



**STROJNA**® is a company with tradition. The company's beginnings go back into the year of 1906, when manufacturer Eylert established a workshop to repair textile machines. At that time, the company has already been producing gears and worm pairs.

During the World War II the company moved from Melje to 11 Linhartova street, where it is still located today. Until 1959, the company officiated under the name Remont, and later under the name Strojna.

Under the new name, it has begun a new period for the company. In 1962, Strojna started its own production program has begun with serial production of helical and later with worm gear units.

During the years we developed a complete program of drive technique, which includes: helical gear units, worm gear units, helical worm gear units, planetary gear units, variable speed drives, Screw Jack, TA-STA gear units, modified gear units, flexible couplings and other elements of drive technique.

Our production capacities include modern high productive machines, which enable us to achieve high quality production with large series. Highly qualified staff, constant equipment updating, technology and quality improvement by using up to date technology, achievements and modern materials, make us recognizable and competitive in drive technique market.

Our research and development department is constantly working on new products of drive technique, closely cooperating with institutes, foreign partners and faculties. We are constantly looking in the future in order to offer modern and efficient gear units to our customers, in order to ensure us a leading position along with the biggest world manufacturers of drive technique.

Regardless of whether we mass-produce for you, deliver popular models on short-term notice, or manufacture individualized single components according to your specifications - we are consistently working on optimizing our customer-oriented service.





**STROJNA**®

ist eine Firma mit Tradition. Der Anfang der Firma reicht ins Jahr 1906 zurück, als der Fabrikant Eylert eine Werkstatt zur Reparatur von Textilmaschinen gründete. Schon damals hat die Firma Zahnräder und Schneckenpaare hergestellt.

Im zweiten Weltkrieg zog die Firma von Melje zum neuen Standort Linhartova 11, wo sie sich noch heute befindet. Nach 1959 arbeitete die Firma unter dem Namen Remont und später unter dem Namen Strojna. Mit dem Wechsel des Namens begann für unsere Firma eine neue Ära. Im Jahre 1962 begann unsere eigene Produktion, die Herstellung von Stirnradgetrieben und später auch Schneckengetrieben.

Durch die Jahre haben wir ein komplettes Program für Antriebstechnik entwickelt, dass Stirnradgetriebe, Schneckengetriebe, Stirnschneckenradgetriebe, Planetengetriebe, Variatoren, Hubspindelgetriebe, TA-STA Getriebe, modifizierte Getriebe, elastische Kupplungen und Elemente für die Antriebstechnik beinhaltet.

Unsere Produktionskapazitäten enthalten moderne, hochproduktive Einheiten, die uns sowohl eine hochqualitative Produktion als auch Massenproduktion erlauben. Durch die ständigen Erneuerungen des Maschinenparks und dem Gebrauch von allerneuster Technologie in der Produktion und der Kontrolle von Stirn-, Schneckenradgetrieben, sowie der Gehäusebearbeitung, können wir auf dem Weltmarkt und der Konkurrenz mithalten. In unserer Entwicklungsabteilung entwickeln wir, im Bereich Antriebstechnik, in Zusammenarbeit mit der Marburger Fakultät für Maschinenbau und verschiedenen ausländischen Partnern, ständig neue Produkte. Wir wollen unseren Kunden einen Service anbieten, der auf dem letzten Stand der Technik ist und uns so neben anderen Herstellern einen ebenbürtigen Platz auf dem Markt sichert.

Unser Auftrag ist, den Kunden mit unserer Qualität, die Kundenorientiert ist und dessen hohen Erwartungen entspricht, zu überzeugen. Der moderne Maschinenpark, die Qualitätskontrolle durch den ganzen Fertigungsprozess und die optimale Technologie machen es möglich, schnell, präzise und billig zu produzieren.

Wir bearbeiten nur hochwertige Materiale, setzen modernste Technologie ein, haben hochqualifizierten Mitarbeiter, Kontrollen und Testläufe, Dies Alles bedeutet Qualität, für die, die Firma Strojna bekannt.

Was auch immer wir für sie herstellen, sei es reguläre Produktion oder Teile nach ihrer Anfrage, bemühen wir uns die Arbeit ständig zu optimieren und Kundenorientiert zu sein.







**INTERNATIONAL REGISTRATION CERTIFICATE**

The International Bureau of the World Intellectual Property Organization (WIPO) hereby certifies that the particulars given below correspond to the recording made in the International Register of Industrial Designs, at the date of the international registration, under the Hague Agreement Concerning the International Registration of Industrial Designs.

Patrick CARTANT  
 Head, Examination Section  
 International Designs Registry  
 Sector of Trademarks, Industrial Designs  
 and Geographical Indications

Geneva, November 4, 2009

DM/072 414

16.09.2009

NANOTEHNOLOGIA D.O.O.  
 Pohorska ulica 13A,  
 SI-2000 Maribor  
 (Slovenia)

Filing date: 16.09.2009  
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 European Community.  
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 commercial establishment  
 Applicant's Contracting Party  
 Name and address of the  
 D.O.O. Copova 14, POB 1  
 Number of designs: 1  
 Locarno Classification: C1  
 Indication of products: 1:  
 Contracting Parties design  
 gins, Serbia  
 Contracting Parties design  
 and Herzegovina, Croatia,  
 Macedonia  
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 for designs No(s) 1: 21.05  
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URAD - ZA USKLADNOST NA NOTRANJEM TRGU  
 (BLAGOVNE ZNAKOVNE IN MODELI)

OHM - OFFICE FOR HARMONIZATION IN THE INTERNAL MARKET  
 TRADE MARKS AND PATENTS

- 21 001520115-0001
- 27 SL - EN
- 32 216922009
- 15 216922009
- 45 316922009
- 11 001520115-0001
- 74 NANOTEHNOLOGIA D.O.O.  
Pohorska ulica 13A  
SI-2000 Maribor  
SLOVENIA
- 74 PATENTNA PISARNA d.o.o. Ljubljana  
Copova 14  
SI-1001 Ljubljana  
SLOVENIA
- 51 15 - 01
- 54 **EN** - Puzenje (Karrudje za -)
- ES** - Reductores (Foluchas para -)
- ES** - Reductores (Puzdra na -)
- DA** - Reduktionsenheder (Elsler til -)
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- EL** - Μεσολητες (Θήτες για -)
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0001.1



Certificate  
 Awarded to  
**STROJNA MARIBOR d.o.o.**  
 LINHARTOVA ULICA 11, 2000 MARIBOR, SLOVENIJA

Bureau Veritas Certification certify that the Management System of the above organization has been audited and found to be in accordance with the requirements of the management system standard detailed below

STANDARD

**ISO 9001:2008**

SCOPE OF CERTIFICATION

RESEARCH, DEVELOPMENT, TRADING AND PRODUCTION OF HELICAL SHAFT MOUNTED, HELICAL BEVEL, HELICAL WORM, PLANETARY GEARBOXES AND OTHER PARTS OF DRIVING TECHNOLOGY

Certification cycle start date: **25/07/2013**  
 Subject to the continued satisfactory operation of the organisation's Management System, this certificate expires on: **25/07/2016**  
 Original certification date: **11/09/2007**  
 Certificate number: **SL20174Q** Version number: **02** Renewal date: **11/07/2014**

*B. Blaha*  
 Certification Authority



Certificate body address: Brooks House, 100 Borough High Street, London SE1 1JA, United Kingdom  
 Local office: Ljubljana, maribor, slovenia  
 Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organization.  
 To check this certificate validity please call: +386 1 47 17 17 17  
 Page 1 of 1

1. D<sup>o</sup>dan<sup>e</sup> informac<sup>je</sup>

When gear unit is going to work in:

- dusty atmosphere,
- chemically aggressive atmosphere,
- at increased temperatures,
- at extremely low temperatures,
- and the specific requirements for upgrading and changing at the input or output,
- other... ,

the following informaĀon in this quesĀonnaire is important, for selecĀng the right gear unit:

Required informaĀon	symbol	units / dimension	value / descripĀon
Type designaĀon			
Geometric shape			
MounĀng posiĀon			
Output speed (min max)	$n_2$	min <sup>-1</sup>	
Gear raĀo	$i$		
Output torque (min max)	$Mt_2$	Nm	
Braking torque	$T_k$	Nm	
Minimal operaĀng coeĀcient of machine	$f_{BR}$		
Radial loads at output shaft	$F_{rr}$	N	
Axial loads at output shaft	$F_{ar}$	N	
Rated power of motor	$P$	kW	
Motor rated voltage	$U$	V	
Brake rated voltage	$U_k$	V	
Frequency	$f$	Hz	
Type of motor , EN 60034	S1, S2,.		
Ambient temperature			
Altitude of installaĀon locaĀon	$H$	m	
* Type of load	I, II, III		
* RelaĀve cyclic duraĀon factor	ED	%	
* DuraĀon of work	$T$	h/dan	
* Number of starts per hour	$Z$	1/h	
* Shaft execuĀon			

The gear units are made in according to the valid DIN, ISO and AGMA standards. The technical data and details about allowed working condiĀons are wriĀen on a name plate and accompanying documents.

When ordering gear units it is necessary to indicate the form of mounĀng (the posiĀon of terminal box of the motor) that is chosen from appropriate scheme. All later changes of mounĀng are possible only with consultaĀon and wriĀen binding conĀirmaĀon.

2. Technical drawing

FG	4	2	-	50	VS	SMB	71B4	K1	N3	0	0		
1	2	3	4	4a	5	6	7	8	9	10	11	12	13
FG	1	2	-	L/ D	50	GO	SMB	B14	63A	K2	B3	0	0
ZG	2	3	V		50	VS	SMR	B5	...	EN	...	1	1
KG	3	4	Z		50	ZP	B1		250M	PH	N3	2	2
SG	4		D			ZD	...				...	3	3
	5		P		300/50		...				V1		
	6		F/V		300/50		B7				...		
	7		F/D		300		A63						
	8		F/Z		300/50		...						
	...		M				...						
	13		S				A250						

LEGEND:

- Gear unit type
- Size of gear unit
- Gear stages code
- Shaft execution
  - hollow shaft
  - V output shaft
  - FV output shaft
  - D hollow shaft with shrink disc
  - Z with output shaft on both sides
  - P hollow shaft with bolt-on flange
  - F/V output shaft with bolt-on flange
  - F/D hollow shaft with bolt-on flange and shrink disc
  - F/Z with output shaft on both sides and with flange
  - F/V output shaft with bolt-on flange
  - M mixer
  - S separator
- Shaft position
  - L left side from electric motor point of view
  - D right side from electric motor point of view
- Dimensions output shafts, see dimensioned drawing
  - Without mark, hole diameter in hollow shaft in mm
  - Variant V, diameter of output shaft in mm
  - Variant Z, diameter of shaft in mm
  - Variant P, diameter of flange in mm / hole diameter in hollow shaft in mm
  - Variant F/V, diameter of flange in mm / diameter of shaft in mm
  - Variant F/D, diameter of flange in mm
  - Variant F/Z, diameter of flange in mm / diameter of shaft in mm
- Additional elements
  - MR -torque arm
  - VS -link circuit
  - ZP -protective lid
  - ZD -protective lid for shrink disc
- Input connector
  - SMB STROINA motor type B
  - SMR STROINA motor type R
  - B with input shaft from size 1 - 7
  - A IEC adapter for motors with axle height 63 - 250 mm
- Motor flange according to IEC
- Motor size and number of poles
- Additional marking motor
  - K1 brake without arm
  - K2 brake with arm
  - EN encoder
  - PH forced cooling
- Basic mounting position
- Position of the terminal box
- Position of the cable entry

Cast iron

Material

Cast iron

Shaft diameter

to D = 50 mm in ISO k6 (DIN 748 Page 1)  
 as of D = 50 mm in ISO m6 (DIN 748 Page 1)  
 Keyway ISO F9 (DIN 6885 Page 1)  
 Key, height ISO h9 (DIN 6885 Page 1 and DIN 6880)  
 Bore - customer ISO H7  
 Circular error of the shaft ends DIN EN 50347  
 Material 42CrMo4 or C45E

Bore diameter

ISO H7 (DIN 748)  
 Keyway ISO JS9 (DIN 6885 Page 1)  
 Key, height ISO h9 (DIN 6885 Page 1 and DIN 6880)  
 Customer shaft ISO h6  
 Material 42CrMo4 or C45E

Outside diameter

ISO f7  
 Inside diameter ISO H7  
 Customer shaft ISO h6

Outside diameter

to D = 230 mm ISO j6 as of D = 230 mm ISO h6  
 Coaxial error and axial run out of the flange flanges DIN 42955-N

Material

16MnCr5, 20MnCr5 or 18CrNiMo7-6

Type

with dust lip according to DIN 3760 AS  
 Material NBR/ FPM

Type

ball bearings or tapered roller bearings

### 3. DETAILED DATA

The gear units are made in accordance with the valid DIN, ISO and AGMA standards. The technical data and details about allowed working conditions are written on a name plate and accompanying documents.

When ordering gear units it is necessary to indicate the form of mounting (the position of terminal box of the motor) that is chosen from appropriate scheme. All later changes of mounting are possible only with consultation and written binding confirmation.

The efficiency of gear units is mainly determined by the gearing and bearing friction. Keep in mind that the starting efficiency of a gear unit is always less than its efficiency at operating speed. This factor is especially pronounced in the case of helical-worm gear units.

In order to choose correct gearbox and driving electric motor it is necessary to know the following data:

- required output torque  $Mt_2$ ,
- gearbox output speed  $n_2$ ,
- way of gearbox load and corresponding operational factor  $f_B$ .

Based on these input values, it is possible to determine the size, box power output and gear ratio as well.

### Detailed Data

The gear unit reliably performs its function by required working conditions. The value of service factor  $f_B$  in table of gear units is given for the way of load I – continuous, smooth running without rocking up to 8 hours/daily.

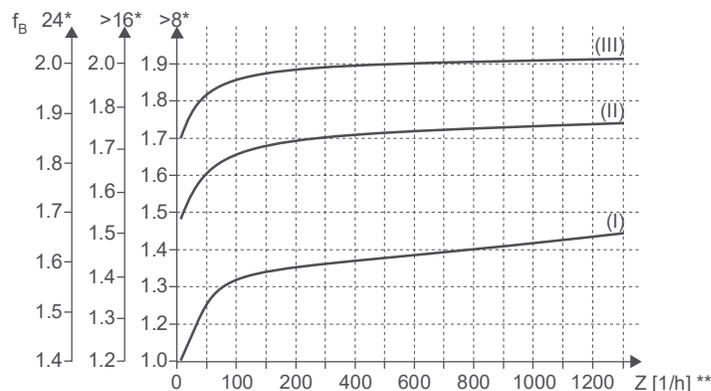
The way of determining the service factor  $f_B$  is not standardized. The gear units with electric motor's SMR or SMB have got  $f_B=1.0$ , and it is satisfied then, when by long-term load with output torque does not come to permanent damage of the gear (or / and pitting).

The chosen service factor must be multiplied with:

- At least 1.2, when the gear is running with internal combustion engine, hydraulic motor, ... , the way of rotation is changing and hard start - if occasionally comes to torque fluctuations at the input of the gear unit,
- At least 1.5, when for driving the gear is used electro-break motor,
- At least 1.6, when for driving the gear is used servomotor,
- At least 1.7, when using frequency regulator.

It is recommended to determine the service factor  $f_B$  of the gear, because the influence of the provided environment temperature is important. The service factor is  $f_{Bmin} \geq 0.8$ , according to AGMA standards. The gear unit made by ATEX requirements has to have the service factor  $f_{Bmin} \geq 1.25$ .

The factor of the driven machine on the gear unit is taken into account to a sufficient level of accuracy using the service factor  $f_B$ . The service factor is determined according to the daily operating time and the starting frequency. Three load classifications are considered depending on load factor. You can read off the service factor applicable to your application in graph. The service factor determined using this diagram must be less than or equal to the service factor as given in the selection tables.



\* Operating hours

\*\* Starts per hour


**Class I:**

A gearmotor can operate with steady loads not exceeding the normal rating and 8 - 10 hours of running time per day.

As for instance : fans, gear pumps, mounting belts, conveyor worms, liquid mixers, filling and packing machines.

**Class II:**

A gearmotor can operate with steady loads not exceeding the normal rating and 24 hours of running time per day.

or

A gearmotor can operate with moderate shock loads not exceeding 1.25 x rated load torque and 8 - 10 hours of running time per day.

As for instance: conveyor belts, lifts, winches, massaging mills, textile and printing machines, wood-working machines.

**Class III:**

A gearmotor can operate with moderate shock loads which are a maximum 1.25 x rated load torque and 24 hours of running time per day.

or

A gearmotor can operate with heavy shock loads in excess 1.25 x rated load torque and 8 - 10 hours of running time per day.

As for instance: concrete mixing machine, suction pumps, compressors, power hammers, roll stand, conveyers of heavy goods, bending and pressing machines, machines with alternating movement.

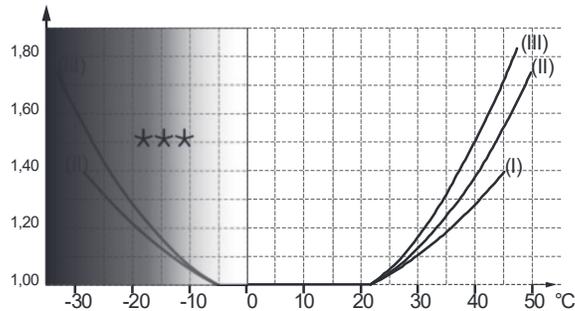
The method for determining the maximum permitted continuous torque  $M_a$  max and using this value to derive the service factor  $f_B = M_a \text{ max} / M$  is not defined in a standard and varies greatly from manufacturer to manufacturer. Under certain circumstances, the service factor may not be comparable with the information given by other gear unit manufacturers. If in doubt, please contact Stroina to find out more detailed information for your specific drive.

Operating time h/day	4 h			8 h			16 h			24 h		
	<10	10...200	>200	<10	10...200	>200	>10	10...200	>200	<10	10...200	>200
Load type I	0,9	1,15	1,2	1,0	1,30	1,35	1,2	1,35	1,4	1,4	1,55	1,6
Load type II	1,4	1,55	1,6	1,45	1,65	1,7	1,55	1,70	1,75	1,7	1,8	1,85
Load type III	1,6	1,75	1,8	1,7	1,85	1,9	1,75	1,85	2,0	1,85	1,95	2,0

In case that gear unit is not operating in enclosed environment 20°C, additional service factor will have to be taken into consideration besides service factor  $f_B$  derived:

- $f_{B1}$  = Service factor from the ambient temperature

The additional service factor  $f_{B1}$  can be determined by referring to the diagram. The load class is taken into consideration in  $f_{B1}$  in the same way as in  $f_B$ .



Total service factor is calculated :  $f_{BT} = f_B \times f_{B1}$

For special requests, demands or if you are in doubt please contact us with completed questionnaire.

\*\*\*  -20°C

Output torque  $Mt_2$

Torque  $Mt_2$  is given by required load of gearbox. It can be expressed as a force of  $F_2$ , which acts at certain distance on arm  $r_2$ .

$$Mt_2 \text{ [Nm]} = F_2 \text{ [N]} \times r_2 \text{ [m]}$$

$$R_2 = \frac{Mt_2}{F_2} \times \frac{1}{r_2}$$

Force on the shaft center, should always be less than or equal to the available loads for the chosen type of gear unit.

$$F_r \geq F_{rr} \text{ and } F_a \geq F_{ar}$$

Actual radial force depends on the transmission element mounted.

$$F_{rr} = ((2000 \times Mt_2) / d_0) \times f_z \text{ [N]}$$

- $Mt_2$  (Nm) - output torque
- $d_0$  (mm) - middle diameter of transmission element

Transmission element	$f_z$	Note
Gear wheel	1,15	$Z \leq 17$
Sprocket	1,25	$Z > 13$
Sprocket	1,4	$Z \geq 13$
V-belt	1,8	Influence of tensile force
Flat belt	2,5	Influence of tensile force

$$T = \frac{P}{\omega}$$

Thermal power limit represents maximal permissible power of gear unit surface temperature 80°C

Data in tables are valid for:

- standard gear unit with STROINA motor
- mounting position B7, B6, B3, N1, N2, N3, N4, N5, V1, V2
- input speed  $\leq 1700 \text{ min}^{-1}$
- operating mode: S1

FG	Thermal power limit $P_t$ [kW]								
	Ambient temperature $\Theta$ [°C]								
	-20	-10	0	10	20	30	40	50	60
12	8,2	7,2	6,3	4,1	4,3	3,5	1,9	1,4	0,9
22	12	10,2	8,8	5,9	6,2	4,0	3,0	1,9	1,1
23	7,3	6,4	5,4	3,7	3,7	2,9	1,8	1,0	0,7
32	23,0	19,8	17,0	13,8	12,5	8,9	6,5	4,1	2,6
33	13,8	11,7	11,5	8,0	7,9	5,0	3,9	2,3	1,6
42	39,0	36,0	28,0	23,5	21	15,0	10,8	7,4	4,5
43	23,0	22,0	16,9	13,9	13,0	9,0	6,6	4,1	2,7
44	15,2	13,0	11,9	9,0	8,8	6,0	4,1	2,9	1,8
52	60,0	51,0	44,0	35,2	29	23,0	16,7	11,1	6,7
53	35,8	29,0	25,8	20,8	17	13,8	9,8	6,7	4,0
54	24,3	19,0	17,9	14,1	11,8	9,1	6,7	4,5	2,3
62	108	93,0	79,0	63,8	54,0	42,0	30,2	20,2	12,2
63	64,0	56,0	47,8	38,2	32,0	25,0	18,2	12,2	7,4
64	43,5	37,0	32,0	25,5	21,0	16,8	12,0	8,1	4,9
72	135	124	101	82,4	73	54,0	40,0	26,1	15,8
73	82	75	59,0	49,6	44,0	32,5	23,4	15,7	9,5
74	53	47	41,0	32,8	30,0	21,6	15,5	10,4	6,3
83	127	114	93,0	75,3	67,0	49,0	35,6	23,8	14,4
84	79,0	69,1	58,3	46,1	42,0	30,4	21,8	14,6	8,8
85	39	34,0	28,7	22,6	20,0	15,0	10,7	7,2	4,3

KG	Thermal power limit $P_t$ [kW]								
	Ambient temperature $\Theta$ [°C]								
	-20	-10	0	10	20	30	40	50	60
12	7,7	6,4	5,3	4,5	3,6	2,8	2,3	1,9	1,2
22	12,1	10,5	9,1	7,6	6,3	5,0	3,7	2,5	1,6
23	6,1	5,2	4,4	3,7	3,2	2,9	2,1	1,6	1,2
32	20,5	17,8	14,8	12,6	10,7	9,0	7,0	5,5	3,0
33	9,6	8,0	7,1	6,4	5,4	4,7	3,8	2,5	1,5
42	31,5	26,3	26,9	22,3	18,7	15,0	9,0	6,7	4,1
43	19,0	16,0	13,3	11,3	9,4	8,1	6,2	5,2	3,2
44	12,8	10,9	9,1	7,7	6,5	5,4	4,5	3,2	2,2
53	25,3	21,5	18,2	15,6	13	9,7	8,1	5,5	3,5
54	15,5	12,7	10,8	9	7,8	6,5	4,8	3,2	1,7
55	10,7	8,7	7,4	6,2	5,2	3,8	2,8	2,0	1,4
63	37,2	32,4	27,3	22,0	19,2	15,3	11,3	7,2	4,8
64	22,8	18,9	16,0	13,5	11,5	9,1	5,9	4,5	2,8
65	16,0	13,2	11,0	9,3	7,7	5,2	4,0	3,4	2,0
73	60,0	52,9	44,6	37,8	32	25,2	18,3	12,1	7,2
74	39,0	33,0	28,0	23,0	19,2	16,0	12,3	8,3	5,2
75	30,0	26	21,9	16,0	12,8	11,3	8,5	5,8	3,6
83	82,6	70,0	58,0	48,0	41,5	33,0	25,5	15,2	9,6
84	50,0	42,0	35,5	30,0	24,9	21	17,3	10,5	7,2
85	38,0	31,5	26,2	21,0	16,6	14,2	11,5	8,2	5,3
93	135,0	114,0	91,0	77,0	62,3	51,0	42,0	30,0	15,5
94	72,0	61,0	52,0	44,0	37,3	31,5	25,9	18,0	9,8
95	51,0	41,0	34,7	29,4	24,9	21,0	15,8	10,9	7,2

ZG	Thermal power limit $P_T$ [kW]								
	Ambient temperature $\Theta$ [°C]								
	-20	-10	0	10	20	30	40	50	60
12	3,4	2,6	2,2	1,8	1,6	1,4	1	0,8	0,6
22	5,6	4,9	4,2	3,6	3,2	2,8	2,4	1,9	1,1
23	5	4,3	3,5	3,1	2,8	2,5	2,2	1,3	0,8
32	7,7	6,8	5,9	5,3	4,6	3,6	3,1	2,4	1,6
33	6,6	5,9	5,1	4,2	3,9	3,1	2,8	1,9	1,4
42	10,2	8,9	8,2	6,8	5,8	5,1	4,3	3,6	2,5
43	8,9	7,3	6,8	5,7	5	4,6	3,8	2,9	1,8
52	14,7	12,2	10,3	9,3	7,9	7,1	6,3	5,4	4,3
53	12,4	11,3	9,2	8,6	7,1	6,5	5,3	4,7	3,1
62	18,2	16,3	14,5	13	12	11,2	10,3	9,2	8,4
63	16,5	14,2	13,2	12,3	10	8,9	7,2	6,5	5,6
64	14,2	13,2	11,8	9,3	8,3	8	6,8	5,6	4,7
72	26,6	24	22,3	20,8	19,3	18,6	17,4	16,1	14,2
73	25	23	20,1	18,5	17,4	16,8	15,2	14,3	11,8
74	22,6	19,2	17,5	16,2	15,3	13,1	12,2	10,6	9,1
82	36,7	32,4	28	26	24	22,2	20,4	18,3	16,3
83	32	29	25	23	19	17,5	16,2	15,3	14
84	29	26	19,8	18,3	17	16	14,2	13,2	12,7
92	51,5	47	42,8	38	35	33,5	30,6	28,2	24,3
93	48	43	39	31	29	27	25	23,1	20,7
94	45	39	31	29	26	23,8	20,2	18,4	17,5
102	58	54	47	44	42	39	34	28	22
103	53	49	44	41	39	36	31,5	24,8	18,5
104	50	46	39,1	35,5	34	32,5	28,4	23,1	16,8
112	92	86	78	67	62	55	51	47	38
113	85	79	68	61	57	51,5	48	43	36
114	80	76	63	57	51	48	44	39	34
122	110,5	106,6	98,8	94,9	91	84,5	79,3	74,1	68,9
123	106,6	97,5	91	88,4	84,5	78	71,5	65	58,5
124	96,2	91	88,4	83,2	78	71,5	65	58,5	52
132	193,8	182,4	174,8	167,2	161,5	153,9	140,6	131,1	121,6
133	186,2	178,6	171	163,4	157,7	148,2	140,6	133	123,5
134	180,5	172,9	169,1	159,6	152	138,7	127,3	114	102,6

SG	Permissible thermal power loss, $P_B$ [kW]								
	Ambient temperature, $\Theta$ [°C]								
	-20	-10	0	10	20	30	40	50	60
1	0,25	0,23	0,20	0,18	0,15	0,12	0,09	0,06	0,04
2	0,40	0,35	0,32	0,28	0,23	0,18	0,15	0,11	0,07
3	0,61	0,56	0,50	0,42	0,35	0,30	0,22	0,17	0,11
4	0,76	0,70	0,60	0,53	0,43	0,38	0,30	0,22	0,13
5	0,95	0,87	0,77	0,68	0,57	0,48	0,36	0,25	0,15
6	1,21	1,10	0,96	0,80	0,70	0,60	0,40	0,32	0,21

For SG gear units we have to include additional formula for calculation. Shown in example:

The table above shows that  $P_g$  for the ambient temperature of 30 °C is 0,18kW; ( $P_g=0,18$  kW).

If we include this in formula  $P_t$  we get:

$$P_t = \frac{P_g}{1 - \frac{\eta}{100}} \text{ [kW]} \qquad P_t = \frac{0,18}{1 - \frac{62}{100}} = 0,47 \text{ [kW]}$$

The value  $P_{td}$  according to the following formula represents maximum permissible input power of the gear unit:

$$P_{td} = P_t \times k_1 \times k_2 \times k_3 \times k_4 \times k_5$$

IEC adapter or input shaft		k1	0,70
Mounting position: N4, N5, N6		k2	0,75
Input speed > 1700 min <sup>-1</sup>		k3	0,70
Duty on intermittent load S3...S6	40 min	k4	1,25
	25 min		1,50
	15 min		1,80
	10 min		2,00
Synthetic lubricant + FPM		k5	1,60

Thermal power limit represents maximal permissible power of gear unit surface temperature 80°C

Data in tables are valid for:

- standard gear unit with STROINA motor
- mounting position B7, B6, B3, N1, N2, N3, N4, N5, V1, V2
- input speed ≤ 1700 min<sup>-1</sup>
- operating mode: S1

4. GEAR UNITS AND GEARMOTORS

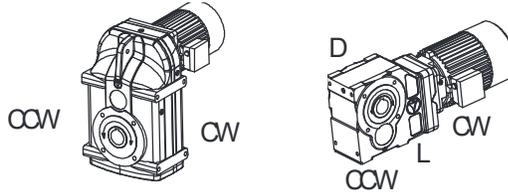
Stroina diŕerenŕates between six mounŕing posiŕions for gear units and gearmotors.

Output direcŕion of rotaŕion with backstop.

If the drive has a backstop, you also have to indicate the direcŕion of rotaŕion of the output for the drive. The following deŕiŕation applies:

As viewed at the output shaŕt:

-  Clockwise (CW)
-  Counterclockwise (CCW)



In the right-angle gear units, you also have to indicate whether the direcŕion of rotaŕion is given looking into the L or D end.

Posiŕion of the output shaŕt and output ŕange:

In right-angle gear units, you also have to indicate the posiŕion of the output shaŕt and the output ŕange:

-  L or D or L+D (L is for Leŕt-side, D is for Right-side)

THERMAL PROTECTION

Changing the mounŕing posiŕion:

It is important that you read the following informaŕion when you operate the gearmotor in a mounŕing posiŕion other than indicated in the order:

-  Adjust the lubricant oil quanŕity to match new mounŕing posiŕion
-  Adjust the posiŕion of the breather valve
-  For helical-bevel gearmotors: contact Stroina customer service prior to changing to mounŕing posiŕion V1 to V2 or vice versa
-  For helical-worm gearmotors: contact Stroina customer service when changing to mounŕing posiŕion N5 or N4

INFORMATION	
	Notes on the shaŕts illustrated on the mounŕing posiŕion sheets:  -For gear units with solid shaŕt: The displayed shaŕt is always on the L end.  -For shaŕt-mounted gear units: The shaŕt with dashed lines represents the customer shaŕt. the output end (shaŕt posiŕion) is always shown on the L end.
INFORMATION	
	Notes on the depicted motors.  Motors are only represented symbolically on the mounŕing posiŕion sheets.
INFORMATION	
	When the terminal box is in the 3 posiŕion, check to see if the gearmotor has to be supported.  Not all cable entry posiŕions (0,1,2,3) and terminal box posiŕions (0,1,2,3) can be selected. Some addiŕional features for the motor require a connecŕion inside the terminal box, wich means this terminal box is larger than the standard terminal box due to the normaŕve air gaps. The dimension sheets only depict the standard terminal box.

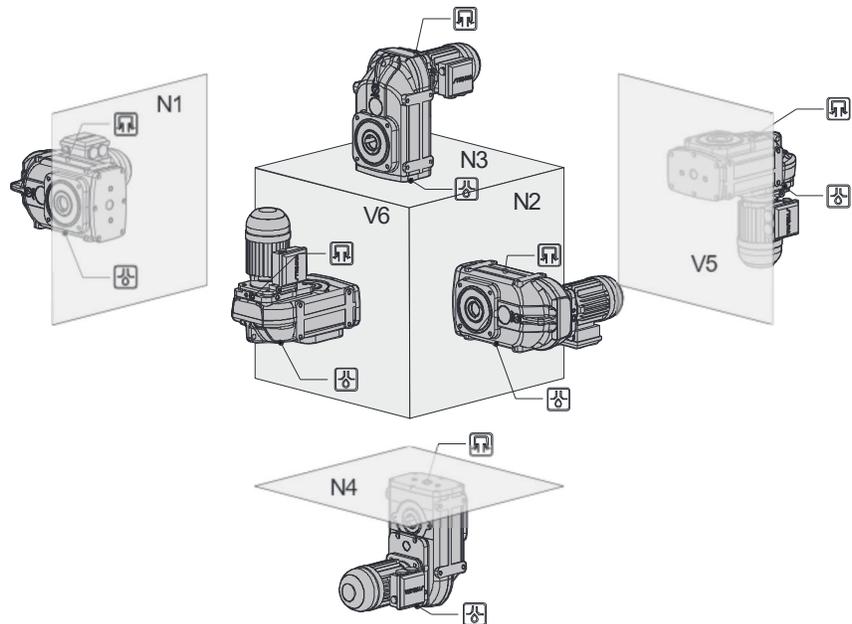
## 5. Oil

Type	Ambient °C	DIN ( ISO )	ISO VG	ARAL	CASTROL	* SHELL	MOBIL
FG	-10°C... +60°C	CLP	220	Degol BG 220	Alpha SP 220	Omala 220	Mobilgear 600 XP 220
	-20°C... +80°C	CLPPG	460	Degol GS460	Alphasyn PG 460	Tivela S460	Glygoyle 460
ZG	-25°C... +60°C	CLPPG	220	Degol GS220	Alphasyn PG 220	Tivela S220	Glygoyle 220
	-40°C... +60°C	CLPHC	220	Degol PAS220	Alphasyn T 220	Omala S4 GX 220	SHC 630
KG	-20°C... +40°C	HCE	220	Eural gear 220	OpEleb GT 220	Cassida GL 220	SHC Dbus 220
	-20°C... +80°C	CLPPG	460	Degol GS460	Alphasyn PG 460	Tivela S460	Glygoyle 460
SG	-25°C... +60°C	CLPPG	220	Degol GS220	Alphasyn PG 220	Tivela S220	Glygoyle 220
	-40°C... +20°C	CLPHC	220	Degol PAS220	Alphasyn T 220	Omala 220 HD	SHC 630
	-20°C... +40°C	HCE	460	-	-	-	Glygoyle 460

- CLP -Mineral oil 1) Standard lubrication according DIN 51517 - CLP ISO 220  
 CLPPG -Polyglycol oil 2) Standard lubrication according DIN 51517 - CLP ISO VG 460  
 CLPHC -Polyalphaolefin oil 3) Special starting procedure  
 HCE -Lubricants for food processing industry Special lubricants on inquiry

\*S

FG	Mounting position					
	N1	N2	N3	N4	V5	V6
12	1,1	1,1	1,5	1,6	1,7	1,9
22	1,2	1,2	1,7	1,8	1,9	2,3
23	1,4	1,4	2,0	2,2	2,4	2,9
32	1,9	1,9	3,0	3,1	3,4	4,0
33	2,3	2,3	3,8	4,0	4,3	5,0
42	3,1	3,1	4,2	4,8	4,8	7,0
43	3,5	3,5	5,8	6,2	6,8	7,7
44	3,7	3,7	7,0	7,5	8,0	9,0
52	6,2	6,2	9	9,2	10	12
53	6,5	6,5	9,7	10	12	15
54	6,8	6,8	10	12	13	16
62	10	10	12	13	14	17
63	9,3	9,3	13	14	16	19
64	10	10	14	15	18	22
72	14	14	16	17	19	24
73	15	15	21	24	25	27
74	15,5	15,5	23,5	26	27	33
83	28	28	40	43	46	50
84	29,5	29,5	48	54	56	60
85	31	31	50	58	61	66



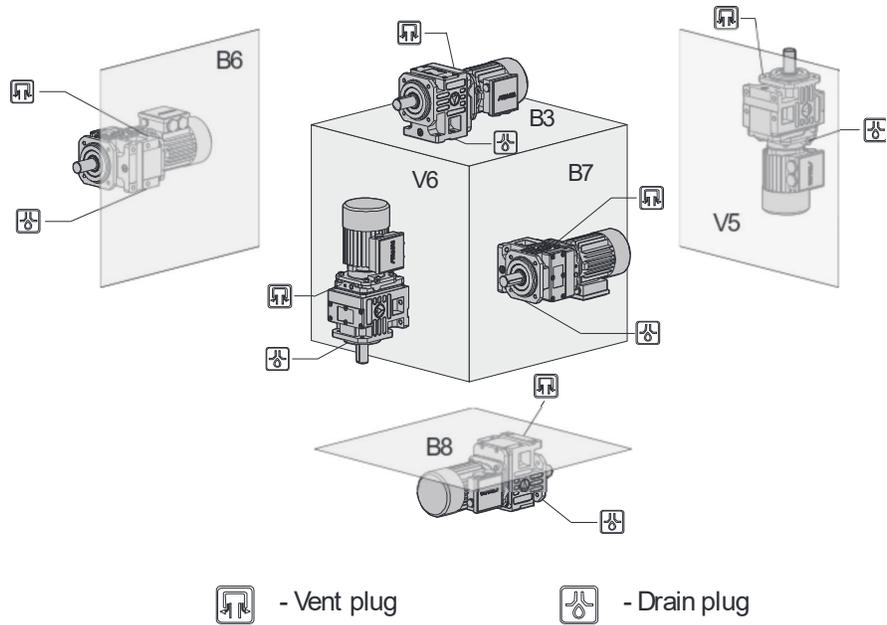
- Vent plug



- Drain plug

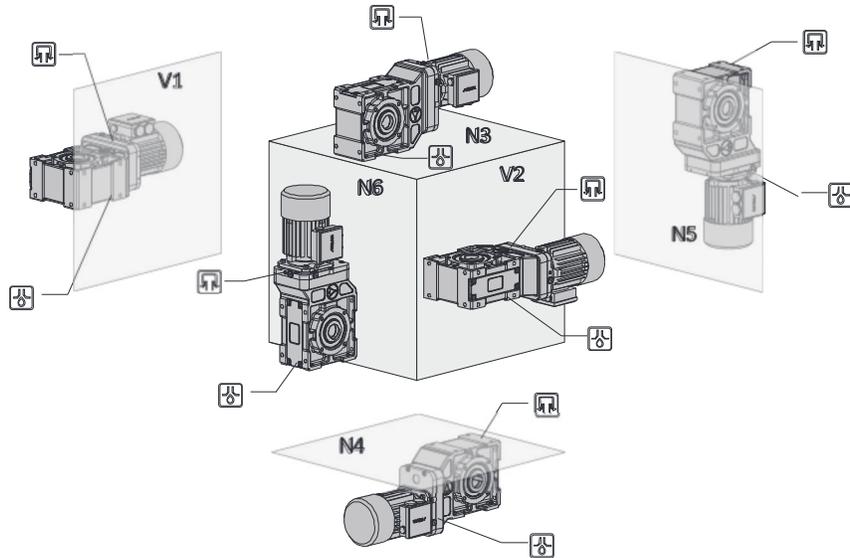
Gear units and geared motors are supplied ready for operation. Gear units sizes FG1, FG2, FG3 are filled with synthetic gear oil labeling according to DIN51502 CLP PG ISO VG220 (according to ISO viscosity grade VG 220 from DIN51519). Sizes from FG4 to FG8 have standard filling with mineral gear oil labeling according to DIN51502 CLP ISO VG220 (according to ISO viscosity grade VG 220 from DIN51519) for ambient temperature -10 °C (14 °F) to +40 °C (104 °F).

ZG	Mounting position					
	B7	B6	B3	B8	V6	V5
12	0,4	0,4	0,2	0,4	0,3	0,4
22	0,8	0,8	0,7	1,4	1,3	1,5
23	0,9	0,9	0,8	1,6	1,5	1,7
32	0,9	0,9	0,7	1,4	1,4	1,6
33	1	1	0,9	1,9	1,8	2
42	1,2	1,2	1	2,1	2	2,2
43	1,4	1,4	1,3	2,7	2,6	2,8
44	1,9	1,9	1,8	3,5	3,4	3,7
52	1,2	1,2	0,9	1,9	1,8	2,2
53	1,6	1,6	1,5	3,2	3,1	3,5
54	2,2	4,4	4,6	5,6	3,7	3,7
62	1,5	1,5	1,2	2,5	2,6	2,7
63	2,1	2,1	1,8	3,5	3,7	3,7
64	2,7	2,7	2,3	4,5	4,6	4,8
72	2,9	2,9	2,1	4,3	4,5	4,5
73	3,6	3,6	3,2	6,4	6,5	6,8
74	4,2	4,2	3,7	7,5	7,5	7,8
82	3,3	3,3	2,7	5,5	5,7	5,9
83	3,9	3,9	3,5	7,2	7,4	7,8
84	5,2	5	4,6	9,3	9,5	10,5
92	8,1	8,1	7	14,4	14,3	15
93	9,3	9,3	8,5	17,5	17,2	18,5
94	10,5	10,5	8,5	18,5	18,5	20
102	11	11,8	10,2	20,6	20,3	22
103	13,8	13,8	12,5	25,6	25,2	27
104	15,7	15,7	14,3	28,5	28,9	31
112	17	17	15,9	32	32,5	33
113	18,4	18,4	17,5	36	37	39
114	24	24	22	45	46	48
122	24	24	22	45	46	46
123	28	28	26	54	56	59
124	36	36	34	68	69	72
132	33	33	31	63	64	65
133	41	41	39	81	83	88
134	55	55	50	101	104	108



Gear units and geared motors are supplied ready for operation. Gear units sizes from ZG1 to ZG6 are filled with synthetic gear oil labeling according to DIN51502 CLP PG ISO VG220 (according to ISO viscosity grade VG 220 from DIN51519). Sizes from ZG7 to ZG13 have standard filling with mineral gear oil labeling according to DIN51502 CLP ISO VG220 (according to ISO viscosity grade VG 220 from DIN51519) for ambient temperature -10 °C (14 °F) to +40 °C (104 °F). Gear units and geared motors are supplied ready for operation. Gear units sizes from ZG1 to ZG6 are filled with synthetic gear oil labeling according to DIN51502 CLP PG ISO VG220 (according to ISO viscosity grade VG 220 from DIN51519). Sizes from ZG7 to ZG13 have standard filling with mineral gear oil labeling according to DIN51502 CLP ISO VG220 (according to ISO viscosity grade VG 220 from DIN51519) for ambient temperature -10 °C (14 °F) to +40 °C (104 °F).

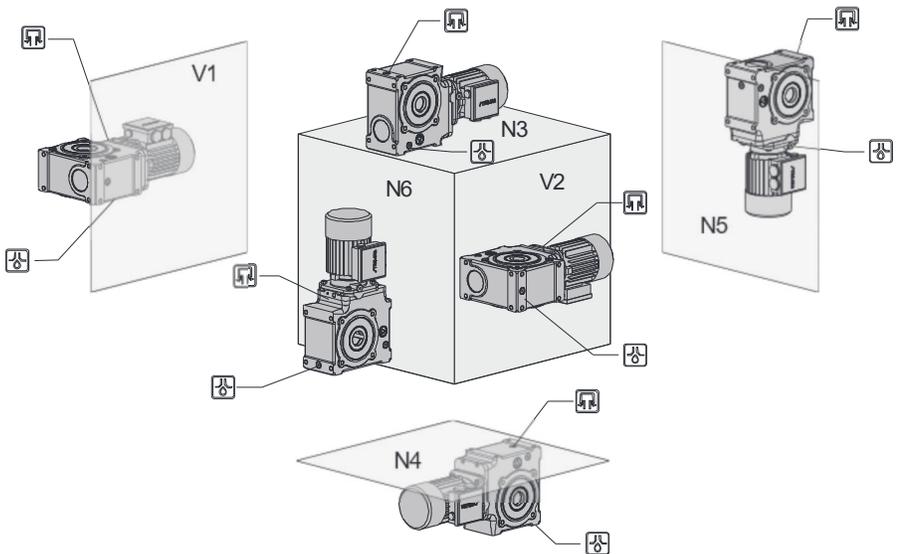
KG	Mounting position					
	N3	N4	N5	N6	V1	V2
12	0,8	0,9	1,2	1,5	1,3	1,4
22	1	1	1,45	1,6	1,5	1,6
23	1	1,1	1,45	1,8	1,7	1,8
32	1,6	1,6	2,2	2,1	2,2	2,2
33	1,7	1,8	2,6	2,8	2,6	2,7
42	2,5	2,6	3,0	4,5	4,5	4,0
43	2,6	2,7	3,3	4,7	4,3	4,4
44	2,8	3,2	3,5	5,0	4,8	4,8
53	3,0	3,8	4,2	5,3	3,2	3,3
54	3,5	4,1	4,7	5,7	3,8	4
55	4,2	4,8	5,3	6,2	5,6	6,0
63	5,0	6,8	7,0	9,2	5,2	5,4
64	5,8	7,5	7,5	9,8	6,0	6,5
65	6,7	8,2	7,9	10,5	7,5	8,0
73	7,8	11	14	16	8	8,2
74	8,5	12	15	17	15	15
75	9,6	12,8	16,5	18,5	17	17
83	17	20	22	28	18	19
84	17	18,5	25	32	20	21
85	20	21,5	26,5	36	23	25
93	35	48	45	67	40	42
94	38	52	48	72	45	47
95	42	56	53	77	52	56



- Vent plug      - Drain plug

Gear units and geared motors are supplied ready for operation. Gear units sizes KG1 to KG4 are filled with synthetic gear oil labeling according to DIN51502 CLP PG ISO VG220 (according to ISO viscosity grade VG 220 from DIN51519). Sizes from KG5 to KG9 have standard filling with mineral gear oil labeling according to DIN51502 CLP ISO VG220 (according to ISO viscosity grade VG 220 from DIN51519) for ambient temperature -10 °C (14 °F) to +40 °C (104 °F).

SG	Mounting position					
	N1	N2	N3	N4	N5	N6
12	0,9	0,9	0,9	1,1	1,1	0,9
22	0,9	1,2	1,2	1,2	1,2	1,2
32	1,1	1,6	1,6	1,6	1,6	1,6
33	1,7	1,7	2,5	2,5	2,5	2,9
42	2	2	3,4	3,4	3,4	3,4
43	3,1	3	4,5	4,5	4,5	5,1
52	3,2	3,2	5,5	5,5	5,5	5,5
53	3,5	3,5	6,3	6,3	6,3	6,3
62	5,6	5,6	9	9	9	9,6
63	5,9	5,9	10,3	10,3	10,3	10,3
55	4,4	4,4	4,6	5,6	3,7	3,7
63	6,2	6,2	6,8	8,2	4,8	4,8



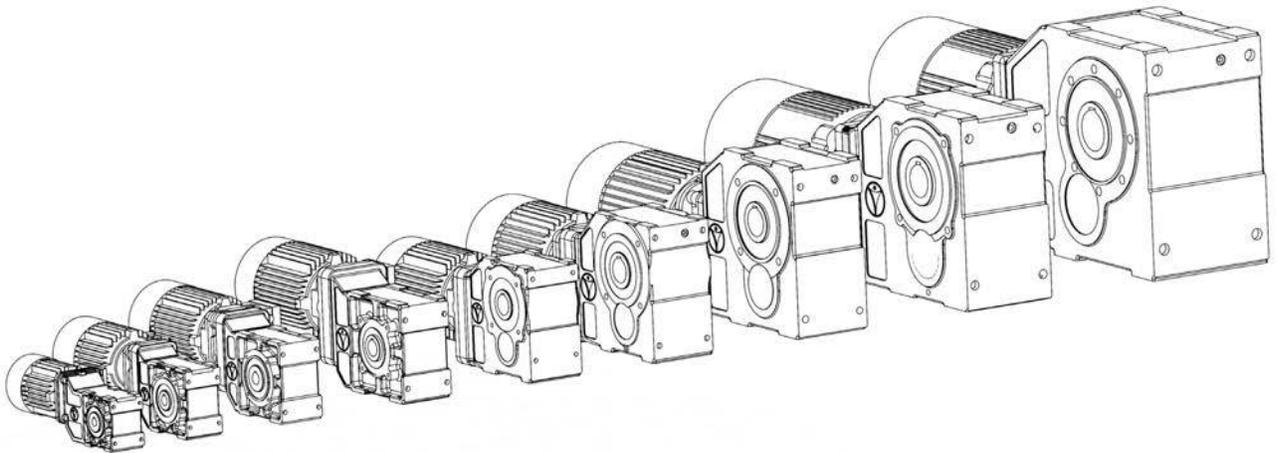
- Vent plug      - Drain plug

Gear units and geared motors are supplied ready for operation. SG gear units are filled with synthetic gear oil labeling according to DIN51502 CLP PG ISO VG460 (according to ISO viscosity grade VG 460 from DIN51519) for ambient temperature -10 °C (14 °F) to +40 °C (104 °F).

KG

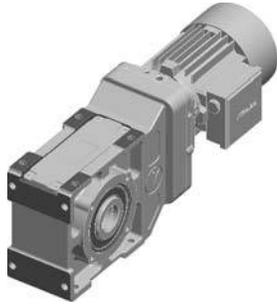
## HELICAL BEVEL GEAR UNITS

Power: 0,12 kW - 55 kW  
Torque: 95 - 13.500 Nm  
RaG: 6,7 - 8158





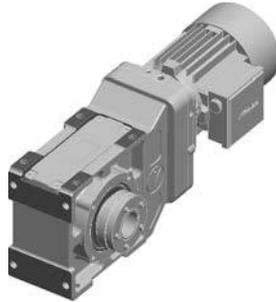
KG..SMB/SMR



KG..P..



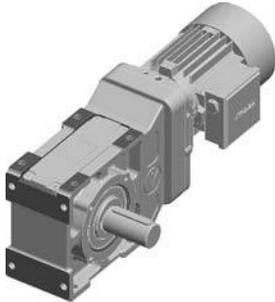
KG..D..



KG..PD..



KG..V..



KG..PV..

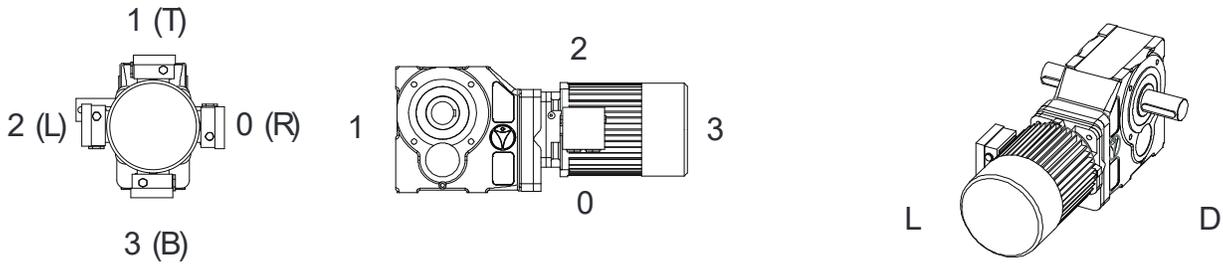


KG..Z..

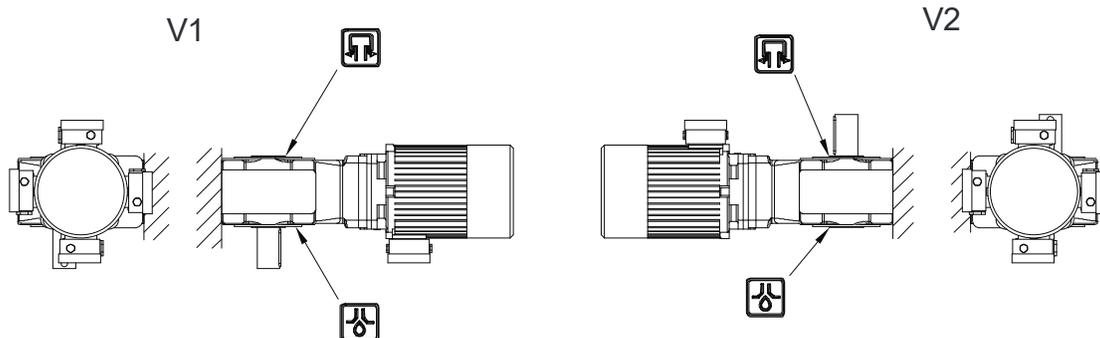
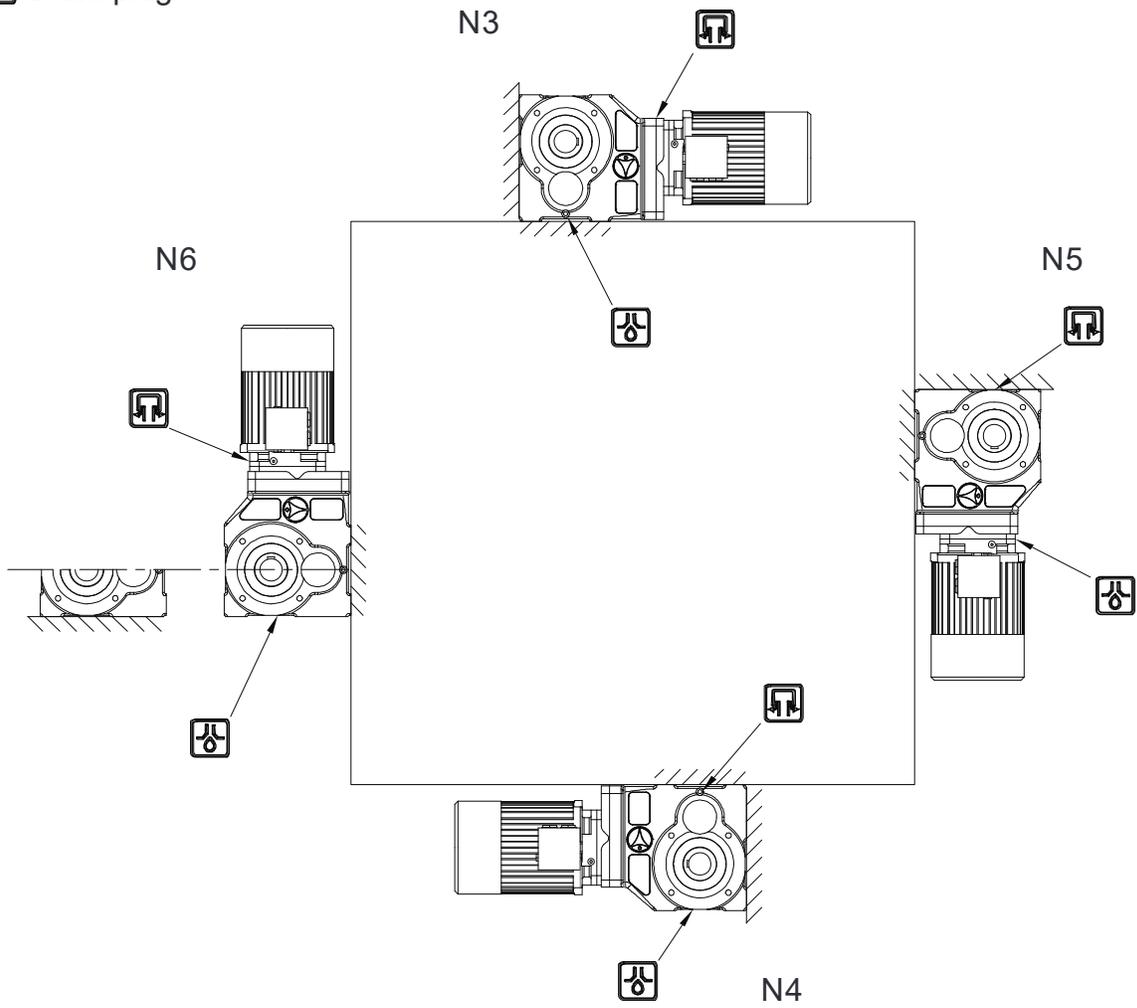


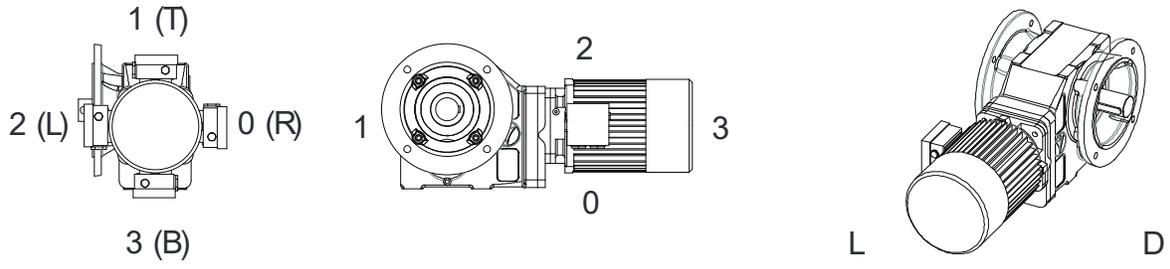
KG..PZ..



