbox output shaft	بار شعاعی محاسبه شده در شفت خروجی گیربکس
Rn1, Rn2	[N]	Rated radial load at shaft mid-point, input and output	بار شعاعی در محور شفت، ورودی و خروجی
Rx2	[N]	Admissible overhung load for forces applying off the shaft midpoint	بارهای باربری مجاز برای نیروهایی که از نقطه اوج شفت استفاده می کنند
S		Safety factor	ضریب ایمنی
ta	[°C]	Ambient temperature	دمای محیط
X	[mm]	Load application distance from shaft shoulder	فاصله بار کاربردی از شانه شفت
d		Dynamic efficiency	کارایی دینامیکی
Z		Starts per hour	استارت ها در ساعت





معرفی پارامترهای مورد نیاز

Introduction of required parameters

1. Output torque

- Gearbox delivered torque M_2 [Nm]

This is the net torque delivered to the output shaft, with installed power P_n , safety factor S , which will yield a theoretical lifetime of 10000 hours. This torque value takes gearbox efficiency into consideration.

- Rated output torque M_{n2} [Nm]

This is the torque output the gearbox can deliver safely, based on:

- uniform loading and safety factor $S=1$

- The theoretical lifetime of 10,000 hours, the M_{n2} values are in accordance with production standards.

- Maximum torque M_{2max} [Nm]

This is the output torque that the gearbox can withstand under static or almost static conditions. It is generally meant as a momentary peak load or starting- up torque under load. The values in the tables are valid only in versions with output splined shaft.

- Required torque M_{r2} [Nm]

The torque drawn by the application. It must always be equal to or less than rated output torque M_{n2} for the gearbox under study.

- Calculated torque M_{c2} [Nm]

Computational torque value to be used when selecting the gearbox, considering required torque M_{r2} and service factor f_s . It is obtained through the equation:

$$M_{c2} = M_{r2} \times f_s \leq M_{n2}$$

۱. گشتاور خروجی

- گشتاور تحویلی گیربکس M_2 [Nm]

این گشتاور خالصی است که به شفت خروجی، با قدرت P_n نصب شده، فاکتور ایمنی S و طول عمر نظری آن ۱۰۰۰۰ ساعت خواهد بود، تحویل داده می شود. این مقدار گشتاور در بهره وری گیربکس باید در نظر گرفته شود.

- گشتاور خروجی مجاز M_{n2} [Nm]

این خروجی گشتاور گیربکس می تواند با خیال راحت بر اساس:

- بارگذاری یکنواخت و با فاکتور ایمنی $S = 1$

- طول عمر تئوری ۱۰۰۰۰ ساعت، مقادیر M_{n2} مطابق با استانداردهای تولید می باشد.

- حداکثر گشتاور M_{2max} [Nm]

این گشتاور خروجی است که گیربکس می تواند در شرایط ایستا یا تقریباً ایستا مقاومت کند. به طور کلی به معنای حداکثر بار لحظه ای یا گشتاور راه اندازی تحت بار است. مقادیر در جداول فقط در نسخه های با شفت خروجی هزارخار معتبر است.

- گشتاور مورد نیاز M_{r2} [Nm]

گشتاور کاربردی در نظر گرفته شده. این باید همیشه برابر یا کمتر از گشتاور خروجی مجاز M_{n2} برای گیربکس مورد نظر باشد.

- گشتاور محاسبه شده M_{c2} [Nm]

مقدار گشتاور محاسباتی که به هنگام انتخاب گیربکس استفاده می شود، با توجه به گشتاور مورد نیاز M_{r2} و فاکتور خدمات f_s از طریق معادله زیر به دست آمده است:





2. POWER

- Rated input power P_{n1} [kW]

P_{n1} is the maximum power that can be safely applied to the gearbox when the same is operated:

- at a $n1$ drive speed
- under a safety factor $S=1$
- yielding a theoretical lifetime of 10000 hours.

- Output power P_2 [kW]

This value is the net power delivered to the output shaft. It can be calculated through the following formulas:

$$P_2 = P_1 \times \eta_d$$

$$P = \frac{M_{r2} \times n_2}{9550}$$

Efficiency values are listed in table (A2).

3. THERMAL CAPACITY P_t [kW]

This parameter is linked to the gearbox thermal limit.

Values for the thermal capacity are listed within the rating charts of gearboxes and gearmotors and represent the mechanical power that can be transmitted continuously at an input speed $n1$ and at an ambient temperature of 20°C , without the lubricant exceeding the temperature of $85-90^\circ\text{C}$ and the gear case the temperature of $75-80^\circ\text{C}$, without the use a supplementary cooling system.

When the duty cycle is formed by short operating periods and rest time is long enough for the unit to cool down, the thermal capacity is hardly significant and it may be omitted from calculation. Should the ambient temperature be different from 20°C

۲. توان

- توان ورودی مجاز P_{n1} [kW]

P_{n1} حداکثر توانی است که می توان به صورت ایمن به گیربکس اعمال کرد، وقتی که همزمان به صورت زیر راه اندازی می شود:

- در سرعت درایو $n1$

- تحت فاکتور ایمنی $S = 1$

- ارزیابی در یک طول عمر تئوری ۱۰۰۰۰ ساعت

- توان خروجی P_2 [kW]

این مقدار توان خالصی است که به شافت خروجی تحویل داده می شود. این را می توان از طریق فرمول های زیر محاسبه کرد:

مقادیر کارایی در جدول (A2) ذکر شده است.

۳. ظرفیت گرمایشی P_t [kW]

این پارامتر به محدودیت حرارتی گیربکس مرتبط است. مقادیر ظرفیت حرارتی در نمودارهای طبقه بندی شده گیربکس ها ذکر شده و نشان دهنده قدرت مکانیکی است که می تواند به طور مداوم با سرعت ورودی $n1$ و در دمای محیط 20°C درجه سانتیگراد، بدون روان کننده بیش از دمای $85-90^\circ\text{C}$ سانتی گراد و برای دنده دمای $75-80^\circ\text{C}$ درجه سانتیگراد، بدون استفاده از یک سیستم خنک کننده مکمل استفاده شود.

زمانی که سیکل کاری از فعالیت های کوتاه مدت متناوب و زمان استراحت به اندازه کافی بلند تا واحد خنک شود تشکیل شده، ظرفیت حرارتی به سختی قابل توجه است و ممکن است از محاسبه حذف شود. اگر دمای محیط از 20°C درجه سانتیگراد متفاوت باشد و یا وظیفه متناوب باشد، ظرفیت حرارتی P_t باید از طریق فاکتور حرارتی f_t مطابق جدول ذکر شده (A1) تنظیم شود.

در نهایت، اطمینان حاصل کنید که شرایط زیر همیشه برقرار است:





and/or duty be intermittent, the thermal capacity P_t is to be adjusted through thermal factor f_t as listed in table (A1).

Finally, make sure that the following condition is always satisfied:

$$P_{r1} \leq P_t \times f_t$$

جدول A1

ft					
ta [°C]	Continuous duty کارکرد پیوسته	Intermittent duty کارکرد متناوب			
		Cyclic duration factor فاکتور طول سیکل			
		80%	60%	40%	20%
10	1.2	1.3	1.6	1.8	2
20	1	1.1	1.3	1.5	1.7
30	0.9	1	1.2	1.3	1.5
40	0.7	0.8	0.9	1	1.2
50	0.5	0.6	0.7	0.8	0.9

Cyclic duration factor is the relationship of operating time under load t_f to total cycle time ($t_f + t_r$, where t_r stands for time at rest), expressed as a percentage.

فاکتور طول سیکل که رابطه زمان عملیاتی زیر بار t_f به زمان کل چرخه ($t_f + t_r$) که t_r زمان استراحت گیربکس می باشد) است، که به صورت درصد تعریف می شود.

$$l = \frac{t_f}{t_f + t_r} \times 100$$

4. EFFICIENCY

- Dynamic efficiency [η_d]

The parameter is defined as the relationship of the net power delivered to the output shaft P2 to the power applied to the input shaft P1:

$$\eta_d = \frac{P_2}{P_1}$$

Indicative values for the efficiency are listed in the table A2.

۴. بازده

- بازده دینامیکی

پارامتری به عنوان رابطه توان خالص، که به شافت خروجی P_2 تحویل داده شده، به قدرت اعمال شده به شافت ورودی P_1 تعریف می شود:

مقادیر شاخص برای بازده در نمودار A2 ذکر شده است.





جدول A2

No. of reductions تعداد کاهش	Planetary خورشیدی
1	0.97
2	0.94
3	0.91
4	0.88

5. GEAR RATIO « i »

It is defined as the relationship of the speed the input shaft is driven at and the speed delivered at the output shaft of a gearbox.

$$i = \frac{n_1}{n_2}$$

6. OPERATING SPEED

- Input speed n_1 [RPM]

The speed the gearbox is driven at. The value is coincident with the motor speed if this is directly connected to the gearbox.

In case the gearbox is driven through an external transmission, the gearbox input speed is the speed of the motor divided by the reduction of the external transmission.

In this case, it is recommended that the input speed be lower than 1400 RPM.

Input speed should never exceed the value listed in the gearbox rating chart.

- Output speed n_2 [RPM]

It is calculated from drive speed n_1 and gear ratio i , as per the following equation:

$$n_2 = \frac{n_1}{i}$$

۵. نسبت گیربکس i

این تعریف به عنوان رابطه سرعت شافت ورودی به سرعت تحویلی در شافت خروجی یک گیربکس است.

۶. سرعت عملیاتی

- سرعت ورودی گیربکس

سرعت گیربکس وابسته به راننده است.

اگر موتور به طور مستقیم به گیربکس متصل شود،

سرعت گیربکس با موتور همخوانی دارد.

در صورتی که گیربکس از طریق انتقال خارجی هدایت

شود، سرعت ورودی گیربکس، سرعت موتور به کاهش انتقال خارجی می باشد.

در این مورد، توصیه می شود که سرعت ورودی کمتر از

۱۴۰۰ دور بر دقیقه باشد.

سرعت ورودی نباید بیش از مقدار ذکر شده در جدول

مجاز گیربکس باشد.

- سرعت خروجی گیربکس

این مقدار از سرعت ورودی n_1 به نسبت دنده i محاسبه

می شود، همانطور که در معادله زیر است:





SERVICE FACTOR [fs]

A parameter representing the severity of the application. This factor takes into account, although approximately, the type of load the gearbox operates with, the specific duty as well as the operating daily hours. The table (A3) is of reference when determining the appropriate service factor.

عامل خدمات [fs]

یک پارامتر که نشان دهنده شدت برنامه است. این عامل، اگر چه تقریباً، نوع بار گیربکس با کار، وظیفه خاص و همچنین ساعت های کاری روزانه را در نظر می گیرد. جدول (A3) هنگام تعیین فاکتور خدمات مناسب مرجع است.

جدول (A3)

Service factor (fs)						
فاکتور خدمات						
Type of load	Number of starts/hour تعداد استارت در ساعت Z	Total operating hours (h) مجموع ساعات کاری				
		≤5000	10000	15000	25000	50000
		Daily operating hours (h) ساعات کاری روزانه				
		h< 10	4<h< 8	8<h< 12	12<h<16	16<h<24
Uniform load	Z< 10	0.9	1	1.15	1.3	1.6
	10<Z< 30	0.95	1.15	1.3	1.5	1.8
	30<Z< 100	1	1.25	1.45	1.6	2
Moderate shock load	Z< 10	1	1.25	1.45	1.6	2
	10<Z< 30	1.1	1.4	1.6	1.8	2.2
	30<Z< 100	1.2	1.5	1.7	2	2.4
Heavy shock load	Z< 10	1.2	1.5	1.7	2	2.4
	10<Z< 30	1.3	1.6	1.8	2.1	2.6
	30<Z< 100	1.4	1.75	2	2.3	2.8

SAFETY FACTOR [S]

This is the relationship of the gear unit rated power to the power of the electric motor actually driving the unit.

ضریب ایمنی [S]

این رابطه قدرت مجاز گیربکس به قدرت موتور الکتریکی در واقع همان راننده است.

$$S = \frac{P_{n1}}{P_1}$$





Selecting a gearmotor

Consider the specific application and establish on beforehand:

- a) service factor f_s according to type of load, number of starts per hour and expected lifetime (tab. A3.);
- b) Required drive power:

$$P_{r1} = \frac{M_{r2} \times n_2}{9550 \times \eta_d}$$

Table (A2) lists the indicative values of efficiency η_d for the different types of gearboxes.

- c) After required power P_{r1} and output speed n_2 are known, locate the gearmotor rating charts and select the one relevant to normalized power P_n equal to or greater than P_{r1} :

$$P_n \geq P_{r1}$$

For the output speed n_2 , or closest to, select the gearmotor that yields a safety factor S meeting the following condition:

$$S \geq f_s$$

Selecting a gearbox

Examine the application and establish:

- a) service factor f_s according to type of load, number of starts per hour and required lifetime (tab. A4);
- b) Determine calculated torque according to required output torque M_{r2} as follows:

$$M_{c2} = M_{r2} \times f_s$$

انتخاب یک گیرموتور

کاربرد خاصی را در نظر گرفته و قبل از آن ایجاد کنید:

- (a) فاکتور خدمات f_s با توجه به نوع بار، تعداد شروع در ساعت و طول عمر مورد انتظار از جدول A3 بخوانید.
- (b) قدرت درایو مورد نیاز:

در جدول (A2) لیست مقادیر بازده η_d برای انواع مختلف گیربکس مشخص شده است.

- (c) پس از نیروی مورد نیاز P_{r1} و سرعت خروجی n_2 که شناخته شده است، به جدول گیربکس ها رفته و یک مورد مربوط به توان P_n برابر یا بیشتر از P_{r1} را انتخاب کنید:

برای سرعت خروجی n_2 ، یا نزدیکترین به آن، گیرموتوری را انتخاب کنید که فاکتور ایمنی S مطابق با شرایط زیر باشد:

انتخاب یک گیربکس

بررسی کاربرد و ایجاد آن:

- (a) فاکتور خدمات f_s با توجه به نوع بار، تعداد شروع در ساعت و طول عمر مورد انتظار از جدول A3 بخوانید.
- (b) گشتاور محاسبه شده را با توجه به گشتاور خروجی مورد نظر M_{r2} به صورت زیر تعیین کنید:





Determine gear ratio from required output speed n_2 and drive speed n_1 :

$$i = \frac{n_1}{n_2}$$

Once M_{c2} and i are determined, locate the gearbox rating chart for the drive speed n_1 and select a gearbox featuring the ratio i nearest to calculated ratio that also satisfies the condition:

$$M_{n2} \geq M_{c2}$$

VERIFICATIONS

After the gearbox has been selected check the following:

a) Thermal capacity

Make sure that the thermal capacity of the gearbox is equal to or greater than the mechanical power required by the application, as per equation at page 6. If this is not the case provide a supplementary cooling system (see chap. 29) or select a larger gearbox.

b) Maximum torque

Make sure that neither the momentary peak torque nor the starting torque under load ever exceed the M_{2max} value that the gearbox is rated for (see figure).

مقدار نسبت گیربکس را از سرعت خروجی مورد نیاز n_2 و سرعت درایو n_1 تعیین کنید:

هنگامی که M_{c2} و i تعیین می شود، به جدول انتخاب گیربکس سرعت درایو n_1 رفته و یک گیربکس با نسبت نزدیکترین به محاسبه را انتخاب می کنیم که همچنین شرایط را رعایت کند:

تأییدیه

پس از انتخاب گیربکس، موارد زیر را بررسی کنید:

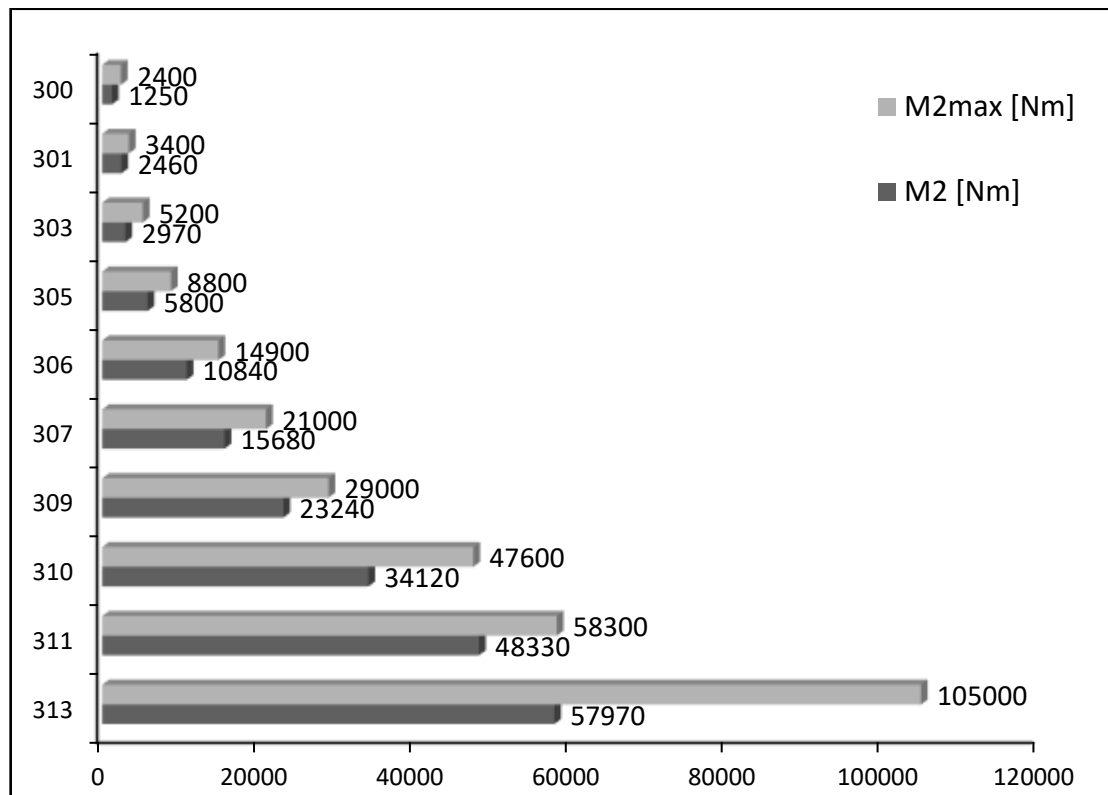
a) ظرفیت گرمایی

اطمینان حاصل کنید که ظرفیت حرارتی گیربکس برابر یا بیشتر از قدرت مکانیکی مورد نیاز کاربرد باشد، همانطور که در معادله صفحه ۶ آمده. اگر این مورد نیست، یک سیستم خنک کننده مکمل فراهم شود یا یک گیربکس بزرگتر را انتخاب کنید.

b) بیشترین گشتاور

اطمینان حاصل کنید که نه گشتاور اوج لحظه ای و نه گشتاور شروع تحت بار از مقدار M_{2max} که برای گیربکس مجاز است فراتر نرود (به نمودار نگاه کنید).





Overhung load

Examine the application and establish:

overhung load applying to input and/or output shaft through the following formula:

$$R_{c1-2} = \frac{2000 \times M_{c1-2} \times K_r}{d}$$

R_{c1-2} overhung load (N)

1 = for input shaft

2 = for output shaft

M_{r1-2} Torque at the shaft (Nm)

d P.C.D (mm) of transmission element (sprocket, gear, pulley, etc.)

$K_r = 1$ chain transmission

$K_r = 1.25$ gear transmission

$K_r = 1.5-2.5$ V-belt transmission

بار معلق

کاربرد را بررسی و ایجاد کنید:

بار معلق وارده به شافت ورودی و / یا خروجی از طریق

فرمول زیر محاسبه می شود:

R_{c1-2} بار معلق (N)

۱ = برای شفت ورودی

۲ = برای شفت خروجی

M_{r1-2} گشتاور در شافت (Nm)

d . P.C.D (میلی متر) عنصر انتقال (زنجیر، چرخ دنده،

قرقره و غیره)

$K_r = 1$ انتقال با زنجیره

$K_r = 1.25$ انتقال با دنده

$K_r = 1.5-2.5$ V انتقال با تسمه





I. output shaft

۱. شافت خروجی

Define the trust load position X onto shaft. Check this value with the chart indicating the load R_{x2} bearable by the gearbox. Check that the following is satisfied:

تعریف موقعیت بار محوری X بر روی شافت. این مقدار را با جدول که R_{x2} بار قابل تحمل گیربکس است چک می کنیم. از اجرای موارد زیر اطمینان حاصل کنید:

$$R_{c2} \leq R_{x2} \times fh$$

a) input shaft

۱۱. شافت ورودی

Define the trust load position X onto shaft. Check this value with the chart indicating the load R_{x1} bearable by the gearbox. Check that the following is satisfied:

موقعیت بار محوری X بر روی شافت را تعیین کنید. این مقدار را با جدول که R_{x1} بار قابل تحمل گیربکس است چک می کنیم. از اجرای موارد زیر اطمینان حاصل کنید:

$$R_{c1} \leq R_{x1} \times fh$$

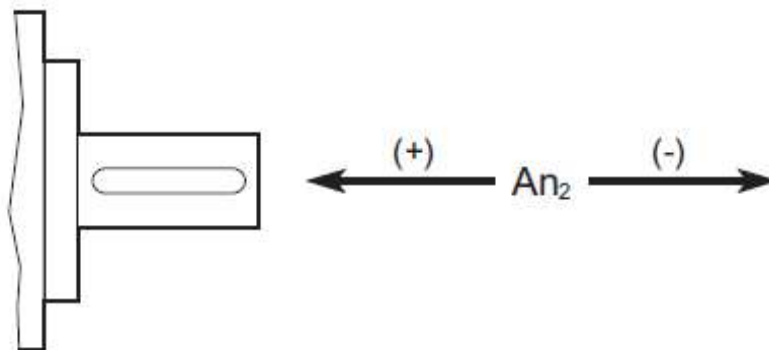
Thrust loads

بار محوری

Check the thrust load, when exerted onto the output shaft, as specified for the radial load. The following should be satisfied:

هنگام بار گذاری بر روی محور خروجی، همانطور که برای بار شعاعی مشخص شده است، بار محوری را باید بررسی کنید. از حصول شرط زیر اطمینان حاصل کنید:

$$\pm A_{c2} \leq \pm A_{n2} \times fh_2$$



SELECTING THE MOTOR

انتخاب موتور

a) Through the formula here after calculate the power required to gearbox input shaft. The following parameters must be determined on beforehand:

a) از طریق فرمول زیر توان مورد نیاز برای شافت ورودی گیربکس را محاسبه می کنیم. پارامترهای زیر باید قبل از آن مشخص شوند:

- required torque M_{r2}
- output speed n_2
- efficiency η_d

- گشتاور مورد نیاز M_{r2}
- سرعت خروجی n_2
- بهره وری η_d

$$P_{r1} = \frac{M_{r2} \times n_2}{9550 \times \eta_d}$$





Table (A2) lists the efficiency values η_d for the various types of gearboxes.

- i. select a motor that is sufficiently rated, as per the following condition:

$$P_n \geq P_{r1}$$

INSTALLATION

Observing a few rules for correct installation is essential to the reliable and proper operation of the gearbox. The rules set out here are intended as a preliminary guide to selecting gearbox. Following is a brief outline of installation rules:

i. Fastening

Place the gearbox on a surface providing adequate rigidity. Mating surfaces should be machined and flat.

This applies specially to flange-mounted gearboxes with splined hollow output shafts.

In applications that involve high radial loads at the output end, flange mounting is recommended for some gearboxes as this mounting pattern benefits from the double pilot diameters provided on these gearboxes.

Make sure the gearbox is suitable for the required mounting position.

Use bolts of grade 8.8 or greater to secure the gearbox. Tighten the bolts to the rated values specified in the relevant charts. With transmitted torque greater than or equal to 70% of the given M_{2max} , and with frequent reversals, use bolts with minimum grade 10.9. Some gearboxes can be fastened using both bolts and pins. If a pin is used, the portion of the pin inserted into the structure the gearbox is being installed to should be at least 1.5 times its diameter.

جدول (A2) مقادیر بازده η_d برای انواع مختلف گیربکس ها را فهرست می کند.
(b) یک موتور را انتخاب کنید که در آن شرط زیر اجرا شود:

نصب

رعایت چند قاعده برای نصب صحیح و عملکرد قابل اطمینان و مناسب گیربکس ضروری است. قوانین مندرج در اینجا به عنوان راهنمایی اولیه برای انتخاب گیربکس می باشد. در زیر شرح مختصری از قوانین نصب است:

i. بست

گیربکس را در یک سطح با استحکام کافی قرار داده. سطوحی که با گیربکس تماس مستقیم دارند باید ماشینکاری شده و مسطح باشند.

این به ویژه برای گیربکس های هالو شافت هزار خار فلنچدار صادق می باشد.

در کاربرد هایی که دارای بارهای شعاعی بالایی در خروجی هستند، برای برخی از گیربکس ها، نصب فلنچ توصیه می شود، زیرا این الگوی نصب از دو قطر دوگانه در این گیربکس ها استفاده می کند.

اطمینان حاصل کنید که گیربکس برای موقعیت نصب مورد نیاز مناسب است.

از پیچ و مهره های با درجه ۸.۸ یا بیشتر برای ایمن کردن گیربکس استفاده کنید. پیچ ها را به مقادیر مشخص شده در جدول مربوطه سفت کنید. برای گشتاور های بزرگتر یا مساوی با ۷۰٪ از M_{2max} داده شده و با معکوس کردن دور مکرر، از پیچ و مهره با حداقل درجه ۱۰.۹ استفاده شود. برخی از گیربکس ها می توانند با استفاده از هر دوی پیچ و پین بسته شوند. اگر از پین استفاده شود، قسمت پین وارد شده به ساختار گیربکس نصب شده باید حداقل ۱.۵ برابر قطر آن باشد.





ii. Connections

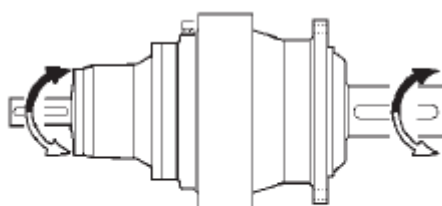
When fitting transmission elements onto the gearbox do not tap them with hammers or similar tools. To slide these parts in, use the service screws and taps provided at the shaft ends. Be sure to clean off any grease or rust preventative from the shafts before fitting any parts.

Direction of rotation Before wiring the motor please note the input/output shaft arrangement, as described in the diagram here after:

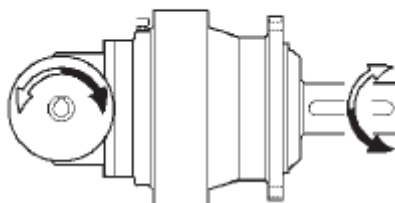
ii. اتصالات

هنگامیکه اتصالات انتقال را روی گیربکس قرار دهید، آنها را با چکش یا ابزار مشابهی متصل نکنید. برای کشیدن این قسمت ها، از پیچ ها و خزینه های ارائه شده روی شافت استفاده کنید. قبل از نصب هر بخش، مطمئن شوید که گریس یا زنگ زدگی را از روی شافت تمیز کرده باشید. لطفاً به جهت چرخش قبل از سیم کشی موتور برای شافت ورودی / خروجی، همانطور که در شکل زیر شرح داده شده توجه داشته باشید:

In line (L)



Right angle (R)



iii. Lubrication

Prior to commissioning, fill the gearbox with the recommended type and quantity of oil (see: Lubrication (prior to start-up)). The level is to be checked through the appropriate plug, or sight glass, each gearbox is provided with, and located according to the mounting position originally specified.

iii. روانکاری

قبل از راه اندازی، گیربکس را با نوع و مقدار توصیه شده روغن پر کنید (به روانکاری (در زمان راه اندازی) مراجعه شود). سطح باید از طریق درپوش مناسب یا شیشه بینایی، برای هر گیربکس با توجه به موقعیت نصب شده که باید در ابتدا مشخص شده باشد، مورد بررسی قرار گیرد.





MAINTENANCE

Check the tightness of mounting bolts after the initial 50 hours of operation. Change the oil first after 100-150 hours operation.

Subsequently, change the oil every 2000 - 3000 hours operation, depending on the application. Alternatively change oil once a year.

However, oil level should be checked at regular intervals and topped up as required.

Check monthly if unit operates under intermittent duty, more frequently if duty is continuous.

نگهداری

بعد از ۵۰ ساعت اول کاری، سفتی پیچ و مهره های نصب را بررسی کنید. برای اولین بار بعد از ۱۰۰-۱۵۰ ساعت، روغن را تعویض کنید.

پس از آن، بسته به کاربرد، هر ۲۰۰۰ تا ۳۰۰۰ ساعت عملیات را تغییر دهید. به نوبت روغن را یک بار در سال تغییر دهید.

با این حال، سطح روغن باید در فواصل منظم بررسی شود و در صورت لزوم اضافه شود.

در صورت کارکرد متناوب، سطح روغن را به طور ماهانه چک کنید، اگر کارکرد مستمر باشد، بیشتر بکار می رود.





GEARBOX DESIGNATION

نامگذاری گیربکس

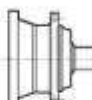
3 11 L 2 16.7 HZ

OUTPUT VERSION / خروجی



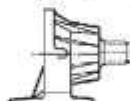
MZ: Splined male shaft

شافت خروجی هزار خار



HZ: Heavy duty splined male shaft

شافت خروجی سنگین هزار خار



PZ: Foot base with splined shaft

شافت خروجی پایه دار هزار خار



FZ / FZB: Hollow splined shaft

شافت خروجی توخالی هزار خار



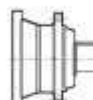
FP: Hollow shaft for shrink disc

شافت خروجی توخالی برای شیرینک



MC: Solid keyed shaft

شافت خروجی تک خار



HC: Heavy duty solid keyed shaft

شافت خروجی سنگین تک خار



PC: Foot base with solid keyed shaft

شافت خروجی پایه دار تک خار



VK: Reinforced output with heavy duty keyed shaft for stirrers and mixer

خروجی تقویت شده با شافت موازی برای همزن ها و میکسر ها

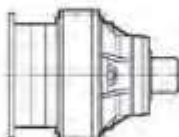
Reduction ratio / نسبت تبدیل

No. OF REDUCTIONS / تعداد استیج

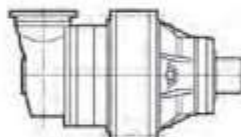
1, 2, 3, 4

DESIGN / مدل

L = Linear مستقیم



R = Right angle راست زاویه



GEARBOX SIZE / سایز گیربکس

00 = 300

01 = 301

03 = 303

04 = 304

05 = 305

06 = 306

07 = 307

09 = 309

10 = 310

11 = 311

13 = 313

15 = 315

16 = 316

17 = 317

18 = 318

19 = 319

21 = 321

SERIES





MOUNTING POSITION

The product designation is only complete when the mounting position is also specified. Please refer to table (A4) for in-line gear units and to (A5) for right angle drives.

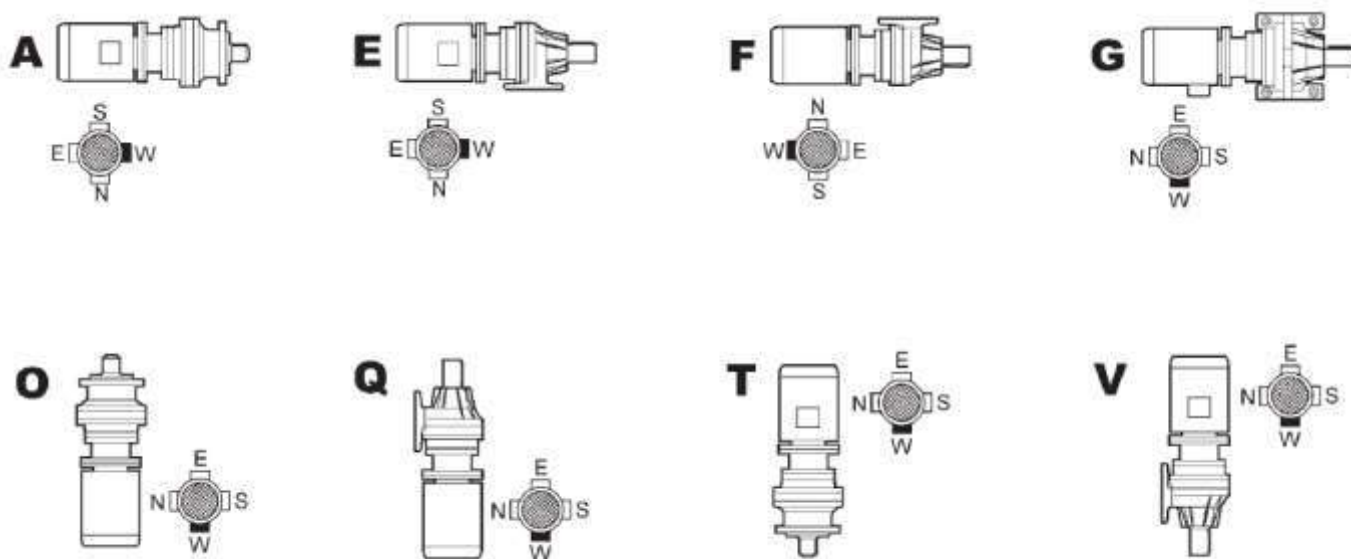
حالات نصب

تعیین محصول زمانی کامل می شود که موقعیت نصب نیز مشخص شود. لطفاً به جدول (A4) برای گیربکس های مستقیم و (A5) برای گیربکس های زاویه راست مراجعه شود.

I. In-line units

۱. گیربکس های مستقیم

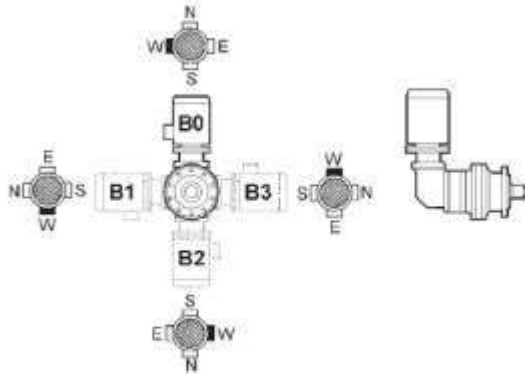
جدول (A4)



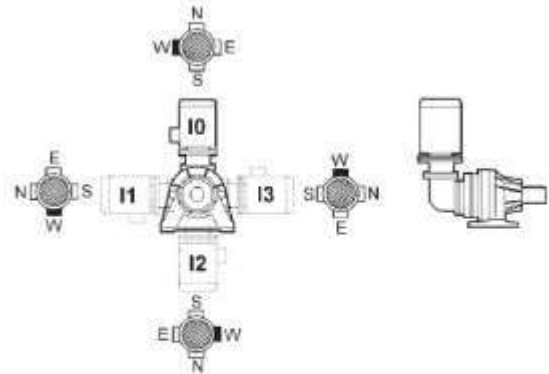


جدول (A6)

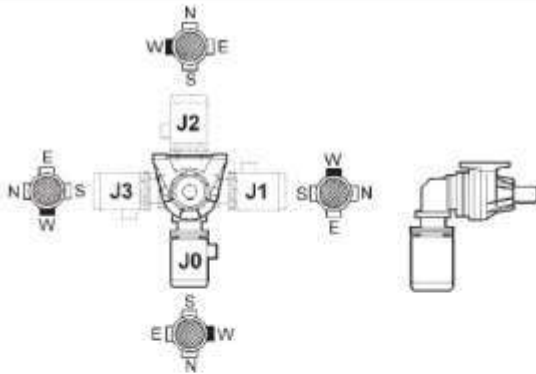
B0 - B1 - B2 - B3



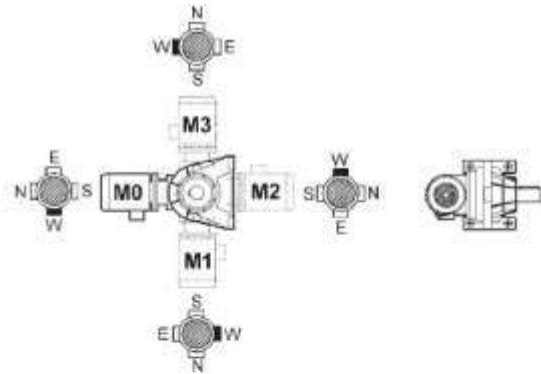
I0 - I1 - I2 - I3



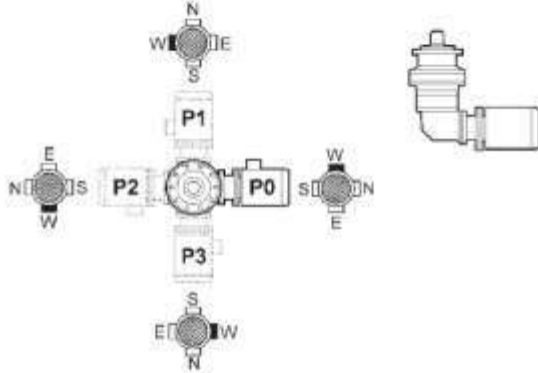
J0 - J1 - J2 - J3



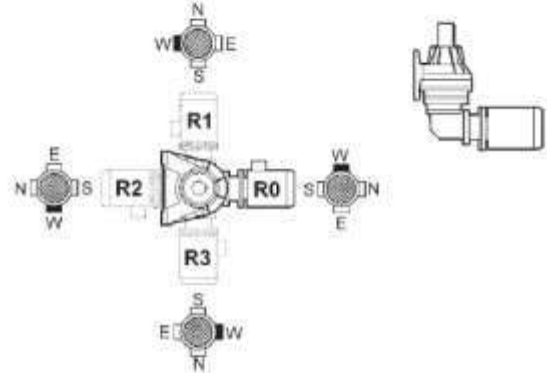
M0 - M1 - M2 - M3



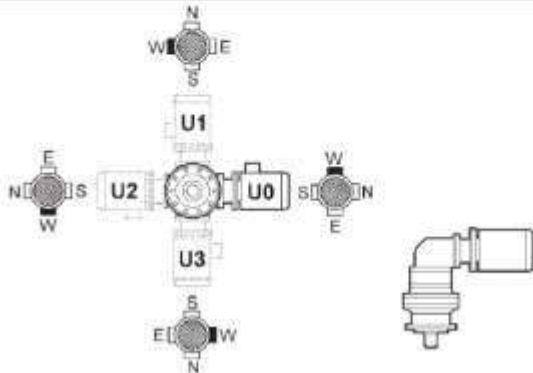
P0 - P1 - P2 - P3



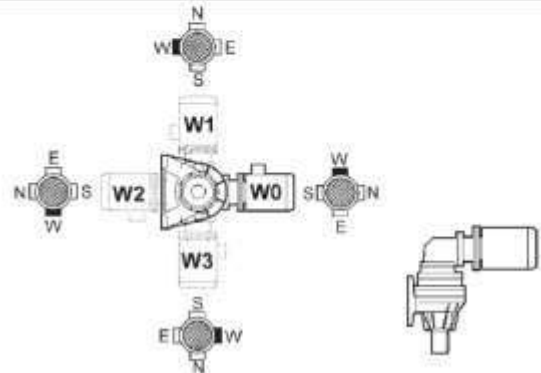
R0 - R1 - R2 - R3



U0 - U1 - U2 - U3



W0 - W1 - W2 - W3





LUBRICATION (prior to start-up)

Gear units are oil lubricated. For gearboxes specified for vertical installation, whereas the oil coverage may not be sufficient to ensure proper lubrication of the uppermost bearings, extra lubrication provisions are used.

Operation of gear units is permitted at ambient temperatures between -20°C and $+40^{\circ}\text{C}$. However, for temperatures between -20°C and -10°C unit may only start up after it has been progressively and evenly pre-heated, or otherwise initially operated unloaded. Load may then be connected to the output shaft when the gear unit has reached the temperature of -10°C , or higher.

Prior to starting-up, fill the gearbox with the appropriate quantity of oil, selecting the viscosity as per table (A14).

The table (A14) lists the most common brands of lubricant and the types recommended for normal applications.

- Note: For applications with non-routine operating conditions, consult factory with complete information.
- Oil temperature must not exceed $85-90^{\circ}\text{C}$ in operation.
- The oil capacities listed for the various types of unit are indicative only. Fill the gearbox up to the level plug, located as per the mounting position specified.
- Should transmitted power exceed the thermal capacity of the unit a supplementary cooling unit must be provided.

روانکاری (قبل از راه اندازی)

گیربکس روغن کاری شده است. برای گیربکس تعیین شده برای نصب عمودی، در حالی که پوشش روغن ممکن است برای اطمینان از روغنکاری مناسب بالاترین یاتاقان کافی نباشد، مقررات روانکاری اضافی استفاده می شود

عملکرد گیربکس در دماهای محیط بین -20 - درجه سانتی گراد و $+40$ درجه سانتیگراد مجاز است. با این حال، برای درجه حرارت بین -20°C و -10°C واحد ممکن است تنها پس از آن که به طور مداوم و به طور مساوی قبل از شروع به کار گرم شود، یا در غیر این صورت در ابتدا بارگیری نشود. سپس بار می تواند به شفت خروجی متصل شود، هنگامی که دستگاه گیربکس به دمای -10 - درجه سانتیگراد یا بالاتر رسیده باشد.

قبل از راه اندازی، گیربکس را با مقدار مناسب روغن پر کنید، برای انتخاب ویسکوزیته به جدول (A7) مراجعه کنید.

جدول (A7) لیستی از رایج ترین مارک های روان کننده و انواع توصیه شده برای کاربردهای معمول را نشان می دهد.

- توجه: برای کاربردهای با شرایط عملیاتی غیر معمول، برای اطلاعات کامل با کارخانه مشورت کنید.
- دمای روغن نباید بیش از $85-90$ درجه سانتیگراد در عمل باشد.
- ظرفیت های واسکازین ذکر شده برای انواع مختلف گیربکس تنها اخباری است. گیربکس را تا سطح پلاگین پر کنید، همانطور که در موقعیت مکانی مشخص شده است.
- اگر قدرت ورودی از ظرفیت حرارتی واحد فراتر رود، واحد خنک کننده مکمل باید ارائه شود.





ISO standard 3448 EP grade			
Ta	-10°C / +30°C	+10°C / +45°C	-20°C / +60°C
	ISO VG 150	ISO VG 220	ISO VG 150-220
SHELL	OMALA S4 WE 150	OMALA S4 WE 220	OMALA S4 WE
TOTAL	CARTER EP 1500	CARTER EP 2200	CARTER SH 150-220
بهران بردبار	بهران بردبار ۱۵۰	بهران بردبار ۲۲۰	

The temperature of the gear case should never exceed 80-85°C at the hottest point.

دمای پوسته گیربکس هرگز نباید بیش از ۸۰-۸۵ درجه سانتیگراد در داغ ترین نقطه باشد.

Oil plug positions

موقعیت درپوش های روغن

ALL UNITS

تمام واحد ها

1 Filler/breather oil plug

۱ درپوش پرکننده روغن

2 Oil level plug

۲ درپوش سطح روغن

3 Oil draining plug

۳ درپوش تخلیه روغن

1 STAGE IN-LINE GEAR UNITS

۱ استیج مستقیم

1A Filler/breather oil plug

A۱ درپوش پرکننده روغن

3A Oil draining plug

A۳ درپوش تخلیه روغن

2 STAGE RIGHT ANGLE GEAR UNITS

۲ استیج راست زاویه

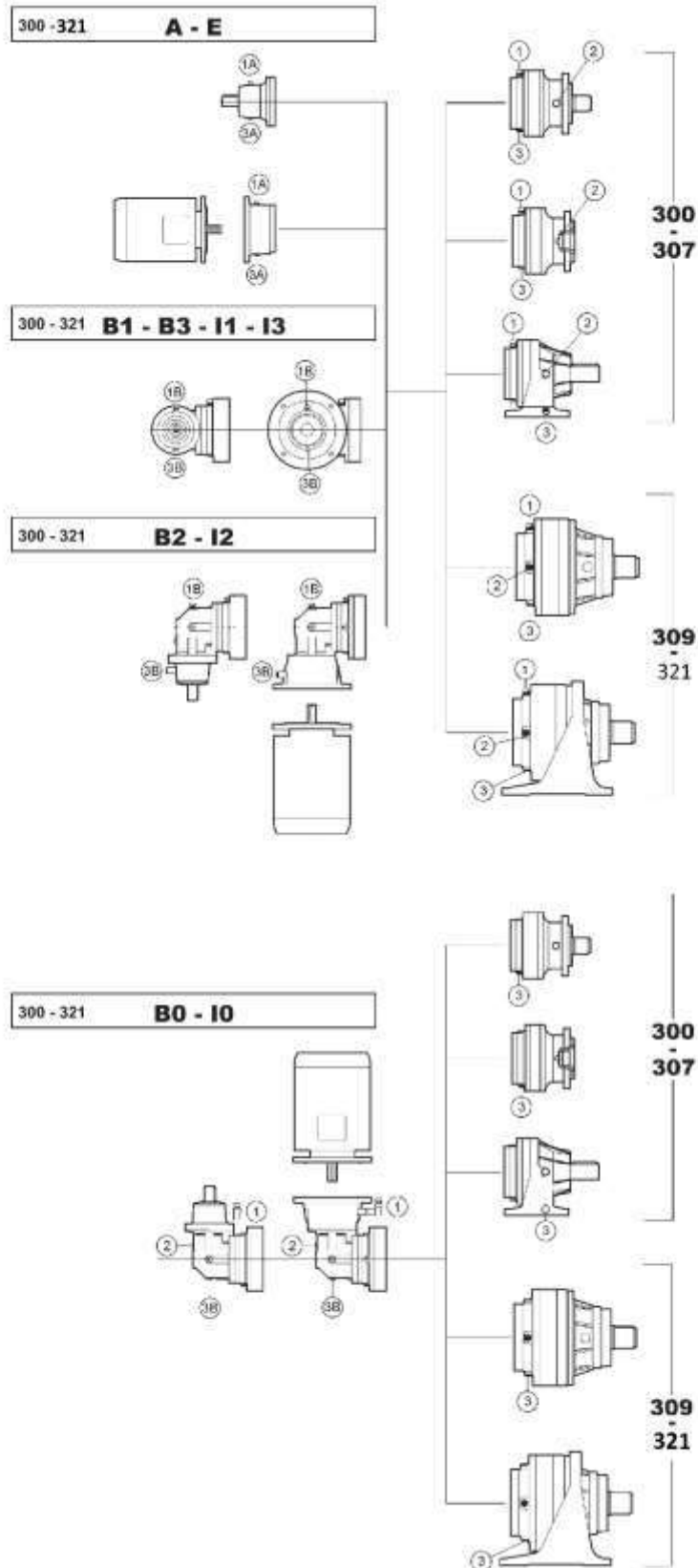
1B Filler/breather oil plug

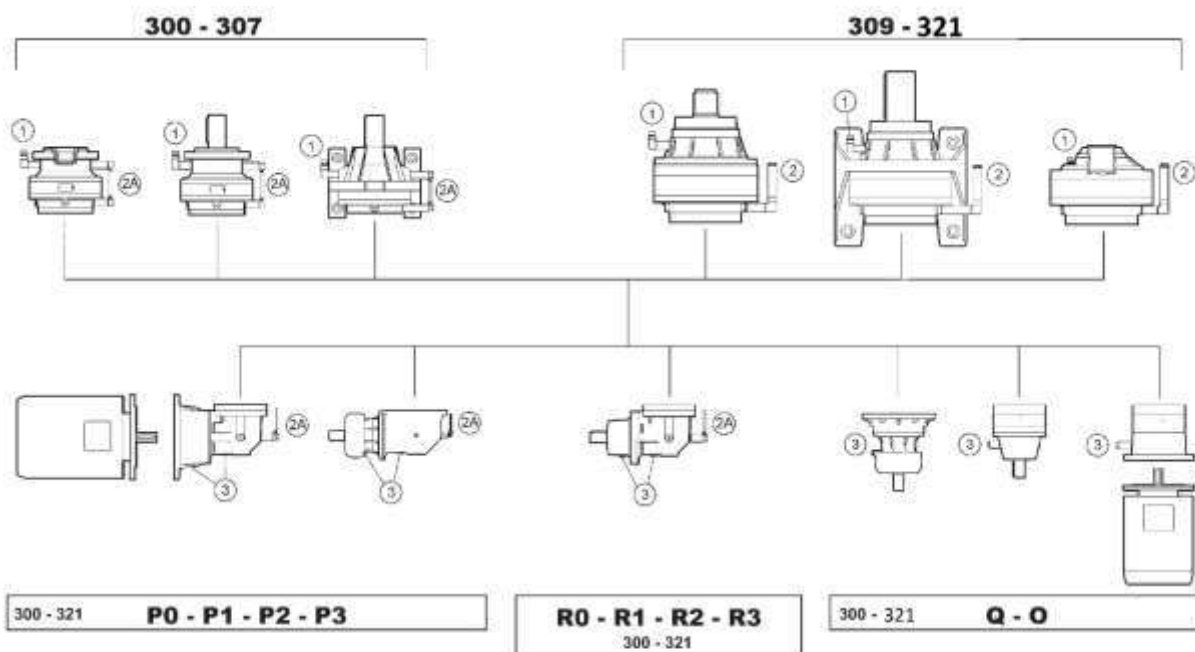
B۱ درپوش پرکننده روغن

3B Oil draining plug

B۳ درپوش تخلیه روغن







ALL GEARBOXES

- 1 Filler/breather oil plug
- 2 Oil level plug
- 3 Transparent oil level pipe
- 4 Oil draining plug
- 5 Expansion tank for continuous duty

همه گیربکس ها

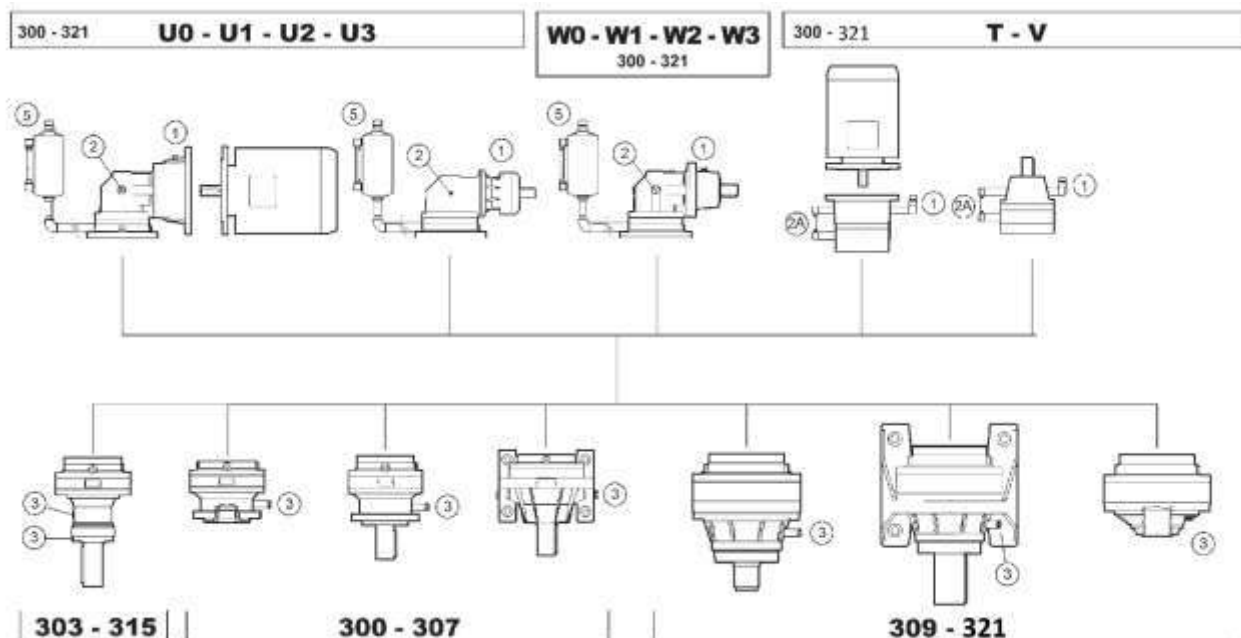
۱ درپوش پرکننده روغن

۲ درپوش سطح روغن

۳ لوله سطح شفاف

۴ درپوش تخلیه روغن

۵ مخزن انبساط برای وظیفه مستمر





Oil quantity (l) 3_L Series

		Mounting position موقعیت نصب		
		A	T	O
300	L1	0.6	1	0.9
	L2	0.9	1.3	1.2
	L3	1.2	1.6	1.5
	L4	1.5	1.9	1.8
301	L1	0.8	1.2	1.1
	L2	1.1	1.5	1.4
	L3	1.4	1.8	1.7
	L4	1.7	2.1	2
303	L1	1.3	2.3	2
	L2	1.6	2.6	2.3
	L3	1.9	2.9	2.6
	L4	2.2	3.2	2.9
305	L1	1.6	2.6	2.4
	L2	2.1	3.1	2.9
	L3	2.4	3.4	3.2
	L4	2.7	3.7	3.5
306	L1	2.5	3.5	3.2
	L2	3.3	4.3	4
	L3	3.6	4.6	4.3
307	L1	3.5	5	4.5
	L2	4.5	6	5.5
	L3	5	6.5	6
	L4	5.3	6.8	6.3
309	L1	4	5.5	5
	L2	5	6.5	6
	L3	5.5	7	6.5
	L4	5.8	7.3	6.8
310	L1	5	6.5	6
	L2	6.3	7.8	7.3
	L3	7.1	8.6	8.1
	L4	7.4	8.9	8.4

مقدار روغن (l) سری 3_L

		Mounting position موقعیت نصب		
		A	T	O
310	L1	5	6.5	6
	L2	6.3	7.8	7.3
	L3	7.1	8.6	8.1
	L4	7.4	8.9	8.4
311	L1	7	12	10
	L2	9	14	12
	L3	10	15	13
	L4	11	16	14
313	L1	9	14	12
	L2	12	17	15
	L3	13	18	16
	L4	13	18	16
315	L1	15	23	19
	L2	19	27	23
	L3	21	29	25
	L4	22	31	26
316	L2	22	30	26
	L3	24	32	28
	L4	25	33	29
317	L2	26	41	36
	L3	29	44	39
	L4	32	45	40
318	L2	35	50	45
	L3	40	55	50
	L4	43	58	53
319	L2	45	65	55
	L3	50	70	60
	L4	53	73	63
321	L3	56	76	66
	L4	60	80	70





Oil quantity (l) 3_R Series

		Mounting position موقعیت نصب		
		B0	U_	P_
300	R2	1.2	1.7	1.5
	R3	1.5	2	1.8
	R4	1.8	2.3	2.1
301	R2	1.6	2.1	1.9
	R3	1.9	2.4	2.2
	R4	2.2	2.7	2.5
303	R2	2.2	2.8	2.6
	R3	2.5	3.1	2.9
	R4	2.8	3.4	3.2
305	R2	2.5	3.1	2.9
	R3	3	3.6	3.4
	R4	3.3	3.9	3.7
306	R2	4	5	4.8
	R3	4.8	5.8	5.6
	R4	5.1	6.1	5.9
307	R2	6	8	7
	R3	7	9	8
	R4	7.5	9.5	8.5

N.B. Oil quantities are indicative.
Check actual level after filling through
the appropriate plug.

مقدار روغن (l) سری 3_R

		Mounting position موقعیت نصب		
		B0	U_	P_
309	R2	6.5	8.5	7.5
	R3	7.5	9.5	8.5
	R4	8	10	9
310	R2	13	15	14
	R3	11	13	12
	R4	12	14	13
311	R2	14	19	17
	R3	16	21	19
	R4	17	22	20
313	R2	16	21	19
	R3	19	24	22
	R4	20	25	23
315	R3	27	35	31
	R4	30	38	34
316	R3	30	38	34
	R4	33	41	37
317	R3	38	52	48
	R4	42	56	52
318	R4	48	63	58

توجه شود مقادیر روغن اخباری هستند. پس از پر کردن
از طریق دریوش مناسب، سطح واقعی را بررسی کنید.





P₁ = 0.25 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
0.47	4439	1.6	2916	6	306 L4	—	45000	51000	101000	119000	35000	248
0.57	3688	3	2423	7.5	307 L4	—	—	—	109000	145000	45000	256
0.59	3557	2	2337	6	306 L4	—	45000	51000	101000	119000	35000	248
0.62	3415	1.1	2243	6	305 L4	—	36000	42000	64000	74000	24000	240
0.67	3157	2.2	2074	6	306 L4	—	45000	51000	101000	119000	35000	248
0.69	3031	0.9	1991	6	303 L4	—	36000	42000	64000	74000	24000	232
0.69	3031	1.8	1991	6	305 L4	—	36000	42000	64000	74000	24000	240
0.74	2823	1.7	1854	6	305 L4	—	36000	42000	64000	74000	24000	240
0.87	2415	0.9	1586	6	303 L4	—	36000	42000	64000	74000	24000	232
0.87	2415	2	1586	6	305 L4	—	36000	42000	64000	74000	24000	240
1	2086	1.2	1370	6	303 L4	—	36000	42000	62200	74000	23800	232
1	2086	2.2	1370	6	305 L4	—	36000	42000	62200	74000	23800	240
1.1	1946	1.4	1278	6	303 L4	—	36000	41900	60900	73300	23300	232
1.1	1946	2.8	1278	6	305 L4	—	36000	41900	60900	73300	23300	240
1.1	1941	1.2	1275	6	301 L4	—	11800	11800	29800	34000	7750	226
1.2	1687	1	1108	6	301 L4	—	11300	11300	28600	32900	7400	226
1.3	1671	1.4	1098	6	303 L4	—	34500	39800	58200	70000	22100	232
1.3	1671	2.7	1098	6	305 L4	—	34500	39800	58200	70000	22100	240
1.4	1555	1.5	1022	6	301 L4	—	11000	11000	27900	32100	7200	229
1.4	1551	1.8	1018	6	303 L4	—	33600	38800	56900	68500	21600	232
1.5	1434	1.6	942	6	301 L4	—	10700	10700	27200	31300	7010	226
1.5	1364	1.6	896	6	303 L4	—	32200	37200	54800	65900	20700	232
1.7	1254	1.8	824	12	—	303 R4	31300	36200	53400	64300	20100	233
1.7	1246	0.9	819	6	300 L4	—	9940	9940	25600	29400	6540	220
1.7	1246	1.8	819	6	301 L4	—	10200	10200	26100	30000	6690	226
1.7	1242	2.2	816	6	303 L4	—	31300	36100	53300	64100	20000	232
1.7	1213	1.5	797	12	—	303 R4	31000	35800	52900	63600	19900	233
1.7	1213	2.8	797	12	—	305 R4	31000	35800	52900	63600	19900	240
1.8	1167	1.3	766	10	—	301 R4	9950	9950	25600	29400	6540	232
1.8	1149	1	755	6	300 L4	—	9680	9680	25000	28700	6360	220
1.8	1149	1.9	755	6	301 L4	—	9900	9900	25500	29300	6510	226
1.9	1093	2	718	6	303 L4	—	29900	34600	51300	61700	19200	232
2.1	1003	2.1	659	12	—	303 R4	29100	33600	50000	60100	18700	233
2.1	989	2.3	649	6	303 L4	—	29000	33400	49700	59800	18600	232
2.2	938	1.1	616	6	300 L4	—	9260	9260	24000	27600	6090	220
2.2	938	2.3	616	6	301 L4	—	9260	9260	24000	27600	6090	226
2.3	933	1.6	613	10	—	301 R4	9240	9240	23900	27500	6080	227
2.4	863	2.8	567	12	—	303 R4	27700	32000	47700	57400	17800	233
2.5	849	1.2	558	6	300 L4	—	8950	8950	23300	26700	5890	220
2.5	849	2.5	558	6	301 L4	—	8950	8950	23300	26700	5890	226
2.6	804	2.5	528	12	—	303 R4	27000	31200	46700	56200	17300	233
2.8	752	1.4	494	6	300 L4	—	8600	8600	22400	25800	5650	220
2.8	752	2.8	494	6	301 L4	—	8600	8600	22400	25800	5650	233





P₁ = 0.25 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
2.8	748	0.9	491	10	—	300 R4	8580	8580	22400	25700	5640	221
2.8	748	1.9	491	10	—	301 R4	8580	8580	22400	25700	5640	227
3	690	1.5	453	10	—	300 R4	8350	8350	21900	25100	5490	221
3	690	2.8	453	10	—	301 R4	8350	8350	21900	25100	5490	227
3.1	681	1.5	447	6	300 L4	—	8320	8320	21800	25000	5470	220
3.1	681	3	447	6	301 L4	—	8320	8320	21800	25000	5470	226
3.4	614	1.1	403	6	300 L4	—	8040	8040	21100	24300	5280	220
3.4	614	2.2	403	6	301 L4	—	8040	8040	21100	24300	5280	226
3.5	599	1.1	394	10	—	300 R4	7970	7970	21000	24100	5240	221
3.5	599	2.3	394	10	—	301 R4	7970	7970	21000	24100	5240	227
3.5	612	2.8	389	7.5	303 L3	—	24400	28200	42600	51300	15700	233
3.7	589	1.1	374	7.5	300 L3	—	7840	7840	20600	23700	5150	220
3.7	589	2.3	374	7.5	301 L3	—	7840	7840	20600	23700	5150	226
3.8	553	1.8	363	10	—	300 R4	7760	7760	20500	23500	5100	221
4.2	503	1.9	330	6	300 L4	—	7520	7520	19900	22900	4940	220
4.6	471	1.4	299	7.5	300 L3	—	7270	7270	19300	22200	4780	220
4.6	471	2.8	299	7.5	301 L3	—	7270	7270	19300	22200	4780	226
4.7	443	2.1	291	10	—	300 R4	7210	7210	19100	22000	4740	221
5.1	408	2.3	268	10	—	300 R4	7020	7020	18700	21500	4610	221
5.8	377	1.7	240	7.5	300 L3	—	6760	6760	18100	20800	4440	220
5.8	361	1.8	237	10	—	300 R4	6740	6740	18000	20700	4430	221
6.2	348	2.6	221	7.5	300 L3	—	6580	6580	17600	20300	4320	220
6.4	327	2.8	215	10	—	300 R4	6520	6520	17500	20100	4280	221
7.2	302	2.2	192	7.5	300 L3	—	6280	6280	16900	19400	4130	220
9.6	218	3	143	10	—	300 R4	5690	5690	15500	17800	3740	221
10.4	209	2.6	133	12	—	300 R3	5550	5550	15100	17400	3650	221

P₁ = 0.37 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
0.47	6672	1	2916	6	306 L4	—	45000	51000	101000	119000	35000	248
0.57	5543	2	2423	7.5	307 L4	—	—	—	109000	145000	45000	256
0.59	5346	1.3	2337	6	306 L4	—	45000	51000	101000	119000	35000	248
0.66	4744	1.5	2074	6	306 L4	—	45000	51000	101000	119000	35000	248
0.69	4555	1.2	1991	6	305 L4	—	36000	42000	64000	74000	24000	240
0.74	4243	1.1	1854	6	305 L4	—	36000	42000	64000	74000	24000	240
0.74	4217	2.4	1843	6	306 L4	—	45000	51000	101000	119000	35000	248
0.86	3653	2.4	1597	6	306 L4	—	45000	51000	101000	119000	35000	248
0.86	3629	1.3	1586	6	305 L4	—	36000	42000	64000	74000	24000	240





P₁ = 0.37 kW n₁=1500 rpm												
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
0.93	3374	3	1475	6	306 L4	—	45000	51000	101000	119000	35000	248
1	3135	1.5	1370	6	305 L4	—	36000	42000	62200	74000	23800	240
1.1	2927	2.9	1279	6	306 L4	—	45000	51000	99700	116100	34000	248
1.1	2924	1	1278	6	303 L4	—	36000	41900	60900	73300	23300	232
1.1	2924	1.9	1278	6	305 L4	—	36000	41900	60900	73300	23300	240
1.2	2512	0.9	1098	6	303 L4	—	33700	38900	57000	68600	21600	232
1.2	2512	1.8	1098	6	305 L4	—	34500	39800	58200	70000	22100	240
1.3	2338	1	1022	6	301 L4	—	10700	10700	27300	31400	7040	226
1.3	2330	1.2	1018	6	303 L4	—	33600	38800	56900	68500	21600	232
1.3	2330	2.3	1018	6	305 L4	—	33600	38800	56900	68500	21600	240
1.5	2156	1.1	942	6	301 L4	—	10700	10700	27200	31300	7010	226
1.5	2051	1.1	896	6	303 L4	—	32200	37200	54800	65900	20700	232
1.5	2051	2.1	896	6	305 L4	—	32200	37200	54800	65900	20700	240
1.7	1884	1.2	824	12	—	303 R4	31300	36200	53400	64300	20100	233
1.7	1884	2.2	824	12	—	305 R4	31300	36200	53400	64300	20100	241
1.7	1873	1.2	819	6	301 L4	—	10200	10200	26100	30000	6690	226
1.7	1867	1.5	816	6	303 L4	—	31300	36100	53300	64100	20000	238
1.7	1867	2.9	816	6	305 L4	—	31300	36100	53300	64100	20000	240
1.7	1824	1	797	12	—	303 R4	31000	35800	52900	63600	19900	233
1.7	1824	1.9	797	12	—	305 R4	31000	35800	52900	63600	19900	241
1.8	1727	1.3	755	6	301 L4	—	9900	9900	25500	29300	6510	232
1.9	1643	1.3	718	6	303 L4	—	29900	34600	51300	61700	19200	232
1.9	1643	2.5	718	6	305 L4	—	29900	34600	51300	61700	19200	240
2.1	1508	1.4	659	12	—	303 R4	29100	33600	50000	60100	18700	233
2.1	1508	2.7	659	12	—	305 R4	29100	33600	50000	60100	18700	241
2.1	1486	1.6	649	6	303 L4	—	29000	33400	49700	59800	18600	232
2.2	1410	1.5	616	6	301 L4	—	9260	9260	24000	27600	6090	224
2.2	1403	1	613	10	—	301 R4	9240	9240	23900	27500	6080	227
2.4	1297	1.9	567	12	—	303 R4	27700	32000	47700	57400	17800	233
2.5	1276	1.7	558	6	301 L4	—	8950	8950	23300	26700	5890	226
2.5	1272	2.2	556	6	303 L4	—	27500	31700	47500	57100	17600	232
2.6	1208	1.7	528	12	—	303 R4	27000	31200	46700	56200	17300	241
2.8	1130	0.9	494	6	300 L4	—	8400	8400	22000	25300	5520	220
2.8	1130	1.8	494	6	301 L4	—	8600	8600	22400	25800	5650	226
2.8	1126	2.4	492	6	303 L4	—	26400	30500	45800	55100	16900	232
2.8	1124	1.3	491	10	—	301 R4	8580	8580	22400	25700	5640	227
3	1037	1	453	10	—	300 R4	8350	8350	21900	25100	5490	221
3	1037	1.9	453	10	—	301 R4	8350	8350	21900	25100	5490	227
3	1033	2.2	452	12	—	303 R4	25700	29600	44600	53700	16500	233
3.1	1023	1	447	6	300 L4	—	8320	8320	21800	25000	5470	221
3.1	1023	2	447	6	301 L4	—	8320	8320	21800	25000	5470	227
3.1	1020	2.8	446	6	303 L4	—	25500	29500	44400	53400	16400	232
3.3	945	2.5	413	6	303 L4	—	24900	28800	43400	52200	16000	232





P₁ = 0.37 kW n₁=1500 rpm												
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
3.4	922	1.5	403	6	301 L4	—	8040	8040	21100	24300	5280	226
3.4	951	2	402	7.5	303 L3	—	24700	28500	43100	51800	15800	232
3.5	901	1.5	394	10	—	301 R4	7970	7970	21000	24100	5240	227
3.5	893	2.2	390	12	—	303 R4	24400	28200	42700	51400	15700	233
3.5	920	1.8	389	7.5	303 L3	—	24400	28200	42600	51300	15700	232
3.7	885	1.5	374	7.5	301 L3	—	7840	7840	20600	23700	5150	226
3.8	833	2.8	364	12	—	303 R4	23900	27600	41800	50300	15300	232
3.8	831	1.2	363	10	—	300 R4	7760	7760	20500	23500	5100	221
3.8	831	2.4	363	10	—	301 R4	7760	7760	20500	23500	5100	227
4.1	768	3	336	12	—	303 R4	23200	26800	40800	49100	14900	233
4.1	756	1.3	330	6	300 L4	—	7520	7520	19900	22900	4940	220
4.1	756	2.5	330	6	301 L4	—	7520	7520	19900	22900	4940	226
4.3	760	2.4	321	7.5	303 L3	—	22900	26400	40300	48500	14700	232
4.4	715	2.6	313	12	—	303 R4	22700	26200	39900	48100	14600	233
4.6	708	0.9	299	7.5	300 L3	—	7270	7270	19300	22200	4780	220
4.6	708	1.8	299	7.5	301 L3	—	7270	7270	19300	22200	4780	226
4.7	666	1.4	291	10	—	300 R4	7210	7210	19100	22000	4740	221
4.7	666	2.8	291	10	—	301 R4	7210	7210	19100	22000	4740	227
5.1	614	1.5	268	10	—	300 R4	7020	7020	18700	21500	4610	221
5.7	567	1.1	240	7.5	300 L3	—	6760	6760	18100	20800	4440	220
5.7	567	2.3	240	7.5	301 L3	—	6760	6760	18100	20800	4440	226
5.8	543	1.2	237	10	—	300 R4	6740	6740	18000	20700	4430	221
5.8	543	2.4	237	10	—	301 R4	6740	6740	18000	20700	4430	227
6.2	523	1.7	221	7.5	300 L3	—	6580	6580	17600	20300	4320	220
6.4	492	1.9	215	10	—	300 R4	6520	6520	17500	20100	4280	221
7.1	454	1.4	192	7.5	300 L3	—	6280	6280	16900	19400	4130	220
7.1	454	2.9	192	7.5	301 L3	—	6280	6280	16900	19400	4130	226
7.7	419	2.1	177	7.5	300 L3	—	6110	6110	16500	19000	4020	220
7.8	401	2.2	175	10	—	300 R4	6090	6090	16500	18900	4000	221
8.6	363	2.4	159	10	—	300 R4	5890	5890	16000	18300	3870	221
9.6	328	2	143	10	—	300 R4	5690	5690	15500	17800	3740	221
9.7	336	2.6	142	7.5	300 L3	—	5670	5670	15400	17700	3730	220
10.3	314	1.7	133	12	—	300 R3	5550	5550	15100	17400	3650	221
10.5	310	2.8	131	7.5	300 L3	—	5520	5520	15100	17300	3630	220
10.6	297	2.9	130	10	—	300 R4	5510	5510	15000	17300	3620	221
11.8	274	2.4	116	7.5	300 L3	—	5300	5300	14500	16700	3490	220
12.9	252	2.6	106	12	—	300 R3	5160	5160	14200	16300	3390	220





P₁ = 0.55 kW n₁=1500 rpm												
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
0.57	8101	1.4	2423	7.5	307 L4	—	—	—	109000	145000	45000	256
0.57	8101	2.1	2423	7.5	309 L4	—	—	—	110000	145000	36000	264
0.67	6934	1	2074	6	306 L4	—	45000	51000	101000	119000	35000	248
0.68	6826	2.1	2041	7.5	307 L4	—	—	—	109000	145000	45000	256
0.69	6697	2.5	2003	7.5	309 L4	—	—	—	110000	145000	36000	264
0.75	6164	1.6	1843	6	306 L4	—	45000	51000	101000	119000	35000	248
0.79	5910	2.7	1767	7.5	307 L4	—	—	—	109000	145000	45000	256
0.81	5761	3	1723	7.5	309 L4	—	—	—	110000	145000	36000	264
0.87	5339	1.6	1597	6	306 L4	—	45000	51000	101000	119000	35000	248
0.87	5319	2.8	1591	7.5	307 L4	—	—	—	109000	145000	45000	256
0.94	4931	2	1475	6	306 L4	—	45000	51000	101000	119000	35000	248
1	4582	1	1370	6	305 L4	—	36000	42000	62200	74000	23800	240
1.1	4278	2	1279	6	306 L4	—	45000	51000	99700	116100	34000	248
1.1	4274	1.3	1278	6	305 L4	—	36000	41900	60900	73300	23300	240
1.1	4262	2.9	1274	7.5	307 L4	—	—	—	107100	140400	43600	256
1.3	3671	1.2	1098	6	305 L4	—	34500	39800	58200	70000	22100	238
1.3	3660	2.1	1095	6	306 L4	—	42900	48600	95200	110800	32200	248
1.4	3406	1.6	1018	6	305 L4	—	33600	38800	56900	68500	21600	240
1.4	3394	2.8	1015	6	306 L4	—	41900	47400	93000	108300	31400	248
1.6	2997	1.4	896	6	305 L4	—	32200	37200	54800	65900	20700	240
1.6	2933	2.6	877	6	306 L4	—	39900	45200	89000	103700	29900	248
1.7	2776	2.3	830	12	—	306 R4	39100	44300	87600	102000	29400	249
1.7	2754	1.5	824	12	—	305 R4	31300	36200	53400	64300	20100	241
1.7	2729	1	816	6	303 L4	—	31300	36100	53300	64100	20000	232
1.7	2729	2	816	6	305 L4	—	31300	36100	53300	64100	20000	240
1.7	2705	2.8	809	6	306 L4	—	38800	44000	86900	101200	29200	246
1.7	2665	1.3	797	12	—	305 R4	31000	35800	52900	63600	19900	241
1.9	2401	1.7	718	6	305 L4	—	29900	34600	51300	61700	19200	240
2.1	2225	2.7	665	12	—	306 R4	36400	41200	82000	95400	27300	249
2.1	2203	1	659	12	—	303 R4	29100	33600	50000	60100	18700	233
2.1	2203	1.8	659	12	—	305 R4	29100	33600	50000	60100	18700	241
2.1	2172	1.1	649	6	303 L4	—	29000	33400	49700	59800	18600	232
2.1	2172	2.1	649	6	305 L4	—	29000	33400	49700	59800	18600	240
2.3	2061	1	616	6	301 L4	—	9260	9260	24000	27600	6090	226
2.5	1895	1.3	567	12	—	303 R4	27700	32000	47700	57400	17800	241
2.5	1895	2.6	567	12	—	305 R4	27700	32000	47700	57400	17800	241
2.5	1865	1.1	558	6	301 L4	—	8950	8950	23300	26700	5890	226
2.5	1860	1.5	556	6	303 L4	—	27500	31700	47500	57100	17600	232
2.5	1860	3	556	6	305 L4	—	27500	31700	47500	57100	17600	240
2.6	1765	1.1	528	12	—	303 R4	27000	31200	46700	56200	17300	233
2.6	1765	2.2	528	12	—	305 R4	27000	31200	46700	56200	17300	241
2.8	1651	1.3	494	6	301 L4	—	8600	8600	22400	25800	5650	226
2.8	1646	1.6	492	6	303 L4	—	26400	30500	45800	55100	16900	232





P₁ = 0.55 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
3.1	1515	1.3	453	10	—	301 R4	8350	8350	21900	25100	5490	227
3.1	1510	1.5	452	12	—	303 R4	25700	29600	44600	53700	16500	233
3.1	1495	1.4	447	6	301 L4	—	8320	8320	21800	25000	5470	226
3.1	1490	1.9	446	6	303 L4	—	25500	29500	44400	53400	16400	232
3.4	1382	1.7	413	6	303 L4	—	24900	28800	43400	52200	16000	232
3.4	1348	1	403	6	301 L4	—	8040	8040	21100	24300	5280	226
3.5	1389	1.4	402	7.5	303 L3	—	24700	28500	43100	51800	15800	232
3.5	1389	2.7	402	7.5	305 L3	—	24700	28500	43100	51800	15800	240
3.5	1316	1	394	10	—	301 R4	7970	7970	21000	24100	5240	227
3.6	1305	1.5	390	12	—	303 R4	24400	28200	42700	51400	15700	233
3.6	1305	2.9	390	12	—	305 R4	24400	28200	42700	51400	15700	241
3.6	1344	1.3	389	7.5	303 L3	—	24400	28200	42600	51300	15700	232
3.6	1344	2.4	389	7.5	305 L3	—	24400	28200	42600	51300	15700	240
3.7	1293	1	374	7.5	301 L3	—	7840	7840	20600	23700	5150	226
3.8	1217	1.9	364	12	—	303 R4	23900	27600	41800	50300	15300	233
3.8	1214	1.6	363	10	—	301 R4	7760	7760	20500	23500	5100	227
4.1	1180	2.1	341	7.5	304 L3	—	23400	27000	41000	49300	15000	call
4.1	1122	2	336	12	—	303 R4	23200	26800	40800	49100	14900	233
4.2	1105	1.7	330	6	301 L4	—	7520	7520	19900	22900	4940	226
4.3	1111	1.7	321	7.5	303 L3	—	22900	26400	40300	48500	14700	232
4.4	1045	1.8	313	12	—	303 R4	22700	26200	39900	48100	14600	233
4.6	1034	1.3	299	7.5	301 L3	—	7270	7270	19300	22200	4780	226
4.8	973	1	291	10	—	300 R4	7210	7210	19100	22000	4740	221
4.8	973	1.9	291	10	—	301 R4	7210	7210	19100	22000	4740	227
4.8	970	2.7	290	12	—	303 R4	22100	25600	39100	47000	14200	233
5	956	2.3	276	7.5	303 L3	—	21800	25200	38500	46300	14000	232
5.2	897	1	268	10	—	300 R4	7020	7020	18700	21500	4610	221
5.2	897	2.1	268	10	—	301 R4	7020	7020	18700	21500	4610	227
5.4	891	2.1	258	7.5	303 L3	—	21300	24600	37700	45300	13600	232
5.4	853	2.2	255	12	—	303 R4	21200	24500	37600	45200	13600	233
5.8	829	1.6	240	7.5	301 L3	—	6760	6760	18100	20800	4440	226
5.9	794	1.6	237	10	—	301 R4	6740	6740	18000	20700	4430	227
6	772	2.4	231	12	—	303 R4	20500	23700	36500	43900	13200	233
6.3	764	1.2	221	7.5	300 L3	—	6580	6580	17600	20300	4320	220
6.3	764	2.3	221	7.5	301 L3	—	6580	6580	17600	20300	4320	226
6.3	762	3	220	7.5	303 L3	—	20200	23300	36000	43300	13000	232
6.5	719	1.3	215	10	—	300 R4	6520	6520	17500	20100	4280	221
6.5	719	2.5	215	10	—	301 R4	6520	6520	17500	20100	4280	227
7.2	664	1	192	7.5	300 L3	—	6280	6280	16900	19400	4130	220
7.2	664	2	192	7.5	301 L3	—	6280	6280	16900	19400	4130	226
7.3	658	2.8	190	7.5	303 L3	—	19200	22200	34400	41400	12300	232
7.8	612	1.4	177	7.5	300 L3	—	6110	6110	16500	19000	4020	220
7.8	612	2.9	177	7.5	301 L3	—	6110	6110	16500	19000	4020	226





P₁ = 0.55 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
7.9	587	1.5	175	10	—	300 R4	6090	6090	16500	18900	4000	221
8.8	531	1.6	159	10	—	300 R4	5890	5890	16000	18300	3870	221
9.7	479	1.4	143	10	—	300 R4	5690	5690	15500	17800	3740	221
9.7	479	2.7	143	10	—	301 R4	5690	5690	15500	17800	3740	227
9.8	491	1.8	142	7.5	300 L3	—	5670	5670	15400	17700	3730	220
10.5	459	1.2	133	12	—	300 R3	5420	5420	14800	17000	3570	221
10.5	459	2.5	133	12	—	301 R3	5550	5550	15100	17400	3650	221
10.6	453	1.9	131	7.5	300 L3	—	5520	5520	15100	17300	3630	220
10.7	434	2	130	10	—	300 R4	5510	5510	15000	17300	3620	221
12	401	1.6	116	7.5	300 L3	—	5300	5300	14500	16700	3490	218
13.1	368	1.8	106	12	—	300 R3	5160	5160	14200	16300	3390	219
13.1	354	2.4	106	10	—	300 R4	5150	5150	14100	16200	3380	219
13.3	363	2.4	105	7.5	300 L3	—	5130	5130	14100	16200	3370	218
16.2	296	2.9	85.6	7.5	300 L3	—	4790	4790	13300	15200	3150	218
16.3	294	2.2	85.2	12	—	300 R3	4790	4790	13200	15200	3150	221
19.9	242	2.7	69.9	7.5	300 L3	—	4480	4480	12500	14300	2950	220
20.4	236	2.8	68.2	12	—	300 R3	4440	4440	12400	14200	2920	221
21.5	231	2.4	64.8	7.5	300 L2	—	4370	4370	12200	14000	2870	220

P₁ = 0.75 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
0.57	11103	2.3	2523	11	310 L4	—	—	—	133000	166000	65000	272
0.59	10659	1	2423	7.5	307 L4	—	—	—	109000	145000	45000	256
0.59	10659	1.6	2423	7.5	309 L4	—	—	—	110000	145000	36000	264
0.7	8981	1.6	2041	7.5	307 L4	—	—	—	109000	145000	45000	256
0.71	8897	2.9	2022	11	310 L4	—	—	—	133000	166000	65000	272
0.71	8812	1.9	2003	7.5	309 L4	—	—	—	110000	145000	36000	264
0.78	8110	1.2	1843	6	306 L4	—	45000	51000	101000	119000	35000	248
0.81	7776	2	1767	7.5	307 L4	—	—	—	109000	145000	45000	256
0.83	7580	2.2	1723	7.5	309 L4	—	—	—	110000	145000	36000	264
0.89	7061	2.4	1605	7.5	309 L4	—	—	—	110000	145000	36000	264
0.9	7026	1.2	1597	6	306 L4	—	45000	51000	101000	119000	35000	248
0.9	6998	2.1	1591	7.5	307 L4	—	—	—	109000	145000	45000	256
0.97	6488	1.6	1475	6	306 L4	—	45000	51000	101000	119000	35000	248
1	6196	2.5	1408	7.5	307 L4	—	—	—	109000	144700	45000	256
1	6074	2.7	1380	7.5	309 L4	—	—	—	110000	143800	35800	264
1.1	5657	2.9	1286	7.5	309 L4	—	—	—	109200	140800	35000	264





P₁ = 0.75 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
1.1	5630	1.5	1279	6	306 L4	—	45000	51000	99700	116100	34000	248
1.1	5624	1	1278	6	305 L4	—	36000	41900	60900	73300	23300	240
1.1	5608	2.2	1274	7.5	307 L4	—	—	—	107100	140400	43600	256
1.2	5089	2.8	1157	7.5	307 L4	—	—	—	104100	136400	42200	256
1.3	4831	0.9	1098	6	305 L4	—	33700	38900	57000	68600	21600	240
1.3	4816	1.6	1095	6	306 L4	—	42900	48600	95200	110800	32200	248
1.4	4481	1.2	1018	6	305 L4	—	33600	38800	56900	68500	21600	240
1.4	4466	2.1	1015	6	306 L4	—	41900	47400	93000	108300	31400	248
1.6	3943	1.1	896	6	305 L4	—	32200	37200	54800	65900	20700	240
1.6	3859	2	877	6	306 L4	—	39900	45200	89000	103700	29900	248
1.7	3653	1.7	830	12	—	306 R4	39100	44300	87600	102000	29400	249
1.7	3624	1.2	824	12	—	305 R4	31300	36200	53400	64300	20100	241
1.8	3591	1.5	816	6	305 L4	—	31300	36100	53300	64100	20000	240
1.8	3559	2.2	809	6	306 L4	—	38800	44000	86900	101200	29200	248
1.8	3507	1	797	12	—	305 R4	31000	35800	52900	63600	19900	241
2	3160	1.3	718	6	305 L4	—	29900	34600	51300	61700	19200	238
2.1	2927	2.1	665	12	—	306 R4	36400	41200	82000	95400	27300	249
2.2	2899	1.4	659	12	—	305 R4	29100	33600	50000	60100	18700	240
2.2	2858	1.6	649	6	305 L4	—	29000	33400	49700	59800	18600	240
2.5	2494	1	567	12	—	303 R4	27700	32000	47700	57400	17800	233
2.5	2494	1.9	567	12	—	305 R4	27700	32000	47700	57400	17800	240
2.6	2447	1.1	556	6	303 L4	—	27500	31700	47500	57100	17600	232
2.6	2447	2.2	556	6	305 L4	—	27500	31700	47500	57100	17600	240
2.7	2323	1.7	528	12	—	305 R4	27000	31200	46700	56200	17300	241
2.9	2173	1	494	6	301 L4	—	8400	8400	22000	25300	5520	226
2.9	2166	1.2	492	6	303 L4	—	26400	30500	45800	55100	16900	232
2.9	2166	2.5	492	6	305 L4	—	26400	30500	45800	55100	16900	240
3.2	1993	1	453	10	—	301 R4	8350	8350	21900	25100	5490	226
3.2	1987	1.1	452	12	—	303 R4	25700	29600	44600	53700	16500	233
3.2	1987	2.4	452	12	—	305 R4	25700	29600	44600	53700	16500	241
3.2	1967	1	447	6	301 L4	—	8320	8320	21800	25000	5470	226
3.2	1961	1.4	446	6	303 L4	—	25500	29500	44400	53400	16400	232
3.2	1961	2.8	446	6	305 L4	—	25500	29500	44400	53400	16400	240
3.5	1818	1.3	413	6	303 L4	—	24900	28800	43400	52200	16000	232
3.5	1818	2.6	413	6	305 L4	—	24900	28800	43400	52200	16000	240
3.6	1828	1.1	402	7.5	303 L3	—	24700	28500	43100	51800	15800	232
3.6	1828	2.1	402	7.5	305 L3	—	24700	28500	43100	51800	15800	240
3.7	1717	1.1	390	12	—	303 R4	24400	28200	42700	51400	15700	233
3.7	1717	2.2	390	12	—	305 R4	24400	28200	42700	51400	15700	241
3.7	1769	1	389	7.5	303 L3	—	24400	28200	42600	51300	15700	233
3.7	1769	1.8	389	7.5	305 L3	—	24400	28200	42600	51300	15700	241
3.9	1601	1.4	364	12	—	303 R4	23900	27600	41800	50300	15300	233
3.9	1601	2.9	364	12	—	305 R4	23900	27600	41800	50300	15300	241





P₁ = 0.75 kW n₁=1500 rpm												
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
3.9	1597	1.2	363	10	—	301 R4	7760	7760	20500	23500	5100	227
4.3	1477	1.5	336	12	—	303 R4	23200	26800	40800	49100	14900	233
4.3	1453	1.3	330	6	301 L4	—	7520	7520	19900	22900	4940	226
4.4	1462	1.3	321	7.5	303 L3	—	22900	26400	40300	48500	14700	232
4.4	1462	2.5	321	7.5	305 L3	—	22900	26400	40300	48500	14700	240
4.6	1375	1.3	313	12	—	303 R4	22700	26200	39900	48100	14600	233
4.6	1375	2.6	313	12	—	305 R4	22700	26200	39900	48100	14600	240
4.8	1361	1	299	7.5	301 L3	—	7270	7270	19300	22200	4780	226
4.9	1280	1.5	291	10	—	301 R4	7210	7210	19100	22000	4740	227
4.9	1276	2.1	290	12	—	303 R4	22100	25600	39100	47000	14200	233
5.2	1258	1.8	276	7.5	303 L3	—	21800	25200	38500	46300	14000	232
5.3	1180	1.6	268	10	—	301 R4	7020	7020	18700	21500	4610	227
5.6	1172	1.6	258	7.5	303 L3	—	21300	24600	37700	45300	13600	232
5.6	1123	1.6	255	12	—	303 R4	21200	24500	37600	45200	13600	233
6	1090	1.2	240	7.5	301 L3	—	6760	6760	18100	20800	4440	226
6	1045	1.2	237	10	—	301 R4	6740	6740	18000	20700	4430	227
6.2	1016	1.8	231	12	—	303 R4	20500	23700	36500	43900	13200	233
6.5	1006	0.9	221	7.5	300 L3	—	6430	6430	17300	19800	4230	220
6.5	1006	1.8	221	7.5	301 L3	—	6580	6580	17600	20300	4320	226
6.5	1002	2.2	220	7.5	303 L3	—	20200	23300	36000	43300	13000	232
6.7	946	1	215	10	—	300 R4	6370	6370	17100	19700	4190	221
6.7	946	1.9	215	10	—	301 R4	6520	6520	17500	20100	4280	227
6.7	943	2.9	214	12	—	303 R4	20000	23100	35700	42900	12800	232
7.4	874	1.5	192	7.5	301 L3	—	6280	6280	16900	19400	4130	226
7.5	866	2.1	190	7.5	303 L3	—	19200	22200	34400	41400	12300	232
7.7	814	2.8	185	12	—	303 R4	19100	22000	34100	41100	12200	232
8.1	808	2.7	178	7.5	303 L3	—	18800	21700	33700	40600	12100	232
8.1	806	1.1	177	7.5	300 L3	—	6110	6110	16500	19000	4020	220
8.1	806	2.2	177	7.5	301 L3	—	6110	6110	16500	19000	4020	226
8.1	772	1.1	175	10	—	300 R4	6090	6090	16500	18900	4000	219
8.1	772	2.3	175	10	—	301 R4	6090	6090	16500	18900	4000	227
8.7	745	3	164	7.5	303 L3	—	18300	21100	32900	39600	11700	232
9	699	1.2	159	10	—	300 R4	5890	5890	16000	18300	3870	220
9	699	2.5	159	10	—	301 R4	5890	5890	16000	18300	3870	227
9.4	694	2.6	152	7.5	303 L3	—	17900	20600	32200	38700	11500	232
10	630	1	143	10	—	300 R4	5690	5690	15500	17800	3740	221
10	630	2.1	143	10	—	301 R4	5690	5690	15500	17800	3740	227
10.1	646	1.3	142	7.5	300 L3	—	5670	5670	15400	17700	3730	220
10.1	646	2.7	142	7.5	301 L3	—	5670	5670	15400	17700	3730	226
10.8	604	0.9	133	12	—	300 R3	5420	5420	14800	17000	3570	227
10.8	604	1.9	133	12	—	301 R3	5550	5550	15100	17400	3650	227
10.9	595	1.4	131	7.5	300 L3	—	5520	5520	15100	17300	3630	220
10.9	595	2.9	131	7.5	301 L3	—	5520	5520	15100	17300	3630	226





P₁ = 0.75 kW n₁=1500 rpm												
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
11	570	1.5	130	10	—	300 R4	5510	5510	15000	17300	3620	221
12.3	527	1.2	116	7.5	300 L3	—	5300	5300	14500	16700	3490	218
12.3	527	2.5	116	7.5	301 L3	—	5300	5300	14500	16700	3490	226
13.4	484	1.3	106	12	—	300 R3	5160	5160	14200	16300	3390	221
13.4	484	2.7	106	12	—	300 R3	5160	5160	14200	16300	3390	221
13.5	466	1.8	106	10	—	300 R4	5150	5150	14100	16200	3380	221
13.6	477	1.8	105	7.5	300 L3	—	5130	5130	14100	16200	3370	220
16.7	389	2.2	85.6	7.5	300 L3	—	4790	4790	13300	15200	3150	220
16.8	387	1.7	85.2	12	—	300 R3	4790	4790	13200	15200	3150	221
18.2	358	2.4	78.7	12	—	300 R3	4660	4660	12900	14900	3060	221
18.5	353	2.4	77.5	7.5	300 L3	—	4640	4640	12900	14800	3050	220
20.5	318	2	69.9	7.5	300 L3	—	4480	4480	12500	14300	2950	220
21	310	2.1	68.2	12	—	300 R3	4440	4440	12400	14200	2920	221
22.1	305	1.8	64.8	7.5	300 L2	—	4370	4370	12200	14000	2870	220
22.6	288	3	63.2	7.5	300 L3	—	4330	4330	12100	13900	2850	220
22.7	286	3	62.9	12	—	300 R3	4330	4330	12100	13900	2840	221
27.5	244	2.7	51.9	7.5	300 L2	—	4060	4060	11400	13100	2670	220

P₁ = 1.1 kW n₁=1500 rpm												
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
0.57	16433	1.6	2523	11	310 L4	—	—	—	133000	166000	65000	272
0.59	15775	1.1	2423	7.5	309 L4	—	—	—	110000	145000	36000	264
0.68	13652	2.5	2096	11	311 L4	—	—	—	157000	195000	65000	280
0.7	13292	1.1	2041	7.5	307 L4	—	—	—	109000	145000	45000	256
0.71	13167	2	2022	11	310 L4	—	—	—	133000	166000	65000	272
0.71	13041	1.3	2003	7.5	309 L4	—	—	—	110000	145000	36000	262
0.8	11686	2.2	1794	11	310 L4	—	—	—	133000	166000	65000	272
0.81	11508	1.4	1767	7.5	307 L4	—	—	—	109000	145000	45000	256
0.83	11218	1.5	1723	7.5	309 L4	—	—	—	110000	145000	36000	264
0.86	10885	2.4	1672	11	310 L4	—	—	—	133000	166000	65000	272
0.89	10450	1.6	1605	7.5	309 L4	—	—	—	110000	145000	36000	262
0.9	10358	1.4	1591	7.5	307 L4	—	—	—	109000	145000	45000	256
0.97	9602	1.1	1475	6	306 L4	—	45000	51000	101000	119000	35000	248
0.99	9363	2.8	1438	11	310 L4	—	—	—	133000	166000	65000	272
1	9171	1.7	1408	7.5	307 L4	—	—	—	109000	144700	45000	256
1	8989	1.9	1380	7.5	309 L4	—	—	—	110000	143800	35800	264
1.1	8373	2	1286	7.5	309 L4	—	—	—	109200	140800	35000	264
1.1	8332	1	1279	6	306 L4	—	45000	51000	99700	116100	34000	248





P ₁ = 1.1 kW n ₁ =1500 rpm													
n2 min ⁻¹	M2 Nm	S	i	Pt kW			Rn ₂ [N]					 Page	
							MC	MZ	HC/PC	HZ/PZ	FZ		
1.1	8299	1.5	1274	7.5	307 L4	—	—	—	107100	140400	43600	256	
1.2	7532	1.9	1157	7.5	307 L4	—	—	—	104100	136400	42200	256	
1.2	7485	2.2	1149	7.5	309 L4	—	—	—	105500	136100	33700	264	
1.3	7128	1.1	1095	6	306 L4	—	42900	48600	95200	110800	32200	248	
1.4	6610	1.4	1015	6	306 L4	—	41900	47400	93000	108300	31400	248	
1.4	6506	2.1	999	7.5	307 L4	—	—	—	99600	130500	40200	256	
1.4	6506	2.8	999	7.5	309 L4	—	—	—	101200	130500	32200	264	
1.6	5902	2.6	906	7.5	307 L4	—	—	—	96700	126800	38900	256	
1.6	5711	1.3	877	6	306 L4	—	39900	45200	89000	103700	29900	248	
1.7	5407	1.2	830	12	—	306 R4	39100	44300	87600	102000	29400	249	
1.8	5314	1	816	6	305 L4	—	31300	36100	53300	64100	20000	240	
1.8	5267	1.5	809	6	306 L4	—	38800	44000	86900	101200	29200	248	
1.8	5213	2.6	801	7.5	307 L4	—	—	—	93200	122100	37400	256	
2	4556	2.1	700	6	306 L4	—	37000	41900	83200	96900	27800	248	
2.1	4492	2.2	690	15	—	307 R4	—	—	89100	116800	35500	257	
2.1	4332	1.4	665	12	—	306 R4	36400	41200	82000	95400	27300	249	
2.2	4291	0.9	659	12	—	305 R4	29100	33600	50000	60100	18700	241	
2.2	4229	1.1	649	6	305 L4	—	29000	33400	49700	59800	18600	240	
2.3	4139	2.3	636	6	306 L4	—	35800	40600	80800	94100	26900	248	
2.4	3845	2.2	590	12	—	306 R4	34900	39600	79100	92100	26200	249	
2.4	3838	2.4	589	6	306 L4	—	34900	39600	79000	92000	26200	248	
2.5	3691	1.3	567	12	—	305 R4	27700	32000	47700	57400	17800	241	
2.6	3622	1.5	556	6	305 L4	—	27500	31700	47500	57100	17600	240	
2.6	3581	2	550	12	—	306 R4	34100	38700	77400	90100	25600	249	
2.7	3438	1.1	528	12	—	305 R4	27000	31200	46700	56200	17300	241	
2.8	3316	2.8	509	6	306 L4	—	33300	37700	75600	88100	25000	248	
2.9	3206	1.7	492	6	305 L4	—	26400	30500	45800	55100	16900	240	
2.9	3194	2.9	490	15	—	307 R4	—	—	80500	105400	31700	256	
2.9	3178	2.8	488	12	—	306 R4	32800	37100	74700	87000	24600	249	
3.1	2961	2.4	455	12	—	306 R4	32000	36300	73100	85100	24100	249	
3.2	2941	1.6	452	12	—	305 R4	25700	29600	44600	53700	16500	240	
3.2	2902	1	446	6	303 L4	—	25500	29500	44400	53400	16400	232	
3.2	2902	1.9	446	6	305 L4	—	25500	29500	44400	53400	16400	240	
3.5	2691	1.8	413	6	305 L4	—	24900	28800	43400	52200	16000	240	
3.5	2727	2.1	405	7.5	306 L3	—	30800	34900	70600	82200	23100	248	
3.6	2705	1.4	402	7.5	305 L3	—	24700	28500	43100	51800	15800	240	
3.7	2546	2.7	391	6	306 L4	—	30400	34500	69900	81400	22900	248	
3.7	2541	1.5	390	12	—	305 R4	24400	28200	42700	51400	15700	240	
3.7	2533	3	389	12	—	306 R4	30400	34400	69800	81200	22800	249	
3.7	2618	1.2	389	7.5	305 L3	—	24400	28200	42600	51300	15700	240	
3.9	2370	1	364	12	—	303 R4	23900	27600	41800	50300	15300	233	
3.9	2370	1.9	364	12	—	305 R4	23900	27600	41800	50300	15300	241	
4.3	2185	1	336	12	—	303 R4	23200	26800	40800	49100	14900	233	





P₁ = 1.1 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
4.3	2185	2.1	336	12	—	305 R4	23200	26800	40800	49100	14900	241
4.4	2185	2.5	325	7.5	306 L3	—	28600	32400	66100	76900	21500	248
4.4	2164	1.7	321	7.5	305 L3	—	22900	26400	40300	48500	14700	240
4.6	2036	0.9	313	12	—	303 R4	22200	25600	39100	47100	14200	233
4.6	2036	1.8	313	12	—	305 R4	22700	26200	39900	48100	14600	240
4.9	1894	1	291	10	—	301 R4	7210	7210	19100	22000	4740	227
4.9	1888	1.4	290	12	—	303 R4	22100	25600	39100	47000	14200	233
4.9	1888	2.8	290	12	—	305 R4	22100	25600	39100	47000	14200	241
5	1939	2.8	288	7.5	306 L3	—	27500	31200	63700	74200	20700	248
5.2	1862	1.2	276	7.5	303 L3	—	21800	25200	38500	46300	14000	232
5.2	1862	2.4	276	7.5	305 L3	—	21800	25200	38500	46300	14000	240
5.3	1747	1.1	268	10	—	301 R4	7020	7020	18700	21500	4610	227
5.6	1734	1.1	258	7.5	303 L3	—	21300	24600	37700	45300	13600	232
5.6	1734	2.1	258	7.5	305 L3	—	21300	24600	37700	45300	13600	240
5.6	1662	1.1	255	12	—	303 R4	21200	24500	37600	45200	13600	233
5.6	1662	2.2	255	12	—	305 R4	21200	24500	37600	45200	13600	241
6.2	1504	1.2	231	12	—	303 R4	20500	23700	36500	43900	13200	233
6.2	1504	2.4	231	12	—	305 R4	20500	23700	36500	43900	13200	241
6.5	1488	1.2	221	7.5	301 L3	—	6580	6580	17600	20300	4320	226
6.5	1484	1.5	220	7.5	303 L3	—	20200	23300	36000	43300	13000	233
6.7	1400	1.3	215	10	—	301 R4	6520	6520	17500	20100	4280	227
6.7	1395	2	214	12	—	303 R4	20000	23100	35700	42900	12800	233
7.4	1293	1	192	7.5	301 L3	—	6280	6280	16900	19400	4130	226
7.5	1282	1.4	190	7.5	303 L3	—	19200	22200	34400	41400	12300	232
7.5	1282	2.8	190	7.5	305 L3	—	19200	22200	34400	41400	12300	240
7.7	1204	1.9	185	12	—	303 R4	19100	22000	34100	41100	12200	233
8.1	1195	1.8	178	7.5	303 L3	—	18800	21700	33700	40600	12100	232
8.1	1192	1.5	177	7.5	301 L3	—	6110	6110	16500	19000	4020	226
8.1	1143	1.5	175	10	—	301 R4	6090	6090	16500	18900	4000	227
8.7	1102	2	164	7.5	303 L3	—	18300	21100	32900	39600	11700	232
9	1034	1.7	159	10	—	301 R4	5890	5890	16000	18300	3870	227
9	1031	2.6	158	12	—	303 R4	18100	20900	32600	39200	11600	233
9.4	1027	1.8	152	7.5	303 L3	—	17900	20600	32200	38700	11500	232
9.7	965	2.4	148	12	—	303 R4	17700	20400	31900	38400	11400	233
10	933	1.4	143	10	—	301 R4	5690	5690	15500	17800	3740	227
10.1	956	0.9	142	7.5	300 L3	—	5540	5540	15100	17400	3650	220
10.1	956	1.8	142	7.5	301 L3	—	5670	5670	15400	17700	3730	226
10.1	953	2.7	141	7.5	303 L3	—	17400	20100	31500	37900	11200	232
10.8	895	1.3	133	12	—	301 R3	5550	5550	15100	17400	3650	227
10.9	881	1	131	7.5	300 L3	—	5520	5520	15100	17300	3630	220
10.9	881	2	131	7.5	301 L3	—	5520	5520	15100	17300	3630	226
11	844	1	130	10	—	300 R4	5510	5510	15000	17300	3620	220
11	844	2	130	10	—	301 R4	5510	5510	15000	17300	3620	227





P₁ = 1.1 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
11.5	838	2.2	124	7.5	303 L3	—	16700	19300	30300	36500	10700	233
12.3	780	1.7	116	7.5	301 L3	—	5300	5300	14500	16700	3490	226
12.5	770	2.4	114	14	—	303 R3	16200	18700	29500	35500	10400	233
12.7	759	2.4	113	7.5	303 L3	—	16200	18600	29400	35400	10400	232
13.4	717	0.9	106	12	—	300 R3	5040	5040	13900	15900	3310	221
13.4	717	1.8	106	12	—	301 R3	5160	5160	14200	16300	3390	227
13.5	689	1.2	106	10	—	300 R4	5150	5150	14100	16200	3380	221
13.5	689	2.5	106	10	—	301 R4	5150	5150	14100	16200	3380	227
13.6	706	1.2	105	7.5	300 L3	—	5130	5130	14100	16200	3370	220
13.6	706	2.4	105	7.5	301 L3	—	5130	5130	14100	16200	3370	226
15.6	616	3	91.5	14	—	303 R3	15100	17400	27600	33200	9670	233
16.7	576	1.5	85.6	7.5	300 L3	—	4790	4790	13300	15200	3150	220
16.7	576	2.9	85.6	7.5	301 L3	—	4790	4790	13300	15200	3150	226
16.8	573	1.1	85.2	12	—	300 R3	4790	4790	13200	15200	3150	221
16.8	573	2.3	85.2	12	—	301 R3	4790	4790	13200	15200	3150	227
18.2	530	1.6	78.7	12	—	300 R3	4660	4660	12900	14900	3060	221
18.2	530	3	78.7	12	—	301 R3	4660	4660	12900	14900	3060	227
18.5	522	1.6	77.5	7.5	300 L3	—	4640	4640	12900	14800	3050	220
20.5	470	1.4	69.9	7.5	300 L3	—	4480	4480	12500	14300	2950	220
20.5	470	2.8	69.9	7.5	301 L3	—	4480	4480	12500	14300	2950	226
21	459	1.4	68.2	12	—	300 R3	4440	4440	12400	14200	2920	221
21	459	2.8	68.2	12	—	301 R3	4440	4440	12400	14200	2920	227
22.1	451	1.2	64.8	7.5	300 L2	—	4370	4370	12200	14000	2870	220
22.1	451	2.6	64.8	7.5	301 L2	—	4370	4370	12200	14000	2870	226
22.6	426	2	63.2	7.5	300 L3	—	4330	4330	12100	13900	2850	220
22.7	424	2	62.9	12	—	300 R3	4330	4330	12100	13900	2840	221
27.5	361	1.8	51.9	7.5	300 L2	—	4060	4060	11400	13100	2670	220
27.7	348	2.4	51.6	7.5	300 L3	—	4050	4050	11400	13100	2660	220
28.4	340	2.5	50.4	12	—	300 R3	4020	4020	11300	13000	2640	221
34	289	2.2	41.5	7.5	300 L2	—	3770	3770	10700	12300	2480	220
35	277	2.3	41.2	12	—	300 R3	3760	3760	10600	12200	2470	221
43	232	2.8	33.3	7.5	300 L2	—	3500	3500	9990	11500	2300	220
78	128	2.9	18.5	12	—	300 R2	2870	2870	8370	9620	1890	221

P₁ = 1.5 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
0.57	22206	1.2	2523	11	310 L4	—	—	—	133000	166000	65000	272
0.65	19246	2.5	2187	11	313 L4	—	—	—	192000	231000	80000	288





P₁ = 1.5 kW n₁=1500 rpm												
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
0.68	18448	1.8	2096	11	311 L4	—	—	—	157000	195000	65000	280
0.71	17794	1.5	2022	11	310 L4	—	—	—	133000	166000	65000	273
0.71	17623	1	2003	7.5	309 L4	—	—	—	110000	145000	36000	264
0.8	15791	1.6	1794	11	310 L4	—	—	—	133000	166000	65000	272
0.81	15552	1	1767	7.5	307 L4	—	—	—	109000	145000	45000	256
0.81	15545	2.8	1766	11	311 L4	—	—	—	157000	195000	65000	280
0.83	15160	1.1	1723	7.5	309 L4	—	—	—	110000	145000	36000	264
0.85	14782	2.3	1680	11	311 L4	—	—	—	157000	195000	65000	280
0.86	14709	1.8	1672	11	310 L4	—	—	—	133000	166000	65000	272
0.89	14121	1.2	1605	7.5	309 L4	—	—	—	110000	145000	36000	264
0.9	13997	1.1	1591	7.5	307 L4	—	—	—	109000	145000	45000	256
0.99	12653	2	1438	11	310 L4	—	—	—	133000	166000	65000	272
1	12393	1.3	1408	7.5	307 L4	—	—	—	109000	144700	45000	256
1	12147	1.4	1380	7.5	309 L4	—	—	—	110000	143800	35800	264
1.1	11315	1.5	1286	7.5	309 L4	—	—	—	109200	140800	35000	264
1.1	11215	1.1	1274	7.5	307 L4	—	—	—	107100	140400	43600	256
1.1	11079	2.5	1259	11	310 L4	—	—	—	128500	161600	62700	272
1.2	10246	2.9	1164	11	310 L4	—	—	—	125500	157900	61100	272
1.2	10179	1.4	1157	7.5	307 L4	—	—	—	104100	136400	42200	256
1.2	10114	1.6	1149	7.5	309 L4	—	—	—	105500	136100	33700	264
1.4	8932	1.1	1015	6	306 L4	—	41900	47400	93000	108300	31400	248
1.4	8792	1.6	999	7.5	307 L4	—	—	—	99600	130500	40200	256
1.4	8792	2.1	999	7.5	309 L4	—	—	—	101200	130500	32200	264
1.6	7975	1.9	906	7.5	307 L4	—	—	—	96700	126800	38900	256
1.6	7975	2.2	906	7.5	309 L4	—	—	—	98300	126800	31100	264
1.6	7903	2.9	898	15	—	310 R4	—	—	116100	146000	56100	273
1.6	7718	1	877	6	306 L4	—	39900	45200	89000	103700	29900	248
1.8	7117	1.1	809	6	306 L4	—	38800	44000	86900	101200	29200	248
1.8	7045	1.9	801	7.5	307 L4	—	—	—	93200	122100	37400	256
1.8	7045	2.6	801	7.5	309 L4	—	—	—	94700	122100	29900	264
2	6355	2.4	722	7.5	307 L4	—	—	—	90400	118400	36100	256
2	6156	1.5	700	6	306 L4	—	37000	41900	83200	96900	27800	248
2.1	6070	1.6	690	15	—	307 R4	—	—	89100	116800	35500	257
2.1	6070	2.4	690	15	—	309 R4	—	—	90600	116800	28400	265
2.1	5854	1	665	12	—	306 R4	36400	41200	82000	95400	27300	249
2.2	5751	2.2	654	7.5	307 L4	—	—	—	87700	114900	34900	256
2.3	5593	1.7	636	6	306 L4	—	35800	40600	80800	94100	26900	248
2.4	5196	1.6	590	12	—	306 R4	34900	39600	79100	92100	26200	249
2.4	5186	1.8	589	6	306 L4	—	34900	39600	79000	92000	26200	248
2.5	5114	2.5	581	15	—	307 R4	38600	48500	84700	110900	33600	257
2.5	5092	2.9	579	7.5	307 L4	—	—	—	84500	110800	33500	256
2.5	4988	1	567	12	—	305 R4	27700	32000	47700	57400	17800	241
2.6	4894	1.1	556	6	305 L4	—	27500	31700	47500	57100	17600	241





P₁ = 1.5 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
2.6	4840	1.5	550	12	—	306 R4	34100	38700	77400	90100	25600	249
2.8	4481	2.1	509	6	306 L4	—	33300	37700	75600	88100	25000	248
2.9	4332	1.2	492	6	305 L4	—	26400	30500	45800	55100	16900	240
2.9	4316	2.2	490	15	—	307 R4	—	—	80500	105400	31700	256
2.9	4295	2.1	488	12	—	306 R4	32800	37100	74700	87000	24600	249
3.1	4091	3	465	7.5	307 L4	—	—	—	79200	103700	31200	257
3.1	4001	1.8	455	12	—	306 R4	32000	36300	73100	85100	24100	249
3.2	3975	1.2	452	12	—	305 R4	25700	29600	44600	53700	16500	241
3.2	3922	1.4	446	6	305 L4	—	25500	29500	44400	53400	16400	240
3.2	3909	2.5	444	6	306 L4	—	31800	36000	72600	84500	23900	248
3.4	3695	2.4	420	12	—	306 R4	31200	35300	71400	83100	23400	249
3.5	3636	1.3	413	6	305 L4	—	24900	28800	43400	52200	16000	240
3.5	3686	1.5	405	7.5	306 L3	—	30800	34900	70600	82200	23100	248
3.6	3656	1	402	7.5	305 L3	—	24700	28500	43100	51800	15800	241
3.7	3440	2	391	6	306 L4	—	30400	34500	69900	81400	22900	248
3.7	3433	1.1	390	12	—	305 R4	24400	28200	42700	51400	15700	241
3.7	3423	2.2	389	12	—	306 R4	30400	34400	69800	81200	22800	249
3.9	3202	1.4	364	12	—	305 R4	23900	27600	41800	50300	15300	241
4.3	3062	2.9	336	11	307 L3	—	—	—	71900	94200	28000	257
4.3	2953	1.5	336	12	—	305 R4	23200	26800	40800	49100	14900	241
4.4	2953	1.9	325	7.5	306 L3	—	28600	32400	66100	76900	21500	248
4.4	2925	1.2	321	7.5	305 L3	—	22900	26400	40300	48500	14700	240
4.6	2751	1.3	313	12	—	305 R4	22700	26200	39900	48100	14600	241
4.6	2742	2.8	312	12	—	306 R4	28200	32000	65300	76000	21200	249
4.9	2552	1	290	12	—	303 R4	22100	25600	39100	47000	14200	233
4.9	2552	2.1	290	12	—	305 R4	22100	25600	39100	47000	14200	241
5	2621	2.1	288	7.5	306 L3	—	27500	31200	63700	74200	20700	248
5.2	2516	1.8	276	7.5	305 L3	—	21800	25200	38500	46300	14000	240
5.3	2441	2.3	268	7.5	306 L3	—	26900	30400	62400	72700	20200	248
5.6	2344	1.5	258	7.5	305 L3	—	21300	24600	37700	45300	13600	240
5.6	2246	1.6	255	12	—	305 R4	21200	24500	37600	45200	13600	241
6.2	2033	0.9	231	12	—	303 R4	20100	23100	35700	43000	12900	233
6.2	2033	1.8	231	12	—	305 R4	20500	23700	36500	43900	13200	241
6.5	2005	1.1	220	7.5	303 L3	—	20200	23300	36000	43300	13000	232
6.5	2005	2.4	220	7.5	305 L3	—	20200	23300	36000	43300	13000	240
6.7	1892	1	215	10	—	301 R4	6520	6520	17500	20100	4280	227
6.7	1886	1.4	214	12	—	303 R4	20000	23100	35700	42900	12800	233
6.7	1886	2.9	214	12	—	305 R4	19600	22600	34900	42000	12500	241
7.5	1732	1.1	190	7.5	303 L3	—	19200	22200	34400	41400	12300	232
7.5	1732	2.1	190	7.5	305 L3	—	19200	22200	34400	41400	12300	240
7.7	1627	1.4	185	12	—	303 R4	19100	22000	34100	41100	12200	233
7.7	1627	2.8	185	12	—	305 R4	19100	22000	34100	41100	12200	241
8.1	1615	1.4	178	7.5	303 L3	—	18800	21700	33700	40600	12100	232





P₁ = 1.5 kW n₁=1500 rpm												
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
8.1	1615	2.7	178	7.5	305 L3	—	18800	21700	33700	40600	12100	238
8.1	1611	1.1	177	7.5	301 L3	—	6110	6110	16500	19000	4020	226
8.1	1544	1.1	175	10	—	301 R4	6090	6090	16500	18900	4000	226
8.7	1490	1.5	164	7.5	303 L3	—	18300	21100	32900	39600	11700	232
8.7	1490	3	164	7.5	305 L3	—	18300	21100	32900	39600	11700	240
9	1398	1.2	159	10	—	301 R4	5890	5890	16000	18300	3870	226
9	1393	1.9	158	12	—	303 R4	18100	20900	32600	39200	11600	239
9.4	1388	1.3	152	7.5	303 L3	—	17900	20600	32200	38700	11500	232
9.4	1388	2.6	152	7.5	305 L3	—	17900	20600	32200	38700	11500	240
9.7	1304	1.8	148	12	—	303 R4	17700	20400	31900	38400	11400	233
10	1260	1	143	10	—	301 R4	5690	5690	15500	17800	3740	227
10.1	1291	1.3	142	7.5	301 L3	—	5670	5670	15400	17700	3730	226
10.1	1287	2	141	7.5	303 L3	—	17400	20100	31500	37900	11200	230
10.8	1209	1	133	12	—	301 R3	5550	5550	15100	17400	3650	227
10.9	1191	1.4	131	7.5	301 L3	—	5520	5520	15100	17300	3630	226
11	1141	1.5	130	10	—	301 R4	5510	5510	15000	17300	3620	227
11.1	1137	2.3	129	12	—	303 R4	16900	19500	30600	36900	10800	233
11.5	1133	1.6	124	7.5	303 L3	—	16700	19300	30300	36500	10700	232
12.3	1054	1.2	116	7.5	301 L3	—	5300	5300	14500	16700	3490	226
12.5	1041	1.7	114	14	—	303 R3	16200	18700	29500	35500	10400	233
12.7	1025	1.8	113	7.5	303 L3	—	16200	18600	29400	35400	10400	232
13.4	969	1.3	106	12	—	301 R3	5160	5160	14200	16300	3390	227
13.5	931	0.9	106	10	—	300 R4	5030	5030	13800	15900	3310	221
13.5	931	1.8	106	10	—	301 R4	5150	5150	14100	16200	3380	227
13.6	954	0.9	105	7.5	300 L3	—	5010	5010	13800	15900	3300	220
13.6	954	1.8	105	7.5	301 L3	—	5130	5130	14100	16200	3370	226
13.7	951	2.7	105	7.5	303 L3	—	15800	18200	28800	34600	10100	232
15.6	833	2.2	91.5	14	—	303 R3	15100	17400	27600	33200	9670	233
15.9	821	2.7	90.2	7.5	303 L3	—	15000	17300	27500	33100	9620	232
16.7	779	1.1	85.6	7.5	300 L3	—	4790	4790	13300	15200	3150	220
16.7	779	2.2	85.6	7.5	301 L3	—	4790	4790	13300	15200	3150	226
16.8	775	1.7	85.2	12	—	301 R3	4790	4790	13200	15200	3150	227
18.2	716	1.2	78.7	12	—	300 R3	4660	4660	12900	14900	3060	221
18.2	716	2.2	78.7	12	—	301 R3	4660	4660	12900	14900	3060	226
18.5	705	1.2	77.5	7.5	300 L3	—	4640	4640	12900	14800	3050	220
18.5	705	2.4	77.5	7.5	301 L3	—	4640	4640	12900	14800	3050	226
19.5	667	2.7	73.3	14	—	303 R3	14000	16200	25900	31100	8980	233
20.5	636	1	69.9	7.5	300 L3	—	4480	4480	12500	14300	2950	220
20.5	636	2	69.9	7.5	301 L3	—	4480	4480	12500	14300	2950	226
21	621	1	68.2	12	—	300 R3	4440	4440	12400	14200	2920	221
21	621	2.1	68.2	12	—	301 R3	4440	4440	12400	14200	2920	227
22.1	609	0.9	64.8	7.5	300 L2	—	4270	4270	12000	13700	2810	220
22.1	609	1.9	64.8	7.5	301 L2	—	4370	4370	12200	14000	2870	226





P₁ = 1.5 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
22.6	576	1.5	63.2	7.5	300 L3	—	4330	4330	12100	13900	2850	220
22.6	576	2.9	63.2	7.5	301 L3	—	4330	4330	12100	13900	2850	226
22.7	573	1.5	62.9	12	—	300 R3	4330	4330	12100	13900	2840	221
22.7	573	2.9	62.9	12	—	301 R3	4330	4330	12100	13900	2840	227
27.5	488	1.3	51.9	7.5	300 L2	—	4060	4060	11400	13100	2670	220
27.5	488	2.7	51.9	7.5	301 L2	—	4060	4060	11400	13100	2670	226
27.7	470	1.8	51.6	7.5	300 L3	—	4050	4050	11400	13100	2660	220
28.4	459	1.9	50.4	12	—	300 R3	4020	4020	11300	13000	2640	221
34	390	1.7	41.5	7.5	300 L2	—	3770	3770	10700	12300	2480	220
35	375	1.7	41.2	12	—	300 R3	3760	3760	10600	12200	2470	221
37	361	2.3	38.4	7.5	300 L2	—	3670	3670	10400	12000	2410	220
38	339	2.5	37.3	12	—	300 R3	3630	3630	10300	11900	2390	221
43	313	2.1	33.3	7.5	300 L2	—	3500	3500	9990	11500	2300	220
47	289	2.9	30.7	7.5	300 L2	—	3410	3410	9750	11200	2240	221
78	173	2.1	18.5	12	—	300 R2	2870	2870	8370	9620	1890	221

P₁ = 2.2 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
0.65	28291	1.7	2187	11	313 L4	—	—	—	192000	231000	80000	286
0.68	27119	1.3	2096	11	311 L4	—	—	—	157000	195000	65000	281
0.71	26157	1	2022	11	310 L4	—	—	—	133000	166000	65000	272
0.79	23503	2.5	1817	11	313 L4	—	—	—	192000	231000	80000	286
0.8	23213	1.1	1794	11	310 L4	—	—	—	133000	166000	65000	272
0.81	22850	1.9	1766	11	311 L4	—	—	—	157000	195000	65000	281
0.85	21730	1.6	1680	11	311 L4	—	—	—	157000	195000	65000	281
0.86	21623	1.2	1672	11	310 L4	—	—	—	133000	166000	65000	272
0.95	19429	3	1502	11	313 L4	—	—	—	192000	231000	80000	288
0.99	18600	1.4	1438	11	310 L4	—	—	—	133000	166000	65000	272
1	18310	2.3	1415	11	311 L4	—	—	—	157000	195000	65000	281
1	18032	2.9	1394	11	313 L4	—	—	—	192000	229000	79900	289
1	17856	0.9	1380	7.5	309 L4	—	—	—	110000	143800	35800	264
1.1	16633	1	1286	7.5	309 L4	—	—	—	109200	140800	35000	264
1.1	16286	1.7	1259	11	310 L4	—	—	—	128500	161600	62700	272
1.2	15916	2.8	1230	11	311 L4	—	—	—	150800	187900	62300	281
1.2	15061	1.9	1164	11	310 L4	—	—	—	125500	157900	61100	272
1.2	14963	0.9	1157	7.5	307 L4	—	—	—	101900	133600	41300	256
1.2	14868	1.1	1149	7.5	309 L4	—	—	—	105500	136100	33700	264
1.4	13202	2.2	1021	11	310 L4	—	—	—	120700	151800	58500	272





P₁ = 2.2 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
1.4	12925	1.1	999	7.5	307 L4	—	—	—	99600	130500	40200	256
1.4	12925	1.4	999	7.5	309 L4	—	—	—	101200	130500	32200	264
1.5	12145	2.7	939	11	310 L4	—	—	—	117700	148000	56900	272
1.6	11724	1.3	906	7.5	307 L4	—	—	—	96700	126800	38900	256
1.6	11724	1.5	906	7.5	309 L4	—	—	—	98300	126800	31100	264
1.6	11618	2	898	15	—	310 R4	—	—	116100	146000	56100	271
1.7	10579	2.6	818	11	310 L4	—	—	—	112900	142000	54300	272
1.8	10356	1.3	801	7.5	307 L4	—	—	—	93200	122100	37400	256
1.8	10356	1.8	801	7.5	309 L4	—	—	—	94700	122100	29900	264
1.9	9789	2.7	757	15	—	310 R4	—	—	110300	138700	52900	273
2	9388	2.9	726	11	310 L4	—	—	—	108900	137000	52200	272
2	9342	1.6	722	7.5	307 L4	—	—	—	90400	118400	36100	256
2	9342	2.3	722	7.5	309 L4	—	—	—	91800	118400	28900	264
2	9050	1	700	6	306 L4	—	37000	41900	83200	96900	27800	248
2.1	8923	1.1	690	15	—	307 R4	—	—	89100	116800	35500	257
2.1	8923	1.7	690	15	—	309 R4	—	—	90600	116800	28400	263
2.2	8454	1.5	654	7.5	307 L4	—	—	—	87700	114900	34900	254
2.2	8454	2.1	654	7.5	309 L4	—	—	—	89100	114900	27900	264
2.2	8262	2.6	639	15	—	310 R4	—	—	104800	131800	50000	273
2.3	8221	1.1	636	6	306 L4	—	35800	40600	80800	94100	26900	248
2.4	7637	1.1	590	12	—	306 R4	34900	39600	79100	92100	26200	248
2.4	7628	2.9	590	15	—	310 R4	—	—	102400	128700	48700	273
2.4	7624	1.2	589	6	306 L4	—	34900	39600	79000	92000	26200	248
2.5	7518	1.7	581	15	—	307 R4	—	—	84700	110900	33600	257
2.5	7518	2.1	581	15	—	309 R4	—	—	86000	110900	26900	265
2.5	7486	2	579	7.5	307 L4	—	—	—	84500	110800	33500	256
2.5	7486	2.8	579	7.5	309 L4	—	—	—	85900	110800	26800	264
2.6	7114	1	550	12	—	306 R4	34100	38700	77400	90100	25600	249
2.8	6588	1.4	509	6	306 L4	—	33300	37700	75600	88100	25000	248
2.8	6587	2.1	509	7.5	307 L4	—	—	—	81400	106600	32100	256
2.8	6587	2.2	509	7.5	309 L4	—	—	—	82700	106600	25700	264
2.9	6345	1.5	490	15	—	307 R4	—	—	80500	105400	31700	256
2.9	6345	2.2	490	15	—	309 R4	—	—	81700	105400	25400	264
2.9	6314	1.4	488	12	—	306 R4	32800	37100	74700	87000	24600	249
3.1	6013	2	465	7.5	307 L4	—	35800	45000	79200	103700	31200	256
3.1	5910	2.3	457	15	—	309 R4	—	—	80000	103200	24800	262
3.1	5881	1.2	455	12	—	306 R4	32000	36300	73100	85100	24100	249
3.2	5858	2.3	453	15	—	307 R4	—	—	78600	102900	30900	256
3.2	5765	1	446	6	305 L4	—	25500	29500	44400	53400	16400	240
3.2	5747	1.7	444	6	306 L4	—	31800	36000	72600	84500	23900	248
3.4	5431	1.6	420	12	—	306 R4	31200	35300	71400	83100	23400	249
3.5	5346	2.2	413	15	—	307 R4	—	—	76400	100100	30000	257
3.5	5246	2.3	406	7.5	307 L4	—	—	—	76000	99600	29800	256





P₁ = 2.2 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
3.5	5418	1	405	7.5	306 L3	—	30800	34900	70600	82200	23100	248
3.7	5057	1.4	391	6	306 L4	—	30400	34500	69900	81400	22900	248
3.7	5031	1.5	389	12	—	306 R4	30400	34400	69800	81200	22800	249
3.8	4843	3	374	15	—	309 R4	—	—	75400	97200	23200	264
3.9	4707	1	364	12	—	305 R4	23900	27600	41800	50300	15300	241
3.9	4694	2.6	363	15	—	307 R4	—	—	73500	96300	28700	257
4.3	4501	2	336	11	307 L3	—	—	—	71900	94200	28000	256
4.3	4501	2.9	336	11	309 L3	—	—	—	73000	94200	22400	264
4.3	4341	1.1	336	12	—	305 R4	23200	26800	40800	49100	14900	241
4.3	4284	2.7	331	15	—	307 R4	—	—	71500	93700	27800	257
4.4	4341	1.3	325	7.5	306 L3	—	28600	32400	66100	76900	21500	248
4.6	4031	1.9	312	12	—	306 R4	28200	32000	65300	76000	21200	249
4.9	3751	1.4	290	12	—	305 R4	22100	25600	39100	47000	14200	241
4.9	3738	2.2	289	12	—	306 R4	27500	31200	63800	74300	20700	249
5	3853	1.4	288	7.5	306 L3	—	27500	31200	63700	74200	20700	248
5	3792	3	284	11	307 L3	—	—	—	68300	89400	26400	256
5.2	3698	1.2	276	7.5	305 L3	—	21800	25200	38500	46300	14000	240
5.3	3589	1.5	268	7.5	306 L3	—	26900	30400	62400	72700	20200	248
5.6	3445	1	258	7.5	305 L3	—	21300	24600	37700	45300	13600	240
5.6	3301	1.1	255	12	—	305 R4	21200	24500	37600	45200	13600	241
5.8	3216	2.5	249	12	—	306 R4	26200	29700	61000	71000	19700	249
6	3201	2.7	239	11	307 L3	—	—	—	64900	85000	25000	256
6	3185	2.6	238	7.5	306 L3	—	25800	29200	60200	70100	19400	248
6.2	2988	1.2	231	12	—	305 R4	20500	23700	36500	43900	13200	240
6.2	2979	2.5	230	12	—	306 R4	25500	28900	59600	69400	19200	249
6.4	2967	2.2	222	7.5	306 L3	—	25200	28600	58900	68600	18900	248
6.5	2947	1.6	220	7.5	305 L3	—	20200	23300	36000	43300	13000	240
6.7	2772	1	214	12	—	303 R4	20000	23100	35700	42900	12800	233
6.7	2772	1.9	214	12	—	305 R4	20000	23100	35700	42900	12800	241
7	2740	3	205	7.5	306 L3	—	24500	27800	57600	67000	18400	248
7.5	2546	1.4	190	7.5	305 L3	—	19200	22200	34400	41400	12300	240
7.5	2538	2.6	190	7.5	306 L3	—	23900	27100	56200	65500	18000	248
7.7	2392	1	185	12	—	303 R4	18600	21500	33400	40200	11900	233
7.7	2392	1.9	185	12	—	305 R4	19100	22000	34100	41100	12200	241
8.1	2375	0.9	178	7.5	303 L3	—	18800	21700	33700	40600	12100	232
8.1	2375	1.9	178	7.5	305 L3	—	18800	21700	33700	40600	12100	240
8.7	2190	1	164	7.5	303 L3	—	18300	21100	32900	39600	11700	231
8.7	2190	2	164	7.5	305 L3	—	18300	21100	32900	39600	11700	240
9	2048	1.3	158	12	—	303 R4	18100	20900	32600	39200	11600	233
9	2048	2.6	158	12	—	305 R4	18100	20900	32600	39200	11600	241
9.4	2040	1.8	152	7.5	305 L3	—	17900	20600	32200	38700	11500	240
9.7	1917	1.2	148	12	—	303 R4	17700	20400	31900	38400	11400	233
9.7	1917	2.3	148	12	—	305 R4	17700	20400	31900	38400	11400	241





P₁ = 2.2 kW n₁=1500 rpm												
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
9.9	1928	2.8	144	14	—	306 R3	21800	24700	51800	60300	16400	249
10.1	1898	0.9	142	7.5	301 L3	—	5540	5540	15100	17400	3650	226
10.1	1892	1.4	141	7.5	303 L3	—	17400	20100	31500	37900	11200	232
10.1	1892	2.7	141	7.5	305 L3	—	17400	20100	31500	37900	11200	240
10.9	1750	1	131	7.5	301 L3	—	5520	5520	15100	17300	3630	226
11	1677	1	130	10	—	301 R4	5510	5510	15000	17300	3620	227
11.1	1672	1.6	129	12	—	303 R4	16900	19500	30600	36900	10800	233
11.5	1665	1.1	124	7.5	303 L3	—	16700	19300	30300	36500	10700	232
11.5	1665	2.2	124	7.5	305 L3	—	16700	19300	30300	36500	10700	240
12.5	1530	1.2	114	14	—	303 R3	16200	18700	29500	35500	10400	233
12.5	1530	2.3	114	14	—	305 R3	16200	18700	29500	35500	10400	241
12.7	1507	1.2	113	7.5	303 L3	—	16200	18600	29400	35400	10400	232
12.7	1507	2.4	113	7.5	305 L3	—	16200	18600	29400	35400	10400	240
13.4	1424	0.9	106	12	—	301 R3	5160	5160	14200	16300	3390	227
13.5	1369	1.2	106	10	—	301 R4	5150	5150	14100	16200	3380	227
13.6	1403	1.2	105	7.5	301 L3	—	5130	5130	14100	16200	3370	226
13.7	1398	1.8	105	7.5	303 L3	—	15800	18200	28800	34600	10100	232
15.6	1224	1.5	91.5	14	—	303 R3	15100	17400	27600	33200	9670	233
15.6	1224	2.9	91.5	14	—	305 R3	15100	17400	27600	33200	9670	241
15.9	1207	1.9	90.2	7.5	303 L3	—	15000	17300	27500	33100	9620	232
16.7	1145	1.5	85.6	7.5	301 L3	—	4790	4790	13300	15200	3150	226
16.8	1139	1.1	85.2	12	—	301 R3	4790	4790	13200	15200	3150	227
18.2	1053	2.1	78.7	14	—	303 R3	14300	16500	26400	31800	9190	233
18.2	1052	1.5	78.7	12	—	301 R3	4660	4660	12900	14900	3060	227
18.5	1036	1.6	77.5	7.5	301 L3	—	4640	4640	12900	14800	3050	226
18.5	1033	2.4	77.2	7.5	303 L3	—	14200	16400	26300	31600	9140	232
19.5	981	1.9	73.3	14	—	303 R3	14000	16200	25900	31100	8980	233
19.8	967	2.3	72.3	7.5	303 L3	—	13900	16100	25700	31000	8940	232
20.5	935	1.4	69.9	7.5	301 L3	—	4480	4480	12500	14300	2950	226
21	913	1.4	68.2	12	—	301 R3	4440	4440	12400	14200	2920	227
22.1	895	1.3	64.8	7.5	301 L2	—	4370	4370	12200	14000	2870	226
22.6	846	1	63.2	7.5	300 L3	—	4330	4330	12100	13900	2850	226
22.6	846	2	63.2	7.5	301 L3	—	4330	4330	12100	13900	2850	226
22.7	844	2.6	63.1	14	—	303 R3	13300	15400	24700	29700	8540	232
22.7	843	3	63.1	7.5	303 L3	—	13300	15400	24700	29700	8540	232
22.7	842	1	62.9	12	—	300 R3	4330	4330	12100	13900	2840	221
22.7	842	2	62.9	12	—	301 R3	4330	4330	12100	13900	2840	227
25.6	771	2.4	55.8	9	303 L2	—	12800	14800	23800	28700	8200	232
26.4	725	2.5	54.2	14	—	303 R3	12700	14600	23600	28400	8120	232
27.5	717	0.9	51.9	7.5	300 L2	—	3970	3970	11200	12900	2610	220
27.5	717	1.8	51.9	7.5	301 L2	—	4060	4060	11400	13100	2670	226
27.7	691	1.2	51.6	7.5	300 L3	—	4050	4050	11400	13100	2660	220
27.7	691	2.4	51.6	7.5	301 L3	—	4050	4050	11400	13100	2660	226