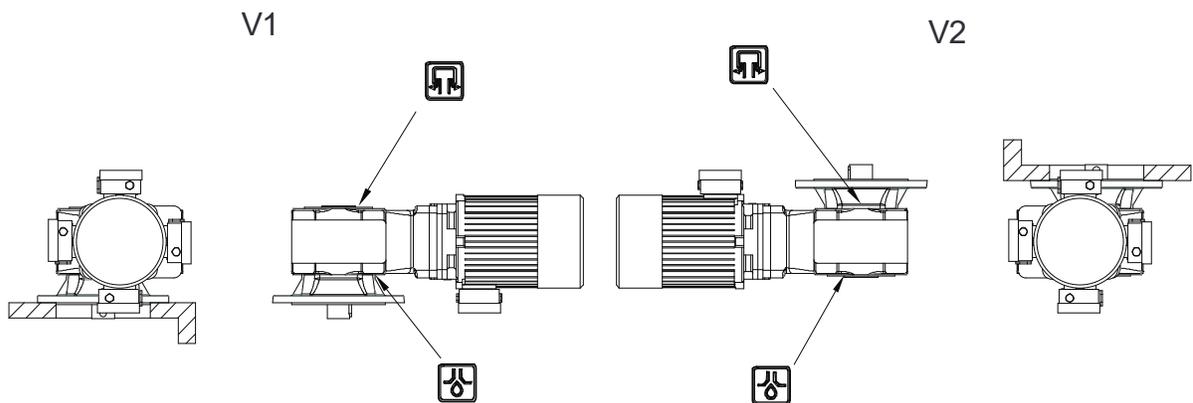
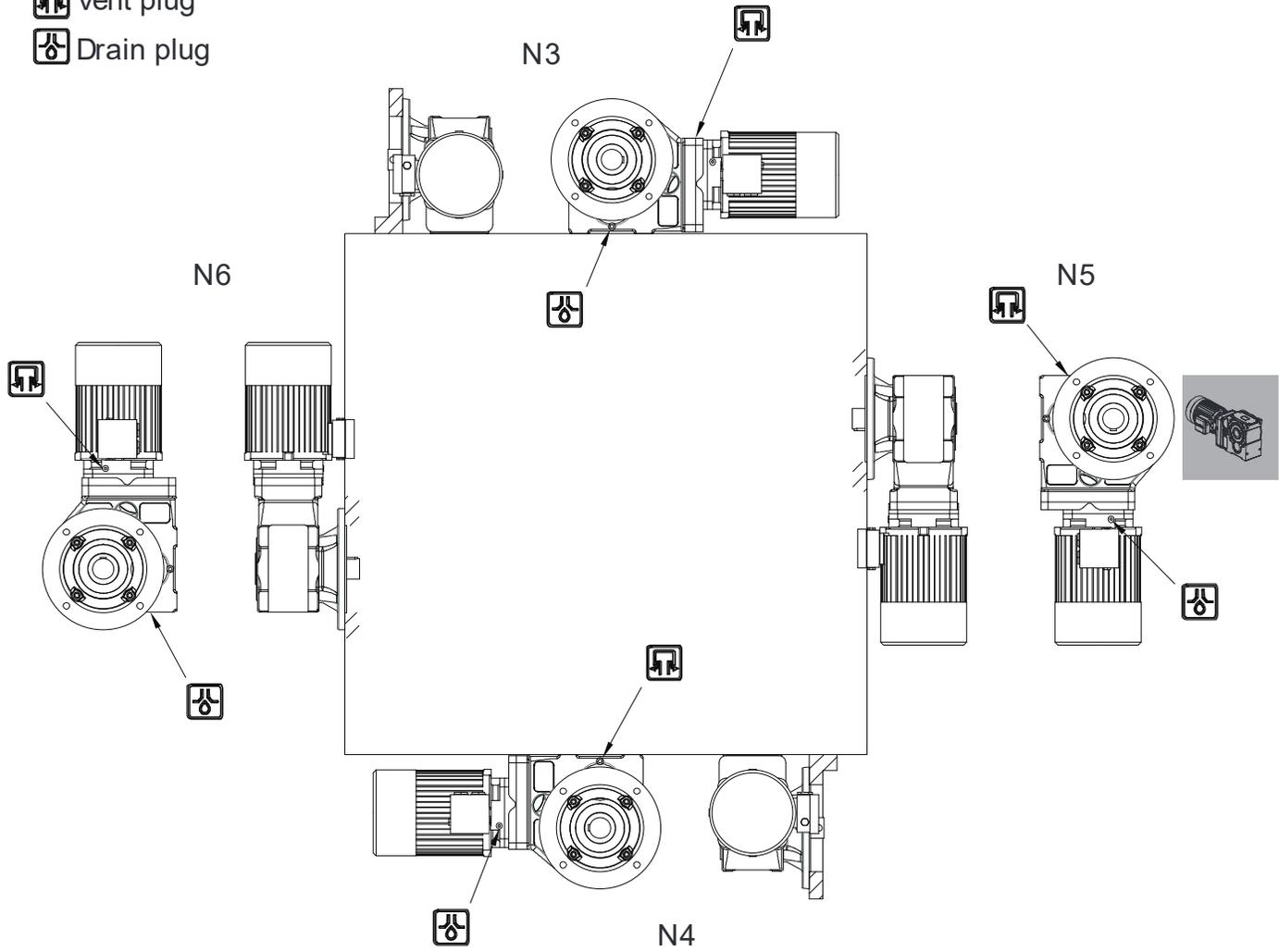


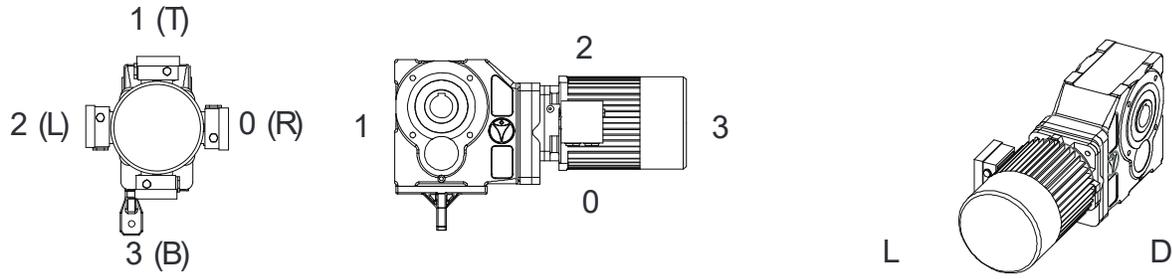
-  Vent plug
-  Drain plug



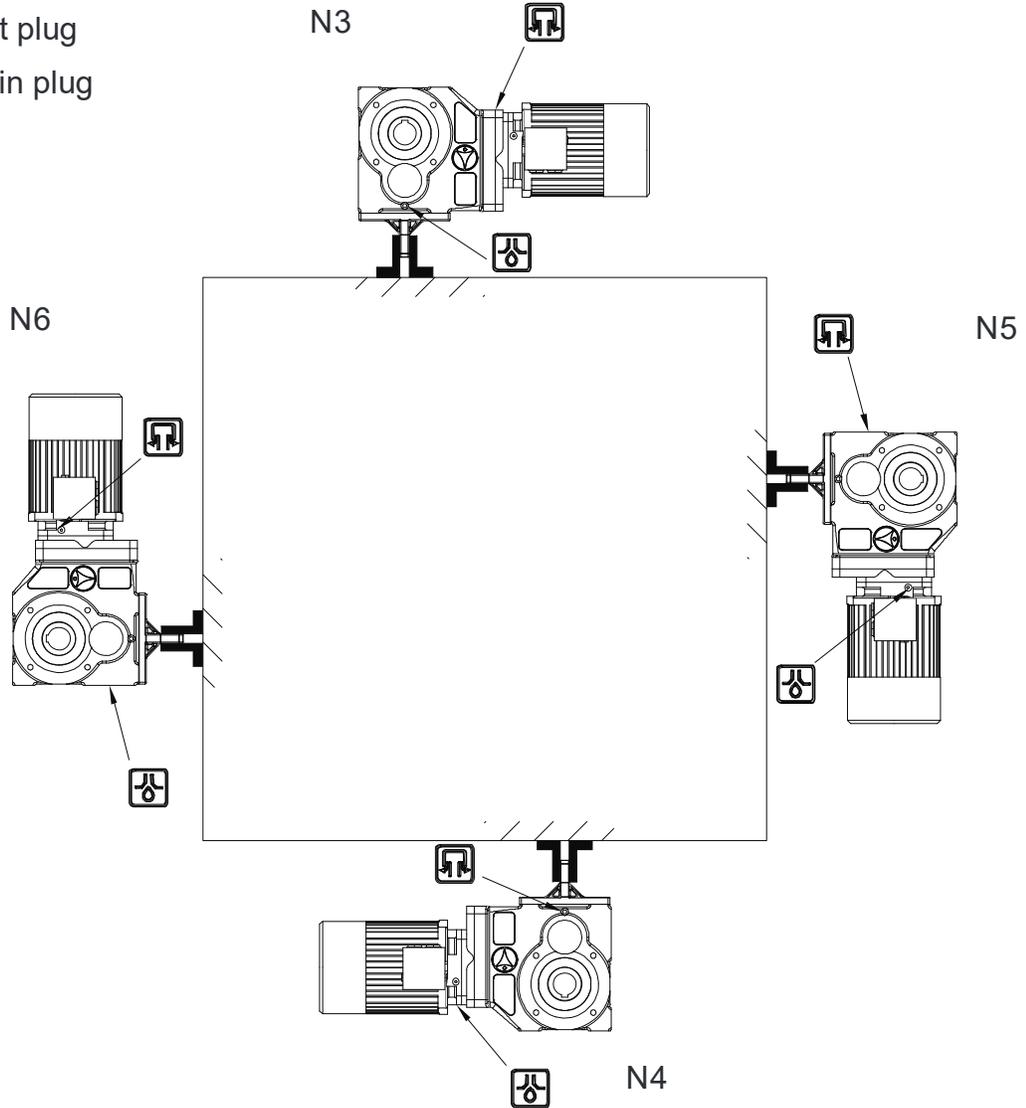


-  Vent plug
-  Drain plug



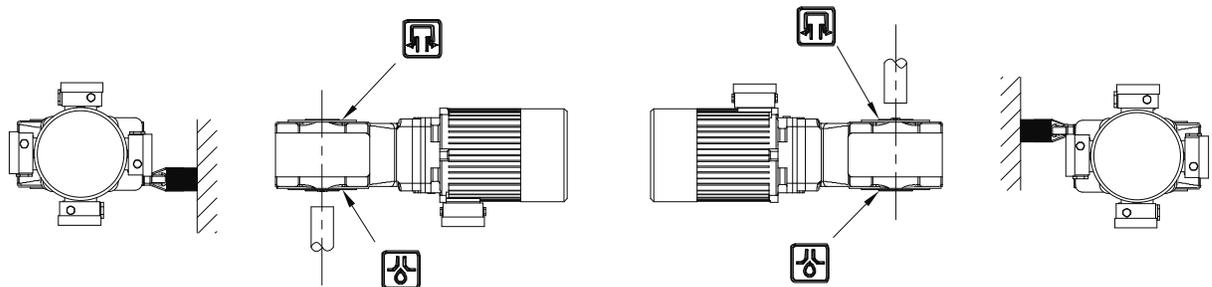


-  Vent plug
-  Drain plug



V1

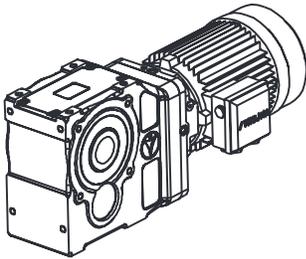
V2







Structure of selection tables



# KG

## HELICAL BEVEL GEAR UNITS

Gear unit type
Motor frame size

KG12															
M <sub>2</sub> [Nm]	(F <sub>r</sub> =0) F <sub>a</sub> [kN]	(F <sub>r</sub> =0) F <sub>r</sub> [kN]	j <sub>CB</sub> [']	Σ [°]	IEC/SMB/SMR										
	63	71	80		90	100	112	132	160	180	200	225	250		
210	7,1	7,3	8,9	94,16											

→ Permissible output torque
→ Permissible axial load
→ Permissible radial load
→ Backlash
→ Total ra

KG12																
M <sub>2</sub> [Nm]	F <sub>a</sub> [kN]	F <sub>F</sub> [kN]	j [°]	i	IEC/SMB/SMR											
					63	71	80	90	100	112	132	160	180	200	225	250
95	7,30	3,40	6,20	66,23												
95	7,30	3,40	6,20	58,85												
95	7,30	3,40	6,40	54,19												
95	7,30	3,40	6,40	49,05												
95	7,30	3,40	6,40	43,53												
95	7,30	3,50	6,60	37,73												
94	7,30	3,50	6,60	33,95												
91	7,30	3,50	6,60	30,76												
88	7,30	3,50	6,60	28,03												
85	7,30	3,50	6,60	25,15												
84	7,30	3,60	6,60	23,80												
81	7,30	3,60	6,70	20,75												
77	7,30	3,70	6,80	17,92												
74	7,30	3,70	6,80	15,98												
71	7,30	3,80	6,80	14,25												
69	7,30	3,80	7,00	12,83												
67	7,30	3,80	7,00	11,90												
63	7,30	3,80	7,00	10,24												
59	7,30	3,90	7,20	8,52												
58	7,30	3,90	7,20	7,55												

KG23																
M <sub>2</sub> [Nm]	F <sub>a</sub> [kN]	F <sub>F</sub> [kN]	j [°]	i	IEC/SMB/SMR											
					63	71	80	90	100	112	132	160	180	200	225	250
210	11,60	10,90	5,50	262,64												
210	11,60	10,90	5,50	237,71												
210	11,60	10,90	5,50	210,98												
210	11,60	10,90	5,50	182,85												
210	11,60	10,90	5,50	164,57												
210	11,60	10,90	5,50	149,09												
210	11,60	10,90	5,50	135,83												
210	11,60	10,90	5,50	121,90												
210	11,60	10,90	5,50	115,34												
210	11,60	10,90	5,70	100,57												
210	11,60	10,90	5,70	86,85												
210	11,60	10,90	5,70	77,44												
210	11,60	10,90	5,70	69,08												
210	11,60	10,90	5,70	62,17												
210	11,60	10,90	5,70	57,67												
210	11,60	10,90	5,70	49,63												
210	11,60	10,90	5,70	41,29												
210	11,60	10,90	5,70	36,57												



KG22																
M <sub>2020</sub> [Nm]	(F) Fa [kN]	(F) F <sub>20</sub> [kN]	j [°]	[mm]	IEC/SMB/SMR											
	63	71	80		90	100	112	132	160	180	200	225	250			
210	11,60	10,90	5,30	75,90												
210	11,60	10,90	5,60	67,62												
210	11,60	10,90	5,60	60,85												
210	11,60	10,90	5,60	56,35												
210	11,60	10,90	5,60	51,48												
210	11,60	10,90	5,60	43,91												
210	11,60	10,90	5,80	39,68												
210	11,60	10,90	5,80	36,09												
210	11,60	10,90	5,80	33,02												
210	11,60	10,90	5,90	31,05												
210	11,60	10,90	5,90	28,13												
210	11,60	10,40	5,90	24,73												
210	11,60	9,80	5,90	21,56												
210	11,60	9,50	5,90	19,89												
209	11,60	9,30	6,00	18,40												
200	11,60	8,90	6,00	15,87												
198	11,60	8,70	6,00	15,13												
191	11,60	8,40	6,00	13,55												
180	11,60	7,90	6,20	11,57												
173	11,60	7,50	6,20	9,94												
165	11,60	7,20	6,40	8,58												
156	11,60	7,00	6,40	7,07												



KG33																
M <sub>2020</sub> [Nm]	(F) Fa [kN]	(F) F <sub>20</sub> [kN]	j [°]	[mm]	IEC/SMB/SMR											
	63	71	80		90	100	112	132	160	180	200	225	250			
420	11,60	13,10	4,40	488,36												
420	11,60	13,10	4,40	433,96												
420	11,60	13,10	4,40	399,57												
420	11,60	13,10	4,40	361,64												
420	11,60	13,10	4,40	320,98												
420	11,60	13,10	4,40	278,18												
420	11,60	13,10	4,40	250,36												
420	11,60	13,10	4,40	226,83												
420	11,60	13,10	4,40	206,65												
420	11,60	13,00	4,40	185,45												
420	11,60	13,00	4,60	175,47												
420	11,60	13,00	4,60	153,00												
420	11,60	13,00	4,60	132,14												
420	11,60	13,00	4,60	117,82												
420	11,60	13,00	4,60	105,09												
420	11,60	13,00	4,60	94,58												
420	11,60	13,00	4,60	87,73												
420	11,60	13,00	4,60	75,51												
420	11,60	13,00	4,60	62,82												
420	11,60	13,00	4,60	55,64												

KG32																
M <sub>2</sub> [Nm]	(F) Fa [kN]	(F) F <sub>2</sub> [kN]	j [°]	□	IEC SMB/SMR											
					63	71	80	90	100	112	132	160	180	200	225	250
420	11,60	13,20	4,60	76,17												
420	11,60	13,20	4,60	69,27												
420	11,60	13,20	4,60	64,45												
420	11,60	13,10	4,60	55,34												
420	11,60	13,10	4,60	50,18												
420	11,60	13,10	4,60	46,83												
420	11,60	13,10	4,60	42,55												
420	11,60	13,10	4,70	38,73												
420	11,60	13,10	4,70	35,24												
420	11,60	13,00	4,70	31,09												
420	11,60	13,00	4,70	28,23												
420	11,60	13,00	4,80	25,80												
420	11,60	12,90	4,90	24,36												
420	11,60	12,90	4,90	21,27												
420	11,60	12,80	4,90	18,91												
420	11,60	12,70	4,90	17,22												
402	11,60	12,30	5,00	14,96												
388	11,60	11,40	5,00	13,09												
369	11,60	10,90	5,20	10,83												
351	11,60	10,30	5,20	9,03												
333	11,60	9,90	5,20	7,57												
324	11,60	9,90	5,20	6,73												



KG44																
M <sub>2</sub> [Nm]	(F) Fa [kN]	(F) F <sub>2</sub> [kN]	j [°]	□	IEC SMB/SMR											
					63	71	80	90	100	112	132	160	180	200	225	250
820	20,30	14,60	3,80	1045,13												
820	20,30	14,60	3,80	937,94												
820	20,30	14,60	3,80	887,43												
820	20,30	14,60	3,80	773,80												
820	20,30	14,60	3,80	668,28												
820	20,30	14,60	3,80	595,87												
820	20,30	14,60	3,80	531,50												
820	20,30	14,60	3,80	478,35												
820	20,30	14,60	3,80	443,72												
820	20,30	14,60	3,80	381,88												
820	20,30	14,60	3,80	317,69												
820	20,30	14,60	3,80	281,38												

KG43																
M <sub>250</sub> [Nm]	(F) Fa [kN]	(F) F <sub>12</sub> [kN]	j [']	□	IEC/SMB/SMR											
	63	71			80	90	100	112	132	160	180	200	225	250		
820	20,30	14,60	3,80	584,00												
820	20,30	14,60	3,80	520,29												
820	20,30	14,60	3,80	468,17												
820	20,30	14,60	3,80	433,58												
820	20,30	14,60	3,80	396,14												
820	20,30	14,60	3,80	337,85												
820	20,30	14,60	3,80	305,27												
820	20,30	14,60	3,80	277,71												
820	20,30	14,60	3,80	254,08												
820	20,30	14,60	3,80	238,91												
820	20,30	14,60	3,80	216,45												
820	20,30	14,60	3,80	190,24												
820	20,30	14,60	3,80	165,91												
820	20,30	14,60	3,80	153,03												
820	20,30	14,60	3,80	141,58												
820	20,30	14,60	3,80	122,11												
820	20,30	14,60	3,80	116,39												
820	20,30	14,60	3,80	104,29												
820	20,30	14,60	3,80	89,06												
820	20,30	14,60	3,80	76,51												
820	20,30	14,60	3,80	66,00												
820	20,30	14,60	3,80	54,39												



KG42																
M <sub>250</sub> [Nm]	(F) Fa [kN]	(F) F <sub>12</sub> [kN]	j [']	□	IEC/SMB/SMR											
	63	71			80	90	100	112	132	160	180	200	225	250		
820	20,30	14,90	3,80	71,19												
820	20,30	14,90	3,80	64,70												
820	20,30	14,90	3,80	59,22												
820	20,30	14,90	3,80	54,51												
820	20,30	14,90	3,80	49,77												
820	20,30	14,90	3,80	45,43												
820	20,30	14,80	3,90	40,92												
795	20,30	14,70	3,90	35,67												
784	20,30	14,60	3,90	33,57												
766	20,30	14,60	3,90	30,97												
747	20,30	14,50	4,00	27,87												
725	20,30	14,50	4,00	25,07												
711	20,30	14,20	4,10	23,40												
686	20,30	13,70	4,10	20,54												
655	20,30	13,00	4,10	18,18												
629	20,30	12,50	4,10	15,31												
605	18,40	11,70	4,10	13,04												
583	17,40	11,00	4,10	11,20												
561	16,40	10,40	4,20	9,67												
539	15,70	9,70	4,20	8,38												
511	15,70	9,70	4,20	6,95												

KG55																
M <sub>2</sub> [Nm]	(F) Fa [kN]	(F) F <sub>2</sub> [kN]	j [']	□	IEC SMB/SMR											
					63	71	80	90	100	112	132	160	180	200	225	250
1550	*	*	6,80	2061,63												
1550	*	*	6,80	1850,18												
1550	*	*	6,80	1750,56												
1550	*	*	6,80	1526,40												
1550	24,50	11,40	6,80	1318,25												
1550	24,50	11,40	6,90	1175,41												
1550	24,50	11,40	6,90	1048,44												
1550	24,50	11,40	7,00	943,59												
1550	24,50	11,40	7,00	875,28												
1550	24,50	11,40	7,00	753,29												
1550	24,50	11,40	7,00	626,67												
1550	24,50	11,40	7,00	555,05												



KG54																
M <sub>2</sub> [Nm]	(F) Fa [kN]	(F) F <sub>2</sub> [kN]	j [']	□	IEC SMB/SMR											
					63	71	80	90	100	112	132	160	180	200	225	250
1550	24,50	11,40	6,90	1152,00												
1550	24,50	11,40	6,90	1026,33												
1550	24,50	11,40	7,00	923,50												
1550	24,50	11,40	7,00	855,27												
1550	24,50	11,40	7,00	781,43												
1550	24,50	11,40	7,00	666,45												
1550	24,50	11,40	7,00	602,18												
1550	24,50	11,40	7,00	547,80												
1550	24,50	11,40	7,00	501,19												
1550	24,50	11,40	7,00	471,27												
1550	24,50	11,40	7,00	426,97												
1550	24,50	11,40	7,00	375,27												
1550	24,50	11,40	7,00	327,27												
1550	24,50	11,40	7,00	301,86												
1550	24,50	11,40	7,00	279,27												
1550	24,50	11,40	7,00	240,87												
1550	24,50	11,40	7,00	229,59												
1550	24,50	11,40	7,00	205,71												
1550	24,50	11,40	7,00	175,67												
1550	24,50	11,40	7,00	150,93												
1550	24,50	11,40	7,20	130,20												
1550	24,50	11,40	7,20	107,28												

KG53															
M <sub>2500</sub> [Nm]	(F) Fa [kN]	(F) F <sub>12</sub> [kN]	j [°]	i <sub>25</sub>	IEC/SMB/SMR										
	63	71			80	90	100	112	132	160	180	200	225	250	
1550	24,50	12,60	7,00	140,43											
1550	24,50	14,40	7,00	127,64											
1550	24,50	14,40	7,00	116,81											
1550	24,50	14,40	7,00	107,53											
1550	24,50	14,40	7,00	98,18											
1550	24,50	14,40	7,00	89,62											
1550	24,50	14,40	7,00	80,73											
1550	24,50	14,40	7,20	70,36											
1550	24,50	14,40	7,20	66,22											
1550	24,50	14,40	7,20	61,09											
1550	24,50	14,40	7,20	54,98											
1550	24,50	14,40	7,20	49,45											
1550	24,50	14,40	7,20	46,16											
1550	23,30	14,20	7,20	40,52											
1542	22,80	14,20	7,40	35,86											
1475	20,40	14,20	7,50	30,21											
1412	18,70	12,60	7,90	25,73											
1352	17,20	12,00	8,10	22,09											
1294	16,00	11,60	8,20	19,08											
1237	14,80	11,30	8,40	16,54											
1161	14,80	10,60	8,60	13,71											
1349	22,54	12,60	7,25	74,90											
1316	19,90	13,66	7,25	68,07											
1286	17,96	12,52	7,25	62,30											
1258	17,22	11,62	7,25	57,35											
1225	18,06	11,50	7,25	52,36											
1196	18,21	11,39	7,25	47,80											
1165	18,91	11,21	7,25	43,05											
1120	18,60	11,00	7,46	37,53											
1104	18,68	11,06	7,59	35,32											
1077	18,85	11,16	7,59	32,58											
1050	19,67	11,57	7,72	29,32											
1016	19,65	11,61	7,72	26,38											
996	19,98	11,62	7,57	24,62											
949	19,05	11,58	7,57	21,61											
920	18,82	11,72	7,63	19,12											
881	16,28	10,64	7,74	16,11											
843	15,08	9,51	8,54	13,72											
807	13,44	9,36	8,75	11,78											
772	12,92	9,44	8,54	10,17											
738	12,83	10,63	9,02	8,82											
693	13,06	9,06	9,38	7,31											



KG65																
M <sub>210</sub> [Nm]	(F) Fa [kN]	(F) F <sub>210</sub> [kN]	j [°]	□	IEC SMB/SMR											
					63	71	80	90	100	112	132	160	180	200	225	250
2800	*	*	6,00	3587,72												
2800	*	*	6,00	3184,37												
2800	*	*	6,00	2759,79												
2800	*	*	6,00	2483,81												
2800	*	*	6,00	2250,29												
2800	*	*	6,00	2050,13												
2800	*	*	6,00	1839,86												
2800	*	*	6,00	1740,79												
2800	25,00	15,50	6,00	1517,88												
2800	25,00	15,50	6,00	1310,90												
2800	25,00	15,50	6,00	1168,85												
2800	25,00	15,50	6,00	1042,59												
2800	25,00	15,50	6,00	938,33												
2800	25,00	15,50	6,00	870,39												
2800	25,00	15,50	6,00	749,08												
2800	25,00	15,50	6,00	623,18												
2800	25,00	15,50	6,00	551,96												

KG64																
M <sub>210</sub> [Nm]	(F) Fa [kN]	(F) F <sub>210</sub> [kN]	j [°]	□	IEC SMB/SMR											
					63	71	80	90	100	112	132	160	180	200	225	250
2800	25,00	15,50	6,00	1145,57												
2800	25,00	15,50	6,00	1020,60												
2800	25,00	15,50	6,00	918,35												
2800	25,00	15,50	6,00	850,50												
2800	25,00	15,50	6,00	777,07												
2800	25,00	15,50	6,00	662,73												
2800	25,00	15,50	6,00	598,82												
2800	25,00	15,50	6,00	544,75												
2800	25,00	15,50	6,10	498,40												
2800	25,00	15,50	6,10	468,64												
2800	25,00	15,50	6,20	424,58												
2800	25,00	19,10	6,20	373,18												
2800	25,00	19,10	6,20	325,45												
2800	25,00	19,10	6,20	300,18												
2800	25,00	19,10	6,20	277,71												
2800	25,00	19,10	6,20	239,53												
2800	25,00	19,10	6,20	228,31												
2800	25,00	19,10	6,20	204,57												
2800	25,00	19,10	6,20	174,69												
2800	25,00	19,10	6,20	150,09												
2800	25,00	19,10	6,20	129,47												
2800	25,00	19,10	6,20	106,68												



KG63																
M <sub>2500</sub> [Nm]	(F) Fa [kN]	(F) F <sub>12</sub> [kN]	j [°]	[mm]	IEC/SMB/SMR											
	63	71	80		90	100	112	132	160	180	200	225	250			
2800	24,00	19,80	6,20	119,27												
2800	21,10	17,50	6,20	102,21												
2800	19,30	16,60	6,20	93,46												
2800	17,80	15,40	6,30	82,93												
2800	17,00	14,80	6,30	73,77												
2775	16,70	14,50	6,40	69,43												
2704	16,00	13,30	6,40	63,20												
2626	15,10	12,70	6,70	56,70												
2527	14,70	12,30	6,70	51,43												
2475	14,30	12,00	6,70	47,50												
2402	13,60	11,30	6,70	41,88												
2334	12,30	10,30	6,70	37,23												
2280	11,50	9,60	6,70	33,14												
2240	11,10	9,30	6,70	31,60												
2153	9,90	8,30	6,80	27,13												
2070	8,30	6,90	6,80	23,50												
2021	8,00	5,40	7,00	21,16												
1914	7,60	4,80	7,20	17,97												
1815	7,00	4,50	7,50	15,15												
1565	7,00	4,50	7,80	13,33												
1668	7,00	4,50	7,80	11,81												
2232	22,08	19,80	6,61	74,22												
2145	17,14	16,60	6,61	63,60												
2095	14,15	14,43	6,61	58,15												
2028	12,51	12,43	6,71	51,60												
1966	12,53	11,82	6,71	45,90												
1933	12,41	11,47	6,82	43,20												
1884	12,35	10,36	6,82	39,32												
1830	11,46	9,70	7,14	35,28												
1760	11,21	9,45	7,26	32,00												
1724	11,00	9,30	7,26	29,56												
1674	10,92	9,08	7,39	26,06												
1626	9,86	8,31	7,39	23,17												
1589	9,38	7,75	7,24	20,62												
1561	9,08	7,58	7,24	19,66												
1499	8,17	6,85	7,21	16,88												
1442	6,62	5,17	7,21	14,63												
1408	6,45	4,08	7,78	13,17												
1333	5,94	3,75	8,00	11,18												
1264	5,65	3,66	8,03	9,43												
1202	6,07	4,23	8,62	8,30												
1162	6,18	3,84	8,75	7,35												

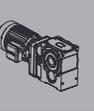


KG75																
M <sub>2</sub> [Nm]	(F <sub>r</sub> =0) Fa [kN]	(F <sub>r</sub> =0) F <sub>l</sub> [kN]	j <sub>□</sub> [°]	□	IEC SMB/SMR											
	63	71			80	90	100	112	132	160	180	200	225	250		
4700	*	*	5	5742,17												
4700	*	*	5	5102,54												
4700	*	*	5	4698,14												
4700	*	*	5	4252,11												
4700	*	*	5	3774,07												
4700	*	*	5	3270,86												
4700	*	*	5	2943,77												
4700	*	*	5	2667,01												
4700	*	*	5	2429,78												
4700	*	*	5	2180,57												
4700	46,5	19,2	5	2063,16												
4700	46,5	19,2	5	1798,97												
4700	46,5	19,2	5	1553,66												
4700	46,5	19,2	5	1385,30												
4700	46,5	19,2	5	1235,66												
4700	46,5	19,2	5	1112,09												
4700	46,5	19,2	5	1031,58												
4700	46,5	19,2	5	887,80												
4700	46,5	19,2	5	738,58												
4700	46,5	19,2	5	654,17												

KG74																
M <sub>2</sub> [Nm]	(F <sub>r</sub> =0) Fa [kN]	(F <sub>r</sub> =0) F <sub>l</sub> [kN]	j <sub>□</sub> [°]	□	IEC SMB/SMR											
	63	71			80	90	100	112	132	160	180	200	225	250		
4700	46,5	19,2	5	1357,71												
4700	46,5	19,2	5	1209,60												
4700	46,5	19,2	5	1088,42												
4700	46,5	19,2	5	1008,00												
4700	46,5	19,2	5	920,97												
4700	46,5	19,2	5	785,45												
4700	46,5	19,2	5	709,71												
4700	46,5	19,2	5	645,63												
4700	46,5	19,2	5	590,69												
4700	46,5	19,2	5	555,43												
4700	46,5	19,2	5	503,21												
4700	46,5	19,2	5	442,29												
4700	46,5	19,2	5	385,71												
4700	46,5	19,2	5	355,76												
4700	46,5	19,2	5	329,14												
4700	46,5	19,2	5,1	283,89												
4700	46,5	19,2	5,1	270,59												
4700	46,5	19,2	5,1	242,45												
4700	46,5	19,2	5,1	207,04												
4700	46,5	19,2	5,2	177,88												
4700	46,5	19,2	5,2	153,45												
4700	46,5	19,2	5,2	126,44												



KG73																
M <sub>2500</sub> [Nm]	(F <sub>r</sub> =0) Fa [kN]	(F <sub>r</sub> =0) F <sub>t</sub> [kN]	j <sub>0</sub> [°]	i <sub>0</sub> [°]	IEC/SMB/SMR											
	63	71	80		90	100	112	132	160	180	200	225	250			
4700	46,50	23,50	5,1	141,36												
4700	46,00	21,90	5,1	121,14												
4700	45,80	21,40	5,1	110,77												
4700	45,00	20,90	5,1	98,29												
4700	44,00	20,50	5,1	87,43												
4700	43,50	20,20	5,2	82,29												
4700	42,00	19,30	5,2	74,90												
4700	40,30	18,10	5,2	67,20												
4700	39,40	17,60	5,2	60,95												
4700	38,80	17,30	5,2	56,30												
4700	36,00	16,80	5,2	49,63												
4700	33,10	16,40	5,3	44,12												
4700	31,00	16,10	5,3	39,27												
4700	29,40	15,90	5,4	37,45												
4700	27,60	14,60	5,7	32,16												
4700	27,50	14,00	5,7	27,86												
4700	27,30	13,80	5,9	25,08												
4657	26,90	13,60	6,2	21,29												
4405	26,40	13,40	6,4	17,96												
3767	25,70	13,30	6,6	15,80												
4032	25,20	13,20	6,6	14,00												
4235	37,01	21,53	5,1	74,22												
4079	35,29	17,85	5,1	63,60												
3990	34,91	16,89	5,1	58,15												
3875	34,50	16,00	5,1	51,60												
3765	33,69	15,66	5,1	45,90												
3709	33,16	15,35	5,2	43,20												
3623	32,20	14,06	5,2	39,32												
3528	31,27	13,58	5,2	35,28												
3421	30,49	13,13	5,3	32,00												
3366	30,19	13,07	5,3	29,56												
3284	28,00	12,96	5,4	26,06												
3208	25,88	12,92	5,5	23,17												
3139	24,92	13,00	5,6	20,62												
3105	23,67	12,79	5,7	19,66												
3010	21,28	11,26	6,3	16,88												
2923	20,93	10,70	6,3	14,63												
2863	21,43	10,88	6,5	13,17												
2738	21,01	10,69	6,7	11,18												
2589	20,43	10,36	6,8	9,43												
2214	19,82	10,22	6,9	8,30												
2371	19,22	10,09	6,9	7,35												

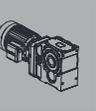


KG85																
M  [Nm]	(F <sub>r</sub> =0)	(F <sub>r</sub> =0)	j  [°]		IEC SMB/SMR											
	F <sub>a</sub> [kN]	F <sub>t</sub>  [kN]			63	71	80	90	100	112	132	160	180	200	225	250
8200	*	*	5	7043,14												
8200	*	*	5	6274,80												
8200	*	*	5	5646,16												
8200	*	*	5	5229,00												
8200	*	*	5	4777,52												
8200	*	*	5	4074,55												
8200	*	*	5	3681,64												
8200	*	*	5	3349,19												
8200	*	*	5	3064,22												
8200	*	*	5	2881,29												
8200	*	*	5	2610,40												
8200	*	*	5	2294,36												
8200	*	*	5	2000,89												
8200	*	*	5	1845,53												
8200	*	*	5	1707,43												
8200	50	50	5	1472,66												
8200	50	50	5	1403,70												
8200	50	50	5	1257,70												
8200	50	50	5	1074,03												
8200	50	49,6	5	922,76												
8200	50	48,6	5	796,03												
8200	50	46,9	5	655,90												

KG84																
M  [Nm]	(F <sub>r</sub> =0)	(F <sub>r</sub> =0)	j  [°]		IEC SMB/SMR											
	F <sub>a</sub> [kN]	F <sub>t</sub>  [kN]			63	71	80	90	100	112	132	160	180	200	225	250
8200	50	49,6	5	858,56												
8200	50	48,6	5	780,35												
8200	50	47,6	5	714,16												
8200	50	47,3	5	657,44												
8200	50	46,7	5	600,27												
8200	50	44,7	5	547,94												
8200	50	42,5	5	493,55												
8200	50	40,2	5	430,19												
8200	50	39,5	5	404,89												
8200	50	38,2	5	373,50												
8200	49,4	36,1	5,1	336,15												
8200	47,3	35	5,1	302,36												
8200	45,8	34,2	5,2	282,23												
8200	42,3	32,9	5,2	247,73												
8200	38,1	30,5	5,2	219,23												
8200	36	28,4	5,2	184,70												
8200	34,4	26,9	5,2	157,31												
8200	30,1	24,1	5,2	135,06												
8200	29	23,1	5,2	116,62												
8200	25,5	20,1	5,2	101,10												
8200	22,9	15,8	5,3	83,85												



KG83															
M <sub>2</sub> [Nm]	(F <sub>r</sub> =0) Fa [kN]	(F <sub>r</sub> =0) F <sub>t</sub> [kN]	j <sub>12</sub> [°]	[mm]	IEC/SMB/SMR										
	63	71			80	90	100	112	132	160	180	200	225	250	
8200	34,4	26,9	5	159,92											
8200	30,1	24,1	5	142,88											
8200	29	23,1	5	120,38											
8200	27,6	22,1	5	110,08											
8200	25,5	20,1	5	98,55											
8200	24,5	19,6	5	88,36											
8200	22,9	18,5	5,1	79,88											
8200	21	18	5,1	72,69											
8200	19,8	17,5	5,2	66,54											
8200	17,4	17	5,2	56,53											
8200	16,4	16,4	5,3	52,41											
8200	15,4	15,9	5,3	48,75											
8200	13,4	15,2	5,4	42,53											
8056	12,5	13,9	5,4	37,43											
7815	11,5	12,2	5,5	33,19											
7586	11,5	12,2	5,7	29,60											
7366	11,5	12,2	5,9	26,52											
7152	11,5	12,2	6	23,85											
7048	11,5	12,2	6,2	22,65											
6741	11,5	12,2	6,3	19,46											
6440	11,5	12,2	6,5	16,78											
6142	11,50	12,20	6,5	14,51											
6348	28,75	22,28	5,1	78,69											
6165	23,27	18,61	5,1	70,30											
5896	21,69	17,35	5,1	59,23											
5761	20,60	16,61	5,1	54,16											
5592	19,05	15,09	5,1	48,49											
5432	18,36	15,06	5,3	43,48											
5286	17,30	14,42	5,4	39,30											
5153	15,87	13,86	5,5	35,77											
4998	15,07	13,33	5,6	32,74											
4818	12,94	12,55	5,6	27,82											
4735	11,79	12,09	5,7	25,79											
4655	10,96	11,69	5,7	23,99											
4506	9,36	10,80	5,8	20,93											
4368	8,49	9,49	5,5	18,42											
4238	7,67	8,38	5,6	16,33											
4113	8,00	8,54	5,8	14,56											
3993	8,16	8,60	6,0	13,05											
3878	8,51	9,07	6,1	11,74											
3821	9,20	9,61	6,3	11,14											
3654	9,92	10,27	6,5	9,57											
3492	10,70	10,95	6,7	8,26											
3329	10,38	10,81	6,7	7,14											

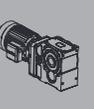


KG95																
M  [Nm]	(F <sub>r</sub> =0) Fa [kN]	(F <sub>r</sub> =0) F <sub>t</sub>  [kN]	j  [°]		IEC SMB/ SMR											
	63	71	80	90	100	112	132	160	180	200	225	250				
13500	*	*	3,2	8517,82												
13500	*	*	3,2	7588,60												
13500	*	*	3,2	6828,33												
13500	*	*	3,2	6323,83												
13500	*	*	3,2	5777,82												
13500	*	*	3,2	4927,66												
13500	*	*	3,2	4452,50												
13500	*	*	3,2	4050,43												
13500	*	*	3,2	3705,80												
13500	*	*	3,2	3484,56												
13500	*	*	3,2	3156,95												
13500	*	*	3,2	2774,74												
13500	*	*	3,2	2419,83												
13500	*	*	3,2	2231,94												
13500	*	*	3,2	2064,93												
13500	*	*	3,2	1781,00												
13500	*	*	3,2	1697,61												
13500	*	*	3,2	1521,04												
13500	359,5	80	3,3	1298,90												
13500	346,1	78,9	3,4	1115,97												
13500	320,5	77,1	3,5	962,70												
13500	285,4	70	3,6	793,23												

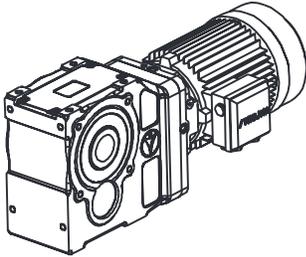
KG94																
M  [Nm]	(F <sub>r</sub> =0) Fa [kN]	(F <sub>r</sub> =0) F <sub>t</sub>  [kN]	j  [°]		IEC SMB/ SMR											
	63	71	80	90	100	112	132	160	180	200	225	250				
13500	320,4	78	3,4	886,86												
13500	285,4	70,4	3,4	760,01												
13500	270	70	3,4	694,93												
13500	261,2	69,6	3,4	616,61												
13500	255,6	69,5	3,4	548,50												
13500	252,8	69,3	3,4	516,23												
13500	239,1	68,5	3,4	469,90												
13500	231,2	68	3,4	421,59												
13500	221,5	67,3	3,5	382,39												
13500	211	66,1	3,5	353,21												
13500	206,5	65,2	3,5	311,38												
13500	194,9	63,4	3,5	276,82												
13500	190,8	63,2	3,5	246,38												
13500	185,1	63	3,5	234,95												
13500	163,6	62,5	3,5	201,75												
13500	162	62	3,5	174,77												
13500	155,5	62	3,5	157,33												
13500	153,8	61,2	3,6	133,59												
13500	142,7	60,9	3,6	112,67												
13500	132,5	60,5	3,6	99,13												
13500	128,3	60,3	3,6	87,83												



KG93															
M <sub>2500</sub> [Nm]	(F=0) Fa [kN]	(F=0) F <sub>12</sub> [kN]	j <sub>12</sub> [°]	i <sub>12</sub> [°]	IEC/SMB/SMR										
	63	71			80	90	100	112	132	160	180	200	225	250	
13500	156,60	72,00	3,5	170,73											
13500	155,50	72,00	3,5	156,36											
13500	153,80	71,49	3,5	140,35											
13500	143,11	71,00	3,6	126,12											
13500	141,90	70,45	3,6	114,27											
13500	136,50	70,00	3,6	104,24											
13500	132,50	69,51	3,6	95,64											
13500	124,30	68,40	3,7	81,67											
13500	121,40	67,90	3,7	75,92											
13500	117,10	67,42	3,7	70,80											
13298	107,50	66,60	3,7	62,11											
12918	98,60	65,49	3,8	55,00											
12562	93,40	64,65	3,8	49,07											
12226	90,10	64,23	3,9	44,05											
11905	90,60	63,92	3,9	39,75											
11598	90,10	63,70	3,9	36,03											
11448	89,90	63,60	4,0	34,35											
11013	89,70	63,24	4,0	29,89											
10593	89,50	62,87	4,2	26,16											
10184	88,40	62,19	4,3	22,99											
9648	86,70	61,90	4,3	19,43											
9115	86,00	61,50	4,5	16,47											
7945	130,87	59,64	3,6	83,38											
7765	120,20	55,59	3,6	76,36											
7544	115,01	53,69	3,6	68,55											
7335	106,80	53,36	3,7	61,60											
7144	105,99	52,87	3,7	55,81											
6898	102,27	53,79	3,8	50,91											
6770	100,11	54,20	3,8	46,71											
6538	93,96	52,66	4,0	39,89											
6431	92,37	51,73	4,0	37,08											
6329	87,06	49,79	4,0	34,58											
6139	77,25	49,10	4,0	30,33											
5963	70,15	48,13	4,1	26,86											
5799	65,27	45,93	4,1	23,96											
5644	61,19	43,83	4,0	21,52											
5496	60,40	43,89	4,0	19,42											
5354	62,64	44,59	4,0	17,60											
5285	63,77	44,85	4,1	16,77											
5084	66,34	47,00	4,1	14,60											
4890	71,60	49,55	4,3	12,78											
4701	76,25	52,37	4,4	11,23											
4454	80,68	55,57	4,4	9,49											
4208	77,64	54,51	4,6	8,04											

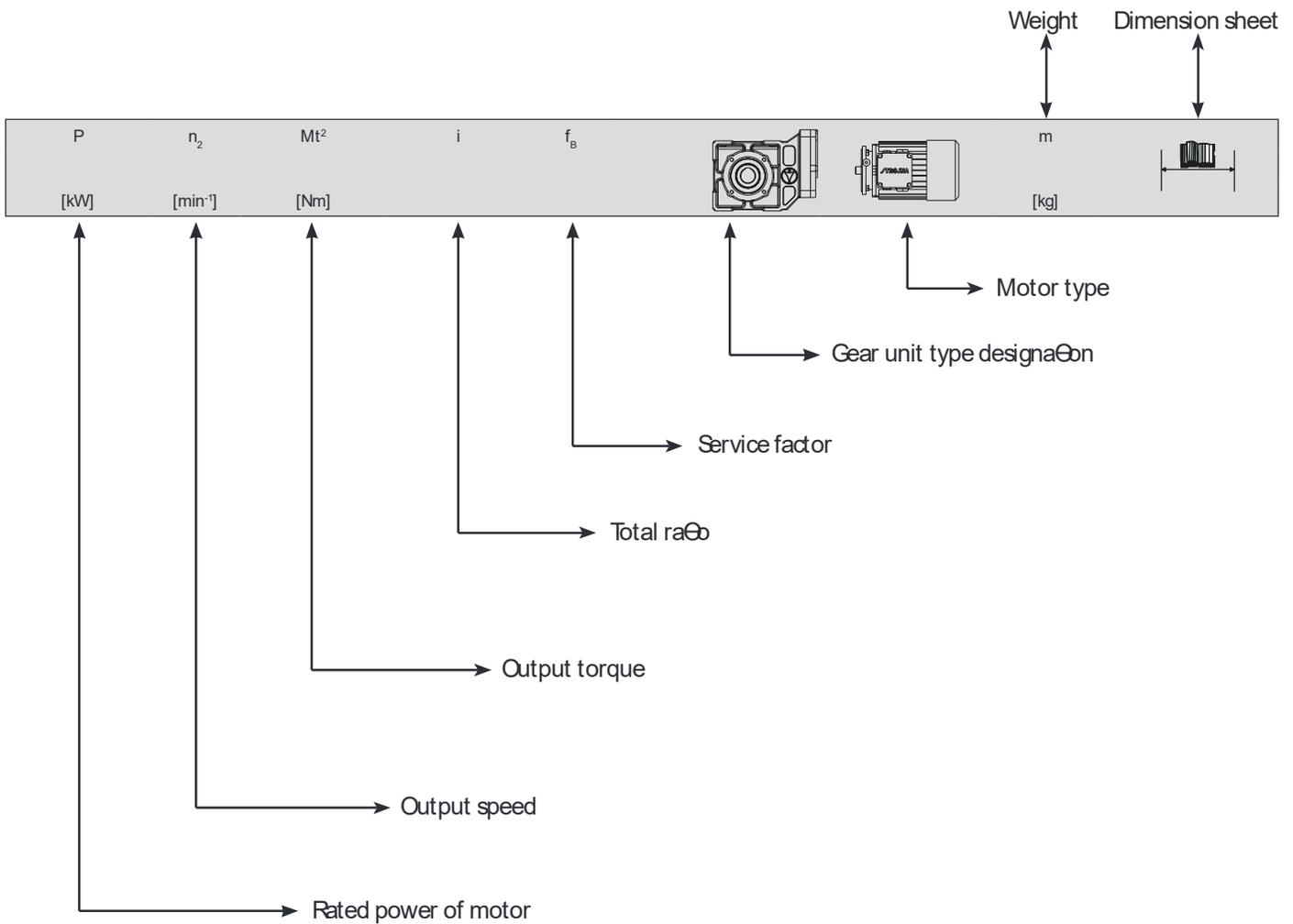


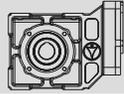
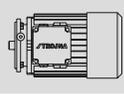
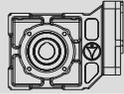
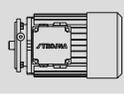
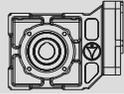
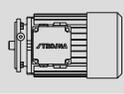
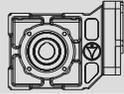
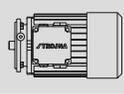
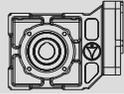
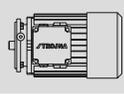




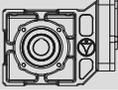
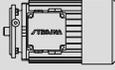
KG

## HELICAL BEVEL GEAR UNITS

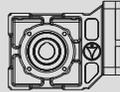
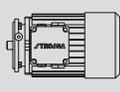


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m								
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]								
0,12	0,32	3237	4050,43	4,17			507	454							
	0,29	3572	4452,50	3,78					KG95	SMB	63A4				
	0,27	3837	4927,66	3,52					KG95	SMB	63A4				
	0,23	4504	5777,82	3,00					KG95	SMB	63A4				
	0,21	4933	6323,83	2,74					KG95	SMB	63A4				
	0,19	5452	6828,33	2,48					KG95	SMB	63A4				
	0,17	6093	7588,60	2,22					KG95	SMB	63A4				
	0,15	6906	8517,82	1,95					KG95	SMB	63A4				
	0,5	2072	2610,40	3,96			279	448							
	0,45	2302	2881,29	3,56					KG85	SMB	63A4				
	0,43	2409	3064,22	3,40					KG85	SMB	63A4				
	0,39	2656	3349,19	3,09					KG85	SMB	63A4				
	0,36	2877	3681,64	2,85					KG85	SMB	63A4				
	0,32	3237	4074,55	2,53					KG85	SMB	63A4				
	0,27	3837	4777,52	2,14					KG85	SMB	63A4				
	0,25	4144	5229,00	1,98					KG85	SMB	63A4				
	0,23	4504	5646,16	1,82					KG85	SMB	63A4				
	0,21	4933	6274,80	1,66					KG85	SMB	63A4				
	0,19	5452	7043,14	1,50					KG85	SMB	63A4				
	0,95	1090	1385,30	4,31							165	442			
	0,84	1233	1553,66	3,81									KG75	SMR	63A4
	0,73	1419	1798,97	3,31									KG75	SMB	63A4
	0,63	1644	2063,16	2,86	KG75	SMB	63A4								
	0,6	1726	2180,57	2,72	KG75	SMB	63A4								
	0,54	1918	2429,78	2,45	KG75	SMB	63A4								
	0,49	2114	2667,01	2,22	KG75	SMB	63A4								
	0,45	2302	2943,77	2,04	KG75	SMB	63A4								
	0,4	2590	3270,86	1,81	KG75	SMB	63A4								
	0,35	2960	3774,07	1,59	KG75	SMB	63A4								
	0,31	3342	4252,11	1,41	KG75	SMB	63A4								
	0,28	3700	4698,14	1,27	KG75	SMB	63A4								
	0,26	3984	5102,54	1,18	KG75	SMB	63A4								
	0,23	4504	5742,17	1,04	KG75	SMB	63A4								
	0,96	1101	1357,71	4,27	KG74	SMB	63A4	161					440		
	1,5	691	870,39	4,05			104	436							
	1,4	740	938,33	3,78									KG65	SMR	63A4
	1,3	797	1042,59	3,51									KG65	SMR	63A4
	1,1	942	1168,85	2,97					KG65	SMR	63A4				
	1	1036	1310,90	2,70					KG65	SMR	63A4				
	0,86	1205	1517,88	2,32					KG65	SMB	63A4				
	0,75	1381	1740,79	2,03					KG65	SMB	63A4				
	0,71	1459	1839,86	1,92					KG65	SMB	63A4				
	0,64	1619	2050,13	1,73					KG65	SMB	63A4				
	0,58	1786	2250,29	1,57					KG65	SMB	63A4				
	0,53	1955	2483,81	1,43					KG65	SMB	63A4				
	0,47	2204	2759,79	1,27					KG65	SMB	63A4				
	0,41	2527	3184,37	1,11					KG65	SMB	63A4				
	1,5	705	850,50	3,97					KG64	SMB	63A4	100	434		

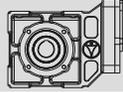
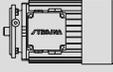


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m	
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]	
0,12	1,4	755	918,35	3,71	KG64	SMB 63A4		
	1,3	813	1020,60	3,44	KG64	SMB 63A4	100	434
	1,1	961	1145,57	2,91	KG64	SMB 63A4		
	2,4	432	555,05	3,59	KG55	SMR 63A4		
	2,1	493	626,67	3,14	KG55	SMR 63A4		
	1,7	609	753,29	2,54	KG55	SMR 63A4		
	1,5	691	875,28	2,24	KG55	SMR 63A4		
	1,4	740	943,59	2,09	KG55	SMR 63A4		
	1,2	863	1048,44	1,80	KG55	SMR 63A4	69	430
	1,1	942	1175,41	1,65	KG55	SMR 63A4		
	0,99	1046	1318,25	1,48	KG55	SMR 63A4		
	0,86	1205	1526,40	1,29	KG55	SMB 63A4		
	0,75	1381	1750,56	1,12	KG55	SMB 63A4		
	0,71	1459	1850,18	1,06	KG55	SMB 63A4		
	2,8	378	471,27	4,11	KG54	SMB 63A4		
	2,6	407	501,19	3,81	KG54	SMB 63A4		
	2,4	440	547,80	3,52	KG54	SMB 63A4		
	2,2	480	602,18	3,23	KG54	SMB 63A4		
	2	529	666,45	2,93	KG54	SMB 63A4		
	1,7	622	781,43	2,49	KG54	SMB 63A4	65	428
	1,5	705	855,27	2,20	KG54	SMB 63A4		
	1,4	755	923,50	2,05	KG54	SMB 63A4		
	1,3	813	1026,33	1,91	KG54	SMB 63A4		
	1,1	961	1152,00	1,61	KG54	SMB 63A4		
	4,7	225	281,38	3,65	KG44	SMR 63A4		
	4,1	258	317,69	3,18	KG44	SMR 63A4		
	3,4	311	381,88	2,64	KG44	SMR 63A4		
	3	352	443,72	2,33	KG44	SMR 63A4		
	2,7	391	478,35	2,09	KG44	SMR 63A4		
	2,5	423	531,50	1,94	KG44	SMR 63A4	56	424
	2,2	480	595,87	1,71	KG44	SMR 63A4		
	2	529	668,28	1,55	KG44	SMR 63A4		
	1,7	622	773,80	1,32	KG44	SMB 63A4		
	1,5	705	887,43	1,16	KG44	SMB 63A4		
	1,4	755	937,94	1,09	KG44	SMB 63A4		
	5,5	196	238,91	4,18	KG43	SMB 63A4		
	5,2	207	254,08	3,95	KG43	SMB 63A4		
	4,7	229	277,71	3,57	KG43	SMB 63A4		
	4,3	251	305,27	3,27	KG43	SMB 63A4		
	3,9	277	337,85	2,96	KG43	SMB 63A4		
	3,3	327	396,14	2,51	KG43	SMB 63A4	50	422
	3	360	433,58	2,28	KG43	SMB 63A4		
	2,8	385	468,17	2,13	KG43	SMB 63A4		
	2,5	431	520,29	1,90	KG43	SMB 63A4		
	2,2	490	584,00	1,67	KG43	SMB 63A4		
	11	98	117,82	4,28	KG33	SMR 63A4		
	9,9	109	132,14	3,85	KG33	SMR 63A4	37	418
	8,6	125	153,00	3,35	KG33	SMB 63A4		

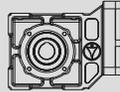
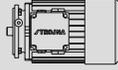


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m						
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]						
0,12	7,5	144	175,47	2,92		KG33	SMB	63A4	37	418			
	7,1	152	185,45	2,76		KG33	SMB	63A4					
	6,3	171	206,65	2,45		KG33	SMB	63A4					
	5,8	186	226,83	2,26		KG33	SMB	63A4					
	5,2	207	250,36	2,02		KG33	SMB	63A4					
	4,7	229	278,18	1,83		KG33	SMB	63A4					
	4,1	263	320,98	1,60		KG33	SMB	63A4					
	3,6	300	361,64	1,40		KG33	SMB	63A4					
	3,3	327	399,57	1,28		KG33	SMB	63A4					
	3	360	433,96	1,17		KG33	SMB	63A4					
	2,7	399	488,36	1,05		KG33	SMB	63A4					
	36	30	36,57	7,01			KG23	SMR			63A4	25	414
	32	34	41,29	6,23			KG23	SMR			63A4		
	26	41	49,63	5,06	KG23		SMR	63A4					
	23	47	57,67	4,48	KG23		SMR	63A4					
	21	51	62,17	4,09	KG23		SMR	63A4					
	19	57	69,08	3,70	KG23		SMR	63A4					
	17	63	77,44	3,31	KG23		SMR	63A4					
	15	72	86,85	2,92	KG23		SMR	63A4					
	13	83	100,57	2,53	KG23		SMB	63A4					
	11	98	121,90	2,14	KG23		SMB	63A4					
	9,6	112	135,83	1,87	KG23		SMB	63A4					
	8,8	123	149,09	1,71	KG23		SMB	63A4					
	8	135	164,57	1,56	KG23		SMB	63A4					
	7,2	150	182,85	1,40	KG23	SMB	63A4						
	6,2	174	210,98	1,21	KG23	SMB	63A4						
	5,5	196	237,71	1,07	KG23	SMB	63A4						
	71	16	18,40	13,48		KG22	SMR	63A4	21	412			
	66	17	19,89	12,59		KG22	SMR	63A4					
	61	18	21,56	11,64		KG22	SMR	63A4					
	53	21	24,73	10,11		KG22	SMB	63A4					
	47	23	28,13	8,97		KG22	SMB	63A4					
	42	26	31,05	8,01		KG22	SMB	63A4					
	40	28	33,02	7,63		KG22	SMB	63A4					
	36	31	36,09	6,87		KG22	SMB	63A4					
	33	33	39,68	6,30		KG22	SMB	63A4					
	30	37	43,91	5,72		KG22	SMB	63A4					
	25	44	51,48	4,77		KG22	SMB	63A4					
	23	48	56,35	4,39		KG22	SMB	63A4					
	22	50	60,85	4,20		KG22	SMB	63A4					
	19	58	67,62	3,63	KG22	SMB	63A4						
	17	65	75,90	3,24	KG22	SMB	63A4						
	174	6	7,55	9,17		KG12	SMR	63A4	14	410			
	154	7	8,52	8,26		KG12	SMR	63A4					
	128	9	10,24	7,33		KG12	SMR	63A4					
	110	10	11,90	6,70		KG12	SMR	63A4					
	102	11	12,83	6,39		KG12	SMR	63A4					
	92	12	14,25	5,93		KG12	SMR	63A4					

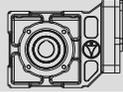
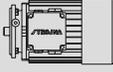


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>b</sub>			m		
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]		
0,12	82	13	15,98	5,51		KG12	SMR	63A4	
	73	15	17,92	5,11		KG12	SMR	63A4	
	63	17	20,75	4,64		KG12	SMB	63A4	
	55	20	23,80	4,20		KG12	SMB	63A4	
	52	21	25,15	4,02		KG12	SMB	63A4	
	47	23	28,03	3,76		KG12	SMB	63A4	
	43	26	30,76	3,56		KG12	SMB	63A4	
	39	28	33,95	3,33		KG12	SMB	63A4	
	35	31	37,73	3,02		KG12	SMB	63A4	
	30	37	43,53	2,59		KG12	SMB	63A4	
	27	41	49,05	2,33		KG12	SMB	63A4	
	24	46	54,19	2,07		KG12	SMB	63A4	
	22	50	58,85	1,90		KG12	SMB	63A4	
	20	55	66,23	1,73		KG12	SMB	63A4	
0,18	0,16	9711	8517,82	1,39		KG95	SMB	63B4	
	0,18	8632	7588,60	1,56		KG95	SMB	63B4	
	0,19	8178	6828,33	1,65		KG95	SMB	63B4	
	0,21	7399	6323,83	1,82		KG95	SMB	63B4	
	0,23	6756	5777,82	2,00		KG95	SMB	63B4	
	0,27	5755	4927,66	2,35		KG95	SMB	63B4	
	0,3	5179	4452,50	2,61		KG95	SMB	63B4	
	0,33	4709	4050,43	2,87		KG95	SMB	63B4	
	0,36	4316	3705,80	3,13		KG95	SMB	63B4	
	0,38	4089	3484,56	3,30		KG95	SMB	63B4	
	0,42	3700	3156,95	3,65		KG95	SMB	63B4	
	0,48	3237	2774,74	4,17		KG95	SMB	63B4	
	0,21	7399	6274,80	1,11		KG85	SMB	63B4	
	0,24	6474	5646,16	1,27		KG85	SMB	63B4	
	0,25	6215	5229,00	1,32		KG85	SMB	63B4	
	0,28	5549	4777,52	1,48		KG85	SMB	63B4	
	0,33	4709	4074,55	1,74		KG85	SMB	63B4	
	0,36	4316	3681,64	1,90		KG85	SMB	63B4	
	0,4	3885	3349,19	2,11		KG85	SMB	63B4	
	0,43	3614	3064,22	2,27		KG85	SMB	63B4	
	0,46	3378	2881,29	2,43		KG85	SMB	63B4	
	0,51	3047	2610,40	2,69		KG85	SMB	63B4	
	0,58	2679	2294,36	3,06		KG85	SMB	63B4	
	0,66	2354	2000,89	3,48		KG85	SMR	63B4	
	0,72	2158	1845,53	3,80		KG85	SMR	63B4	
	0,78	1992	1707,43	4,12		KG85	SMR	63B4	
	0,35	4440	3774,07	1,06		KG75	SMB	63B4	
	0,41	3790	3270,86	1,24		KG75	SMB	63B4	
	0,45	3453	2943,77	1,36		KG75	SMB	63B4	
	0,5	3108	2667,01	1,51		KG75	SMB	63B4	
0,55	2825	2429,78	1,66	KG75	SMB	63B4			
0,61	2547	2180,57	1,85	KG75	SMB	63B4			
0,64	2428	2063,16	1,94	KG75	SMB	63B4			
0,74	2100	1798,97	2,24	KG75	SMB	63B4			

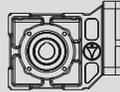
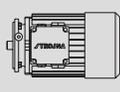


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m				
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]				
0,18	0,86	1807	1553,66	2,60	KG75	SMR 63B4	166	442			
	0,96	1619	1385,30	2,90		SMR 63B4					
	1,1	1413	1235,66	3,33		SMR 63B4					
	1,2	1295	1112,09	3,63		SMR 63B4					
	1,3	1195	1031,58	3,93		SMR 63B4					
	0,98	1618	1357,71	2,90	KG74	SMB 63B4	162	440			
	1,1	1441	1209,60	3,26		SMB 63B4					
	1,2	1321	1088,42	3,56		SMB 63B4					
	1,3	1220	1008,00	3,85		SMB 63B4					
	1,4	1133	920,97	4,15		SMB 63B4					
	0,59	2634	2250,29	1,06	KG65	SMB 63B4	105	436			
	0,65	2391	2050,13	1,17		SMB 63B4					
	0,72	2158	1839,86	1,30		SMB 63B4					
	0,76	2045	1740,79	1,37		SMB 63B4					
	0,88	1766	1517,88	1,59		SMB 63B4					
	1	1554	1310,90	1,80		SMR 63B4					
	1,1	1413	1168,85	1,98		SMR 63B4					
	1,3	1195	1042,59	2,34		SMR 63B4					
	1,4	1110	938,33	2,52		SMR 63B4					
	1,5	1036	870,39	2,70		SMR 63B4					
	1,8	863	749,08	3,24		SMR 63B4					
	2,1	740	623,18	3,78		SMR 63B4					
	2,4	647	551,96	4,32		SMR 63B4					
	1,2	1321	1145,57	2,12		KG64			SMB 63B4	101	434
	1,3	1220	1020,60	2,30					SMB 63B4		
	1,4	1133	918,35	2,47	SMB 63B4						
	1,6	991	850,50	2,83	SMB 63B4						
	1,7	933	777,07	3,00	SMB 63B4						
	2	793	662,73	3,53	SMB 63B4						
	2,2	721	598,82	3,89	SMB 63B4						
	2,4	661	544,75	4,24	SMB 63B4						
	1,1	1413	1175,41	1,10	KG55		SMR 63B4	70	430		
	1,3	1195	1048,44	1,30			SMR 63B4				
	1,4	1110	943,59	1,40		SMR 63B4					
	1,5	1036	875,28	1,50		SMR 63B4					
	1,8	863	753,29	1,80		SMR 63B4					
	2,1	740	626,67	2,09		SMR 63B4					
	2,4	647	555,05	2,39		SMR 63B4					
	1,2	1321	1152,00	1,17		KG54	SMB 63B4			66	428
	1,3	1220	1026,33	1,27	SMB 63B4						
	1,4	1133	923,50	1,37	SMB 63B4						
	1,6	991	855,27	1,56	SMB 63B4						
	1,7	933	781,43	1,66	SMB 63B4						
	2	793	666,45	1,96	SMB 63B4						
	2,2	721	602,18	2,15	SMB 63B4						
	2,4	661	547,80	2,35	SMB 63B4						
	2,7	587	501,19	2,64	SMB 63B4						
	2,8	566	471,27	2,74	SMB 63B4						

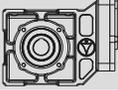
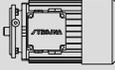


P	$n_2$	$Mt_2$	i	$f_b$			m		
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]		
0,18	3,1	511	426,97	3,03	KG54	SMB 63B4	66	428	
	3,5	453	375,27	3,42	KG54	SMB 63B4			
	4,1	387	327,27	4,01	KG54	SMR 63B4			
	4,4	360	301,86	4,30	KG54	SMR 63B4			
2	793	668,28	1,03	KG44	SMR 63B4	57	424		
2,2	721	595,87	1,14	KG44	SMR 63B4				
2,5	634	531,50	1,29	KG44	SMR 63B4				
2,8	566	478,35	1,45	KG44	SMR 63B4				
3	529	443,72	1,55	KG44	SMR 63B4				
3,5	453	381,88	1,81	KG44	SMR 63B4				
4,2	378	317,69	2,17	KG44	SMR 63B4				
4,7	337	281,38	2,43	KG44	SMR 63B4				
2,3	703	584,00	1,17	KG43	SMB 63B4			51	422
2,6	622	520,29	1,32	KG43	SMB 63B4				
2,8	578	468,17	1,42	KG43	SMB 63B4				
3,1	522	433,58	1,57	KG43	SMB 63B4				
3,4	476	396,14	1,72	KG43	SMB 63B4				
3,9	415	337,85	1,98	KG43	SMB 63B4				
4,4	368	305,27	2,23	KG43	SMB 63B4				
4,8	337	277,71	2,43	KG43	SMB 63B4				
5,2	311	254,08	2,64	KG43	SMB 63B4				
5,6	289	238,91	2,84	KG43	SMB 63B4				
6,1	265	216,45	3,09	KG43	SMB 63B4				
7	231	190,24	3,55	KG43	SMB 63B4				
8	202	165,91	4,05	KG43	SMR 63B4				
8,7	186	153,03	4,41	KG43	SMR 63B4				
4,1	395	320,98	1,06	KG33	SMB 63B4	38	418		
4,8	337	278,18	1,25	KG33	SMB 63B4				
5,3	305	250,36	1,38	KG33	SMB 63B4				
5,9	274	226,83	1,53	KG33	SMB 63B4				
6,4	253	206,65	1,66	KG33	SMB 63B4				
7,2	225	185,45	1,87	KG33	SMB 63B4				
7,6	213	175,47	1,97	KG33	SMB 63B4				
8,7	186	153,00	2,26	KG33	SMB 63B4				
10	162	132,14	2,60	KG33	SMR 63B4				
11	147	117,82	2,86	KG33	SMR 63B4				
13	124	105,09	3,37	KG33	SMR 63B4				
14	116	94,58	3,63	KG33	SMR 63B4				
15	108	87,73	3,89	KG33	SMR 63B4				
17	97	76,17	4,32	KG33	SMB 63B4				
8,1	200	164,57	1,05	KG23	SMB 63B4	26	414		
8,9	182	149,09	1,16	KG23	SMB 63B4				
9,8	165	135,83	1,27	KG23	SMB 63B4				
11	147	121,90	1,43	KG23	SMB 63B4				
12	135	115,34	1,56	KG23	SMB 63B4				
13	124	100,57	1,69	KG23	SMB 63B4				
15	108	86,85	1,95	KG23	SMR 63B4				
17	95	77,44	2,21	KG23	SMR 63B4				

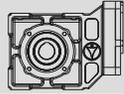
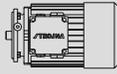
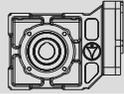
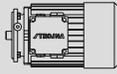
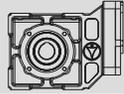
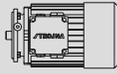
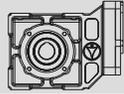
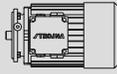
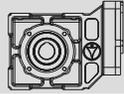
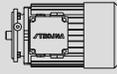
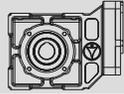
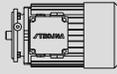
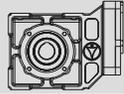
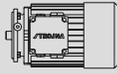


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m		
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]		
0,18	19	85	69,08	2,47	KG23	SMR	63B4	26	414
	21	77	62,17	2,73		SMR	63B4		
	23	70	57,67	2,99		SMR	63B4		
	27	60	49,63	3,50		SMR	63B4		
	32	51	41,29	4,15		SMR	63B4		
	36	45	36,57	4,67		SMR	63B4		
	18	92	75,90	2,29	KG22	SMB	63B4	22	412
	20	83	67,62	2,54		SMB	63B4		
	22	75	60,85	2,80		SMB	63B4		
	24	69	56,35	3,05		SMB	63B4		
	26	63	51,48	3,31		SMB	63B4		
	30	55	43,91	3,82		SMB	63B4		
	34	49	39,68	4,32		SMB	63B4		
	37	45	36,09	4,71		SMB	63B4		
	40	41	33,02	5,09		SMB	63B4		
	43	38	31,05	5,47		SMB	63B4		
	47	35	28,13	5,98		SMB	63B4		
	54	31	24,73	6,87		SMB	63B4		
	62	27	21,56	7,89		SMR	63B4		
	67	25	19,89	8,52		SMR	63B4		
72	23	18,40	9,11	SMR	63B4				
84	20	15,87	10,18	SMR	63B4				
88	19	15,13	10,55	SMR	63B4				
98	17	13,55	11,34	SMR	63B4				
115	14	11,57	12,54	SMR	63B4				
134	12	9,94	14,04	SMR	63B4				
20	83	66,23	1,15	KG12	SMB	63B4	14	410	
23	72	58,85	1,32		SMB	63B4			
25	66	54,19	1,44		SMB	63B4			
27	61	49,05	1,55		SMB	63B4			
31	53	43,53	1,78		SMB	63B4			
35	47	37,73	2,01		SMB	63B4			
39	42	33,95	2,22		SMB	63B4			
43	38	30,76	2,37		SMB	63B4			
47	35	28,03	2,51		SMB	63B4			
53	31	25,15	2,73		SMB	63B4			
56	29	23,80	2,85		SMB	63B4			
64	26	20,75	3,14		SMB	63B4			
74	22	17,92	3,45		SMR	63B4			
83	20	15,98	3,72		SMR	63B4			
93	18	14,25	4,00		SMR	63B4			
104	16	12,83	4,35		SMR	63B4			
112	15	11,90	4,55		SMR	63B4			
130	13	10,24	4,96		SMR	63B4			
156	11	8,52	5,58		SMR	63B4			
176	9	7,55	6,18		SMR	63B4			
0,25	0,18	11990	7588,60	1,13	KG95	SMB	71A4	508	454
	0,2	10791	6828,33	1,25		SMB	71A4		

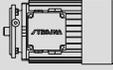


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m							
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]							
0,25	0,21	10277	6323,83	1,31	KG95	SMB	71A4	508	454					
	0,23	9383	5777,82	1,44										
	0,27	7993	4927,66	1,69										
	0,3	7194	4452,50	1,88										
	0,33	6540	4050,43	2,06										
	0,36	5995	3705,80	2,25										
	0,38	5679	3484,56	2,38										
	0,42	5138	3156,95	2,63										
	0,48	4496	2774,74	3,00										
	0,55	3924	2419,83	3,44										
	0,6	3597	2231,94	3,75										
	0,65	3320	2064,93	4,07										
	0,28	0,28	7708	4777,52		1,06				KG85	SMB	71A4	280	448
		0,33	6540	4074,55		1,25								
0,36		5995	3681,64	1,37										
0,4		5395	3349,19	1,52										
0,44		4905	3064,22	1,67										
0,47		4592	2881,29	1,79										
0,51		4232	2610,40	1,94										
0,58		3721	2294,36	2,20										
0,67		3221	2000,89	2,55										
0,73		2956	1845,53	2,77										
0,78		2767	1707,43	2,96										
0,91		2372	1472,66	3,46										
0,95		2272	1403,70	3,61										
1,1		1962	1257,70	4,18										
0,5	0,5	4316	2667,01	1,09	KG75	SMB	71A4	166	442					
	0,55	3924	2429,78	1,20										
	0,61	3538	2180,57	1,33										
	0,65	3320	2063,16	1,42										
	0,74	2916	1798,97	1,61										
	0,86	2509	1553,66	1,87										
	0,97	2225	1385,30	2,11										
	1,1	1962	1235,66	2,40										
	1,2	1798	1112,09	2,61										
	1,3	1660	1031,58	2,83										
	1,5	1439	887,80	3,27										
	1,8	1199	738,58	3,92										
	2	1079	654,17	4,36										
	0,99	0,99	2224	1357,71		2,11				KG74	SMB	71A4	162	440
1,1		2002	1209,60	2,35										
1,2		1835	1088,42	2,56										
1,3		1694	1008,00	2,77										
1,5		1468	920,97	3,20										
1,7		1295	785,45	3,63										
1,9		1159	709,71	4,06										
2,1		1049	645,63	4,48										
0,88	2452	1517,88	1,14	KG65	SMB	71A4	105	436						

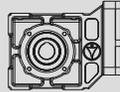
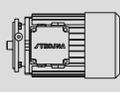
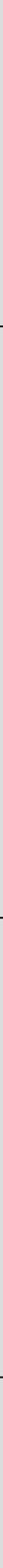


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m					
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]					
0,25	1	2158	1310,90	1,30			105	436				
	1,1	1962	1168,85	1,43					KG65	SMR	71A4	
	1,3	1660	1042,59	1,69					KG65	SMR	71A4	
	1,4	1542	938,33	1,82					KG65	SMR	71A4	
	1,5	1439	870,39	1,95					KG65	SMR	71A4	
	1,8	1199	749,08	2,34					KG65	SMR	71A4	
	2,2	981	623,18	2,85					KG65	SMR	71A4	
	2,4	899	551,96	3,11					KG65	SMR	71A4	
	1,2	1835	1145,57	1,53			101	434				
	1,3	1694	1020,60	1,65					KG64	SMB	71A4	
	1,5	1468	918,35	1,91					KG64	SMB	71A4	
	1,6	1376	850,50	2,03					KG64	SMB	71A4	
	1,7	1295	777,07	2,16					KG64	SMB	71A4	
	2	1101	662,73	2,54					KG64	SMB	71A4	
	2,2	1001	598,82	2,80					KG64	SMB	71A4	
	2,5	881	544,75	3,18					KG64	SMB	71A4	
	2,7	816	498,40	3,43					KG64	SMB	71A4	
	2,9	759	468,64	3,69					KG64	SMB	71A4	
	3,2	688	424,58	4,07	KG64	SMB	71A4					
	1,5	1439	875,28	1,08			70	430				
	1,8	1199	753,29	1,29					KG55	SMR	71A4	
	2,1	1028	626,67	1,51					KG55	SMR	71A4	
	2,4	899	555,05	1,72					KG55	SMR	71A4	
	1,6	1376	855,27	1,13			66	428				
	1,7	1295	781,43	1,20					KG54	SMB	71A4	
	2	1101	666,45	1,41					KG54	SMB	71A4	
	2,2	1001	602,18	1,55					KG54	SMB	71A4	
	2,4	918	547,80	1,69					KG54	SMB	71A4	
	2,7	816	501,19	1,90					KG54	SMB	71A4	
	2,8	786	471,27	1,97					KG54	SMB	71A4	
	3,1	710	426,97	2,18					KG54	SMB	71A4	
	3,6	612	375,27	2,53					KG54	SMB	71A4	
	4,1	537	327,27	2,89					KG54	SMR	71A4	
	4,4	500	301,86	3,10					KG54	SMR	71A4	
	4,8	459	279,27	3,38					KG54	SMR	71A4	
	5,6	393	240,87	3,94					KG54	SMR	71A4	
	5,8	380	229,59	4,08					KG54	SMR	71A4	
	2,8	786	478,35	1,04							57	424
	3	734	443,72	1,12								
	3,5	629	381,88	1,30	KG44	SMR	71A4					
	4,2	524	317,69	1,56	KG44	SMR	71A4					
	4,8	459	281,38	1,79	KG44	SMR	71A4					
	2,9	775	468,17	1,06			51	422				
	3,1	725	433,58	1,13					KG43	SMB	71A4	
	3,4	661	396,14	1,24					KG43	SMB	71A4	
	4	562	337,85	1,46					KG43	SMB	71A4	
	4,4	511	305,27	1,61					KG43	SMB	71A4	
	4,8	468	277,71	1,75					KG43	SMB	71A4	

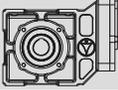
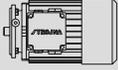


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m		
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]		
0,25	5,3	424	254,08	1,93	KG43	SMB 71A4	51	422	
	5,6	401	238,91	2,04	KG43	SMB 71A4			
	6,2	362	216,45	2,26	KG43	SMB 71A4			
	7	321	190,24	2,55	KG43	SMB 71A4			
	8,1	277	165,91	2,96	KG43	SMR 71A4			
	8,8	255	153,03	3,21	KG43	SMR 71A4			
	9,5	237	141,58	3,47	KG43	SMR 71A4			
	11	204	122,11	4,01	KG43	SMR 71A4			
	12	187	116,39	4,38	KG43	SMR 71A4			
	5,9	381	226,83	1,10	KG33	SMB 71A4	38	418	
	6,5	346	206,65	1,21	KG33	SMB 71A4			
	7,2	312	185,45	1,35	KG33	SMB 71A4			
	7,6	296	175,47	1,42	KG33	SMB 71A4			
	8,8	255	153,00	1,64	KG33	SMB 71A4			
	10	225	132,14	1,87	KG33	SMR 71A4			
	11	204	117,82	2,06	KG33	SMR 71A4			
13	173	105,09	2,43	KG33	SMR 71A4				
14	161	94,58	2,62	KG33	SMR 71A4				
15	150	87,73	2,80	KG33	SMR 71A4				
18	125	75,51	3,36	KG33	SMR 71A4				
21	107	62,82	3,93	KG33	SMR 71A4				
24	94	55,64	4,49	KG33	SMR 71A4				
18	127	76,17	3,30	KG32	SMB 71A4	34			416
19	121	69,27	3,48	KG32	SMB 71A4				
21	109	64,45	3,85	KG32	SMB 71A4				
24	96	55,34	4,40	KG32	SMB 71A4				
11	204	121,90	1,03	KG23	SMB 71A4	26	414		
12	187	115,34	1,12	KG23	SMB 71A4				
13	173	100,57	1,21	KG23	SMB 71A4				
15	150	86,85	1,40	KG23	SMR 71A4				
17	132	77,44	1,59	KG23	SMR 71A4				
19	118	69,08	1,78	KG23	SMR 71A4				
22	102	62,17	2,06	KG23	SMR 71A4				
23	98	57,67	2,15	KG23	SMR 71A4				
27	83	49,63	2,52	KG23	SMR 71A4				
32	70	41,29	2,99	KG23	SMR 71A4				
37	61	36,57	3,46	KG23	SMR 71A4				
18	127	75,90	1,65	KG22	SMB 71A4			22	412
20	115	67,62	1,83	KG22	SMB 71A4				
22	104	60,85	2,01	KG22	SMB 71A4				
24	96	56,35	2,20	KG22	SMB 71A4				
26	88	51,48	2,38	KG22	SMB 71A4				
31	74	43,91	2,84	KG22	SMB 71A4				
34	67	39,68	3,11	KG22	SMB 71A4				
37	62	36,09	3,39	KG22	SMB 71A4				
41	56	33,02	3,75	KG22	SMB 71A4				
43	53	31,05	3,94	KG22	SMB 71A4				
48	48	28,13	4,40	KG22	SMB 71A4				

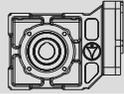
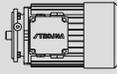


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m					
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]					
0,25	54	42	24,73	4,95		KG22	SMB	71A4	22	412		
	62	37	21,56	5,68		KG22	SMR	71A4				
	67	34	19,89	6,14		KG22	SMR	71A4				
	73	31	18,40	6,65		KG22	SMR	71A4				
	84	27	15,87	7,33		KG22	SMR	71A4				
	89	26	15,13	7,69		KG22	SMR	71A4				
	99	23	13,55	8,25		KG22	SMR	71A4				
	116	20	11,57	9,11		KG22	SMR	71A4				
	135	17	9,94	10,19		KG22	SMR	71A4				
	156	15	8,58	11,23		KG22	SMR	71A4				
	25	92	54,19	1,04		KG12	SMB	71A4			15	410
	27	85	49,05	1,12		KG12	SMB	71A4				
	31	74	43,53	1,28		KG12	SMB	71A4				
	36	64	37,73	1,49		KG12	SMB	71A4				
	39	59	33,95	1,60		KG12	SMB	71A4				
	44	52	30,76	1,75		KG12	SMB	71A4				
	48	48	28,03	1,84		KG12	SMB	71A4				
	53	43	25,15	1,96		KG12	SMB	71A4				
	56	41	23,80	2,05		KG12	SMB	71A4				
65	35	20,75	2,30	KG12	SMB	71A4						
75	31	17,92	2,52	KG12	SMR	71A4						
84	27	15,98	2,71	KG12	SMR	71A4						
94	24	14,25	2,91	KG12	SMR	71A4						
104	22	12,83	3,13	KG12	SMR	71A4						
113	20	11,90	3,30	KG12	SMR	71A4						
131	18	10,24	3,60	KG12	SMR	71A4						
157	15	8,52	4,04	KG12	SMR	71A4						
178	13	7,55	4,50	KG12	SMR	71A4						
0,37	0,27	11830	4927,66	1,14		KG95	SMB	71B4	509	454		
	0,3	10647	4452,50	1,27		KG95	SMB	71B4				
	0,33	9679	4050,43	1,39		KG95	SMB	71B4				
	0,36	8872	3705,80	1,52		KG95	SMB	71B4				
	0,38	8405	3484,56	1,61		KG95	SMB	71B4				
	0,42	7605	3156,95	1,78		KG95	SMB	71B4				
	0,48	6654	2774,74	2,03		KG95	SMB	71B4				
	0,55	5807	2419,83	2,32		KG95	SMR	71B4				
	0,6	5323	2231,94	2,54		KG95	SMR	71B4				
	0,65	4914	2064,93	2,75		KG95	SMR	71B4				
	0,75	4259	1781,00	3,17		KG95	SMR	71B4				
	0,79	4043	1697,61	3,34		KG95	SMR	71B4				
	0,88	3630	1521,04	3,72		KG95	SMR	71B4				
	1	3194	1298,90	4,23		KG95	SMR	71B4				
	0,4	7985	3349,19	1,03		KG85	SMB	71B4			281	448
	0,44	7259	3064,22	1,13		KG85	SMB	71B4				
	0,47	6796	2881,29	1,21		KG85	SMB	71B4				
	0,51	6263	2610,40	1,31		KG85	SMB	71B4				
	0,58	5507	2294,36	1,49		KG85	SMB	71B4				
	0,67	4767	2000,89	1,72		KG85	SMR	71B4				

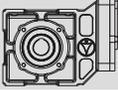
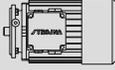


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>b</sub>			m		
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]		
0,37	0,73	4375	1845,53	1,87		KG85	SMR	71B4	
	0,78	4095	1707,43	2,00		KG85	SMR	71B4	
	0,91	3510	1472,66	2,34		KG85	SMR	71B4	
	0,95	3362	1403,70	2,44		KG85	SMR	71B4	
	1,1	2904	1257,70	2,82		KG85	SMR	71B4	
	1,2	2662	1074,03	3,08		KG85	SMR	71B4	
	1,5	2129	922,76	3,85		KG85	SMR	71B4	
	1,7	1879	796,03	4,36		KG85	SMR	71B4	
	1,6	2037	858,56	4,03		KG84	SMB	71B4	
	1,7	1917	780,35	4,28		KG84	SMB	71B4	
	0,74	4316	1798,97	1,09		KG75	SMB	71B4	
	0,86	3714	1553,66	1,27		KG75	SMR	71B4	
	0,97	3293	1385,30	1,43		KG75	SMR	71B4	
	1,1	2904	1235,66	1,62		KG75	SMR	71B4	
1,2	2662	1112,09	1,77	KG75	SMR	71B4			
1,3	2457	1031,58	1,91	KG75	SMR	71B4			
1,5	2129	887,80	2,21	KG75	SMR	71B4			
1,8	1774	738,58	2,65	KG75	SMR	71B4			
2	1597	654,17	2,94	KG75	SMR	71B4			
0,99	3292	1357,71	1,43	KG74	SMB	71B4			
1,1	2963	1209,60	1,59	KG74	SMB	71B4			
1,2	2716	1088,42	1,73	KG74	SMB	71B4			
1,3	2507	1008,00	1,87	KG74	SMB	71B4			
1,5	2173	920,97	2,16	KG74	SMB	71B4			
1,7	1917	785,45	2,45	KG74	SMB	71B4			
1,9	1715	709,71	2,74	KG74	SMB	71B4			
2,1	1552	645,63	3,03	KG74	SMB	71B4			
2,3	1417	590,69	3,32	KG74	SMB	71B4			
2,4	1358	555,43	3,46	KG74	SMB	71B4			
2,7	1207	503,21	3,89	KG74	SMB	71B4			
3	1086	442,29	4,33	KG74	SMB	71B4			
1,3	2457	1042,59	1,14	KG65	SMR	71B4			
1,4	2281	938,33	1,23	KG65	SMR	71B4			
1,5	2129	870,39	1,31	KG65	SMR	71B4			
1,8	1774	749,08	1,58	KG65	SMR	71B4			
2,2	1452	623,18	1,93	KG65	SMR	71B4			
2,4	1331	551,96	2,10	KG65	SMR	71B4			
1,2	2716	1145,57	1,03	KG64	SMB	71B4			
1,3	2507	1020,60	1,12	KG64	SMB	71B4			
1,5	2173	918,35	1,29	KG64	SMB	71B4			
1,6	2037	850,50	1,37	KG64	SMB	71B4			
1,7	1917	777,07	1,46	KG64	SMB	71B4			
2	1630	662,73	1,72	KG64	SMB	71B4			
2,2	1481	598,82	1,89	KG64	SMB	71B4			
2,5	1304	544,75	2,15	KG64	SMB	71B4			
2,7	1207	498,40	2,32	KG64	SMB	71B4			
2,9	1124	468,64	2,49	KG64	SMB	71B4			
3,2	1018	424,58	2,75	KG64	SMB	71B4			

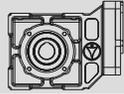
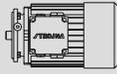


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m				
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]				
0,37	3,6	905	373,18	3,09	KG64	SMB 71B4	102	434			
	4,1	795	325,45	3,52		SMR 71B4					
	4,5	724	300,18	3,87		SMR 71B4					
	4,8	679	277,71	4,12		SMR 71B4					
	2,1	1521	626,67	1,02	KG55	SMR 71B4	71	430			
	2,4	1331	555,05	1,16		SMR 71B4					
	2,2	1481	602,18	1,05	KG54	SMB 71B4	67	428			
	2,4	1358	547,80	1,14		SMB 71B4					
	2,7	1207	501,19	1,28		SMB 71B4					
	2,8	1164	471,27	1,33		SMB 71B4					
	3,1	1051	426,97	1,47		SMB 71B4					
	3,6	905	375,27	1,71		SMB 71B4					
	4,1	795	327,27	1,95		SMR 71B4					
	4,4	741	301,86	2,09		SMR 71B4					
	4,8	679	279,27	2,28		SMR 71B4					
	5,6	582	240,87	2,66		SMR 71B4					
	5,8	562	229,59	2,76		SMR 71B4					
	6,5	501	205,71	3,09		SMR 71B4					
	7,6	429	175,67	3,61		SMR 71B4					
	8,9	366	150,93	4,23	SMR 71B4						
	9,5	350	140,43	4,43	KG53	SMB 71B4	62	426			
	4,2	776	317,69	1,06	KG44	SMR 71B4	58	424			
	4,8	679	281,38	1,21		SMR 71B4					
	4,4	756	305,27	1,08	KG43	SMB 71B4	52	422			
	4,8	693	277,71	1,18		SMB 71B4					
	5,3	627	254,08	1,31		SMB 71B4					
	5,6	594	238,91	1,38		SMB 71B4					
	6,2	536	216,45	1,53		SMB 71B4					
	7	475	190,24	1,73		SMB 71B4					
	8,1	411	165,91	2,00		SMR 71B4					
	8,8	378	153,03	2,17		SMR 71B4					
	9,5	350	141,58	2,34		SMR 71B4					
	11	302	122,11	2,71		SMR 71B4					
	12	277	116,39	2,96		SMR 71B4					
	13	256	104,29	3,21		SMR 71B4					
	15	222	89,06	3,70		SMR 71B4					
	18	185	76,51	4,44		SMR 71B4					
	8,8	378	153,00	1,11		KG33			SMB 71B4	39	418
	10	333	132,14	1,26					SMR 71B4		
	11	302	117,82	1,39	SMR 71B4						
	13	256	105,09	1,64	SMR 71B4						
	14	238	94,58	1,77	SMR 71B4						
	15	222	87,73	1,89	SMR 71B4						
	18	185	75,51	2,27	SMR 71B4						
	21	158	62,82	2,65	SMR 71B4						
	24	139	55,64	3,03	SMR 71B4						
	18	189	76,17	2,23	KG32		SMB 71B4	35	416		
	19	179	69,27	2,35			SMB 71B4				

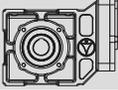
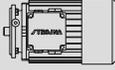


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>b</sub>			m		
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]		
0,37	21	162	64,45	2,60	KG32	SMB	71B4	35	416
	24	141	55,34	2,97					
	27	126	50,18	3,34					
	29	117	46,83	3,59					
	31	109	42,55	3,84					
	35	97	38,73	4,33	KG32	SMB	71B4		
	27	123	49,63	1,70	KG23	SMR	71B4	27	414
	32	104	41,29	2,02					
	37	90	36,57	2,34					
	18	189	75,90	1,11	KG22	SMB	71B4	23	412
	20	170	67,62	1,24					
	22	154	60,85	1,36					
	24	141	56,35	1,49					
	26	131	51,48	1,61					
	31	109	43,91	1,92					
	34	100	39,68	2,10					
	37	92	36,09	2,29					
	41	83	33,02	2,54					
	43	79	31,05	2,66					
	48	71	28,13	2,97					
	54	63	24,73	3,34					
	62	55	21,56	3,84					
	67	51	19,89	4,15					
	73	46	18,40	4,50					
	84	40	15,87	4,95					
	89	38	15,13	5,19					
	99	34	13,55	5,57					
	116	29	11,57	6,15					
	135	25	9,94	6,88					
	156	22	8,58	7,58					
	39	87	33,95	1,08	KG12	SMB	71B4	16	410
	44	77	30,76	1,18					
	48	71	28,03	1,24					
	53	64	25,15	1,33					
	56	61	23,80	1,39					
65	52	20,75	1,55						
75	45	17,92	1,70						
84	40	15,98	1,83						
94	36	14,25	1,97						
104	33	12,83	2,11						
113	30	11,90	2,23						
131	26	10,24	2,43						
157	22	8,52	2,73						
178	19	7,55	3,04						
0,55	0,37	12832	3705,80	1,05					
	0,39	12174	3484,56	1,11					
	0,44	10791	3156,95	1,25					
	0,5	9496	2774,74	1,42					

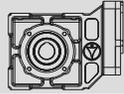
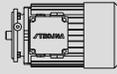


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m				
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]				
0,55	0,57	8330	2419,83	1,62	KG95	SMR	80A4	511	454		
	0,62	7658	2231,94	1,76		SMR	80A4				
	0,67	7086	2064,93	1,91		SMR	80A4				
	0,77	6166	1781,00	2,19		SMR	80A4				
	0,81	5862	1697,61	2,30		SMR	80A4				
	0,9	5275	1521,04	2,56		SMR	80A4				
	1,1	4316	1298,90	3,13		SMR	80A4				
	1,2	3957	1115,97	3,41		SMR	80A4				
	1,4	3391	962,70	3,98		SMR	80A4				
0,6	7913	2294,36	1,04	KG85	SMB	80A4	283	448			
0,69	6881	2000,89	1,19		SMR	80A4					
0,75	6330	1845,53	1,30		SMR	80A4					
0,81	5862	1707,43	1,40		SMR	80A4					
0,93	5105	1472,66	1,61		SMR	80A4					
0,98	4845	1403,70	1,69		SMR	80A4					
1,1	4316	1257,70	1,90		SMR	80A4					
1,3	3652	1074,03	2,25		SMR	80A4					
1,5	3165	922,76	2,59		SMR	80A4					
1,7	2793	796,03	2,94	SMR	80A4						
2,1	2261	655,90	3,63	SMR	80A4						
1,6	3028	858,56	2,71	KG84	SMB	80A4	279	446			
1,8	2692	780,35	3,05		SMB	80A4					
1,9	2550	714,16	3,22		SMB	80A4					
2,1	2307	657,44	3,55		SMB	80A4					
2,3	2106	600,27	3,89		SMB	80A4					
2,5	1938	547,94	4,23		SMB	80A4					
1,1	4316	1235,66	1,09		KG75	SMR			80A4	169	442
1,2	3957	1112,09	1,19			SMR			80A4		
1,3	3652	1031,58	1,29			SMR			80A4		
1,5	3165	887,80	1,48	SMR		80A4					
1,9	2499	738,58	1,88	SMR		80A4					
2,1	2261	654,17	2,08	SMR		80A4					
1,1	4404	1209,60	1,07	KG74	SMB	80A4	165	440			
1,3	3727	1088,42	1,26		SMB	80A4					
1,4	3461	1008,00	1,36		SMB	80A4					
1,5	3230	920,97	1,46		SMB	80A4					
1,8	2692	785,45	1,75		SMB	80A4					
1,9	2550	709,71	1,84		SMB	80A4					
2,1	2307	645,63	2,04		SMB	80A4					
2,3	2106	590,69	2,23		SMB	80A4					
2,5	1938	555,43	2,43		SMB	80A4					
2,7	1794	503,21	2,62		SMB	80A4					
3,1	1563	442,29	3,01		SMB	80A4					
3,6	1346	385,71	3,49		SMR	80A4					
3,9	1242	355,76	3,78		SMR	80A4					
4,2	1154	329,14	4,07		SMR	80A4					
1,8	2638	749,08	1,06		KG65	SMR			80A4	108	436
2,2	2158	623,18	1,30	SMR		80A4					

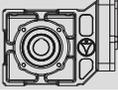
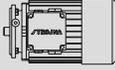
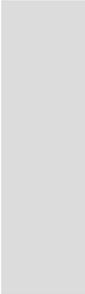
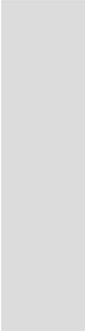
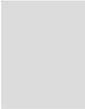


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m	
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]	
0,55	2,5	1899	551,96	1,47	KG65	SMR 80A4	108	436
	1,8	2692	777,07	1,04	KG64	SMB 80A4		
	2,1	2307	662,73	1,21	KG64	SMB 80A4		
	2,3	2106	598,82	1,33	KG64	SMB 80A4		
	2,5	1938	544,75	1,44	KG64	SMB 80A4		
	2,8	1730	498,40	1,62	KG64	SMB 80A4		
	2,9	1671	468,64	1,68	KG64	SMB 80A4		
	3,2	1514	424,58	1,85	KG64	SMB 80A4	104	434
	3,7	1309	373,18	2,14	KG64	SMB 80A4		
	4,2	1154	325,45	2,43	KG64	SMR 80A4		
	4,6	1053	300,18	2,66	KG64	SMR 80A4		
	5	969	277,71	2,89	KG64	SMR 80A4		
	5,7	850	239,53	3,29	KG64	SMR 80A4		
	6	807	228,31	3,47	KG64	SMR 80A4		
	6,7	723	204,57	3,87	KG64	SMR 80A4		
	3,7	1309	375,27	1,18	KG54	SMB 80A4		
	4,2	1154	327,27	1,34	KG54	SMR 80A4		
	4,6	1053	301,86	1,47	KG54	SMR 80A4		
	4,9	989	279,27	1,57	KG54	SMR 80A4		
	5,7	850	240,87	1,82	KG54	SMR 80A4		
	6	807	229,59	1,92	KG54	SMR 80A4	69	428
	6,7	723	205,71	2,14	KG54	SMR 80A4		
	7,8	621	175,67	2,50	KG54	SMR 80A4		
	9,1	532	150,93	2,91	KG54	SMR 80A4		
	11	440	130,20	3,52	KG54	SMR 80A4		
	13	373	107,28	4,16	KG54	SMR 80A4		
	9,8	504	140,43	3,07	KG53	SMB 80A4		
	11	449	127,64	3,45	KG53	SMB 80A4		
	12	412	116,81	3,76	KG53	SMB 80A4	64	426
	13	380	107,53	4,08	KG53	SMB 80A4		
	14	353	98,18	4,39	KG53	SMB 80A4		
	6,4	772	216,45	1,06	KG43	SMB 80A4		
	7,2	687	190,24	1,19	KG43	SMB 80A4		
	8,3	596	165,91	1,38	KG43	SMR 80A4		
	9	549	153,03	1,49	KG43	SMR 80A4		
	9,7	510	141,58	1,61	KG43	SMR 80A4		
	11	449	122,11	1,82	KG43	SMR 80A4		
	12	412	116,39	1,99	KG43	SMR 80A4		
	13	380	104,29	2,16	KG43	SMR 80A4		
	15	330	89,06	2,49	KG43	SMR 80A4	54	422
	18	275	76,51	2,99	KG43	SMR 80A4		
	21	235	66,00	3,48	KG43	SMR 80A4		
	25	198	54,39	4,15	KG43	SMR 80A4		
	19	266	71,19	3,09	KG43	SMB 80A4		
	21	240	64,70	3,41	KG43	SMB 80A4		
	23	219	59,22	3,74	KG43	SMB 80A4		
	25	202	54,51	4,06	KG43	SMB 80A4		
	13	380	105,09	1,10	KG33	SMR 80A4	41	418

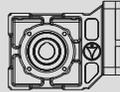
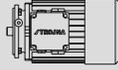
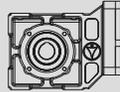
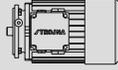
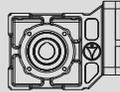
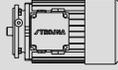
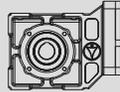
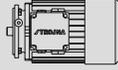
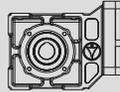
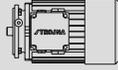
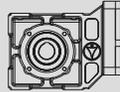
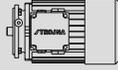


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m		
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]		
0,55	15	330	94,58	1,27	KG33	SMR	80A4	41	418
	16	309	87,73	1,36		SMR	80A4		
	18	275	75,51	1,53		SMR	80A4		
	22	225	62,82	1,87		SMR	80A4		
	25	198	55,64	2,12		SMR	80A4		
	18	280	76,17	1,50	KG32	SMB	80A4	37	416
	20	252	69,27	1,67		SMB	80A4		
	21	240	64,45	1,75		SMB	80A4		
	25	202	55,34	2,08		SMB	80A4		
	27	187	50,18	2,25		SMB	80A4		
	29	174	46,83	2,41		SMB	80A4		
	32	158	42,55	2,66		SMB	80A4		
	36	140	38,73	3,00		SMB	80A4		
	39	129	35,24	3,25		SMB	80A4		
	44	115	31,09	3,66		SMB	80A4		
	49	103	28,23	4,08		SMR	80A4		
	53	95	25,80	4,41	SMR	80A4			
	24	206	57,67	1,02	KG23	SMR	80A4	29	414
	28	177	49,63	1,19		SMR	80A4		
	33	150	41,29	1,40		SMR	80A4		
	38	130	36,57	1,61		SMR	80A4		
	24	210	56,35	1,00	KG22	SMB	80A4	25	412
	27	187	51,48	1,12		SMB	80A4		
	31	163	43,91	1,29		SMB	80A4		
	35	144	39,68	1,46		SMB	80A4		
38	133	36,09	1,58	SMB		80A4			
42	120	33,02	1,75	SMB		80A4			
44	115	31,05	1,83	SMB		80A4			
49	103	28,13	2,04	SMB		80A4			
56	90	24,73	2,33	SMB		80A4			
64	79	21,56	2,66	SMR		80A4			
69	73	19,89	2,87	SMR		80A4			
75	67	18,40	3,11	SMR		80A4			
87	58	15,87	3,45	SMR		80A4			
91	55	15,13	3,57	SMR		80A4			
101	50	13,55	3,82	SMR		80A4			
119	42	11,57	4,25	SMR		80A4			
66	76	20,75	1,06	KG12		SMB	80A4		
77	66	17,92	1,18		SMR	80A4			
86	59	15,98	1,26		SMR	80A4			
96	53	14,25	1,35		SMR	80A4			
107	47	12,83	1,46		SMR	80A4			
116	43	11,90	1,54		SMR	80A4			
134	38	10,24	1,67		SMR	80A4			
161	31	8,52	1,88		SMR	80A4			
182	28	7,55	2,09		SMR	80A4			
0,75	0,5	12949	2774,74		1,04	KG95	SMB	80B4	512
	0,57	11358	2419,83	1,19	SMR		80B4		

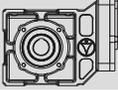
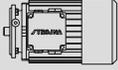


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m			
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]			
0,75	0,62	10442	2231,94	1,29		KG95	SMR	80B4	512	454
	0,67	9663	2064,93	1,40		KG95	SMR	80B4		
	0,77	8408	1781,00	1,61		KG95	SMR	80B4		
	0,81	7993	1697,61	1,69		KG95	SMR	80B4		
	0,9	7194	1521,04	1,88		KG95	SMR	80B4		
	1,1	5886	1298,90	2,29		KG95	SMR	80B4		
	1,2	5395	1115,97	2,50		KG95	SMR	80B4		
	1,4	4625	962,70	2,92		KG95	SMR	80B4		
	1,7	3808	793,23	3,54		KG95	SMR	80B4		
0,81	0,81	7993	1707,43	1,03		KG85	SMR	80B4	284	448
	0,93	6962	1472,66	1,18		KG85	SMR	80B4		
	0,98	6606	1403,70	1,24		KG85	SMR	80B4		
	1,1	5886	1257,70	1,39		KG85	SMR	80B4		
	1,3	4980	1074,03	1,65		KG85	SMR	80B4		
	1,5	4316	922,76	1,90		KG85	SMR	80B4		
	1,7	3808	796,03	2,15		KG85	SMR	80B4		
	2,1	3083	655,90	2,66		KG85	SMR	80B4		
1,6	1,6	4129	858,56	1,99		KG84	SMB	80B4	280	446
	1,8	3670	780,35	2,23		KG84	SMB	80B4		
	1,9	3477	714,16	2,36		KG84	SMB	80B4		
	2,1	3146	657,44	2,61		KG84	SMB	80B4		
	2,3	2872	600,27	2,85		KG84	SMB	80B4		
	2,5	2643	547,94	3,10		KG84	SMB	80B4		
	2,8	2359	493,55	3,48		KG84	SMB	80B4		
	3,2	2065	430,19	3,97		KG84	SMR	80B4		
	3,4	1943	404,89	4,22		KG84	SMR	80B4		
	1,5	1,5	4316	887,80		1,09		KG75		
1,9		3408	738,58	1,38	KG75	SMR		80B4		
2,1		3083	654,17	1,52	KG75	SMR		80B4		
1,4	1,4	4719	1008,00	1,00		KG74	SMB	80B4	166	440
	1,5	4404	920,97	1,07		KG74	SMB	80B4		
	1,8	3670	785,45	1,28		KG74	SMB	80B4		
	1,9	3477	709,71	1,35		KG74	SMB	80B4		
	2,1	3146	645,63	1,49		KG74	SMB	80B4		
	2,3	2872	590,69	1,64		KG74	SMB	80B4		
	2,5	2643	555,43	1,78		KG74	SMB	80B4		
	2,7	2447	503,21	1,92		KG74	SMB	80B4		
	3,1	2131	442,29	2,21		KG74	SMB	80B4		
	3,6	1835	385,71	2,56		KG74	SMR	80B4		
	3,9	1694	355,76	2,77		KG74	SMR	80B4		
	4,2	1573	329,14	2,99		KG74	SMR	80B4		
	4,8	1376	283,89	3,41		KG74	SMR	80B4		
	5,1	1295	270,59	3,63		KG74	SMR	80B4		
	5,7	1159	242,45	4,06		KG74	SMR	80B4		
2,5	2590	551,96	1,08		KG65	SMR	80B4	109	436	
2,5	2643	544,75	1,06		KG64	SMB	80B4			
2,8	2359	498,40	1,19		KG64	SMB	80B4			
2,9	2278	468,64	1,23		KG64	SMB	80B4			

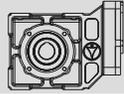
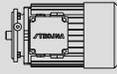
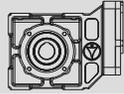
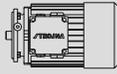
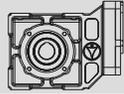
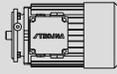
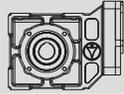
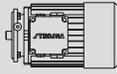
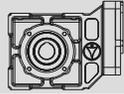
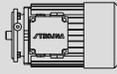
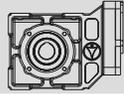
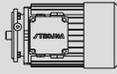


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m				
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]				
0,75	3,2	2065	424,58	1,36			105	434			
	3,7	1786	373,18	1,57					KG64	SMB	80B4
	4,2	1573	325,45	1,78					KG64	SMR	80B4
	4,6	1436	300,18	1,95					KG64	SMR	80B4
	5	1321	277,71	2,12					KG64	SMR	80B4
	5,7	1159	239,53	2,42					KG64	SMR	80B4
	6	1101	228,31	2,54					KG64	SMR	80B4
	6,7	986	204,57	2,84					KG64	SMR	80B4
	7,9	836	174,69	3,35					KG64	SMR	80B4
	9,2	718	150,09	3,90					KG64	SMR	80B4
	4,6	1436	301,86	1,08			70	428			
	4,9	1348	279,27	1,15					KG54	SMR	80B4
	5,7	1159	240,87	1,34					KG54	SMR	80B4
	6	1101	229,59	1,41					KG54	SMR	80B4
	6,7	986	205,71	1,57					KG54	SMR	80B4
	7,8	847	175,67	1,83					KG54	SMR	80B4
	9,1	726	150,93	2,14					KG54	SMR	80B4
	11	601	130,20	2,58					KG54	SMR	80B4
	13	508	107,28	3,05					KG54	SMR	80B4
	9,8	688	140,43	2,25							65
	11	613	127,64	2,53	KG53	SMB	80B4				
	12	562	116,81	2,76	KG53	SMB	80B4				
	13	519	107,53	2,99	KG53	SMB	80B4				
	14	482	98,18	3,22	KG53	SMB	80B4				
	15	449	89,62	3,45	KG53	SMB	80B4				
	17	397	80,73	3,91	KG53	SMB	80B4				
	18	375	74,90	3,60	KG53	SMB	80B4				
	20	337	68,07	3,90	KG53	SMB	80B4				
	22	306	62,30	4,20	KG53	SMB	80B4				
	24	281	57,35	4,48	KG53	SMB	80B4				
	8,3	812	165,91	1,01			55	422			
	9	749	153,03	1,09					KG43	SMR	80B4
	9,7	695	141,58	1,18					KG43	SMR	80B4
	11	613	122,11	1,34					KG43	SMR	80B4
	12	562	116,39	1,46					KG43	SMR	80B4
	13	519	104,29	1,58					KG43	SMR	80B4
	15	449	89,06	1,82					KG43	SMR	80B4
	18	375	76,51	2,19					KG43	SMR	80B4
	21	321	66,00	2,55					KG43	SMR	80B4
	25	270	54,39	3,04					KG43	SMR	80B4
	19	362	71,19	2,26			42	418			
	21	328	64,70	2,50					KG43	SMB	80B4
	23	299	59,22	2,74					KG43	SMB	80B4
	25	275	54,51	2,98					KG43	SMB	80B4
	28	246	49,77	3,34					KG43	SMB	80B4
	30	229	45,43	3,58					KG43	SMB	80B4
	34	202	40,92	4,05					KG43	SMB	80B4
	18	375	75,51	1,12					KG33	SMR	80B4

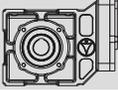
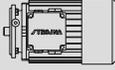


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>b</sub>			m			
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]			
0,75	22	306	62,82	1,37	KG33	SMR 80B4	42	418		
	25	270	55,64	1,56	KG33	SMR 80B4				
	18	382	76,17	1,10	KG32	SMB 80B4	37	416		
	20	344	69,27	1,22	KG32	SMB 80B4				
	21	328	64,45	1,28	KG32	SMB 80B4				
	25	275	55,34	1,53	KG32	SMB 80B4				
	27	255	50,18	1,65	KG32	SMB 80B4				
	29	237	46,83	1,77	KG32	SMB 80B4				
	32	215	42,55	1,95	KG32	SMB 80B4				
	36	191	38,73	2,20	KG32	SMB 80B4				
	39	176	35,24	2,38	KG32	SMB 80B4				
	44	156	31,09	2,69	KG32	SMB 80B4				
	49	140	28,23	2,99	KG32	SMR 80B4				
	53	130	25,80	3,24	KG32	SMR 80B4				
	56	123	24,36	3,42	KG32	SMR 80B4				
	65	106	21,27	3,97	KG32	SMR 80B4				
	73	94	18,91	4,46	KG32	SMR 80B4				
	38	177	36,57	1,18	KG23	SMR 80B4	30	414		
	35	197	39,68	1,07	KG22	SMB 80B4	26	412		
	38	181	36,09	1,16	KG22	SMB 80B4				
42	164	33,02	1,28	KG22	SMB 80B4					
44	156	31,05	1,34	KG22	SMB 80B4					
49	140	28,13	1,50	KG22	SMB 80B4					
56	123	24,73	1,71	KG22	SMB 80B4					
64	107	21,56	1,95	KG22	SMR 80B4					
69	100	19,89	2,11	KG22	SMR 80B4					
75	92	18,40	2,28	KG22	SMR 80B4					
87	79	15,87	2,53	KG22	SMR 80B4					
91	76	15,13	2,62	KG22	SMR 80B4					
101	68	13,55	2,80	KG22	SMR 80B4					
119	58	11,57	3,11	KG22	SMR 80B4					
138	50	9,94	3,47	KG22	SMR 80B4					
160	43	8,58	3,84	KG22	SMR 80B4					
195	35	7,07	4,42	KG22	SMR 80B4					
107	64	12,83	1,07	KG12	SMR 80B4	18			410	
116	59	11,90	1,13	KG12	SMR 80B4					
134	51	10,24	1,23	KG12	SMR 80B4					
161	43	8,52	1,38	KG12	SMR 80B4					
182	38	7,55	1,53	KG12	SMR 80B4					
1,10	0,79	12020	1781,00	1,12	KG95	SMR 90S4	516	454		
	0,83	11441	1697,61	1,18	KG95	SMR 90S4				
	0,93	10210	1521,04	1,32	KG95	SMR 90S4				
	1,1	8632	1298,90	1,56	KG95	SMR 90S4				
	1,3	7304	1115,97	1,85	KG95	SMR 90S4				
	1,5	6330	962,70	2,13	KG95	SMR 90S4				
	1,8	5275	793,23	2,56	KG95	SMR 90S4				
	2,1	4522	655,90	1,81	KG85	SMR 90S4			288	448
	1,6	6056	858,56	1,35	KG84	SMB 90S4			284	446

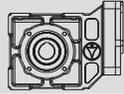
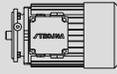


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m								
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]								
1,10	1,8	5383	780,35	1,52			284	446							
	2	4845	714,16	1,69					KG84	SMB	90S4				
	2,1	4614	657,44	1,78					KG84	SMB	90S4				
	2,3	4213	600,27	1,95					KG84	SMB	90S4				
	2,6	3727	547,94	2,20					KG84	SMB	90S4				
	2,9	3341	493,55	2,45					KG84	SMB	90S4				
	3,3	2936	430,19	2,79					KG84	SMB	90S4				
	3,5	2768	404,89	2,96					KG84	SMB	90S4				
	3,8	2550	373,50	3,22					KG84	SMR	90S4				
	4,2	2307	336,15	3,55					KG84	SMR	90S4				
	4,7	2062	302,36	3,98					KG84	SMR	90S4				
	5	1938	282,23	4,23					KG84	SMR	90S4				
	2,2	4316	654,17	1,09					KG75	SMR	90S4	174	442		
	2,2	4404	645,63	1,07							170	440			
	2,4	4037	590,69	1,16	KG74	SMB	90S4								
	2,5	3876	555,43	1,21	KG74	SMB	90S4								
	2,8	3461	503,21	1,36	KG74	SMB	90S4								
	3,2	3028	442,29	1,55	KG74	SMB	90S4								
	3,7	2619	385,71	1,79	KG74	SMB	90S4								
	4	2422	355,76	1,94	KG74	SMB	90S4								
	4,3	2253	329,14	2,09	KG74	SMR	90S4								
	5	1938	283,89	2,43	KG74	SMR	90S4								
	5,2	1863	270,59	2,52	KG74	SMR	90S4								
	5,8	1671	242,45	2,81	KG74	SMR	90S4								
	6,8	1425	207,04	3,30	KG74	SMR	90S4								
	7,9	1227	177,88	3,83	KG74	SMR	90S4								
	9,2	1053	153,45	4,46	KG74	SMR	90S4								
	3,8	2550	373,18	1,10			109	434							
	4,3	2253	325,45	1,24					KG64	SMB	90S4				
	4,7	2062	300,18	1,36					KG64	SMB	90S4				
	5,1	1900	277,71	1,47					KG64	SMR	90S4				
	5,9	1642	239,53	1,70					KG64	SMR	90S4				
	6,2	1563	228,31	1,79					KG64	SMR	90S4				
	6,9	1404	204,57	1,99					KG64	SMR	90S4				
	8,1	1196	174,69	2,34					KG64	SMR	90S4				
	9,4	1031	150,09	2,72					KG64	SMR	90S4				
	11	881	129,47	3,18					KG64	SMR	90S4				
	13	745	106,68	3,76					KG64	SMR	90S4				
	6,9	1404	205,71	1,10							74	428			
	8	1211	175,67	1,28									KG54	SMR	90S4
	9,3	1042	150,93	1,49									KG54	SMR	90S4
	11	881	130,20	1,76	KG54	SMR	90S4								
	13	745	107,28	2,08	KG54	SMR	90S4								
	10	989	140,43	1,57			69	426							
	11	899	127,64	1,72					KG53	SMB	90S4				
	12	824	116,81	1,88					KG53	SMB	90S4				
	13	761	107,53	2,04					KG53	SMB	90S4				
	14	706	98,18	2,19					KG53	SMB	90S4				

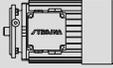


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m						
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]						
1,10	16	618	89,62	2,51		KG53	SMB	90S4					
	17	582	80,73	2,67		KG53	SMB	90S4					
	20	494	70,36	3,14		KG53	SMB	90S4					
	21	471	66,22	3,29		KG53	SMB	90S4					
	23	430	61,09	3,61		KG53	SMR	90S4					
	26	380	54,98	4,08		KG53	SMR	90S4					
	19	520	74,90	2,59		KG53	SMB	90S4		69	426		
	23	430	62,30	2,99		KG53	SMB	90S4					
	25	395	57,35	3,18		KG53	SMB	90S4					
	27	366	52,36	3,35		KG53	SMB	90S4					
	29	341	47,80	3,51		KG53	SMB	90S4					
	33	300	43,05	3,89		KG53	SMB	90S4					
	38	260	37,53	4,30		KG53	SMB	90S4					
	40	247	35,32	4,47		KG53	SMB	90S4					
	12	824	122,11	1,00		KG43	SMR	90S4				59	422
	14	706	104,29	1,16		KG43	SMR	90S4					
	16	618	89,06	1,33		KG43	SMR	90S4					
18	549	76,51	1,49	KG43	SMR	90S4							
21	471	66,00	1,74	KG43	SMR	90S4							
26	380	54,39	2,16	KG43	SMR	90S4							
20	504	71,19	1,63		KG42	SMB	90S4						
22	459	64,70	1,79		KG42	SMB	90S4						
24	420	59,22	1,95		KG42	SMB	90S4						
26	388	54,51	2,11		KG42	SMB	90S4						
28	360	49,77	2,28		KG42	SMB	90S4						
31	325	45,43	2,52		KG42	SMB	90S4						
34	297	40,92	2,76		KG42	SMB	90S4		59	420			
40	252	35,67	3,15		KG42	SMB	90S4						
42	240	33,57	3,26		KG42	SMB	90S4						
46	219	30,97	3,49		KG42	SMR	90S4						
51	198	27,87	3,78		KG42	SMR	90S4						
56	180	25,07	4,02		KG42	SMR	90S4						
60	168	23,40	4,23		KG42	SMR	90S4						
25	395	55,64	1,06		KG33	SMR	90S4				46	418	
25	404	55,34	1,04		KG32	SMB	90S4						
28	360	50,18	1,17	KG32	SMB	90S4	42	416					
30	336	46,83	1,25	KG32	SMB	90S4							
33	306	42,55	1,37	KG32	SMB	90S4							
36	280	38,73	1,50	KG32	SMB	90S4							
40	252	35,24	1,67	KG32	SMB	90S4							
45	224	31,09	1,87	KG32	SMB	90S4							
50	202	28,23	2,08	KG32	SMB	90S4							
55	183	25,80	2,29	KG32	SMB	90S4							
58	174	24,36	2,41	KG32	SMR	90S4							
66	153	21,27	2,75	KG32	SMR	90S4							
75	135	18,91	3,12	KG32	SMR	90S4							
82	123	17,22	3,41	KG32	SMR	90S4							
94	107	14,96	3,75	KG32	SMR	90S4							

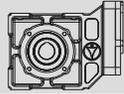
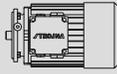


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m		
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]		
1,10	108	93	13,09	4,15	KG32	SMR 90S4	42	416	
	50	202	28,13	1,04	KG22	SMB 90S4			
	57	177	24,73	1,19	KG22	SMB 90S4			
	65	155	21,56	1,35	KG22	SMB 90S4			
	71	142	19,89	1,48	KG22	SMB 90S4			
	77	131	18,40	1,60	KG22	SMR 90S4			
	89	113	15,87	1,76	KG22	SMR 90S4	30	412	
	93	108	15,13	1,83	KG22	SMR 90S4			
	104	97	13,55	1,97	KG22	SMR 90S4			
	122	83	11,57	2,18	KG22	SMR 90S4			
	142	71	9,94	2,43	KG22	SMR 90S4			
	164	62	8,58	2,68	KG22	SMR 90S4			
	199	51	7,07	3,08	KG22	SMR 90S4			
	187	54	7,55	1,08	KG12	SMR 90S4	23	410	
	1,50	1,1	11772	1298,90	1,15	KG95	SMR 90L4		
		1,3	9961	1115,97	1,36	KG95	SMR 90L4	519	454
		1,5	8632	962,70	1,56	KG95	SMR 90L4		
1,8		7194	793,23	1,88	KG95	SMR 90L4			
1,8		7194	796,03	1,14	KG85	SMR 90L4			
2,1		6166	655,90	1,33	KG85	SMR 90L4	291	448	
1,8		7341	780,35	1,12	KG84	SMB 90L4			
2		6606	714,16	1,24	KG84	SMB 90L4			
2,1		6292	657,44	1,30	KG84	SMB 90L4			
2,3		5745	600,27	1,43	KG84	SMB 90L4			
2,6		5082	547,94	1,61	KG84	SMB 90L4			
2,8		4719	493,55	1,74	KG84	SMB 90L4			
3,3		4004	430,19	2,05	KG84	SMB 90L4	287	446	
3,5		3775	404,89	2,17	KG84	SMB 90L4			
3,8		3477	373,50	2,36	KG84	SMR 90L4			
4,2		3146	336,15	2,61	KG84	SMR 90L4			
4,6		2872	302,36	2,85	KG84	SMR 90L4			
5		2643	282,23	3,10	KG84	SMR 90L4			
5,7		2318	247,73	3,54	KG84	SMR 90L4			
6,4		2065	219,23	3,97	KG84	SMR 90L4			
3,2		4129	442,29	1,14	KG74	SMB 90L4			
3,6		3670	385,71	1,28	KG74	SMB 90L4			
3,9		3388	355,76	1,39	KG74	SMB 90L4			
4,3		3073	329,14	1,53	KG74	SMR 90L4			
4,9		2697	283,89	1,74	KG74	SMR 90L4			
5,2		2541	270,59	1,85	KG74	SMR 90L4	173	440	
5,8		2278	242,45	2,06	KG74	SMR 90L4			
6,8		1943	207,04	2,42	KG74	SMR 90L4			
7,9		1673	177,88	2,81	KG74	SMR 90L4			
9,2		1436	153,45	3,27	KG74	SMR 90L4			
11		1201	126,44	3,91	KG74	SMR 90L4			
5,1		2591	277,71	1,08	KG64	SMR 90L4			
5,9		2239	239,53	1,25	KG64	SMR 90L4	112	434	
6,2	2131	228,31	1,31	KG64	SMR 90L4				