P ₁ = 2.2 kW n ₁ =1500 rpm												
n2 min ⁻¹	M2 Nm	S	i	Pt kW			Rn ₂ [N]					 Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
28.4	674	1.3	50.4	12	—	300 R3	4020	4020	11300	13000	2640	220
28.4	674	2.4	50.4	12	—	301 R3	4020	4020	11300	13000	2640	227
32	617	3	44.6	9	303 L2	—	11900	13700	22300	26800	7610	232
34	574	1.1	41.5	7.5	300 L2	—	3770	3770	10700	12300	2480	220
34	574	2.3	41.5	7.5	301 L2	—	3770	3770	10700	12300	2480	226
35	551	1.2	41.2	12	—	300 R3	3760	3760	10600	12200	2470	221
35	551	2.4	41.2	12	—	301 R3	3760	3760	10600	12200	2470	227
37	530	1.6	38.4	7.5	300 L2	—	3670	3670	10400	12000	2410	220
37	530	2.9	38.4	7.5	301 L2	—	3670	3670	10400	12000	2410	226
38	498	1.7	37.3	12	—	300 R3	3630	3630	10300	11900	2390	221
43	460	1.4	33.3	7.5	300 L2	—	3500	3500	9990	11500	2300	220
43	460	2.8	33.3	7.5	301 L2	—	3500	3500	9990	11500	2300	226
47	424	2	30.7	7.5	300 L2	—	3410	3410	9750	11200	2240	220
47	407	2.1	30.4	12	—	300 R3	3400	3400	9730	11200	2230	221
58	332	2.2	24.8	12	—	300 R3	3170	3170	9150	10500	2090	221
58	342	2.5	24.8	18	—	303 R2	9750	11300	18700	22500	6250	233
58	340	2.4	24.6	7.5	300 L2	—	3160	3160	9130	10500	2080	220
71	277	2.3	20.1	7.5	300 L2	—	2960	2960	8590	9870	1940	220
78	255	1.5	18.5	12	—	300 R2	2870	2870	8370	9620	1890	221
78	255	2.9	18.5	12	—	301 R2	2870	2870	8370	9620	1890	227
79	251	3	18.2	7.5	300 L2	—	2860	2860	8330	9580	1880	221
97	204	2.5	14.8	12	—	300 R2	2670	2670	7830	9000	1750	221
159	128	2.5	9	7.5	300 L1	—	2260	2260	6750	7750	1490	220

P ₁ = 3 kW n ₁ =1500 rpm												
n2 min ⁻¹	M2 Nm	S	i	Pt kW			Rn ₂ [N]					 Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
0.65	38491	1.3	2187	11	313 L4	—	—	192000	231000	80000	288	
0.68	36897	0.9	2096	11	311 L4	—	—	157000	195000	65000	280	
0.78	31977	1.8	1817	11	313 L4	—	—	192000	231000	80000	288	
0.8	31089	1.4	1766	11	311 L4	—	—	157000	195000	65000	280	
0.85	29565	1.2	1680	11	311 L4	—	—	157000	195000	65000	280	
0.95	26435	2.2	1502	11	313 L4	—	—	192000	231000	80000	288	
0.99	25307	1	1438	11	310 L4	—	—	133000	166000	65000	272	
1	24911	1.7	1415	11	311 L4	—	—	157000	195000	65000	280	
1	24533	2.1	1394	11	313 L4	—	—	192000	229000	79900	288	
1.1	22274	2.5	1266	11	313 L4	—	—	188000	222500	77400	288	
1.1	22158	1.2	1259	11	310 L4	—	—	128500	161600	62700	272	
1.2	21655	2	1230	11	311 L4	—	—	150800	187900	62300	280	





P₁ = 3 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
1.2	20491	1.4	1164	11	310 L4	—	—	—	125500	157900	61100	272
1.3	19658	2.7	1117	11	313 L4	—	—	—	181100	214300	74200	288
1.3	18628	2.3	1058	11	311 L4	—	—	—	144200	179600	59200	280
1.4	17963	1.6	1021	11	310 L4	—	—	—	120700	151800	58500	272
1.4	17584	1	999	7.5	309 L4	—	—	—	101200	130500	32200	264
1.4	17352	2.4	986	11	311 L4	—	—	—	141100	175800	57800	280
1.5	16524	2	939	11	310 L4	—	—	—	117700	148000	56900	272
1.6	15951	1	906	7.5	307 L4	—	—	—	94700	124200	38000	256
1.6	15951	1.1	906	7.5	309 L4	—	—	—	98300	126800	31100	264
1.6	15905	2.9	904	11	311 L4	—	—	—	137500	171300	56200	280
1.6	15807	1.5	898	15	—	310 R4	—	—	116100	146000	56100	273
1.7	14393	1.9	818	11	310 L4	—	—	—	112900	142000	54300	272
1.8	14090	0.9	801	7.5	307 L4	—	—	—	91300	119600	36500	256
1.8	14090	1.3	801	7.5	309 L4	—	—	—	94700	122100	29900	264
1.9	13319	2	757	15	—	310 R4	—	—	110300	138700	52900	273
1.9	13132	2.3	746	22	—	311 R4	—	—	129800	161700	52700	280
2	12773	2.1	726	11	310 L4	—	—	—	108900	137000	52200	272
2	12711	1.2	722	7.5	307 L4	—	—	—	90400	118400	36100	256
2	12711	1.7	722	7.5	309 L4	—	—	—	91800	118400	28900	264
2.1	12140	1.2	690	15	—	309 R4	—	—	90600	116800	28400	265
2.2	11502	1.1	654	7.5	307 L4	—	—	—	87700	114900	34900	256
2.2	11502	1.6	654	7.5	309 L4	—	—	—	89100	114900	27900	264
2.2	11240	1.9	639	15	—	310 R4	—	—	104800	131800	50000	273
2.2	11205	2.4	637	11	310 L4	—	—	—	104700	131700	50000	272
2.4	10378	2.1	590	15	—	310 R4	—	—	102400	128700	48700	273
2.4	10229	1.2	581	15	—	307 R4	—	—	84700	110900	33600	257
2.4	10229	1.5	581	15	—	309 R4	—	—	86000	110900	26900	265
2.5	10185	1.5	579	7.5	307 L4	—	—	—	84500	110800	33500	256
2.5	10185	2.1	579	7.5	309 L4	—	—	—	85900	110800	26800	264
2.7	9102	2.8	517	15	—	310 R4	—	—	98400	123800	46600	273
2.8	8963	1.1	509	6	306 L4	—	33300	37700	75600	88100	25000	248
2.8	8962	1.6	509	7.5	307 L4	—	—	—	81400	106600	32100	256
2.8	8962	1.6	509	7.5	309 L4	—	—	—	82700	106600	25700	264
2.8	8929	2.9	507	11	310 L4	—	—	—	97900	123000	46300	272
2.9	8633	1.1	490	15	—	307 R4	—	—	80500	105400	31700	257
2.9	8633	1.6	490	15	—	309 R4	—	—	81700	105400	25400	265
2.9	8590	1.1	488	12	—	306 R4	32800	37100	74700	87000	24600	249
3.1	8181	1.5	465	7.5	307 L4	—	—	—	79200	103700	31200	256
3.1	8181	2.2	465	7.5	309 L4	—	—	—	80400	103700	24900	264
3.1	8041	1.7	457	15	—	309 R4	—	—	80000	103200	24800	265
3.1	7993	2.5	454	15	—	310 R4	—	—	94700	119000	44700	273
3.1	7970	1.7	453	15	—	307 R4	—	—	78600	102900	30900	257
3.2	7819	1.3	444	6	306 L4	—	31800	36000	72600	84500	23900	248





P₁ = 3 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
3.4	7389	1.2	420	12	—	306 R4	31200	35300	71400	83100	23400	248
3.4	7274	1.6	413	15	—	307 R4	—	—	76400	100100	30000	257
3.4	7274	2.5	413	15	—	309 R4	—	—	77700	100100	24000	265
3.5	7137	1.7	406	7.5	307 L4	—	—	—	76000	99600	29800	256
3.5	7137	2.5	406	7.5	309 L4	—	—	—	77200	99600	23800	264
3.6	6893	2.8	392	11	310 L4	—	—	—	90500	113900	42500	272
3.6	6880	1	391	6	306 L4	—	30400	34500	69900	81400	22900	248
3.7	6845	1.1	389	12	—	306 R4	30400	34400	69800	81200	22800	249
3.8	6589	2.2	374	15	—	309 R4	—	—	75400	97200	23200	265
3.9	6387	1.9	363	15	—	307 R4	—	—	73500	96300	28700	257
4.1	6144	2.4	349	7.5	307 L4	—	—	—	72700	95200	28300	256
4.2	6124	1.4	336	11	307 L3	—	—	—	71900	94200	28000	256
4.2	6124	2.2	336	11	309 L3	—	—	—	73000	94200	22400	264
4.3	5828	2	331	15	—	307 R4	—	—	71500	93700	27800	257
4.3	5828	3	331	15	—	309 R4	—	—	72700	93700	22300	264
4.4	5906	0.9	325	7.5	306 L3	—	28600	32400	66100	76900	21500	248
4.6	5485	1.4	312	12	—	306 R4	28200	32000	65300	76000	21200	249
4.7	5280	2.7	300	15	—	307 R4	—	—	69400	91000	26900	257
4.9	5104	1	290	12	—	305 R4	22100	25600	39100	47000	14200	241
4.9	5086	1.6	289	12	—	306 R4	27500	31200	63800	74300	20700	249
4.9	5242	1	288	7.5	306 L3	—	27500	31200	63700	74200	20700	248
5	5007	2.3	284	15	—	307 R4	—	—	68300	89500	26500	257
5	5160	2.2	284	11	307 L3	—	—	—	68300	89400	26400	256
5.3	4883	1.1	268	7.5	306 L3	—	26900	30400	62400	72700	20200	248
5.7	4375	1.9	249	12	—	306 R4	26200	29700	61000	71000	19700	249
5.9	4355	2	239	11	307 L3	—	—	—	64900	85000	25000	256
5.9	4355	3	239	11	309 L3	—	—	—	65900	85000	20000	264
6	4333	1.9	238	7.5	306 L3	—	25800	29200	60200	70100	19400	248
6.1	4087	2.7	232	15	—	307 R4	—	—	64300	84200	24700	257
6.2	4053	1.9	230	12	—	306 R4	25500	28900	59600	69400	19200	249
6.4	4036	1.6	222	7.5	306 L3	—	25200	28600	58900	68600	18900	248
6.4	4010	1.2	220	7.5	305 L3	—	20200	23300	36000	43300	13000	240
6.6	3771	1.4	214	12	—	305 R4	20000	23100	35700	42900	12800	241
6.6	3760	2.6	214	12	—	306 R4	24900	28200	58300	67900	18700	249
6.9	3727	2.2	205	7.5	306 L3	—	24500	27800	57600	67000	18400	248
7	3669	3	202	11	307 L3	—	—	—	61600	80700	23600	256
7.5	3464	1	190	7.5	305 L3	—	19200	22200	34400	41400	12300	240
7.5	3453	1.9	190	7.5	306 L3	—	23900	27100	56200	65500	18000	248
7.7	3254	1.4	185	12	—	305 R4	19100	22000	34100	41100	12200	241
7.8	3185	3	181	12	—	306 R4	23600	26700	55500	64600	17700	247
8	3231	1.4	178	7.5	305 L3	—	18800	21700	33700	40600	12100	240
8.5	2953	2.6	168	12	—	306 R4	23000	26000	54200	63100	17300	249
8.7	2979	1.5	164	7.5	305 L3	—	18300	21100	32900	39600	11700	240





P₁ = 3 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
9	2787	1	158	12	—	303 R4	18100	20900	32600	39200	11600	232
9	2787	1.9	158	12	—	305 R4	18100	20900	32600	39200	11600	240
9.3	2775	1.3	152	7.5	305 L3	—	17900	20600	32200	38700	11500	240
9.3	2767	2.7	152	7.5	306 L3	—	22200	25200	52600	61300	16700	248
9.6	2608	1.7	148	12	—	305 R4	17700	20400	31900	38400	11400	241
9.9	2623	2.1	144	14	—	306 R3	21800	24700	51800	60300	16400	248
10	2575	1	141	7.5	303 L3	—	17400	20100	31500	37900	11200	232
10	2575	2	141	7.5	305 L3	—	17400	20100	31500	37900	11200	240
11	2275	1.2	129	12	—	303 R4	16900	19500	30600	36900	10800	233
11	2275	2.3	129	12	—	305 R4	16900	19500	30600	36900	10800	240
11.4	2265	1.6	124	7.5	305 L3	—	16700	19300	30300	36500	10700	240
11.9	2169	3	119	14	—	306 R3	20500	23200	48900	57000	15400	249
12.4	2082	1.7	114	14	—	305 R3	16200	18700	29500	35500	10400	241
12.6	2051	1.8	113	7.5	305 L3	—	16200	18600	29400	35400	10400	240
13.4	1863	0.9	106	10	—	301 R4	5030	5030	13800	15900	3310	226
13.6	1902	1.4	105	7.5	303 L3	—	15800	18200	28800	34600	10100	232
13.6	1902	2.6	105	7.5	305 L3	—	15800	18200	28800	34600	10100	240
15.5	1666	1.1	91.5	14	—	303 R3	15100	17400	27600	33200	9670	233
15.5	1666	2.1	91.5	14	—	305 R3	15100	17400	27600	33200	9670	241
15.7	1642	1.4	90.2	7.5	303 L3	—	15000	17300	27500	33100	9620	232
15.7	1642	2.6	90.2	7.5	305 L3	—	15000	17300	27500	33100	9620	240
16.6	1558	1.1	85.6	7.5	301 L3	—	4790	4790	13300	15200	3150	226
18	1433	1.5	78.7	14	—	303 R3	14300	16500	26400	31800	9190	233
18.1	1432	1.1	78.7	12	—	301 R3	14300	16500	26400	31800	9190	227
18.3	1410	1.2	77.5	7.5	301 L3	—	4640	4640	12900	14800	3050	224
18.4	1406	1.8	77.2	7.5	303 L3	—	14200	16400	26300	31600	9140	232
19.4	1335	1.4	73.3	14	—	303 R3	14000	16200	25900	31100	8980	233
19.4	1335	2.7	73.3	14	—	305 R3	14000	16200	25900	31100	8980	240
19.6	1315	1.7	72.3	7.5	303 L3	—	13900	16100	25700	31000	8940	232
20.3	1272	1	69.9	7.5	301 L3	—	4480	4480	12500	14300	2950	226
20.8	1242	1	68.2	12	—	301 R3	4440	4440	12400	14200	2920	227
21.9	1218	0.9	64.8	7.5	301 L2	—	4370	4370	12200	14000	2870	226
22.5	1151	1.4	63.2	7.5	301 L3	—	4330	4330	12100	13900	2850	226
22.5	1148	1.9	63.1	14	—	303 R3	13300	15400	24700	29700	8540	233
22.5	1148	2.2	63.1	7.5	303 L3	—	13300	15400	24700	29700	8540	232
22.6	1145	1.4	62.9	12	—	301 R3	4330	4330	12100	13900	2840	227
25.4	1049	1.7	55.8	9	303 L2	—	12800	14800	23800	28700	8200	232
26.2	986	1.8	54.2	14	—	303 R3	12700	14600	23600	28400	8120	233
26.6	972	2.2	53.4	7.5	303 L3	—	12600	14500	23500	28300	8080	232
27.3	976	1.3	51.9	7.5	301 L2	—	4060	4060	11400	13100	2670	226
27.5	940	0.9	51.6	7.5	300 L3	—	3960	3960	11200	12800	2600	220
27.5	940	1.7	51.6	7.5	301 L3	—	4050	4050	11400	13100	2660	226
28.2	918	0.9	50.4	12	—	300 R3	3930	3930	11100	12700	2580	221





P₁ = 3 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
28.2	918	1.8	50.4	12	—	301 R3	4020	4020	11300	13000	2640	227
28.3	915	2.6	50.3	14	—	303 R3	12300	14200	23100	27800	7920	233
30	848	2.5	46.6	14	—	303 R3	12000	13900	22600	27200	7720	233
32	839	2.2	44.6	9	303 L2	—	11900	13700	22300	26800	7610	232
33	775	2.7	42.6	14	—	303 R3	11700	13500	22000	26400	7490	233
34	781	1.7	41.5	7.5	301 L2	—	3770	3770	10700	12300	2480	226
35	749	1.7	41.2	12	—	301 R3	3760	3760	10600	12200	2470	227
37	722	3	38.4	9	303 L2	—	11300	13000	21300	25600	7240	232
37	721	1.2	38.4	7.5	300 L2	—	3670	3670	10400	12000	2410	220
37	721	2.1	38.4	7.5	301 L2	—	3670	3670	10400	12000	2410	226
38	678	1.2	37.3	12	—	300 R3	3630	3630	10300	11900	2390	221
38	678	2.4	37.3	12	—	301 R3	3630	3630	10300	11900	2390	225
40	672	2.7	35.8	9	303 L2	—	10800	12400	20400	24600	6910	232
43	626	1	33.3	7.5	300 L2	—	3420	3420	9790	11200	2250	220
43	626	2.1	33.3	7.5	301 L2	—	3420	3420	9790	11200	2250	226
46	577	1.5	30.7	7.5	300 L2	—	3330	3330	9550	11000	2190	220
46	577	2.7	30.7	7.5	301 L2	—	3410	3410	9750	11200	2240	226
47	554	1.5	30.4	12	—	300 R3	3400	3400	9730	11200	2230	221
47	554	2.9	30.4	12	—	301 R3	3400	3400	9730	11200	2230	221
57	452	1.6	24.8	12	—	300 R3	3170	3170	9150	10500	2090	221
57	466	1.8	24.8	18	—	303 R2	9750	11300	18700	22500	6250	233
58	462	1.7	24.6	7.5	300 L2	—	3160	3160	9130	10500	2080	220
71	377	1.7	20.1	7.5	300 L2	—	2960	2960	8590	9870	1940	220
77	347	1.1	18.5	12	—	300 R2	2870	2870	8370	9620	1890	221
77	347	2.1	18.5	12	—	301 R2	2870	2870	8370	9620	1890	227
78	342	2.2	18.2	7.5	300 L2	—	2860	2860	8330	9580	1880	220
96	279	2.6	14.8	7.5	300 L2	—	2670	2670	7840	9010	1760	220
96	277	1.8	14.8	12	—	300 R2	2670	2670	7830	9000	1750	221
117	228	3	12.1	7.5	300 L2	—	2500	2500	7380	8480	1640	220
120	222	2.7	11.8	12	—	300 R2	2480	2480	7330	8420	1630	221
158	175	1.8	9	7.5	300 L1	—	2260	2260	6750	7750	1490	220
197	140	2.9	7.2	7.5	300 L1	—	2100	2100	6310	7250	1380	220

P₁ = 4 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
0.66	51963	0.9	2187	11	313 L4	—	—	—	192000	231000	80000	288
0.79	43169	1.3	1817	11	313 L4	—	—	—	192000	231000	80000	288
0.82	41970	1	1766	11	311 L4	—	—	—	157000	195000	65000	280





P₁ = 4 kW n₁=1500 rpm												
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
0.96	35687	1.6	1502	11	313 L4	—	—	—	192000	231000	80000	288
1	33630	1.3	1415	11	311 L4	—	—	—	157000	195000	65000	280
1	33119	1.6	1394	11	313 L4	—	—	—	192000	229000	79900	288
1.1	30069	1.9	1266	11	313 L4	—	—	—	188000	222500	77400	288
1.1	29913	0.9	1259	11	310 L4	—	—	—	128500	161600	62700	272
1.2	29234	1.5	1230	11	311 L4	—	—	—	150800	187900	62300	280
1.2	27663	1.1	1164	11	310 L4	—	—	—	125500	157900	61100	272
1.3	26538	2	1117	11	313 L4	—	—	—	181100	214300	74200	288
1.4	25148	1.7	1058	11	311 L4	—	—	—	144200	179600	59200	288
1.4	24249	1.2	1021	11	310 L4	—	—	—	120700	151800	58500	272
1.4	24094	2.3	1014	11	313 L4	—	—	—	175900	208200	71800	288
1.5	23425	1.8	986	11	311 L4	—	—	—	141100	175800	57800	280
1.5	22307	1.5	939	11	310 L4	—	—	—	117700	148000	56900	272
1.6	21472	2.2	904	11	311 L4	—	—	—	137500	171300	56200	280
1.6	21339	1.1	898	15	—	310 R4	—	—	116100	146000	56100	273
1.6	21130	2.5	889	11	313 L4	—	—	—	169100	200100	68800	288
1.7	19596	2.3	825	11	311 L4	—	—	—	133800	166600	54500	280
1.8	19431	1.4	818	11	310 L4	—	—	—	112900	142000	54300	272
1.8	19022	1	801	7.5	309 L4	—	—	—	94700	122100	29900	265
1.8	18768	2.8	790	11	313 L4	—	—	—	163200	193100	66100	288
1.9	18494	2.4	778	22	—	313 R4	—	—	162500	192300	65800	289
1.9	17980	1.5	757	15	—	310 R4	—	—	110300	138700	52900	273
1.9	17728	1.7	746	22	—	311 R4	—	—	129800	161700	52700	280
2	17244	1.6	726	11	310 L4	—	—	—	108900	137000	52200	278
2	17205	2.7	724	11	311 L4	—	—	—	128700	160300	52200	286
2	17160	1.2	722	7.5	309 L4	—	—	—	91800	118400	28900	264
2.1	16388	0.9	690	15	—	309 R4	—	—	90600	116800	28400	265
2.2	15527	1.2	654	7.5	309 L4	—	—	—	89100	114900	27900	264
2.3	15174	1.4	639	15	—	310 R4	—	—	104800	131800	50000	273
2.3	15126	1.8	637	11	310 L4	—	—	—	104700	131700	50000	272
2.3	14937	2.7	629	22	—	311 R4	—	—	123300	153600	49800	281
2.3	14890	2.7	627	11	311 L4	—	—	—	123200	153500	49700	280
2.4	14010	1.6	590	15	—	310 R4	—	—	102400	128700	48700	273
2.5	13809	0.9	581	15	—	307 R4	—	—	82900	108700	32800	257
2.5	13809	1.1	581	15	—	309 R4	—	—	86000	110900	26900	265
2.5	13750	1.1	579	7.5	307 L4	—	—	—	82800	108500	32800	257
2.5	13750	1.5	579	7.5	309 L4	—	—	—	85900	110800	26800	264
2.6	13208	2.4	556	11	310 L4	—	—	—	100600	126500	47800	272
2.8	12287	2.1	517	15	—	310 R4	—	—	98400	123800	46600	273
2.8	12099	1.2	509	7.5	307 L4	—	—	—	81400	106600	32100	256
2.8	12099	1.2	509	7.5	309 L4	—	—	—	82700	106600	25700	264
2.8	12054	2.1	507	11	310 L4	—	—	—	97900	123000	46300	272
2.9	11654	1.2	490	15	—	309 R4	—	—	81700	105400	25400	265





P₁ = 4 kW n₁=1500 rpm												
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
2.9	11639	3	490	22	—	311 R4	—	—	114400	142500	45800	280
3.1	11045	1.1	465	7.5	307 L4	—	—	—	79200	103700	31200	256
3.1	11045	1.7	465	7.5	309 L4	—	—	—	80400	103700	24900	264
3.2	10856	1.3	457	15	—	309 R4	—	—	80000	103200	24800	265
3.2	10791	1.9	454	15	—	310 R4	—	—	94700	119000	44700	2723
3.2	10760	1.2	453	15	—	307 R4	—	—	78600	102900	30900	257
3.2	10708	2.8	451	11	310 L4	—	—	—	94400	118700	44500	272
3.2	10555	0.9	444	6	306 L4	—	31100	35200	71100	82800	23300	248
3.4	9963	2.9	419	15	—	310 R4	—	—	92400	116200	43500	273
3.5	9820	1.2	413	15	—	307 R4	—	—	76400	100100	30000	257
3.5	9820	1.8	413	15	—	309 R4	—	—	77700	100100	24000	265
3.6	9635	1.2	406	7.5	307 L4	—	—	—	76000	99600	29800	256
3.6	9635	1.8	406	7.5	309 L4	—	—	—	77200	99600	23800	264
3.7	9306	2.1	392	11	310 L4	—	—	—	90500	113900	42500	272
3.8	8895	1.6	374	15	—	309 R4	—	—	75400	97200	23200	265
4	8630	2.8	363	15	—	310 R4	—	—	88500	111300	41500	273
4	8622	1.4	363	15	—	307 R4	—	—	73500	96300	28700	257
4.1	8294	1.8	349	7.5	307 L4	—	—	—	72700	95200	28300	256
4.1	8294	2.6	349	7.5	309 L4	—	—	—	73800	95200	22700	264
4.3	8267	1.1	336	11	307 L3	—	—	—	71900	94200	28000	256
4.3	8267	1.6	336	11	309 L3	—	—	—	73000	94200	22400	264
4.3	7868	1.5	331	15	—	307 R4	—	—	71500	93700	27800	263
4.3	7868	2.2	331	15	—	309 R4	—	—	72700	93700	22300	265
4.6	7405	1	312	12	—	306 R4	28200	32000	65300	76000	21200	249
4.8	7127	2	300	15	—	307 R4	—	—	69400	91000	26900	257
5	6866	1.2	289	12	—	306 R4	27500	31200	63800	74300	20700	249
5.1	6759	1.7	284	15	—	307 R4	—	—	68300	89500	26500	257
5.1	6759	2.5	284	15	—	309 R4	—	—	69400	89500	21200	265
5.1	6966	1.6	284	11	307 L3	—	—	—	68300	89400	26400	256
5.1	6966	2.3	284	11	309 L3	—	—	—	69400	89400	21100	264
5.6	6131	2.4	258	15	—	307 R4	—	—	66400	87000	25600	257
5.6	6131	2.8	258	15	—	309 R4	—	—	67400	87000	20500	265
5.8	5906	1.4	249	12	—	306 R4	26200	29700	61000	71000	19700	249
6	5879	1.5	239	11	307 L3	—	—	—	64900	85000	25000	256
6	5879	2.2	239	11	309 L3	—	—	—	65900	85000	20000	264
6	5850	1.4	238	7.5	306 L3	—	25800	29200	60200	70100	19400	249
6.2	5517	2	232	15	—	307 R4	—	—	64300	84200	24700	257
6.3	5472	1.4	230	12	—	306 R4	25500	28900	59600	69400	19200	249
6.5	5476	2.4	223	11	309 L3	—	—	—	64500	83200	19500	264
6.5	5449	1.2	222	7.5	306 L3	—	25200	28600	58900	68600	18900	248
6.5	5428	2.3	221	11	307 L3	—	—	—	63300	83000	24300	256
6.7	5091	1.1	214	12	—	305 R4	20000	23100	35700	42900	12800	241
6.7	5076	1.9	214	12	—	306 R4	24900	28200	58300	67900	18700	249





P₁ = 4 kW n₁=1500 rpm												
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
7	4886	2.9	206	15	—	307 R4	—	—	62000	81200	23700	257
7	5032	1.6	205	7.5	306 L3	—	24500	27800	57600	67000	18400	248
7.1	4953	2.2	202	11	307 L3	—	—	—	61600	80700	23600	256
7.6	4661	1.4	190	7.5	306 L3	—	23900	27100	56200	65500	18000	248
7.8	4394	1	185	12	—	305 R4	19100	22000	34100	41100	12200	241
8	4299	2.2	181	12	—	306 R4	23600	26700	55500	64600	17700	249
8.1	4362	1	178	7.5	305 L3	—	18800	21700	33700	40600	12100	240
8.1	4349	2.8	177	11	307 L3	—	—	—	59300	77700	22600	256
8.6	3987	1.9	168	12	—	306 R4	23000	26000	54200	63100	17300	247
8.8	4022	1.1	164	7.5	305 L3	—	18300	21100	32900	39600	11700	240
8.9	3969	2.7	162	11	307 L3	—	—	—	57700	75600	21900	256
9.1	3762	1.4	158	12	—	305 R4	18100	20900	32600	39200	11600	241
9.1	3751	2.6	158	12	—	306 R4	22500	25500	53200	62000	16900	249
9.4	3747	1	152	7.5	305 L3	—	17900	20600	32200	38700	11500	240
9.5	3735	2	152	7.5	306 L3	—	22200	25200	52600	61300	16700	248
9.7	3520	1.3	148	12	—	305 R4	17700	20400	31900	38400	11400	241
10	3542	1.6	144	14	—	306 R3	21800	24700	51800	60300	16400	249
10.2	3476	1.5	141	7.5	305 L3	—	17400	20100	31500	37900	11200	240
10.2	3464	2.3	141	7.5	306 L3	—	21700	24600	51500	59900	16300	248
11.1	3071	1.7	129	12	—	305 R4	16900	19500	30600	36900	10800	241
11.6	3058	1.2	124	7.5	305 L3	—	16700	19300	30300	36500	10700	240
11.9	2979	2.6	121	7.5	306 L3	—	20600	23400	49200	57300	15500	248
12	2942	2.9	120	22	—	307 R3	—	—	52700	69100	19800	257
12.1	2928	2.2	119	14	—	306 R3	20500	23200	48900	57000	15400	249
12.6	2811	1.3	114	14	—	305 R3	16200	18700	29500	35500	10400	241
12.8	2769	1.3	113	7.5	305 L3	—	16200	18600	29400	35400	10400	241
12.8	2760	2.7	112	7.5	306 L3	—	20100	22800	48100	56000	15100	248
13.8	2568	1	105	7.5	303 L3	—	15800	18200	28800	34600	10100	232
13.8	2568	2	105	7.5	305 L3	—	15800	18200	28800	34600	10100	240
14.6	2420	2.7	98.5	14	—	306 R3	19200	21800	46200	53800	14400	247
15.7	2248	1.6	91.5	14	—	305 R3	15100	17400	27600	33200	9670	239
16	2216	1	90.2	7.5	303 L3	—	15000	17300	27500	33100	9620	230
16	2216	1.9	90.2	7.5	305 L3	—	15000	17300	27500	33100	9620	238
18.3	1934	1.1	78.7	14	—	303 R3	14300	16500	26400	31800	9190	233
18.3	1934	2.2	78.7	14	—	305 R3	14300	16500	26400	31800	9190	241
18.6	1898	1.3	77.2	7.5	303 L3	—	14200	16400	26300	31600	9140	233
18.6	1898	2.5	77.2	7.5	305 L3	—	14200	16400	26300	31600	9140	240
19.6	1802	1	73.3	14	—	303 R3	14000	16200	25900	31100	8980	233
19.6	1802	2	73.3	14	—	305 R3	14000	16200	25900	31100	8980	241
19.9	1776	1.3	72.3	7.5	303 L3	—	13900	16100	25700	31000	8940	233
19.9	1776	2.3	72.3	7.5	305 L3	—	13900	16100	25700	31000	8940	240
22.8	1554	1.1	63.2	7.5	301 L3	—	4330	4330	12100	13900	2850	226
22.8	1550	1.4	63.1	14	—	303 R3	13300	15400	24700	29700	8540	233





P₁ = 4 kW n ₁ =1500 rpm												
n ₂ min ⁻¹	M ₂ Nm	S	i	Pt kW			Rn ₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
22.8	1550	2.8	63.1	14	—	305 R3	13300	15400	24700	29700	8540	241
22.8	1549	1.6	63.1	7.5	303 L3	—	13300	15400	24700	29700	8540	233
22.9	1546	1.1	62.9	12	—	301 R3	4330	4330	12100	13900	2840	227
25.8	1416	1.3	55.8	9	303 L2	—	12800	14800	23800	28700	8200	233
25.8	1416	2.5	55.8	9	305 L2	—	12800	14800	23800	28700	8200	240
26.6	1331	1.4	54.2	14	—	303 R3	12700	14600	23600	28400	8120	233
26.6	1331	2.7	54.2	14	—	305 R3	12700	14600	23600	28400	8120	241
27	1312	1.7	53.4	7.5	303 L3	—	12600	14500	23500	28300	8080	233
27.7	1318	1	51.9	7.5	301 L2	—	4060	4060	11400	13100	2670	226
27.9	1269	1.3	51.6	7.5	301 L3	—	4050	4050	11400	13100	2660	226
28.6	1239	1.3	50.4	12	—	301 R3	4020	4020	11300	13000	2640	227
28.6	1235	1.9	50.3	14	—	303 R3	12300	14200	23100	27800	7920	233
31	1145	1.9	46.6	14	—	303 R3	12000	13900	22600	27200	7720	233
32	1133	1.6	44.6	9	303 L2	—	11900	13700	22300	26800	7610	232
34	1046	2	42.6	14	—	303 R3	11700	13500	22000	26400	7490	233
35	1054	1.2	41.5	7.5	301 L2	—	3770	3770	10700	12300	2480	226
35	1011	1.3	41.2	12	—	301 R3	3760	3760	10600	12200	2470	227
38	975	2.2	38.4	9	303 L2	—	11300	13000	21300	25600	7240	233
38	974	1.6	38.4	7.5	301 L2	—	3670	3670	10400	12000	2410	226
39	915	0.9	37.3	12	—	300 R3	3550	3550	10100	11600	2330	221
39	915	1.7	37.3	12	—	301 R3	3630	3630	10300	11900	2390	227
39	913	2.6	37.1	14	—	303 R3	11200	12900	21100	25400	7160	233
40	908	2	35.8	9	303 L2	—	11000	12700	20800	25100	7070	232
43	845	1.5	33.3	7.5	301 L2	—	3500	3500	9990	11500	2300	226
46	773	2.7	31.5	14	—	303 R3	10600	12200	20100	24100	6770	233
47	781	2.7	30.8	9	303 L2	—	10500	12100	19900	24000	6720	232
47	779	1.1	30.7	7.5	300 L2	—	3410	3410	9750	11200	2240	220
47	779	2	30.7	7.5	301 L2	—	3410	3410	9750	11200	2240	226
47	747	1.1	30.4	12	—	300 R3	3400	3400	9730	11200	2230	221
47	747	2.1	30.4	12	—	301 R3	3400	3400	9730	11200	2230	227
54	671	2.7	26.4	9	303 L2	—	9960	11500	19000	22900	6390	232
58	610	1.2	24.8	12	—	300 R3	3170	3170	9150	10500	2090	221
58	610	2.3	24.8	12	—	301 R3	3170	3170	9150	10500	2090	227
58	629	1.4	24.8	18	—	303 R2	9750	11300	18700	22500	6250	233
59	624	1.3	24.6	7.5	300 L2	—	3160	3160	9130	10500	2080	221
59	624	2.4	24.6	7.5	301 L2	—	3160	3160	9130	10500	2080	226
72	510	1.3	20.1	7.5	300 L2	—	2960	2960	8590	9870	1940	220
72	510	2.5	20.1	7.5	301 L2	—	2960	2960	8590	9870	1940	226
78	468	1.6	18.5	12	—	301 R2	2870	2870	8370	9620	1890	227
79	461	1.6	18.2	7.5	300 L2	—	2860	2860	8330	9580	1880	220
79	461	2.9	18.2	7.5	301 L2	—	2860	2860	8330	9580	1880	226
97	377	1.9	14.8	7.5	300 L2	—	2670	2670	7840	9010	1760	220
98	375	1.4	14.8	12	—	300 R2	2670	2670	7830	9000	1750	221





P₁ = 4 kW n₁=1500 rpm												
n₂ min ⁻¹	M₂ Nm	S	i	Pt kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
98	375	2.5	14.8	12	—	301 R2	2670	2670	7830	9000	1750	226
119	307	2.2	12.1	7.5	300 L2	—	2500	2500	7380	8480	1640	220
122	300	2	11.8	12	—	300 R2	2480	2480	7330	8420	1630	221
160	236	1.4	9	7.5	300 L1	—	2260	2260	6750	7750	1490	220
160	236	2.7	9	7.5	301 L1	—	2260	2260	6750	7750	1490	226
165	222	2.8	8.74	12	—	300 R2	2240	2240	6690	7690	1470	221
200	189	2.2	7.2	7.5	300 L1	—	2100	2100	6310	7250	1380	220

P₁ = 5.5 kW n₁=1500 rpm												
n₂ min ⁻¹	M₂ Nm	S	i	Pt kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
0.8	57559	1	1817	11	313 L4	—	—	—	192000	231000	80000	288
0.81	57190	1.5	1805	18	315 L4	—	—	—	206000	243000	90000	296
0.81	56908	1.2	1796	15	314 L4	—	—	—	206000	243000	90000	call
0.97	47582	1.2	1502	11	313 L4	—	—	—	192000	231000	80000	288
0.98	47277	1.8	1492	18	315 L4	—	—	—	206000	243000	90000	296
0.98	47044	1.4	1485	15	314 L4	—	—	—	206000	243000	90000	call
1	44840	1	1415	11	311 L4	—	—	—	157000	195000	65000	280
1	44159	1.2	1394	11	313 L4	—	—	—	192000	229000	79900	288
1.1	40669	2.4	1284	18	315 L4	—	—	—	201500	236600	87400	296
1.1	40468	1.9	1277	15	314 L4	—	—	—	201200	236300	87300	call
1.2	40092	1.4	1266	11	313 L4	—	—	—	188000	222500	77400	288
1.2	38979	1.1	1230	11	311 L4	—	—	—	150800	187900	62300	280
1.3	35384	1.5	1117	11	313 L4	—	—	—	181100	214300	74200	288
1.3	34984	2.7	1104	18	315 L4	—	—	—	192600	226200	83200	296
1.3	34811	2.2	1099	15	314 L4	—	—	—	192400	225800	83000	call
1.4	33530	1.3	1058	11	311 L4	—	—	—	144200	179600	59200	280
1.4	32869	2.5	1038	15	314 L4	—	—	—	189100	222000	81400	call
1.4	32125	1.7	1014	11	313 L4	—	—	—	175900	208200	71800	288
1.5	31233	1.4	986	11	311 L4	—	—	—	141100	175800	57800	288
1.6	29743	1.1	939	11	310 L4	—	—	—	115300	145000	55600	272
1.6	29331	2.5	926	15	314 L4	—	—	—	182700	214500	78400	call
1.6	28807	2.7	909	40	—	315 R4	—	—	181700	213400	77900	297
1.6	28630	1.6	904	11	311 L4	—	—	—	137500	171300	56200	280
1.6	28174	1.9	889	11	313 L4	—	—	—	169100	200100	68800	288
1.7	27172	3	858	15	314 L4	—	—	—	178600	209700	76400	call
1.8	26127	1.7	825	11	311 L4	—	—	—	133800	166600	54500	280
1.8	25908	1.1	818	11	310 L4	—	—	—	112900	142000	54300	272
1.8	25024	2.1	790	11	313 L4	—	—	—	163200	193100	66100	288





P₁ = 5.5 kW n₁=1500 rpm												
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
1.9	24658	1.8	778	22	—	313 R4	—	—	162500	192300	65800	287
1.9	23973	1.1	757	15	—	310 R4	—	—	110300	138700	52900	273
2	23637	1.3	746	22	—	311 R4	—	—	129800	161700	52700	281
2	22992	1.2	726	11	310 L4	—	—	—	108900	137000	52200	272
2	22941	2	724	11	311 L4	—	—	—	128700	160300	52200	280
2	22879	0.9	722	7.5	309 L4	—	—	—	89900	116000	28200	264
2.1	22021	2.3	695	11	313 L4	—	—	—	157000	185900	63300	288
2.3	20485	2.5	647	22	—	313 R4	—	—	153700	181900	61800	289
2.3	20233	1.1	639	15	—	310 R4	—	—	104800	131800	50000	273
2.3	20168	1.3	637	11	310 L4	—	—	—	104700	131700	50000	272
2.3	20051	2.6	633	11	313 L4	—	—	—	152700	180700	61400	288
2.3	19916	2	629	22	—	311 R4	—	—	123300	153600	49800	281
2.3	19853	2	627	11	311 L4	—	—	—	123200	153500	49700	280
2.4	19443	3	614	22	—	314 R4	—	—	161500	189600	68400	call
2.5	18681	1.2	590	15	—	310 R4	—	—	102400	128700	48700	272
2.5	18333	1.2	579	7.5	309 L4	—	—	—	85900	110800	26800	264
2.6	17984	2.4	568	11	311 L4	—	—	—	119600	149000	48100	280
2.6	17611	1.8	556	11	310 L4	—	—	—	100600	126500	47800	272
2.7	16935	2.9	535	22	—	313 R4	—	—	145100	171800	58000	289
2.8	16464	2.3	520	22	—	311 R4	—	—	116500	145100	46700	281
2.8	16383	1.6	517	15	—	310 R4	—	—	98400	123800	46600	272
2.8	16273	3	514	11	313 L4	—	—	—	143400	169700	57300	288
2.9	16224	2.7	512	11	311 L4	—	—	—	116000	144500	46500	280
2.9	16072	1.6	507	11	310 L4	—	—	—	97900	123000	46300	272
3	15539	0.9	490	15	—	309 R4	—	—	80100	103300	24800	265
3	15519	2.2	490	22	—	311 R4	—	—	114400	142500	45800	281
3.1	14726	1.2	465	7.5	309 L4	—	—	—	80400	103700	24900	264
3.2	14474	1	457	15	—	309 R4	—	—	80000	103200	24800	265
3.2	14388	1.4	454	15	—	310 R4	—	—	94700	119000	44700	273
3.2	14277	2.1	451	11	310 L4	—	—	—	94400	118700	44500	272
3.3	13873	2.7	438	22	—	311 R4	—	—	110600	137800	44100	281
3.5	13284	2.2	419	15	—	310 R4	—	—	92400	116200	43500	273
3.5	13093	1.4	413	15	—	309 R4	—	—	77700	100100	24000	265
3.6	12847	1.4	406	7.5	309 L4	—	—	—	77200	99600	23800	264
3.7	12407	1.6	392	11	310 L4	—	—	—	90500	113900	42500	272
3.9	11860	1.2	374	15	—	309 R4	—	—	75400	97200	23200	264
4	11507	2.1	363	15	—	310 R4	—	—	88500	111300	41500	273
4.2	11482	1.7	350	18	310 L3	—	—	—	87600	110100	41000	272
4.2	11058	1.9	349	7.5	309 L4	—	—	—	73800	95200	22700	264
4.3	11022	1.2	336	11	309 L3	—	—	—	73000	94200	22400	264
4.4	10586	2.6	334	15	—	310 R4	—	—	86300	108600	40300	273
4.4	10491	1.6	331	15	—	309 R4	—	—	72700	93700	22300	264
4.8	9660	2.4	305	15	—	310 R4	—	—	84000	105600	39100	273





P₁ = 5.5 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
4.9	9674	2.4	295	18	310 L3	—	—	—	83200	104600	38700	272
5	9539	2.8	291	18	311 L3	—	—	—	97900	121900	38500	280
5.1	9012	1.9	284	15	—	309 R4	—	—	69400	89500	21200	265
5.1	9287	1.7	284	11	309 L3	—	—	—	69400	89400	21100	264
5.2	8967	2.9	283	15	—	310 R4	—	—	82100	103300	38100	273
5.7	8183	2.8	258	15	—	310 R4	—	—	79900	100500	37000	273
5.7	8175	2.1	258	15	—	309 R4	—	—	67400	87000	20500	265
5.9	8165	2.3	249	18	310 L3	—	—	—	79100	99400	36600	272
6.1	7838	1.7	239	11	309 L3	—	—	—	65900	85000	20000	264
6.3	7356	2.3	232	15	—	309 R4	—	—	65300	84200	19800	265
6.3	7539	2.8	230	18	310 L3	—	—	—	77200	97100	35600	272
6.6	7301	1.8	223	11	309 L3	—	—	—	64500	83200	19500	264
7.2	6604	2.5	202	11	309 L3	—	—	—	62600	80700	18900	264
7.7	6041	2.9	191	15	—	309 R4	—	—	61600	79400	18500	265
8	5983	2.4	183	11	309 L3	—	—	—	60800	78400	18300	264
23.1	2066	1.1	63.1	14	—	303 R3	13300	15400	24700	29700	8540	232
26.9	1775	1	54.2	14	—	303 R3	12700	14600	23600	28400	8120	232
29	1652	1	50.4	12	—	301 R3	3930	3930	11100	12700	2580	227
29	1647	1.4	50.3	14	—	303 R3	12300	14200	23100	27800	7920	233
31	1527	1.4	46.6	14	—	303 R3	12000	13900	22600	27200	7720	233
34	1395	1.5	42.6	14	—	303 R3	11700	13500	22000	26400	7490	233
35	1348	1	41.2	12	—	301 R3	3760	3760	10600	12200	2470	227
39	1221	1.3	37.3	12	—	301 R3	3630	3630	10300	11900	2390	227
39	1217	2	37.1	14	—	303 R3	11200	12900	21100	25400	7160	233
46	1031	2	31.5	14	—	303 R3	10600	12200	20100	24100	6770	233
48	996	1.6	30.4	12	—	301 R3	3400	3400	9730	11200	2230	227
57	841	2.4	25.7	14	—	303 R3	9870	11400	18900	22700	6330	233
59	813	1.7	24.8	12	—	301 R3	3170	3170	9150	10500	2090	227

P₁ = 7.5 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
0.77	81609	1.9	1893	18	317 L4	—	—	—	442000	470000	150000	310
0.81	77842	1.1	1805	18	315 L4	—	—	—	206000	243000	90000	296
0.92	68763	2.5	1595	18	317 L4	—	—	—	442000	470000	150000	310
0.98	64350	1.3	1492	18	315 L4	—	—	—	206000	243000	90000	296
0.98	64032	1	1485	15	314 L4	—	—	—	206000	243000	90000	call
1.1	56844	3	1318	18	317 L4	—	—	—	434300	462400	147000	310
1.1	55354	1.8	1284	18	315 L4	—	—	—	201500	236600	87400	296





P₁ = 7.5 kW n₁=1500 rpm													
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]						Page
							MC	MZ	HC/PC	HZ/PZ	FZ		
1.1	55081	1.4	1277	15	314 L4	—	—	—	201200	236300	87300	call	
1.2	54570	1	1266	11	313 L4	—	—	—	188000	222500	77400	288	
1.2	53360	2.3	1237	18	316 L4	—	—	—	331400	368600	144000	304	
1.3	48161	1.1	1117	11	313 L4	—	—	—	181100	214300	74200	288	
1.3	47617	2	1104	18	315 L4	—	—	—	192600	226200	83200	296	
1.3	47382	1.6	1099	15	314 L4	—	—	—	192400	225800	83000	call	
1.4	45638	0.9	1058	11	311 L4	—	—	—	141200	175900	57900	280	
1.4	44960	2.3	1043	18	315 L4	—	—	—	189400	222300	81600	296	
1.4	44960	2.9	1043	18	316 L4	—	—	—	314800	350100	136000	304	
1.4	44738	1.8	1038	15	314 L4	—	—	—	189100	222000	81400	call	
1.4	43726	1.2	1014	11	313 L4	—	—	—	175900	208200	71800	288	
1.5	42512	1	986	11	311 L4	—	—	—	141100	175800	57800	280	
1.6	40096	2.3	930	18	315 L4	—	—	—	183000	214800	78500	296	
1.6	39923	1.9	926	15	314 L4	—	—	—	182700	214500	78400	call	
1.6	39209	2	909	40	—	315 R4	—	—	181700	213400	77900	297	
1.6	38968	1.2	904	11	311 L4	—	—	—	137500	171300	56200	280	
1.6	38348	1.4	889	11	313 L4	—	—	—	169100	200100	68800	288	
1.7	37167	2.7	862	18	315 L4	—	—	—	178800	210000	76600	296	
1.7	36984	2.2	858	15	314 L4	—	—	—	178600	209700	76400	call	
1.8	35562	1.3	825	11	311 L4	—	—	—	133800	166600	54500	280	
1.8	34060	1.5	790	11	313 L4	—	—	—	163200	193100	66100	288	
1.9	33729	2.7	782	40	—	315 R4	—	—	173700	203900	74100	297	
1.9	33563	1.3	778	22	—	313 R4	—	—	162500	192300	65800	289	
2	32173	0.9	746	22	—	311 R4	—	—	129800	161700	52700	281	
2	31814	2.5	738	15	314 L4	—	—	—	170700	200400	72700	call	
2	31225	1.5	724	11	311 L4	—	—	—	128700	160300	52200	280	
2.1	29974	1.7	695	11	313 L4	—	—	—	157000	185900	63300	286	
2.2	28818	2.8	668	15	314 L4	—	—	—	165700	194500	70300	call	
2.3	27883	1.8	647	22	—	313 R4	—	—	153700	181900	61800	287	
2.3	27452	1	637	11	310 L4	—	—	—	104700	131700	50000	270	
2.3	27291	1.9	633	11	313 L4	—	—	—	152700	180700	61400	288	
2.3	27108	1.5	629	22	—	311 R4	—	—	123300	153600	49800	281	
2.3	27023	1.5	627	11	311 L4	—	—	—	123200	153500	49700	280	
2.4	26465	2.2	614	22	—	314 R4	—	—	161500	189600	68400	call	
2.6	24478	1.8	568	11	311 L4	—	—	—	119600	149000	48100	280	
2.6	24309	2.3	564	11	313 L4	—	—	—	147500	174500	59100	288	
2.6	23971	1.3	556	11	310 L4	—	—	—	100600	126500	47800	272	
2.7	23050	2.1	535	22	—	313 R4	—	—	145100	171800	58000	289	
2.8	22410	1.7	520	22	—	311 R4	—	—	116500	145100	46700	281	
2.8	22299	1.1	517	15	—	310 R4	—	—	98400	123800	46600	273	
2.8	22149	2.2	514	11	313 L4	—	—	—	143400	169700	57300	288	
2.9	22082	2	512	11	311 L4	—	—	—	116000	144500	46500	280	
2.9	21875	1.2	507	11	310 L4	—	—	—	97900	123000	46300	272	





P₁ = 7.5 kW n₁=1500 rpm													
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]						Page
							MC	MZ	HC/PC	HZ/PZ	FZ		
2.9	21392	2.4	496	22	—	313 R4	—	—	141900	168000	56600	289	
3	21123	1.6	490	22	—	311 R4	—	—	114400	142500	45800	281	
3.1	20044	0.9	465	7.5	309 L4	—	—	—	78800	101600	24400	265	
3.2	19583	1	454	15	—	310 R4	—	—	94700	119000	44700	273	
3.2	19479	2.8	452	11	313 L4	—	—	—	138000	163300	54900	288	
3.2	19432	1.5	451	11	310 L4	—	—	—	94400	118700	44500	272	
3.2	19422	2.5	450	22	—	313 R4	—	—	137900	163200	54800	289	
3.3	18882	2	438	22	—	311 R4	—	—	110600	137800	44100	281	
3.5	18081	1.6	419	15	—	310 R4	—	—	92400	116200	43500	273	
3.5	17821	1	413	15	—	309 R4	—	—	77700	100100	24000	265	
3.5	17798	2.3	413	22	—	311 R4	—	—	108700	135400	43300	287	
3.6	17694	2.3	410	11	311 L4	—	—	—	108500	135200	43200	280	
3.6	17486	1	406	7.5	309 L4	—	—	—	77200	99600	23800	264	
3.7	16888	1.1	392	11	310 L4	—	—	—	90500	113900	42500	272	
3.8	16707	2.8	387	22	—	313 R4	—	—	131800	156000	52100	288	
4	15663	1.5	363	15	—	310 R4	—	—	88500	111300	41500	273	
4.2	15628	1.2	350	18	310 L3	—	—	—	87600	110100	41000	272	
4.2	15052	1	349	7.5	307 L4	—	—	—	71200	93300	27700	256	
4.2	15052	1.4	349	7.5	309 L4	—	—	—	73800	95200	22700	264	
4.2	14988	2.7	348	11	311 L4	—	—	—	103200	128600	40900	280	
4.3	14713	2.7	341	22	—	311 R4	—	—	102700	127900	40600	281	
4.4	14408	1.9	334	15	—	310 R4	—	—	86300	108600	40300	279	
4.4	14279	1.2	331	15	—	309 R4	—	—	72700	93700	22300	271	
4.5	13869	2.8	322	22	—	311 R4	—	—	100900	125600	39800	287	
4.8	13149	1.8	305	15	—	310 R4	—	—	84000	105600	39100	279	
4.8	13544	2.9	304	18	313 L3	—	—	—	122500	145000	48100	295	
4.9	12935	1.1	300	15	—	307 R4	—	—	69400	91000	26900	257	
4.9	13168	1.8	295	18	310 L3	—	—	—	83200	104600	38700	272	
5	12983	2.1	291	18	311 L3	—	—	—	97900	121900	38500	280	
5.1	12266	0.9	284	15	—	307 R4	—	—	66900	87700	25900	257	
5.1	12266	1.4	284	15	—	309 R4	—	—	69400	89500	21200	265	
5.1	12641	1.2	284	11	309 L3	—	—	—	69400	89400	21100	264	
5.2	12205	2.1	283	15	—	310 R4	—	—	82100	103300	38100	273	
5.7	11138	2	258	15	—	310 R4	—	—	79900	100500	37000	273	
5.7	11127	1.3	258	15	—	307 R4	—	—	66400	87000	25600	257	
5.7	11127	1.6	258	15	—	309 R4	—	—	67400	87000	20500	265	
5.9	11113	1.7	249	18	310 L3	—	—	—	79100	99400	36600	272	
6.1	10669	1.2	239	11	309 L3	—	—	—	65900	85000	20000	264	
6.2	10089	2.4	234	15	—	310 R4	—	—	77600	97600	35800	273	
6.3	10013	1.1	232	15	—	307 R4	—	—	64300	84200	24700	257	
6.3	10013	1.7	232	15	—	309 R4	—	—	65300	84200	19800	265	
6.3	10261	2.1	230	18	310 L3	—	—	—	77200	97100	35600	272	
6.6	9938	1.3	223	11	309 L3	—	—	—	64500	83200	19500	264	





P₁ = 7.5 kW n₁=1500 rpm													
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]						Page
							MC	MZ	HC/PC	HZ/PZ	FZ		
6.6	9850	1.3	221	11	307 L3	—	—	—	63300	83000	24300	256	
6.8	9211	1.1	214	12	—	306 R4	24900	28200	58300	67900	18700	249	
7.1	8876	2.5	206	15	—	310 R4	—	—	74700	93900	34300	273	
7.1	8867	1.6	206	15	—	307 R4	—	—	62000	81200	23700	257	
7.1	8867	2.2	206	15	—	309 R4	—	—	63000	81200	19000	265	
7.2	8999	2.4	202	18	310 L3	—	—	—	74200	93300	34100	272	
7.2	8989	1.2	202	11	307 L3	—	—	—	61600	80700	23600	257	
7.2	8989	1.8	202	11	309 L3	—	—	—	62600	80700	18900	264	
7.7	8222	1.7	191	15	—	307 R4	—	—	60600	79400	23200	257	
7.7	8222	2.1	191	15	—	309 R4	—	—	61600	79400	18500	265	
7.7	8165	2.8	189	15	—	310 R4	—	—	72800	91500	33400	272	
8	8143	1.8	183	11	309 L3	—	—	—	60800	78400	18300	264	
8.1	7803	1.2	181	12	—	306 R4	23600	26700	55500	64600	17700	249	
8.2	7903	2.3	177	18	310 L3	—	—	—	71400	89800	32600	272	
8.2	7893	1.6	177	11	307 L3	—	—	—	59300	77700	22600	257	
8.7	7235	1	168	12	—	306 R4	23000	26000	54200	63100	17300	249	
8.8	7122	2.3	165	15	—	309 R4	—	—	59000	76100	17700	265	
9	7203	1.5	162	11	307 L3	—	—	—	57700	75600	21900	256	
9	7203	2.3	162	11	309 L3	—	—	—	58600	75600	17500	264	
9.2	6807	1.4	158	12	—	306 R4	22500	25500	53200	62000	16900	249	
9.6	6779	1.1	152	7.5	306 L3	—	22200	25200	52600	61300	16700	248	
9.6	6552	2.8	152	15	—	309 R4	—	—	57500	74200	17200	265	
10	6525	2.1	146	11	307 L3	—	—	—	56000	73300	21200	256	
10.4	6286	1.3	141	7.5	306 L3	—	21700	24600	51500	59900	16300	248	
10.5	6188	1.7	139	11	307 L3	—	—	—	55100	72200	20800	256	
10.5	6188	2.6	139	11	309 L3	—	—	—	56000	72200	16700	264	
11.3	5574	0.9	129	12	—	305 R4	16900	19500	30600	36900	10800	241	
11.6	5613	2.3	126	11	307 L3	—	—	—	53500	70100	20200	256	
11.6	5613	2.9	126	11	309 L3	—	—	—	54400	70100	16100	264	
11.8	5348	2	124	15	—	307 R4	—	—	56900	74500	21600	256	
12	5407	1.4	121	7.5	306 L3	—	20600	23400	49200	57300	15500	248	
12.2	5340	1.6	120	22	—	307 R3	—	—	52700	69100	19800	257	
12.2	5340	2.4	120	22	—	309 R3	—	—	53600	69100	15900	265	
12.3	5313	1.2	119	14	—	306 R3	20500	23200	48900	57000	15400	248	
12.9	5051	2.1	113	11	307 L3	—	—	—	51800	67900	19500	256	
13	5009	1.5	112	7.5	306 L3	—	20100	22800	48100	56000	15100	248	
13.9	4530	3	105	15	—	307 R4	—	—	55400	72700	21000	257	
14	4661	1.1	105	7.5	305 L3	—	15800	18200	28800	34600	10100	240	
14	4647	1.9	104	7.5	306 L3	—	19600	22200	47000	54700	14700	249	
14.6	4473	2.8	100	11	307 L3	—	—	—	50000	65500	18700	256	
14.7	4414	1.9	99	22	—	307 R3	—	—	49800	65200	18600	257	
14.7	4414	2.9	99	22	—	309 R3	—	—	50600	65200	14900	265	
14.8	4392	1.5	98.5	14	—	306 R3	19200	21800	46200	53800	14400	257	





P₁ = 7.5 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
15.7	4148	2.9	93	11	307 L3	—	—	—	48900	64000	18200	256
16.2	4022	1.1	90.2	7.5	305 L3	—	15000	17300	27500	33100	9620	240
16.5	3936	2.2	88.3	7.5	306 L3	—	18500	21000	44700	52100	13900	248
17.2	3778	2	84.7	14	—	306 R3	18300	20700	44200	51400	13700	249
17.5	3719	2.7	83.4	22	—	307 R3	20200	25400	47300	62000	17600	257
17.8	3650	1.9	81.9	7.5	306 L3	—	18100	20500	43700	50900	13600	248
18.1	3593	2.8	80.6	11	307 L3	—	—	—	46800	61300	17400	256
18.5	3510	1.2	78.7	14	—	305 R3	14300	16500	26400	31800	9190	241
18.9	3444	1.4	77.2	7.5	305 L3	—	14200	16400	26300	31600	9140	240
19	3434	2.4	77	7.5	306 L3	—	17700	20100	42900	50000	13300	248
19.9	3270	1.1	73.3	14	—	305 R3	14000	16200	25900	31100	8980	241
20	3250	2.3	72.9	14	—	306 R3	17400	19700	42200	49200	13100	249
20.1	3339	1.6	72.5	13	306 L2	—	17400	19700	42100	49100	13000	248
20.2	3223	1.3	72.3	7.5	305 L3	—	13900	16100	25700	31000	8940	240
21.6	3011	2.4	67.5	14	—	306 R3	17000	19200	41300	48000	12700	249
22.4	2908	2.6	65.2	7.5	306 L3	—	16800	19000	40800	47500	12600	248
23.1	2813	1.5	63.1	14	—	305 R3	13300	15400	24700	29700	8540	241
23.2	2811	1.7	63.1	7.5	305 L3	—	13300	15400	24700	29700	8540	240
25.1	2590	2.9	58.1	14	—	306 R3	16100	18300	39400	45900	12100	249
26	2591	2	56.3	13	306 L2	—	16000	18100	39100	45500	12000	248
26.2	2570	1.4	55.8	9	305 L2	—	12800	14800	23800	28700	8200	240
26.9	2416	1.5	54.2	14	—	305 R3	12700	14600	23600	28400	8120	241
27.3	2382	0.9	53.4	7.5	303 L3	—	—	—	—	—	—	232
27.3	2382	1.7	53.4	7.5	305 L3	—	12600	14500	23500	28300	8080	240
27.4	2374	3	53.2	7.5	306 L3	—	15700	17800	38400	44700	11800	248
29	2241	1.1	50.3	14	—	303 R3	12300	14200	23100	27800	7920	232
29	2241	2	50.3	14	—	305 R3	12300	14200	23100	27800	7920	241
31	2078	1	46.6	14	—	303 R3	12000	13900	22600	27200	7720	232
31	2078	2.1	46.6	14	—	305 R3	12000	13900	22600	27200	7720	241
33	2056	1.7	44.6	9	305 L2	—	11900	13700	22300	26800	7610	240
34	1899	1.1	42.6	14	—	303 R3	11700	13500	22000	26400	7490	233
34	1899	2	42.6	14	—	305 R3	11700	13500	22000	26400	7490	241
38	1769	1.2	38.4	9	303 L2	—	11300	13000	21300	25600	7240	232
38	1769	2.4	38.4	9	305 L2	—	11300	13000	21300	25600	7240	240
39	1661	1	37.3	12	—	301 R3	3550	3550	10100	11600	2330	226
39	1656	1.4	37.1	14	—	303 R3	11200	12900	21100	25400	7160	233
39	1656	2.6	37.1	14	—	305 R3	11200	12900	21100	25400	7160	241
41	1648	1.1	35.8	9	303 L2	—	11000	12700	20800	25100	7070	232
41	1648	2.2	35.8	9	305 L2	—	11000	12700	20800	25100	7070	240
46	1403	1.5	31.5	14	—	303 R3	10600	12200	20100	24100	6770	233
46	1403	2.7	31.5	14	—	305 R3	10600	12200	20100	24100	6770	241
47	1417	1.5	30.8	9	303 L2	—	10500	12100	19900	24000	6720	232
48	1414	1.1	30.7	7.5	301 L2	—	3410	3410	9750	11200	2240	220





P₁ = 7.5 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
48	1356	1.2	30.4	12	—	301 R3	3400	3400	9730	11200	2230	227
55	1217	1.5	26.4	9	303 L2	—	9960	11500	19000	22900	6390	232
55	1217	2.9	26.4	9	305 L2	—	9960	11500	19000	22900	6390	240
57	1145	1.8	25.7	14	—	303 R3	9870	11400	18900	22700	6330	233
59	1107	1.3	24.8	12	—	301 R3	3170	3170	9150	10500	2090	227
59	1133	1.3	24.6	7.5	301 L2	—	3160	3160	9130	10500	2080	226
60	1129	1.9	24.5	9	303 L2	—	9720	11200	18600	22400	6230	232
64	1047	2	22.7	9	303 L2	—	9470	10900	18200	21900	6080	232
70	957	1.9	20.8	9	303 L2	—	9190	10600	17700	21300	5900	232
73	925	1.4	20.1	7.5	301 L2	—	2960	2960	8590	9870	1940	226
76	885	1.8	19.2	18	—	303 R2	8960	10300	17300	20800	5750	233
80	837	1.6	18.2	7.5	301 L2	—	2860	2860	8330	9580	1880	226
81	835	2.4	18.1	9	303 L2	—	8780	10100	17000	20400	5630	233
92	732	2.5	15.9	18	—	303 R2	8410	9710	16300	19700	5390	233
95	707	2.4	15.3	9	303 L2	—	8310	9590	16200	19500	5330	232
98	683	1.1	14.8	7.5	300 L2	—	2610	2610	7680	8820	1720	220
98	683	1.9	14.8	7.5	301 L2	—	2670	2670	7840	9010	1760	226
99	680	1.4	14.8	12	—	301 R2	2670	2670	7830	9000	1750	227
117	577	2.8	12.5	9	303 L2	—	7770	8970	15200	18300	4980	232
121	558	1.2	12.1	7.5	300 L2	—	2500	2500	7380	8480	1640	220
121	558	2.2	12.1	7.5	301 L2	—	2500	2500	7380	8480	1640	226
123	545	1.1	11.8	12	—	300 R2	2480	2480	7330	8420	1630	220
123	545	2.1	11.8	12	—	301 R2	2480	2480	7330	8420	1630	227
151	459	1.6	9.67	11	303 L1	—	7120	8220	14100	16900	4570	232
162	428	1.5	9	7.5	301 L1	—	2260	2260	6750	7750	1490	227
167	403	1.5	8.74	12	—	300 R2	2240	2240	6690	7690	1470	221
167	403	2.7	8.74	12	—	301 R2	2240	2240	6690	7690	1470	227
203	342	1.2	7.2	7.5	300 L1	—	2100	2100	6310	7250	1380	220
203	342	2.2	7.2	7.5	301 L1	—	2100	2100	6310	7250	1380	220
205	329	1.8	7.13	12	—	300 R2	2090	2090	6300	7230	1380	221
253	274	1.7	5.77	7.5	300 L1	—	1950	1950	5910	6790	1280	220
342	203	2.4	4.26	7.5	300 L1	—	1760	1760	5390	6200	1160	220
420	165	2.8	3.48	7.5	300 L1	—	1610	1610	4970	5710	1060	220

P₁ = 11 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
0.77	119915	1.3	1893	18	317 L4	—	—	—	442000	470000	150000	310
0.92	101039	1.7	1595	18	317 L4	—	—	—	442000	470000	150000	310





P₁ = 11 kW n₁=1500 rpm												
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
1.1	83526	2	1318	18	317 L4	—	—	—	434300	462400	147000	310
1.1	81337	1.2	1284	18	315 L4	—	—	—	201500	236600	87400	296
1.1	80935	1	1277	15	314 L4	—	—	—	201200	236300	87300	call
1.2	78406	1.6	1237	18	316 L4	—	—	—	331400	368600	144000	304
1.3	71850	2.3	1134	18	317 L4	—	—	—	415100	442000	139800	310
1.3	69967	1.4	1104	18	315 L4	—	—	—	192600	226200	83200	296
1.3	69622	1.1	1099	15	314 L4	—	—	—	192400	225800	83000	call
1.4	66064	1.6	1043	18	315 L4	—	—	—	189400	222300	81600	296
1.4	66064	2	1043	18	316 L4	—	—	—	314800	350100	136000	310
1.4	65738	1.3	1038	15	314 L4	—	—	—	189100	222000	81400	call
1.4	65408	2.8	1032	18	317 L4	—	—	—	403600	429700	135500	310
1.5	60402	2.4	953	50	—	317 R4	—	—	394100	419600	132000	311
1.6	58917	1.6	930	18	315 L4	—	—	—	183000	214800	78500	296
1.6	58663	1.3	926	15	314 L4	—	—	—	182700	214500	78400	call
1.6	57614	1.3	909	40	—	315 R4	—	—	181700	213400	77900	297
1.6	57256	2.9	904	18	317 L4	—	—	—	387800	412900	129600	310
1.6	56347	0.9	889	11	313 L4	—	—	—	169100	200100	68800	288
1.7	54613	1.9	862	18	315 L4	—	—	—	178800	210000	76600	296
1.7	54613	2.4	862	18	316 L4	—	—	—	297400	330700	127600	304
1.7	54343	1.5	858	15	314 L4	—	—	—	178600	209700	76400	call
1.8	51479	2.5	812	18	316 L4	—	—	—	292100	324900	125100	310
1.9	50047	1	790	11	313 L4	—	—	—	163200	193100	66100	288
1.9	49560	1.8	782	40	—	315 R4	—	—	173700	203900	74100	297
2	46950	2.2	741	18	315 L4	—	—	—	170900	200700	72800	296
2	46950	2.7	741	18	316 L4	—	—	—	284200	316100	121400	304
2	46747	1.7	738	15	314 L4	—	—	—	170700	200400	72700	call
2	46017	2.8	726	18	316 L4	—	—	—	282500	314100	120500	304
2	45881	1	724	11	311 L4	—	—	—	128700	160300	52200	280
2.1	44043	1.2	695	11	313 L4	—	—	—	157000	185900	63300	288
2.1	43375	2.9	685	18	316 L4	—	—	—	277500	308600	118200	304
2.2	42556	2.4	672	18	315 L4	—	—	—	165900	194800	70500	296
2.2	42346	1.9	668	15	314 L4	—	—	—	165700	194500	70300	call
2.2	41759	2.1	659	40	—	315 R4	—	—	165000	193700	70000	297
2.3	40971	1.2	647	22	—	313 R4	—	—	153700	181900	61800	289
2.3	40102	1.3	633	11	313 L4	—	—	—	152700	180700	61400	288
2.3	39833	1	629	22	—	311 R4	—	—	123300	153600	49800	281
2.3	39707	1	627	11	311 L4	—	—	—	123200	153500	49700	280
2.4	39493	2.5	623	40	—	315 R4	—	—	162300	190500	68700	297
2.4	39493	2.9	623	45	—	316 R4	—	—	269800	300100	114500	304
2.4	38887	1.5	614	22	—	314 R4	—	—	161500	189600	68400	call
2.5	37436	2.7	591	18	315 L4	—	—	—	159700	187500	67500	296
2.5	37252	2.1	588	15	314 L4	—	—	—	159500	187200	67400	call
2.6	35968	1.2	568	11	311 L4	—	—	—	119600	149000	48100	280





P₁ = 11 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
2.6	35720	1.5	564	11	313 L4	—	—	—	147500	174500	59100	286
2.6	35113	2.3	554	15	314 L4	—	—	—	156600	183900	66100	call
2.7	33869	1.4	535	22	—	313 R4	—	—	145100	171800	58000	289
2.7	33799	2.9	533	18	315 L4	—	—	—	154900	181800	65200	296
2.8	33451	2.1	528	22	—	314 R4	—	—	154400	181300	65000	call
2.8	33277	3	525	40	—	315 R4	—	—	154100	181000	64900	297
2.8	32928	1.2	520	22	—	311 R4	—	—	116500	145100	46700	280
2.9	32545	1.5	514	11	313 L4	—	—	—	143400	169700	57300	288
2.9	32447	1.4	512	11	311 L4	—	—	—	116000	144500	46500	281
3	31433	1.7	496	22	—	313 R4	—	—	141900	168000	56600	289
3	31334	2.5	495	15	314 L4	—	—	—	151400	177700	63600	call
3	31039	1.1	490	22	—	311 R4	—	—	114400	142500	45800	281
3.2	29027	2.7	458	15	314 L4	—	—	—	148000	173700	62000	call
3.2	28622	1.9	452	11	313 L4	—	—	—	138000	163300	54900	288
3.3	28553	1	451	11	310 L4	—	—	—	92500	116300	43500	272
3.3	28538	1.7	450	22	—	313 R4	—	—	137900	163200	54800	289
3.3	28186	2.4	445	22	—	314 R4	—	—	146700	172200	61400	call
3.3	27745	1.4	438	22	—	311 R4	—	—	110600	137800	44100	281
3.5	26656	3	421	22	—	314 R4	—	—	144200	169300	60300	call
3.5	26568	1.1	419	15	—	310 R4	—	—	92400	116200	43500	273
3.5	26153	1.6	413	22	—	311 R4	—	—	108700	135400	43300	281
3.6	25999	1.6	410	11	311 L4	—	—	—	108500	135200	43200	280
3.7	24969	2.2	394	11	313 L4	—	—	—	132500	156800	52400	288
3.8	24549	1.9	387	22	—	313 R4	—	—	131800	156000	52100	289
4	23015	1	363	15	—	310 R4	—	—	88500	111300	41500	273
4.2	22303	2.4	352	11	313 L4	—	—	—	128000	151500	50500	288
4.2	22117	1	349	7.5	309 L4	—	—	—	72300	93300	22100	264
4.2	22023	1.8	348	11	311 L4	—	—	—	103200	128600	40900	280
4.2	21894	2.4	346	22	—	313 R4	—	—	127300	150700	50200	289
4.3	21620	1.8	341	22	—	311 R4	—	—	102700	127900	40600	281
4.4	21171	1.3	334	15	—	310 R4	—	—	86300	108600	40300	272
4.6	20379	1.9	322	22	—	311 R4	—	—	100900	125600	39800	281
4.7	19562	2.3	309	22	—	313 R4	—	—	123100	145700	48300	289
4.8	19321	1.2	305	15	—	310 R4	—	—	84000	105600	39100	273
4.8	19902	2	304	18	313 L3	—	—	—	122500	145000	48100	288
5	19349	1.2	295	18	310 L3	—	—	—	83200	104600	38700	272
5	18598	2	294	22	—	311 R4	—	—	98100	122200	38600	279
5	19077	1.4	291	18	311 L3	—	—	—	97900	121900	38500	280
5.1	18024	0.9	284	15	—	309 R4	—	—	68000	87700	20700	264
5.2	17933	1.5	283	15	—	310 R4	—	—	82100	103300	38100	273
5.2	17812	2.7	281	22	—	313 R4	—	—	119700	141700	46800	289
5.5	16847	2.2	266	22	—	311 R4	—	—	95300	118700	37400	281
5.7	16366	1.4	258	15	—	310 R4	—	—	79900	100500	37000	273





P₁ = 11 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
5.7	16350	1.1	258	15	—	309 R4	—	—	67400	87000	20500	263
5.8	16534	2.7	252	18	313 L3	—	—	—	115900	137100	45200	288
5.9	16330	1.1	249	18	310 L3	—	—	—	79100	99400	36600	272
6	16074	2.1	245	18	311 L3	—	—	—	93000	115800	36400	280
6.2	15008	2.7	237	22	—	313 R4	—	—	113700	134600	44200	278
6.3	14825	1.7	234	15	—	310 R4	—	—	77600	97600	35800	273
6.3	14713	1.1	232	15	—	309 R4	—	—	65300	84200	19800	265
6.4	15077	1.4	230	18	310 L3	—	—	—	77200	97100	35600	272
6.4	14492	2.4	229	22	—	311 R4	—	—	91100	113400	35500	281
7.1	13042	1.7	206	15	—	310 R4	—	—	74700	93900	34300	273
7.1	13029	1.1	206	15	—	307 R4	—	—	62000	81200	23700	257
7.1	13029	1.5	206	15	—	309 R4	—	—	63000	81200	19000	265
7.2	13288	2.5	203	18	311 L3	—	—	—	87800	109400	34100	280
7.3	13223	1.7	202	18	310 L3	—	—	—	74200	93300	34100	273
7.3	13209	1.2	202	11	309 L3	—	—	—	62600	80700	18900	264
7.3	12713	2.7	201	22	—	313 R4	—	—	108200	128000	41900	289
7.4	12553	2.7	198	22	—	311 R4	—	—	87200	108600	33900	281
7.7	12526	2.6	191	18	311 L3	—	—	—	86300	107500	33500	280
7.7	12081	1.2	191	15	—	307 R4	—	—	60600	79400	23200	257
7.7	12081	1.4	191	15	—	309 R4	—	—	61600	79400	18500	264
7.7	11997	1.9	189	15	—	310 R4	—	—	72800	91500	33400	273
7.9	11695	2.7	185	22	—	313 R4	—	—	105500	124900	40700	289
8	11965	1.2	183	11	309 L3	—	—	—	60800	78400	18300	264
8	11548	2.7	182	22	—	311 R4	—	—	85100	106000	32900	281
8.3	11612	1.6	177	18	310 L3	—	—	—	71400	89800	32600	272
8.3	11598	1.1	177	11	307 L3	—	—	—	59300	77700	22600	257
8.6	11197	2.9	171	18	311 L3	—	—	—	83400	103900	32200	280
8.9	10466	1.6	165	15	—	309 R4	—	—	59000	76100	17700	264
9	10721	2.1	164	18	310 L3	—	—	—	69700	87600	31800	272
9.1	10584	1	162	11	307 L3	—	—	—	57700	75600	21900	256
9.1	10584	1.5	162	11	309 L3	—	—	—	58600	75600	17500	264
9.1	10162	2.2	160	15	—	310 R4	—	—	69300	87100	31600	273
9.3	10002	1	158	12	—	306 R4	22000	24900	52100	60700	16500	249
9.5	9782	2.7	154	22	—	311 R4	—	—	80900	100800	31200	280
9.6	9627	1.9	152	15	—	309 R4	—	—	57500	74200	17200	265
10	9609	2.8	147	40	—	311 R3	—	—	79700	99300	30600	281
10	9587	1.4	146	11	307 L3	—	—	—	56000	73300	21200	256
10.3	9287	2.2	142	18	310 L3	—	—	—	66700	83900	30300	272
10.6	9092	1.2	139	11	307 L3	—	—	—	55100	72200	20800	256
10.6	9092	1.8	139	11	309 L3	—	—	—	56000	72200	16700	264
10.8	8608	2.4	136	15	—	310 R4	—	—	65900	82900	29900	273
11.2	8544	2.4	130	18	310 L3	—	—	—	65100	81900	29500	272
11.6	8247	1.6	126	11	307 L3	—	—	—	53500	70100	20200	256





P₁ = 11 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
11.6	8247	2	126	11	309 L3	—	—	—	54400	70100	16100	264
11.8	7859	1.4	124	15	—	307 R4	—	—	56900	74500	21600	257
12.1	7945	1	121	7.5	306 L3	—	20600	23400	49200	57300	15500	248
12.2	7846	1.1	120	22	—	307 R3	—	—	52700	69100	19800	257
12.2	7846	1.6	120	22	—	309 R3	—	—	53600	69100	15900	265
12.2	7846	2.2	120	22	—	310 R3	—	—	63500	79800	28600	273
12.3	7797	2.5	119	18	310 L3	—	—	—	63300	79600	28600	272
12.9	7422	1.4	113	11	307 L3	—	—	—	51800	67900	19500	256
12.9	7422	2.1	113	11	309 L3	—	—	—	52700	67900	15600	264
13	7360	1	112	7.5	306 L3	—	20100	22800	48100	56000	15100	248
13.3	7237	2.7	110	18	310 L3	—	—	—	61900	77900	27900	272
13.9	6657	2	105	15	—	307 R4	—	—	55400	72700	21000	257
14.1	6828	1.3	104	7.5	306 L3	—	19600	22200	47000	54700	14700	248
14.5	6604	2.8	101	18	310 L3	—	—	—	60300	75800	27000	272
14.6	6572	1.9	100	11	307 L3	—	—	—	50000	65500	18700	256
14.6	6572	2.5	100	11	309 L3	—	—	—	50800	65500	15000	264
14.8	6486	1.3	99	22	—	307 R3	—	—	49800	65200	18600	256
14.8	6486	2	99	22	—	309 R3	—	—	50600	65200	14900	265
14.8	6486	2.5	99	22	—	310 R3	—	—	59900	75400	26900	273
14.9	6454	1	98.5	14	—	306 R3	19200	21800	46200	53800	14400	249
15.8	6094	2	93	11	307 L3	—	—	—	48900	64000	18200	256
15.8	6094	2.5	93	11	309 L3	—	—	—	49600	64000	14600	264
16.6	5783	1.5	88.3	7.5	306 L3	—	18500	21000	44700	52100	13900	248
17.3	5552	1.4	84.7	14	—	306 R3	18300	20700	44200	51400	13700	249
17.6	5465	1.9	83.4	22	—	307 R3	—	—	47300	62000	17600	256
17.6	5465	2.6	83.4	22	—	309 R3	—	—	48000	62000	14100	265
17.6	5465	2.7	83.4	22	—	310 R3	—	—	56900	71600	25400	273
17.9	5363	1.3	81.9	7.5	306 L3	—	18100	20500	43700	50900	13600	248
18.2	5279	1.9	80.6	11	307 L3	—	—	—	46800	61300	17400	256
18.2	5279	2.8	80.6	11	309 L3	—	—	—	47600	61300	13900	264
18.6	5151	2.7	78.6	22	—	310 R3	—	—	55900	70300	24900	273
18.6	5151	2.2	78.6	22	—	307 R3	—	—	46500	60900	17200	256
19	5061	1	77.2	7.5	305 L3	—	13900	16100	25700	30900	8930	240
19	5045	1.7	77	7.5	306 L3	—	17700	20100	42900	50000	13300	248
19.8	4856	2.4	74.1	11	307 L3	—	—	—	45600	59800	16900	256
20.1	4776	1.6	72.9	14	—	306 R3	17400	19700	42200	49200	13100	249
20.2	4907	1.1	72.5	13	306 L2	—	17400	19700	42100	49100	13000	248
20.4	4701	2.1	71.8	22	—	307 R3	—	—	45200	59200	16700	256
20.4	4701	2.7	71.8	22	—	309 R3	—	—	45900	59200	13400	265
20.4	4701	2.7	71.8	22	—	310 R3	—	—	54400	68400	24100	273
21.7	4424	1.6	67.5	14	—	306 R3	17000	19200	41300	48000	12700	249
22.5	4274	1.8	65.2	7.5	306 L3	—	16800	19000	40800	47500	12600	248
22.5	4258	2.7	65	22	—	310 R3	—	—	52800	66400	23400	273





P₁ = 11 kW n₁=1500 rpm												
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
22.5	4258	2.6	65	22	—	307 R3	—	—	43900	57500	16200	257
22.5	4258	2.6	65	22	—	309 R3	—	—	44600	57500	12900	265
23.2	4131	1.1	63.1	7.5	305 L3	—	13000	15000	24200	29100	8340	240
24.2	3964	2.8	60.5	11	307 L3	—	—	—	42900	56300	15800	256
25.2	3806	2	58.1	14	—	306 R3	16100	18300	39400	45900	12100	248
26	3807	1.4	56.3	13	306 L2	—	16000	18100	39100	45500	12000	264
26.2	3663	2.7	55.9	22	—	310 R3	17700	22200	41900	55000	15400	273
26.2	3663	2.7	55.9	22	—	307 R3	—	—	42600	55000	12300	257
26.2	3663	2.7	55.9	22	—	309 R3	—	—	50500	63500	22200	265
26.3	3777	0.9	55.8	9	305 L2	—	12500	14400	23300	28100	8010	240
27.4	3499	1.1	53.4	7.5	305 L3	—	12600	14500	23500	28300	8080	240
27.5	3489	2	53.2	7.5	306 L3	—	15700	17800	38400	44700	11800	264
31	3163	2.6	46.7	18	307 L2	—	—	—	39700	52100	14500	257
32	3147	2.1	46.5	13	306 L2	—	15000	17000	36900	43000	11300	248
32	3033	2.5	46.3	14	—	306 R3	15000	16900	36800	42900	11200	248
33	3021	1.2	44.6	9	305 L2	—	11900	13700	22300	26800	7610	240
33	2919	2.7	44.6	22	—	310 R3	—	—	47200	59300	20600	272
33	2919	2.7	44.6	22	—	307 R3	—	—	39200	51300	14300	257
33	2919	2.7	44.6	22	—	309 R3	—	—	39800	51300	11400	265
37	2569	2.5	39.2	14	—	306 R3	14100	16000	35000	40800	10600	249
38	2602	2.5	38.4	13	306 L2	—	14100	15900	34800	40600	10600	248
38	2599	1.7	38.4	9	305 L2	—	11300	13000	21300	25600	7240	240
39	2473	2.7	37.7	22	—	310 R3	—	—	44900	56400	19500	273
39	2473	2.7	37.7	22	—	307 R3	—	—	37300	48800	13500	257
39	2473	2.7	37.7	22	—	309 R3	—	—	37900	48800	10800	265
41	2421	1.5	35.8	9	305 L2	—	11000	12700	20800	25100	7070	240
44	2176	2.7	33.2	14	—	306 R3	13400	15200	33300	38800	10100	249
46	2072	2.7	31.6	22	—	307 R3	—	—	35400	46300	12700	257
46	2072	2.7	31.6	22	—	309 R3	—	—	35900	46300	10200	265
48	2082	1	30.8	9	303 L2	—	10500	12100	19900	24000	6720	232
48	2082	2.1	30.8	9	305 L2	—	10500	12100	19900	24000	6720	240
55	1789	1	26.4	9	303 L2	—	9960	11500	19000	22900	6390	232
55	1789	2	26.4	9	305 L2	—	9960	11500	19000	22900	6390	240
60	1659	1.3	24.5	9	303 L2	—	9720	11200	18600	22400	6230	232
60	1659	2.3	24.5	9	305 L2	—	9720	11200	18600	22400	6230	240
64	1539	1.4	22.7	9	303 L2	—	9470	10900	18200	21900	6080	232
64	1539	2.6	22.7	9	305 L2	—	9470	10900	18200	21900	6080	240
71	1406	1.3	20.8	9	303 L2	—	9190	10600	17700	21300	5900	232
71	1406	2.3	20.8	9	305 L2	—	9190	10600	17700	21300	5900	240
76	1301	2.7	19.2	18	—	306 R2	11200	12600	28300	33000	8380	249
81	1226	1.6	18.1	9	303 L2	—	8780	10100	17000	20400	5630	232
81	1226	3	18.1	9	305 L2	—	8780	10100	17000	20400	5630	240
92	1075	2.7	15.9	18	—	306 R2	10500	11900	26700	31100	7870	249





P₁ = 11 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
95	1039	1.6	15.3	9	303 L2	—	8310	9590	16200	19500	5330	232
95	1039	2.9	15.3	9	305 L2	—	8310	9590	16200	19500	5330	240
107	925	2.7	13.7	18	—	306 R2	9960	11300	25500	29700	7480	249
117	848	1.9	12.5	9	303 L2	—	7770	8970	15200	18300	4980	232
135	737	2.7	10.9	18	—	306 R2	9230	10500	23900	27800	6930	249
152	675	1.1	9.67	11	303 L1	—	7120	8220	14100	16900	4570	232
159	624	2.7	9.23	18	—	306 R2	8730	9900	22700	26400	6560	249
195	524	2.3	7.5	11	303 L1	—	2260	2260	6750	7750	1490	232

P₁ = 15 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
0.77	163217	1	1893	18	317 L4	—	—	—	442000	470000	150000	310
0.92	137526	1.2	1595	18	317 L4	—	—	—	442000	470000	150000	310
1.1	113688	1.5	1318	18	317 L4	—	—	—	434300	462400	147000	310
1.2	106719	1.1	1237	18	316 L4	—	—	—	331400	368600	144000	304
1.3	97796	1.7	1134	18	317 L4	—	—	—	415100	442000	139800	310
1.3	95233	1	1104	18	315 L4	—	—	—	192600	226200	83200	296
1.4	89921	1.1	1043	18	315 L4	—	—	—	189400	222300	81600	296
1.4	89921	1.5	1043	18	316 L4	—	—	—	314800	350100	136000	304
1.4	89477	0.9	1038	15	314 L4	—	—	—	189100	222000	81400	call
1.4	89028	2	1032	18	317 L4	—	—	—	403600	429700	135500	310
1.5	82213	1.8	953	50	—	317 R4	—	—	394100	419600	132000	310
1.6	80193	1.2	930	18	315 L4	—	—	—	183000	214800	78500	310
1.6	79847	0.9	926	15	314 L4	—	—	—	182700	214500	78400	call
1.6	78419	1	909	40	—	315 R4	—	—	181700	213400	77900	297
1.6	77931	2.1	904	18	317 L4	—	—	—	387800	412900	129600	310
1.7	74334	1.4	862	18	315 L4	—	—	—	178800	210000	76600	296
1.7	74334	1.7	862	18	316 L4	—	—	—	297400	330700	127600	310
1.7	73967	1.1	858	15	314 L4	—	—	—	178600	209700	76400	call
1.8	70068	1.9	812	18	316 L4	—	—	—	292100	324900	125100	304
1.8	69272	2.4	803	50	—	317 R4	—	—	374300	398500	124600	311
1.8	68302	2.7	792	18	317 L4	—	—	—	372700	396900	124100	310
1.9	67457	1.3	782	40	—	315 R4	—	—	173700	203900	74100	311
2	63904	1.6	741	18	315 L4	—	—	—	170900	200700	72800	296
2	63904	2	741	18	316 L4	—	—	—	284200	316100	121400	304
2	63628	1.3	738	15	314 L4	—	—	—	170700	200400	72700	call
2	62634	2.1	726	18	316 L4	—	—	—	282500	314100	120500	304
2	62012	2.9	719	18	317 L4	—	—	—	362100	385500	120100	310





P₁ = 15 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
2.1	59039	2.2	685	18	316 L4	—	—	—	277500	308600	118200	304
2.2	58368	2.8	677	50	—	317 R4	—	—	355600	378600	117700	311
2.2	57923	1.7	672	18	315 L4	—	—	—	165900	194800	70500	296
2.2	57637	1.4	668	15	314 L4	—	—	—	165700	194500	70300	call
2.2	56839	1.6	659	40	—	315 R4	—	—	165000	193700	70000	297
2.3	55766	0.9	647	22	—	313 R4	—	—	150500	178100	60400	289
2.3	54583	1	633	11	313 L4	—	—	—	152700	180700	61400	288
2.3	53978	2.9	626	50	—	317 R4	—	—	347300	369800	114700	310
2.3	53845	2.3	624	18	316 L4	—	—	—	270000	300300	114600	304
2.4	53755	1.9	623	40	—	315 R4	—	—	162300	190500	68700	297
2.4	53755	2.1	623	45	—	316 R4	—	—	269800	300100	114500	304
2.4	52929	1.1	614	22	—	314 R4	—	—	161500	189600	68400	call
2.5	50955	2	591	18	315 L4	—	—	—	159700	187500	67500	296
2.5	50955	2.4	591	18	316 L4	—	—	—	265500	295300	112500	304
2.5	50703	1.6	588	15	314 L4	—	—	—	159500	187200	67400	call
2.6	48805	2.5	566	18	316 L4	—	—	—	262100	291500	110900	304
2.6	48619	1.1	564	11	313 L4	—	—	—	147500	174500	59100	288
2.6	47793	1.7	554	15	314 L4	—	—	—	156600	183900	66100	call
2.7	46100	1.1	535	22	—	313 R4	—	—	145100	171800	58000	289
2.7	46004	2.2	533	18	315 L4	—	—	—	154900	181800	65200	296
2.7	46004	2.6	533	18	316 L4	—	—	—	257500	286400	108700	304
2.8	45531	1.5	528	22	—	314 R4	—	—	154400	181300	65000	call
2.8	45293	2.2	525	40	—	315 R4	—	—	154100	181000	64900	296
2.8	45293	2.6	525	45	—	316 R4	—	—	256300	285000	108200	311
2.9	44298	1.1	514	11	313 L4	—	—	—	143400	169700	57300	288
2.9	44164	1	512	11	311 L4	—	—	—	116000	144500	46500	280
3	42783	1.2	496	22	—	313 R4	—	—	141900	168000	56600	289
3	42650	1.9	495	15	314 L4	—	—	—	151400	177700	63600	call
3	41983	2.4	487	18	315 L4	—	—	—	150700	176900	63300	296
3	41983	2.8	487	18	316 L4	—	—	—	250500	278600	105500	304
3.2	39509	2	458	15	314 L4	—	—	—	148000	173700	62000	call
3.2	38957	1.4	452	11	313 L4	—	—	—	138000	163300	54900	288
3.3	38843	1.2	450	22	—	313 R4	—	—	137900	163200	54800	289
3.3	38364	1.8	445	22	—	314 R4	—	—	146700	172200	61400	call
3.3	38030	2.6	441	18	315 L4	—	—	—	146300	171700	61200	304
3.3	37764	1	438	22	—	311 R4	—	—	110600	137800	44100	281
3.5	36282	2.2	421	22	—	314 R4	—	—	144200	169300	60300	call
3.5	35597	1.1	413	22	—	311 R4	—	—	108700	135400	43300	285
3.6	35388	1.2	410	11	—	311 R4	—	—	108500	135200	43200	280
3.6	35294	2.8	409	40	—	315 R4	—	—	143000	167900	59700	297
3.7	33985	1.6	394	11	313 L4	—	—	—	132500	156800	52400	288
3.8	33467	2.3	388	15	314 L4	—	—	—	140800	165300	58700	call
3.8	33414	1.4	387	22	—	313 R4	—	—	131800	156000	52100	289





P₁ = 15 kW n₁=1500 rpm													
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]						Page
							MC	MZ	HC/PC	HZ/PZ	FZ		
4.1	30571	2.6	354	22	—	314 R4	—	—	137000	160800	56900	call	
4.2	30356	1.7	352	11	313 L4	—	—	—	128000	151500	50500	288	
4.2	29976	1.3	348	11	311 L4	—	—	—	103200	128600	40900	280	
4.2	29801	1.8	346	22	—	313 R4	—	—	127300	150700	50200	289	
4.3	29427	1.3	341	22	—	311 R4	—	—	102700	127900	40600	281	
4.4	28817	1	334	15	—	310 R4	—	—	84600	106300	39400	273	
4.6	27738	1.4	322	22	—	311 R4	—	—	100900	125600	39800	281	
4.7	27083	2.9	314	15	314 L4	—	—	—	132100	155100	54700	call	
4.7	26627	1.7	309	22	—	313 R4	—	—	123100	145700	48300	289	
4.8	27088	1.4	304	18	313 L3	—	—	—	122500	145000	48100	288	
5	25313	1.5	294	22	—	311 R4	—	—	98100	122200	38600	281	
5	25966	1	291	18	311 L3	—	—	—	97900	121900	38500	280	
5.2	24409	1.1	283	15	—	310 R4	—	—	82100	103300	38100	273	
5.2	24244	2	281	22	—	313 R4	—	—	119700	141700	46800	289	
5.5	22930	1.6	266	22	—	311 R4	—	—	95300	118700	37400	281	
5.7	22276	1	258	15	—	310 R4	—	—	79900	100500	37000	273	
5.8	22504	2	252	18	313 L3	—	—	—	115900	137100	45200	288	
6	21879	1.6	245	18	311 L3	—	—	—	93000	115800	36400	280	
6.1	21360	2.4	240	25	314 L3	—	—	—	119300	140100	48800	call	
6.2	20428	2	237	22	—	313 R4	—	—	113700	134600	44200	289	
6.3	20178	1.2	234	15	—	310 R4	—	—	77600	97600	35800	273	
6.4	20522	1	230	18	310 L3	—	—	—	77200	97100	35600	272	
6.4	19725	1.8	229	22	—	311 R4	—	—	91100	113400	35500	281	
7	18603	2.4	209	18	313 L3	—	—	—	109400	129500	42400	288	
7.1	17751	1.2	206	15	—	310 R4	—	—	74700	93900	34300	272	
7.1	17733	1.1	206	15	—	309 R4	—	—	63000	81200	19000	265	
7.2	18087	1.8	203	18	311 L3	—	—	—	87800	109400	34100	280	
7.3	17997	1.2	202	18	310 L3	—	—	—	74200	93300	34100	272	
7.3	17979	0.9	202	11	309 L3	—	—	—	61300	79100	18400	264	
7.3	17304	2	201	22	—	313 R4	—	—	108200	128000	41900	289	
7.4	17087	2	198	22	—	311 R4	—	—	87200	108600	33900	281	
7.6	17265	2.8	194	18	313 L3	—	—	—	107000	126700	41400	288	
7.7	17049	1.9	191	18	311 L3	—	—	—	86300	107500	33500	281	
7.7	16444	1.1	191	15	—	309 R4	—	—	61600	79400	18500	265	
7.7	16329	1.4	189	15	—	310 R4	—	—	72800	91500	33400	273	
7.9	15918	2	185	22	—	313 R4	—	—	105500	124900	40700	289	
8	15718	2	182	22	—	311 R4	—	—	85100	106000	32900	281	
8	16231	2.4	182	18	313 L3	—	—	—	105100	124300	40500	288	
8.3	15805	1.2	177	18	310 L3	—	—	—	71400	89800	32600	272	
8.3	15675	2.9	176	18	313 L3	—	—	—	104000	123000	40100	288	
8.6	15240	2.1	171	18	311 L3	—	—	—	83400	103900	32200	280	
8.9	14245	1.1	165	15	—	309 R4	—	—	59000	76100	17700	265	
9	14593	1.5	164	18	310 L3	—	—	—	69700	87600	31800	272	





P₁ = 15 kW n₁=1500 rpm												
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
9.1	14406	1.1	162	11	309 L3	—	—	—	58600	75600	17500	264
9.1	14365	2.2	161	18	311 L3	—	—	—	82000	102100	31600	280
9.1	13832	1.6	160	15	—	310 R4	—	—	69300	87100	31600	272
9.5	13314	2	154	22	—	311 R4	—	—	80900	100800	31200	281
9.6	13645	2.9	153	40	—	313 R3	—	—	99700	118000	38200	289
9.6	13104	1.4	152	15	—	309 R4	—	—	57500	74200	17200	265
10	13109	2.4	147	18	311 L3	—	—	—	79700	99300	30700	280
10	13079	2.1	147	40	—	311 R3	—	—	79700	99300	30600	281
10	13050	1	146	11	307 L3	—	—	—	56000	73300	21200	256
10.3	12641	1.6	142	18	310 L3	—	—	—	66700	83900	30300	272
10.6	12375	1.3	139	11	309 L3	—	—	—	56000	72200	16700	264
10.8	11716	1.8	136	15	—	310 R4	—	—	65900	82900	29900	272
11	11875	2.5	133	18	311 L3	—	—	—	77400	96400	29700	280
11.2	11629	1.8	130	18	310 L3	—	—	—	65100	81900	29500	272
11.6	11225	1.2	126	11	307 L3	—	—	—	53500	70100	20200	256
11.6	11225	1.5	126	11	309 L3	—	—	—	54400	70100	16100	264
11.7	11194	2.6	126	18	311 L3	—	—	—	76100	94700	29100	280
11.8	10697	1	124	15	—	307 R4	—	—	56900	74500	21600	257
11.9	11021	2.7	124	40	—	311 R3	—	—	75700	94300	28900	281
12.2	10679	1.2	120	22	—	309 R3	—	—	53600	69100	15900	265
12.2	10679	1.6	120	22	—	310 R3	—	—	63500	79800	28600	273
12.3	10612	1.9	119	18	310 L3	—	—	—	63300	79600	28600	272
12.8	10215	2.8	115	18	311 L3	—	—	—	74000	92200	28200	280
12.9	10102	1	113	11	307 L3	—	—	—	51800	67900	19500	257
12.9	10102	1.5	113	11	309 L3	—	—	—	52700	67900	15600	264
13.3	9850	2	110	18	310 L3	—	—	—	61900	77900	27900	272
13.9	9061	1.5	105	15	—	307 R4	—	—	55400	72700	21000	257
14.1	9293	1	104	7.5	306 L3	—	19200	21700	46000	53600	14400	248
14.5	8989	2.1	101	18	310 L3	—	—	—	60300	75800	27000	272
14.6	8945	1.4	100	11	307 L3	—	—	—	50000	65500	18700	256
14.6	8945	1.8	100	11	309 L3	—	—	—	50800	65500	15000	264
14.8	8828	1	99	22	—	307 R3	—	—	49800	65200	18600	257
14.8	8828	1.4	99	22	—	309 R3	—	—	50600	65200	14900	265
14.8	8828	1.9	99	22	—	310 R3	—	—	59900	75400	26900	273
15.8	8295	1.5	93	11	307 L3	—	—	—	48900	64000	18200	256
15.8	8295	1.8	93	11	309 L3	—	—	—	49600	64000	14600	264
16	8143	2.3	91.3	18	310 L3	—	—	—	58500	73600	26200	272
16.6	7872	1.1	88.3	7.5	306 L3	—	18100	20500	43800	51000	13600	248
17.3	7557	1	84.7	14	—	306 R3	18300	20700	44200	51400	13700	249
17.6	7438	1.4	83.4	22	—	307 R3	—	—	47300	62000	17600	257
17.6	7438	1.9	83.4	22	—	309 R3	—	—	48000	62000	14100	265
17.6	7438	2	83.4	22	—	310 R3	—	—	56900	71600	25400	273
17.9	7300	0.9	81.9	7.5	306 L3	—	17700	20000	42800	49900	13300	248





P₁ = 15 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
18.2	7186	1.4	80.6	11	307 L3	—	—	—	46800	61300	17400	256
18.2	7186	2.1	80.6	11	309 L3	—	—	—	47600	61300	13900	264
18.2	7163	2.4	80.3	18	310 L3	—	—	—	56300	70800	25100	272
18.6	7012	2	78.6	22	—	310 R3	—	—	55900	70300	24900	273
18.6	7012	1.6	78.6	22	—	307 R3	—	—	46500	60900	17200	257
19	6867	1.2	77	7.5	306 L3	—	17700	20100	42900	50000	13300	248
19.8	6610	1.8	74.1	11	307 L3	—	—	—	45600	59800	16900	256
19.8	6610	2.3	74.1	11	309 L3	—	—	—	46400	59800	13500	264
19.8	6590	2.7	73.9	18	310 L3	—	—	—	54900	69000	24400	272
20.1	6500	1.1	72.9	14	—	306 R3	17400	19700	42200	49200	13100	249
20.4	6399	1.6	71.8	22	—	307 R3	—	—	45200	59200	16700	257
20.4	6399	2	71.8	22	—	309 R3	—	—	45900	59200	13400	265
20.4	6399	2	71.8	22	—	310 R3	—	—	54400	68400	24100	273
21.7	6022	1.2	67.5	14	—	306 R3	17000	19200	41300	48000	12700	249
22.5	5817	1.3	65.2	7.5	306 L3	—	16800	19000	40800	47500	12600	248
22.5	5796	2	65	22	—	310 R3	—	—	52800	66400	23400	273
22.5	5796	1.9	65	22	—	307 R3	—	—	43900	57500	16200	257
22.5	5796	1.9	65	22	—	309 R3	—	—	44600	57500	12900	263
23.4	5582	3	62.6	18	310 L3	—	—	—	52200	65700	23100	272
24.2	5396	2.1	60.5	11	307 L3	—	—	—	42900	56300	15800	256
24.2	5396	2.6	60.5	11	309 L3	—	—	—	43600	56300	12600	264
25.2	5180	1.5	58.1	14	—	306 R3	16100	18300	39400	45900	12100	249
26	5182	1	56.3	13	306 L2	—	16000	18100	39100	45500	12000	248
26.2	4986	2	55.9	22	—	310 R3	—	—	50500	63500	22200	273
26.2	4986	2	55.9	22	—	307 R3	—	—	41900	55000	15400	257
26.2	4986	2	55.9	22	—	309 R3	—	—	42600	55000	12300	265
27.5	4748	1.5	53.2	7.5	306 L3	—	15700	17800	38400	44700	11800	248
28.6	4571	2.3	51.3	11	307 L3	—	—	—	40900	53500	14900	256
28.6	4571	2.9	51.3	11	309 L3	—	—	—	41500	53500	12000	264
31	4305	1.9	46.7	18	307 L2	—	—	—	39700	52100	14500	256
31	4305	2.9	46.7	18	309 L2	—	—	—	40400	52100	11600	264
32	4284	1.5	46.5	13	306 L2	—	15000	17000	36900	43000	11300	248
32	4128	1.8	46.3	14	—	306 R3	15000	16900	36800	42900	11200	249
33	3973	2	44.6	22	—	310 R3	—	—	47200	59300	20600	273
33	3973	2	44.6	22	—	307 R3	—	—	39200	51300	14300	257
33	3973	2	44.6	22	—	309 R3	—	—	39800	51300	11400	265
37	3497	1.9	39.2	14	—	306 R3	14100	16000	35000	40800	10600	249
38	3559	2.3	38.6	18	307 L2	—	—	—	37500	49200	13600	254
38	3541	1.8	38.4	13	306 L2	—	14100	15900	34800	40600	10600	248
38	3537	1.2	38.4	9	305 L2	—	11300	13000	21300	25600	7240	240
39	3366	2	37.7	22	—	310 R3	—	—	44900	56400	19500	273
39	3366	2	37.7	22	—	307 R3	—	—	37300	48800	13500	257
39	3366	2	37.7	22	—	309 R3	—	—	37900	48800	10800	265





P₁ = 15 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
41	3295	1.1	35.8	9	305 L2	—	11000	12700	20800	25100	7070	240
44	2962	2	33.2	14	—	306 R3	13400	15200	33300	38800	10100	249
44	3046	2.3	33.1	13	306 L2	—	13400	15100	33300	38800	10000	248
46	2821	2	31.6	22	—	307 R3	—	—	35400	46300	12700	257
46	2821	2	31.6	22	—	309 R3	—	—	35900	46300	10200	265
48	2834	1.5	30.8	9	305 L2	—	10500	12100	19900	24000	6720	240
52	2620	2.6	28.4	13	306 L2	—	12700	14400	31800	37100	9550	248
55	2435	1.4	26.4	9	305 L2	—	9960	11500	19000	22900	6390	240
56	2427	2.6	26.4	13	306 L2	—	12400	14000	31100	36200	9310	248
60	2259	1	24.5	9	303 L2	—	9490	11000	18200	21900	6090	232
60	2259	1.7	24.5	9	305 L2	—	9720	11200	18600	22400	6230	240
64	2095	1	22.7	9	303 L2	—	9470	10900	18200	21900	6080	232
64	2095	1.9	22.7	9	305 L2	—	9470	10900	18200	21900	6080	240
65	2088	2.9	22.7	13	306 L2	—	11800	13400	29700	34600	8850	248
71	1913	1	20.8	9	303 L2	—	8980	10400	17300	20900	5760	232
71	1913	1.7	20.8	9	305 L2	—	9190	10600	17700	21300	5900	240
76	1771	2	19.2	18	—	306 R2	11200	12600	28300	33000	8380	232
81	1669	1.2	18.1	9	303 L2	—	8780	10100	17000	20400	5630	232
81	1669	2.2	18.1	9	305 L2	—	8780	10100	17000	20400	5630	240
92	1464	2	15.9	18	—	306 R2	10500	11900	26700	31100	7870	233
95	1414	1.2	15.3	9	303 L2	—	8310	9590	16200	19500	5330	232
95	1414	2.2	15.3	9	305 L2	—	8310	9590	16200	19500	5330	240
107	1259	2	13.7	18	—	306 R2	9960	11300	25500	29700	7480	249
117	1154	1.4	12.5	9	303 L2	—	7770	8970	15200	18300	4980	232
117	1154	2.5	12.5	9	305 L2	—	7770	8970	15200	18300	4980	240
135	1003	2	10.9	18	—	306 R2	9230	10500	23900	27800	6930	233
159	850	2	9.23	18	—	306 R2	8730	9900	22700	26400	6560	249
195	713	1.7	7.5	11	303 L1	—	6550	7560	13000	15700	4200	232
236	589	2.4	6.2	11	303 L1	—	6140	7090	12300	14800	3940	232
275	507	2.9	5.33	11	303 L1	—	5840	6750	11800	14200	3750	232

P₁ = 18.5 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
0.92	169802	1	1595	18	317 L4	—	—	—	442000	470000	150000	310
1.1	147863	2.4	1389	30	319 L4	—	—	—	636100	700800	199500	322
1.1	140370	1.2	1318	18	317 L4	—	—	—	434300	462400	147000	310
1.2	131765	0.9	1237	18	316 L4	—	—	—	331400	368600	144000	310
1.2	127194	2.8	1195	30	319 L4	—	—	—	608000	669900	189700	322





P₁ = 18.5 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
1.3	120748	1.4	1134	18	317 L4	—	—	—	415100	442000	139800	310
1.4	112771	2.4	1059	22	318 L4	—	—	—	503000	520700	182200	316
1.4	111025	0.9	1043	18	315 L4	—	—	—	189400	222300	81600	296
1.4	111025	1.2	1043	18	316 L4	—	—	—	314800	350100	136000	304
1.4	109922	1.6	1032	18	317 L4	—	—	—	403600	429700	135500	310
1.5	101508	1.4	953	50	—	317 R4	—	—	394100	419600	132000	311
1.6	99014	0.9	930	18	315 L4	—	—	—	183000	214800	78500	296
1.6	97007	2.8	911	22	318 L4	—	—	—	487700	497700	173300	316
1.6	96221	1.7	904	18	317 L4	—	—	—	387800	412900	129600	310
1.7	91780	1.1	862	18	315 L4	—	—	—	178800	210000	76600	296
1.7	91780	1.4	862	18	316 L4	—	—	—	297400	330700	127600	304
1.8	86513	1.5	812	18	316 L4	—	—	—	292100	324900	125100	304
1.8	85530	1.9	803	50	—	317 R4	—	—	374300	398500	124600	311
1.8	84332	2.2	792	18	317 L4	—	—	—	372700	396900	124100	310
1.9	83289	1.1	782	40	—	315 R4	—	—	173700	203900	74100	297
2	78901	1.3	741	18	315 L4	—	—	—	170900	200700	72800	296
2	78901	1.6	741	18	316 L4	—	—	—	284200	316100	121400	304
2	78561	1	738	15	314 L4	—	—	—	170700	200400	72700	call
2	77333	1.7	726	18	316 L4	—	—	—	282500	314100	120500	304
2	76565	2.3	719	18	317 L4	—	—	—	362100	385500	120100	310
2.1	72895	1.8	685	18	316 L4	—	—	—	277500	308600	118200	304
2.2	72067	2.3	677	50	—	317 R4	—	—	355600	378600	117700	311
2.2	71517	1.4	672	18	315 L4	—	—	—	165900	194800	70500	296
2.2	71164	1.1	668	15	314 L4	—	—	—	165700	194500	70300	call
2.2	70179	1.3	659	40	—	315 R4	—	—	165000	193700	70000	297
2.3	66647	2.3	626	50	—	317 R4	—	—	347300	369800	114700	311
2.3	66482	1.9	624	18	316 L4	—	—	—	270000	300300	114600	304
2.4	66371	1.5	623	40	—	315 R4	—	—	162300	190500	68700	297
2.4	66371	1.7	623	45	—	316 R4	—	—	269800	300100	114500	305
2.4	65863	2.7	619	18	317 L4	—	—	—	346100	368500	114200	310
2.5	62914	1.6	591	18	315 L4	—	—	—	159700	187500	67500	296
2.5	62914	1.9	591	18	316 L4	—	—	—	265500	295300	112500	304
2.5	62603	1.3	588	15	314 L4	—	—	—	159500	187200	67400	call
2.6	60260	2.1	566	18	316 L4	—	—	—	262100	291500	110900	304
2.6	59010	1.4	554	15	314 L4	—	—	—	156600	183900	66100	call
2.7	58741	3	552	18	317 L4	—	—	—	334400	356100	110000	310
2.7	56801	1.8	533	18	315 L4	—	—	—	154900	181800	65200	294
2.7	56801	2.1	533	18	316 L4	—	—	—	257500	286400	108700	304
2.8	55924	1.8	525	40	—	315 R4	—	—	154100	181000	64900	297
2.8	55924	2.1	525	45	—	316 R4	—	—	256300	285000	108200	305
2.8	55368	3	520	50	—	317 R4	—	—	328500	349800	107800	311
3	52659	1.5	495	15	314 L4	—	—	—	151400	177700	63600	call
3	51836	1.9	487	18	315 L4	—	—	—	150700	176900	63300	296





$P_1 = 18.5 \text{ kW}$ $n_1 = 1500 \text{ rpm}$												
n2 min ⁻¹	M2 Nm	S	i	Pt kW			Rn2 [N]					 Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
3	51836	2.3	487	18	316 L4	—	—	—	250500	278600	105500	304
3.2	48782	1.6	458	15	314 L4	—	—	—	148000	173700	62000	call
3.3	47121	2.5	443	45	—	316 R4	—	—	243500	270800	102200	305
3.3	46956	2.1	441	18	315 L4	—	—	—	146300	171700	61200	296
3.3	46956	2.5	441	18	316 L4	—	—	—	243200	270500	102100	304
3.6	43577	2.3	409	40	—	315 R4	—	—	143000	167900	59700	297
3.6	43577	2.6	409	45	—	316 R4	—	—	237800	264500	99600	305
3.8	41321	1.9	388	15	314 L4	—	—	—	140800	165300	58700	call
4	39353	2.5	370	18	315 L4	—	—	—	138700	162900	57700	296
4	39353	2.8	370	18	316 L4	—	—	—	230600	256500	96200	304
4.2	36717	2.6	345	40	—	315 R4	—	—	135900	159500	56400	297
4.2	36717	2.9	345	45	—	316 R4	—	—	225900	251200	94000	305
4.7	33439	2.3	314	15	314 L4	—	—	—	132100	155100	54700	call
4.8	33446	1.2	304	18	313 L3	—	—	—	122500	145000	48100	288
5.5	28611	2.9	269	40	—	315 R4	—	—	126100	148000	51900	297
5.8	27786	1.6	252	18	313 L3	—	—	—	115900	137100	45200	288
6	27014	1.3	245	18	311 L3	—	—	—	93000	115800	36400	280
6.1	26503	2.5	241	30	315 L3	—	—	—	122000	143200	50000	296
6.1	26373	2	240	25	314 L3	—	—	—	121800	143000	50000	call
7	22970	2	209	18	313 L3	—	—	—	109400	129500	42400	288
7.1	22686	2.8	206	25	314 L3	—	—	—	116400	136700	47500	call
7.2	22332	1.5	203	18	311 L3	—	—	—	87800	109400	34100	280
7.3	22221	1	202	18	310 L3	—	—	—	74200	93300	34100	272
7.6	21317	2.2	194	18	313 L3	—	—	—	107000	126700	41400	288
7.7	21050	1.5	191	18	311 L3	—	—	—	86300	107500	33500	280
8	20040	1.9	182	18	313 L3	—	—	—	105100	124300	40500	288
8.3	19515	0.9	177	18	310 L3	—	—	—	71400	89800	32600	272
8.3	19354	2.3	176	18	313 L3	—	—	—	104000	123000	40100	288
8.6	18816	1.7	171	18	311 L3	—	—	—	83400	103900	32200	280
9	18018	1.2	164	18	310 L3	—	—	—	69700	87600	31800	272
9	17962	2.6	163	18	313 L3	—	—	—	101700	120300	39100	288
9.1	17736	1.8	161	18	311 L3	—	—	—	82000	102100	31600	280
9.6	16847	2.3	153	40	—	313 R3	—	—	99700	118000	38200	289
9.7	16649	2.7	151	18	313 L3	—	—	—	99400	117600	38100	288
10	16186	2	147	18	311 L3	—	—	—	79700	99300	30700	280
10	16149	1.7	147	40	—	311 R3	—	—	79700	99300	30600	281
10.2	15745	2.8	143	18	313 L3	—	—	—	97700	115700	37400	288
10.3	15608	1.3	142	18	310 L3	—	—	—	66700	83900	30300	272
10.9	14848	3	135	18	313 L3	—	—	—	96000	113600	36700	288
11	14662	2	133	18	311 L3	—	—	—	77400	96400	29700	280
11.2	14358	1.4	130	18	310 L3	—	—	—	65100	81900	29500	272
11.5	13996	2.9	127	40	—	313 R3	—	—	94300	111600	36000	289
11.7	13821	2.1	126	18	311 L3	—	—	—	76100	94700	29100	280





P₁ = 18.5 kW n₁=1500 rpm													
n₂ min ⁻¹	M₂ Nm	S	i	Pt kW			Rn₂ [N]						Page
							MC	MZ	HC/PC	HZ/PZ	FZ		
11.9	13607	2.2	124	40	—	311 R3	—	—	75700	94300	28900	281	
12.3	13103	1.5	119	18	310 L3	—	—	—	63300	79600	28600	272	
12.8	12613	2.3	115	18	311 L3	—	—	—	74000	92200	28200	280	
13.3	12162	1.6	110	18	310 L3	—	—	—	61900	77900	27900	272	
14.1	11465	2.5	104	40	—	311 R3	—	—	71900	89600	27300	281	
14.1	11425	2.4	104	18	311 L3	—	—	—	71800	89500	27300	288	
14.5	11099	1.7	101	18	310 L3	—	—	—	60300	75800	27000	272	
15.2	10603	2.6	96.3	40	—	311 R3	—	—	70200	87500	26600	281	
16	10054	1.9	91.3	18	310 L3	—	—	—	58500	73600	26200	272	
16.4	9828	2.7	89.3	18	311 L3	—	—	—	68100	84900	25700	280	
18.1	8934	2.9	81.1	40	—	311 R3	—	—	66700	83100	25200	281	
18.2	8845	2	80.3	18	310 L3	—	—	—	56300	70800	25100	272	
18.9	8514	3	77.3	18	311 L3	—	—	—	65800	81900	24800	280	
19.8	8136	2.2	73.9	18	310 L3	—	—	—	54900	69000	24400	272	
23.4	6892	2.4	62.6	18	310 L3	—	—	—	52200	65700	23100	278	
27.6	5838	2.7	53	18	310 L3	—	—	—	49700	62500	21800	272	
31	5315	1.6	46.7	18	307 L2	—	—	—	39700	52100	14500	256	
31	5315	2.4	46.7	18	309 L2	—	—	—	40400	52100	11600	264	
31	5315	2.7	46.7	22	310 L2	—	—	—	47800	60200	20900	272	
32	5289	1.2	46.5	13	306 L2	—	15000	17000	36900	43000	11300	248	
38	4394	1.9	38.6	18	307 L2	—	—	—	37500	49200	13600	256	
38	4394	2.8	38.6	18	309 L2	—	—	—	38100	49200	10900	264	
38	4372	1.5	38.4	13	306 L2	—	14100	15900	34800	40600	10600	248	
44	3761	1.8	33.1	13	306 L2	—	13400	15100	33300	38800	10000	248	
45	3702	2.5	32.6	18	307 L2	—	—	—	35700	46700	12800	256	
48	3490	2.7	30.7	18	307 L2	—	—	—	35000	45900	12600	256	
52	3235	2.1	28.4	13	306 L2	—	12700	14400	31800	37100	9550	248	
52	3185	2.9	28	18	307 L2	—	—	—	34100	44700	12200	256	
56	2997	2.1	26.4	13	306 L2	—	12400	14000	31100	36200	9310	256	
62	2677	3	23.5	35	—	307 R2	13300	16600	32400	42400	11500	257	
65	2578	2.4	22.7	13	306 L2	—	11800	13400	29700	34600	8850	248	
81	2054	2.9	18.1	13	306 L2	—	10900	12400	27800	32300	8210	248	
96	1740	2.9	15.3	13	306 L2	—	10300	11700	26400	30800	7770	248	
195	880	1.4	7.5	11	303 L1	—	6550	7560	13000	15700	4200	232	
195	880	2.6	7.5	13	305 L1	—	6550	7560	13000	15700	4200	240	
236	728	1.9	6.2	11	303 L1	—	6140	7090	12300	14800	3940	232	
275	626	2.4	5.33	11	303 L1	—	5840	6750	11800	14200	3750	232	
345	499	2.9	4.25	11	303 L1	—	5420	6250	11000	13200	3480	232	





P₁ = 22 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
1.1	174748	2	1389	30	319 L4	—	—	—	636100	700800	199500	322
1.1	165892	1	1318	18	317 L4	—	—	—	425400	452900	143700	310
1.2	150321	2.4	1195	30	319 L4	—	—	—	608000	669900	189700	322
1.3	142703	1.2	1134	18	317 L4	—	—	—	415100	442000	139800	310
1.4	133274	2.1	1059	22	318 L4	—	—	—	503000	520700	182200	316
1.4	131211	1	1043	18	316 L4	—	—	—	314800	350100	136000	304
1.4	129908	1.4	1032	18	317 L4	—	—	—	403600	429700	135500	310
1.5	126659	2.7	1007	30	319 L4	—	—	—	577600	636300	179200	322
1.5	119964	1.2	953	50	—	317 R4	—	—	394100	419600	132000	310
1.6	114733	2.9	912	30	319 L4	—	—	—	560700	617700	173400	322
1.6	114645	2.4	911	22	318 L4	—	—	—	487700	497700	173300	316
1.6	114053	2.9	906	115	—	319 R4 (C)	—	—	559700	616600	173000	323
1.6	113716	1.5	904	18	317 L4	—	—	—	387800	412900	129600	310
1.7	108468	0.9	862	18	315 L4	—	—	—	178800	210000	76600	296
1.7	108468	1.2	862	18	316 L4	—	—	—	297400	330700	127600	304
1.8	102242	1.3	812	18	316 L4	—	—	—	292100	324900	125100	304
1.8	101081	1.6	803	50	—	317 R4	—	—	374300	398500	124600	311
1.8	99665	1.9	792	18	317 L4	—	—	—	372700	396900	124100	310
1.9	98432	0.9	782	40	—	315 R4	—	—	173700	203900	74100	297
1.9	96599	2.8	768	22	318 L4	—	—	—	463300	472800	163700	316
2	93247	1.1	741	18	315 L4	—	—	—	170900	200700	72800	296
2	93247	1.4	741	18	316 L4	—	—	—	284200	316100	121400	304
2	91394	1.4	726	18	316 L4	—	—	—	282500	314100	120500	304
2	91357	2.9	726	22	318 L4	—	—	—	455600	464900	160700	316
2	90486	2	719	18	317 L4	—	—	—	362100	385500	120100	310
2.1	86149	1.5	685	18	316 L4	—	—	—	277500	308600	118200	304
2.2	85170	1.9	677	50	—	317 R4	—	—	355600	378600	117700	311
2.2	84520	1.2	672	18	315 L4	—	—	—	165900	194800	70500	296
2.2	84103	1	668	15	314 L4	—	—	—	165700	194500	70300	call
2.2	82938	1.1	659	40	—	315 R4	—	—	165000	193700	70000	297
2.3	78764	2	626	50	—	317 R4	—	—	347300	369800	114700	311
2.3	78569	1.6	624	18	316 L4	—	—	—	270000	300300	114600	304
2.4	78438	1.3	623	40	—	315 R4	—	—	162300	190500	68700	297
2.4	78438	1.5	623	45	—	316 R4	—	—	269800	300100	114500	305
2.4	77838	2.3	619	18	317 L4	—	—	—	346100	368500	114200	310
2.5	74353	1.3	591	18	315 L4	—	—	—	159700	187500	67500	297
2.5	74353	1.6	591	18	316 L4	—	—	—	265500	295300	112500	304
2.5	73986	1.1	588	15	314 L4	—	—	—	159500	187200	67400	call
2.6	71216	1.7	566	18	316 L4	—	—	—	262100	291500	110900	304
2.6	69739	1.1	554	15	314 L4	—	—	—	156600	183900	66100	call
2.7	69421	2.5	552	18	317 L4	—	—	—	334400	356100	110000	310
2.7	67129	1.5	533	18	315 L4	—	—	—	154900	181800	65200	296
2.7	67129	1.8	533	18	316 L4	—	—	—	257500	286400	108700	304





P₁ = 22 kW n₁=1500 rpm													
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]						Page
							MC	MZ	HC/PC	HZ/PZ	FZ		
2.8	66091	1.5	525	40	—	315 R4	—	—	154100	181000	64900		296
2.8	66091	1.8	525	45	—	316 R4	—	—	256300	285000	108200		304
2.8	65435	2.5	520	50	—	317 R4	—	—	328500	349800	107800		310
3	62234	1.3	495	15	314 L4	—	—	—	151400	177700	63600	call	
3	62027	2.7	493	18	317 L4	—	—	—	323300	344200	105900		310
3	61261	1.6	487	18	315 L4	—	—	—	150700	176900	63300		296
3	61261	1.9	487	18	316 L4	—	—	—	250500	278600	105500		304
3.2	57651	1.4	458	15	314 L4	—	—	—	148000	173700	62000	call	
3.3	56477	2.9	449	18	317 L4	—	—	—	314300	334700	102700		310
3.3	55688	2.1	443	45	—	316 R4	—	—	243500	270800	102200		305
3.3	55493	1.8	441	18	315 L4	—	—	—	146300	171700	61200		296
3.3	55493	2.1	441	18	316 L4	—	—	—	243200	270500	102100		304
3.3	55135	2.8	438	50	—	317 R4	—	—	312100	332300	101800		311
3.6	51500	1.9	409	40	—	315 R4	—	—	143000	167900	59700		297
3.6	51500	2.2	409	45	—	316 R4	—	—	237800	264500	99600		305
3.7	50201	2.9	399	50	—	317 R4	—	—	303400	323100	98700		311
3.8	48834	1.6	388	15	314 L4	—	—	—	140800	165300	58700	call	
4	46509	2.1	370	18	315 L4	—	—	—	138700	162900	57700		296
4	46509	2.4	370	18	316 L4	—	—	—	230600	256500	96200		304
4.2	43393	2.2	345	40	—	315 R4	—	—	135900	159500	56400		296
4.2	43393	2.5	345	45	—	316 R4	—	—	225900	251200	94000		305
4.4	42299	2.9	336	50	—	317 R4	—	—	288200	306900	93200		311
4.5	41351	2.6	329	18	316 L4	—	—	—	222700	247600	92500		304
4.7	39519	2	314	15	314 L4	—	—	—	132100	155100	54700	call	
4.8	39527	1	304	18	313 L3	—	—	—	122500	145000	48100		288
4.8	38040	2.5	302	18	315 L4	—	—	—	130600	153300	54000		296
4.8	38040	2.7	302	18	316 L4	—	—	—	217100	241500	90000		304
5.1	36368	2.9	289	45	—	316 R4	—	—	214200	238300	88700		305
5.5	33813	2.4	269	40	—	315 R4	—	—	126100	148000	51900		297
5.5	33813	2.9	269	45	—	316 R4	—	—	209600	233100	86500		305
5.6	32961	2.9	262	50	—	317 R4	—	—	267500	284800	85800		311
5.8	32838	1.4	252	18	313 L3	—	—	—	115900	137100	45200		288
6	31926	1.1	245	18	311 L3	—	—	—	93000	115800	36400		280
6.1	31322	2.1	241	30	315 L3	—	—	—	122000	143200	50000		296
6.1	31168	1.7	240	25	314 L3	—	—	—	121800	143000	50000	call	
6.5	28339	2.7	225	40	—	315 R4	—	—	119600	140400	48900		297
6.7	27624	2.9	220	50	—	317 R4	—	—	253600	270100	80900		311
7	27146	1.7	209	18	313 L3	—	—	—	109400	129500	42400		288
7.1	26944	3	207	30	315 L3	—	—	—	116600	136900	47600		296
7.1	26811	2.4	206	25	314 L3	—	—	—	116400	136700	47500	call	
7.2	26392	1.3	203	18	311 L3	—	—	—	87800	109400	34100		280
7.6	25193	1.9	194	18	313 L3	—	—	—	107000	126700	41400		288
7.7	24877	1.3	191	18	311 L3	—	—	—	86300	107500	33500		280





P₁ = 22 kW n₁=1500 rpm													
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]						Page
							MC	MZ	HC/PC	HZ/PZ	FZ		
8	23684	1.6	182	18	313 L3	—	—	—	105100	124300	40500	288	
8.3	22873	2	176	18	313 L3	—	—	—	104000	123000	40100	288	
8.4	22591	2.8	174	25	314 L3	—	—	—	110600	129800	44900	call	
8.6	22238	1.5	171	18	311 L3	—	—	—	83400	103900	32200	280	
9	21294	1	164	18	310 L3	—	—	—	69700	87600	31800	272	
9	21227	2.2	163	18	313 L3	—	—	—	101700	120300	39100	288	
9.1	20961	1.5	161	18	311 L3	—	—	—	82000	102100	31600	280	
9.3	20443	2.5	157	55	—	314 R3 (C)	—	—	107300	126000	43400	call	
9.6	19910	2	153	40	—	313 R3	—	—	99700	118000	38200	289	
9.7	19676	2.3	151	18	313 L3	—	—	—	99400	117600	38100	288	
10	19129	1.7	147	18	311 L3	—	—	—	79700	99300	30700	280	
10	19085	1.4	147	40	—	311 R3	—	—	79700	99300	30600	281	
10.2	18608	2.4	143	18	313 L3	—	—	—	97700	115700	37400	288	
10.3	18446	1.1	142	18	310 L3	—	—	—	66700	83900	30300	272	
10.9	17548	2.5	135	18	313 L3	—	—	—	96000	113600	36700	288	
11	17328	1.7	133	18	311 L3	—	—	—	77400	96400	29700	280	
11.2	16969	1.2	130	18	310 L3	—	—	—	65100	81900	29500	272	
11.5	16541	2.5	127	40	—	313 R3	—	—	94300	111600	36000	288	
11.7	16333	1.8	126	18	311 L3	—	—	—	76100	94700	29100	280	
11.9	16081	1.9	124	40	—	311 R3	—	—	75700	94300	28900	281	
12.2	15679	2.7	120	18	313 L3	—	—	—	92800	109900	35300	288	
12.3	15485	1.3	119	18	310 L3	—	—	—	63300	79600	28600	272	
12.8	14906	1.9	115	18	311 L3	—	—	—	74000	92200	28200	280	
13.3	14373	1.4	110	18	310 L3	—	—	—	61900	77900	27900	272	
13.4	14276	2.9	110	18	313 L3	—	—	—	90300	106800	34200	288	
13.7	13937	2.8	107	40	—	313 R3	—	—	89600	106000	34000	288	
14.1	13550	2.1	104	40	—	311 R3	—	—	71900	89600	27300	281	
14.1	13502	2.1	104	18	311 L3	—	—	—	71800	89500	27300	280	
14.5	13117	1.4	101	18	310 L3	—	—	—	60300	75800	27000	272	
15	12690	2.9	97.5	40	—	313 R3	—	—	87100	103100	32900	289	
15.2	12531	2.2	96.3	40	—	311 R3	—	—	70200	87500	26600	281	
16	11882	1.6	91.3	18	310 L3	—	—	—	58500	73600	26200	272	
16.4	11615	2.3	89.3	18	311 L3	—	—	—	68100	84900	25700	280	
17.8	10692	2.9	82.2	40	—	313 R3	—	—	82800	97900	31100	289	
18.1	10558	2.5	81.1	40	—	311 R3	—	—	66700	83100	25200	285	
18.2	10453	1.7	80.3	18	310 L3	—	—	—	56300	70800	25100	272	
18.9	10061	2.5	77.3	18	311 L3	—	—	—	65800	81900	24800	280	
19.8	9616	1.8	73.9	18	310 L3	—	—	—	54900	69000	24400	272	
20.6	9256	2.7	71.1	18	311 L3	—	—	—	64100	79900	24100	280	
20.9	9102	2.9	69.9	40	—	313 R3	—	—	78900	93300	29500	289	
21.5	8849	2.7	68	40	—	311 R3	—	—	63300	78800	23700	281	
22.9	8332	2.9	64	40	—	313 R3	—	—	76800	90900	28600	289	
23.2	8227	2.9	63.2	40	—	311 R3	—	—	61900	77100	23100	281	





P₁ = 22 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
23.4	8145	2	62.6	18	310 L3	—	—	—	52200	65700	23100	272
27.3	6983	2.9	53.7	40	—	313 R3	—	—	72800	86200	27000	289
27.6	6899	2.3	53	18	310 L3	—	—	—	49700	62500	21800	272
27.6	6895	2.9	53	40	—	311 R3	—	—	58700	73100	21800	281
31	6282	1.3	46.7	18	307 L2	—	—	—	39700	52100	14500	256
31	6282	2	46.7	18	309 L2	—	—	—	40400	52100	11600	264
31	6282	2.3	46.7	22	310 L2	—	—	—	47800	60200	20900	272
32	6251	1	46.5	13	306 L2	—	15000	17000	36900	43000	11300	248
38	5193	1.6	38.6	18	307 L2	—	—	—	37500	49200	13600	256
38	5193	2.4	38.6	18	309 L2	—	—	—	38100	49200	10900	264
38	5193	2.6	38.6	22	310 L2	—	—	—	45200	56800	19600	274
38	5167	1.3	38.4	13	306 L2	—	14100	15900	34800	40600	10600	248
44	4445	1.5	33.1	13	306 L2	—	13400	15100	33300	38800	10000	248
45	4375	2.2	32.6	18	307 L2	—	—	—	35700	46700	12800	264
45	4375	3	32.6	18	309 L2	—	—	—	36200	46700	10300	264
48	4124	2.3	30.7	18	307 L2	—	—	—	35000	45900	12600	256
52	3824	1.8	28.4	13	306 L2	—	12700	14400	31800	37100	9550	248
52	3764	2.4	28	18	307 L2	—	—	—	34100	44700	12200	264
56	3542	1.8	26.4	13	306 L2	—	12400	14000	31100	36200	9310	248
58	3409	2.7	25.4	18	307 L2	—	—	—	33100	43400	11800	256
62	3164	2.9	23.5	35	—	309 R2	—	—	32900	42400	9220	265
62	3164	2.5	23.5	35	—	307 R2	—	—	32400	42400	11500	257
65	3047	2	22.7	13	306 L2	—	11800	13400	29700	34600	8850	248
67	2933	3	21.8	18	307 L2	—	—	—	31600	41400	11200	256
74	2666	2.9	19.8	35	—	309 R2	—	—	31200	40300	8710	264
74	2666	2.9	19.8	35	—	307 R2	—	—	30700	40300	10900	256
81	2428	2.4	18.1	13	306 L2	—	10900	12400	27800	32300	8210	248
95	2077	2.9	15.5	35	—	309 R2	—	—	29000	37400	8020	265
95	2077	2.9	15.5	35	—	307 R2	—	—	28500	37400	10000	257
96	2057	2.4	15.3	13	306 L2	—	10300	11700	26400	30800	7770	248
113	1742	2.8	13	13	306 L2	—	9780	11100	25100	29300	7350	248
113	1741	2.9	13	35	—	309 R2	—	—	27500	35400	7560	265
113	1741	2.9	13	35	—	307 R2	—	—	27000	35400	9450	257
195	1040	1.2	7.5	11	303 L1	—	6550	7560	13000	15700	4200	232
195	1040	2.2	7.5	13	305 L1	—	6550	7560	13000	15700	4200	240
236	860	1.6	6.2	11	303 L1	—	6140	7090	12300	14800	3940	232
275	740	2	5.33	11	303 L1	—	5840	6750	11800	14200	3750	232
345	590	2.4	4.25	11	303 L1	—	5420	6250	11000	13200	3480	232
407	499	2.8	3.6	11	303 L1	—	5010	5780	10300	12300	3210	232