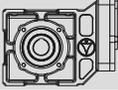
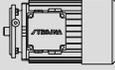


P	$n_2$	$Mt_2$	i	$f_b$			m		
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]		
1,50	6,9	1915	204,57	1,46	KG64	SMR	90L4	112	434
	8	1652	174,69	1,70					
	9,4	1406	150,09	1,99					
	11	1201	129,47	2,33					
	13	1016	106,68	2,75					
	9,3	1421	150,93	1,09	KG54	SMR	90L4	77	428
	11	1201	130,20	1,29					
	13	1016	107,28	1,53					
	10	1348	140,43	1,15	KG53	SMB	90L4	72	426
	11	1226	127,64	1,26					
	12	1124	116,81	1,38					
	13	1037	107,53	1,49					
	14	963	98,18	1,61					
	16	843	89,62	1,84					
	17	793	80,73	1,95					
	20	674	70,36	2,30					
	21	642	66,22	2,41					
	23	586	61,09	2,64					
	26	519	54,98	2,99					
	28	482	49,45	3,22					
30	449	46,16	3,45						
35	385	40,52	4,02						
39	346	35,86	4,46						
19	710	74,90	1,90						
24	562	57,35	2,24						
27	499	52,36	2,45						
29	465	47,80	2,57						
33	409	43,05	2,85						
37	364	37,53	3,07						
40	337	35,32	3,28						
43	314	32,58	3,44						
48	281	29,32	3,74						
53	254	26,38	4,00						
57	237	24,62	4,21						
18	749	76,51	1,09	KG43	SMR	90L4	62	422	
21	642	66,00	1,28						
26	519	54,39	1,58						
20	688	71,19	1,19	KG42	SMB	90L4	61	420	
22	625	64,70	1,31						
24	573	59,22	1,43						
26	529	54,51	1,55						
28	491	49,77	1,67						
31	444	45,43	1,85						
34	405	40,92	2,03						
39	353	35,67	2,25						
42	328	33,57	2,39						
45	306	30,97	2,51						
50	275	27,87	2,71						

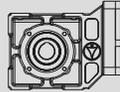
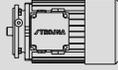
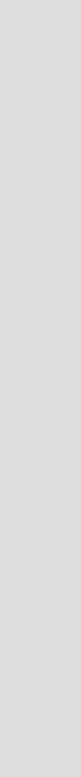


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m					
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]					
1,50	56	246	25,07	2,95	KG42	SMR	90L4	61	420			
	60	229	23,40	3,10		SMR	90L4					
	68	202	20,54	3,39		SMR	90L4					
	77	179	18,18	3,67		SMR	90L4					
	36	382	38,73	1,10	KG32	SMB	90L4	44	416			
	40	344	35,24	1,22		SMB	90L4					
	45	306	31,09	1,37		SMB	90L4					
	50	275	28,23	1,53		SMB	90L4					
	54	255	25,80	1,65		SMB	90L4					
	58	237	24,36	1,77		SMR	90L4					
	66	208	21,27	2,01		SMR	90L4					
	74	186	18,91	2,26		SMR	90L4					
	82	168	17,22	2,50		SMR	90L4					
	94	146	14,96	2,75		SMR	90L4					
107	129	13,09	3,02	SMR		90L4						
71	194	19,89	1,08	KG22	SMB	90L4	32	412				
76	181	18,40	1,15		SMR	90L4						
89	155	15,87	1,29		SMR	90L4						
93	148	15,13	1,34		SMR	90L4						
104	132	13,55	1,44		SMR	90L4						
121	114	11,57	1,58		SMR	90L4						
141	98	9,94	1,77		SMR	90L4						
164	84	8,58	1,97		SMR	90L4						
199	69	7,07	2,26		SMR	90L4						
2,20	1,5	12661	962,70	1,07	KG95	SMR	100L4	524	454			
	1,8	10551	793,23	1,28		SMR	100L4					
	1,6	12112	886,86	1,11	KG94	SMB	100L4	516	452			
	1,9	10199	760,01	1,32		SMB	100L4					
	2	9689	694,93	1,39		SMB	100L4					
	2,3	8426	616,61	1,60		SMB	100L4					
	2,6	7453	548,50	1,81		SMB	100L4					
	2,7	7177	516,23	1,88		SMB	100L4					
	3	6460	469,90	2,09		SMB	100L4					
	3,3	5872	421,59	2,30		SMR	100L4					
	3,7	5238	382,39	2,58		SMR	100L4					
	4	4845	353,21	2,79		SMR	100L4					
	4,5	4306	311,38	3,13		SMR	100L4					
	5,1	3800	276,82	3,55		SMR	100L4					
	5,7	3400	246,38	3,97		SMR	100L4					
	6	3230	234,95	4,18		SMR	100L4					
	2,6	7453	547,94	1,10		KG84	SMB			100L4	292	446
	2,9	6682	493,55	1,23			SMB			100L4		
	3,3	5872	430,19	1,40	SMB		100L4					
	3,5	5537	404,89	1,48	SMB		100L4					
	3,8	5100	373,50	1,61	SMB		100L4					
	4,2	4614	336,15	1,78	SMR		100L4					
	4,7	4123	302,36	1,99	SMR		100L4					
	5	3876	282,23	2,12	SMR		100L4					

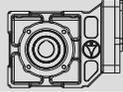
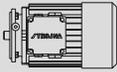


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>b</sub>			m				
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]				
2,20	5,7	3400	247,73	2,41	KG84	SMR	100L4				
	6,4	3028	219,23	2,71							
	7,6	2550	184,70	3,22							
	9	2153	157,31	3,81							
	10	1938	135,06	4,23							
5	3876	283,89	1,21	KG74	SMR	100L4					
5,2	3727	270,59	1,26								
5,8	3341	242,45	1,41								
6,8	2850	207,04	1,65								
7,9	2453	177,88	1,92								
9,2	2106	153,45	2,23	KG74	SMR	100L4	178				
11	1762	126,44	2,67								
10	1977	141,36	2,38					KG73	SMB	100L4	
12	1648	121,14	2,85								
13	1521	110,77	3,09								
14	1412	98,29	3,33								
16	1236	87,43	3,80								
17	1163	82,29	4,04	KG73	SMB	100L4	171				
19	1041	74,22	4,07								
8,1	2392	174,69	1,17					KG64	SMR	100L4	
9,4	2062	150,09	1,36								
11	1762	129,47	1,59								
13	1491	106,68	1,88								
12	1648	119,27	1,70	KG63	SMB	100L4					
14	1412	102,21	1,98								
15	1318	93,46	2,12								
17	1163	82,93	2,41								
19	1041	73,77	2,69								
20	989	69,43	2,81	KG63	SMB	100L4					
22	899	63,20	3,01								
25	791	56,70	3,32								
27	732	51,43	3,45								
30	659	47,50	3,75								
34	582	41,88	4,13	KG63	SMR	100L4	109				
38	520	37,23	4,49								
24	824	58,15	2,54					KG63	SMB	100L4	
31	638	45,90	3,08								
33	599	43,20	3,23								
36	549	39,32	3,43								
40	494	35,28	3,70								
44	449	32,00	3,92	KG63	SMR	100L4					
48	412	29,56	4,19								
13	1491	107,28	1,04					KG54	SMR	100L4	82
14	1412	98,18	1,10								
16	1236	89,62	1,25								
17	1163	80,73	1,33								
20	989	70,36	1,57								
21	942	66,22	1,65	KG53	SMB	100L4	77				
16	1236	89,62	1,25								
17	1163	80,73	1,33								
20	989	70,36	1,57								
21	942	66,22	1,65								

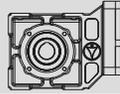
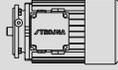


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m				
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]				
2,20	23	860	61,09	1,80		KG53	SMB	100L4			
	26	761	54,98	2,04		KG53	SMR	100L4			
	29	682	49,45	2,27		KG53	SMR	100L4			
	31	638	46,16	2,43		KG53	SMR	100L4			
	35	565	40,52	2,74		KG53	SMR	100L4			
	39	507	35,86	3,04		KG53	SMR	100L4			
	47	421	30,21	3,51		KG53	SMR	100L4			
	55	360	25,73	3,93		KG53	SMR	100L4			
	64	309	22,09	4,38		KG53	SMR	100L4			
	27	732	52,36	1,67		KG53	SMB	100L4			
	33	599	43,05	1,95		KG53	SMB	100L4		77	426
	38	520	37,53	2,15		KG53	SMB	100L4			
	40	494	35,32	2,23		KG53	SMB	100L4			
	43	460	32,58	2,34		KG53	SMB	100L4			
	48	412	29,32	2,55		KG53	SMR	100L4			
	53	373	26,38	2,73		KG53	SMR	100L4			
	57	347	24,62	2,87		KG53	SMR	100L4			
	65	304	21,61	3,12		KG53	SMR	100L4			
	74	267	19,12	3,45		KG53	SMR	100L4			
	88	225	16,11	3,92		KG53	SMR	100L4			
	103	192	13,72	4,39	KG53	SMR	100L4				
	26	761	54,39	1,08	KG43	SMR	100L4	67	422		
	24	841	59,22	0,98	KG42	SMB	100L4				
	26	776	54,51	1,06	KG42	SMB	100L4				
	28	721	49,77	1,14	KG42	SMB	100L4				
	31	651	45,43	1,26	KG42	SMB	100L4				
	34	593	40,92	1,38	KG42	SMB	100L4				
	40	504	35,67	1,58	KG42	SMB	100L4				
	42	480	33,57	1,63	KG42	SMB	100L4				
	46	439	30,97	1,75	KG42	SMB	100L4				
	51	396	27,87	1,89	KG42	SMR	100L4				
	56	360	25,07	2,01	KG42	SMR	100L4	66	420		
	60	336	23,40	2,11	KG42	SMR	100L4				
	69	292	20,54	2,35	KG42	SMR	100L4				
	78	259	18,18	2,53	KG42	SMR	100L4				
	92	219	15,31	2,87	KG42	SMR	100L4				
	108	187	13,04	3,24	KG42	SMR	100L4				
	126	160	11,20	3,64	KG42	SMR	100L4				
	146	138	9,67	4,06	KG42	SMR	100L4				
	168	120	8,38	4,49	KG42	SMR	100L4				
	50	404	28,23	1,04	KG32	SMB	100L4				
	55	367	25,80	1,14	KG32	SMB	100L4				
	58	348	24,36	1,21	KG32	SMB	100L4				
	66	306	21,27	1,37	KG32	SMR	100L4	49	416		
	75	269	18,91	1,56	KG32	SMR	100L4				
	82	246	17,22	1,71	KG32	SMR	100L4				
	94	215	14,96	1,87	KG32	SMR	100L4				
	108	187	13,09	2,08	KG32	SMR	100L4				

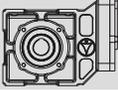
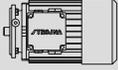
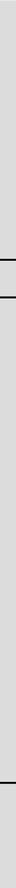
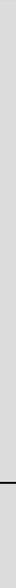
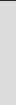


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>b</sub>			m							
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]							
2,20	130	155	10,83	2,38	KG32	SMR	100L4	49	416					
	156	129	9,03	2,71										
	186	108	7,57	3,07										
	209	97	6,73	3,36										
3,00	122	165	11,57	1,09	KG22	SMR	100L4	37	412					
	142	142	9,94	1,22										
	164	123	8,58	1,34										
	199	101	7,07	1,54										
3,00	2,3	11489	616,61	1,17	KG94	SMB	100Ld4	518	452					
	2,6	10164	548,50	1,33										
	2,7	9787	516,23	1,38										
	3	8809	469,90	1,53										
	3,3	8008	421,59	1,69										
	3,7	7142	382,39	1,89										
	4	6606	353,21	2,04										
	4,5	5872	311,38	2,30										
	5,1	5182	276,82	2,61										
	5,7	4636	246,38	2,91										
	6	4404	234,95	3,07										
	7	3775	201,75	3,58										
	8,1	3262	174,77	4,14										
	3,5	7550	404,89	1,09						KG84	SMB	100Ld4	294	446
	3,8	6954	373,50	1,18										
	4,2	6292	336,15	1,30										
	4,7	5623	302,36	1,46										
	5	5285	282,23	1,55										
	5,7	4636	247,73	1,77										
	6,4	4129	219,23	1,99										
7,6	3477	184,70	2,36											
9	2936	157,31	2,79											
10	2643	135,06	3,10											
12	2202	116,62	3,72											
14	1888	101,10	4,34											
6,8	3886	207,04	1,21	KG74	SMR	100Ld4	180	440						
7,9	3345	177,88	1,41											
9,2	2872	153,45	1,64											
11	2402	126,44	1,96											
10	2697	141,36	1,74	KG73	SMB	100Ld4	173	438						
12	2247	121,14	2,09											
13	2074	110,77	2,27											
14	1926	98,29	2,44											
16	1685	87,43	2,79											
17	1586	82,29	2,96											
19	1419	74,90	3,31											
21	1284	67,20	3,66											
23	1172	60,95	4,01											
25	1079	56,30	4,36											
22	1226	63,60	3,33											

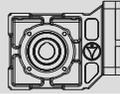
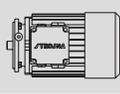


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m			
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]			
3,00	24	1124	58,15	3,55	KG73	SMB	100Ld4	173	438	
	27	999	51,60	3,88		SMB	100Ld4			
	31	870	45,90	4,33		SMB	100Ld4			
	11	2402	129,47	1,17	KG64	SMR	100Ld4	119	434	
	13	2033	106,68	1,38		SMR	100Ld4			
	12	2247	119,27	1,25	KG63	SMB	100Ld4	111	432	
	14	1926	102,21	1,45		SMB	100Ld4			
	15	1798	93,46	1,56	SMB	100Ld4				
	17	1586	82,93	1,77	SMB	100Ld4				
	19	1419	73,77	1,97	SMB	100Ld4				
	20	1348	69,43	2,06	SMB	100Ld4				
	22	1226	63,20	2,21	SMB	100Ld4				
	25	1079	56,70	2,43	SMR	100Ld4				
	27	999	51,43	2,53	SMR	100Ld4				
	30	899	47,50	2,75	SMR	100Ld4				
	34	793	41,88	3,03	SMR	100Ld4				
	38	710	37,23	3,29	SMR	100Ld4				
	43	627	33,14	3,64	SMR	100Ld4				
	45	599	31,60	3,74	SMR	100Ld4				
	52	519	27,13	4,15	SMR	100Ld4				
	31	870	45,90	2,26	KG63	SMB	100Ld4			
	33	817	43,20	2,37	KG63	SMB	100Ld4			
	36	749	39,32	2,52	KG63	SMB	100Ld4			
	40	674	35,28	2,71	KG63	SMR	100Ld4			
	44	613	32,00	2,87	KG63	SMR	100Ld4			
	48	562	29,56	3,07	KG63	SMR	100Ld4			
	54	499	26,06	3,35	KG63	SMR	100Ld4			
	61	442	23,17	3,68	KG63	SMR	100Ld4			
	68	397	20,62	4,01	KG63	SMR	100Ld4			
	72	375	19,66	4,17	KG63	SMR	100Ld4			
	17	1586	80,73	0,98	KG53	SMB	100Ld4	79	426	
	20	1348	70,36	1,15		SMB	100Ld4			
	21	1284	66,22	1,21		SMB	100Ld4			
	23	1172	61,09	1,32		SMB	100Ld4			
	26	1037	54,98	1,49		SMR	100Ld4			
	29	930	49,45	1,67		SMR	100Ld4			
	31	870	46,16	1,78		SMR	100Ld4			
	35	770	40,52	2,01		SMR	100Ld4			
	39	691	35,86	2,23		SMR	100Ld4			
	47	574	30,21	2,57		SMR	100Ld4			
	55	490	25,73	2,88		SMR	100Ld4			
	64	421	22,09	3,21		SMR	100Ld4			
	74	364	19,08	3,55		SMR	100Ld4			
	85	317	16,54	3,90		SMR	100Ld4			
	27	999	52,36	1,23		KG53	SMB			100Ld4
	33	817	43,05	1,43		KG53	SMB			100Ld4
	38	710	37,53	1,58		KG53	SMB			100Ld4
	40	674	35,32	1,64		KG53	SMB			100Ld4

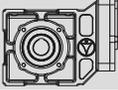
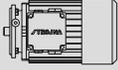


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>b</sub>			m						
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]						
3,00	43	627	32,58	1,72		KG53	SMB	100Ld4	79	426			
	48	562	29,32	1,87		KG53	SMR	100Ld4					
	53	509	26,38	2,00		KG53	SMR	100Ld4					
	57	473	24,62	2,11		KG53	SMR	100Ld4					
	65	415	21,61	2,29		KG53	SMR	100Ld4					
	88	306	16,11	2,88		KG53	SMR	100Ld4					
	103	262	13,72	3,22		KG53	SMR	100Ld4					
	120	225	11,78	3,59		KG53	SMR	100Ld4					
	139	194	10,17	3,98		KG53	SMR	100Ld4					
	160	169	8,82	4,38		KG53	SMR	100Ld4					
	34	809	40,92	1,01		KG42	SMB	100Ld4			68	420	
	40	688	35,67	1,16		KG42	SMB	100Ld4					
	42	655	33,57	1,20		KG42	SMB	100Ld4					
	46	598	30,97	1,28		KG42	SMB	100Ld4					
	51	540	27,87	1,38		KG42	SMR	100Ld4					
	56	491	25,07	1,48		KG42	SMR	100Ld4					
60	459	23,40	1,55	KG42	SMR	100Ld4							
69	399	20,54	1,72	KG42	SMR	100Ld4							
78	353	18,18	1,86	KG42	SMR	100Ld4							
92	299	15,31	2,10	KG42	SMR	100Ld4							
108	255	13,04	2,37	KG42	SMR	100Ld4							
126	218	11,20	2,67	KG42	SMR	100Ld4							
146	188	9,67	2,98	KG42	SMR	100Ld4							
168	164	8,38	3,29	KG42	SMR	100Ld4							
4,00	82	336	17,22	1,25		KG32	SMR	100Ld4	51	416			
	94	293	14,96	1,37		KG32	SMR	100Ld4					
	108	255	13,09	1,52		KG32	SMR	100Ld4					
	130	212	10,83	1,74		KG32	SMR	100Ld4					
	156	176	9,03	1,99		KG32	SMR	100Ld4					
	186	148	7,57	2,25		KG32	SMR	100Ld4					
	209	132	6,73	2,46		KG32	SMR	100Ld4					
	199	138	7,07	1,13		KG22	SMR	100Ld4			39	412	
	2,8	12584	516,23	1,07			KG94	SMB			112M4	523	452
	3	11745	469,90	1,15			KG94	SMB			112M4		
3,4	10363	421,59	1,30	KG94	SMR		112M4						
3,7	9523	382,39	1,42	KG94	SMR		112M4						
4	8809	353,21	1,53	KG94	SMR		112M4						
4,6	7660	311,38	1,76	KG94	SMR		112M4						
5,1	6909	276,82	1,95	KG94	SMR		112M4						
5,8	6075	246,38	2,22	KG94	SMR		112M4						
6	5872	234,95	2,30	KG94	SMR		112M4						
7	5033	201,75	2,68	KG94	SMR		112M4						
8,1	4350	174,77	3,10	KG94	SMR		112M4						
9	3915	157,33	3,45	KG94	SMR		112M4						
11	3203	133,59	4,21	KG94	SMR		112M4						
4,7	7497	302,36	1,09		KG84		SMR	112M4	299	446			
5	7047	282,23	1,16		KG84		SMR	112M4					
5,7	6181	247,73	1,33		KG84		SMR	112M4					

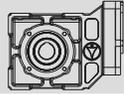
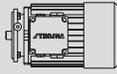


P	$n_2$	$Mt_2$	i	$f_b$			m		
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]		
4,00	6,5	5421	219,23	1,51	KG84	SMR	112M4	299	446
	7,7	4576	184,70	1,79					
	9	3915	157,31	2,09					
	11	3203	135,06	2,56					
	12	2936	116,62	2,79					
	14	2517	101,10	3,26					
	17	2073	83,85	3,96					
8	4404	177,88	1,07	KG74	SMR	112M4	185	440	
9,3	3789	153,45	1,24	KG74	SMR	112M4			
11	3203	126,44	1,47	KG74	SMR	112M4			
10	3595	141,36	1,31	KG73	SMB	112M4	178	438	
12	2996	121,14	1,57	KG73	SMB	112M4			
13	2766	110,77	1,70	KG73	SMB	112M4			
14	2568	98,29	1,83	KG73	SMB	112M4			
16	2247	87,43	2,09	KG73	SMB	112M4			
17	2115	82,29	2,22	KG73	SMB	112M4			
19	1892	74,90	2,48	KG73	SMB	112M4			
21	1712	67,20	2,75	KG73	SMR	112M4			
23	1563	60,95	3,01	KG73	SMR	112M4			
25	1438	56,30	3,27	KG73	SMR	112M4			
29	1240	49,63	3,79	KG73	SMR	112M4			
32	1124	44,12	4,18	KG73	SMR	112M4			
19	1892	74,22	2,24	KG73	SMB	112M4			
22	1634	63,60	2,50	KG73	SMB	112M4			
24	1498	58,15	2,66	KG73	SMB	112M4			
28	1284	51,60	3,02	KG73	SMB	112M4			
31	1160	45,90	3,25	KG73	SMB	112M4			
33	1090	43,20	3,40	KG73	SMB	112M4			
36	999	39,32	3,63	KG73	SMB	112M4			
40	899	35,28	3,93	KG73	SMR	112M4			
44	817	32,00	4,19	KG73	SMR	112M4			
48	749	29,56	4,49	KG73	SMR	112M4			
14	2568	102,21	1,09	KG63	SMB	112M4	116	432	
15	2397	93,46	1,17	KG63	SMB	112M4			
17	2115	82,93	1,32	KG63	SMB	112M4			
19	1892	73,77	1,48	KG63	SMB	112M4			
20	1798	69,43	1,54	KG63	SMB	112M4			
22	1634	63,20	1,65	KG63	SMB	112M4			
25	1438	56,70	1,83	KG63	SMR	112M4			
28	1284	51,43	1,97	KG63	SMR	112M4			
30	1198	47,50	2,07	KG63	SMR	112M4			
34	1057	41,88	2,27	KG63	SMR	112M4			
38	946	37,23	2,47	KG63	SMR	112M4			
43	836	33,14	2,73	KG63	SMR	112M4			
45	799	31,60	2,80	KG63	SMR	112M4			
52	691	27,13	3,11	KG63	SMR	112M4			
60	599	23,50	3,45	KG63	SMR	112M4			
67	537	21,16	3,77	KG63	SMR	112M4			

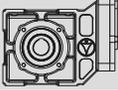
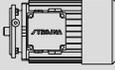
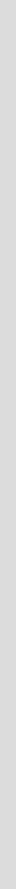


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m		
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]		
4,00	79	455	17,97	4,21		KG63	SMR	112M4	
	31	1160	45,90	1,70		KG63	SMB	112M4	
	33	1090	43,20	1,77		KG63	SMB	112M4	
	36	999	39,32	1,89		KG63	SMB	112M4	
	40	899	35,28	2,04		KG63	SMR	112M4	
	44	817	32,00	2,15		KG63	SMR	112M4	
	48	749	29,56	2,30		KG63	SMR	112M4	
	54	666	26,06	2,51		KG63	SMR	112M4	
	61	589	23,17	2,76		KG63	SMR	112M4	
	69	521	20,62	3,05		KG63	SMR	112M4	
	72	499	19,66	3,13		KG63	SMR	112M4	
	84	428	16,88	3,50		KG63	SMR	112M4	
	97	371	14,63	3,89		KG63	SMR	112M4	
	108	333	13,17	4,23		KG63	SMR	112M4	
	26	1383	54,98	1,12		KG53	SMR	112M4	
	29	1240	49,45	1,25		KG53	SMR	112M4	
	31	1160	46,16	1,34		KG53	SMR	112M4	
	35	1027	40,52	1,51		KG53	SMR	112M4	
40	899	35,86	1,72	KG53	SMR	112M4			
47	765	30,21	1,93	KG53	SMR	112M4			
55	654	25,73	2,16	KG53	SMR	112M4			
64	562	22,09	2,41	KG53	SMR	112M4			
74	486	19,08	2,66	KG53	SMR	112M4			
86	418	16,54	2,96	KG53	SMR	112M4			
104	346	13,71	3,36	KG53	SMR	112M4			
33	1090	43,05	1,07	KG53	SMB	112M4			
38	946	37,53	1,18	KG53	SMB	112M4			
44	817	32,58	1,32	KG53	SMB	112M4			
48	749	29,32	1,40	KG53	SMR	112M4			
54	666	26,38	1,53	KG53	SMR	112M4			
58	620	24,62	1,61	KG53	SMR	112M4			
66	545	21,61	1,74	KG53	SMR	112M4			
88	409	16,11	2,16	KG53	SMR	112M4			
103	349	13,72	2,42	KG53	SMR	112M4			
121	297	11,78	2,72	KG53	SMR	112M4			
140	257	10,17	3,01	KG53	SMR	112M4			
161	223	8,82	3,31	KG53	SMR	112M4			
194	185	7,31	3,74	KG53	SMR	112M4			
51	719	27,87	1,04	KG42	SMR	112M4			
57	644	25,07	1,13	KG42	SMR	112M4			
61	601	23,40	1,18	KG42	SMR	112M4			
69	532	20,54	1,29	KG42	SMR	112M4			
78	470	18,18	1,39	KG42	SMR	112M4			
93	394	15,31	1,59	KG42	SMR	112M4			
109	337	13,04	1,80	KG42	SMR	112M4			
127	289	11,20	2,02	KG42	SMR	112M4			
147	250	9,67	2,25	KG42	SMR	112M4			
169	217	8,38	2,48	KG42	SMR	112M4			

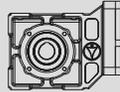
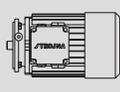
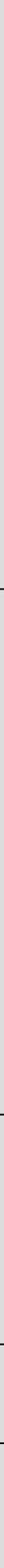


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m	
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]	
4,00	204	180	6,95	2,84	KG42	SMR 112M4	74	420
	95	386	14,96	1,04	KG32	SMR 112M4		
	108	340	13,09	1,14	KG32	SMR 112M4		
	131	280	10,83	1,32	KG32	SMR 112M4		
	157	234	9,03	1,50	KG32	SMR 112M4		
	188	195	7,57	1,71	KG32	SMR 112M4		
	211	174	6,73	1,86	KG32	SMR 112M4		
5,50	3,8	12749	382,39	1,06	KG94	SMB 132S4	548	452
	4,1	11816	353,21	1,14	KG94	SMB 132S4		
	4,7	10308	311,38	1,31	KG94	SMR 132S4		
	5,2	9317	276,82	1,45	KG94	SMR 132S4		
	5,9	8211	246,38	1,64	KG94	SMR 132S4		
	6,2	7814	234,95	1,73	KG94	SMR 132S4		
	7,2	6729	201,75	2,01	KG94	SMR 132S4		
	8,3	5837	174,77	2,31	KG94	SMR 132S4		
	9,2	5266	157,33	2,56	KG94	SMR 132S4		
	11	4404	133,59	3,07	KG94	SMR 132S4		
	13	3727	112,67	3,62	KG94	SMR 132S4		
	15	3230	99,13	4,18	KG94	SMR 132S4		
	8,5	5816	170,73	2,32	KG93	SMB 132S4		
	9,3	5316	156,36	2,54	KG93	SMB 132S4		
	10	4944	140,35	2,73	KG93	SMB 132S4		
	11	4494	126,12	3,00	KG93	SMB 132S4		
	13	3803	114,27	3,55	KG93	SMB 132S4		
	14	3531	104,24	3,82	KG93	SMB 132S4		
	15	3296	95,64	4,10	KG93	SMB 132S4		
	17	2908	83,38	2,73	KG93	SMB 132S4		
	19	2602	76,36	2,98	KG93	SMB 132S4		
	21	2354	68,55	3,20	KG93	SMB 132S4		
	24	2060	61,60	3,56	KG93	SMB 132S4		
	26	1901	55,81	3,76	KG93	SMB 132S4		
	28	1766	50,91	3,91	KG93	SMB 132S4		
	31	1595	46,71	4,25	KG93	SMB 132S4		
	6,6	7341	219,23	1,12	KG84	SMR 132S4	324	446
	7,9	6133	184,70	1,34	KG84	SMR 132S4		
	9,2	5266	157,31	1,56	KG84	SMR 132S4		
	11	4404	135,06	1,86	KG84	SMR 132S4		
	12	4037	116,62	2,03	KG84	SMR 132S4		
14	3461	101,10	2,37	KG84	SMR 132S4			
17	2850	83,85	2,88	KG84	SMR 132S4			
9,1	5433	159,92	1,51	KG83	SMB 132S4	303	444	
10	4944	142,88	1,66	KG83	SMB 132S4			
12	4120	120,38	1,99	KG83	SMB 132S4			
13	3803	110,08	2,16	KG83	SMB 132S4			
15	3296	98,55	2,49	KG83	SMB 132S4			
16	3090	88,36	2,65	KG83	SMB 132S4			
18	2746	79,88	2,99	KG83	SMB 132S4			
20	2472	72,69	3,32	KG83	SMB 132S4			

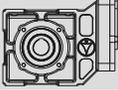
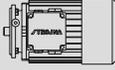


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m			
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]			
5,50	22	2247	66,54	3,65		KG83	SMB	132S4	303	444
	26	1901	56,53	4,31		KG83	SMR	132S4		
	21	2354	70,30	2,62		KG83	SMB	132S4		
	24	2060	59,23	2,86		KG83	SMB	132S4		
	27	1831	54,16	3,15		KG83	SMB	132S4		
	30	1648	48,49	3,39		KG83	SMB	132S4		
	33	1498	43,48	3,63		KG83	SMB	132S4		
	37	1336	39,30	3,96		KG83	SMB	132S4		
	41	1206	35,77	4,27		KG83	SMB	132S4		
	44	1124	32,74	4,45		KG83	SMB	132S4		
	12	4120	121,14	1,14			KG73	SMB		
13	3803	110,77	1,24	KG73	SMB		132S4			
15	3296	98,29	1,43	KG73	SMB		132S4			
17	2908	87,43	1,62	KG73	SMB		132S4			
18	2746	82,29	1,71	KG73	SMB		132S4			
19	2602	74,90	1,81	KG73	SMB		132S4			
22	2247	67,20	2,09	KG73	SMB		132S4			
24	2060	60,95	2,28	KG73	SMB		132S4			
26	1901	56,30	2,47	KG73	SMB		132S4			
29	1705	49,63	2,76	KG73	SMR		132S4			
33	1498	44,12	3,14	KG73	SMR		132S4			
37	1336	39,27	3,52	KG73	SMR		132S4			
39	1268	37,45	3,71	KG73	SMR		132S4			
45	1099	32,16	4,28	KG73	SMR		132S4			
23	2149	63,60	1,90	KG73	SMB		132S4			
25	1977	58,15	2,02	KG73	SMB		132S4			
28	1766	51,60	2,19	KG73	SMB		132S4			
32	1545	45,90	2,44	KG73	SMB		132S4			
34	1454	43,20	2,55	KG73	SMB		132S4			
41	1206	35,28	2,93	KG73	SMB		132S4			
49	1009	29,56	3,34	KG73	SMB		132S4			
56	883	26,06	3,72	KG73	SMR		132S4			
63	785	23,17	4,09	KG73	SMR		132S4			
70	706	20,62	4,45	KG73	SMR		132S4			
17	2908	82,93	0,96		KG63	SMB	132S4	141	432	
20	2472	73,77	1,13		KG63	SMB	132S4			
21	2354	69,43	1,18		KG63	SMB	132S4			
23	2149	63,20	1,26		KG63	SMB	132S4			
26	1901	56,70	1,38		KG63	SMB	132S4			
28	1766	51,43	1,43		KG63	SMB	132S4			
31	1595	47,50	1,55		KG63	SMB	132S4			
35	1412	41,88	1,70		KG63	SMR	132S4			
39	1268	37,23	1,84		KG63	SMR	132S4			
44	1124	33,14	2,03		KG63	SMR	132S4			
46	1075	31,60	2,08		KG63	SMR	132S4			
53	933	27,13	2,31		KG63	SMR	132S4			
62	797	23,50	2,60		KG63	SMR	132S4			
69	716	21,16	2,82		KG63	SMR	132S4			

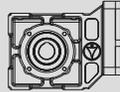
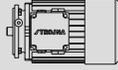


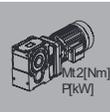
P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m				
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]				
5,50	81	610	17,97	3,14		KG63	SMR 132S4	141	432		
	96	515	15,15	3,52		KG63	SMR 132S4				
	109	454	13,33	3,45		KG63	SMR 132S4				
	123	402	11,81	4,15		KG63	SMR 132S4				
	37	1336	39,32	1,41		KG63	SMB 132S4				
	41	1206	35,28	1,52		KG63	SMB 132S4				
	45	1099	32,00	1,60		KG63	SMB 132S4				
	49	1009	29,56	1,71		KG63	SMB 132S4				
	56	883	26,06	1,90		KG63	SMR 132S4				
	63	785	23,17	2,07		KG63	SMR 132S4				
	70	706	20,62	2,25		KG63	SMR 132S4				
	74	668	19,66	2,34		KG63	SMR 132S4				
	86	575	16,88	2,61		KG63	SMR 132S4				
	99	499	14,63	2,89		KG63	SMR 132S4				
	110	449	13,17	3,14		KG63	SMR 132S4				
	130	380	11,18	3,51		KG63	SMR 132S4				
	154	321	9,43	3,94		KG63	SMR 132S4				
	175	282	8,30	4,26		KG63	SMR 132S4				
	31	1595	46,16	0,97		KG53	SMB 132S4			109	426
	36	1373	40,52	1,13		KG53	SMR 132S4				
40	1236	35,86	1,25	KG53	SMR 132S4						
48	1030	30,21	1,43	KG53	SMR 132S4						
56	883	25,73	1,60	KG53	SMR 132S4						
66	749	22,09	1,80	KG53	SMR 132S4						
76	650	19,08	1,99	KG53	SMR 132S4						
88	562	16,54	2,20	KG53	SMR 132S4						
106	466	13,71	2,49	KG53	SMR 132S4						
59	838	24,62	1,19	KG53	SMB 132S4						
67	738	21,61	1,29	KG53	SMR 132S4						
90	549	16,11	1,60	KG53	SMR 132S4						
123	402	11,78	2,01	KG53	SMR 132S4						
143	346	10,17	2,24	KG53	SMR 132S4						
164	301	8,82	2,45	KG53	SMR 132S4						
198	250	7,31	2,78	KG53	SMR 132S4						
80	631	18,18	1,04	KG42	SMR 132S4	99	420				
95	531	15,31	1,18	KG42	SMR 132S4						
111	454	13,04	1,33	KG42	SMR 132S4						
129	391	11,20	1,49	KG42	SMR 132S4						
150	336	9,67	1,67	KG42	SMR 132S4						
173	292	8,38	1,85	KG42	SMR 132S4						
209	241	6,95	2,12	KG42	SMR 132S4						
161	313	9,03	1,12	KG32	SMR 132S4			81	416		
192	263	7,57	1,27	KG32	SMR 132S4						
215	235	6,73	1,38	KG32	SMR 132S4						
5,2	12705	276,82	1,06	KG94	SMR 132M4	559	452				
5,9	11197	246,38	1,21	KG94	SMR 132M4						
6,2	10656	234,95	1,27	KG94	SMR 132M4						
7,2	9176	201,75	1,47	KG94	SMR 132M4						
7,50											

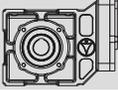
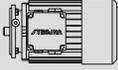


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m		
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]		
7,50	8,3	7960	174,77	1,70	KG94	SMR	132M4	559	452
	9,2	7181	157,33	1,88					
	11	6006	133,59	2,25					
	13	5082	112,67	2,66					
	15	4404	99,13	3,07					
	17	3886	87,83	3,47					
8,5	7931	170,73	1,70	KG93	SMB	132M4	518	450	
9,3	7249	156,36	1,86	KG93	SMB	132M4			
10	6741	140,35	2,00	KG93	SMB	132M4			
11	6128	126,12	2,20	KG93	SMB	132M4			
13	5186	114,27	2,60	KG93	SMB	132M4			
14	4815	104,24	2,80	KG93	SMB	132M4			
15	4494	95,64	3,00	KG93	SMB	132M4			
18	3745	81,67	3,60	KG93	SMR	132M4			
19	3548	75,92	3,80	KG93	SMR	132M4			
20	3371	70,80	4,01	KG93	SMR	132M4			
17	3965	83,38	2,00	KG93	SMB	132M4			
21	3210	68,55	2,35	KG93	SMB	132M4			
24	2809	61,60	2,61	KG93	SMB	132M4			
26	2593	55,81	2,76	KG93	SMB	132M4			
28	2408	50,91	2,87	KG93	SMB	132M4			
31	2175	46,71	3,11	KG93	SMB	132M4			
36	1873	39,89	3,49	KG93	SMR	132M4			
39	1729	37,08	3,72	KG93	SMR	132M4			
42	1605	34,58	3,94	KG93	SMR	132M4			
48	1404	30,33	4,37	KG93	SMR	132M4			
9,2	7181	157,31	1,14	KG84	SMR	132M4	335	446	
11	6006	135,06	1,37	KG84	SMR	132M4			
12	5505	116,62	1,49	KG84	SMR	132M4			
14	4719	101,10	1,74	KG84	SMR	132M4			
17	3886	83,85	2,11	KG84	SMR	132M4			
9,1	7408	159,92	1,11	KG83	SMB	132M4	314	444	
10	6741	142,88	1,22	KG83	SMB	132M4			
12	5618	120,38	1,46	KG83	SMB	132M4			
13	5186	110,08	1,58	KG83	SMB	132M4			
15	4494	98,55	1,82	KG83	SMB	132M4			
16	4213	88,36	1,95	KG83	SMB	132M4			
18	3745	79,88	2,19	KG83	SMB	132M4			
20	3371	72,69	2,43	KG83	SMB	132M4			
22	3064	66,54	2,68	KG83	SMB	132M4			
26	2593	56,53	3,16	KG83	SMR	132M4			
28	2408	52,41	3,41	KG83	SMR	132M4			
30	2247	48,75	3,65	KG83	SMR	132M4			
34	1983	42,53	4,14	KG83	SMR	132M4			
21	3210	70,30	1,92	KG83	SMB	132M4			
24	2809	59,23	2,10	KG83	SMB	132M4			
27	2497	54,16	2,31	KG83	SMB	132M4			
30	2247	48,49	2,49	KG83	SMB	132M4			

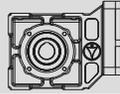
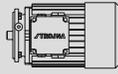


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m		
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]		
7,50	33	2043	43,48	2,66	KG83	SMB	132M4	314	444
	37	1822	39,30	2,90		SMB	132M4		
	41	1644	35,77	3,13		SMB	132M4		
	44	1532	32,74	3,26		SMB	132M4		
	52	1296	27,82	3,72		SMR	132M4		
	56	1204	25,79	3,93		SMR	132M4		
	60	1124	23,99	4,14		SMR	132M4		
15	4494	98,29	1,05	KG73	SMB	132M4	214	438	
17	3965	87,43	1,19	KG73	SMB	132M4			
18	3745	82,29	1,25	KG73	SMB	132M4			
19	3548	74,90	1,32	KG73	SMB	132M4			
22	3064	67,20	1,53	KG73	SMB	132M4			
24	2809	60,95	1,67	KG73	SMB	132M4			
26	2593	56,30	1,81	KG73	SMB	132M4			
29	2325	49,63	2,02	KG73	SMR	132M4			
33	2043	44,12	2,30	KG73	SMR	132M4			
37	1822	39,27	2,58	KG73	SMR	132M4			
39	1729	37,45	2,72	KG73	SMR	132M4			
45	1498	32,16	3,14	KG73	SMR	132M4			
52	1296	27,86	3,63	KG73	SMR	132M4			
58	1162	25,08	4,04	KG73	SMR	132M4			
23	2931	63,60	1,39	KG73	SMB	132M4			
25	2697	58,15	1,48	KG73	SMB	132M4			
28	2408	51,60	1,61	KG73	SMB	132M4			
32	2107	45,90	1,79	KG73	SMB	132M4			
34	1983	43,20	1,87	KG73	SMB	132M4			
41	1644	35,28	2,15	KG73	SMB	132M4			
49	1376	29,56	2,45	KG73	SMB	132M4			
56	1204	26,06	2,73	KG73	SMR	132M4			
63	1070	23,17	3,00	KG73	SMR	132M4			
70	963	20,62	3,26	KG73	SMR	132M4			
74	911	19,66	3,41	KG73	SMR	132M4			
86	784	16,88	3,84	KG73	SMR	132M4			
99	681	14,63	4,29	KG73	SMR	132M4			
28	2408	51,43	1,05	KG63	SMB	132M4			152
31	2175	47,50	1,14	KG63	SMB	132M4			
35	1926	41,88	1,25	KG63	SMR	132M4			
39	1729	37,23	1,35	KG63	SMR	132M4			
44	1532	33,14	1,49	KG63	SMR	132M4			
46	1465	31,60	1,53	KG63	SMR	132M4			
53	1272	27,13	1,69	KG63	SMR	132M4			
62	1087	23,50	1,90	KG63	SMR	132M4			
69	977	21,16	2,07	KG63	SMR	132M4			
81	832	17,97	2,30	KG63	SMR	132M4			
96	702	15,15	2,58	KG63	SMR	132M4			
109	618	13,33	2,53	KG63	SMR	132M4			
123	548	11,81	3,04	KG63	SMR	132M4			
49	1376	29,56	1,25	KG63	SMB	132M4			

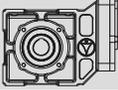
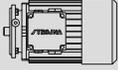


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m		
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]		
7,50	56	1204	26,06	1,39		KG63	SMR 132M4	152	432
	70	963	20,62	1,65		KG63	SMR 132M4		
	74	911	19,66	1,71		KG63	SMR 132M4		
	86	784	16,88	1,91		KG63	SMR 132M4		
	99	681	14,63	2,12		KG63	SMR 132M4		
	110	613	13,17	2,30		KG63	SMR 132M4		
	130	519	11,18	2,57		KG63	SMR 132M4		
	154	438	9,43	2,89		KG63	SMR 132M4		
	175	385	8,30	3,12		KG63	SMR 132M4		
	197	342	7,35	3,40		KG63	SMR 132M4		
	48	1404	30,21	1,05		KG53	SMR 132M4		
	56	1204	25,73	1,17		KG53	SMR 132M4		
	66	1021	22,09	1,32		KG53	SMR 132M4		
	76	887	19,08	1,46		KG53	SMR 132M4		
	88	766	16,54	1,61		KG53	SMR 132M4		
	106	636	13,71	1,83		KG53	SMR 132M4		
	76	887	19,12	1,04		KG53	SMR 132M4		
	106	636	13,72	1,33		KG53	SMR 132M4		
	123	548	11,78	1,47		KG53	SMR 132M4		
143	471	10,17	1,64	KG53	SMR 132M4				
164	411	8,82	1,80	KG53	SMR 132M4				
198	340	7,31	2,04	KG53	SMR 132M4				
9,20	129	533	11,20	1,09		KG42	SMR 132M4	110	420
	150	459	9,67	1,22		KG42	SMR 132M4		
	173	398	8,38	1,36		KG42	SMR 132M4		
	209	329	6,95	1,55		KG42	SMR 132M4		
	6,1	13285	234,95	1,02		KG94	SMR 132Ma4		
	7,1	11414	201,75	1,18		KG94	SMR 132Ma4		
	8,2	9883	174,77	1,37		KG94	SMR 132Ma4		
	9,2	8809	157,33	1,53		KG94	SMR 132Ma4		
	11	7367	133,59	1,83		KG94	SMR 132Ma4		
	13	6234	112,67	2,17		KG94	SMR 132Ma4		
	15	5403	99,13	2,50		KG94	SMR 132Ma4		
	16	5065	87,83	2,67		KG94	SMR 132Ma4		
	8,4	9844	170,73	1,37		KG93	SMB 132Ma4		
	9,2	8988	156,36	1,50		KG93	SMB 132Ma4		
	10	8269	140,35	1,63		KG93	SMB 132Ma4		
	11	7518	126,12	1,80		KG93	SMB 132Ma4		
	13	6361	114,27	2,12		KG93	SMB 132Ma4		
	14	5907	104,24	2,29		KG93	SMB 132Ma4		
	15	5513	95,64	2,45		KG93	SMB 132Ma4		
18	4594	81,67	2,94	KG93	SMR 132Ma4				
19	4352	75,92	3,10	KG93	SMR 132Ma4				
20	4135	70,80	3,27	KG93	SMR 132Ma4				
23	3595	62,11	3,70	KG93	SMR 132Ma4				
26	3181	55,00	4,06	KG93	SMR 132Ma4				
29	2851	49,07	4,41	KG93	SMR 132Ma4				
21	3938	68,55	1,92	KG93	SMB 132Ma4				

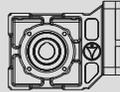
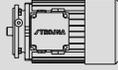


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m		
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]		
9,20	23	3595	61,60	2,04	KG93	SMB	132Ma4	529	450
	26	3181	55,81	2,25		SMB			
	28	2953	50,91	2,34		SMB			
	31	2668	46,71	2,54		SMB			
	36	2297	39,89	2,85		SMR			
	39	2120	37,08	3,03		SMR			
	42	1969	34,58	3,21		SMR			
	47	1759	30,33	3,49		SMR			
	54	1531	26,86	3,89		SMR			
	60	1378	23,96	4,21		SMR			
11	7367	135,06	1,11	KG84	SMR	132Ma4	346	452	
12	6753	116,62	1,21		SMR				
14	5789	101,10	1,42		SMR				
17	4767	83,85	1,72		SMR				
10	8269	142,88	0,99	KG83	SMB	132Ma4	325	444	
12	6891	120,38	1,19		SMB				
13	6361	110,08	1,29		SMB				
15	5513	98,55	1,49		SMB				
16	5168	88,36	1,59		SMB				
18	4594	79,88	1,78		SMB				
20	4135	72,69	1,98		SMB				
22	3759	66,54	2,18		SMB				
25	3308	56,53	2,48		SMR				
27	3063	52,41	2,68		SMR				
30	2756	48,75	2,97		SMR				
34	2432	42,53	3,37		SMR				
38	2176	37,43	3,70		SMR				
43	1923	33,19	4,06		SMR				
24	3446	59,23	1,71		SMB				
33	2506	43,48	2,17		SMB				
37	2235	39,30	2,37		SMB				
40	2067	35,77	2,49		SMB				
44	1879	32,74	2,66		SMB				
52	1590	27,82	3,03		SMR				
56	1477	25,79	3,21	SMR					
60	1378	23,99	3,38	SMR					
69	1198	20,93	3,76	SMR					
78	1060	18,42	4,12	SMR					
19	4352	74,90	1,08	KG73	SMB	132Ma4	225	438	
21	3938	67,20	1,19		SMB				
24	3446	60,95	1,36		SMB				
26	3181	56,30	1,48		SMB				
29	2851	49,63	1,65		SMR				
33	2506	44,12	1,88		SMR				
37	2235	39,27	2,10		SMR				
38	2176	37,45	2,16		SMR				
45	1838	32,16	2,56		SMR				
52	1590	27,86	2,96		SMR				

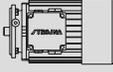


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>b</sub>			m		
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]		
9,20	57	1451	25,08	3,24	KG73	SMR 132Ma4	225	438	
	68	1216	21,29	3,83	KG73	SMR 132Ma4			
	80	1034	17,96	4,26	KG73	SMR 132Ma4			
	91	909	15,80	4,15	KG73	SMR 132Ma4			
	28	2953	51,60	1,31	KG73	SMB 132Ma4			
	31	2668	45,90	1,41	KG73	SMB 132Ma4			
	41	2017	35,28	1,75	KG73	SMB 132Ma4			
	49	1688	29,56	1,99	KG73	SMB 132Ma4			
	55	1504	26,06	2,18	KG73	SMR 132Ma4			
	62	1334	23,17	2,41	KG73	SMR 132Ma4			
	70	1181	20,62	2,66	KG73	SMR 132Ma4			
	73	1133	19,66	2,74	KG73	SMR 132Ma4			
	85	973	16,88	3,09	KG73	SMR 132Ma4			
	98	844	14,63	3,46	KG73	SMR 132Ma4			
	109	759	13,17	3,77	KG73	SMR 132Ma4			
	129	641	11,18	4,27	KG73	SMR 132Ma4			
	34	2432	41,88	0,99	KG63	SMR 132Ma4			
	39	2120	37,23	1,10	KG63	SMR 132Ma4			
	43	1923	33,14	1,19	KG63	SMR 132Ma4			
	46	1798	31,60	1,25	KG63	SMR 132Ma4			
53	1560	27,13	1,38	KG63	SMR 132Ma4				
61	1356	23,50	1,53	KG63	SMR 132Ma4				
68	1216	21,16	1,66	KG63	SMR 132Ma4				
80	1034	17,97	1,85	KG63	SMR 132Ma4				
95	870	15,15	2,09	KG63	SMR 132Ma4				
108	766	13,33	2,04	KG63	SMR 132Ma4				
122	678	11,81	2,46	KG63	SMR 132Ma4	163	432		
45	1838	32,00	0,96	KG63	SMB 132Ma4				
49	1688	29,56	1,02	KG63	SMB 132Ma4				
73	1133	19,66	1,38	KG63	SMR 132Ma4				
85	973	16,88	1,54	KG63	SMR 132Ma4				
98	844	14,63	1,71	KG63	SMR 132Ma4				
109	759	13,17	1,86	KG63	SMR 132Ma4				
129	641	11,18	2,08	KG63	SMR 132Ma4				
153	540	9,43	2,34	KG63	SMR 132Ma4				
174	475	8,30	2,53	KG63	SMR 132Ma4				
196	422	7,35	2,76	KG63	SMR 132Ma4				
65	1272	22,09	1,06	KG53	SMR 132Ma4			131	426
75	1103	19,08	1,17	KG53	SMR 132Ma4				
87	950	16,54	1,30	KG53	SMR 132Ma4				
105	788	13,71	1,47	KG53	SMR 132Ma4				
122	678	11,78	1,19	KG53	SMR 132Ma4				
142	582	10,17	1,33	KG53	SMR 132Ma4				
163	507	8,82	1,45	KG53	SMR 132Ma4				
197	420	7,31	1,65	KG53	SMR 132Ma4				
172	491	8,38	1,10	KG42	SMR 132Ma4				
207	408	6,95	1,25	KG42	SMR 132Ma4				
11,00	8,2	11816	174,77	1,14	KG94	SMR 160M4	584	452	

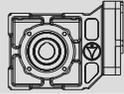
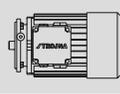


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m		
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]		
11,00	9,2	10532	157,33	1,28	KG94	SMR	160M4	584	452
	11	8809	133,59	1,53					
	13	7453	112,67	1,81					
	15	6460	99,13	2,09					
	16	6056	87,83	2,23					
8,4	11771	170,73	1,15	KG93	SMB	160M4	543	450	
9,2	10747	156,36	1,26	KG93	SMB	160M4			
10	9887	140,35	1,37	KG93	SMB	160M4			
11	8988	126,12	1,50	KG93	SMB	160M4			
13	7606	114,27	1,78	KG93	SMB	160M4			
14	7062	104,24	1,91	KG93	SMB	160M4			
15	6591	95,64	2,05	KG93	SMB	160M4			
18	5493	81,67	2,46	KG93	SMB	160M4			
19	5204	75,92	2,59	KG93	SMB	160M4			
20	4944	70,80	2,73	KG93	SMR	160M4			
23	4299	62,11	3,09	KG93	SMR	160M4			
26	3803	55,00	3,40	KG93	SMR	160M4			
29	3409	49,07	3,68	KG93	SMR	160M4			
33	2996	44,05	4,08	KG93	SMR	160M4			
36	2746	39,75	4,33	KG93	SMR	160M4			
21	4708	68,55	1,60	KG93	SMB	160M4			
23	4299	61,60	1,71	KG93	SMB	160M4			
26	3803	55,81	1,88	KG93	SMB	160M4			
28	3531	50,91	1,95	KG93	SMB	160M4			
31	3189	46,71	2,12	KG93	SMB	160M4			
36	2746	39,89	2,38	KG93	SMB	160M4			
39	2535	37,08	2,54	KG93	SMB	160M4			
42	2354	34,58	2,69	KG93	SMR	160M4			
47	2104	30,33	2,92	KG93	SMR	160M4			
54	1831	26,86	3,26	KG93	SMR	160M4			
60	1648	23,96	3,52	KG93	SMR	160M4			
67	1476	21,52	3,82	KG93	SMR	160M4			
74	1336	19,42	4,11	KG93	SMR	160M4			
82	1206	17,60	4,44	KG93	SMR	160M4			
13	7606	110,08	1,08	KG83	SMB	160M4	339	444	
15	6591	98,55	1,24	KG83	SMB	160M4			
16	6180	88,36	1,33	KG83	SMB	160M4			
18	5493	79,88	1,49	KG83	SMB	160M4			
20	4944	72,69	1,66	KG83	SMB	160M4			
22	4494	66,54	1,82	KG83	SMB	160M4			
25	3955	56,53	2,07	KG83	SMB	160M4			
27	3662	52,41	2,24	KG83	SMB	160M4			
30	3296	48,75	2,49	KG83	SMR	160M4			
34	2908	42,53	2,82	KG83	SMR	160M4			
38	2602	37,43	3,10	KG83	SMR	160M4			
43	2299	33,19	3,40	KG83	SMR	160M4			
49	2018	29,60	3,76	KG83	SMR	160M4			
54	1831	26,52	4,02	KG83	SMR	160M4			

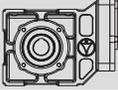
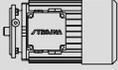


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>b</sub>			m					
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]					
11,00	60	1648	23,85	4,34		KG83	SMR	160M4	339	444		
	33	2996	43,48	1,81		KG83	SMB	160M4				
	37	2672	39,30	1,98		KG83	SMB	160M4				
	40	2472	35,77	2,08		KG83	SMB	160M4				
	44	2247	32,74	2,22		KG83	SMB	160M4				
	52	1901	27,82	2,53		KG83	SMB	160M4				
	56	1766	25,79	2,68		KG83	SMB	160M4				
	69	1433	20,93	3,15		KG83	SMR	160M4				
	78	1268	18,42	3,45		KG83	SMR	160M4				
	88	1124	16,33	3,77		KG83	SMR	160M4				
	99	999	14,56	4,12		KG83	SMR	160M4				
	110	899	13,05	4,44		KG83	SMR	160M4				
	24	4120	60,95	1,14			KG73	SMB			160M4	239
26	3803	56,30	1,24	KG73	SMB		160M4					
29	3409	49,63	1,38	KG73	SMB		160M4					
33	2996	44,12	1,57	KG73	SMB		160M4					
37	2672	39,27	1,76	KG73	SMB		160M4					
38	2602	37,45	1,81	KG73	SMR		160M4					
45	2197	32,16	2,14	KG73	SMR		160M4					
52	1901	27,86	2,47	KG73	SMR		160M4					
57	1735	25,08	2,71	KG73	SMR		160M4					
68	1454	21,29	3,20	KG73	SMR		160M4					
80	1236	17,96	3,56	KG73	SMR		160M4					
91	1087	15,80	3,47	KG73	SMR		160M4					
103	960	14,00	4,20	KG73	SMR		160M4					
41	2412	35,28	1,46	KG73	SMB		160M4					
49	2018	29,56	1,67	KG73	SMB		160M4					
55	1798	26,06	1,83	KG73	SMB		160M4					
62	1595	23,17	2,01	KG73	SMB		160M4					
70	1412	20,62	2,22	KG73	SMB		160M4					
73	1354	19,66	2,29	KG73	SMR		160M4					
85	1163	16,88	2,59	KG73	SMR		160M4					
98	1009	14,63	2,90	KG73	SMR		160M4					
109	907	13,17	3,16	KG73	SMR		160M4					
129	766	11,18	3,57	KG73	SMR		160M4					
153	646	9,43	4,01	KG73	SMR		160M4					
174	568	8,30	3,90	KG73	SMR		160M4					
46	2149	31,60	1,04		KG63		SMR	160M4	177	432		
53	1866	27,13	1,15		KG63		SMR	160M4				
61	1621	23,50	1,28		KG63		SMR	160M4				
68	1454	21,16	1,39		KG63	SMR	160M4					
80	1236	17,97	1,55		KG63	SMR	160M4					
95	1041	15,15	1,74		KG63	SMR	160M4					
108	915	13,33	1,71		KG63	SMR	160M4					
122	810	11,81	2,06		KG63	SMR	160M4					
73	1354	19,66	1,15		KG63	SMR	160M4					
85	1163	16,88	1,29		KG63	SMR	160M4					
98	1009	14,63	1,43		KG63	SMR	160M4					

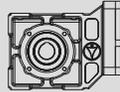
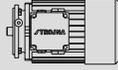
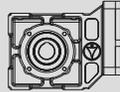
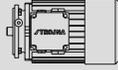
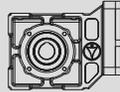
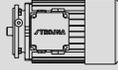
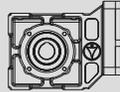
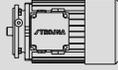


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m	
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]	
11,00	109	907	13,17	1,55	KG63	SMR 160M4	177	432
	129	766	11,18	1,74	KG63	SMR 160M4		
	153	646	9,43	1,96	KG63	SMR 160M4		
	174	568	8,30	2,12	KG63	SMR 160M4		
	196	504	7,35	2,30	KG63	SMR 160M4		
	87	1136	16,54	1,09	KG53	SMR 160M4	145	426
	105	942	13,71	1,23	KG53	SMR 160M4		
	142	696	10,17	1,11	KG53	SMR 160M4		
	163	607	8,82	1,22	KG53	SMR 160M4		
	197	502	7,31	1,38	KG53	SMR 160M4		
15,00	11	12012	133,59	1,12	KG94	SMR 160L4	613	452
	13	10164	112,67	1,33	KG94	SMR 160L4		
	15	8809	99,13	1,53	KG94	SMR 160L4		
	16	8258	87,83	1,63	KG94	SMR 160L4		
	10	13483	140,35	1,00	KG93	SMB 160L4	572	450
	11	12257	126,12	1,10	KG93	SMB 160L4		
	13	10371	114,27	1,30	KG93	SMB 160L4		
	14	9630	104,24	1,40	KG93	SMB 160L4		
	15	8988	95,64	1,50	KG93	SMB 160L4		
	18	7490	81,67	1,80	KG93	SMB 160L4		
	19	7096	75,92	1,90	KG93	SMB 160L4		
	20	6741	70,80	2,00	KG93	SMR 160L4		
	23	5862	62,11	2,27	KG93	SMR 160L4		
	26	5186	55,00	2,49	KG93	SMR 160L4		
	29	4649	49,07	2,70	KG93	SMR 160L4		
	33	4086	44,05	2,99	KG93	SMR 160L4		
	36	3745	39,75	3,18	KG93	SMR 160L4		
	40	3371	36,03	3,44	KG93	SMR 160L4		
	42	3210	34,35	3,57	KG93	SMR 160L4		
	48	2809	29,89	3,92	KG93	SMR 160L4		
	31	4349	46,71	1,56	KG93	SMB 160L4		
	39	3457	37,08	1,86	KG93	SMB 160L4		
	47	2869	30,33	2,14	KG93	SMR 160L4		
	54	2497	26,86	2,39	KG93	SMR 160L4		
	60	2247	23,96	2,58	KG93	SMR 160L4		
	67	2012	21,52	2,80	KG93	SMR 160L4		
	74	1822	19,42	3,02	KG93	SMR 160L4		
	82	1644	17,60	3,26	KG93	SMR 160L4		
	86	1568	16,77	3,37	KG93	SMR 160L4		
	99	1362	14,60	3,73	KG93	SMR 160L4		
	16	8427	88,36	0,97	KG83	SMB 160L4	368	444
	18	7490	79,88	1,09	KG83	SMB 160L4		
	20	6741	72,69	1,22	KG83	SMB 160L4		
	22	6128	66,54	1,34	KG83	SMB 160L4		
25	5393	56,53	1,52	KG83	SMB 160L4			
27	4994	52,41	1,64	KG83	SMB 160L4			
30	4494	48,75	1,82	KG83	SMR 160L4			
34	3965	42,53	2,07	KG83	SMR 160L4			