P₁ = 30 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
1.1	239514	1.5	1389	30	319 L4		—	—	636100	700800	199500	322
1.2	206034	1.7	1195	30	319 L4		—	—	608000	669900	189700	322
1.3	193443	2.7	1122	35	321 L4		—	—	731900	867900	1114500	328
1.4	182670	1.5	1059	22	318 L4		—	—	503000	520700	182200	316
1.4	178055	1	1032	18	317 L4		—	—	403600	429700	135500	310
1.5	173603	2	1007	30	319 L4		—	—	577600	636300	179200	322
1.6	157257	2.1	912	30	319 L4		—	—	560700	173400	173400	322
1.6	157135	1.7	911	22	318 L4		—	—	487700	497700	173300	316
1.6	156325	2.1	906	115	—	319 R4 (C)	—	—	559700	616600	173000	323
1.6	155863	1.1	904	18	317 L4		—	—	387800	412900	129600	310
1.7	146694	2.5	850	30	319 L4		—	—	549100	605000	169400	322
1.8	140136	0.9	812	18	316 L4		—	—	286100	318200	122300	305
1.8	138545	1.2	803	50	—	317 R4	—	—	374300	398500	124600	311
1.8	136603	1.4	792	18	317 L4		—	—	372700	396900	124100	310
1.9	134473	2.5	780	115	—	319 R4 (C)	—	—	535000	589400	164500	323
1.9	132401	2	768	22	318L4		—	—	463300	472800	163700	316
2	127807	1	741	18	316L4		—	—	284200	316100	121400	304
2	125267	1	726	18	316L4		—	—	282500	314100	120500	304
2	125217	2.1	726	22	318L4		—	—	455600	464900	160700	316
2	124023	1.4	719	18	317L4		—	—	362100	385500	120100	310
2	123603	2.9	717	30	319L4		—	—	521600	574700	160000	322
2.1	119224	2.2	691	110	—	318R4(C)		—	448900	458100	158100	317
2.1	118078	1.1	685	18	316L4		—	—	277500	308600	118200	304
2.2	116737	1.4	677	50	—	317R4		—	355600	378600	117700	311
2.2	113306	2.8	657	115	—	319R4(C)		—	508200	559900	155400	323
2.2	112919	2.8	655	95	—	319R4(B)		—	507700	559300	155200	323
2.3	111560	2.4	647	22	318L4		—	—	440100	449100	154600	317
2.3	107957	1.4	626	50	—	317R4		—	347300	369800	114700	311
2.3	107690	1.2	624	18	316L4		—	—	270000	300300	114600	304
2.3	107510	0.9	623	40	—	315R4		—	162300	190500	68700	297
2.3	107510	1.1	623	45	—	316R4		—	269800	300100	114500	305
2.4	106687	1.7	619	18	317L4		—	—	346100	368500	114200	308
2.4	105507	2.5	612	22	318L4		—	—	432800	441700	151800	316
2.5	102558	2.6	595	110	—	318R4(C)		—	429100	437900	150300	317
2.5	101910	1	591	18	315L4		—	—	159700	187500	67500	296
2.5	101910	1.2	591	18	316L4	—	—	—	265500	295300	112500	304
2.6	97611	1.3	566	18	316L4	—	—	—	262100	291500	110900	304
2.6	95150	1.8	552	18	317L4	—	—	—	334400	356100	110000	310
2.7	92009	1.1	533	18	315L4	—	—	—	154900	181800	65200	296
2.7	92009	1.3	533	18	316L4	—	—	—	257500	286400	108700	304
2.8	90587	1.1	525	40	—	315R4	—	—	154100	181000	64900	297
2.8	90587	1.3	525	45	—	316R4	—	—	256300	285000	108200	305





P ₁ = 30 kW n ₁ =1500 rpm												
n2 min ⁻¹	M2 Nm	S	i	Pt kW			Rn ₂ [N]					 Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
2.8	89687	1.8	520	50	—	317R4	—	—	328500	349800	107800	309
2.8	88899	2.8	515	22	318L4		—	—	411100	419500	143300	316
2.9	86415	2.9	501	110	—	318R4(C)	—	—	407600	416000	142000	317
2.9	86120	2.9	499	90	—	318R4(B)			407200	415600	141800	317
3	85299	0.9	495	15	314L4		—	—	151400	177700	63600	call
3	85016	2	493	18	317L4		—	—	323300	344200	105900	310
3	83966	1.2	487	18	315L4		—	—	150700	176900	63300	296
3	83966	1.4	487	18	316L4		—	—	250500	278600	105500	304
3.2	79018	1	458	15	314 L4		—	—	148000	173700	62000	call
3.3	77409	2.1	449	18	317 L4		—	—	314300	334700	102700	310
3.3	76328	1.5	443	45	—	316R4		—	243500	270800	102200	304
3.3	76060	1.3	441	18	315 L4		—	—	146300	171700	61200	296
3.3	76060	1.5	441	18	316 L4		—	—	243200	270500	102100	304
3.3	75570	2.1	438	50	—	317R4	—	—	312100	332300	101800	311
3.6	70587	1.4	409	40	—	315R4	—	—	143000	167900	59700	297
3.6	70587	1.6	409	45	—	316R4	—	—	237800	264500	99600	304
3.7	68808	2.2	399	50	—	317R4	—	—	303400	323100	98700	311
3.8	66933	1.2	388	15	314L4		—	—	140800	165300	58700	call
4	63746	1.5	370	18	315L4		—	—	138700	162900	57700	296
4	63746	1.7	370	18	316L4		—	—	230600	256500	96200	304
4.1	62139	2.5	360	18	317L4		—	—	294300	313300	95400	310
4.2	59476	1.6	345	40	—	315R4		—	135900	159500	56400	297
4.2	59476	1.8	345	45	—	316R4		—	225900	251200	94000	305
4.3	57977	2.2	336	50	—	317R4		—	288200	306900	93200	311
4.4	56677	1.9	329	18	316 L4		—	—	222700	247600	92500	305
4.6	54166	1.4	314	15	314 L4		—	—	132100	155100	54700	call
4.7	53453	2.7	310	18	317 L4		—	—	281300	299500	90700	308
4.8	52138	1.9	302	18	315 L4		—	—	130600	153300	54000	294
4.8	52138	2	302	18	316 L4		—	—	217100	241500	90000	302
5.1	49847	2.1	289	45	—	316R4	—	—	214200	238300	88700	303
5.4	46345	1.8	269	40	—	315R4	—	—	126100	148000	51900	297
5.4	46345	2.2	269	45	—	316R4	—	—	209600	233100	86500	305
5.6	45177	2.2	262	50	—	317R4	—	—	267500	284800	85800	311
5.7	44164	2.2	256	18	316 L4		—	—	206600	229800	85100	304
5.8	45008	1	252	18	317 L3		—	—	115900	137100	45200	310
5.8	45008	2.7	252	35	313 L3		—	—	264500	281600	84700	288
6.1	42931	1.5	241	30	315 L3		—	—	122000	143200	50000	296
6.1	42719	1.2	240	25	314 L3		—	—	121800	143000	50000	call
6.5	38842	2	225	40	—	315R4	—	—	119600	140400	48900	296
6.5	38842	2.4	225	45	—	316R4	—	—	198800	221100	81600	304
6.7	37862	2.1	220	50	—	317R4	—	—	253600	270100	80900	311
6.8	37014	2.5	215	18	316L4		—	—	195900	217900	80300	304
7	37207	1.2	209	18	313L3		—	—	109400	129500	42400	288





P ₁ = 30 kW n ₁ =1500 rpm													
n2 min ⁻¹	M2 Nm	S	i	Pt kW			Rn ₂ [N]					 Page	
							MC	MZ	HC/PC	HZ/PZ	FZ		
7.1	36930	2.2	207	30	315L3		—	—	116600	136900	47600	296	
7.1	36748	1.7	206	25			314L3	—	—	116400	136700	47500	call
7.2	36173	0.9	203	18			311L3	—	—	86000	107200	33400	280
7.5	34530	1.4	194	18			313L3	—	—	107000	126700	41400	288
7.6	34097	0.9	191	18			311L3	—	—	86300	107500	33500	280
8	32462	1.2	182	18	313L3		—	—	105100	124300	40500	288	
8.3	31350	1.4	176	18	313L3		—	—	104000	123000	40100	288	
8.4	31117	2.5	174	30	315L3		—	—	110700	130000	45000	296	
8.4	30963	2	174	25	314L3		—	—	110600	129800	44900	call	
8.5	30479	1.1	171	18	311L3		—	—	83400	103900	32200	280	
8.8	29429	2.7	165	30	315L3		—	—	108900	127900	44100	296	
8.8	29429	2.8	165	35	316L3		—	—	181100	201400	73500	304	
8.9	29283	2.2	164	25	314L3		—	—	108700	127700	44100	call	
9	29095	1.6	163	18	313L3		—	—	101700	120300	39100	288	
9.1	28730	1.1	161	18	311L3		—	—	82000	102100	31600	280	
9.3	28020	1.9	157	55	—	314R3(C)	—	—	107300	126000	43400	call	
9.3	28020	2.3	157	90	—	315R3(C)	—	—	107300	126000	43400	297	
9.5	27289	1.4	153	40	—	313R3	—	—	99700	118000	38200	280	
9.7	26968	1.7	151	18	313L3		—	—	99400	117600	38100	288	
9.9	26219	1.2	147	18	311L3		—	—	79700	99300	30700	280	
10	26159	1	147	40	—		311R3	—	—	79700	99300	30600	281
10.2	25505	1.7	143	18	313L3		—	—	97700	115700	37400	288	
10.6	24674	2.6	138	25	314L3		—	—	103300	121300	41600	call	
10.8	24103	2.5	135	55	—	314R3(C)	—	—	102600	120400	41300	call	
10.8	24052	1.8	135	18	313L3		—	—	96000	113600	36700	288	
11	23750	1.3	133	18	311L3		—	—	77400	96400	29700	280	
11.5	22671	1.8	127	40	—		313R3	—	—	94300	111600	36000	289
11.6	22387	1.3	126	18	311L3		—	—	76100	94700	29100	280	
11.8	22041	1.4	124	40	—		311R3	—	—	75700	94300	28900	281
12.1	21490	2	120	18	313L3		—	—	92800	109900	35300	288	
12.3	21225	0.9	119	18	310L3		—	—	63300	79600	28600	272	
12.7	20430	1.4	115	18	311L3		—	—	74000	92200	28200	280	
12.8	20309	2.5	114	55	—		314R3(C)	—	—	97400	114400	39000	call
12.9	20240	2.4	113	55	—		314R3	—	—	97300	114300	38900	call
12.9	20240	3	113	75	—	315R3(B)	—	—	97300	114300	38900	297	
13.2	19701	1	110	18	310L3		—	—	60700	76300	27200	272	
13.3	19567	2.1	110	18	313L3		—	—	90300	106800	34200	288	
13.5	19226	3	108	25	314L3		—	—	95900	112500	38300	call	
13.6	19207	2.6	108	55	—		314R3(C)	—	—	95800	112500	38300	call
13.6	19102	2	107	40	—		313R3	—	—	89600	106000	34000	289
14	18572	1.5	104	40	—	311R3	—	—	71900	89600	27300	281	





P₁ = 30 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
18.2	14327	1.2	80.3	18	310L3		—	—	56300	70800	25100	272
18.6	13966	2.7	78.3	18	313L3		—	—	81600	96500	30600	288
18.9	13790	1.8	77.3	18	311L3		—	—	65800	81900	24800	280
19.8	13179	1.3	73.9	18	310L3		—	—	54900	69000	24400	272
20.3	12847	2.8	72	18	313L3		—	—	79600	94100	29800	288
20.5	12686	2	71.1	18	311L3		—	—	64100	79900	24100	280
20.9	12475	2.1	69.9	40	—	313R3	—	—	78900	93300	29500	289
21.5	12128	2	68	40	—	311R3	—	—	63300	78800	23700	281
22.8	11420	2.1	64	40	—	313R3	—	—	76800	90900	28600	289
23.1	11276	2.1	63.2	40	—	311R3	—	—	61900	77100	23100	281
23.3	11164	1.5	62.6	18	310L3		—	—	52200	65700	23100	272
24.2	10746	2.2	60.2	18	311L3		—	—	61000	76000	22800	280
27.2	9571	2.1	53.7	40	—	313R3	—	—	72800	86200	27000	289
27.5	9456	1.7	53	18	310L3		—	—	49700	62500	21800	272
27.6	9451	2.1	53	40	—	311R3	—	—	58700	73100	21800	281
28.9	9006	2.5	50.5	18	311L3		—	—	57900	72100	21500	280
31	8610	1	46.7	18	307L2		16700	20900	39700	52100	14500	256
31	8610	1.5	46.7	18	309L2		—	—	40400	52100	11600	264
31	8610	1.6	46.7	22	310L2		—	—	47800	60200	20900	272
38	7153	2.8	38.8	26	311L2		—	—	53500	66600	19700	280
38	7117	1.2	38.6	18	307L2		15600	19600	37500	49200	13600	256
38	7117	1.8	38.6	18	309L2		—	—	38100	49200	10900	264
38	7117	1.9	38.6	22	310L2		—	—	45200	56800	19600	272
38	7082	0.9	38.4	13	306L2		13700	15600	34100	39700	10300	248
44	6092	1.1	33.1	13	306L2		13400	15100	33300	38800	10000	248
45	5997	1.6	32.6	18	307L2		14800	18500	35700	46700	12800	256
45	5997	2.2	32.6	18	309L2		—	—	36200	46700	10300	264
45	5997	2.2	32.6	22	310L2		—	—	42900	54000	18600	272
48	5653	2.4	30.7	22	310L2		—	—	42200	53000	18200	272
48	5653	1.7	30.7	18	307L2		14500	18200	35000	45900	12600	256
51	5241	1.3	28.4	13	306L2		12700	14400	31800	37100	9550	248
52	5159	1.8	28	18	307L2		14100	17600	34100	44700	12200	256
52	5159	2.4	28	18	309L2		—	—	34600	44700	9770	264
52	5159	2.5	28	22	310L2		—	—	41000	51600	17600	272
55	4855	1.3	26.4	13	306L2		12400	14000	31100	36200	9310	248
58	4673	2.7	25.4	22	310L2		—	—	39800	50100	17100	272
58	4673	1.9	25.4	18	307L2		13600	17100	33100	43400	11800	256
58	4673	2.2	25.4	18	309L2		—	—	33600	43400	9460	264
58	4668	2.6	25.3	55	—	310R2	—	—	39800	50100	17100	272
62	4337	2.1	23.5	35	—	309R2	—	—	32900	42400	9220	265
62	4337	1.8	23.5	35	—	307R2	13300	16600	32400	42400	11500	257
64	4176	1.5	22.7	13	306L2		11800	13400	29700	34600	8850	248
67	4020	2.2	21.8	18	307L2		12900	16200	31600	41400	11200	256





P₁ = 30 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
67	4020	2.5	21.8	18	309L2		—	—	32100	41400	8990	264
68	3934	3	21.3	55	—	310R2(C)	—	—	37800	47600	16100	273
74	3654	2.1	19.8	35	—	309R2	—	—	31200	40300	8710	265
74	3654	2.1	19.8	35	—	307R2	12500	15700	30700	40300	10900	257
81	3328	1.8	18.1	13	306L2		10900	12400	27800	32300	8210	248
84	3203	2.5	17.4	18	307L2		12000	15000	29500	38700	10400	257
94	2847	2.1	15.5	35	—	309R2	—	—	29000	37400	8020	265
94	2847	2.1	15.5	35	—	307R2	11500	14500	28500	37400	10000	257
95	2819	1.8	15.3	13	306L2		10300	11700	26400	30800	7770	248
99	2713	2.8	14.7	18	307L2		11300	14200	28100	36800	9860	256
113	2388	2	13	13	306L2		9780	11100	25100	29300	7350	246
113	2386	2.1	13	35	—	309R2	—	—	27500	35400	7560	265
113	2386	2.1	13	35	—	307R2	10900	13600	27000	35400	9450	257
195	1426	1.6	7.5	13	305L1		6550	7560	13000	15700	4200	240
195	1426	2.9	7.5	18	306L1		8150	9240	21300	24800	6120	248
222	1249	1.5	6.57	12	304L1		6260	7230	12500	15100	4020	call
235	1179	1.2	6.2	11	303L1		6140	7090	12300	14800	3940	232
235	1179	2.2	6.2	13	305L1		6140	7090	12300	14800	3940	240
274	1014	1.5	5.33	11	303L1		5840	6750	11800	14200	3750	232
274	1014	2	5.33	12	304L1		5840	6750	11800	14200	3750	call
274	1014	2.5	5.33	13	305L1		5840	6750	11800	14200	3750	240
344	808	1.8	4.25	11	303L1		5420	6250	11000	13200	3480	232
344	808	2.4	4.25	12	304L1		5420	6250	11000	13200	3480	call
406	684	2	3.6	13	303L1		5420	6250	11000	13200	3480	232
406	684	2.7	3.6	18	304L1		6750	7640	18000	21000	5070	call

P₁ = 37 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
1.1	292061	1.2	1389	30	319L4		—	—	636100	700800	199500	322
1.2	251235	1.4	1195	30	319L4		—	—	608000	669900	189700	322
1.3	235882	2.2	1122	35	321L4		—	—	731900	867900	1114500	328
1.4	222745	1.2	1059	22	318L4		—	—	503000	520700	182200	316
1.5	211689	1.6	1007	30	319L4		—	—	577600	636300	179200	322
1.6	198752	2.9	945	35	321 L4		—	—	695300	824500	1052600	328
1.6	191757	1.8	912	30	319 L4		—	—	560700	617700	173400	322
1.6	191609	1.4	911	22	318 L4		—	—	487700	497700	173300	316
1.6	190621	1.8	906	115	—	319R4(C)	—	—	559700	616600	173000	323
1.7	178877	2	850	30	319 L4		—	—	549100	605000	169400	322





P₁ = 37 kW n₁=1500 rpm													
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]						Page
							MC	MZ	HC/PC	HZ/PZ	FZ		
1.9	163975	2	780	115	—	319R4(C)	—	—	535000	589400	164500	323	
1.9	161448	1.7	768	22	318L4		—	—	463300	472800	163700	316	
2	152688	1.7	726	22	318L4		—	—	455600	464900	160700	316	
2.1	150721	2.4	717	30	319L4		—	—	521600	574700	160000	322	
2.1	145380	1.8	691	110	—	318R4(C)	—	—	448900	458100	158100	317	
2.2	142543	2.5	678	30	319L4		—	—	513000	565100	157000	322	
2.3	138164	2.3	657	115	—	319R4(C)		—	508200	559900	155400	323	
2.3	137692	2.3	655	95	—	319R4(B)		—	507700	559300	155200	329	
2.3	136035	1.9	647	22	318L4		—	—	440100	449100	154600	316	
2.4	128654	2	612	22	318L4		—	—	432800	441700	151800	316	
2.5	125058	2.1	595	110	—	318R4(C)		—	429100	437900	150300	317	
2.6	120105	2.9	571	30	319L4		—	—	487300	536800	148300	322	
2.6	118445	2.6	563	95	—	319R4(B)		—	485200	534600	147600	323	
2.7	116749	2.6	555	115	—	319R(C)		—	483100	532300	146900	323	
2.8	110414	2.7	525	115	—	319R4(C)		—	475100	523500	144200	323	
2.9	108403	2.3	515	22	318L4		—	—	411100	419500	143300	316	
3	105373	2.4	501	110	—	318R4(C)		—	407600	416000	142000	317	
3	105013	2.4	499	90	—	318R4(B)		—	407200	415600	141800	317	
3.1	100250	2.5	477	22	318L4		—	—	401600	409800	139700	316	
3.1	99656	2.5	474	110	—	318R4(C)		—	400900	409100	139400	317	
3.4	90334	2.7	430	90	—	318R4(B)		—	389200	397200	134900	317	
3.5	88839	2.7	422	22	318L4		—	—	387300	395200	134100	316	
3.7	84470	2.8	402	22	318L4		—	—	381500	389300	131900	316	
3.7	83969	2.8	399	110	—	318R4(C)		—	380800	388600	131600	317	
5.9	54883	2.2	252	35	317L3		—	—	264500	281600	84700	310	
6.1	52350	1.2	241	30	315L3		—	—	122000	143200	50000	296	
6.2	52091	1	240	25	314L3		—	—	121800	143000	50000	call	
7.1	45032	1.8	207	30	315L3		—	—	116600	136900	47600	296	
7.2	44810	1.4	206	25	314L3		—	—	116400	136700	47500	call	
8.5	37944	2.1	174	30	315L3		—	—	110700	130000	45000	296	
8.5	37756	1.7	174	25	314L3		—	—	110600	129800	44900	call	
9	35885	2.2	165	30	315L3		—	—	108900	127900	44100	296	
9	35885	2.3	165	35	316L3		—	—	181100	201400	73500	304	
9	35708	1.8	164	25	314L3		—	—	108700	127700	44100	call	
9.4	34167	1.5	157	55	—	314R3(C)		—	107300	126000	43400	call	
9.4	34167	1.9	157	90	—	315R3(C)		—	107300	126000	43400	297	
10.6	30236	2.7	139	30	315L3		—	—	103500	121500	41700	296	
10.6	30236	2.7	139	35	316L3		—	—	172000	191300	69500	302	
10.7	30087	2.2	138	25	314L3		—	—	103300	121300	41600	call	
11	29391	2.1	135	55	—	314R3(C)		—	102600	120400	41300	call	
11	29391	2.6	135	90	—	315R3(C)		—	102600	120400	41300	297	
13	24765	2.1	114	55	—	314R3(C)		—	97400	114400	39000	call	
13	24765	2.6	114	90	—	315R3(C)		—	97400	114400	39000	297	





P₁ = 37 kW n₁=1500 rpm												
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
13	24680	1.9	113	55	—	314R3(B)	—	—	97300	114300	38900	call
13	24680	2.4	113	75	—	315R3(B)	—	—	97300	114300	38900	297
13.7	23444	2.4	108	25	314L3	—	—	—	95900	112500	38300	call
13.7	23421	2.1	108	55	—	314R3(C)	—	—	95800	112500	38300	call
13.7	23421	2.7	108	90	—	315R3(C)	—	—	95800	112500	38300	297
15.2	21230	2.6	97.6	55	—	314R3(B)	—	—	93000	109200	37000	call
16	20167	2.7	92.7	25	314L3	—	—	—	91600	107600	36400	call
16.3	19734	2.4	90.7	55	—	314R3(C)	—	—	91000	106900	36200	call
16.3	19734	3	90.7	90	—	315R3(C)	—	—	91000	106900	36200	297
18	17889	2.9	82.3	55	—	314R3(B)	—	—	88400	103800	35000	call
20.9	15378	2.9	70.7	55	—	314R3(C)	—	—	84500	99200	33300	call
32	10499	1.4	46.7	22	310L2	—	—	—	47800	60200	20900	273
38	8722	2.3	38.8	26	311L2	—	—	—	53500	66600	19700	280
38	8679	1.6	38.6	22	310L2	—	—	—	45200	56800	19600	272
45	7349	2.7	32.7	26	311L2	—	—	—	50800	63300	18600	280
45	7313	1.8	32.6	22	310L2	—	—	—	42900	54000	18600	272
48	6893	1.9	30.7	22	310L2	—	—	—	42200	53000	18200	272
53	6290	2	28	22	310L2	—	—	—	41000	51600	17600	272
58	5698	2.2	25.4	22	310L2	—	—	—	39800	50100	17100	272
58	5693	2.1	25.3	55	—	310R2(C)	—	—	39800	50100	17100	273
68	4902	2.5	21.8	22	310L2	—	—	—	38100	47900	16200	272
69	4796	2.5	21.3	55	—	310R2(C)	—	—	37800	47600	16100	273
81	4112	2.7	18.3	55	—	310R2(B)	—	—	36100	45400	15300	273
85	3906	2.9	17.4	22	310L2	—	—	—	35600	44700	15100	272
89	3738	3	16.6	55	—	310R2(C)	—	—	35100	44100	14800	273
197	1739	2.4	7.5	18	306L1	—	8150	9240	21300	24800	6120	248
239	1437	2.9	6.2	18	306L1	—	7650	8670	20200	23500	5750	248

P₁ = 45 kW n₁=1500 rpm												
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
1.1	355606	1	1389	30	319L4	—	—	—	636100	700800	199500	322
1.2	327642	2.7	1279	50	323L4	—	—	—	—	—	1043200	call
1.2	305897	1.2	1195	30	319L4	—	—	—	608000	669900	189700	322
1.3	287204	1.8	1122	35	321L4	—	—	—	731900	867900	1114500	328
1.4	271209	1	1059	22	318L4	—	—	—	499800	510000	178100	316
1.5	257747	1.3	1007	30	319L4	—	—	—	577600	636300	179200	322
1.6	241996	2.4	945	35	321L4	—	—	—	695300	824500	1052600	328
1.6	233478	1.4	912	30	319L4	—	—	—	560700	617700	173400	322
1.6	233298	1.2	911	22	318L4	—	—	—	487700	497700	173300	316
1.6	232095	1.4	906	115	—	319R4(C)	—	—	559700	616600	173000	323





P₁ = 45 kW n₁=1500 rpm												
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
1.7	217796	1.7	850	30	319 L4		—	—	549100	605000	169400	322
1.9	203904	2.7	796	35	321 L4		—	—	660400	783200	994200	328
1.9	199651	1.7	780	115	—	319R4(C)	—	—	535000	589400	164500	323
1.9	196575	1.4	768	22	318 L4		—	—	463300	472800	163700	316
2	188568	2.9	736	35	321 L4		—	—	645100	765000	968700	328
2	187451	2.8	732	125	—	321R4(C)	—	—	644000	763700	966700	329
2	185909	1.4	726	22	318 L4		—	—	455600	464900	160700	316
2.1	183513	1.9	717	30	319 L4		—	—	521600	574700	160000	322
2.1	177011	1.5	691	110	—	318R4(C)	—	—	448900	458100	158100	317
2.2	173556	2	678	30	319 L4		—	—	513000	565100	157000	322
2.3	168225	1.9	657	115	—	319R4(C)	—	—	508200	559900	155400	323
2.3	167650	1.9	655	95	—	319R4(B)	—	—	507700	559300	155200	323
2.3	165633	1.6	647	22	318L4		—	—	440100	449100	154600	316
2.4	156646	1.7	612	22	318L4		—	—	432800	441700	151800	316
2.5	152268	1.7	595	110	—	318R4(C)	—	—	429100	437900	150300	317
2.6	146237	2.4	571	30	319L4		—		487300	536800	148300	323
2.6	144215	2.2	563	95	—	319R4(B)	—	—	485200	534600	147600	323
2.7	142150	2.2	555	115	—	319R4 (C)	—	—	483100	532300	146900	323
2.8	135239	2.5	528	30	319L4		—		476000	524400	144500	322
2.8	134437	2.2	525	115	—	319R4(C)	—	—	475100	523500	144200	323
2.9	131988	1.9	515	22	318L4		—		411100	419500	143300	316
3	128299	2	501	110	—	318R4(C)	—	—	407600	416000	142000	317
3	127861	2	499	90	—	318R4(B)	—	—	407200	415600	141800	317
3.1	122062	2	477	22	318L4		—		401600	409800	139700	316
3.1	121515	2.5	475	95	—	319R4(B)	—	—	460900	507800	139400	323
3.1	121338	2	474	110	—	318R4(C)	—	—	400900	409100	139400	317
3.3	113951	2.8	445	30	319L4		—		452100	498100	136500	322
3.3	113276	2.5	442	115	—	319R4(C)	—	—	451300	497200	136200	323
3.4	109988	2.2	430	90	—	318R4(B)	—	—	389200	397200	134900	317
3.5	108168	2.2	422	22	318L4		—	—	387300	395200	134100	316
3.7	102848	2.3	402	22	318L4		—	—	381500	389300	131900	316
3.7	102239	2.3	399	110	—	318R4(C)	—	—	380800	388600	131600	317
4.1	92675	2.5	362	90	—	318 R4(B)	—	—	369700	377300	127400	317
4.3	88267	2.9	345	115	—	319 R4(C)	—	—	418800	461400	125400	323
4.3	87647	2.6	342	90	—	318 R4(B)	—	—	363600	371000	125100	317
4.4	86197	2.6	337	22	318 L4		—	—	361800	369200	124400	316
4.7	80141	2.8	313	22	318 L4		—	—	353900	361200	121400	316
4.8	79666	2.8	311	110	—	318 R4(C)	—	—	353300	360600	121100	317
5.1	73851	2.9	288	90	—	318 R4(B)	—	—	345400	352500	118100	317
5.9	66824	1.8	252	35	317 L3		—	—	264500	281600	84700	310
6.1	63740	1	241	30	315 L3		—	—	122000	143200	50000	296
7	56305	2.5	213	35	317 L3		—	—	251200	267500	80000	310
7.1	54830	1.5	207	30	315 L3		—	—	116600	136900	47600	296





P₁ = 45 kW n₁=1500 rpm												
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
7.1	54830	1.5	207	30	315 L3		—	—	116600	136900	47600	296
7.2	54559	1.2	206	25	314L3		—	—	116400	136700	47500	call
8.3	47442	2.9	179	35	317L3		—	—	238700	254100	75600	310
8.5	46199	1.7	174	30	315L3		—	—	110700	130000	45000	296
8.5	45971	1.4	174	25	314L3		—	—	110600	129800	44900	call
8.9	43874	2.7	166	35	317L3		—	—	233100	248200	73600	310
9	43692	1.8	165	30	315L3		—	—	108900	127900	44100	296
9	43692	1.9	165	35	316L3		—	—	181100	201400	73500	310
9	43614	2.7	165	100	—	317R3(C)	—	—	232700	247800	73500	311
9	43477	1.5	164	25	314L3		—	—	108700	127700	44100	call
9.4	41601	1.2	157	55	—	314R3(C)	—	—	107300	126000	43400	call
9.4	41601	1.6	157	90	—	315R3(C)	—	—	107300	126000	43400	297
10.6	36815	2.2	139	30	315L3		—	—	103500	121500	41700	296
10.6	36815	2.2	139	35	316L3		—	—	172000	191300	69500	304
10.7	36633	1.8	138	25	314L3		—	—	103300	121300	41600	call
11	35786	1.7	135	55	—	314R3(C)	—	—	102600	120400	41300	call
11	35786	2.1	135	90	—	315R3(C)	—	—	102600	120400	41300	297
12.6	31020	2.6	117	35	316L3		—	—	163400	181700	65600	304
13	30153	1.7	114	55	—	314R3(C)	—	—	97400	114400	39000	call
13	30153	2.1	114	90	—	315R3(C)	—	—	97400	114400	39000	297
13	30050	1.6	113	55	—	314R3(B)	—	—	97300	114300	38900	call
13	30050	2	113	75	—	315R3(B)	—	—	97300	114300	38900	297
13.7	28687	2.5	108	30	315L3		—	—	96000	112700	38400	297
13.7	28687	2.6	108	35	316L3		—	—	159600	177500	63900	296
13.7	28545	2	108	25	314L3		—	—	95900	112500	38300	call
13.7	28517	1.7	108	55	—	314R3(C)	—	—	95800	112500	38300	call
13.7	28517	2.2	108	90	—	315R3(C)	—	—	95800	112500	38300	295
13.7	28517	2.5	108	90	—	316R3(C)	—	—	159300	177200	63800	303
15.2	25850	2.1	97.6	55	—	314R3(B)	—	—	93000	109200	37000	call
15.2	25850	2.7	97.6	75	—	315R3(B)	—	—	93000	109200	37000	297
16	24555	2.2	92.7	25	314L3		—	—	91600	107600	36400	call
16.2	24171	2.8	91.3	30	315L3		—	—	91200	107100	36200	296
16.2	24171	3	91.3	35	316L3		—	—	151600	168600	60400	304
16.3	24028	2	90.7	55	—	314R3(C)	—	—	91000	106900	36200	call
16.3	24028	2.5	90.7	90	—	315R3(C)	—	—	91000	106900	36200	297
16.3	24028	2.9	90.7	90	—	316R3(C)	—	—	151300	168300	60300	305
18	21781	2.4	82.3	100	—	314R3(B)	—	—	194000	206600	60100	call
19	20599	2.5	77.8	55	—	314R3(B)	—	—	88400	103800	35000	call
20	19567	2.6	73.9	55	314L3		—	—	86900	102000	34300	call
20.9	18723	2.3	70.7	35	—	314R3(C)	—	—	143800	159900	56900	call
20.9	18723	2.9	70.7	25	—	315R3(C)	—	—	85600	100500	33800	297
22.6	17356	2.9	65.5	30	—	314R3(B)	—	—	84600	99300	33300	call
23.6	16575	2.9	62.6	35	314L3		—	—	140700	156500	55600	call





P₁ = 45 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
29	13524	2.8	51.1	55	—	314R3(B)	—	—	76600	89900	29800	call
32	12783	1.1	46.7	22	310L2		—	—	47800	60200	20900	272
37	11078	2.7	40.5	30	313L2		—	—	66900	79200	24600	288
38	10620	1.9	38.8	26	311L2		—	—	53500	66600	19700	280
38	10567	1.3	38.6	22	310L2		—	—	45200	56800	19600	272
45	8948	2.3	32.7	26	311L2		—	—	50800	63300	18600	280
45	8904	1.5	32.6	22	310L2		—	—	42900	54000	18600	272
48	8393	1.6	30.7	22	310L2		—	—	42200	53000	18200	272
53	7659	1.7	28	22	310L2		—	—	41000	51600	17600	272
54	7539	2.5	27.6	26	311L2		—	—	48300	60100	17600	280
58	6972	2.6	25.5	26	311L2		—	—	47100	58700	17100	280
58	6938	1.8	25.4	22	310L2		—	—	39800	50100	17100	272
58	6931	1.8	25.3	55	—	310R2(C)	—	—	39800	50100	17100	273
58	6931	2.5	25.3	90	—	311R2(C)	—	—	47100	58600	17100	281
68	5968	2	21.8	22	310 L2		—	—	38100	47900	16200	272
69	5875	3	21.5	26	311 L2		—	—	44800	55800	16200	380
69	5840	2	21.3	55	—	310R2(C)	—	—	37800	47600	16100	373
69	5840	2.9	21.3	90	—	311R2(C)	—	—	44700	55700	16100	281
81	5007	2.2	18.3	55	—	310R2(B)	—	—	36100	45400	15300	273
85	4756	2.4	17.4	22	310 L2		—	—	35600	44700	15100	272
89	4551	2.5	16.6	55	—	310R2(C)	—	—	35100	44100	14800	273
96	4218	2.5	15.4	55	—	310R2(B)	—	—	34300	43100	14500	273
100	4028	2.7	14.7	22	310 L2		—	—	33800	42600	14200	272
197	2117	1.9	7.5	18	306 L1		8150	9240	21300	24800	6120	348
239	1750	2.4	6.2	18	306 L1		7650	8670	20200	23500	5750	348
278	1505	2.7	5.33	18	306 L1		7280	8240	19300	22400	5470	348

P₁ = 55 kW n₁=1500 rpm												
n₂ min⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
1.2	399701	2.2	1279	50	323L4	—	—	—	—	—	1043200	call
1.2	373174	0.9	1195	30	319L4	—	—	—	595600	656200	185400	320
1.3	350369	1.5	1122	35	321L4	—	—	—	731900	867900	1114500	326
1.3	343828	2.5	1101	50	323L4	—	—	—	—	—	992100	call
1.4	320273	2.7	1025	50	323L4	—	—	—	—	—	968900	call
1.5	314433	1.1	1007	30	319L4		—	—	577600	636300	179200	322
1.6	295218	2	945	35	321L4		—	—	695300	824500	1052600	328
1.6	284828	1.2	912	30	319L4		—	—	560700	617700	173400	322
1.6	284607	1	911	22	318L4		—	—	477700	487500	169400	316
1.6	283140	1.2	906	115	—	319R4(C)	—	—	559700	616600	173000	323





P ₁ = 55 kW n ₁ =1500 rpm												
n2 min ⁻¹	M2 Nm	S	i	Pt kW			Rn ₂ [N]					 Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
1.2	399701	2.2	1279	50	323 L4		—	—	—	—	1043200	call
1.2	373174	0.9	1195	30	319 L4		—	—	595600	656200	185400	322
1.3	350369	1.5	1122	35	321 L4		—	—	731900	867900	1114500	328
1.3	343828	2.5	1101	50	323 L4		—	—	—	—	992100	call
1.4	320273	2.7	1025	50	323 L4		—	—	—	—	968900	call
1.5	314433	1.1	1007	30	319 L4		—	—	577600	636300	179200	322
1.6	295218	2	945	35	321 L4		—	—	695300	824500	1052600	328
1.6	284828	1.2	912	30	319 L4		—	—	560700	617700	173400	322
1.6	284607	1	911	22	318 L4		—	—	477700	487500	169400	316
1.6	283140	1.2	906	115	—	319R4(C)	—	—	559700	616600	173000	323
1.7	265696	1.4	850	30	319L4		—	—	549100	605000	169400	322
1.9	248748	2.2	796	35	321L4		—	—	660400	783200	994200	328
1.9	243561	1.4	780	115	—	319R4(C)	—	—	535000	589400	164500	323
1.9	239808	1.1	768	22	318L4		—	—	463300	472800	163700	316
2	230040	2.4	736	35	321L4		—	—	645100	765000	968700	328
2	228677	2.3	732	125	—	321R4(C)	—	—	644000	763700	966700	329
2	226796	1.2	726	22	318L4		—	—	455600	464900	160700	316
2.1	223874	1.6	717	30	319L4		—	—	521600	574700	160000	322
2.1	215941	1.2	691	110	—	318R4(C)	—	—	448900	458100	158100	317
2.2	211727	1.7	678	30	319L4		—	—	513000	565100	157000	322
2.3	205223	1.6	657	115	—	319R4(C)	—	—	508200	559900	155400	323
2.3	204522	1.6	655	95	—	319R4(B)	—	—	507700	559300	155200	322
2.3	202060	1.3	647	22	318L4		—	—	440100	449100	154600	316
2.4	192681	2.6	617	125	—	321R4(C)	—	—	611700	725400	913100	329
2.4	191110	2.7	612	35	321L4		—	—	610200	723600	910600	328
2.4	191097	1.4	612	22	318L4		—	—	432800	441700	151800	316
2.5	185756	1.4	595	110	—	318R4(C)	—	—	429100	437900	150300	317
2.6	178399	1.9	571	30	319L4		—	—	487300	536800	148300	322
2.6	175933	1.8	563	95	—	319R4(B)	—	—	485200	534600	147600	323
2.7	173413	1.8	555	115	—	319R4(C)	—	—	483100	532300	146900	323
2.8	165181	2.9	529	105	—	321R4(B)	—	—	584100	692700	867400	329
2.8	164982	2	528	30	319L4		—	—	476000	524400	144500	322
2.8	164004	1.8	525	115	—	319R4(C)	—	—	475100	523500	144200	323
2.9	161017	1.6	515	22	318L4		—	—	411100	419500	143300	316
2.9	160074	2.6	512	125	—	321R4(C)	—	—	578600	686200	858400	329
3	156517	1.6	501	110	—	318R4(C)	—	—	407600	416000	142000	317
3	155982	1.6	499	90	—	318R4(B)	—	—	407200	415600	141800	317
3.1	150141	2.6	481	125	—	321R4(C)	—	—	567600	673100	840200	329
3.1	148907	1.7	477	22	318L4		—	—	401600	409800	139700	316
3.1	148240	2	475	95	—	319R4(B)	—	—	460900	507800	139400	323
3.1	148024	1.7	474	110	—	318R4(C)	—	—	400900	409100	139400	317
3.3	139181	2.9	446	105	—	321R4(B)	—	—	554800	658000	819300	329





P₁ = 55 kW n₁=1500 rpm												
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
3.3	139012	2.3	445	30	319L4		—	—	452100	498100	136500	322
3.3	138189	2	442	115	—	319R4(C)	—	—	451300	497200	136200	323
3.4	134178	1.8	430	90	—	318R4(B)	—	—	389200	397200	134900	317
3.5	131958	1.8	422	22	318L4		—	—	387300	395200	134100	316
3.7	125468	1.9	402	22	318L4		—	—	381500	389300	131900	316
3.7	125263	2.5	401	95	—	319R4(B)	—	—	438200	482800	131800	323
3.7	124733	2.6	399	125	—	321R4(C)	—	—	536900	636700	789900	329
3.7	124724	1.9	399	110	—	318R4(C)	—	—	380800	388600	131600	316
3.9	118466	2.6	379	95	—	319R4(B)	—	—	430900	474800	129400	323
4	115627	3	370	105	—	321R4(B)	—	—	524800	622400	770200	329
4.1	113058	2	362	90	—	318R4(B)	—	—	369700	377300	127400	317
4.3	108452	3	347	105	—	321R4(B)	—	—	514800	610500	753900	319
4.3	108321	2.8	347	30	319L4		—	—	419500	462200	125600	322
4.3	107679	2.4	345	115	—	319R4(C)	—	—	418800	461400	125400	323
4.3	106923	2.1	342	90	—	318R4(B)	—	—	363600	371000	125100	317
4.4	105154	2.1	337	22	318L4		—	—	361800	369200	124400	316
4.6	99819	2.9	320	95	—	319R4(B)	—	—	409400	451000	122200	323
4.7	97767	2.3	313	22	318L4		—	—	353900	361200	121400	316
4.8	97188	2.3	311	110	—	318R4(C)	—	—	353300	360600	121100	317
4.8	95694	2.6	306	125	—	321R4(C)	—	—	495900	588000	723100	329
5.1	90099	2.9	288	105	—	321R4(B)	—	—	487000	577500	708700	329
5.1	90093	2.4	288	90	—	318R4(B)	—	—	345400	352500	118100	317
5.6	81938	2.6	262	22	318L4		—	—	335700	342600	114400	316
5.9	81520	1.5	252	35	317L3		—	—	471100	558700	683100	316
5.9	77781	2.9	249	95	—	319R4(B)	—	—	379800	418500	112500	323
6.6	70202	2.9	225	90	—	318R4(B)	—	—	320500	327000	108700	317
6.7	69124	3	221	105	—	321R4(B)	—	—	449800	533400	648800	329
7	68689	2.1	213	35	317L3		—	—	251200	267500	80000	310
7.1	66889	1.2	207	30	315L3		—	—	116600	136900	47600	296
7.2	66558	1	206	25	314L3		—	—	116400	136700	47500	call
8.3	57876	2.4	179	35	317L3		—	—	238700	254100	75600	310
8.5	56360	1.4	174	30	315L3		—	—	110700	130000	45000	296
8.5	56081	1.1	174	25	314L3		—	—	110600	129800	44900	call
8.9	53524	2.3	166	35	317L3		—	—	233100	248200	73600	310
9	53302	1.5	165	30	315L3		—	—	108900	127900	44100	296
9	53302	1.5	165	35	316L3		—	—	181100	201400	73500	304
9	53206	2.2	165	100	—	317R3(C)	—	—	232700	247800	73500	311
9	53039	1.2	164	25	314L3		—	—	108700	127700	44100	call
9.4	50751	1	157	55	—	314R3(C)	—	—	107300	126000	43400	call
9.4	50751	1.3	157	90	—	315R3(C)	—	—	107300	126000	43400	297
10.6	44912	1.8	139	30	315L3		—	—	103500	121500	41700	297
10.6	44912	1.8	139	35	316L3		—	—	172000	191300	69500	304
10.7	44831	2.6	139	100	—	317R3(C)	—	—	221000	235400	69400	311





P₁ = 55 kW n₁=1500 rpm												
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			R_{n2} [N]					↔ Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
10.7	44690	1.4	138	25	314L3		—	—	103300	121300	41600	call
10.8	44466	2.6	138	35	317L3		—	—	220500	234800	69200	310
11	43656	1.4	135	55	—	314R3(C)	—	—	102600	120400	41300	call
11	43656	1.7	135	90	—	315R3(C)	—	—	102600	120400	41300	297
12.4	38433	2.9	119	90	—	317R3(B)	—	—	211100	224700	65900	311
12.6	37842	2.1	117	35	316L3		—	—	163400	181700	65600	304
12.8	37466	2.9	116	35	317L3		—	—	209500	223000	65400	310
12.8	37244	2.6	115	100	—	317R3(C)	—	—	209100	222600	65300	311
13	36785	1.4	114	55	—	314R3(C)	—	—	97400	114400	39000	call
13	36785	1.8	114	90	—	315R3(C)	—	—	97400	114400	39000	297
13	36659	1.3	113	40	—	314R3(B)	—	—	95300	111900	38100	call
13	36659	1.6	113	75	—	315R3(B)	—	—	97300	114300	38900	297
13.7	34996	2	108	30	315L3		—	—	96000	112700	38400	296
13.7	34996	2.2	108	35	316L3		—	—	159600	177500	63900	304
13.7	34933	2.6	108	100	—	317R3(C)	—	—	205100	218400	63900	311
13.7	34823	1.6	108	25	314L3		—	—	95900	112500	38300	call
13.7	34789	1.4	108	55	—	314R3(C)	—	—	95800	112500	38300	call
13.7	34789	1.8	108	90	—	315R3(C)	—	—	95800	112500	38300	297
13.7	34789	2.1	108	90	—	316R3(C)	—	—	159300	177200	63800	305
14.8	32383	3	100	90	—	317R3(B)	—	—	200500	213500	62300	310
15.2	31535	1.7	97.6	40	—	314R3(B)	—	—	91100	107000	36200	call
15.2	31535	2.2	97.6	75	—	315R3(B)	—	—	93000	109200	37000	297
16	29956	1.8	92.7	25	314L3		—	—	91600	107600	36400	call
16.2	29487	2.3	91.3	30	315L3		—	—	91200	107100	36200	297
16.2	29487	2.4	91.3	35	316L3		—	—	151600	168600	60400	304
16.3	29313	1.6	90.7	55	—	314R3(C)	—	—	91000	106900	36200	call
16.3	29313	2	90.7	90	—	315R3(C)	—	—	91000	106900	36200	297
16.3	29313	2.4	90.7	90	—	316R3(C)	—	—	151300	168300	60300	305
16.5	29022	2.6	89.8	100	—	317R3(C)	—	—	194000	206600	60100	311
17.8	26903	3	83.3	90	—	317R3(B)	—	—	189700	201900	58600	311
18	26571	2	82.3	40	—	314R3(B)	—	—	86600	101600	34200	call
18	26571	2.5	82.3	75	—	315R3(B)	—	—	88400	103800	35000	297
18.9	25234	3	78.1	90	—	317R3(B)	—	—	186000	198100	57300	311
19	25129	2	77.8	40	—	314R3(B)	—	—	85100	100000	33600	call
19	25129	2.6	77.8	75	—	315R3(B)	—	—	86900	102000	34300	297
19	25129	2.6	77.8	75	—	316R3(B)	—	—	144500	160700	57200	305
19.3	24713	2.8	76.5	35	316L3		—	—	143800	159900	56900	304
20	23871	2.1	73.9	25	314L3		—	—	85600	100500	33800	call
20.8	22977	2.7	71.1	30	315L3		—	—	84600	99300	33300	296
20.8	22977	2.9	71.1	35	316L3		—	—	140700	156500	55600	304
20.9	22841	1.9	70.7	55	—	314R3(C)	—	—	84500	99200	33300	call
20.9	22841	2.4	70.7	90	—	315R3(C)	—	—	84500	99200	33300	296
20.9	22841	2.6	70.7	90	—	316R3(C)	—	—	140400	156200	55400	305





P₁ = 55 kW n₁=1500 rpm													
n₂ min ⁻¹	M₂ Nm	S	i	P_t kW			Rn₂ [N]						Page
							MC	MZ	HC/PC	HZ/PZ	FZ		
21.5	22265	2.6	68.9	100	—	317R3(C)	—	—	179200	190800	55000	311	call
22.6	21174	2.3	65.5	40	—	314R3(B)	—	—	80900	94900	31700		
22.6	21174	2.9	65.5	75	—	315R3(B)	—	—	82600	96900	32400	297	311
22.8	20963	2.9	64.9	90	—	317R3(B)	—	—	176000	187400	53900		
23.6	20220	2.4	62.6	25	314L3		—	—	81400	95600	31900	call	call
29	16499	2.3	51.1	40	—	314R3(B)	—	—	75000	88100	29200	call	
29	16499	2.9	51.1	75	—	315R3(B)	—	—	76600	89900	29800	297	311
29.7	16083	2.9	49.8	90	—	317R3(B)	—	—	162500	173000	49300		
32	15594	0.9	46.7	22	310L2		—	—	47800	60200	20900	272	288
37	13515	2.2	40.5	30	313L2		—	—	66900	79200	24600		
38	12955	1.5	38.8	26	311L2		—	—	53500	66600	19700	280	272
38	12891	1.1	38.6	22	310L2		—	—	45200	56800	19600		
38	12891	2.7	38.6	40	314L2		—	—	69000	81000	26600	call	288
44	11228	2.6	33.6	30	313L2		—	—	63300	74900	23100		
45	10916	1.9	32.7	26	311L2		—	—	50800	63300	18600	280	262
45	10862	1.2	32.6	22	310L2		—	—	42900	54000	18600		
48	10239	1.3	30.7	22	310L2		—	—	42200	53000	18200	262	288
52	9460	2.9	28.4	30	313L2		—	—	60100	71200	21800		
53	9344	1.4	28	22	310L2		—	—	41000	51600	17600	272	280
54	9198	2.1	27.6	26	311L2		—	—	48300	60100	17600		
56	8821	2.6	26.4	90	—	313R2(C)	—	—	58900	69700	21300	289	281
58	8506	2.2	25.5	26	311L2		—	—	47100	58700	17100		
58	8464	1.5	25.4	22	310L2		—	—	39800	50100	17100	272	281
58	8455	2.1	25.3	55	—	311R2(C)	—	—	39800	50100	17100		
67	7328	2.6	22	90	—	313R2(C)	—	—	47100	58600	17100	289	272
68	7281	1.7	21.8	22	310L2		—	—	38100	47900	16200		
69	7167	2.4	21.5	26	311L2		—	—	44800	55800	16200	280	281
69	7124	2.4	21.3	90	—	311R2(C)	—	—	44700	55700	16100		
78	6372	3	19.1	75	—	313R2(B)	—	—	53400	63200	19100	289	281
81	6108	2.6	18.3	75	—	311R2(B)	—	—	42700	53200	15300		
82	6007	2.8	18	26	311L2		—	—	42500	52900	15200	280	271
85	5802	1.9	17.4	22	310L2		—	—	35600	44700	15100		
88	5622	2.6	16.8	90	—	313R2(C)	—	—	51400	60900	18300	289	280
88	5585	2.9	16.7	26	311L2		—	—	41600	51800	14900		
89	5552	2.6	16.6	90	—	311R2(C)	—	—	41500	51700	14800	281	289
93	5293	3	15.9	75	—	313R2(B)	—	—	50500	59800	18000		
96	5146	3	15.4	75	—	311R2(B)	—	—	40500	50500	14500	281	272
100	4914	2.2	14.7	22	310L2		—	—	33800	42600	14200		
122	4061	3	12.2	75	—	313R2(B)	—	—	46700	55200	16400	289	281
123	4010	3	12	75	—	311R2(B)	—	—	37600	46900	13300		
197	2583	1.6	7.5	18	306L1		8150	9240	21300	24800	6120	248	256
238	2146	2.7	6.23	22	307L1		8520	10700	21700	28500	7400		





P ₁ = 55 kW n ₁ =1500 rpm												
n2 min ⁻¹	M2 Nm	S	i	Pt kW			Rn ₂ [N]					 Page
							MC	MZ	HC/PC	HZ/PZ	FZ	
239	2135	2	6.2	18	306L1		7650	8670	20200	23500	5750	248
278	1837	2.2	5.33	18	306L1		7280	8240	19300	22400	5470	248
348	1463	2.7	4.25	18	306L1		6750	7640	18000	21000	5070	248



RATING CHARTS FOR IN-LINE UNITS 3__L

نمودار طبقه بندی شده برای گیربکس های
مستقیم 3__L

301 L							Page 224	2460 Nm						
n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		R_{n2} [N]					$M_{2 \max}$ Nm
MC	MZ	HC/PC	HZ/PZ	FZ										
1500	301 L1	3.48	431	840	30	7.5	71-80-90-100-112-132		1610	1610	4970	5710	1060	3400
	301 L1	4.26	352	880	30	7.5	71-80-90-100-112-132		1720	1720	5280	6070	1130	3400
	301 L1	5.77	260	930	26	7.5	71-80-90-100-112-132		1910	1910	5790	6650	1250	3400
	301 L2	12.1	124	1220	16.8	7.5	71-80-90-100-112-132		2440	2440	7230	8300	1600	3400
	301 L2	14.8	101	1280	14.4	7.5	71-80-90-100-112-132		2610	2610	7680	8820	1720	3400

1. Reference torque

2. Gearbox drive speed

3. Frame size of the in-line gear unit

4. Gear ratio

5. Gearbox output speed

6. Gearbox rated output torque based on:

- safety factor $S=1$
- 10000 h theoretical lifetime

7. Gearbox rated input power, based on:

- safety factor $S=1$
- 10000 h theoretical lifetime

8. Gearbox thermal capacity

9. Frame size of available IEC motor

10. Permitted overhung loading on output shaft, based on:

- safety factor $S=1$
- 10000 h theoretical lifetime.

For forces applying off midpoint of the shaft, see diagrams provided in the pages following dimensions of the specific gearbox

11. Maximum torque

12. Page installation drawing can be found at

۱. گشتاور مرجع

۲. سرعت درایو گیربکس

۳. سایز گیربکس مستقیم

۴. نسبت گیربکس

۵. سرعت خروجی گیربکس

۶. گشتاور خروجی مجاز بر اساس:

- فاکتور ایمنی $S = 1$

- ۱۰۰۰۰ ساعت عمر نظری

۷. قدرت ورودی مجاز گیربکس بر اساس:

- فاکتور ایمنی $S = 1$

- ۱۰۰۰۰ ساعت عمر نظری

۸. ظرفیت حرارتی گیربکس

۹. اندازه قاب موتور IEC در دسترس

۱۰. حد مجاز بارگذاری بر روی شافت خروجی، بر اساس:

- فاکتور ایمنی $S = 1$

- ۱۰۰۰۰ ساعت عمر نظری.

برای نیروهایی که در نقطه مرکزی شافت قرار ندارند،

نمودارهای را که در صفحات بعد از ابعاد گیربکس ارائه

شده است، مشاهده کنید

۱۱. حداکثر گشتاور

۱۲. شماره صفحه ابعاد گیربکس





300 L							1250 Nm						
Page 220													

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]		FZ	$M_{2 \max}$ Nm
										HC/PC	HZ/PZ		
1500	300 L1	3.48	431	470	20	7.5	71-80-90-100-112-132	1610	1610	4970	5710	1060	2000
	300 L1	4.26	352	490	18.8	7.5	71-80-90-100-112-132	1720	1720	5280	6070	1130	2400
	300 L1	5.77	260	470	13.3	7.5	71-80-90-100-112-132	1910	1910	5790	6650	1250	2400
	300 L1	7.2	208	410	9.2	7.5	71-80-90-100-112-132	2050	2050	6180	7100	1350	2400
	300 L1	9	167	320	5.7	7.5	71-80-90-100-112-132	2210	2210	6610	7600	1450	2400
	300 L2	12.1	124	680	9.4	7.5	71-80-90-100-112-132	2440	2440	7230	8300	1600	2000
	300 L2	14.8	101	720	8.1	7.5	71-80-90-100-112-132	2610	2610	7680	8820	1720	2000
	300 L2	18.2	83	750	6.9	7.5	71-80-90-100-112-132	2790	2790	8160	9380	1840	2400
	300 L2	20.1	75	640	5.3	7.5	71-80-90-100-112-132	2890	2890	8410	9660	1900	2000
	300 L2	24.6	61	800	5.5	7.5	71-80-90-100-112-132	3090	3090	8940	10300	2030	2400
	300 L2	30.7	49	840	4.6	7.5	71-80-90-100-112-132	3330	3330	9550	11000	2190	2400
	300 L2	33.3	45	650	3.3	7.5	71-80-90-100-112-132	3420	3420	9790	11200	2250	2400
	300 L2	38.4	39	840	3.7	7.5	71-80-90-100-112-132	3590	3590	10200	11700	2360	2400
	300 L2	41.5	36	650	2.6	7.5	71-80-90-100-112-132	3680	3680	10500	12000	2420	2400
	300 L2	51.9	28.9	650	2.1	7.5	71-80-90-100-112-132	3970	3970	11200	12900	2610	2400
	300 L2	64.8	23.1	550	1.4	7.5	71-80-90-100-112-132	4270	4270	12000	13700	2810	2400
	300 L3	51.6	29.1	850	2.8	7.5	71-80-90-100-112-132	3960	3960	11200	12800	2600	2000
	300 L3	63.2	23.7	850	2.3	7.5	71-80-90-100-112-132	4240	4240	11900	13600	2780	2400
	300 L3	69.9	21.5	650	1.6	7.5	71-80-90-100-112-132	4380	4380	12200	14000	2880	2000
	300 L3	77.5	19.4	850	1.9	7.5	71-80-90-100-112-132	4530	4530	12600	14500	2980	2400
	300 L3	85.6	17.5	850	1.7	7.5	71-80-90-100-112-132	4680	4680	13000	14900	3080	2400
	300 L3	105	14.3	860	1.4	7.5	71-80-90-100-112-132	5010	5010	13800	15900	3300	2400
	300 L3	116	13	650	0.97	7.5	71-80-90-100-112-132	5180	5180	14200	16300	3410	2400
	300 L3	131	11.5	860	1.1	7.5	71-80-90-100-112-132	5400	5400	14800	17000	3550	2400
	300 L3	142	10.6	860	1	7.5	71-80-90-100-112-132	5540	5540	15100	17400	3650	2400
	300 L3	177	8.5	880	0.86	7.5	71-80-90-100-112-132	5970	5970	16200	18600	3920	2400
	300 L3	192	7.8	650	0.58	7.5	71-80-90-100-112-132	6130	6130	16600	19000	4030	2400
	300 L3	221	6.8	910	0.71	7.5	71-80-90-100-112-132	6430	6430	17300	19800	4230	2400
	300 L3	240	6.3	650	0.47	7.5	71-80-90-100-112-132	6600	6600	17700	20300	4340	2400
	300 L3	299	5	650	0.37	7.5	71-80-90-100-112-132	7110	7110	18900	21700	4670	2400
	300 L3	374	4	670	0.31	7.5	71-80-90-100-112-132	7660	7660	20200	23200	5030	2400
	300 L4	330	4.5	970	0.52	6	71-80-90-100-112-132	7350	7350	19500	22400	4830	2400
	300 L4	403	3.7	680	0.3	6	71-80-90-100-112-132	7850	7850	20700	23800	5160	2400
	300 L4	447	3.4	1020	0.4	6	71-80-90-100-112-132	8130	8130	21300	24500	5340	2400
	300 L4	494	3	1030	0.37	6	71-80-90-100-112-132	8400	8400	22000	25300	5520	2400
	300 L4	558	2.7	1060	0.34	6	71-80-90-100-112-132	8750	8750	22800	26200	5750	2400
	300 L4	616	2.4	1070	0.31	6	71-80-90-100-112-132	9050	9050	23500	27000	5950	2400
	300 L4	755	2	1110	0.26	6	71-80-90-100-112-132	9680	9680	25000	28700	6360	2400
	300 L4	819	1.8	1130	0.24	6	71-80-90-100-112-132	9940	9940	25600	29400	6540	2400
	300 L4	942	1.6	1160	0.22	6	71-80-90-100-112-132	10400	10400	26700	30700	6850	2400





300 L							Page 220	1250 Nm					
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n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]		FZ	$M_{2\max}$ Nm
										HC/PC	HZ/PZ		
1500	300 L4	1022	1.5	1170	0.2	6	71-80-90-100-112-132	10700	10700	27300	31400	7040	2400
	300 L4	1108	1.4	810	0.13	6	71-80-90-100-112-132	11000	11000	28000	32200	7230	2400
	300 L4	1275	1.2	1220	0.17	6	71-80-90-100-112-132	11500	11500	29200	33600	7580	2400
	300 L4	1383	1.1	850	0.11	6	71-80-90-100-112-132	11800	11800	29900	34000	7790	2400
	300 L4	1591	0.94	1250	0.14	6	71-80-90-100-112-132	12000	12400	31000	34000	8000	2400
	300 L4	1725	0.87	860	0.09	6	71-80-90-100-112-132	12000	12500	31000	34000	8000	2400
	300 L4	2153	0.7	860	0.07	6	71-80-90-100-112-132	12000	12500	31000	34000	8000	2400
	300 L4	2692	0.56	1000	0.07	6	71-80-90-100-112-132	12000	12500	31000	34000	8000	2400
1000	300 L1	3.48	287	530	16.5	9	71-80-90-100-112-132	1840	1840	5610	6450	1210	2000
	300 L1	4.26	235	560	14.1	9	71-80-90-100-112-132	1970	1970	5970	6860	1300	2400
	300 L1	5.77	173	530	10	9	71-80-90-100-112-132	2180	2180	6530	7510	1430	2400
	300 L1	7.2	139	460	6.9	9	71-80-90-100-112-132	2350	2350	6980	8020	1540	2400
	300 L1	9	111	360	4.3	9	71-80-90-100-112-132	2530	2530	7470	8580	1660	2400
	300 L2	12.1	83	730	6.7	9	71-80-90-100-112-132	2790	2790	8160	9380	1840	2000
	300 L2	14.8	67	790	5.9	9	71-80-90-100-112-132	2990	2990	8670	9970	1970	2000
	300 L2	18.2	55	820	5	9	71-80-90-100-112-132	3200	3200	9220	10600	2100	2400
	300 L2	20.1	50	650	3.6	9	71-80-90-100-112-132	3310	3310	9500	10900	2170	2000
	300 L2	24.6	41	840	3.8	9	71-80-90-100-112-132	3540	3540	10100	11600	2330	2400
	300 L2	30.7	33	850	3.1	9	71-80-90-100-112-132	3810	3810	10800	12400	2500	2400
	300 L2	33.3	30	650	2.2	9	71-80-90-100-112-132	3910	3910	11100	12700	2570	2400
	300 L2	38.4	26.1	850	2.5	9	71-80-90-100-112-132	4100	4100	11500	13300	2700	2400
	300 L2	41.5	24.1	650	1.7	9	71-80-90-100-112-132	4210	4210	11800	13600	2770	2400
	300 L2	51.9	19.3	650	1.4	9	71-80-90-100-112-132	4540	4540	12600	14500	2980	2400
	300 L2	64.8	15.4	550	0.94	9	71-80-90-100-112-132	4890	4890	13500	15500	3210	2400
	300 L3	51.6	19.4	850	1.9	9	71-80-90-100-112-132	4530	4530	12600	14500	2980	2000
	300 L3	63.2	15.8	850	1.5	9	71-80-90-100-112-132	4850	4850	13400	15400	3190	2400
	300 L3	69.9	14.3	650	1.1	9	71-80-90-100-112-132	5010	5010	13800	15900	3290	2000
	300 L3	77.5	12.9	860	1.3	9	71-80-90-100-112-132	5190	5190	14200	16400	3410	2400
	300 L3	85.6	11.7	860	1.2	9	71-80-90-100-112-132	5360	5360	14700	16900	3530	2400
	300 L3	105	9.5	870	0.95	9	71-80-90-100-112-132	5740	5740	15600	17900	3770	2400
	300 L3	116	8.6	650	0.64	9	71-80-90-100-112-132	5930	5930	16100	18500	3900	2400
	300 L3	131	7.6	890	0.78	9	71-80-90-100-112-132	6180	6180	16700	19200	4060	2400
	300 L3	142	7	900	0.73	9	71-80-90-100-112-132	6350	6350	17100	19600	4170	2400
	300 L3	177	5.6	930	0.6	9	71-80-90-100-112-132	6830	6830	18300	21000	4490	2400
	300 L3	192	5.2	650	0.39	9	71-80-90-100-112-132	7020	7020	18700	21500	4620	2400
	300 L3	221	4.5	970	0.5	9	71-80-90-100-112-132	7360	7360	19500	22400	4840	2400
	300 L3	240	4.2	670	0.32	9	71-80-90-100-112-132	7560	7560	20000	23000	4970	2400
	300 L3	299	3.3	700	0.27	9	71-80-90-100-112-132	8140	8140	21400	24500	5350	2400
	300 L3	374	2.7	720	0.22	9	71-80-90-100-112-132	8770	8770	22800	26200	5760	2400



**300 L**

Page 220

1250 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M _{n2} Nm	P _{n1} kW	P _t kW	P (IEC) 	MC	MZ	R _{n2} [N]			FZ	M _{2 max} Nm
										HC/PC	HZ/PZ			
1000	300 L4	330	3	1040	0.37	7.2	71-80-90-100-112-132	8410	8410	22000	25300	5530	2400	
	300 L4	403	2.5	730	0.21	7.2	71-80-90-100-112-132	8990	8990	23400	26800	5910	2400	
	300 L4	447	2.2	1090	0.29	7.2	71-80-90-100-112-132	9300	9300	24100	27700	6120	2400	
	300 L4	494	2	1110	0.27	7.2	71-80-90-100-112-132	9620	9620	24800	28500	6320	2400	
	300 L4	558	1.8	1130	0.24	7.2	71-80-90-100-112-132	10000	10000	25800	29600	6590	2400	
	300 L4	616	1.6	1150	0.22	7.2	71-80-90-100-112-132	10400	10400	26500	30500	6810	2400	
	300 L4	755	1.3	1190	0.19	7.2	71-80-90-100-112-132	11100	11100	28200	32400	7280	2400	
	300 L4	819	1.2	1210	0.17	7.2	71-80-90-100-112-132	11400	11400	28900	33200	7480	2400	
	300 L4	942	1.1	1240	0.16	7.2	71-80-90-100-112-132	11900	11900	30100	34000	7840	2400	
	300 L4	1022	0.98	1250	0.14	7.2	71-80-90-100-112-132	12000	12300	30900	34000	8000	2400	
	300 L4	1108	0.9	860	0.09	7.2	71-80-90-100-112-132	12000	12500	31000	34000	8000	2400	
	300 L4	1275	0.78	1250	0.12	7.2	71-80-90-100-112-132	12000	12500	31000	34000	8000	2400	
	300 L4	1383	0.72	860	0.07	7.2	71-80-90-100-112-132	12000	12500	31000	34000	8000	2400	
	300 L4	1591	0.63	1250	0.09	7.2	71-80-90-100-112-132	12000	12500	31000	34000	8000	2400	
	300 L4	1725	0.58	860	0.06	7.2	71-80-90-100-112-132	12000	12500	31000	34000	8000	2400	
	300 L4	2153	0.46	860	0.05	7.2	71-80-90-100-112-132	12000	12500	31000	34000	8000	2400	
	300 L4	2692	0.37	1000	0.04	7.2	71-80-90-100-112-132	12000	12500	31000	34000	8000	2400	
500	300L1	3.48	144	650	10.2	15	71-80-90-100-112-132	2320	2320	6910	7940	1530	2000	
	300L1	4.26	117	690	8.7	15	71-80-90-100-112-132	2490	2490	7350	8440	1630	2400	
	300L1	5.77	87	630	5.9	15	71-80-90-100-112-132	2750	2750	8040	9240	1810	2400	
	300L1	7.2	69	530	4	15	71-80-90-100-112-132	2960	2960	8600	9880	1950	2400	
	300L1	9	56	370	2.2	15	71-80-90-100-112-132	3190	3190	9190	10600	2100	2400	
	300L2	12.1	41	730	3.4	15	71-80-90-100-112-132	3520	3520	10000	11500	2310	2000	
	300L2	14.8	34	840	3.2	15	71-80-90-100-112-132	3770	3770	10700	12300	2480	2000	
	300L2	18.2	27.5	850	2.6	15	71-80-90-100-112-132	4030	4030	11300	13000	2650	2400	
	300L2	20.1	24.9	650	1.8	15	71-80-90-100-112-132	4170	4170	11700	13400	2740	2000	
	300L2	24.6	20.3	850	1.9	15	71-80-90-100-112-132	4460	4460	12400	14300	2930	2400	
	300L2	30.7	16.3	850	1.5	15	71-80-90-100-112-132	4800	4800	13300	15300	3160	2400	
	300L2	33.3	15	650	1.1	15	71-80-90-100-112-132	4930	4930	13600	15600	3240	2400	
	300L2	38.4	13	860	1.2	15	71-80-90-100-112-132	5170	5170	14200	16300	3400	2400	
	300L2	41.5	12	650	0.87	15	71-80-90-100-112-132	5310	5310	14500	16700	3490	2400	
	300L2	51.9	9.6	650	0.7	15	71-80-90-100-112-132	5720	5720	15600	17900	3760	2400	
	300L2	64.8	7.7	550	0.47	15	71-80-90-100-112-132	6160	6160	16600	19100	4050	2400	
	300L3	51.6	9.7	860	0.96	15	71-80-90-100-112-132	5710	5710	15500	17800	3750	2000	
	300L3	63.2	7.9	890	0.81	15	71-80-90-100-112-132	6110	6110	16500	19000	4020	2400	
	300L3	69.9	7.2	650	0.53	15	71-80-90-100-112-132	6310	6310	17000	19500	4150	2000	
	300L3	77.5	6.5	920	0.68	15	71-80-90-100-112-132	6540	6540	17500	20100	4300	2400	
	300L3	85.6	5.8	930	0.62	15	71-80-90-100-112-132	6760	6760	18100	20800	4440	2400	
	300L3	105	4.8	960	0.52	15	71-80-90-100-112-132	7230	7230	19200	22100	4750	2400	





300 L Page 220

1250 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]		FZ	$M_{2 \max}$ Nm
										HC/PC	HZ/PZ		
500	300L3	116	4.3	670	0.33	15	71-80-90-100-112-132	7470	7470	19800	22700	4910	2400
	300L3	131	3.8	990	0.44	15	71-80-90-100-112-132	7780	7780	20500	23600	5120	2400
	300L3	142	3.5	1010	0.41	15	71-80-90-100-112-132	8000	8000	21000	24200	5260	2400
	300L3	177	2.8	1050	0.34	15	71-80-90-100-112-132	8610	8610	22500	25800	5660	2400
	300L3	192	2.6	730	0.22	15	71-80-90-100-112-132	8850	8850	23000	26500	5820	2400
	300L3	221	2.3	1090	0.28	15	71-80-90-100-112-132	9270	9270	24000	27600	6090	2400
	300L3	240	2.1	750	0.18	15	71-80-90-100-112-132	9520	9520	24600	28300	6260	2400
	300L3	299	1.7	780	0.15	15	71-80-90-100-112-132	10300	10300	26300	30200	6740	2400
	300L3	374	1.3	820	0.13	15	71-80-90-100-112-132	11000	11000	28100	32300	7260	2400
	300L4	330	1.5	1170	0.21	12	71-80-90-100-112-132	10600	10600	27100	31100	6970	2400
	300L4	403	1.2	830	0.12	12	71-80-90-100-112-132	11300	11300	28800	33000	7450	2400
	300L4	447	1.1	1230	0.16	12	71-80-90-100-112-132	11700	11700	29700	34000	7710	2400
	300L4	494	1	1250	0.15	12	71-80-90-100-112-132	12000	12100	30600	34000	7970	2400
	300L4	558	0.9	1250	0.13	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	2400
	300L4	616	0.81	1250	0.12	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	2400
	300L4	755	0.66	1250	0.1	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	2400
	300L4	819	0.61	1250	0.09	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	2400
	300L4	942	0.53	1250	0.08	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	2400
	300L4	1022	0.49	1250	0.07	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	2400
	300L4	1108	0.45	860	0.05	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	2400
	300L4	1275	0.39	1250	0.06	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	2400
	300L4	1383	0.36	860	0.04	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	2400
	300L4	1591	0.31	1250	0.05	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	2400
	300L4	1725	0.29	860	0.03	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	2400
	300L4	2153	0.23	860	0.02	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	2400
	300L4	2692	0.19	1000	0.02	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	2400

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2460 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]		FZ	$M_{2 \max}$ Nm
										HC/PC	HZ/PZ		
1500	301 L1	3.48	431	840	30	7.5	71-80-90-100-112-132	1610	1610	4970	5710	1060	3400
	301 L1	4.26	352	880	30	7.5	71-80-90-100-112-132	1720	1720	5280	6070	1130	3400
	301 L1	5.77	260	930	26	7.5	71-80-90-100-112-132	1910	1910	5790	6650	1250	3400
	301 L1	7.2	208	750	17	7.5	71-80-90-100-112-132	2050	2050	6180	7100	1350	3400
	301 L1	9	167	630	11.3	7.5	71-80-90-100-112-132	2210	2210	6610	7600	1450	3400
	301 L2	12.1	124	1220	16.8	7.5	71-80-90-100-112-132	2440	2440	7230	8300	1600	3400
	301 L2	14.8	101	1280	14.4	7.5	71-80-90-100-112-132	2610	2610	7680	8820	1720	3400





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[Page 226](#)

2460 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			M_2 max Nm
										HC/PC	HZ/PZ	FZ	
1500	301 L4	942	1.6	2290	0.43	6	71-80-90-100-112-132	10400	10400	26700	30700	6850	3400
	301 L4	1022	1.5	2320	0.4	6	71-80-90-100-112-132	10700	10700	27300	31400	7040	3400
	301 L4	1108	1.4	1630	0.26	6	71-80-90-100-112-132	11000	11000	28000	32200	7230	3400
	301 L4	1275	1.2	2400	0.33	6	71-80-90-100-112-132	11500	11500	29200	33600	7580	3400
	301 L4	1383	1.1	1700	0.22	6	71-80-90-100-112-132	11800	11800	29900	34000	7790	3400
	301 L4	1591	0.94	2000	0.22	6	71-80-90-100-112-132	12000	12400	31000	34000	8000	3400
	301 L4	1725	0.87	1720	0.18	6	71-80-90-100-112-132	12000	12500	31000	34000	8000	3400
	301 L4	2153	0.7	1720	0.14	6	71-80-90-100-112-132	12000	12500	31000	34000	8000	3400
	301 L4	2692	0.56	1720	0.11	6	71-80-90-100-112-132	12000	12500	31000	34000	8000	3400
1000	301 L1	3.48	287	950	29	9	71-80-90-100-112-132	1840	1840	5610	6450	1210	3400
	301 L1	4.26	235	990	25	9	71-80-90-100-112-132	1970	1970	5970	6860	1300	3400
	301 L1	5.77	173	1050	19.7	9	71-80-90-100-112-132	2180	2180	6530	7510	1430	3400
	301 L1	7.2	139	850	12.8	9	71-80-90-100-112-132	2350	2350	6980	8020	1540	3400
	301 L1	9	111	710	8.5	9	71-80-90-100-112-132	2530	2530	7470	8580	1660	3400
	301 L2	12.1	83	1330	12.3	9	71-80-90-100-112-132	2790	2790	8160	9380	1840	3400
	301 L2	14.8	67	1440	10.8	9	71-80-90-100-112-132	2990	2990	8670	9970	1970	3400
	301 L2	18.2	55	1530	9.4	9	71-80-90-100-112-132	3200	3200	9220	10600	2100	3400
	301 L2	20.1	50	1300	7.2	9	71-80-90-100-112-132	3310	3310	9500	10900	2170	3400
	301 L2	24.6	41	1600	7.2	9	71-80-90-100-112-132	3540	3540	10100	11600	2330	3400
	301 L2	30.7	33	1620	5.9	9	71-80-90-100-112-132	3810	3810	10800	12400	2500	3400
	301 L2	33.3	30	1300	4.3	9	71-80-90-100-112-132	3910	3910	11100	12700	2570	3400
	301 L2	38.4	26.1	1550	4.5	9	71-80-90-100-112-132	4100	4100	11500	13300	2700	3400
	301 L2	41.5	24.1	1300	3.5	9	71-80-90-100-112-132	4210	4210	11800	13600	2770	3400
	301 L2	51.9	19.3	1300	2.8	9	71-80-90-100-112-132	4540	4540	12600	14500	2980	3400
	301 L2	64.8	15.4	1150	2	9	71-80-90-100-112-132	4890	4890	13500	15500	3210	3400
	301 L3	51.6	19.4	1670	3.7	9	71-80-90-100-112-132	4530	4530	12600	14500	2980	3400
	301 L3	63.2	15.8	1690	3.1	9	71-80-90-100-112-132	4850	4850	13400	15400	3190	3400
	301 L3	69.9	14.3	1300	2.1	9	71-80-90-100-112-132	5010	5010	13800	15900	3290	3400
	301 L3	77.5	12.9	1710	2.5	9	71-80-90-100-112-132	5190	5190	14200	16400	3410	3400
	301 L3	85.6	11.7	1710	2.3	9	71-80-90-100-112-132	5360	5360	14700	16900	3530	3400
	301 L3	105	9.5	1740	1.9	9	71-80-90-100-112-132	5740	5740	15600	17900	3770	3400
	301 L3	116	8.6	1300	1.3	9	71-80-90-100-112-132	5930	5930	16100	18500	3900	3400
	301 L3	131	7.6	1790	1.6	9	71-80-90-100-112-132	6180	6180	16700	19200	4060	3400
	301 L3	142	7	1810	1.5	9	71-80-90-100-112-132	6350	6350	17100	19600	4170	3400
	301 L3	177	5.6	1860	1.2	9	71-80-90-100-112-132	6830	6830	18300	21000	4490	3400
	301 L3	192	5.2	1300	0.78	9	71-80-90-100-112-132	7020	7020	18700	21500	4620	3400
	301 L3	221	4.5	1850	0.96	9	71-80-90-100-112-132	7360	7360	19500	22400	4840	3400
	301 L3	240	4.2	1340	0.64	9	71-80-90-100-112-132	7560	7560	20000	23000	4970	3400
	301L3	299	3.3	1390	0.53	9	71-80-90-100-112-132	8140	8140	21400	24500	5350	3400





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2460 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
										HC/PC	HZ/PZ	FZ	
500	301L3	51.6	9.7	1740	1.9	15	71-80-90-100-112-132	5710	5710	15500	17800	3750	3400
	301L3	63.2	7.9	1780	1.6	15	71-80-90-100-112-132	6110	6110	16500	19000	4020	3400
	301L3	69.9	7.2	1300	1.1	15	71-80-90-100-112-132	6310	6310	17000	19500	4150	3400
	301L3	77.5	6.5	1830	1.4	15	71-80-90-100-112-132	6540	6540	17500	20100	4300	3400
	301L3	85.6	5.8	1850	1.2	15	71-80-90-100-112-132	6760	6760	18100	20800	4440	3400
	301L3	105	4.8	1910	1	15	71-80-90-100-112-132	7230	7230	19200	22100	4750	3400
	301L3	116	4.3	1330	0.66	15	71-80-90-100-112-132	7470	7470	19800	22700	4910	3400
	301L3	131	3.8	1980	0.87	15	71-80-90-100-112-132	7780	7780	20500	23600	5120	3400
	301L3	142	3.5	2010	0.81	15	71-80-90-100-112-132	8000	8000	21000	24200	5260	3400
	301L3	177	2.8	2090	0.68	15	71-80-90-100-112-132	8610	8610	22500	25800	5660	3400
	301L3	192	2.6	1450	0.43	15	71-80-90-100-112-132	8850	8850	23000	26500	5820	3400
	301L3	221	2.3	2000	0.52	15	71-80-90-100-112-132	9270	9270	24000	27600	6090	3400
	301L3	240	2.1	1510	0.36	15	71-80-90-100-112-132	9520	9520	24600	28300	6260	3400
	301L3	299	1.7	1570	0.3	15	71-80-90-100-112-132	10300	10300	26300	30200	6740	3400
	301L3	374	1.3	1630	0.25	15	71-80-90-100-112-132	11000	11000	28100	32300	7260	3400
	301L4	330	1.5	2310	0.41	12	71-80-90-100-112-132	10600	10600	27100	31100	6970	3400
	301L4	403	1.2	1650	0.24	12	71-80-90-100-112-132	11300	11300	28800	33000	7450	3400
	301L4	447	1.1	2420	0.32	12	71-80-90-100-112-132	11700	11700	29700	34000	7710	3400
	301L4	494	1	2460	0.29	12	71-80-90-100-112-132	12000	12100	30600	34000	7970	3400
	301L4	558	0.9	2460	0.26	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	3400
	301L4	616	0.81	2460	0.24	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	3400
	301L4	755	0.66	2460	0.19	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	3400
	301L4	819	0.61	2460	0.18	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	3400
	301L4	942	0.53	2460	0.15	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	3400
	301L4	1022	0.49	2460	0.14	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	3400
	301L4	1108	0.45	1720	0.09	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	3400
	301L4	1275	0.39	2460	0.11	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	3400
	301L4	1383	0.36	1720	0.07	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	3400
	301L4	1591	0.31	2000	0.07	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	3400
	301L4	1725	0.29	1720	0.06	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	3400
	301L4	2153	0.23	1720	0.05	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	3400
	301L4	2692	0.19	1720	0.04	12	71-80-90-100-112-132	12000	12500	31000	34000	8000	3400





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2970 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			M_2 max Nm
										HC/PC	HZ/PZ	FZ	
1500	303 L1	3.6	417	1380	40	11	132-160-180-200	5010	5780	10300	12300	3210	5200
	303 L1	4.25	353	1430	40	11	132-160-180-200	5290	6110	10800	13000	3400	5200
	303 L1	5.33	281	1490	40	11	132-160-180-200	5710	6590	11500	13900	3660	5200
	303 L1	6.2	242	1400	36	11	132-160-180-200	6000	6930	12100	14500	3850	5200
	303 L1	7.5	200	1220	26	11	132-160-180-200	6400	7390	12800	15400	4100	5200
	303 L1	9.67	155	750	12.6	11	132-160-180-200	6960	8040	13800	16600	4470	5200
	303 L2	12.5	120	1640	20	9	71-80-90-100-112-132-160	7590	8760	14900	17900	4870	5200
	303 L2	15.3	98	1710	18.6	9	71-80-90-100-112-132-160	8120	9380	15800	19100	5210	5200
	303 L2	18.1	83	2020	18.6	9	71-80-90-100-112-132-160	8580	9910	16600	20000	5510	5200
	303 L2	20.8	72	1820	14.6	9	71-80-90-100-112-132-160	8980	10400	17300	20900	5760	5200
	303 L2	22.7	66	2100	15.4	9	71-80-90-100-112-132-160	9260	10700	17800	21400	5940	5200
	303 L2	24.5	61	2150	14.6	9	71-80-90-100-112-132-160	9490	11000	18200	21900	6090	5200
	303 L2	26.4	57	1820	11.5	9	71-80-90-100-112-132-160	9740	11200	18600	22400	6250	5200
	303 L2	30.8	49	2140	11.6	9	71-80-90-100-112-132-160	10200	11800	19500	23500	6570	5200
	303 L2	35.8	42	1820	8.5	9	71-80-90-100-112-132-160	10800	12400	20400	24600	6910	5200
	303 L2	38.4	39	2150	9.3	9	71-80-90-100-112-132-160	11000	12700	20900	25100	7070	5200
	303 L2	44.6	34	1820	6.8	9	71-80-90-100-112-132-160	11600	13400	21800	26300	7440	5200
	303 L2	55.8	26.9	1820	5.4	9	71-80-90-100-112-132-160	12500	14400	23300	28100	8010	5200
	303 L3	53.4	28.1	2170	7	7.5	71-80-90-100-112-132-160	12300	14200	23000	27700	7900	5200
	303 L3	63.1	23.8	2510	6.8	7.5	71-80-90-100-112-132-160	13000	15000	24200	29100	8340	5200
	303 L3	72.3	20.8	2230	5.3	7.5	71-80-90-100-112-132-160	13600	15700	25200	30300	8730	5200
	303 L3	77.2	19.4	2520	5.6	7.5	71-80-90-100-112-132-160	13900	16100	25700	30900	8930	5200
	303 L3	90.2	16.6	2250	4.3	7.5	71-80-90-100-112-132-160	14700	16900	26900	32400	9400	5200
	303 L3	105	14.4	2580	4.2	7.5	71-80-90-100-112-132-160	15400	17800	28200	33900	9880	5200
	303 L3	113	13.3	1820	2.8	7.5	71-80-90-100-112-132-160	15800	18200	28800	34700	10100	5200
	303 L3	124	12.1	1820	2.5	7.5	71-80-90-100-112-132-160	16300	18800	29700	35700	10500	5200
	303 L3	141	10.6	2610	3.2	7.5	71-80-90-100-112-132-160	17000	19700	30800	37100	10900	5200
	303 L3	152	9.8	1820	2.1	7.5	71-80-90-100-112-132-160	17500	20200	31500	37900	11200	5200
	303 L3	164	9.2	2200	2.3	7.5	71-80-90-100-112-132-160	17900	20600	32200	38800	11500	5200
	303 L3	178	8.5	2210	2.1	7.5	71-80-90-100-112-132-160	18400	21200	33000	39700	11800	5200
	303 L3	190	7.9	1830	1.7	7.5	71-80-90-100-112-132-160	18800	21700	33700	40600	12100	5200
	303 L3	220	6.8	2250	1.8	7.5	71-80-90-100-112-132-160	19700	22800	35200	42400	12700	5200
	303 L3	258	5.8	1840	1.2	7.5	71-80-90-100-112-132-160	20800	24000	36900	44400	13300	5200
	303 L3	276	5.4	2230	1.4	7.5	71-80-90-100-112-132-160	21300	24600	37700	45400	13700	5200
	303 L3	321	4.7	1860	1	7.5	71-80-90-100-112-132-160	22400	25800	39400	47500	14400	5200
	303 L3	389	3.9	1690	0.75	7.5	71-80-90-100-112-132-160	23900	27500	41800	50300	15300	5200
	303 L3	402	3.7	1940	0.83	7.5	71-80-90-100-112-132-160	24100	27800	42200	50700	15500	5200
	303 L4	413	3.6	2360	1	6	71-80-90-100-112-132-160	24300	28100	42500	51200	15600	5200
	303 L4	446	3.4	2810	1.1	6	71-80-90-100-112-132-160	25000	28800	43500	52400	16000	5200
	303 L4	492	3	2690	0.97	6	71-80-90-100-112-132-160	25800	29800	44800	53900	16600	5200





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2970 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			M_2 max Nm
											HC/PC	HZ/PZ	FZ	
1000	303 L4	556	2.7	2810	0.9	6	71-80-90-100-112-132-160		26900	31000	46500	55900	17200	5200
	303 L4	649	2.3	2320	0.63	6	71-80-90-100-112-132-160		28300	32700	48700	58600	18200	5200
	303 L4	718	2.1	2150	0.53	6	71-80-90-100-112-132-160		29300	33800	50200	60400	18800	5200
	303 L4	816	1.8	2720	0.59	6	71-80-90-100-112-132-160		30500	35300	52200	62800	19600	5200
	303 L4	896	1.7	2230	0.44	6	71-80-90-100-112-132-160		31500	36400	53700	64600	20200	5200
	303 L4	1018	1.5	2740	0.48	6	71-80-90-100-112-132-160		32900	38000	55800	67100	21100	5200
	303 L4	1098	1.4	2310	0.37	6	71-80-90-100-112-132-160		33700	38900	57000	68600	21600	5200
	303 L4	1278	1.2	2790	0.39	6	71-80-90-100-112-132-160		35500	40900	59700	71800	22800	5200
	303 L4	1370	1.1	2400	0.31	6	71-80-90-100-112-132-160		36000	41900	60900	73300	23300	5200
	303 L4	1586	0.95	2250	0.25	6	71-80-90-100-112-132-160		36000	42000	63700	74000	24000	5200
	303 L4	1854	0.81	2440	0.23	6	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	5200
	303 L4	1991	0.75	2850	0.25	6	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	5200
	303 L4	2243	0.67	2000	0.16	6	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	5200
	303 L4	2799	0.54	2000	0.13	6	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	5200
1000	303 L1	3.6	278	1560	40	13.2	132-160-180-200		5730	6620	11600	13900	3680	5200
	303 L1	4.25	235	1620	40	13.2	132-160-180-200		6060	7000	12200	14600	3890	5200
	303 L1	5.33	188	1680	34	13.2	132-160-180-200		6540	7550	13000	15700	4190	5200
	303 L1	6.2	161	1580	27	13.2	132-160-180-200		6870	7930	13600	16400	4410	5200
	303 L1	7.5	133	1380	19.8	13.2	132-160-180-200		7320	8450	14400	17400	4700	5200
	303 L1	9.67	103	850	9.5	13.2	132-160-180-200		7970	9200	15600	18700	5110	5200
	303 L2	12.5	80	1850	16.4	10.8	71-80-90-100-112-132-160		8690	10000	16800	20300	5570	5200
	303 L2	15.3	65	1940	14	10.8	71-80-90-100-112-132-160		9300	10700	17900	21500	5960	5200
	303 L2	18.1	55	2280	14	10.8	71-80-90-100-112-132-160		9830	11300	18800	22600	6300	5200
	303 L2	20.8	48	2030	10.9	10.8	71-80-90-100-112-132-160		10300	11900	19600	23600	6600	5200
	303 L2	22.7	44	2140	10.5	10.8	71-80-90-100-112-132-160		10600	12200	20100	24200	6800	5200
	303 L2	24.5	41	2320	10.5	10.8	71-80-90-100-112-132-160		10900	12500	20600	24800	6970	5200
	303 L2	26.4	38	1820	7.7	10.8	71-80-90-100-112-132-160		11100	12900	21100	25300	7150	5200
	303 L2	30.8	33	2160	7.8	10.8	71-80-90-100-112-132-160		11700	13500	22000	26500	7520	5200
	303 L2	35.8	28	1820	5.7	10.8	71-80-90-100-112-132-160		12300	14200	23100	27700	7910	5200
	303 L2	38.4	26	2160	6.3	10.8	71-80-90-100-112-132-160		12600	14600	23600	28300	8100	5200
	303 L2	44.6	22.4	1820	4.5	10.8	71-80-90-100-112-132-160		13300	15300	24600	29600	8510	5200
	303 L2	55.8	17.9	1820	3.6	10.8	71-80-90-100-112-132-160		14300	16500	26300	31700	9170	5200
	303 L3	53.4	18.7	2230	4.8	9	71-80-90-100-112-132-160		14100	16300	26000	31300	9040	5200
	303 L3	63.1	15.9	2570	4.7	9	71-80-90-100-112-132-160		14900	17200	27300	32900	9550	5200
	303 L3	72.3	13.8	2270	3.6	9	71-80-90-100-112-132-160		15600	18000	28500	34300	10000	5200
	303 L3	77.2	12.9	2600	3.9	9	71-80-90-100-112-132-160		15900	18400	29000	34900	10200	5200
	303 L3	90.2	11.1	2300	2.9	9	71-80-90-100-112-132-160		16800	19400	30400	36600	10800	5200
	303 L3	105	9.6	2660	2.9	9	71-80-90-100-112-132-160		17600	20300	31800	38300	11300	5200
	303 L3	113	8.9	1820	1.9	9	71-80-90-100-112-132-160		18100	20900	32500	39100	11600	5200
	303 L3	124	8	1830	1.7	9	71-80-90-100-112-132-160		18700	21600	33500	40300	12000	5200





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n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			M_2 max Nm
1000	303 L4	556	2.7	2810	0.9	6	71-80-90-100-112-132-160	26900	31000	46500	55900	17200	5200
	303 L4	649	2.3	2320	0.63	6	71-80-90-100-112-132-160	28300	32700	48700	58600	18200	5200
	303 L4	718	2.1	2150	0.53	6	71-80-90-100-112-132-160	29300	33800	50200	60400	18800	5200
	303 L4	816	1.8	2720	0.59	6	71-80-90-100-112-132-160	30500	35300	52200	62800	19600	5200
	303 L4	896	1.7	2230	0.44	6	71-80-90-100-112-132-160	31500	36400	53700	64600	20200	5200
	303 L4	1018	1.5	2740	0.48	6	71-80-90-100-112-132-160	32900	38000	55800	67100	21100	5200
	303 L4	1098	1.4	2310	0.37	6	71-80-90-100-112-132-160	33700	38900	57000	68600	21600	5200
	303 L4	1278	1.2	2790	0.39	6	71-80-90-100-112-132-160	35500	40900	59700	71800	22800	5200
	303 L4	1370	1.1	2400	0.31	6	71-80-90-100-112-132-160	36000	41900	60900	73300	23300	5200
	303 L4	1586	0.95	2250	0.25	6	71-80-90-100-112-132-160	36000	42000	63700	74000	24000	5200
	303 L4	1854	0.81	2440	0.23	6	71-80-90-100-112-132-160	36000	42000	64000	74000	24000	5200
	303 L4	1991	0.75	2850	0.25	6	71-80-90-100-112-132-160	36000	42000	64000	74000	24000	5200
	303 L4	2243	0.67	2000	0.16	6	71-80-90-100-112-132-160	36000	42000	64000	74000	24000	5200
	303 L4	2799	0.54	2000	0.13	6	71-80-90-100-112-132-160	36000	42000	64000	74000	24000	5200

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n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			M_2 max Nm
500	303L2	30.8	16.3	2180	3.9	18	71-80-90-100-112-132-160	14800	17100	27100	32600	9480	5200
	303L2	35.8	14	1820	2.8	18	71-80-90-100-112-132-160	15500	17900	28400	34200	9960	5200
	303L2	38.4	13	2190	3.2	18	71-80-90-100-112-132-160	15900	18400	29000	34900	10200	5200
	303L2	44.6	11.2	1820	2.3	18	71-80-90-100-112-132-160	16700	19300	30300	36500	10700	5200
	303L2	55.8	9	1820	1.8	18	71-80-90-100-112-132-160	18000	20800	32400	39000	11600	5200
	303L3	53.4	9.4	2310	2.5	15	71-80-90-100-112-132-160	17800	20500	32000	38500	11400	5200
	303L3	63.1	7.9	2700	2.5	15	71-80-90-100-112-132-160	18800	21700	33600	40500	12000	5200
	303L3	72.3	6.9	2310	1.8	15	71-80-90-100-112-132-160	19600	22700	35100	42200	12600	5200
	303L3	77.2	6.5	2750	2	15	71-80-90-100-112-132-160	20100	23200	35800	43000	12900	5200
	303L3	90.2	5.5	2310	1.5	15	71-80-90-100-112-132-160	21100	24400	37500	45100	13600	5200
	303L3	105	4.8	2810	1.5	15	71-80-90-100-112-132-160	22200	25600	39200	47100	14200	5200
	303L3	113	4.4	1880	0.96	15	71-80-90-100-112-132-160	22800	26300	40100	48200	14600	5200
	303L3	124	4	1910	0.88	15	71-80-90-100-112-132-160	23500	27200	41300	49600	15100	5200
	303L3	141	3.5	2670	1.1	15	71-80-90-100-112-132-160	24600	28400	42900	51600	15800	5200
	303L3	152	3.3	1980	0.75	15	71-80-90-100-112-132-160	25200	29100	43900	52800	16200	5200
	303L3	164	3.1	2430	0.85	15	71-80-90-100-112-132-160	25800	29800	44800	53900	16500	5200
	303L3	178	2.8	2470	0.8	15	71-80-90-100-112-132-160	26500	30600	45900	55200	17000	5200
	303L3	190	2.6	2060	0.62	15	71-80-90-100-112-132-160	27100	31300	46900	56400	17400	5200
	303L3	220	2.3	2210	0.57	15	71-80-90-100-112-132-160	28500	32900	49000	58900	18300	5200
	303L3	258	1.9	2170	0.48	15	71-80-90-100-112-132-160	30000	34600	51300	61700	19200	5200
	303L3	276	1.8	2580	0.54	15	71-80-90-100-112-132-160	30700	35400	52400	63100	19700	5200





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n ₁ min ⁻¹		i	n ₂ min ⁻¹	M _{n2} Nm	P _{n1} kW	P _t kW	P (IEC)		R _{n2} [N]					M _{2 max} Nm
									MC	MZ	HC/PC	HZ/PZ	FZ	
500	303L3	321	1.6	2260	0.4	15	71-80-90-100-112-132-160		32300	37300	54900	66000	20700	5200
	303L3	389	1.3	1930	0.28	15	71-80-90-100-112-132-160		34400	39700	58100	69900	22100	5200
	303L3	402	1.2	2350	0.34	15	71-80-90-100-112-132-160		34800	40200	58600	70600	22300	5200
	303L4	413	1.2	2780	0.4	12	71-80-90-100-112-132-160		35100	40500	59100	71200	22500	5200
	303L4	446	1.1	2950	0.39	12	71-80-90-100-112-132-160		36000	41600	60500	72800	23100	5200
	303L4	492	1	2770	0.33	12	71-80-90-100-112-132-160		36000	42000	62300	74000	23900	5200
	303L4	556	0.9	2970	0.32	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	5200
	303L4	649	0.77	2410	0.22	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	5200
	303L4	718	0.7	2440	0.2	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	5200
	303L4	816	0.61	2770	0.2	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	5200
	303L4	896	0.56	2440	0.16	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	5200
	303L4	1018	0.49	2770	0.16	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	5200
	303L4	1098	0.46	2440	0.13	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	5200
	303L4	1278	0.39	2850	0.13	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	5200
	303L4	1370	0.36	2440	0.11	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	5200
	303L4	1586	0.32	2250	0.08	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	5200
	303L4	1854	0.27	2440	0.08	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	5200
	303L4	1991	0.25	2850	0.08	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	5200
	303L4	2243	0.22	2000	0.05	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	5200
	303L4	2799	0.18	2000	0.04	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	5200

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n ₁ min ⁻¹		i	n ₂ min ⁻¹	M _{n2} Nm	P _{n1} kW	P _t kW	P (IEC)		R _{n2} [N]					M _{2 max} Nm
									MC	MZ	HC/PC	HZ/PZ	FZ	
1500	305 L1	3.6	417	2370	60	13	132-160-180-200		5010	5780	10300	12300	3210	8800
	305 L1	4.25	353	2450	60	13	132-160-180-200		5290	6110	10800	13000	3400	8800
	305 L1	5.33	281	2560	60	13	132-160-180-200		5710	6590	11500	13900	3660	8800
	305 L1	6.2	242	2650	60	13	132-160-180-200		6000	6930	12100	14500	3850	8800
	305 L1	7.5	200	2270	49	13	132-160-180-200		6400	7390	12800	15400	4100	8800
	305L2	12.5	120	2930	30	9	71-80-90-100-112-132-160		7590	8760	14900	17900	4870	8800
	305 L2	15.3	98	3060	30	9	71-80-90-100-112-132-160		8120	9380	15800	19100	5210	8800
	305 L2	18.1	83	3620	30	9	71-80-90-100-112-132-160		8580	9910	16600	20000	5510	8800
	305 L2	20.8	72	3250	26	9	71-80-90-100-112-132-160		8980	10400	17300	20900	5760	8800
	305 L2	22.7	66	3940	29	9	71-80-90-100-112-132-160		9260	10700	17800	21400	5940	8800
	305 L2	24.5	61	3830	26	9	71-80-90-100-112-132-160		9490	11000	18200	21900	6090	8800





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5800 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			FZ	M_2 max Nm
											HC/PC	HZ/PZ			
1500	305 L2	26.4	57	3530	22	9	71-80-90-100-112-132-160		9740	11200	18600	22400	6250	8800	
	305 L2	30.8	49	4280	23	9	71-80-90-100-112-132-160		10200	11800	19500	23500	6570	8800	
	305 L2	35.8	42	3560	16.6	9	71-80-90-100-112-132-160		10800	12400	20400	24600	6910	8800	
	305 L2	38.4	39	4300	18.7	9	71-80-90-100-112-132-160		11000	12700	20900	25100	7070	8800	
	305 L2	44.6	34	3560	13.3	9	71-80-90-100-112-132-160		11600	13400	21800	26300	7440	8800	
	305 L2	55.8	26.9	3540	10.6	9	71-80-90-100-112-132-160		12500	14400	23300	28100	8010	8800	
	305 L3	53.4	28.1	4000	12.9	7.5	71-80-90-100-112-132-160		12300	14200	23000	27700	7900	8800	
	305 L3	63.1	23.8	4720	12.9	7.5	71-80-90-100-112-132-160		13000	15000	24200	29100	8340	8800	
	305 L3	72.3	20.8	4160	9.9	7.5	71-80-90-100-112-132-160		13600	15700	25200	30300	8730	8800	
	305 L3	77.2	19.4	4820	10.7	7.5	71-80-90-100-112-132-160		13900	16100	25700	30900	8930	8800	
	305 L3	90.2	16.6	4260	8.1	7.5	71-80-90-100-112-132-160		14700	16900	26900	32400	9400	8800	
	305 L3	105	14.4	5030	8.3	7.5	71-80-90-100-112-132-160		15400	17800	28200	33900	9880	8800	
	305 L3	113	13.3	3590	5.5	7.5	71-80-90-100-112-132-160		15800	18200	28800	34700	10100	8800	
	305 L3	124	12.1	3590	5	7.5	71-80-90-100-112-132-160		16300	18800	29700	35700	10500	8800	
	305 L3	141	10.6	5180	6.3	7.5	71-80-90-100-112-132-160		17000	19700	30800	37100	10900	8800	
	305 L3	152	9.8	3600	4.1	7.5	71-80-90-100-112-132-160		17500	20200	31500	37900	11200	8800	
	305 L3	164	9.2	4410	4.6	7.5	71-80-90-100-112-132-160		17900	20600	32200	38800	11500	8800	
	305 L3	178	8.5	4420	4.3	7.5	71-80-90-100-112-132-160		18400	21200	33000	39700	11800	8800	
	305 L3	190	7.9	3600	3.3	7.5	71-80-90-100-112-132-160		18800	21700	33700	40600	12100	8800	
	305 L3	220	6.8	4750	3.7	7.5	71-80-90-100-112-132-160		19700	22800	35200	42400	12700	8800	
	305 L3	258	5.8	3600	2.4	7.5	71-80-90-100-112-132-160		20800	24000	36900	44400	13300	8800	
	305 L3	276	5.4	4460	2.8	7.5	71-80-90-100-112-132-160		21300	24600	37700	45400	13700	8800	
	305 L3	321	4.7	3640	1.9	7.5	71-80-90-100-112-132-160		22400	25800	39400	47500	14400	8800	
	305 L3	389	3.9	3170	1.4	7.5	71-80-90-100-112-132-160		23900	27500	41800	50300	15300	8800	
	305 L3	402	3.7	3760	1.6	7.5	71-80-90-100-112-132-160		24100	27800	42200	50700	15500	8800	
	305 L4	413	3.6	4720	2	6	71-80-90-100-112-132-160		24300	28100	42500	51200	15600	8800	
	305 L4	446	3.4	5490	2.2	6	71-80-90-100-112-132-160		25000	28800	43500	52400	16000	8800	
	305 L4	492	3	5340	1.9	6	71-80-90-100-112-132-160		25800	29800	44800	53900	16600	8800	
	305 L4	556	2.7	5500	1.8	6	71-80-90-100-112-132-160		26900	31000	46500	55900	17200	8800	
	305 L4	649	2.3	4510	1.2	6	71-80-90-100-112-132-160		28300	32700	48700	58600	18200	8800	
	305 L4	718	2.1	4130	1	6	71-80-90-100-112-132-160		29300	33800	50200	60400	18800	8800	
	305 L4	816	1.8	5410	1.2	6	71-80-90-100-112-132-160		30500	35300	52200	62800	19600	8800	
	305 L4	896	1.7	4290	0.85	6	71-80-90-100-112-132-160		31500	36400	53700	64600	20200	8800	
	305 L4	1018	1.5	5450	0.95	6	71-80-90-100-112-132-160		32900	38000	55800	67100	21100	8800	
	305 L4	1098	1.4	4440	0.72	6	71-80-90-100-112-132-160		33700	38900	57000	68600	21600	8800	
	305L4	1278	1.2	5500	0.76	6	71-80-90-100-112-132-160		35500	40900	59700	71800	22800	8800	
	305 L4	1370	1.1	4620	0.6	6	71-80-90-100-112-132-160		36000	41900	60900	73300	23300	8800	
	305 L4	1586	0.95	4750	0.53	6	71-80-90-100-112-132-160		36000	42000	63700	74000	24000	8800	
	305 L4	1854	0.81	4690	0.45	6	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	8800	





305 L							Page 240	5800 Nm						
n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]		FZ	M_2 max Nm
1500	305 L4	1991	0.75	5600	0.5	6	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	8800
	305 L4	2243	0.67	3800	0.3	6	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	8800
	305 L4	2799	0.54	3800	0.24	6	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	8800
1000	305 L1	3.6	278	2680	60	15.6	132-160-180-200		5730	6620	11600	13900	3680	8800
	305 L1	4.25	235	2770	60	15.6	132-160-180-200		6060	7000	12200	14600	3890	8800
	305 L1	5.33	188	2890	58	15.6	132-160-180-200		6540	7550	13000	15700	4190	8800
	305 L1	6.2	161	3000	52	15.6	132-160-180-200		6870	7930	13600	16400	4410	8800
	305 L1	7.5	133	2560	37	15.6	132-160-180-200		7320	8450	14400	17400	4700	8800
	305 L2	12.5	80	3300	29	10.8	71-80-90-100-112-132-160		8690	10000	16800	20300	5570	8800
	305 L2	15.3	65	3460	25	10.8	71-80-90-100-112-132-160		9300	10700	17900	21500	5960	8800
	305 L2	18.1	55	4090	25	10.8	71-80-90-100-112-132-160		9830	11300	18800	22600	6300	8800
	305 L2	20.8	48	3650	19.5	10.8	71-80-90-100-112-132-160		10300	11900	19600	23600	6600	8800
	305 L2	22.7	44	4290	21	10.8	71-80-90-100-112-132-160		10600	12200	20100	24200	6800	8800
	305 L2	24.5	41	4200	19.1	10.8	71-80-90-100-112-132-160		10900	12500	20600	24800	6970	8800
	305 L2	26.4	38	3560	15	10.8	71-80-90-100-112-132-160		11100	12900	21100	25300	7150	8800
	305 L2	30.8	33	4310	15.6	10.8	71-80-90-100-112-132-160		11700	13500	22000	26500	7520	8800
	305 L2	35.8	28	3570	11.1	10.8	71-80-90-100-112-132-160		12300	14200	23100	27700	7910	8800
	305 L2	38.4	26	4330	12.5	10.8	71-80-90-100-112-132-160		12600	14600	23600	28300	8100	8800
	305 L2	44.6	22.4	3570	8.9	10.8	71-80-90-100-112-132-160		13300	15300	24600	29600	8510	8800
	305 L2	55.8	17.9	3560	7.1	10.8	71-80-90-100-112-132-160		14300	16500	26300	31700	9170	8800
	305 L3	53.4	18.7	4190	9	9	71-80-90-100-112-132-160		14100	16300	26000	31300	9040	8800
	305 L3	63.1	15.9	4980	9.1	9	71-80-90-100-112-132-160		14900	17200	27300	32900	9550	8800
	305 L3	72.3	13.8	4340	6.9	9	71-80-90-100-112-132-160		15600	18000	28500	34300	10000	8800
	305 L3	77.2	12.9	5110	7.6	9	71-80-90-100-112-132-160		15900	18400	29000	34900	10200	8800
	305 L3	90.2	11.1	4440	5.7	9	71-80-90-100-112-132-160		16800	19400	30400	36600	10800	8800
	305 L3	105	9.6	5310	5.8	9	71-80-90-100-112-132-160		17600	20300	31800	38300	11300	8800
	305 L3	113	8.9	3600	3.7	9	71-80-90-100-112-132-160		18100	20900	32500	39100	11600	8800
	305 L3	124	8	3600	3.3	9	71-80-90-100-112-132-160		18700	21600	33500	40300	12000	8800
	305 L3	141	7.1	5260	4.3	9	71-80-90-100-112-132-160		19500	22500	34800	41900	12500	8800
	305 L3	152	6.6	3600	2.7	9	71-80-90-100-112-132-160		20000	23100	35600	42900	12800	8800
	305 L3	164	6.1	4450	3.1	9	71-80-90-100-112-132-160		20500	23600	36400	43800	13100	8800
	305 L3	178	5.6	4460	2.9	9	71-80-90-100-112-132-160		21000	24300	37300	44900	13500	8800
	305 L3	190	5.3	3600	2.2	9	71-80-90-100-112-132-160		21500	24800	38100	45800	13800	8800
	305 L3	220	4.5	4750	2.5	9	71-80-90-100-112-132-160		22600	26100	39800	47900	14500	8800
	305 L3	258	3.9	3740	1.7	9	71-80-90-100-112-132-160		23800	27500	41700	50200	15300	8800
	305 L3	276	3.6	4670	1.9	9	71-80-90-100-112-132-160		24400	28100	42600	51200	15600	8800
	305L3	321	3.1	3870	1.4	9	71-80-90-100-112-132-160		25600	29600	44600	53600	16400	8800
	305L3	389	2.6	3290	0.97	9	71-80-90-100-112-132-160		27300	31500	47200	56800	17500	8800
	305L3	402	2.5	4000	1.1	9	71-80-90-100-112-132-160		27600	31900	47600	57300	17700	8800





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5800 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			FZ	M_2 max Nm
											HC/PC	HZ/PZ			
1000	305 L4	413	2.4	5060	1.4	7.2	71-80-90-100-112-132-160		27900	32200	48000	57800	17900		8800
	305 L4	446	2.2	5530	1.5	7.2	71-80-90-100-112-132-160		28600	33000	49100	59100	18300		8800
	305 L4	492	2	5390	1.3	7.2	71-80-90-100-112-132-160		29500	34100	50600	60900	19000		8800
	305 L4	556	1.8	5610	1.2	7.2	71-80-90-100-112-132-160		30800	35500	52500	63200	19700		8800
	305 L4	649	1.5	4600	0.84	7.2	71-80-90-100-112-132-160		32400	37400	55000	66200	20800		8800
	305 L4	718	1.4	4430	0.73	7.2	71-80-90-100-112-132-160		33500	38700	56700	68200	21500		8800
	305 L4	816	1.2	5490	0.8	7.2	71-80-90-100-112-132-160		35000	40400	58900	70900	22400		8800
	305 L4	896	1.1	4600	0.61	7.2	71-80-90-100-112-132-160		36000	41600	60600	72900	23100		8800
	305 L4	1018	0.98	5530	0.64	7.2	71-80-90-100-112-132-160		36000	42000	63000	74000	24000		8800
	305 L4	1098	0.91	4690	0.51	7.2	71-80-90-100-112-132-160		36000	42000	64000	74000	24000		8800
	305 L4	1278	0.78	5600	0.52	7.2	71-80-90-100-112-132-160		36000	42000	64000	74000	24000		8800
	305 L4	1370	0.73	4690	0.4	7.2	71-80-90-100-112-132-160		36000	42000	64000	74000	24000		8800
	305 L4	1586	0.63	4750	0.35	7.2	71-80-90-100-112-132-160		36000	42000	64000	74000	24000		8800
	305 L4	1854	0.54	4690	0.3	7.2	71-80-90-100-112-132-160		36000	42000	64000	74000	24000		8800
	305 L4	1991	0.5	5600	0.33	7.2	71-80-90-100-112-132-160		36000	42000	64000	74000	24000		8800
	305 L4	2243	0.45	3800	0.2	7.2	71-80-90-100-112-132-160		36000	42000	64000	74000	24000		8800
	305 L4	2799	0.36	3800	0.16	7.2	71-80-90-100-112-132-160		36000	42000	64000	74000	24000		8800
500	305L1	3.6	139	3300	49	26	132-160-180-200		7220	8340	14300	17200	4630		8800
	305L1	4.25	118	3410	43	26	132-160-180-200		7630	8810	15000	18000	4900		8800
	305L1	5.33	94	3560	36	26	132-160-180-200		8240	9510	16000	19300	5280		8800
	305L1	6.2	81	3490	30	26	132-160-180-200		8660	10000	16800	20200	5560		8800
	305L1	7.5	67	2910	21	26	132-160-180-200		9230	10700	17800	21400	5920		8800
	305L2	12.5	40	3890	17.3	18	71-80-90-100-112-132-160		10900	12600	20700	24900	7020		8800
	305L2	15.3	33	3930	14.3	18	71-80-90-100-112-132-160		11700	13500	22000	26500	7510		8800
	305L2	18.1	27.6	4580	14.1	18	71-80-90-100-112-132-160		12400	14300	23100	27800	7940		8800
	305L2	20.8	24.1	3970	10.6	18	71-80-90-100-112-132-160		13000	15000	24100	29000	8310		8800
	305L2	22.7	22	4340	10.6	18	71-80-90-100-112-132-160		13400	15400	24800	29800	8570		8800
	305L2	24.5	20.4	4680	10.6	18	71-80-90-100-112-132-160		13700	15800	25300	30500	8780		8800
	305L2	26.4	18.9	3580	7.5	18	71-80-90-100-112-132-160		14000	16200	25900	31200	9010		8800
	305L2	30.8	16.3	4360	7.9	18	71-80-90-100-112-132-160		14800	17100	27100	32600	9480		8800
	305L2	35.8	14	3590	5.6	18	71-80-90-100-112-132-160		15500	17900	28400	34200	9960		8800
	305L2	38.4	13	4380	6.3	18	71-80-90-100-112-132-160		15900	18400	29000	34900	10200		8800
	305L2	44.6	11.2	3600	4.5	18	71-80-90-100-112-132-160		16700	19300	30300	36500	10700		8800
	305L2	55.8	9	3600	3.6	18	71-80-90-100-112-132-160		18000	20800	32400	39000	11600		8800
	305L3	53.4	9.4	4490	4.8	15	71-80-90-100-112-132-160		17800	20500	32000	38500	11400		8800
	305L3	63.1	7.9	5360	4.9	15	71-80-90-100-112-132-160		18800	21700	33600	40500	12000		8800
	305L3	72.3	6.9	4490	3.6	15	71-80-90-100-112-132-160		19600	22700	35100	42200	12600		8800
	305L3	77.2	6.5	5410	4	15	71-80-90-100-112-132-160		20100	23200	35800	43000	12900		8800
	305L3	90.2	5.5	4490	2.9	15	71-80-90-100-112-132-160		21100	24400	37500	45100	13600		8800
	305L3	105	4.8	5480	3	15	71-80-90-100-112-132-160		22200	25600	39200	47100	14200		8800



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5800 Nm

n ₁ min ⁻¹		i	n ₂ min ⁻¹	M _{n2} Nm	P _{n1} kW	P _t kW	P (IEC)		MC	MZ	R _{n2} [N]			M _{2 max} Nm
											HC/PC	HZ/PZ	FZ	
500	305L3	113	4.4	3670	1.9	15	71-80-90-100-112-132-160		22800	26300	40100	48200	14600	8800
	305L3	124	4	3720	1.7	15	71-80-90-100-112-132-160		23500	27200	41300	49600	15100	8800
	305L3	141	3.5	5320	2.2	15	71-80-90-100-112-132-160		24600	28400	42900	51600	15800	8800
	305L3	152	3.3	3840	1.4	15	71-80-90-100-112-132-160		25200	29100	43900	52800	16200	8800
	305L3	164	3.1	4870	1.7	15	71-80-90-100-112-132-160		25800	29800	44800	53900	16500	8800
	305L3	178	2.8	4940	1.6	15	71-80-90-100-112-132-160		26500	30600	45900	55200	17000	8800
	305L3	190	2.6	3970	1.2	15	71-80-90-100-112-132-160		27100	31300	46900	56400	17400	8800
	305L3	220	2.3	4750	1.2	15	71-80-90-100-112-132-160		28500	32900	49000	58900	18300	8800
	305L3	258	1.9	4180	0.93	15	71-80-90-100-112-132-160		30000	34600	51300	61700	19200	8800
	305L3	276	1.8	5140	1.1	15	71-80-90-100-112-132-160		30700	35400	52400	63100	19700	8800
	305L3	321	1.6	4340	0.78	15	71-80-90-100-112-132-160		32300	37300	54900	66000	20700	8800
	305L3	389	1.3	3660	0.54	15	71-80-90-100-112-132-160		34400	39700	58100	69900	22100	8800
	305L3	402	1.2	4520	0.64	15	71-80-90-100-112-132-160		34800	40200	58600	70600	22300	8800
	305L4	413	1.2	5480	0.78	12	71-80-90-100-112-132-160		35100	40500	59100	71200	22500	8800
	305L4	446	1.1	5760	0.76	12	71-80-90-100-112-132-160		36000	41600	60500	72800	23100	8800
	305L4	492	1	5530	0.66	12	71-80-90-100-112-132-160		36000	42000	62300	74000	23900	8800
	305L4	556	0.9	5800	0.62	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	8800
	305L4	649	0.77	4700	0.43	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	8800
	305L4	718	0.7	4690	0.39	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	8800
	305L4	816	0.61	5530	0.4	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	8800
	305L4	896	0.56	4690	0.31	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	8800
	305L4	1018	0.49	5530	0.32	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	8800
	305L4	1098	0.46	4690	0.25	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	8800
	305L4	1278	0.39	5600	0.26	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	8800
	305L4	1370	0.36	4690	0.2	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	8800
	305L4	1586	0.32	4750	0.18	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	8800
	305L4	1854	0.27	4690	0.15	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	8800
	305L4	1991	0.25	5600	0.17	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	8800
	305L4	2243	0.22	3800	0.1	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	8800
	305L4	2799	0.18	3800	0.08	12	71-80-90-100-112-132-160		36000	42000	64000	74000	24000	8800

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10840 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			FZ	$M_{2\max}$ Nm
1500	306 L1	3.6	417	3760	75	18	160-180-200-225-250	6240	7070	16800	19500	4690	14900	
	306 L1	4.25	353	3890	75	18	160-180-200-225-250	6590	7470	17600	20500	4950	14900	
	306 L1	5.33	281	4060	75	18	160-180-200-225-250	7110	8060	18900	22000	5340	14900	
	306 L1	6.2	242	4200	75	18	160-180-200-225-250	7480	8470	19700	23000	5620	14900	
	306 L1	7.5	200	4090	75	18	160-180-200-225-250	7970	9030	20900	24300	2980	14900	





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10840 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]		FZ	$M_{2 \max}$ Nm
										HC/PC	HZ/PZ		
1500	306L2	13	116	4820	40	13	132-160-180-200	9560	10800	24600	28700	7180	14900
	306L2	15.3	98	4990	40	13	132-160-180-200	10100	11400	25900	30100	7590	14900
	306L2	18.1	83	5890	40	13	132-160-180-200	10700	12100	27200	31700	8020	14900
	306L2	22.7	66	6140	40	13	132-160-180-200	11500	13000	29100	33900	8650	14900
	306L2	26.4	57	6370	40	13	132-160-180-200	12100	13700	30500	35500	9100	14900
	306L2	28.4	53	6700	39	13	132-160-180-200	12400	14100	31200	36300	9330	14900
	306L2	33.1	45	6870	35	13	132-160-180-200	13100	14800	32600	38000	9810	14900
	306L2	38.4	39	6470	28	13	132-160-180-200	13700	15600	34100	39700	10300	14900
	306L2	46.5	32	6470	23	13	132-160-180-200	14600	16600	36100	42100	11000	14900
	306L2	56.3	26.7	5210	15.5	13	132-160-180-200	15600	17700	38300	44500	11700	14900
	306L2	72.5	20.7	5290	12.2	13	132-160-180-200	17000	19200	41300	48100	12700	14900
	306L3	53.2	28.2	7100	20	7.5	71-80-90-100-112-132-160	15300	17300	37600	43800	11500	14900
	306L3	65.2	23	7480	19.7	7.5	71-80-90-100-112-132-160	16400	18600	40000	46600	12300	14900
	306L3	77	19.5	8350	18.7	7.5	71-80-90-100-112-132-160	17300	19600	42000	48900	13000	14900
	306L3	81.9	18.3	6890	14.5	7.5	71-80-90-100-112-132-160	17700	20000	42800	49900	13300	14900
	306L3	88.3	17	8550	16.7	7.5	71-80-90-100-112-132-160	18100	20500	43800	51000	13600	14900
	306L3	104	14.4	8900	14.7	7.5	71-80-90-100-112-132-160	19200	21700	46000	53600	14400	14900
	306L3	112	13.4	7410	11.3	7.5	71-80-90-100-112-132-160	19600	22200	47100	54800	14800	14900
	306L3	121	12.4	7790	11.1	7.5	71-80-90-100-112-132-160	20100	22800	48200	56100	15100	14900
	306L3	141	10.6	7900	9.6	7.5	71-80-90-100-112-132-160	21200	24000	50400	58700	15900	14900
	306L3	152	9.9	7590	8.6	7.5	71-80-90-100-112-132-160	21700	24600	51600	60000	16300	14900
	306L3	190	7.9	6510	5.9	7.5	71-80-90-100-112-132-160	23400	26500	55100	64200	17600	14900
	306L3	205	7.3	8110	6.8	7.5	71-80-90-100-112-132-160	24000	27200	56400	65600	18000	14900
	306L3	222	6.8	6520	5.1	7.5	71-80-90-100-112-132-160	24600	27900	57700	67200	18500	14900
	306L3	238	6.3	8180	5.9	7.5	71-80-90-100-112-132-160	25200	28600	59000	68700	19000	14900
	306L3	268	5.6	5500	3.5	7.5	71-80-90-100-112-132-160	26200	29700	61100	71200	19700	14900
	306L3	288	5.2	5500	3.3	7.5	71-80-90-100-112-132-160	26900	30500	62400	72700	20200	14900
	306L3	325	4.6	5540	2.9	7.5	71-80-90-100-112-132-160	28000	31700	64700	75400	21000	14900
	306L3	405	3.7	5670	2.4	7.5	71-80-90-100-112-132-160	30100	34100	69200	80500	22600	14900
	306L4	391	3.8	6840	3.1	6	71-80-90-100-112-132-160	29800	33700	68400	79700	22400	14900
	306L4	444	3.4	9850	3.9	6	71-80-90-100-112-132-160	31100	35200	71100	82800	23300	14900
	306L4	509	2.9	9450	3.3	6	71-80-90-100-112-132-160	32500	36800	74100	86300	24400	14900
	306L4	589	2.5	9320	2.8	6	71-80-90-100-112-132-160	34100	38700	77400	90100	25600	14900
	306L4	636	2.4	9450	2.6	6	71-80-90-100-112-132-160	35000	39600	79200	92200	26300	14900
	306L4	700	2.1	9470	2.4	6	71-80-90-100-112-132-160	36100	40900	81500	94900	27100	14900
	306L4	809	1.9	7690	1.7	6	71-80-90-100-112-132-160	37900	43000	85100	99100	28500	14900
	306L4	877	1.7	7710	1.6	6	71-80-90-100-112-132-160	39000	44100	87200	101600	29300	14900





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10840 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			FZ	$M_{2 \max}$ Nm
											HC/PC	HZ/PZ			
1500	306L4	1015	1.5	9460	1.7	6	71-80-90-100-112-132-160		40900	46300	91100	106100	30700		14900
	306L4	1095	1.4	7790	1.3	6	71-80-90-100-112-132-160		41900	47500	93200	108500	31500		14900
	306L4	1279	1.2	8400	1.2	6	71-80-90-100-112-132-160		44200	50100	97700	113700	33200		14900
	306L4	1475	1	10100	1.2	6	71-80-90-100-112-132-160		45000	51000	101000	118700	34800		14900
	306L4	1597	0.94	8630	0.96	6	71-80-90-100-112-132-160		45000	51000	101000	119000	35000		14900
	306L4	1843	0.81	10100	0.97	6	71-80-90-100-112-132-160		45000	51000	101000	119000	35000		14900
	306L4	2074	0.72	7000	0.6	6	71-80-90-100-112-132-160		45000	51000	101000	119000	35000		14900
	306L4	2337	0.64	7000	0.53	6	71-80-90-100-112-132-160		45000	51000	101000	119000	35000		14900
	306L4	2916	0.51	7000	0.43	6	71-80-90-100-112-132-160		45000	51000	101000	119000	35000		14900
1000	306L1	3.6	278	4250	75	22	160-180-200-225-250		7140	8090	18900	22100	5360		14900
	306L1	4.25	235	4390	75	22	160-180-200-225-250		7550	8550	19900	23200	5670		14900
	306L1	5.33	188	4580	75	22	160-180-200-225-250		8140	9220	21300	24800	6120		14900
	306L1	6.2	161	4750	75	22	160-180-200-225-250		8560	9700	22300	26000	6430		14900
	306L1	7.5	133	4620	67	22	160-180-200-225-250		9120	10300	23600	27500	6850		14900
	306L2	13	77	5450	40	15.6	132-160-180-200		10900	12400	27800	32400	8220		14900
	306L2	15.3	65	5640	40	15.6	132-160-180-200		11600	13100	29200	34000	8690		14900
	306L2	18.1	55	6650	40	15.6	132-160-180-200		12200	13800	30700	35800	9180		14900
	306L2	22.7	44	6840	34	15.6	132-160-180-200		13200	14900	32900	38300	9910		14900
	306L2	26.4	38	6780	29	15.6	132-160-180-200		13900	15700	34400	40100	10400		14900
	306L2	28.4	35	7040	28	15.6	132-160-180-200		14200	16100	35200	41000	10700		14900
	306L2	33.1	30	7150	24	15.6	132-160-180-200		15000	16900	36800	42900	11200		14900
	306L2	38.4	26	6480	18.7	15.6	132-160-180-200		15700	17800	38500	44900	11800		14900
	306L2	46.5	21.5	6480	15.5	15.6	132-160-180-200		16800	19000	40800	47500	12600		14900
	306L2	56.3	17.8	5330	10.5	15.6	132-160-180-200		17800	20200	43200	50300	13400		14900
	306L2	72.5	13.8	5400	8.3	15.6	132-160-180-200		19400	22000	46600	54300	14600		14900
	306L3	53.2	18.8	7890	17	9	71-80-90-100-112-132-160		17500	19900	42500	49500	13200		14900
	306L3	65.2	15.3	8320	14.6	9	71-80-90-100-112-132-160		18800	21200	45200	52600	14100		14900
	306L3	77	13	9090	13.5	9	71-80-90-100-112-132-160		19800	22500	47500	55300	14900		14900
	306L3	81.9	12.2	7310	10.2	9	71-80-90-100-112-132-160		20200	22900	48400	56300	15200		14900
	306L3	88.3	11.3	9230	12	9	71-80-90-100-112-132-160		20700	23500	49500	57600	15600		14900
	306L3	104	9.6	9610	10.6	9	71-80-90-100-112-132-160		21900	24800	52000	60500	16500		14900
	306L3	112	8.9	7590	7.8	9	71-80-90-100-112-132-160		22500	25500	53200	61900	16900		14900
	306L3	121	8.2	8050	7.6	9	71-80-90-100-112-132-160		23100	26100	54400	63300	17300		14900
	306L3	141	7.1	8120	6.6	9	71-80-90-100-112-132-160		24200	27500	56900	66300	18200		14900
	306L3	152	6.6	7590	5.7	9	71-80-90-100-112-132-160		24900	28200	58200	67800	18700		14900
	306L3	190	5.3	6530	3.9	9	71-80-90-100-112-132-160		26800	30300	62200	72500	20100		14900
	306L3	205	4.9	8330	4.7	9	71-80-90-100-112-132-160		27500	31100	63700	74100	20600		14900
	306L3	222	4.5	6650	3.4	9	71-80-90-100-112-132-160		28200	31900	65200	75900	21200		14900





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10840 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			FZ	$M_{2 \max}$ Nm
											HC/PC	HZ/PZ			
1000	306L3	238	4.2	8550	4.1	9	71-80-90-100-112-132-160		28900	32700	66600	77600	21700		14900
	306L3	268	3.7	5670	2.4	9	71-80-90-100-112-132-160		30000	34000	69000	80400	22600		14900
	306L3	288	3.5	5710	2.3	9	71-80-90-100-112-132-160		30800	34900	70500	82100	23100		14900
	306L3	325	3.1	5780	2	9	71-80-90-100-112-132-160		32000	36300	73100	85100	24100		14900
	306L3	405	2.5	5910	1.7	9	71-80-90-100-112-132-160		34500	39100	78100	91000	25900		14900
	306L4	391	2.6	7340	2.2	7.2	71-80-90-100-112-132-160		34100	38600	77300	90000	25600		14900
	306L4	444	2.3	9910	2.6	7.2	71-80-90-100-112-132-160		35500	40300	80300	93500	26700		14900
	306L4	509	2	9450	2.2	7.2	71-80-90-100-112-132-160		37200	42200	83700	97400	27900		14900
	306L4	589	1.7	9650	1.9	7.2	71-80-90-100-112-132-160		39100	44300	87400	101800	29300		14900
	306L4	636	1.6	9450	1.8	7.2	71-80-90-100-112-132-160		40100	45400	89400	104100	30100		14900
	306L4	700	1.4	9790	1.7	7.2	71-80-90-100-112-132-160		41400	46900	92000	107200	31100		14900
	306L4	809	1.2	7820	1.1	7.2	71-80-90-100-112-132-160		43400	49200	96100	111900	32600		14900
	306L4	877	1.1	7850	1.1	7.2	71-80-90-100-112-132-160		44600	50500	98500	114700	33500		14900
	306L4	1015	0.99	9540	1.1	7.2	71-80-90-100-112-132-160		45000	51000	101000	119000	35000		14900
	306L4	1095	0.91	7890	0.85	7.2	71-80-90-100-112-132-160		45000	51000	101000	119000	35000		14900
	306L4	1279	0.78	8630	0.8	7.2	71-80-90-100-112-132-160		45000	51000	101000	119000	35000		14900
	306L4	1475	0.68	10100	0.81	7.2	71-80-90-100-112-132-160		45000	51000	101000	119000	35000		14900
	306L4	1597	0.63	8630	0.64	7.2	71-80-90-100-112-132-160		45000	51000	101000	119000	35000		14900
	306L4	1843	0.54	10100	0.65	7.2	71-80-90-100-112-132-160		45000	51000	101000	119000	35000		14900
	306L4	2074	0.48	7000	0.4	7.2	71-80-90-100-112-132-160		45000	51000	101000	119000	35000		14900
	306L4	2337	0.43	7000	0.35	7.2	71-80-90-100-112-132-160		45000	51000	101000	119000	35000		14900
	306L4	2916	0.34	7000	0.28	7.2	71-80-90-100-112-132-160		45000	51000	101000	119000	35000		14900
500	306L1	3.6	139	5230	75	36	160-180-200-225-250		9000	10200	23300	27200	6760		14900
	306L1	4.25	118	5410	69	36	160-180-200-225-250		9510	10800	24500	28500	7140		14900
	306L1	5.33	94	5640	57	36	160-180-200-225-250		10300	11600	26200	30600	7700		14900
	306L1	6.2	81	5770	50	36	160-180-200-225-250		10800	12200	27400	32000	8100		14900
	306L1	7.5	67	5040	36	36	160-180-200-225-250		11500	13000	29100	33800	8630		14900
	306L2	13	39	6470	28	26	132-160-180-200		13800	15600	34200	39900	10400		14900
	306L2	15.3	33	6830	25	26	132-160-180-200		14600	16500	36000	41900	10900		14900
	306L2	18.1	27.7	7760	24	26	132-160-180-200		15400	17400	37800	44100	11600		14900
	306L2	22.7	22.1	7820	19.2	26	132-160-180-200		16600	18800	40500	47200	12500		14900
	306L2	26.4	19	7190	15.2	26	132-160-180-200		17500	19800	42400	49300	13100		14900
	306L2	28.4	17.6	7530	14.7	26	132-160-180-200		17900	20300	43400	50500	13500		14900
	306L2	33.1	15.1	7640	12.9	26	132-160-180-200		18800	21300	45400	52800	14200		14900
	306L2	38.4	13	6490	9.4	26	132-160-180-200		19800	22400	47500	55300	14900		14900
	306L2	46.5	10.8	6500	7.8	26	132-160-180-200		21100	23900	50200	58500	15900		14900
	306L2	56.3	8.9	5500	5.4	26	132-160-180-200		22500	25500	53200	61900	16900		14900
	306L2	72.5	6.9	5500	4.2	26	132-160-180-200		24500	27700	57400	66800	18400		14900





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10840 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]		FZ	$M_{2 \max}$ Nm
											HC/PC	HZ/PZ		
500	306L3	53.2	9.4	9300	10	15	71-80-90-100-112-132-160		22100	25000	52300	60900	16600	14900
	306L3	65.2	7.7	9320	8.2	15	71-80-90-100-112-132-160		23600	26800	55600	64800	17800	14900
	306L3	77	6.5	9750	7.3	15	71-80-90-100-112-132-160		25000	28300	58400	68100	18800	14900
	306L3	81.9	6.1	7650	5.4	15	71-80-90-100-112-132-160		25500	28900	59500	69300	19100	14900
	306L3	88.3	5.7	9450	6.1	15	71-80-90-100-112-132-160		26100	29600	60900	70900	19600	14900
	306L3	104	4.8	9850	5.4	15	71-80-90-100-112-132-160		27600	31300	64000	74500	20800	14900
	306L3	112	4.5	7590	3.9	15	71-80-90-100-112-132-160		28300	32100	65500	76200	21300	14900
	306L3	121	4.1	8580	4.1	15	71-80-90-100-112-132-160		29100	32900	67000	78000	21800	14900
	306L3	141	3.5	8800	3.6	15	71-80-90-100-112-132-160		30500	34600	70100	81600	23000	14900
	306L3	152	3.3	7590	2.9	15	71-80-90-100-112-132-160		31300	35500	71700	83500	23500	14900
	306L3	190	2.6	7300	2.2	15	71-80-90-100-112-132-160		33700	38200	76600	89200	25300	14900
	306L3	205	2.4	9370	2.6	15	71-80-90-100-112-132-160		34600	39200	78400	91300	26000	14900
	306L3	222	2.3	7500	1.9	15	71-80-90-100-112-132-160		35500	40300	80300	93500	26700	14900
	306L3	238	2.1	9390	2.3	15	71-80-90-100-112-132-160		36400	41200	82000	95500	27300	14900
	306L3	268	1.9	6230	1.3	15	71-80-90-100-112-132-160		37900	42900	85000	99000	28400	14900
	306L3	288	1.7	6320	1.3	15	71-80-90-100-112-132-160		38800	43900	86800	101100	29100	14900
	306L3	325	1.5	6460	1.1	15	71-80-90-100-112-132-160		40300	45700	90000	104800	30300	14900
	306L3	405	1.2	6730	0.95	15	71-80-90-100-112-132-160		43400	49200	96200	112000	32600	14900
	306L4	391	1.3	8270	1.3	12	71-80-90-100-112-132-160		42900	48600	95200	110800	32200	14900
	306L4	444	1.1	10300	1.4	12	71-80-90-100-112-132-160		44800	50700	98900	115100	33600	14900
	306L4	509	0.98	9450	1.1	12	71-80-90-100-112-132-160		45000	51000	101000	119000	35000	14900
	306L4	589	0.85	10100	1	12	71-80-90-100-112-132-160		45000	51000	101000	119000	35000	14900
	306L4	636	0.79	9450	0.88	12	71-80-90-100-112-132-160		45000	51000	101000	119000	35000	14900
	306L4	700	0.71	10100	0.85	12	71-80-90-100-112-132-160		45000	51000	101000	119000	35000	14900
	306L4	809	0.62	7890	0.58	12	71-80-90-100-112-132-160		45000	51000	101000	119000	35000	14900
	306L4	877	0.57	7890	0.53	12	71-80-90-100-112-132-160		45000	51000	101000	119000	35000	14900
	306L4	1015	0.49	9540	0.56	12	71-80-90-100-112-132-160		45000	51000	101000	119000	35000	14900
	306L4	1095	0.46	7890	0.43	12	71-80-90-100-112-132-160		45000	51000	101000	119000	35000	14900
	306L4	1279	0.39	8630	0.4	12	71-80-90-100-112-132-160		45000	51000	101000	119000	35000	14900
	306L4	1475	0.34	10100	0.4	12	71-80-90-100-112-132-160		45000	51000	101000	119000	35000	14900
	306L4	1597	0.31	8630	0.32	12	71-80-90-100-112-132-160		45000	51000	101000	119000	35000	14900
	306L4	1843	0.27	10100	0.32	12	71-80-90-100-112-132-160		45000	51000	101000	119000	35000	14900
	306L4	2074	0.24	7000	0.2	12	71-80-90-100-112-132-160		45000	51000	101000	119000	35000	14900
	306L4	2337	0.21	7000	0.18	12	71-80-90-100-112-132-160		45000	51000	101000	119000	35000	14900
	306L4	2916	0.17	7000	0.14	12	71-80-90-100-112-132-160		45000	51000	101000	119000	35000	14900





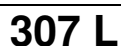
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15680 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			$M_{2\max}$ Nm
											HC/PC	HZ/PZ	FZ	
1500	307L1	3.43	438	5110	115	22	180-200-225-250		—	—	17800	23300	5930	18600
	307L1	4.09	367	5260	115	22	180-200-225-250		—	—	18700	24600	6290	21000
	307L1	5.25	286	5540	115	22	180-200-225-250		—	—	20200	26500	6830	21000
	307L1	6.23	241	5750	115	22	180-200-225-250		—	—	21300	27900	7230	21000
	307L2	12.3	122	7510	60	18	132-160-180-200		—	—	26100	34200	9080	18600
	307L2	14.7	102	7730	60	18	132-160-180-200		—	—	27500	36100	9640	21000
	307L2	17.4	86	8120	60	18	132-160-180-200		—	—	28900	37900	10200	21000
	307L2	21.8	69	8690	60	18	132-160-180-200		—	—	31000	40600	11000	21000
	307L2	25.4	59	9090	60	18	132-160-180-200		—	—	32400	42500	11600	21000
	307L2	28	54	9150	55	18	132-160-180-200		—	—	33400	43700	11900	21000
	307L2	30.7	49	9590	52	18	132-160-180-200		—	—	34300	45000	12300	21000
	307L2	32.6	46	9410	48	18	132-160-180-200		—	—	34900	45800	12600	21000
	307L2	38.6	39	8310	36	18	132-160-180-200		—	—	36800	48200	13300	21000
	307L2	46.7	32	8360	30	18	132-160-180-200		—	—	38900	51000	14200	21000
	307L3	51.3	29.3	10700	30	11	71-80-90-100-112-132-160		—	—	40000	52400	14600	21000
	307L3	60.5	24.8	11100	30	11	71-80-90-100-112-132-160		—	—	42100	55100	15400	21000
	307L3	74.1	20.2	11600	27	11	71-80-90-100-112-132-160		—	—	44700	58600	16500	21000
	307L3	80.6	18.6	10200	22	11	71-80-90-100-112-132-160		—	—	45800	60100	17000	21000
	307L3	93	16.1	12200	23	11	71-80-90-100-112-132-160		—	—	47900	62700	17800	21000
	307L3	100	15	12400	21	11	71-80-90-100-112-132-160		—	—	49000	64100	18300	21000
	307L3	113	13.2	10500	16	11	71-80-90-100-112-132-160		—	—	50800	66500	19000	21000
1500	307L3	126	11.9	13000	17.8	11	71-80-90-100-112-132-160		—	—	52400	68700	19700	21000
	307L3	139	10.8	10700	13.3	11	71-80-90-100-112-132-160		—	—	54000	70700	20400	21000
	307L3	146	10.3	13400	15.8	11	71-80-90-100-112-132-160		—	—	54800	71800	20700	21000
	307L3	162	9.3	10800	11.6	11	71-80-90-100-112-132-160		—	—	56500	74000	21400	21000
	307L3	177	8.5	12300	12	11	71-80-90-100-112-132-160		—	—	58000	76100	22100	21000
	307L3	202	7.4	11000	9.4	11	71-80-90-100-112-132-160		—	—	60400	79100	23100	21000
	307L3	221	6.8	12700	9.9	11	71-80-90-100-112-132-160		—	—	62000	81300	23800	21000
	307L3	239	6.3	8700	6.3	11	71-80-90-100-112-132-160		—	—	63500	83300	24400	21000
	307L3	284	5.3	11300	6.8	11	71-80-90-100-112-132-160		—	—	66900	87600	25800	21000
	307L3	336	4.5	8840	4.5	11	71-80-90-100-112-132-160		—	—	70400	92200	27300	21000
	307L4	349	4.3	14900	7.6	7.5	71-80-90-100-112-132-160		—	—	71200	93300	27700	21000
	307L4	406	3.7	11900	5.2	7.5	71-80-90-100-112-132-160		—	—	74400	97500	29100	21000
	307L4	465	3.2	12200	4.6	7.5	71-80-90-100-112-132-160		—	—	77500	101600	30500	21000
	307L4	509	2.9	14000	4.9	7.5	71-80-90-100-112-132-160		—	—	79700	104400	31400	21000







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15680 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
											HC/PC	HZ/PZ	FZ	
1000	307 L3	177	5.6	12300	8	13.2	71-80-90-100-112-132-160		—	—	65600	85900	25300	21000
	307 L3	202	5	11300	6.4	13.2	71-80-90-100-112-132-160		—	—	68200	89300	26400	21000
	307 L3	221	4.5	13000	6.8	13.2	71-80-90-100-112-132-160		—	—	70100	91800	27200	21000
	307 L3	239	4.2	8920	4.3	13.2	71-80-90-100-112-132-160		—	—	71800	94000	27900	21000
	307 L3	284	3.5	12000	4.8	13.2	71-80-90-100-112-132-160		—	—	75500	98900	29600	21000
	307 L3	336	3	9370	3.2	13.2	71-80-90-100-112-132-160		—	—	79500	104200	31300	21000
	307 L4	349	2.9	14900	5	9	71-80-90-100-112-132-160		—	—	80400	105300	31700	21000
	307 L4	406	2.5	12700	3.7	9	71-80-90-100-112-132-160		—	—	84100	110200	33300	21000
	307 L4	465	2.2	13000	3.3	9	71-80-90-100-112-132-160		—	—	87600	114800	34900	21000
	307 L4	509	2	14300	3.3	9	71-80-90-100-112-132-160		—	—	90000	117900	35900	21000
	307 L4	579	1.7	15200	3.1	9	71-80-90-100-112-132-160		—	—	93500	122600	37500	21000
	307 L4	654	1.5	13800	2.5	9	71-80-90-100-112-132-160		—	—	97000	127100	39100	21000
	307 L4	722	1.4	15400	2.5	9	71-80-90-100-112-132-160		—	—	100000	131000	40400	21000
	307 L4	801	1.2	14300	2.1	9	71-80-90-100-112-132-160		—	—	103100	135100	41800	21000
	307 L4	906	1.1	15600	2	9	71-80-90-100-112-132-160		—	—	107000	140200	43500	21000
	307 L4	999	1	14800	1.8	9	71-80-90-100-112-132-160		—	—	109000	144400	45000	21000
	307 L4	1157	0.86	14800	1.5	9	71-80-90-100-112-132-160		—	—	109000	145000	45000	21000
	307 L4	1274	0.78	12300	1.1	9	71-80-90-100-112-132-160		—	—	109000	145000	45000	21000
	307 L4	1408	0.71	15700	1.3	9	71-80-90-100-112-132-160		—	—	109000	145000	45000	21000
	307 L4	1591	0.63	15000	1.1	9	71-80-90-100-112-132-160		—	—	109000	145000	45000	21000
	307 L4	1767	0.57	15700	1	9	71-80-90-100-112-132-160		—	—	109000	145000	45000	21000
	307 L4	2041	0.49	14300	0.83	9	71-80-90-100-112-132-160		—	—	109000	145000	45000	21000
	307 L4	2423	0.41	11000	0.54	9	71-80-90-100-112-132-160		—	—	109000	145000	45000	21000
500	307L1	3.43	146	7110	112	44	180-200-225-250		—	—	24700	32400	8550	18600
	307L1	4.09	122	7320	97	44	180-200-225-250		—	—	26100	34200	9070	21000
	307L1	5.25	95	7700	79	44	180-200-225-250		—	—	28100	36800	9850	21000
	307L1	6.23	80	7720	67	44	180-200-225-250		—	—	29600	38800	10400	21000
	307L2	12.3	41	8390	38	36	132-160-180-200		—	—	36300	47600	13100	18600
	307L2	14.7	34	10400	39	36	132-160-180-200		—	—	38300	50200	13900	21000
	307L2	17.4	28.8	10800	34	36	132-160-180-200		—	—	40200	52700	14700	21000
	307L2	21.8	22.9	11300	29	36	132-160-180-200		—	—	43100	56400	15800	21000
	307L2	25.4	19.7	11700	26	36	132-160-180-200		—	—	45100	59000	16700	21000
	307L2	28	17.9	10200	20	36	132-160-180-200		—	—	46400	60800	17200	21000
	307L2	30.7	16.3	11400	21	36	132-160-180-200		—	—	47700	62500	17700	21000
	307L2	32.6	15.4	10400	17.7	36	132-160-180-200		—	—	48600	63600	18100	21000
	307L2	38.6	12.9	8620	12.4	36	132-160-180-200		—	—	51100	67000	19200	21000
	307L2	46.7	10.7	8680	10.3	36	132-160-180-200		—	—	54100	70900	20400	21000





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15680 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			M_2 max Nm
											HC/PC	HZ/PZ	FZ	
5000	307L3	51.3	9.8	13600	15.2	22	71-80-90-100-112-132-160		—	—	55600	72900	21100	21000
	307L3	60.5	8.3	13900	13.2	22	71-80-90-100-112-132-160		—	—	58500	76600	22300	21000
	307L3	74.1	6.7	14300	11	22	71-80-90-100-112-132-160		—	—	62200	81500	23800	21000
	307L3	80.6	6.2	11100	7.9	22	71-80-90-100-112-132-160		—	—	63700	83500	24500	21000
	307L3	93	5.4	14700	9.1	22	71-80-90-100-112-132-160		—	—	66500	87200	25700	21000
	307L3	100	5	14900	8.5	22	71-80-90-100-112-132-160		—	—	68100	89200	26300	21000
	307L3	113	4.4	11500	5.8	22	71-80-90-100-112-132-160		—	—	70600	92500	27400	21000
	307L3	126	4	14900	6.8	22	71-80-90-100-112-132-160		—	—	72900	95500	28400	21000
	307L3	139	3.6	11900	4.9	22	71-80-90-100-112-132-160		—	—	75000	98300	29400	21000
	307L3	146	3.4	14000	5.5	22	71-80-90-100-112-132-160		—	—	76200	99900	29900	21000
	307L3	162	3.1	12300	4.4	22	71-80-90-100-112-132-160		—	—	78500	102900	30900	21000
	307L3	177	2.8	12300	4	22	71-80-90-100-112-132-160		—	—	80700	105800	31800	21000
	307L3	202	2.5	12700	3.6	22	71-80-90-100-112-132-160		—	—	83900	110000	33200	21000
	307L3	221	2.3	13900	3.6	22	71-80-90-100-112-132-160		—	—	86300	113000	34300	21000
	307L3	239	2.1	9860	2.4	22	71-80-90-100-112-132-160		—	—	88300	115800	35200	21000
	307L3	284	1.8	13300	2.7	22	71-80-90-100-112-132-160		—	—	93000	121800	37200	21000
	307L3	336	1.5	10400	1.8	22	71-80-90-100-112-132-160		—	—	97900	128200	39400	21000
	307L4	349	1.4	15400	2.6	15	71-80-90-100-112-132-160		—	—	98900	129700	39900	21000
	307L4	406	1.2	14300	2.1	15	71-80-90-100-112-132-160		—	—	103500	135600	42000	21000
	307L4	465	1.1	14700	1.9	15	71-80-90-100-112-132-160		—	—	107800	141300	43900	21000
	307L4	509	0.98	15000	1.7	15	71-80-90-100-112-132-160		—	—	109000	145000	45000	21000
	307L4	579	0.86	15700	1.6	15	71-80-90-100-112-132-160		—	—	109000	145000	45000	21000
	307L4	654	0.77	14800	1.3	15	71-80-90-100-112-132-160		—	—	109000	145000	45000	21000
	307L4	722	0.69	15700	1.3	15	71-80-90-100-112-132-160		—	—	109000	145000	45000	21000
	307L4	801	0.62	14800	1.1	15	71-80-90-100-112-132-160		—	—	109000	145000	45000	21000
	307L4	906	0.55	15700	1	15	71-80-90-100-112-132-160		—	—	109000	145000	45000	21000
	307L4	999	0.5	14800	0.88	15	71-80-90-100-112-132-160		—	—	109000	145000	45000	21000
	307L4	1157	0.43	14800	0.76	15	71-80-90-100-112-132-160		—	—	109000	145000	45000	21000
	307L4	1274	0.39	12300	0.57	15	71-80-90-100-112-132-160		—	—	109000	145000	45000	21000
	307L4	1408	0.36	15700	0.66	15	71-80-90-100-112-132-160		—	—	109000	145000	45000	21000
	307L4	1591	0.31	15000	0.56	15	71-80-90-100-112-132-160		—	—	109000	145000	45000	21000
	307L4	1767	0.28	15700	0.52	15	71-80-90-100-112-132-160		—	—	109000	145000	45000	21000
	307L4	2041	0.24	14300	0.42	15	71-80-90-100-112-132-160		—	—	109000	145000	45000	21000
	307L4	2423	0.21	11000	0.27	15	71-80-90-100-112-132-160		—	—	109000	145000	45000	21000





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23240 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
											HC/PC	HZ/PZ	FZ	
1500	309 L1	3.43	438	7010	150	25	180-200-225-250		—	—	18100	23300	4740	27900
	309 L1	4.09	367	7220	150	25	180-200-225-250		—	—	19000	24600	5030	29000
	309 L1	5.25	286	7600	150	25	180-200-225-250		—	—	20500	26500	5470	29000
	309 L1	6.23	241	7900	150	25	180-200-225-250		—	—	21600	27900	5790	29000
	309 L2	12.3	122	7890	60	18	132-160-180-200		—	—	26500	34200	7270	27900
	309 L2	14.7	102	9410	60	18	132-160-180-200		—	—	28000	36100	7710	29000
	309 L2	17.4	86	9730	60	18	132-160-180-200		—	—	29400	37900	8150	29000
	309 L2	21.8	69	10100	60	18	132-160-180-200		—	—	31500	40600	8790	29000
	309 L2	25.4	59	10500	60	18	132-160-180-200		—	—	32900	42500	9240	29000
	309 L2	28	54	12500	60	18	132-160-180-200		—	—	33900	43700	9550	29000
	309 L2	32.6	46	13000	60	18	132-160-180-200		—	—	35500	45800	10000	29000
	309 L2	38.6	39	12500	54	18	132-160-180-200		—	—	37400	48200	10600	29000
	309 L2	46.7	32	12500	45	18	132-160-180-200		—	—	39600	51000	11300	29000
	309 L3	51.3	29.3	13400	30	11	71-80-90-100-112-132-160		—	—	40700	52400	11700	29000
	309 L3	60.5	24.8	14100	30	11	71-80-90-100-112-132-160		—	—	42700	55100	12300	29000
	309 L3	74.1	20.2	15000	30	11	71-80-90-100-112-132-160		—	—	45400	58600	13200	29000
	309 L3	80.6	18.6	14800	30	11	71-80-90-100-112-132-160		—	—	46600	60100	13600	29000
	309 L3	93	16.1	15100	28	11	71-80-90-100-112-132-160		—	—	48600	62700	14200	29000
	309 L3	100	15	16500	28	11	71-80-90-100-112-132-160		—	—	49700	64100	14600	29000
	309 L3	113	13.2	15500	24	11	71-80-90-100-112-132-160		—	—	51600	66500	15200	29000
	309 L3	126	11.9	16400	22	11	71-80-90-100-112-132-160		—	—	53200	68700	15800	29000
	309 L3	139	10.8	16000	19.9	11	71-80-90-100-112-132-160		—	—	54800	70700	16300	29000
	309 L3	162	9.3	16300	17.3	11	71-80-90-100-112-132-160		—	—	57400	74000	17100	29000
	309 L3	183	8.2	14300	13.5	11	71-80-90-100-112-132-160		—	—	59500	76800	17800	29000
	309 L3	202	7.4	16500	14.1	11	71-80-90-100-112-132-160		—	—	61300	79100	18400	29000
	309 L3	223	6.7	13000	10	11	71-80-90-100-112-132-160		—	—	63200	81500	19100	29000
	309 L3	239	6.3	13000	9.4	11	71-80-90-100-112-132-160		—	—	64600	83300	19500	29000
	309 L3	284	5.3	15700	9.6	11	71-80-90-100-112-132-160		—	—	67900	87600	20700	29000
	309 L3	336	4.5	13200	6.8	11	71-80-90-100-112-132-160		—	—	71500	92200	21900	29000
	309 L4	349	4.3	21300	10.8	7.5	71-80-90-100-112-132-160		—	—	72300	93300	22100	29000
	309 L4	406	3.7	17800	7.8	7.5	71-80-90-100-112-132-160		—	—	75600	97500	23300	29000
	309 L4	465	3.2	18300	7	7.5	71-80-90-100-112-132-160		—	—	78800	101600	24400	29000
	309 L4	509	2.9	14300	5	7.5	71-80-90-100-112-132-160		—	—	81000	104400	25100	29000
	309 L4	579	2.6	21300	6.5	7.5	71-80-90-100-112-132-160		—	—	84100	108500	26200	29000
	309 L4	654	2.3	18100	4.9	7.5	71-80-90-100-112-132-160		—	—	87300	112600	27300	29000
	309 L4	722	2.1	21300	5.2	7.5	71-80-90-100-112-132-160		—	—	89900	116000	28200	29000
	309 L4	801	1.9	18200	4	7.5	71-80-90-100-112-132-160		—	—	92800	119600	29200	29000
	309 L4	906	1.7	17900	3.5	7.5	71-80-90-100-112-132-160		—	—	96300	124200	30400	29000
	309 L4	999	1.5	18200	3.2	7.5	71-80-90-100-112-132-160		—	—	99100	127800	31400	29000
	309 L4	1149	1.3	16200	2.5	7.5	71-80-90-100-112-132-160		—	—	103400	133300	32900	29000





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23240 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
											HC/PC	HZ/PZ	FZ	
1500	309 L4	1286	1.2	16500	2.3	7.5	71-80-90-100-112-132-160		—	—	106900	137900	34200	29000
	309 L4	1380	1.1	16700	2.2	7.5	71-80-90-100-112-132-160		—	—	109200	140900	35000	29000
	309 L4	1605	0.93	17000	1.9	7.5	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000
	309 L4	1723	0.87	17000	1.8	7.5	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000
	309 L4	2003	0.75	17000	1.5	7.5	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000
	309 L4	2423	0.62	17000	1.2	7.5	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000
1000	309 L1	3.43	292	7920	150	30	180-200-225-250		—	—	20400	26300	5430	27900
	309 L1	4.09	244	8150	150	30	180-200-225-250		—	—	21500	27700	5760	29000
	309 L1	5.25	190	8580	150	30	180-200-225-250		—	—	23200	29900	6260	29000
	309 L1	6.23	160	8920	150	30	180-200-225-250		—	—	24400	31500	6620	29000
	309 L2	12.3	81	8900	60	22	132-160-180-200		—	—	30000	38600	8320	27900
	309 L2	14.7	68	10600	60	22	132-160-180-200		—	—	31600	40700	8820	29000
	309 L2	17.4	58	11000	60	22	132-160-180-200		—	—	33200	42800	9330	29000
	309 L2	21.8	46	11400	58	22	132-160-180-200		—	—	35500	45800	10100	29000
	309 L2	25.4	39	11500	50	22	132-160-180-200		—	—	37200	48000	10600	29000
	309 L2	28	36	13500	53	22	132-160-180-200		—	—	38300	49400	10900	29000
	309 L2	32.6	31	13800	47	22	132-160-180-200		—	—	40100	51700	11500	29000
	309 L2	38.6	25.9	12600	36	22	132-160-180-200		—	—	42200	54400	12200	29000
	309 L2	46.7	21.4	12700	30	22	132-160-180-200		—	—	44700	57600	13000	29000
	309 L3	51.3	19.5	14900	30	13.2	71-80-90-100-112-132-160		—	—	45900	59200	13400	29000
	309 L3	60.5	16.5	16000	30	13.2	71-80-90-100-112-132-160		—	—	48300	62300	14100	29000
	309 L3	74.1	13.5	17000	26	13.2	71-80-90-100-112-132-160		—	—	51300	66200	15100	29000
	309 L3	80.6	12.4	15700	22	13.2	71-80-90-100-112-132-160		—	—	52600	67800	15500	29000
	309 L3	93	10.8	16800	21	13.2	71-80-90-100-112-132-160		—	—	54900	70800	16300	29000
	309 L3	100	10	18600	21	13.2	71-80-90-100-112-132-160		—	—	56200	72400	16700	29000
	309 L3	113	8.8	16300	16.5	13.2	71-80-90-100-112-132-160		—	—	58300	75100	17400	29000
	309 L3	126	7.9	17300	15.7	13.2	71-80-90-100-112-132-160		—	—	60100	77600	18000	29000
	309 L3	139	7.2	16500	13.7	13.2	71-80-90-100-112-132-160		—	—	61900	79900	18600	29000
	309 L3	162	6.2	16700	11.9	13.2	71-80-90-100-112-132-160		—	—	64800	83600	19600	29000
	309 L3	183	5.5	14300	9	13.2	71-80-90-100-112-132-160		—	—	67200	86700	20400	29000
	309 L3	202	5	17000	9.7	13.2	71-80-90-100-112-132-160		—	—	69300	89300	21100	29000
	309 L3	223	4.5	13200	6.8	13.2	71-80-90-100-112-132-160		—	—	71400	92100	21800	29000
	309 L3	239	4.2	13300	6.4	13.2	71-80-90-100-112-132-160		—	—	72900	94000	22300	29000
	309 L3	284	3.5	15800	6.4	13.2	71-80-90-100-112-132-160		—	—	76700	98900	23600	29000
	309 L3	336	3	14000	4.8	13.2	71-80-90-100-112-132-160		—	—	80800	104200	25000	29000
	309 L4	349	2.9	21300	7.2	9	71-80-90-100-112-132-160		—	—	81700	105300	25300	29000
	309 L4	406	2.5	19100	5.6	9	71-80-90-100-112-132-160		—	—	85400	110200	26600	29000
	309 L4	465	2.2	19500	5	9	71-80-90-100-112-132-160		—	—	89000	114800	27900	29000
	309 L4	509	2	14400	3.3	9	71-80-90-100-112-132-160		—	—	91500	117900	28700	29000





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23240 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
											HC/PC	HZ/PZ	FZ	
1000	309 L4	579	1.7	21400	4.4	9	71-80-90-100-112-132-160		—	—	95000	122600	30000	29000
	309 L4	654	1.5	18200	3.3	9	71-80-90-100-112-132-160		—	—	98600	127100	31200	29000
	309 L4	722	1.4	21500	3.5	9	71-80-90-100-112-132-160		—	—	101600	131000	32300	29000
	309 L4	801	1.2	18300	2.7	9	71-80-90-100-112-132-160		—	—	104700	135100	33400	29000
	309 L4	906	1.1	18400	2.4	9	71-80-90-100-112-132-160		—	—	108700	140200	34800	29000
	309 L4	999	1	18300	2.2	9	71-80-90-100-112-132-160		—	—	110000	144400	36000	29000
	309 L4	1149	0.87	17000	1.7	9	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000
	309 L4	1286	0.78	17000	1.6	9	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000
	309 L4	1380	0.72	17000	1.5	9	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000
	309 L4	1605	0.62	17000	1.3	9	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000
	309 L4	1723	0.58	17000	1.2	9	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000
	309 L4	2003	0.5	17000	1	9	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000
	309 L4	2423	0.41	17000	0.83	9	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000
500	309L1	3.43	146	9750	150	50	180-200-225-250		—	—	25100	32400	6840	27900
	309L1	4.09	122	10000	132	50	180-200-225-250		—	—	26500	34200	7250	29000
	309L1	5.25	95	10600	109	50	180-200-225-250		—	—	28500	36800	7880	29000
	309L1	6.23	80	10900	94	50	180-200-225-250		—	—	30000	38800	8350	29000
	309L2	12.3	41	10600	48	36	132-160-180-200		—	—	36900	47600	10500	27900
	309L2	14.7	34	12900	49	36	132-160-180-200		—	—	38900	50200	11100	29000
	309L2	17.4	28.8	13500	43	36	132-160-180-200		—	—	40900	52700	11800	29000
	309L2	21.8	22.9	13700	35	36	132-160-180-200		—	—	43800	56400	12700	29000
	309L2	25.4	19.7	12800	28	36	132-160-180-200		—	—	45800	59000	13300	29000
	309L2	28	17.9	14900	30	36	132-160-180-200		—	—	47200	60800	13800	29000
	309L2	32.6	15.4	15200	26	36	132-160-180-200		—	—	49300	63600	14500	29000
	309L2	38.6	12.9	12900	18.6	36	132-160-180-200		—	—	51900	67000	15300	29000
	309L2	46.7	10.7	13000	15.4	36	132-160-180-200		—	—	55000	70900	16300	29000
	309L3	51.3	9.8	17700	19.8	22	71-80-90-100-112-132-160		—	—	56500	72900	16800	29000
	309L3	60.5	8.3	19300	18.3	22	71-80-90-100-112-132-160		—	—	59400	76600	17800	29000
	309L3	74.1	6.7	20100	15.5	22	71-80-90-100-112-132-160		—	—	63200	81500	19100	29000
	309L3	80.6	6.2	16700	11.9	22	71-80-90-100-112-132-160		—	—	64800	83500	19600	29000
	309L3	93	5.4	17500	10.8	22	71-80-90-100-112-132-160		—	—	67600	87200	20600	29000
	309L3	100	5	21300	12.2	22	71-80-90-100-112-132-160		—	—	69200	89200	21100	29000
	309L3	113	4.4	17100	8.7	22	71-80-90-100-112-132-160		—	—	71700	92500	21900	29000
	309L3	126	4	17500	8	22	71-80-90-100-112-132-160		—	—	74000	95500	22700	29000
	309L3	139	3.6	17500	7.2	22	71-80-90-100-112-132-160		—	—	76200	98300	23500	29000
	309L3	162	3.1	18400	6.5	22	71-80-90-100-112-132-160		—	—	79800	102900	24700	29000
	309L3	183	2.7	14300	4.5	22	71-80-90-100-112-132-160		—	—	82800	106800	25700	29000
	309L3	202	2.5	19100	5.4	22	71-80-90-100-112-132-160		—	—	85300	110000	26600	29000
	309L3	223	2.2	14700	3.8	22	71-80-90-100-112-132-160		—	—	87900	113300	27500	29000





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23240 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
											HC/PC	HZ/PZ	FZ	
500	309L3	239	2.1	14900	3.6	22	71-80-90-100-112-132-160		—	—	89800	115800	28200	29000
	309L3	284	1.8	15800	3.2	22	71-80-90-100-112-132-160		—	—	94500	121800	29800	29000
	309L3	336	1.5	15800	2.7	22	71-80-90-100-112-132-160		—	—	99400	128200	31500	29000
	309L4	349	1.4	21500	3.6	15	71-80-90-100-112-132-160		—	—	100500	129700	31900	29000
	309L4	406	1.2	21300	3.1	15	71-80-90-100-112-132-160		—	—	105200	135600	33600	29000
	309L4	465	1.1	21700	2.8	15	71-80-90-100-112-132-160		—	—	109600	141300	35100	29000
	309L4	509	0.98	14700	1.7	15	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000
	309L4	579	0.86	21600	2.2	15	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000
	309L4	654	0.77	18300	1.7	15	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000
	309L4	722	0.69	21600	1.8	15	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000
	309L4	801	0.62	18300	1.4	15	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000
	309L4	906	0.55	18500	1.2	15	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000
	309L4	999	0.5	18300	1.1	15	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000
	309L4	1149	0.44	17000	0.87	15	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000
	309L4	1286	0.39	17000	0.78	15	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000
	309L4	1380	0.36	17000	0.73	15	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000
	309L4	1605	0.31	17000	0.63	15	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000
	309L4	1723	0.29	17000	0.58	15	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000
	309L4	2003	0.25	17000	0.5	15	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000
	309L4	2423	0.21	17000	0.42	15	71-80-90-100-112-132-160		—	—	110000	145000	36000	29000

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34120 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
											HC/PC	HZ/PZ	FZ	
1500	310 L1	4.09	367	7330	175	35	200-225-250		—	—	22600	28400	9080	47600
	310 L1	5.25	286	7710	175	35	200-225-250		—	—	24300	30600	9870	47600
	310 L1	6.23	241	8020	175	35	200-225-250		—	—	25600	32200	10400	47600
	310 L2	14.7	102	10800	75	22	160-180-200-225-250		—	—	33100	41700	13900	47600
	310 L2	17.4	86	11300	75	22	160-180-200-225-250		—	—	34800	43800	14700	47600
	310 L2	21.8	69	12100	75	22	160-180-200-225-250		—	—	37300	46900	15900	47600
	310 L2	25.4	59	12700	75	22	160-180-200-225-250		—	—	39000	49100	16700	47600
	310 L2	28	54	12800	75	22	160-180-200-225-250		—	—	40200	50500	17200	47600
	310 L2	30.7	49	13400	73	22	160-180-200-225-250		—	—	41300	51900	17800	47600
	310 L2	32.6	46	13300	68	22	160-180-200-225-250		—	—	42000	52900	18100	47600
	310 L2	38.6	39	13600	59	22	160-180-200-225-250		—	—	44300	55700	19200	47600
	310 L2	46.7	32	14200	51	22	160-180-200-225-250		—	—	46900	58900	20500	47600





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34120 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			M_2 max Nm
											HC/PC	HZ/PZ	FZ	
1500	310L3	53	28.3	15800	40	18	132-160-180-200		—	—	48700	61200	21300	47600
	310 L3	62.6	24	16600	40	18	132-160-180-200		—	—	51200	64300	22500	47600
	310 L3	73.9	20.3	17500	40	18	132-160-180-200		—	—	53800	67600	23800	47600
	310 L3	80.3	18.7	17500	37	18	132-160-180-200		—	—	55100	69300	24500	47600
	310 L3	91.3	16.4	18600	35	18	132-160-180-200		—	—	57300	72100	25600	47600
	310 L3	101	14.9	18700	32	18	132-160-180-200		—	—	59000	74200	26400	47600
	310 L3	110	13.6	19700	31	18	132-160-180-200		—	—	60700	76300	27200	47600
	310 L3	119	12.6	19700	28	18	132-160-180-200		—	—	62000	78000	27900	47600
	310 L3	130	11.5	20700	27	18	132-160-180-200		—	—	63800	80200	28800	47600
	310 L3	142	10.6	20700	25	18	132-160-180-200		—	—	65400	82200	29600	47600
	310 L3	164	9.2	22200	23	18	132-160-180-200		—	—	68300	85800	31100	47600
	310 L3	177	8.5	18300	17.7	18	132-160-180-200		—	—	69900	87900	31900	47600
	310 L3	202	7.4	22000	18.8	18	132-160-180-200		—	—	72700	91400	33300	47600
	310 L3	230	6.5	21200	15.8	18	132-160-180-200		—	—	75600	95100	34800	47600
	310 L3	249	6	18400	12.7	18	132-160-180-200		—	—	77400	97400	35700	47600
	310 L3	295	5.1	23300	13.6	18	132-160-180-200		—	—	81500	102500	37800	47600
	310 L3	350	4.3	19000	9.3	18	132-160-180-200		—	—	85800	107900	40000	47600
	310 L4	392	3.8	19400	8.8	11	71-80-90-100-112-132-160		—	—	88700	111500	41500	47600
	310 L4	451	3.3	29800	11.7	11	71-80-90-100-112-132-160		—	—	92500	116300	43500	47600
	310 L4	507	3	25500	8.9	11	71-80-90-100-112-132-160		—	—	95800	120500	45300	47600
	310 L4	556	2.7	31600	10.1	11	71-80-90-100-112-132-160		—	—	98500	123900	46700	47600
	310 L4	637	2.4	26500	7.4	11	71-80-90-100-112-132-160		—	—	102600	129000	48800	47600
	310 L4	726	2.1	27100	6.6	11	71-80-90-100-112-132-160		—	—	106700	134200	51000	47600
	310 L4	818	1.8	27600	6	11	71-80-90-100-112-132-160		—	—	110600	139100	53100	47600
	310 L4	939	1.6	33200	6.3	11	71-80-90-100-112-132-160		—	—	115300	145000	55600	47600
	310 L4	1021	1.5	28700	5	11	71-80-90-100-112-132-160		—	—	118200	148600	57200	47600
	310 L4	1164	1.3	29300	4.5	11	71-80-90-100-112-132-160		—	—	123000	154600	59700	47600
	310 L4	1259	1.2	27600	3.9	11	71-80-90-100-112-132-160		—	—	125900	158300	61300	47600
	310 L4	1438	1	25800	3.2	11	71-80-90-100-112-132-160		—	—	131000	164700	64100	47600
	310 L4	1672	0.9	26000	2.8	11	71-80-90-100-112-132-160		—	—	133000	166000	65000	47600
	310 L4	1794	0.84	26000	2.6	11	71-80-90-100-112-132-160		—	—	133000	166000	65000	47600
	310 L4	2022	0.74	26000	2.3	11	71-80-90-100-112-132-160		—	—	133000	166000	65000	47600
	310 L4	2523	0.59	26000	1.8	11	71-80-90-100-112-132-160		—	—	133000	166000	65000	47600
1000	310 L1	4.09	244	8280	175	42	200-225-250		—	—	25500	32100	10400	47600
	310 L1	5.25	190	8710	175	42	200-225-250		—	—	27500	34500	11300	47600
	310 L1	6.23	160	9060	157	42	200-225-250		—	—	28900	36400	12000	47600
	310 L2	14.7	68	12200	75	26	160-180-200-225-250		—	—	37400	47100	15900	47600
	310 L2	17.4	58	12800	75	26	160-180-200-225-250		—	—	39300	49500	16800	47600
	310 L2	21.8	46	13700	70	26	160-180-200-225-250		—	—	42100	53000	18200	47600
	310 L2	25.4	39	14300	63	26	160-180-200-225-250		—	—	44100	55400	19100	47600





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34120 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			FZ	M_2 max Nm
											HC/PC	HZ/PZ			
1000	310 L2	28	36	14400	57	26	160-180-200-225-250		—	—	45400	57100	19700		47600
	310 L2	30.7	33	14900	54	26	160-180-200-225-250		—	—	46700	58700	20300		47600
	310 L2	32.6	31	15100	52	26	160-180-200-225-250		—	—	47500	59700	20800		47600
	310 L2	38.6	25.9	14800	43	26	160-180-200-225-250		—	—	50000	62900	22000		47600
	310 L2	46.7	21.4	15500	37	26	160-180-200-225-250		—	—	52900	66600	23400		47600
	310 L3	53	18.9	17800	39	22	132-160-180-200		—	—	55000	69100	24400		47600
	310 L3	62.6	16	18800	34	22	132-160-180-200		—	—	57800	72700	25800		47600
	310 L3	73.9	13.5	19700	31	22	132-160-180-200		—	—	60700	76400	27300		47600
	310 L3	80.3	12.4	19800	28	22	132-160-180-200		—	—	62300	78300	28000		47600
	310 L3	91.3	11	21000	26	22	132-160-180-200		—	—	64700	81400	29300		47600
	310 L3	101	9.9	21100	24	22	132-160-180-200		—	—	66700	83800	30300		47600
	310 L3	110	9.1	22200	23	22	132-160-180-200		—	—	68500	86200	31200		47600
	310 L3	119	8.4	21600	21	22	132-160-180-200		—	—	70100	88100	32000		47600
	310 L3	130	7.7	23400	21	22	132-160-180-200		—	—	72000	90600	33000		47600
	310 L3	142	7.1	22200	18	22	132-160-180-200		—	—	73800	92800	33900		47600
	310 L3	164	6.1	25000	17.5	22	132-160-180-200		—	—	77100	96900	35600		47600
	310 L3	177	5.6	18400	11.9	22	132-160-180-200		—	—	79000	99300	36500		47600
	310 L3	202	5	23400	13.3	22	132-160-180-200		—	—	82100	103200	38100		47600
	310 L3	230	4.3	21800	10.9	22	132-160-180-200		—	—	85400	107400	39800		47600
	310 L3	249	4	19300	8.9	22	132-160-180-200		—	—	87500	110000	40900		47600
	310 L3	295	3.4	24700	9.6	22	132-160-180-200		—	—	92000	115700	43300		47600
	310 L3	350	2.9	20600	6.8	22	132-160-180-200		—	—	96900	121800	45800		47600
	310 L4	392	2.6	21100	6.4	13.2	71-80-90-100-112-132-160		—	—	100200	125900	47600		47600
	310 L4	451	2.2	32600	8.5	13.2	71-80-90-100-112-132-160		—	—	104500	131400	49800		47600
	310 L4	507	2	27300	6.4	13.2	71-80-90-100-112-132-160		—	—	108200	136100	51800		47600
	310 L4	556	1.8	33000	7	13.2	71-80-90-100-112-132-160		—	—	111300	139900	53400		47600
	310 L4	637	1.6	28400	5.3	13.2	71-80-90-100-112-132-160		—	—	115900	145700	55900		47600
	310 L4	726	1.4	29000	4.7	13.2	71-80-90-100-112-132-160		—	—	120500	151500	58400		47600
	310 L4	818	1.2	29600	4.3	13.2	71-80-90-100-112-132-160		—	—	124900	157100	60800		47600
	310 L4	939	1.1	34000	4.3	13.2	71-80-90-100-112-132-160		—	—	130200	163700	63600		47600
	310 L4	1021	0.98	30600	3.5	13.2	71-80-90-100-112-132-160		—	—	133000	166000	65000		47600
	310 L4	1164	0.86	30600	3.1	13.2	71-80-90-100-112-132-160		—	—	133000	166000	65000		47600
	310 L4	1259	0.79	28000	2.6	13.2	71-80-90-100-112-132-160		—	—	133000	166000	65000		47600
	310 L4	1438	0.7	26000	2.1	13.2	71-80-90-100-112-132-160		—	—	133000	166000	65000		47600
	310 L4	1672	0.6	26000	1.8	13.2	71-80-90-100-112-132-160		—	—	133000	166000	65000		47600
	310 L4	1794	0.56	26000	1.7	13.2	71-80-90-100-112-132-160		—	—	133000	166000	65000		47600
	310 L4	2022	0.49	26000	1.5	13.2	71-80-90-100-112-132-160		—	—	133000	166000	65000		47600
	310 L4	2523	0.4	26000	1.2	13.2	71-80-90-100-112-132-160		—	—	133000	166000	65000		47600





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34120 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
											HC/PC	HZ/PZ	FZ	
500	310L1	4.09	122	10200	134	70	200-225-250		—	—	31400	39500	13100	47600
	310L1	5.25	95	10700	110	70	200-225-250		—	—	33800	42500	14200	47600
	310L1	6.23	80	11200	97	70	200-225-250		—	—	35600	44800	15100	47600
	310L2	14.7	34	15000	57	44	160-180-200-225-250		—	—	46100	58000	20100	47600
	310L2	17.4	28.8	15700	50	44	160-180-200-225-250		—	—	48400	60900	21200	47600
	310L2	21.8	22.9	16800	43	44	160-180-200-225-250		—	—	51900	65200	22900	47600
	310L2	25.4	19.7	17600	39	44	160-180-200-225-250		—	—	54200	68200	24100	47600
	310L2	28	17.9	17700	35	44	160-180-200-225-250		—	—	55900	70300	24900	47600
	310L2	30.7	16.3	17800	32	44	160-180-200-225-250		—	—	57400	72200	25600	47600
	310L2	32.6	15.4	18600	32	44	160-180-200-225-250		—	—	58500	73500	26100	47600
	310L2	38.6	12.9	17200	25	44	160-180-200-225-250		—	—	61500	77400	27700	47600
	310L2	46.7	10.7	18000	21	44	160-180-200-225-250		—	—	65200	81900	29500	47600
	310L3	53	9.4	22000	24	36	132-160-180-200		—	—	67700	85100	30800	47600
	310L3	62.6	8	23100	21	36	132-160-180-200		—	—	71100	89400	32500	47600
	310L3	73.9	6.8	24300	18.8	36	132-160-180-200		—	—	74800	94000	34400	47600
	310L3	80.3	6.2	22600	16.2	36	132-160-180-200		—	—	76700	96400	35300	47600
	310L3	91.3	5.5	25900	16.2	36	132-160-180-200		—	—	79700	100200	36900	47600
	310L3	101	5	23400	13.3	36	132-160-180-200		—	—	82100	103200	38100	47600
	310L3	110	4.5	27300	14.2	36	132-160-180-200		—	—	84400	106100	39300	47600
	310L3	119	4.2	24000	11.6	36	132-160-180-200		—	—	86300	108500	40300	47600
	310L3	130	3.8	28700	12.6	36	132-160-180-200		—	—	88700	111500	41500	47600
	310L3	142	3.5	24800	10	36	132-160-180-200		—	—	90900	114300	42700	47600
	310L3	164	3.1	30300	10.6	36	132-160-180-200		—	—	94900	119300	44800	47600
	310L3	177	2.8	20700	6.7	36	132-160-180-200		—	—	97200	122200	46000	47600
	310L3	202	2.5	26300	7.5	36	132-160-180-200		—	—	101100	127100	48000	47600
	310L3	230	2.2	21800	5.4	36	132-160-180-200		—	—	105100	132200	50200	47600
	310L3	249	2	22300	5.1	36	132-160-180-200		—	—	107700	135400	51500	47600
	310L3	295	1.7	26800	5.2	36	132-160-180-200		—	—	113300	142500	54500	47600
	310L3	350	1.4	24000	3.9	36	132-160-180-200		—	—	119300	150000	57700	47600
	310L4	392	1.3	24600	3.7	22	71-80-90-100-112-132-160		—	—	123300	155100	59900	47600
	310L4	451	1.1	33900	4.5	22	71-80-90-100-112-132-160		—	—	128600	161700	62800	47600
	310L4	507	0.99	30600	3.6	22	71-80-90-100-112-132-160		—	—	133000	166000	65000	47600
	310L4	556	0.9	34100	3.6	22	71-80-90-100-112-132-160		—	—	133000	166000	65000	47600
	310L4	637	0.79	30600	2.8	22	71-80-90-100-112-132-160		—	—	133000	166000	65000	47600
	310L4	726	0.69	30600	2.5	22	71-80-90-100-112-132-160		—	—	133000	166000	65000	47600
	310L4	818	0.61	30600	2.2	22	71-80-90-100-112-132-160		—	—	133000	166000	65000	47600
	310L4	939	0.53	34100	2.1	22	71-80-90-100-112-132-160		—	—	133000	166000	65000	47600
	310L4	1021	0.49	30600	1.8	22	71-80-90-100-112-132-160		—	—	133000	166000	65000	47600
	310L4	1164	0.43	30600	1.6	22	71-80-90-100-112-132-160		—	—	133000	166000	65000	47600





310 L

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34120 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			M_2 max Nm
										HC/PC	HZ/PZ	FZ	
500	310L4	1259	0.4	28000	1.3	22	71-80-90-100-112-132-160	—	—	133000	166000	65000	47600
	310L4	1438	0.35	26000	1.1	22	71-80-90-100-112-132-160	—	—	133000	166000	65000	47600
	310L4	1672	0.3	26000	0.92	22	71-80-90-100-112-132-160	—	—	133000	166000	65000	47600
	310L4	1794	0.28	26000	0.86	22	71-80-90-100-112-132-160	—	—	133000	166000	65000	47600
	310L4	2022	0.25	26000	0.76	22	71-80-90-100-112-132-160	—	—	133000	166000	65000	47600
	310L4	2523	0.2	26000	0.61	22	71-80-90-100-112-132-160	—	—	133000	166000	65000	47600

311 L

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48330 Nm

n ₁ min ⁻¹		i	n ₂ min ⁻¹	M _{n2} Nm	P _{n1} kW	P _t kW	P (IEC) 	MC	MZ	R _{n2} [N]			M ₂ max Nm
1500	311 L1	4.09	367	10600	200	35	—	—	—	26700	33200	9080	58300
	311 L1	5.25	286	11700	200	35	—	—	—	28700	35800	9870	58300
	311 L1	6.23	241	11600	200	35	—	—	—	30300	37700	10400	58300
	311 L2	14	107	15300	115	26	180-200-225-250	—	—	38600	48100	13700	58300
	311 L2	16.7	90	16100	115	26	180-200-225-250	—	—	40700	50700	14500	58300
	311 L2	21.5	70	17400	115	26	180-200-225-250	—	—	43900	54600	15800	58300
	311 L2	25.5	59	18300	115	26	180-200-225-250	—	—	46200	57500	16700	58300
	311 L2	27.6	54	19200	115	26	180-200-225-250	—	—	47300	58900	17200	58300
	311 L2	32.7	46	20200	103	26	180-200-225-250	—	—	49800	62000	18200	58300
	311 L2	38.8	39	19700	85	26	180-200-225-250	—	—	52400	65300	19200	58300
	311 L3	50.5	29.7	22400	60	18	132-160-180-200	—	—	56700	70600	21000	58300
	311 L3	60.2	24.9	23700	60	18	132-160-180-200	—	—	59800	74500	22300	58300
	311 L3	71.1	21.1	24900	60	18	132-160-180-200	—	—	62800	78300	23500	58300
	311 L3	77.3	19.4	25500	57	18	132-160-180-200	—	—	64400	80200	24200	58300
	311 L3	89.3	16.8	26600	51	18	132-160-180-200	—	—	67300	83800	25400	58300
	311 L3	104	14.5	27800	46	18	132-160-180-200	—	—	70400	87600	26700	58300
	311 L3	115	13.1	28700	43	18	132-160-180-200	—	—	72500	90300	27600	58300
	311 L3	126	12	29500	40	18	132-160-180-200	—	—	74500	92800	28400	58300
	311 L3	133	11.3	30000	39	18	132-160-180-200	—	—	75800	94500	29000	58300
	311 L3	147	10.2	31800	37	18	132-160-180-200	—	—	78100	97300	30000	58300
	311 L3	161	9.3	31800	34	18	132-160-180-200	—	—	80300	100000	30900	58300
	311 L3	171	8.8	32600	33	18	132-160-180-200	—	—	81700	101800	31500	58300
	311 L3	191	7.8	32200	29	18	132-160-180-200	—	—	84500	105300	32700	58300
	311 L3	203	7.4	33400	28	18	132-160-180-200	—	—	86000	107200	33400	58300
	311 L3	245	6.1	34300	24	18	132-160-180-200	—	—	91100	113500	35500	58300
	311 L3	291	5.2	27000	16	18	132-160-180-200	—	—	95900	119400	37600	58300
	311 L4	348	4.3	39800	20	11	71-80-90-100-112-132-160	—	—	101100	126000	39900	58300





311 L

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48330 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]				FZ	M_2 max Nm
										HC/PC	HZ/PZ				
1500	311 L4	410	3.7	41500	18	11	71-80-90-100-112-132-160	—	—	106300	132400	42200			58300
	311 L4	512	2.9	44000	15.2	11	71-80-90-100-112-132-160	—	—	113600	141500	45400			58300
	311 L4	568	2.6	43000	13.4	11	71-80-90-100-112-132-160	—	—	117200	145900	47000			58300
	311 L4	627	2.4	39800	11.3	11	71-80-90-100-112-132-160	—	—	120700	150300	48600			58300
	311 L4	724	2.1	46300	11.4	11	71-80-90-100-112-132-160	—	—	126000	157000	51000			58300
	311 L4	825	1.8	44600	9.6	11	71-80-90-100-112-132-160	—	—	131000	163200	53300			58300
	311 L4	904	1.7	46900	9.2	11	71-80-90-100-112-132-160	—	—	134700	167800	54900			58300
	311 L4	986	1.5	42500	7.7	11	71-80-90-100-112-132-160	—	—	138300	172200	56500			58300
	311 L4	1058	1.4	43000	7.2	11	71-80-90-100-112-132-160	—	—	141200	175900	57900			58300
	311 L4	1230	1.2	43900	6.3	11	71-80-90-100-112-132-160	—	—	147800	184000	60800			58300
	311 L4	1415	1.1	42800	5.4	11	71-80-90-100-112-132-160	—	—	154100	191900	63800			58300
	311 L4	1680	0.89	34000	3.6	11	71-80-90-100-112-132-160	—	—	157000	195000	65000			58300
	311 L4	1766	0.85	43000	4.3	11	71-80-90-100-112-132-160	—	—	157000	195000	65000			58300
	311 L4	2096	0.72	34000	2.9	11	71-80-90-100-112-132-160	—	—	157000	195000	65000			58300
1000	311 L1	4.09	244	11900	200	42	—	—	—	30100	37500	10400			58300
	311 L1	5.25	190	13200	200	42	—	—	—	32500	40400	11300			58300
	311 L1	6.23	160	13100	200	42	—	—	—	34200	42600	12000			58300
	311L2	14	71	17300	115	31	180-200-225-250	—	—	43600	54300	15700			58300
	311L2	16.7	60	18200	115	31	180-200-225-250	—	—	46000	57300	16600			58300
	311L2	18	56	19100	115	31	180-200-225-250	—	—	47000	58500	17000			58300
	311L2	21.5	47	19600	102	31	180-200-225-250	—	—	49500	61700	18100			58300
	311L2	25.5	39	20600	90	31	180-200-225-250	—	—	52200	65000	19100			58300
	311L2	27.6	36	21700	88	31	180-200-225-250	—	—	53400	66500	19600			58300
	311L2	32.7	31	22800	78	31	180-200-225-250	—	—	56200	70000	20800			58300
	311L2	38.8	25.8	21700	62	31	180-200-225-250	—	—	59200	73700	22000			58300
	311 L3	60.2	16.6	26700	51	22	132-160-180-200	—	—	67500	84100	25500			58300
	311 L3	71.1	14.1	28100	45	22	132-160-180-200	—	—	71000	88400	26900			58300
	311 L3	77.3	12.9	28800	43	22	132-160-180-200	—	—	72800	90600	27700			58300
	311 L3	89.3	11.2	30100	39	22	132-160-180-200	—	—	76000	94600	29000			58300
	311 L3	104	9.6	31400	35	22	132-160-180-200	—	—	79500	99000	30500			58300
	311 L3	115	8.7	32400	32	22	132-160-180-200	—	—	81900	102000	31600			58300
	311 L3	126	8	33300	30	22	132-160-180-200	—	—	84100	104800	32500			58300
	311 L3	133	7.5	33900	29	22	132-160-180-200	—	—	85600	106700	33200			58300
	311 L3	147	6.8	33800	26	22	132-160-180-200	—	—	88200	109900	34300			58300
	311 L3	161	6.2	35900	26	22	132-160-180-200	—	—	90700	112900	35400			58300
	311 L3	171	5.9	34500	23	22	132-160-180-200	—	—	92300	115000	36100			58300
	311 L3	191	5.2	34300	21	22	132-160-180-200	—	—	95500	118900	37400			58300
	311 L3	203	4.9	35300	20	22	132-160-180-200	—	—	97200	121000	38200			58300
	311 L3	245	4.1	36400	17	22	132-160-180-200	—	—	102900	128100	40700			58300
	311 L3	291	3.4	28300	11.2	22	132-160-180-200	—	—	108300	134900	43100			58300





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48330 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			FZ	M_2 max Nm
											HC/PC	HZ/PZ			
1000	311 L4	348	2.9	44200	15	13.2	71-80-90-100-112-132-160		—	—	114200	142300	45700		58300
	311 L4	410	2.4	45900	13.2	13.2	71-80-90-100-112-132-160		—	—	120000	149500	48300		58300
	311 L4	512	2	46500	10.7	13.2	71-80-90-100-112-132-160		—	—	128300	159800	52000		58300
	311 L4	568	1.8	44700	9.3	13.2	71-80-90-100-112-132-160		—	—	132300	164800	53800		58300
	311 L4	627	1.6	42200	8	13.2	71-80-90-100-112-132-160		—	—	136300	169800	55600		58300
	311 L4	724	1.4	47400	7.7	13.2	71-80-90-100-112-132-160		—	—	142300	177300	58400		58300
	311 L4	825	1.2	46200	6.6	13.2	71-80-90-100-112-132-160		—	—	148000	184300	61000		58300
	311 L4	904	1.1	48000	6.3	13.2	71-80-90-100-112-132-160		—	—	152100	189500	62800		58300
	311 L4	986	1	45100	5.4	13.2	71-80-90-100-112-132-160		—	—	156100	194500	64700		58300
	311 L4	1058	0.94	45200	5.1	13.2	71-80-90-100-112-132-160		—	—	157000	195000	65000		58300
	311 L4	1230	0.81	45200	4.3	13.2	71-80-90-100-112-132-160		—	—	157000	195000	65000		58300
	311 L4	1415	0.71	43000	3.6	13.2	71-80-90-100-112-132-160		—	—	157000	195000	65000		58300
	311 L4	1680	0.6	34000	2.4	13.2	71-80-90-100-112-132-160		—	—	157000	195000	65000		58300
	311 L4	1766	0.57	43000	2.9	13.2	71-80-90-100-112-132-160		—	—	157000	195000	65000		58300
	311 L4	2096	0.48	34000	1.9	13.2	71-80-90-100-112-132-160		—	—	157000	195000	65000		58300
500	311L1	4.09	122	14700	194	70	—		—	—	37100	46200	13100		58300
	311L1	5.25	95	16200	167	70	—		—	—	40000	49800	14200		58300
	311L1	6.23	80	16100	140	70	—		—	—	42100	52400	15100		58300
	311L2	14	36	21200	84	52	180-200-225-250		—	—	53700	66900	19800		58300
	311L2	16.7	29.9	22400	74	52	180-200-225-250		—	—	56600	70500	20900		58300
	311L2	18	27.8	23500	73	52	180-200-225-250		—	—	57800	72100	21500		58300
	311L2	21.5	23.3	24100	63	52	180-200-225-250		—	—	61000	76000	22800		58300
	311L2	25.5	19.6	25400	55	52	180-200-225-250		—	—	64200	80000	24100		58300
	311L2	27.6	18.1	26700	54	52	180-200-225-250		—	—	65700	81900	24700		58300
	311L2	32.7	15.3	28200	48	52	180-200-225-250		—	—	69200	86200	26200		58300
	311L2	38.8	12.9	25500	36	52	180-200-225-250		—	—	72800	90700	27700		58300
	311L3	50.5	9.9	31200	35	36	132-160-180-200		—	—	78800	98200	30300		58300
	311L3	60.2	8.3	32900	31	36	132-160-180-200		—	—	83100	103500	32100		58300
	311L3	71.1	7	34600	28	36	132-160-180-200		—	—	87400	108800	33900		58300
	311L3	77.3	6.5	35400	26	36	132-160-180-200		—	—	89600	111600	34900		58300
	311L3	89.3	5.6	37000	24	36	132-160-180-200		—	—	93500	116500	36600		58300
	311L3	104	4.8	38700	21	36	132-160-180-200		—	—	97800	121900	38500		58300
	311L3	115	4.4	39200	19.7	36	132-160-180-200		—	—	100800	125500	39800		58300
	311L3	126	4	40600	18.6	36	132-160-180-200		—	—	103600	129000	41000		58300
	311L3	133	3.8	40300	17.4	36	132-160-180-200		—	—	105400	131300	41800		58300
	311L3	147	3.4	37600	14.7	36	132-160-180-200		—	—	108600	135300	43200		58300
	311L3	161	3.1	41700	14.9	36	132-160-180-200		—	—	111600	139000	44600		58300
	311L3	171	2.9	38500	12.9	36	132-160-180-200		—	—	113600	141500	45400		58300
	311L3	191	2.6	34500	10.4	36	132-160-180-200		—	—	117500	146400	47200		58300
	311L3	203	2.5	39600	11.2	36	132-160-180-200		—	—	119600	149000	48100		58300





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48330 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			M_2 max Nm
										HC/PC	HZ/PZ	FZ	
500	311L3	245	2	40300	9.4	36	132-160-180-200	—	—	126600	157800	51300	58300
	311L3	291	1.7	31300	6.2	36	132-160-180-200	—	—	133300	166100	54300	58300
	311L4	348	1.4	47300	8.1	22	71-80-90-100-112-132-160	—	—	140600	175100	57600	58300
	311L4	410	1.2	47800	6.9	22	71-80-90-100-112-132-160	—	—	147800	184100	60900	58300
	311L4	512	0.98	48300	5.6	22	71-80-90-100-112-132-160	—	—	157000	195000	65000	58300
	311L4	568	0.88	46900	4.9	22	71-80-90-100-112-132-160	—	—	157000	195000	65000	58300
	311L4	627	0.8	45200	4.3	22	71-80-90-100-112-132-160	—	—	157000	195000	65000	58300
	311L4	724	0.69	48300	3.9	22	71-80-90-100-112-132-160	—	—	157000	195000	65000	58300
	311L4	825	0.61	46900	3.4	22	71-80-90-100-112-132-160	—	—	157000	195000	65000	58300
	311L4	904	0.55	48300	3.2	22	71-80-90-100-112-132-160	—	—	157000	195000	65000	58300
	311L4	986	0.51	45200	2.7	22	71-80-90-100-112-132-160	—	—	157000	195000	65000	58300
	311L4	1058	0.47	45200	2.5	22	71-80-90-100-112-132-160	—	—	157000	195000	65000	58300
	311L4	1230	0.41	45200	2.2	22	71-80-90-100-112-132-160	—	—	157000	195000	65000	58300
	311L4	1415	0.35	43000	1.8	22	71-80-90-100-112-132-160	—	—	157000	195000	65000	58300
	311L4	1680	0.3	34000	1.2	22	71-80-90-100-112-132-160	—	—	157000	195000	65000	58300
	311L4	1766	0.28	43000	1.4	22	71-80-90-100-112-132-160	—	—	157000	195000	65000	58300
	311L4	2096	0.24	34000	0.96	22	71-80-90-100-112-132-160	—	—	157000	195000	65000	58300

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57970 Nm

n ₁ min ⁻¹		i	n ₂ min ⁻¹	M _{n2} Nm	P _{n1} kW	P _t kW	P (IEC) 	MC	MZ	R _{n2} [N]			M ₂ max Nm
										HC/PC	HZ/PZ	FZ	
1500	313 L2	14.2	106	22600	150	30	180-200-225-250	—	—	47900	56700	16900	105000
	313 L2	16.9	89	23500	150	30	180-200-225-250	—	—	50500	59700	18000	105000
	313 L2	18.5	81	24100	150	30	180-200-225-250	—	—	51800	61400	18500	105000
	313 L2	21.8	69	25500	150	30	180-200-225-250	—	—	54400	64400	19500	105000
	313 L2	25.8	58	26700	150	30	180-200-225-250	—	—	57300	67800	20700	105000
	313 L2	28.4	53	27300	150	30	180-200-225-250	—	—	58900	69700	21300	105000
	313 L2	33.6	45	28800	143	30	180-200-225-250	—	—	62000	73400	22600	105000
	313 L2	40.5	37	29500	122	30	180-200-225-250	—	—	65600	77600	24000	105000
	313 L3	51.1	29.3	32700	60	18	132-160-180-200	—	—	70300	83200	25900	105000
	313 L3	61	24.6	34500	60	18	132-160-180-200	—	—	74100	87700	27500	105000
	313 L3	72	20.8	36300	60	18	132-160-180-200	—	—	77900	92200	29100	105000
	313 L3	78.3	19.2	37300	60	18	132-160-180-200	—	—	79900	94600	29900	105000
	313 L3	92.4	16.2	39300	60	18	132-160-180-200	—	—	84000	99400	31600	105000
	313 L3	110	13.7	41200	60	18	132-160-180-200	—	—	88400	104600	33500	105000
	313 L3	120	12.4	42100	60	18	132-160-180-200	—	—	90900	107600	34500	105000
	313 L3	135	11.1	44000	56	18	132-160-180-200	—	—	94100	111300	35800	105000





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57970 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			FZ	M_2 max Nm
											HC/PC	HZ/PZ			
1500	313 L3	143	10.5	44400	53	18	132-160-180-200		—	—	95700	113300	36500	105000	
	313 L3	151	9.9	45000	51	18	132-160-180-200		—	—	97300	115200	37200	105000	
	313 L3	163	9.2	46000	49	18	132-160-180-200		—	—	99600	117800	38200	105000	
	313 L3	176	8.5	45000	44	18	132-160-180-200		—	—	101800	120500	39100	105000	
	313 L3	182	8.2	39000	37	18	132-160-180-200		—	—	102900	121800	39600	105000	
	313 L3	194	7.7	47600	42	18	132-160-180-200		—	—	104800	124100	40400	105000	
	313 L3	209	7.2	45000	37	18	132-160-180-200		—	—	107200	126900	41400	105000	
	313 L3	252	5.9	45000	31	18	132-160-180-200		—	—	113500	134300	44200	105000	
	313 L3	304	4.9	39100	22	18	132-160-180-200		—	—	120000	142000	47000	105000	
	313 L4	352	4.3	52500	26	11	71-80-90-100-112-132-160		—	—	125400	148400	49300	105000	
	313 L4	394	3.8	55000	25	11	71-80-90-100-112-132-160		—	—	129700	153500	51200	105000	
	313 L4	452	3.3	54000	21	11	71-80-90-100-112-132-160		—	—	135200	160000	53600	105000	
	313 L4	514	2.9	48600	16.8	11	71-80-90-100-112-132-160		—	—	140500	166300	56000	105000	
	313 L4	564	2.7	54800	17.2	11	71-80-90-100-112-132-160		—	—	144500	171000	57700	105000	
	313 L4	633	2.4	52000	14.6	11	71-80-90-100-112-132-160		—	—	149600	177000	60000	105000	
	313 L4	695	2.2	51000	13	11	71-80-90-100-112-132-160		—	—	153800	182100	61900	105000	
	313 L4	790	1.9	52200	11.7	11	71-80-90-100-112-132-160		—	—	159800	189200	64600	105000	
	313 L4	889	1.7	53100	10.6	11	71-80-90-100-112-132-160		—	—	165600	196000	67200	105000	
	313 L4	1014	1.5	54300	9.5	11	71-80-90-100-112-132-160		—	—	172300	203900	70200	105000	
	313 L4	1117	1.3	52500	8.3	11	71-80-90-100-112-132-160		—	—	177300	209900	72500	105000	
	313 L4	1266	1.2	56300	7.9	11	71-80-90-100-112-132-160		—	—	184100	217900	75600	105000	
	313 L4	1394	1.1	52700	6.7	11	71-80-90-100-112-132-160		—	—	189500	224300	78100	105000	
	313 L4	1502	1	58000	6.8	11	71-80-90-100-112-132-160		—	—	192000	229400	80000	105000	
	313 L4	1817	0.83	58000	5.7	11	71-80-90-100-112-132-160		—	—	192000	231000	80000	105000	
	313 L4	2187	0.69	49000	4	11	71-80-90-100-112-132-160		—	—	192000	231000	80000	105000	
1000	313 L2	14.2	70	25600	150	36	180-200-225-250		—	—	54100	64000	19400	105000	
	313 L2	16.9	59	26500	150	36	180-200-225-250		—	—	57000	67500	20500	105000	
	313 L2	18.5	54	27200	150	36	180-200-225-250		—	—	58500	69300	21200	105000	
	313 L2	21.8	46	28700	147	36	180-200-225-250		—	—	61400	72700	22300	105000	
	313 L2	25.8	39	30100	130	36	180-200-225-250		—	—	64700	76600	23600	105000	
	313 L2	28.4	35	30900	121	36	180-200-225-250		—	—	66500	78700	24400	105000	
	313 L2	33.6	29.7	32500	107	36	180-200-225-250		—	—	70000	82900	25800	105000	
	313 L2	40.5	24.7	32200	88	36	180-200-225-250		—	—	74000	87600	27500	105000	
	313 L3	51.1	19.6	37000	60	22	132-160-180-200		—	—	79400	94000	29700	105000	
	313 L3	61	16.4	39000	60	22	132-160-180-200		—	—	83700	99100	31500	105000	
	313 L3	72	13.9	41000	60	22	132-160-180-200		—	—	88000	104100	33300	105000	
	313 L3	78.3	12.8	42200	60	22	132-160-180-200		—	—	90200	106800	34200	105000	
	313 L3	92.4	10.8	44300	55	22	132-160-180-200		—	—	94800	112200	36200	105000	
	313 L3	110	9.1	46100	48	22	132-160-180-200		—	—	99800	118200	38300	105000	





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57970 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			FZ	$M_{2\max}$ Nm
											HC/PC	HZ/PZ			
1000	313L3	120	8.3	45000	43	22	132-160-180-200		—	—	102700	121500	39500	105000	
	313 L3	135	7.4	49300	42	22	132-160-180-200		—	—	106200	125700	41000	105000	
	313 L3	143	7	45000	36	22	132-160-180-200		—	—	108100	127900	41800	105000	
	313 L3	151	6.6	45000	34	22	132-160-180-200		—	—	109900	130100	42600	105000	
	313 L3	163	6.1	50200	35	22	132-160-180-200		—	—	112500	133100	43700	105000	
	313 L3	176	5.7	45000	29	22	132-160-180-200		—	—	115000	136100	44800	105000	
	313 L3	182	5.5	39000	25	22	132-160-180-200		—	—	116200	137500	45300	105000	
	313 L3	194	5.2	51700	31	22	132-160-180-200		—	—	118400	140100	46300	105000	
	313 L3	209	4.8	45300	25	22	132-160-180-200		—	—	121100	143300	47400	105000	
	313 L3	252	4	46500	21	22	132-160-180-200		—	—	128200	151700	50600	105000	
	313 L3	304	3.3	41000	15.5	22	132-160-180-200		—	—	135500	160400	53800	105000	
	313 L4	352	2.8	52500	17.6	13.2	71-80-90-100-112-132-160		—	—	141600	167600	56500	105000	
	313 L4	394	2.5	55000	16.5	13.2	71-80-90-100-112-132-160		—	—	146500	173400	58700	105000	
	313 L4	452	2.2	55100	14.4	13.2	71-80-90-100-112-132-160		—	—	152700	180700	61400	105000	
	313 L4	514	1.9	51900	11.9	13.2	71-80-90-100-112-132-160		—	—	158700	187800	64100	105000	
	313 L4	564	1.8	55200	11.6	13.2	71-80-90-100-112-132-160		—	—	163100	193100	66100	105000	
	313 L4	633	1.6	52400	9.8	13.2	71-80-90-100-112-132-160		—	—	168900	199900	68700	105000	
	313 L4	695	1.4	54500	9.3	13.2	71-80-90-100-112-132-160		—	—	173700	205600	70900	105000	
	313 L4	790	1.3	52600	7.9	13.2	71-80-90-100-112-132-160		—	—	180500	213600	74000	105000	
	313 L4	889	1.1	56800	7.6	13.2	71-80-90-100-112-132-160		—	—	187100	221400	76900	105000	
	313 L4	1014	0.99	58000	6.8	13.2	71-80-90-100-112-132-160		—	—	192000	230300	80000	105000	
	313 L4	1117	0.9	52800	5.6	13.2	71-80-90-100-112-132-160		—	—	192000	231000	80000	105000	
	313 L4	1266	0.79	58000	5.4	13.2	71-80-90-100-112-132-160		—	—	192000	231000	80000	105000	
	313 L4	1394	0.72	52800	4.5	13.2	71-80-90-100-112-132-160		—	—	192000	231000	80000	105000	
	313 L4	1502	0.67	58000	4.6	13.2	71-80-90-100-112-132-160		—	—	192000	231000	80000	105000	
	313 L4	1817	0.55	58000	3.8	13.2	71-80-90-100-112-132-160		—	—	192000	231000	80000	105000	
500	313L1	4.14	121	21700	250	95	—		—	—	46000	54400	16200	105000	
	313L1	5.4	93	23100	231	95	—		—	—	49800	58900	17700	105000	
	313L1	6.5	77	24400	202	95	—		—	—	52700	62300	18800	105000	
	313L2	14.2	35	31500	124	60	180-200-225-250		—	—	66600	78800	24400	105000	
	313L2	16.9	29.5	32700	107	60	180-200-225-250		—	—	70200	83100	25900	105000	
	313L2	18.5	27	33400	100	60	180-200-225-250		—	—	72100	85300	26700	105000	
	313L2	21.8	23	35400	90	60	180-200-225-250		—	—	75600	89500	28100	105000	
	313L2	25.8	19.4	37100	80	60	180-200-225-250		—	—	79600	94200	29800	105000	
	313L2	28.4	17.6	38000	75	60	180-200-225-250		—	—	81900	96900	30700	105000	
	313L2	33.6	14.9	40000	66	60	180-200-225-250		—	—	86200	102000	32500	105000	
	313L2	40.5	12.3	37300	51	60	180-200-225-250		—	—	91200	107900	34600	105000	
	313L3	51.1	9.8	45300	51	36	132-160-180-200		—	—	97800	115700	37400	105000	
	313L3	61	8.2	47200	44	36	132-160-180-200		—	—	103100	122000	39700	105000	





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n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			FZ	$M_{2 \max}$ Nm
											HC/PC	HZ/PZ			
500	313L3	72	6.9	48900	39	36	132-160-180-200		—	—	108300	128200	41900	105000	
	313L3	78.3	6.4	51400	38	36	132-160-180-200		—	—	111100	131500	43100	105000	
	313L3	92.4	5.4	53800	33	36	132-160-180-200		—	—	116800	138200	45600	105000	
	313L3	110	4.6	52000	27	36	132-160-180-200		—	—	122900	145500	48300	105000	
	313L3	120	4.1	46200	22	36	132-160-180-200		—	—	126400	149600	49800	105000	
	313L3	135	3.7	55000	23	36	132-160-180-200		—	—	130800	154800	51700	105000	
	313L3	143	3.5	47400	19	36	132-160-180-200		—	—	133100	157500	52700	105000	
	313L3	151	3.3	47800	18.1	36	132-160-180-200		—	—	135300	160200	53700	105000	
	313L3	163	3.1	54300	19.1	36	132-160-180-200		—	—	138500	163900	55100	105000	
	313L3	176	2.8	48800	15.9	36	132-160-180-200		—	—	141600	167600	56500	105000	
	313L3	182	2.7	41900	13.2	36	132-160-180-200		—	—	143100	169300	57100	105000	
	313L3	194	2.6	52000	15.4	36	132-160-180-200		—	—	145800	172500	58300	105000	
	313L3	209	2.4	50100	13.8	36	132-160-180-200		—	—	149100	176400	59800	105000	
	313L3	252	2	51700	11.8	36	132-160-180-200		—	—	157800	186800	63700	105000	
	313L3	304	1.6	45300	8.6	36	132-160-180-200		—	—	166800	197500	67800	105000	
	313L4	352	1.4	54300	9.1	22	71-80-90-100-112-132-160		—	—	174400	206400	71200	105000	
	313L4	394	1.3	55300	8.3	22	71-80-90-100-112-132-160		—	—	180400	213500	73900	105000	
	313L4	452	1.1	55400	7.2	22	71-80-90-100-112-132-160		—	—	187900	222400	77300	105000	
	313L4	514	0.97	58000	6.7	22	71-80-90-100-112-132-160		—	—	192000	231000	80000	105000	
	313L4	564	0.89	55400	5.8	22	71-80-90-100-112-132-160		—	—	192000	231000	80000	105000	
	313L4	633	0.79	52800	4.9	22	71-80-90-100-112-132-160		—	—	192000	231000	80000	105000	
	313L4	695	0.72	58000	4.9	22	71-80-90-100-112-132-160		—	—	192000	231000	80000	105000	
	313L4	790	0.63	52800	4	22	71-80-90-100-112-132-160		—	—	192000	231000	80000	105000	
	313L4	889	0.56	58000	3.9	22	71-80-90-100-112-132-160		—	—	192000	231000	80000	105000	
	313L4	1014	0.49	58000	3.4	22	71-80-90-100-112-132-160		—	—	192000	231000	80000	105000	
	313L4	1117	0.45	52800	2.8	22	71-80-90-100-112-132-160		—	—	192000	231000	80000	105000	
	313L4	1266	0.4	58000	2.7	22	71-80-90-100-112-132-160		—	—	192000	231000	80000	105000	
	313L4	1394	0.36	52800	2.2	22	71-80-90-100-112-132-160		—	—	192000	231000	80000	105000	
	313L4	1502	0.33	58000	2.3	22	71-80-90-100-112-132-160		—	—	192000	231000	80000	105000	
	313L4	1817	0.28	58000	1.9	22	71-80-90-100-112-132-160		—	—	192000	231000	80000	105000	
	313L4	2187	0.23	49000	1.3	22	71-80-90-100-112-132-160		—	—	192000	231000	80000	105000	





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105000 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]		FZ	M_2 max Nm
											HC/PC	HZ/PZ		
1500	315L2	17.4	86	41400	200	42	—	—	—	—	54300	63800	20400	135000
	315L2	22.3	67	46800	200	42	—	—	—	—	58500	68700	22100	135000
	315L2	26.5	57	46600	200	42	—	—	—	—	61600	72300	23400	135000
	315L2	28	54	47800	200	42	—	—	—	—	62700	73600	23900	135000
	315L2	33.2	45	50300	200	42	—	—	—	—	66000	77400	25300	135000
	315L2	38.6	39	44100	190	42	—	—	—	—	69000	81000	26600	135000
	315L3	59.6	25.2	59900	115	30	180-200-225-250	—	—	—	78600	92300	30700	135000
	315L3	71.1	21.1	63100	115	30	180-200-225-250	—	—	—	82900	97300	32600	135000
	315L3	91.3	16.4	68000	115	30	180-200-225-250	—	—	—	89300	104900	35400	135000
	315L3	108	13.8	71600	114	30	180-200-225-250	—	—	—	94000	110400	37500	135000
	315L3	139	10.8	81100	100	30	180-200-225-250	—	—	—	101300	119000	40700	135000
	315L3	165	9.1	80400	84	30	180-200-225-250	—	—	—	106700	125200	43100	135000
	315L3	174	8.6	78800	78	30	180-200-225-250	—	—	—	108500	127400	43900	135000
	315L3	207	7.2	79800	66	30	180-200-225-250	—	—	—	114200	134100	46500	135000
	315L3	241	6.2	65000	46	30	180-200-225-250	—	—	—	119500	140300	48900	135000
	315L4	302	5	97000	57	18	132-160-180-200	—	—	—	127900	150200	52800	135000
	315L4	370	4.1	97900	47	18	132-160-180-200	—	—	—	135900	159500	56400	135000
	315L4	441	3.4	98700	40	18	132-160-180-200	—	—	—	143300	168200	59800	135000
	315L4	487	3.1	99100	36	18	132-160-180-200	—	—	—	147600	173300	61800	135000
	315L4	533	2.8	99500	33	18	132-160-180-200	—	—	—	151700	178100	63800	135000
	315L4	591	2.5	99900	30	18	132-160-180-200	—	—	—	156400	183600	66000	135000
	315L4	672	2.2	100600	27	18	132-160-180-200	—	—	—	162500	190800	68900	135000
	315L4	741	2	101100	24	18	132-160-180-200	—	—	—	167400	196600	71200	135000
	315L4	862	1.7	101900	21	18	132-160-180-200	—	—	—	175200	205700	74800	135000
	315L4	930	1.6	92600	17.6	18	132-160-180-200	—	—	—	179200	210400	76800	135000
	315L4	1043	1.4	103000	17.5	18	132-160-180-200	—	—	—	185500	217800	79700	135000
	315L4	1104	1.4	94800	15.2	18	132-160-180-200	—	—	—	188700	221500	81300	135000
	315L4	1284	1.2	96900	13.4	18	132-160-180-200	—	—	—	197400	231800	85400	135000
	315L4	1492	1	83400	9.9	18	132-160-180-200	—	—	—	206000	242500	89800	135000
	315L4	1805	0.83	83500	8.2	18	132-160-180-200	—	—	—	206000	243000	90000	135000
1000	315L2	17.4	58	46700	200	50	—	—	—	—	61300	72000	23300	135000
	315L2	22.3	45	52700	200	50	—	—	—	—	66100	77600	25300	135000
	315L2	26.5	38	52600	200	50	—	—	—	—	69600	81700	26800	135000
	315L2	28	36	53800	200	50	—	—	—	—	70800	83100	27300	135000
	315L2	33.2	30	56600	189	50	—	—	—	—	74500	87500	28900	135000
	315L2	38.6	25.9	49500	143	50	—	—	—	—	77900	91500	30400	135000
	315L3	59.6	16.8	67600	115	36	180-200-225-250	—	—	—	88800	104200	35200	135000
	315L3	71.1	14.1	71300	115	36	180-200-225-250	—	—	—	93600	109900	37300	135000





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105000 Nm

n ₁ min ⁻¹		i	n ₂ min ⁻¹	M _{n2} Nm	P _{n1} kW	P _t kW	P (IEC) 	MC	MZ	R _{n2} [N]		FZ	M ₂ max Nm
										HC/PC	HZ/PZ		
1000	315L3	91.3	11	76900	97	36	180-200-225-250	—	—	100900	118400	40500	135000
	315L3	59.6	16.8	67600	115	36	180-200-225-250	—	—	88800	104200	35200	135000
	315L3	71.1	14.1	71300	115	36	180-200-225-250	—	—	93600	109900	37300	135000
	315L3	91.3	11	76900	97	36	180-200-225-250	—	—	100900	118400	40500	135000
	315L3	108	9.2	80900	86	36	180-200-225-250	—	—	106200	124700	42900	135000
	315L3	139	7.2	89400	74	36	180-200-225-250	—	—	114400	134400	46600	135000
	315L3	165	6.1	91300	63	36	180-200-225-250	—	—	120500	141500	49400	135000
	315L3	174	5.7	81100	53	36	180-200-225-250	—	—	122500	143800	50300	135000
	315L3	207	4.8	82100	45	36	180-200-225-250	—	—	129000	151400	53200	135000
	315L3	241	4.2	66700	32	36	180-200-225-250	—	—	134900	158400	56000	135000
	315L4	302	3.3	98800	39	22	132-160-180-200	—	—	144500	169600	60400	135000
	315L4	370	2.7	99700	32	22	132-160-180-200	—	—	153500	180200	64600	135000
	315L4	441	2.3	100500	27	22	132-160-180-200	—	—	161800	190000	68500	135000
	315L4	487	2.1	101100	25	22	132-160-180-200	—	—	166700	195700	70800	135000
	315L4	533	1.9	101500	23	22	132-160-180-200	—	—	171300	201100	73000	135000
	315L4	591	1.7	102100	20	22	132-160-180-200	—	—	176600	207400	75500	135000
	315L4	672	1.5	102800	18.1	22	132-160-180-200	—	—	183600	215500	78800	135000
	315L4	741	1.3	103300	16.5	22	132-160-180-200	—	—	189100	222000	81500	135000
	315L4	862	1.2	104200	14.3	22	132-160-180-200	—	—	197800	232300	85700	135000
	315L4	930	1.1	98000	12.5	22	132-160-180-200	—	—	202400	237700	87900	135000
	315L4	1043	0.96	105000	11.9	22	132-160-180-200	—	—	206000	243000	90000	135000
	315L4	1104	0.91	99000	10.6	22	132-160-180-200	—	—	206000	243000	90000	135000
	315L4	1284	0.78	99000	9.1	22	132-160-180-200	—	—	206000	243000	90000	135000
	315L4	1492	0.67	83500	6.6	22	132-160-180-200	—	—	206000	243000	90000	135000
	315L4	1805	0.55	83500	5.5	22	132-160-180-200	—	—	206000	243000	90000	135000
500	315L1	4.25	118	40800	260	60	—	—	—	49500	58100	18400	135000
	315L1	5.33	94	40500	260	60	—	—	—	53000	62200	19800	135000
	315L1	6.2	81	35500	260	60	—	—	—	55400	65100	20800	135000
	315L2	17.4	28.8	57500	184	84	—	—	—	75500	88700	29400	135000
	315L2	22.3	22.4	65000	162	84	—	—	—	81400	95600	31900	135000
	315L2	26.5	18.9	64600	136	84	—	—	—	85700	100600	33800	135000
	315L2	28	17.9	65900	131	84	—	—	—	87100	102300	34400	135000
	315L2	33.2	15	69200	116	84	—	—	—	91700	107700	36500	135000
	315L2	38.6	12.9	60400	87	84	—	—	—	96000	112700	38300	135000
	315L3	59.6	8.4	83200	80	60	180-200-225-250	—	—	109300	128300	44300	135000
	315L3	71.1	7	87700	71	60	180-200-225-250	—	—	115200	135300	47000	135000
	315L3	91.3	5.5	94400	59	60	180-200-225-250	—	—	124200	145800	51100	135000





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105000 Nm

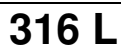
n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			M_2 max Nm
										HC/PC	HZ/PZ	FZ	
500	315L3	91.3	5.5	94400	59	60	180-200-225-250	—	—	124200	145800	51100	135000
	315L3	108	4.6	97300	52	60	180-200-225-250	—	—	130700	153500	54100	135000
	315L3	139	3.6	98400	41	60	180-200-225-250	—	—	140900	165400	58700	135000
	315L3	165	3	99200	34	60	180-200-225-250	—	—	148300	174100	62200	135000
	315L3	207	2.4	87400	24	60	180-200-225-250	—	—	158800	186400	67100	135000
	315L3	241	2.1	74000	17.6	60	180-200-225-250	—	—	166100	195000	70500	135000
	315L4	302	1.7	102200	20	36	132-160-180-200	—	—	177900	208800	76100	135000
	315L4	370	1.4	103300	16.5	36	132-160-180-200	—	—	188900	221800	81400	135000
	315L4	441	1.1	104300	14	36	132-160-180-200	—	—	199200	233900	86300	135000
	315L4	487	1	104900	12.7	36	132-160-180-200	—	—	205200	240900	89200	135000
	315L4	533	0.94	105000	11.6	36	132-160-180-200	—	—	206000	243000	90000	135000
	315L4	591	0.85	105000	10.5	36	132-160-180-200	—	—	206000	243000	90000	135000
	315L4	672	0.74	105000	9.2	36	132-160-180-200	—	—	206000	243000	90000	135000
	315L4	741	0.67	105000	8.4	36	132-160-180-200	—	—	206000	243000	90000	135000
	315L4	862	0.58	105000	7.2	36	132-160-180-200	—	—	206000	243000	90000	135000
	315L4	930	0.54	99000	6.3	36	132-160-180-200	—	—	206000	243000	90000	135000
	315L4	1043	0.48	105000	6	36	132-160-180-200	—	—	206000	243000	90000	135000
	315L4	1104	0.45	99000	5.3	36	132-160-180-200	—	—	206000	243000	90000	135000
	315L4	1284	0.39	99000	4.6	36	132-160-180-200	—	—	206000	243000	90000	135000
	315L4	1492	0.34	83500	3.3	36	132-160-180-200	—	—	206000	243000	90000	135000
	315L4	1805	0.28	83500	2.7	36	132-160-180-200	—	—	206000	243000	90000	135000

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138820 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			M_2 max Nm
										HC/PC	HZ/PZ	FZ	
1500	316L2	17.4	86	43900	200	50	—	—	—	90300	100400	33900	192000
	316L2	22.3	67	48500	200	50	—	—	—	97300	108200	36900	192000
	316L2	26.5	57	47700	200	50	—	—	—	102500	113900	39100	192000
	316L3	59.6	25.2	63400	115	35	180-200-225-250	—	—	130700	145300	51200	192000
	316L3	71.1	21.1	66900	115	35	180-200-225-250	—	—	137800	153300	54300	192000
	316L3	76.5	19.6	70100	115	35	180-200-225-250	—	—	140800	156600	55600	192000
	316L3	91.3	16.4	72100	115	35	180-200-225-250	—	—	148500	165200	59000	192000
	316L3	108	13.8	75900	115	35	180-200-225-250	—	—	156300	173900	62500	192000
	316L3	117	12.8	79400	115	35	180-200-225-250	—	—	160000	178000	64100	192000
	316L3	139	10.8	81800	101	35	180-200-225-250	—	—	168500	187400	67900	192000
316L3	165	9.1	82500	86	35	180-200-225-250	—	—	177400	197300	71900	192000	







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138820 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
										HC/PC	HZ/PZ	FZ	
1000	316L4	533	1.9	129900	29	22	132-160-180-200	—	—	284800	316800	121700	192000
	316L4	566	1.8	130700	27	22	132-160-180-200	—	—	289900	322500	124100	192000
	316L4	591	1.7	129500	26	22	132-160-180-200	—	—	293700	326600	125900	192000
	316L4	625	1.6	132100	25	22	132-160-180-200	—	—	298700	332200	128200	192000
	316L4	685	1.5	133400	23	22	132-160-180-200	—	—	307000	341400	132200	192000
	316L4	726	1.4	134200	22	22	132-160-180-200	—	—	312500	347500	134800	192000
	316L4	741	1.3	133400	21	22	132-160-180-200	—	—	314400	349700	135800	192000
	316L4	812	1.2	135800	19.8	22	132-160-180-200	—	—	323200	359400	140000	192000
	316L4	862	1.2	136100	18.7	22	132-160-180-200	—	—	328900	365800	142800	192000
	316L4	1043	0.96	138800	15.7	22	132-160-180-200	—	—	345000	385000	150000	192000
	316L4	1237	0.81	124000	11.9	22	132-160-180-200	—	—	345000	385000	150000	192000
500	316L2	17.4	28.8	60900	195	100	—	—	—	125600	139600	49000	192000
	316L2	22.3	22.4	67400	168	100	—	—	—	135300	150500	53200	192000
	316L2	26.5	18.9	66200	139	100	—	—	—	142400	158400	56300	192000
	316L3	59.6	8.4	88200	85	70	180-200-225-250	—	—	181700	202100	73800	192000
	316L3	71.1	7	93000	75	70	180-200-225-250	—	—	191600	213100	78300	192000
	316L3	76.5	6.5	98000	74	70	180-200-225-250	—	—	195800	217800	80200	192000
	316L3	91.3	5.5	100200	63	70	180-200-225-250	—	—	206500	229600	85100	192000
	316L3	108	4.6	105400	56	70	180-200-225-250	—	—	217400	241800	90100	192000
	316L3	117	4.3	111100	54	70	180-200-225-250	—	—	222500	247500	92500	192000
	316L3	139	3.6	112100	46	70	180-200-225-250	—	—	234300	260500	97900	192000
	316L3	165	3	110200	38	70	180-200-225-250	—	—	246600	274300	103700	192000
	316L4	215	2.3	126900	35	36	132-160-180-200	—	—	266800	296800	113100	192000
	316L4	256	2	129300	30	36	132-160-180-200	—	—	281400	312900	120000	192000
	316L4	302	1.7	131600	26	36	132-160-180-200	—	—	295700	328900	126800	192000
	316L4	329	1.5	132800	24	36	132-160-180-200	—	—	303200	337200	130400	192000
	316L4	370	1.4	134500	22	36	132-160-180-200	—	—	314100	349300	135600	192000
	316L4	441	1.1	137000	18.4	36	132-160-180-200	—	—	331200	368400	143800	192000
	316L4	487	1	138400	16.8	36	132-160-180-200	—	—	341200	379500	148700	192000
	316L4	533	0.94	138800	15.4	36	132-160-180-200	—	—	345000	385000	150000	192000
	316L4	566	0.88	138800	14.5	36	132-160-180-200	—	—	345000	385000	150000	192000
	316L4	591	0.85	138800	13.9	36	132-160-180-200	—	—	345000	385000	150000	192000
	316L4	625	0.8	138800	13.1	36	132-160-180-200	—	—	345000	385000	150000	192000
	316L4	685	0.73	138800	12	36	132-160-180-200	—	—	345000	385000	150000	192000
	316L4	726	0.69	138800	11.3	36	132-160-180-200	—	—	345000	385000	150000	192000
	316L4	741	0.67	138800	11.1	36	132-160-180-200	—	—	345000	385000	150000	192000
	316L4	812	0.62	138800	10.1	36	132-160-180-200	—	—	345000	385000	150000	192000
	316L4	862	0.58	138800	9.5	36	132-160-180-200	—	—	345000	385000	150000	192000





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138820 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			M_2 max Nm
										HC/PC	HZ/PZ	FZ	
500	316L4	1043	0.48	138800	7.9	36	132-160-180-200	—	—	345000	385000	150000	192000
	316L4	1237	0.4	124000	5.9	36	132-160-180-200	—	—	345000	385000	150000	192000

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208110 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			M_2 max Nm
										HC/PC	HZ/PZ	FZ	
1500	317L3	58.1	25.8	90300	150	35	180-200-225-250	—	—	166800	177500	50800	393000
	317L3	69.3	21.6	93300	150	35	180-200-225-250	—	—	175800	187200	53800	393000
	317L3	89	16.9	101000	150	35	180-200-225-250	—	—	189500	201800	58500	393000
	317L3	106	14.2	105800	150	35	180-200-225-250	—	—	199500	212400	61900	393000
	317L3	116	12.9	108300	150	35	180-200-225-250	—	—	205200	218400	63900	393000
	317L3	138	10.9	114000	143	35	180-200-225-250	—	—	216000	230000	67700	393000
	317L3	166	9.1	120500	125	35	180-200-225-250	—	—	228300	243100	72000	393000
	317L3	179	8.4	136600	131	35	180-200-225-250	—	—	233800	248900	73900	393000
	317L3	213	7.1	142200	115	35	180-200-225-250	—	—	246100	262000	78200	393000
	317L3	252	5.9	119700	82	35	180-200-225-250	—	—	259100	275800	82800	393000
	317L4	310	4.8	146200	60	18	132-160-180-200	—	—	275500	293400	88700	393000
	317L4	360	4.2	152900	60	18	132-160-180-200	—	—	288300	306900	93200	393000
	317L4	449	3.3	163300	60	18	132-160-180-200	—	—	307900	327800	100300	393000
	317L4	493	3	166900	60	18	132-160-180-200	—	—	316700	337200	103500	393000
	317L4	552	2.7	174500	56	18	132-160-180-200	—	—	327600	348800	107500	393000
	317L4	619	2.4	177200	51	18	132-160-180-200	—	—	339000	361000	111600	393000
	317L4	719	2.1	178400	44	18	132-160-180-200	—	—	354700	377600	117400	393000
	317L4	792	1.9	186500	42	18	132-160-180-200	—	—	365100	388700	121200	393000
	317L4	904	1.7	166600	33	18	132-160-180-200	—	—	379800	404400	126700	393000
	317L4	1032	1.5	181300	31	18	132-160-180-200	—	—	395300	420900	132400	393000
	317L4	1134	1.3	168100	26	18	132-160-180-200	—	—	406600	432900	136600	393000
	317L4	1318	1.1	169100	23	18	132-160-180-200	—	—	425400	452900	143700	393000
	317L4	1595	0.94	170000	18.9	18	132-160-180-200	—	—	442000	470000	150000	393000
	317L4	1893	0.79	156200	14.6	18	132-160-180-200	—	—	442000	470000	150000	393000
1000	317L3	58.1	17.2	101900	150	42	180-200-225-250	—	—	188300	200500	58100	393000
	317L3	69.3	14.4	105300	150	42	180-200-225-250	—	—	198600	211400	61600	393000
	317L3	89	11.2	114000	147	42	180-200-225-250	—	—	214000	227800	67000	393000
	317L3	106	9.5	119500	130	42	180-200-225-250	—	—	225300	239900	70900	393000
	317L3	116	8.6	122300	121	42	180-200-225-250	—	—	231700	246700	73200	393000
	317L3	138	7.3	128800	107	42	180-200-225-250	—	—	243900	259700	77400	393000
	317L3	166	6	136100	94	42	180-200-225-250	—	—	257900	274600	82400	393000





317L

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208110 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			M_2 max Nm
										HC/PC	HZ/PZ	FZ	
1000	317L3	179	5.6	150100	96	42	180-200-225-250	—	—	264000	281100	84600	393000
	317L3	213	4.7	154900	84	42	180-200-225-250	—	—	277900	295900	89500	393000
	317L3	252	4	124600	57	42	180-200-225-250	—	—	292600	311500	94800	393000
	317L4	310	3.2	165100	60	22	132-160-180-200	—	—	311200	331300	101500	393000
	317L4	360	2.8	172700	57	22	132-160-180-200	—	—	325600	346600	106700	393000
	317L4	449	2.2	181600	48	22	132-160-180-200	—	—	347700	370200	114800	393000
	317L4	493	2	178600	43	22	132-160-180-200	—	—	357700	380800	118500	393000
	317L4	552	1.8	188400	40	22	132-160-180-200	—	—	369900	393900	123000	393000
	317L4	619	1.6	180400	35	22	132-160-180-200	—	—	382900	407600	127800	393000
	317L4	719	1.4	181600	30	22	132-160-180-200	—	—	400600	426500	134400	393000
	317L4	792	1.3	199300	30	22	132-160-180-200	—	—	412300	439000	138800	393000
	317L4	904	1.1	169300	22	22	132-160-180-200	—	—	429000	456700	145000	393000
	317L4	1032	0.97	184300	21	22	132-160-180-200	—	—	442000	470000	150000	393000
	317L4	1134	0.88	170000	17.7	22	132-160-180-200	—	—	442000	470000	150000	393000
	317L4	1318	0.76	170000	15.3	22	132-160-180-200	—	—	442000	470000	150000	393000
	317L4	1595	0.63	170000	12.6	22	132-160-180-200	—	—	442000	470000	150000	393000
	317L4	1893	0.53	156200	9.8	22	132-160-180-200	—	—	442000	470000	150000	393000
500	317L2	16.9	29.5	86700	250	116	—	—	—	160200	170600	48500	393000
	317L2	22.1	22.6	91400	230	116	—	—	—	173500	184700	53000	393000
	317L2	26.6	18.8	96700	202	116	—	—	—	183400	195300	56400	393000
	317L2	28.4	17.6	110500	217	116	—	—	—	186900	199000	57600	393000
	317L2	34.1	14.7	116800	191	116	—	—	—	197600	210400	61300	393000
	317L2	40.5	12.3	112800	155	116	—	—	—	208100	221500	64900	393000
	317L3	58.1	8.6	125400	124	70	180-200-225-250	—	—	231900	246900	73200	393000
	317L3	69.3	7.2	129700	107	70	180-200-225-250	—	—	244500	260300	77600	393000
	317L3	89	5.6	140100	90	70	180-200-225-250	—	—	263500	280500	84400	393000
	317L3	106	4.7	147100	80	70	180-200-225-250	—	—	277400	295300	89300	393000
	317L3	116	4.3	150500	74	70	180-200-225-250	—	—	285300	303700	92200	393000
	317L3	138	3.6	158400	66	70	180-200-225-250	—	—	300300	319700	97600	393000
	317L3	166	3	151900	53	70	180-200-225-250	—	—	317500	338000	103800	393000
	317L3	179	2.8	162300	52	70	180-200-225-250	—	—	325000	346100	106500	393000
	317L3	213	2.4	164400	44	70	180-200-225-250	—	—	342200	364300	112800	393000
	317L3	252	2	139600	32	70	180-200-225-250	—	—	360200	383500	119400	393000
	317L4	310	1.6	191500	37	36	132-160-180-200	—	—	383100	407900	127900	393000
	317L4	360	1.4	196200	32	36	132-160-180-200	—	—	400800	426700	134500	393000
	317L4	449	1.1	203400	27	36	132-160-180-200	—	—	428100	455800	144700	393000
	317L4	493	1	184200	22	36	132-160-180-200	—	—	440300	468800	149300	393000
	317L4	552	0.91	207100	22	36	132-160-180-200	—	—	442000	470000	150000	393000





317L [Page 310](#)

208110 Nm

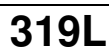
n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			M_2 max Nm
										HC/PC	HZ/PZ	FZ	
500	317L4	619	0.81	184300	17.6	36	132-160-180-200	—	—	442000	470000	150000	393000
	317L4	719	0.7	184300	15.2	36	132-160-180-200	—	—	442000	470000	150000	393000
	317L4	792	0.63	207100	15.5	36	132-160-180-200	—	—	442000	470000	150000	393000
	317L4	904	0.55	170000	11.1	36	132-160-180-200	—	—	442000	470000	150000	393000
	317L4	1032	0.48	184300	10.6	36	132-160-180-200	—	—	442000	470000	150000	393000
	317L4	1134	0.44	170000	8.9	36	132-160-180-200	—	—	442000	470000	150000	393000
	317L4	1318	0.38	170000	7.6	36	132-160-180-200	—	—	442000	470000	150000	393000
	317L4	1595	0.31	170000	6.3	36	132-160-180-200	—	—	442000	470000	150000	393000
	317L4	1893	0.26	156200	4.9	36	132-160-180-200	—	—	442000	470000	150000	393000

318L [Page 316](#)

280580 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			M_2 max Nm
										HC/PC	HZ/PZ	FZ	
1500	318L3	76.5	19.6	144900	200	40	—	—	—	227200	231900	74200	500000
	318L3	98.2	15.3	156100	200	40	—	—	—	244900	249900	80600	500000
	318L3	117	12.9	164400	200	40	—	—	—	257800	263100	85300	500000
	318L3	123	12.2	167200	200	40	—	—	—	262100	267500	86900	500000
	318L3	146	10.3	176000	200	40	—	—	—	275900	281600	92000	500000
	318L3	170	8.8	184100	186	40	—	—	—	288700	294600	96800	500000
	318L4	262	5.7	209700	115	22	180-200-225-250	—	—	328800	335600	111800	500000
	318L4	313	4.8	220800	115	22	180-200-225-250	—	—	346700	353800	118600	500000
	318L4	337	4.5	225200	115	22	180-200-225-250	—	—	354400	361600	121500	500000
	318L4	402	3.7	236100	104	22	180-200-225-250	—	—	373600	381300	128900	500000
	318L4	422	3.6	239300	101	22	180-200-225-250	—	—	379300	387100	131100	500000
	318L4	477	3.1	247200	92	22	180-200-225-250	—	—	393300	401400	136500	500000
	318L4	515	2.9	252500	87	22	180-200-225-250	—	—	402700	410900	140100	500000
	318L4	612	2.5	263300	76	22	180-200-225-250	—	—	423900	432600	148300	500000
	318L4	647	2.3	264400	73	22	180-200-225-250	—	—	431100	439900	151100	500000
	318L4	726	2.1	266600	65	22	180-200-225-250	—	—	446300	455400	157000	500000
	318L4	768	2	267600	62	22	180-200-225-250	—	—	453800	463100	160000	500000
	318L4	911	1.6	270900	53	22	180-200-225-250	—	—	477700	487500	169400	500000
	318L4	1059	1.4	273800	46	22	180-200-225-250	—	—	499800	510000	178100	500000
1000	318L3	76.5	13.1	163600	200	48	—	—	—	256600	261900	84900	500000
	318L3	98.2	10.2	176300	200	48	—	—	—	276500	282200	92300	500000
	318L3	117	8.6	185600	183	48	—	—	—	291100	297100	97700	500000
	318L3	123	8.1	188800	176	48	—	—	—	296000	302100	99500	500000
	318L3	146	6.8	198700	156	48	—	—	—	311600	318000	105400	500000







319L

[Page 322](#)
476410 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
										HC/PC	HZ/PZ	FZ	
500	319L2	30.2	16.5	168600	260	70	—	—	—	274800	302800	78500	680000
	319L2	35.8	14	199000	260	70	—	—	—	289000	318500	83000	680000
	319L3	84.8	5.9	272100	184	100	—	—	—	374400	412500	110700	680000
	319L3	109	4.6	306300	162	100	—	—	—	403500	444600	120300	680000
	319L3	129	3.9	306100	136	100	—	—	—	424800	468000	127400	680000
	319L3	137	3.7	312300	131	100	—	—	—	432000	475900	129700	680000
	319L3	162	3.1	302300	107	100	—	—	—	454400	500600	137200	680000
	319L3	188	2.7	290800	89	100	—	—	—	475800	524200	144400	680000
	319L3	223	2.2	322300	83	100	—	—	—	500400	551300	152800	680000

321L

[Page 328](#)
655740 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
										HC/PC	HZ/PZ	FZ	
1500	321L4	258	5.8	401700	150	35	180-200-225-250	—	—	461500	547200	667600	934000
	321L4	308	4.9	423600	150	35	180-200-225-250	—	—	486600	577000	708100	934000
	321L4	395	3.8	456500	150	35	180-200-225-250	—	—	524400	621900	769500	934000
	321L4	469	3.2	480500	150	35	180-200-225-250	—	—	552000	654600	814700	934000
	321L4	515	2.9	494200	150	35	180-200-225-250	—	—	567800	673300	840500	934000
	321L4	612	2.5	519900	150	35	180-200-225-250	—	—	597700	708800	889900	934000
	321L4	736	2	545400	131	35	180-200-225-250	—	—	631900	749400	946600	934000
	321L4	796	1.9	556600	124	35	180-200-225-250	—	—	646900	767100	971600	934000
	321L4	945	1.6	581800	109	35	180-200-225-250	—	—	681000	807600	1028700	934000
	321L4	1122	1.3	530200	84	35	180-200-225-250	—	—	716900	850200	1089200	934000
1000	321L3	75.3	13.3	313500	250	60	—	—	—	360100	427000	506800	934000
	321L3	98.2	10.2	339400	250	60	—	—	—	389900	462400	553600	934000
	321L3	118	8.5	358800	250	60	—	—	—	412200	488800	588900	934000
	321L3	126	7.9	365800	250	60	—	—	—	420200	498300	601600	934000
	321L3	152	6.6	386700	250	60	—	—	—	444200	526800	639900	934000
	321L3	180	5.6	407100	250	60	—	—	—	467700	554600	677500	934000
	321L4	258	3.9	453700	150	42	180-200-225-250	—	—	521200	618000	764200	934000
	321L4	308	3.2	478300	150	42	180-200-225-250	—	—	549500	651700	810500	934000
	321L4	395	2.5	515500	150	42	180-200-225-250	—	—	592200	702300	880800	934000
	321L4	469	2.1	539100	136	42	180-200-225-250	—	—	623400	739300	932600	934000
	321L4	515	1.9	552400	127	42	180-200-225-250	—	—	641200	760400	962200	934000
	321L4	612	1.6	577400	112	42	180-200-225-250	—	—	675000	800500	1018700	934000
	321L4	736	1.4	605800	97	42	180-200-225-250	—	—	713600	846300	1083600	934000
	321L4	796	1.3	618200	92	42	180-200-225-250	—	—	730600	866400	1112200	934000





321L

[Page 328](#)

655740 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
										HC/PC	HZ/PZ	FZ	
1000	321L4	945	1.1	646200	81	42	180-200-225-250	—	—	769100	912000	1177600	934000
	321L4	1122	0.89	536400	57	42	180-200-225-250	—	—	779000	923000	1200000	934000
500	321L3	75.3	6.6	385900	250	127	—	—	—	443300	525700	638500	934000
	321L3	98.2	5.1	417900	244	127	—	—	—	480000	569300	697500	934000
	321L3	118	4.2	441800	214	127	—	—	—	507500	601800	742000	934000
	321L3	126	4	450300	205	127	—	—	—	517300	613500	758000	934000
	321L3	152	3.3	476100	180	127	—	—	—	546900	648600	806300	934000
	321L3	180	2.8	501200	160	127	—	—	—	575800	682800	853700	934000
	321L4	258	1.9	552700	127	70	180-200-225-250	—	—	641600	760900	962800	934000
	321L4	308	1.6	578500	111	70	180-200-225-250	—	—	676500	802300	1021200	934000
	321L4	395	1.3	617100	92	70	180-200-225-250	—	—	729100	864600	1109700	934000
	321L4	469	1.1	645100	81	70	180-200-225-250	—	—	767500	910200	1174900	934000
	321L4	515	0.97	655700	75	70	180-200-225-250	—	—	779000	923000	1200000	934000
	321L4	612	0.82	655700	63	70	180-200-225-250	—	—	779000	923000	1200000	934000
	321L4	736	0.68	655700	53	70	180-200-225-250	—	—	779000	923000	1200000	934000
	321L4	796	0.63	655700	49	70	180-200-225-250	—	—	779000	923000	1200000	934000
	321L4	945	0.53	655700	41	70	180-200-225-250	—	—	779000	923000	1200000	934000
	321L4	1122	0.45	536400	28	70	180-200-225-250	—	—	779000	923000	1200000	934000





11. Maximum torque
12. Page installation drawing can be found at

۱۱. حداکثر گشتاور
۱۲. شماره صفحه ابعاد گیربکس

300 R							Page 221	1250 Nm						
n ₁ min ⁻¹		i	n ₂ min ⁻¹	M _{n2} Nm	P _{n1} kW	P _t kW	P (IEC) 	MC	MZ	R _{n2} [N]		FZ	M _{2 max} Nm	
1500	300 R2	7.13	210	580	13.7	12	71-80-90-100-112-132	—	—	6170	7080	1350	2000	
	300 R2	8.74	172	610	11.7	12	71-80-90-100-112-132	—	—	6550	7530	1440	2400	
	300 R2	11.8	127	590	8.3	12	71-80-90-100-112-132	—	—	7180	8240	1590	2400	
	300 R2	14.8	102	510	5.7	12	71-80-90-100-112-132	—	—	7670	8810	1710	2400	
	300 R2	18.5	81	370	3.3	12	71-80-90-100-112-132	—	—	8200	9420	1850	2400	
	300 R3	24.8	60	730	5.1	12	71-80-90-100-112-132	—	—	8960	10300	2040	2000	
	300 R3	30.4	49	840	4.8	12	71-80-90-100-112-132	—	—	9530	10900	2180	2400	
	300 R3	37.3	40	840	3.9	12	71-80-90-100-112-132	—	—	10100	11600	2330	2400	
	300 R3	41.2	36	650	2.7	12	71-80-90-100-112-132	—	—	10400	12000	2410	2400	
	300 R3	50.4	29.8	850	2.9	12	71-80-90-100-112-132	—	—	11100	12700	2580	2400	
	300 R3	62.9	23.8	850	2.3	12	71-80-90-100-112-132	—	—	11800	13600	2780	2400	
	300 R3	68.2	22	650	1.6	12	71-80-90-100-112-132	—	—	12100	13900	2860	2400	
	300 R3	78.7	19.1	850	1.9	12	71-80-90-100-112-132	—	—	12700	14600	2990	2400	
	300 R3	85.2	17.6	650	1.3	12	71-80-90-100-112-132	—	—	13000	14900	3070	2400	
	300 R3	106	14.1	650	1.1	12	71-80-90-100-112-132	—	—	13900	15900	3310	2400	
	300 R3	133	11.3	550	0.71	12	71-80-90-100-112-132	—	—	14800	17000	3570	2400	
	300 R4	106	14.2	860	1.4	10	71-80-90-100-112-132	—	—	13800	15900	3310	2400	
	300 R4	130	11.6	860	1.2	10	71-80-90-100-112-132	—	—	14700	16900	3540	2400	
	300 R4	143	10.5	650	0.81	10	71-80-90-100-112-132	—	—	15200	17400	3660	2400	
	300 R4	159	9.4	870	0.97	10	71-80-90-100-112-132	—	—	15600	18000	3780	2400	
	300 R4	175	8.5	880	0.89	10	71-80-90-100-112-132	—	—	16100	18500	3910	2400	
	300 R4	215	7	910	0.75	10	71-80-90-100-112-132	—	—	17100	19700	4190	2400	
	300 R4	237	6.3	650	0.49	10	71-80-90-100-112-132	—	—	17600	20300	4330	2400	
	300 R4	268	5.6	930	0.62	10	71-80-90-100-112-132	—	—	18300	21000	4510	2400	
	300 R4	291	5.2	950	0.58	10	71-80-90-100-112-132	—	—	18800	21500	4630	2400	
	300 R4	363	4.1	980	0.48	10	71-80-90-100-112-132	—	—	20000	23000	4990	2400	
	300 R4	394	3.8	680	0.31	10	71-80-90-100-112-132	—	—	20500	23600	5120	2400	
	300 R4	453	3.3	1020	0.4	10	71-80-90-100-112-132	—	—	21400	24600	5370	2400	
	300 R4	491	3.1	710	0.25	10	71-80-90-100-112-132	—	—	21900	25200	5510	2400	
	300 R4	613	2.4	730	0.21	10	71-80-90-100-112-132	—	—	23500	27000	5940	2400	
	300 R4	766	2	760	0.18	10	71-80-90-100-112-132	—	—	25100	28800	6400	2400	
1000	300 R2	7.13	140	660	10.3	14.4	71-80-90-100-112-132	—	—	6960	8000	1540	2000	
	300 R2	8.74	114	690	8.8	14.4	71-80-90-100-112-132	—	—	7400	8500	1650	2400	





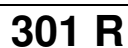
300 R

Page 221

1250 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
										HC/PC	HZ/PZ	FZ	
1000	300 R2	11.8	85	630	6	14.4	71-80-90-100-112-132	—	—	8100	9310	1820	2400
	300 R2	14.8	68	530	4	14.4	71-80-90-100-112-132	—	—	8660	9950	1960	2400
	300 R2	18.5	54	370	2.2	14.4	71-80-90-100-112-132	—	—	9260	10600	2110	2400
	300 R3	24.8	40	730	3.4	14.4	71-80-90-100-112-132	—	—	10100	11600	2330	2000
	300 R3	30.4	33	850	3.2	14.4	71-80-90-100-112-132	—	—	10800	12400	2500	2400
	300 R3	37.3	26.8	850	2.6	14.4	71-80-90-100-112-132	—	—	11400	13100	2670	2400
	300 R3	41.2	24.3	650	1.8	14.4	71-80-90-100-112-132	—	—	11800	13500	2760	2400
	300 R3	50.4	19.8	850	1.9	14.4	71-80-90-100-112-132	—	—	12500	14400	2960	2400
	300 R3	62.9	15.9	850	1.6	14.4	71-80-90-100-112-132	—	—	13400	15400	3180	2400
	300 R3	68.2	14.7	650	1.1	14.4	71-80-90-100-112-132	—	—	13700	15800	3270	2400
	300 R3	78.7	12.7	860	1.3	14.4	71-80-90-100-112-132	—	—	14300	16400	3430	2400
	300 R3	85.2	11.7	650	0.88	14.4	71-80-90-100-112-132	—	—	14700	16800	3520	2400
	300 R3	106	9.4	650	0.7	14.4	71-80-90-100-112-132	—	—	15700	18000	3790	2400
	300 R3	133	7.5	550	0.48	14.4	71-80-90-100-112-132	—	—	16700	19200	4080	2400
	300 R4	106	9.4	870	0.97	12	71-80-90-100-112-132	—	—	15600	18000	3780	2400
	300 R4	130	7.7	890	0.81	12	71-80-90-100-112-132	—	—	16600	19100	4050	2400
	300 R4	143	7	650	0.54	12	71-80-90-100-112-132	—	—	17100	19700	4190	2400
	300 R4	159	6.3	920	0.68	12	71-80-90-100-112-132	—	—	17700	20300	4330	2400
	300 R4	175	5.7	930	0.63	12	71-80-90-100-112-132	—	—	18200	20900	4480	2400
	300 R4	215	4.7	960	0.53	12	71-80-90-100-112-132	—	—	19300	22200	4790	2400
	300 R4	237	4.2	670	0.33	12	71-80-90-100-112-132	—	—	19900	22900	4950	2400
	300 R4	268	3.7	1000	0.44	12	71-80-90-100-112-132	—	—	20700	23800	5160	2400
	300 R4	291	3.4	1010	0.41	12	71-80-90-100-112-132	—	—	21200	24300	5300	2400
	300 R4	363	2.8	1050	0.34	12	71-80-90-100-112-132	—	—	22600	26000	5710	2400
	300 R4	394	2.5	730	0.22	12	71-80-90-100-112-132	—	—	23200	26600	5860	2400
	300 R4	453	2.2	1090	0.29	12	71-80-90-100-112-132	—	—	24200	27800	6140	2400
	300 R4	491	2	760	0.18	12	71-80-90-100-112-132	—	—	24800	28500	6310	2400
	300 R4	613	1.6	790	0.15	12	71-80-90-100-112-132	—	—	26500	30400	6800	2400
	300 R4	766	1.3	820	0.13	12	71-80-90-100-112-132	—	—	28300	32500	7320	2400
500	300R2	7.13	70	730	5.7	24	71-80-90-100-112-132	—	—	8570	9850	1940	2000
	300R2	8.74	57	820	5.2	24	71-80-90-100-112-132	—	—	9110	10500	2080	2400
	300R2	11.8	42	650	3.1	24	71-80-90-100-112-132	—	—	9980	11500	2300	2400
	300R2	14.8	34	550	2.1	24	71-80-90-100-112-132	—	—	10700	12300	2470	2400
	300R2	18.5	27.1	370	1.1	24	71-80-90-100-112-132	—	—	11400	13100	2660	2400
	300R3	24.8	20.1	730	1.7	24	71-80-90-100-112-132	—	—	12500	14300	2940	2000
	300R3	30.4	16.4	850	1.6	24	71-80-90-100-112-132	—	—	13200	15200	3150	2400
	300R3	37.3	13.4	860	1.3	24	71-80-90-100-112-132	—	—	14100	16200	3370	2400







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n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
										HC/PC	HZ/PZ	FZ	
500	301 R4	106	9.4	1740	1.9	12	71-80-90-100-112-132	—	—	15600	18000	3780	3400
	301 R4	130	7.7	1790	1.6	12	71-80-90-100-112-132	—	—	16600	19100	4050	3400
	301 R4	143	7	1300	1.1	12	71-80-90-100-112-132	—	—	17100	19700	4190	3400
	301 R4	159	6.3	1840	1.4	12	71-80-90-100-112-132	—	—	17700	20300	4330	3400
	301 R4	175	5.7	1870	1.3	12	71-80-90-100-112-132	—	—	18200	20900	4480	3400
	301 R4	215	4.7	1920	1.1	12	71-80-90-100-112-132	—	—	19300	22200	4790	3400
	301 R4	237	4.2	1340	0.67	12	71-80-90-100-112-132	—	—	19900	22900	4950	3400
	301 R4	268	3.7	2000	0.88	12	71-80-90-100-112-132	—	—	20700	23800	5160	3400
	301 R4	291	3.4	2030	0.82	12	71-80-90-100-112-132	—	—	21200	24300	5300	3400
	301 R4	363	2.8	2100	0.69	12	71-80-90-100-112-132	—	—	22600	26000	5710	3400
	301 R4	394	2.5	1460	0.44	12	71-80-90-100-112-132	—	—	23200	26600	5860	3400
	301 R4	453	2.2	2000	0.52	12	71-80-90-100-112-132	—	—	24200	27800	6140	3400
	301 R4	491	2	1510	0.36	12	71-80-90-100-112-132	—	—	24800	28500	6310	3400
	301 R4	613	1.6	1580	0.3	12	71-80-90-100-112-132	—	—	26500	30400	6800	3400
	301 R4	766	1.3	1640	0.25	12	71-80-90-100-112-132	—	—	28300	32500	7320	3400
	301R2	7.13	70	1370	10.6	24	71-80-90-100-112-132	—	—	8570	9850	1940	3200
	301R2	8.74	57	1520	9.7	24	71-80-90-100-112-132	—	—	9110	10500	2080	3200
	301R2	11.8	42	1300	6.1	24	71-80-90-100-112-132	—	—	9980	11500	2300	3200
	301R2	14.8	34	1150	4.3	24	71-80-90-100-112-132	—	—	10700	12300	2470	3200
	301R2	18.5	27.1	740	2.2	24	71-80-90-100-112-132	—	—	11400	13100	2660	3200
	301R3	24.8	20.1	1430	3.3	24	71-80-90-100-112-132	—	—	12500	14300	2940	3400
	301R3	30.4	16.4	1680	3.2	24	71-80-90-100-112-132	—	—	13200	15200	3150	3400
	301R3	37.3	13.4	1700	2.6	24	71-80-90-100-112-132	—	—	14100	16200	3370	3400
	301R3	41.2	12.1	1300	1.8	24	71-80-90-100-112-132	—	—	14500	16700	3480	3400
	301R3	50.4	9.9	1730	2	24	71-80-90-100-112-132	—	—	15400	17700	3720	3400
	301R3	62.9	7.9	1760	1.6	24	71-80-90-100-112-132	—	—	16500	18900	4010	3400
	301R3	68.2	7.3	1300	1.1	24	71-80-90-100-112-132	—	—	16900	19400	4120	3400
	301R3	78.7	6.4	1600	1.2	24	71-80-90-100-112-132	—	—	17600	20200	4320	3400
	301R3	85.2	5.9	1300	0.88	24	71-80-90-100-112-132	—	—	18000	20700	4430	3400
	301R3	106	4.7	1310	0.71	24	71-80-90-100-112-132	—	—	19300	22200	4780	3400
	301R3	133	3.8	1150	0.5	24	71-80-90-100-112-132	—	—	20600	23700	5140	3400
	301R4	106	4.7	1920	1.1	20	71-80-90-100-112-132	—	—	19300	22100	4770	3400
	301R4	130	3.9	1990	0.91	20	71-80-90-100-112-132	—	—	20500	23500	5100	3400
	301R4	143	3.5	1380	0.57	20	71-80-90-100-112-132	—	—	21100	24200	5270	3400
	301R4	159	3.1	2060	0.77	20	71-80-90-100-112-132	—	—	21700	25000	5460	3400
	301R4	175	2.8	2090	0.71	20	71-80-90-100-112-132	—	—	22400	25700	5640	3400
	301R4	215	2.3	2160	0.6	20	71-80-90-100-112-132	—	—	23800	27400	6040	3400
	301R4	237	2.1	1510	0.37	20	71-80-90-100-112-132	—	—	24500	28200	6240	3400
	301R4	268	1.9	2240	0.49	20	71-80-90-100-112-132	—	—	25500	29200	6500	3400





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n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
										HC/PC	HZ/PZ	FZ	
500	301R4	291	1.7	2270	0.46	20	71-80-90-100-112-132	—	—	26100	30000	6680	3400
	301R4	363	1.4	2340	0.38	20	71-80-90-100-112-132	—	—	27900	32000	7190	3400
	301R4	394	1.3	1650	0.25	20	71-80-90-100-112-132	—	—	28600	32800	7390	3400
	301R4	453	1.1	2000	0.26	20	71-80-90-100-112-132	—	—	29800	34000	7740	3400
	301R4	491	1	1710	0.21	20	71-80-90-100-112-132	—	—	30500	34000	7950	3400
	301R4	613	0.82	1720	0.17	20	71-80-90-100-112-132	—	—	31000	34000	8000	3400
	301R4	766	0.65	1720	0.13	20	71-80-90-100-112-132	—	—	31000	34000	8000	3400

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2970 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
										HC/PC	HZ/PZ	FZ	
1500	303 R2	9.23	163	1680	30	18	71-80-90-100-112-132	—	—	13600	16400	4400	5200
	303 R2	10.9	138	1900	29	18	71-80-90-100-112-132	—	—	14300	17200	4650	5200
	303 R2	13.7	110	1970	24	18	71-80-90-100-112-132	—	—	15300	18400	5010	5200
	303 R2	15.9	94	1820	19.1	18	71-80-90-100-112-132	—	—	16000	19300	5270	5200
	303 R2	19.2	78	1550	13.5	18	71-80-90-100-112-132	—	—	16900	20400	5620	5200
	303 R2	24.8	61	860	5.8	18	71-80-90-100-112-132	—	—	18300	22000	6110	5200
	303 R3	25.7	58	2030	13.6	14	71-80-90-100-112-132	—	—	18500	22200	6190	5200
	303 R3	31.5	48	2110	11.5	14	71-80-90-100-112-132	—	—	19600	23600	6620	5200
	303 R3	37.1	40	2390	11.1	14	71-80-90-100-112-132	—	—	20600	24800	7000	5200
	303 R3	42.6	35	2070	8.4	14	71-80-90-100-112-132	—	—	21500	25900	7320	5200
	303 R3	46.6	32	2160	8	14	71-80-90-100-112-132	—	—	22100	26600	7550	5200
	303 R3	50.3	29.8	2380	8.2	14	71-80-90-100-112-132	—	—	22600	27200	7740	5200
	303 R3	54.2	27.7	1820	5.8	14	71-80-90-100-112-132	—	—	23100	27800	7930	5200
	303 R3	63.1	23.8	2170	5.9	14	71-80-90-100-112-132	—	—	24200	29100	8350	5200
	303 R3	73.3	20.5	1820	4.3	14	71-80-90-100-112-132	—	—	25300	30500	8780	5200
	303 R3	78.7	19.1	2180	4.8	14	71-80-90-100-112-132	—	—	25900	31100	8990	5200
	303 R3	91.5	16.4	1820	3.4	14	71-80-90-100-112-132	—	—	27100	32600	9450	5200
	303 R3	114	13.1	1820	2.7	14	71-80-90-100-112-132	—	—	28900	34800	10200	5200
	303 R4	129	11.6	2620	3.6	12	71-80-90-100-112-132	—	—	30000	36100	10600	5200
	303 R4	148	10.1	2310	2.8	12	71-80-90-100-112-132	—	—	31300	37600	11100	5200
	303 R4	158	9.5	2660	3	12	71-80-90-100-112-132	—	—	31900	38400	11300	5200
	303 R4	185	8.1	2310	2.2	12	71-80-90-100-112-132	—	—	33400	40200	11900	5200
	303 R4	214	7	2730	2.3	12	71-80-90-100-112-132	—	—	34900	42000	12500	5200
	303 R4	231	6.5	1830	1.4	12	71-80-90-100-112-132	—	—	35700	43000	12900	5200





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n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
										HC/PC	HZ/PZ	FZ	
1500	303 R4	255	5.9	1840	1.3	12	71-80-90-100-112-132	—	—	36800	44300	13300	5200
	303 R4	290	5.2	2650	1.6	12	71-80-90-100-112-132	—	—	38300	46000	13900	5200
	303 R4	313	4.8	1850	1.1	12	71-80-90-100-112-132	—	—	39100	47100	14200	5200
	303 R4	336	4.5	2270	1.2	12	71-80-90-100-112-132	—	—	40000	48100	14600	5200
	303 R4	364	4.1	2310	1.1	12	71-80-90-100-112-132	—	—	40900	49300	15000	5200
	303 R4	390	3.8	1930	0.88	12	71-80-90-100-112-132	—	—	41800	50300	15300	5200
	303 R4	452	3.3	2250	0.88	12	71-80-90-100-112-132	—	—	43700	52600	16100	5200
	303 R4	528	2.8	2030	0.68	12	71-80-90-100-112-132	—	—	45800	55100	16900	5200
	303 R4	567	2.6	2430	0.76	12	71-80-90-100-112-132	—	—	46800	56300	17400	5200
	303 R4	659	2.3	2110	0.57	12	71-80-90-100-112-132	—	—	48900	58900	18200	5200
	303 R4	797	1.9	1820	0.41	12	71-80-90-100-112-132	—	—	51800	62300	19400	5200
	303 R4	824	1.8	2200	0.47	12	71-80-90-100-112-132	—	—	52300	62900	19700	5200
1000	303 R2	9.23	108	1890	23	22	71-80-90-100-112-132	—	—	15400	18500	5030	5200
	303 R2	10.9	92	2140	22	22	71-80-90-100-112-132	—	—	16100	19400	5320	5200
	303 R2	13.7	73	2080	16.9	22	71-80-90-100-112-132	—	—	17300	20800	5740	5200
	303 R2	15.9	63	1820	12.7	22	71-80-90-100-112-132	—	—	18100	21700	6030	5200
	303 R2	19.2	52	1640	9.5	22	71-80-90-100-112-132	—	—	19100	23000	6430	5200
	303 R2	24.8	40	860	3.9	22	71-80-90-100-112-132	—	—	20700	24800	7000	5200
	303 R3	25.7	39	2160	9.6	16.8	71-80-90-100-112-132	—	—	20900	25100	7080	5200
	303 R3	31.5	32	2160	7.9	16.8	71-80-90-100-112-132	—	—	22200	26700	7580	5200
	303 R3	37.1	26.9	2460	7.6	16.8	71-80-90-100-112-132	—	—	23300	28100	8010	5200
	303 R3	42.6	23.5	2110	5.7	16.8	71-80-90-100-112-132	—	—	24300	29200	8380	5200
	303 R3	46.6	21.5	2170	5.3	16.8	71-80-90-100-112-132	—	—	25000	30000	8640	5200
	303 R3	50.3	19.9	2470	5.6	16.8	71-80-90-100-112-132	—	—	25500	30700	8860	5200
	303 R3	54.2	18.5	1820	3.9	16.8	71-80-90-100-112-132	—	—	26100	31400	9080	5200
	303 R3	63.1	15.9	2180	4	16.8	71-80-90-100-112-132	—	—	27300	32900	9550	5200
	303 R3	73.3	13.6	1820	2.8	16.8	71-80-90-100-112-132	—	—	28600	34400	10000	5200
	303 R3	78.7	12.7	2190	3.2	16.8	71-80-90-100-112-132	—	—	29200	35100	10300	5200
	303 R3	91.5	10.9	1820	2.3	16.8	71-80-90-100-112-132	—	—	30600	36800	10800	5200
	303 R3	114	8.7	1820	1.8	16.8	71-80-90-100-112-132	—	—	32700	39300	11700	5200
	303 R4	129	7.7	2710	2.5	14.4	71-80-90-100-112-132	—	—	33900	40800	12100	5200
	303 R4	148	6.7	2310	1.8	14.4	71-80-90-100-112-132	—	—	35300	42500	12700	5200
	303 R4	158	6.3	2760	2.1	14.4	71-80-90-100-112-132	—	—	36000	43300	13000	5200
	303 R4	185	5.4	2310	1.5	14.4	71-80-90-100-112-132	—	—	37700	45400	13700	5200
	303 R4	214	4.7	2810	1.6	14.4	71-80-90-100-112-132	—	—	39500	47500	14400	5200
	303 R4	231	4.3	1890	0.97	14.4	71-80-90-100-112-132	—	—	40300	48500	14700	5200
	303 R4	255	3.9	1920	0.89	14.4	71-80-90-100-112-132	—	—	41600	50000	15200	5200
	303 R4	290	3.4	2680	1.1	14.4	71-80-90-100-112-132	—	—	43200	52000	15900	5200





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n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
										HC/PC	HZ/PZ	FZ	
1000	303 R4	313	3.2	1990	0.75	14.4	71-80-90-100-112-132	—	—	44200	53200	16300	5200
	303 R4	336	3	2440	0.86	14.4	71-80-90-100-112-132	—	—	45100	54300	16700	5200
	303 R4	364	2.7	2480	0.81	14.4	71-80-90-100-112-132	—	—	46200	55600	17100	5200
	303 R4	390	2.6	2070	0.63	14.4	71-80-90-100-112-132	—	—	47200	56800	17500	5200
	303 R4	452	2.2	2250	0.59	14.4	71-80-90-100-112-132	—	—	49300	59400	18400	5200
	303 R4	528	1.9	2180	0.49	14.4	71-80-90-100-112-132	—	—	51700	62200	19400	5200
	303 R4	567	1.8	2600	0.54	14.4	71-80-90-100-112-132	—	—	52800	63500	19900	5200
	303 R4	659	1.5	2270	0.41	14.4	71-80-90-100-112-132	—	—	55300	66500	20900	5200
	303 R4	797	1.3	1930	0.29	14.4	71-80-90-100-112-132	—	—	58500	70400	22300	5200
	303 R4	824	1.2	2360	0.34	14.4	71-80-90-100-112-132	—	—	59100	71100	22500	5200
500	303R2	9.23	54	2260	13.7	36	71-80-90-100-112-132	—	—	18900	22700	6340	5200
	303R2	10.9	46	2570	13.2	36	71-80-90-100-112-132	—	—	19900	23900	6700	5200
	303R2	13.7	37	2150	8.8	36	71-80-90-100-112-132	—	—	21300	25600	7230	5200
	303R2	15.9	31	1820	6.4	36	71-80-90-100-112-132	—	—	22300	26800	7600	5200
	303R2	19.2	26	1650	4.8	36	71-80-90-100-112-132	—	—	23600	28300	8100	5200
	303R2	24.8	20.2	860	1.9	36	71-80-90-100-112-132	—	—	25400	30600	8810	5200
	303R3	25.7	19.5	2230	5	28	71-80-90-100-112-132	—	—	25700	30900	8920	5200
	303R3	31.5	15.9	2250	4.1	28	71-80-90-100-112-132	—	—	27300	32900	9550	5200
	303R3	37.1	13.5	2590	4	28	71-80-90-100-112-132	—	—	28700	34500	10100	5200
	303R3	42.6	11.7	2190	3	28	71-80-90-100-112-132	—	—	29900	36000	10600	5200
	303R3	46.6	10.7	2200	2.7	28	71-80-90-100-112-132	—	—	30700	37000	10900	5200
	303R3	50.3	9.9	2620	3	28	71-80-90-100-112-132	—	—	31400	37800	11200	5200
	303R3	54.2	9.2	1820	1.9	28	71-80-90-100-112-132	—	—	32200	38700	11400	5200
	303R3	63.1	7.9	2210	2	28	71-80-90-100-112-132	—	—	33700	40500	12000	5200
	303R3	73.3	6.8	1830	1.4	28	71-80-90-100-112-132	—	—	35200	42400	12700	5200
	303R3	78.7	6.4	2220	1.6	28	71-80-90-100-112-132	—	—	36000	43300	13000	5200
	303R3	91.5	5.5	1840	1.2	28	71-80-90-100-112-132	—	—	37600	45300	13600	5200
	303R3	114	4.4	1880	0.94	28	71-80-90-100-112-132	—	—	40200	48400	14700	5200
	303R4	129	3.9	2810	1.3	24	71-80-90-100-112-132	—	—	41700	50200	15300	5200
	303R4	148	3.4	2310	0.92	24	71-80-90-100-112-132	—	—	43500	52300	16000	5200
	303R4	158	3.2	2810	1	24	71-80-90-100-112-132	—	—	44400	53400	16400	5200
	303R4	185	2.7	2310	0.74	24	71-80-90-100-112-132	—	—	46500	55900	17200	5200
	303R4	214	2.3	2820	0.78	24	71-80-90-100-112-132	—	—	48600	58400	18100	5200
	303R4	231	2.2	2130	0.55	24	71-80-90-100-112-132	—	—	49700	59800	18600	5200
	303R4	255	2	2170	0.5	24	71-80-90-100-112-132	—	—	51200	61600	19200	5200
	303R4	290	1.7	2730	0.56	24	71-80-90-100-112-132	—	—	53200	64000	20000	5200
	303R4	313	1.6	2250	0.43	24	71-80-90-100-112-132	—	—	54400	65400	20500	5200
	303R4	336	1.5	2700	0.48	24	71-80-90-100-112-132	—	—	55600	66900	21000	5200





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2970 Nm

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5600 Nm

159



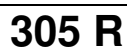
305 R

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5600 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
										HC/PC	HZ/PZ	FZ	
1500	305 R4	290	5.2	5300	3.2	12	71-80-90-100-112-132	—	—	38300	46000	13900	8800
	305 R4	313	4.8	3620	2.1	12	71-80-90-100-112-132	—	—	39100	47100	14200	8800
	305 R4	336	4.5	4560	2.4	12	71-80-90-100-112-132	—	—	40000	48100	14600	8800
	305 R4	364	4.1	4620	2.3	12	71-80-90-100-112-132	—	—	40900	49300	15000	8800
	305 R4	390	3.8	3750	1.7	12	71-80-90-100-112-132	—	—	41800	50300	15300	8800
	305 R4	452	3.3	4750	1.9	12	71-80-90-100-112-132	—	—	43700	52600	16100	8800
	305 R4	528	2.8	3920	1.3	12	71-80-90-100-112-132	—	—	45800	55100	16900	8800
	305 R4	567	2.6	4860	1.5	12	71-80-90-100-112-132	—	—	46800	56300	17400	8800
	305 R4	659	2.3	4070	1.1	12	71-80-90-100-112-132	—	—	48900	58900	18200	8800
	305 R4	797	1.9	3450	0.77	12	71-80-90-100-112-132	—	—	51800	62300	19400	8800
	305 R4	824	1.8	4230	0.91	12	71-80-90-100-112-132	—	—	52300	62900	19700	8800
1000	305 R2	9.23	108	1890	23	22	71-80-90-100-112-132	—	—	15400	18500	5030	7700
	305 R2	10.9	92	2240	23	22	71-80-90-100-112-132	—	—	16100	19400	5320	7700
	305 R2	13.7	73	2810	23	22	71-80-90-100-112-132	—	—	17300	20800	5740	7700
	305 R2	15.9	63	3270	23	22	71-80-90-100-112-132	—	—	18100	21700	6030	7700
	305 R2	19.2	52	2990	17.3	22	71-80-90-100-112-132	—	—	19100	23000	6430	7700
	305 R3	25.7	39	3900	15	16.8	71-80-90-100-112-132	—	—	20900	25100	7080	8800
	305 R3	31.5	32	3950	14.4	16.8	71-80-90-100-112-132	—	—	22200	26700	7580	8800
	305 R3	37.1	26.9	4600	14.2	16.8	71-80-90-100-112-132	—	—	23300	28100	8010	8800
	305 R3	42.6	23.5	3990	10.7	16.8	71-80-90-100-112-132	—	—	24300	29200	8380	8800
	305 R3	46.6	21.5	4340	10.7	16.8	71-80-90-100-112-132	—	—	25000	30000	8640	8800
	305 R3	50.3	19.9	4700	10.7	16.8	71-80-90-100-112-132	—	—	25500	30700	8860	8800
	305 R3	54.2	18.5	3580	7.6	16.8	71-80-90-100-112-132	—	—	26100	31400	9080	8800
	305 R3	63.1	15.9	4370	7.9	16.8	71-80-90-100-112-132	—	—	27300	32900	9550	8800
	305 R3	73.3	13.6	3590	5.6	16.8	71-80-90-100-112-132	—	—	28600	34400	10000	8800
	305 R3	78.7	12.7	4380	6.4	16.8	71-80-90-100-112-132	—	—	29200	35100	10300	8800
	305 R3	91.5	10.9	3600	4.5	16.8	71-80-90-100-112-132	—	—	30600	36800	10800	8800
	305 R3	114	8.7	3600	3.6	16.8	71-80-90-100-112-132	—	—	32700	39300	11700	8800
	305 R4	129	7.7	5370	4.9	14.4	71-80-90-100-112-132	—	—	33900	40800	12100	8800
	305 R4	148	6.7	4490	3.6	14.4	71-80-90-100-112-132	—	—	35300	42500	12700	8800
	305 R4	158	6.3	5420	4	14.4	71-80-90-100-112-132	—	—	36000	43300	13000	8800
	305 R4	185	5.4	4490	2.9	14.4	71-80-90-100-112-132	—	—	37700	45400	13700	8800
	305 R4	214	4.7	5480	3	14.4	71-80-90-100-112-132	—	—	39500	47500	14400	8800
	305 R4	231	4.3	3680	1.9	14.4	71-80-90-100-112-132	—	—	40300	48500	14700	8800
	305 R4	255	3.9	3740	1.7	14.4	71-80-90-100-112-132	—	—	41600	50000	15200	8800
	305 R4	290	3.4	5350	2.2	14.4	71-80-90-100-112-132	—	—	43200	52000	15900	8800
	305 R4	313	3.2	3850	1.5	14.4	71-80-90-100-112-132	—	—	44200	53200	16300	8800
	305 R4	336	3	4890	1.7	14.4	71-80-90-100-112-132	—	—	45100	54300	16700	8800