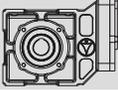
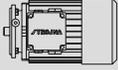


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m		
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]		
15,00	38	3548	37,43	2,27	KG83	SMR	160L4	368	444
	43	3135	33,19	2,49		SMR	160L4		
	49	2752	29,60	2,76		SMR	160L4		
	54	2497	26,52	2,95		SMR	160L4		
	60	2247	23,85	3,18		SMR	160L4		
	64	2107	22,65	3,35		SMR	160L4		
	74	1822	19,46	3,70		SMR	160L4		
	30	4494	48,49	1,24		SMB	160L4		
	33	4086	43,48	1,33		SMB	160L4		
	37	3644	39,30	1,45		SMB	160L4		
	40	3371	35,77	1,53		SMB	160L4		
	44	3064	32,74	1,63		SMB	160L4		
	52	2593	27,82	1,86		SMB	160L4		
	56	2408	25,79	1,97		SMB	160L4		
	60	2247	23,99	2,07		SMR	160L4		
	69	1954	20,93	2,31		SMR	160L4		
	78	1729	18,42	2,53		SMR	160L4		
	88	1532	16,33	2,77		SMR	160L4		
	99	1362	14,56	3,02		SMR	160L4		
	110	1226	13,05	3,26		SMR	160L4		
123	1096	11,74	3,54	SMR	160L4				
129	1045	11,14	3,66	SMR	160L4				
150	899	9,57	4,07	SMR	160L4				
29	4649	49,63	1,01	KG73	SMB	160L4	268	438	
33	4086	44,12	1,15	KG73	SMB	160L4			
37	3644	39,27	1,29	KG73	SMB	160L4			
38	3548	37,45	1,32	KG73	SMR	160L4			
45	2996	32,16	1,57	KG73	SMR	160L4			
52	2593	27,86	1,81	KG73	SMR	160L4			
57	2365	25,08	1,99	KG73	SMR	160L4			
68	1983	21,29	2,35	KG73	SMR	160L4			
80	1685	17,96	2,61	KG73	SMR	160L4			
91	1482	15,80	2,54	KG73	SMR	160L4			
103	1309	14,00	3,08	KG73	SMR	160L4			
41	3288	35,28	1,07	KG73	SMB	160L4			
49	2752	29,56	1,22	KG73	SMB	160L4			
55	2451	26,06	1,34	KG73	SMB	160L4			
62	2175	23,17	1,48	KG73	SMB	160L4			
70	1926	20,62	1,63	KG73	SMB	160L4			
73	1847	19,66	1,68	KG73	SMR	160L4			
85	1586	16,88	1,90	KG73	SMR	160L4			
98	1376	14,63	2,12	KG73	SMR	160L4			
109	1237	13,17	2,32	KG73	SMR	160L4			
129	1045	11,18	2,62	KG73	SMR	160L4			
153	881	9,43	2,94	KG73	SMR	160L4			
174	775	8,30	2,86	KG73	SMR	160L4			
196	688	7,35	3,45	KG73	SMR	160L4			
68	1983	21,16	1,02	KG63	SMR	160L4	206	432	

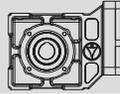
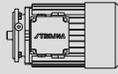


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m				
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]				
15,00	80	1685	17,97	1,14			206	432			
	95	1419	15,15	1,28					KG63	SMR	160L4
	108	1248	13,33	1,25					KG63	SMR	160L4
	122	1105	11,81	1,51					KG63	SMR	160L4
	98	1376	14,63	1,05					KG63	SMR	160L4
	109	1237	13,17	1,14					KG63	SMR	160L4
	129	1045	11,18	1,28					KG63	SMR	160L4
	153	881	9,43	1,43					KG63	SMR	160L4
	174	775	8,30	1,55					KG63	SMR	160L4
	196	688	7,35	1,69					KG63	SMR	160L4
18,50	13	12535	112,67	1,08			635	452			
	15	10864	99,13	1,24					KG94	SMR	180M4
	17	9586	87,83	1,41					KG94	SMR	180M4
	13	12791	114,27	1,06					KG93	SMB	180M4
	14	11878	104,24	1,14					KG93	SMB	180M4
	15	11086	95,64	1,22					KG93	SMB	180M4
	18	9238	81,67	1,46					KG93	SMB	180M4
	19	8752	75,92	1,54					KG93	SMB	180M4
	21	7918	70,80	1,70					KG93	SMB	180M4
	24	6929	62,11	1,92					KG93	SMR	180M4
	27	6159	55,00	2,10					KG93	SMR	180M4
	30	5543	49,07	2,27					KG93	SMR	180M4
	33	5039	44,05	2,43					KG93	SMR	180M4
	37	4494	39,75	2,65					KG93	SMR	180M4
	41	4056	36,03	2,86					KG93	SMR	180M4
	43	3867	34,35	2,96					KG93	SMR	180M4
	49	3394	29,89	3,25					KG93	SMR	180M4
	56	2969	26,16	3,57					KG93	SMR	180M4
	64	2598	22,99	3,92					KG93	SMR	180M4
	75	2217	19,43	4,35					KG93	SMR	180M4
	29	5734	50,91	1,20					KG93	SMB	180M4
	31	5364	46,71	1,26					KG93	SMB	180M4
	39	4264	37,08	1,51					KG93	SMB	180M4
	42	3959	34,58	1,60					KG93	SMB	180M4
	48	3464	30,33	1,77					KG93	SMR	180M4
	54	3079	26,86	1,94					KG93	SMR	180M4
	61	2726	23,96	2,13					KG93	SMR	180M4
	68	2445	21,52	2,31					KG93	SMR	180M4
	83	2003	17,60	2,67					KG93	SMR	180M4
	87	1911	16,77	2,77					KG93	SMR	180M4
	100	1663	14,60	3,06					KG93	SMR	180M4
	114	1459	12,78	3,35					KG93	SMR	180M4
	130	1279	11,23	3,68					KG93	SMR	180M4
154	1080	9,49	4,12	KG93	SMR	180M4					
22	7558	66,54	1,08			390	444				
26	6396	56,53	1,28					KG83	SMB	180M4	
28	5939	52,41	1,38					KG83	SMB	180M4	
30	5543	48,75	1,48					KG83	SMB	180M4	

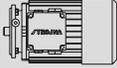
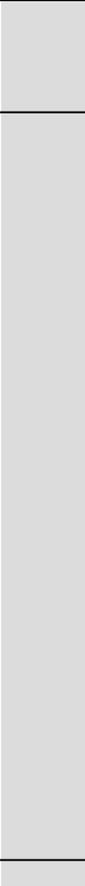


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m				
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]				
18,50	34	4891	42,53	1,68		KG83	SMR	180M4			
	39	4264	37,43	1,89		KG83	SMR	180M4			
	44	3779	33,19	2,07		KG83	SMR	180M4			
	49	3394	29,60	2,24		KG83	SMR	180M4			
	55	3023	26,52	2,44		KG83	SMR	180M4			
	61	2726	23,85	2,62		KG83	SMR	180M4			
	64	2598	22,65	2,71		KG83	SMR	180M4			
	75	2217	19,46	3,04		KG83	SMR	180M4			
	87	1911	16,78	3,37		KG83	SMR	180M4			
	101	1646	14,51	3,73		KG83	SMR	180M4			
	41	4056	35,77	1,27		KG83	SMB	180M4		390	444
	45	3695	32,74	1,35		KG83	SMB	180M4			
	52	3198	27,82	1,51		KG83	SMB	180M4			
	57	2917	25,79	1,62		KG83	SMB	180M4			
	70	2376	20,93	1,90		KG83	SMR	180M4			
	79	2105	18,42	2,08		KG83	SMR	180M4			
	89	1868	16,33	2,27		KG83	SMR	180M4			
	100	1663	14,56	2,47		KG83	SMR	180M4			
	112	1485	13,05	2,69		KG83	SMR	180M4			
	124	1341	11,74	2,89		KG83	SMR	180M4			
131	1269	11,14	3,01	KG83	SMR	180M4					
153	1087	9,57	3,36	KG83	SMR	180M4					
177	939	8,26	3,72	KG83	SMR	180M4					
204	815	7,14	4,08	KG83	SMR	180M4					
37	4494	39,27	1,05	KG73	SMB	180M4	290	438			
39	4264	37,45	1,10	KG73	SMB	180M4					
45	3695	32,16	1,27	KG73	SMR	180M4					
52	3198	27,86	1,47	KG73	SMR	180M4					
58	2867	25,08	1,64	KG73	SMR	180M4					
69	2410	21,29	1,93	KG73	SMR	180M4					
81	2053	17,96	2,15	KG73	SMR	180M4					
92	1807	15,80	2,08	KG73	SMR	180M4					
104	1599	14,00	2,52	KG73	SMR	180M4					
63	2639	23,17	1,22	KG73	SMB	180M4					
71	2342	20,62	1,34	KG73	SMB	180M4					
74	2247	19,66	1,38	KG73	SMB	180M4					
86	1934	16,88	1,56	KG73	SMR	180M4					
100	1663	14,63	1,76	KG73	SMR	180M4					
111	1498	13,17	1,91	KG73	SMR	180M4					
131	1269	11,18	2,16	KG73	SMR	180M4					
155	1073	9,43	2,41	KG73	SMR	180M4					
176	945	8,30	2,34	KG73	SMR	180M4					
199	836	7,35	2,84	KG73	SMR	180M4					
96	1732	15,15	1,05	KG63	SMR	180M4			228	432	
110	1512	13,33	1,04	KG63	SMR	180M4					
124	1341	11,81	1,24	KG63	SMR	180M4					
131	1269	11,18	1,05	KG63	SMR	180M4					
155	1073	9,43	1,18	KG63	SMR	180M4					

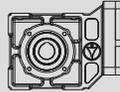
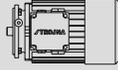
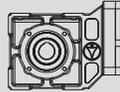
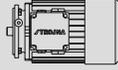
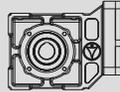
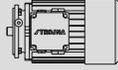


P	$n_2$	$Mt_2$	i	$f_b$			m	
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]	
18,50	176	945	8,30	1,27	KG63	SMR 180M4	228	432
	199	836	7,35	1,39				
22,00	15	12919	99,13	1,04	KG94	SMR 180L4	650	452
	17	11399	87,83	1,18				
	15	13183	95,64	1,02	KG93	SMB 180L4		
	18	10986	81,67	1,23	KG93	SMB 180L4		
	19	10408	75,92	1,30	KG93	SMB 180L4		
	21	9416	70,80	1,43	KG93	SMB 180L4		
	24	8239	62,11	1,61	KG93	SMR 180L4		
	27	7324	55,00	1,76	KG93	SMR 180L4		
	30	6591	49,07	1,91	KG93	SMR 180L4		
	33	5992	44,05	2,04	KG93	SMR 180L4		
	37	5344	39,75	2,23	KG93	SMR 180L4		
	41	4823	36,03	2,40	KG93	SMR 180L4		
	43	4599	34,35	2,49	KG93	SMR 180L4		
	49	4036	29,89	2,73	KG93	SMR 180L4		
	56	3531	26,16	3,00	KG93	SMR 180L4		
	64	3090	22,99	3,30	KG93	SMR 180L4	609	450
	75	2637	19,43	3,66	KG93	SMR 180L4		
	89	2222	16,47	4,10	KG93	SMR 180L4		
	42	4708	34,58	1,34	KG93	SMB 180L4		
	48	4120	30,33	1,49	KG93	SMR 180L4		
	54	3662	26,86	1,63	KG93	SMR 180L4		
	61	3242	23,96	1,79	KG93	SMR 180L4		
	68	2908	21,52	1,94	KG93	SMR 180L4		
	83	2382	17,60	2,25	KG93	SMR 180L4		
	87	2273	16,77	2,33	KG93	SMR 180L4		
	100	1977	14,60	2,57	KG93	SMR 180L4		
	114	1735	12,78	2,82	KG93	SMR 180L4		
	130	1521	11,23	3,09	KG93	SMR 180L4		
	154	1284	9,49	3,47	KG93	SMR 180L4		
	182	1087	8,04	3,87	KG93	SMR 180L4		
	26	7606	56,53	1,08	KG83	SMB 180L4		
	28	7062	52,41	1,16	KG83	SMB 180L4		
	30	6591	48,75	1,24	KG83	SMB 180L4		
	34	5816	42,53	1,41	KG83	SMR 180L4		
	39	5070	37,43	1,59	KG83	SMR 180L4		
	44	4494	33,19	1,74	KG83	SMR 180L4		
	49	4036	29,60	1,88	KG83	SMR 180L4		
	55	3595	26,52	2,05	KG83	SMR 180L4		
	61	3242	23,85	2,21	KG83	SMR 180L4	405	444
	64	3090	22,65	2,28	KG83	SMR 180L4		
	75	2637	19,46	2,56	KG83	SMR 180L4		
	87	2273	16,78	2,83	KG83	SMR 180L4		
	101	1958	14,51	3,14	KG83	SMR 180L4		
	52	3803	27,82	1,27	KG83	SMB 180L4		
	57	3469	25,79	1,36	KG83	SMB 180L4		
	70	2825	20,93	1,60	KG83	SMR 180L4		

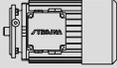


P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m			
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]			
22,00	79	2503	18,42	1,75		KG83	SMR	180L4	405	444
	89	2222	16,33	1,91		KG83	SMR	180L4		
	100	1977	14,56	2,08		KG83	SMR	180L4		
	112	1766	13,05	2,26		KG83	SMR	180L4		
	124	1595	11,74	2,43		KG83	SMR	180L4		
	131	1509	11,14	2,53		KG83	SMR	180L4		
	153	1292	9,57	2,83		KG83	SMR	180L4		
	177	1117	8,26	3,13		KG83	SMR	180L4		
	204	969	7,14	3,44		KG83	SMR	180L4		
	45	4394	32,16	1,07		KG73	SMR	180L4	305	438
	52	3803	27,86	1,24		KG73	SMR	180L4		
	58	3409	25,08	1,38		KG73	SMR	180L4		
	69	2866	21,29	1,62		KG73	SMR	180L4		
	81	2441	17,96	1,80		KG73	SMR	180L4		
	92	2149	15,80	1,75		KG73	SMR	180L4		
	104	1901	14,00	2,12		KG73	SMR	180L4		
	74	2672	19,66	1,16		KG73	SMB	180L4		
	86	2299	16,88	1,31		KG73	SMR	180L4		
	100	1977	14,63	1,48		KG73	SMR	180L4		
111	1781	13,17	1,61	KG73	SMR	180L4				
131	1509	11,18	1,81	KG73	SMR	180L4				
155	1276	9,43	2,03	KG73	SMR	180L4				
176	1124	8,30	1,97	KG73	SMR	180L4				
199	994	7,35	2,39	KG73	SMR	180L4				
124	1595	11,81	1,05	KG63	SMR	180L4	243	432		
176	1124	8,30	1,07	KG63	SMR	180L4				
199	994	7,35	1,17	KG63	SMR	180L4				
30,00	24	11235	62,11	1,18		KG93	SMR	200L4		
	27	9987	55,00	1,29		KG93	SMR	200L4		
	30	8988	49,07	1,40		KG93	SMR	200L4		
	33	8171	44,05	1,50		KG93	SMR	200L4		
	37	7288	39,75	1,63		KG93	SMR	200L4		
	41	6577	36,03	1,76		KG93	SMR	200L4		
	43	6271	34,35	1,83		KG93	SMR	200L4		
	49	5503	29,89	2,00		KG93	SMR	200L4		
	56	4815	26,16	2,20		KG93	SMR	200L4		
	64	4213	22,99	2,42		KG93	SMR	200L4		
	76	3548	19,43	2,72		KG93	SMR	200L4		
	89	3030	16,47	3,01		KG93	SMR	200L4		
	68	3965	21,52	1,42		KG93	SMR	200L4		
	84	3210	17,60	1,67		KG93	SMR	200L4		
	88	3064	16,77	1,72		KG93	SMR	200L4		
	101	2670	14,60	1,90		KG93	SMR	200L4		
	115	2345	12,78	2,09		KG93	SMR	200L4		
	131	2058	11,23	2,28		KG93	SMR	200L4		
	155	1740	9,49	2,56		KG93	SMR	200L4		
	183	1474	8,04	2,86		KG93	SMR	200L4		
	35	7704	42,53	1,06		KG83	SMR	200L4	480	444



P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>B</sub>			m				
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]				
30,00	39	6914	37,43	1,17			480	444			
	44	6128	33,19	1,28					KG83	SMR	200L4
	50	5393	29,60	1,41					KG83	SMR	200L4
	55	4903	26,52	1,50					KG83	SMR	200L4
	62	4349	23,85	1,64					KG83	SMR	200L4
	65	4148	22,65	1,70					KG83	SMR	200L4
	76	3548	19,46	1,90					KG83	SMR	200L4
	88	3064	16,78	2,10					KG83	SMR	200L4
	101	2670	14,51	2,30					KG83	SMR	200L4
	70	3852	20,93	1,17					KG83	SMR	200L4
	80	3371	18,42	1,30					KG83	SMR	200L4
	90	2996	16,33	1,41					KG83	SMR	200L4
	101	2670	14,56	1,54					KG83	SMR	200L4
	113	2386	13,05	1,67					KG83	SMR	200L4
	125	2157	11,74	1,80					KG83	SMR	200L4
	132	2043	11,14	1,87					KG83	SMR	200L4
	154	1751	9,57	2,09					KG83	SMR	200L4
	178	1515	8,26	2,31					KG83	SMR	200L4
	206	1309	7,14	2,54					KG83	SMR	200L4
	37,00	27	12317	55,00					1,05		
30		11086	49,07	1,13	KG93	SMR	225S4				
33		10078	44,05	1,21	KG93	SMR	225S4				
37		8988	39,75	1,32	KG93	SMR	225S4				
41		8111	36,03	1,43	KG93	SMR	225S4				
43		7734	34,35	1,48	KG93	SMR	225S4				
49		6787	29,89	1,62	KG93	SMR	225S4				
56		5939	26,16	1,78	KG93	SMR	225S4				
64		5196	22,99	1,96	KG93	SMR	225S4				
76		4376	19,43	2,20	KG93	SMR	225S4				
89		3737	16,47	2,44	KG93	SMR	225S4				
61		5452	23,96	1,06	KG93	SMR	225S4				
68		4891	21,52	1,15	KG93	SMR	225S4				
84		3959	17,60	1,35	KG93	SMR	225S4				
88		3779	16,77	1,40	KG93	SMR	225S4				
101		3293	14,60	1,54	KG93	SMR	225S4				
115		2892	12,78	1,69	KG93	SMR	225S4				
131		2539	11,23	1,85	KG93	SMR	225S4				
155		2146	9,49	2,08	KG93	SMR	225S4				
183		1817	8,04	2,32	KG93	SMR	225S4				
50	6651	29,60	1,14	KG83	SMR	225S4					
55	6047	26,52	1,22	KG83	SMR	225S4					
62	5364	23,85	1,33	KG83	SMR	225S4					
65	5116	22,65	1,38	KG83	SMR	225S4					
76	4376	19,46	1,54	KG83	SMR	225S4					
88	3779	16,78	1,70	KG83	SMR	225S4					
101	3293	14,51	1,87	KG83	SMR	225S4					
90	3695	16,33	1,15	KG83	SMR	225S4					
113	2943	13,05	1,36	KG83	SMR	225S4					



P	n <sub>2</sub>	Mt <sub>2</sub>	i	f <sub>b</sub>			m						
[kW]	[min <sup>-1</sup> ]	[Nm]					[kg]						
37,00	125	2661	11,74	1,46	KG83	SMR 225S4	545	444					
	132	2519	11,14	1,52									
	154	2160	9,57	1,69									
	178	1868	8,26	1,87									
	206	1614	7,14	2,06									
45,00	37	10932	39,75	1,09	KG93	SMR 225M4	781	450					
	41	9865	36,03	1,18									
	43	9406	34,35	1,22									
	49	8255	29,89	1,33									
	56	7223	26,16	1,47									
	64	6320	22,99	1,61									
	76	5322	19,43	1,81									
	89	4545	16,47	2,01									
	84	4815	17,60	1,11									
	88	4596	16,77	1,15									
	101	4005	14,60	1,27									
	115	3517	12,78	1,39									
	131	3088	11,23	1,52									
	155	2610	9,49	1,71									
	183	2210	8,04	1,90									
	55,00	62	6524	23,85					1,10	KG83	SMR 225M4	577	444
		65	6223	22,65					1,13				
		76	5322	19,46					1,27				
		88	4596	16,78					1,40				
101		4005	14,51	1,53									
113		3579	13,05	1,12									
125		3236	11,74	1,20									
132		3064	11,14	1,25									
154		2626	9,57	1,39									
178		2272	8,26	1,54									
206		1963	7,14	1,70									
55,00		41	12058	36,03	0,96	KG93	SMR 250M4	864	450				
		43	11497	34,35	1,00								
	50	9887	29,89	1,11									
	57	8673	26,16	1,22									
	64	7724	22,99	1,32									
	76	6505	19,43	1,48									
	90	5493	16,47	1,66									
	116	4262	12,78	1,15									
	132	3745	11,23	1,26									
	156	3169	9,49	1,41									
	184	2687	8,04	1,57									
	88	5618	16,78	1,15	KG83					SMR 250M4	660	444	
	102	4847	14,51	1,27									
	155	3189	9,57	1,15									
	179	2762	8,26	1,26									
	207	2388	7,14	1,39									



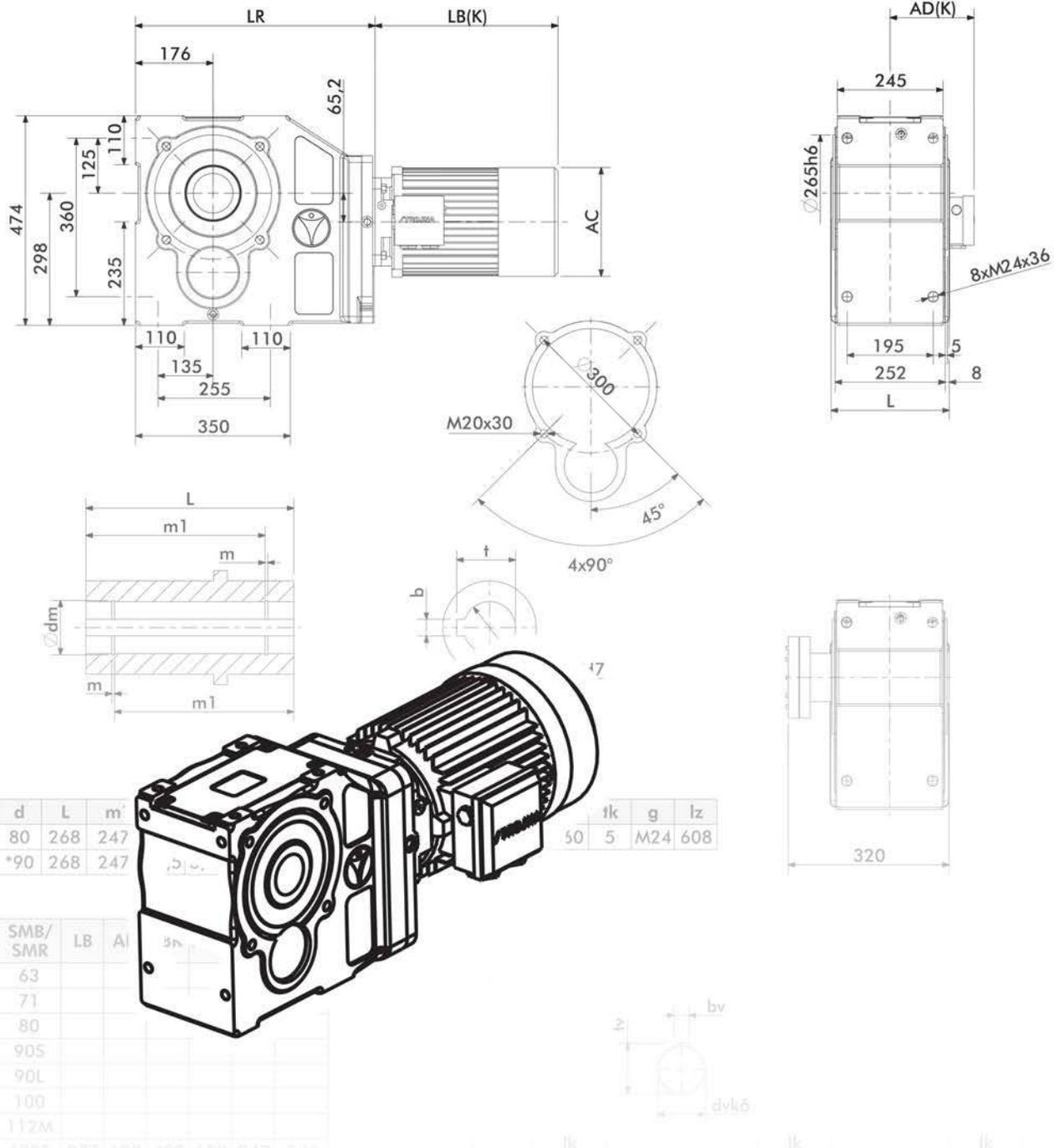




KG

# HELICAL BEVEL GEAR UNITS

Dimension sheets - Geared motors



d	L	m'
80	268	247
*90	268	247

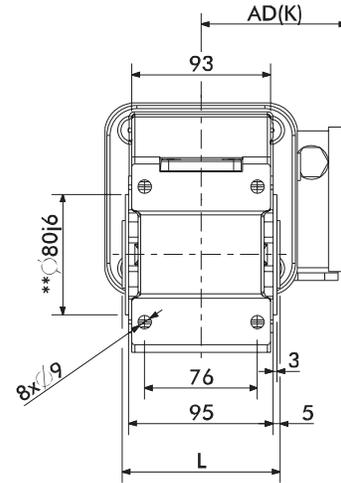
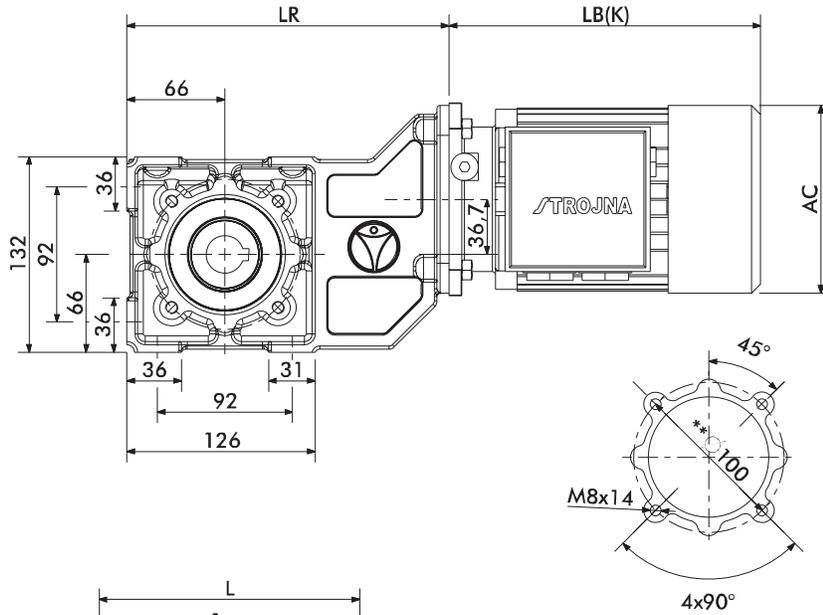
lk	g	lz
50	5	M24 608

SMB/SMR	LB	Al
63		
71		
80		
90S		
90L		
100		
112M		
132S	377	100 492 181 247 544
132M	415	532
132Mc	415	

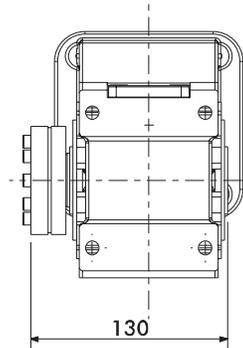
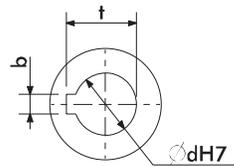
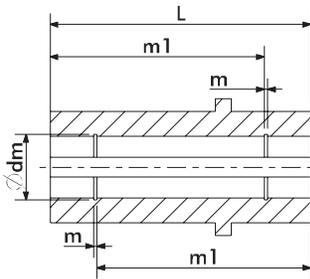
Drawings are for reference dimensions only and subject to change.

We reserve the right to change technical data or dimensions due to modifications.

## KG12...SMB/SMR



## KG12D...

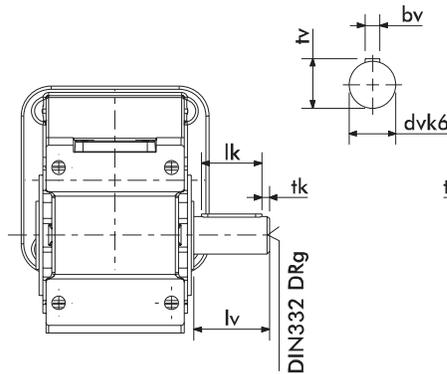


d	L	m1	dm	m	t	b
20	105	97	21	1,3	22,8	6
*25	105	91	26,2	1,3	28,3	8

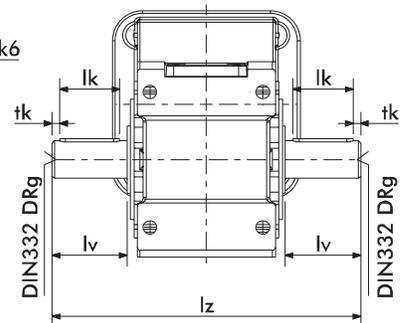
dv	tv	bv	lv	lk	tk	g	lz
20	22,5	6	40	30	5	M6	185
*25	28	8	50	40	5	M10	205

SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	215
71	223	105	280	137	140	215
80	251	110	311	147	154	215
90S	276	121	360	164	170	215
90L	301	121	385	164	170	215
100						
112M						
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

## KG12V...

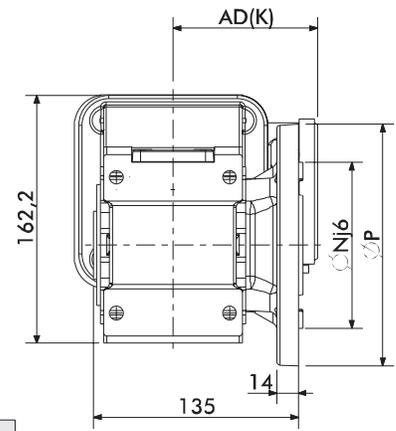
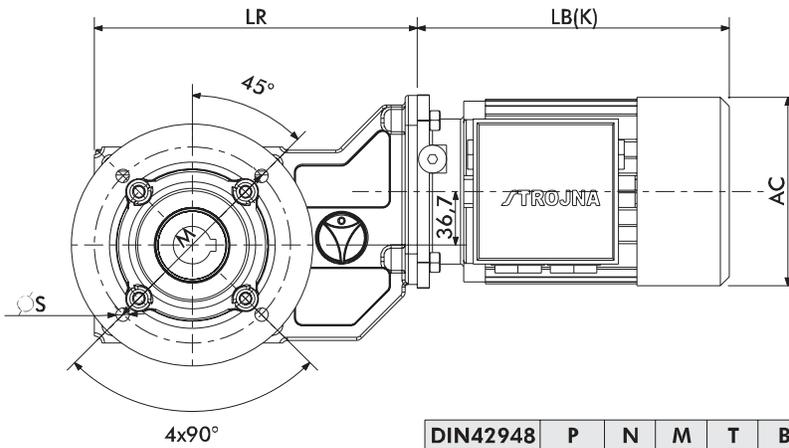


## KG12Z...



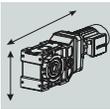
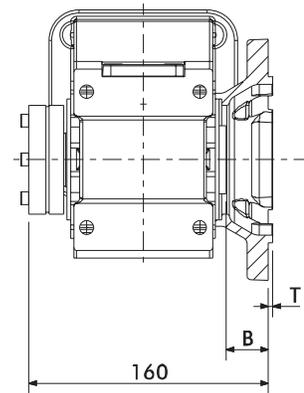
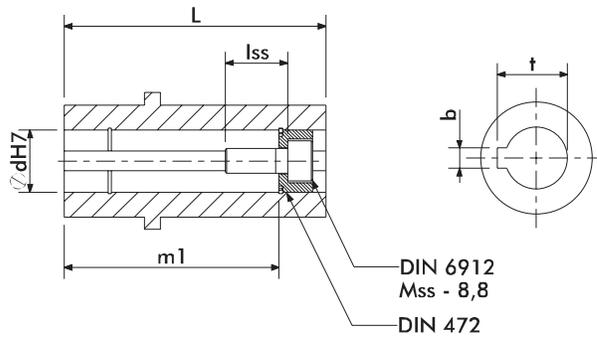
\* Standard  
\*\* C Flange DIN42948

# KG12P..SMB/SMR



DIN42948	P	N	M	T	B	S
*A160	160	110	130	3	30	9
A200	200	130	165	3	30	11

# KG12PD...



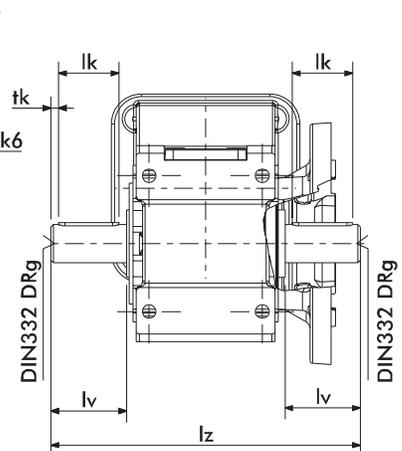
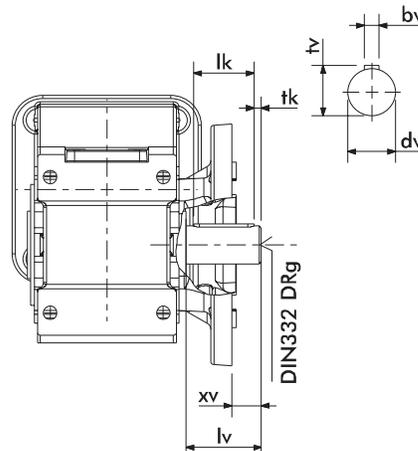
d	L	m1	lss	Mss	t	b
20	105	97	20	M6	22,8	6
*25	105	91	25	M10	28,3	8

dv	tv	bv	lv	lk	tk	xv	g	lz
20	22,5	6	40	30	5	7	M6	185
*25	28	8	50	40	5	17	M10	205

SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	215
71	223	105	280	137	140	215
80	251	110	311	147	154	215
90S	276	121	360	164	170	215
90L	301	121	385	164	170	215
100						
112M						
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

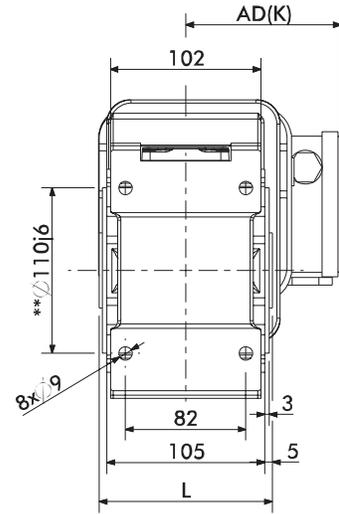
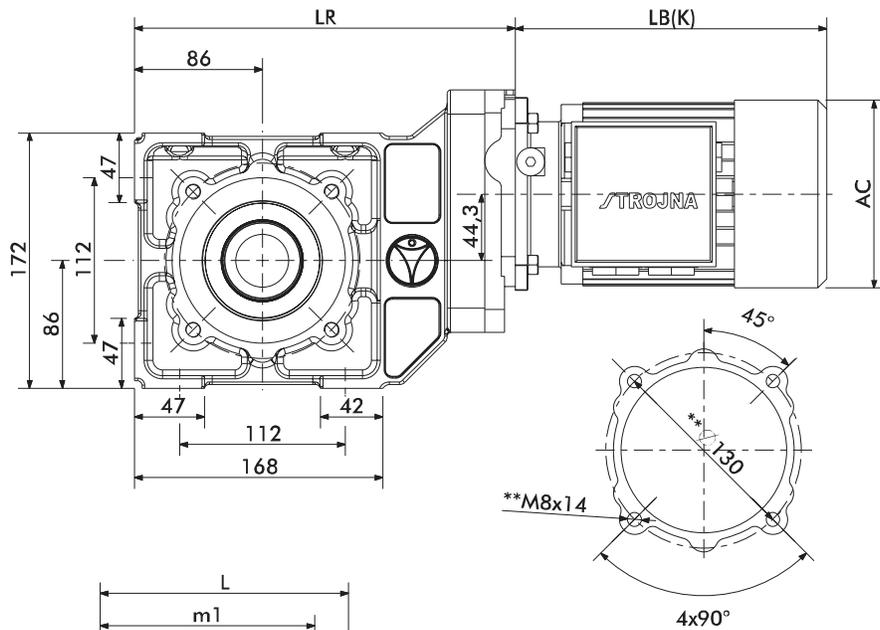
# KG12PV...

# KG12PZ...

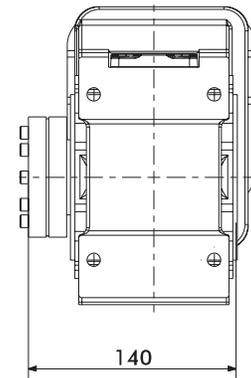
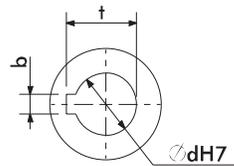
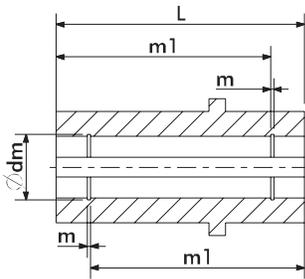


\* Standard

## KG22...SMB/SMR



## KG22D...

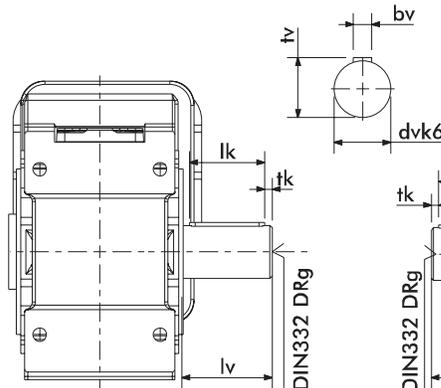


d	L	m1	dm	m	t	b
25	115	107	26,2	1,3	28,3	8
*30	115	101	31,4	1,3	33,3	8

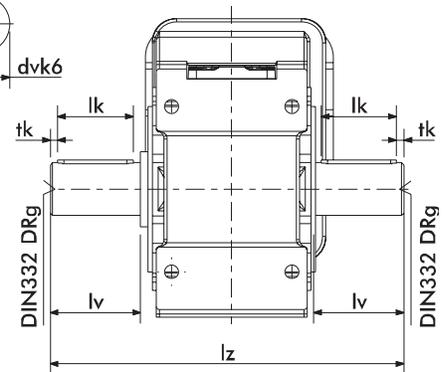
dv	tv	bv	lv	lk	tk	g	lz
25	28	8	50	40	5	M10	215
*30	33	8	60	50	5	M12	235

SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	255
71	223	105	280	137	140	255
80	251	110	311	147	154	255
90S	276	121	360	164	170	255
90L	301	121	385	164	170	255
100	329	157	418	174	193	255
112M	334	169	434	199	216	255
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

## KG22V...

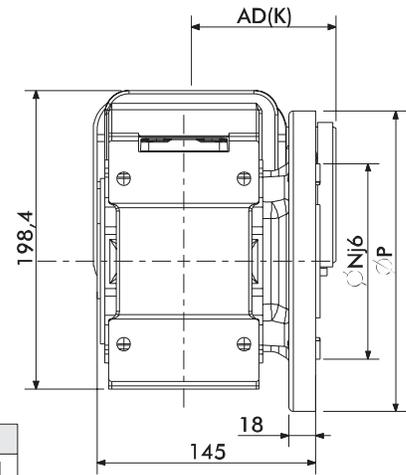
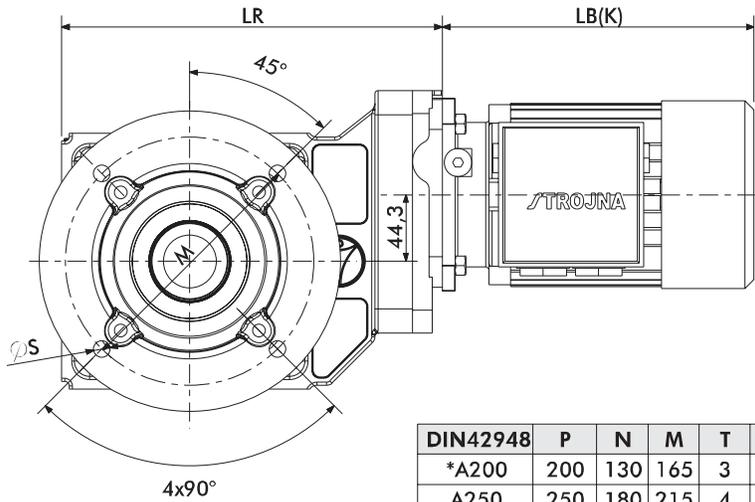


## KG22Z...



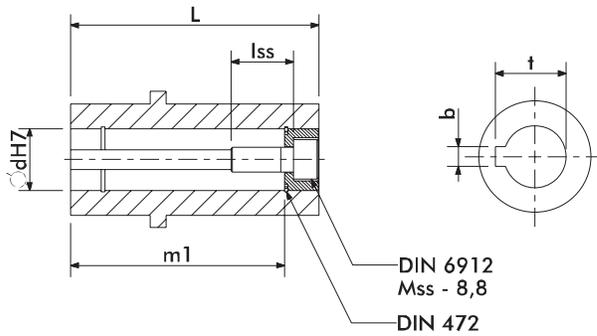
\* Standard  
\*\* C Flange DIN42948

## KG22P..SMB/SMR



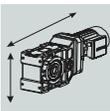
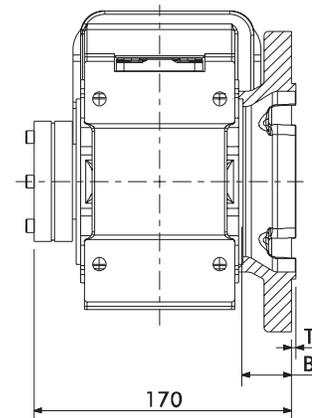
DIN42948	P	N	M	T	B	S
*A200	200	130	165	3	30	11
A250	250	180	215	4	30	14

## KG22PD...



d	L	m1	lss	Mss	t	b
25	115	107	25	M10	28,3	8
*30	115	101	25	M10	33,3	8

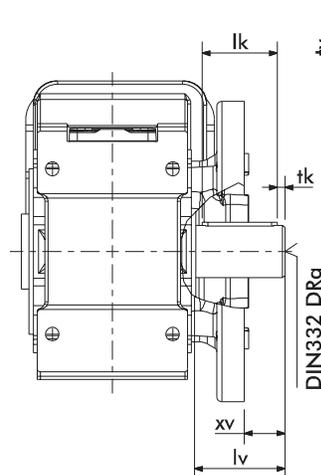
dv	tv	bv	lv	lk	tk	xv	g	lz
25	28	8	50	40	5	17	M10	215
*30	33	8	60	50	5	27	M10	235



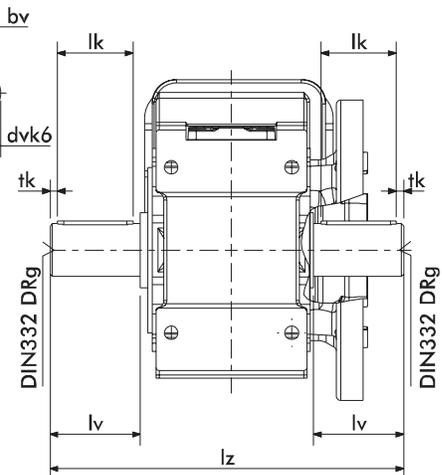
SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	255
71	223	105	280	137	140	255
80	251	110	311	147	154	255
90S	276	121	360	164	170	255
90L	301	121	385	164	170	255
100	329	157	418	174	193	255
112M	334	169	434	199	216	255
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

\* Standard

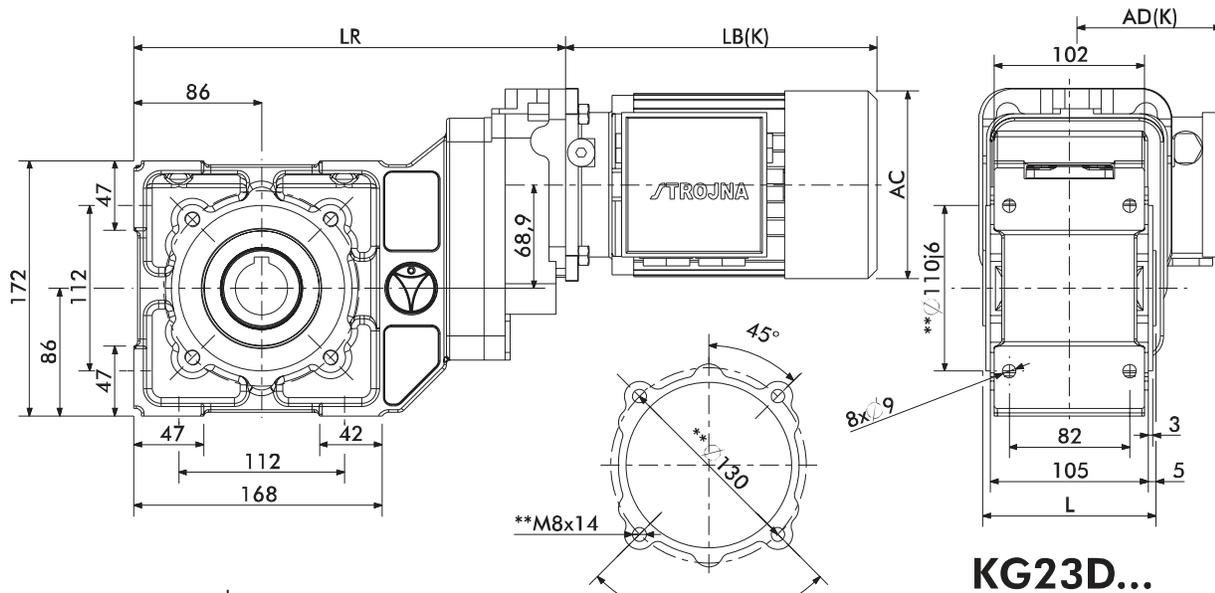
## KG22PV...



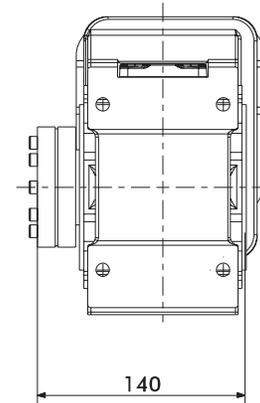
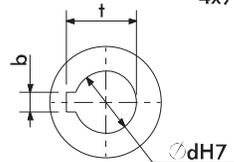
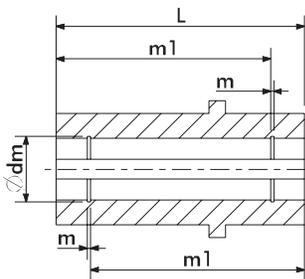
## KG22PZ...



## KG23...SMB/SMR



## KG23D...



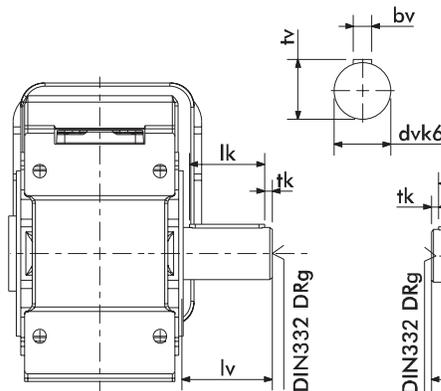
d	L	m1	dm	m	t	b
25	115	107	26,2	1,3	28,3	8
*30	115	101	31,4	1,3	33,3	8

dv	tv	bv	lv	lk	tk	g	lz
25	28	8	50	40	5	M10	215
*30	33	8	60	50	5	M12	235

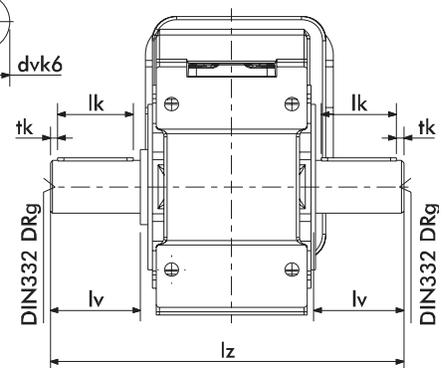
SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	285
71	223	105	280	137	140	285
80	251	110	311	147	154	285
90S	276	121	360	164	170	285
90L	301	121	385	164	170	285
100						
112M						
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

\* Standard  
\*\* C Flange DIN42948

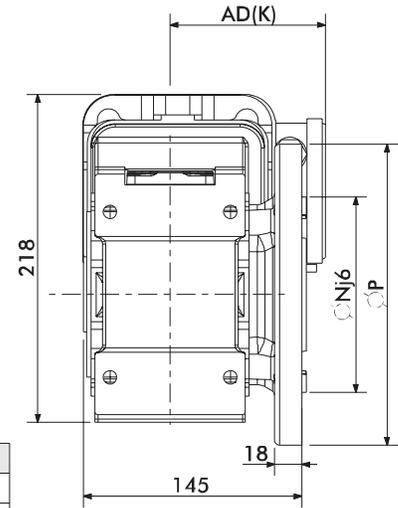
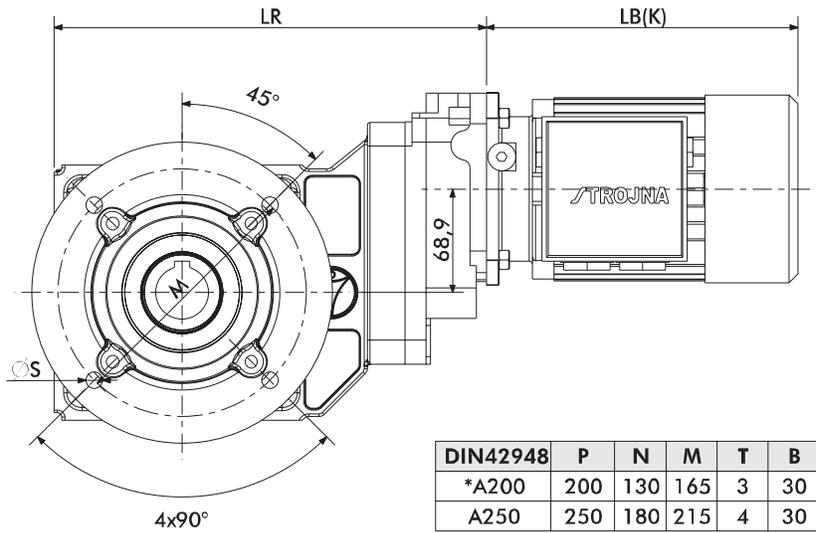
## KG23V...



## KG23Z...

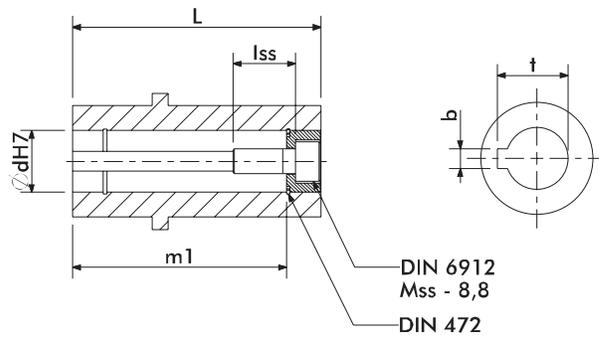


## KG23P...SMB/SMR



DIN42948	P	N	M	T	B	S
*A200	200	130	165	3	30	11
A250	250	180	215	4	30	14

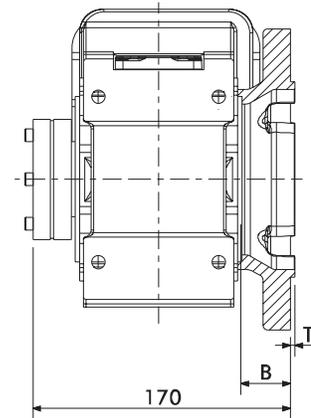
## KG23PD...



DIN 6912  
Mss - 8,8  
DIN 472

d	L	m1	lss	Mss	t	b
25	115	107	25	M10	28,3	8
*30	115	101	25	M10	33,3	8

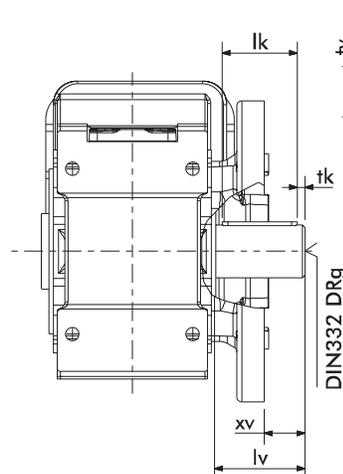
dv	tv	bv	lv	lk	tk	xv	g	lz
25	28	8	50	40	5	17	M10	215
*30	33	8	60	50	5	27	M10	235



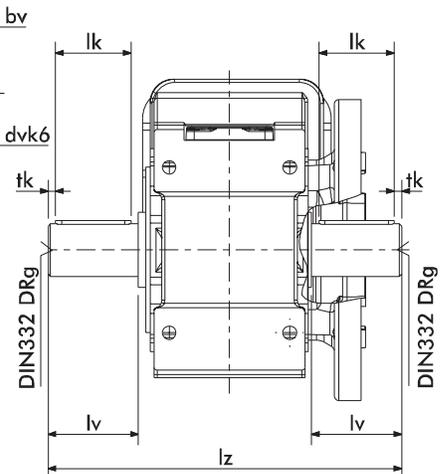
SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	285
71	223	105	280	137	140	285
80	251	110	311	147	154	285
90S	276	121	360	164	170	285
90L	301	121	385	164	170	285
100						
112M						
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

\* Standard

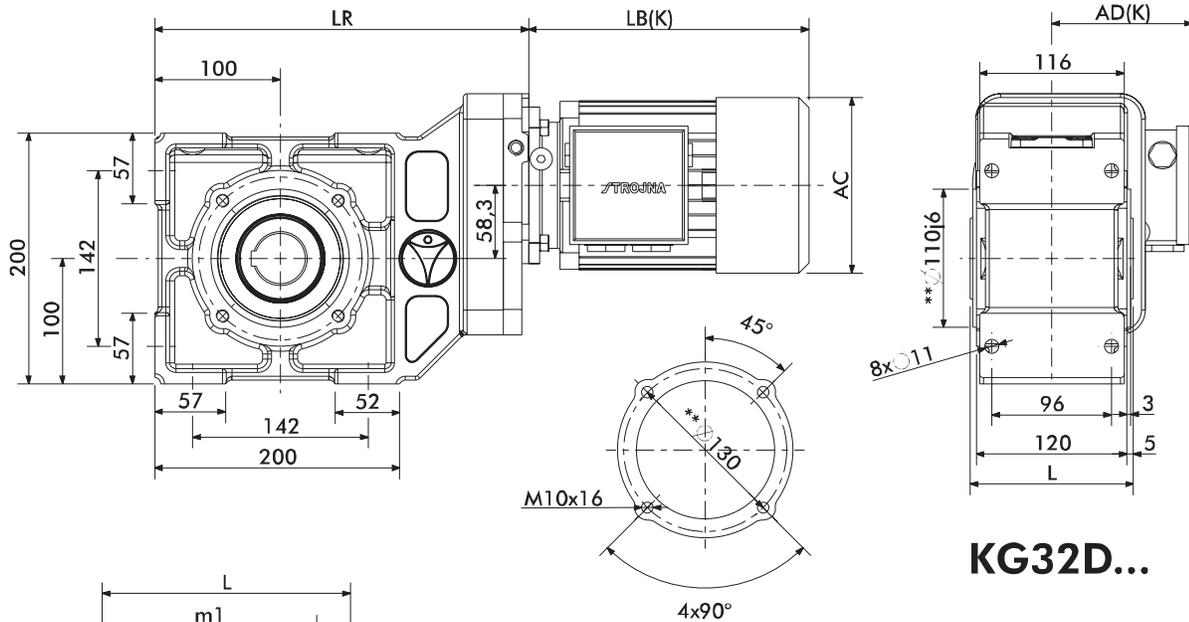
## KG23PV...



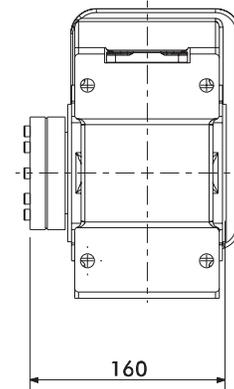
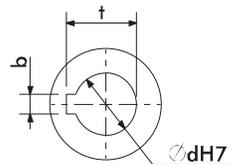
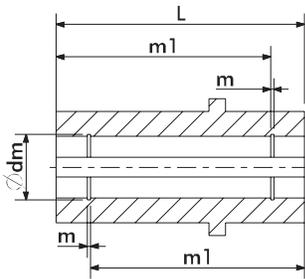
## KG23PZ...



## KG32...SMB/SMR



## KG32D...



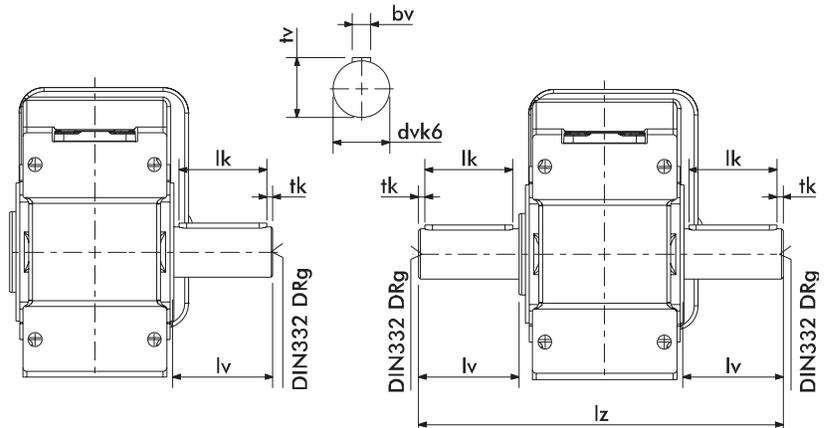
d	L	m1	dm	m	t	b
30	130	116	31,4	1.3	33,3	8
*35	130	115	37	1.6	38,3	10

dv	tv	bv	lv	lk	tk	g	lz
30	33	8	60	50	5	M10	250
*35	38	10	70	63	5	M12	270

SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	297
71	223	105	280	137	140	297
80	251	110	311	147	154	297
90S	276	121	360	164	170	297
90L	301	121	385	164	170	297
100	329	157	418	174	193	301
112M	334	169	434	199	216	301
132S	377	190	492	183	247	314
132M	415	190	532	183	247	314
132Ma	415	190	532	183	247	314
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

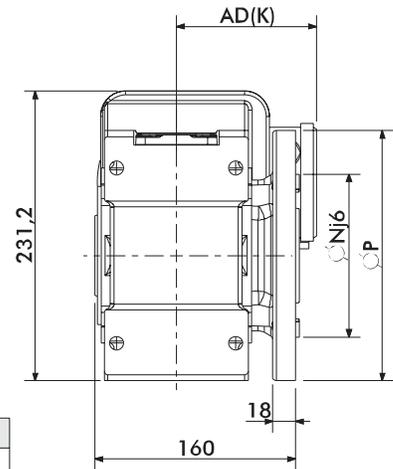
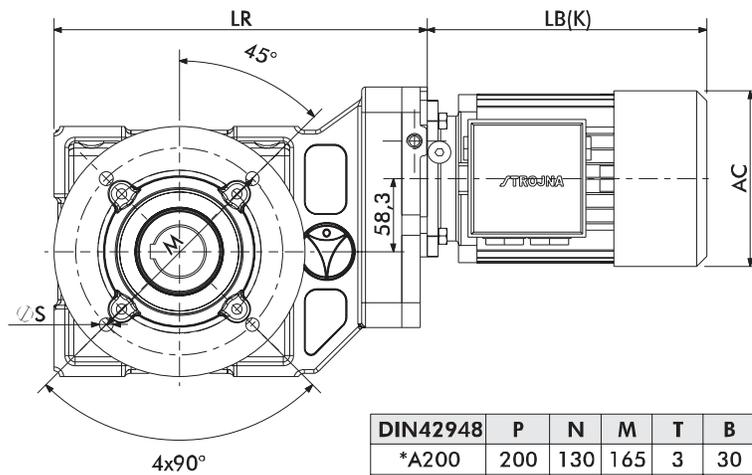
## KG32V...