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7300 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
											HC/PC	HZ/PZ	FZ	
1500	306 R3	58.1	25.8	7580	22	14	71-80-90-100-112-132-160		—	—	38600	45000	11800	14900
	306 R3	67.5	22.2	7090	18.1	14	71-80-90-100-112-132-160		—	—	40400	47100	12500	14900
	306 R3	72.9	20.6	7420	17.5	14	71-80-90-100-112-132-160		—	—	41300	48100	12800	14900
	306 R3	84.7	17.7	7530	15.3	14	71-80-90-100-112-132-160		—	—	43300	50400	13400	14900
	306 R3	98.5	15.2	6490	11.3	14	71-80-90-100-112-132-160		—	—	45300	52700	14100	14900
	306 R3	119	12.6	6490	9.4	14	71-80-90-100-112-132-160		—	—	47900	55800	15000	14900
	306 R3	144	10.4	5490	6.6	14	71-80-90-100-112-132-160		—	—	50700	59100	16000	14900
	306 R4	158	9.5	9620	10.8	12	71-80-90-100-112-132-160		—	—	52100	60700	16500	14900
	306 R4	168	8.9	7560	8	12	71-80-90-100-112-132-160		—	—	53100	61800	16900	14900
	306 R4	181	8.3	9450	9.3	12	71-80-90-100-112-132-160		—	—	54300	63200	17300	14900
	306 R4	214	7	9730	8.1	12	71-80-90-100-112-132-160		—	—	57100	66500	18300	14900
	306 R4	230	6.5	7590	5.8	12	71-80-90-100-112-132-160		—	—	58400	68000	18700	14900
	306 R4	249	6	8200	5.9	12	71-80-90-100-112-132-160		—	—	59700	69600	19200	14900
	306 R4	289	5.2	8280	5.1	12	71-80-90-100-112-132-160		—	—	62500	72800	20200	14900
	306 R4	312	4.8	7590	4.3	12	71-80-90-100-112-132-160		—	—	63900	74500	20700	14900
	306 R4	389	3.9	7590	3.5	12	71-80-90-100-112-132-160		—	—	68300	79600	22300	14900
	306 R4	420	3.6	8790	3.7	12	71-80-90-100-112-132-160		—	—	69900	81400	22900	14900
	306 R4	455	3.3	7020	2.7	12	71-80-90-100-112-132-160		—	—	71600	83400	23500	14900
	306 R4	488	3.1	9020	3.3	12	71-80-90-100-112-132-160		—	—	73200	85200	24100	14900
	306 R4	550	2.7	7260	2.3	12	71-80-90-100-112-132-160		—	—	75800	88300	25100	14900
	306 R4	590	2.5	8480	2.5	12	71-80-90-100-112-132-160		—	—	77400	90200	25600	14900
	306 R4	665	2.3	6010	1.6	12	71-80-90-100-112-132-160		—	—	80300	93500	26700	14900
	306 R4	830	1.8	6270	1.3	12	71-80-90-100-112-132-160		—	—	85800	99900	28700	14900
1000	306 R2	9.23	108	1890	23	22	71-80-90-100-112-132-160		—	—	25100	29200	7340	12000
	306 R2	10.9	92	2240	23	22	71-80-90-100-112-132-160		—	—	26400	30700	7760	12000
	306 R2	13.7	73	2810	23	22	71-80-90-100-112-132-160		—	—	28300	32900	8370	12000
	306 R2	15.9	63	3270	23	22	71-80-90-100-112-132-160		—	—	29600	34400	8800	12000
	306 R2	19.2	52	3940	23	22	71-80-90-100-112-132-160		—	—	31300	36500	9380	12000
	306 R3	33.2	30	6330	22	16.8	71-80-90-100-112-132-160		—	—	36900	43000	11300	14900
	306 R3	39.2	25.5	7280	21	16.8	71-80-90-100-112-132-160		—	—	38800	45100	11900	14900
	306 R3	46.3	21.6	8170	20	16.8	71-80-90-100-112-132-160		—	—	40800	47500	12600	14900
	306 R3	58.1	17.2	8200	16.2	16.8	71-80-90-100-112-132-160		—	—	43600	50800	13600	14900
	306 R3	67.5	14.8	7340	12.5	16.8	71-80-90-100-112-132-160		—	—	45600	53100	14300	14900
	306 R3	72.9	13.7	7710	12.1	16.8	71-80-90-100-112-132-160		—	—	46700	54400	14600	14900
	306 R3	84.7	11.8	7820	10.6	16.8	71-80-90-100-112-132-160		—	—	48900	56900	15400	14900
	306 R3	98.5	10.2	6500	7.6	16.8	71-80-90-100-112-132-160		—	—	51100	59500	16200	14900
	306 R3	119	8.4	6510	6.3	16.8	71-80-90-100-112-132-160		—	—	54100	63000	17200	14900
	306 R3	144	6.9	5500	4.4	16.8	71-80-90-100-112-132-160		—	—	57300	66700	18400	14900





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7300 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
											HC/PC	HZ/PZ	FZ	
500	306R4	420	1.2	9940	1.4	24	71-80-90-100-112-132-160		—	—	97200	113200	33000	14900
	306R4	455	1.1	8490	1.1	24	71-80-90-100-112-132-160		—	—	99600	115900	33900	14900
	306R4	488	1	9530	1.2	24	71-80-90-100-112-132-160		—	—	101000	118400	34700	14900
	306R4	550	0.91	8500	0.91	24	71-80-90-100-112-132-160		—	—	101000	119000	35000	14900
	306R4	590	0.85	9500	0.95	24	71-80-90-100-112-132-160		—	—	101000	119000	35000	14900
	306R4	665	0.75	7000	0.62	24	71-80-90-100-112-132-160		—	—	101000	119000	35000	14900
	306R4	830	0.6	7000	0.5	24	71-80-90-100-112-132-160		—	—	101000	119000	35000	14900

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14000 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
											HC/PC	HZ/PZ	FZ	
1500	307 R2	13	116	5110	66	35	132-160-180-200		—	—	26500	34700	9230	18600
	307 R2	15.5	97	6090	66	35	132-160-180-200		—	—	27900	36600	9790	21000
	307 R2	19.8	76	7820	66	35	132-160-180-200		—	—	30100	39400	10600	21000
	307 R2	23.5	64	7970	57	35	132-160-180-200		—	—	31700	41500	11300	21000
	307 R3	31.6	47	5570	30	22	71-80-90-100-112-132-160		—	—	34600	45400	12400	18600
	307 R3	37.7	40	6650	30	22	71-80-90-100-112-132-160		—	—	36500	47800	13200	21000
	307 R3	44.6	34	7860	30	22	71-80-90-100-112-132-160		—	—	38400	50300	13900	21000
	307 R3	55.9	26.8	9860	30	22	71-80-90-100-112-132-160		—	—	41100	53800	15000	21000
	307 R3	65	23.1	11000	29	22	71-80-90-100-112-132-160		—	—	43000	56300	15800	21000
	307 R3	71.8	20.9	10100	24	22	71-80-90-100-112-132-160		—	—	44300	58000	16300	21000
	307 R3	78.6	19.1	11100	24	22	71-80-90-100-112-132-160		—	—	45500	59600	16800	21000
	307 R3	83.4	18	10200	21	22	71-80-90-100-112-132-160		—	—	46300	60700	17200	21000
	307 R3	99	15.2	8580	14.9	22	71-80-90-100-112-132-160		—	—	48800	63900	18200	21000
	307 R3	120	12.5	8630	12.4	22	71-80-90-100-112-132-160		—	—	51600	67600	19400	21000
	307 R4	152	9.9	13500	15	15	71-80-90-100-112-132-160		—	—	55400	72700	21000	21000
	307 R4	165	9.1	10900	11.7	15	71-80-90-100-112-132-160		—	—	56900	74500	21600	21000
	307 R4	191	7.9	14000	13	15	71-80-90-100-112-132-160		—	—	59400	77800	22600	21000
	307 R4	206	7.3	14100	12.2	15	71-80-90-100-112-132-160		—	—	60700	79600	23200	21000
	307 R4	232	6.5	11100	8.5	15	71-80-90-100-112-132-160		—	—	63000	82500	24200	21000
	307 R4	258	5.8	14600	10	15	71-80-90-100-112-132-160		—	—	65000	85200	25000	21000
	307 R4	284	5.3	11300	7	15	71-80-90-100-112-132-160		—	—	66900	87700	25900	21000
	307 R4	300	5	14000	8.3	15	71-80-90-100-112-132-160		—	—	68000	89100	26300	21000
	307 R4	331	4.5	11500	6.2	15	71-80-90-100-112-132-160		—	—	70000	91800	27200	21000
	307 R4	363	4.1	12300	6	15	71-80-90-100-112-132-160		—	—	72000	94300	28000	21000
	307 R4	413	3.6	11900	5.1	15	71-80-90-100-112-132-160		—	—	74900	98100	29300	21000
	307 R4	453	3.3	13400	5.3	15	71-80-90-100-112-132-160		—	—	76900	100800	30200	21000





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14000 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
											HC/PC	HZ/PZ	FZ	
1500	307 R4	490	3.1	9330	3.4	15	71-80-90-100-112-132-160		—	—	78800	103300	31000	21000
	307 R4	581	2.6	12600	3.9	15	71-80-90-100-112-132-160		—	—	82900	108700	32800	21000
	307 R4	690	2.2	9800	2.5	15	71-80-90-100-112-132-160		—	—	87300	114400	34700	21000
1000	307 R2	13	77	5770	50	42	132-160-180-200		—	—	29900	39200	10600	18600
	307 R2	15.5	65	6880	50	42	132-160-180-200		—	—	31500	41300	11200	21000
	307 R2	19.8	50	8830	50	42	132-160-180-200		—	—	34000	44500	12200	21000
	307 R2	23.5	42	8290	39	42	132-160-180-200		—	—	35800	46900	12900	21000
	307 R3	31.6	32	6180	22	26	71-80-90-100-112-132-160		—	—	39100	51200	14200	18600
	307 R3	37.7	26.5	7510	23	26	71-80-90-100-112-132-160		—	—	41200	54000	15100	21000
	307R3	44.6	11.2	10900	14.1	44	71-80-90-100-112-132-160		—	—	53400	69900	20100	21000
	307R3	55.9	8.9	13500	13.9	44	71-80-90-100-112-132-160		—	—	57100	74800	21700	21000
	307R3	65	7.7	13700	12.1	44	71-80-90-100-112-132-160		—	—	59800	78300	22800	21000
	307R3	71.8	7	11100	8.8	44	71-80-90-100-112-132-160		—	—	61600	80700	23600	21000
	307R3	78.6	6.4	12300	9	44	71-80-90-100-112-132-160		—	—	63300	82900	24300	21000
	307R3	83.4	6	11200	7.7	44	71-80-90-100-112-132-160		—	—	64400	84400	24800	21000
	307R3	99	5.1	8700	5	44	71-80-90-100-112-132-160		—	—	67800	88800	26200	21000
	307R3	120	4.2	8930	4.3	44	71-80-90-100-112-132-160		—	—	71800	94100	27900	21000
	307R4	152	6.6	14300	11.2	18	71-80-90-100-112-132-160		—	—	62600	82100	24000	21000
	307R4	165	6.1	11200	8	18	71-80-90-100-112-132-160		—	—	64200	84100	24700	21000
	307R4	191	5.2	14800	9.2	18	71-80-90-100-112-132-160		—	—	67000	87800	25900	21000
	307R4	206	4.9	14900	8.6	18	71-80-90-100-112-132-160		—	—	68600	89900	26600	21000
	307R4	232	4.3	11600	5.9	18	71-80-90-100-112-132-160		—	—	71100	93200	27700	21000
	307R4	258	3.9	14900	6.8	18	71-80-90-100-112-132-160		—	—	73400	96200	28600	21000
	307R4	284	3.5	12000	5	18	71-80-90-100-112-132-160		—	—	75600	99000	29600	21000
	307R4	300	3.3	14000	5.5	18	71-80-90-100-112-132-160		—	—	76800	100600	30100	21000
500	307R2	13	39	6780	29	70	132-160-180-200		—	—	36800	48300	13300	18600
	307R2	15.5	32	7950	29	70	132-160-180-200		—	—	38800	50900	14100	21000
	307R2	19.8	25.2	9630	27	70	132-160-180-200		—	—	41900	54800	15300	21000
	307R2	23.5	21.2	8480	20	70	132-160-180-200		—	—	44100	57700	16200	21000
	307R3	31.6	15.8	7380	13.4	44	71-80-90-100-112-132-160		—	—	48100	63100	17900	18600
	307R3	37.7	13.2	9250	14.1	44	71-80-90-100-112-132-160		—	—	50800	66500	19000	21000
	307R3	44.6	11.2	10900	14.1	44	71-80-90-100-112-132-160		—	—	53400	69900	20100	21000
	307R3	55.9	8.9	13500	13.9	44	71-80-90-100-112-132-160		—	—	57100	74800	21700	21000
	307R3	65	7.7	13700	12.1	44	71-80-90-100-112-132-160		—	—	59800	78300	22800	21000
	307R3	71.8	7	11100	8.8	44	71-80-90-100-112-132-160		—	—	61600	80700	23600	21000
	307R3	78.6	6.4	12300	9	44	71-80-90-100-112-132-160		—	—	63300	82900	24300	21000
	307R3	83.4	6	11200	7.7	44	71-80-90-100-112-132-160		—	—	64400	84400	24800	21000
	307R3	99	5.1	8700	5	44	71-80-90-100-112-132-160		—	—	67800	88800	26200	21000



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14000 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			M_2 max Nm
											HC/PC	HZ/PZ	FZ	
500	307R3	120	4.2	8930	4.3	44	71-80-90-100-112-132-160		—	—	71800	94100	27900	21000
	307R4	152	3.3	14900	5.8	30	71-80-90-100-112-132-160		—	—	77100	101000	30300	21000
	307R4	165	3	12300	4.4	30	71-80-90-100-112-132-160		—	—	79100	103600	31100	21000
	307R4	191	2.6	14900	4.6	30	71-80-90-100-112-132-160		—	—	82500	108100	32600	21000
	307R4	206	2.4	14900	4.3	30	71-80-90-100-112-132-160		—	—	84400	110600	33500	21000
	307R4	232	2.2	13000	3.3	30	71-80-90-100-112-132-160		—	—	87600	114700	34800	21000
	307R4	258	1.9	15100	3.5	30	71-80-90-100-112-132-160		—	—	90400	118400	36100	21000
	307R4	284	1.8	13500	2.8	30	71-80-90-100-112-132-160		—	—	93100	121900	37300	21000
	307R4	300	1.7	14400	2.8	30	71-80-90-100-112-132-160		—	—	94500	123900	38000	21000
	307R4	331	1.5	13800	2.5	30	71-80-90-100-112-132-160		—	—	97400	127600	39200	21000
	307R4	363	1.4	12300	2	30	71-80-90-100-112-132-160		—	—	100100	131200	40400	21000
	307R4	413	1.2	14400	2.1	30	71-80-90-100-112-132-160		—	—	104100	136400	42200	21000
	307R4	453	1.1	14900	1.9	30	71-80-90-100-112-132-160		—	—	107000	140200	43500	21000
	307R4	490	1	11000	1.3	30	71-80-90-100-112-132-160		—	—	109000	143600	44700	21000
	307R4	581	0.86	14300	1.5	30	71-80-90-100-112-132-160		—	—	109000	145000	45000	21000
	307R4	690	0.72	11000	0.94	30	71-80-90-100-112-132-160		—	—	109000	145000	45000	21000

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16460 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			M_2 max Nm
											HC/PC	HZ/PZ	FZ	
1500	309 R2	13	116	5110	66	35	132-160-180-200		—	—	26900	34700	7390	27400
	309 R2	15.5	97	6090	66	35	132-160-180-200		—	—	28400	36600	7830	27400
	309 R2	19.8	76	7820	66	35	132-160-180-200		—	—	30600	39400	8510	27400
	309 R2	23.5	64	9280	66	35	132-160-180-200		—	—	32200	41500	9010	27400
	309 R3	31.6	47	5580	30	22	71-80-90-100-112-132-160		—	—	35200	45400	9950	27900
	309 R3	37.7	40	6650	30	22	71-80-90-100-112-132-160		—	—	37100	47800	10500	29000
	309 R3	44.6	34	7860	30	22	71-80-90-100-112-132-160		—	—	39000	50300	11100	29000
	309 R3	55.9	26.8	9860	30	22	71-80-90-100-112-132-160		—	—	41700	53800	12000	29000
	309 R3	65	23.1	11200	30	22	71-80-90-100-112-132-160		—	—	43700	56300	12600	29000
	309 R3	71.8	20.9	12700	30	22	71-80-90-100-112-132-160		—	—	45000	58000	13100	29000
	309 R3	83.4	18	14000	29	22	71-80-90-100-112-132-160		—	—	47100	60700	13700	29000
	309 R3	99	15.2	12800	22	22	71-80-90-100-112-132-160		—	—	49500	63900	14500	29000
	309 R3	120	12.5	12900	18.6	22	71-80-90-100-112-132-160		—	—	52500	67600	15500	29000
	309 R4	152	9.9	18600	15	15	71-80-90-100-112-132-160		—	—	56300	72700	16800	29000
	309 R4	165	9.1	16300	15	15	71-80-90-100-112-132-160		—	—	57800	74500	17300	29000
	309 R4	191	7.9	17300	15	15	71-80-90-100-112-132-160		—	—	60300	77800	18100	29000





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16460 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			$M_{2\ max}$ Nm
											HC/PC	HZ/PZ	FZ	
1500	309 R4	206	7.3	19800	15	15	71-80-90-100-112-132-160		—	—	61700	79600	18600	29000
	309 R4	232	6.5	16700	12.7	15	71-80-90-100-112-132-160		—	—	64000	82500	19300	29000
	309 R4	258	5.8	17400	12	15	71-80-90-100-112-132-160		—	—	66000	85200	20000	29000
	309 R4	284	5.3	16900	10.5	15	71-80-90-100-112-132-160		—	—	68000	87700	20700	29000
	309 R4	331	4.5	17200	9.2	15	71-80-90-100-112-132-160		—	—	71200	91800	21800	29000
	309 R4	374	4	14300	6.8	15	71-80-90-100-112-132-160		—	—	73800	95200	22700	29000
	309 R4	413	3.6	17900	7.7	15	71-80-90-100-112-132-160		—	—	76100	98100	23400	29000
	309 R4	457	3.3	13800	5.4	15	71-80-90-100-112-132-160		—	—	78400	101100	24200	29000
	309 R4	490	3.1	14000	5.1	15	71-80-90-100-112-132-160		—	—	80100	103300	24800	29000
	309 R4	581	2.6	15800	4.8	15	71-80-90-100-112-132-160		—	—	84300	108700	26200	29000
	309 R4	690	2.2	14800	3.8	15	71-80-90-100-112-132-160		—	—	88700	114400	27800	29000
1000	309 R2	13	77	5770	50	42	132-160-180-200		—	—	30400	39200	8450	27400
	309 R2	15.5	65	6880	50	42	132-160-180-200		—	—	32100	41300	8970	27400
	309 R2	19.8	50	8830	50	42	132-160-180-200		—	—	34500	44500	9740	27400
	309 R2	23.5	42	10200	48	42	132-160-180-200		—	—	36400	46900	10300	27400
	309 R3	31.6	32	6300	23	26	71-80-90-100-112-132-160		—	—	39700	51200	11400	27900
	309 R3	37.7	26.5	7510	23	26	71-80-90-100-112-132-160		—	—	41900	54000	12100	29000
	309 R3	44.6	22.4	8870	23	26	71-80-90-100-112-132-160		—	—	44000	56800	12800	29000
	309 R3	55.9	17.9	11100	23	26	71-80-90-100-112-132-160		—	—	47100	60800	13800	29000
	309 R3	65	15.4	12500	22	26	71-80-90-100-112-132-160		—	—	49300	63600	14500	29000
	309 R3	71.8	13.9	14300	23	26	71-80-90-100-112-132-160		—	—	50800	65500	15000	29000
	309 R3	83.4	12	15500	21	26	71-80-90-100-112-132-160		—	—	53100	68500	15700	29000
	309 R3	99	10.1	13000	15.1	26	71-80-90-100-112-132-160		—	—	56000	72200	16700	29000
	309 R3	120	8.4	13000	12.5	26	71-80-90-100-112-132-160		—	—	59200	76400	17700	29000
	309 R4	152	6.6	20200	15	18	71-80-90-100-112-132-160		—	—	63600	82100	19200	29000
	309 R4	165	6.1	16700	12	18	71-80-90-100-112-132-160		—	—	65200	84100	19800	29000
	309 R4	191	5.2	17500	10.8	18	71-80-90-100-112-132-160		—	—	68100	87800	20700	29000
	309 R4	206	4.9	21300	12.2	18	71-80-90-100-112-132-160		—	—	69700	89900	21200	29000
	309 R4	232	4.3	17200	8.8	18	71-80-90-100-112-132-160		—	—	72300	93200	22100	29000
	309 R4	258	3.9	17500	8	18	71-80-90-100-112-132-160		—	—	74600	96200	22900	29000
	309 R4	284	3.5	17500	7.3	18	71-80-90-100-112-132-160		—	—	76800	99000	23700	29000
	309 R4	331	3	18500	6.6	18	71-80-90-100-112-132-160		—	—	80400	103700	24900	29000
	309 R4	374	2.7	14300	4.5	18	71-80-90-100-112-132-160		—	—	83400	107500	25900	29000
	309 R4	413	2.4	19200	5.5	18	71-80-90-100-112-132-160		—	—	85900	110800	26800	29000
	309 R4	457	2.2	14800	3.8	18	71-80-90-100-112-132-160		—	—	88500	114200	27700	29000
	309 R4	490	2	14900	3.6	18	71-80-90-100-112-132-160		—	—	90400	116600	28400	29000
	309 R4	581	1.7	15800	3.2	18	71-80-90-100-112-132-160		—	—	95200	122700	30000	29000
	309 R4	690	1.4	15900	2.7	18	71-80-90-100-112-132-160		—	—	100200	129200	31800	29000





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16460 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			FZ	M_2 max Nm
											HC/PC	HZ/PZ			
500	309R2	13	39	6780	29	70	132-160-180-200		—	—	37400	48300	10700		27400
	309R2	15.5	32	7950	29	70	132-160-180-200		—	—	39500	50900	11300		27400
	309R2	19.8	25.2	10200	29	70	132-160-180-200		—	—	42500	54800	12300		27400
	309R2	23.5	21.2	11200	26	70	132-160-180-200		—	—	44800	57700	13000		27400
	309R3	31.6	15.8	7760	14.1	44	71-80-90-100-112-132-160		—	—	48900	63100	14300		27900
	309R3	37.7	13.2	9250	14.1	44	71-80-90-100-112-132-160		—	—	51600	66500	15200		29000
	309R3	44.6	11.2	10900	14.1	44	71-80-90-100-112-132-160		—	—	54200	69900	16100		29000
	309R3	55.9	8.9	13700	14.1	44	71-80-90-100-112-132-160		—	—	58000	74800	17300		29000
	309R3	65	7.7	14100	12.5	44	71-80-90-100-112-132-160		—	—	60700	78300	18200		29000
	309R3	71.8	7	16400	13.1	44	71-80-90-100-112-132-160		—	—	62500	80700	18800		29000
	309R3	83.4	6	16700	11.5	44	71-80-90-100-112-132-160		—	—	65400	84400	19800		29000
	309R3	99	5.1	13000	7.5	44	71-80-90-100-112-132-160		—	—	68900	88800	21000		29000
	309R3	120	4.2	13400	6.4	44	71-80-90-100-112-132-160		—	—	72900	94100	22400		29000
	309R4	152	3.3	21300	8.3	30	71-80-90-100-112-132-160		—	—	78300	101000	24200		29000
	309R4	165	3	18400	6.6	30	71-80-90-100-112-132-160		—	—	80300	103600	24900		29000
	309R4	191	2.6	17500	5.4	30	71-80-90-100-112-132-160		—	—	83900	108100	26100		29000
	309R4	206	2.4	21300	6.1	30	71-80-90-100-112-132-160		—	—	85800	110600	26800		29000
	309R4	232	2.2	18100	4.6	30	71-80-90-100-112-132-160		—	—	89000	114700	27900		29000
	309R4	258	1.9	17800	4.1	30	71-80-90-100-112-132-160		—	—	91800	118400	28900		29000
	309R4	284	1.8	18200	3.8	30	71-80-90-100-112-132-160		—	—	94500	121900	29800		29000
	309R4	331	1.5	20600	3.7	30	71-80-90-100-112-132-160		—	—	99000	127600	31400		29000
	309R4	374	1.3	14600	2.3	30	71-80-90-100-112-132-160		—	—	102700	132400	32700		29000
	309R4	413	1.2	21300	3.1	30	71-80-90-100-112-132-160		—	—	105800	136400	33800		29000
	309R4	457	1.1	16700	2.2	30	71-80-90-100-112-132-160		—	—	109000	140600	34900		29000
	309R4	490	1	16900	2	30	71-80-90-100-112-132-160		—	—	110000	143600	35800		29000
	309R4	581	0.86	15800	1.6	30	71-80-90-100-112-132-160		—	—	110000	145000	36000		29000
	309R4	690	0.72	17000	1.5	30	71-80-90-100-112-132-160		—	—	110000	145000	36000		29000

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34120 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			FZ	M_2 max Nm
											HC/PC	HZ/PZ			
1500	310 R2 (B)	12	125	10100	130	55	180-200-225		—	—	31200	39200	13000		47600
	310 R2 (B)	15.4	97	10700	115	55	180-200-225		—	—	33600	42300	14100		47600
	310 R2 (B)	18.3	82	11100	101	55	180-200-225		—	—	35400	44500	15000		47600
	310 R2 (C)	16.6	90	11200	112	55	180-200-225-250		—	—	34400	43200	14500		47600
	310 R2 (C)	21.3	70	11800	92	55	180-200-225-250		—	—	37100	46600	15800		47600
	310 R2 (C)	25.3	59	12200	81	55	180-200-225-250		—	—	39000	49000	16700		47600





310 R

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34120 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			FZ	$M_{2\max}$ Nm
											HC/PC	HZ/PZ			
1500	310 R3	37.7	40	6650	30	22	71-80-90-100-112-132-160		—	—	44000	55300	19000	47600	
	310 R3	44.6	34	7860	30	22	71-80-90-100-112-132-160		—	—	46200	58100	20100	47600	
	310 R3	55.9	26.8	9860	30	22	71-80-90-100-112-132-160		—	—	49500	62200	21700	47600	
	310 R3	65	23.1	11500	30	22	71-80-90-100-112-132-160		—	—	51700	65100	22800	47600	
	310 R3	71.8	20.9	12700	30	22	71-80-90-100-112-132-160		—	—	53300	67000	23600	47600	
	310 R3	78.6	19.1	13900	30	22	71-80-90-100-112-132-160		—	—	54800	68900	24300	47600	
	310 R3	83.4	18	14700	30	22	71-80-90-100-112-132-160		—	—	55800	70100	24800	47600	
	310 R3	99	15.2	16400	29	22	71-80-90-100-112-132-160		—	—	58700	73800	26300	47600	
	310 R3	120	12.5	17400	25	22	71-80-90-100-112-132-160		—	—	62200	78200	28000	47600	
	310 R4	136	11	21000	27	15	71-80-90-100-112-132-160		—	—	64600	81200	29200	47600	
	310 R4	160	9.4	22000	24	15	71-80-90-100-112-132-160		—	—	67800	85300	30900	47600	
	310 R4	189	7.9	23200	22	15	71-80-90-100-112-132-160		—	—	71300	89700	32600	47600	
	310 R4	206	7.3	22100	19	15	71-80-90-100-112-132-160		—	—	73100	91900	33500	47600	
	310 R4	234	6.4	24700	18.7	15	71-80-90-100-112-132-160		—	—	76000	95600	35000	47600	
	310 R4	258	5.8	22800	15.7	15	71-80-90-100-112-132-160		—	—	78300	98400	36200	47600	
	310 R4	283	5.3	26100	16.4	15	71-80-90-100-112-132-160		—	—	80500	101200	37300	47600	
	310 R4	305	4.9	23400	13.6	15	71-80-90-100-112-132-160		—	—	82300	103500	38200	47600	
	310 R4	334	4.5	27400	14.6	15	71-80-90-100-112-132-160		—	—	84600	106300	39400	47600	
	310 R4	363	4.1	24100	11.8	15	71-80-90-100-112-132-160		—	—	86700	109000	40500	47600	
	310 R4	419	3.6	29000	12.3	15	71-80-90-100-112-132-160		—	—	90500	113800	42500	47600	
	310 R4	454	3.3	20000	7.8	15	71-80-90-100-112-132-160		—	—	92700	116600	43600	47600	
	310 R4	517	2.9	25600	8.8	15	71-80-90-100-112-132-160		—	—	96400	121200	45600	47600	
	310 R4	590	2.5	21800	6.6	15	71-80-90-100-112-132-160		—	—	100300	126100	47600	47600	
	310 R4	639	2.3	21500	6	15	71-80-90-100-112-132-160		—	—	102700	129100	48900	47600	
	310 R4	757	2	26400	6.2	15	71-80-90-100-112-132-160		—	—	108100	135900	51700	47600	
	310 R4	898	1.7	23200	4.6	15	71-80-90-100-112-132-160		—	—	113800	143100	54800	47600	
1000	310 R2 (B)	12	83	11400	106	66	180-200-225		—	—	35200	44300	14900	47600	
	310 R2 (B)	15.4	65	12000	87	66	180-200-225		—	—	38000	47700	16200	47600	
	310 R2 (B)	18.3	55	12500	76	66	180-200-225		—	—	40000	50200	17100	47600	
	310 R2 (C)	16.6	60	12600	84	66	180-200-225-250		—	—	38800	48800	16600	47600	
	310 R2 (C)	21.3	47	13300	69	66	180-200-225-250		—	—	41800	52600	18000	47600	
	310 R2 (C)	25.3	39	13500	59	66	180-200-225-250		—	—	44100	55400	19100	47600	
	310 R3	37.7	26.5	7510	23	26	71-80-90-100-112-132-160		—	—	49600	62400	21800	47600	
	310 R3	44.6	22.4	8870	23	26	71-80-90-100-112-132-160		—	—	52200	65600	23000	47600	
	310 R3	55.9	17.9	11100	23	26	71-80-90-100-112-132-160		—	—	55900	70200	24900	47600	
	310 R3	65	15.4	12900	23	26	71-80-90-100-112-132-160		—	—	58400	73500	26100	47600	
	310 R3	71.8	13.9	14300	23	26	71-80-90-100-112-132-160		—	—	60200	75700	27000	47600	
	310 R3	78.6	12.7	15700	23	26	71-80-90-100-112-132-160		—	—	61900	77800	27800	47600	
	310 R3	83.4	12	16600	23	26	71-80-90-100-112-132-160		—	—	63000	79200	28400	47600	

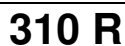




310 R							Page 273	34120 Nm						
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n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]		FZ	$M_{2\max}$ Nm
											HC/PC	HZ/PZ		
1000	310 R3	83.4	12	16600	23	26	71-80-90-100-112-132-160		—	—	63000	79200	28400	47600
	310 R3	99	10.1	18200	21	26	71-80-90-100-112-132-160		—	—	66300	83400	30100	47600
	310 R3	120	8.4	18300	17.5	26	71-80-90-100-112-132-160		—	—	70200	88300	32000	47600
	310 R4	136	7.4	23700	21	18	71-80-90-100-112-132-160		—	—	72900	91700	33400	47600
	310 R4	160	6.2	24900	18.3	18	71-80-90-100-112-132-160		—	—	76600	96400	35300	47600
	310 R4	189	5.3	26100	16.3	18	71-80-90-100-112-132-160		—	—	80500	101300	37300	47600
	310 R4	206	4.9	23500	13.5	18	71-80-90-100-112-132-160		—	—	82600	103800	38400	47600
	310 R4	234	4.3	27800	14	18	71-80-90-100-112-132-160		—	—	85800	107900	40100	47600
	310 R4	258	3.9	24400	11.2	18	71-80-90-100-112-132-160		—	—	88400	111200	41400	47600
	310 R4	283	3.5	29300	12.3	18	71-80-90-100-112-132-160		—	—	90900	114300	42700	47600
	310 R4	305	3.3	25100	9.7	18	71-80-90-100-112-132-160		—	—	92900	116800	43800	47600
	310 R4	334	3	30700	10.9	18	71-80-90-100-112-132-160		—	—	95500	120100	45100	47600
	310 R4	363	2.8	25800	8.4	18	71-80-90-100-112-132-160		—	—	97900	123100	46400	47600
	310 R4	419	2.4	32000	9	18	71-80-90-100-112-132-160		—	—	102200	128600	48700	47600
	310 R4	454	2.2	21800	5.7	18	71-80-90-100-112-132-160		—	—	104700	131700	50000	47600
	310 R4	517	1.9	27400	6.3	18	71-80-90-100-112-132-160		—	—	108900	136900	52200	47600
	310 R4	590	1.7	21800	4.4	18	71-80-90-100-112-132-160		—	—	113200	142400	54500	47600
	310 R4	639	1.6	23500	4.4	18	71-80-90-100-112-132-160		—	—	116000	145800	56000	47600
500	310R2(B)	12	42	14100	65	110	160-180-200-225		—	—	43400	54500	18800	47600
	310R2(B)	15.4	32	14800	53	110	160-180-200-225		—	—	46700	58800	20400	47600
	310R2(B)	18.3	27.3	14700	45	110	160-180-200-225		—	—	49200	61900	21600	47600
	310R2(C)	16.6	30	15500	52	110	160-180-200-225-250		—	—	47800	60100	20900	47600
	310R2(C)	21.3	23.4	16300	43	110	160-180-200-225-250		—	—	51500	64800	22700	47600
	310R2(C)	25.3	19.7	15700	35	110	160-180-200-225-250		—	—	54200	68200	24100	47600
	310R3	37.7	13.2	9250	14.1	44	71-80-90-100-112-132-160		—	—	61100	76900	27500	47600
	310R3	44.6	11.2	10900	14.1	44	71-80-90-100-112-132-160		—	—	64200	80800	29000	47600
	310R3	55.9	8.9	13700	14.1	44	71-80-90-100-112-132-160		—	—	68800	86500	31300	47600
	310R3	65	7.7	15900	14.1	44	71-80-90-100-112-132-160		—	—	71900	90500	32900	47600
	310R3	71.8	7	17600	14.1	44	71-80-90-100-112-132-160		—	—	74100	93200	34000	47600
	310R3	78.6	6.4	18900	13.8	44	71-80-90-100-112-132-160		—	—	76200	95800	35100	47600
	310R3	83.4	6	20500	14.1	44	71-80-90-100-112-132-160		—	—	77500	97500	35800	47600
	310R3	99	5.1	18400	10.7	44	71-80-90-100-112-132-160		—	—	81600	102600	37900	47600
	310R3	120	4.2	19100	9.2	44	71-80-90-100-112-132-160		—	—	86400	108700	40400	47600
	310R4	136	3.7	29000	12.6	30	71-80-90-100-112-132-160		—	—	89800	112900	42100	47600
	310R4	160	3.1	30400	11.2	30	71-80-90-100-112-132-160		—	—	94300	118600	44500	47600
	310R4	189	2.6	31800	9.9	30	71-80-90-100-112-132-160		—	—	99200	124700	47000	47600
	310R4	206	2.4	26400	7.6	30	71-80-90-100-112-132-160		—	—	101700	127800	48400	47600
	310R4	234	2.1	32600	8.2	30	71-80-90-100-112-132-160		—	—	105700	132900	50500	47600



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48330 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			FZ	M_2 max Nm
											HC/PC	HZ/PZ			
1500	311 R4	341	4.4	39200	20	22	71-80-90-100-112-132-160		—	—	100600	125300	39700	58300	
	311 R4	413	3.6	40600	17.4	22	71-80-90-100-112-132-160		—	—	106500	132600	42300	58300	
	311 R4	438	3.4	37500	15.2	22	71-80-90-100-112-132-160		—	—	108400	135000	43100	58300	
	311 R4	490	3.1	34500	12.5	22	71-80-90-100-112-132-160		—	—	112100	139600	44800	58300	
	311 R4	520	2.9	38600	13.2	22	71-80-90-100-112-132-160		—	—	114100	142100	45700	58300	
	311 R4	629	2.4	39700	11.2	22	71-80-90-100-112-132-160		—	—	120800	150500	48600	58300	
	311 R4	746	2	30500	7.3	22	71-80-90-100-112-132-160		—	—	127200	158400	51500	58300	
1000	311 R2 (B)	12	83	13500	125	90	180-200-225-250		—	—	41600	51800	14900	58300	
	311 R2 (B)	15.4	65	17400	126	90	180-200-225-250		—	—	44900	55900	16200	58300	
	311 R2 (A)	17.7	56	9600	54	90	132-160-180-200		—	—	48300	60000	17600	58300	
	311 R2 (B)	18.3	55	18100	110	90	180-200-225-250		—	—	47200	58800	17100	58300	
	311 R2 (A)	22.8	44	12300	54	90	132-160-180-200		—	—	52100	64700	19100	58300	
	311 R2 (A)	27	37	14600	54	90	132-160-180-200		—	—	54800	68100	20200	58300	
	311 R3	53	18.9	22900	50	48	132-160-180-200		—	—	65000	80900	24400	58300	
	311 R3	63.2	15.8	27100	49	48	132-160-180-200		—	—	68500	85300	25900	58300	
	311 R3	68	14.7	27100	46	48	132-160-180-200		—	—	70000	87200	26500	58300	
	311 R3	81.1	12.3	29200	41	48	132-160-180-200		—	—	73800	91900	28100	58300	
	311 R3	96.3	10.4	30700	37	48	132-160-180-200		—	—	77700	96800	29800	58300	
	311 R3	104	9.6	32200	35	48	132-160-180-200		—	—	79500	99100	30600	58300	
	311 R3	124	8.1	33000	31	48	132-160-180-200		—	—	83700	104300	32400	58300	
	311 R3	147	6.8	27000	21	48	132-160-180-200		—	—	88200	109800	34300	58300	
	311 R4	154	6.5	29800	23	26	71-80-90-100-112-132-160		—	—	89500	111500	34900	58300	
	311 R4	182	5.5	35200	23	26	71-80-90-100-112-132-160		—	—	94100	117200	36900	58300	
	311 R4	198	5	38200	23	26	71-80-90-100-112-132-160		—	—	96500	120200	37900	58300	
	311 R4	229	4.4	39600	21	26	71-80-90-100-112-132-160		—	—	100700	125500	39800	58300	
	311 R4	266	3.8	41200	18.3	26	71-80-90-100-112-132-160		—	—	105400	131300	41800	58300	
	311 R4	294	3.4	41000	16.5	26	71-80-90-100-112-132-160		—	—	108600	135200	43200	58300	
	311 R4	322	3.1	43300	15.9	26	71-80-90-100-112-132-160		—	—	111600	139000	44500	58300	
	311 R4	341	2.9	42200	14.6	26	71-80-90-100-112-132-160		—	—	113600	141500	45400	58300	
	311 R4	413	2.4	43500	12.5	26	71-80-90-100-112-132-160		—	—	120200	149800	48400	58300	
	311 R4	438	2.3	40100	10.8	26	71-80-90-100-112-132-160		—	—	122400	152500	49400	58300	
	311 R4	490	2	34700	8.4	26	71-80-90-100-112-132-160		—	—	126600	157700	51200	58300	
	311 R4	520	1.9	40500	9.2	26	71-80-90-100-112-132-160		—	—	128800	160500	52300	58300	
	311 R4	629	1.6	41200	7.8	26	71-80-90-100-112-132-160		—	—	136400	169900	55700	58300	
	311 R4	746	1.3	32500	5.2	26	71-80-90-100-112-132-160		—	—	143600	178900	59000	58300	
500	311R2(B)	12	42	16700	77	150	180-200-225-250		—	—	51200	63800	18800	58300	
	311R2(B)	15.4	32	21400	77	150	180-200-225-250		—	—	55200	68800	20400	58300	
	311R2(B)	18.3	27.3	21400	65	150	180-200-225-250		—	—	58100	72400	21600	58300	
	311R2(C)	16.6	30	20000	67	180	180-200-225-250		—	—	56500	70400	20900	58300	





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n ₁ min ⁻¹		i	n ₂ min ⁻¹	M _{n2} Nm	P _{n1} kW	P _t kW	P (IEC) 	R _{n2} [N]					M _{2 max} Nm
								MC	MZ	HC/PC	HZ/PZ	FZ	
500	311R2(C)	21.3	23.4	23500	61	180	180-200-225-250	—	—	60900	75800	22700	58300
	311R2(C)	25.3	19.7	22500	49	180	180-200-225-250	—	—	64100	79800	24100	58300
	311R3	53	9.4	28100	30	80	132-160-180-200	—	—	80000	99600	30800	58300
	311R3	63.2	7.9	33400	30	80	132-160-180-200	—	—	84300	105000	32600	58300
	311R3	68	7.4	32400	27	80	132-160-180-200	—	—	86200	107400	33400	58300
	311R3	81.1	6.2	36000	25	80	132-160-180-200	—	—	90900	113200	35500	58300
	311R3	96.3	5.2	34300	20	80	132-160-180-200	—	—	95700	119200	37500	58300
	311R3	104	4.8	35500	19.5	80	132-160-180-200	—	—	97900	122000	38500	58300
	311R3	124	4	36500	16.9	80	132-160-180-200	—	—	103100	128400	40800	58300
	311R3	147	3.4	28400	11.1	80	132-160-180-200	—	—	108500	135200	43200	58300
	311R4	154	3.2	36700	14.1	44	71-80-90-100-112-132-160	—	—	110200	137300	43900	58300
	311R4	182	2.7	43400	14.1	44	71-80-90-100-112-132-160	—	—	115800	144300	46400	58300
	311R4	198	2.5	43300	12.9	44	71-80-90-100-112-132-160	—	—	118800	148000	47700	58300
	311R4	229	2.2	46200	11.9	44	71-80-90-100-112-132-160	—	—	124000	154500	50100	58300
	311R4	266	1.9	46600	10.4	44	71-80-90-100-112-132-160	—	—	129700	161600	52700	58300
	311R4	294	1.7	44800	9	44	71-80-90-100-112-132-160	—	—	133600	166500	54400	58300
	311R4	322	1.6	47100	8.7	44	71-80-90-100-112-132-160	—	—	137400	171100	56100	58300
	311R4	341	1.5	45400	7.9	44	71-80-90-100-112-132-160	—	—	139800	174200	57200	58300
	311R4	413	1.2	46200	6.6	44	71-80-90-100-112-132-160	—	—	148000	184400	61000	58300
	311R4	438	1.1	44300	6	44	71-80-90-100-112-132-160	—	—	150700	187700	62200	58300
	311R4	490	1	35200	4.2	44	71-80-90-100-112-132-160	—	—	155800	194100	64600	58300
	311R4	520	0.96	43000	4.9	44	71-80-90-100-112-132-160	—	—	157000	195000	65000	58300
	311R4	629	0.8	43000	4	44	71-80-90-100-112-132-160	—	—	157000	195000	65000	58300
	311R4	746	0.67	34000	2.7	44	71-80-90-100-112-132-160	—	—	157000	195000	65000	58300

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n ₁ min ⁻¹		i	n ₂ min ⁻¹	M _{n2} Nm	P _{n1} kW	P _t kW	P (IEC) 	R _{n2} [N]					M _{2 max} Nm
								MC	MZ	HC/PC	HZ/PZ	FZ	
1500	313R2(B)	12.2	123	12100	150	75	180-200-225-250	—	—	45700	54100	16100	86300
	313R2(B)	15.9	95	15700	150	75	180-200-225-250	—	—	49500	58600	17600	86300
	313R2(B)	19.1	79	19100	150	75	180-200-225-250	—	—	52300	61900	18700	86300
	313R2(C)	16.8	89	14600	144	90	180-200-225-250	—	—	50400	59600	17900	105000
	313R2(C)	22	68	19000	144	90	180-200-225-250	—	—	54600	64600	19600	105000
	313R2(C)	26.4	57	22800	144	90	180-200-225-250	—	—	57700	68300	20800	105000
	313R3	53.7	28	20500	66	40	132-160-180-200	—	—	71300	84400	26400	105000
	313R3	64	23.4	24500	66	40	132-160-180-200	—	—	75200	89000	28000	105000
	313R3	69.9	21.4	26700	66	40	132-160-180-200	—	—	77200	91400	28800	105000





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57970 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]		FZ	$M_{2\max}$ Nm
										HC/PC	HZ/PZ		
1500	313R3	82.2	18.3	31400	66	40	132-160-180-200	—	—	81100	95900	30400	105000
	313R3	97.5	15.4	37300	66	40	132-160-180-200	—	—	85300	101000	32200	105000
	313R3	107	14	38800	62	40	132-160-180-200	—	—	87800	103900	33200	105000
	313R3	127	11.8	40700	55	40	132-160-180-200	—	—	92400	109400	35100	105000
	313R3	153	9.8	39000	44	40	132-160-180-200	—	—	97700	115600	37400	105000
	313R4	185	8.1	31600	30	22	71-80-90-100-112-132-160	—	—	103300	122300	39800	105000
	313R4	201	7.5	34300	30	22	71-80-90-100-112-132-160	—	—	106000	125400	40900	105000
	313R4	237	6.3	40500	30	22	71-80-90-100-112-132-160	—	—	111400	131800	43200	105000
	313R4	281	5.3	48100	30	22	71-80-90-100-112-132-160	—	—	117200	138800	45800	105000
	313R4	309	4.9	44500	26	22	71-80-90-100-112-132-160	—	—	120600	142700	47200	105000
	313R4	346	4.3	53000	27	22	71-80-90-100-112-132-160	—	—	124700	147600	49000	105000
	313R4	387	3.9	46700	21	22	71-80-90-100-112-132-160	—	—	129100	152800	50900	105000
	313R4	450	3.3	47700	18.8	22	71-80-90-100-112-132-160	—	—	135100	159800	53600	105000
	313R4	496	3	52100	18.6	22	71-80-90-100-112-132-160	—	—	139000	164500	55300	105000
	313R4	535	2.8	48900	16.2	22	71-80-90-100-112-132-160	—	—	142200	168300	56700	105000
	313R4	647	2.3	50400	13.8	22	71-80-90-100-112-132-160	—	—	150500	178100	60400	105000
	313R4	778	1.9	44200	10.1	22	71-80-90-100-112-132-160	—	—	159100	188300	64300	105000
1000	313 R2 (B)	12.2	82	13700	126	90	180-200-225-250	—	—	51600	61100	18400	86300
	313 R2 (B)	15.9	63	17700	124	90	180-200-225-250	—	—	55900	66100	20100	86300
	313 R2 (A)	18	55	9700	54	90	132-160-180-200	—	—	59300	71400	21700	86300
	313 R2 (B)	19.1	52	21800	127	90	180-200-225-250	—	—	59100	69900	21400	86300
	313 R2 (A)	23.4	43	12700	54	90	132-160-180-200	—	—	64200	77300	23700	86300
	313 R2 (A)	28.2	35	15200	54	90	132-160-180-200	—	—	67900	81700	25200	86300
	313 R3	53.7	18.6	23200	50	48	132-160-180-200	—	—	80600	95300	30200	105000
	313 R3	64	15.6	27700	50	48	132-160-180-200	—	—	84900	100500	32000	105000
	313 R3	69.9	14.3	30200	50	48	132-160-180-200	—	—	87200	103200	33000	105000
	313 R3	82.2	12.2	35500	50	48	132-160-180-200	—	—	91500	108300	34800	105000
	313 R3	97.5	10.3	42100	50	48	132-160-180-200	—	—	96400	114100	36800	105000
	313 R3	107	9.3	42800	46	48	132-160-180-200	—	—	99100	117300	38000	105000
	313 R3	127	7.9	43400	39	48	132-160-180-200	—	—	104400	123500	40200	105000
	313 R3	153	6.5	39000	29	48	132-160-180-200	—	—	110300	130600	42800	105000
	313 R4	185	5.4	35700	23	26	71-80-90-100-112-132-160	—	—	116700	138100	45500	105000
	313 R4	201	5	38800	23	26	71-80-90-100-112-132-160	—	—	119700	141600	46800	105000
	313 R4	237	4.2	45600	23	26	71-80-90-100-112-132-160	—	—	125800	148900	49500	105000
	313 R4	281	3.6	49700	21	26	71-80-90-100-112-132-160	—	—	132400	156700	52400	105000
	313 R4	309	3.2	47600	18.2	26	71-80-90-100-112-132-160	—	—	136200	161200	54100	105000
	313 R4	346	2.9	54500	18.6	26	71-80-90-100-112-132-160	—	—	140900	166700	56100	105000
	313 R4	387	2.6	49500	15.1	26	71-80-90-100-112-132-160	—	—	145800	172500	58300	105000





313 R

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57970 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		R_{n2} [N]					$M_{2 \max}$ Nm
									MC	MZ	HC/PC	HZ/PZ	FZ	
1000	313 R4	450	2.2	50700	13.3	26	71-80-90-100-112-132-160		—	—	152500	180500	61300	105000
	313 R4	496	2	52200	12.5	26	71-80-90-100-112-132-160		—	—	157000	185800	63300	105000
	313 R4	535	1.9	52200	11.6	26	71-80-90-100-112-132-160		—	—	160600	190000	64900	105000
	313 R4	647	1.5	53900	9.9	26	71-80-90-100-112-132-160		—	—	170000	201200	69200	105000
	313 R4	778	1.3	47100	7.2	26	71-80-90-100-112-132-160		—	—	179700	212700	73600	105000
500	313R2(B)	12.2	41	17000	78	150	180-200-225-250		—	—	63600	75200	23200	86300
	313R2(B)	15.9	32	21900	77	150	180-200-225-250		—	—	68800	81400	25300	86300
	313R2(B)	19.1	26.2	26900	78	150	180-200-225-250		—	—	72700	86100	26900	86300
	313R2(C)	16.8	29.7	20200	67	180	180-200-225-250		—	—	70100	82900	25800	105000
	313R2(C)	22	22.8	26400	67	180	180-200-225-250		—	—	75900	89800	28200	105000
	313R2(C)	26.4	18.9	28300	60	180	180-200-225-250		—	—	80200	94900	30000	105000
	313R3	53.7	9.3	28400	30	80	132-160-180-200		—	—	99200	117400	38000	105000
	313R3	64	7.8	34100	31	80	132-160-180-200		—	—	104600	123800	40300	105000
	313R3	69.9	7.1	37200	31	80	132-160-180-200		—	—	107400	127100	41500	105000
	313R3	82.2	6.1	43700	31	80	132-160-180-200		—	—	112700	133400	43800	105000
	313R3	97.5	5.1	50000	29	80	132-160-180-200		—	—	118700	140400	46400	105000
	313R3	107	4.7	45100	24	80	132-160-180-200		—	—	122000	144400	47900	105000
	313R3	127	3.9	46600	21	80	132-160-180-200		—	—	128500	152000	50700	105000
	313R3	153	3.3	41100	15.4	80	132-160-180-200		—	—	135800	160700	53900	105000
	313R4	185	2.7	43900	14.1	44	71-80-90-100-112-132-160		—	—	143700	170000	57400	105000
	313R4	201	2.5	47700	14.1	44	71-80-90-100-112-132-160		—	—	147300	174400	59000	105000
	313R4	237	2.1	53000	13.2	44	71-80-90-100-112-132-160		—	—	154900	183300	62400	105000
	313R4	281	1.8	51300	10.8	44	71-80-90-100-112-132-160		—	—	163000	192900	66000	105000
	313R4	309	1.6	53500	10.2	44	71-80-90-100-112-132-160		—	—	167700	198400	68100	105000
	313R4	346	1.4	55200	9.5	44	71-80-90-100-112-132-160		—	—	173400	205200	70700	105000
	313R4	387	1.3	55500	8.5	44	71-80-90-100-112-132-160		—	—	179500	212400	73500	105000
	313R4	450	1.1	57000	7.5	44	71-80-90-100-112-132-160		—	—	187800	222200	77300	105000
	313R4	496	1	53000	6.3	44	71-80-90-100-112-132-160		—	—	192000	228800	79800	105000
	313R4	535	0.94	58000	6.4	44	71-80-90-100-112-132-160		—	—	192000	231000	80000	105000
	313R4	647	0.77	58000	5.3	44	71-80-90-100-112-132-160		—	—	192000	231000	80000	105000
	313R4	778	0.64	49000	3.7	44	71-80-90-100-112-132-160		—	—	192000	231000	80000	105000





315 R

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105000 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
										HC/PC	HZ/PZ	FZ	
1500	315R3(B)	51.1	29.4	48100	150	75	180-200-225-250	—	—	75000	88100	29200	135000
	315R3(B)	65.5	22.9	62100	150	75	180-200-225-250	—	—	80900	94900	31700	135000
	315R3(B)	77.8	19.3	64400	143	75	180-200-225-250	—	—	85100	100000	33600	135000
	315R3(B)	82.3	18.2	65500	137	75	180-200-225-250	—	—	86600	101600	34200	135000
	315R3(B)	97.6	15.4	68800	121	75	180-200-225-250	—	—	91100	107000	36200	135000
1500	315R3(B)	113	13.2	60000	91	75	180-200-225-250	—	—	95300	111900	38100	135000
	315R3(C)	70.7	21.2	54900	134	90	180-200-225-250	—	—	82700	97100	32500	135000
	315R3(C)	90.7	16.5	59200	112	90	180-200-225-250	—	—	89200	104700	35300	135000
	315R3(C)	108	13.9	62300	100	90	180-200-225-250	—	—	93900	110200	37400	135000
	315R3(C)	114	13.2	64700	98	90	180-200-225-250	—	—	95400	112100	38100	135000
	315R3(C)	135	11.1	75700	96	90	180-200-225-250	—	—	100500	118000	40300	135000
	315R3(C)	157	9.5	65000	71	90	180-200-225-250	—	—	105100	123400	42400	135000
	315R4	225	6.7	77700	61	40	132-160-180-200	—	—	117100	137500	47800	135000
	315R4	269	5.6	82000	54	40	132-160-180-200	—	—	123500	145000	50700	135000
	315R4	345	4.3	96000	49	40	132-160-180-200	—	—	133100	156200	55100	135000
	315R4	409	3.7	98300	43	40	132-160-180-200	—	—	140100	164500	58400	135000
	315R4	525	2.9	99400	34	40	132-160-180-200	—	—	151000	177300	63400	135000
	315R4	623	2.4	100200	29	40	132-160-180-200	—	—	158900	186600	67200	135000
	315R4	659	2.3	88200	24	40	132-160-180-200	—	—	161600	189800	68400	135000
	315R4	782	1.9	90300	20	40	132-160-180-200	—	—	170200	199800	72400	135000
	315R4	909	1.6	76900	15	40	132-160-180-200	—	—	178000	209000	76200	135000
1000	315R3(B)	51.1	19.6	54400	122	90	180-200-225-250	—	—	84700	99500	33400	135000
	315R3(B)	65.5	15.3	70700	124	90	180-200-225-250	—	—	91300	107200	36300	135000
	315R3(B)	77.8	12.9	72500	107	90	180-200-225-250	—	—	96100	112900	38400	135000
	315R3(B)	82.3	12.2	73700	103	90	180-200-225-250	—	—	97800	114800	39100	135000
	315R3(B)	97.6	10.2	77500	91	90	180-200-225-250	—	—	102900	120800	41400	135000
	315R3(B)	113	8.8	65000	66	90	180-200-225-250	—	—	107700	126400	43600	135000
	315R3(C)	70.7	14.1	62000	101	108	180-200-225-250	—	—	93400	109700	37200	135000
	315R3(C)	90.7	11	66800	85	108	180-200-225-250	—	—	100700	118200	40400	135000
	315R3(C)	108	9.3	70400	75	108	180-200-225-250	—	—	106000	124500	42800	135000
	315R3(C)	114	8.8	72100	73	108	180-200-225-250	—	—	107800	126600	43600	135000
	315R3(C)	135	7.4	79600	68	108	180-200-225-250	—	—	113500	133200	46200	135000
	315R3(C)	157	6.4	65000	47	108	180-200-225-250	—	—	118700	139400	48600	135000
	315R4	225	4.4	86800	46	48	132-160-180-200	—	—	132300	155300	54800	135000
	315R4	269	3.7	90500	40	48	132-160-180-200	—	—	139500	163700	58100	135000
	315R4	345	2.9	98900	34	48	132-160-180-200	—	—	150300	176500	63100	135000
	315R4	409	2.4	100100	29	48	132-160-180-200	—	—	158200	185800	66800	135000
	315R4	525	1.9	101500	23	48	132-160-180-200	—	—	170500	200200	72600	135000





315 R

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105000 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
										HC/PC	HZ/PZ	FZ	
1000	315R4	623	1.6	102400	19.4	48	132-160-180-200	—	—	179500	210800	76900	135000
	315R4	659	1.5	93300	16.8	48	132-160-180-200	—	—	182500	214300	78300	135000
	315R4	782	1.3	95600	14.5	48	132-160-180-200	—	—	192200	225600	82900	135000
	315R4	909	1.1	82200	10.7	48	132-160-180-200	—	—	201000	236000	87200	135000
500	315R3(B)	51.1	9.8	67000	75	150	180-200-225-250	—	—	104300	122500	42100	135000
	315R3(B)	65.5	7.6	86800	76	150	180-200-225-250	—	—	112400	132000	45700	135000
	315R3(B)	77.8	6.4	89600	66	150	180-200-225-250	—	—	118400	139000	48400	135000
	315R3(B)	82.3	6.1	80700	56	150	180-200-225-250	—	—	120400	141300	49300	135000
	315R3(B)	97.6	5.1	81700	48	150	180-200-225-250	—	—	126700	148800	52200	135000
	315R3(B)	113	4.4	66200	33	150	180-200-225-250	—	—	132600	155600	54900	135000
	315R3(C)	70.7	7.1	76400	62	180	180-200-225-250	—	—	115000	135100	46900	135000
	315R3(C)	90.7	5.5	82300	52	180	180-200-225-250	—	—	124000	145500	51000	135000
	315R3(C)	108	4.6	86200	46	180	180-200-225-250	—	—	130500	153200	53900	135000
	315R3(C)	114	4.4	82800	42	180	180-200-225-250	—	—	132700	155800	55000	135000
	315R3(C)	135	3.7	84000	36	180	180-200-225-250	—	—	139700	164000	58200	135000
	315R3(C)	157	3.2	69300	25	180	180-200-225-250	—	—	146200	171600	61200	135000
	315R4	225	2.2	98500	26	80	132-160-180-200	—	—	162800	191200	69000	135000
	315R4	269	1.9	100900	22	80	132-160-180-200	—	—	171700	201600	73200	135000
	315R4	345	1.4	102900	17.7	80	132-160-180-200	—	—	185000	217200	79500	135000
	315R4	409	1.2	103900	15	80	132-160-180-200	—	—	194800	228700	84200	135000
	315R4	525	0.95	105000	11.8	80	132-160-180-200	—	—	206000	243000	90000	135000
	315R4	623	0.8	105000	10	80	132-160-180-200	—	—	206000	243000	90000	135000
	315R4	659	0.76	99000	8.9	80	132-160-180-200	—	—	206000	243000	90000	135000
	315R4	782	0.64	99000	7.5	80	132-160-180-200	—	—	206000	243000	90000	135000
	315R4	909	0.55	83500	5.4	80	132-160-180-200	—	—	206000	243000	90000	135000
500	315R3(B)	51.1	9.8	67000	75	150	180-200-225-250	—	—	104300	122500	42100	135000
	315R3(B)	65.5	7.6	86800	76	150	180-200-225-250	—	—	112400	132000	45700	135000
	315R3(B)	77.8	6.4	89600	66	150	180-200-225-250	—	—	118400	139000	48400	135000
	315R3(B)	82.3	6.1	80700	56	150	180-200-225-250	—	—	120400	141300	49300	135000
	315R3(B)	97.6	5.1	81700	48	150	180-200-225-250	—	—	126700	148800	52200	135000
	315R3(B)	113	4.4	66200	33	150	180-200-225-250	—	—	132600	155600	54900	135000
	315R3(C)	70.7	7.1	76400	62	180	180-200-225-250	—	—	115000	135100	46900	135000
	315R3(C)	90.7	5.5	82300	52	180	180-200-225-250	—	—	124000	145500	51000	135000
	315R3(C)	108	4.6	86200	46	180	180-200-225-250	—	—	130500	153200	53900	135000
	315R3(C)	114	4.4	82800	42	180	180-200-225-250	—	—	132700	155800	55000	135000
	315R3(C)	135	3.7	84000	36	180	180-200-225-250	—	—	139700	164000	58200	135000
	315R3(C)	157	3.2	69300	25	180	180-200-225-250	—	—	146200	171600	61200	135000
	315R4	225	2.2	98500	26	80	132-160-180-200	—	—	162800	191200	69000	135000





315 R

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105000 Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
										HC/PC	HZ/PZ	FZ	
500	315R4	225	2.2	98500	26	80	132-160-180-200	—	—	162800	191200	69000	135000
	315R4	269	1.9	100900	22	80	132-160-180-200	—	—	171700	201600	73200	135000
	315R4	345	1.4	102900	17.7	80	132-160-180-200	—	—	185000	217200	79500	135000
	315R4	409	1.2	103900	15	80	132-160-180-200	—	—	194800	228700	84200	135000
	315R4	525	0.95	105000	11.8	80	132-160-180-200	—	—	206000	243000	90000	135000
	315R4	623	0.8	105000	10	80	132-160-180-200	—	—	206000	243000	90000	135000
	315R4	659	0.76	99000	8.9	80	132-160-180-200	—	—	206000	243000	90000	135000
	315R4	782	0.64	99000	7.5	80	132-160-180-200	—	—	206000	243000	90000	135000
	315R4	909	0.55	83500	5.4	80	132-160-180-200	—	—	206000	243000	90000	135000

316 R

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138820Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
										HC/PC	HZ/PZ	FZ	
1500	316R3(B)	51.1	29.4	50000	150	75	180-200-225-250	—	—	124800	138800	48600	192000
	316R3(B)	65.5	22.9	63800	150	75	180-200-225-250	—	—	134500	149500	52800	192000
	316R3(B)	77.8	19.3	65800	146	75	180-200-225-250	—	—	141600	157400	55900	192000
	316R3©	70.7	21.2	59300	144	90	180-200-225-250	—	—	137600	153000	54200	192000
	316R3©	90.7	16.5	69800	132	90	180-200-225-250	—	—	148200	164900	58900	192000
	316R3©	108	13.9	72500	116	90	180-200-225-250	—	—	156100	173600	62300	192000
	316R4	225	6.7	94500	74	45	132-160-180-200	—	—	194700	216600	79700	192000
	316R4	269	5.6	99700	66	45	132-160-180-200	—	—	205300	228300	84600	192000
	316R4	289	5.2	105700	65	45	132-160-180-200	—	—	209900	233400	86600	192000
	316R4	345	4.3	107300	55	45	132-160-180-200	—	—	221300	246100	91900	192000
	316R4	409	3.7	112700	49	45	132-160-180-200	—	—	232900	259100	97300	192000
	316R4	443	3.4	117300	47	45	132-160-180-200	—	—	238500	265200	99900	192000
	316R4	525	2.9	118900	40	45	132-160-180-200	—	—	251000	279200	105700	192000
	316R4	623	2.4	115400	33	45	132-160-180-200	—	—	264300	293900	111900	192000
1000	316R3(B)	51.1	19.6	56900	128	90	180-200-225-250	—	—	140900	156700	55700	192000
	316R3(B)	65.5	15.3	72400	127	90	180-200-225-250	—	—	151900	168900	60500	192000
	316R3(B)	77.8	12.9	74300	110	90	180-200-225-250	—	—	159900	177800	64000	192000
	316R3©	70.7	14.1	66900	109	108	180-200-225-250	—	—	155300	172800	62000	192000
	316R3©	90.7	11	78800	100	108	180-200-225-250	—	—	167400	186200	67400	192000
	316R3©	108	9.3	81900	87	108	180-200-225-250	—	—	176200	196000	71400	192000
	316R4	225	4.4	106600	56	54	132-160-180-200	—	—	219900	244600	91300	192000
	316R4	269	3.7	112200	49	54	132-160-180-200	—	—	231900	257900	96800	192000
	316R4	289	3.5	116700	48	54	132-160-180-200	—	—	237000	263600	99200	192000
	316R4	345	2.9	120700	41	54	132-160-180-200	—	—	249900	277900	105200	192000
	316R4	409	2.4	126200	36	54	132-160-180-200	—	—	263100	292600	111400	192000



138820Nm

n ₁ min ⁻¹		i	n ₂ min ⁻¹	M _{n2} Nm	P _{n1} kW	P _t kW	P (IEC) 	MC	MZ	R _{n2} [N]		FZ	M ₂ max Nm
1000	316R4	443	2.3	127400	34	54	132-160-180-200	—	—	269300	299500	114300	192000
	316R4	525	1.9	127500	29	54	132-160-180-200	—	—	283500	315300	121000	192000
	316R4	623	1.6	119300	23	54	132-160-180-200	—	—	298500	331900	128100	192000
500	316R3(B)	51.1	9.8	70800	79	150	180-200-225-250	—	—	173500	192900	70100	192000
	316R3(B)	65.5	7.6	90400	79	150	180-200-225-250	—	—	187000	207900	76200	192000
	316R3(B)	77.8	6.4	91500	67	150	180-200-225-250	—	—	196800	218900	80700	192000
	316R3(C)	70.7	7.1	82400	67	180	180-200-225-250	—	—	191300	212700	78100	192000
	316R3(C)	90.7	5.5	97000	61	180	180-200-225-250	—	—	206100	229200	84900	192000
	316R3(C)	108	4.6	99600	53	180	180-200-225-250	—	—	217000	241300	89900	192000
	316R4	225	2.2	127600	34	90	132-160-180-200	—	—	270700	301100	115000	192000
	316R4	269	1.9	130000	29	90	132-160-180-200	—	—	285500	317500	122000	192000
	316R4	289	1.7	131000	27	90	132-160-180-200	—	—	291800	324500	124900	192000
	316R4	345	1.4	133500	23	90	132-160-180-200	—	—	307700	342200	132500	192000
	316R4	409	1.2	135900	19.6	90	132-160-180-200	—	—	323900	360200	140300	192000
	316R4	443	1.1	137000	18.3	90	132-160-180-200	—	—	331600	368700	144000	192000
	316R4	525	0.95	138800	15.6	90	132-160-180-200	—	—	345000	385000	150000	192000
	316R4	623	0.8	124000	11.8	90	132-160-180-200	—	—	345000	385000	150000	192000

187860Nm

n ₁ min ⁻¹		i	n ₂ min ⁻¹	M _{n2} Nm	P _{n1} kW	P _t kW	P (IEC) 	MC	MZ	R _{n2} [N] HC/PC HZ/PZ		FZ	M _{2 max} Nm
1500	317R3(B)	49.8	30	46900	150	90	180-200-225-250	—	—	159200	169500	48200	393000
	317R3(B)	64.9	23.1	61200	150	90	180-200-225-250	—	—	172400	183500	52700	393000
	317R3(B)	78.1	19.2	75100	150	90	180-200-225-250	—	—	182200	194000	56000	393000
	317R3(B)	83.3	18	80200	150	90	180-200-225-250	—	—	185800	197800	57200	393000
	317R3(B)	100	15	96200	150	90	180-200-225-250	—	—	196400	209100	60900	393000
	317R3(B)	119	12.6	111000	150	90	180-200-225-250	—	—	206700	220100	64400	393000
	317R3(C)	68.9	21.8	57800	144	100	180-200-225-250	—	—	175500	186900	53700	393000
	317R3(C)	89.8	16.7	75300	144	100	180-200-225-250	—	—	190000	202300	58700	393000
	317R3(C)	108	13.9	90600	144	100	180-200-225-250	—	—	200900	213900	62400	393000
	317R3(C)	115	13	96600	144	100	180-200-225-250	—	—	204800	218100	63800	393000
	317R3(C)	139	10.8	116300	144	100	180-200-225-250	—	—	216500	230500	67800	393000
	317R3(C)	165	9.1	118900	124	100	180-200-225-250	—	—	227900	242700	71800	393000
317R4	220	6.8	81400	66	50	132-160-180-200	—	—	248500	264500	79000	393000	





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187860Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
											HC/PC	HZ/PZ	FZ	
1500	317R4	262	5.7	97200	66	50	132-160-180-200		—	—	262000	278900	83800	393000
	317R4	336	4.5	124700	66	50	132-160-180-200		—	—	282300	300600	91100	393000
	317R4	399	3.8	148000	66	50	132-160-180-200		—	—	297200	316500	96500	393000
	317R4	438	3.4	157000	64	50	132-160-180-200		—	—	305700	325500	99500	393000
	317R4	520	2.9	164800	56	50	132-160-180-200		—	—	321800	342600	105400	393000
	317R4	626	2.4	155000	44	50	132-160-180-200		—	—	340200	362200	112100	393000
	317R4	677	2.2	164700	43	50	132-160-180-200		—	—	348300	370800	115000	393000
	317R4	803	1.9	165900	37	50	132-160-180-200		—	—	366700	390400	121800	393000
	317R4	953	1.6	145000	27	50	132-160-180-200		—	—	386000	411000	129000	393000
1000	317R3(B)	49.8	20.1	53000	122	108	180-200-225-250		—	—	179800	191400	55200	393000
	317R3(B)	64.9	15.4	69100	122	108	180-200-225-250		—	—	194700	207300	60300	393000
	317R3(B)	78.1	12.8	85500	126	108	180-200-225-250		—	—	205800	219100	64100	393000
	317R3(B)	83.3	12	90800	125	108	180-200-225-250		—	—	209800	223400	65500	393000
	317R3(B)	100	10	109300	125	108	180-200-225-250		—	—	221800	236100	69700	393000
	317R3(B)	119	8.4	119100	115	108	180-200-225-250		—	—	233500	248600	73800	393000
	317R3(C)	68.9	14.5	65200	109	120	180-200-225-250		—	—	198200	211000	61500	393000
	317R3(C)	89.8	11.1	85000	109	120	180-200-225-250		—	—	214600	228500	67200	393000
	317R3(C)	108	9.2	102400	109	120	180-200-225-250		—	—	226900	241600	71500	393000
	317R3(C)	115	8.7	109100	109	120	180-200-225-250		—	—	231300	246300	73000	393000
	317R3(C)	139	7.2	131400	109	120	180-200-225-250		—	—	244500	260300	77700	393000
	317R3(C)	165	6.1	119600	83	120	180-200-225-250		—	—	257400	274100	82200	393000
	317R4	220	4.6	92000	50	60	132-160-180-200		—	—	280600	298700	90500	393000
	317R4	262	3.8	109700	50	60	132-160-180-200		—	—	295900	315000	96000	393000
	317R4	336	3	140800	50	60	132-160-180-200		—	—	318900	339500	104300	393000
	317R4	399	2.5	167100	50	60	132-160-180-200		—	—	335700	357400	110400	393000
	317R4	438	2.3	172800	47	60	132-160-180-200		—	—	345200	367600	113900	393000
	317R4	520	1.9	175200	40	60	132-160-180-200		—	—	363400	387000	120600	393000
	317R4	626	1.6	155000	29	60	132-160-180-200		—	—	384200	409100	128300	393000
	317R4	677	1.5	167400	29	60	132-160-180-200		—	—	393300	418800	131700	393000
	317R4	803	1.2	168500	25	60	132-160-180-200		—	—	414100	440900	139400	393000
	317R4	953	1	154900	19.2	60	132-160-180-200		—	—	435900	464100	147600	393000
500	317R3(B)	49.8	10	65200	75	180	180-200-225-250		—	—	221300	235700	69500	393000
	317R3(B)	64.9	7.7	85000	75	180	180-200-225-250		—	—	239700	255200	75900	393000
	317R3(B)	78.1	6.4	106500	78	180	180-200-225-250		—	—	253400	269800	80800	393000
	317R3(B)	83.3	6	113100	78	180	180-200-225-250		—	—	258300	275000	82500	393000
	317R3(B)	100	5	134900	77	180	180-200-225-250		—	—	273100	290700	87800	393000
	317R3(B)	119	4.2	123400	60	180	180-200-225-250		—	—	287500	306100	92900	393000
	317R3(C)	68.9	7.3	80300	67	200	180-200-225-250		—	—	244000	259800	77500	393000





317 R

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187860Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	M C	MZ	R_{n2} [N]			M_2 max Nm
										HC/PC	HZ/PZ	FZ	
500	317R3(C)	89.8	5.6	104700	67	200	180-200-225-250	—	—	264200	281300	84600	393000
	317R3(C)	108	4.6	123600	66	200	180-200-225-250	—	—	279300	297400	90000	393000
	317R3(C)	115	4.3	134400	67	200	180-200-225-250	—	—	284800	303200	92000	393000
	317R3(C)	139	3.6	154600	64	200	180-200-225-250	—	—	301000	320500	97800	393000
	317R3(C)	165	3	130200	45	200	180-200-225-250	—	—	316900	337400	103600	393000
	317R4	220	2.3	112500	30	100	132-160-180-200	—	—	345400	367800	114000	393000
	317R4	262	1.9	134900	30	100	132-160-180-200	—	—	364200	387800	120900	393000
	317R4	336	1.5	173400	31	100	132-160-180-200	—	—	392600	418000	131400	393000
	317R4	399	1.3	196500	29	100	132-160-180-200	—	—	413200	440000	139100	393000
	317R4	438	1.1	182400	25	100	132-160-180-200	—	—	425000	452500	143500	393000
	317R4	520	0.96	184300	21	100	132-160-180-200	—	—	442000	470000	150000	393000
	317R4	626	0.8	155000	14.6	100	132-160-180-200	—	—	442000	470000	150000	393000
	317R4	677	0.74	170000	14.9	100	132-160-180-200	—	—	442000	470000	150000	393000
	317R4	803	0.62	170000	12.5	100	132-160-180-200	—	—	442000	470000	150000	393000
	317R4	953	0.52	156200	9.7	100	132-160-180-200	—	—	442000	470000	150000	393000

318 R

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280580Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			M_2 max Nm
										HC/PC	HZ/PZ	FZ	
1500	318R4(B)	225	6.7	200200	150	90	180-200-225-250	—	—	313900	320300	106200	500000
	318R4(B)	288	5.2	215700	133	90	180-200-225-250	—	—	338300	345200	115400	500000
	318R4(B)	342	4.4	226200	117	90	180-200-225-250	—	—	356100	363400	122200	500000
	318R4(B)	362	4.1	229600	113	90	180-200-225-250	—	—	362100	369600	124500	500000
	318R4(B)	430	3.5	240400	99	90	180-200-225-250	—	—	381200	389100	131800	500000
	318R4(B)	499	3	250300	89	90	180-200-225-250	—	—	398900	407000	138600	500000
	318R4(C)	311	4.8	220500	126	110	180-200-225-250	—	—	346100	353200	118400	500000
	318R4(C)	399	3.8	235700	105	110	180-200-225-250	—	—	373000	380600	128700	500000
	318R4(C)	474	3.2	246800	92	110	180-200-225-250	—	—	392600	400700	136200	500000
	318R4(C)	501	3	250600	89	110	180-200-225-250	—	—	399300	407500	138800	500000
	318R4(C)	595	2.5	262400	78	110	180-200-225-250	—	—	420300	428900	146900	500000
	318R4(C)	691	2.2	265600	68	110	180-200-225-250	—	—	439700	448800	154500	500000
1000	318R4(B)	225	4.5	225300	119	108	180-200-225-250	—	—	354500	361800	121600	500000
	318R4(B)	288	3.5	240900	99	108	180-200-225-250	—	—	382100	389900	132100	500000
	318R4(B)	342	2.9	252200	87	108	180-200-225-250	—	—	402200	410500	139900	500000
	318R4(B)	362	2.8	256000	84	108	180-200-225-250	—	—	409000	417400	142500	500000
	318R4(B)	430	2.3	264300	73	108	180-200-225-250	—	—	430600	439400	150900	500000
	318R4(B)	499	2	267100	63	108	180-200-225-250	—	—	450400	459700	158700	500000





318R

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280580Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
										HC/PC	HZ/PZ	FZ	
1000	318R4(C)	311	3.2	245800	93	132	180-200-225-250	—	—	390800	398900	135500	500000
	318R4(C)	399	2.5	262900	78	132	180-200-225-250	—	—	421200	429900	147300	500000
	318R4(C)	474	2.1	266200	66	132	180-200-225-250	—	—	443400	452500	155900	500000
	318R4(C)	501	2	267200	63	132	180-200-225-250	—	—	450900	460200	158800	500000
	318R4(C)	595	1.7	270500	54	132	180-200-225-250	—	—	474700	484400	168200	500000
	318R4(C)	691	1.4	273400	47	132	180-200-225-250	—	—	496600	506800	176800	500000
500	318R4(B)	225	2.2	265200	70	180	180-200-225-250	—	—	436500	445400	153200	500000
	318R4(B)	288	1.7	269900	55	180	180-200-225-250	—	—	470400	480000	166500	500000
	318R4(B)	342	1.5	273200	47	180	180-200-225-250	—	—	495200	505300	176300	500000
	318R4(B)	362	1.4	274200	45	180	180-200-225-250	—	—	503000	513900	179600	500000
	318R4(B)	430	1.2	277600	38	180	180-200-225-250	—	—	503000	541000	190100	500000
	318R4(B)	499	1	280600	33	180	180-200-225-250	—	—	503000	565000	199900	500000
	318R4(C)	311	1.6	271300	52	220	180-200-225-250	—	—	481200	491100	170700	500000
	318R4(C)	399	1.3	276200	41	220	180-200-225-250	—	—	503000	529200	185500	500000
	318R4(C)	474	1.1	279500	35	220	180-200-225-250	—	—	503000	557100	196400	500000
	318R4(C)	501	1	280600	33	220	180-200-225-250	—	—	503000	565000	200000	500000
	318R4(C)	595	0.84	280600	28	220	180-200-225-250	—	—	503000	565000	200000	500000
	318R4(C)	691	0.72	280600	24	220	180-200-225-250	—	—	503000	565000	200000	500000

319R

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403720Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N]			$M_{2 \max}$ Nm
										HC/PC	HZ/PZ	FZ	
1500	319R4(B)	249	6	227700	150	95	180-200-225-250	—	—	372100	409900	109900	680000
	319R4(B)	320	4.7	289000	150	95	180-200-225-250	—	—	401000	441800	119400	680000
	319R4(B)	379	4	304200	142	95	180-200-225-250	—	—	422100	465100	126500	680000
	319R4(B)	401	3.7	310500	137	95	180-200-225-250	—	—	429200	472900	128800	680000
	319R4(B)	475	3.2	300900	112	95	180-200-225-250	—	—	451500	497400	136300	680000
	319R4(B)	563	2.7	313000	99	95	180-200-225-250	—	—	475300	523700	144300	680000
	319R4(B)	655	2.3	321300	87	95	180-200-225-250	—	—	497300	547900	151700	680000
	319R4(C)	345	4.4	259700	134	115	180-200-225-250	—	—	410200	451900	122500	680000
	319R4(C)	442	3.4	279900	112	115	180-200-225-250	—	—	442100	487100	133100	680000
	319R4(C)	525	2.9	294600	100	115	180-200-225-250	—	—	465400	512700	140900	680000
	319R4(C)	555	2.7	306300	98	115	180-200-225-250	—	—	473200	521400	143600	680000
	319R4(C)	657	2.3	322200	87	115	180-200-225-250	—	—	497800	548400	151900	680000
	319R4(C)	780	1.9	331100	75	115	180-200-225-250	—	—	524000	577300	160800	680000
	319R4(C)	906	1.7	335900	66	115	180-200-225-250	—	—	548200	604000	169100	680000



**319R**[Page 323](#)**403720Nm**

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N] HC/PC HZ/PZ FZ			M_2 max Nm
1000	319R4(B)	249	4	257100	122	114	180-200-225-250	—	—	420200	462900	125800	680000
	319R4(B)	320	3.1	323900	120	114	180-200-225-250	—	—	452800	498900	136700	680000
	319R4(B)	379	2.6	342600	107	114	180-200-225-250	—	—	476700	525200	144800	680000
	319R4(B)	401	2.5	348100	103	114	180-200-225-250	—	—	484800	534100	147500	680000
	319R4(B)	475	2.1	326400	81	114	180-200-225-250	—	—	509900	561800	156000	680000
	319R4(B)	563	1.8	335400	70	114	180-200-225-250	—	—	536800	591400	165200	680000
	319R4(B)	655	1.5	339600	61	114	180-200-225-250	—	—	561600	618700	173700	680000
	319R4(C)	345	2.9	293300	101	138	180-200-225-250	—	—	463300	510400	140200	680000
	319R4(C)	442	2.3	316100	85	138	180-200-225-250	—	—	499300	550100	152400	680000
	319R4(C)	525	1.9	332800	75	138	180-200-225-250	—	—	525600	579100	161300	680000
	319R4(C)	555	1.8	338600	72	138	180-200-225-250	—	—	534500	588800	164400	680000
	319R4(C)	657	1.5	343700	62	138	180-200-225-250	—	—	562200	619400	173900	680000
	319R4(C)	780	1.3	353300	54	138	180-200-225-250	—	—	591800	652000	184100	680000
	319R4(C)	906	1.1	354900	46	138	180-200-225-250	—	—	619100	682100	193600	680000
500	319R4(B)	249	2	316600	75	190	180-200-225-250	—	—	517300	570000	158500	680000
	319R4(B)	320	1.6	373900	69	190	180-200-225-250	—	—	557500	614200	172300	680000
	319R4(B)	379	1.3	386000	60	190	180-200-225-250	—	—	586900	646600	182400	680000
	319R4(B)	401	1.2	379400	56	190	180-200-225-250	—	—	596800	657500	185800	680000
	319R4(B)	475	1.1	364500	45	190	180-200-225-250	—	—	627700	691600	196500	680000
	319R4(B)	563	0.89	367600	39	190	180-200-225-250	—	—	638000	702000	200000	680000
	319R4(B)	655	0.76	359700	32	190	180-200-225-250	—	—	638000	702000	200000	680000
	319R4(C)	345	1.5	361100	62	230	180-200-225-250	—	—	570300	628400	176700	680000
	319R4(C)	442	1.1	389200	52	230	180-200-225-250	—	—	614700	677200	192000	680000
	319R4(C)	525	0.95	403700	45	230	180-200-225-250	—	—	638000	702000	200000	680000
	319R4(C)	555	0.9	389900	42	230	180-200-225-250	—	—	638000	702000	200000	680000
	319R4(C)	657	0.76	367600	33	230	180-200-225-250	—	—	638000	702000	200000	680000
	319R4(C)	780	0.64	367600	28	230	180-200-225-250	—	—	638000	702000	200000	680000
	319R4(C)	906	0.55	359700	23	230	180-200-225-250	—	—	638000	702000	200000	680000

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n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC) 	MC	MZ	R_{n2} [N] HC/PC HZ/PZ FZ			M_2 max Nm
1500	321R4(B)	221	6.8	205600	150	105	180-200-225-250	—	—	440600	522400	634000	934000
	321R4(B)	288	5.2	265300	150	105	180-200-225-250	—	—	477000	565700	692600	934000
	321R4(B)	347	4.3	320600	150	105	180-200-225-250	—	—	504300	598000	736800	934000
	321R4(B)	370	4.1	341300	150	105	180-200-225-250	—	—	514100	609600	752700	934000
	321R4(B)	446	3.4	409600	150	105	180-200-225-250	—	—	543500	644500	800600	934000
	321R4(B)	529	2.8	484700	150	105	180-200-225-250	—	—	572100	678500	847700	934000





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655200Nm

n_1 min ⁻¹		i	n_2 min ⁻¹	M_{n2} Nm	P_{n1} kW	P_t kW	P (IEC)		R_{n2} [N]					$M_{2 \max}$ Nm
									MC	MZ	HC/PC	HZ/PZ	FZ	
1500	321R4(B)	221	6.8	205600	150	105	180-200-225-250		—	—	440600	522400	634000	934000
	321R4(B)	288	5.2	265300	150	105	180-200-225-250		—	—	477000	565700	692600	934000
	321R4(B)	347	4.3	320600	150	105	180-200-225-250		—	—	504300	598000	736800	934000
	321R4(B)	370	4.1	341300	150	105	180-200-225-250		—	—	514100	609600	752700	934000
	321R4(B)	446	3.4	409600	150	105	180-200-225-250		—	—	543500	644500	800600	934000
	321R4(B)	529	2.8	484700	150	105	180-200-225-250		—	—	572100	678500	847700	934000
	321R4(C)	306	4.9	249000	144	125	180-200-225-250		—	—	485700	576000	706700	934000
	321R4(C)	399	3.8	324600	144	125	180-200-225-250		—	—	525900	623700	771900	934000
	321R4(C)	481	3.1	390700	144	125	180-200-225-250		—	—	556000	659300	821100	934000
	321R4(C)	512	2.9	416600	144	125	180-200-225-250		—	—	566800	672100	838900	934000
	321R4(C)	617	2.4	501400	144	125	180-200-225-250		—	—	599200	710600	892300	934000
	321R4(C)	732	2	521400	126	125	180-200-225-250		—	—	630800	748000	944800	934000
1000	321R4(B)	221	4.5	233700	125	126	180-200-225-250		—	—	497500	590000	725800	934000
	321R4(B)	288	3.5	304200	125	126	180-200-225-250		—	—	538700	638800	792800	934000
	321R4(B)	347	2.9	361600	123	126	180-200-225-250		—	—	569500	675400	843400	934000
	321R4(B)	370	2.7	391600	125	126	180-200-225-250		—	—	580600	688500	861600	934000
	321R4(B)	446	2.2	460100	122	126	180-200-225-250		—	—	613800	727900	916500	934000
	321R4(B)	529	1.9	513000	115	126	180-200-225-250		—	—	646100	766200	970400	934000
	321R4(C)	306	3.3	281200	109	150	180-200-225-250		—	—	548500	650500	808900	934000
	321R4(C)	399	2.5	366600	109	150	180-200-225-250		—	—	593900	704300	883600	934000
	321R4(C)	481	2.1	441300	109	150	180-200-225-250		—	—	627900	744600	940000	934000
	321R4(C)	512	2	470500	109	150	180-200-225-250		—	—	640100	759100	960200	934000
	321R4(C)	617	1.6	566500	109	150	180-200-225-250		—	—	676700	802500	1021500	934000
	321R4(C)	732	1.4	529800	86	150	180-200-225-250		—	—	712400	844800	1081500	934000
500	321R4(B)	221	2.3	290300	78	210	180-200-225-250		—	—	612500	726400	914500	934000
	321R4(B)	288	1.7	379500	78	210	180-200-225-250		—	—	663200	786500	998900	934000
	321R4(B)	347	1.4	450300	77	210	180-200-225-250		—	—	701200	831500	1062600	934000
	321R4(B)	370	1.4	483100	77	210	180-200-225-250		—	—	714800	847600	1085500	934000
	321R4(B)	446	1.1	567200	75	210	180-200-225-250		—	—	755600	896100	1154700	934000
	321R4(B)	529	0.95	536400	60	210	180-200-225-250		—	—	779000	923000	1200000	934000
	321R4(C)	306	1.6	346300	67	250	180-200-225-250		—	—	675300	800800	1019200	934000
	321R4(C)	399	1.3	451600	67	250	180-200-225-250		—	—	731200	867100	1113300	934000
	321R4(C)	481	1	543700	67	250	180-200-225-250		—	—	773000	916700	1184300	934000
	321R4(C)	512	0.98	575400	66	250	180-200-225-250		—	—	779000	923000	1200000	934000
	321R4(C)	617	0.81	655200	63	250	180-200-225-250		—	—	779000	923000	1200000	934000
	321R4(C)	732	0.68	536400	43	250	180-200-225-250		—	—	779000	923000	1200000	934000





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		i	M _{n2} [NM]						P ₁	P _T	n ₁	n _{1MAX}	M _{2 max}
			n _{2-h}	n _{2-h}	n _{2-h}	n _{2-h}	n _{2-h}	n _{2-h}					
		1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
L1	3.48		760	730	730	730	730	730	20	7.5	2000	4000	2000
	4.26		1250	1070	950	860	840	720	20	7.5	2000	4000	2400
	5.77		860	730	650	650	650	630	20	7.5	2000	4000	2400
	7.2		700	600	550	550	550	510	16.5	7.5	2000	4000	2400
	9		460	390	370	370	370	370	8.9	7.5	2000	4000	2400
L2	12.1		760	730	730	730	730	730	11.9	7.5	2000	4000	2000
	14.8		1250	1070	950	860	840	720	12.6	7.5	2000	4000	2000
	18.2		1250	1070	950	860	840	720	10.4	7.5	2000	4000	2400
	20.1		860	730	650	650	650	630	7.2	7.5	2000	4000	2000
	24.6		1250	1070	950	860	840	720	7.8	7.5	2000	4000	2400
	30.7		1250	1070	950	860	840	720	6.4	7.5	2000	4000	2400
	33.3		860	730	650	650	650	630	4.3	7.5	2000	4000	2400
	38.4		1250	1070	950	860	840	720	5.2	7.5	2000	4000	2400
	41.5		860	730	650	650	650	630	3.5	7.5	2000	4000	2400
	51.9		860	730	650	650	650	630	2.9	7.5	2000	4000	2400
	64.8		700	600	550	550	550	510	2	7.5	2000	4000	2400
L3	51.6		1250	1070	950	860	840	720	4.2	7.5	2000	4000	2000
	63.2		1250	1070	950	860	840	720	3.5	7.5	2000	4000	2400
	69.9		860	730	650	650	650	630	2.4	7.5	2000	4000	2000
	77.5		1250	1070	950	860	840	720	3	7.5	2000	4000	2400
	85.6		1250	1070	950	860	840	720	2.7	7.5	2000	4000	2400
	105		1250	1070	950	860	840	720	2.2	7.5	2000	4000	2400
	116		860	730	650	650	650	630	1.6	7.5	2000	4000	2400
	131		1250	1070	950	860	840	720	1.8	7.5	2000	4000	2400
	142		1250	1070	950	860	840	720	1.6	7.5	2000	4000	2400
	177		1250	1070	950	860	840	720	1.3	7.5	2000	4000	2400
	192		860	730	650	650	650	630	1	7.5	2000	4000	2400
	221		1250	1070	950	860	840	720	1	7.5	2000	4000	2400
	240		860	730	650	650	650	630	0.82	7.5	2000	4000	2400
	299		860	730	650	650	650	630	0.66	7.5	2000	4000	2400
	374		860	730	650	650	650	630	0.53	7.5	2000	4000	2400
L4	330		1250	1070	950	860	840	720	0.72	6	2000	4000	2400
	403		860	730	650	650	650	630	0.5	6	2000	4000	2400
	447		1250	1070	950	860	840	720	0.53	6	2000	4000	2400
	494		1250	1070	950	860	840	720	0.48	6	2000	4000	2400
	558		1250	1070	950	860	840	720	0.42	6	2000	4000	2400
	616		1250	1070	950	860	840	720	0.38	6	2000	4000	2400
	755		1250	1070	950	860	840	720	0.31	6	2000	4000	2400





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1250 Nm

		i	Mn2[NM]						P ₁	P _T	n ₁	n _{1MAX}	M _{2 max}
			n _{2-h}	n _{2-h}	n _{2-h}	n _{2-h}	n _{2-h}	n _{2-h}					
		1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
L4	819		1250	1070	950	860	840	720	0.29	6	2000	4000	2400
	942		1250	1070	950	860	840	720	0.25	6	2000	4000	2400
	1022		1250	1070	950	860	840	720	0.23	6	2000	4000	2400
	1108		860	730	650	650	650	630	0.18	6	2000	4000	2400
	1275		1250	1070	950	860	840	720	0.19	6	2000	4000	2400
	1383		860	730	650	650	650	630	0.15	6	2000	4000	2400
	1591		1250	1070	950	860	840	720	0.15	6	2000	4000	2400
	1725		860	730	650	650	650	630	0.12	6	2000	4000	2400
	2153		860	730	650	650	650	630	0.09	6	2000	4000	2400
	2692		1000	1000	890	850	760	630	0.09	6	2000	4000	2400

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2460 Nm

		i	Mn2[NM]						P ₁	P _T	n ₁	n _{1MAX}	M _{2 max}
			n _{2-h}	n _{2-h}	n _{2-h}	n _{2-h}	n _{2-h}	n _{2-h}					
		1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
L1	3.48		1490	1430	1430	1430	1430	1300	30	7.5	2000	4000	3400
	4.26		2460	2140	1890	1730	1580	1280	30	7.5	2000	4000	3400
	5.77		1720	1460	1300	1300	1300	1240	30	7.5	2000	4000	3400
	7.2		1150	1150	1150	1150	1150	940	30	7.5	2000	4000	3400
	9		920	780	730	730	730	730	15.8	7.5	2000	4000	3400
L2	12.1		1490	1430	1430	1430	1430	1300	23.9	7.5	2000	4000	3400
	14.8		2460	2140	1890	1730	1580	1280	25	7.5	2000	4000	3400
	18.2		2460	2140	1890	1730	1580	1280	20.7	7.5	2000	4000	3400
	20.1		1720	1460	1300	1300	1300	1240	14.4	7.5	2000	4000	3400
	24.6		2460	2140	1890	1730	1580	1280	15.6	7.5	2000	4000	3400
	30.7		2000	2000	1830	1730	1580	1280	12.6	7.5	2000	4000	3400
	33.3		1720	1460	1300	1300	1300	1240	8.7	7.5	2000	4000	3400
	38.4		1600	1570	1570	1570	1530	1280	10.1	7.5	2000	4000	3400
	41.5		1720	1460	1300	1300	1300	1240	7	7.5	2000	4000	3400
	51.9		1720	1460	1300	1300	1300	1240	5.9	7.5	2000	4000	3400
	64.8		1150	1150	1150	1150	1150	940	4	7.5	2000	4000	3400
L3	51.6		2460	2140	1890	1730	1580	1280	8.3	7.5	2000	4000	3400
	63.2		2460	2140	1890	1730	1580	1280	7	7.5	2000	4000	50





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		i	Mn2[NM]						P ₁	P _T	n ₁	n _{1MAX}	M _{2 max}
			n _{2-h}	n _{2-h}	n _{2-h}	n _{2-h}	n _{2-h}	n _{2-h}					
		1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
L3	69.9		1720	1460	1300	1300	1300	1240	4.7	7.5	2000	4000	50
	77.5		2460	2140	1890	1730	1580	1280	5.9	7.5	2000	4000	50
	85.6		2460	2140	1890	1730	1580	1280	5.4	7.5	2000	4000	50
	105		2460	2140	1890	1730	1580	1280	4.4	7.5	2000	4000	50
	116		1720	1460	1300	1300	1300	1240	3.1	7.5	2000	4000	50
	131		2460	2140	1890	1730	1580	1280	3.5	7.5	2000	4000	50
	142		2460	2140	1890	1730	1580	1280	3.2	7.5	2000	4000	50
	177		2460	2140	1890	1730	1580	1280	2.6	7.5	2000	4000	50
	192		1720	1460	1300	1300	1300	1240	2	7.5	2000	4000	50
	221		2000	2000	1830	1730	1580	1280	2.1	7.5	2000	4000	50
	240		1720	1460	1300	1300	1300	1240	1.6	7.5	2000	4000	50
	299		1720	1460	1300	1300	1300	1240	1.3	7.5	2000	4000	50
	374		1720	1460	1300	1300	1300	1240	1	7.5	2000	4000	50
L4	330		2460	2140	1890	1730	1580	1280	1.4	6	2000	4000	3400
	403		1720	1460	1300	1300	1300	1240	1	6	2000	4000	3400
	447		2460	2140	1890	1730	1580	1280	1.06	6	2000	4000	3400
	494		2460	2140	1890	1730	1580	1280	0.96	6	2000	4000	3400
	558		2460	2140	1890	1730	1580	1280	0.85	6	2000	4000	3400
	616		2460	2140	1890	1730	1580	1280	0.77	6	2000	4000	3400
	755		2460	2140	1890	1730	1580	1280	0.63	6	2000	4000	3400
	819		2460	2140	1890	1730	1580	1280	0.58	6	2000	4000	3400
	942		2460	2140	1890	1730	1580	1280	0.5	6	2000	4000	3400
	1022		2460	2140	1890	1730	1580	1280	0.46	6	2000	4000	3400
	1108		1720	1460	1300	1300	1300	1240	0.36	6	2000	4000	3400
	1275		2460	2140	1890	1730	1580	1280	0.37	6	2000	4000	3400
	1383		1720	1460	1300	1300	1300	1240	0.29	6	2000	4000	3400
	1591		2000	2000	1830	1730	1580	1280	0.3	6	2000	4000	3400
	1725		1720	1460	1300	1300	1300	1240	0.23	6	2000	4000	3400
	2153		1720	1460	1300	1300	1300	1240	0.19	6	2000	4000	3400
	2692		1720	1460	1300	1300	1300	1240	0.15	6	2000	4000	3400



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2970 Nm

		i	Mn2[NM]						P ₁	P _T	n ₁	n _{1MAX}	M _{2 max}
			n _{2-h}	n _{2-h}	n _{2-h}	n _{2-h}	n _{2-h}	n _{2-h}					
		1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
L1	3.6		2410	2310	2310	2310	2310	2120	40	11	1800	3800	5200
	4.25		2970	2810	2810	2650	2570	2090	40	11	1800	3800	5200
	5.33		2850	2520	2230	2200	2140	2030	40	11	1800	3800	5200
	6.2		2440	2080	1840	1820	1820	1820	40	11	1800	3800	5200
	7.5		2000	1750	1650	1650	1650	1500	40	11	1800	3800	5200
	9.67		1050	900	860	860	860	860	17.3	11	1800	3800	5200
	12.5		2410	2310	2310	2310	2130	1730	20	9	2000	4000	5200
L2	15.3		2410	2310	2310	2310	2100	1700	20	9	2000	4000	5200
	18.1		2970	2810	2810	2650	2350	1910	20	9	2000	4000	5200
	20.8		2410	2210	2210	2210	2030	1650	20	9	2000	4000	5200
	22.7		2850	2520	2230	2200	2140	2030	20	9	2000	4000	5200
	24.5		2770	2700	2650	2620	2280	1850	20	9	2000	4000	5200
	26.4		2440	2080	1840	1820	1820	1820	15.2	9	2000	4000	5200
	30.8		2850	2520	2230	2200	2140	2030	15.9	9	2000	4000	5200
	35.8		2440	2080	1840	1820	1820	1820	11.2	9	2000	4000	5200
	38.4		2850	2450	2230	2200	2140	2030	12.8	9	2000	4000	5200
	44.6		2440	2080	1840	1820	1820	1820	9.2	9	2000	4000	5200
	55.8		2300	2080	1840	1820	1820	1820	7.6	9	2000	4000	5200
L3	53.4		2410	2310	2310	2310	2100	1700	9.3	7.5	2000	4000	5200
	63.1		2970	2810	2810	2650	2390	1940	9.8	7.5	2000	4000	5200
	72.3		2410	2310	2310	2310	2130	1730	7	7.5	2000	4000	5200
	77.2		2970	2810	2810	2650	2350	1910	8.2	7.5	2000	4000	5200
	90.2		2410	2310	2310	2310	2130	1730	5.6	7.5	2000	4000	5200
	105		2970	2810	2810	2650	2350	1910	6.2	7.5	2000	4000	5200
	113		2440	2080	1840	1820	1820	1820	4.4	7.5	2000	4000	5200
	124		2440	2080	1840	1820	1820	1820	4	7.5	2000	4000	5200
	141		2770	2700	2650	2620	2280	1850	4.4	7.5	2000	4000	5200
	152		2440	2080	1840	1820	1820	1820	3.4	7.5	2000	4000	5200
	164		2850	2520	2230	2200	2140	2030	3.9	7.5	2000	4000	5200
	178		2850	2520	2230	2200	2140	2030	3.6	7.5	2000	4000	5200
	190		2440	2080	1840	1820	1820	1820	2.8	7.5	2000	4000	5200
	220		2250	2200	2250	2250	1830	1800	2.3	7.5	2000	4000	5200
	258		2440	2080	1840	1820	1820	1820	2	7.5	2000	4000	5200
	276		2850	2450	2230	2200	2140	2030	2.4	7.5	2000	4000	5200
	321		2440	2080	1840	1820	1820	1820	1.6	7.5	2000	4000	5200
	389		2000	1750	1650	1650	1650	1500	1.2	7.5	2000	4000	5200





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	i	Mn2[NM]						P ₁	P _T	n ₁	n _{1MAX}	M _{2 max}
		n _{2.h} 10000	n _{2.h} 25000	n _{2.h} 50000	n _{2.h} 100000	n _{2.h} 500000	n _{2.h} 1000000					
	1:							[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
L2	24.5	5530	5400	5300	5230	4070	3310	30	9	2000	4000	8800
	26.4	4690	4000	3600	3600	3550	3460	30	9	2000	4000	8800
	30.8	5600	5040	4470	4400	4280	3490	30	9	2000	4000	8800
	35.8	4690	4000	3600	3600	3550	3460	22.4	9	2000	4000	8800
	38.4	5600	4900	4470	4400	4280	3490	25.5	9	2000	4000	8800
	44.6	4690	4000	3600	3600	3550	3460	18.3	9	2000	4000	8800
	55.8	4430	4000	3600	3600	3500	3460	15.2	9	2000	4000	8800
L3	53.4	4700	4490	4490	4490	3750	3040	18.8	7.5	2000	4000	8800
	63.1	5800	5480	5480	5300	4270	3470	19.4	7.5	2000	4000	160
	72.3	4700	4490	4490	4490	3800	3090	14.1	7.5	2000	4000	100
	77.2	5800	5500	5480	5300	4210	3420	16.3	7.5	2000	4000	100
	90.2	4700	4490	4490	4490	3800	3090	11.4	7.5	2000	4000	100
	105	5800	5500	5480	5300	4210	3420	12.3	7.5	2000	4000	100
	113	4690	4000	3600	3600	3550	3460	8.7	7.5	2000	4000	100
	124	4690	4000	3600	3600	3550	3460	8	7.5	2000	4000	50
	141	5530	5350	5300	5230	4070	3310	8.9	7.5	2000	4000	100
	152	4690	4000	3600	3600	3550	3460	6.7	7.5	2000	4000	50
	164	5600	5040	4470	4400	4280	3490	7.7	7.5	2000	4000	50
	178	5600	5040	4470	4400	4280	3490	7.2	7.5	2000	4000	50
	190	4690	4000	3600	3600	3550	3460	5.5	7.5	2000	4000	50
	220	4750	4750	4750	4750	3660	3210	4.9	7.5	2000	4000	50
	258	4690	4000	3600	3600	3550	3460	4.1	7.5	2000	4000	50
	276	5600	4900	4470	4400	4280	3490	4.6	7.5	2000	4000	50
	321	4690	4000	3600	3600	3550	3460	3.3	7.5	2000	4000	50
	389	3800	3300	3100	3100	3000	2790	2.2	7.5	2000	4000	50
	402	4690	4000	3600	3600	3550	3460	2.6	6	2000	4000	50
L4	413	5600	5040	4470	4400	4280	3490	3.2	6	2000	4000	8800
	446	5800	5500	5480	5300	4210	3420	3.1	6	2000	4000	8800
	492	5530	5350	5300	5230	4070	3310	2.6	6	2000	4000	8800
	556	5800	5500	5480	5300	4210	3420	2.5	6	2000	4000	8800
	649	4700	4490	4490	4490	3800	3090	1.7	6	2000	4000	8800
	718	4690	4000	3600	3600	3550	3460	1.5	6	2000	4000	8800
	816	5530	5350	5300	5230	4070	3310	1.6	6	2000	4000	8800
	896	4690	4000	3600	3600	3550	3460	1.2	6	2000	4000	8800
	1018	5530	5350	5300	5230	4070	3310	1.3	6	2000	4000	8800
	1098	4690	4000	3600	3600	3550	3460	0.99	6	2000	4000	8800
	1278	5600	5040	4470	4400	4280	3490	1	6	2000	4000	8800
	1370	4690	4000	3600	3600	3550	3460	0.79	6	2000	4000	8800
	1586	4750	4750	4750	4750	3660	3210	0.71	6	2000	4000	8800
	1854	4690	4000	3600	3600	3550	3460	0.59	6	2000	4000	8800




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15680Nm

	i	Mn2[NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
		n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
L2	25.4	14670	14010	14010	13510	9560	7770	60	18	1800	3800	21000
	28	14840	12700	11300	10790	9340	7590	60	18	1800	3800	21000
	30.7	12300	12300	12300	12300	9560	7770	60	18	1800	3800	21000
	32.6	14840	12700	11300	10790	9340	7590	60	18	1800	3800	21000
	38.6	11000	9600	8700	8700	8240	7490	46	18	1800	3800	21000
	46.7	11000	9600	8700	8700	8240	7490	39	18	1800	3800	21000
L3	51.3	15680	14890	14890	13510	9560	7770	30	11	2000	4000	21000
	60.5	15680	14890	14890	13510	9560	7770	30	11	2000	4000	21000
	74.1	15680	14890	14890	13510	9560	7770	30	11	2000	4000	21000
	80.6	14840	12700	11300	10790	9340	7590	30	11	2000	4000	21000
	93	15680	14890	14890	13510	9560	7770	30	11	2000	4000	21000
	100	15680	14890	14890	13510	9560	7770	30	11	2000	4000	21000
	113	14840	12700	11300	10790	9340	7590	26	11	2000	4000	21000
	126	15680	14890	14890	13510	9560	7770	26	11	2000	4000	21000
	139	14840	12700	11300	10790	9340	7590	22	11	2000	4000	21000
	146	15000	14010	14010	13510	9560	7770	23	11	2000	4000	21000
	162	14840	12700	11300	10790	9340	7590	19.4	11	2000	4000	21000
	177	12300	12300	12300	12300	9560	7770	15.9	11	2000	4000	21000
	202	14840	12700	11300	10790	9340	7590	15.9	11	2000	4000	21000
	221	15000	13800	12900	12500	9560	7770	15.6	11	2000	4000	21000
	239	11000	9600	8700	8700	8240	7490	10.5	11	2000	4000	21000
	284	14330	12700	11300	10790	9340	7590	11.3	11	2000	4000	21000
	336	11000	9600	8700	8700	8240	7490	7.5	11	2000	4000	21000
L4	349	15680	14890	14890	13510	9560	7770	10.2	7.5	2000	4000	21000
	406	14840	12700	11300	10790	9340	7590	8.2	7.5	2000	4000	21000
	465	14840	12700	11300	10790	9340	7590	7.1	7.5	2000	4000	21000
	509	15000	14010	14010	13510	9560	7770	7	7.5	2000	4000	21000
	579	15680	14890	14890	13510	9560	7770	6.1	7.5	2000	4000	21000
	654	14840	12700	11300	10790	9340	7590	5.1	7.5	2000	4000	21000
	722	15680	14890	14890	13510	9560	7770	4.9	7.5	2000	4000	21000
	801	14840	12700	11300	10790	9340	7590	4.1	7.5	2000	4000	21000
	906	15680	14890	14890	13510	9560	7770	3.9	7.5	2000	4000	21000
	999	14840	12700	11300	10790	9340	7590	3.3	7.5	2000	4000	21000
	1157	14840	12700	11300	10790	9340	7590	2.9	7.5	2000	4000	21000
	1274	12300	12300	12300	12300	9560	7770	2.3	7.5	2000	4000	21000
	1408	15680	14890	14890	13510	9560	7770	2.5	7.5	2000	4000	21000
	1591	15000	13800	12900	12500	9560	7770	2.2	7.5	2000	4000	21000
	1767	15680	14890	14890	13510	9560	7770	2	7.5	2000	4000	21000
	2041	14330	12700	11300	10790	9340	7590	1.6	7.5	2000	4000	21000





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	i	Mn2[NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
		n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]

L4	2423	11000	9600	8700	8700	8240	7490	1.1	7.5	2000	4000	21000
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309 L	Page 264	23240Nm
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	i	Mn2[NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
		n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]

L1	3.43	13000	13000	13000	13000	12310	10920	150	25	1500	2000	27900
	4.09	23240	22070	22070	20260	13120	10660	150	25	1500	2000	29000
	5.25	21980	19060	16940	16190	12810	10410	150	25	1500	2000	29000
	6.23	17000	14400	13000	13000	12370	10280	150	25	1500	2000	29000
L2												
	12.3	13000	13000	13000	13000	10290	8360	60	18	1800	3800	27900
	14.7	17730	17730	17730	17730	11650	9460	60	18	1800	3800	29000
	17.4	21620	21260	21260	18580	11460	9310	60	18	1800	3800	29000
	21.8	18510	17500	17500	17140	11160	9070	60	18	1800	3800	29000
	25.4	14670	14300	14300	14300	11060	8990	60	18	1800	3800	29000
	28	21980	19060	16940	16190	12810	10410	60	18	1800	3800	29000
	32.6	18300	18100	16940	16190	12810	10410	60	18	1800	3800	29000
	38.6	17000	14400	13000	13000	12370	10280	60	18	1800	3800	29000
	46.7	17000	14400	13000	13000	12370	10280	58	18	1800	3800	29000
L3												
	51.3	17730	17730	17730	17730	11650	9460	30	11	2000	4000	29000
	60.5	21620	21260	21260	18580	11460	9310	30	11	2000	4000	29000
	223	17000	14400	13000	13000	12370	10280	17.5	11	2000	4000	29000
	239	17000	14400	13000	13000	12370	10280	16.3	11	2000	4000	29000
	284	15800	15800	15800	15000	12810	10410	12.8	11	2000	4000	29000
L4	336	17000	14400	13000	13000	12370	10280	11.6	11	2000	4000	29000
	349	21620	21260	21260	18580	11460	9310	14.4	7.5	2000	4000	29000
	406	21980	19060	16940	16190	12810	10410	12.3	7.5	2000	4000	29000
	465	21980	19060	16940	16190	12810	10410	10.7	7.5	2000	4000	29000
	509	14670	14300	14300	14300	11060	8990	6.7	7.5	2000	4000	29000
	579	21620	21260	21260	18580	11460	9310	8.7	7.5	2000	4000	29000
	654	18300	18100	16940	16190	12810	10410	6.6	7.5	2000	4000	29000
	722	21620	21260	21260	18580	11460	9310	7	7.5	2000	4000	29000
	801	18300	18100	16940	16190	12810	10410	5.4	7.5	2000	4000	29000
	906	18510	17500	17500	17140	11160	9070	4.7	7.5	2000	4000	29000
	999	18300	18100	16940	16190	12810	10410	4.3	7.5	2000	4000	29000
	1149	17000	14400	13000	13000	12370	10280	3.5	7.5	2000	4000	29000
	1286	17000	14400	13000	13000	12370	10280	3.1	7.5	2000	4000	29000





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23240Nm

	i	Mn2[NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
		n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
L4	1380	17000	14400	13000	13000	12370	10280	2.9	7.5	2000	4000	29000
	1605	17000	14400	13000	13000	12370	10280	2.5	7.5	2000	4000	29000
	1723	17000	14400	13000	13000	12370	10280	2.3	7.5	2000	4000	29000
	2003	17000	14400	13000	13000	12370	10280	1.9	7.5	2000	4000	29000
	2423	17000	14400	13000	13000	12370	10280	1.7	7.5	2000	4000	29000

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34120Nm

	i	Mn2[NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
		n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
L1	4.09	34120	32340	26580	21590	13320	10820	175	35	1500	1800	47600
	5.25	30600	26240	23350	21100	13020	10570	175	35	1500	1800	47600
	6.23	26000	21200	18420	18230	12860	10440	175	35	1500	1800	47600
L2	14.7	34120	32340	26580	21590	13320	10820	75	22	1600	3000	47600
	17.4	34120	32340	26580	21590	13320	10820	75	22	1600	3000	47600
	21.8	34120	31930	26580	21590	13320	10820	75	22	1600	3000	47600
	25.4	27110	25910	25910	21590	13320	10820	75	22	1600	3000	47600
	28	30600	26240	23350	21100	13020	10570	75	22	1600	3000	47600
	30.7	21800	21800	21800	20150	13320	10820	75	22	1600	3000	47600
	32.6	30600	26240	23350	21100	13020	10570	75	22	1600	3000	47600
	38.6	26000	21200	18420	18230	12860	10440	75	22	1600	3000	47600
	46.7	26000	21200	18420	18230	12860	10440	75	22	1600	3000	47600
L3	53	34120	32340	26580	21590	13320	10820	40	18	1800	3800	47600
	62.6	34120	32340	26580	21590	13320	10820	40	18	1800	3800	47600
	73.9	34120	32340	26580	21590	13320	10820	40	18	1800	3800	47600
	80.3	30600	26240	23350	21100	13020	10570	40	18	1800	3800	47600
	91.3	34120	32340	26580	21590	13320	10820	40	18	1800	3800	47600
	101	30600	26240	23350	21100	13020	10570	40	18	1800	3800	47600
	110	34120	32340	26580	21590	13320	10820	40	18	1800	3800	47600
	119	30600	26240	23350	21100	13020	10570	40	18	1800	3800	47600
	130	34120	32340	26580	21590	13320	10820	40	18	1800	3800	47600
	142	30600	26240	23350	21100	13020	10570	40	18	1800	3800	47600
	164	34120	31930	26580	21590	13320	10820	38	18	1800	3800	47600
	177	26000	21200	18420	18230	12860	10440	30	18	1800	3800	47600
	202	30600	26240	23350	21100	13020	10570	30	18	1800	3800	47600





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34120Nm

	i	Mn2[NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
		n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
L3	230	21800	21800	21800	20150	13320	10820	19.6	18	1800	3800	47600
	249	26000	21200	18420	18230	12860	10440	22	18	1800	3800	47600
	295	28000	25880	23350	21100	13020	10570	19.6	18	1800	3800	47600
	350	26000	21200	18420	18230	12860	10440	15.3	18	1800	3800	47600

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48330Nm

	i	Mn2[NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
		n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
L1	4.09	48330	45840	38290	31100	19190	15590	200	35	1500	1800	58300
	5.25	45210	39550	35220	32000	19700	16000	200	35	1500	1800	58300
	6.23	34000	29500	27000	27000	18600	15100	200	35	1500	1800	58300
L2	14	35700	35700	35700	31100	19190	15590	115	26	1500	2500	58300
	16.7	48330	45840	38290	31100	19190	15590	115	26	1500	2500	58300
	18	43000	39550	35220	32000	19700	16000	115	26	1500	2500	58300
	21.5	46920	43390	38290	31100	19190	15590	115	26	1500	2500	58300
	25.5	35200	34500	34500	31100	19190	15590	115	26	1500	2500	58300
	27.6	45210	39550	35220	32000	19700	16000	115	26	1500	2500	58300
	32.7	43000	39550	35220	32000	19700	16000	115	26	1500	2500	58300
	38.8	34000	29500	27000	27000	18600	15100	115	26	1500	2500	58300
L3	50.5	35700	35700	35700	31100	19190	15590	60	18	1800	3800	58300
	60.2	48330	45840	38290	31100	19190	15590	60	18	1800	3800	58300
	71.1	48330	45840	38290	31100	19190	15590	60	18	1800	3800	58300
	77.3	46920	43390	38290	31100	19190	15590	60	18	1800	3800	58300
	89.3	48330	45840	38290	31100	19190	15590	60	18	1800	3800	58300
	104	48330	45840	38290	31100	19190	15590	60	18	1800	3800	58300
	115	46920	43390	38290	31100	19190	15590	60	18	1800	3800	58300
	126	48330	45840	38290	31100	19190	15590	60	18	1800	3800	58300
	133	46920	43390	38290	31100	19190	15590	60	18	1800	3800	58300
	147	45210	39550	35220	32000	19700	16000	59	18	1800	3800	58300
	161	46920	43390	38290	31100	19190	15590	56	18	1800	3800	58300
	171	45210	39550	35220	32000	19700	16000	52	18	1800	3800	58300
	191	35200	34500	34500	31100	19190	15590	38	18	1800	3800	58300
	203	43000	39550	35220	32000	19700	16000	44	18	1800	3800	58300



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48330Nm

	i	M _{n2} [NM]						P ₁	P _T	n ₁	n _{1MAX}	M _{2 max}
		n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
L3	203	43000	39550	35220	32000	19700	16000	44	18	1800	3800	58300
	245	43000	39550	35220	32000	19700	16000	36	18	1800	3800	58300
	291	34000	29500	27000	27000	18600	15100	24	18	1800	3800	58300
L4	348	48330	45840	38290	31100	19190	15590	30	11	2000	4000	58300
	410	48330	45840	38290	31100	19190	15590	26	11	2000	4000	58300
	512	48330	45840	38290	31100	19190	15590	21	11	2000	4000	58300
	568	46920	43390	38290	31100	19190	15590	18.4	11	2000	4000	58300
	627	45210	39550	35220	32000	19700	16000	16.2	11	2000	4000	58300
	724	48330	45840	38290	31100	19190	15590	14.7	11	2000	4000	58300
	825	46920	43390	38290	31100	19190	15590	12.6	11	2000	4000	58300
	904	48330	45840	38290	31100	19190	15590	11.8	11	2000	4000	58300
	986	45210	39550	35220	32000	19700	16000	10.3	11	2000	4000	58300
	1058	45210	39550	35220	32000	19700	16000	9.6	11	2000	4000	58300
	1230	45210	39550	35220	32000	19700	16000	8.3	11	2000	4000	58300
	1415	43000	39550	35220	32000	19700	16000	7.2	11	2000	4000	58300
	1680	34000	29500	27000	27000	18600	15100	4.8	11	2000	4000	58300
	1766	43000	39550	35220	32000	19700	16000	5.8	11	2000	4000	58300
	2096	34000	29500	27000	27000	18600	15100	3.8	11	2000	4000	58300

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57970Nm

	i	M _{n2} [NM]						P ₁	P _T	n ₁	n _{1MAX}	M _{2 max}
		n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
L1	4.14	55410	55000	55000	46000	28400	23000	250	45	900	1200	105000
	5.4	57970	49730	45000	45000	27800	22600	250	45	900	1200	105000
	6.5	49000	42400	39000	39000	27800	22500	250	45	900	1200	105000
L2	14.2	52000	52000	52000	46000	28400	23000	150	30	1500	2000	105000
	16.9	55410	55000	54000	45210	27900	22660	150	30	1500	2000	105000
	18.5	57970	49730	45000	45000	27800	22600	150	30	1500	2000	105000
	21.8	55410	55000	55000	45400	28000	22800	150	30	1500	2000	105000
	25.8	53000	52000	52000	45210	27900	22660	150	30	1500	2000	105000
	28.4	57970	49730	45000	45000	27800	22600	150	30	1500	2000	105000
	33.6	57970	49730	45000	45000	27800	22600	150	30	1500	2000	105000
	40.5	49000	42400	39000	39000	27700	22500	150	30	1500	2000	105000




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57970Nm

	i	M _{n2} [NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
		n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
L3	51.1	52000	52000	49140	45210	27900	22660	60	18	1800	3800	105000
	61	55410	55000	52510	45210	27900	22660	60	18	1800	3800	105000
	72	55410	55000	52510	45210	27900	22660	60	18	1800	3800	105000
	78.3	55410	55000	55000	45400	28000	22800	60	18	1800	3800	105000
	92.4	55410	55000	55000	45400	28000	22800	60	18	1800	3800	105000
	110	53000	52000	52000	45210	27900	22660	60	18	1800	3800	105000
	120	57970	49730	45000	45000	27800	22600	60	18	1800	3800	105000
	135	55410	55000	55000	45400	28000	22800	60	18	1800	3800	105000
	143	57970	49730	45000	45000	27800	22600	60	18	1800	3800	105000
	151	57970	49730	45000	45000	27800	22600	60	18	1800	3800	105000
	163	55410	55000	52510	45210	27900	22660	60	18	1800	3800	105000
	176	57970	49730	45000	45000	27800	22600	60	18	1800	3800	105000
	182	49000	42400	39000	39000	27700	22500	56	18	1800	3800	105000
	194	53000	52000	52000	45210	27900	22660	57	18	1800	3800	105000
	209	57970	49730	45000	45000	27800	22600	54	18	1800	3800	105000
	252	57970	49730	45000	45000	27800	22600	45	18	1800	3800	105000
	304	49000	42400	39000	39000	27700	22500	33	18	1800	3800	105000
L4	352	55410	52510	52510	45210	27900	22660	30	11	2000	4000	105000
	394	55410	55000	55000	45400	28000	22800	30	11	2000	4000	105000
	452	55410	55000	52510	45210	27900	22660	29	11	2000	4000	105000
	514	57970	49730	45000	45000	27800	22600	25	11	2000	4000	105000
	564	55410	55000	52510	45210	27900	22660	23	11	2000	4000	105000
	633	52800	52000	52000	45210	27900	22660	19.7	11	2000	4000	105000
	695	57970	49730	45000	45000	27800	22600	18.7	11	2000	4000	105000
L4	790	52800	52000	52000	45210	27900	22660	15.8	11	2000	4000	105000
	889	57970	49730	45000	45000	27800	22600	14.6	11	2000	4000	105000
	1014	57970	49730	45000	45000	27800	22600	12.8	11	2000	4000	105000
	1117	52800	52000	52000	45210	27900	22660	11.2	11	2000	4000	105000
	1266	57970	49730	45000	45000	27800	22600	10.3	11	2000	4000	105000
	1394	52800	52000	52000	45210	27900	22660	9	11	2000	4000	105000
	1502	57970	49730	45000	45000	27800	22600	8.7	11	2000	4000	105000
	1817	57970	49730	45000	45000	27800	22600	7.2	11	2000	4000	105000
	2187	49000	42400	39000	39000	27700	22500	5.3	11	2000	4000	105000





315 L	Page 296	105000Nm
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		i	M _{n2} [NM]						P ₁	P _T	n ₁	n _{1MAX}	M _{2max}
			n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}					
		1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
L1	4.25		105000	100000	97000	85000	53000	42800	260	60	500	800	135000
	5.33		99000	87000	81830	78000	49000	39700	260	60	500	800	135000
	6.2		83490	71770	65000	65000	41000	33300	260	60	500	800	135000
L2	17.4		105000	100000	97000	79000	48700	39600	200	45	1500	1800	135000
	22.3		105000	100000	97000	83000	51000	41700	200	45	1500	1800	135000
	26.5		105000	100000	97000	78000	48400	39400	200	45	1500	1800	135000
	28		99000	87000	81830	78000	48800	39700	200	45	1500	1800	135000
	33.2		99000	87000	81830	78000	48800	39700	200	45	1500	1800	135000
	38.6		83490	71770	65000	65000	41000	33300	200	45	1500	1800	135000
L3	59.6		105000	100000	97000	79000	48700	39600	115	30	1500	2500	135000
	71.1		105000	100000	97000	79000	48700	39600	115	30	1500	2500	135000
	91.3		105000	100000	97000	79000	48700	39600	115	30	1500	2500	135000
	108		105000	100000	97000	79000	48700	39600	115	30	1500	2500	135000
	139		105000	100000	97000	83000	51000	41700	115	30	1500	2500	135000
	165		105000	100000	97000	78000	48400	39400	110	30	1500	2500	135000
	174		99000	87000	81830	78000	48800	39700	98	30	1500	2500	135000
	207		99000	87000	81830	78000	48800	39700	82	30	1500	2500	135000
	241		83490	71770	65000	65000	41000	33300	57	30	1500	2500	135000
L4	302		105000	100000	97000	79000	48700	39600	60	18	1800	3800	135000
	370		105000	100000	97000	79000	48700	39600	60	18	1800	3800	135000
	441		105000	100000	97000	79000	48700	39600	51	18	1800	3800	135000
	487		105000	100000	97000	79000	48700	39600	46	18	1800	3800	135000
	533		105000	100000	97000	79000	48700	39600	42	18	1800	3800	135000
	591		105000	100000	97000	83000	51000	41700	38	18	1800	3800	135000
	672		105000	100000	97000	79000	48700	39600	33	18	1800	3800	135000
	741		105000	100000	97000	83000	51000	41700	30	18	1800	3800	135000
	862		105000	100000	97000	83000	51000	41700	26	18	1800	3800	135000
	930		99000	87000	81830	78000	48800	39700	23	18	1800	3800	135000
	1043		105000	100000	97000	83000	51000	41700	21	18	1800	3800	135000
	1104		99000	87000	81830	78000	48800	39700	19.1	18	1800	3800	135000
	1284		99000	87000	81830	78000	48800	39700	16.4	18	1800	3800	135000
	1492		83490	71770	65000	65000	41000	33300	11.4	18	1800	3800	135000
L4	1805		83490	71770	65000	65000	41000	33300	9.4	18	1800	3800	135000





316L	Page 304	138820Nm
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	i	M _{n2} [NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
		n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
L1	4.25	138820	130420	113000	100000	66000	54000	280	68	350	500	192000
L2	17.4	138820	126000	103000	83700	51600	42000	200	50	1500	1800	192000
	22.3	138820	126000	107000	85300	53300	42700	200	50	1500	1800	192000
	26.5	124000	115000	98650	80130	49440	40500	200	50	1500	1800	192000
L3	59.6	138820	126000	103000	83700	51600	42000	115	35	1500	2500	192000
	71.1	138820	126000	103000	83700	51600	42000	115	35	1500	2500	192000
	76.5	138820	126000	107000	85300	53300	42700	115	35	1500	2500	192000
	91.3	138820	126000	103000	83700	51600	42000	115	35	1500	2500	192000
	108	138820	125920	103000	83700	51600	42000	115	35	1500	2500	192000
	117	138820	126000	107000	85300	53300	42700	115	35	1500	2500	192000
	139	138820	122980	103000	83700	51600	42000	115	35	1500	2500	192000
	165	124000	115000	98650	80130	49440	40500	115	35	1500	2500	192000
L4	215	138820	126000	103000	83700	51600	42000	60	18	1800	3800	192000
	256	138820	126000	103000	83700	51600	42000	60	18	1800	3800	192000
	302	138820	126000	103000	83700	51600	42000	60	18	1800	3800	192000
	329	138820	126000	103000	83700	51600	42000	60	18	1800	3800	192000
L4	370	138820	126000	103000	83700	51600	42000	60	18	1800	3800	192000
	441	138820	126000	103000	83700	51600	42000	60	18	1800	3800	192000
	487	138820	126000	103000	83700	51600	42000	59	18	1800	3800	192000
	533	138820	126000	103000	83700	51600	42000	54	18	1800	3800	192000
	566	138820	126000	103000	83700	51600	42000	51	18	1800	3800	192000
	591	138820	122980	103000	83700	51600	42000	48	18	1800	3800	192000
	625	138820	126000	107000	85300	53300	42700	46	18	1800	3800	192000
	685	138820	126000	103000	83700	51600	42000	42	18	1800	3800	192000
	726	138820	126000	107000	85300	53300	42700	40	18	1800	3800	192000
	741	138820	122980	103000	83700	51600	42000	38	18	1800	3800	192000
	812	138820	125920	103000	83700	51600	42000	35	18	1800	3800	192000
	862	138820	122980	103000	83700	51600	42000	33	18	1800	3800	192000
	1043	138820	122980	103000	83700	51600	42000	27	18	1800	3800	192000
	1237	124000	115000	98650	80130	49440	40500	21	18	1800	3800	192000



**317L**

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208110Nm

	i	M _{n2} [NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
	1:	n _{2-h} 10000	n _{2-h} 25000	n _{2-h} 50000	n _{2-h} 100000	n _{2-h} 500000	n _{2-h} 1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
L1	4.09	208110	196530	166000	135000	83000	67240	300	85	200	300	393000
	5.25	187860	172400	154050	131030	80850	65670	300	85	200	300	393000
	6.23	156150	134380	119950	118770	79850	64860	300	85	200	300	393000
L2	16.9	207080	180000	147000	120000	74000	60000	250	55	900	1200	393000
	22.1	184310	177000	144000	117000	72000	59000	250	55	900	1200	393000
	26.6	155000	155000	144000	117000	72000	59000	250	55	900	1200	393000
	28.4	187860	172400	154050	131030	80850	65670	250	55	900	1200	393000
	34.1	170000	163960	154050	131030	80850	65670	250	55	900	1200	393000
	40.5	156150	134380	119950	118770	79850	64860	250	55	900	1200	393000
L3	58.1	207080	180000	147000	120000	74000	60000	150	35	1500	2000	393000
	69.3	207080	178190	144740	117560	72540	58920	150	35	1500	2000	393000
	89	207080	179000	145000	118000	73000	59000	150	35	1500	2000	393000
	106	207080	178190	144740	117560	72540	58920	150	35	1500	2000	393000
	116	184310	177000	144000	117000	72000	59000	150	35	1500	2000	393000
	138	184310	177000	144000	117000	72000	59000	150	35	1500	2000	393000
	166	155000	155000	144000	117000	72000	59000	150	35	1500	2000	393000
	179	170000	163960	154050	131030	80850	65670	150	35	1500	2000	393000
	213	170000	163960	154050	131030	80850	65670	138	35	1500	2000	393000
	252	156150	134380	119950	118770	79850	64860	99	35	1500	2000	393000
L4	310	207080	178190	144740	117560	72540	58920	60	18	1800	3800	393000
	360	207080	178190	144740	117560	72540	58920	60	18	1800	3800	393000
	449	207080	178190	144740	117560	72540	58920	60	18	1800	3800	393000
	493	184310	177000	144000	117000	72000	59000	60	18	1800	3800	393000
	552	207080	179000	145000	118000	73000	59000	60	18	1800	3800	393000
	619	184310	177000	144000	117000	72000	59000	60	18	1800	3800	393000
	719	184310	177000	144000	117000	72000	59000	53	18	1800	3800	393000
	792	207080	178190	144740	117560	72540	58920	48	18	1800	3800	393000
	904	170000	163960	154050	131030	80850	65670	40	18	1800	3800	393000
	1032	184310	177000	144000	117000	72000	59000	37	18	1800	3800	393000
	1134	170000	163960	154050	131030	80850	65670	32	18	1800	3800	393000
	1318	170000	163960	154050	131030	80850	65670	27	18	1800	3800	393000
	1595	170000	163960	154050	131030	80850	65670	23	18	1800	3800	393000
	1893	156150	134380	119950	118770	79850	64860	16.3	18	1800	3800	393000





	i	M _{n2} [NM]						P ₁	P _T	n ₁	n _{1MAX}	M _{2 max}
		n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
L3	180	536350	517290	420170	341290	210580	171050	250	60	1000	1200	934000
L4	258	655740	517290	420170	341290	210580	171050	150	35	1500	2000	934000
	308	655740	517290	420170	341290	210580	171050	150	35	1500	2000	934000
	395	655740	517290	420170	341290	210580	171050	150	35	1500	2000	934000
	469	655740	517290	420170	341290	210580	171050	150	35	1500	2000	934000
	515	655740	517290	420170	341290	210580	171050	150	35	1500	2000	934000
	612	655740	517290	420170	341290	210580	171050	150	35	1500	2000	934000
	736	655740	517290	420170	341290	210580	171050	130	35	1500	2000	934000
	796	655740	517290	420170	341290	210580	172000	120	35	1500	2000	934000
	945	655740	517290	420170	341290	210580	172000	101	35	1500	2000	934000
	1122	536350	517290	420170	341290	210580	171050	79	35	1500	2000	934000





300 R	Page 221	1250 Nm
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	i	Mn2[NM]						P ₁	P _T	n ₁	n _{1MAX}	M _{2 max}
		n _{2-h}	n _{2-h}	n _{2-h}	n _{2-h}	n _{2-h}	n _{2-h}					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
R2	7.13	760	730	730	730	730	730	15	12	2000	4000	2000
	8.74	1250	1070	950	860	840	720	15	12	2000	4000	2400
	11.8	860	730	650	650	650	630	12.2	12	2000	4000	2400
	14.8	700	600	550	550	550	510	8.3	12	2000	4000	2400
	18.5	460	390	370	370	370	370	4.5	12	2000	4000	2400
R3	24.8	760	730	730	730	730	730	6.2	12	2000	4000	2000
	30.4	1250	1070	950	860	840	720	6.6	12	2000	4000	2400
	37.3	1250	1070	950	860	840	720	5.5	12	2000	4000	2400
	41.2	860	730	650	650	650	630	3.6	12	2000	4000	2400
	50.4	1250	1070	950	860	840	720	4.3	12	2000	4000	2400
	62.9	1250	1070	950	860	840	720	3.5	12	2000	4000	2400
	68.2	860	730	650	650	650	630	2.4	12	2000	4000	2400
	78.7	1250	1070	950	860	840	720	2.9	12	2000	4000	2400
	85.2	860	730	650	650	650	630	2	12	2000	4000	2400
	106	860	730	650	650	650	630	1.7	12	2000	4000	2400
	133	700	600	550	550	550	510	1.2	12	2000	4000	2400
R4	106	1250	1070	950	860	840	720	2.2	10	2000	4000	2400
	130	1250	1070	950	860	840	720	1.8	10	2000	4000	2400
	143	860	730	650	650	650	630	1.4	10	2000	4000	2400
	159	1250	1070	950	860	840	720	1.5	10	2000	4000	2400
	175	1250	1070	950	860	840	720	1.3	10	2000	4000	2400
	215	1250	1070	950	860	840	720	1.1	10	2000	4000	2400
	237	860	730	650	650	650	630	0.86	10	2000	4000	2400
	268	1250	1070	950	860	840	720	0.88	10	2000	4000	2400
	291	1250	1070	950	860	840	720	0.81	10	2000	4000	2400
	363	1250	1070	950	860	840	720	0.65	10	2000	4000	2400
	394	860	730	650	650	650	630	0.52	10	2000	4000	2400
	453	1250	1070	950	860	840	720	0.52	10	2000	4000	2400
	491	860	730	650	650	650	630	0.41	10	2000	4000	2400
	613	860	730	650	650	650	630	0.33	10	2000	4000	2400
	766	860	730	650	650	650	630	0.27	10	2000	4000	2400




301 R

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2060 Nm

		i	M _{n2} [NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
			n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h					
		1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
R2	7.13		1490	1430	1430	1430	1430	1300	15	12	2000	4000	3200
	8.74		2060	2060	1890	1730	1580	1280	15	12	2000	4000	3200
	11.8		1720	1460	1300	1300	1300	1240	15	12	2000	4000	3200
	14.8		1150	1150	1150	1150	1150	940	15	12	2000	4000	3200
	18.5		920	780	740	740	740	740	8	12	2000	4000	3200
R3	24.8		1490	1430	1430	1430	1430	1300	12.4	12	2000	4000	3400
	30.4		2460	2140	1900	1730	1580	1280	13.1	12	2000	4000	3400
	37.3		2460	2140	1900	1730	1580	1280	10.8	12	2000	4000	3400
	41.2		1720	1460	1300	1300	1300	1240	7.3	12	2000	4000	3400
	50.4		2460	2140	1900	1730	1580	1280	8.4	12	2000	4000	3400
	62.9		2000	2000	1830	1730	1580	1280	7	12	2000	4000	3400
	68.2		1720	1460	1300	1300	1300	1240	4.8	12	2000	4000	3400
	78.7		1600	1600	1600	1600	1530	1280	5.8	12	2000	4000	3400
	85.2		1720	1460	1300	1300	1300	1240	4	12	2000	4000	3400
	106		1720	1460	1300	1300	1300	1240	3.3	12	2000	4000	3400
	133		1150	1150	1150	1150	1150	940	2	12	2000	4000	3400
R4	106		2460	2140	1900	1730	1580	1280	4.5	10	2000	4000	3400
	130		2460	2140	1900	1730	1580	1280	3.6	10	2000	4000	3400
	143		1720	1460	1300	1300	1300	1240	2.7	10	2000	4000	3400
	159		2460	2140	1900	1730	1580	1280	3	10	2000	4000	3400
R4	175		2460	2140	1900	1730	1580	1280	2.7	10	2000	4000	3400
	215		2460	2140	1900	1730	1580	1280	2.2	10	2000	4000	3400
	237		1720	1460	1300	1300	1300	1240	1.7	10	2000	4000	3400
	268		2460	2140	1900	1730	1580	1280	1.8	10	2000	4000	3400
	291		2460	2140	1900	1730	1580	1280	1.6	10	2000	4000	3400
	363		2460	2140	1900	1730	1580	1280	1.3	10	2000	4000	3400
	394		1720	1460	1300	1300	1300	1240	1	10	2000	4000	3400
	453		2000	2000	1830	1730	1580	1280	1	10	2000	4000	3400
	491		1720	1460	1300	1300	1300	1240	0.82	10	2000	4000	3400
	613		1720	1460	1300	1300	1300	1240	0.66	10	2000	4000	3400
	766		1720	1460	1300	1300	1300	1240	0.52	10	2000	4000	3400



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2060 Nm

	i	M _{n2} [NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
		n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
R2	9.23	2410	2310	2310	2310	2310	1940	35	18	1800	3800	5200
	10.9	2970	2810	2810	2650	2570	2090	35	18	1800	3800	5200
	13.7	2850	2520	2230	2200	2140	2030	32	18	1800	3800	5200
	15.9	2440	2080	1840	1820	1820	1820	23	18	1800	3800	5200
	19.2	2000	1750	1650	1650	1650	1500	17.2	18	1800	3800	5200
	24.8	1050	900	860	860	860	860	7	18	1800	3800	5200
R3	25.7	2410	2310	2310	2310	2130	1730	15	14	2000	4000	5200
	31.5	2410	2310	2310	2310	2100	1700	15	14	2000	4000	5200
	37.1	2970	2810	2810	2650	2350	1910	15	14	2000	4000	5200
	42.6	2410	2210	2210	2210	2030	1650	11.6	14	2000	4000	5200
	46.6	2850	2520	2230	2200	2140	2030	11.2	14	2000	4000	5200
	50.3	2770	2700	2650	2620	2280	1850	12.2	14	2000	4000	5200
	54.2	2440	2080	1840	1820	1820	1820	8.1	14	2000	4000	5200
	63.1	2850	2520	2230	2200	2140	2030	8.7	14	2000	4000	5200
	73.3	2440	2080	1840	1820	1820	1820	6.2	14	2000	4000	5200
	78.7	2850	2450	2230	2200	2140	2030	7.1	14	2000	4000	5200
	91.5	2440	2080	1840	1820	1820	1820	5.2	14	2000	4000	5200
	114	2300	2080	1840	1820	1820	1820	4.3	14	2000	4000	5200
R4	129	2970	2810	2810	2650	2390	1940	5.1	12	20000	4000	5200
	148	2410	2310	2310	2310	2130	1730	3.6	12	2000	4000	5200
	158	2970	2810	2810	2650	2350	1910	4.3	12	2000	4000	5200
	185	2410	2310	2310	2310	2130	1730	2.9	12	2000	4000	5200
	214	2970	2810	2810	2650	2350	1910	3.2	12	2000	4000	5200
	231	2440	2080	1840	1820	1820	1820	2.4	12	2000	4000	5200
	255	2440	2080	1840	1820	1820	1820	2.1	12	2000	4000	5200
	290	2770	2700	2650	2620	2280	1850	2.2	12	2000	4000	5200
	313	2440	2080	1840	1820	1820	1820	1.7	12	2000	4000	5200
	336	2850	2520	2230	2200	2140	2030	2	12	2000	4000	5200
	364	2850	2520	2230	2200	2140	2030	1.9	12	2000	4000	5200
	390	2440	2080	1840	1820	1820	1820	1.4	12	2000	4000	5200
	452	2250	2250	2250	2250	1830	1800	1.2	12	2000	4000	5200
	528	2440	2080	1840	1820	1820	1820	1	12	2000	4000	5200
	567	2850	2450	2230	2200	2140	2030	1.2	12	2000	4000	5200
	659	2440	2080	1840	1820	1820	1820	0.83	12	2000	4000	5200
	797	2000	1750	1650	1650	1650	1500	0.59	12	2000	4000	5200
	824	2440	2080	1840	1820	1820	1820	0.66	12	2000	4000	5200



**305 R**

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5600 Nm

	i	M _{n2} [NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
		n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
R2	9.23	4650	4050	4000	3870	2390	1940	35	18	1800	3800	7700
	10.9	5300	4720	4720	4350	2680	2180	35	18	1800	3800	7700
	13.7	5600	5040	4470	4280	3150	2560	35	18	1800	3800	7700
	15.9	4690	4000	3600	3600	3500	2840	35	18	1800	3800	7700
	19.2	3800	3300	3100	3100	3000	2790	32	18	1800	3800	7700
R3	25.7	4680	4490	4490	4490	3800	3090	15	14	2000	4000	8800
	31.5	4700	4490	4490	4490	3750	3040	15	14	2000	4000	8800
	37.1	5800	5500	5480	5300	4210	3420	15	14	2000	4000	8800
	42.6	4700	4450	4430	4430	3630	2950	15	14	2000	4000	8800
	46.6	5600	5040	4470	4400	4280	3490	15	14	2000	4000	8800
	50.3	5530	5350	5300	5230	4070	3310	15	14	2000	4000	8800
	54.2	4690	4000	3600	3600	3550	3460	15	14	2000	4000	8800
	63.1	5600	5040	4470	4400	4280	3490	15	14	2000	4000	8800
	73.3	4690	4000	3600	3600	3550	3460	12.3	14	2000	4000	8800
	78.7	5600	4900	4470	4400	4280	3490	14.3	14	2000	4000	8800
	91.5	4690	4000	3600	3600	3550	3460	10.2	14	2000	4000	8800
	114	4430	4000	3600	3600	3500	3460	8.6	14	2000	4000	8800
R4	129	5800	5480	5480	5300	4270	3470	10.3	12	2000	4000	8800
	148	4700	4490	4490	4490	3800	3090	7.4	12	2000	4000	8800
	158	5800	5500	5480	5300	4210	3420	8.6	12	2000	4000	8800
R4	185	4700	4490	4490	4490	3800	3090	6	12	2000	4000	8800
	214	5800	5500	5480	5300	4210	3420	6.4	12	2000	4000	8800
	231	4690	4000	3600	3600	3550	3460	4.7	12	2000	4000	8800
	255	4690	4000	3600	3600	3550	3460	4.3	12	2000	4000	8800
	290	5530	5400	5300	5230	4070	3310	4.5	12	2000	4000	8800
	313	4690	4000	3600	3600	3550	3460	3.5	12	2000	4000	8800
	336	5600	5040	4470	4400	4280	3490	3.9	12	2000	4000	8800
	364	5600	5040	4470	4400	4280	3490	3.6	12	2000	4000	8800
	390	4690	4000	3600	3600	3550	3460	2.8	12	2000	4000	8800
	452	4750	4750	4750	4750	3660	3210	2.5	12	2000	4000	8800
	528	4690	4000	3600	3600	3550	3460	2.1	12	2000	4000	8800
	567	5600	4900	4470	4400	4280	3490	2.3	12	2000	4000	8800
	659	4690	4000	3600	3600	3550	3460	1.7	12	2000	4000	8800
	797	3800	3300	3100	3100	3000	2790	1.1	12	2000	4000	8800
	824	4690	4000	3600	3600	3550	3460	1.3	12	2000	4000	8800





306 R	Page 249	7300 Nm
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		i	M _{n2} [NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
			n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h					
		1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
R2	9.23		4650	4050	4000	3870	2390	1940	35	18	1800	3800	12000
	10.9		5300	4720	4720	4350	2680	2180	35	18	1800	3800	12000
	13.7		6500	5920	5920	5100	3150	2560	35	18	1800	3800	12000
	15.9		7300	6890	6530	5670	3500	2840	35	18	1800	3800	12000
	19.2		7000	5900	5500	5400	3990	3240	35	18	1800	3800	12000
R3	33.2		8020	8020	8020	8020	5680	4620	35	14	2000	4000	14900
	39.2		9770	9340	9340	9300	6110	4960	35	14	2000	4000	14900
	46.3		10420	9850	9850	9600	6860	5570	35	14	2000	4000	14900
	58.1		9560	9100	9100	9100	6680	5430	35	14	2000	4000	14900
	67.5		7890	7590	7590	7590	6620	5380	25	14	2000	4000	14900
	72.9		10080	9350	8300	7950	6810	5530	27	14	2000	4000	14900
	84.7		9540	9350	8300	7950	6810	5530	23	14	2000	4000	14900
	98.5		8630	7370	6530	6500	6460	5480	17.7	14	2000	4000	14900
	119		8500	7370	6530	6500	6460	5480	15.2	14	2000	4000	14900
	144		7000	5900	5500	5500	5040	5040	10.7	14	2000	4000	14900
R4	158		10420	9850	9850	9600	6860	5570	14.9	12	2000	4000	14900
	168		8320	7700	7700	7530	5950	4830	11.3	12	2000	4000	14900
	181		9450	9450	9450	9450	6970	5660	11.6	12	2000	4000	14900
	214		10420	9850	9850	9600	6860	5570	11.1	12	2000	4000	14900
	230		7890	7590	7590	7590	6620	5380	7.7	12	2000	4000	14900
	249		10080	9350	8300	7950	6810	5530	9	12	2000	4000	14900
	289		9540	9350	8300	7950	6810	5530	7.6	12	2000	4000	14900
	312		7890	7590	7590	7590	6620	5380	5.7	12	2000	4000	14900
	389		8500	7590	7590	7590	6620	5380	5.2	12	2000	4000	14900
	420		10080	9350	8300	7950	6810	5530	5.4	12	2000	4000	14900
	455		8630	7370	6530	6500	6460	5480	4.4	12	2000	4000	14900
	488		9540	9350	8300	7950	6810	5530	4.5	12	2000	4000	14900
	550		8500	7370	6530	6500	6460	5480	3.7	12	2000	4000	14900
	590		9500	8500	7800	7800	6810	5530	3.8	12	2000	4000	14900
	665		7000	5900	5500	5500	5040	5040	2.5	12	2000	4000	14900
	830		7000	5900	5500	5500	5040	5040	2	12	2000	4000	14900





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14000 Nm

	i	M _{n2} [NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
		n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
R2	13	9000	8500	8270	7960	6570	5340	85	35	1800	3800	18600
	15.5	11400	10690	9630	9520	7440	6040	85	35	1800	3800	21000
	19.8	14000	12700	11300	10790	8850	7190	85	35	1800	3800	21000
	23.5	11000	9600	8700	8700	8240	7490	74	35	1800	3800	21000
R3	31.6	9000	9000	9000	8300	5490	4460	35	22	2000	4000	18600
	37.7	15680	14890	12400	10070	6210	5050	35	22	2000	4000	21000
	44.6	15680	14890	13930	11310	6980	5670	35	22	2000	4000	21000
	55.9	15680	14890	14890	13260	8180	6650	35	22	2000	4000	21000
	65	14670	14010	14010	13510	9090	7380	35	22	2000	4000	21000
	71.8	14840	12700	11300	10790	9340	7590	35	22	2000	4000	21000
	78.6	12300	12300	12300	12300	9560	7770	35	22	2000	4000	21000
	83.4	14840	12700	11300	10790	9340	7590	33	22	2000	4000	21000
	99	11000	9600	8700	8700	8240	7490	23	22	2000	4000	21000
	120	11000	9600	8700	8700	8240	7490	19.9	22	2000	4000	21000
R4	152	15680	14890	14890	13510	9560	7770	15	15	2000	4000	21000
	165	14840	12700	11300	10790	9340	7590	15	15	2000	4000	21000
	191	15680	14890	14890	13510	9560	7770	15	15	2000	4000	21000
	206	15680	14890	14890	13510	9560	7770	15	15	2000	4000	21000
	232	14840	12700	11300	10790	9340	7590	14.3	15	2000	4000	21000
	258	15680	14890	14890	13510	9560	7770	13.8	15	2000	4000	21000
	284	14840	12700	11300	10790	9340	7590	11.6	15	2000	4000	21000
	300	15000	14010	14010	13510	9560	7770	11.8	15	2000	4000	21000
	331	14840	12700	11300	10790	9340	7590	10	15	2000	4000	21000
	363	12300	12300	12300	12300	9560	7770	8	15	2000	4000	21000
	413	14840	12700	11300	10790	9340	7590	8	15	2000	4000	21000
	453	15000	13800	12900	12500	9560	7770	7.8	15	2000	4000	21000
	490	11000	9600	8700	8700	8240	7490	5.3	15	2000	4000	21000
	581	14330	12710	11300	10790	9340	7590	5.7	15	2000	4000	21000
	690	11000	9600	8700	8700	8240	7490	3.8	15	2000	4000	21000

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16460 Nm

	i	M _{n2} [NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
		n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
R2	13	9800	9120	8270	7960	6570	5340	85	35	1800	3800	27400
	15.5	11400	10690	9630	9520	7440	6040	85	35	1800	3800	27400



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16460 Nm

	i	M _{n2} [NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
	1:	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
R2	19.8	14000	13270	12270	12270	8850	7190	85	35	1800	3800	27400
	23.5	16460	14070	12500	12370	9980	8110	85	35	1800	3800	27400
R3	31.6	12800	12310	10960	8900	5490	4460	35	22	2000	4000	27900
	37.7	15830	15260	12400	10070	6210	5050	35	22	2000	4000	29000
	44.6	18670	17150	13930	11310	6980	5670	35	22	2000	4000	29000
	55.9	18510	17140	16330	13260	8180	6650	35	22	2000	4000	29000
	65	14670	14300	14300	14010	9090	7380	35	22	2000	4000	29000
	71.8	21980	19060	16940	15790	9740	7910	35	22	2000	4000	29000
	83.4	18300	18100	16940	16190	10830	8790	35	22	2000	4000	29000
	99	17000	14400	13000	13000	12210	9910	35	22	2000	4000	29000
	120	17000	14400	13000	13000	12370	10280	30	22	2000	4000	29000
R4	152	21620	21260	21260	18580	11460	9310	15	15	2000	4000	29000
	165	21980	19060	16940	16190	12810	10410	15	15	2000	4000	29000
	191	18510	17500	17500	17140	11160	9070	15	15	2000	4000	29000
	206	21620	21260	21260	18580	11460	9310	15	15	2000	4000	29000
	232	18300	18100	16940	16190	12810	10410	15	15	2000	4000	29000
	258	18510	17500	17500	17140	11160	9070	15	15	2000	4000	29000
	284	18300	18100	16940	16190	12810	10410	15	15	2000	4000	29000
	331	21980	19060	16940	16190	12810	10410	15	15	2000	4000	29000
	374	14670	14300	14300	14010	11060	8990	9.2	15	2000	4000	29000
R4	413	21980	19060	16940	16190	12810	10410	12	15	2000	4000	29000
	457	17000	14400	13000	13000	12370	10280	8.8	15	2000	4000	29000
	490	17000	14400	13000	13000	12370	10280	8.2	15	2000	4000	29000
	581	15800	15800	15800	15000	12810	10410	6.4	15	2000	4000	29000
	690	17000	14400	13000	13000	12370	10280	5.8	15	2000	4000	29000

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34120 Nm

	i	M _{n2} [NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
	1:	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
R2	12	28200	27800	25000	21590	13320	10820	130	55	1500	2500	47600
	15.4	30600	26240	23350	21100	13020	10570	130	55	1500	2500	47600
	18.3	26000	21200	18420	18230	12860	10440	130	55	1500	2500	47600
	16.6	34120	32340	26580	21590	13320	10820	130	55	1500	2500	47600
	21.3	30600	26240	23350	21100	13020	10570	130	55	1500	2500	47600
	25.3	26000	21200	18420	18230	12860	10440	119	55	1500	2500	47600



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34120 Nm

	i	M _{n2} [NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
		n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
R3	37.7	15830	15260	12400	10070	6210	5050	35	22	1800	3800	47600
	44.6	18670	17150	13930	11310	6980	5670	35	22	1800	3800	47600
	55.9	23410	20100	16320	13260	8180	6650	35	22	1800	3800	47600
	65	27110	22330	18140	14730	9090	7380	35	22	1800	3800	47600
	71.8	29990	23930	19440	15790	9740	7910	35	22	1800	3800	47600
	78.6	21800	21100	20150	16840	10390	8440	35	22	1800	3800	47600
	83.4	30600	26240	21600	17550	10830	8790	35	22	1800	3800	47600
	99	26000	21200	18420	18230	12210	9910	35	22	1800	3800	47600
	120	26000	21200	18420	18230	12860	10440	35	22	1800	3800	47600
R4	136	34120	32340	26580	21590	13320	10820	35	15	2000	4000	47600
	160	34120	32340	26580	21590	13320	10820	35	15	2000	4000	47600
	189	34120	32340	26580	21590	13320	10820	35	15	2000	4000	47600
	206	30600	26240	23350	21100	13020	10570	34	15	2000	4000	47600
	234	34120	32340	26580	21590	13320	10820	25	15	2000	4000	47600
	258	30600	26240	23350	21100	13020	10570	27	15	2000	4000	47600
	283	34120	32340	26580	21590	13320	10820	19.1	15	2000	4000	47600
	305	30600	26240	23350	21100	13020	10570	23	15	2000	4000	47600
	334	34120	32340	26580	21590	13320	10820	19.1	15	2000	4000	47600
	363	30600	26240	23350	21100	13020	10570	19.1	15	2000	4000	47600
	419	34120	31930	26580	21590	13320	10820	16.9	15	2000	4000	47600
	454	26000	21200	18420	18230	12860	10440	13.5	15	2000	4000	47600
	517	30600	26240	23350	21100	13020	10570	13.5	15	2000	4000	47600
	590	21800	21800	21800	20150	13320	10820	8.7	15	2000	4000	47600
	639	26000	21200	18420	18230	12860	10440	9.6	15	2000	4000	47600
	757	28000	25880	23350	21100	13020	10570	8.8	15	2000	4000	47600
	898	26000	21200	18420	18230	12860	10440	6.8	15	2000	4000	47600

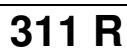
311 R

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48330 Nm

	i	M _{n2} [NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
		n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
R2	12	28200	27800	25000	24910	15900	12700	150	75	1500	2500	58300
	15.4	35600	33600	31960	30600	18800	15300	150	75	1500	2500	58300
	18.3	34000	29500	27000	27000	18600	15100	150	75	1500	2500	58300
	16.6	48330	42150	34220	27800	17150	13940	150	90	1500	2500	58300
	21.3	45210	39560	35220	30380	18740	15230	150	90	1500	2500	58300
	25.3	34000	29500	27000	26000	18510	15040	150	90	1500	2500	58300





48330 Nm

313 R

579700 Nm



**313 R**

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579700 Nm

	i	M _{n2} [NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
		n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
R3	53.7	35120	32860	32860	27940	17240	14000	85	40	1800	3800	105000
	64	40990	39380	38920	31620	19510	15850	85	40	1800	3800	105000
	69.9	44280	43120	41410	33630	20750	16860	85	40	1800	3800	105000
	82.2	51000	50890	46350	37650	23230	18870	85	40	1800	3800	105000
	97.5	52430	50280	50280	42440	26190	21270	85	40	1800	3800	105000
	107	57970	49730	44600	42590	27200	22090	85	40	1800	3800	105000
	127	57970	49730	45000	42590	27200	22090	85	40	1800	3800	105000
	153	49000	42400	39000	39000	27700	22500	65	40	1800	3800	105000
R4	185	55410	44980	36540	29680	18310	14870	35	22	2000	4000	105000
	201	55410	47690	38730	31460	19410	15770	35	22	2000	4000	105000
	237	55410	52510	43510	35340	21810	17710	35	22	2000	4000	105000
	281	53000	50280	49050	39840	24580	19970	35	22	2000	4000	105000
	309	57970	49730	44290	42550	26250	21320	35	22	2000	4000	105000
	346	55410	55000	52510	45210	27900	22660	35	22	2000	4000	105000
	387	57970	49730	45000	42590	27200	22090	34	22	2000	4000	105000
	450	57970	49730	45000	45000	27800	22600	29	22	2000	4000	105000
	496	53000	52000	52200	45210	27900	22660	25	22	2000	4000	105000
	535	57970	49730	45000	45000	27800	22600	24	22	2000	4000	105000
	647	57970	49730	45000	45000	27800	22600	20	22	2000	4000	105000
	778	49000	42400	39000	39000	27700	22500	14.9	22	2000	4000	105000

315 R

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105000 Nm

	i	M _{n2} [NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
		n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
R3	51.1	102300	97690	82600	66510	41040	33350	150	75	1500	2500	135000
	65.5	105000	100000	97000	80800	48500	38400	150	75	1500	2500	135000
	77.8	105000	100000	97000	78000	48800	39400	150	75	1500	2500	135000
	82.3	99000	87000	81830	78000	48800	39700	150	75	1500	2500	135000
	97.6	99000	87000	81830	78000	48800	39700	150	75	1500	2500	135000
	113	83490	71770	65000	65000	41000	33300	118	75	1500	2500	135000
	70.7	103970	97680	84730	68820	42460	34490	150	90	1500	2500	135000
	90.7	105000	97680	84730	68820	42460	34490	150	90	1500	2500	135000
	108	105000	100000	84730	68820	42460	34490	150	90	1500	2500	135000
	114	99000	87000	81830	70000	44100	36300	146	90	1500	2500	135000
	135	99000	87000	81830	78000	48800	39700	125	90	1500	2500	135000
	157	83490	71770	65000	65000	41000	33300	88	90	1500	2500	135000



**315 R**

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105000 Nm

	i	M _{n2} [NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
		n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
R4	225	103970	97680	84730	68820	42460	34490	90	40	1800	3800	135000
	269	105000	99000	84730	68820	42460	34490	83	40	1800	3800	135000
	345	105000	100000	95000	78000	47900	38900	65	40	1800	3800	135000
	409	105000	100000	97000	79000	48700	39600	55	40	1800	3800	135000
	525	105000	100000	97000	83000	51000	41700	43	40	1800	3800	135000
	623	105000	100000	97000	78000	48400	39300	36	40	1800	3800	135000
	659	99000	87000	81830	78000	48800	39700	32	40	1800	3800	135000
	782	99000	87000	81830	78000	48800	39700	27	40	1800	3800	135000
	909	83490	71770	65000	65000	41000	33300	18.7	40	1800	3800	135000

316 R

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138820 Nm

	i	M _{n2} [NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
		n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
R3	51.1	108000	101000	87200	70300	42300	33900	150	75	1500	2500	192000
	65.5	134000	126000	104000	82600	50000	40200	150	75	1500	2500	192000
	77.8	124000	115000	98650	80130	49440	40500	150	75	1500	2500	192000
	70.7	138810	112590	91410	74250	45820	37220	150	90	1500	2500	192000
	90.7	138820	122980	99890	81130	50060	40660	150	90	1500	2500	192000
	108	124000	108000	98650	80130	49440	40160	150	90	1500	2500	192000
R4	225	138810	126000	103000	83700	51600	42000	85	45	1800	3800	192000
	269	138820	126000	103000	83700	51600	42000	85	45	1800	3800	192000
	289	138820	126000	107000	85300	53300	42700	85	45	1800	3800	192000
	345	138820	126000	103000	83700	51600	42000	83	45	1800	3800	192000
	409	138820	125920	103000	83700	51600	42000	69	45	1800	3800	192000
	443	138820	126000	107000	85300	53300	42700	65	45	1800	3800	192000
	525	138820	122980	103000	83700	51600	42000	54	45	1800	3800	192000
	623	124000	115000	98650	80130	49440	40500	42	45	1800	3800	192000

317 R

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187860 Nm

	i	M _{n2} [NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
		n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
R3	49.8	108300	99090	80420	65330	40310	32760	150	90	1500	2500	393000
	64.9	134800	119290	96820	78650	48530	39440	150	90	1500	2500	393000
	78.1	151300	138800	115100	92600	55260	45000	150	90	1500	2500	393000



**317 R**

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187860 Nm

	i	M _{n2} [NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
		n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
R3	83.3	165870	148000	120000	96000	58700	46960	150	90	1500	2500	393000
	100	170000	161770	134800	109200	65810	53480	150	90	1500	2500	393000
	119	156150	134380	119950	118760	74300	60290	150	90	1500	2500	393000
	68.9	145590	110540	89790	72940	45010	36570	150	100	1500	2500	393000
	89.8	175270	133080	108100	87810	54180	44020	150	100	1500	2500	393000
	108	137600	127510	123140	99980	61690	50120	150	100	1500	2500	393000
	115	187860	158560	128730	104560	64520	52420	150	100	1500	2500	393000
	139	167000	163960	146640	119060	73470	59690	150	100	1500	2500	393000
	165	156150	134380	119950	118760	79850	64860	141	100	1500	2500	393000
R4	220	136030	110120	89450	72650	44830	36410	90	50	1800	3800	393000
	262	163270	124610	101220	82210	50730	41200	90	50	1800	3800	393000
	336	195330	148390	120530	97900	60410	49060	90	50	1800	3800	393000
	399	207070	167280	135880	110370	68100	55310	90	50	1800	3800	393000
	438	184310	171620	141110	114620	70720	57440	87	50	1800	3800	393000
	520	184310	171620	141110	114620	70720	57440	73	50	1800	3800	393000
	626	155000	155000	144000	117000	72000	59000	53	50	1800	3800	393000
	677	170000	163960	154050	131030	80850	65670	53	50	1800	3800	393000
	803	170000	163960	154050	131030	80850	65670	45	50	1800	3800	393000
	953	156150	134380	119950	118760	79850	64860	32	50	1800	3800	393000

318 R

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280580 Nm

	i	M _{n2} [NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
		n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h	n ₂ .h					
	1:	10000	25000	50000	100000	500000	1000000	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
R4	225	280580	262990	218310	177320	109410	88870	150	90	1500	2500	500000
	288	280580	262990	218310	177320	109410	88870	150	90	1500	2500	500000
	342	280580	262990	218310	177320	109410	88870	130	90	1500	2500	500000
	362	280580	262990	218310	177320	109410	88870	123	90	1500	2500	500000
	430	280580	262990	218310	177320	109410	88870	103	90	1500	2500	500000
	499	280580	262990	218310	177320	109410	88870	87	90	1500	2500	500000
	311	280580	262990	218310	177320	109410	88870	143	110	1500	2500	500000
R4	399	280580	262990	218310	177320	109410	88870	111	110	1500	2500	500000
	474	280580	262990	218310	177320	109410	88870	94	110	1500	2500	500000
	501	280580	262990	218310	177320	109410	88870	89	110	1500	2500	500000
	595	280580	262990	218310	177320	109410	88870	75	110	1500	2500	500000
	691	280580	262990	218310	177320	109410	88870	63	110	1500	2500	500000



**319 R**

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403720 Nm

	i	M _{n2} [NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
	1:	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
R4	249	390680	296370	240760	195590	120710	98100	150	95	1500	2500	680000
	320	403720	345000	283900	226500	136700	112800	150	95	1500	2500	680000
	379	403720	348000	284000	231000	142000	116000	150	95	1500	2500	680000
	401	389910	348000	286000	233000	144000	117000	150	95	1500	2500	680000
	475	367580	317580	270690	248000	153000	124000	127	95	1500	2500	680000
	563	367580	317580	270690	248000	153000	124000	107	95	1500	2500	680000
	655	359690	317560	267610	220000	136000	110000	92	95	1500	2500	680000
	345	403720	306690	249110	202340	124850	101410	150	115	1500	2500	680000
	442	403720	306690	249110	202340	124850	101410	140	115	1500	2500	680000
	525	403720	306690	249110	202340	124850	101410	118	115	1500	2500	680000
	555	389910	313000	257800	208700	128900	105600	112	115	1500	2500	680000
	657	367580	317580	270690	232200	145100	119000	92	115	1500	2500	680000
	780	367580	317580	270690	248000	153000	124000	77	115	1500	2500	680000
	906	359690	317560	267610	220000	136000	110000	67	115	1500	2500	680000

321 R

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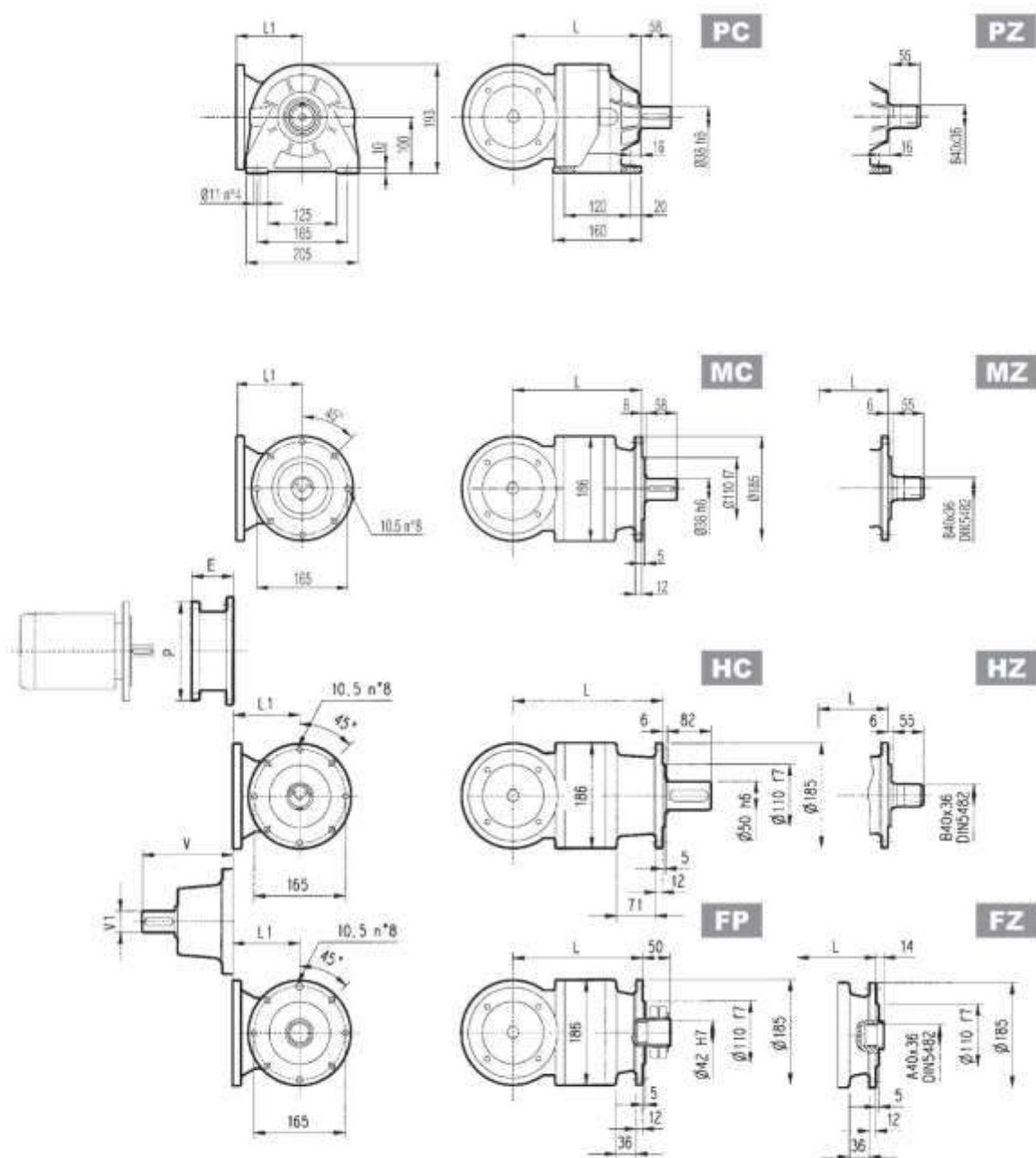
655200 Nm

	i	M _{n2} [NM]						P ₁	P _T	n ₁	n ₁ MAX	M ₂ max
	1:	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	n _{2.h}	[KW]	[KW]	[min ⁻¹]	[min ⁻¹]	[NM]
R4	221	374000	281300	226400	181800	111130	90320	150	105	1500	2500	934000
	288	447500	340100	268500	216800	133790	108740	150	105	1500	2500	934000
	347	506300	377100	307000	247800	152340	123900	150	105	1500	2500	934000
	370	528500	402100	317800	264200	159330	129500	150	105	1500	2500	934000
	446	587310	445420	366500	293970	181430	147460	150	105	1500	2500	934000
	529	536350	503040	410200	331430	204550	166260	150	105	1500	2500	934000
	306	401340	304660	247480	201030	124050	100790	150	125	1500	2500	934000
	399	483180	366770	297930	242020	149350	121350	150	125	1500	2500	934000
	481	550170	417600	339230	275560	170050	138170	132	125	1500	2500	934000
	512	575410	436760	354790	288200	177850	144510	125	125	1500	2500	934000
	617	655200	497290	403960	328150	202500	164540	120	125	1500	2500	934000
	732	536360	517290	420170	341290	210580	171050	113	125	1500	2500	934000





300R



FP

$M_{2max} = 1300 \text{ Nm}$

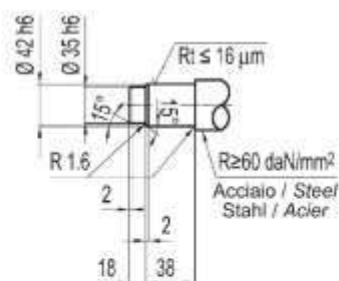
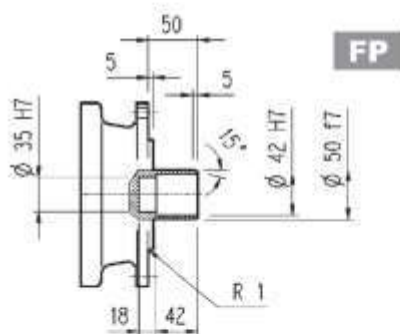
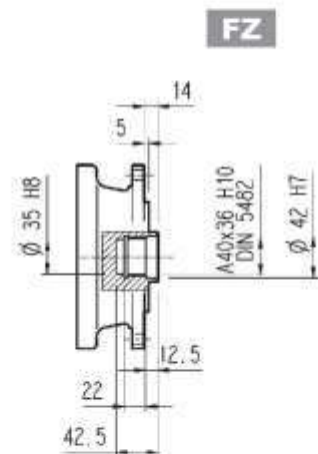
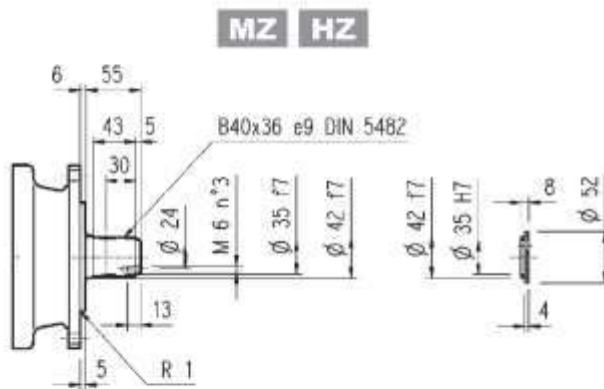
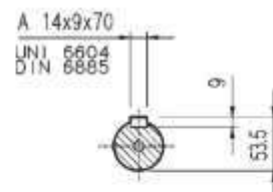
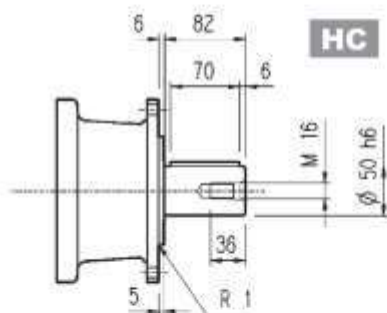
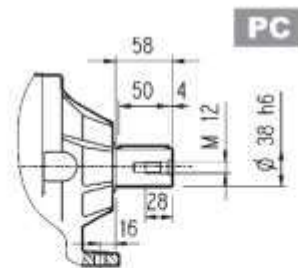
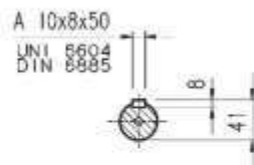
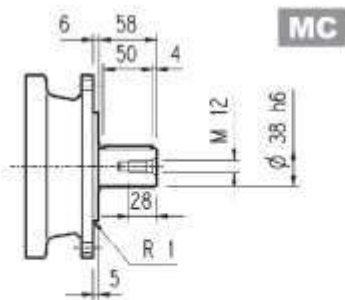
	L					L1	Wight (kg)				V	V1	(kg)	V	V1	(kg)
	MC - MZ	PC - PZ	HC - HZ	FP - FZ	MC - MZ		PC - PZ	HC - HZ	FP - FZ							
300 R2	172	178	207	172	122	32	37	34	30	137.5	24	6	158	38	7	
300 R3	225	231	260	225	122	36	41	38	34	137.5	24	6	158	38	7	
300 R4	278	284	313	278	122	40	45	42	38	137.5	24	6	158	38	7	

	P71		P80		P90		P100		P112		P132	
	E	P	E	P	E	P	E	P	E	P	E	P
300 R2	65	160	84	200	84	200	94	250	94	250	114	300
300 R3	65	160	84	200	84	200	94	250	94	250	114	300
300 R4	65	160	84	200	84	200	94	250	94	250	114	300





300L-300R

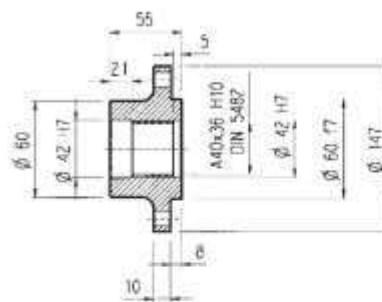
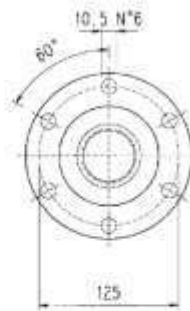


FP

$M_{2max} = 1300 \text{ Nm}$

300L-300R

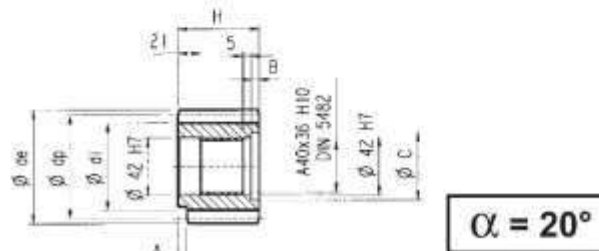
Flange



Material: Steel C40

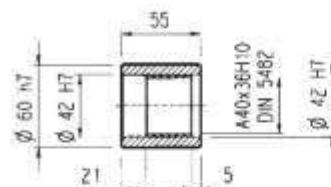
WOA

Pinions



	m	z	x	dp	di	de	H	A	B	C	Material
PBE	5	14	0.51	63	56	75.5	55	—	—	—	Steel 39NiCrMo3 hardened and tempered
PCE	5	14	0.5	70	63	84.8	65	—	10	53	
PDC	6	12	0.25	72	61	84.8	59	14	4	54	
PDE	6	14	0.5	84	73	99.6	65	—	10	54	

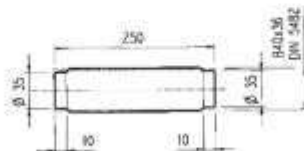
Sleeve coupling



Material: Steel 16CrNi4

MOA

Splined bars



Material: Case hardening steel 18NiCrMo5
UNI 5331 must be case hardened 50-55 HRC

BOA

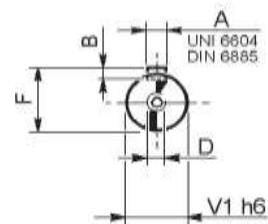
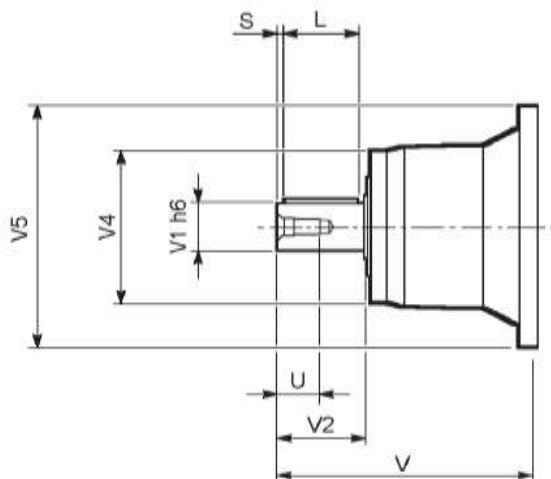
Shrink disc



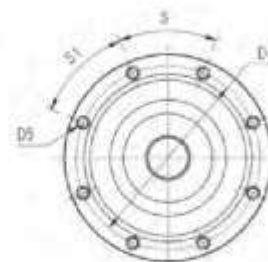
GOA



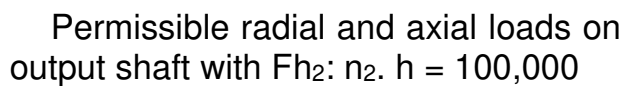
300L-300R



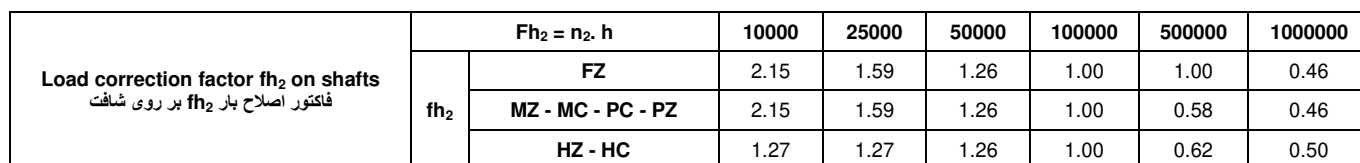
	input	V	V1	V2	V4	V5	A	B	F	L	S	D	U
300 L1	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28
300 L2	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28
300 L3	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28
300 L4	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28
300 R2-R3-R4	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28



		C	D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	L5	L6	S	S1	Input
300L1	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	—	9	18	53	18	45°	45°	A
300L2	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	—	9	18	106	18	45°	45°	A
300L3	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	—	9	18	159	18	45°	45°	A
300L4	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	—	9	18	212	18	45°	45°	A
300R2-R3-R4	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	—	9	18	37	18	45°	45°	A

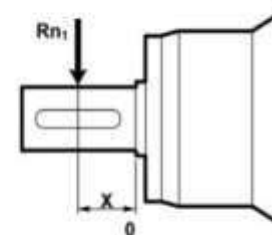


بارهای شعاعی و محوری مجاز بر روی شافت خروجی با
Fh2: n2. h = 100,000



Permissible radial loads on input shaft with Fh1: n1. h = 250000

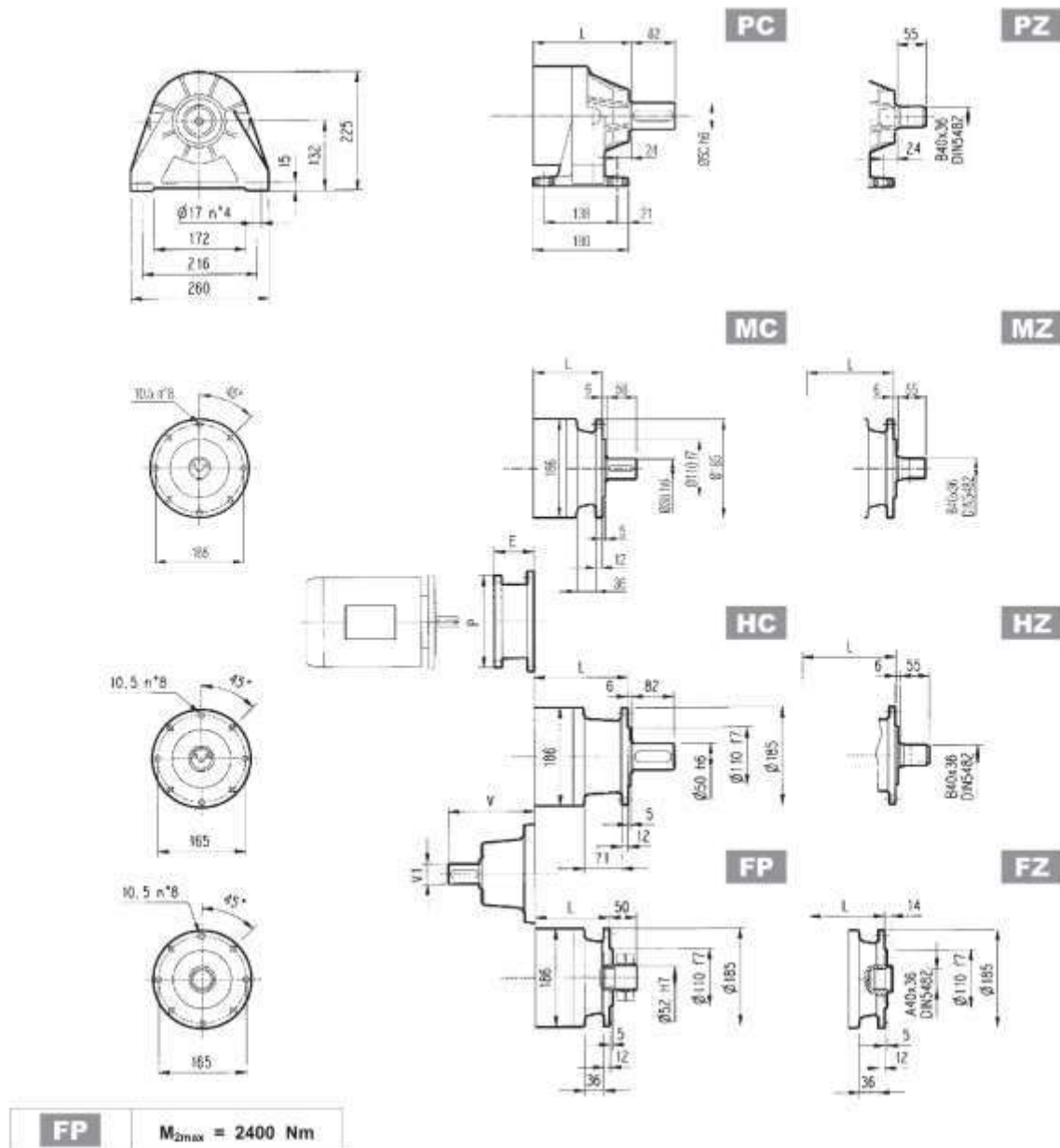
بارهای شعاعی مجاز بر روی شفت ورودی با
Fh1: n1. h = 250000



Load correction factor fh1 on shafts فاکتور اصلاح بار fh1 بر روی شافت	Fh1 = n1. h	250000	500000	1000000	2000000	5000000	10000000
	fh1	1	0.79	0.63	0.5	0.37	0.29



301 L

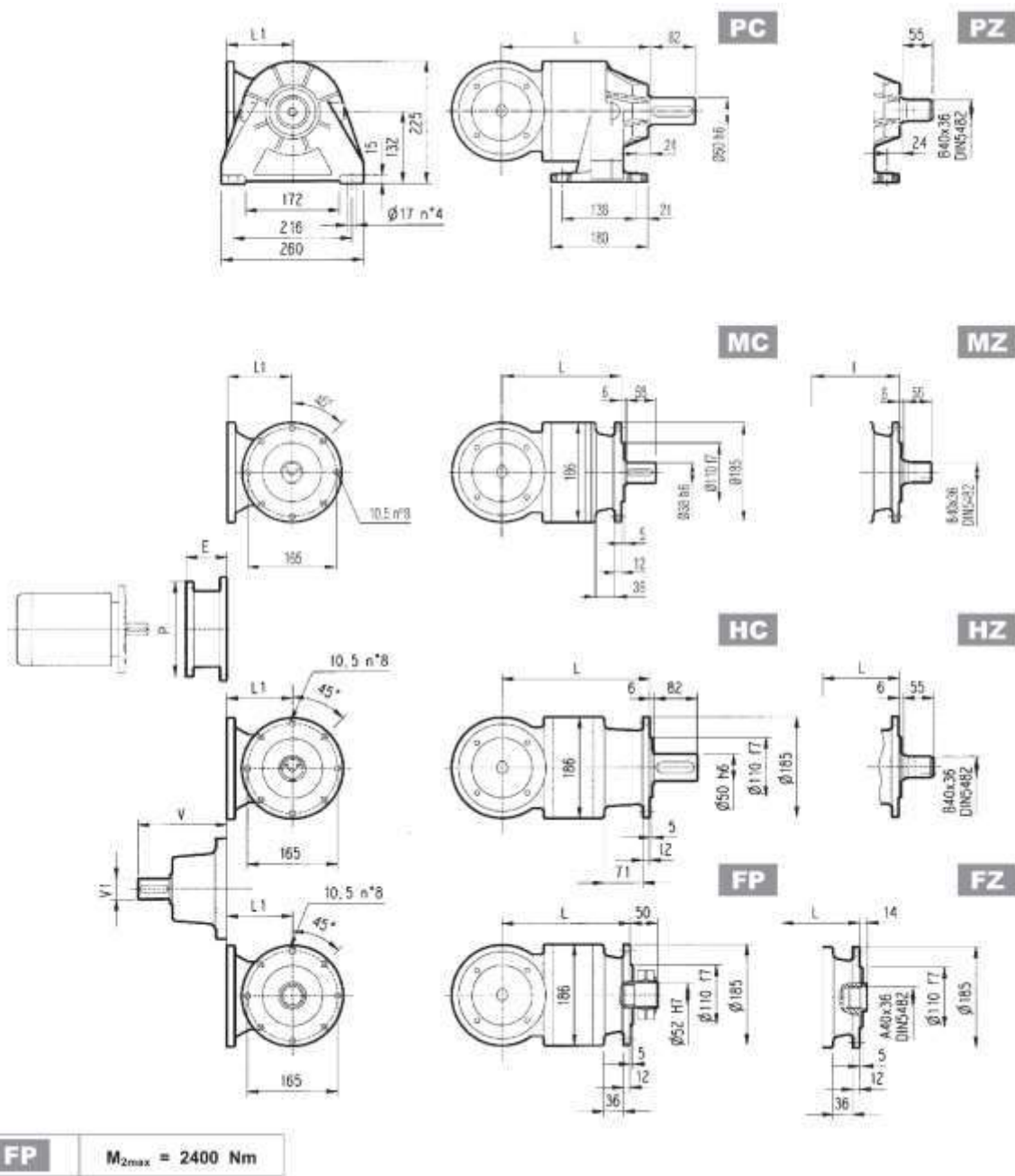


	L				Wight (kg)				V	V ₁	W(kg)	V	V ₁	W(kg)
	MC - MZ	PC - PZ	HC - HZ	FP - FZ	MC - MZ	PC - PZ	HC - HZ	FP - FZ						
301 L1	92	132	126	92	21	26	23	19	137.5	24	6	158	38	7
301 L2	145	185	176	145	25	30	27	23	137.5	24	6	158	38	7
301 L3	198	238	232	198	29	34	31	27	137.5	24	6	158	38	7
301 L4	251	291	285	251	33	38	35	31	137.5	24	6	158	38	7

	P71		P80		P90		P100		P112		P132	
	E	P	E	P	E	P	E	P	E	P	E	P
301 L1	65	160	84	200	84	200	94	250	102	250	114	300
301 L2	65	160	84	200	84	200	94	250	102	250	114	300
301 L3	65	160	84	200	84	200	94	250	102	250	114	300
301 L4	65	160	84	200	84	200	94	250	102	250	114	300



301 R



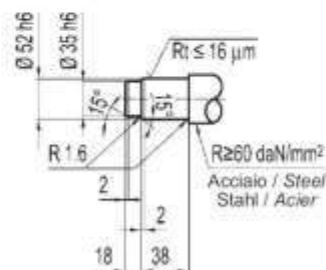
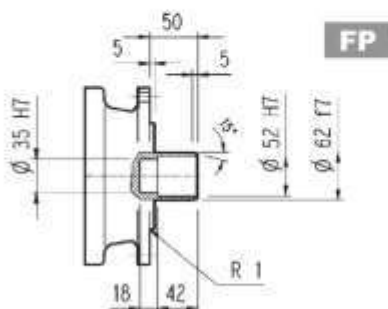
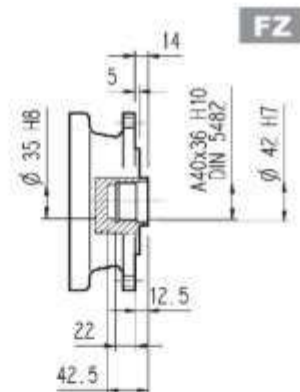
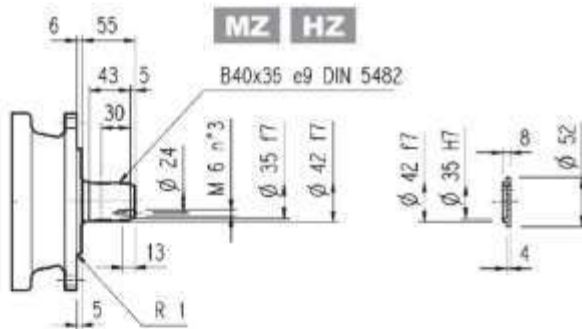
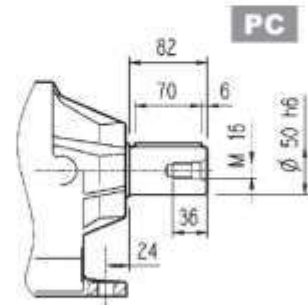
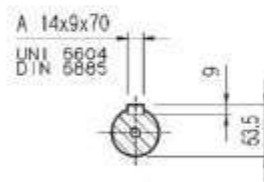
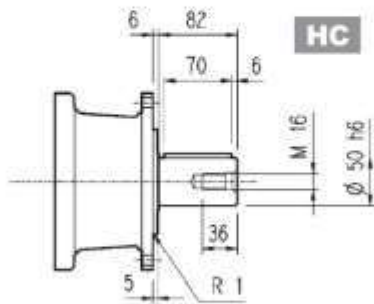
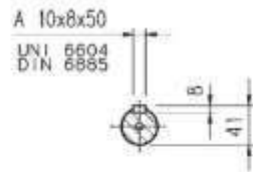
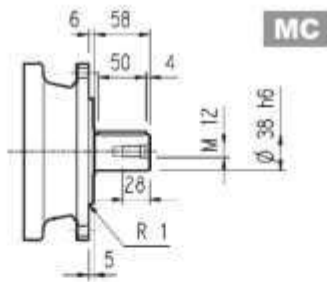
	L				R1	Wight (kg)				V	V1	(kg)	V	V1	(kg)
	MC - MZ	PC - PZ	HC - HZ	FP - FZ		MC - MZ	PC - PZ	HC - HZ	FP - FZ						
301 R2	184	225	219	184	122	35	42	37	33	137.5	24	6	158	38	7
301 R3	237	278	272	237	122	39	46	41	37	137.5	24	6	158	38	7
301 R4	290	331	325	290	122	43	50	45	41	137.5	24	6	158	38	7

	P71		P80		P90		P100		P112		P132	
	E	P	E	P	E	P	E	P	E	P	E	P
301 R2	65	160	84	200	84	200	94	250	94	250	114	300
301 R3	65	160	84	200	84	200	94	250	94	250	114	300
301 R4	65	160	84	200	84	200	94	250	94	250	114	300





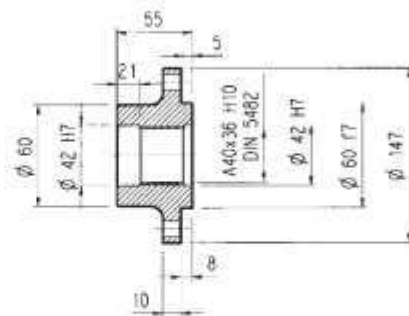
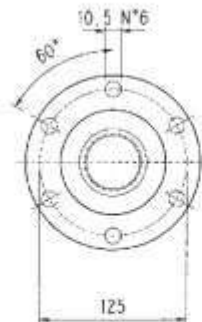
301L-301R



FP	$M_{2max} = 2400 \text{ Nm}$
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301 L-301 R

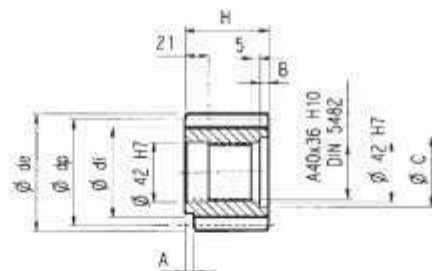
Flange



Material: Steel C40

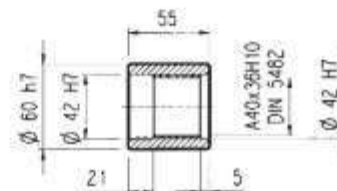
WOA

Pinions

 $\alpha = 20^\circ$

m	z	x	dp	di	de	H	A	B	C		Material
PBE	5	14	0.5	63	56	75.5	55	—	—	—	Steel 39NiCrMo3 hardened and tempered
PCE	5	14	0.5	70	63	84.8	65	—	10	53	
PDC	6	12	0.3	72	61	84.8	59	14	4	54	
PDE	6	14	0.5	84	73	99.6	65	—	10	54	

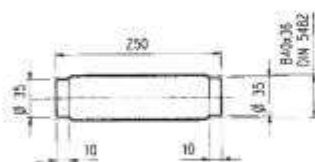
Sleeve coupling



Material: Steel 16CrNi4

MOA

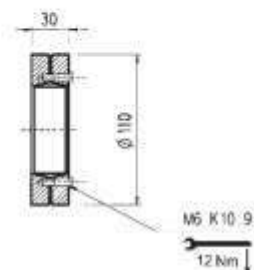
Splined bars



Material: Case hardening steel 18NiCrMo5
UNI 5331 must be case hardened 50-55 HRC

BOA

Shrink disc

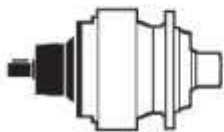
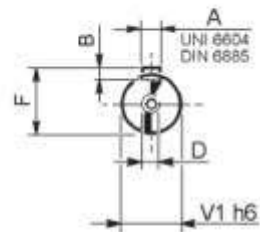
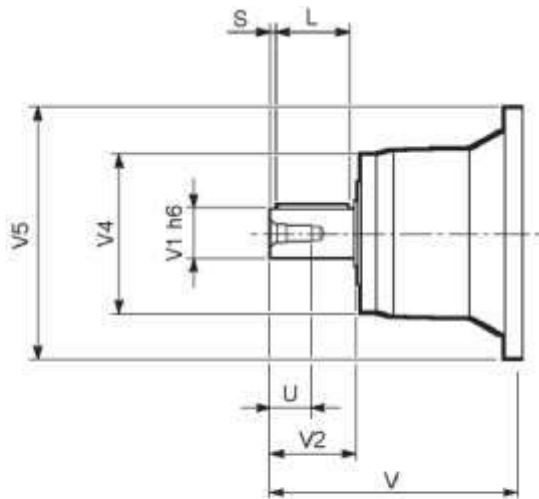


M5 K10 9
12 Nm

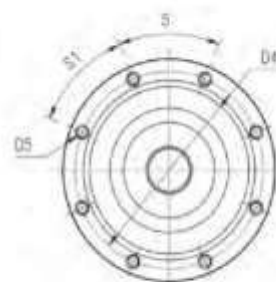
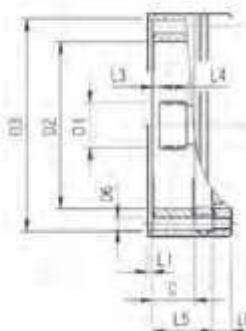
GOA



301L-301R



	input	V	V1	V2	V4	V5	A	B	F	L	S	D	U
301 L1	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28
301 L2	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28
301 L3	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28
301 L4	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28
301 R2-R3-R4	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28



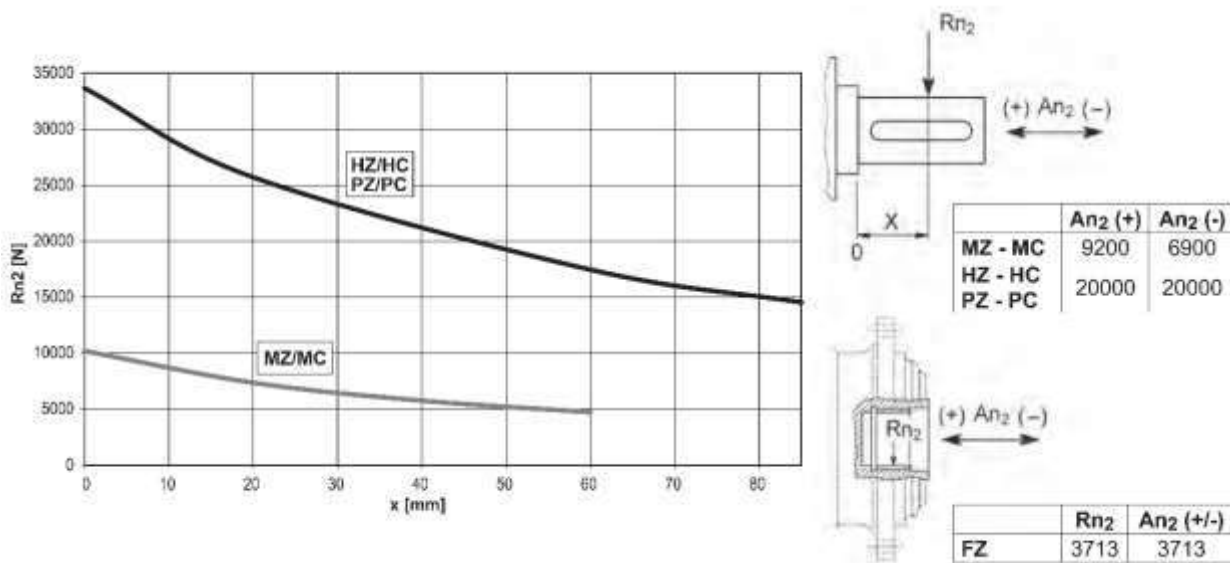
		C	D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	L5	L6	S	S1	Input
301L1	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	—	9	18	53	18	45°	45°	A
301L2	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	—	9	18	106	18	45°	45°	A
301L3	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	—	9	18	159	18	45°	45°	A
301L4	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	—	9	18	212	18	45°	45°	A
301R2-R3-R4	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	—	9	18	37	18	45°	45°	A





Permissible radial and axial loads on output shaft with $F_{h2}: n_2. h = 100,000$

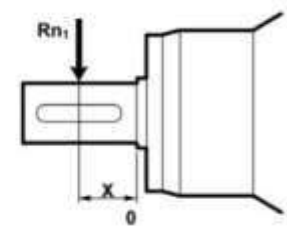
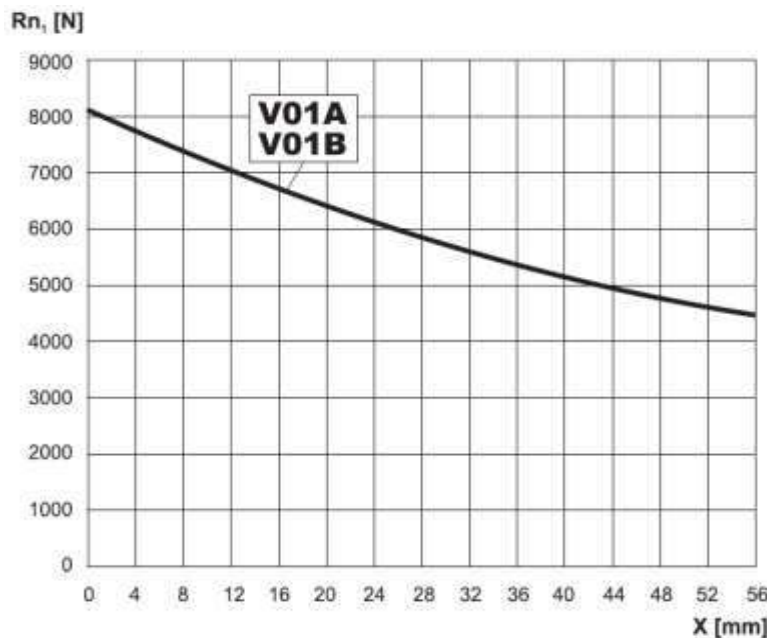
بارهای شعاعی و محوری مجاز بر روی شافت خروجی با $F_{h2}: n_2. h = 100,000$



Load correction factor fh_2 on shafts فاکتور اصلاح بار fh_2 بر روی شافت	$F_{h2} = n_2. h$		10000	25000	50000	100000	500000	1000000
	fh_2	FZ	2.15	1.59	1.26	1.00	0.58	0.46
		MZ - MC	2.15	1.59	1.26	1.00	0.58	0.46
		HZ - HC - PC - PZ	1.27	1.27	1.26	1.00	0.62	0.50

Permissible radial loads on input shaft with $F_{h1}: n_1. h = 250000$

بارهای شعاعی مجاز بر روی شافت ورودی با $F_{h1}: n_1. h = 250000$

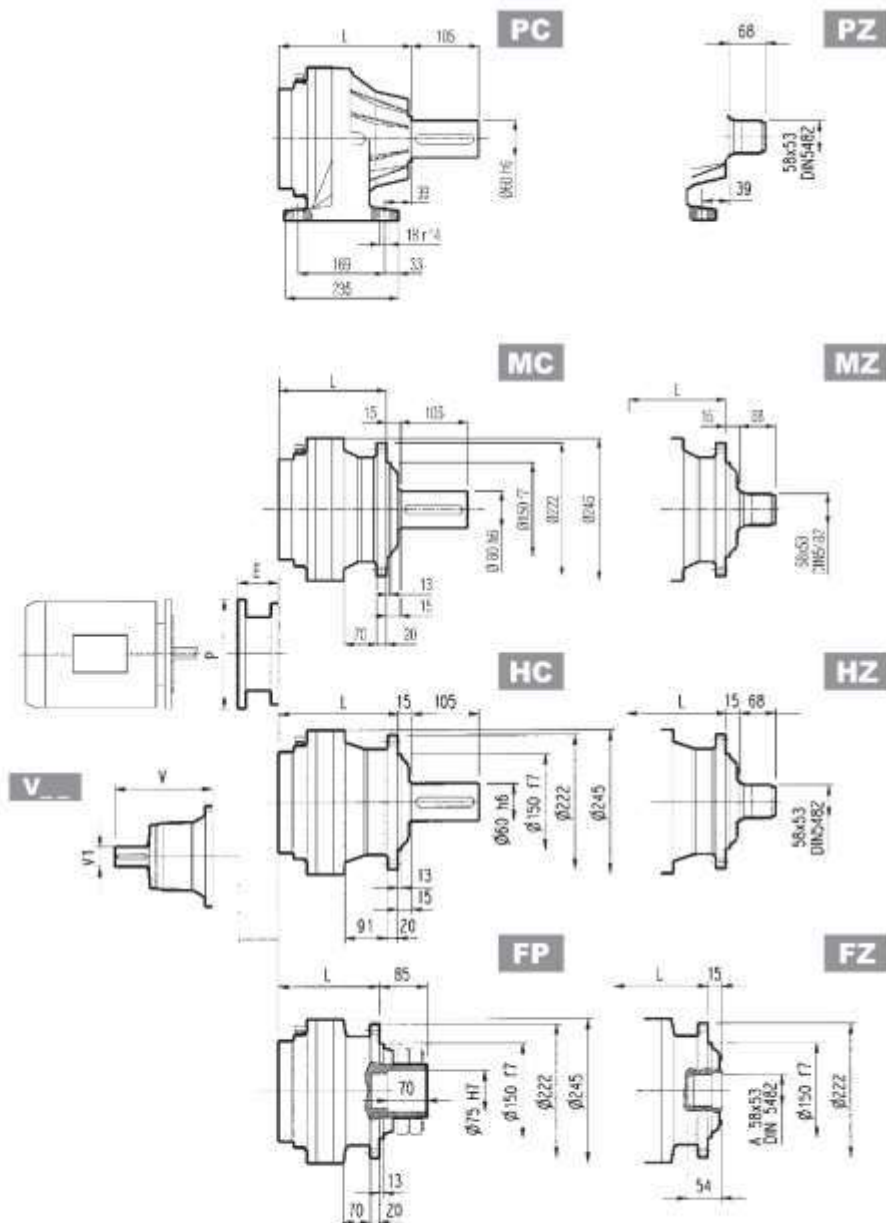
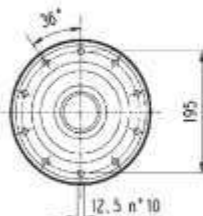
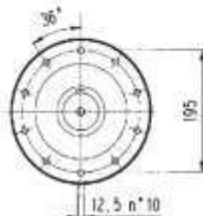
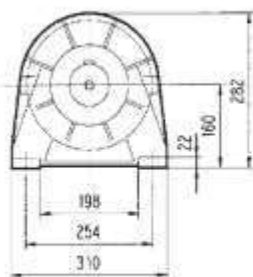


Load correction factor fh_1 on shafts فاکتور اصلاح بار fh_1 بر روی شافت	$F_{h1} = n_1. h$	250000	500000	1000000	2000000	5000000	10000000
	fh_1	1	0.79	0.63	0.5	0.37	0.29





303 L

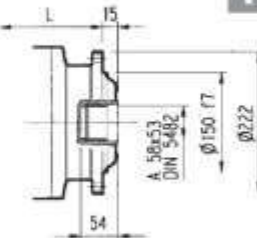
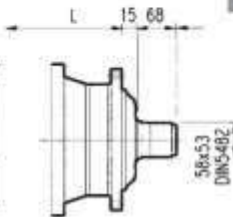
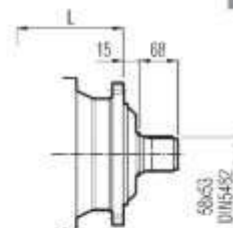


FP	$M_{2max} = 5200 \text{ Nm}$
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	L				Wight (kg)				V	V ₁	W(kg)	V	V ₁	W(kg)
	MC - MZ	PC - PZ	HC - HZ	FP - FZ	MC - MZ	PC - PZ	HC - HZ	FP - FZ						
303 L1	125	165	150	125	31	40	35	31	239	48	15	-	-	-
303 L2	178	218	203	178	35	44	39	35	137.5	24	6	158	38	7
303 L3	231	271	254	231	39	48	43	39	137.5	24	6	158	38	7
303 L4	284	324	309	284	43	52	47	43	137.5	24	6	158	38	7

	P71		P80		P90		P100		P112		P132		P160		P180		P200	
	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P
303 L1	-	-	-	-	-	-	-	-	-	-	114	300	114	350	144	350	174	400
303 L2	65	160	84	200	84	200	94	250	94	250	114	300	114	350	-	-	-	-
303 L3	65	160	84	200	84	200	94	250	94	250	114	300	114	350	-	-	-	-
303 L4	65	160	84	200	84	200	94	250	94	250	114	300	114	350	-	-	-	-

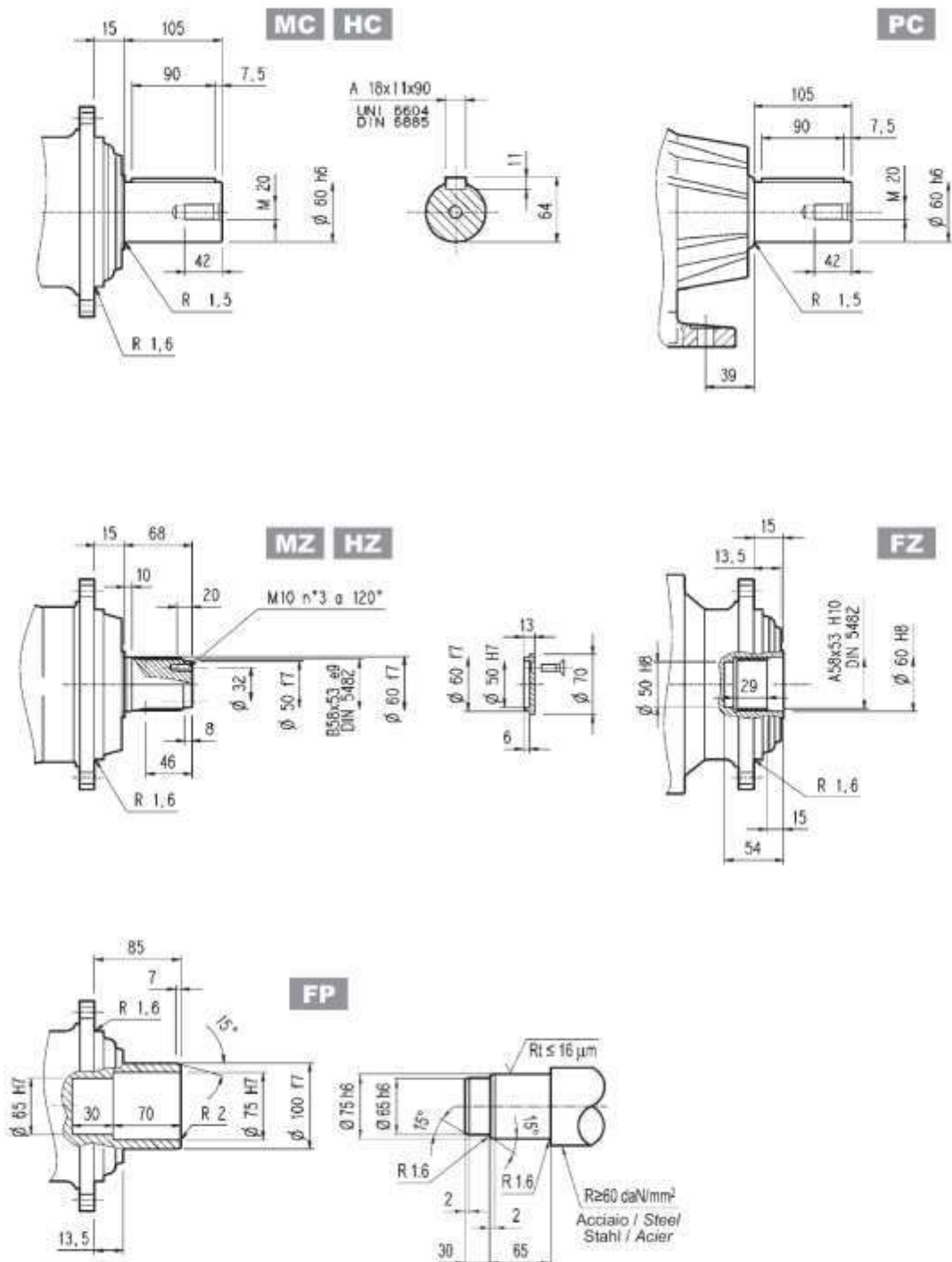



$$M_{2\max} = 5200 \text{ Nm}$$

	P71		P80		P90		P100		P112		P132	
	E	P	E	P	E	P	E	P	E	P	E	P
303 R2	65	160	84	200	84	200	94	250	94	250	114	300
303 R3	65	160	84	200	84	200	94	250	94	250	114	300
303 R4	65	160	84	200	84	200	94	250	94	250	114	300



303 L-303 R

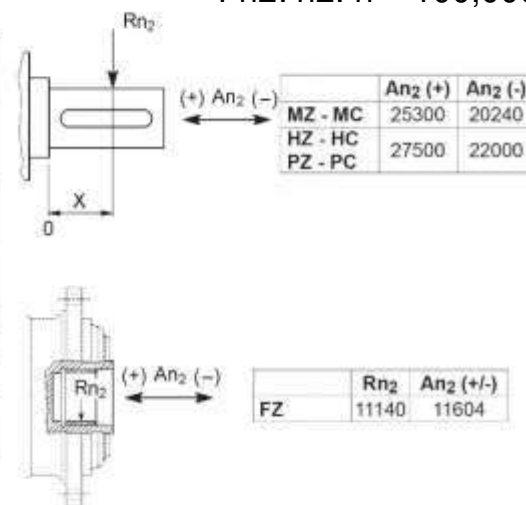
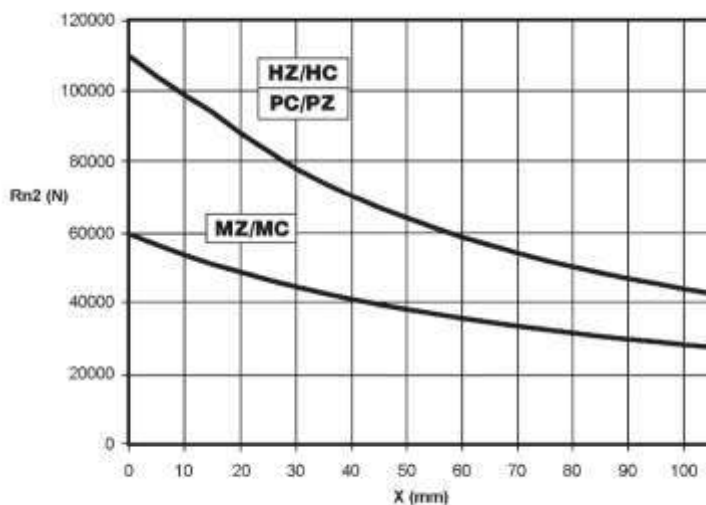


FP	$M_{2max} = 5200 \text{ Nm}$
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Permissible radial and axial loads on output shaft with $F_{h2}: n_2. h = 100,000$

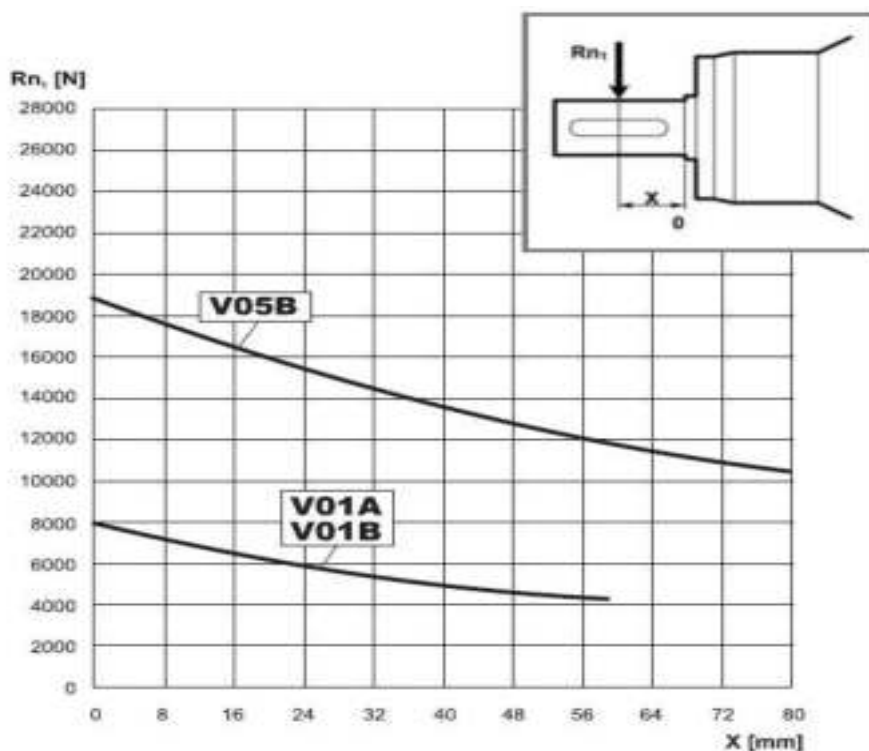
بارهای شعاعی و محوری مجاز بر روی شافت خروجی با $F_{h2}: n_2. h = 100,000$



FLoad correction factor fh2 on shafts بر روی شافتfh2فاکتور اصلاح بار	Fh2 = n2. h		10000	25000	50000	100000	500000	1000000
	fh2	FZ	2.15	1.59	1.26	1.00	0.58	0.46
		MZ - MC - FZ	2.15	1.59	1.26	1.00	0.58	0.46
		HZ - HC - PC - PZ	1.48	1.48	1.23	1.00	0.62	0.50

Permissible radial loads on input shaft with $F_{h1}: n_1. h = 250000$

بارهای شعاعی مجاز بر روی شافت ورودی با $F_{h1}: n_1. h = 250000$

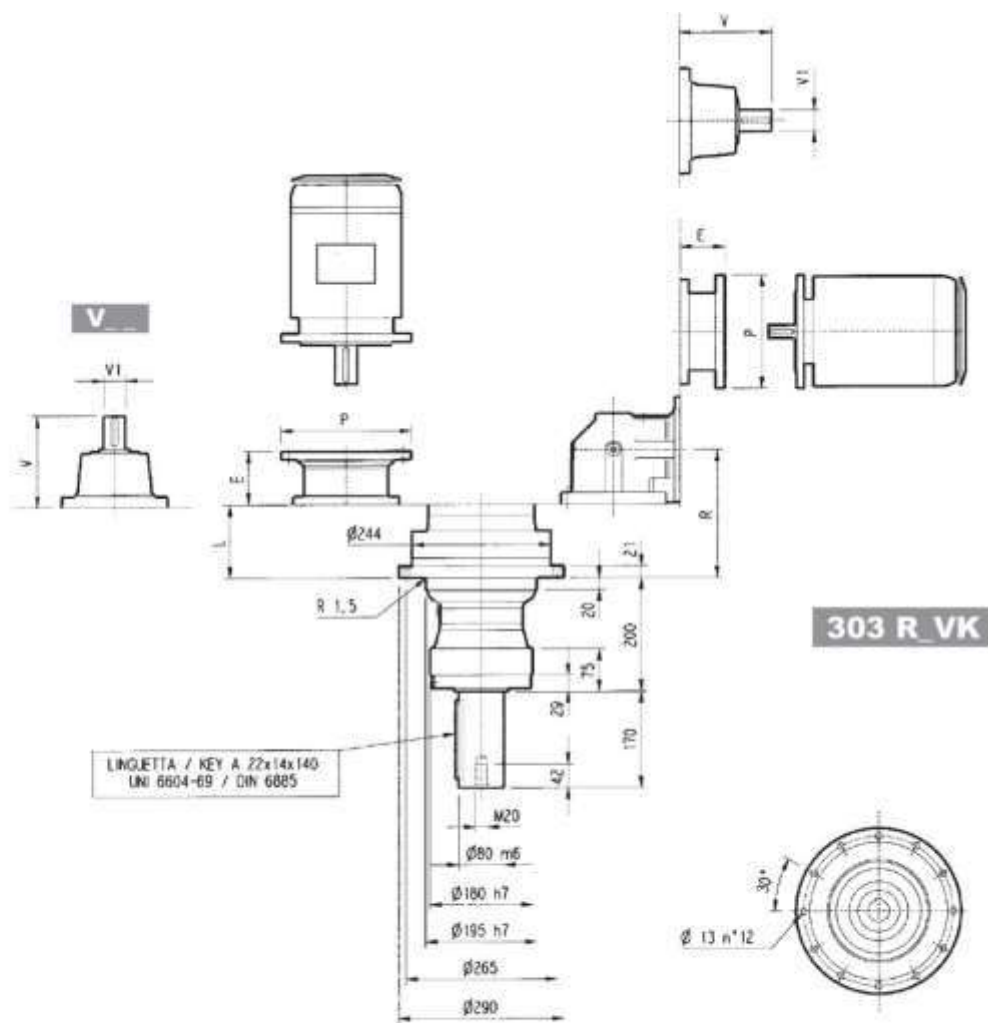


Load correction factor fh_1 on shafts فاکتور اصلاح بار fh_1 بر روی شافت	$F_{h1} = n_1. h$	250000	500000	1000000	2000000	5000000	10000000
	fh_1	1	0.79	0.63	0.5	0.37	0.29





303 VK



	L	Kg	V	V1	Kg	V	V1	Kg	P71		P80		P90		P100		P112		P132		P160	
									E	P	E	P	E	P	E	P	E	P	E	P	E	P
303L1	51	65	239	48	15	-	-	-	-	-	-	-	-	-	-	-	-	-	114	300	144	350
303L2	104	70	137.5	24	6	158	38	7	65	160	84	200	84	200	94	250	94	250	114	300	144	350
303L3	157	73	137.5	24	6	158	38	7	65	160	84	200	84	200	94	250	94	250	114	300	144	350
303L4	210	77	137.5	24	6	158	38	7	65	160	84	200	84	200	94	250	94	250	114	300	144	350

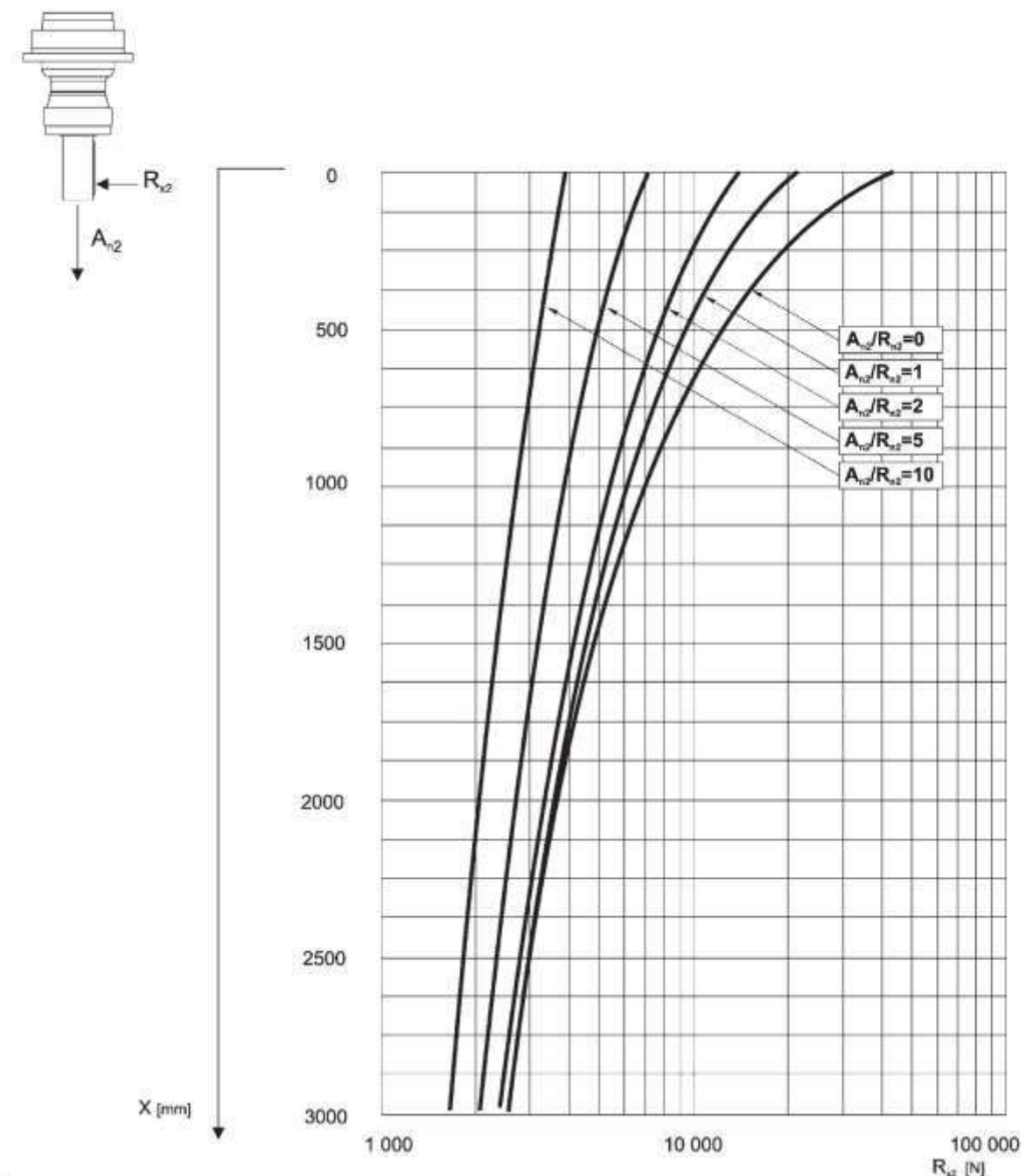
	R	R1	Kg	V	V1	Kg	V	V1	Kg	P71		P80		P90		P100		P112		P132	
										E	P	E	P	E	P	E	P	E	P	E	P
303R1	143	140	85	137.5	24	6	158	38	7	65	160	84	200	84	200	94	250	94	250	114	300
303R2	196	122	83	137.5	24	6	158	38	7	65	160	84	200	84	200	94	250	94	250	114	300
303R3	249	122	87	137.5	24	6	158	38	7	65	160	84	200	84	200	94	250	94	250	114	300



The diagram below allows the calculation of permitted overhung load R_{x2} on the output shaft of gearbox, with radial force applying at a distance x from shaft shoulder. The curves are relevant to value resulting from the relationship of trust load A_{n2} to radial load R_{n2} , based on $n_2 = 10 \text{ min}^{-1}$ and 10000 hrs. theoretical lifetime.

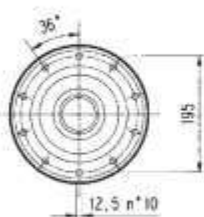
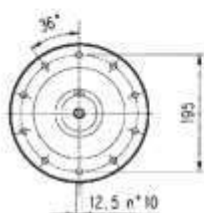
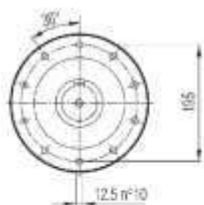
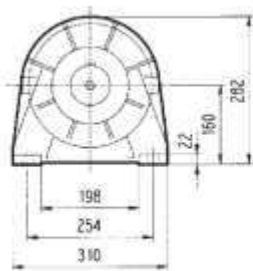
نمودار زیر امکان محاسبه بار اضافی مجاز R_{x2} را بر روی شافت خروجی گیربکس، با نیروی شعاعی اعمال شده در فاصله x از شافت.

منحنی ها به مقدار مربوط به رابطه بار مجاز A_{n2} به بار شعاعی R_{n2} مربوط می شوند
 $n_2 = 10$ دقیقه در ۱ و ۱۰۰۰۰ ساعت طول عمر نظری.

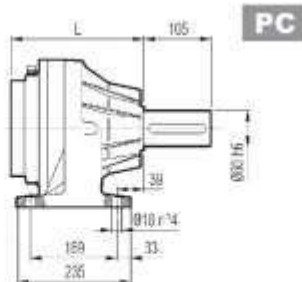
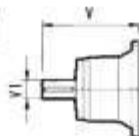




305 L



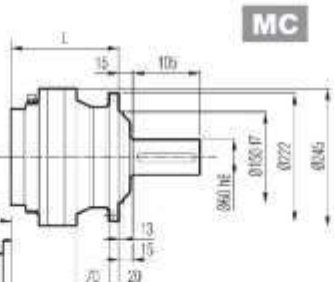
V



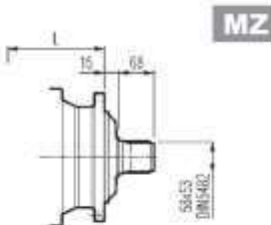
PC



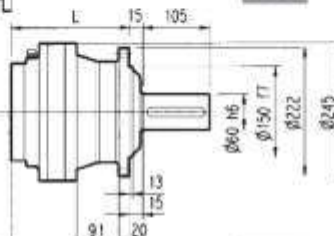
PZ



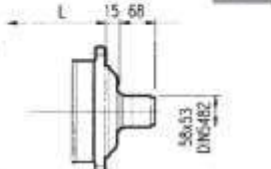
MC



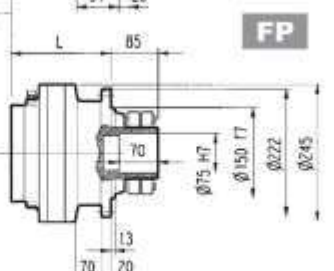
MZ



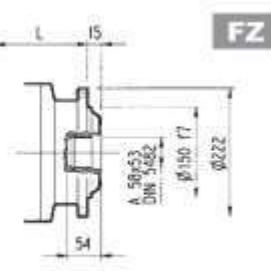
HC



HZ



FP



FZ

FP

$M_{2max} = 7500 \text{ Nm}$

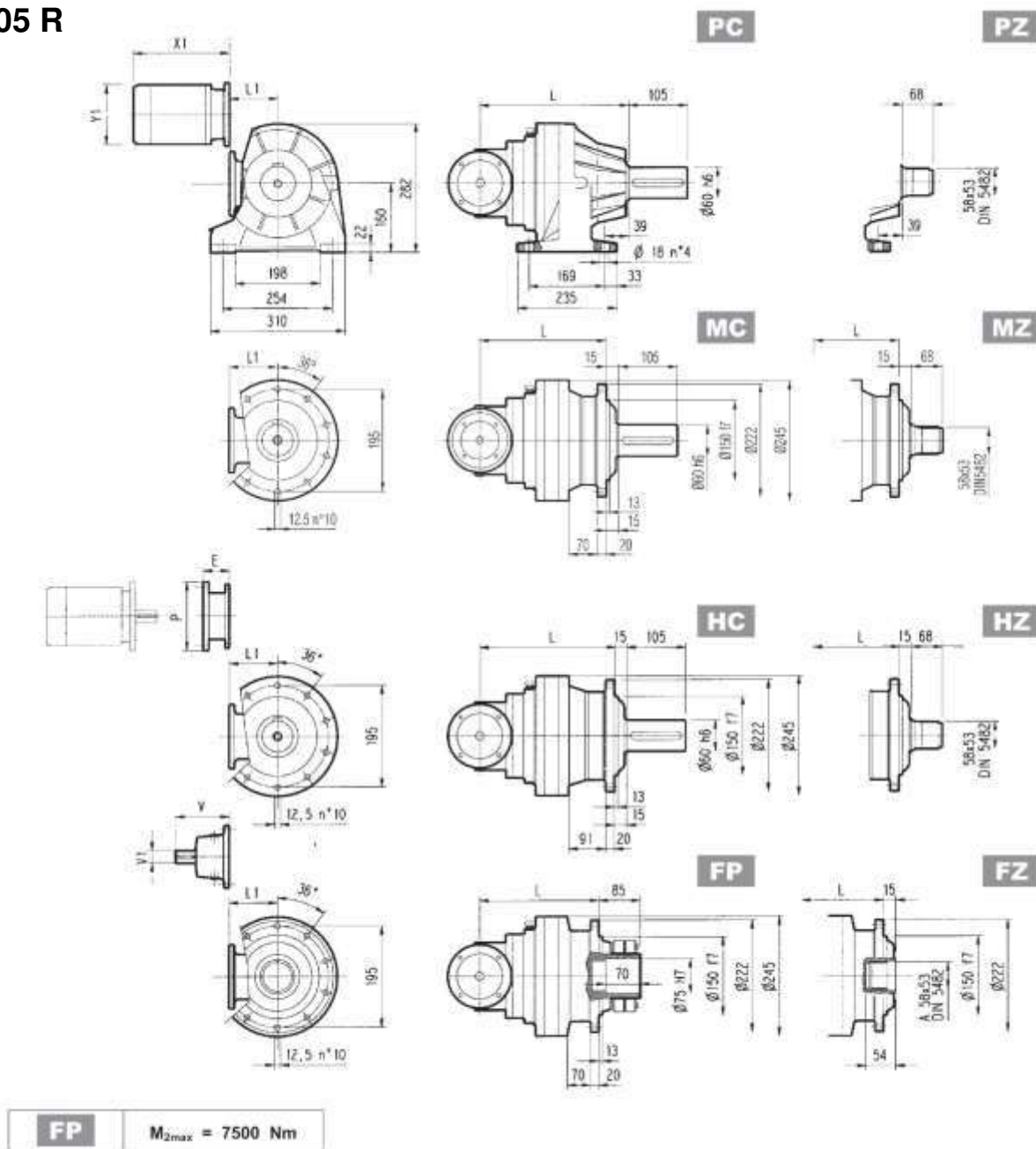
	L				Wight (kg)									
	MC - MZ	PC - PZ	HC - HZ	FP - FZ	MC - MZ	PC - PZ	HC - HZ	FP - FZ	V	V ₁	W(kg)	V	V ₁	W(kg)
305 L1	143	183	168	143	36	45	40	36	239	48	15	239	48	15
305 L2	208	248	233	208	43	52	47	43	137.5	24	6	137.5	24	6
305 L3	261	301	286	261	47	56	51	47	137.5	24	6	137.5	24	6
305 L4	314	354	339	314	51	60	55	51	137.5	24	6	137.5	24	6

	P71		P80		P90		P100		P112		P132		P160		P180		P200	
	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P
305 L1	-	-	-	-	-	-	-	-	-	-	114	300	114	350	144	350	174	400
305 L2	65	160	84	200	84	200	94	250	94	250	114	300	114	350	-	-	-	-
305 L3	65	160	84	200	84	200	94	250	94	250	114	300	114	350	-	-	-	-
305 L4	65	160	84	200	84	200	94	250	94	250	114	300	114	350	-	-	-	-





305 R



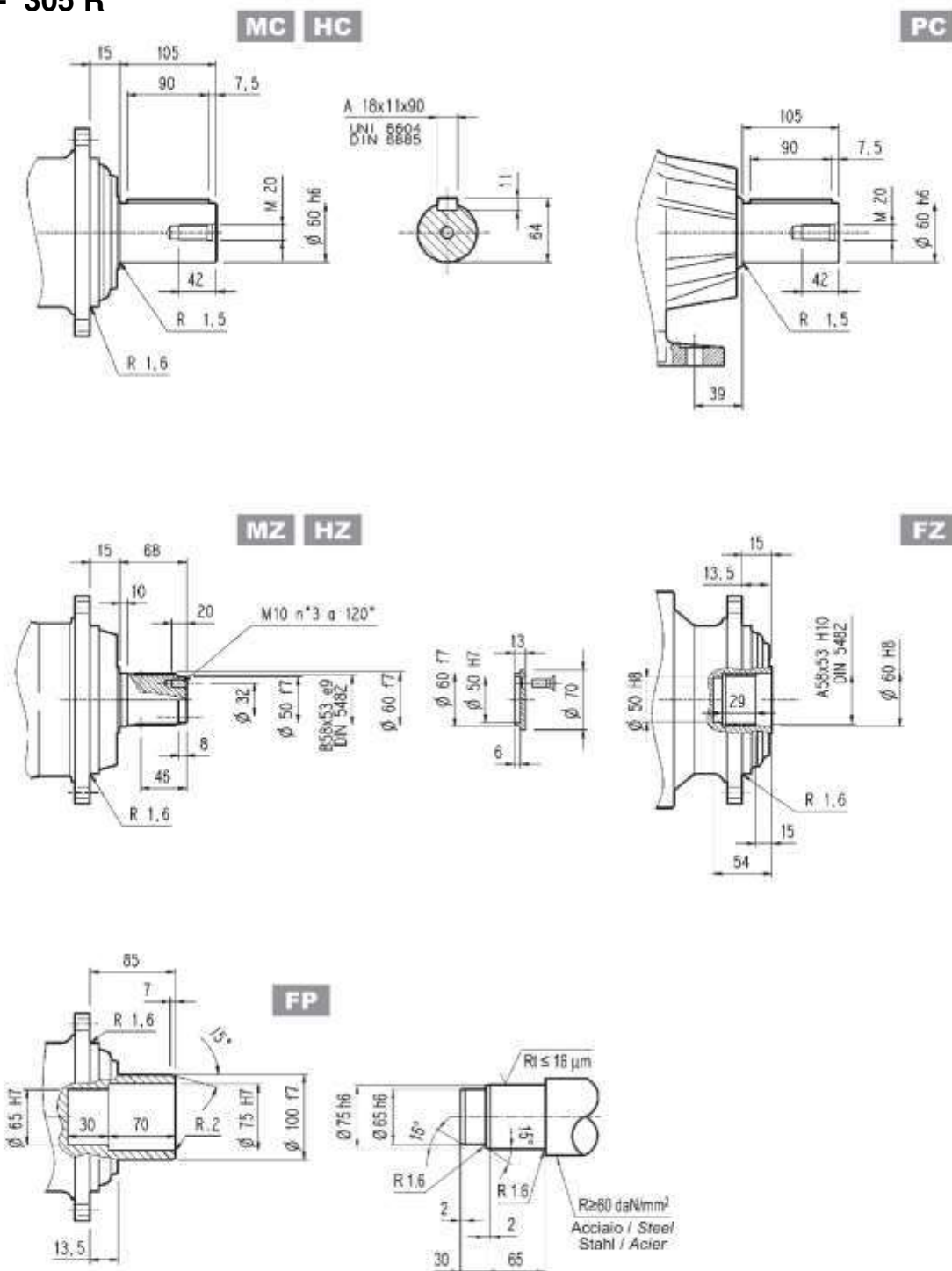
	L				L1	Wight (kg)				V	V1	(kg)	V	V1	(kg)
	MC - MZ	PC - PZ	HC - HZ	FP - FZ		MC - MZ	PC - PZ	HC - HZ	FP - FZ						
305 R2	235	375	260	235	140	56	65	60	56	137.5	24	6	158	38	7
305 R3	300	340	325	300	122	57	66	61	57	137.5	24	6	158	38	7
305 R4	353	393	378	353	122	61	70	65	61	137.5	24	6	158	38	7

	P71		P80		P90		P100		P112		P132	
	E	P	E	P	E	P	E	P	E	P	E	P
305 R2	65	160	84	200	84	200	94	250	94	250	114	300
305 R3	65	160	84	200	84	200	94	250	94	250	114	300
305 R4	65	160	84	200	84	200	94	250	94	250	114	300





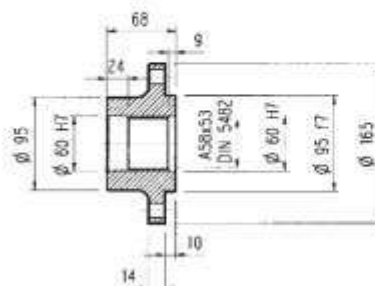
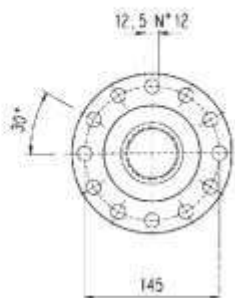
305 L - 305 R



FP	$M_{2max} = 7500 \text{ Nm}$
-----------	------------------------------

305 L - 305 R

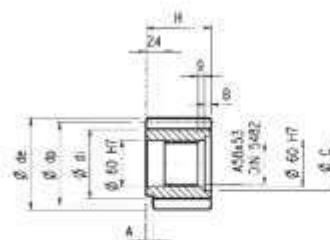
Flange



Material: Steel C40

WOA

Pinions

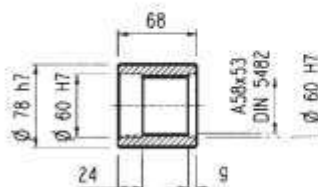


P...

 $\alpha = 20^\circ$

	m	z	x	dp	di	de	H	A	B	C	Material
PCL1	5	19	—	95	82	104	77	12	9	72	Steel 39NiCrMo3 hardened and tempered
PCL2	5	19	—	95	82	104	68	—	—	—	
PCM	5	20	—	100	87.5	110	68	18	—	—	
PCP	5	22	—	110	97.5	120	68	18	—	—	Steel 18NiCrMo5 case hardened
PDE	6	14	0.5	84	75	99.6	68	—	—	—	
PDI	6	18	0.5	108	99	123.6	68	—	—	—	
PDM	6	20	0.83	120	115	140	68	—	—	—	Steel 39NiCrMo3 hardened and tempered
PFD	8	13	0.68	104	95	127.6	68	—	—	—	
PFE1	8	14	—	112	92	126	68	—	—	—	
PFE2	8	14	—	112	92	126	80	—	12	72	Steel 18NiCrMo5 case hardened
PFF	8	15	—	120	100	136	68	—	—	—	
PFP	8	22	—	176	156	190	77	12	10	71	
PHG	10	16	0.5	160	145	188	75	—	7	72	Steel 39NiCrMo3 hardened and tempered

Sleeve coupling



Material: Steel 16CrNi4

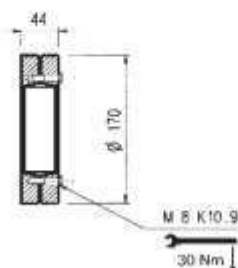
MOA

Splined bars



BOA

Shrink disc

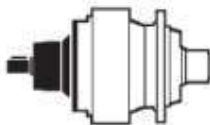
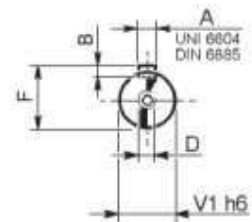
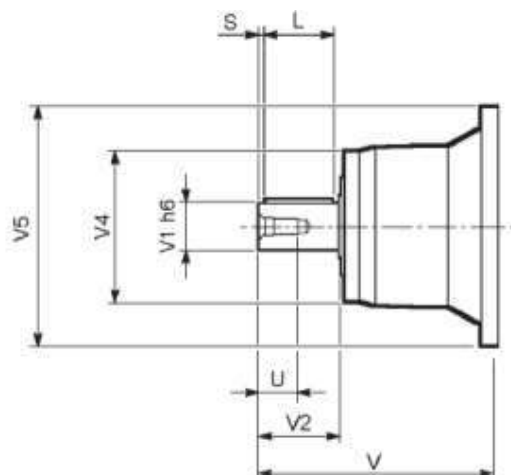


Material: Case hardening steel 18NiCrMo5
UNI 5331 must be case hardened 50-55 HRC

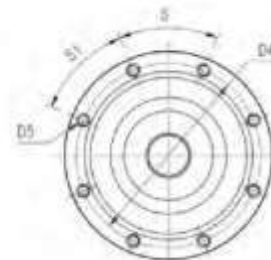
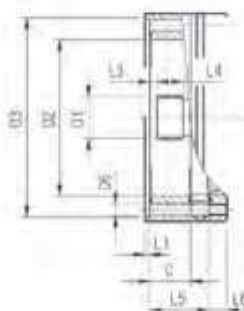
GOA



305 L - 305 R



	input	V	V1	V2	V4	V5	A	B	F	L	S	D	U
305 L1	V05B	239	48	82	155	245	14	9	51.5	70	6	M16	36
305 L2	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28
305 L3	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28
305 L4	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28
305 R2-R3-R4	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28

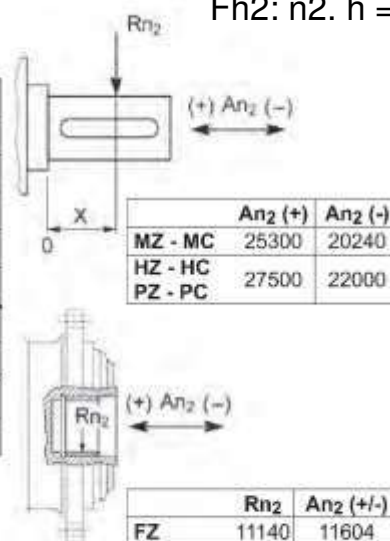
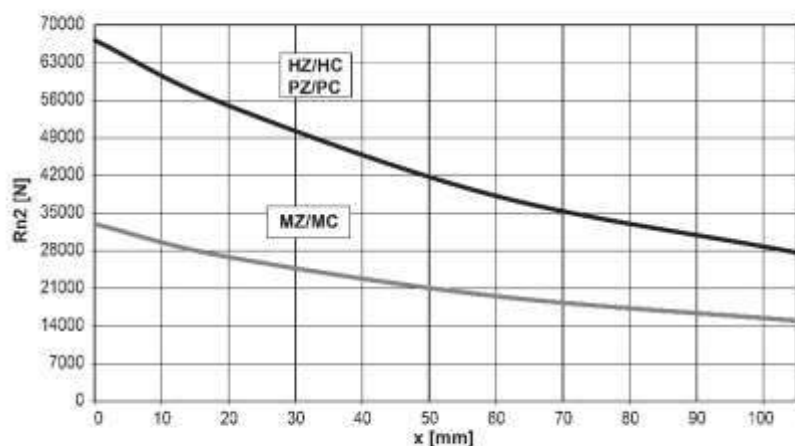


		C	D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	L5	L6	S	S1	Input
305L1	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	—	9	18	—	18	45°	45°	A
305L2	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	—	9	18	65	18	45°	45°	A
305L3	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	—	9	18	118	18	45°	45°	A
305L4	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	—	9	18	171	18	45°	45°	A
305R2-R3-R4	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	—	9	18	37	18	45°	45°	A



Permissible radial and axial loads on output shaft with $F_{h2}: n_2, h = 100,000$

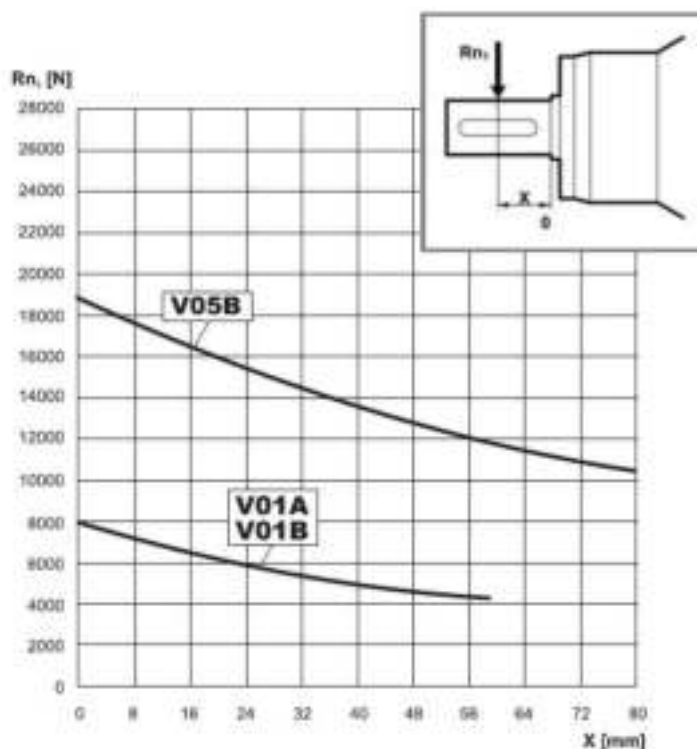
بارهای شعاعی و محوری مجاز بر روی شافت خروجی با $F_{h2}: n_2, h = 100,000$



Load correction factor fh_2 on shafts فاکتور اصلاح بار fh_2 بر روی شافت	$Fh_2 = n_2 \cdot h$		10000	25000	50000	100000	500000	1000000
	fh_2	FZ	2.15	1.59	1.26	1.00	0.58	0.46
		MZ - MC - FZ	2.15	1.59	1.26	1.00	0.58	0.46
		HZ - HC - PC - PZ	1.18	1.48	1.23	1.00	0.62	0.50

Permissible radial loads on input shaft with $F_{h1}: n_1, h = 250000$

بارهای شعاعی مجاز بر روی شافت ورودی با $F_{h1}: n_1, h = 250000$

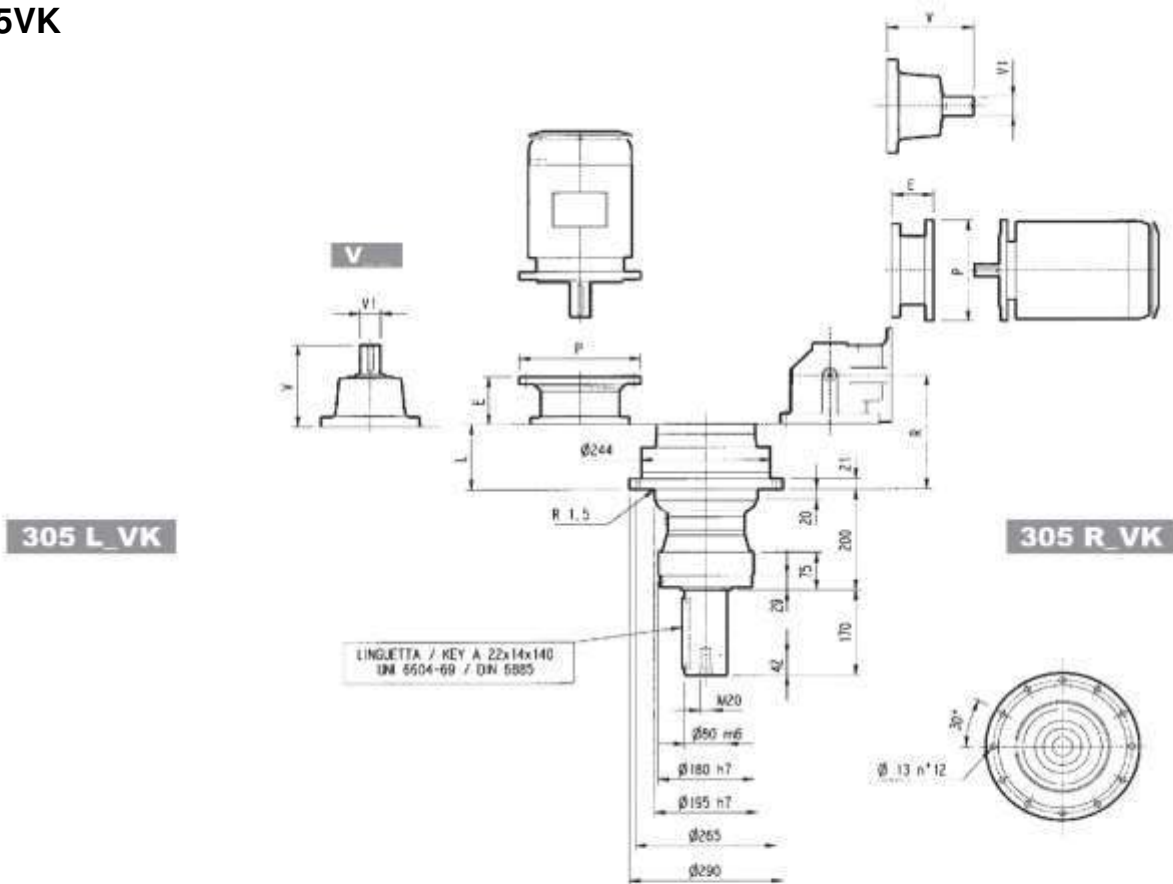


Load correction factor fh_1 on shafts فاکتور اصلاح بار fh_1 بر روی شافت	$F_{h1} = n_1, h$	250000	500000	1000000	2000000	5000000	10000000
	fh_1	1	0.79	0.63	0.5	0.37	0.29





305VK



	L	kg	V	V1	kg	V	V1	kg	P71		P80		P90		P100		P112		P132		P160		P180		P200	
									E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P
305L1	69	70	239	48	15	—	—	—	—	—	—	—	—	—	—	—	—	—	114	300	144	350	144	350	174	400
305L2	134	77	138	24	6	158	38	7	65	160	84	200	84	200	94	250	94	250	114	300	144	350	—	—	—	—
305L3	187	81	138	24	6	158	38	7	65	160	84	200	84	200	94	250	94	250	114	300	144	350	—	—	—	—
305L4	240	85	138	24	6	158	38	7	65	160	84	200	84	200	94	250	94	250	114	300	144	350	—	—	—	—

	R	R1	kg	V	V1	kg	V	V1	kg	P71		P80		P90		P100		P112		P132	
										E	P	E	P	E	P	E	P	E	P	E	P
305R1	161	140	90	137.5	24	6	158	38	7	65	160	84	200	84	200	94	250	94	250	114	300
305R2	226	122	92	137.5	24	6	158	38	7	65	160	84	200	84	200	94	250	94	250	114	300
305R3	279	122	95	137.5	24	6	158	38	7	65	160	84	200	84	200	94	250	94	250	114	300

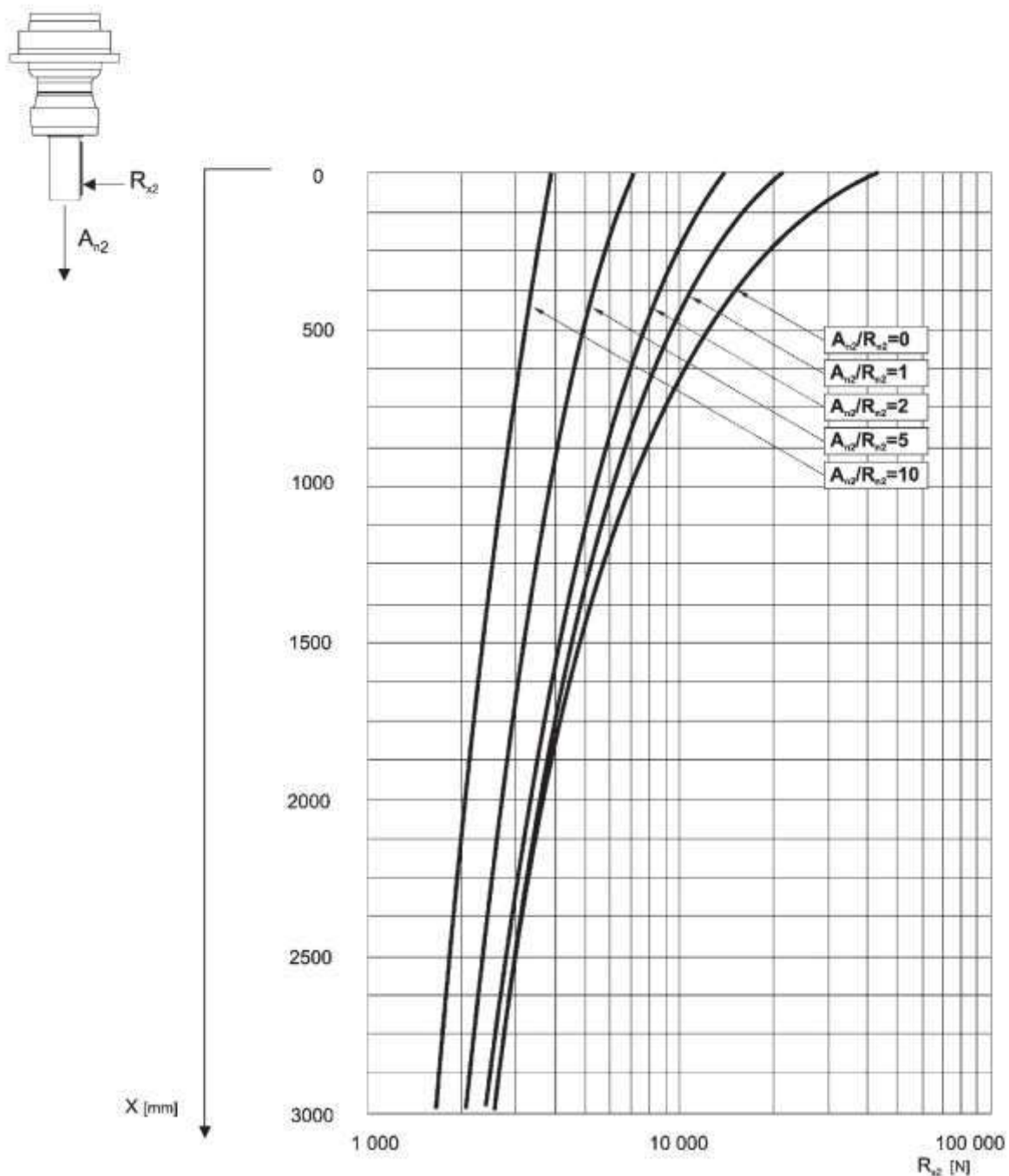


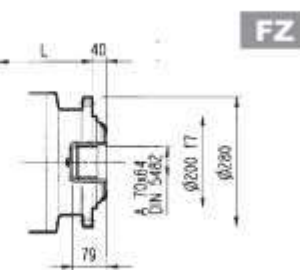
The diagram below allows the calculation of permitted overhung load R_{x2} on the output shaft of gearbox, with radial force applying at a distance x from shaft shoulder. The curves are relevant to value resulting from the relationship of trust load A_{n2} to radial load R_{n2} , based on $n_2 = 10 \text{ min}^{-1}$ and 10000 hrs. theoretical lifetime.

نمودار زیر امکان محاسبه بار اضافی مجاز R_{x2} را بر روی شافت خروجی گیربکس، با نیروی شعاعی اعمال شده در فاصله x از شافت.

منحنی ها به مقدار مربوط به رابطه بار مجاز A_{n2} به بار شعاعی R_{n2} مربوط می شوند

$n_2 = 10$ دقیقه در ۱ و ۱۰۰۰۰ ساعت طول عمر نظری.

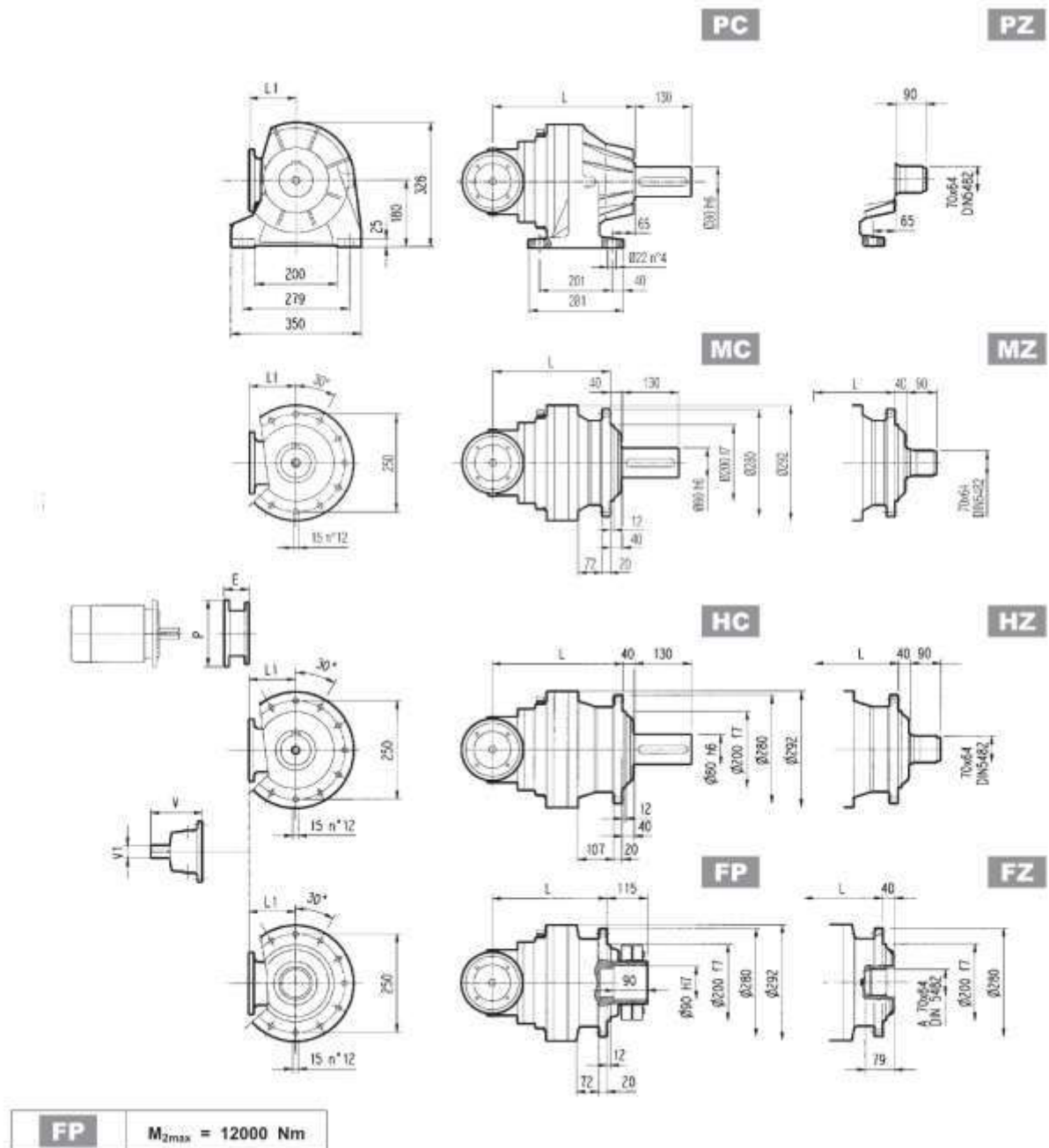




	P71		P80		P90		P100		P112		P132		P160		P180		P200		P225		P250	
	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P
306 L1	-	-	-	-	-	-	-	-	-	-	-	-	114	350	153	350	183	400	212	450	193	550
306 L2	-	-	-	-	-	-	-	-	-	-	114	300	114	350	114	350	174	400	-	-	-	-
306 L3	106	160	84	200	84	200	94	250	94	250	114	300	114	350	-	-	-	-	-	-	-	-
306 L4	106	160	84	200	84	200	94	250	94	250	114	300	114	350	-	-	-	-	-	-	-	-



306 R



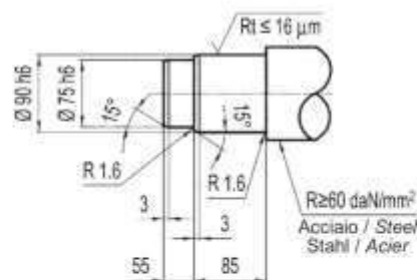
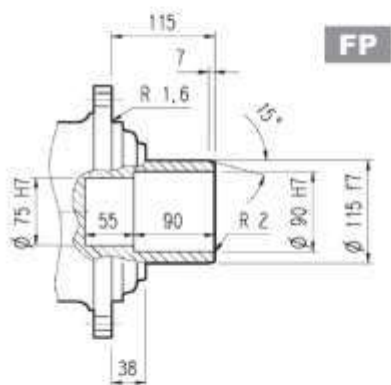
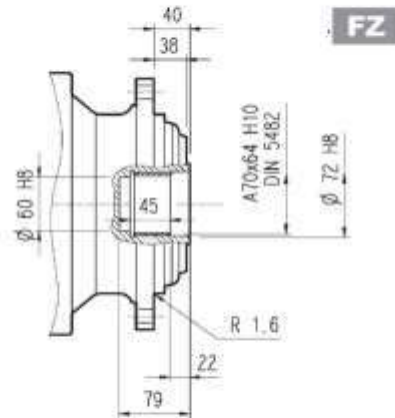
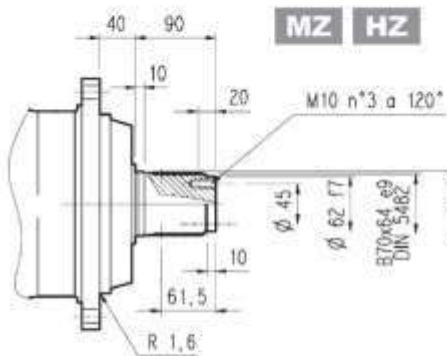
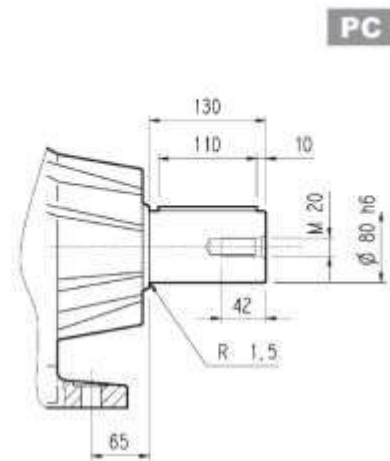
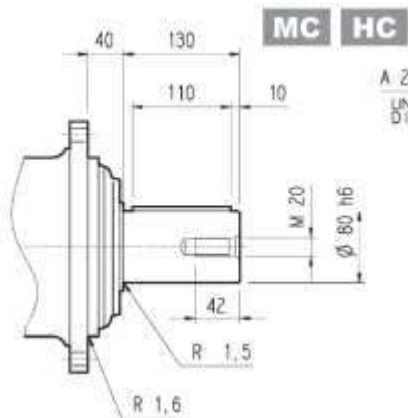
	L				L1	Wight (kg)				V	V1	(kg)			
	MC - MZ	PC - PZ	HC - HZ	FP - FZ		MC - MZ	PC - PZ	HC - HZ	FP - FZ			(kg)	V	V1	(kg)
306 R2	297	372	332	297	140	89	105	94	89	137.5	24	6	158	38	7
306 R3	317	392	352	317	140	85	100	90	85	137.5	24	6	158	38	7
306 R4	370	445	405	370	122	79	95	84	79	137.5	24	6	158	38	7

	P71		P80		P90		P100		P112		P132		P160	
	E	P	E	P	E	P	E	P	E	P	E	P	E	P
306 R2	65	160	84	200	84	200	94	250	94	250	114	300	114	350
306 R3	65	160	84	200	84	200	94	250	94	250	114	300	114	350
306 R4	65	160	84	200	84	200	94	250	94	250	114	300	114	350





306 L - 306 R



FP

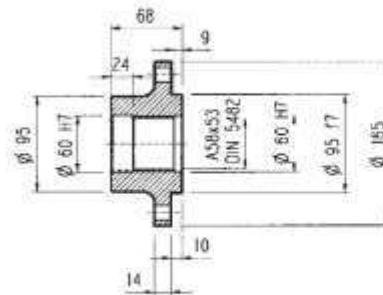
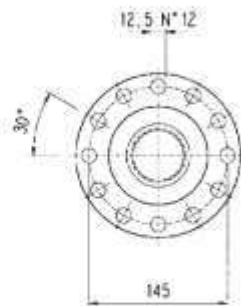
$M_{2max} = 12000 \text{ Nm}$



306L-306R

Flange

WOA



Material: Steel C40

Pinions

P...