## KG32Z...



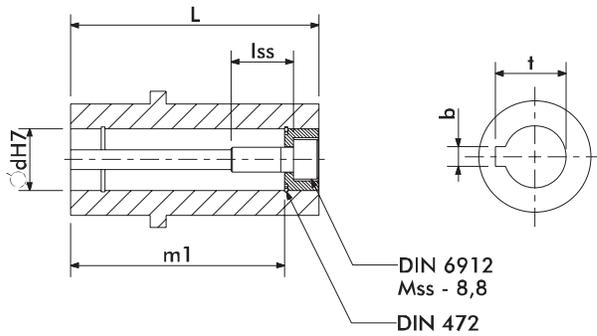
\* Standard  
\*\* C Flange DIN42948

# KG32P..SMB/SMR



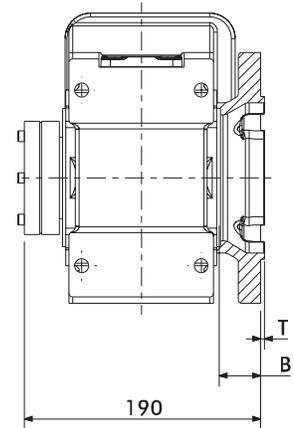
DIN42948	P	N	M	T	B	S
*A200	200	130	165	3	30	11
A250	250	180	215	4	30	14

# KG32PD...



d	L	m1	lss	Mss	t	b
30	130	116	25	M10	33,3	8
*35	130	115	30	M12	38,3	10

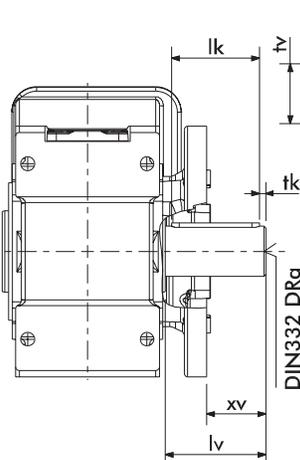
dv	tv	bv	lv	lk	tk	xv	g	lz
30	33	8	60	50	5	27	M10	250
*35	38	10	70	63	5	37	M12	270



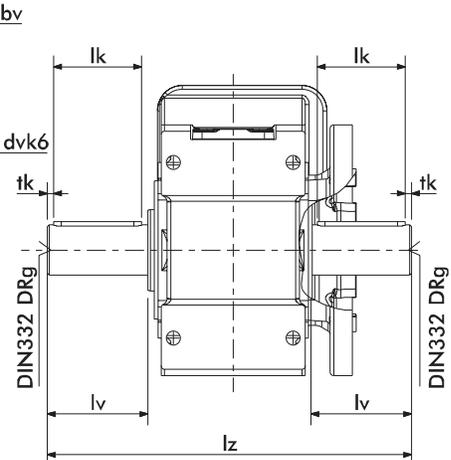
SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	297
71	223	105	280	137	140	297
80	251	110	311	147	154	297
90S	276	121	360	164	170	297
90L	301	121	385	164	170	297
100	329	157	418	174	193	301
112M	334	169	434	199	216	301
132S	377	190	492	183	247	314
132M	415	190	532	183	247	314
132Ma	415	190	532	183	247	314
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

\* Standard

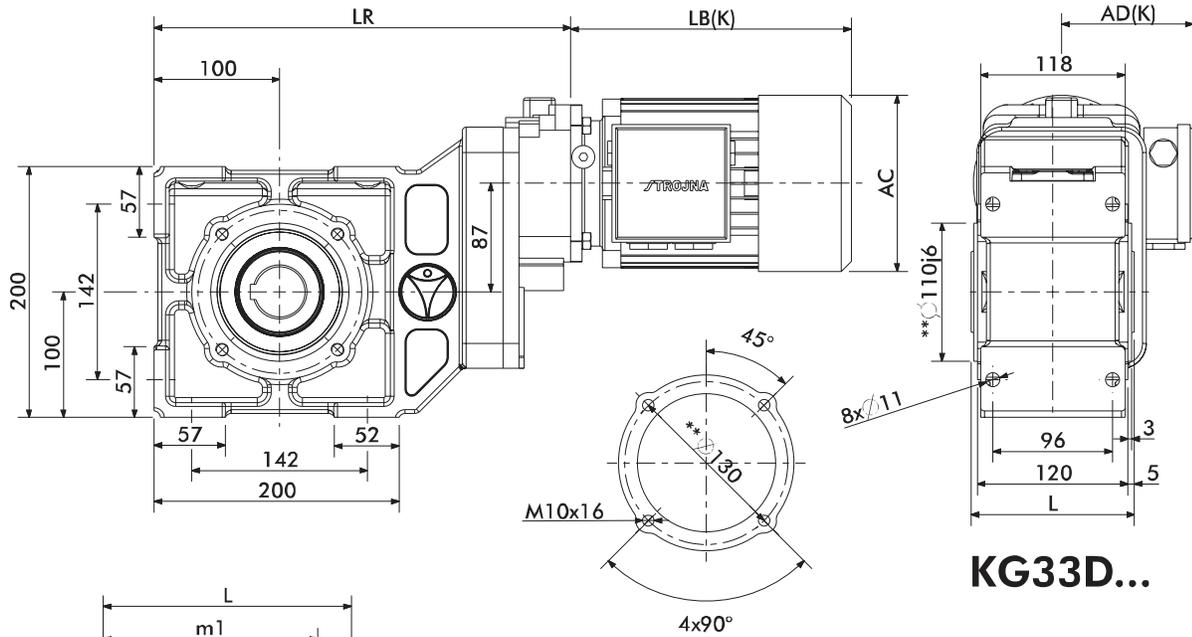
# KG32PV...



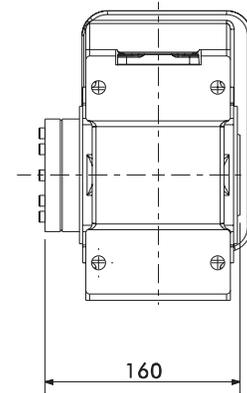
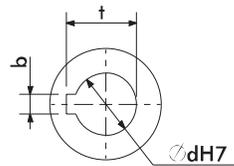
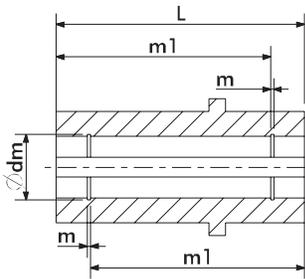
# KG32PZ...



## KG33...SMB/SMR



## KG33D...



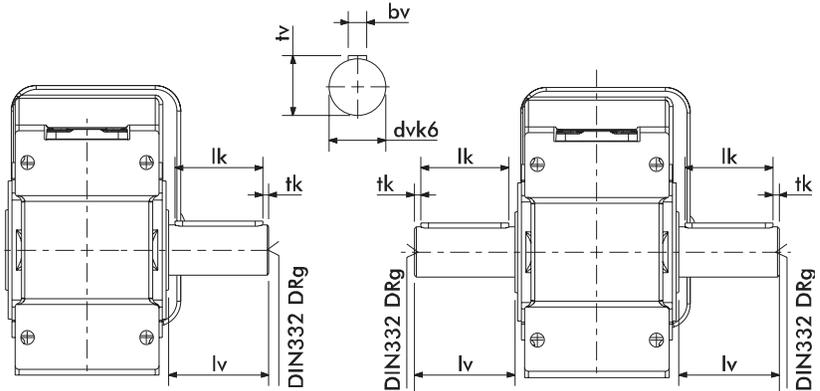
d	L	m1	dm	m	t	b
30	130	116	31,4	1,3	33,3	8
*35	130	115	37	1,6	38,3	10

dv	tv	bv	lv	lk	tk	g	lz
30	33	8	60	50	5	M10	250
*35	38	10	70	63	5	M12	270

SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	334
71	223	105	280	137	140	334
80	251	110	311	147	154	334
90S	276	121	360	164	170	334
90L	301	121	385	164	170	334
100						
112M						
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

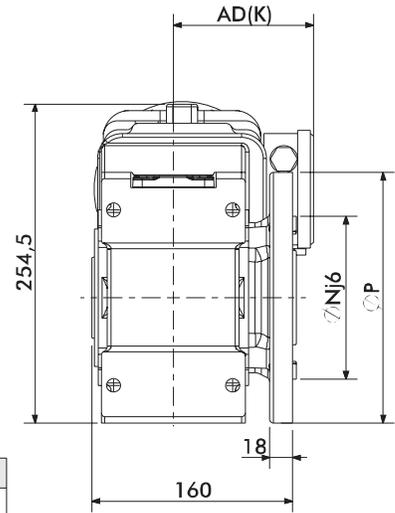
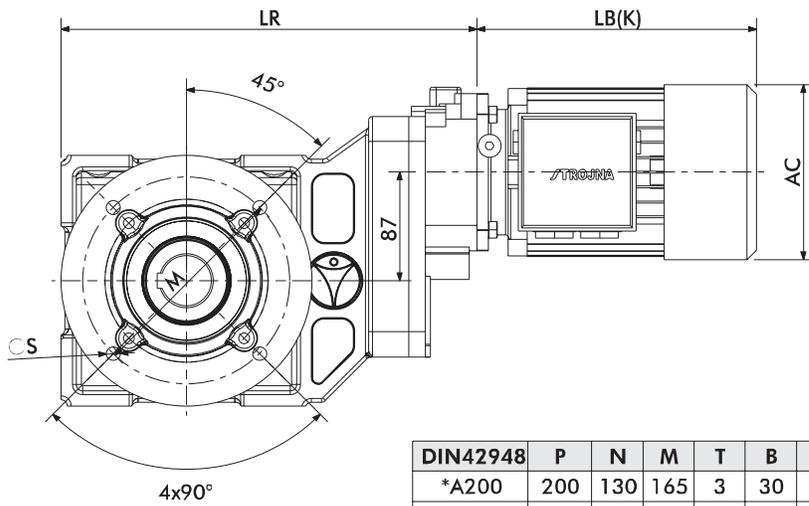
## KG33V...

## KG33Z...



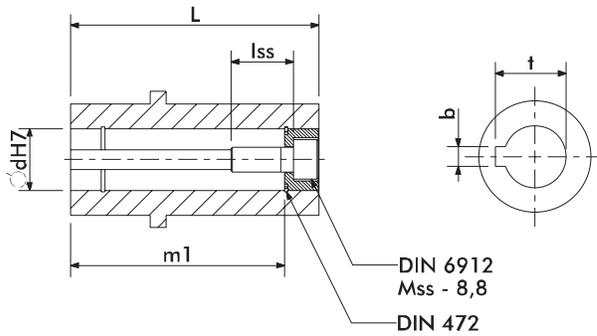
\* Standard  
\*\* C Flange DIN42948

## KG33P..SMB/SMR



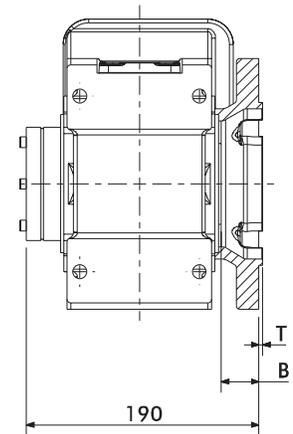
DIN42948	P	N	M	T	B	S
*A200	200	130	165	3	30	11
A250	250	180	215	4	30	14

## KG33PD...



d	L	m1	lss	Mss	t	b
30	130	116	25	M10	33,3	8
*35	130	115	30	M12	38,3	10

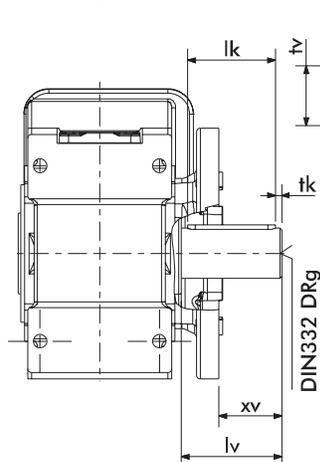
dv	tv	bv	lv	lk	tk	xv	g	lz
30	33	8	60	50	5	27	M10	250
*35	38	10	70	63	5	37	M12	270



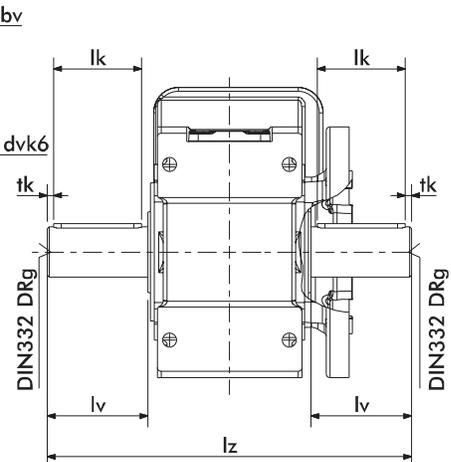
SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	334
71	223	105	280	137	140	334
80	251	110	311	147	154	334
90S	276	121	360	164	170	334
90L	301	121	385	164	170	334
100						
112M						
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

\* Standard

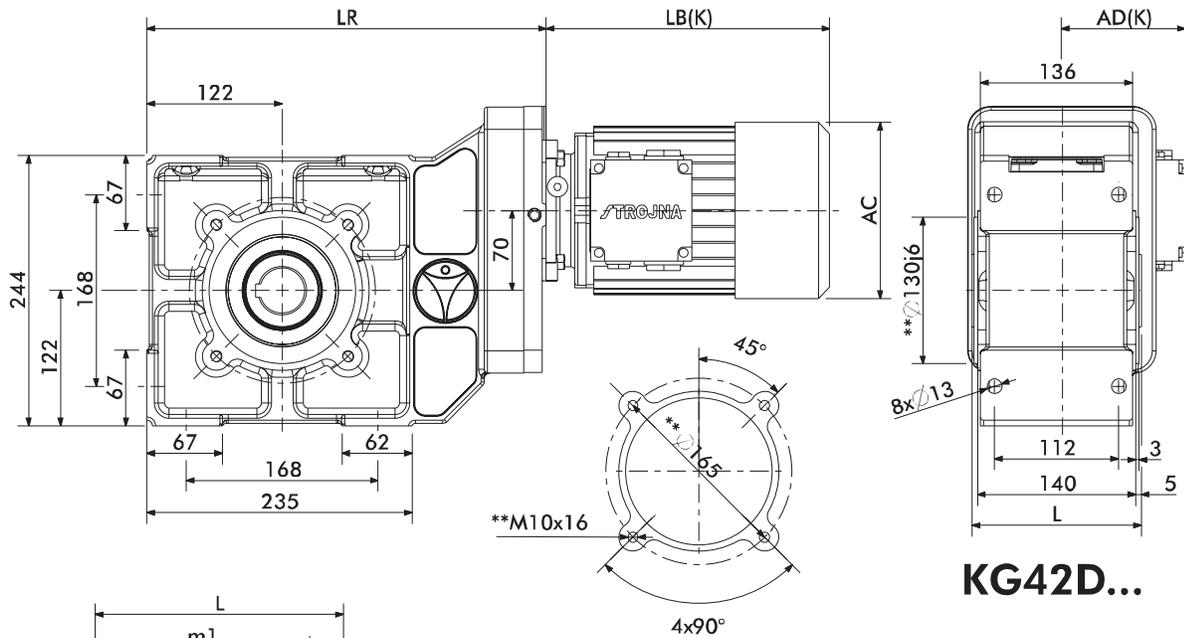
## KG33PV...



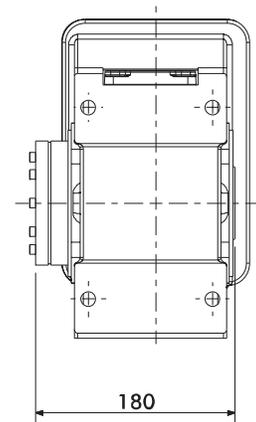
## KG33PZ...



## KG42...SMB/SMR



## KG42D...

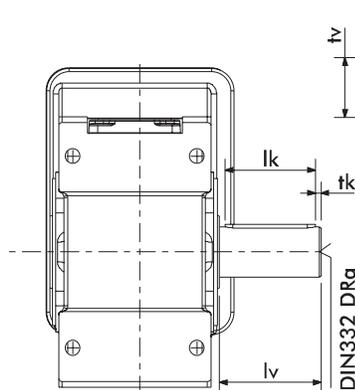


d	L	m1	dm	m	t	b
40	150	138	42,5	1,85	43,3	12
*45	150	133	47,5	1,85	48,8	14

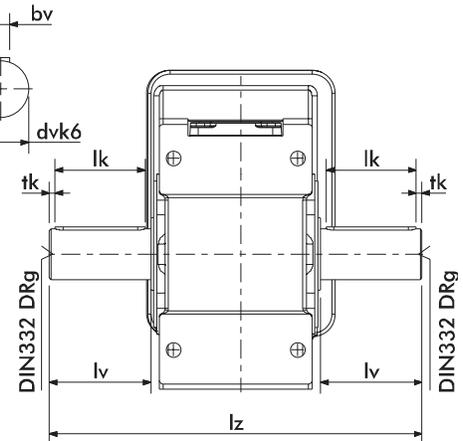
dv	tv	bv	lv	lk	tk	g	lz
40	43	12	80	70	5	M16	310
*45	48,5	14	90	80	5	M16	330

SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	354
71	223	105	280	137	140	354
80	251	110	311	147	154	354
90S	276	121	360	164	170	357
90L	301	121	385	164	170	357
100	329	157	418	174	193	362
112M	334	169	434	199	216	362
132S	377	190	492	183	247	372
132M	415	190	532	183	247	372
132Ma	415	190	532	183	247	372
160M	489	246	613	246	285	386
160L	533	246	657	246	285	386
180M						
180L						
200L						
225S						
225M						
250M						

## KG42V...

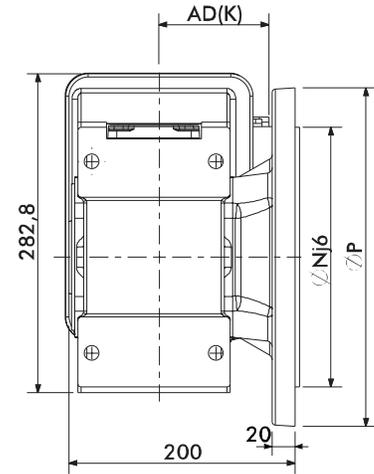
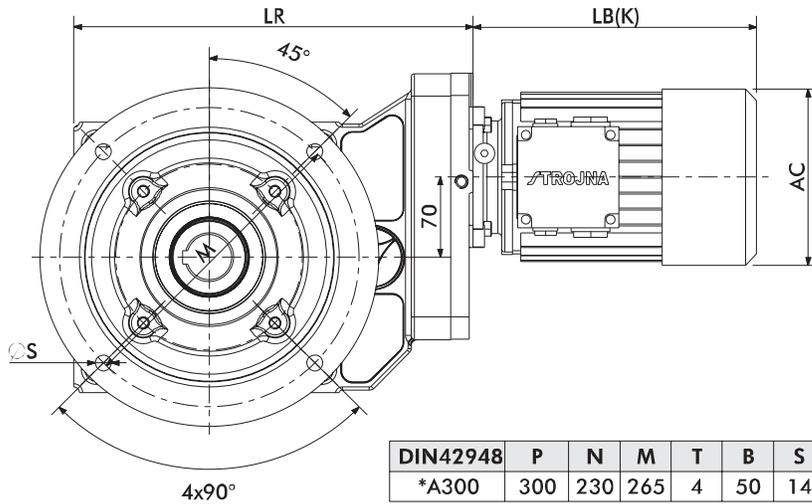


## KG42Z...

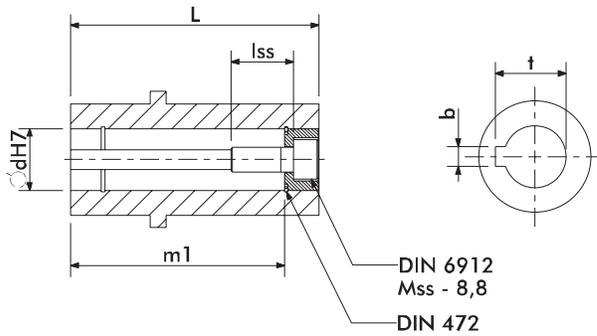


\* Standard  
\*\* C Flange DIN42948

# KG42P..SMB/SMR

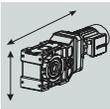
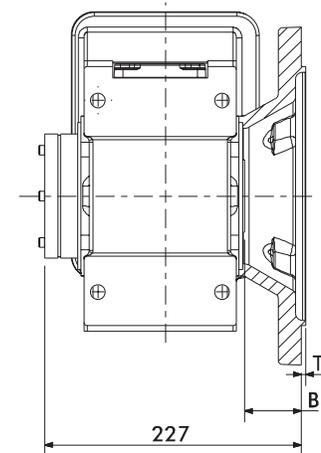


# KG42PD...



d	L	m1	lss	Mss	t	b
40	150	138	40	M16	43,3	12
*45	150	133	40	M16	48,8	14

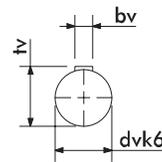
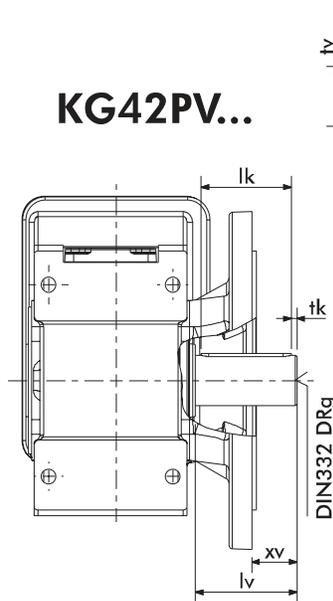
dv	tv	bv	lv	lk	tk	xv	g	lz
40	43	12	80	70	5	27	M16	310
*45	48,5	14	90	80	5	37	M16	330



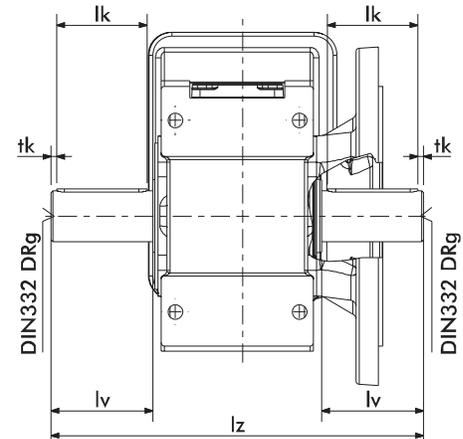
SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	354
71	223	105	280	137	140	354
80	251	110	311	147	154	354
90S	276	121	360	164	170	357
90L	301	121	385	164	170	357
100	329	157	418	174	193	362
112M	334	169	434	199	216	362
132S	377	190	492	183	247	372
132M	415	190	532	183	247	372
132Ma	415	190	532	183	247	372
160M	489	246	613	246	285	386
160L	533	246	657	246	285	386
180M						
180L						
200L						
225S						
225M						
250M						

\* Standard

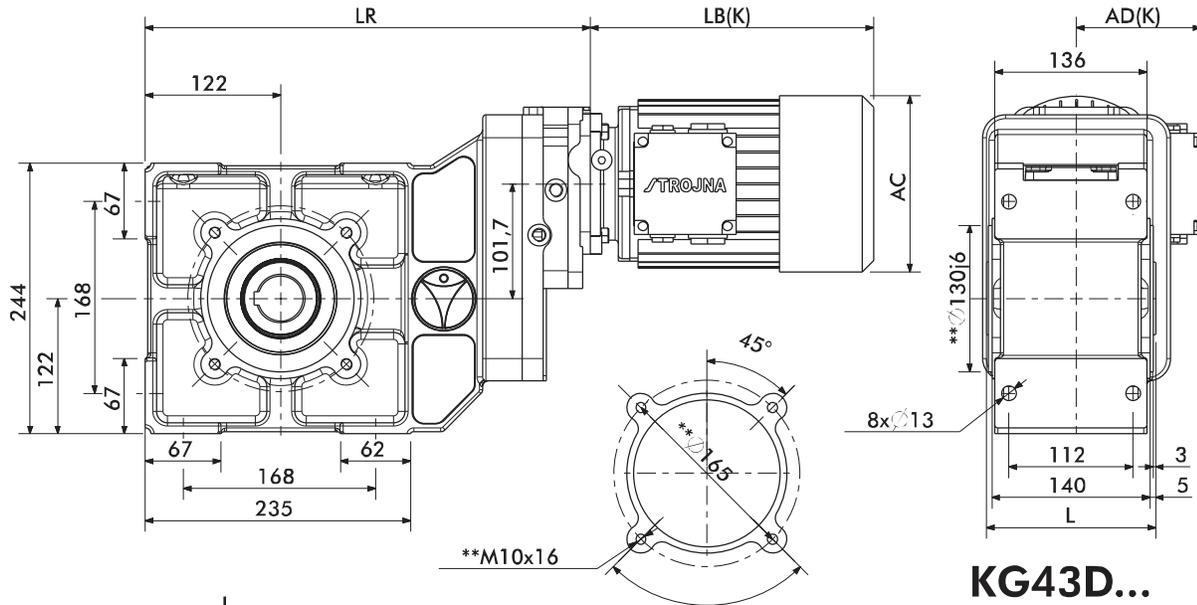
# KG42PV...



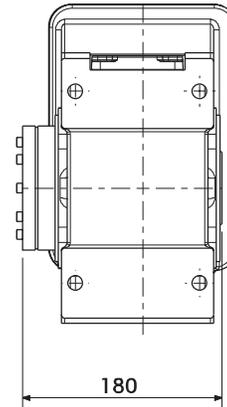
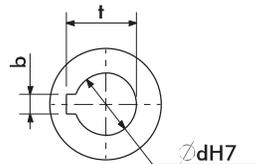
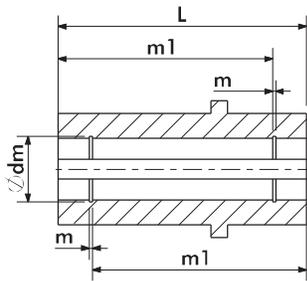
# KG42PZ...



## KG43...SMB/SMR



## KG43D...



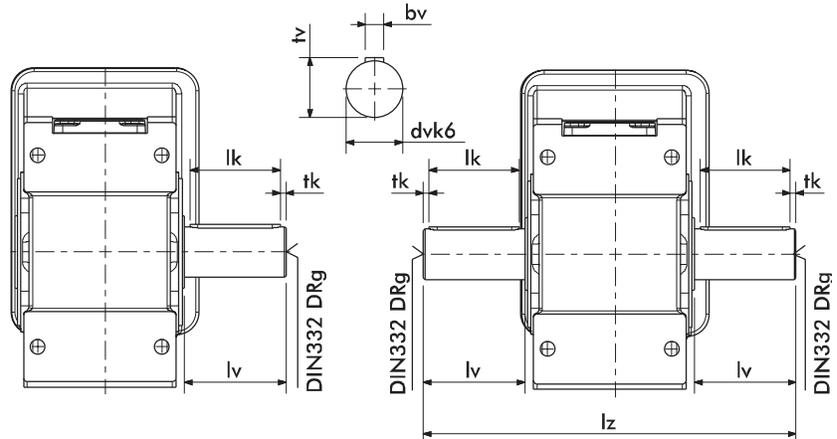
d	L	m1	dm	m	t	b
40	150	138	42,5	1,85	43,3	12
*45	150	133	47,5	1,85	48,8	14

dv	tv	bv	lv	lk	tk	g	lz
40	43	12	80	70	5	M16	310
*45	48,5	14	90	80	5	M16	330

SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	396
71	223	105	280	137	140	396
80	251	110	311	147	154	396
90S	276	121	360	164	170	397
90L	301	121	385	164	170	397
100	329	157	418	174	193	400
112M	334	169	434	199	216	400
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

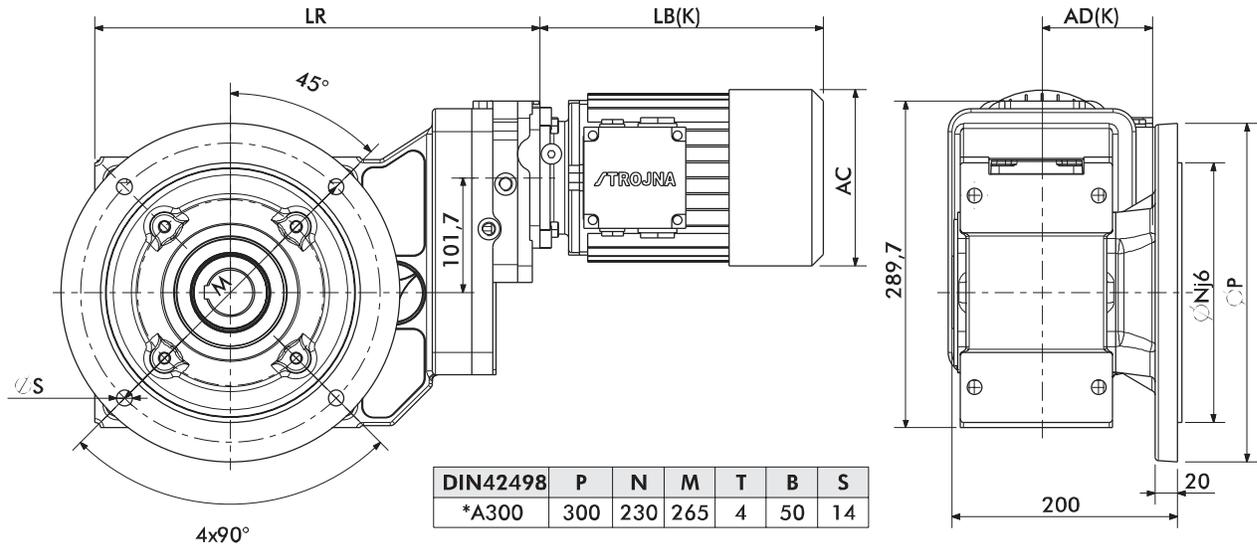
## KG43V...

## KG43Z...

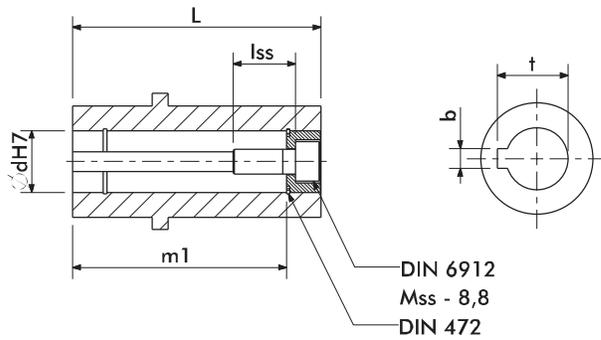


\* Standard  
\*\* C Flange DIN42948

# KG43P..SMB/SMR

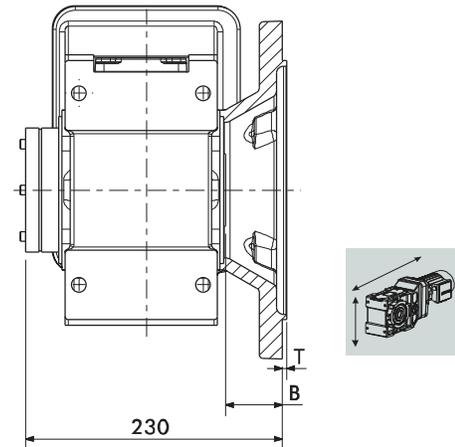


# KG43PD...



d	L	m1	lss	Mss	t	b
40	150	138	40	M16	43,3	12
*45	150	133	40	M16	48,8	14

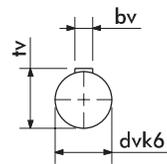
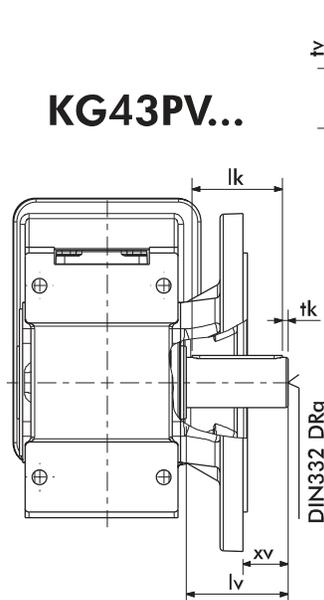
dv	tv	bv	lv	lk	tk	xv	g	lz
40	43	12	80	70	5	27	M16	310
*45	48,5	14	90	80	5	37	M16	330



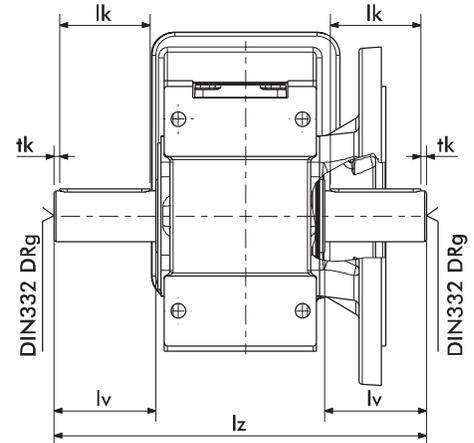
SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	396
71	223	105	280	137	140	396
80	251	110	311	147	154	396
90S	276	121	360	164	170	397
90L	301	121	385	164	170	397
100	329	157	418	174	193	400
112M	334	169	434	199	216	400
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

\* Standard

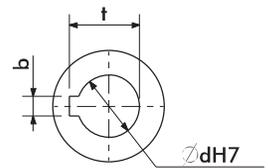
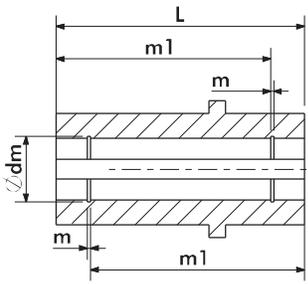
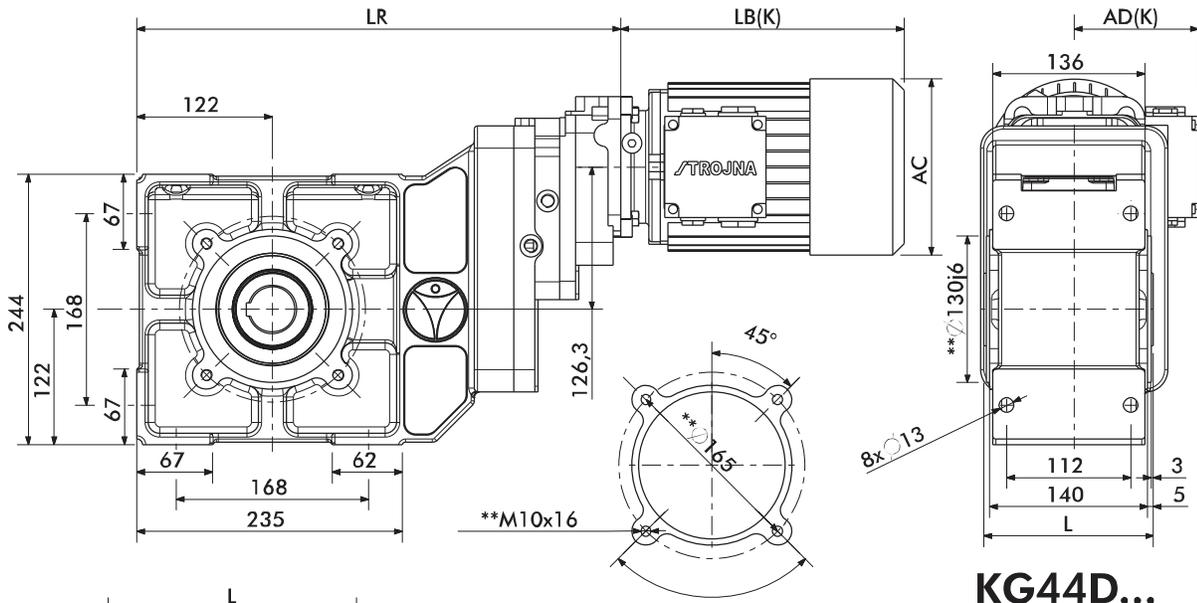
# KG43PV...



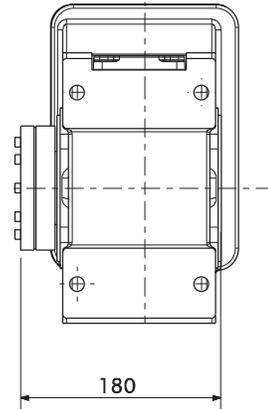
# KG43PZ...



## KG44...SMB/SMR



## KG44D...

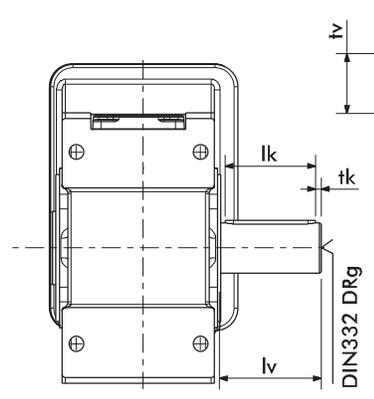


d	L	m1	dm	m	t	b
40	150	138	42,5	1,85	43,3	12
*45	150	133	47,5	1,85	48,8	14

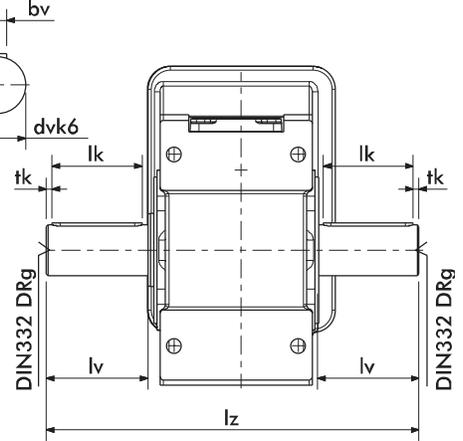
dv	tv	bv	lv	lk	tk	g	lz
40	43	12	80	70	5	M16	310
*45	48,5	14	90	80	5	M16	330

SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	429
71	223	105	280	137	140	429
80	251	110	311	147	154	429
90S	276	121	360	164	170	430
90L	301	121	385	164	170	430
100						
112M						
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

## KG44V...

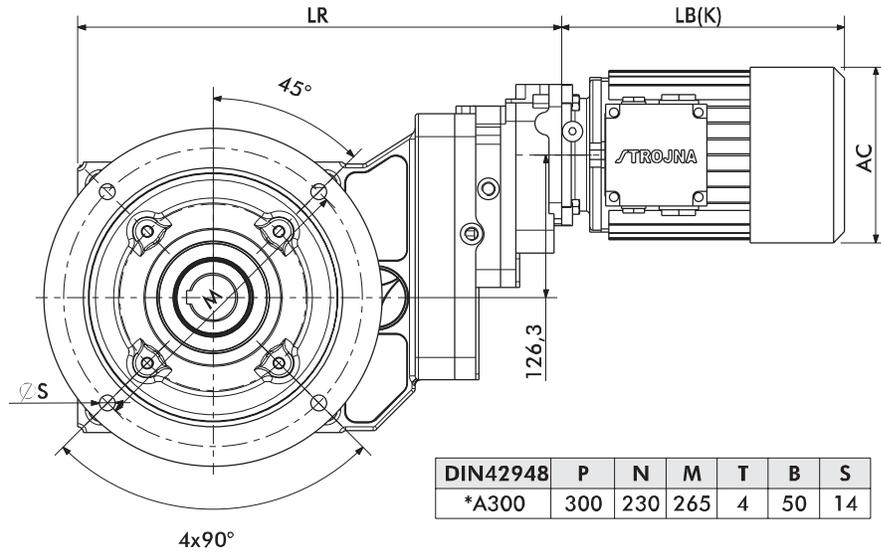


## KG44Z...

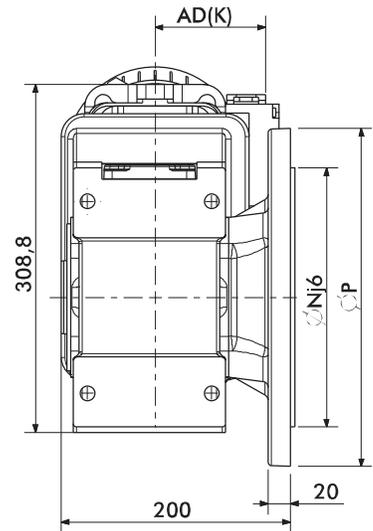


\* Standard  
\*\* C Flange DIN42948

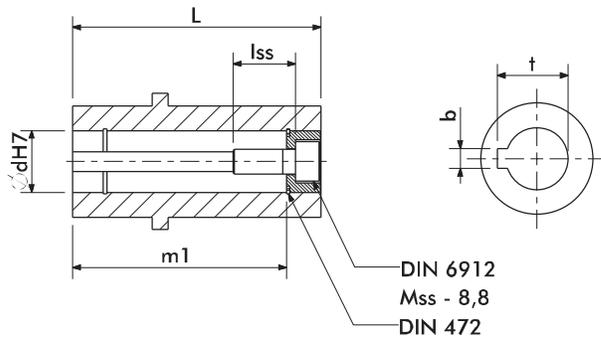
# KG44P..SMB/SMR



DIN42948	P	N	M	T	B	S
*A300	300	230	265	4	50	14

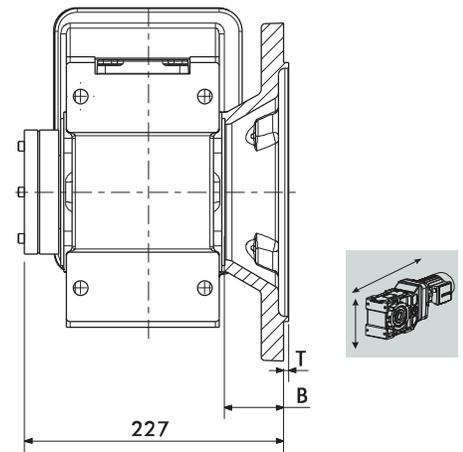


# KG44PD...



d	L	m1	lss	Mss	t	b
40	150	138	40	M16	43,3	12
*45	150	133	40	M16	48,8	14

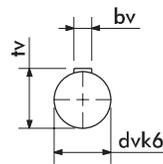
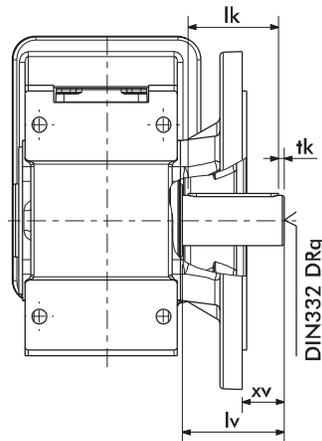
dv	tv	bv	lv	lk	tk	xv	g	lz
40	43	12	80	70	5	27	M16	310
*45	48,5	14	90	80	5	37	M16	330



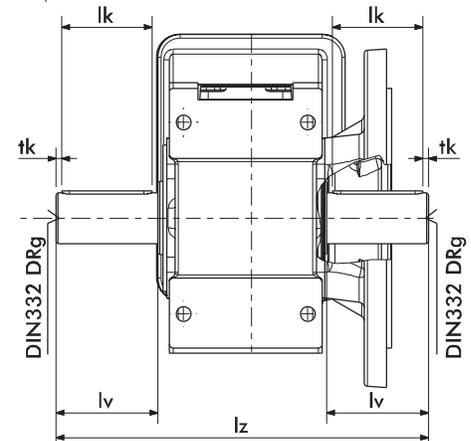
SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	429
71	223	105	280	137	140	429
80	251	110	311	147	154	429
90S	276	121	360	164	170	430
90L	301	121	385	164	170	430
100						
112M						
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

\* Standard

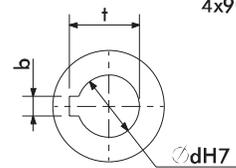
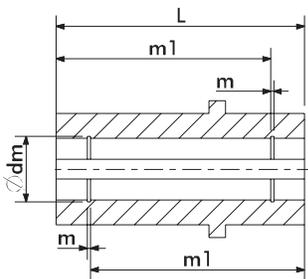
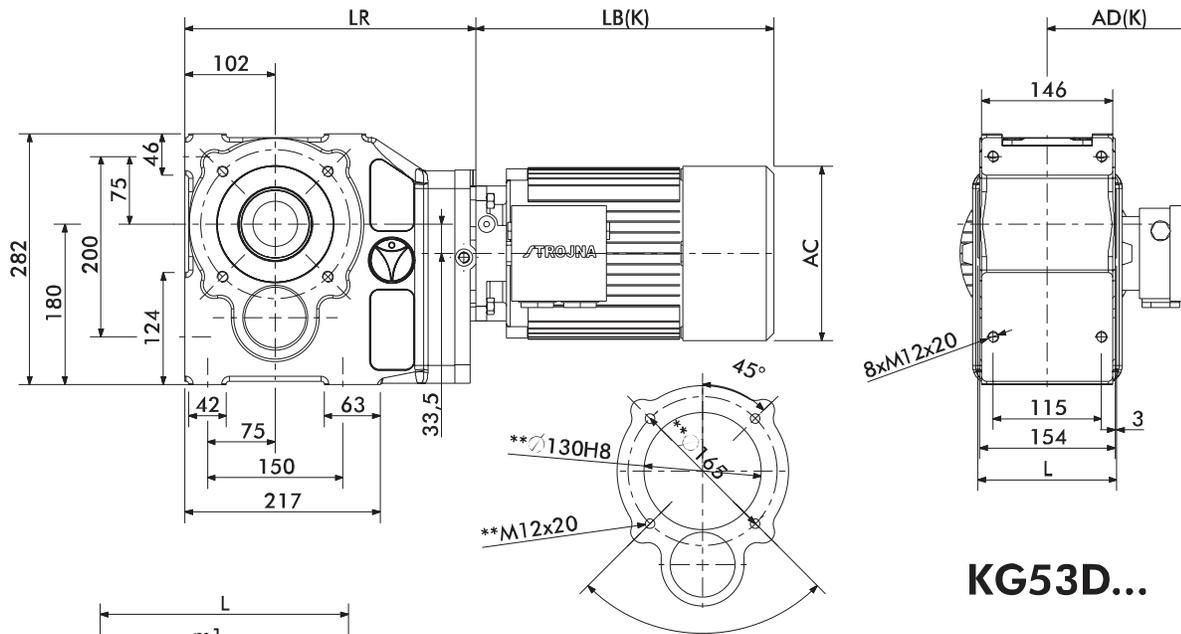
# KG44PV...



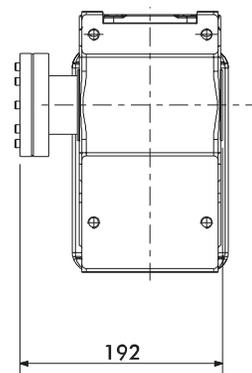
# KG44PZ...



## KG53...SMB/SMR



## KG53D...

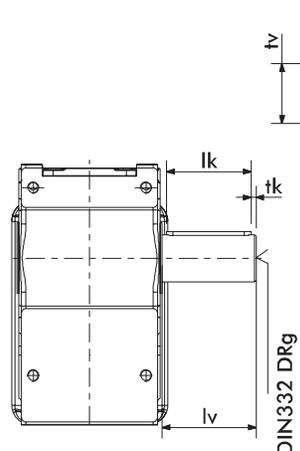


d	L	m1	dm	m	t	b
*50	160	143	53	2,15	53,8	14

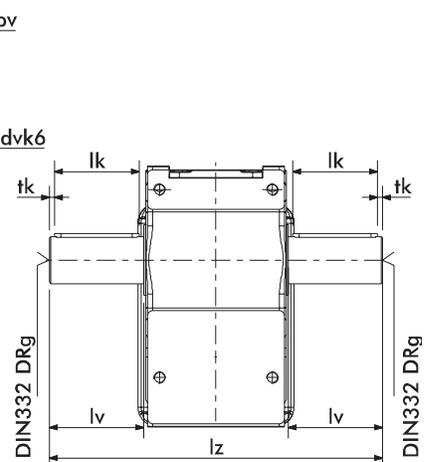
dv	tv	bv	lv	lk	tk	g	lz
*50	53,5	14	100	80	10	M16	360

SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	317
71	223	105	280	137	140	317
80	251	110	311	147	154	317
90S	276	121	360	164	170	318
90L	301	121	385	164	170	318
100	329	157	418	174	193	322
112M	334	169	434	199	216	322
132S	377	190	492	183	247	335
132M	415	190	532	183	247	335
132Ma	415	190	532	183	247	335
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

## KG53V...

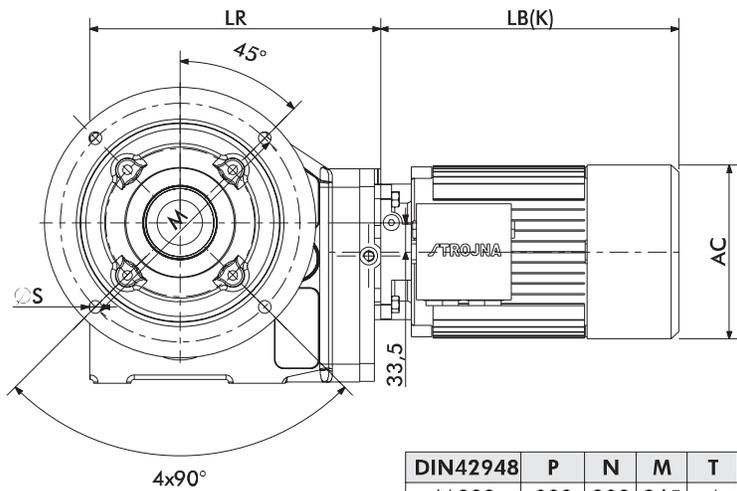


## KG53Z...

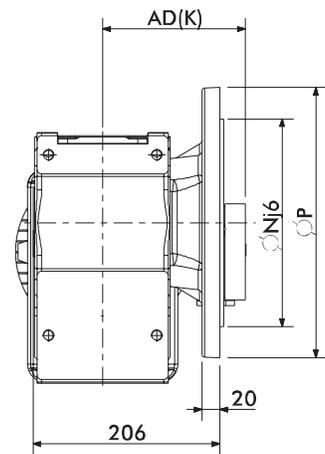


\*Standard  
\*\*C Flange DIN42948

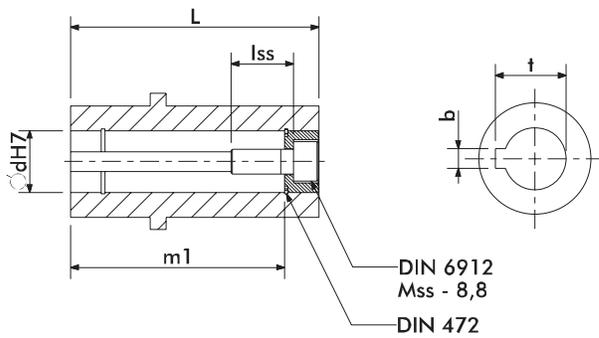
# KG53P..SMB/SMR



DIN42948	P	N	M	T	B	S
*A300	300	230	265	4	52	14

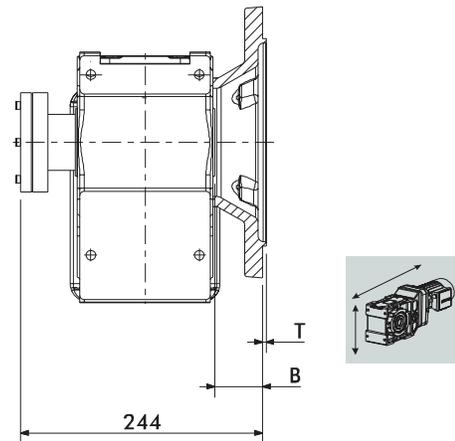


# KG53PD...



d	L	m1	lss	Mss	t	b
*50	160	143	45	M16	53,8	14

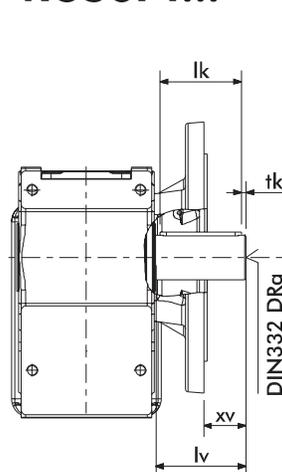
dv	tv	bv	lv	lk	tk	xv	g	lz
*50	53,5	14	100	80	10	47	M16	360



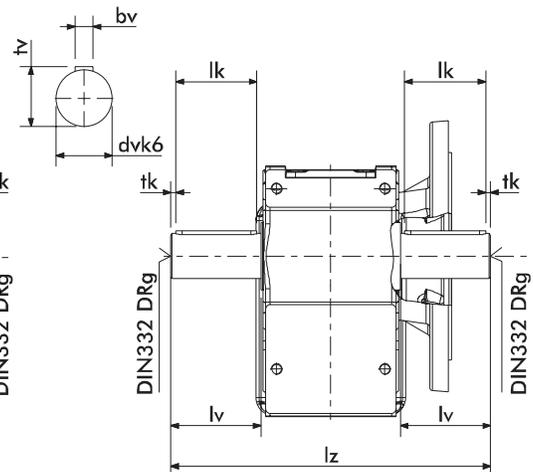
SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	317
71	223	105	280	137	140	317
80	251	110	311	147	154	317
90S	276	121	360	164	170	318
90L	301	121	385	164	170	318
100	329	157	418	174	193	322
112M	334	169	434	199	216	322
132S	377	190	492	183	247	335
132M	415	190	532	183	247	335
132Ma	415	190	532	183	247	335
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

\*Standard

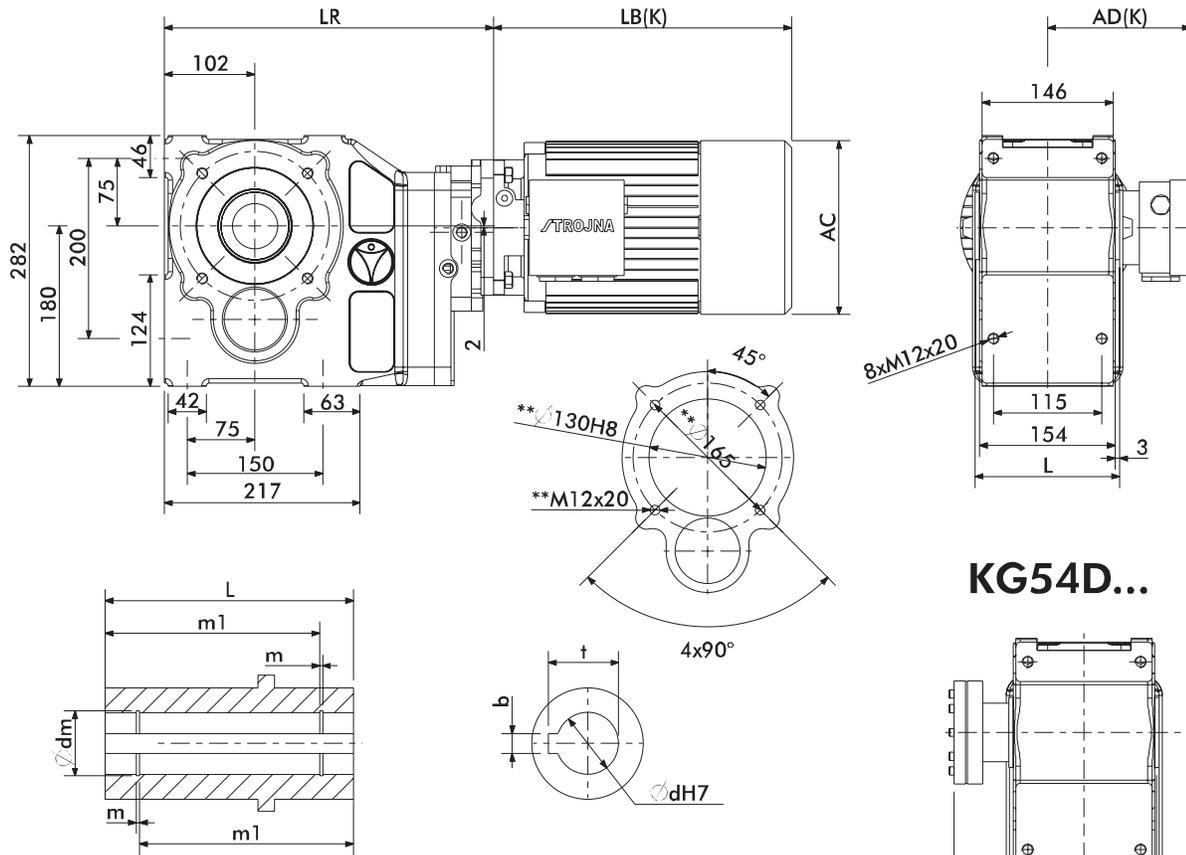
# KG53PV...



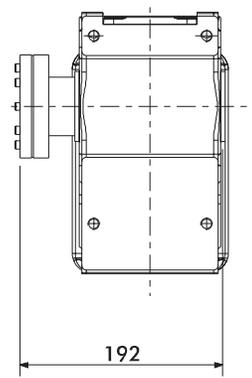
# KG53PZ...