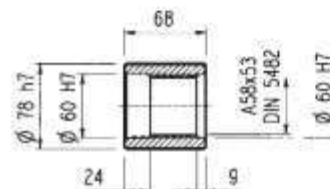


	m	z	x	dp	di	de	H	A	B	C	Material
PFF1	8	15	—	120	100	134	90	—	—	—	Steel 39NiCrMo3 hardened and tempered
PFF2	8	15	0.5	120	108	141	90	—	—	—	
PHB	10	11	0.5	110	95	136	90	10	—	—	
PHC1	10	12	0.45	120	104	145	90	—	—	—	
PHC2	10	12	0.32	120	100	144.2	90	—	—	—	
PHC3	10	12	0.35	120	101	144	90	—	—	—	Steel 39NiCrMo3 hardened and tempered
PHD1	10	13	0.95	130	124	165	90	—	—	—	
PHD2	10	13	0.5	130	115	159	90	—	—	—	
PHE1	10	14	—	140	115	160	90	—	—	—	
PHE2	10	14	0.5	140	125	166	90	—	—	—	
PHF	10	15	—	150	127	167	90	24	—	—	Steel 18NiCrMo5 case hardened
PHH	10	17	0.48	170	154	197.5	90	10	—	—	Steel 39NiCrMo3 hardened and tempered
PHM	10	20	—	200	175	220	90	10	—	—	Steel 18NiCrMo5 case hardened

$\alpha = 20^\circ$

Sleeve coupling

MOA



Material: Steel 16CrNi4

Splined bars

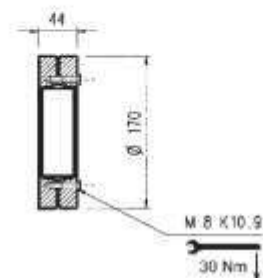
BOA

Shrink disc

GOA

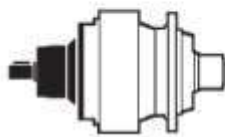
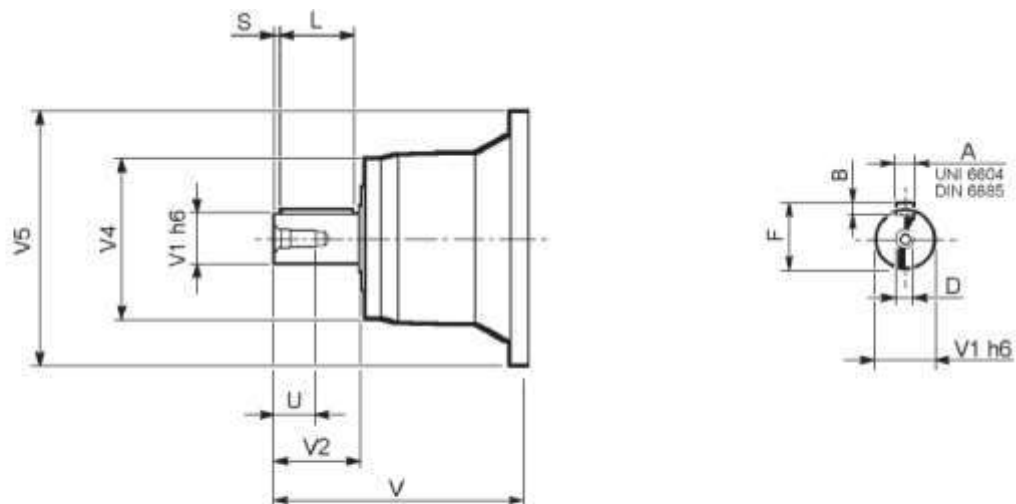


Material: Case hardening steel 18NiCrMo5
UNI 5331 must be case hardened 50-55 HRC

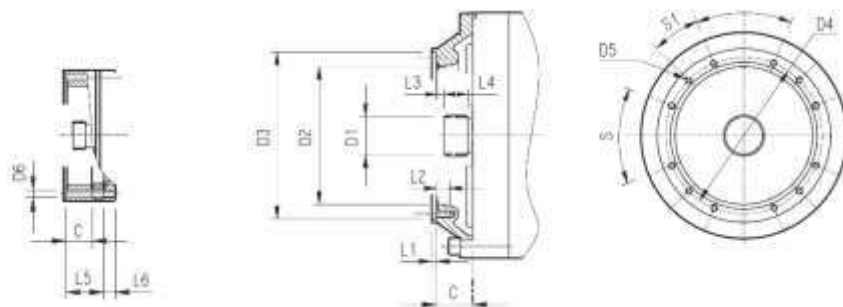




306L-306R



	input	V	V1	V2	V4	V5	A	B	F	L	S	D	U
306 L1	V06B	307	60	105	155	292	18	11	64	90	7.5	M16	36
306 L2	V05B	239	48	82	155	245	14	9	51.5	70	6	M16	36
306 L3	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28
306 L4	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28
306 R2-R3-R4	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28



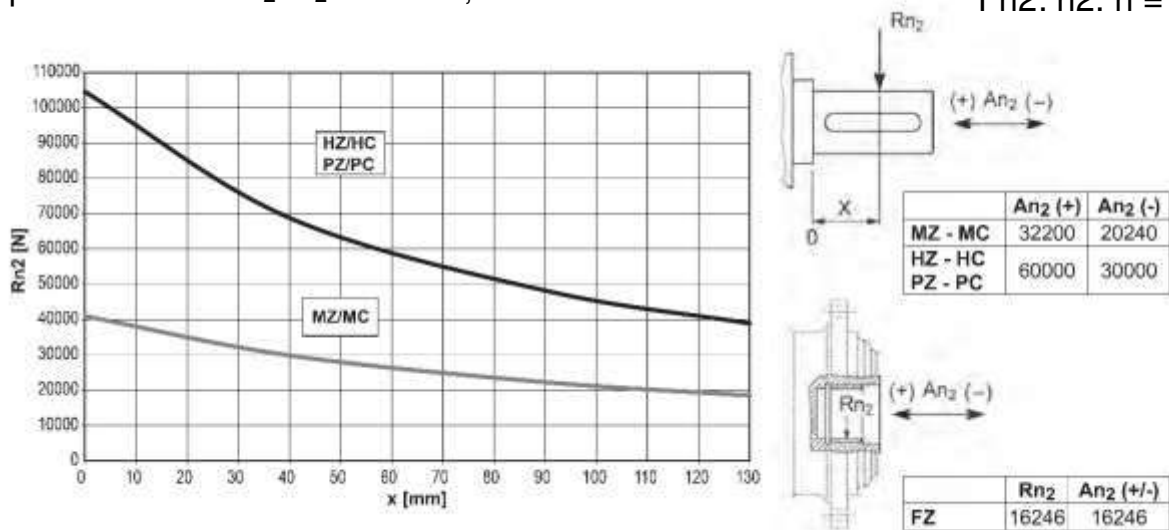
		C	D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	L5	L6	S	S1	Input
306L1	V9AB	45	58x53DIN5482	195	236H7	222	M10n°12	—	4	18	11	22	—	—	45°	22.5°	B
306L2	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	—	4	18	9	18	—	—	45°	45°	A
306L3	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	—	9	18	53	18	45°	45°	A
306L4	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	—	9	18	106	18	45°	45°	A
306R2-R3-R4	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	—	9	18	37	18	45°	45°	A





Permissible radial and axial loads on output shaft with $Fh_2: n_2. h = 100,000$

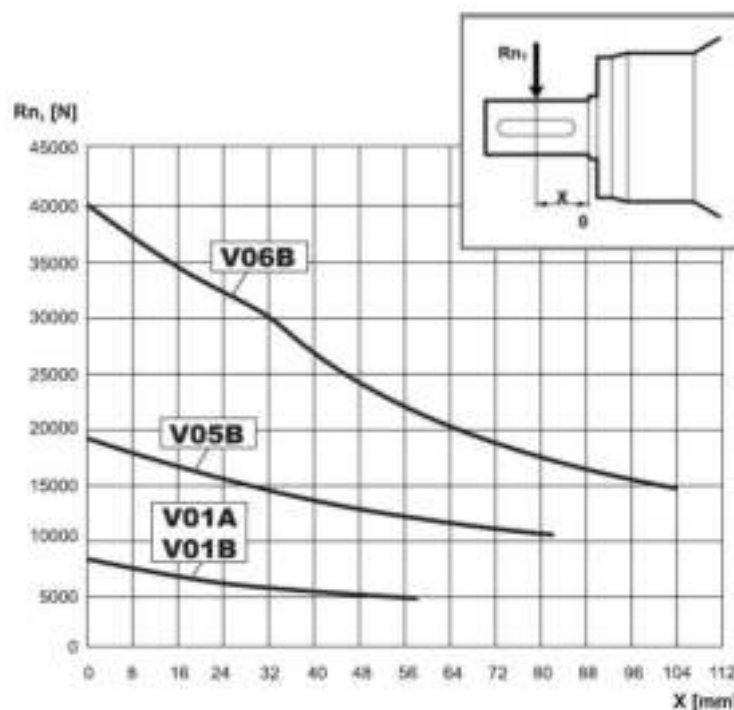
بارهای شعاعی و محوری مجاز بر روی شافت خروجی با $Fh_2: n_2. h = 100,000$



Load correction factor fh_2 on shafts فاکتور اصلاح بار fh_2 بر روی شافت	$Fh_2 = n_2 \cdot h$		10000	25000	50000	100000	500000	1000000
	fh_2	FZ	2.15	1.59	1.26	1.00	0.58	0.46
		MZ - MC - FZ	2.15	1.59	1.26	1.00	0.58	0.46
		HZ - HC - PC - PZ	1.34	1.34	1.23	1.00	0.62	0.50

Permissible radial loads on input shaft with $Fh_1: n_1. h = 250000$

بارهای شعاعی مجاز بر روی شافت ورودی با $Fh_1: n_1. h = 250000$



Load correction factor fh_1 on shafts فاکتور اصلاح بار fh_1 بر روی شافت	$Fh_1 = n_1. h$	250000	500000	1000000	2000000	5000000	10000000
	fh_1	1	0.79	0.63	0.5	0.37	0.29





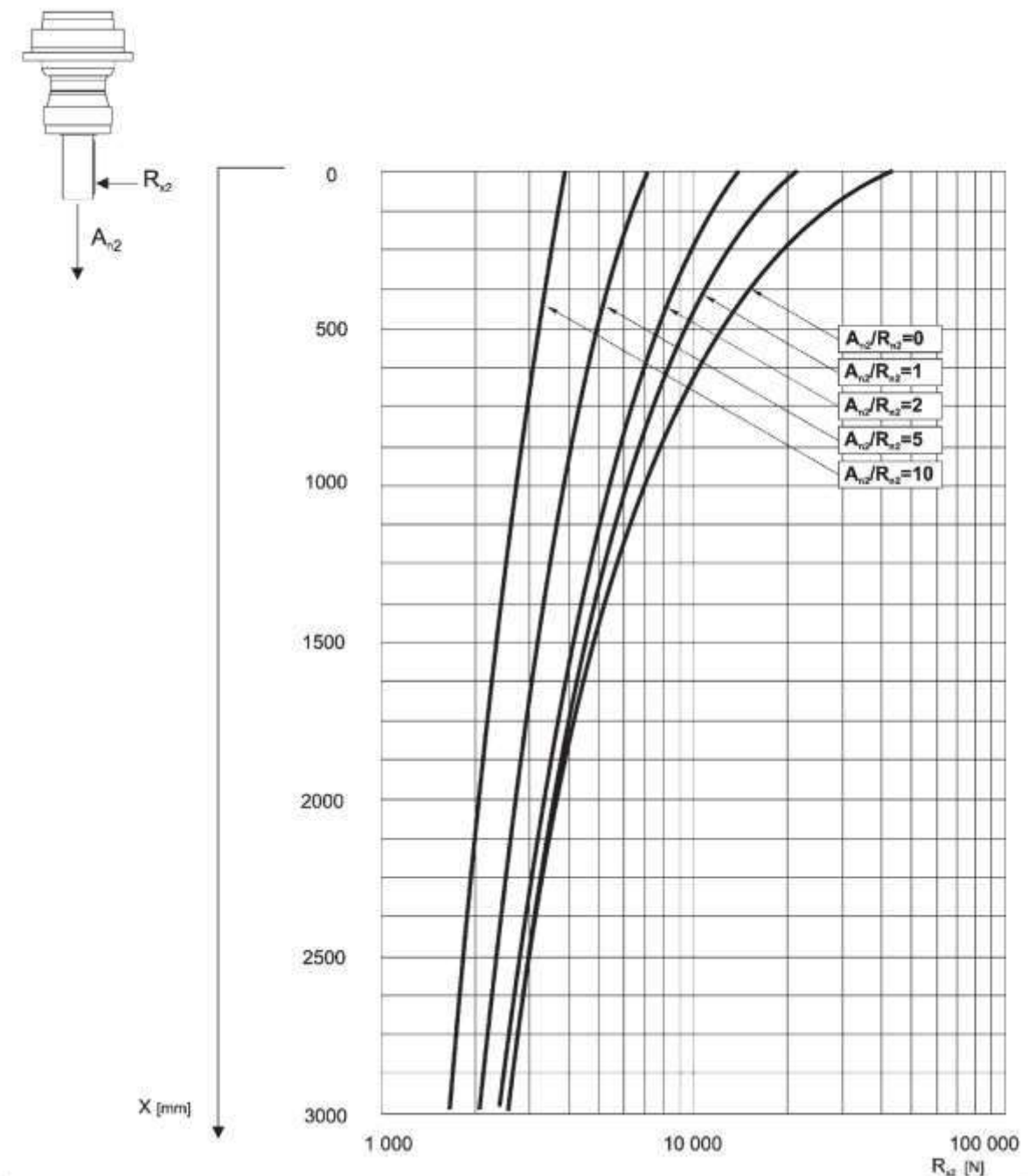
	R	R1	Kg	V	V1	Kg	V	V1	Kg	P71		P80		P90		P100		P112		P132		P160	
										E	P	E	P	E	P	E	P	E	P	E	P	E	P
306R2	212	140	90	138	24	6	158	38	7	65	160	84	200	84	200	94	250	94	250	114	300	144	350
306R3	232	140	92	138	24	6	158	38	7	65	160	84	200	84	200	94	250	94	250	114	300	144	350
306R4	285	122	95	138	24	6	158	38	7	65	160	84	200	84	200	94	250	94	250	114	300	144	350

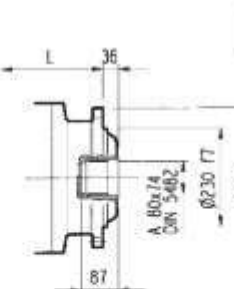
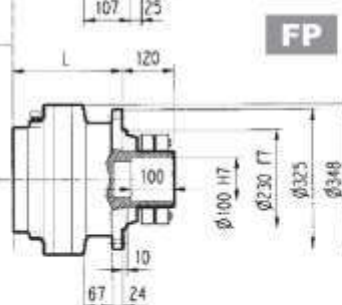
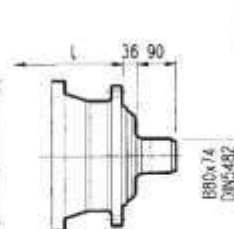
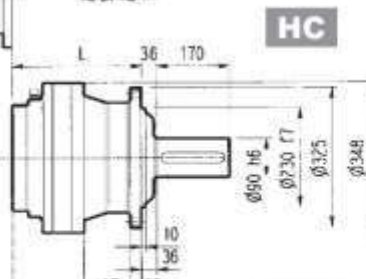
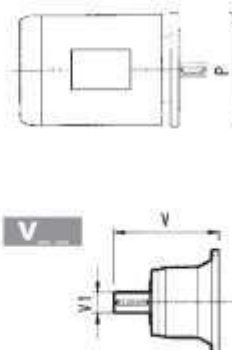
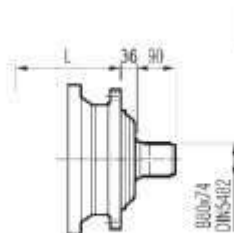
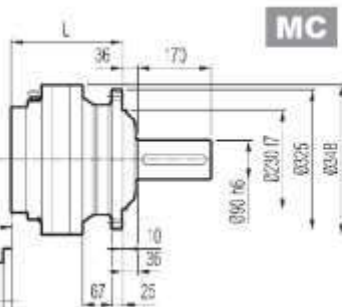
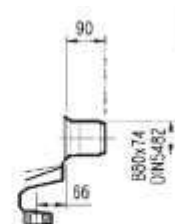
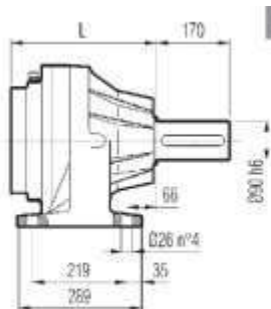
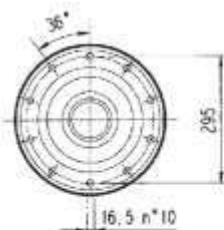
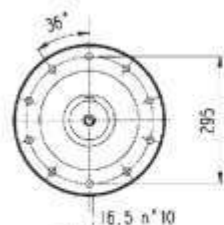
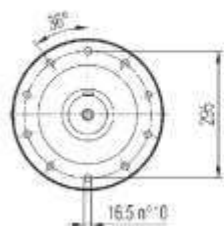


The diagram below allows the calculation of permitted overhung load R_{x2} on the output shaft of gearbox, with radial force applying at a distance x from shaft shoulder. The curves are relevant to value resulting from the relationship of trust load A_{n2} to radial load R_{n2} , based on $n_2 = 10 \text{ min}^{-1}$ and 10000 hrs. theoretical lifetime.

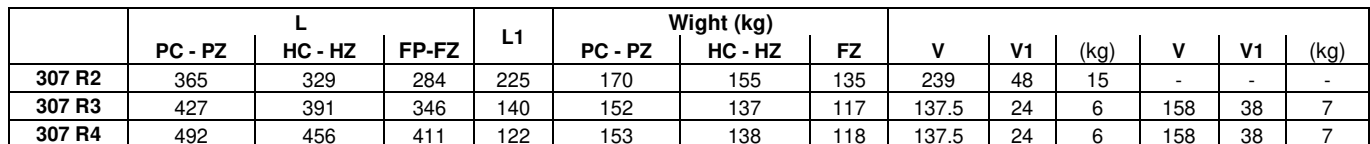
نمودار زیر امکان محاسبه بار اضافی مجاز R_{x2} را بر روی شافت خروجی گیربکس، با نیروی شعاعی اعمال شده در فاصله x از شافت.

منحنی ها به مقدار مربوط به رابطه بار مجاز A_{n2} به بار شعاعی R_{n2} مربوط می شوند
 $n_2 = 10$ دقیقه در ۱ و ۱۰۰۰۰ ساعت طول عمر نظری.




$$M_{2max} = 18200 \text{ Nm}$$

	P71		P80		P90		P100		P112		P132		P160		P180		P200		P225		P250		
	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	
307 L1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	195	350	186	400	216	450	215	550	
307 L2	-	-	-	-	-	-	-	-	-	-	-	114	300	204	350	114	350	174	400	-	-	-	-
307 L3	65	160	84	200	84	200	94	250	94	250	114	300	183	350	-	-	-	-	-	-	-	-	
307 L4	65	160	84	200	84	200	94	250	94	250	114	300	183	350	-	-	-	-	-	-	-	-	

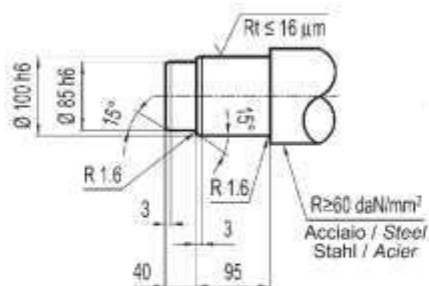
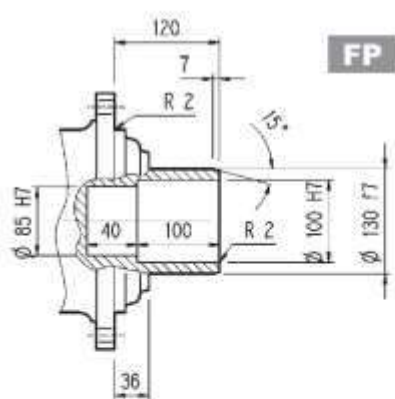
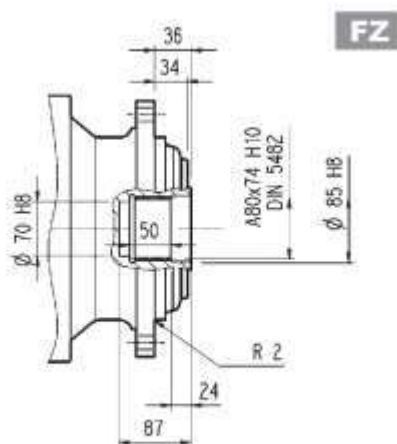
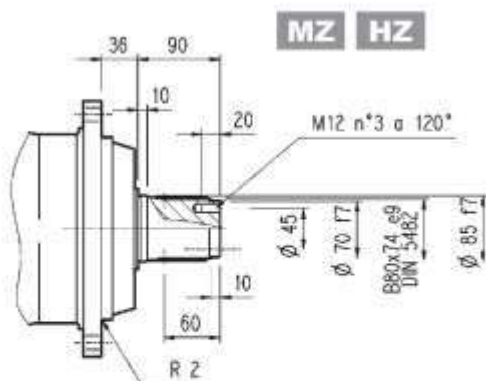
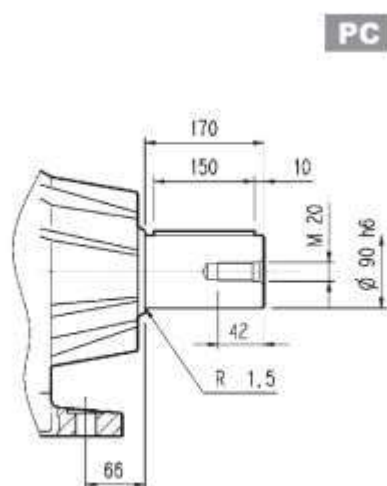
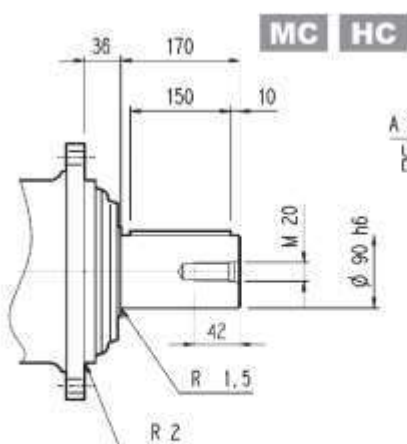


	P71		P80		P90		P100		P112		P132		P160		P180		P200	
	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P
307 R2	-	-	-	-	-	-	-	-	-	-	114	300	114	350	114	350	174	400
307 R3	65	160	84	200	84	200	94	250	94	250	114	300	114	350	-	-	-	-
307 R4	65	160	84	200	84	200	94	250	94	250	114	300	114	350	-	-	-	-





307 L - 307 R



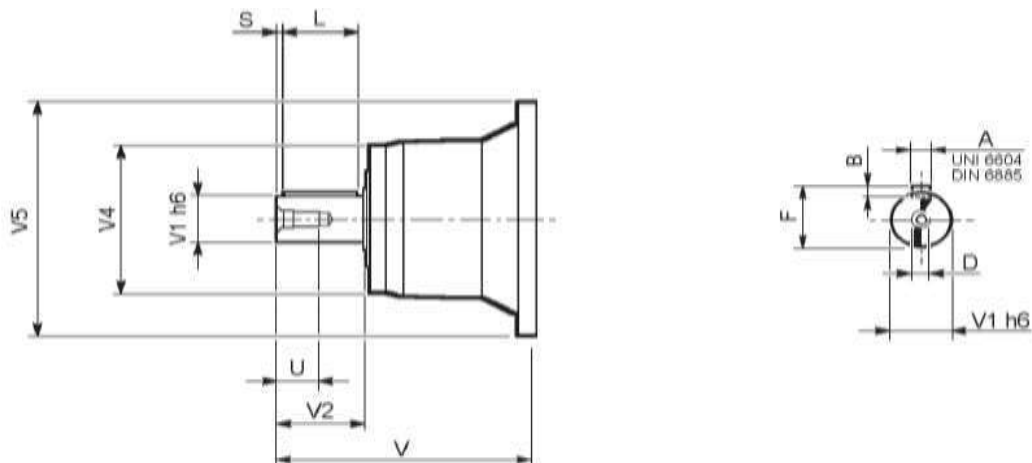
FP

$M_{2max} = 18200 \text{ Nm}$

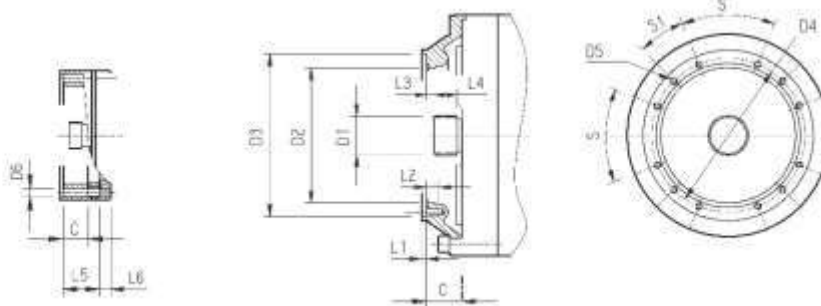




307 L-307 R



	input	V	V1	V2	V4	V5	A	B	F	L	S	D	U
307 L1	V07B	315	80	130	200	345	22	14	85	110	10	M16	36
	V07A	313	60	105	155	345	18	11	64	90	7.5	M16	36
307 L2	V05B	239	48	82	155	245	14	9	51.5	70	6	M16	36
307 L3	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28
307 L4	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28
307 R2	V05B	239	48	82	155	245	14	9	51.5	70	6	M16	36
307 R3-R4	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28

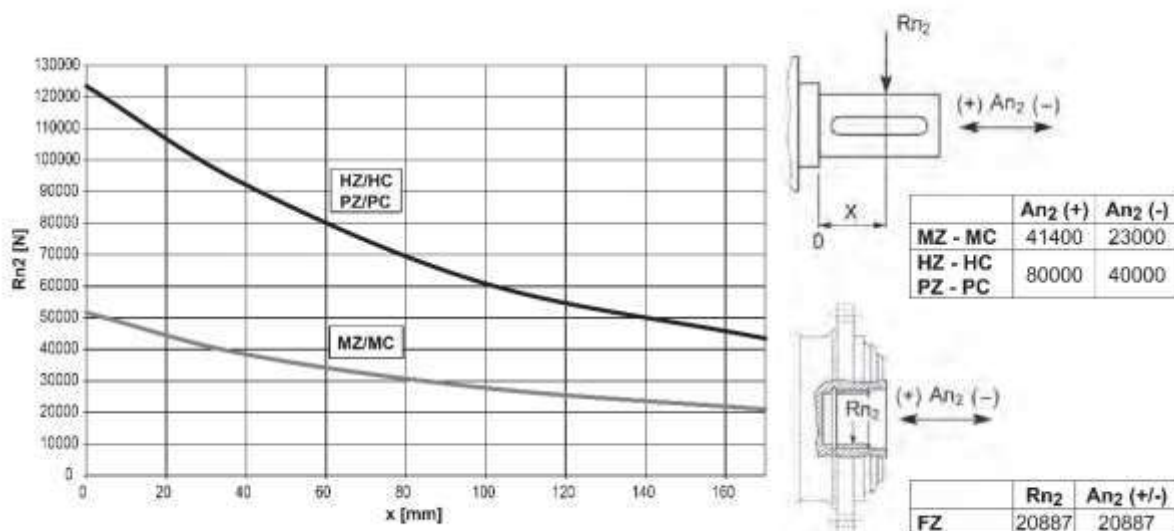


		C	D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	L5	L6	S	S1	Input
307L1	V9AB	51	58x53DIN5482	195	236H7	222	M10n°12	—	4	18	11	22	—	—	45°	22.5°	B
307L2	V9AA	37	40x36DIN5482	140	178H7	165	M10n°12	—	4	18	9	18	—	—	45°	45°	A
307L3	V9AA	37	40x36DIN5482	140	178H7	165	M10n°12	11	4	—	9	18	65	18	45°	45°	A
307L4	V9AA	37	40x36DIN5482	140	178H7	165	M10n°12	11	4	—	9	18	118	18	45°	45°	A
307R2	V9AA	37	40x36DIN5482	140	178H7	165	M10n°12	11	4	18	9	18	—	—	45°	45°	A
307R3-R4	V9AA	37	40x36DIN5482	140	178H7	165	M10n°12	11	4	—	9	18	37	18	45°	45°	A



Permissible radial and axial loads on output shaft with $F_{h2}: n_2 \cdot h = 100,000$

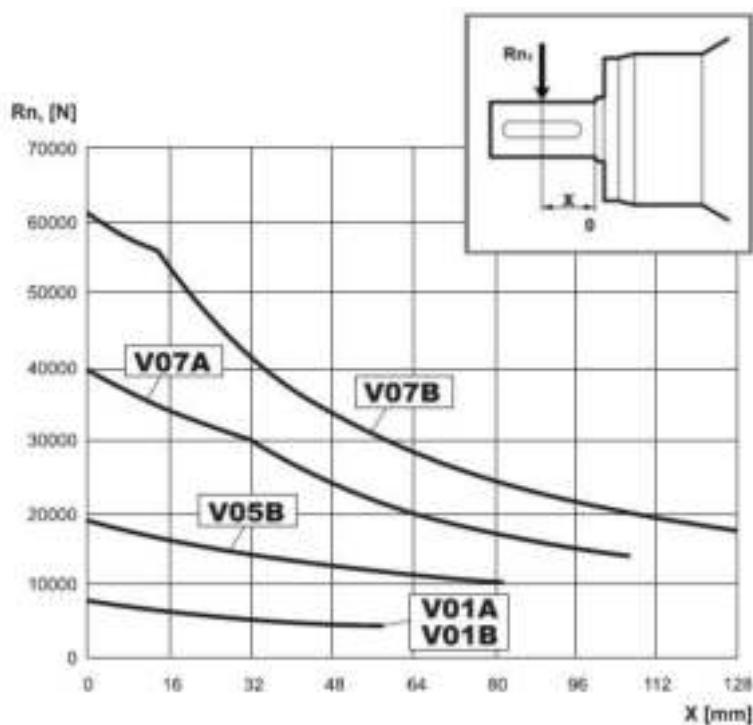
بارهای شعاعی و محوری مجاز بر روی شافت خروجی با $F_{h2}: n_2 \cdot h = 100,000$



Load correction factor fh_2 on shafts فاکتور اصلاح بار fh_2 بر روی شافت	$Fh_2 = n_2 \cdot h$		10000	25000	50000	100000	500000	1000000
	fh_2	FZ	2.15	1.59	1.26	1.00	0.58	0.46
		MZ - MC	2.15	1.59	1.26	1.00	0.58	0.46
		HZ - HC - PC - PZ	1.49	1.49	1.23	1.00	0.62	0.50

Permissible radial loads on input shaft with $F_{h1}: n_1 \cdot h = 250000$

بارهای شعاعی مجاز بر روی شافت ورودی با $F_{h1}: n_1 \cdot h = 250000$



Load correction factor fh_1 on shafts فاکتور اصلاح بار fh_1 بر روی شافت	$F_{h1} = n_1 \cdot h$	250000	500000	1000000	2000000	5000000	10000000
	fh_1	1	0.79	0.63	0.5	0.37	0.29





	R	R1	Kg	V	V1	Kg	V	V1	Kg	P71		P80		P90		P100		P112		P132		P160		P180		P200	
										E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P
307R2	199	225	180	239	48	15	—	—	—	—	—	—	—	—	—	—	—	—	—	114	300	144	350	144	350	174	400
307R3	261	140	170	137.5	24	6	158	38	7	65	160	84	200	84	200	94	250	94	250	114	300	144	350	—	—	—	—
307R4	326	122	175	137.5	24	6	158	38	7	65	160	84	200	84	200	94	250	94	250	114	300	144	350	—	—	—	—

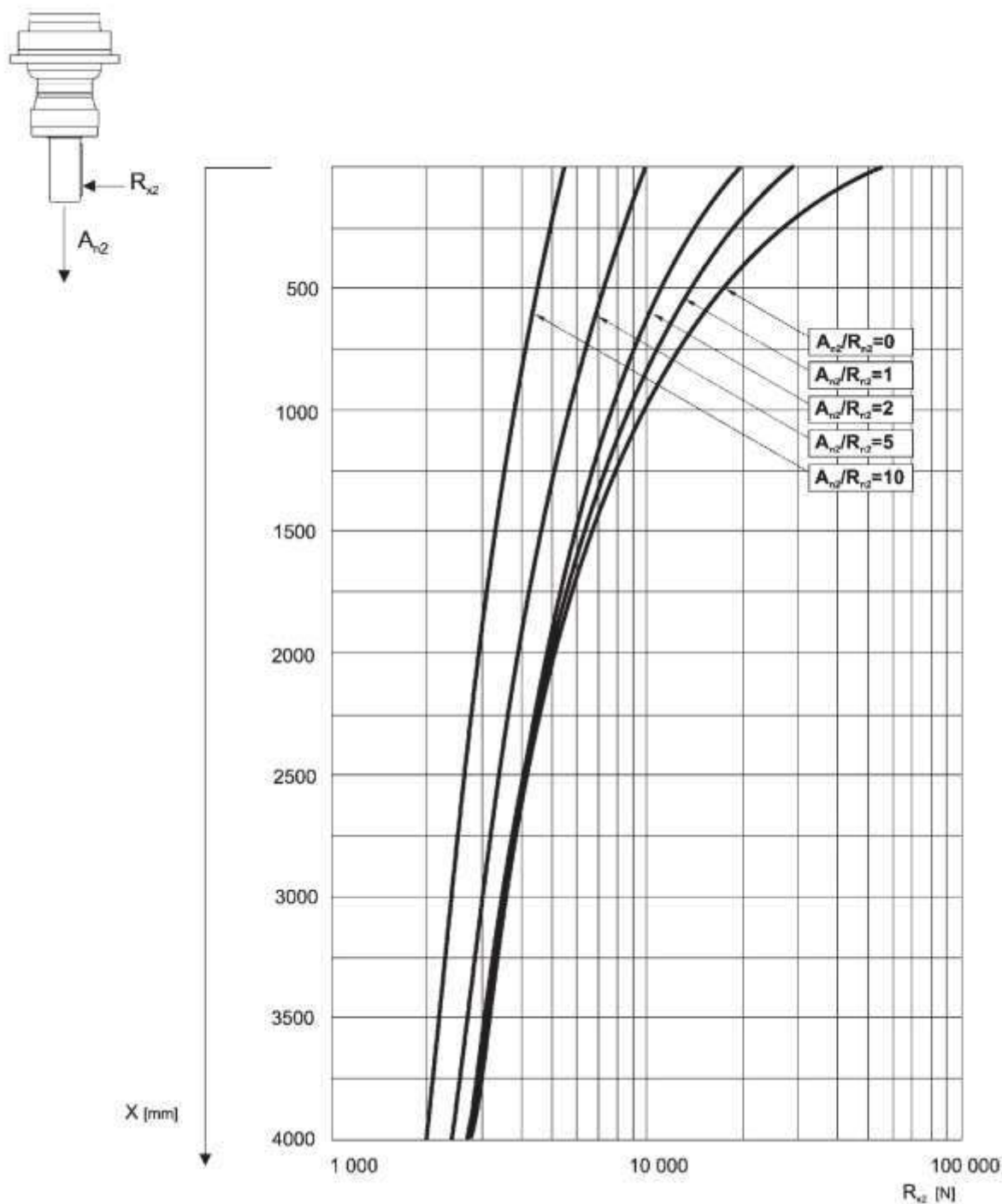


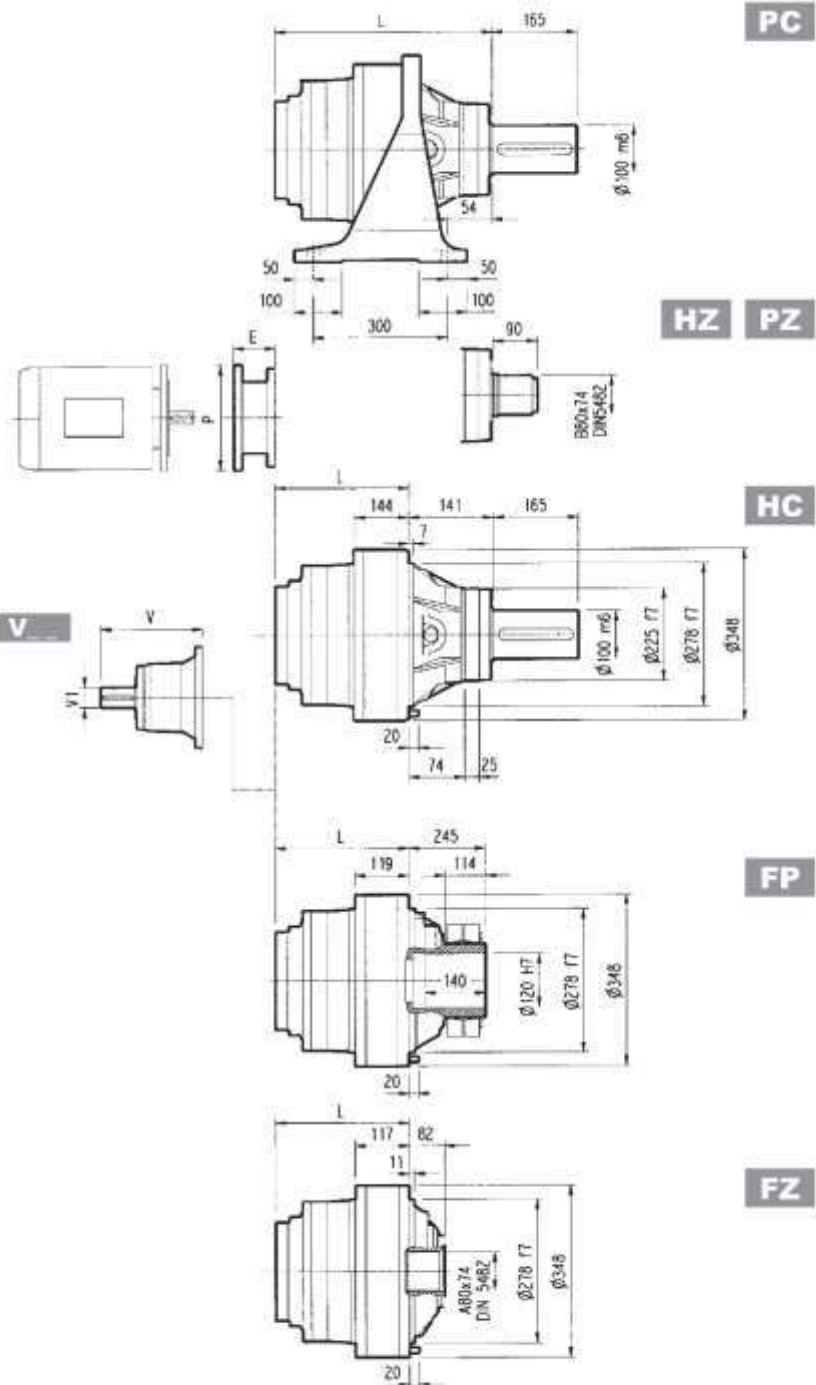
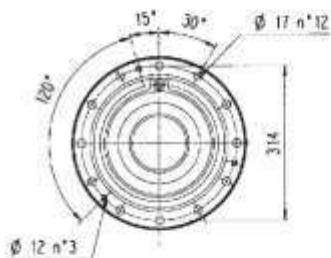
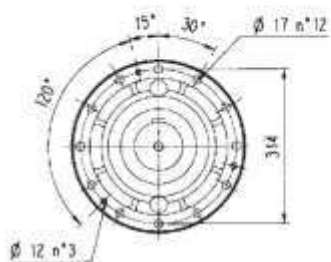
The diagram below allows the calculation of permitted overhung load R_{x2} on the output shaft of gearbox, with radial force applying at a distance x from shaft shoulder. The curves are relevant to value resulting from the relationship of trust load A_{n2} to radial load R_{n2} , based on $n_2 = 10 \text{ min}^{-1}$ and 10000 hrs. theoretical lifetime.

نمودار زیر امکان محاسبه بار اضافی مجاز R_{x2} را بر روی شافت خروجی گیربکس، با نیروی شعاعی اعمال شده در فاصله x از شافت.

منحنی ها به مقدار مربوط به رابطه بار مجاز A_{n2} به بار شعاعی R_{n2} مربوط می شوند

$n_2 = 10$ دقیقه در ۱ و ۱۰۰۰۰ ساعت طول عمر نظری.



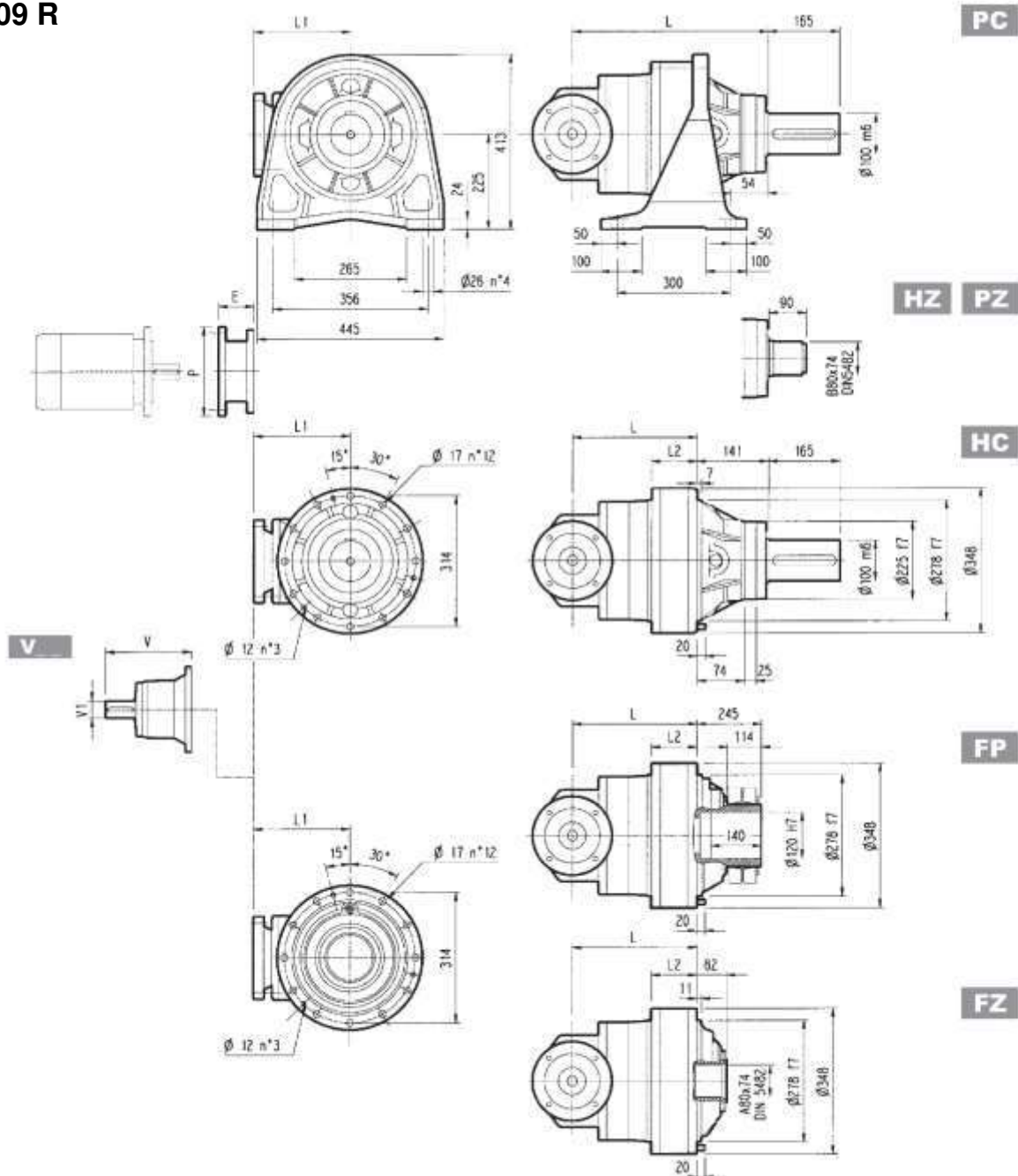


	P71		P80		P90		P100		P112		P132		P160		P180		P200		P225		P250	
	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P
309 L1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	195	350	186	400	216	450	216	550
309 L2	-	-	-	-	-	-	-	-	-	-	114	300	114	350	144	350	174	400	-	-	-	-
309 L3	65	160	84	200	84	200	94	250	94	250	114	300	114	350	-	-	-	-	-	-	-	-
309 L4	65	160	84	200	84	200	94	250	94	250	114	300	114	350	-	-	-	-	-	-	-	-





309 R



FP

$M_{2max} = 29000 \text{ Nm}$

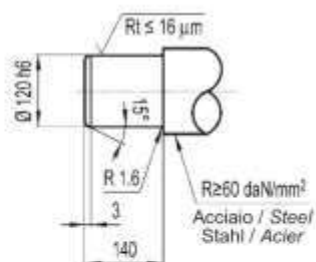
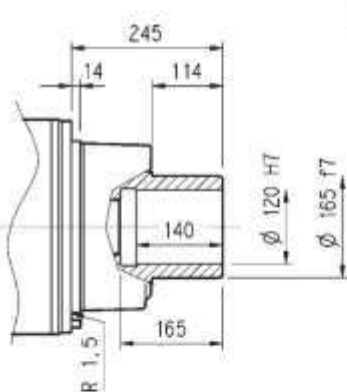
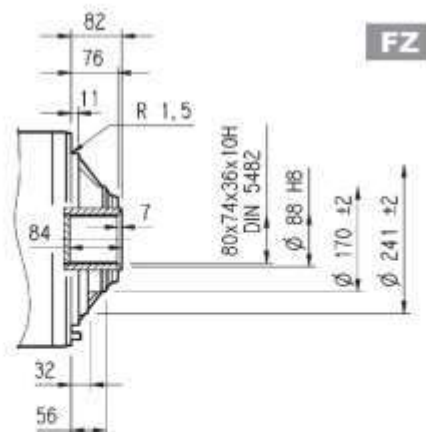
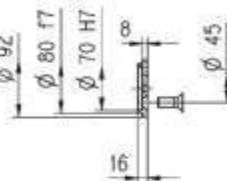
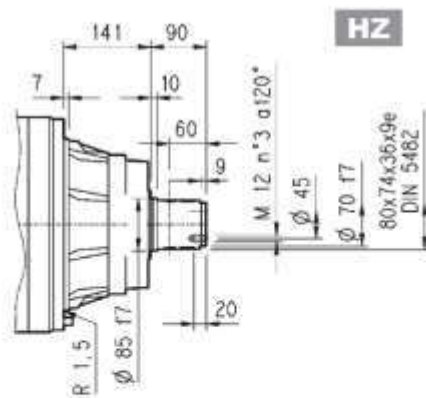
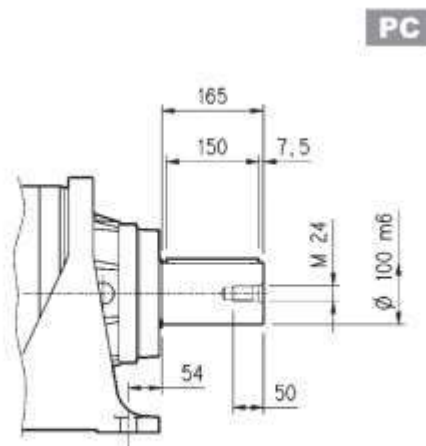
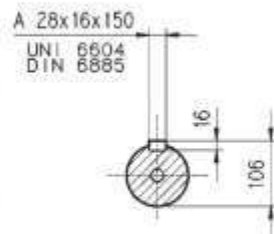
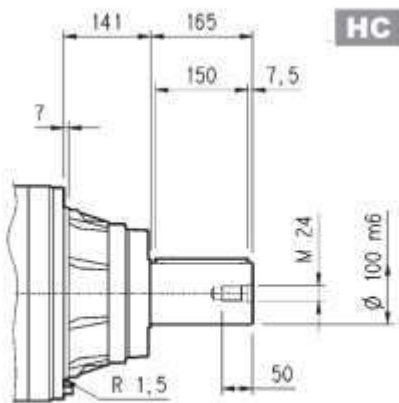
	L				L1	L2			Wight (kg)			V	V1	(kg)	V	V1	(kg)
	PC - PZ	HC - HZ	FZ	FP		HC-HZ	FZ	FP	PC - PZ	HC - HZ	FZ						
309 R2	386	245	218	220	225	168	141	143	180	165	145	239	48	15	-	-	-
309 R3	448	309	280	282	140	144	117	119	162	147	127	137.5	24	6	158	38	7
309 R4	513	372	345	347	122	144	117	119	163	148	128	137.5	24	6	158	38	7

	P71		P80		P90		P100		P112		P132		P160		P180		P200	
	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P
309 R2	-	-	-	-	-	-	-	-	-	-	114	300	114	350	114	350	174	400
309 R3	65	160	84	200	84	200	94	250	94	250	114	300	114	350	-	-	-	-
309 R4	65	160	84	200	84	200	94	250	94	250	114	300	114	350	-	-	-	-





309 L - 309 R



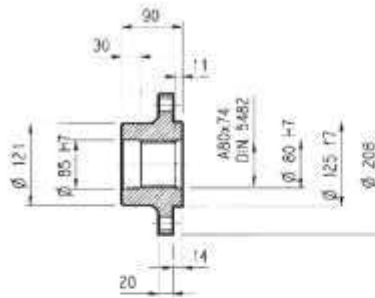
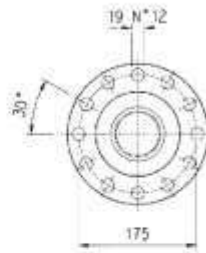
FP

$M_{2max} = 29000 \text{ Nm}$



309L-309R Flange

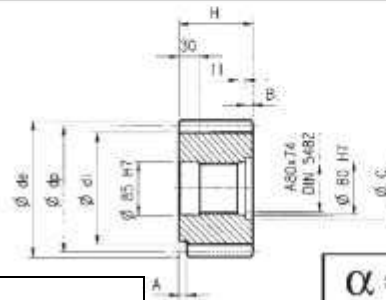
WOA



Material: Steel C40

Pinions

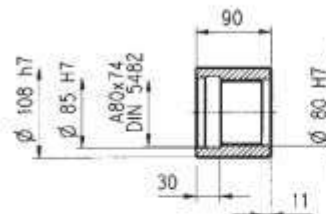
P...



m	z	x	dp	di	de	H	A	B	C	Material
PFG	8	16	0.5	128	117	150	90	—	—	Steel 39NiCrMo3 hardened and tempered
PHC	10	12	0.45	120	104	145	90	—	—	
PHE	10	14	0.32	140	121	165	116	13	26	
PHF	10	15	0.15	150	130	172	107	20	17	
PHG	10	16	0.5	160	145	186	90	—	—	Steel 18NiCrMo5 case hardened
PHH1	10	17	—	170	145	189	90	—	—	
PHH2	10	17	0.5	170	154	198	90	—	—	
PLD	12	13	0.5	156	138	192	102	—	12	Steel 39NiCrMo3 hardened and tempered
PLE	12	14	0.5	168	150	199	90	—	—	
PLI	12	18	0.5	216	198	250	107	7	17	Steel 18NiCrMo5 case hardened
PLT	12	26	—	312	282	336	90	10	—	

Sleeve coupling

MOA



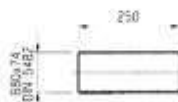
Material: Steel 16CrNi4

Splined bars

BOA

Shrink disc

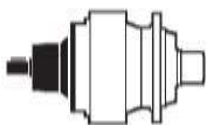
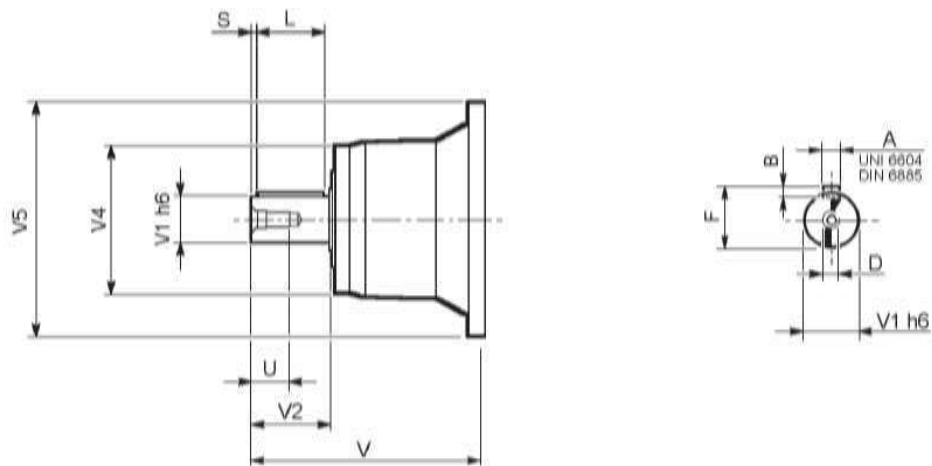
GOA



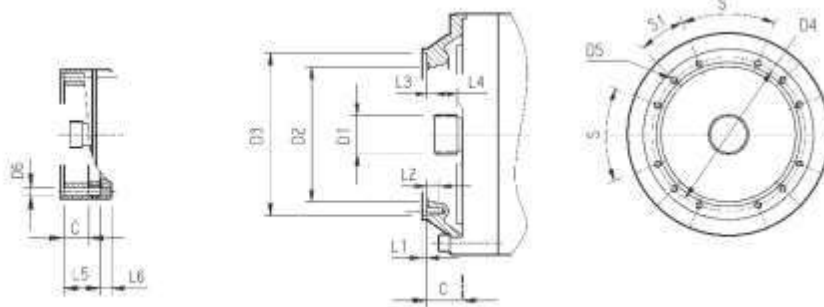
Material: Case hardening steel 18NiCrMo5
UNI 5331 must be case hardened 50-55 HRC



309L-309R



	input	V	V1	V2	V4	V5	A	B	F	L	S	D	U
309 L1	V07B	315	80	130	200	345	22	14	85	110	10	M16	36
	V07A	313	60	105	155	345	18	11	64	90	7.5	M16	36
309 L2	V05B	239	48	82	155	245	14	9	51.5	70	6	M16	36
309 L3	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28
309 L4	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28
309 R2	V05B	239	48	82	155	245	14	9	51.5	70	6	M16	36
309 R3-R4	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28



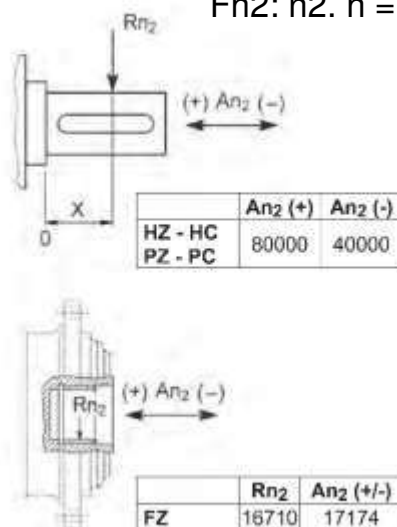
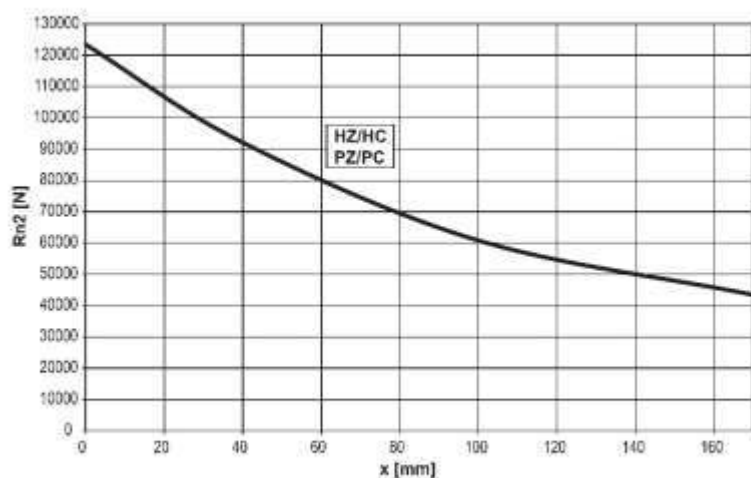
		C	D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	L5	L6	S	S1	Input
309L1	V9AB	51	58x53DIN5482	195	236H7	222	M10n°12	—	4	18	11	22	—	—	45°	22.5°	B
309L2	V9AA	37	40x36DIN5482	140	178H7	165	M10n°12	—	4	18	9	18	—	—	45°	45°	A
309L3	V9AA	37	40x36DIN5482	140	178H7	165	M10n°12	11	4	—	9	18	65	18	45°	45°	A
309L4	V9AA	37	40x36DIN5482	140	178H7	165	M10n°12	11	4	—	9	18	118	18	45°	45°	A
309R2	V9AA	37	40x36DIN5482	140	178H7	165	M10n°12	11	4	18	9	18	—	—	45°	45°	A
309R3-R4	V9AA	37	40x36DIN5482	140	178H7	165	M10n°12	11	4	—	9	18	37	18	45°	45°	A





Permissible radial and axial loads on output shaft with $Fh_2: n_2 \cdot h = 100,000$

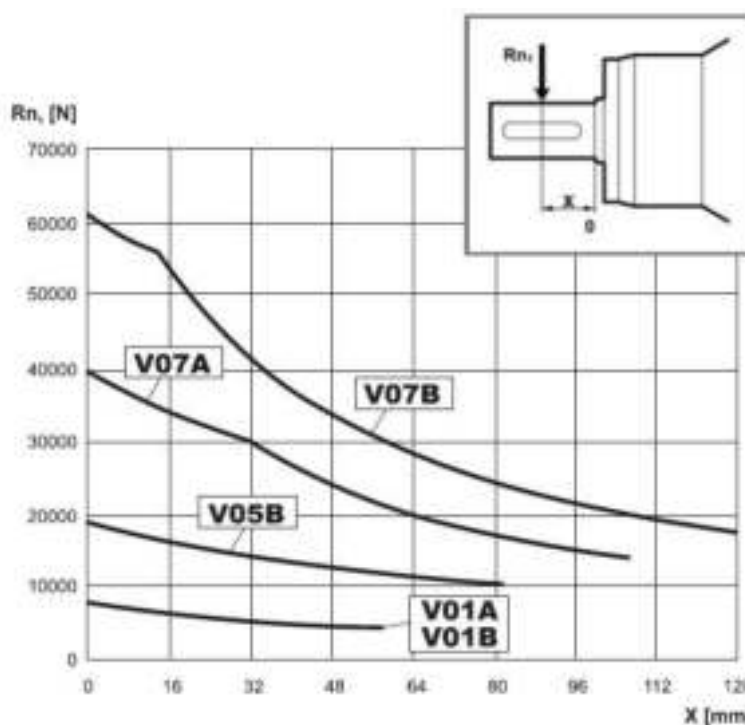
بارهای شعاعی و محوری مجاز بر روی شافت خروجی با $Fh_2: n_2 \cdot h = 100,000$



Load correction factor fh_2 on shafts فاکتور اصلاح بار fh_2 بر روی شافت	$Fh_2 = n_2 \cdot h$		10000	25000	50000	100000	500000	1000000
	fh_2	FZ	2.15	1.74	1.26	1.00	0.58	0.46
		HZ - HC - PC - PZ	1.49	1.49	1.23	1.00	0.62	0.50

Permissible radial loads on input shaft with $Fh_1: n_1 \cdot h = 250000$

بارهای شعاعی مجاز بر روی شافت ورودی با $Fh_1: n_1 \cdot h = 250000$

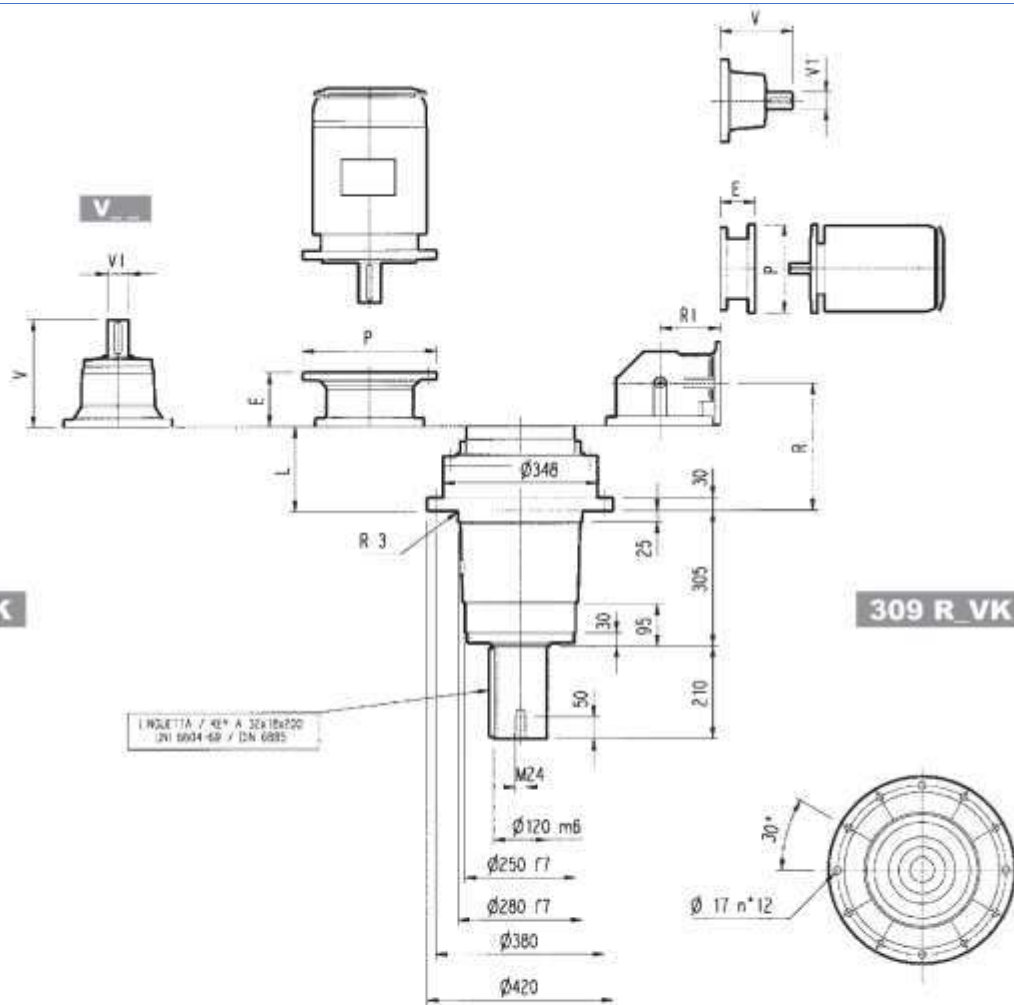


Load correction factor fh_1 on shafts فاکتور اصلاح بار fh_1 بر روی شافت	$Fh_1 = n_1 \cdot h$	250000	500000	1000000	2000000	5000000	10000000
	fh_1	1	0.79	0.63	0.5	0.37	0.29





309VK



	L	Kg	V	V1	Kg	V	V1	Kg
309L1	102	165	315	80	35	313	60	28
309L2	191	180	239	48	15	—	—	—
309L3	256	190	138	24	6	158	38	7
309L4	309	195	138	24	6	158	38	7

	R	R1	Kg	V	V1	kg	V	V1	kg
309R2	221	225	200	239	48	15	—	—	—
309R3	283	140	190	138	24	6	158	38	7
309R4	348	122	195	138	24	6	158	38	7

	P71		P80		P90		P100		P112		P132		P160		P180		P200		P225		P250	
	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P
309L1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	195	350	186	400	216	450	216	450
309L2	—	—	—	—	—	—	—	—	—	—	114	300	144	350	144	350	174	400	—	—	—	—
309L3	65	160	84	200	84	200	94	250	94	250	114	300	144	350	—	—	—	—	—	—	—	—
309L4	65	160	84	200	84	200	94	250	94	250	114	300	144	350	—	—	—	—	—	—	—	—

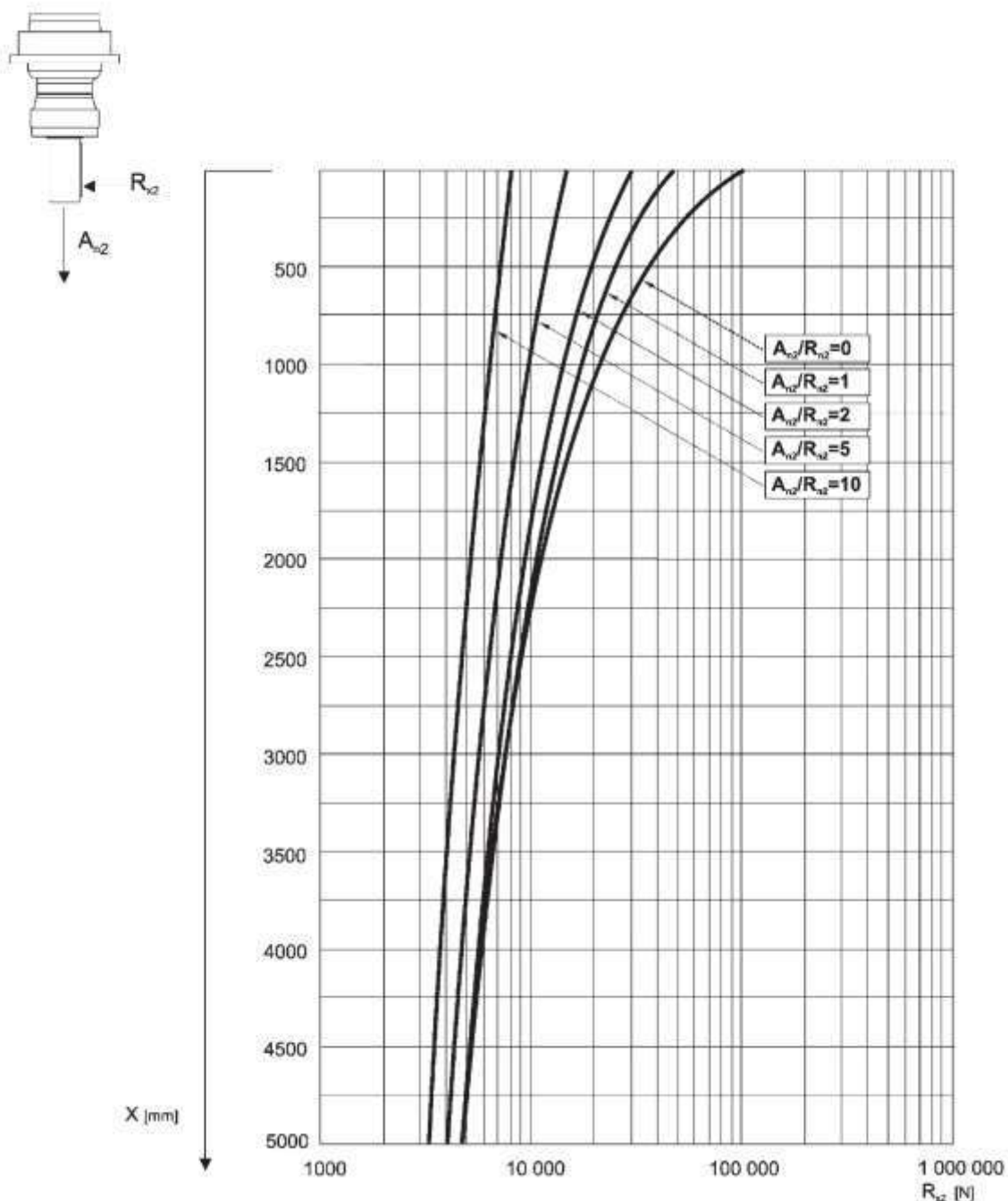
	P71		P80		P90		P100		P112		P132		P160		P180		P200	
	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P
309R2	—	—	—	—	—	—	—	—	—	—	114	300	144	350	144	350	174	400
309R3	65	160	84	200	84	200	94	250	94	250	114	300	144	350	—	—	—	—
309R4	65	160	84	200	84	200	94	250	94	250	114	300	144	350	—	—	—	—



The diagram below allows the calculation of permitted overhung load R_{x2} on the output shaft of gearbox, with radial force applying at a distance x from shaft shoulder. The curves are relevant to value resulting from the relationship of trust load A_{n2} to radial load R_{n2} , based on $n_2 = 10 \text{ min}^{-1}$ and 10000 hrs. theoretical lifetime.

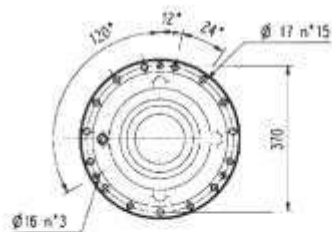
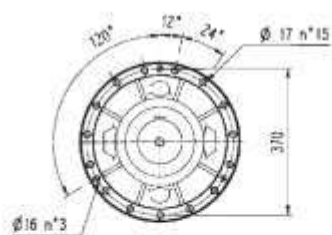
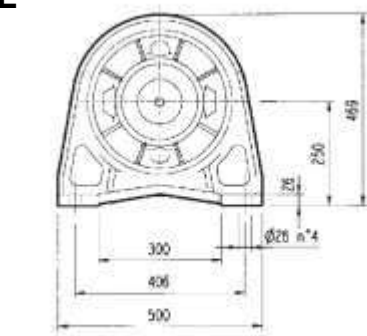
نمودار زیر امکان محاسبه بار اضافی مجاز R_{x2} را بر روی شافت خروجی گیربکس، با نیروی شعاعی اعمال شده در فاصله x از شافت.

منحنی ها به مقدار مربوط به رابطه بار مجاز A_{n2} به بار شعاعی R_{n2} مربوط می شوند
 $n_2 = 10$ دقیقه در ۱ و ۱۰۰۰۰ ساعت طول عمر نظری.

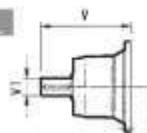




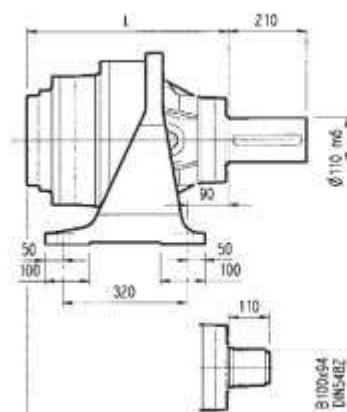
310L



V

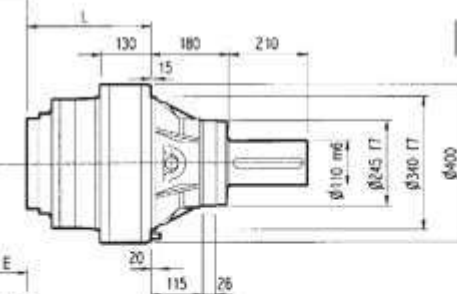


PC



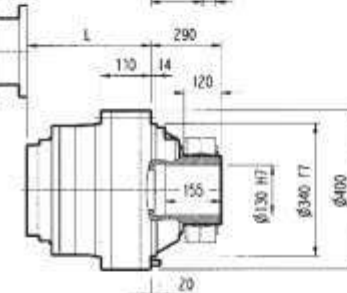
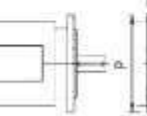
HZ PZ

HC

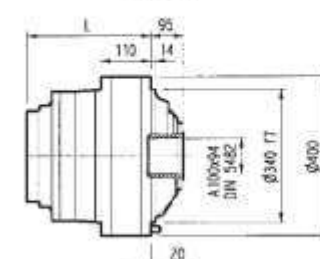


FP

E



FZ



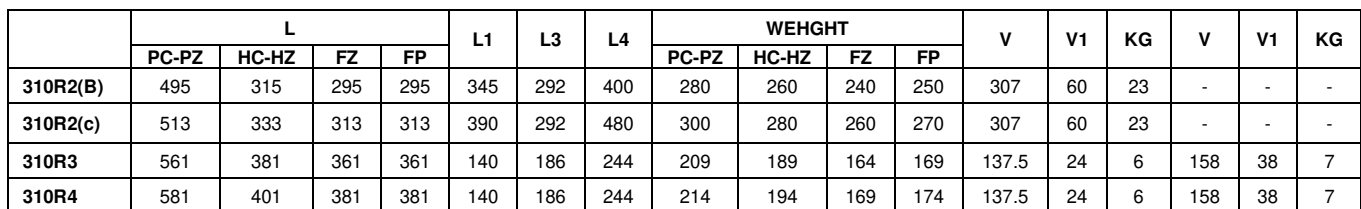
FP

M_{2max} = 44000 Nm

	L			Wight (kg)									
	PC - PZ	HC - HZ	FP-FZ	PC - PZ	HC - HZ	FZ	FP	V	V ₁	W(kg)	V	V ₁	W(kg)
310 L1	288	108	99	155	135	110	115	337	80	50	-	-	-
310 L2	424	244	224	185	165	140	154	307	60	23	-	-	-
310 L3	489	309	289	194	174	149	154	239	48	15	-	-	-
310 L4	542	362	324	198	175	153	158	137.5	24	6	158	38	7

	P71		P80		P90		P100		P112		P132		P160		P180		P200		P225		P250	
	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P
310L1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	271	400	301	450	281	550	—	—
310L2	—	—	—	—	—	—	—	—	—	—	—	—	152	350	153	350	183	400	212	450	193	550
310L3	—	—	—	—	—	—	—	—	—	—	114	300	144	350	144	350	174	400	—	—	—	—
310L4	65	160	84	200	84	200	94	250	94	250	114	300	144	350	—	—	—	—	—	—	—	—



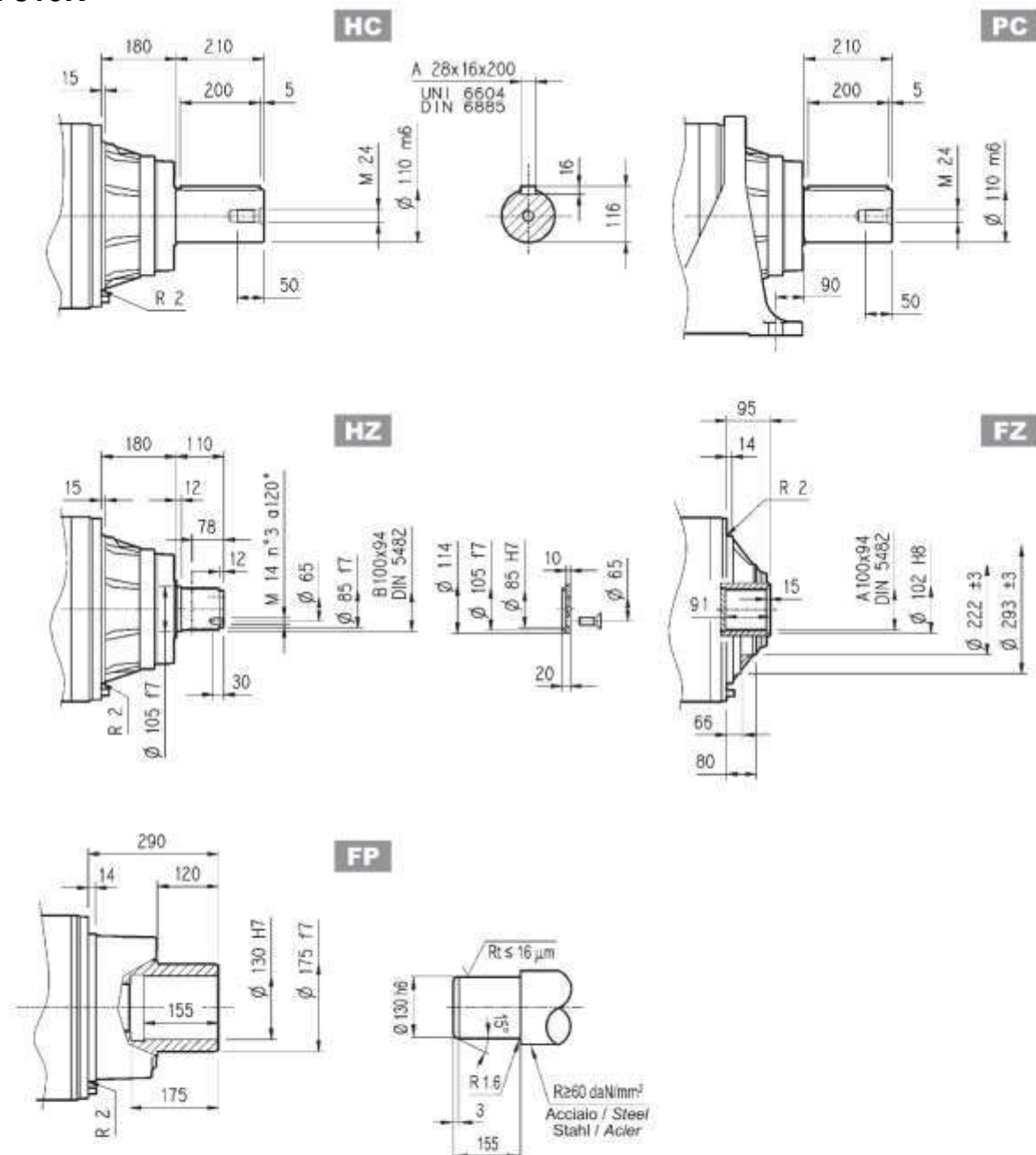


	P71		P80		P90		P100		P112		P132		P160		P180		P200		P225	
	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P
310R2(B)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	152	350	182	400	212	450
310R2(c)	-	-	-	-	-	-	-	-	-	-	114	300	152	350	152	350	182	400	212	450
310R3	65	160	84	200	84	200	94	250	94	250	114	300	144	350	-	-	-	-	-	-
310R4	65	160	84	200	84	200	94	250	94	250	114	300	144	350	-	-	-	-	-	-





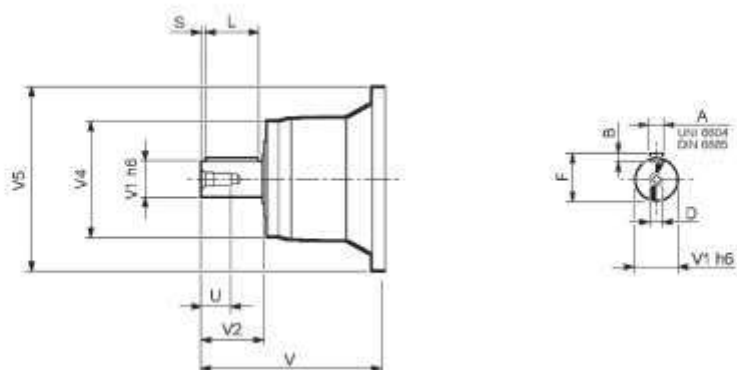
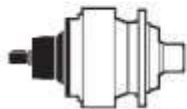
310L-310R



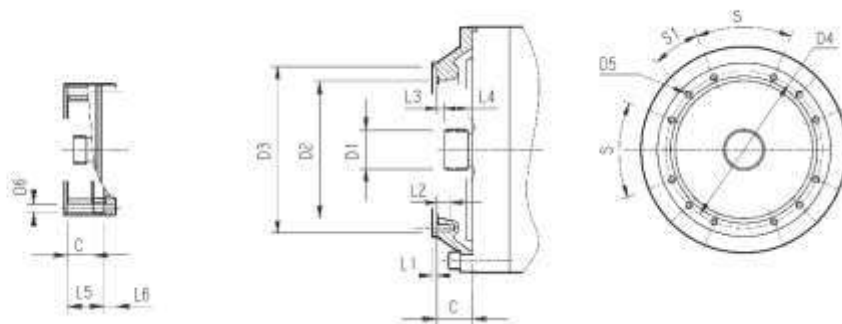
FP	$M_{2max} = 44000 \text{ Nm}$
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310L-310R



	input	V	V1	V2	V4	V5	A	B	F	L	S	D	U
310 L1	V10B	377	80	130	200	400	22	14	85	110	10	M16	36
310L2	V06B	307	60	105	155	292	18	11	64	90	7.5	M16	36
310 L3	V05B	239	48	82	155	245	14	9	52	70	6	M16	36
310 L4	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28
310 R2(B)(C)	V06B	307	60	105	155	292	18	11	64	90	7.5	M16	36
310 R3-R4	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28

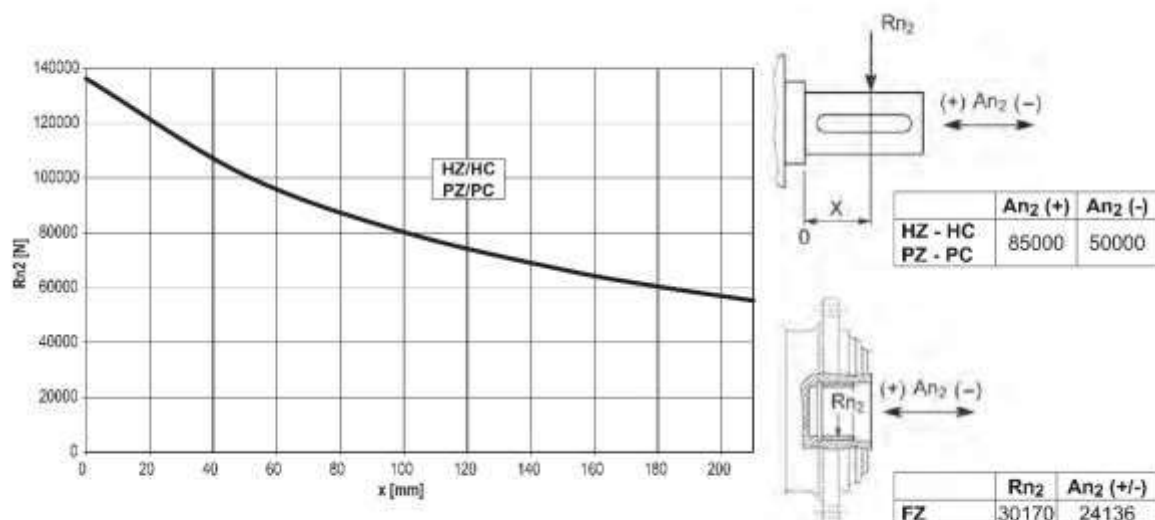


		C	D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	L5	L6	S	S1	Input
310L1	V9AC	88	70x64DIN5482	200	282H7	266	M12n°12	—	4	22	11	32	—	—	45°	45°	C
310L2	V9AB	45	58x53DIN5482	195	236H7	222	M10n°12	—	4	18	11	22	—	—	45°	22.5°	B
310L3	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	—	4	18	9	18	—	—	45°	45°	A
310L4	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	—	9	18	53	18	45°	45°	A
310R2(B)(C)	V9AA	45	58x53DIN5482	195	236H7	222	M10n°12	—	4	18	11	22	—	—	45°	22.5°	B
310R3-R4	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	—	9	18	37	18	45°	45°	A



Permissible radial and axial loads on output shaft with $F_{h2}: n_2 \cdot h = 10,000$

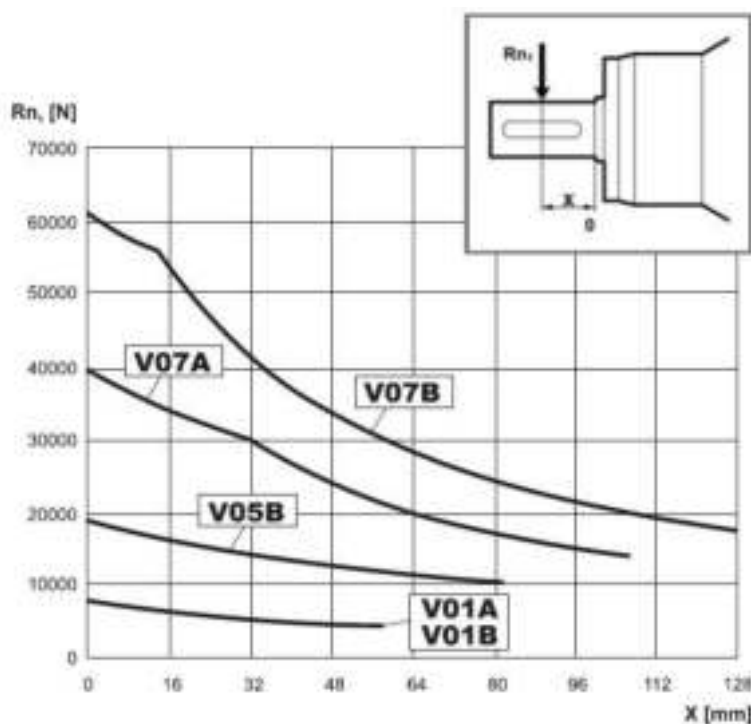
بارهای شعاعی و محوری مجاز بر روی شافت خروجی با $F_{h2}: n_2 \cdot h = 100,000$



Load correction factor fh_2 on shafts فاکتور اصلاح بار fh_2 بر روی شافت	$Fh_2 = n_2 \cdot h$		10000	25000	50000	100000	500000	1000000
	fh_2	FZ	2.15	1.59	1.26	1.00	0.58	0.46
		HZ - HC - PC - PZ	1.27	1.27	1.23	1.00	0.62	0.50

Permissible radial loads on input shaft with $F_{h1}: n_1 \cdot h = 250000$

بارهای شعاعی مجاز بر روی شافت ورودی با $F_{h1}: n_1 \cdot h = 250000$

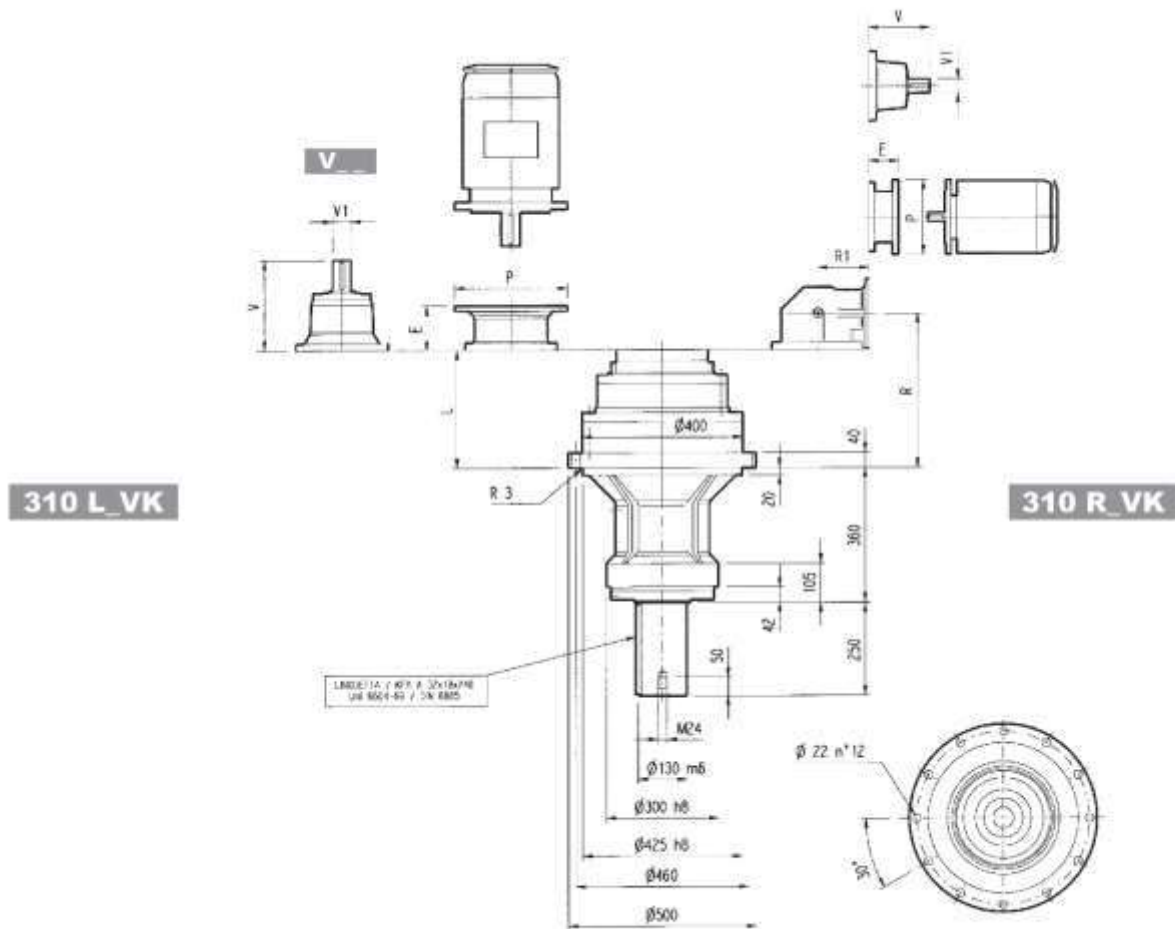


Load correction factor fh_1 on shafts فاکتور اصلاح بار fh_1 بر روی شافت	$F_{h1} = n_1 \cdot h$	250000	500000	1000000	2000000	5000000	10000000
	fh_1	1	0.79	0.63	0.5	0.37	0.29





310VK



	L	Kg	V	V1	Kg	V	V1	Kg		R	R1	Kg	V	V1	Kg	V	V1	Kg
310L1	107	200	377	80	50	—	—	—	310R2(B)	315	345	320	307	60	23	—	—	—
310L2	243	230	307	60	23	—	—	—	310R2(C)	333	390	340	307	60	23	—	—	—
310L3	308	240	239	48	15	—	—	—	310R3	380	140	250	138	24	6	158	38	7
310L4	361	245	137.5	24	6	158	38	7	310R4	400	140	260	138	24	6	158	38	7

	P71		P80		P90		P100		P112		P132		P160		P180		P200		P225		P250	
	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P
310L1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	271	400	301	450	281	550
310L2	—	—	—	—	—	—	—	—	—	—	—	—	152	350	153	350	183	400	212	450	193	550
310L3	—	—	—	—	—	—	—	—	—	—	114	300	144	350	144	350	174	400	—	—	—	—
310L4	6 5	160	84	200	84	200	94	250	94	250	114	300	144	350	—	—	—	—	—	—	—	—

	P71		P80		P90		P100		P112		P132		P160		P180		P200		P225	
	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P
310R2(B)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	152	350	182	400	212	450
310R2(C)	—	—	—	—	—	—	—	—	—	—	114	300	152	350	152	350	182	400	212	450
310R3	65	160	84	200	84	200	94	250	94	250	114	300	144	350	—	—	—	—	—	—
310R4	65	160	84	200	84	200	94	250	94	250	114	300	144	350	—	—	—	—	—	—



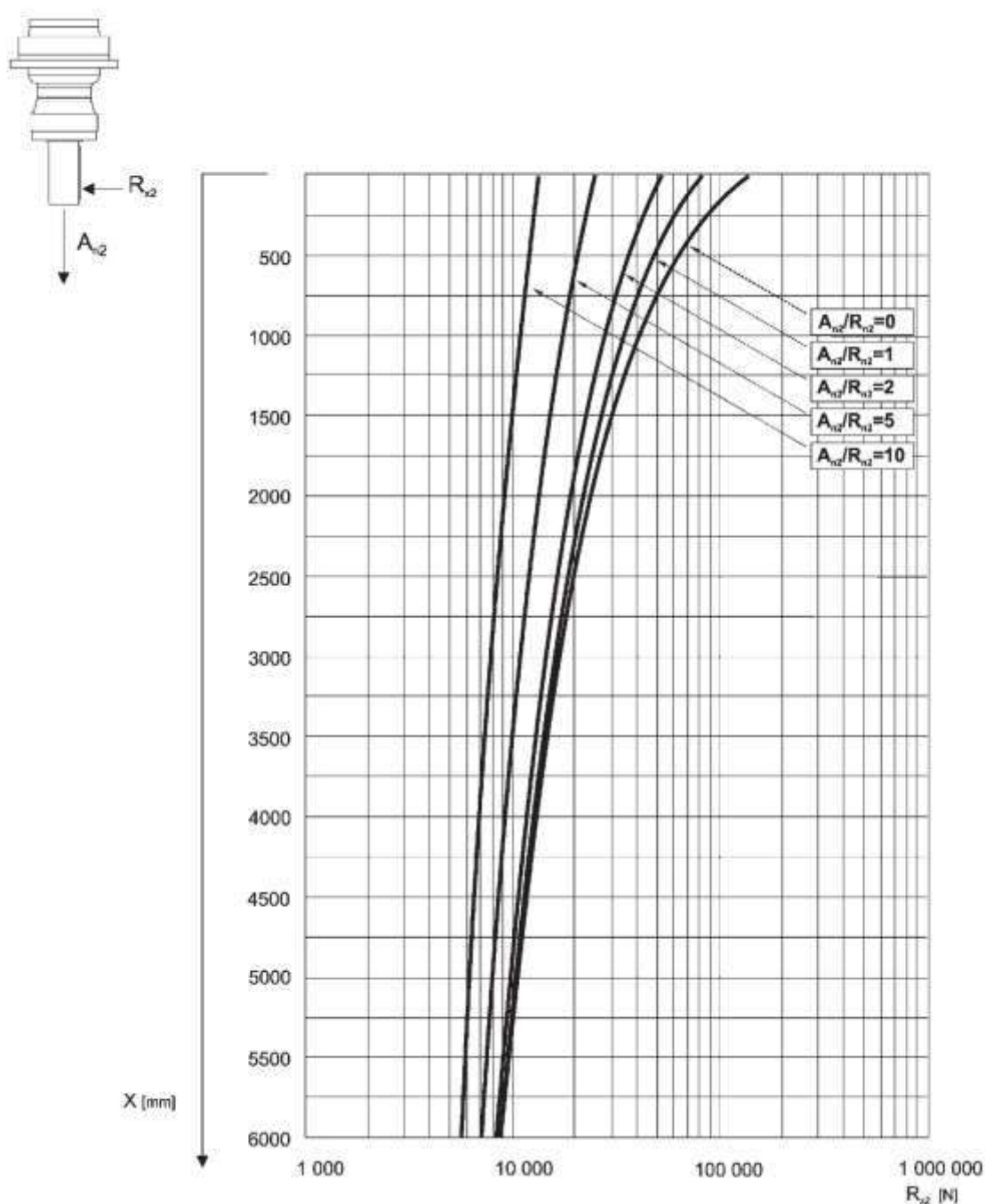


The diagram below allows the calculation of permitted overhung load R_{x2} on the output shaft of gearbox, with radial force applying at a distance x from shaft shoulder. The curves are relevant to value resulting from the relationship of trust load A_{n2} to radial load R_{n2} , based on $n_2 = 10 \text{ min}^{-1}$ and 10000 hrs. theoretical lifetime.

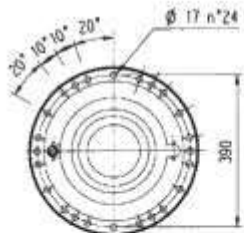
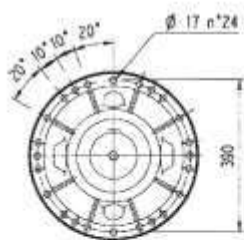
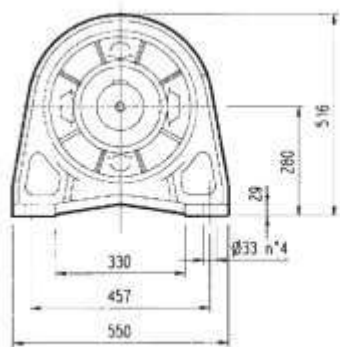
نمودار زیر امکان محاسبه بار اضافی مجاز R_{x2} را بر روی شافت خروجی گیربکس، با نیروی شعاعی اعمال شده در فاصله x از شافت.

منحنی ها به مقدار مربوط به رابطه بار مجاز A_{n2} به بار شعاعی R_{n2} مربوط می شوند

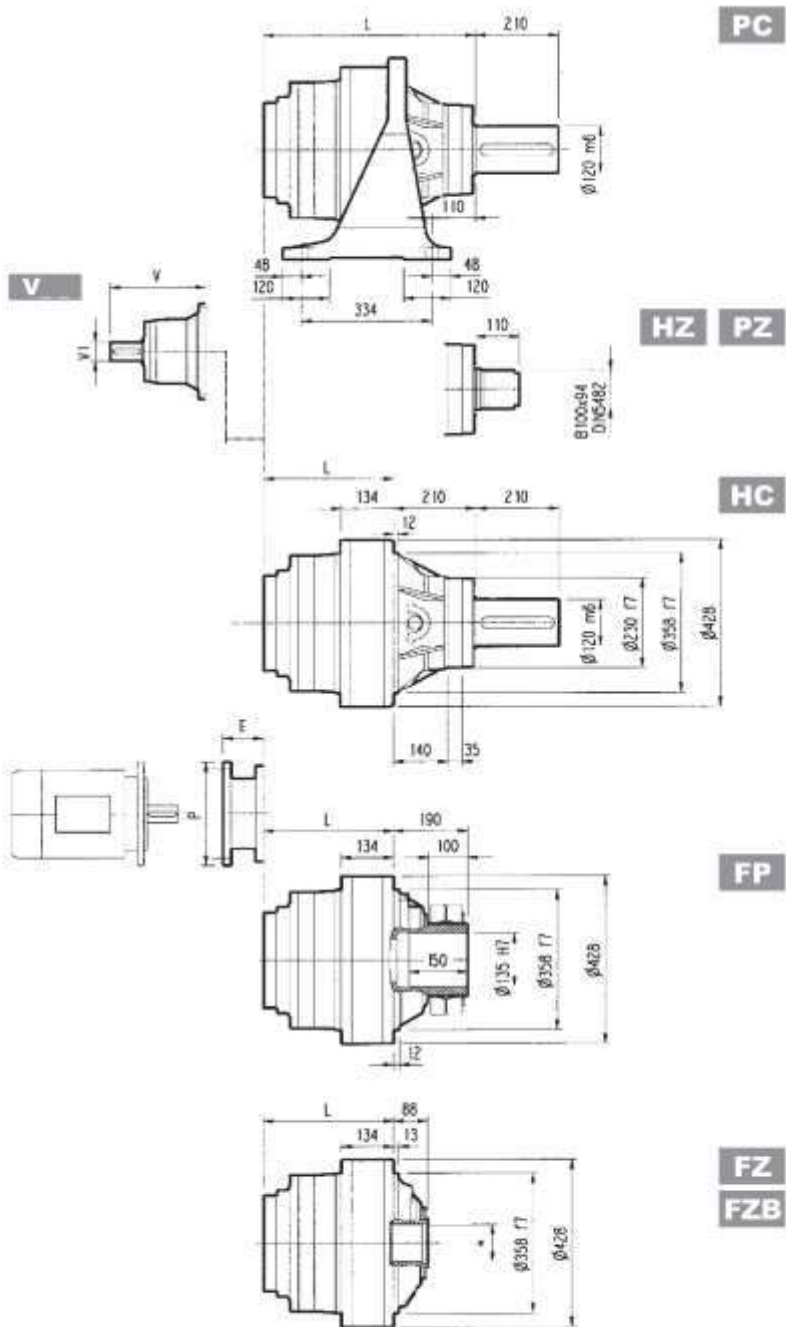
$n_2 = 10$ دقیقه در ۱ و ۱۰۰۰۰ ساعت طول عمر نظری.



311L

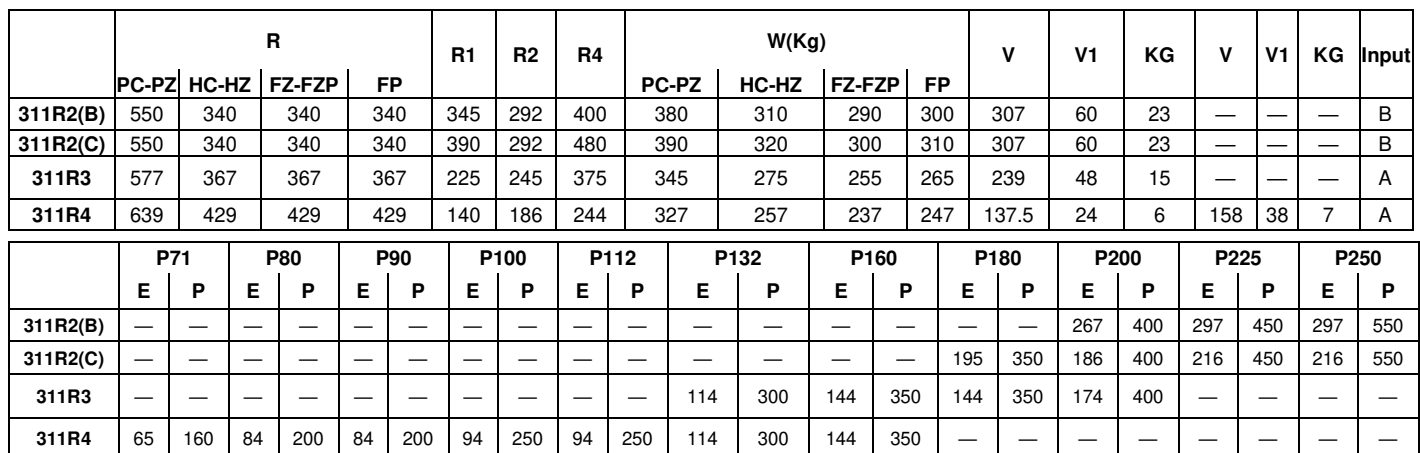


FZB	$M_{2max} = 66900 \text{ Nm}$
FP	$M_{2max} = 55000 \text{ Nm}$



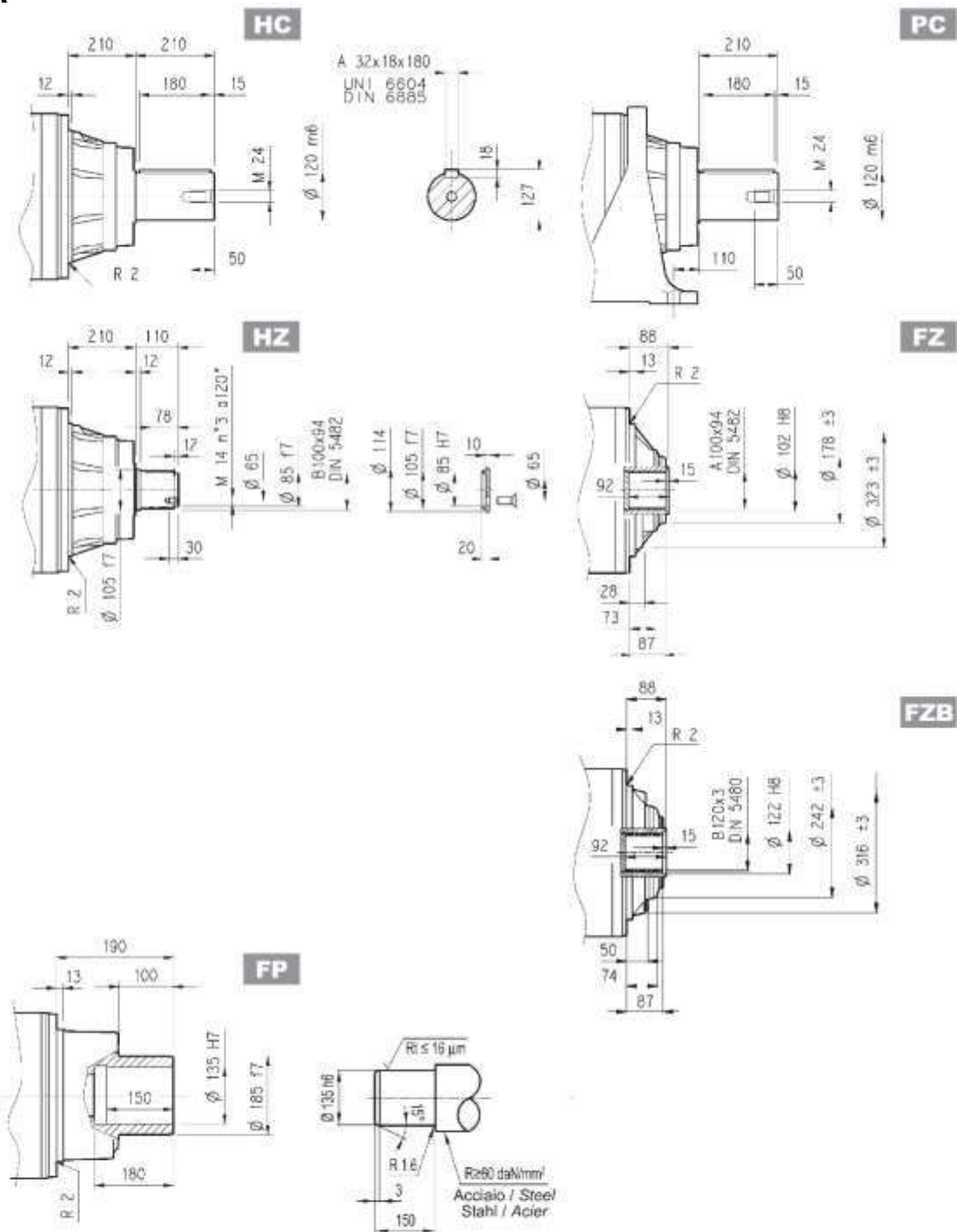
	L				Wight (kg)									
	PC - PZ	HC - HZ	FZ-FZP	FP	PC - PZ	HC - HZ	FZ-FZP	FP	V	V1	W(kg)	V	V1	W(kg)
311 L1	325	115	115	115	250	180	160	170	348	80	55	-	-	-
311 L2	458	248	248	248	295	225	205	215	315	80	35	313	60	28
311 L3	547	337	337	337	307	237	217	227	239	48	15	-	-	-
311 L4	612	402	402	402	314	244	224	234	137.5	24	6	158	38	7

	P71		P80		P90		P100		P112		P132		P160		P180		P200		P225		P250	
	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P
311L1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	267	400	297	450	297	550
311L2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	195	350	186	400	216	450	216	550
311L3	—	—	—	—	—	—	—	—	—	—	114	300	144	350	144	350	174	400	—	—	—	—
311L4	65	160	84	200	84	200	94	250	94	250	114	300	144	350	—	—	—	—	—	—	—	—





311L-311R



FZB	$M_{2\text{max}} = 66900 \text{ Nm}$
FP	$M_{2\text{max}} = 55000 \text{ Nm}$

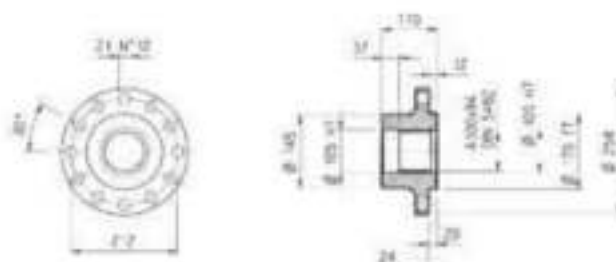




Flange



WOA



Material: Steel C40

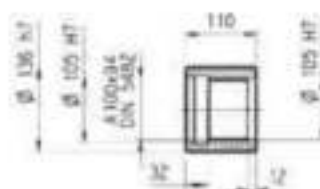
Pinions

 $\alpha = 20^\circ$

P...

	m	z	x	dp	di	de	H	A	B	C	Material
PLQ	12	23	—	276	246	300	110	—	—	—	Steel 18NiCrMo5 case hardened
PPD	16	13	0.5	208	184	253	145	—	35	118	Steel 38NiCrMo3 ha
PPF	16	15	0.45	240	215	280	125	—	15	120	

Sleeve coupling



MOA

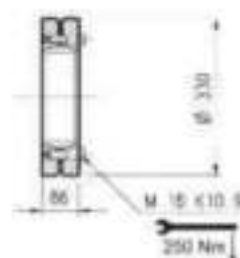
Material: Steel 16CrNi4

Splined bars



BOA

Shrink disc



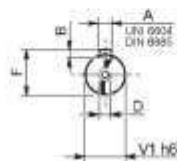
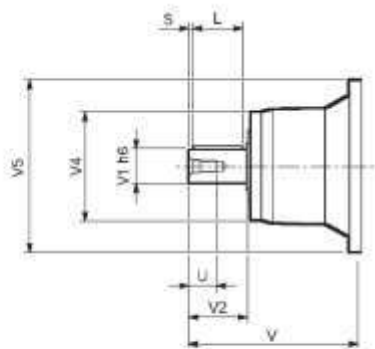
GOA

Material: Case hardening steel 18NiCrMo5
UNI 5331 must be case hardened 50-55 HRC

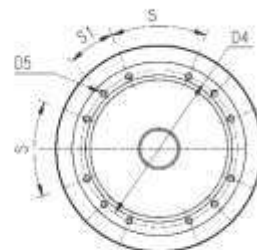
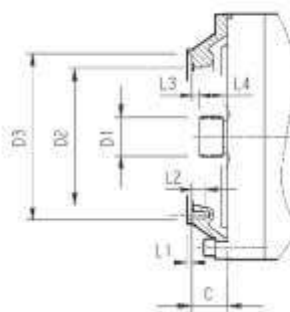
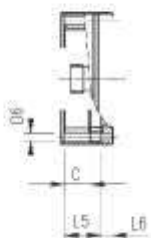


311L-311R

V_____



	input	V	V1	V2	V4	V5	A	B	F	L	S	D	U
311 L1	V11B	348	80	130	200	400	22	14	85	110	10	M16	36
311L2	V07B	315	80	130	200	345	22	14	85	110	10	M16	36
	V07A	313	60	105	155	345	18	11	64	90	7.5	M16	36
311 L3	V05B	239	48	82	155	245	14	9	52	70	6	M16	36
311 L4	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28
311 R2(B)(C)	V06B	307	60	105	155	292	18	11	64	90	7.5	M16	36
311 R3	V05B	239	48	82	155	245	14	9	52	70	6	M16	36
311 R4	V01A	137.5	24	36	120	186	8	7	24	30	3	M8	19
	V01A	158	38	58	120	186	10	8	41	50	4	M12	28

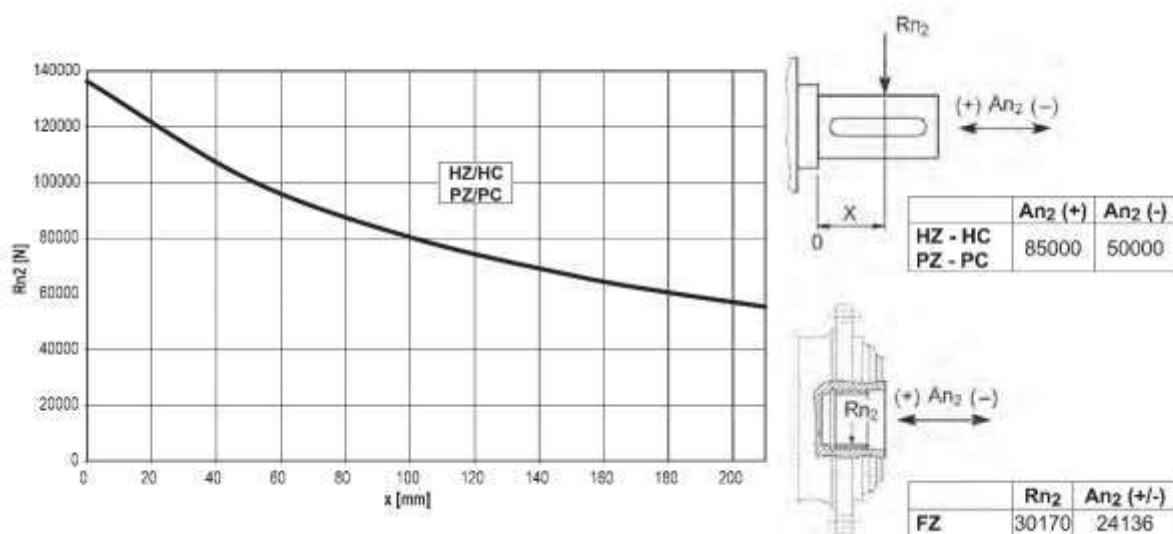


		C	D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	L5	L6	S	S1	Input
311L1	V9AD	81	80x74DIN5482	270	335H7	314	M16n°8	—	5	30	8.5	40	—	—	60°	30°	D
311L2	V9AB	51	58x53DIN5482	195	236H7	222	M10n°12	—	4	18	11	22	—	—	45°	22.5°	B
311L3	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	—	4	18	9	18	—	—	45°	45°	A
311L4	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	—	9	18	65	18	45°	45°	A
311R3	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	18	9	18	—	—	45°	45°	A
311R2(B)(C)	V9AB	45	58x53DIN5482	195	236H7	222	M10n°12	—	4	18	11	22	—	—	45°	22.5°	B
311R4	V9AA	37	40x36DIN5482	140	178H7	165	M10n°12	11	4	—	9	18	37	18	45°	45°	A



Permissible radial and axial loads on output shaft with $Fh_2: n_2 \cdot h = 100,000$

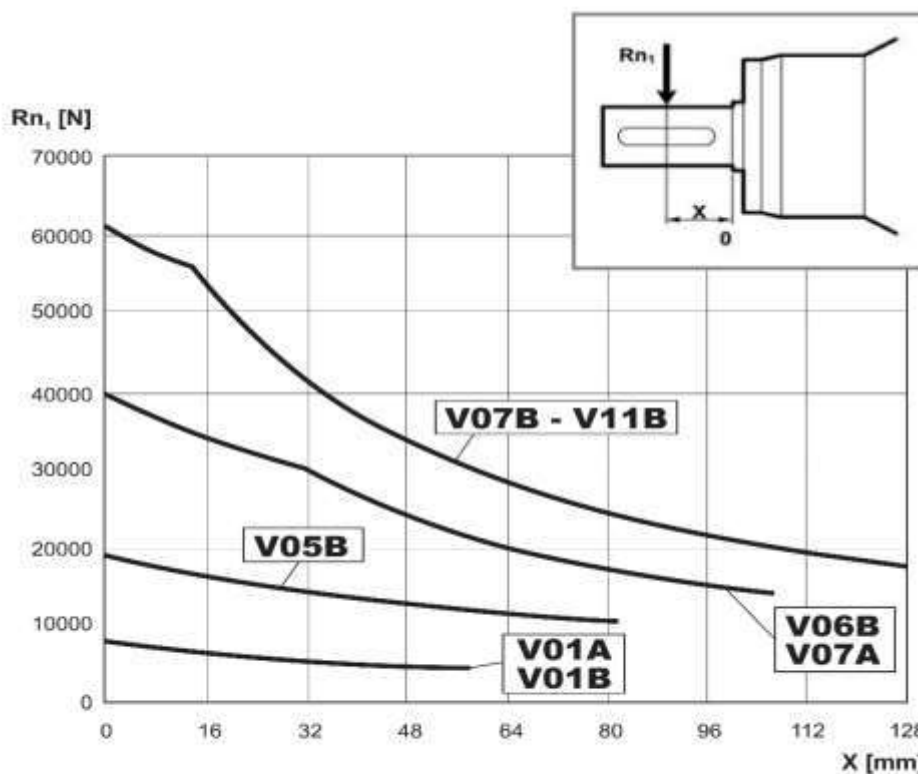
بارهای شعاعی و محوری مجاز بر روی شافت خروجی با $Fh_2: n_2 \cdot h = 100,000$



Load correction factor fh_2 on shafts فاکتور اصلاح بار fh_2 بر روی شافت	$Fh_2 = n_2 \cdot h$		10000	25000	50000	100000	500000	1000000
	fh_2	FZ	2.15	1.59	1.26	1.00	0.58	0.46
		HC - PC	1.93	1.27	1.23	1.00	0.62	0.50
		HZ - PZ	1.24	1.00	1.00	1.00	0.62	0.50

Permissible radial loads on input shaft with $Fh_1: n_1 \cdot h = 250000$

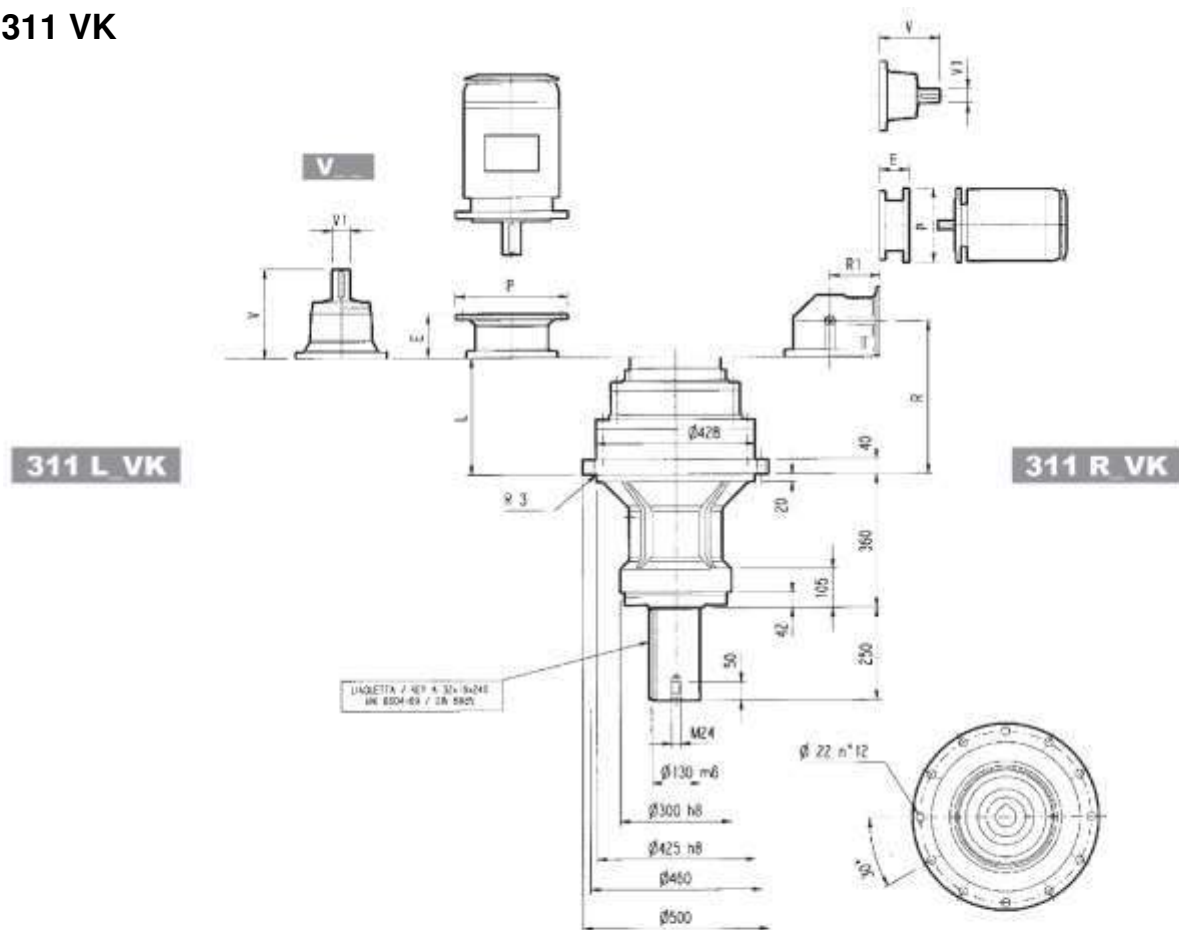
بارهای شعاعی مجاز بر روی شافت ورودی با $Fh_1: n_1 \cdot h = 250000$



Load correction factor fh_1 on shafts بر روی شافت fh_1 فاکتور اصلاح بار	$Fh_1 = n_1 \cdot h$	250000	500000	1000000	2000000	5000000	10000000
	fh_1	1	0.79	0.63	0.5	0.37	0.29



311 VK



	L	Kg	V	V1	Kg	V	V1	Kg
311L1	129	295	348	80	55	—	—	—
311L2	262	340	315	60	35	313	60	28
311L3	351	350	239	48	15	—	—	—
311L4	416	360	137.5	24	6	158	38	7

	R	R1	Kg	V	V1	Kg	V	V1	Kg
311R2(B)	354	345	420	307	60	23	—	—	—
311R2(C)	354	390	430	307	60	23	—	—	—
311R3	381	225	358	239	48	15	—	—	—
311R4	443	140	360	137.5	24	6	158	38	7

	P71		P80		P90		P100		P112		P132		P160		P180		P200		P225		P250		
	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	
311L2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	195	350	186	400	216	450	216	550	
311L3	—	—	—	—	—	—	—	—	—	—	—	114	300	144	350	144	350	174	400	—	—	—	—
311L4	65	160	84	200	84	200	94	250	94	250	114	300	144	350	—	—	—	—	—	—	—	—	

	P71		P80		P90		P100		P112		P132		P160		P180		P200		P225		P250	
	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P
311R2(B)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	152	350	182	400	212	450	193	550
311R2(C)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	152	350	182	400	212	450	193	550
311R3	—	—	—	—	—	—	—	—	—	—	114	300	144	350	144	350	174	400	—	—	—	—
311R4	65	160	84	200	84	200	94	250	94	250	114	300	144	350	—	—	—	—	—	—	—	—

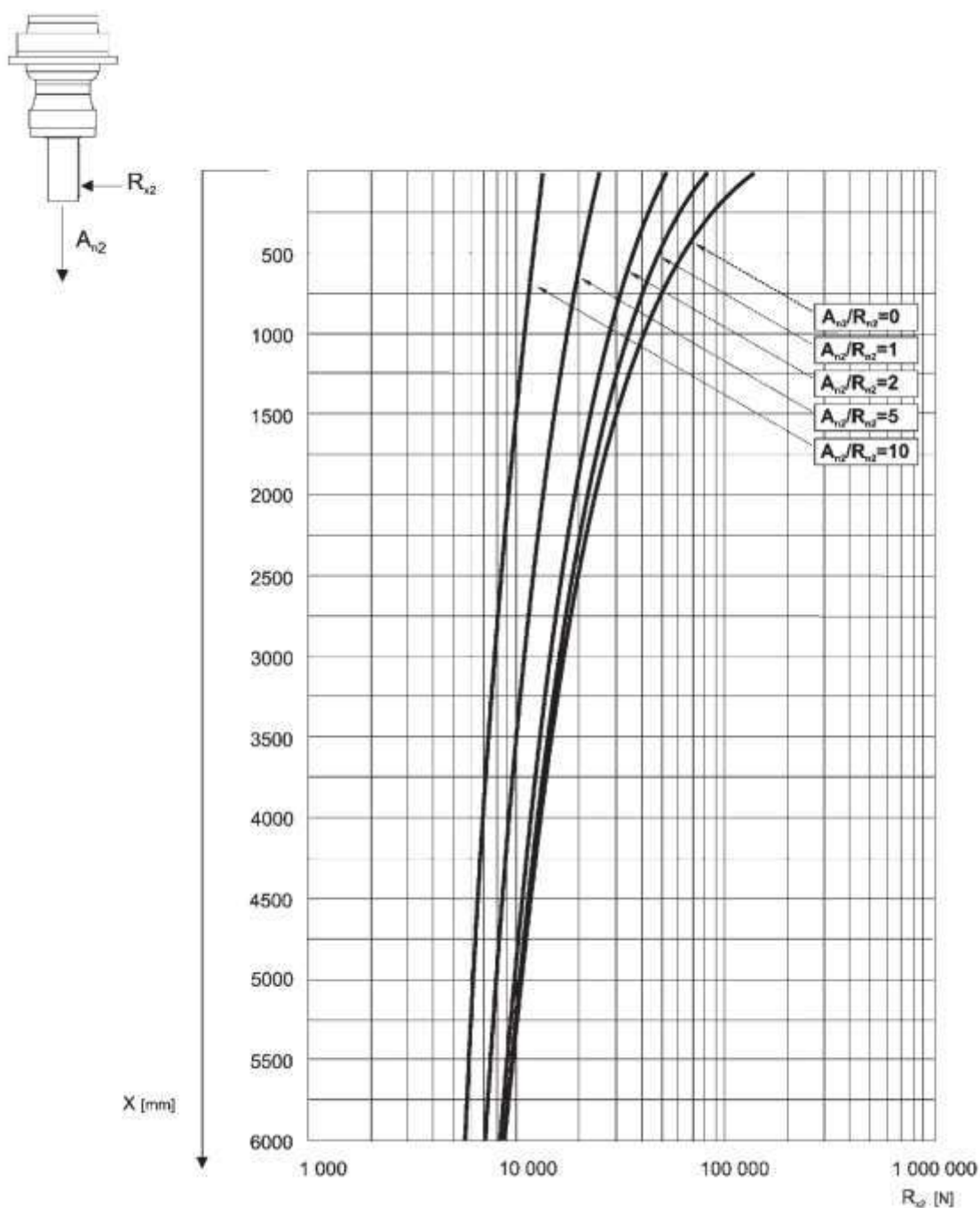


The diagram below allows the calculation of permitted overhung load R_{x2} on the output shaft of gearbox, with radial force applying at a distance x from shaft shoulder. The curves are relevant to value resulting from the relationship of trust load A_{n2} to radial load R_{n2} , based on $n_2 = 10 \text{ min}^{-1}$ and 10000 hrs. theoretical lifetime.

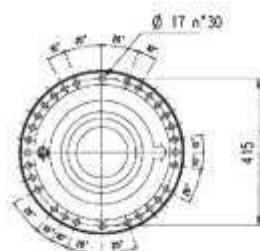
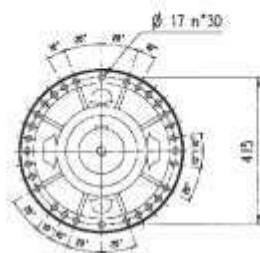
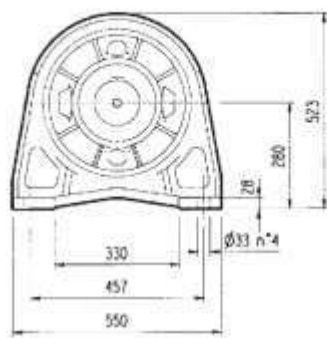
نمودار زیر امکان محاسبه بار اضافی مجاز R_{x2} را بر روی شافت خروجی گیربکس، با نیروی شعاعی اعمال شده در فاصله x از شافت.

منحنی ها به مقدار مربوط به رابطه بار مجاز A_{n2} به بار شعاعی R_{n2} مربوط می شوند

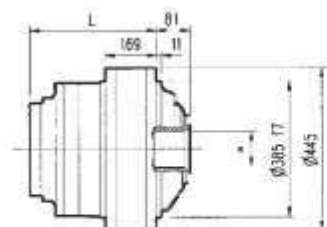
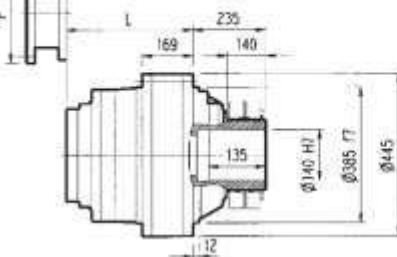
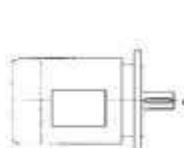
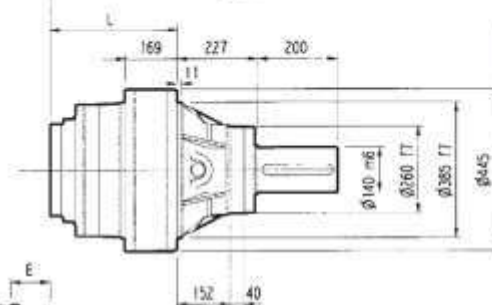
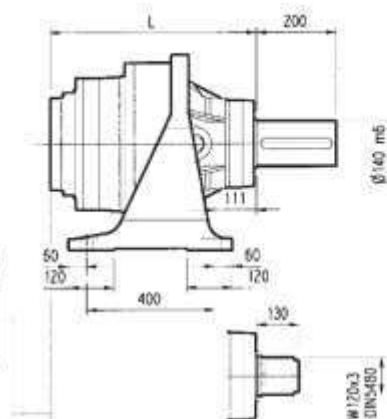
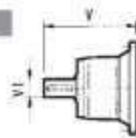
$n_2 = 10$ دقیقه در ۱ و ۱۰۰۰۰ ساعت طول عمر نظری.



313 L



V



PC

	HZ	PZ
--	----	----

HC

FP

FZ

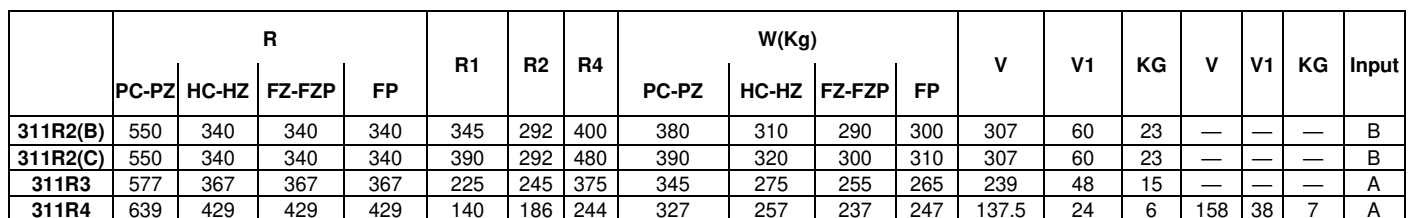
FZB

FP

$$M_{Zmax} = 79000 \text{ Nm}$$

	L				Wight (kg)									
	PC - PZ	HC - HZ	FZ-FZP-FP	FP	PC - PZ	HC - HZ	FZ-FZP	FP	V	V ₁	W(kg)	V	V ₁	W(kg)
313 L1	381	154	154	154	320	230	230	200	343	80	55	-	-	-
313 L2	531	304	304	304	380	290	290	280	315	80	35	313	60	28
313 L3	620	393	393	393	392	302	302	299	239	48	15	-	-	-
313L4	685	458	458	458	399	309	309	299	137.5	24	6	158	38	7

	P71		P80		P90		P100		P112		P132		P160		P180		P200		P225		P250	
	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P
313L1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	267	400	297	450	297	550
313L2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	195	350	186	400	216	450	216	550
313L3	—	—	—	—	—	—	—	—	—	—	114	300	144	350	144	350	174	400	—	—	—	—
313L4	65	160	84	200	84	200	94	250	94	250	114	300	144	350	—	—	—	—	—	—	—	—

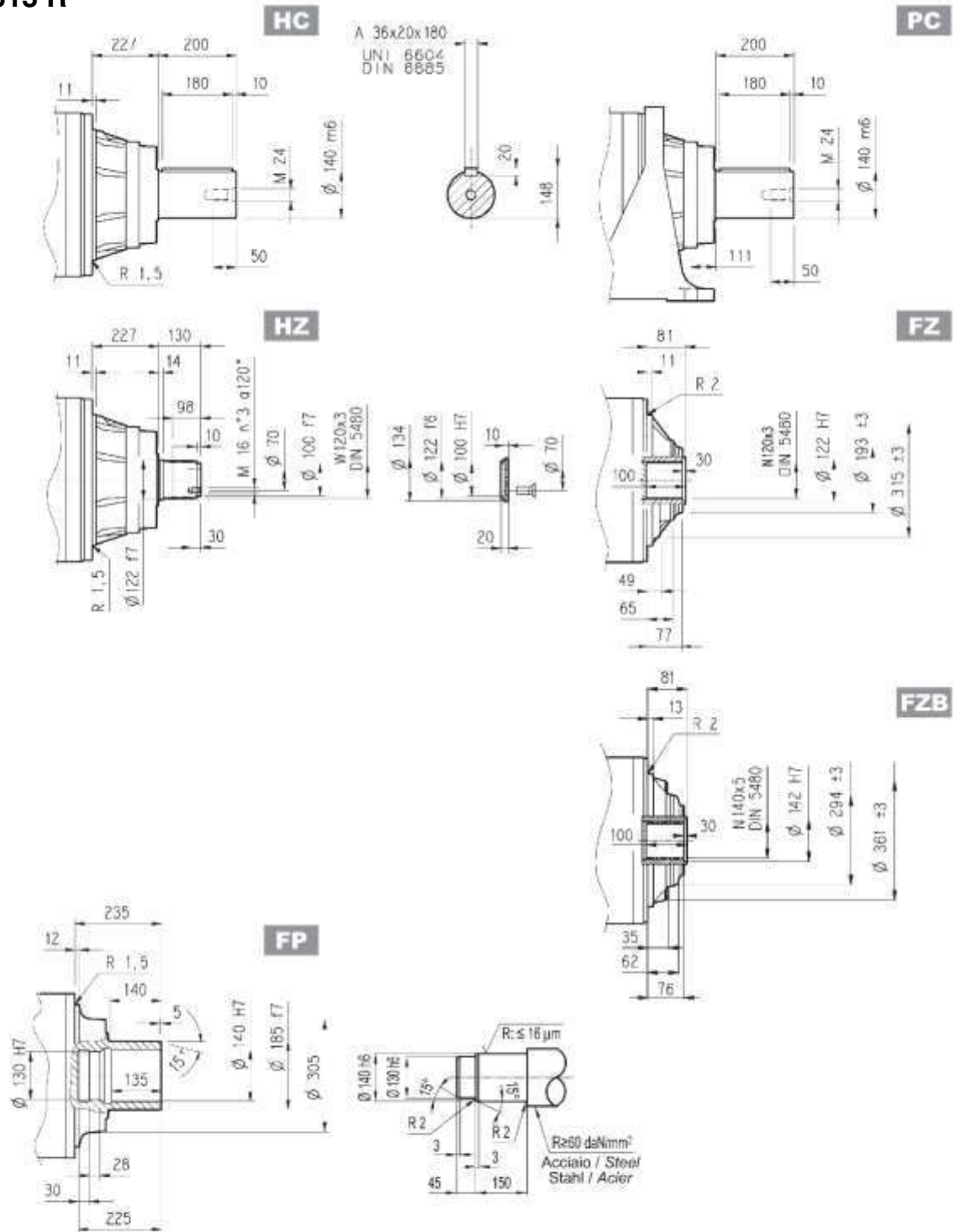


	P71		P80		P90		P100		P112		P132		P160		P180		P200		P225		P250	
	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P
313R2(B)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	152	350	182	400	212	450	193	550
313R2(C)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	152	350	182	400	212	450	193	550
313R3	—	—	—	—	—	—	—	—	—	—	114	300	144	350	144	350	174	400	—	—	—	—
313R4	65	160	84	200	84	200	94	250	94	250	114	300	144	350	—	—	—	—	—	—	—	—





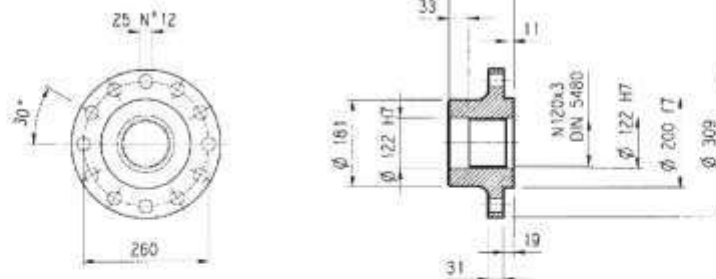
313 L - 313 R





313 L-313 R Flange

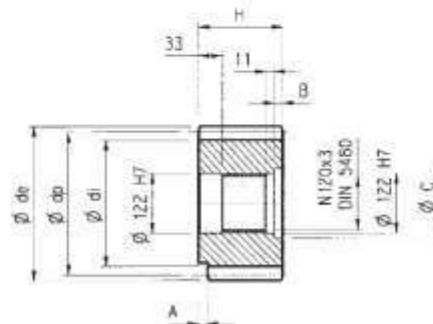
WOA



Material: Steel C40

Pinions

P...