## KG54...SMB/SMR



## KG54D...

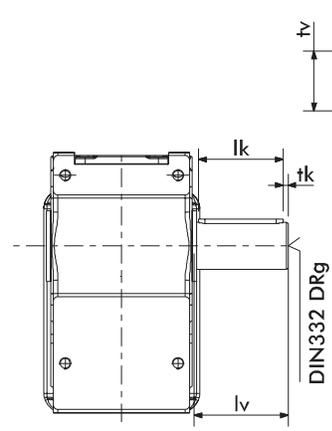


d	L	m1	dm	m	t	b
*50	160	143	53	2,15	53,8	14

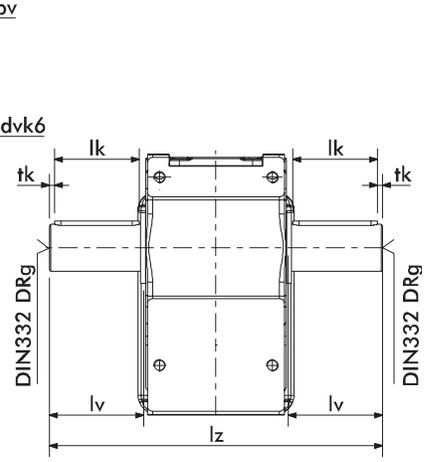
dv	tv	bv	lv	lk	tk	g	lz
*50	53,5	14	100	80	10	M16	360

SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	362
71	223	105	280	137	140	362
80	251	110	311	147	154	362
90S	276	121	360	164	170	363
90L	301	121	385	164	170	363
100	329	157	418	174	193	368
112M	334	169	434	199	216	368
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

## KG54V...

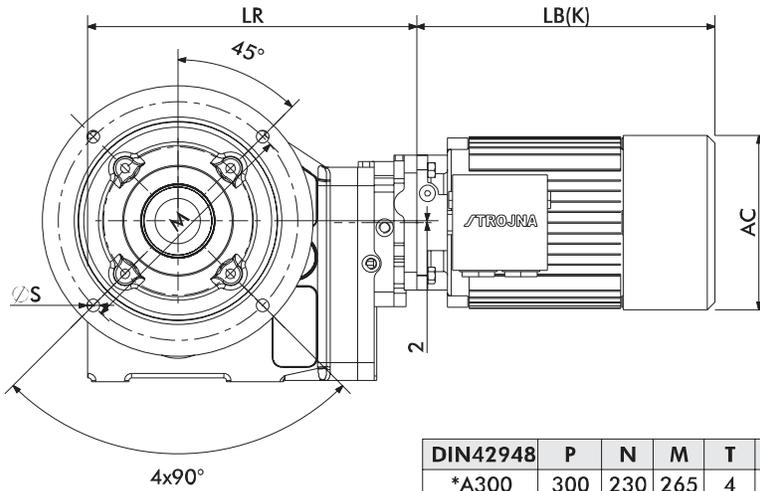


## KG54Z...

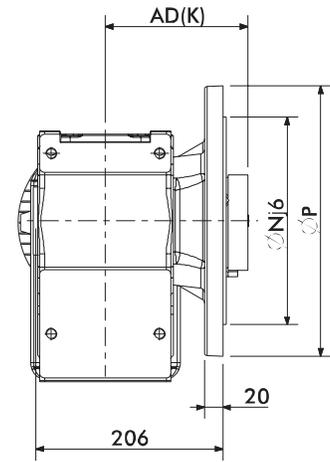


\*Standard  
\*\*C Flange DIN42948

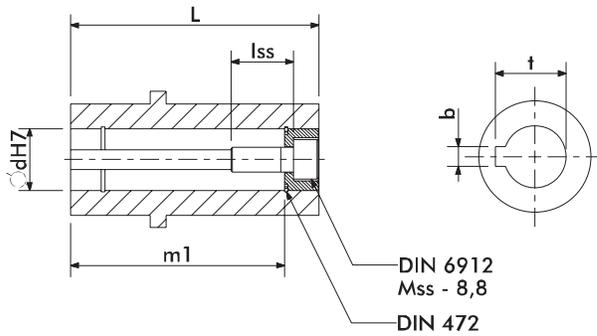
# KG54P..SMB/SMR



DIN42948	P	N	M	T	B	S
*A300	300	230	265	4	52	14



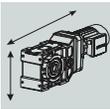
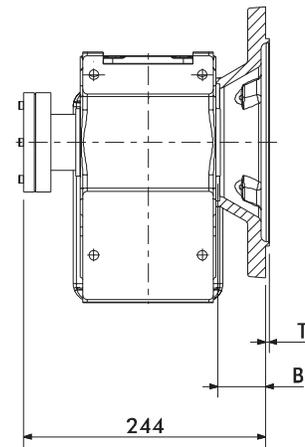
# KG54PD...



DIN 6912  
Mss - 8,8  
DIN 472

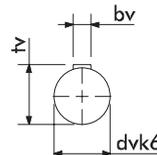
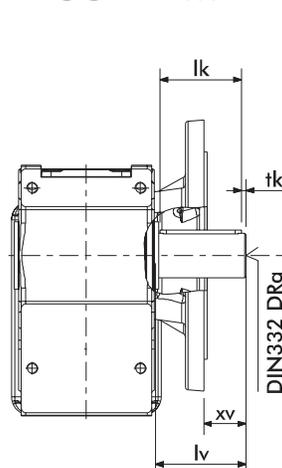
d	L	m1	lss	Mss	t	b
*50	160	143	45	M16	53,8	14

dv	tv	bv	lv	lk	tk	xv	g	lz
*50	53,5	14	100	80	10	47	M16	360

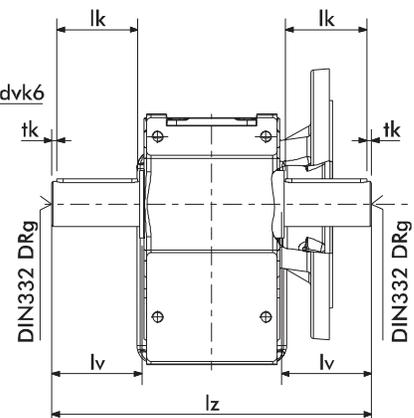


SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	215	125	362
71	223	105	280	137	140	362
80	251	110	311	147	154	362
90S	276	121	360	164	170	363
90L	301	121	385	164	170	363
100	329	157	418	174	193	368
112M	334	169	434	199	216	368
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

# KG54PV...

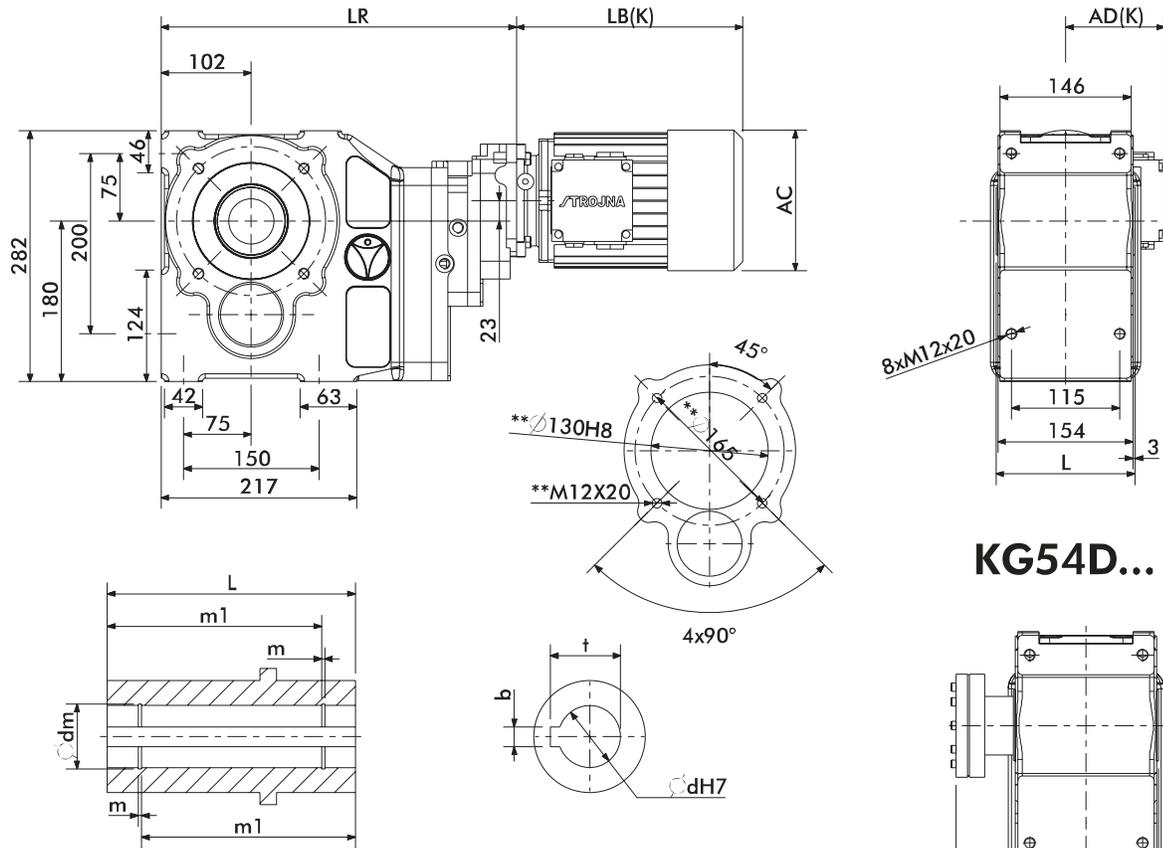


# KG54PZ...

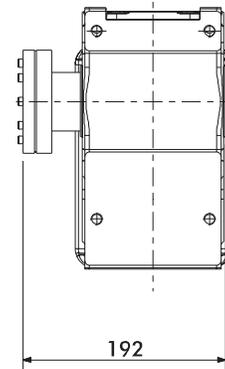


\*Standard

## KG55...SMB/SMR



## KG54D...

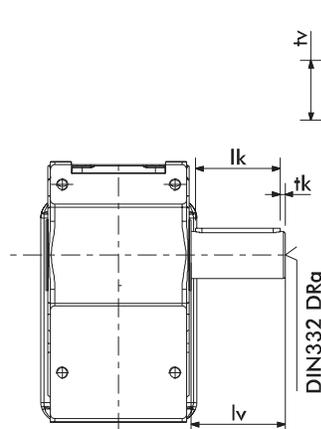


d	L	m1	dm	m	t	b
*50	160	143	53	2,15	53,8	14

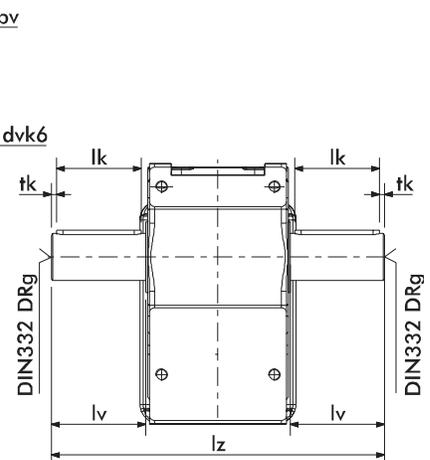
dv	tv	bv	lv	lk	tk	g	lz
*50	53,5	14	100	80	10	M16	360

SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	395
71	223	105	280	137	140	395
80	251	110	311	147	154	395
90S	276	121	360	164	170	398
90L	301	121	385	164	170	398
100						
112M						
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

## KG55V...

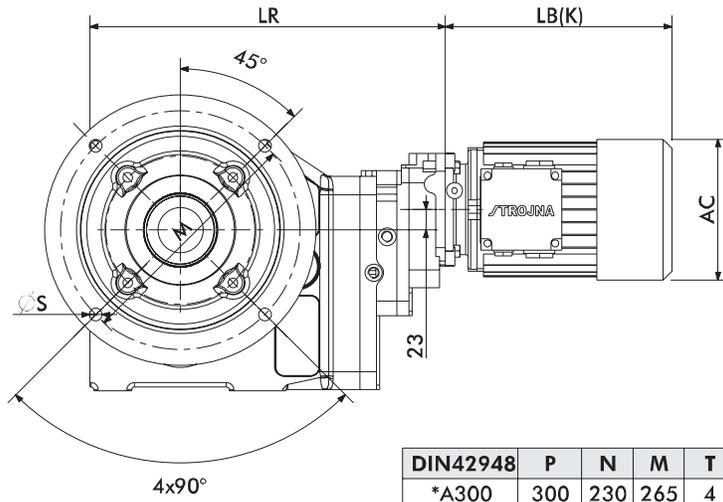


## KG55Z...

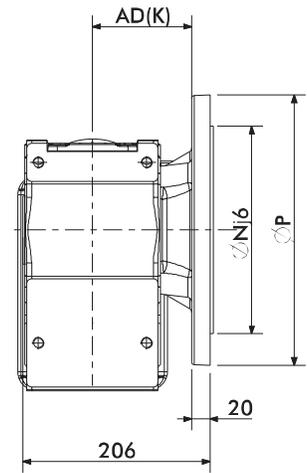


\*Standard  
\*\*C Flange DIN42948

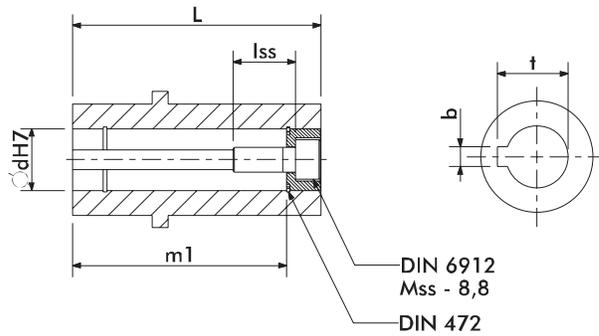
## KG55P...SMB/SMR



DIN42948	P	N	M	T	B	S
*A300	300	230	265	4	52	14

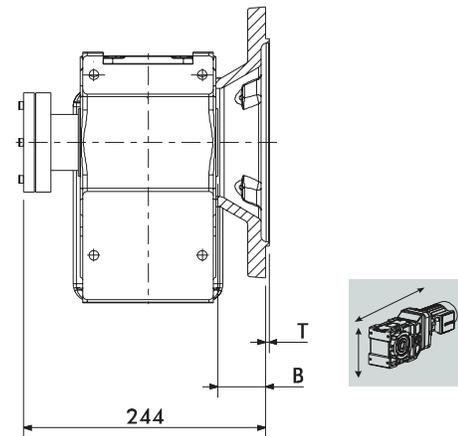


## KG55PD...



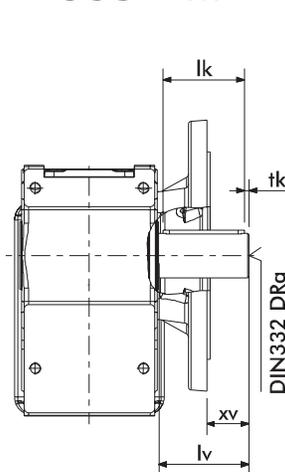
d	L	m1	lss	Mss	t	b
*50	154	143	45	M16	53,8	14

dv	tv	bv	lv	lk	tk	xv	g	lz
*50	53,5	14	100	80	10	47	M16	360

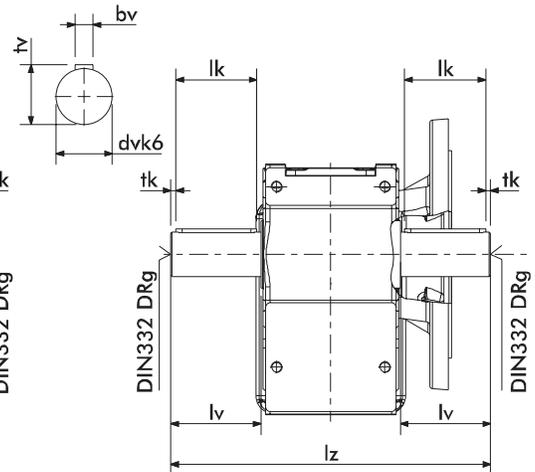


SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	395
71	223	105	280	137	140	395
80	251	110	311	147	154	395
90S	276	121	360	164	170	398
90L	301	121	385	164	170	398
100						
112M						
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

## KG55PV...

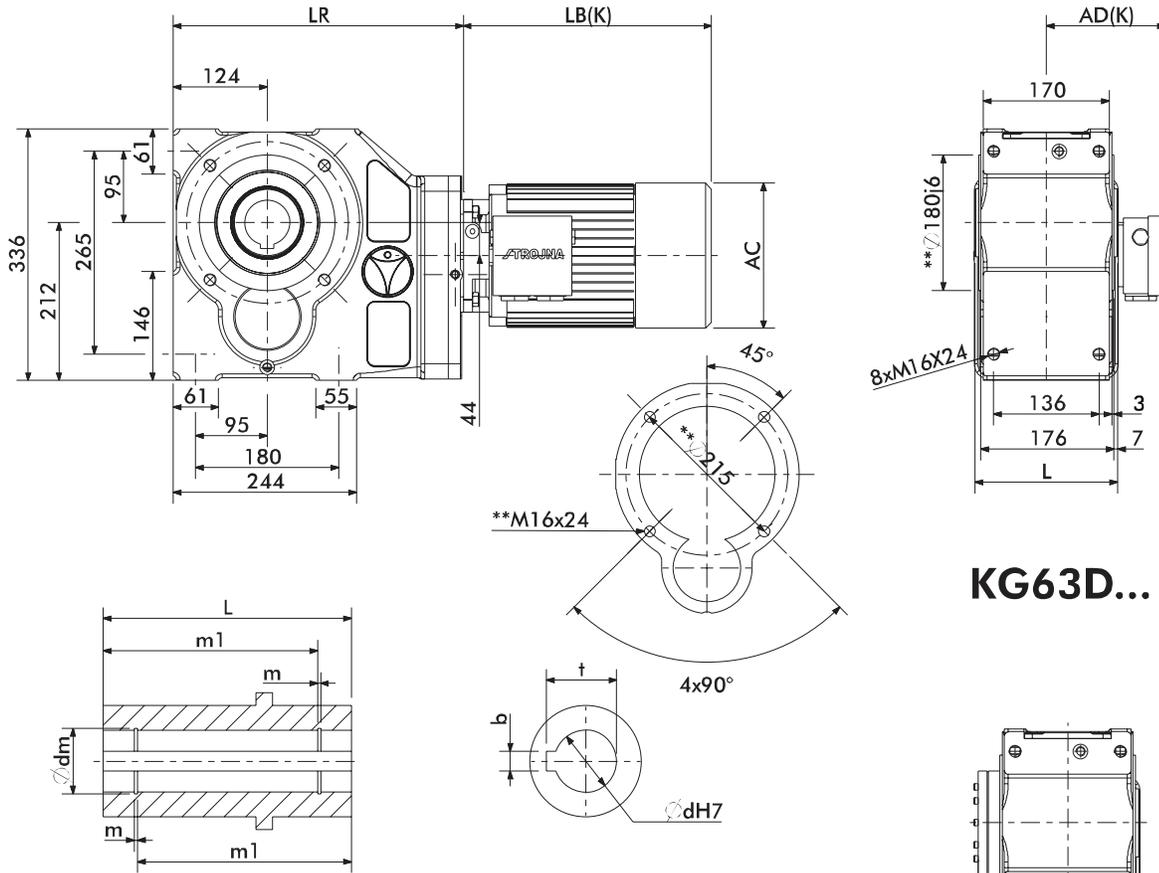


## KG55PZ...

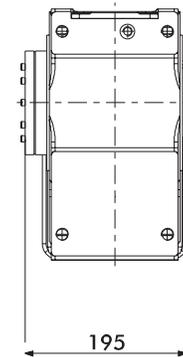


\*Standard

## KG63...SMB/SMR



## KG63D...

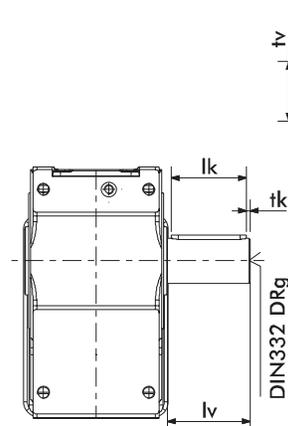


d	L	m1	dm	m	t	b
*60	190	167	63	2,15	64,4	18

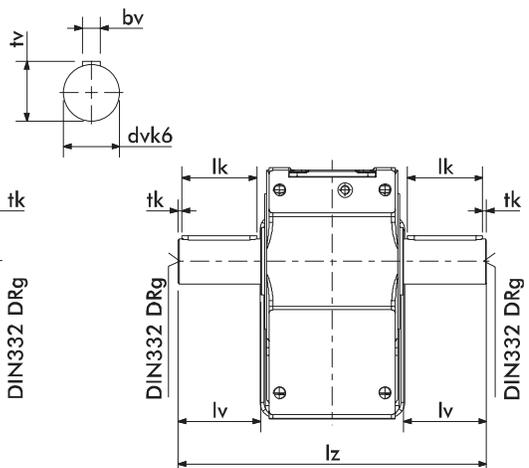
dv	tv	bv	lv	lk	tk	g	lz
*60	64	18	110	100	5	M20	410

SMB/SMR	LB	AD	LBK	ADK	AC	LR
63						
71						
80						
90S						
90L						
100	329	157	418	174	193	386
112M	334	169	434	199	216	386
132S	377	190	492	183	247	400
132M	415	190	532	183	247	400
132Ma	415	190	532	183	247	400
160M	489	246	613	246	285	408
160L	533	246	657	246	285	408
180M	554	260	739	260	323	408
180L	592	260	777	260	323	408
200L						
225S						
225M						
250M						

## KG63V...

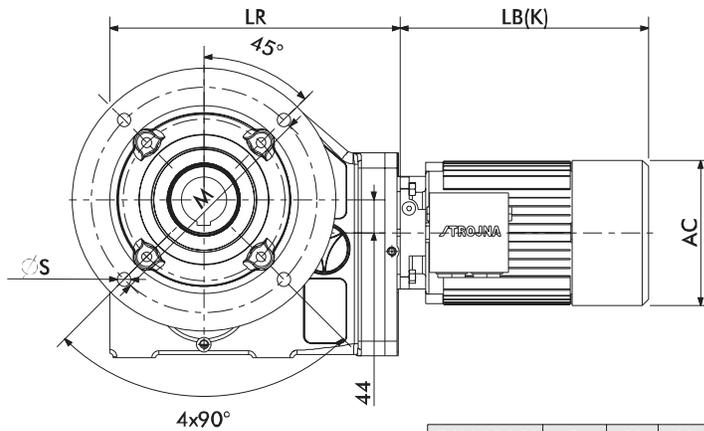


## KG63Z...

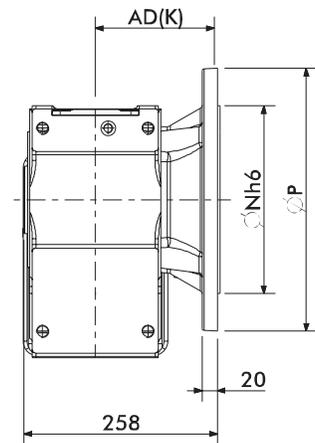


\*Standard  
\*\*C Flange DIN42948

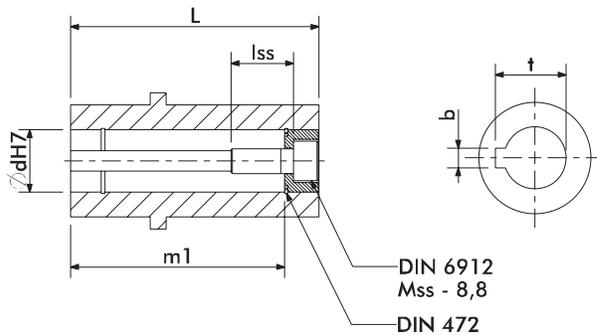
# KG63P...SMB/SMR



DIN42948	P	N	M	T	B	S
*A350	350	250	300	4	68	18

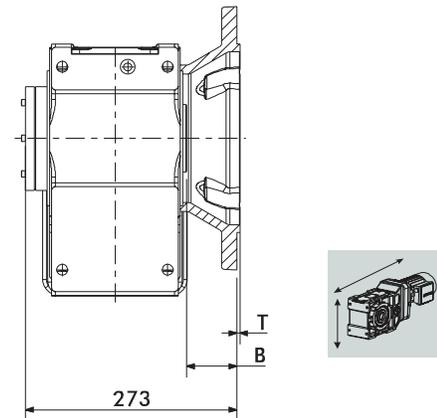


# KG63PD...



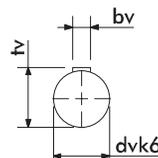
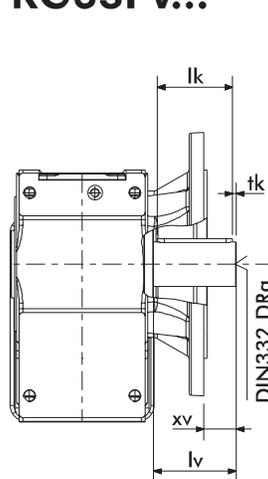
d	L	m1	lss	Mss	t	b
*60	190	167	50	M20	64,4	18

dv	tv	bv	lv	lk	tk	xv	g	lz
*60	64	18	110	100	5	40	M20	410

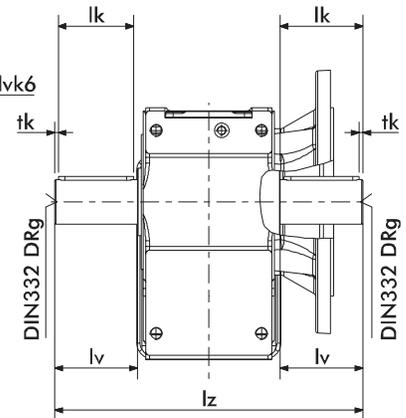


SMB/SMR	LB	AD	LBK	ADK	AC	LR
63						
71						
80						
90S						
90L						
100	329	157	418	174	193	386
112M	334	169	434	199	216	386
132S	377	190	492	183	247	400
132M	415	190	532	183	247	400
132Ma	415	190	532	183	247	400
160M	489	246	613	246	285	408
160L	533	246	657	246	285	408
180M	554	260	739	260	323	408
180L	592	260	777	260	323	408
200L						
225S						
225M						
250M						

# KG63PV...

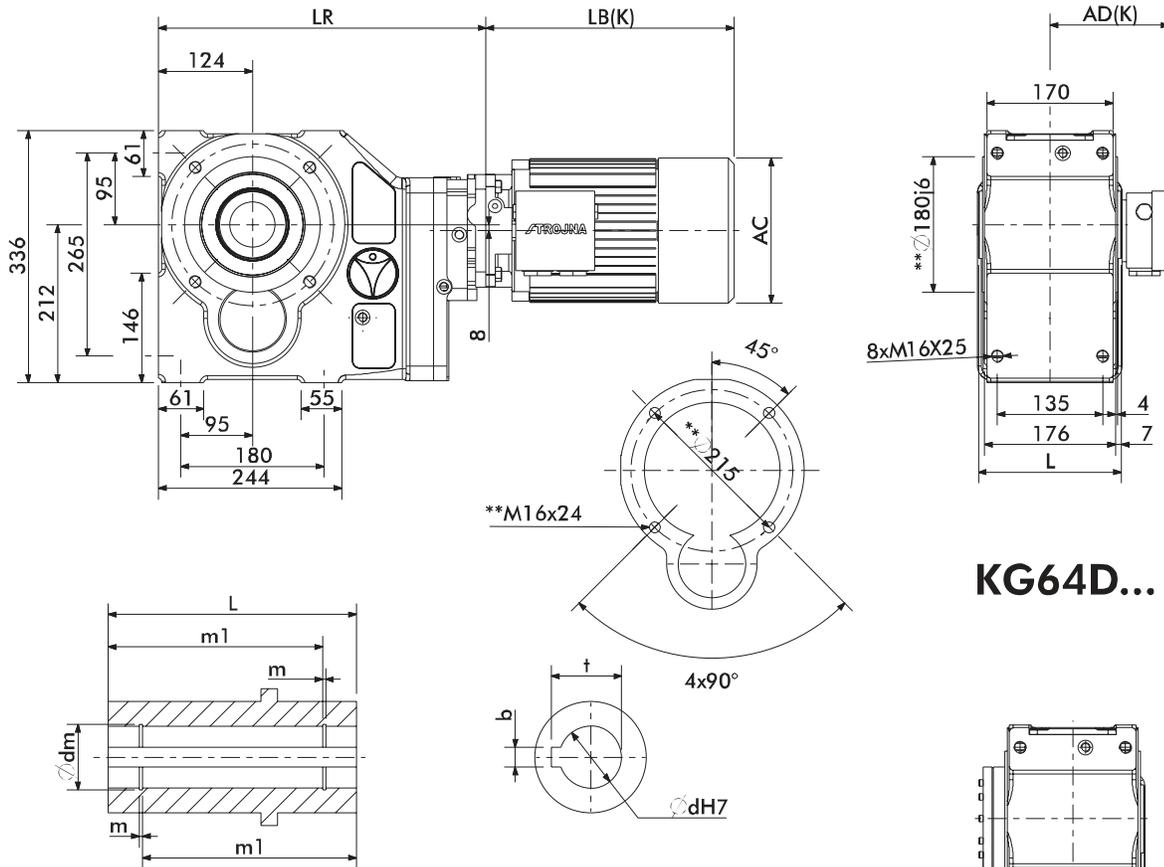


# KG63PZ...

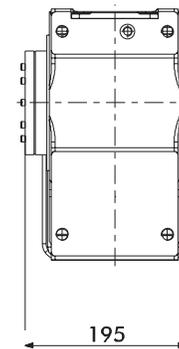


\*Standard

## KG64...SMB/SMR



## KG64D...

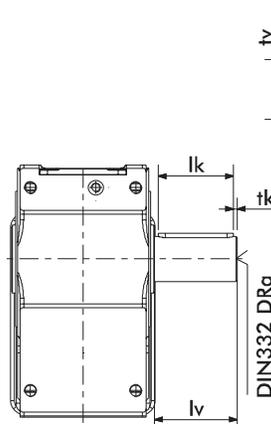


d	L	m1	dm	m	t	b
*60	190	167	63	2,15	64,4	18

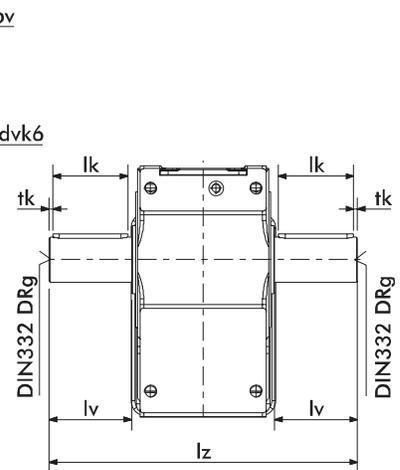
dv	tv	bv	lv	lk	tk	g	lz
*60	64	18	110	100	5	M20	410

SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	428
71	223	105	280	137	140	428
80	251	110	311	147	154	428
90S	276	121	360	164	170	430
90L	301	121	385	164	170	430
100	329	157	418	174	193	434
112M	334	169	434	199	216	434
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

## KG64V...

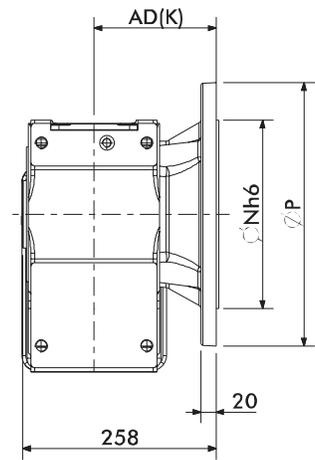
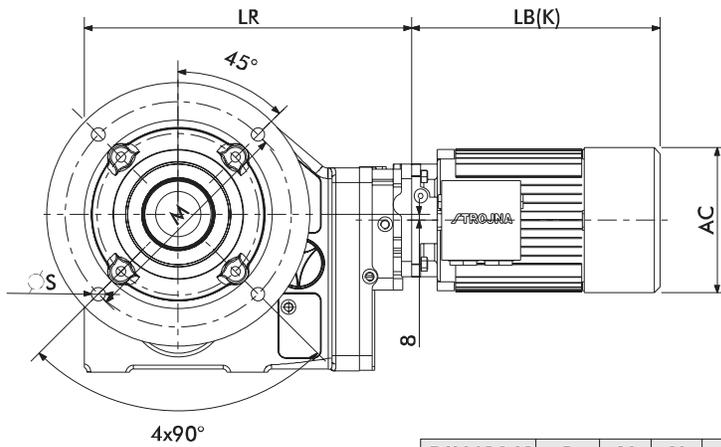


## KG64Z...



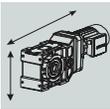
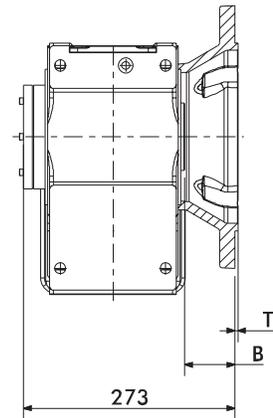
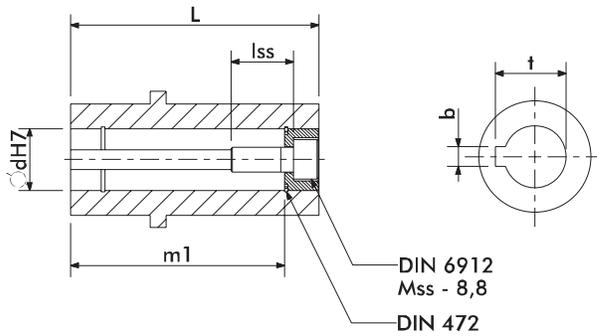
\*Standard  
\*\*C Flange DIN 42948

# KG64P..SMB/SMR



DIN42948	P	N	M	T	B	S
*A350	350	250	300	4	68	18

# KG64PD...

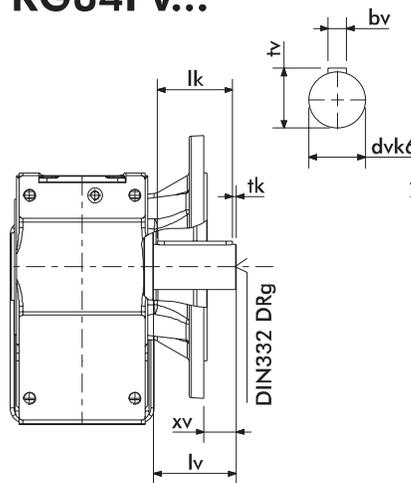


d	L	m1	lss	Mss	t	b
*60	190	167	50	M20	64,4	18

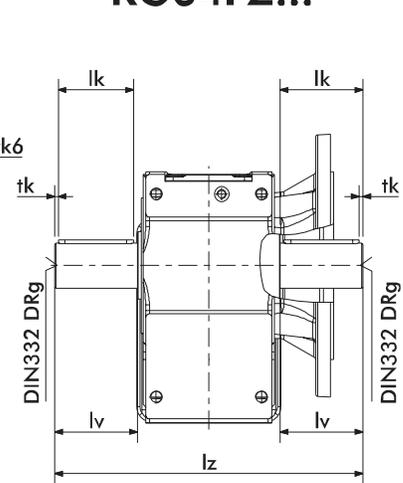
dv	tv	bv	lv	lk	tk	xv	g	lz
*60	64	18	110	100	5	40	M20	410

SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	428
71	223	105	280	137	140	428
80	251	110	311	147	154	428
90S	276	121	360	164	170	430
90L	301	121	385	164	170	430
100	329	157	418	174	193	434
112M	334	169	434	199	216	434
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

# KG64PV...

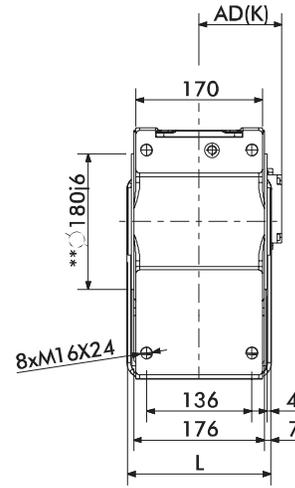
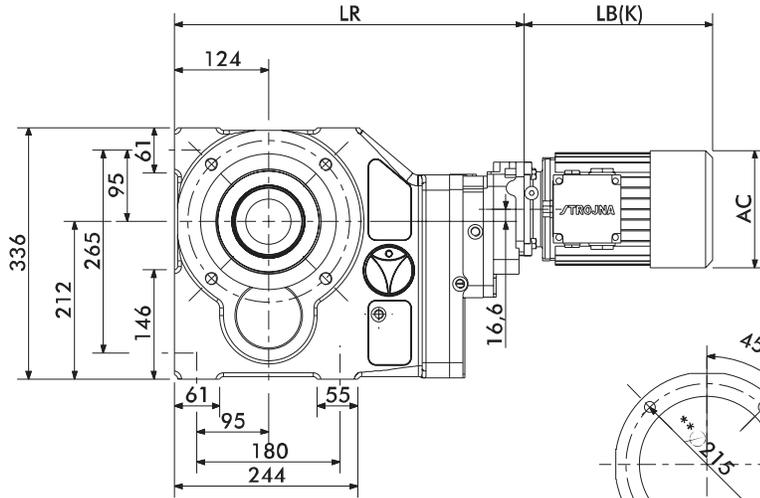


# KG64PZ...

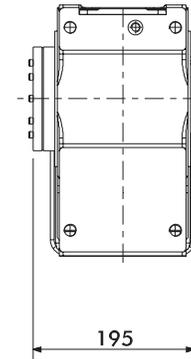
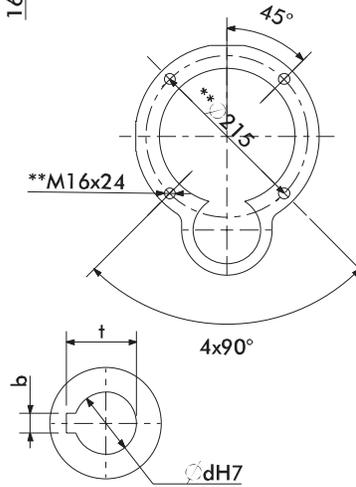
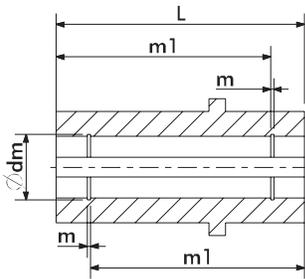


\*Standard

## KG65...SMB/SMR



## KG65D...



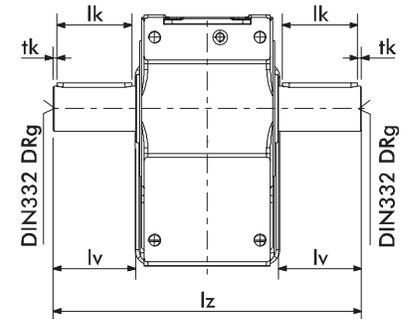
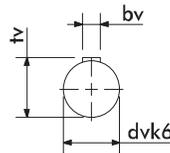
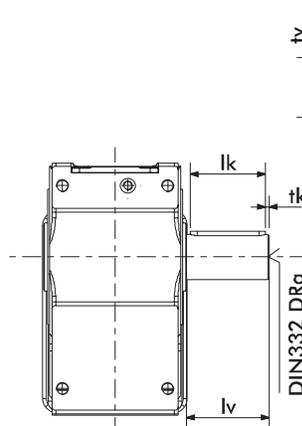
## KG65Z...

d	L	m1	dm	m	t	b
*60	190	167	63	2,15	64,4	18

dv	tv	bv	lv	lk	tk	g	lz
*60	64	18	110	100	5	M20	410

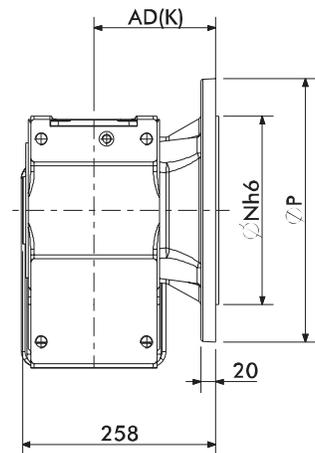
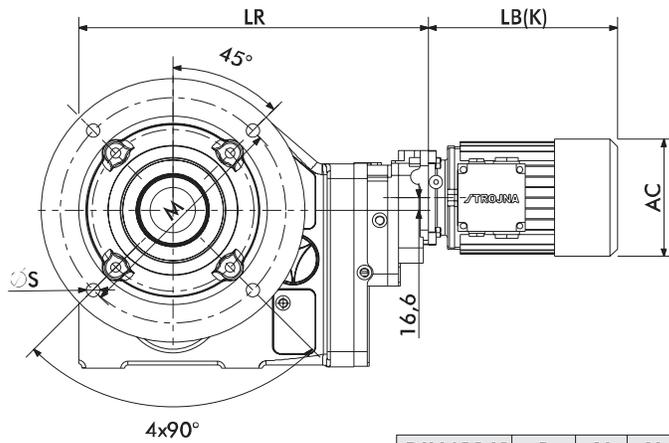
SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	462
71	223	105	280	137	140	462
80	251	110	311	147	154	462
90S	276	121	360	164	170	463
90L	301	121	385	164	170	463
100						
112M						
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

## KG65V...



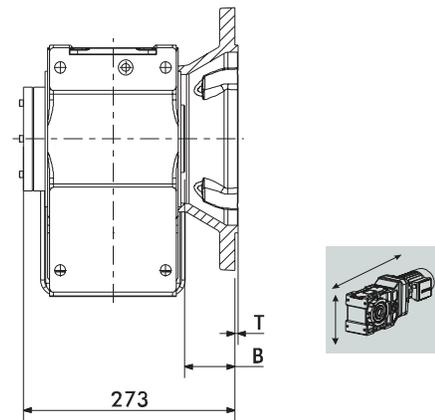
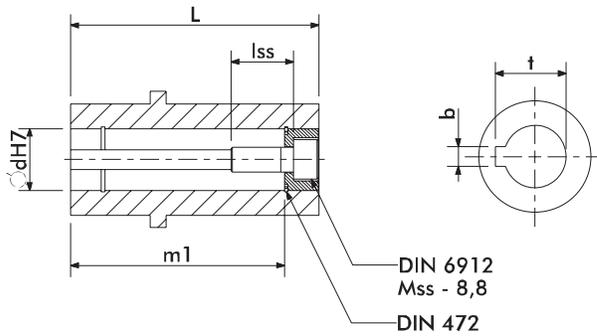
\*Standard  
\*\*C Flange DIN42948

# KG65P..SMB/SMR



DIN42948	P	N	M	T	B	S
*A350	350	280	300	4	68	18

# KG65PD...



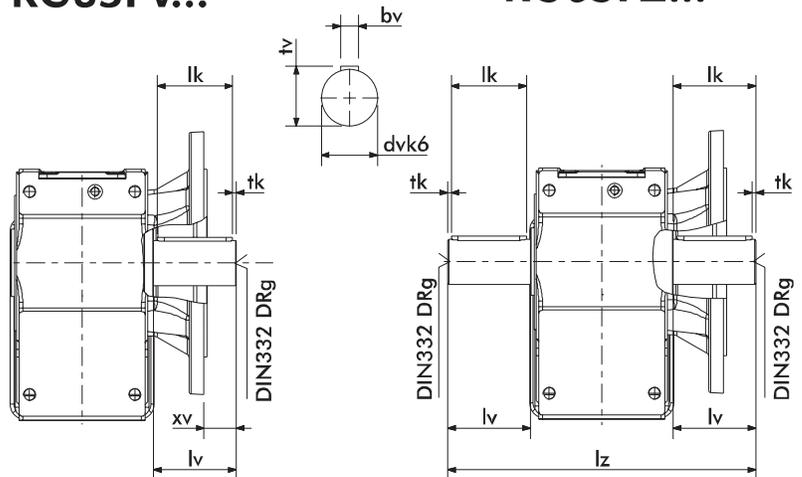
d	L	m1	lss	Mss	t	b
*60	190	167	50	M20	64,4	18

dv	tv	bv	lv	lk	tk	xv	g	lz
*60	64	18	110	100	5	40	M20	410

SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	462
71	223	105	280	137	140	462
80	251	110	311	147	154	462
90S	276	121	360	164	170	463
90L	301	121	385	164	170	463
100						
112M						
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

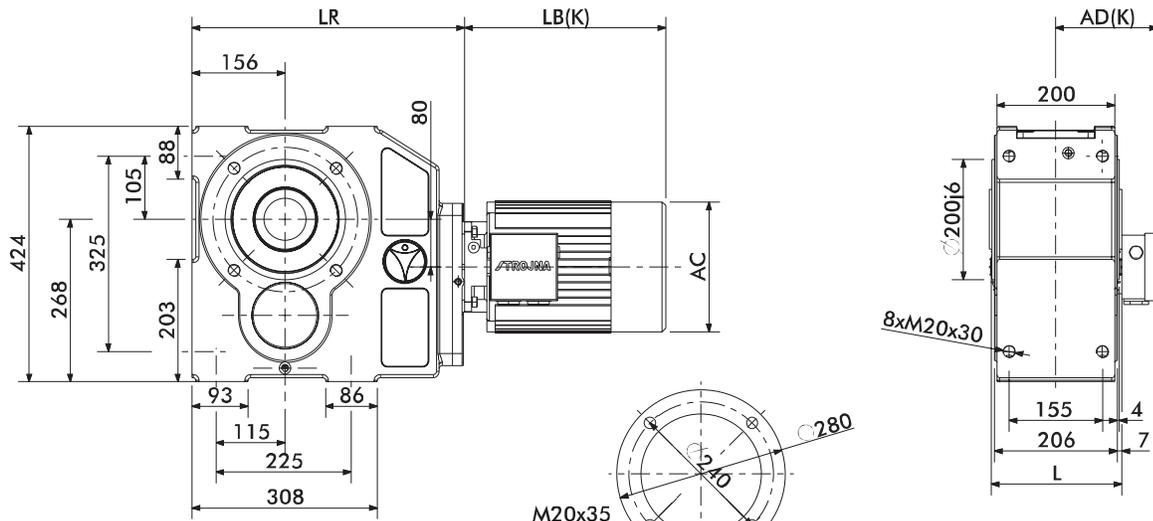
# KG65PV...

# KG65PZ...

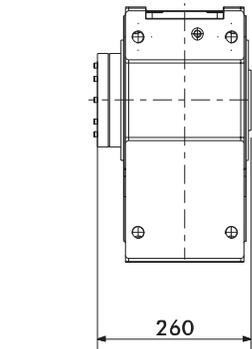


\* Standard

## KG73...SMB/SMR



## KG73D...



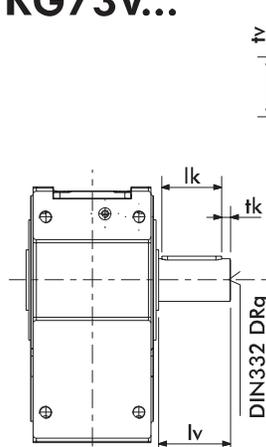
d	L	m1	dm	m	t	b
*70	220	198	73	2,65	74,9	20

dv	tv	bv	lv	lk	tk	g	lz
*70	74,5	20	120	100	10	M20	560

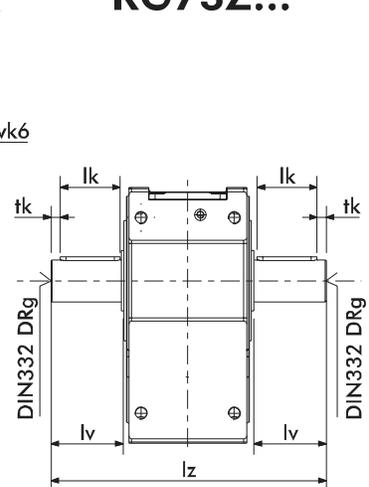
SMB/SMR	LB	AD	LBK	ADK	AC	LR
63						
71						
80						
90S						
90L						
100	329	157	418	174	193	453
112M	334	169	434	199	216	453
132S	377	190	492	183	247	466
132M	415	190	532	183	247	466
132Ma	415	190	532	183	247	466
160M	489	246	613	246	285	475
160L	533	246	657	246	285	475
180M	554	260	739	260	323	475
180L	592	260	777	260	323	475
200L						
225S						
225M						
250M						

\*Standard

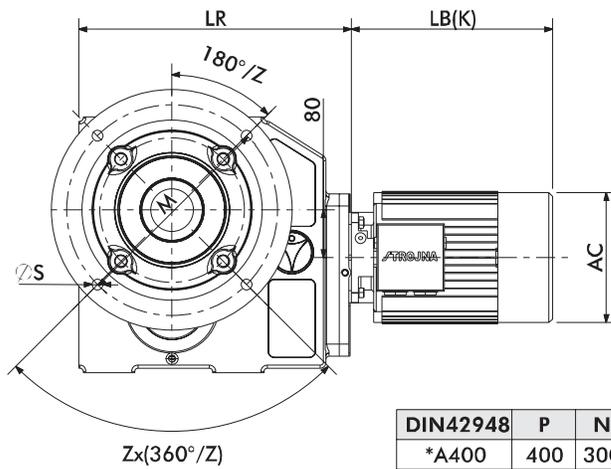
## KG73V...



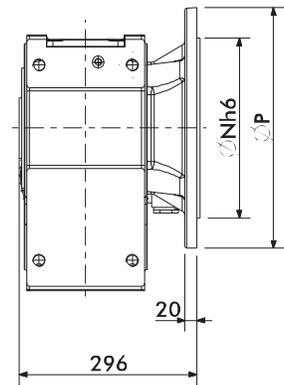
## KG73Z...



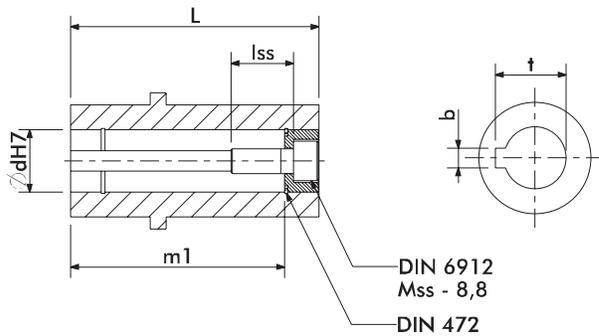
# KG73P...SMB/SMR



DIN42948	P	N	M	T	B	Z	S
*A400	400	300	350	5	76	4	18
A450	450	350	400	5	76	8	18



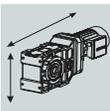
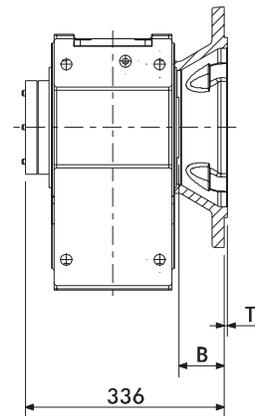
# KG73PD...



DIN 6912  
Mss - 8,8  
DIN 472

d	L	m1	lss	Mss	t	b
*70	220	198	55	M20	74,9	20

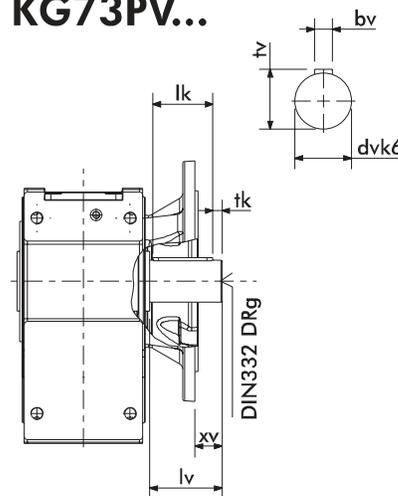
dv	tv	bv	lv	lk	tk	xv	g	lz
*70	74,5	20	120	100	10	42	M20	560



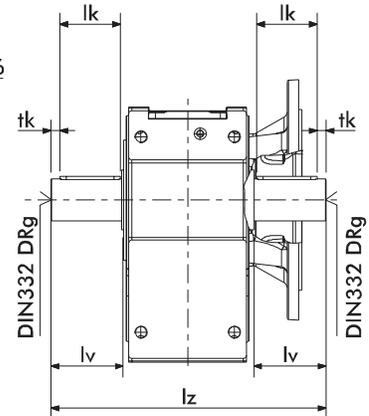
SMB/SMR	LB	AD	LBK	ADK	AC	LR
63						
71						
80						
90S						
90L						
100	329	157	418	174	193	453
112M	334	169	434	199	216	453
132S	377	190	492	183	247	466
132M	415	190	532	183	247	466
132Ma	415	190	532	183	247	466
160M	489	246	613	246	285	475
160L	533	246	657	246	285	475
180M	554	260	739	260	323	475
180L	592	260	777	260	323	475
200L						
225S						
225M						
250M						

\* Standard

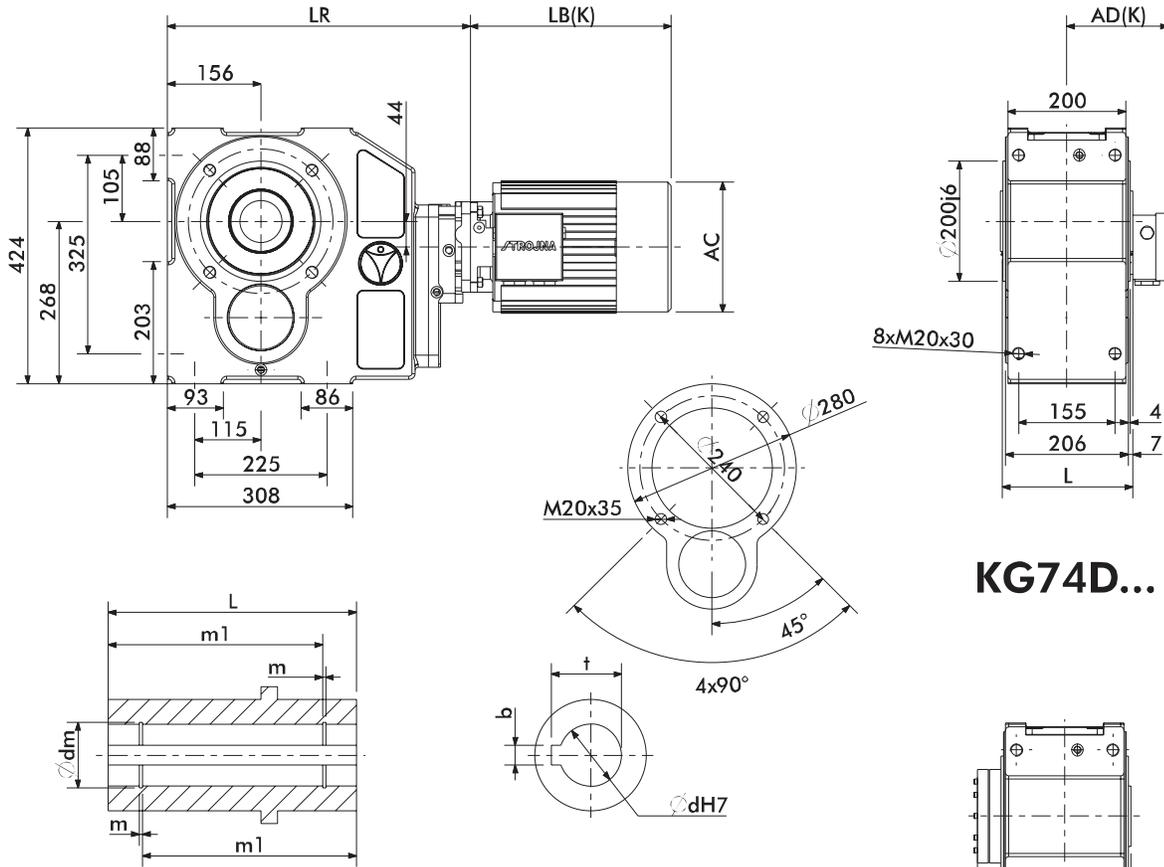
# KG73PV...



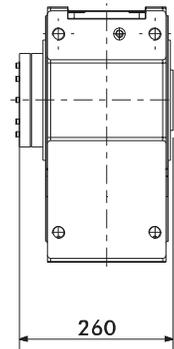
# KG73PZ...