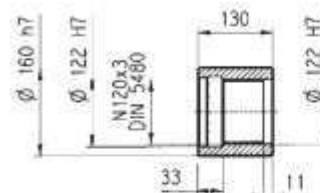
$\alpha = 20^\circ$

m	z	x	dp	di	de	H	A	B	C	Material
PPH	16	17	0.5	272	247	315	135	—	5	136
PRI	18	18	0.333	324	294	365	140	—	10	140

Steel 39NiCrMo3 hardened and tempered

Sleeve coupling

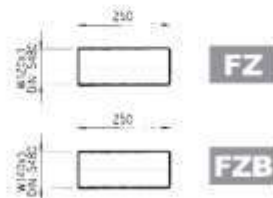
MOA



Material: Steel 16CrNi4

Splined bars

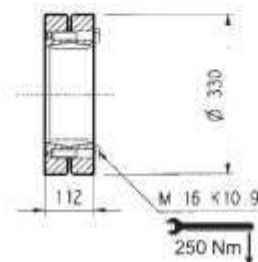
BOA



Material: Case hardening steel 18NiCrMo5
UNI 5331 must be case hardened 50-55 HRC

Shrink disc

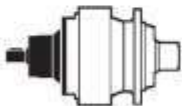
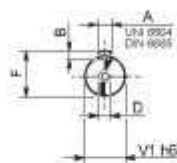
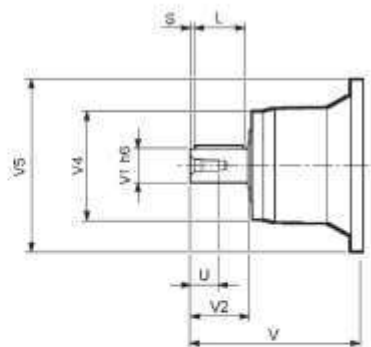
GOA



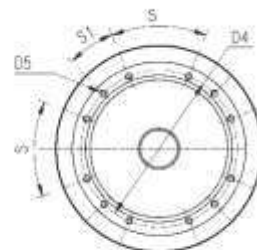
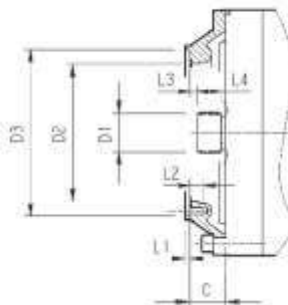
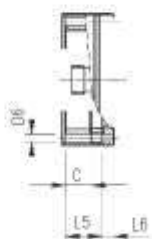


313 L–313 R

V



	input	V	V1	V2	V4	V5	A	B	F	L	S	D	U
313 L1	V11B	343	80	130	200	445	22	14	85	110	10	M16	36
313 L2	V07B	315	80	130	200	345	22	14	85	110	10	M16	36
	V07A	313	60	105	155	345	18	11	64	90	7.5	M16	36
313 L3	V05B	239	48	82	155	245	14	9	52	70	6	M16	36
313 L4	V01A	137.5	24	36	120	186	8	7	27	30	3	M8	19
	V01B	158	38	58	120	186	10	8	41	50	4	M12	28
313 R2(B)(C)	V06B	307	60	105	155	292	18	11	64	90	7.5	M16	36
313 R3	V05B	239	48	82	155	245	14	9	52	70	6	M16	36
313 R4	V01A	137.5	24	36	120	186	8	7	24	30	3	M8	19
	V01A	158	38	58	120	186	10	8	41	50	4	M12	28



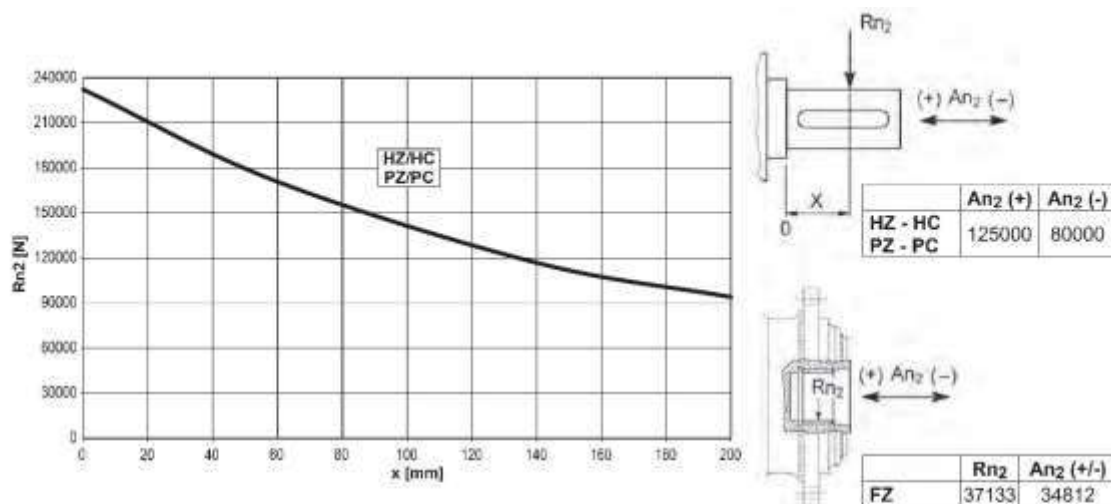
		C	D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	L5	L6	S	S1	Input
313 L1	V9AD	75	80x74DIN5482	270	335H7	314	M16n°8	—	5	30	8.5	40	—	—	60°	30°	D
313 L2	V9AB	51	58x53DIN5482	195	236H7	222	M10n°12	—	4	18	11	22	—	—	45°	22.5°	B
313 L3	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	—	4	18	9	18	—	—	45°	45°	A
313 L4	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	—	9	18	65	18	45°	45°	A
313 R3	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	18	9	18	—	—	45°	45°	A
313 R2(B)(C)	V9AB	45	58x53DIN5482	195	236H7	222	M10n°12	—	4	18	11	22	—	—	45°	22.5°	B
313 R4	V9AA	37	40x36DIN5482	140	178H7	165	M10n°12	11	4	—	9	18	37	18	45°	45°	A





Permissible radial and axial loads on output shaft with $F_{h2}: n_2 \cdot h = 100,000$

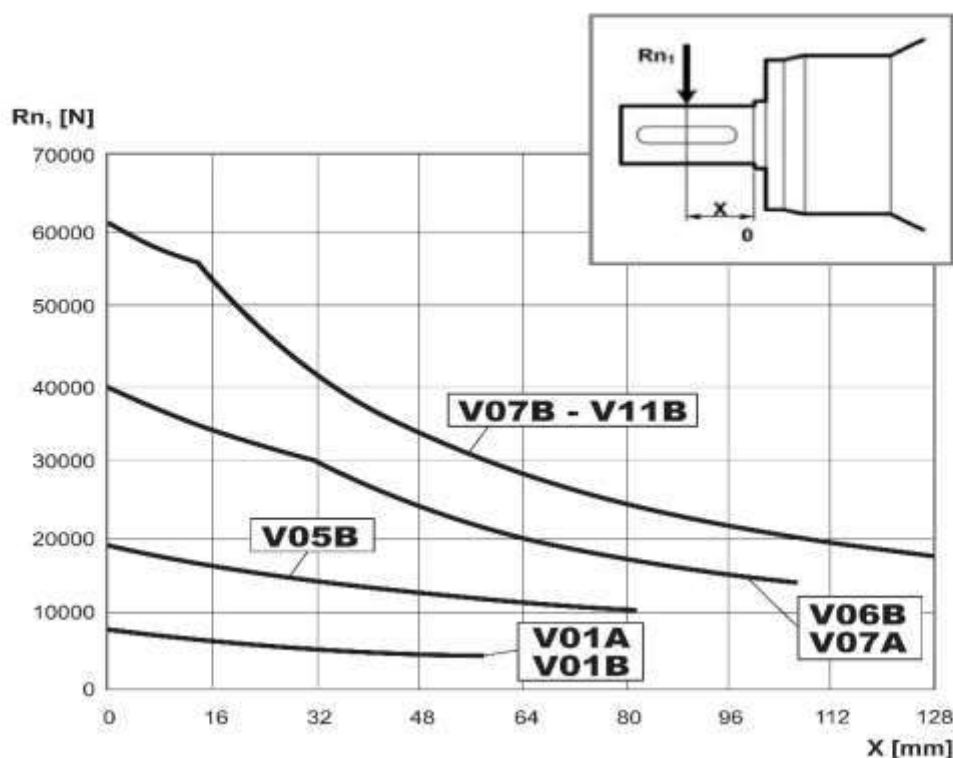
بارهای شعاعی و محوری مجاز بر روی شافت خروجی با $F_{h2}: n_2 \cdot h = 100000$



Load correction factor fh_2 on shafts فاکتور اصلاح بار fh_2 بر روی شافت	$Fh_2 = n_2 \cdot h$		10000	25000	50000	100000	500000	1000000
	fh_2	FZ	2.15	1.59	1.26	1.00	0.58	0.46
		HC - PC HZ - PZ	1.32	1.20	1.20	1.00	0.62	0.50

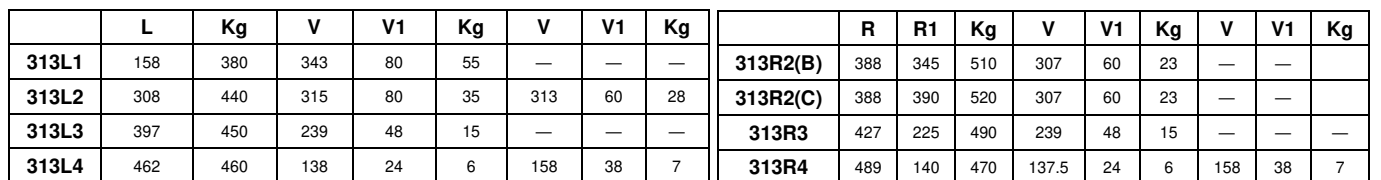
Permissible radial loads on input shaft with $F_{h1}: n_1 \cdot h = 250000$

بارهای شعاعی مجاز بر روی شافت ورودی با $F_{h1}: n_1 \cdot h = 250000$



Load correction factor fh_1 on shafts فاکتور اصلاح بار fh_1 بر روی شافت	$F_{h1} = n_1 \cdot h$	250000	500000	1000000	2000000	5000000	10000000
	fh_1	1	0.79	0.63	0.5	0.37	0.29





	P71		P80		P90		P100		P112		P132		P160		P180		P200		P225		P250	
	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P
313L2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	195	350	186	400	216	450	216	550
313L3	—	—	—	—	—	—	—	—	—	—	114	300	144	350	144	350	174	400	—	—	—	—
313L4	65	160	84	200	84	200	94	250	94	250	114	300	144	350	—	—	—	—	—	—	—	—

	P71		P80		P90		P100		P112		P132		P160		P180		P200		P225		P250	
	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P
313R2(B)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	152	350	182	400	212	450	193	550
313R2(C)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	152	350	182	400	212	450	193	550
313R3	—	—	—	—	—	—	—	—	—	—	114	300	144	350	144	350	174	400	—	—	—	—
313R4	65	160	84	200	84	200	94	250	94	250	114	300	144	350	—	—	—	—	—	—	—	—

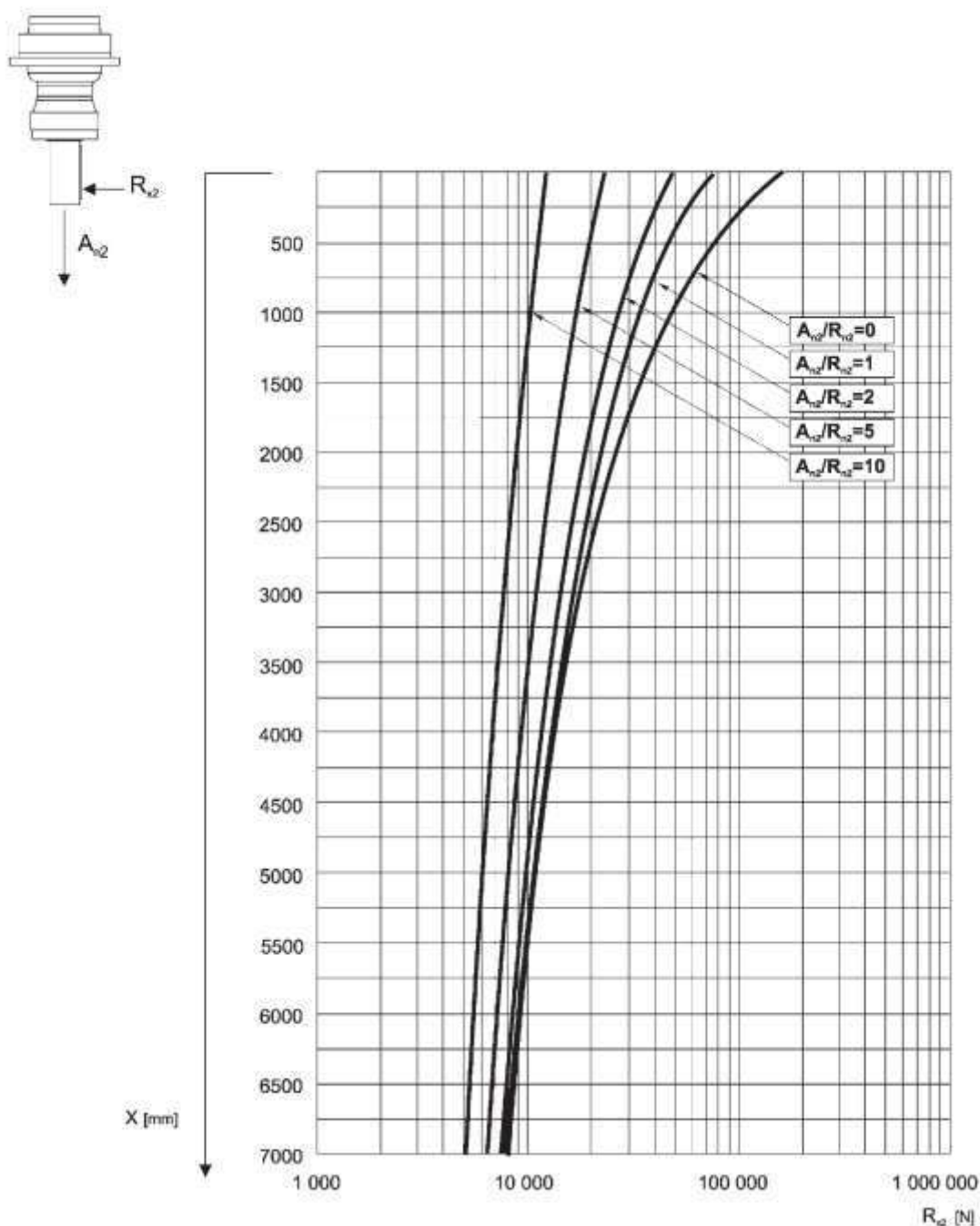




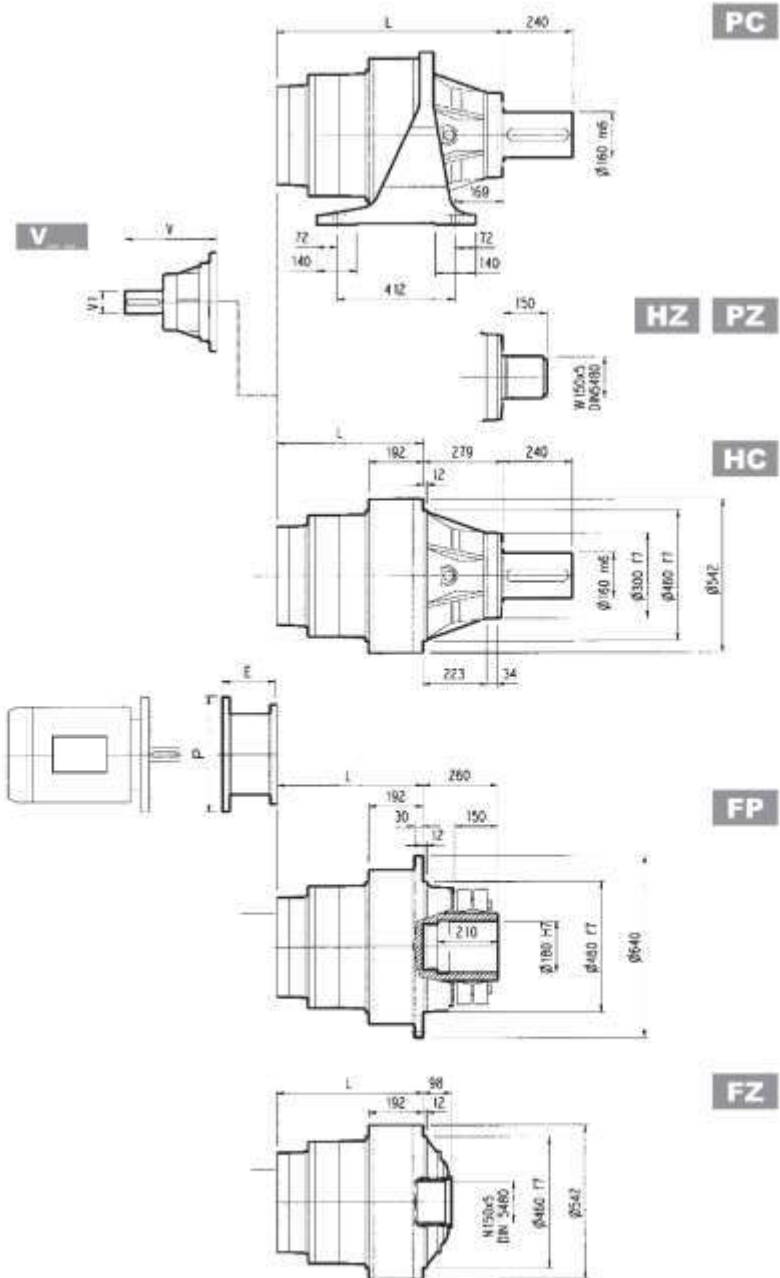
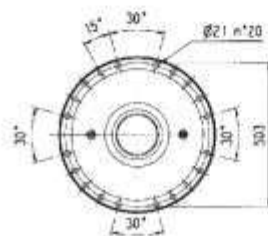
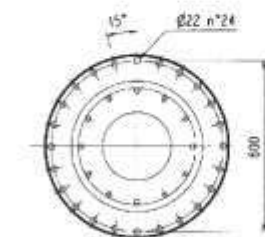
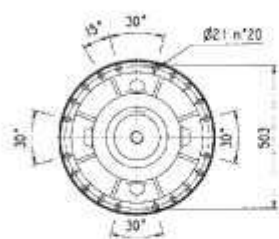
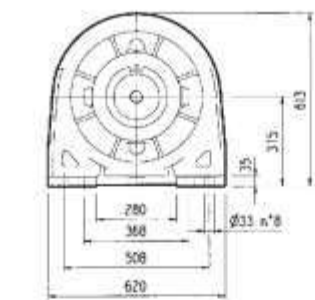
The diagram below allows the calculation of permitted overhung load R_{x2} on the output shaft of gearbox, with radial force applying at a distance x from shaft shoulder. The curves are relevant to value resulting from the relationship of trust load A_{n2} to radial load R_{n2} , based on $n_2 = 10 \text{ min}^{-1}$ and 10000 hrs. theoretical lifetime.

را بر روی R_{x2} نمودار زیر امکان محاسبه بار اضافی مجاز شافت خروجی گیربکس، با نیروی شعاعی اعمال شده در فاصله x از شافت.

به بار A_{n2} منحنی ها به مقدار مربوط به رابطه بار مجاز مربوط می شوند R_{n2} شعاعی دقیقه در ۱ و ۱۰۰۰۰ ساعت طول عمر نظری. $n_2 = 10$



315 L



	L				Wight (kg)									
	PC - PZ	HC - HZ	FZ-FZP	FP	PC - PZ	HC - HZ	FZ-FZP	FP	V	V1	W(kg)	V	V1	W(kg)
315 L1	453	174	174	174	500	370	280	330	556	120	125	-	-	-
315 L2	665	386	386	386	585	455	365	415	348	80	55	-	-	-
315 L3	798	519	519	519	630	500	410	460	315	80	35	313	60	28
315L4	887	608	608	608	642	512	422	472	239	48	15	-	-	-

	P132		P160		P180		P200		P225		P250	
	E	P	E	P	E	P	E	P	E	P	E	P
315L2	—	—	—	—	—	—	267	400	297	450	297	550
315L3	—	—	—	—	195	350	186	400	216	450	215	550
315L4	114	300	144	350	144	350	174	400	—	—	—	—



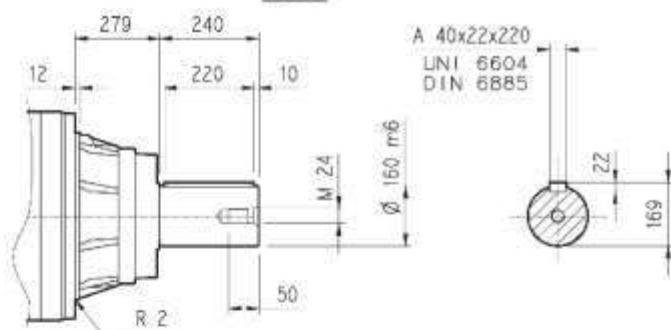
	P132		P160		P180		P200		P225		P250	
	E	P	E	P	E	P	E	P	E	P	E	P
315L2	—	—	—	—	152	350	182	400	212	450	193	550
315L3	—	—	—	—	152	350	182	400	212	450	193	550
315L4	114	300	144	350	144	350	174	400	—	—	—	—



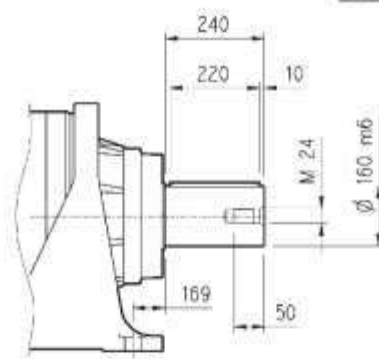


315L-315R

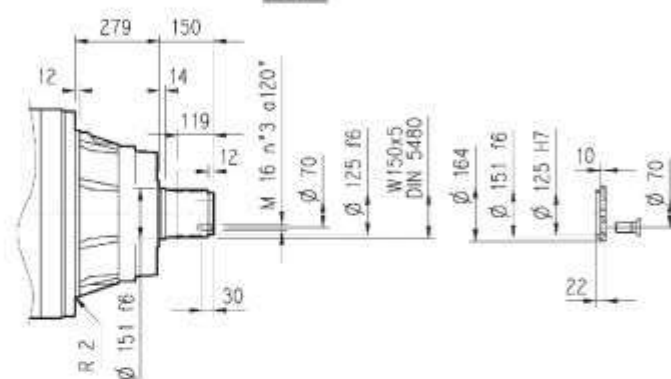
HC



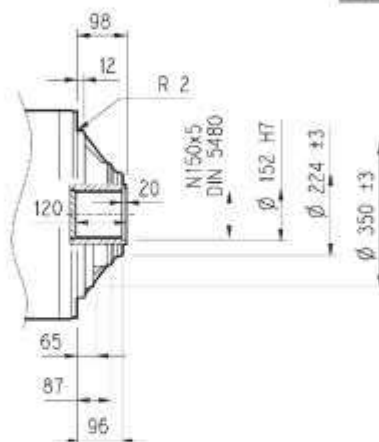
PC



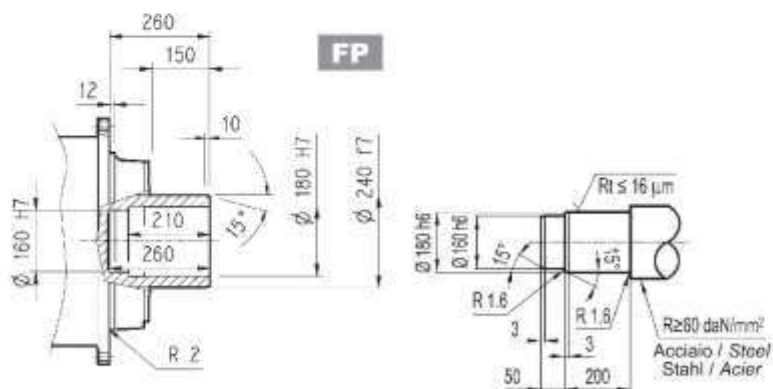
HZ



FZ



FP



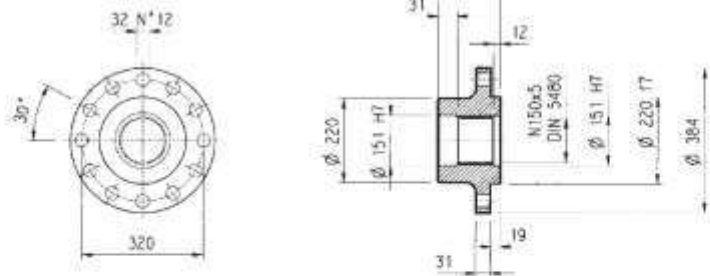
FP

$M_{2max} = 135000 \text{ Nm}$



315L-315R Flange

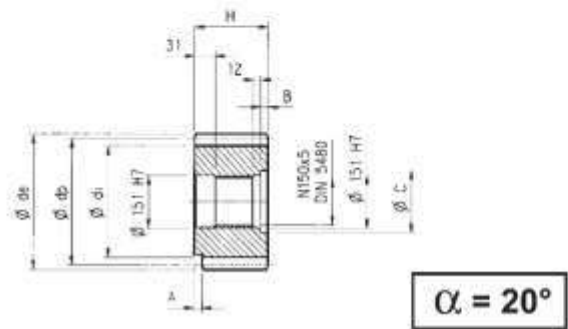
WOA



Material: Steel C40

Pinions

P...



$\alpha = 20^\circ$

	m	z	x	dp	di	de	H	A	B	C	Material
PRG1	18	16	1	288	261	342	160	—	10	166	Steel 18NiCrMo5 case hardened
PRG2	18	16	1	288	271	339	150	30	—	—	Steel 39NiCrMo3 hardened and tempered

Sleeve coupling

MOA



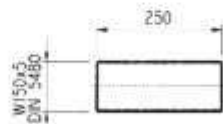
Material: Steel 16CrNi4

Splined bars

BOA

Shrink disc

GOA



Material: Case hardening steel 18NiCrMo5
UNI 5331 must be case hardened 50-55 HRC

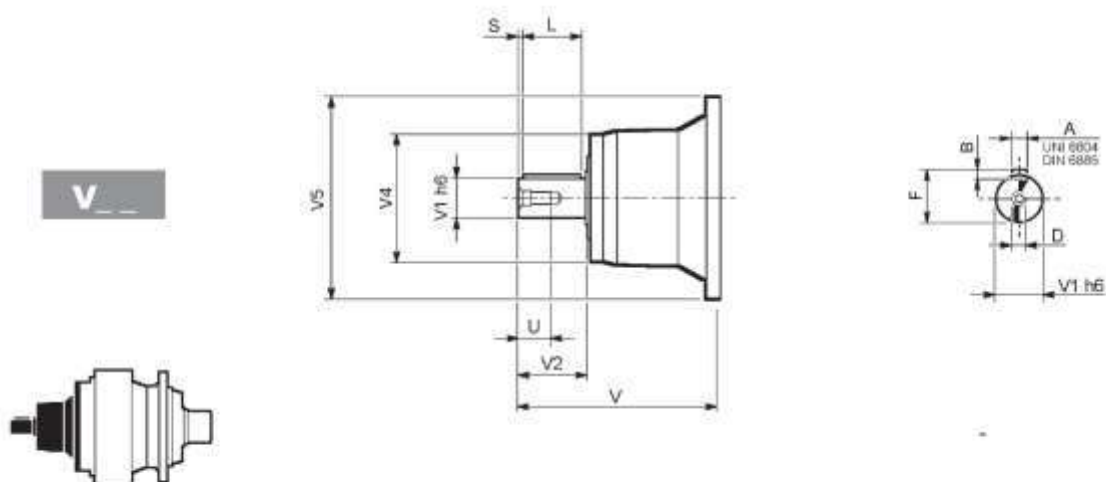


M 20 K 10. 9
490 Nm

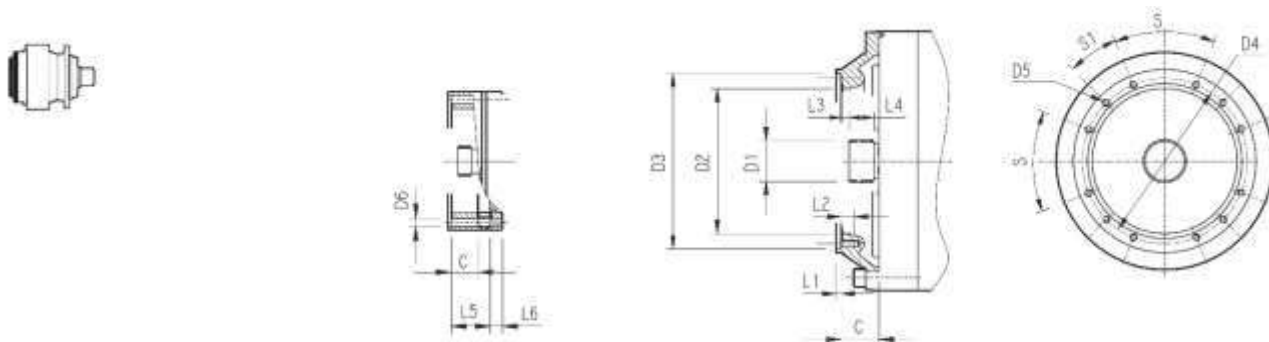




315L-315R



	input	V	V1	V2	V4	V5	A	B	F	L	S	D	U
315L1	V15B	556	120	210	230	542	32	18	127	180	15	M24	50
315L2	V11B	348	80	130	428	345	22	14	85	110	10	M16	36
315 L3	V07B	315	80	130	200	345	22	14	85	110	10	M16	36
	V07A	313	60	105	155	345	22	14	85	110	10	M16	36
315 L4	V05B	239	48	82	155	245	14	9	51.5	70	6	M16	36
315 R3(B)(C)	V06B	307	60	105	155	292	18	11	64	90	7.5	M16	36
315 R4	V05B	239	48	82	155	245	14	9	51.5	70	6	M16	36

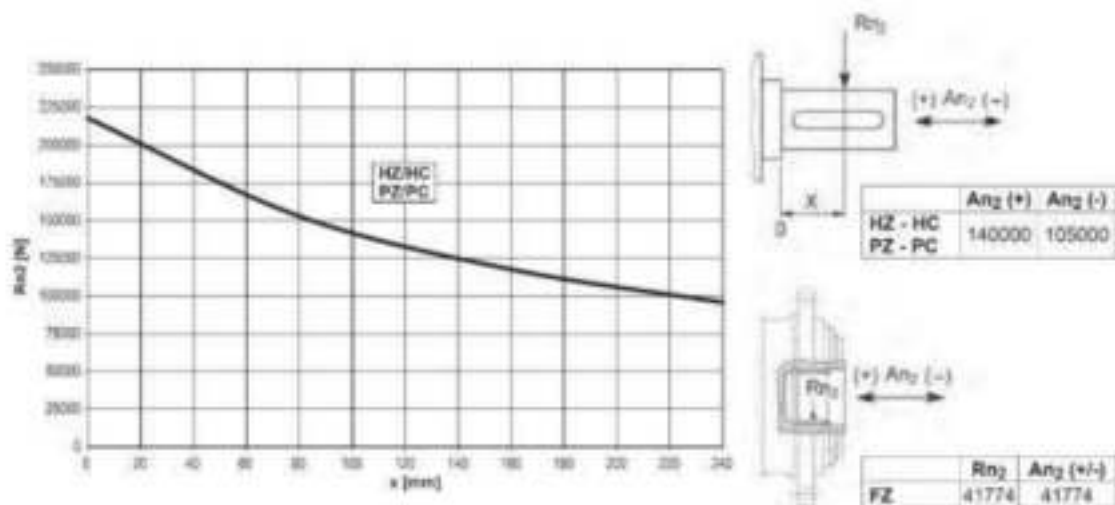


		C	D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	L5	L6	S	S1	Input
315L1	V9AE	116	100x94DIN5482	340	412H7	390	M16n°18	—	7	30	8	55	—	—	20°	20°	E
315L2	V9AD	81	80x74DIN5482	270	335H7	314	M16n°8	—	5	30	8.5	40	—	—	60°	30°	D
315L3	V9AB	51	58x53DIN5482	195	236H7	222	M10n°12	—	4	18	11	22	—	—	45°	22.5°	B
315L4	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	—	4	18	9	18	—	—	45°	45°	A
315R4	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	18	9	18	—	—	45°	45°	A
315R3(B)(C)	V9AB	45	58x53DIN5482	195	236H7	222	M10n°12	—	4	18	11	22	—	—	45°	22.5°	B



Permissible radial and axial loads on output shaft with $Fh_2: n_2, h = 100,000$

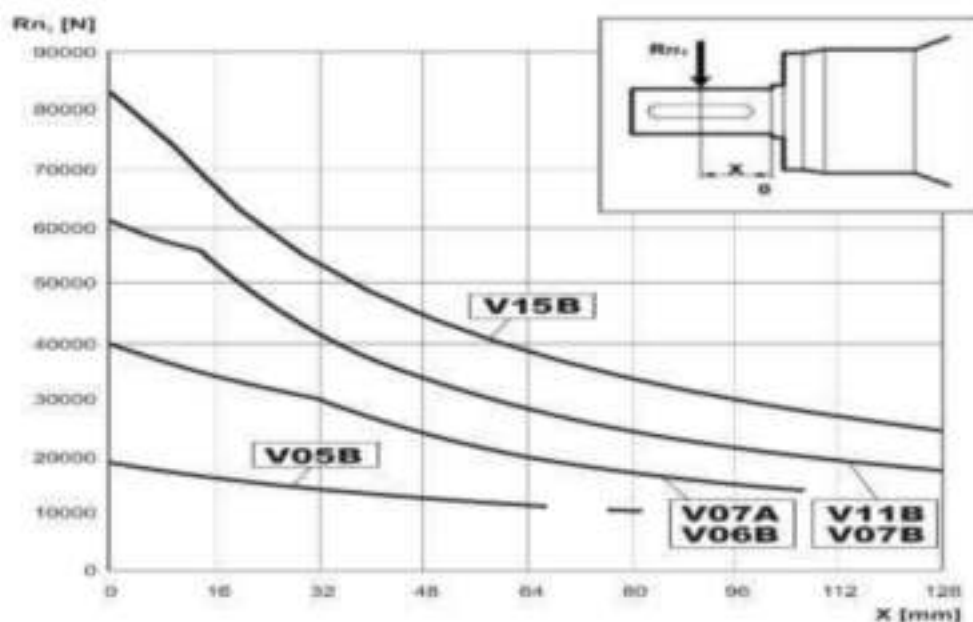
بارهای شعاعی و محوری مجاز بر روی شافت خروجی با $Fh_2: n_2, h = 100000$



Load correction factor fh_2 on shafts فکتور اصلاح بار fh_2 بر روی شافت	$Fh_2 = n_2, h$							
	fh_2	10000	25000	50000	100000	500000	1000000	
		FZ	2.15	1.59	1.26	1.00	0.58	0.46
		HC - PC HZ - PZ	2.00	1.52	1.23	1.00	0.62	0.50

Permissible radial loads on input shaft with $Fh_1: n_1, h = 250000$

بارهای شعاعی مجاز بر روی شافت ورودی با $Fh_1: n_1, h = 250000$



Load correction factor fh_1 on shafts فکتور اصلاح بار fh_1 بر روی شافت	$Fh_1 = n_1, h$	250000	500000	1000000	2000000	5000000	10000000
	fh_1	1	0.79	0.63	0.5	0.37	0.29

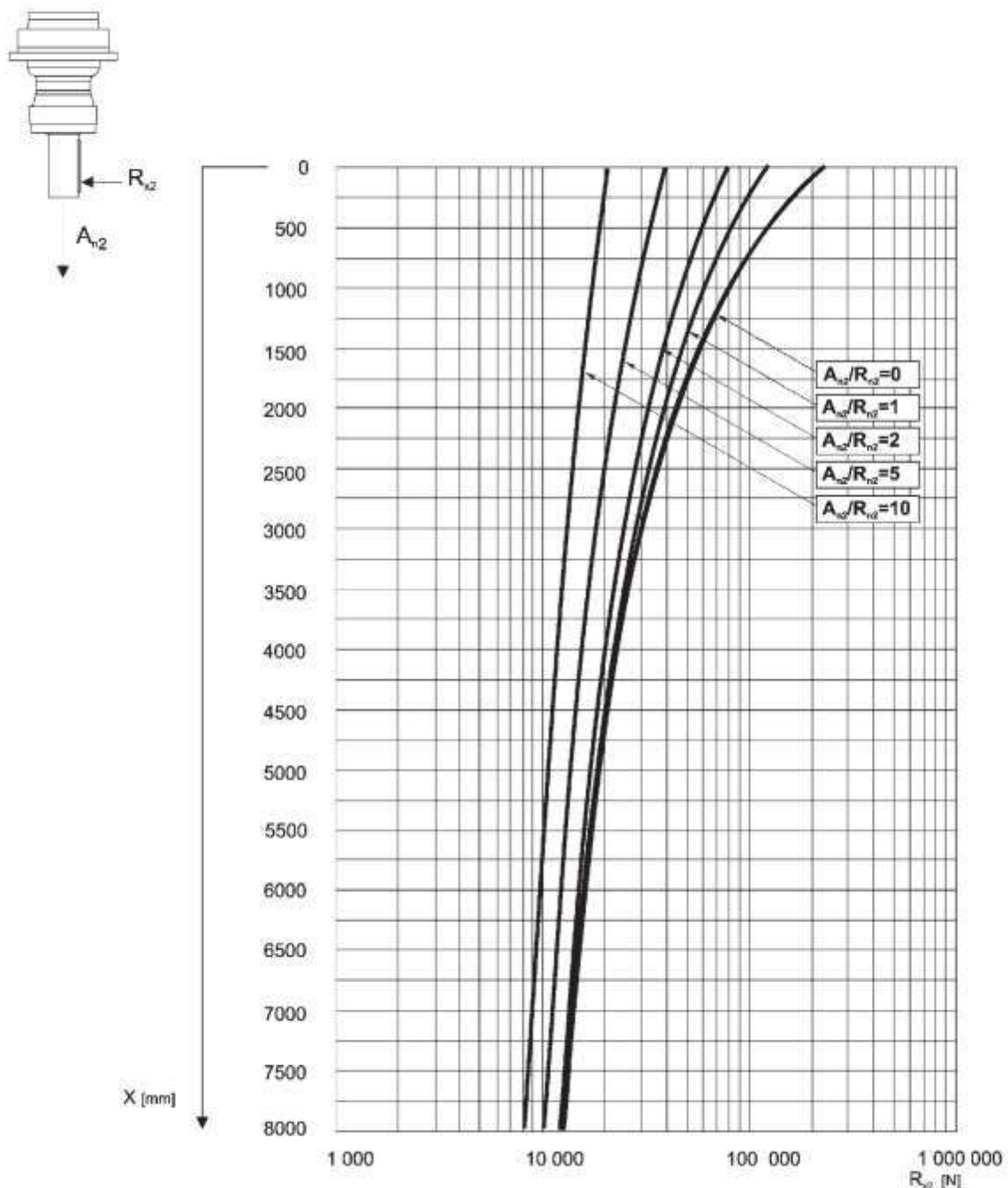


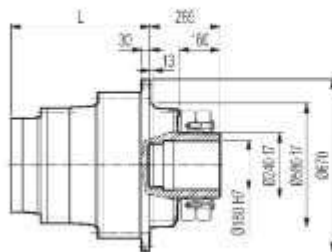
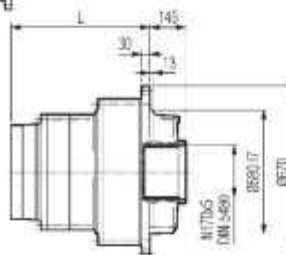
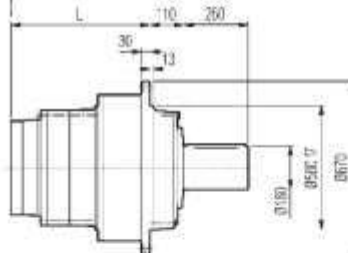
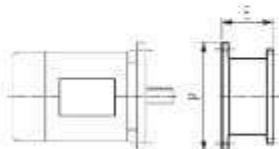
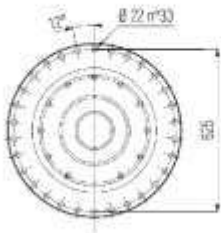


The diagram below allows the calculation of permitted overhung load R_{x2} on the output shaft of gearbox, with radial force applying at a distance x from shaft shoulder. The curves are relevant to value resulting from the relationship of trust load A_{n2} to radial load R_{n2} , based on $n_2 = 10 \text{ min}^{-1}$ and 10000 hrs. theoretical lifetime.

نمودار زیر امکان محاسبه بار اضافی مجاز R_{x2} را بر روی شافت خروجی گیربکس، با نیروی شعاعی اعمال شده در فاصله x از شافت.

منحنی ها به مقدار مربوط به رابطه بار مجاز A_{n2} به بار شعاعی R_{n2} مربوط می شوند
 $n_2 = 10$ دقیقه در ۱ و ۱۰۰۰۰ ساعت طول عمر نظری.





PC

	HZ	PZ
1	0.00	0.00
2	0.00	0.00
3	0.00	0.00
4	0.00	0.00
5	0.00	0.00
6	0.00	0.00
7	0.00	0.00
8	0.00	0.00
9	0.00	0.00
10	0.00	0.00
11	0.00	0.00
12	0.00	0.00
13	0.00	0.00
14	0.00	0.00
15	0.00	0.00
16	0.00	0.00
17	0.00	0.00
18	0.00	0.00
19	0.00	0.00
20	0.00	0.00
21	0.00	0.00
22	0.00	0.00
23	0.00	0.00
24	0.00	0.00
25	0.00	0.00
26	0.00	0.00
27	0.00	0.00
28	0.00	0.00
29	0.00	0.00
30	0.00	0.00
31	0.00	0.00
32	0.00	0.00
33	0.00	0.00
34	0.00	0.00
35	0.00	0.00
36	0.00	0.00
37	0.00	0.00
38	0.00	0.00
39	0.00	0.00
40	0.00	0.00
41	0.00	0.00
42	0.00	0.00
43	0.00	0.00
44	0.00	0.00
45	0.00	0.00
46	0.00	0.00
47	0.00	0.00
48	0.00	0.00
49	0.00	0.00
50	0.00	0.00
51	0.00	0.00
52	0.00	0.00
53	0.00	0.00
54	0.00	0.00
55	0.00	0.00
56	0.00	0.00
57	0.00	0.00
58	0.00	0.00
59	0.00	0.00
60	0.00	0.00
61	0.00	0.00
62	0.00	0.00
63	0.00	0.00
64	0.00	0.00
65	0.00	0.00
66	0.00	0.00
67	0.00	0.00
68	0.00	0.00
69	0.00	0.00
70	0.00	0.00
71	0.00	0.00
72	0.00	0.00
73	0.00	0.00
74	0.00	0.00
75	0.00	0.00
76	0.00	0.00
77	0.00	0.00
78	0.00	0.00
79	0.00	0.00
80	0.00	0.00
81	0.00	0.00
82	0.00	0.00
83	0.00	0.00
84	0.00	0.00
85	0.00	0.00
86	0.00	0.00
87	0.00	0.00
88	0.00	0.00
89	0.00	0.00
90	0.00	0.00
91	0.00	0.00
92	0.00	0.00
93	0.00	0.00
94	0.00	0.00
95	0.00	0.00
96	0.00	0.00
97	0.00	0.00
98	0.00	0.00
99	0.00	0.00
100	0.00	0.00

HC

FZ

FP

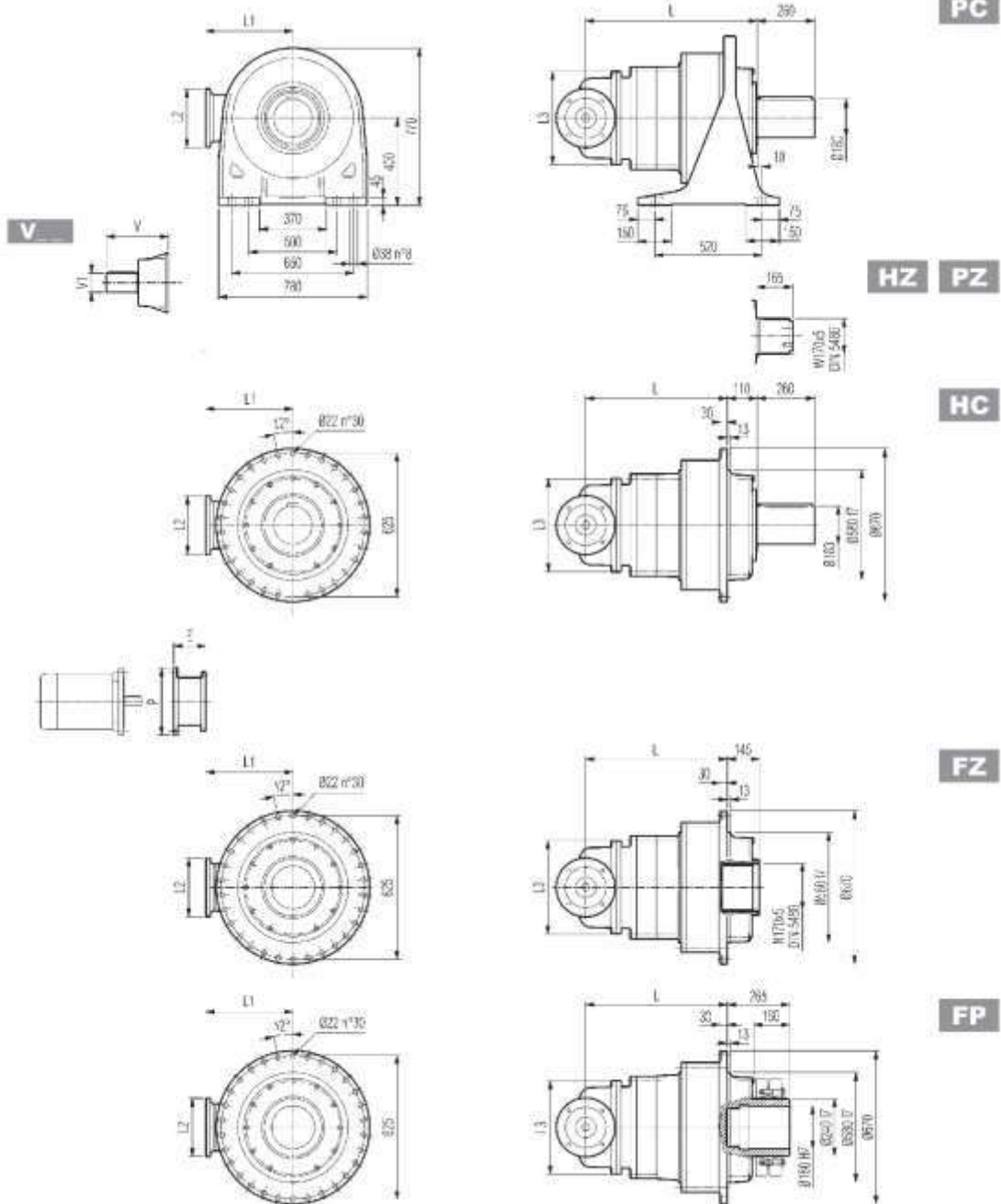
FP

$$M_{2max} = 178000 \text{ Nm}$$

	P132		P160		P180		P200		P225		P250	
	E	P	E	P	E	P	E	P	E	P	E	P
316L2	—	—	—	—	—	—	267	400	297	450	297	550
316L3	—	—	—	—	195	350	186	400	216	450	215	550
316L4	114	300	144	350	144	350	174	400	—	—	—	—



316 R



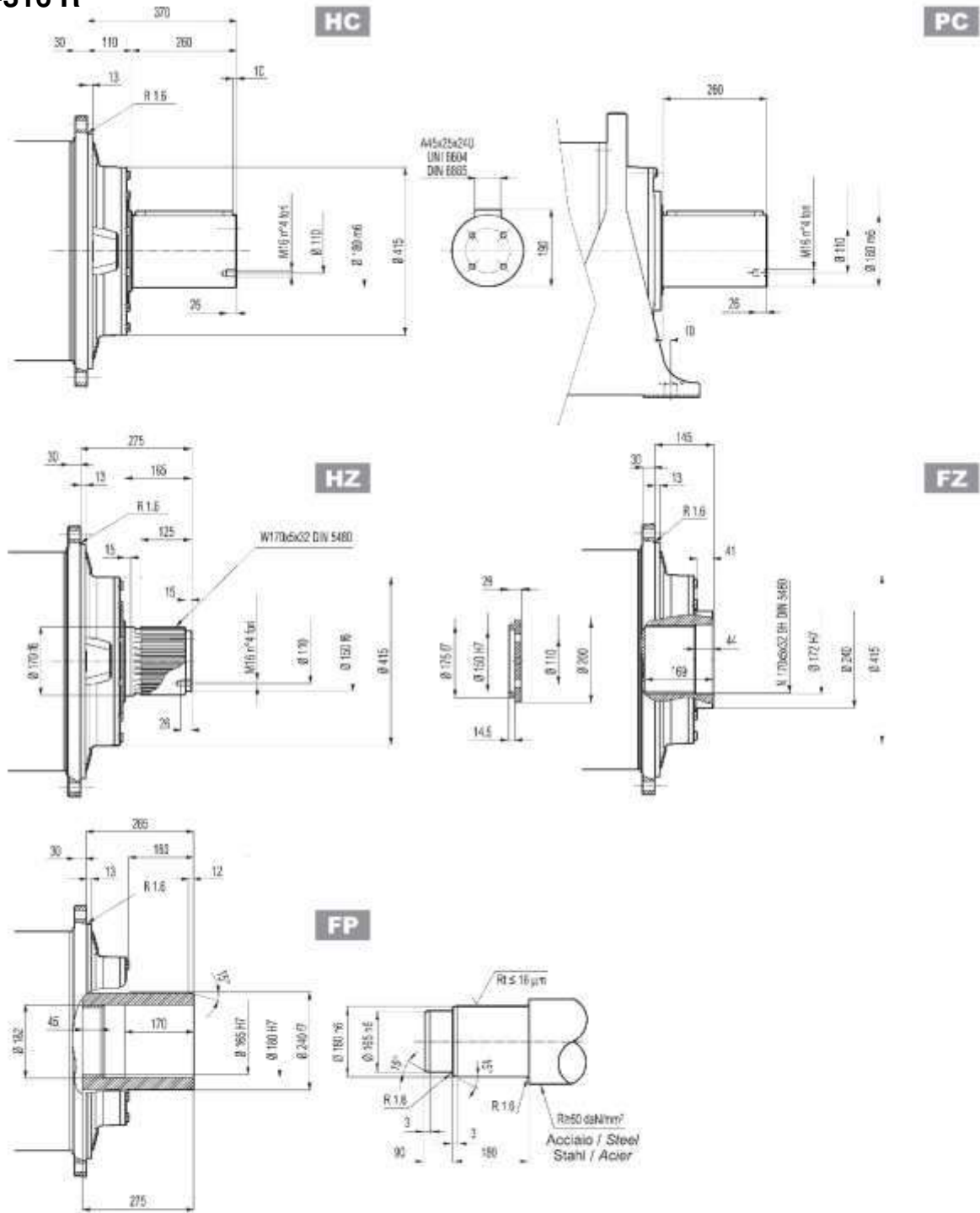
FP $M_{2max} = 178000 \text{ Nm}$

	R				R1	R2	R4	W(Kg)				V	V1	KG	V	V1	KG	Input
	PC-PZ	HC-HZ	FZ-FZP	FP				PC-PZ	HC-HZ	FZ-FZP	FP							
316R3(B)	766	565	656	656	345	292	400	910	710	640	660	307	60	23	—	—	—	B
316R3(C)	766	565	656	656	390	292	480	920	720	650	570	307	60	23	—	—	—	B
316R4	793	638	683	683	225	245	345	890	690	620	640	239	48	15	—	—	—	A

	P132		P160		P180		P200		P225		P250	
	E	P	E	P	E	P	E	P	E	P	E	P
316R3(B)	—	—	—	—	152	350	182	400	212	450	193	550
316R3(C)	—	—	—	—	152	350	182	400	212	450	193	550
316R4	114	300	144	350	144	350	174	400	—	—	—	—



316 L-316 R



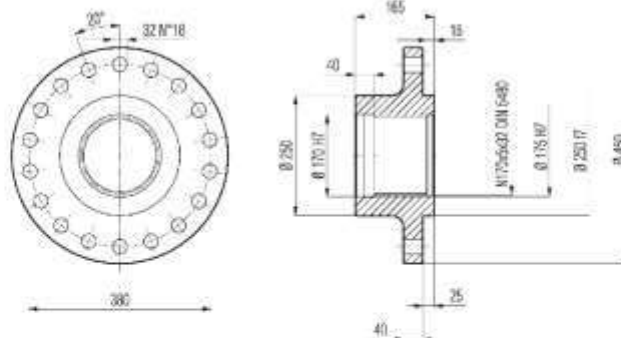
FP	$M_{2max} = 178000 \text{ Nm}$
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316L-316R

Flange

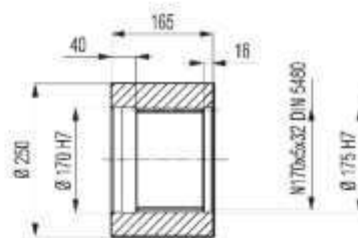
WOA



Material: Steel C40

Sleeve coupling

MOA



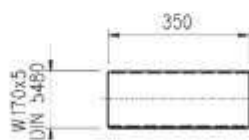
Material: Steel C40

Splined bars

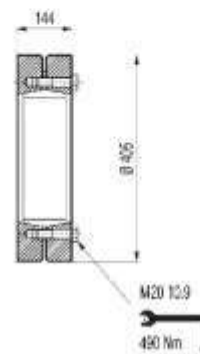
BOA

Shrink disc

GOA



Material: Case hardening steel
18NiCrMo5 UNI 5331 must be case
hardened 50-55 HRC

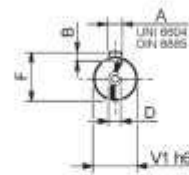
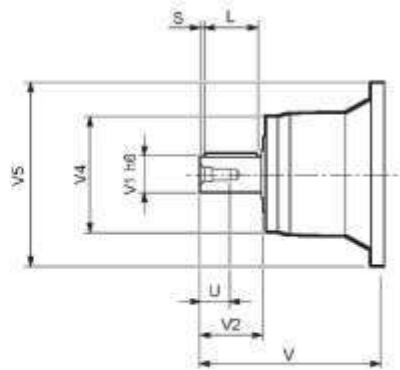
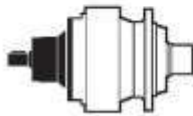


M20 12.9
490 Nm

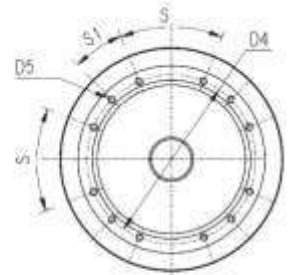
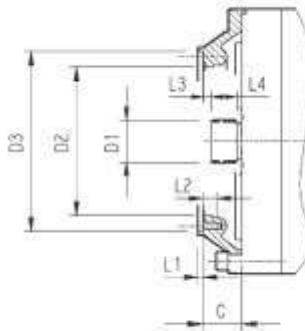


316L-316R

V



	input	V	V1	V2	V4	V5	A	B	F	L	S	D	U
316L2	V11B	348	80	130	428	345	22	14	85	110	10	M16	36
316 L3	V07B	315	80	130	200	345	22	14	85	110	10	M16	36
	V07A	313	60	105	155	345	22	14	85	110	10	M16	36
316 L4	V05B	239	48	82	155	245	14	9	51.5	70	6	M16	36
316 R3(B)(C)	V06B	307	60	105	155	292	18	11	64	90	7.5	M16	36
316 R4	V05B	239	48	82	155	245	14	9	51.5	70	6	M16	36



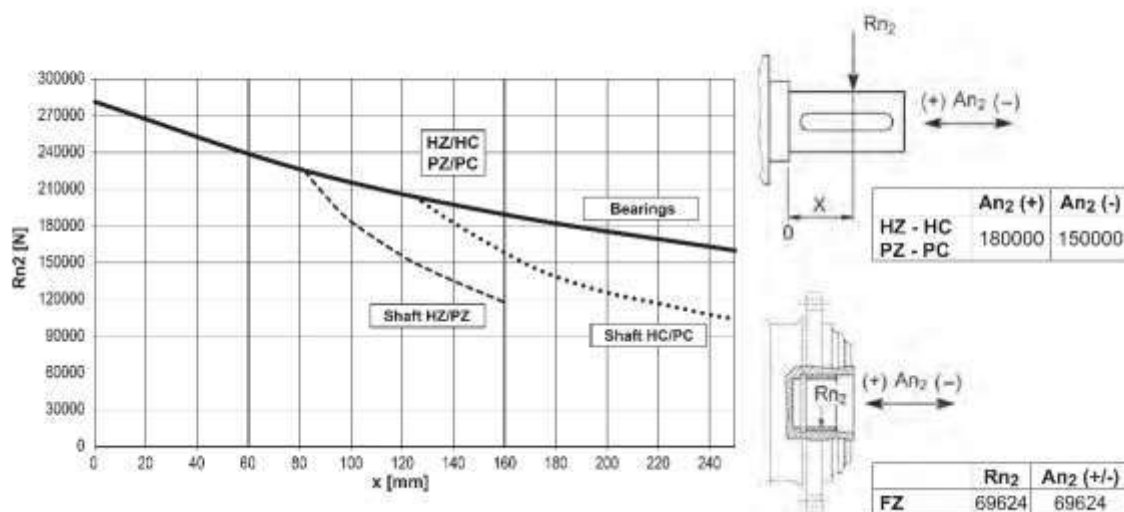
		C	D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	L5	L6	S	S1	Input
316L1	V9AE	116	100x94DIN5482	340	412H7	390	M16n°18	—	7	30	8	55	—	—	20°	20°	E
316L2	V9AD	81	80x74DIN5482	270	335H7	314	M16n°8	—	5	30	8.5	40	—	—	60°	30°	D
316L3	V9AB	51	58x53DIN5482	195	236H7	222	M10n°12	—	4	18	11	22	—	—	45°	22.5°	B
316L4	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	—	4	18	9	18	—	—	45°	45°	A
316R3(B)(C)	V9AB	45	58x53DIN5482	195	236H7	222	M10n°12	—	4	18	11	22	—	—	45°	22.5°	B
316R4	V9AA	37	40x36DIN5482	140	178H7	165	M10n°8	11	4	18	9	18	—	—	45°	45°	A





Permissible radial and axial loads on output shaft with $F_{h2}: n_2 \cdot h = 100,000$

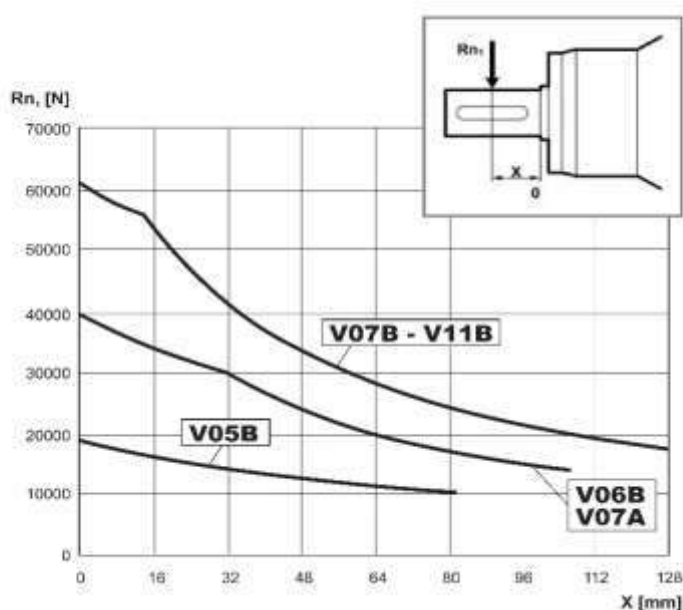
بارهای شعاعی و محوری مجاز بر روی شافت خروجی با $F_{h2}: n_2 \cdot h = 100000$



Load correction factor fh_2 on shafts فاکتور اصلاح بار fh_2 بر روی شافت	$Fh_2 = n_2 \cdot h$							
	fh_2	10000	25000	50000	100000	500000	1000000	
		FZ	2.15	1.59	1.26	1.00	0.58	0.46
		HC - PC	1.16	1.00	1.00	1.00	0.62	0.50
		HZ - PZ	1.19	1.02	1.02	1.00	0.62	0.50

Permissible radial loads on input shaft with $F_{h1}: n_1 \cdot h = 250000$

بارهای شعاعی مجاز بر روی شافت ورودی با $F_{h1}: n_1 \cdot h = 250000$

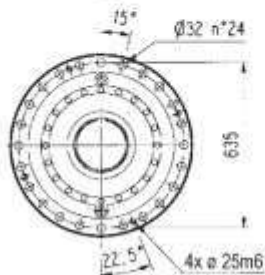
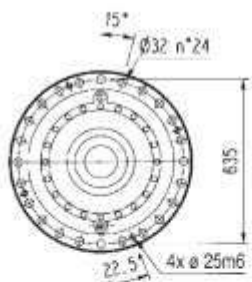
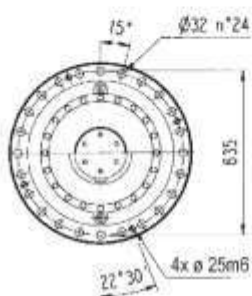
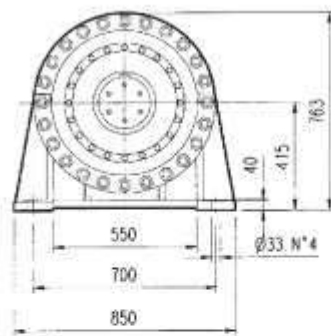


Load correction factor fh_1 on shafts فاکتور اصلاح بار fh_1 بر روی شافت	$F_{h1} = n_1 \cdot h$	250000	500000	1000000	2000000	5000000	10000000
	fh_1	1	0.79	0.63	0.5	0.37	0.29

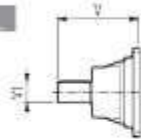




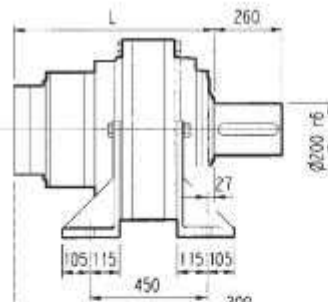
317 L



V

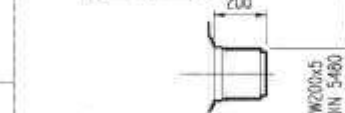


PC

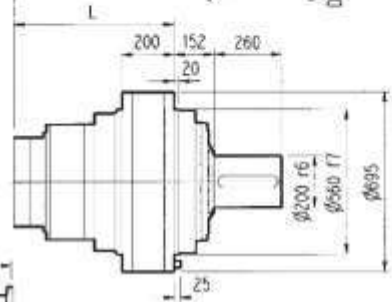


HZ

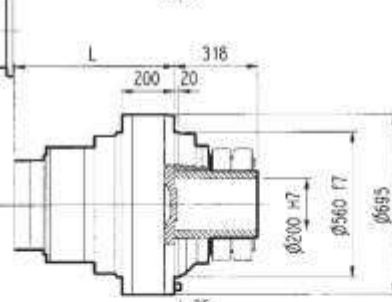
PZ



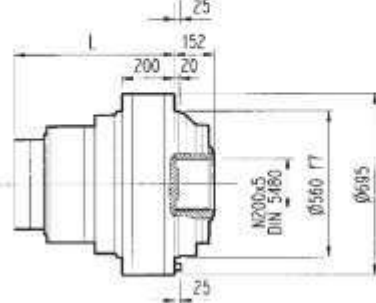
HC



FP



FZ



FP

$M_{2max} = 242000 \text{ Nm}$

	L				Wight (kg)									
	PC - PZ	HC - HZ	FZ-FZP	FP	PC - PZ	HC - HZ	FZ-FZP	FP	V	V ₁	W(kg)	V	V ₁	W(kg)
317 L1	315	163	163	163	950	800	750	800	348	80	55	-	-	-
317 L2	624	472	472	472	1080	930	880	930						
317 L3	774	564	564	564	1140	990	940	990	315	80	35	313	60	28
317 L4	862	653	653	653	1152	1000	552	1000	239	48	15	-	-	-

	P132		P160		P180		P200		P225		P250	
	E	P	E	P	E	P	E	P	E	P	E	P
317 L3	—	—	—	—	196	350	186	400	216	450	216	550
317 L4	114	300	144	350	144	350	174	400	—	—	—	—





	R				R1	R2	R4	W(Kg)				V	V1	KG	V	V1	KG	Input
	PC-PZ	HC-HZ	FZ-FZP	FP				PC-PZ	HC-HZ	FZ-FZP	FP							
317R3(B)	853	701	701	701	345	292	400	1210	1060	1010	1060	307	60	23	—	—	—	B
317R3(C)	853	701	701	701	390	292	480	1220	1070	1020	1070	307	60	23	—	—	—	B
317R4	892	740	740	740	225	245	345	1190	1040	990	1040	239	48	15	—	—	—	A

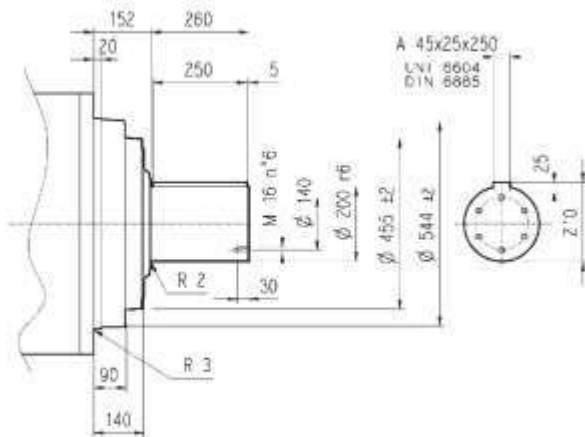
	P132		P160		P180		P200		P225		P250	
	E	P	E	P	E	P	E	P	E	P	E	P
317R3(B)	—	—	—	—	152	350	182	400	212	450	193	550
317R3(C)	—	—	—	—	152	350	182	400	212	450	193	550
317R4	114	300	144	350	144	350	174	400	—	—	—	—



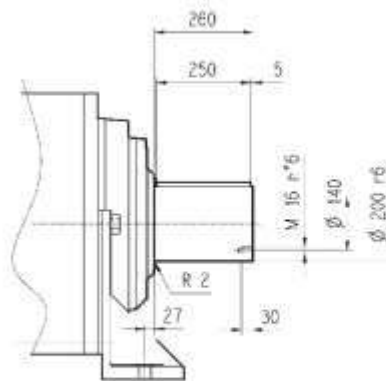


317L-317R

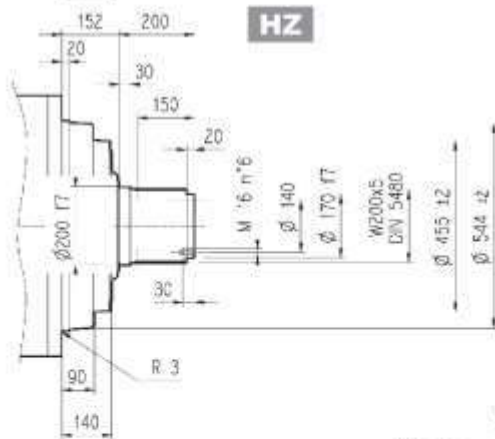
HC



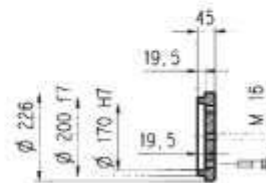
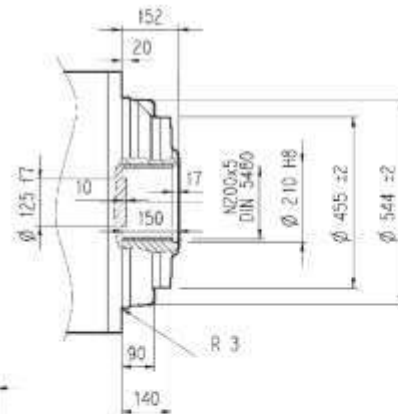
PC



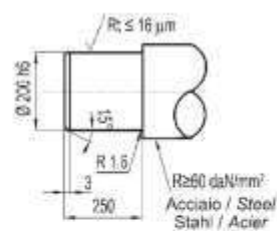
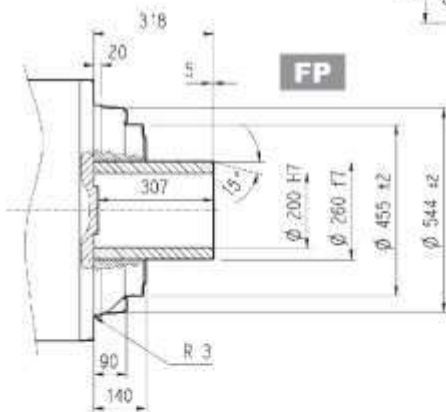
HZ



FZ



FP



FP

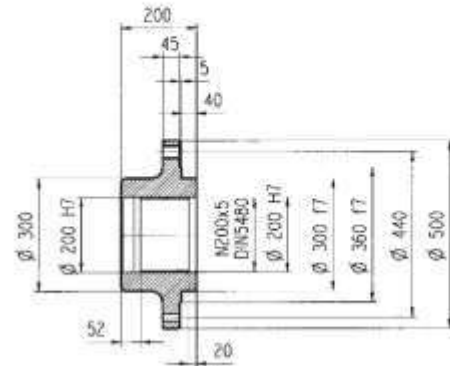
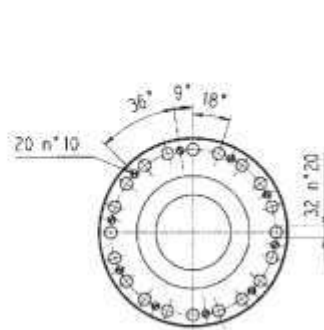
$M_{2max} = 242000 \text{ Nm}$



317L-317R

Flange

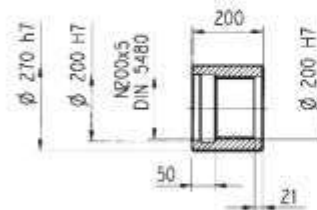
WOA



Material: Steel C40

Sleeve coupling

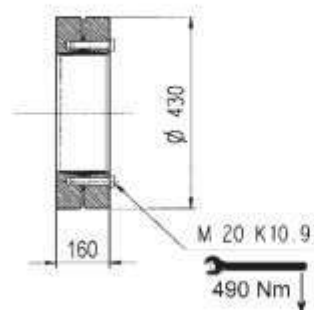
MOA



Material: Steel 16CrNi4

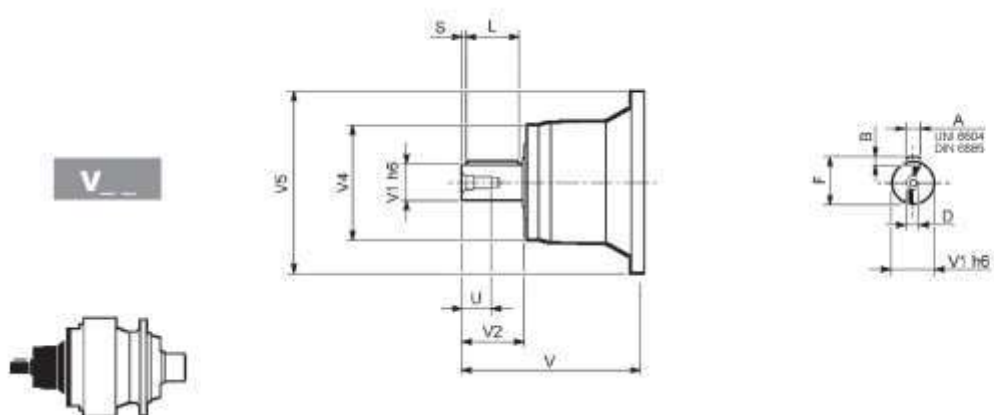
Shrink disc

GOA

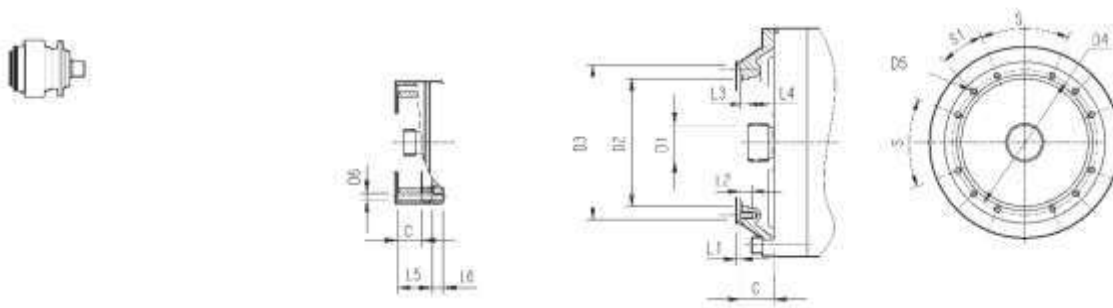




317L-317R



	input	V	V1	V2	V4	V5	A	B	F	L	S	D	U
317L2	V11B	343	80	130	200	445	22	14	85	110	10	M16	36
317 L3	V07B	315	80	130	200	345	22	14	85	110	10	M16	36
	V07A	313	60	105	155	345	22	14	85	110	10	M16	36
317 L4	V05B	239	48	82	155	245	14	9	51.5	70	6	M16	36
317 R3(B)(C)	V06B	307	60	105	155	292	18	11	64	90	7.5	M16	40
317 R4	V05B	239	48	82	155	245	14	9	51.5	70	6	M16	36



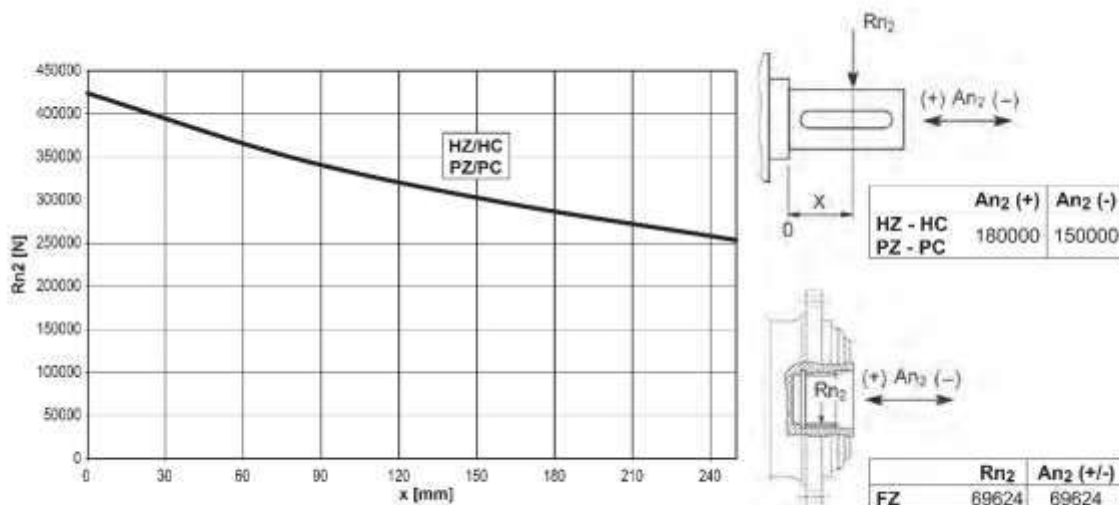
		C	D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	L5	L6	S	S1	Input
317L1	V9AF	181	120x3 DIN5480	365	390g7	415	M16n°18	—	4	30	3	65	—	—	20°	20°	F
317L2	V9AD	75	80x74 DIN5482	270	335H7	314	M16n°8	—	5	30	9.5	40	—	—	60°	30°	D
317L3	V9AB	51	58x53 DIN5482	195	236H7	222	M10n°12	—	4	18	11	22	—	—	45°	22.5°	B
317L4	V9AA	37	40x36 DIN5482	140	178H7	165	M10n°8	—	4	18	9	18	—	—	45°	45°	A
317R4	V9AA	37	40°36 DIN5482	140	178H7	165	M10n°8	11	4	18	9	18	—	—	45°	45°	A
317R3(B)(C)	V9AB	45	58x53 DIN5482	195	236H7	222	M10n°12	—	4	18	11	22	—	—	45°	22.5°	A





Permissible radial and axial loads on output shaft with $Fh_2: n_2 \cdot h = 100,000$

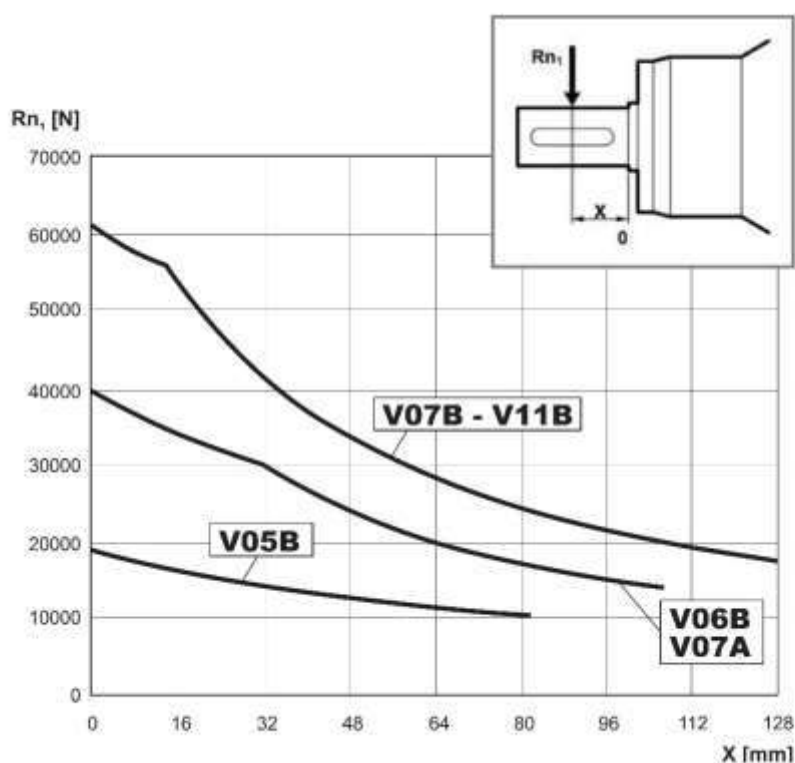
بارهای شعاعی و محوری مجاز بر روی شافت خروجی با $Fh_2: n_2 \cdot h = 100000$



Load correction factor fh_2 on shafts فاکتور اصلاح بار fh_2 بر روی شافت	$Fh_2 = n_2 \cdot h$		10000	25000	50000	100000	500000	1000000
	fh_2	FZ	2.15	1.59	1.26	1.00	0.58	0.46
		HZ - HC PZ - PC	1.50	1.50	1.23	1.00	0.62	0.50

Permissible radial loads on input shaft with $Fh_1: n_1 \cdot h = 250000$

بارهای شعاعی مجاز بر روی شافت ورودی با $Fh_1: n_1 \cdot h = 250000$

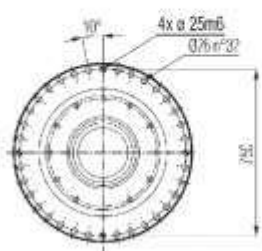
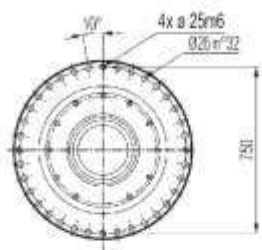
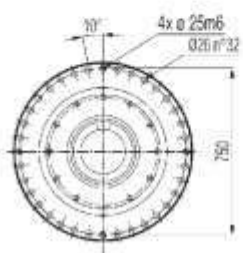
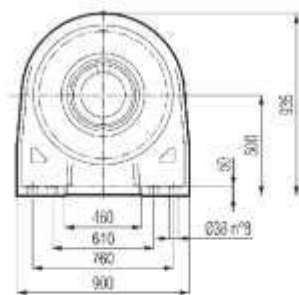


Load correction factor fh_1 on shafts فاکتور اصلاح بار fh_1 بر روی شافت	$Fh_1 = n_1 \cdot h$	250000	500000	1000000	2000000	5000000	10000000
	fh_1	1	0.79	0.63	0.5	0.37	0.29

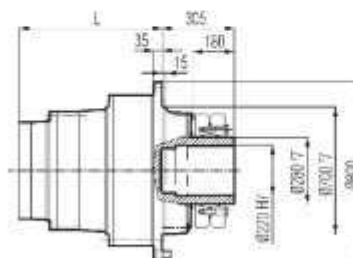
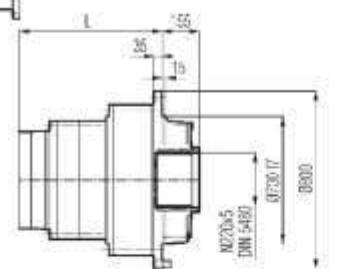
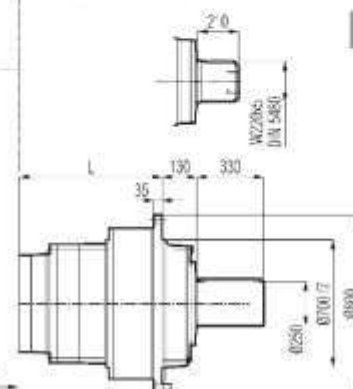
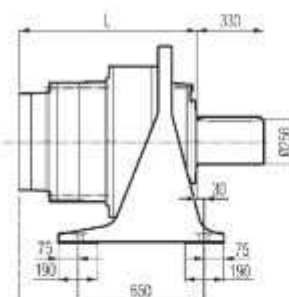
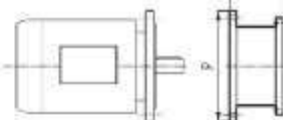
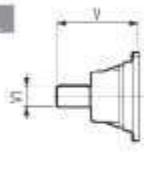




318L



V



PC

HZ PZ

HC

FZ

FP

FP

$M_{2max} = 322000 \text{ Nm}$

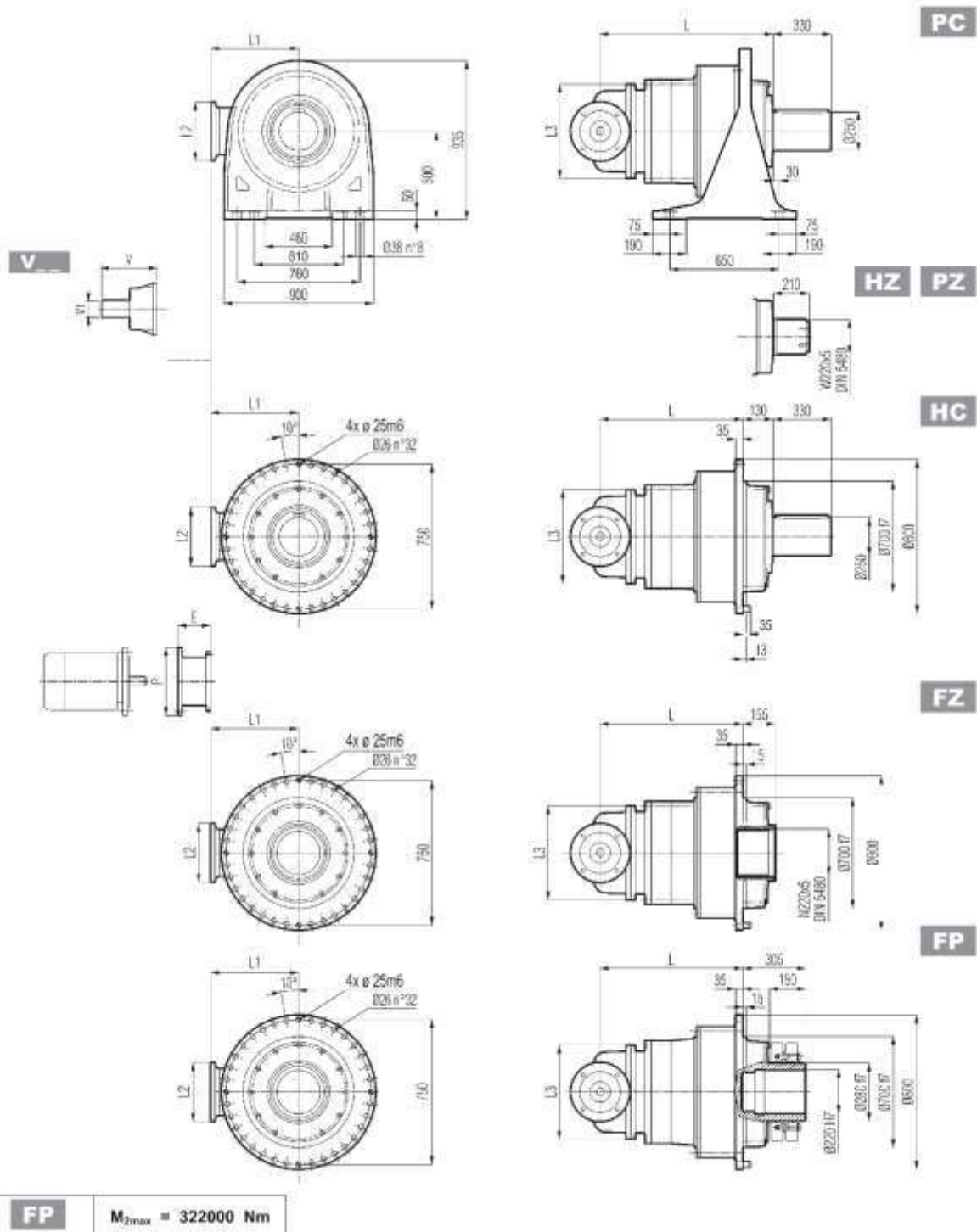
	L				Wight (kg)									
	PC - PZ	HC - HZ	FZ-FZP	FP	PC - PZ	HC - HZ	FZ-FZP	FP	V	V ₁	W(kg)	V	V ₁	W(kg)
318 L1	332	202	202	202	1250	950	830	800	-	-	-	-	-	-
318 L2	677	547	547	547	1500	1200	1050	1080	556	120	125	-	-	-
318L3	889	759	752	752	1600	1300	1150	1180	348	80	55	-	-	-
318L4	1022	892	892	892	1650	1350	1200	1230	315	80	35	313	60	28

	P180		P200		P225		P250	
	E	P	E	P	E	P	E	P
318L3	-	-	267	400	297	450	297	550
318L4	195	350	186	400	216	450	215	550





318R



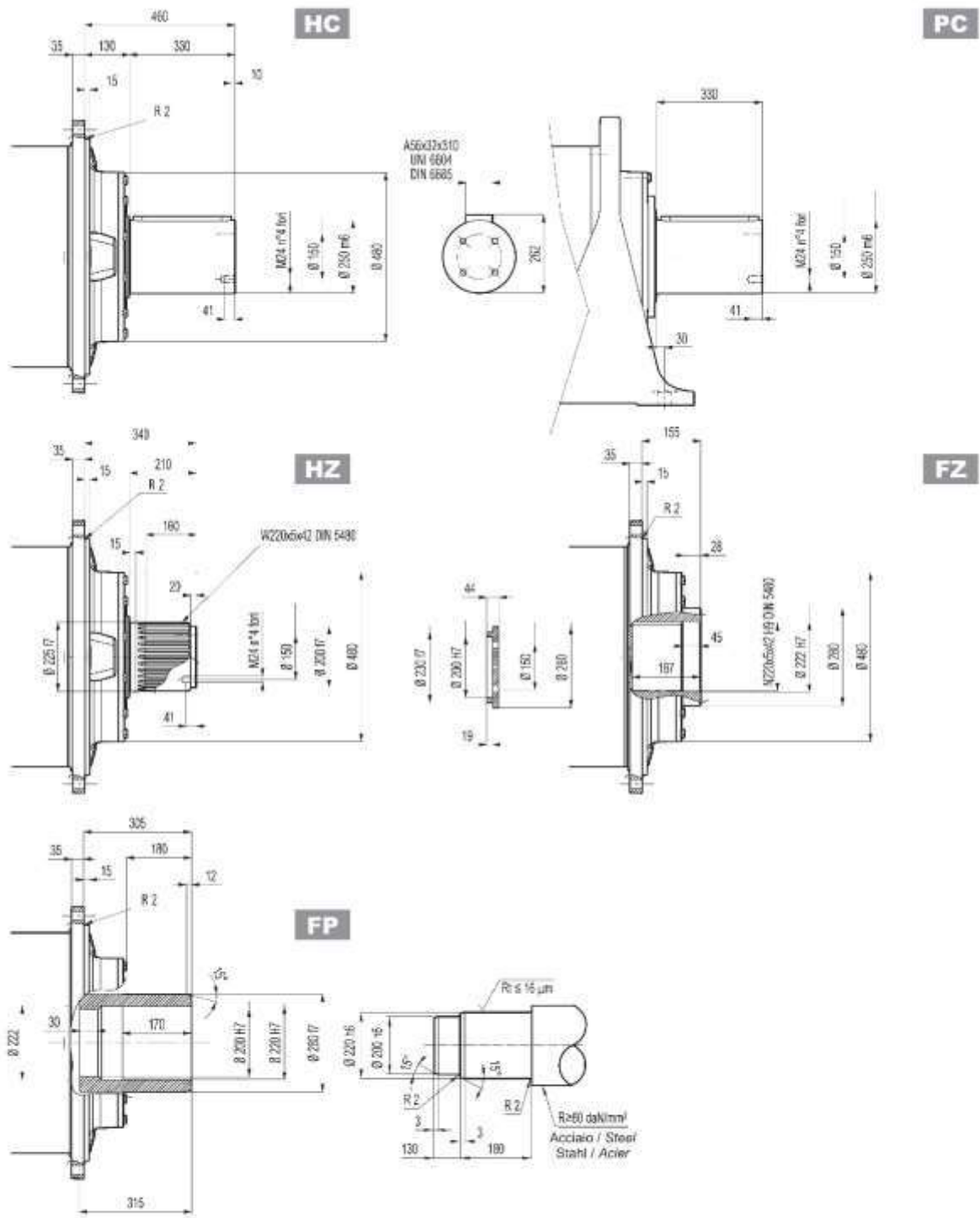
	R				R1	R2	R4	W(Kg)				V	V1	KG	V	V1	KG	Input
	PC-PZ	HC-HZ	FZ-FZP	FP				PC-PZ	HC-HZ	FZ-FZP	FP							
318R4(B)	1115	985	985	985	345	292	400	1720	1420	1270	1300	307	60	23	—	—	—	B
318R4(C)	1115	985	985	985	390	292	480	1730	1430	1280	1310	307	60	23	—	—	—	B

	P132		P160		P180		P200		P225		P250	
	E	P	E	P	E	P	E	P	E	P	E	P
318R4(B)	—	—	—	—	152	350	182	400	212	450	193	550
318R4(C)	—	—	—	—	152	350	182	400	212	450	193	550





318L-318R



FP	$M_{2max} = 322000 \text{ Nm}$
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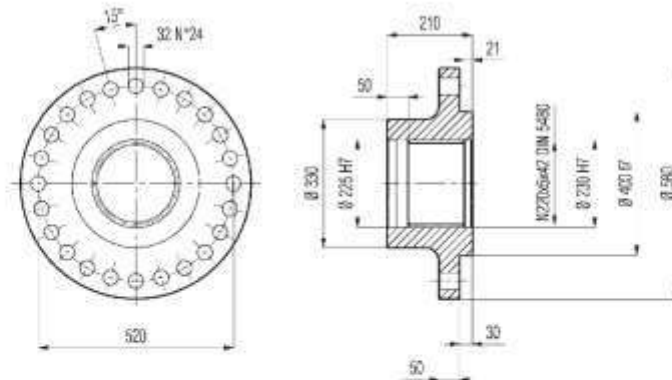




318 L-318 R

Flange

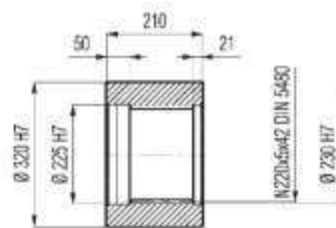
WOA



Material: Steel C40

Sleeve coupling

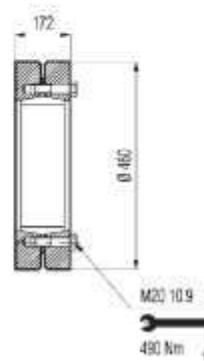
MOA



Material: Steel C40

Shrink disc

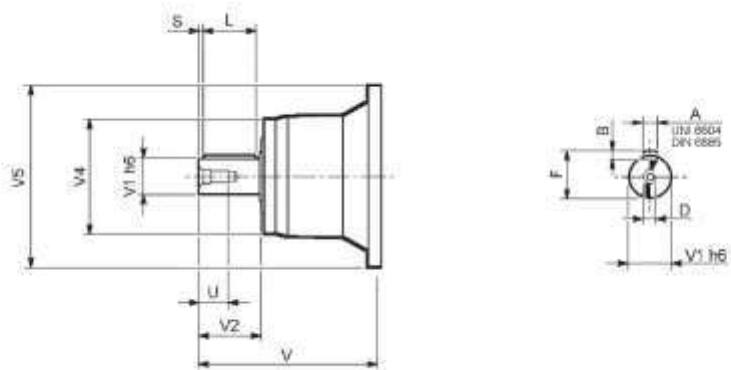
GOA



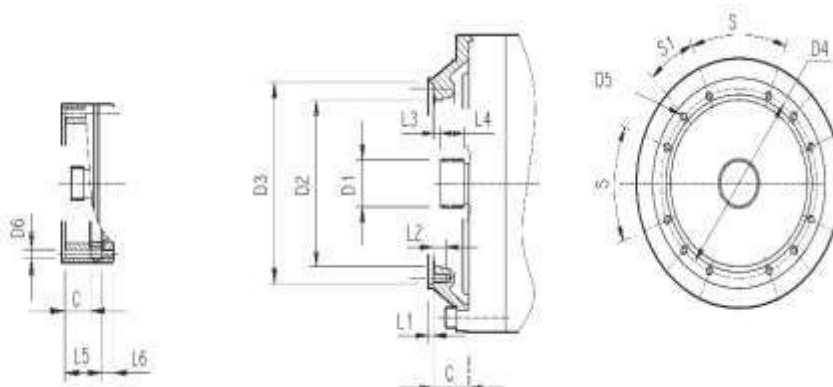


318L-318R

V _ _



	input	V	V1	V2	V4	V5	A	B	F	L	S	D	U
318L2	V15B	556	120	210	230	542	32	18	127	180	15	M24	50
318 L3	V11B	348	80	130	200	428	22	14	85	110	10	M16	36
318 L4	V07B	315	80	130	200	345	22	14	85	110	10	M16	36
	V07A	313	60	105	155	345	18	11	64	90	7.5	M16	36
318 R4(B)(C)	V06B	307	60	105	155	292	18	11	64	90	7.5	M16	36

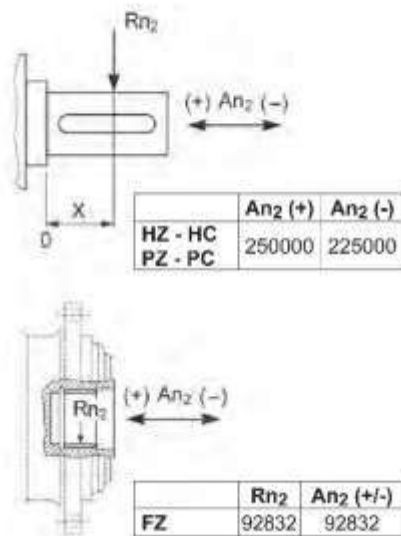
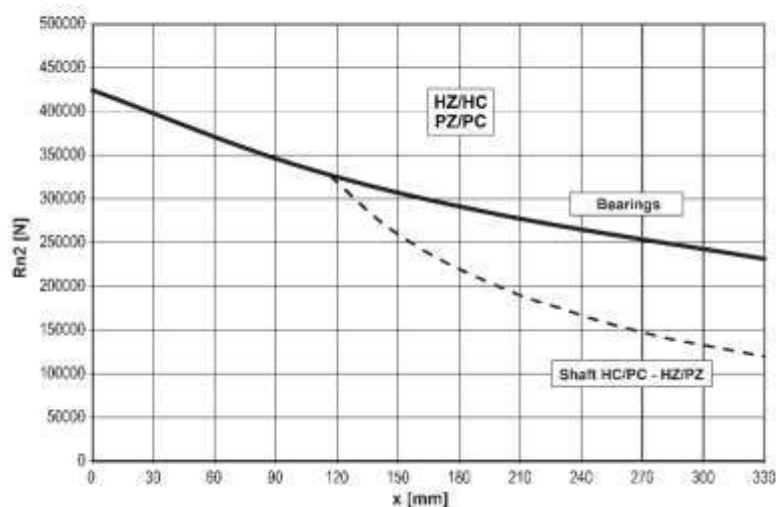


		C	D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	L5	L6	S	S1	Input
318L2	V9AE	116	100x94 DIN5482	340	412H7	390	M16n°18	—	7	30	8	55	—	—	20°	20°	E
318L3	V9AD	81	80°74 DIN5482	270	335H7	314	M10n°8	—	5	30	8.5	40	—	—	60°	30°	D
318L4	V9AB	51	58x53 DIN5482	195	236H7	222	M10n°12	—	4	18	9	22	—	—	45°	22.5°	A
318R3(B)(C)	V9AB	45	58x53 DIN5482	195	236H7	222	M10n°10	—	4	18	9	22	—	—	45°	22.5°	B



Permissible radial and axial loads on output shaft with $Fh_2: n_2. h = 100,000$

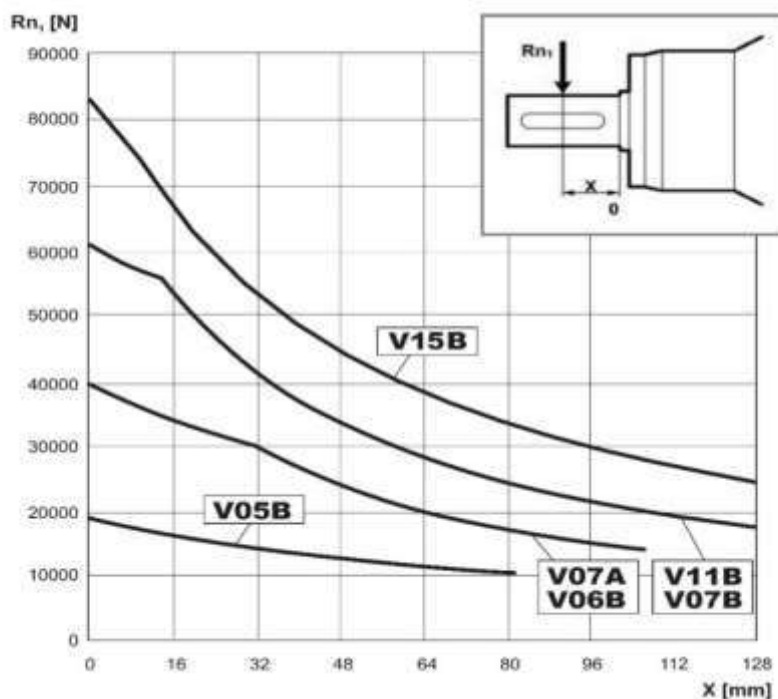
بارهای شعاعی و محوری مجاز بر روی شافت خروجی با $Fh_2: n_2. h = 100000$



Load correction factor fh_2 on shafts فاکتور اصلاح بار fh_2 بر روی شافت	$Fh_2 = n_2. h$		10000	25000	50000	100000	500000	1000000
	fh_2	FZ	2.15	1.59	1.26	1.00	0.58	0.46
		HC - PC	1.96	1.52	1.23	1.00	0.62	0.50
		HZ-PZ	1.15	1.00	1.00	1.00	0.62	0.50

Permissible radial loads on input shaft with $Fh_1: n_1. h = 250000$

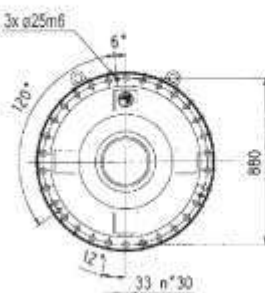
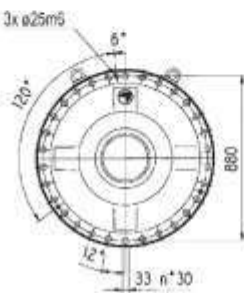
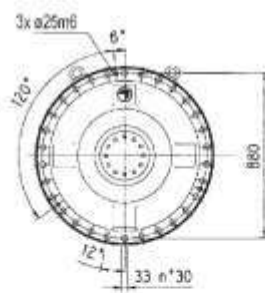
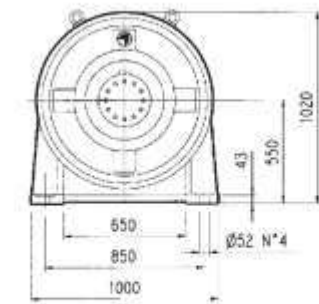
بارهای شعاعی مجاز بر روی شافت ورودی با $Fh_1: n_1. h = 250000$



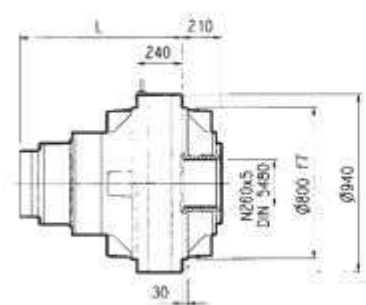
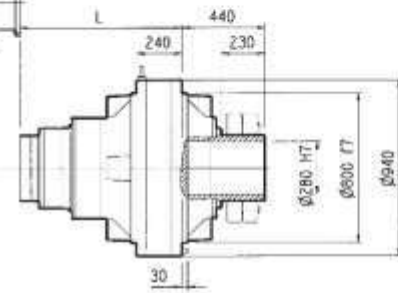
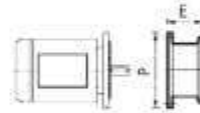
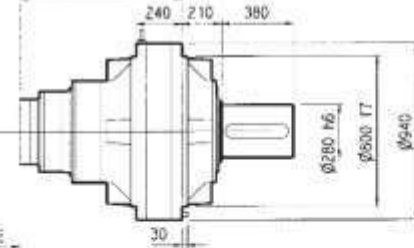
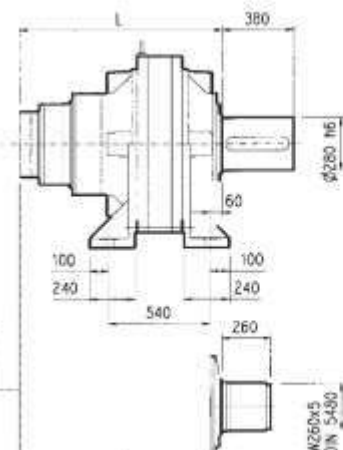
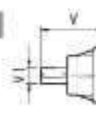
Load correction factor fh_1 on shafts فاکتور اصلاح بار fh_1 بر روی شافت	$Fh_1 = n_1. h$	250000	500000	1000000	2000000	5000000	10000000
	fh_1	1	0.79	0.63	0.5	0.37	0.29



319 L



V



PC

HZ PZ

HC

FP

FZ

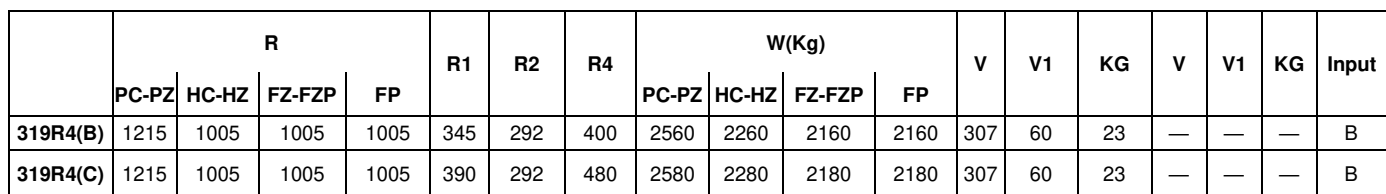
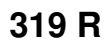
FP

$$M_{2max} = 480000 \text{ Nm}$$

	L				Wight (kg)									
	PC - PZ	HC - HZ	FZ-FZP	FP	PC - PZ	HC - HZ	FZ-FZP	FP	V	V ₁	W(kg)	V	V ₁	W(kg)
319 L1	395	185	185	185	2100	1800	1700	1700	-	-	-	-	-	-
319 L2	778	568	568	568	2350	2050	1950	1950	556	120	125	-	-	-
319 L3	990	780	780	780	2435	2135	2035	2035	348	80	55	-	-	-
319 L4	1123	913	913	913	2480	2180	2080	2080	315	80	35	313	60	28

	P180		P200		P225		P250	
	E	P	E	P	E	P	E	P
319L3	-	-	267	400	297	450	297	550
319L4	195	350	186	400	216	450	215	550





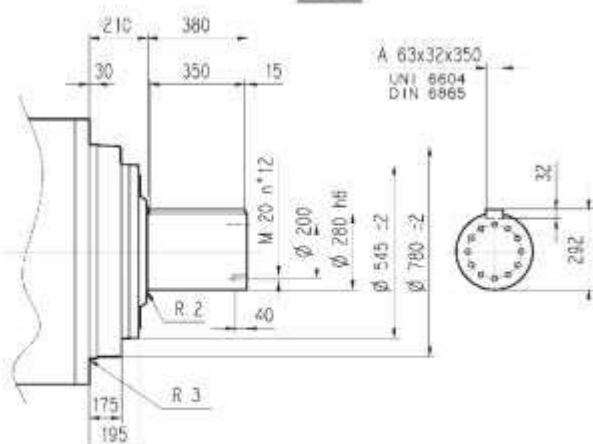
	P132		P160		P180		P200		P225		P250	
	E	P	E	P	E	P	E	P	E	P	E	P
319R4(B)	—	—	—	—	152	350	182	400	212	450	193	550
319R4(C)	—	—	—	—	152	350	182	400	212	450	193	550



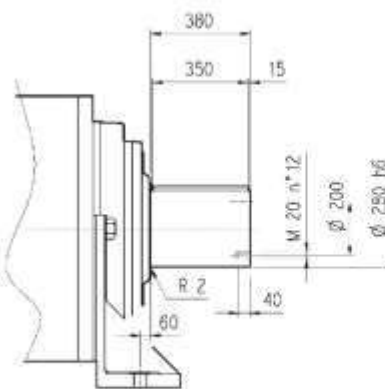


319L-319R

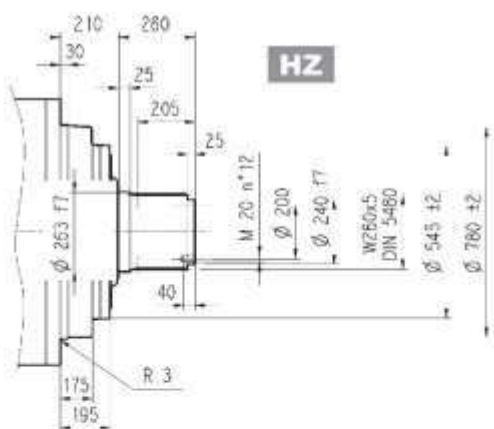
HC



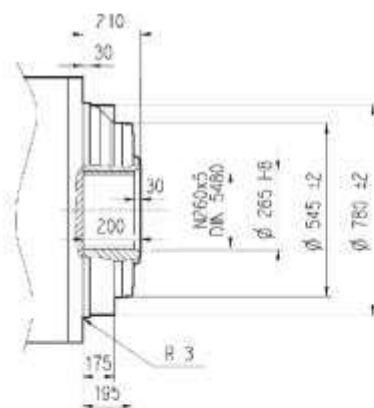
PC



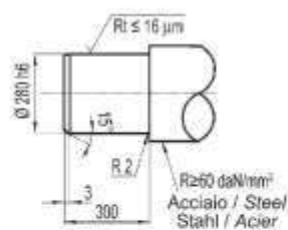
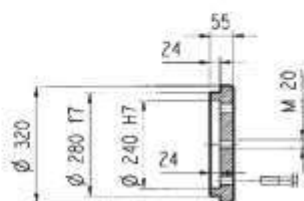
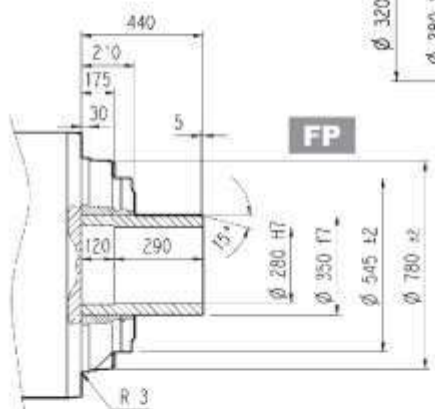
HZ



FZ



FP



FP

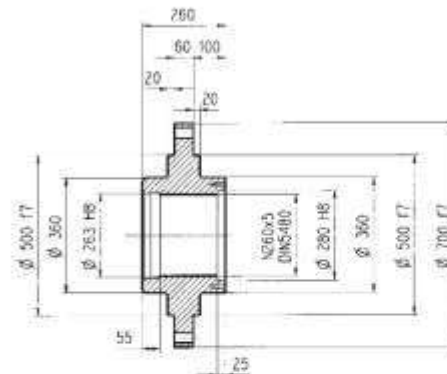
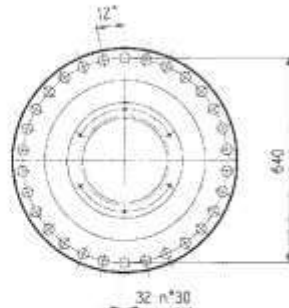
$M_{2max} = 480000 \text{ Nm}$



319L-319R

Flange

WOA



Material: Steel C40

Sleeve coupling

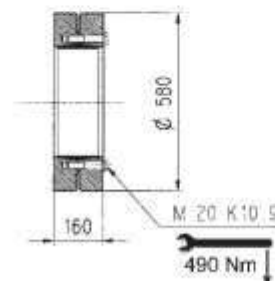
MOA



Material: Steel 16CrNi4

Shrink disc

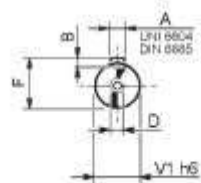
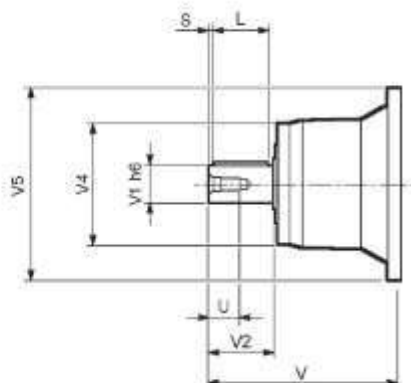
G0A



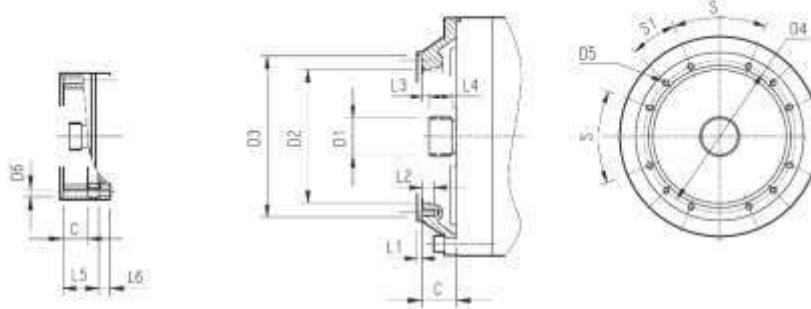


319 L-319 R

V



	input	V	V1	V2	V4	V5	A	B	F	L	S	D	U
319L2	V15B	556	120	210	230	542	32	18	127	180	15	M24	36
319 L3	V11B	348	80	130	200	428	22	14	85	110	10	M16	36
319 L4	V07B	315	80	130	200	345	22	14	85	110	10	M16	36
	V07A	313	60	105	155	345	18	11	64	90	7.5	M16	36
319 R4(B)(C)	V06B	307	60	105	155	292	18	11	64	90	7.5	M16	36

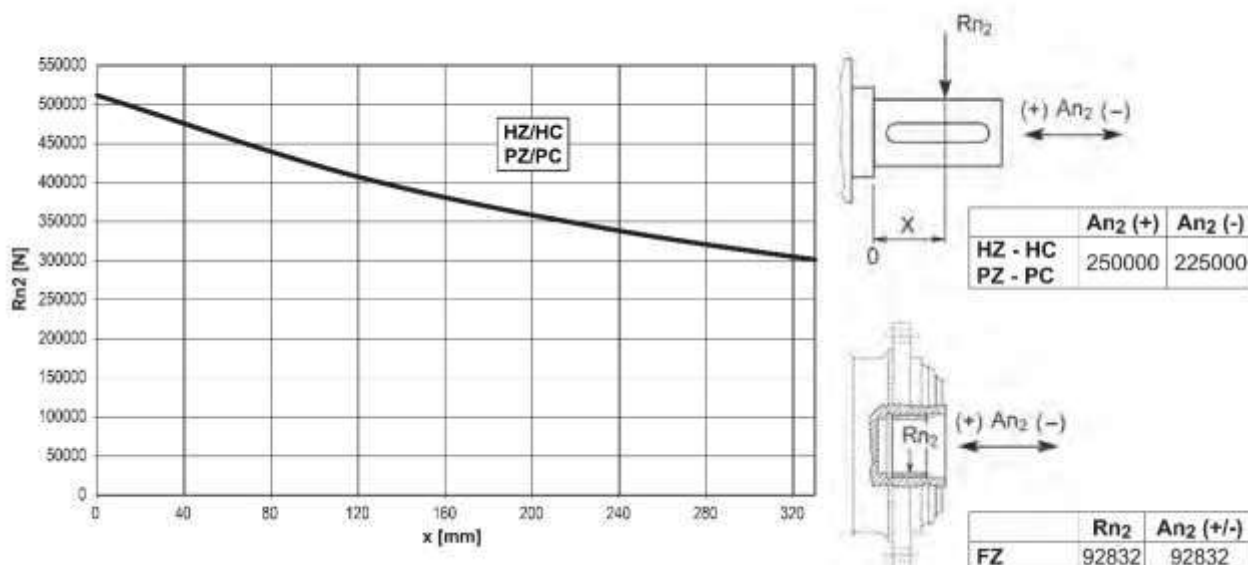


		C	D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	L5	L6	S	S1	Input
319L1	V9AG	245	150x5*28 DIN5480	444	474g7	503	M20n°20	20	5	40	20	82	—	—	30°	15°	G
319L2	V9AE	116	100°94 DIN5482	340	412H7	390	M16n°18	—	7	30	8	55	—	—	20°	20°	E
319L3	V9AD	81	80°74 DIN5482	270	335H7	314	M16n°8	—	5	30	8.5	40	—	—	60°	30°	D
319L4	V9AB	51	58°53 DIN5482	195	236H7	222	M10n°12	—	4	18	11	22	—	—	45°	22.5°	B
319R4	V9AA	37	40°36 DIN5482	140	178H7	165	M12n°8	11	4	18	9	18	—	—	45°	45°	A
319R3(B)(C)	V9AB	45	58x53 DIN5482	195	236H7	222	M10n°12	—	4	18	11	22	—	—	45°	22.5°	B



Permissible radial and axial loads on output shaft with $Fh_2: n_2. h = 100,000$

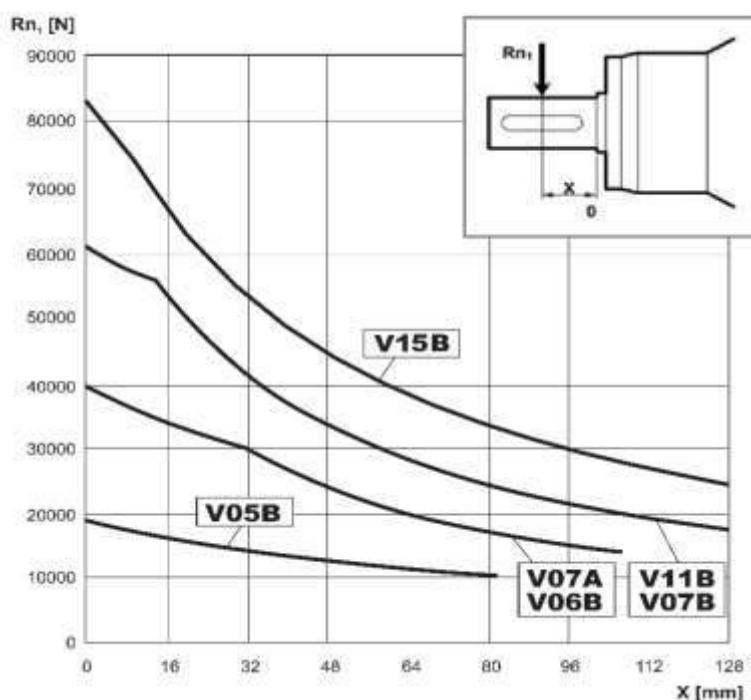
بارهای شعاعی و محوری مجاز بر روی شافت خروجی با $Fh_2: n_2. h = 100000$



Load correction factor fh_2 on shafts فانکتور اصلاح بار fh_2 بر روی شافت	$Fh_2 = n_2 \cdot h$		10000	25000	50000	100000	500000	1000000
	fh_2	FZ	2.15	1.59	1.26	1.00	0.58	0.46
		HC - PC HZ-PZ	1.75	1.52	1.23	1.00	0.62	0.50

Permissible radial loads on input shaft with $Fh_1: n_1. h = 250000$

بارهای شعاعی مجاز بر روی شافت ورودی با $Fh_1: n_1. h = 250000$

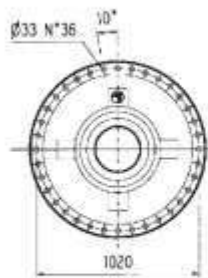
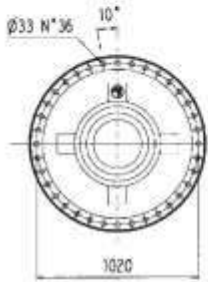
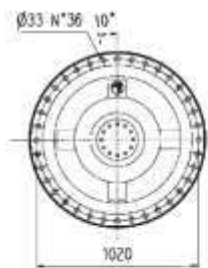
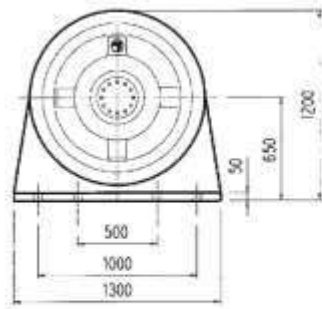


Load correction factor fh_1 on shafts فانکتور اصلاح بار fh_1 بر روی شافت	$Fh_1 = n_1. h$	250000	500000	1000000	2000000	5000000	10000000
	fh_1	1	0.79	0.63	0.5	0.37	0.29

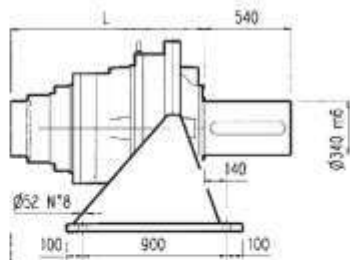
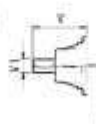




321 L



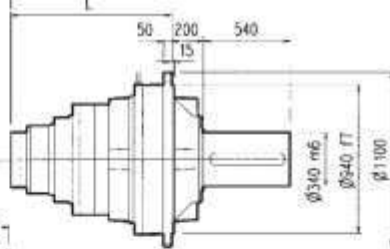
V



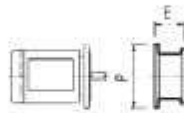
PC

HZ

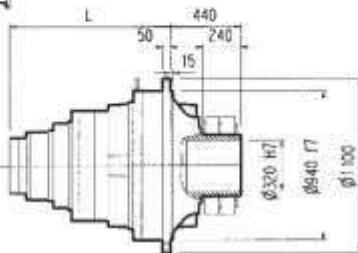
PZ



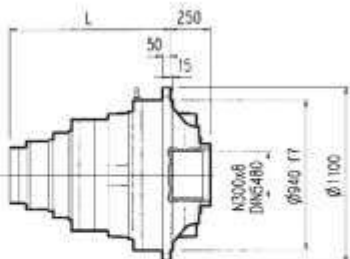
HC



FP



FZ



FP

M_{2max} = 720000 Nm

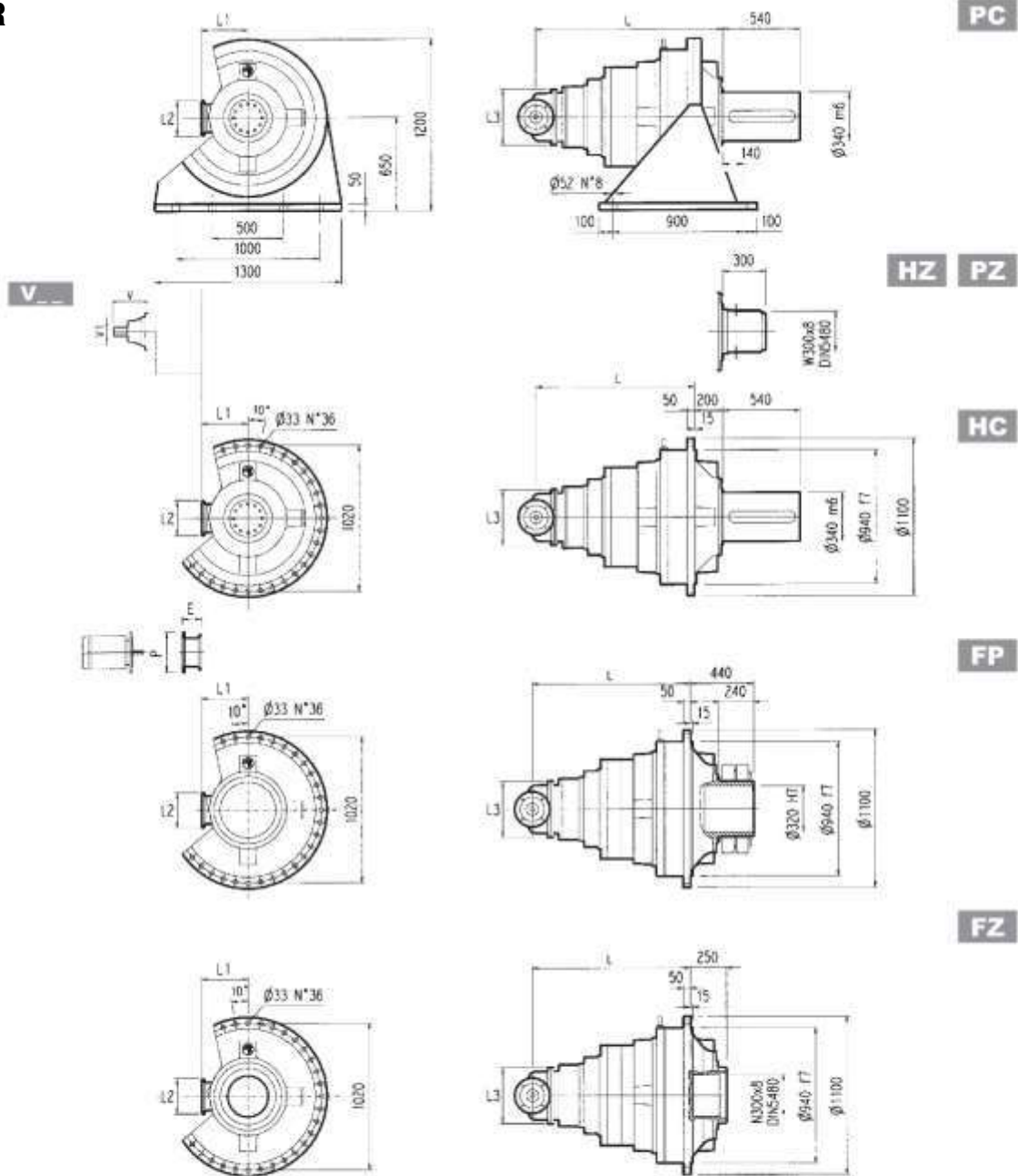
	L				Wight (kg)									
	PC - PZ	HC - HZ	FZ-FZP	FP	PC - PZ	HC - HZ	FZ-FZP	FP	V	V1	W(kg)	V	V1	W(kg)
321 L2	795	595	595	595	3000	2700	2600	2600	-	-	-	-	-	-
321 L3	1104	904	904	904	3120	2820	2720	2720	343	80	55	-	-	-
321 L4	1253	1053	1053	1053	3180	2880	2780	2780	315	80	35	313	60	28

	P180		P200		P225		P250	
	E	P	E	P	E	P	E	P
321 L4	195	350	186	400	216	450	215	550





321R



	R				R1	R2	R4	W(Kg)				V	V1	KG	V	V1	KG	Input
	PC-PZ	HC-HZ	FZ-FZP	FP				PC-PZ	HC-HZ	FZ-FZP	FP							
321R4(B)	1334	1134	1134	1134	345	292	400	3250	2950	2850	2850	307	60	23	—	—	—	B
321R4(C)	1334	1134	1134	1134	390	292	480	3260	2960	2860	2860	307	60	23	—	—	—	B

	P132		P160		P180		P200		P225		P250	
	E	P	E	P	E	P	E	P	E	P	E	P
321R4(B)	—	—	—	—	152	350	182	400	212	450	193	550
321R4(C)	—	—	—	—	152	350	182	400	212	450	193	550

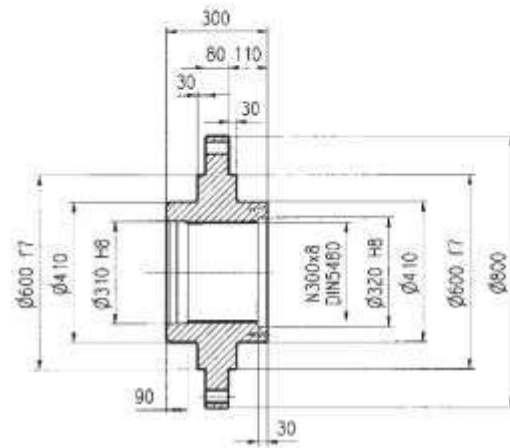
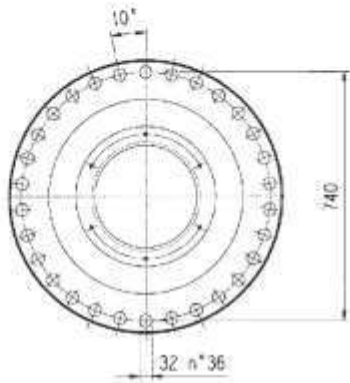




321L-321R

Flange

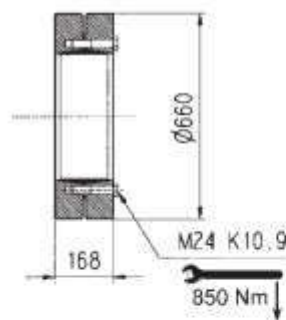
WOA

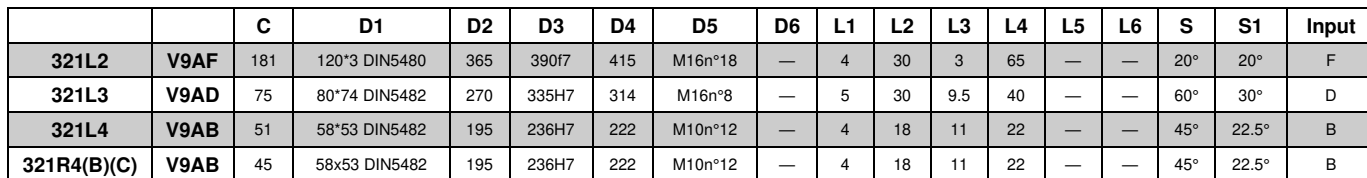
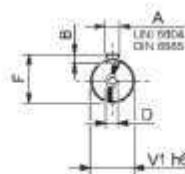
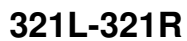


Material: Steel C40

Shrink disc

GOA

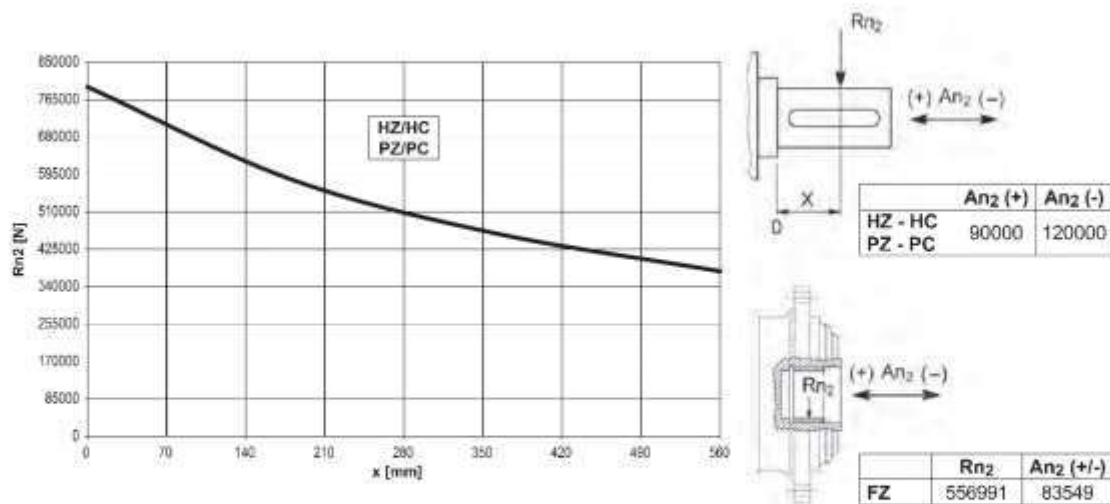






Permissible radial and axial loads on output shaft with $F_{h2}: n_2 \cdot h = 100,000$

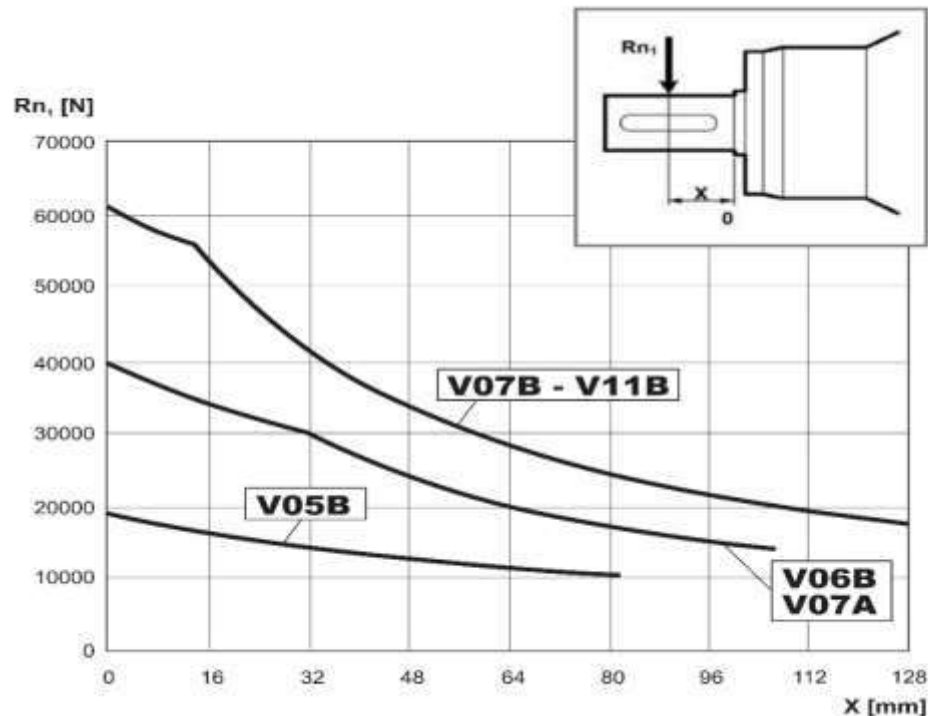
بارهای شعاعی و محوری مجاز بر روی شافت خروجی با $F_{h2}: n_2 \cdot h = 100000$



Load correction factor fh_2 on shafts فاکتور اصلاح بار fh_2 بر روی شافت	$Fh_2 = n_2 \cdot h$		10000	25000	50000	100000	500000	1000000
	fh_2	FZ	2.15	1.59	1.26	1.00	0.58	0.46
		HC - PC HZ-PZ	1.54	1.35	1.23	1.00	0.62	0.50

Permissible radial loads on input shaft with $F_{h1}: n_1 \cdot h = 250000$

بارهای شعاعی مجاز بر روی شافت ورودی با $F_{h1}: n_1 \cdot h = 250000$



Load correction factor fh_1 on shafts فاکتور اصلاح بار fh_1 بر روی شافت	$F_{h1} = n_1 \cdot h$						
	fh_1	250000	500000	1000000	2000000	5000000	10000000
		1	0.79	0.63	0.5	0.37	0.29



تولید کننده انواع الکتروگیربکس های کتابی ، خورشیدی، هلیکال
طراحی تخصصی انواع کوپلینگ ها و گیربکس های صنعتی
تعمیر و اورهال تخصصی انواع گیربکس های صنعتی
مشاوره و ساخت انواع گیربکس براساس سفارش
فروش انواع الکتروگیربکس های صنعتی، خورشیدی، هلیکال، حلزونی
SUN GEARBOX / SK&SH GEARBOX / HELICAL GEARBOX



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