## KG74...SMB/SMR



## KG74D...

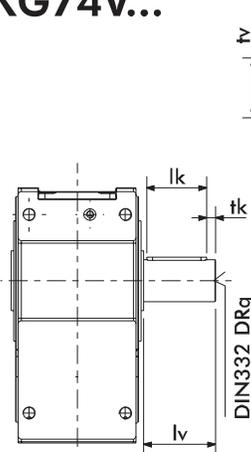


d	L	m1	dm	m	t	b
*70	220	198	73	2,65	74,9	20

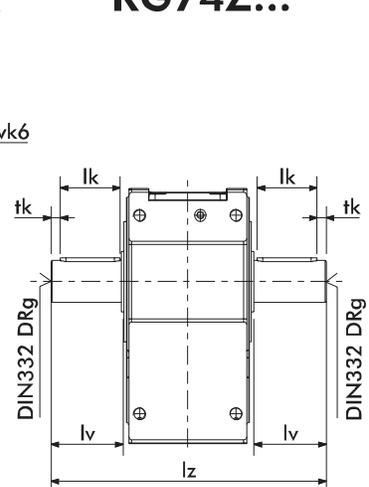
dv	tv	bv	lv	lk	tk	g	lz
*70	74,5	20	120	100	10	M20	560

SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	498
71	223	105	280	137	140	498
80	251	110	311	147	154	498
90S	276	121	360	164	170	500
90L	301	121	385	164	170	500
100	329	157	418	174	193	506
112M	334	169	434	199	216	506
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

## KG74V...

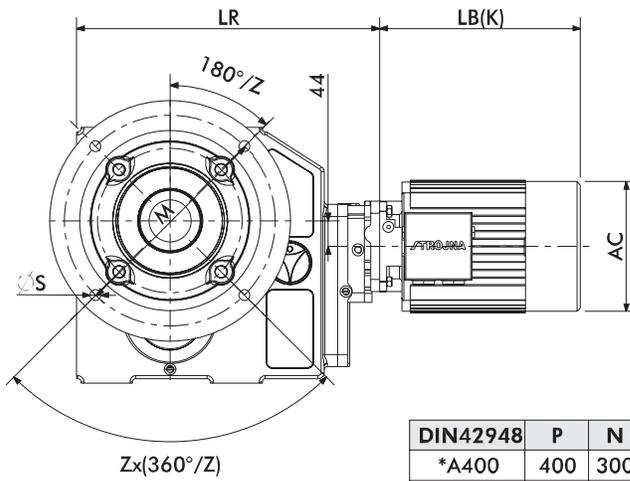


## KG74Z...

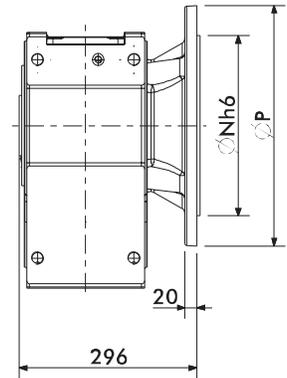


\*Standard

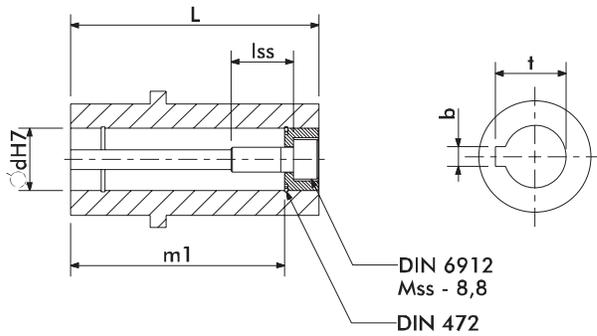
## KG74P..SMB/SMR



DIN42948	P	N	M	T	B	Z	S
*A400	400	300	350	5	75	4	18
A450	450	350	400	5	75	8	18

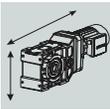
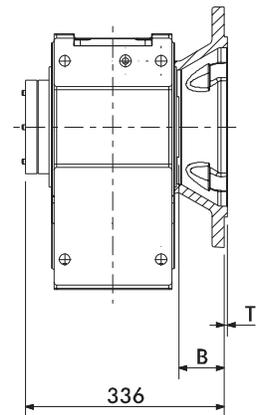


## KG74PD...



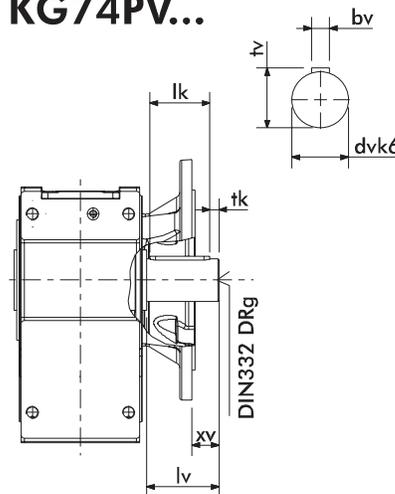
d	L	m1	lss	Mss	t	b
*70	220	198	55	M20	74,9	20

dv	tv	bv	lv	lk	tk	xv	g	lz
*70	74,5	20	120	100	10	42	M20	560

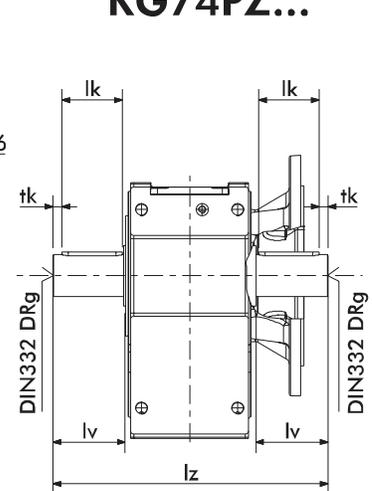


SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	498
71	223	105	280	137	140	498
80	251	110	311	147	154	498
90S	276	121	360	164	170	500
90L	301	121	385	164	170	500
100	329	157	418	174	193	506
112M	334	169	434	199	216	506
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

## KG74PV...

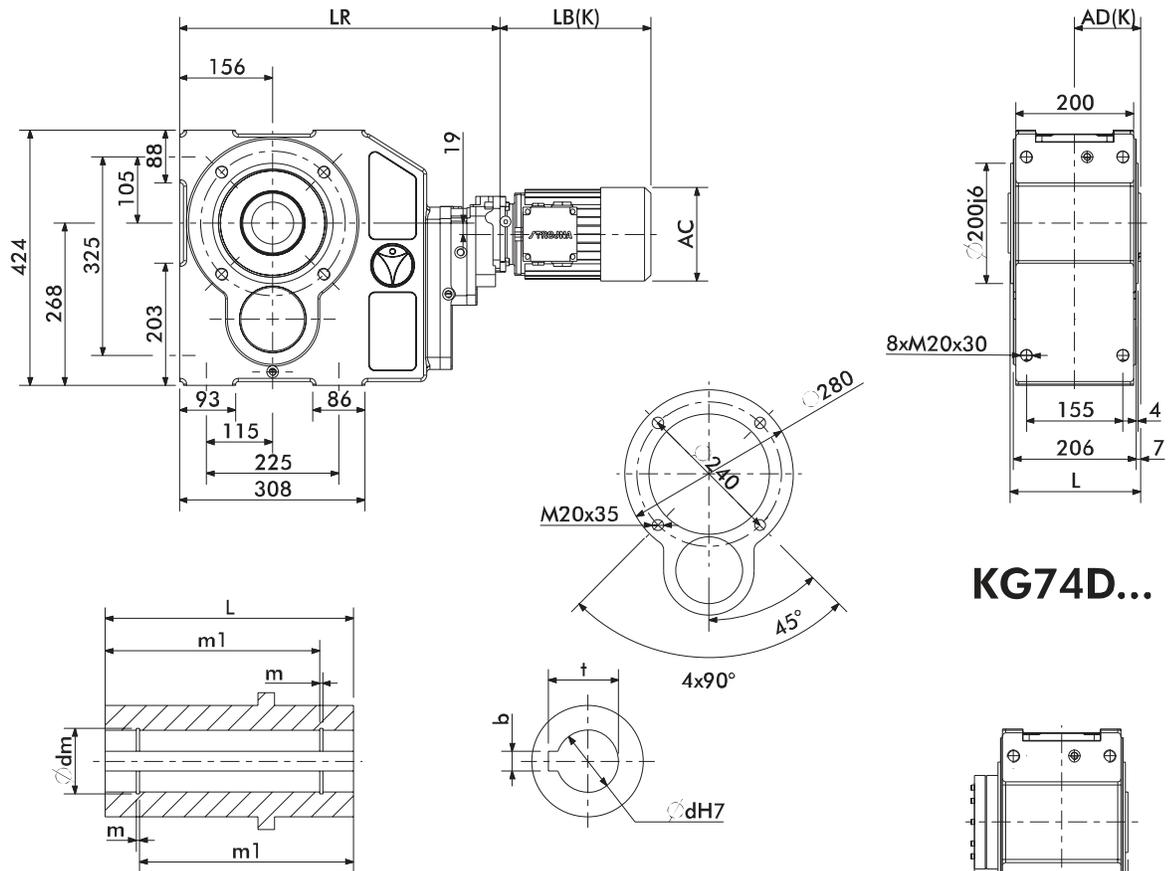


## KG74PZ...

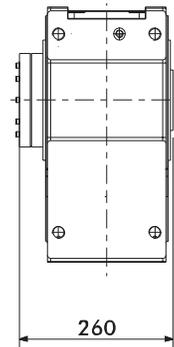


\*Standard

## KG75...SMB/SMR



## KG74D...

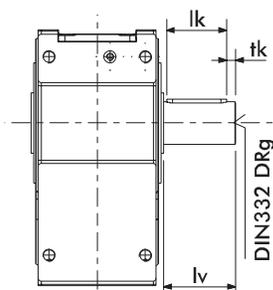


d	L	m1	dm	m	t	b
*70	220	198	73	2,65	74,9	20

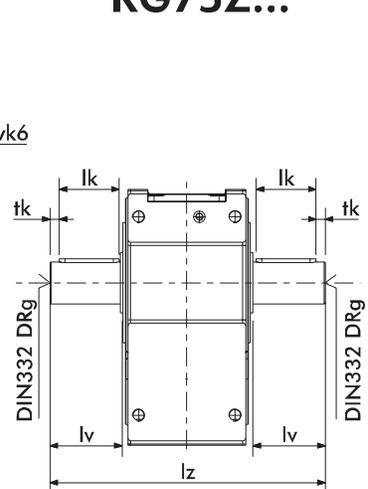
dv	tv	bv	lv	lk	tk	g	lz
*70	74,5	20	120	100	10	M20	560

SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	531
71	223	105	280	137	140	531
80	251	110	311	147	154	531
90S	276	121	360	164	170	532
90L	301	121	385	164	170	532
100						
112M						
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

## KG75V...

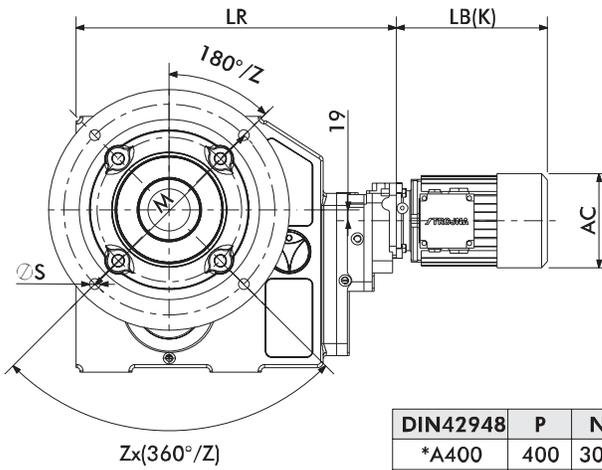


## KG75Z...

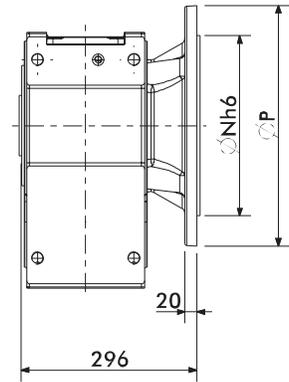


\*Standard

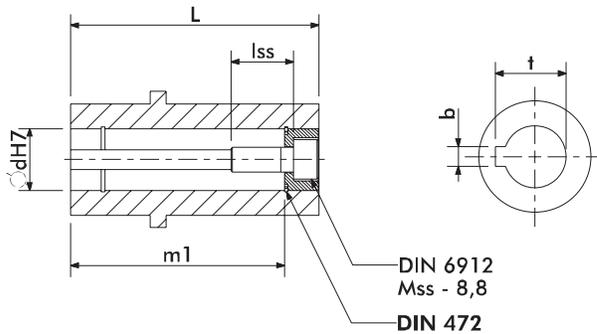
# KG75P..SMB/SMR



DIN42948	P	N	M	T	B	Z	S
*A400	400	300	350	5	76	4	18
A450	450	350	400	5	76	8	18

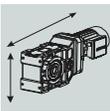
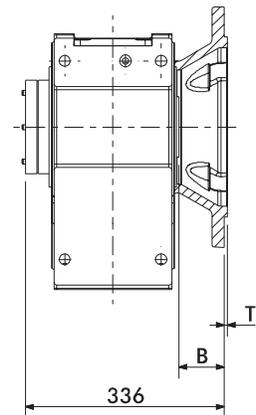


# KG75PD...



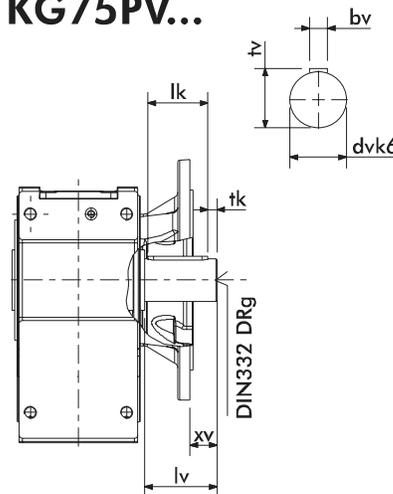
d	L	m1	lss	Mss	t	b
*70	220	192,5	55	M20	74,9	20

dv	tv	bv	lv	lk	tk	xv	g	lz
*70	74,5	20	120	100	10	42	M20	560

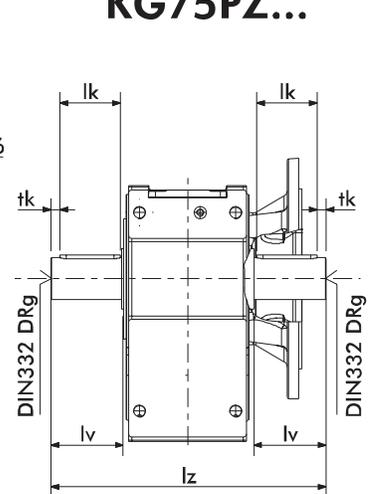


SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	531
71	223	105	280	137	140	531
80	251	110	311	147	154	531
90S	276	121	360	164	170	532
90L	301	121	385	164	170	532
100						
112M						
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

# KG75PV...

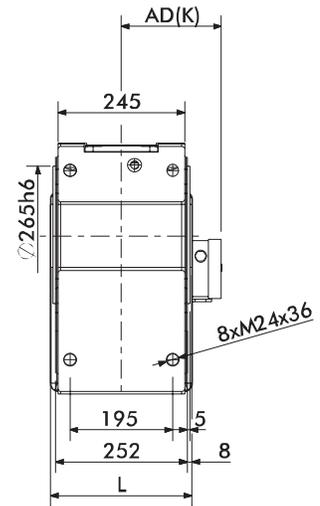
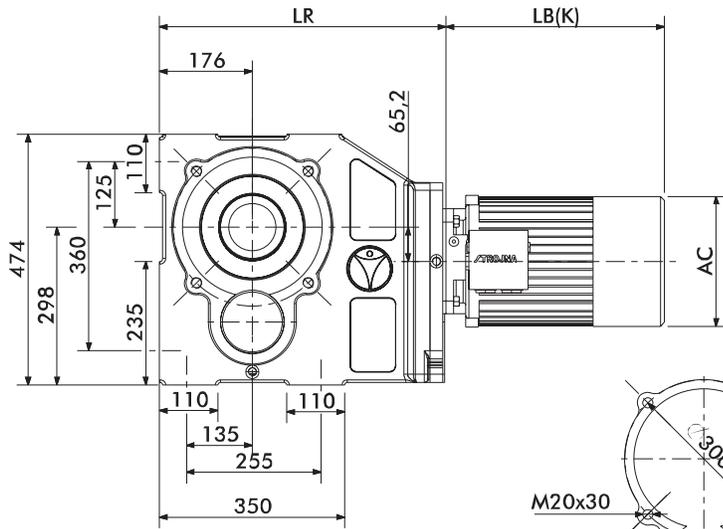


# KG75PZ...

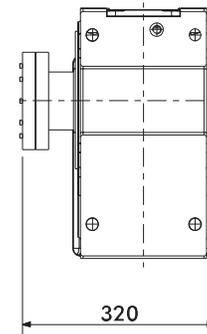
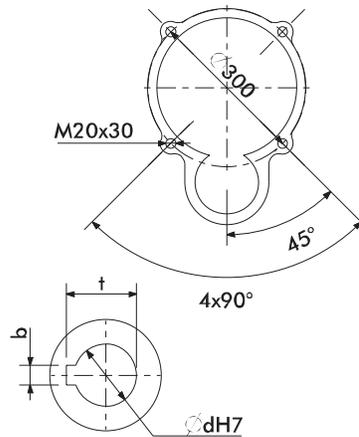
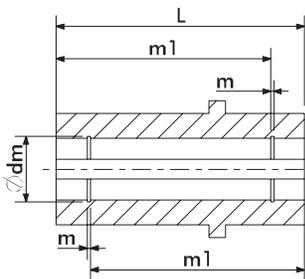


\* Standard

## KG83...SMB/SMR



## KG83D...



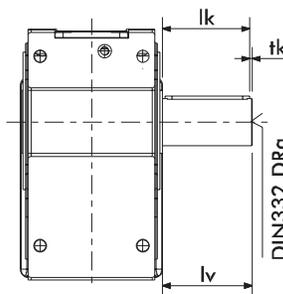
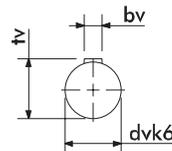
d	L	m1	dm	m	t	b
80	268	247	83,5	2,65	85,4	22
*90	268	247	93,5	3,15	95,4	25

dv	tv	bv	lv	lk	tk	g	lz
*90	95	25	170	160	5	M24	608

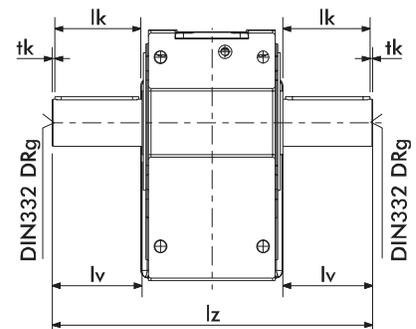
SMB/SMR	LB	AD	LBK	ADK	AC	LR
63						
71						
80						
90S						
90L						
100						
112M						
132S	377	190	492	183	247	544
132M	415	190	532	183	247	544
132Ma	415	190	532	183	247	544
160M	489	246	611	246	285	553
160L	533	246	655	246	285	553
180M	554	260	739	260	323	553
180L	592	260	777	260	323	553
200L	658	299	828	299	369	567
225S						
225M						
250M						

\*Standard

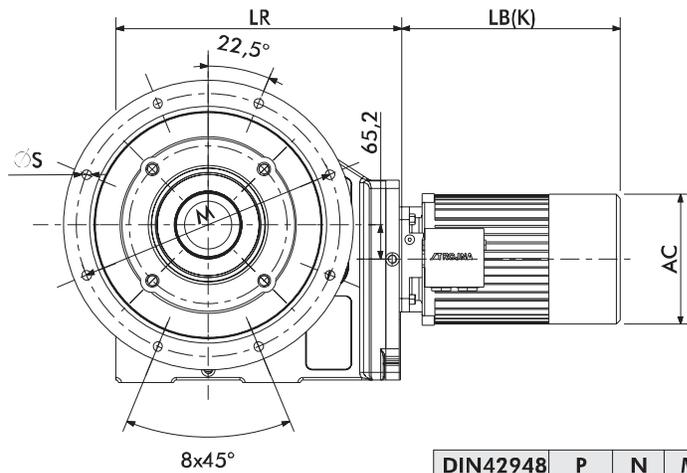
## KG83V...



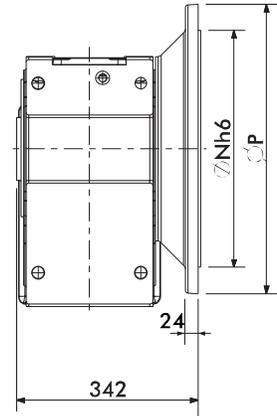
## KG83Z...



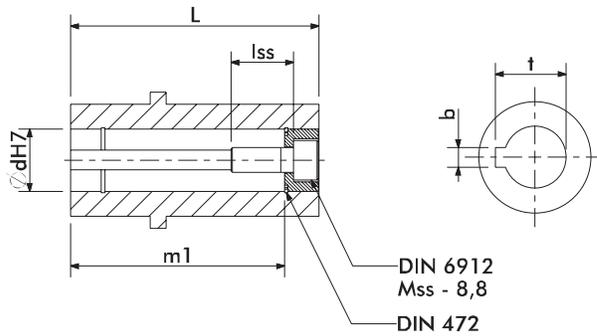
# KG83P..SMB/SMR



DIN42948	P	N	M	T	B	S
*A550	550	450	500	5	74	18

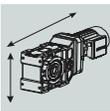
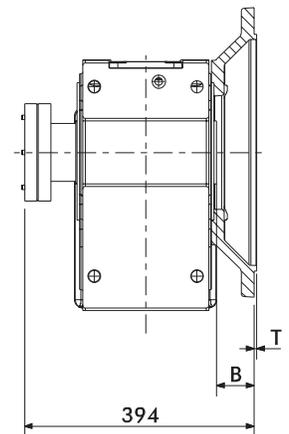


# KG83PD...



d	L	m1	lss	Mss	t	b
80	268	247	55	M20	85,4	20
*90	268	247	50	M24	95,4	25

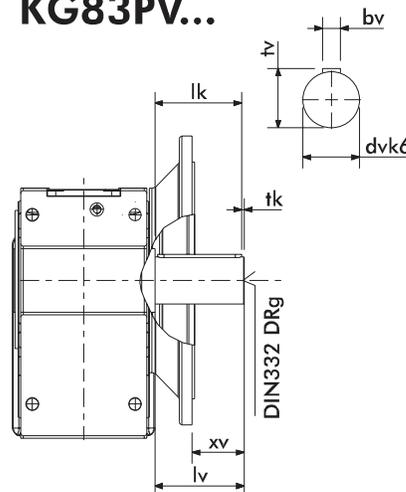
dv	tv	bv	lv	lk	tk	xv	g	lz
*90	95	25	170	160	5	94	M24	608



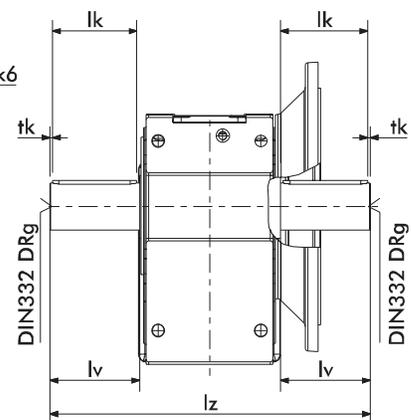
SMB/SMR	LB	AD	LBK	ADK	AC	LR
63						
71						
80						
90S						
90L						
100						
112M						
132S	377	190	492	183	247	544
132M	415	190	532	183	247	544
132Mα	415	190	532	183	247	544
160M	489	246	611	246	285	553
160L	533	246	655	246	285	553
180M	554	260	739	260	323	553
180L	592	260	777	260	323	553
200L	658	299	828	299	369	567
225S						
225M						
250M						

\* Standard

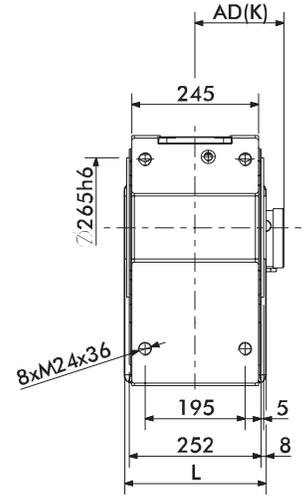
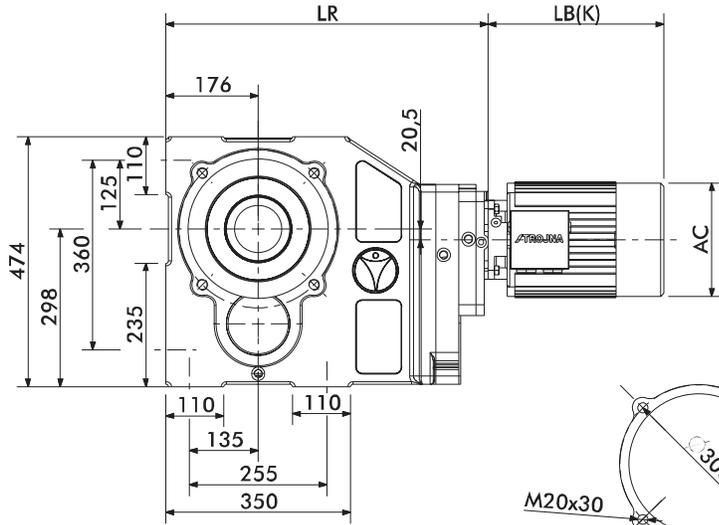
# KG83PV...



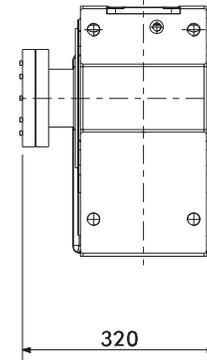
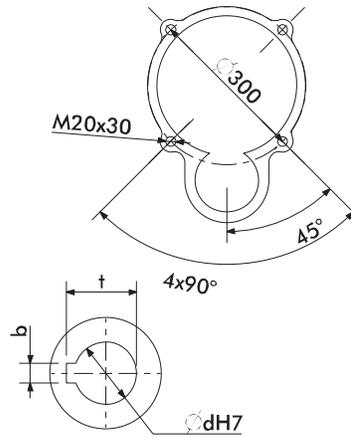
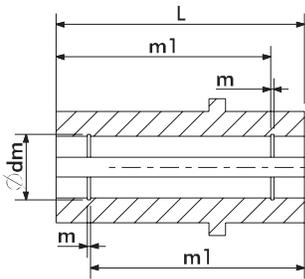
# KG83PZ...



## KG84...SMB/SMR



## KG84D...



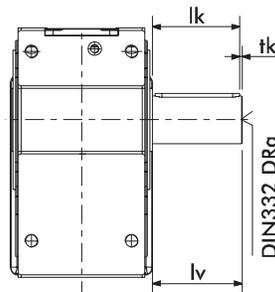
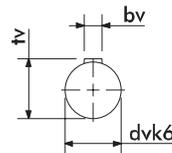
d	L	m1	dm	m	t	b
80	268	247	83,5	2,65	85,4	20
*90	268	236,5	93,5	3,15	95,4	25

dv	tv	bv	lv	lk	tk	g	lz
*90	95	25	170	160	5	M24	608

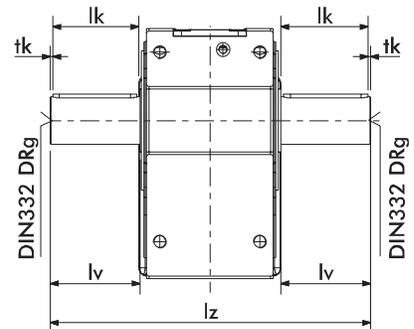
SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	607
71	223	105	280	137	140	607
80	251	110	311	147	154	607
90S	276	121	360	164	170	608
90L	301	121	385	164	170	608
100	329	157	418	174	193	612
112M	334	169	434	199	216	612
132S	377	190	492	183	247	623
132M	415	190	532	183	247	623
132Ma	415	190	532	183	247	623
160M	489	246	611	246	285	628
160L	533	246	655	246	285	628
180M	554	260	739	260	323	628
180L	592	260	777	260	323	628
200L						
225S						
225M						
250M						

\*Standard

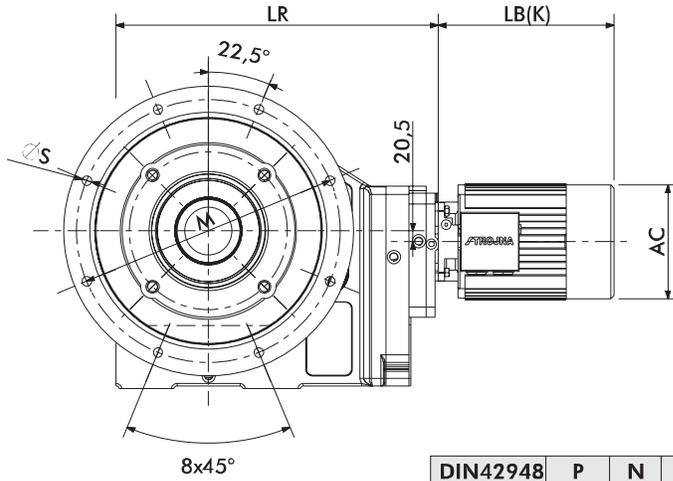
## KG84V...



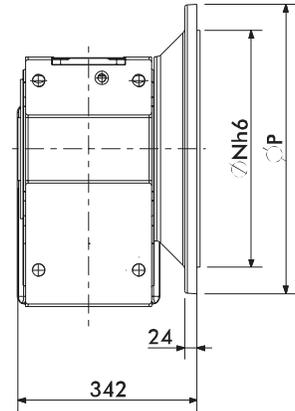
## KG84Z...



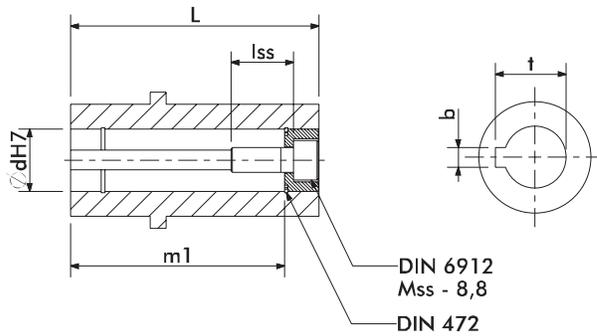
# KG84P...SMB/SMR



DIN42948	P	N	M	T	B	S
*A550	550	450	500	5	74	18

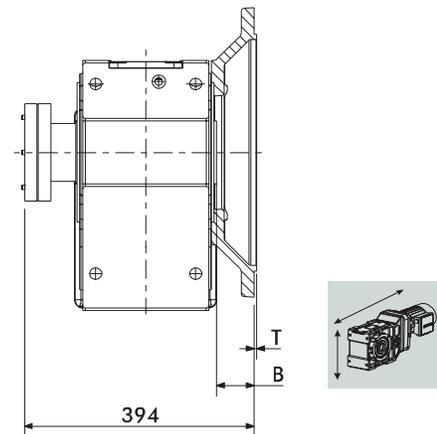


# KG84PD...



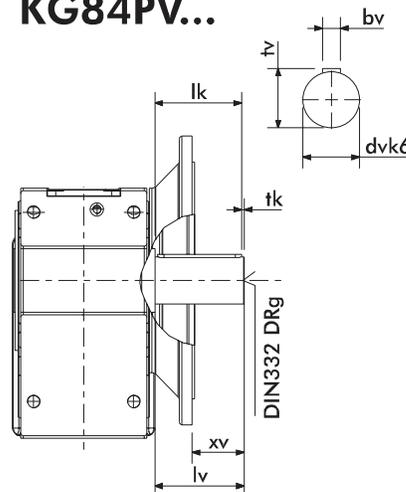
d	L	m1	lss	Mss	t	b
80	268	247	55	M20	85,4	20
*90	268	247	50	M24	95,4	25

dv	tv	bv	lv	lk	tk	xv	g	lz
*90	95	25	170	160	5	94	M24	608

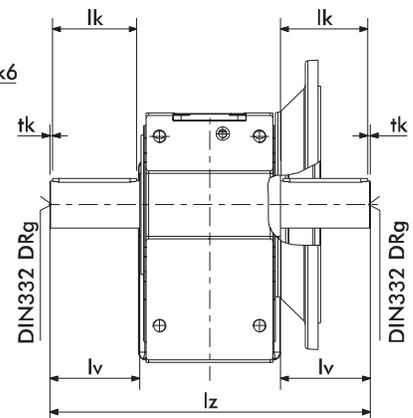


SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	607
71	223	105	280	137	140	607
80	251	110	311	147	154	607
90S	276	121	360	164	170	608
90L	301	121	385	164	170	608
100	329	157	418	174	193	612
112M	334	169	434	199	216	612
132S	377	190	492	183	247	623
132M	415	190	532	183	247	623
132Ma	415	190	532	183	247	623
160M	489	246	611	246	285	628
160L	533	246	655	246	285	628
180M	554	260	739	260	323	628
180L	592	260	777	260	323	628
200L						
225S						
225M						
250M						

# KG84PV...

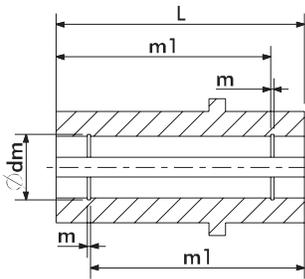
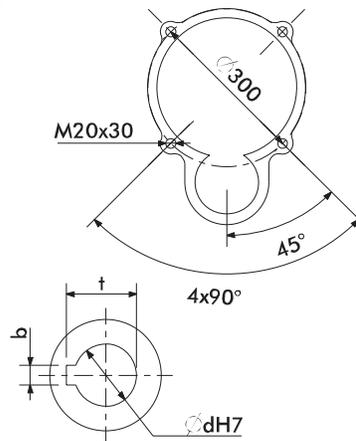
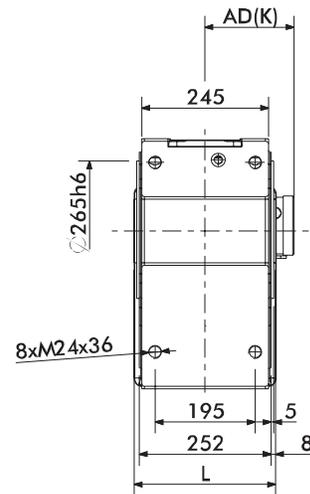
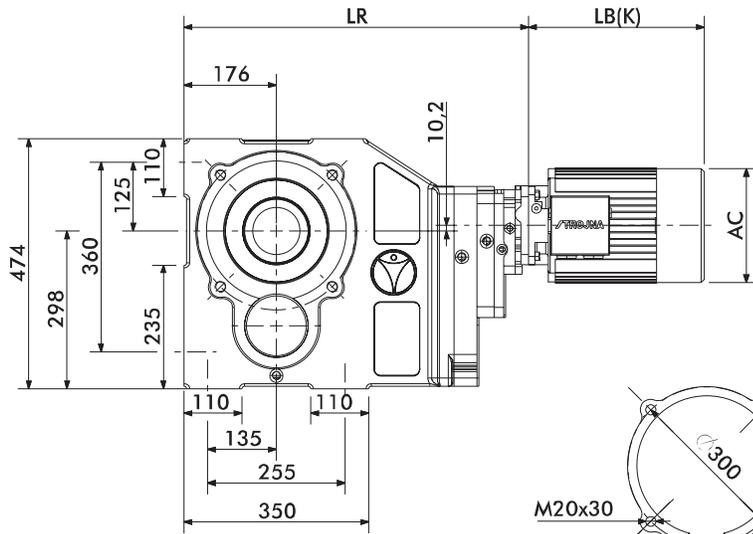


# KG84PZ...

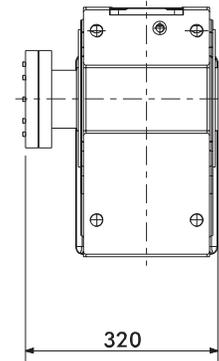


\* Standard

## KG85...SMB/SMR



## KG85D...

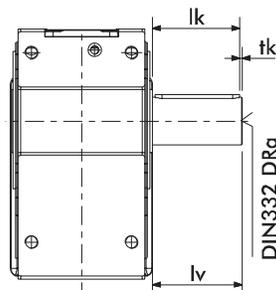
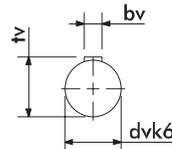


d	L	m1	dm	m	t	b
80	268	247	83,5	2,65	85,4	20
*90	268	247	93,5	3,15	95,4	25

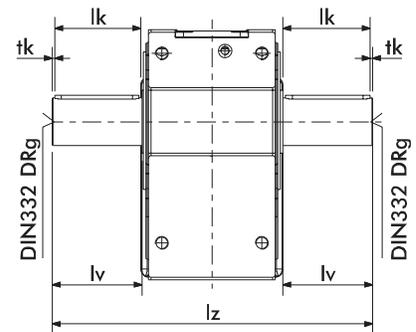
dv	tv	bv	lv	lk	tk	g	lz
*90	95	25	170	160	5	M24	608

SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	648
71	223	105	280	137	140	648
80	251	110	311	147	154	648
90S	276	121	360	164	170	651
90L	301	121	385	164	170	651
100	329	157	418	174	193	656
112M	334	169	434	199	216	656
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

## KG85V...

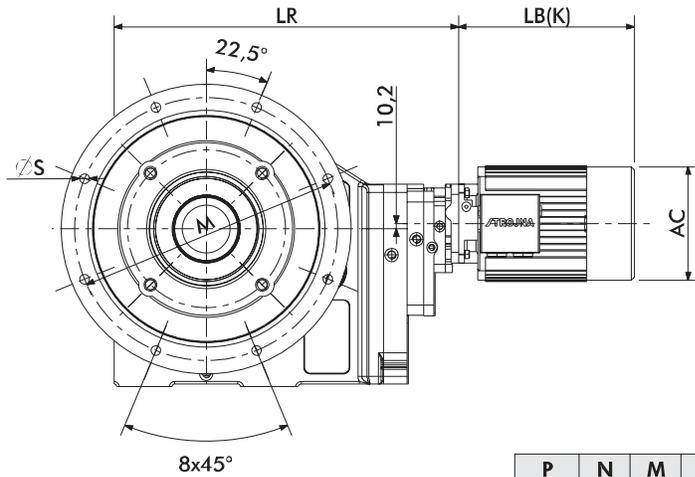


## KG85Z...

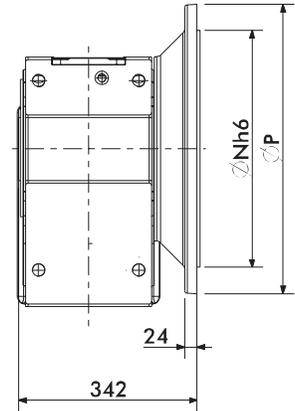


\*Standard

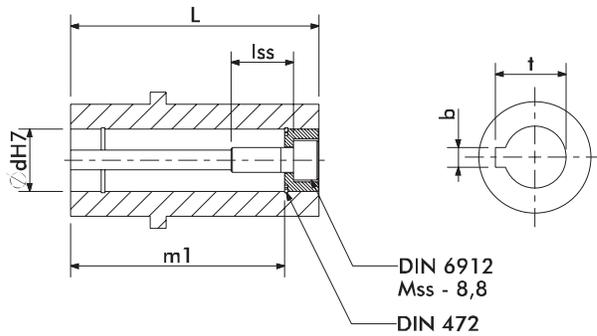
# KG85P..SMB/SMR



P	N	M	T	B	S
*550	450	500	5	74	18

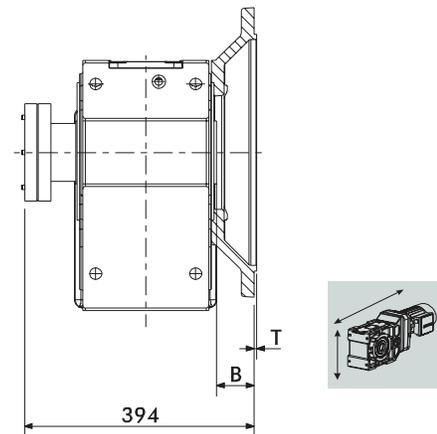


# KG85PD...



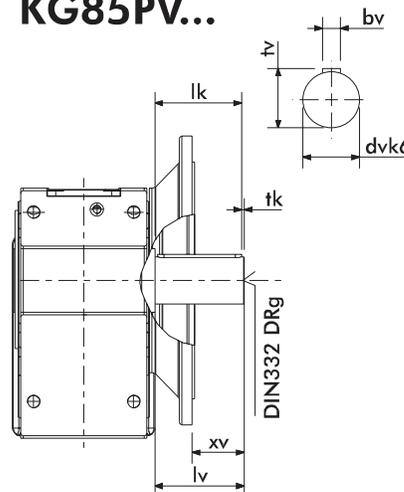
d	L	m1	lss	Mss	t	b
80	268	247	55	M20	85,4	20
*90	268	247	50	M24	95,4	25

dv	tv	bv	lv	lk	tk	xv	g	lz
*90	95	25	170	160	5	94	M24	608

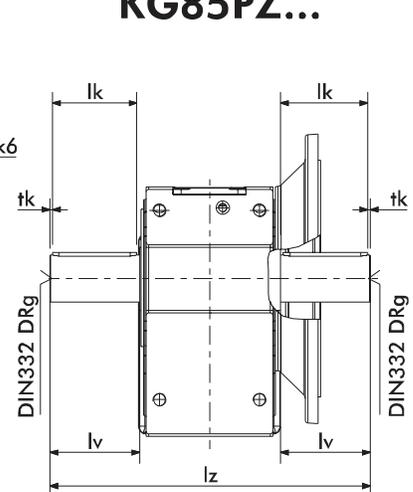


SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	648
71	223	105	280	137	140	648
80	251	110	311	147	154	648
90S	276	121	360	164	170	651
90L	301	121	385	164	170	651
100	329	157	418	174	193	656
112M	334	169	434	199	216	656
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

# KG85PV...

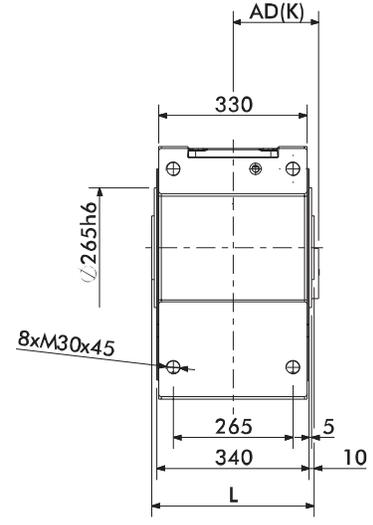
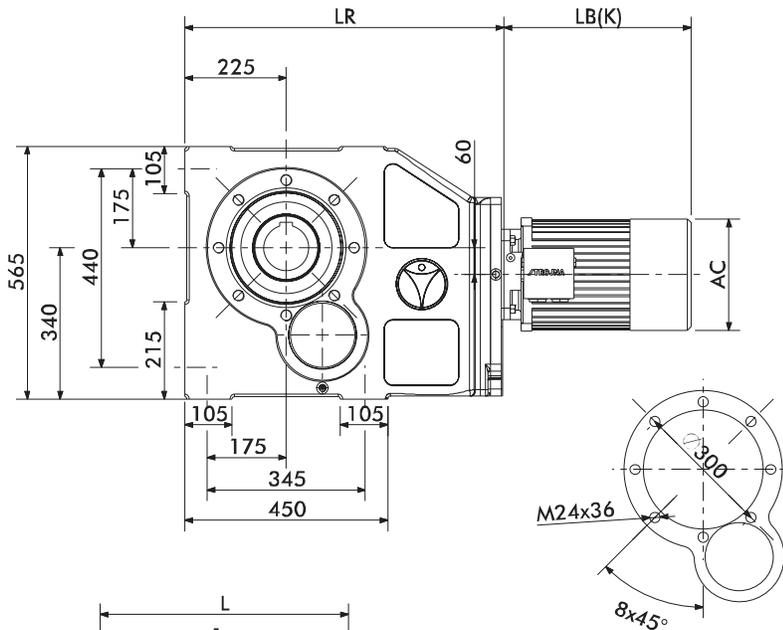


# KG85PZ...

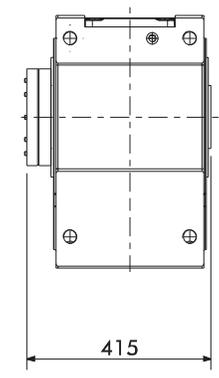
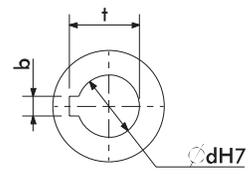
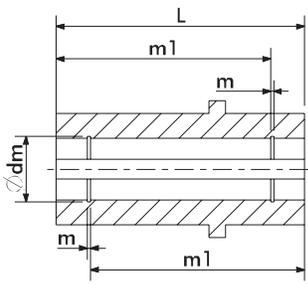


\* Standard

## KG93...SMB/SMR



## KG93D...



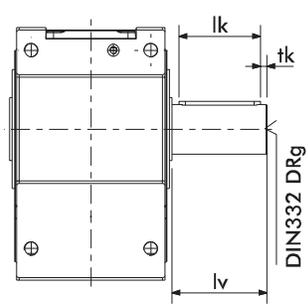
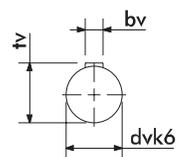
d	L	m1	dm	m	t	b
*100	360	335	103,5	3,15	106,4	28

dv	tv	bv	lv	lk	tk	g	lz
*110	116	28	210	180	15	M24	780

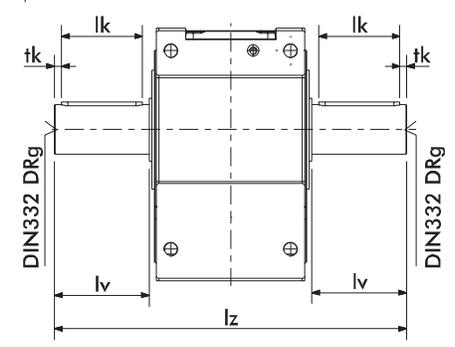
SMB/SMR	LB	AD	LBK	ADK	AC	LR
63						
71						
80						
90S						
90L						
100						
112M						
132S	377	190	492	183	247	707
132M	415	190	532	183	247	707
132Ma	415	190	532	183	247	707
160M	489	246	611	246	285	716
160L	533	246	655	246	285	716
180M	554	260	739	260	323	716
180L	592	260	777	260	323	716
200L	658	299	828	299	369	729
225S	677	337	848	337	418	729
225M	702	337	873	337	418	729
250M	778	360	968	400	471	729

\*Standard

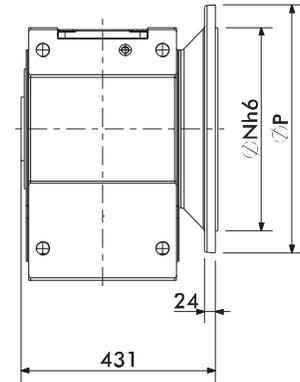
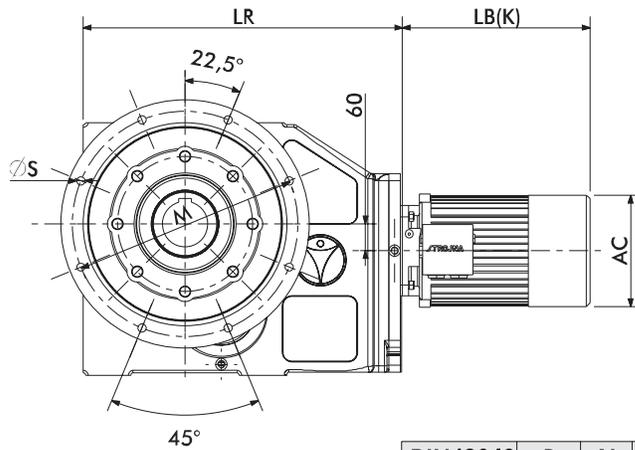
## KG93V...



## KG93Z...

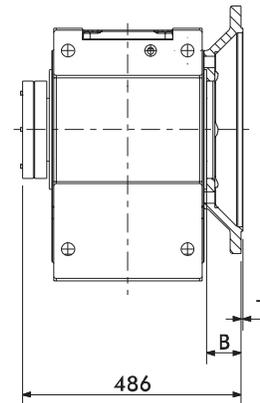
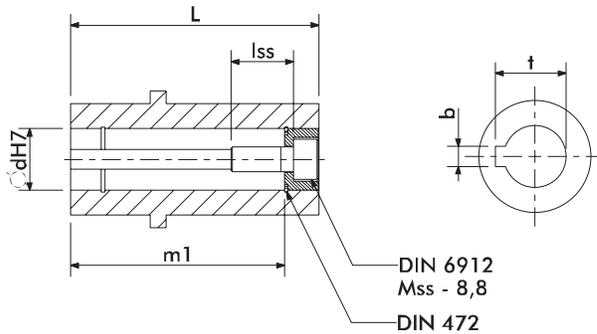


# KG93P...SMB/SMR



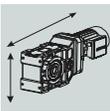
DIN42948	P	N	M	T	B	S
*A550	550	450	500	5	71	18

# KG93PD...



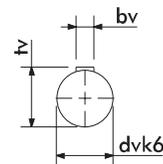
d	L	m1	lss	Mss	t	b
*100	360	335	50	M24	106,4	28

dv	tv	bv	lv	lk	tk	xv	g	lz
*110	116	28	210	180	15	135	M24	780

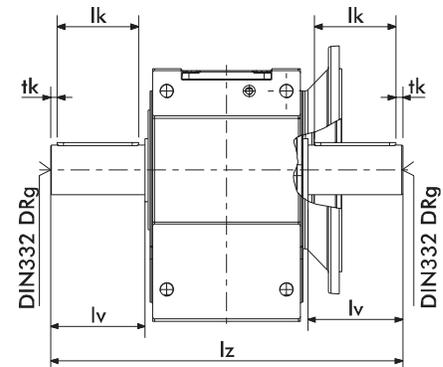
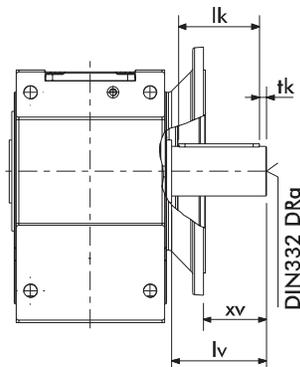


SMB/SMR	LB	AD	LBK	ADK	AC	LR
63						
71						
80						
90S						
90L						
100						
112M						
132S	377	190	492	183	247	707
132M	415	190	532	183	247	707
132Ma	415	190	532	183	247	707
160M	489	246	611	246	285	716
160L	533	246	655	246	285	716
180M	554	260	739	260	323	716
180L	592	260	777	260	323	716
200L	658	299	828	299	369	729
225S	677	337	848	337	418	729
225M	702	337	873	337	418	729
250M	778	360	968	400	471	729

# KG93PV...

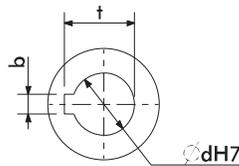
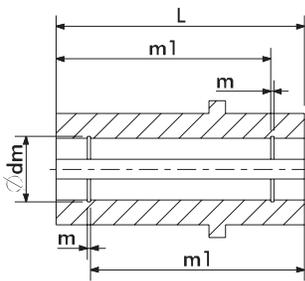
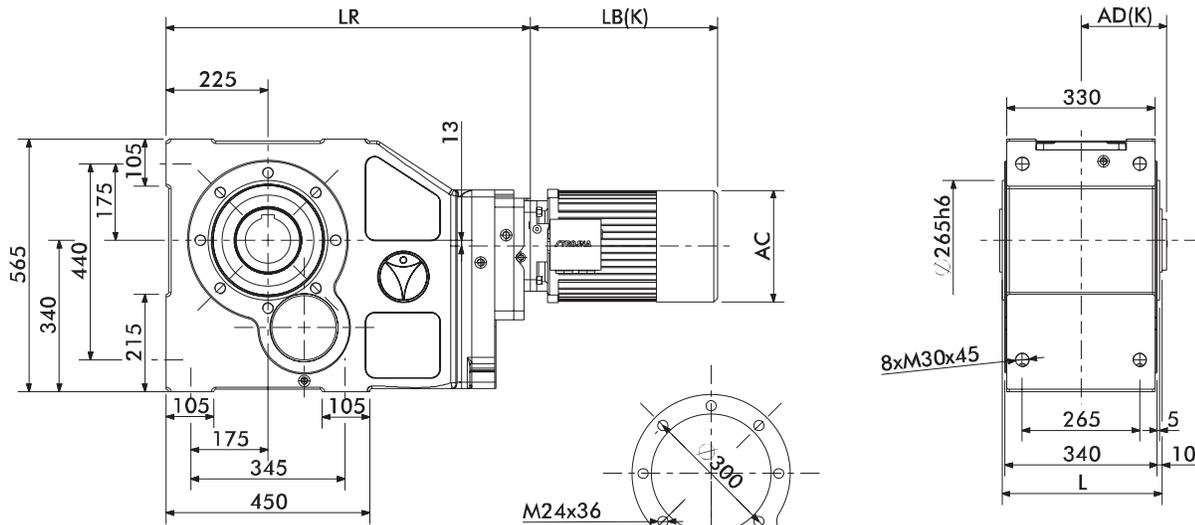


# KG93PZ...

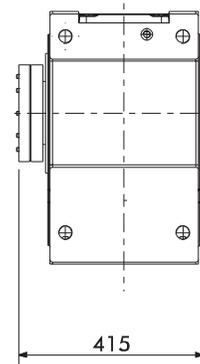


\* Standard

## KG94...SMB/SMR



## KG94D...



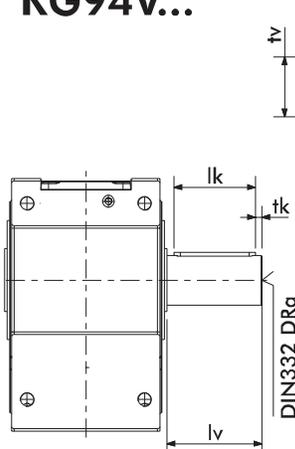
d	L	m1	dm	m	t	b
*100	360	343	103,5	3,15	106,4	28

dv	tv	bv	lv	lk	tk	g	lz
*110	116	28	210	180	15	M24	780

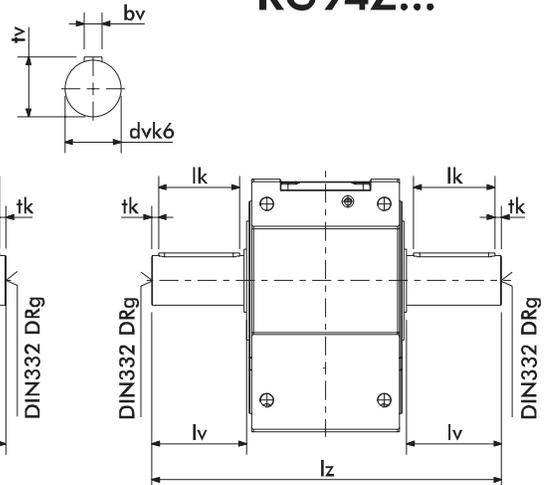
SMB/SMR	LB	AD	LBK	ADK	AC	LR
63						
71						
80						
90S						
90L						
100	329	157	418	174	193	795
112M	334	169	434	199	216	795
132S	377	190	492	183	247	806
132M	415	190	532	183	247	806
132Ma	415	190	532	183	247	806
160M	489	246	611	246	285	815
160L	533	246	655	246	285	815
180M	554	260	739	260	323	815
180L	592	260	777	260	323	815
200L						
225S						
225M						
250M						

\*Standard

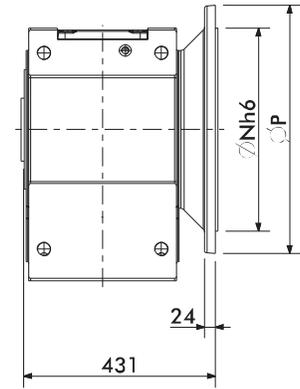
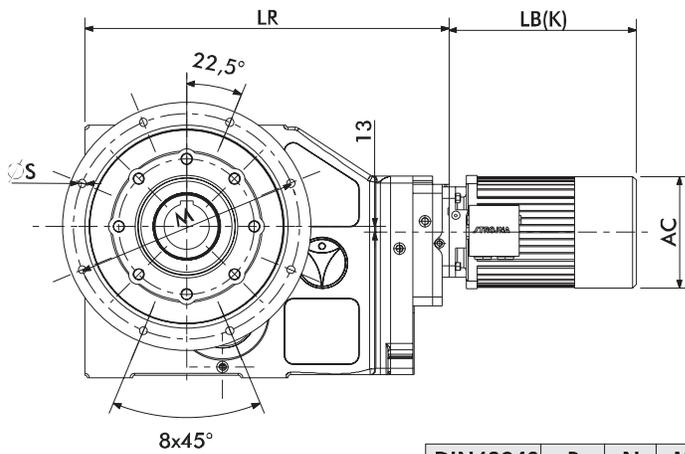
## KG94V...



## KG94Z...

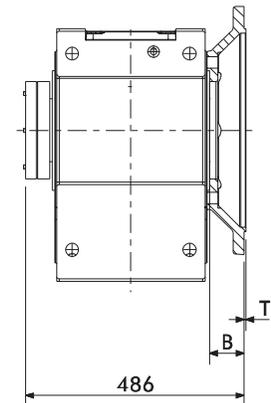
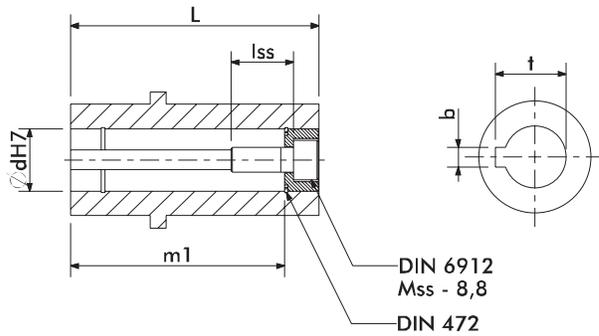


# KG94P..SMB/SMR



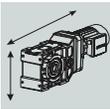
DIN42948	P	N	M	T	B	S
*A550	550	450	550	5	71	18

# KG94PD...



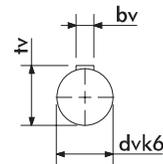
d	L	m1	lss	Mss	t	b
*100	360	335	50	M24	106,4	28

dv	tv	bv	lv	lk	tk	xv	g	lz
*110	116	28	210	180	15	135	M24	780

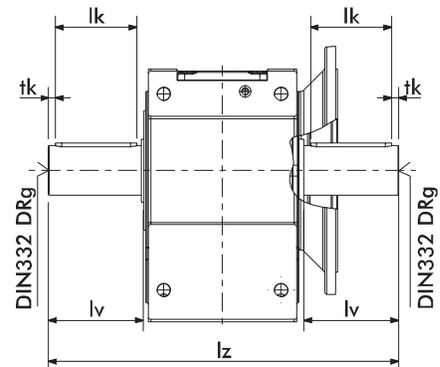
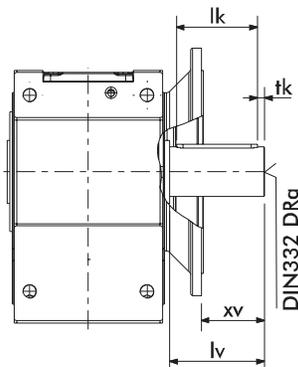


SMB/SMR	LB	AD	LBK	ADK	AC	LR
63						
71						
80						
90S						
90L						
100						
112M						
132S	377	190	492	183	247	806
132M	415	190	532	183	247	806
132Ma	415	190	532	183	247	806
160M	489	246	611	246	285	815
160L	533	246	655	246	285	815
180M	554	260	739	260	323	815
180L	592	260	777	260	323	815
200L						
225S						
225M						
250M						

# KG94PV...

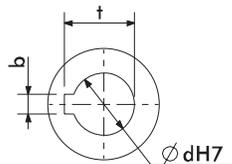
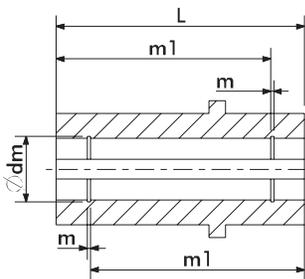
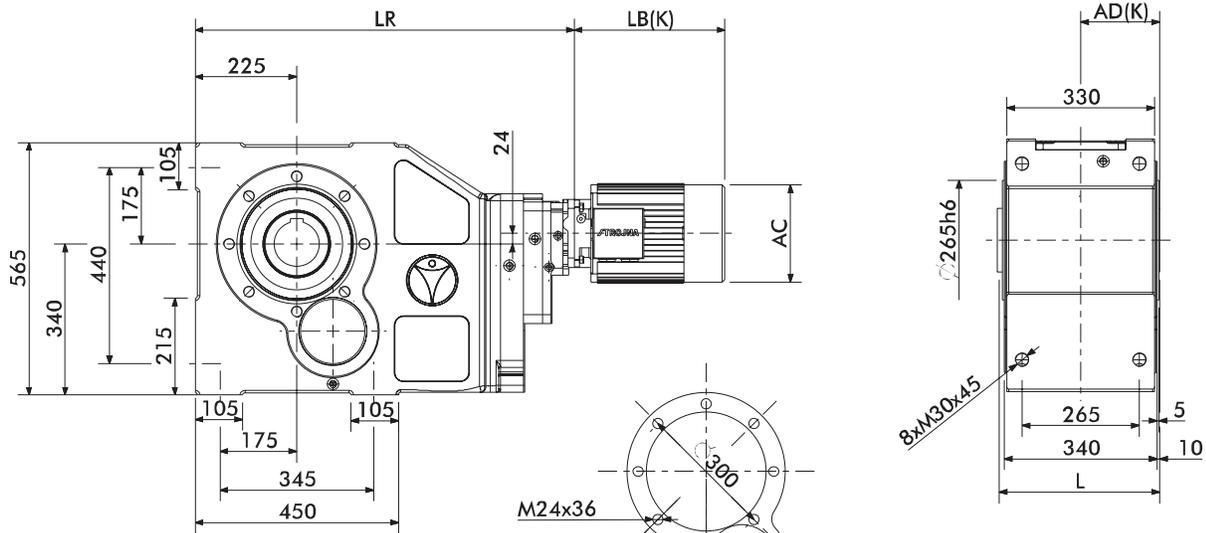


# KG94PZ...

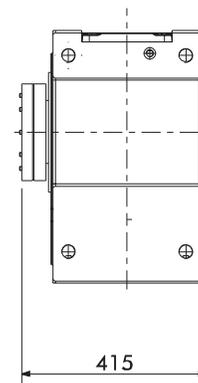


\* Standard

## KG95...SMB/SMR

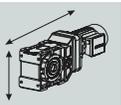


## KG95D...



d	L	m1	dm	m	t	b
*100	360	335	103,5	3,15	106,4	28

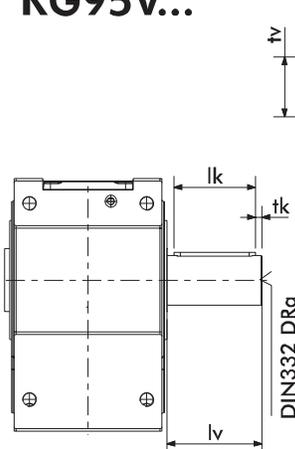
dv	tv	bv	lv	lk	tk	g	lz
*110	116	28	210	180	15	M24	780



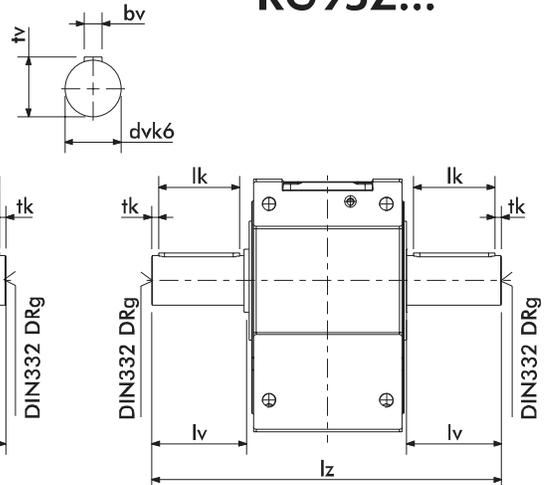
SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	836
71	223	105	280	137	140	836
80	251	110	311	147	154	836
90S	276	121	360	164	170	836
90L	301	121	385	164	170	836
100	329	157	418	174	193	842
112M	334	169	434	199	216	842
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

\*Standard

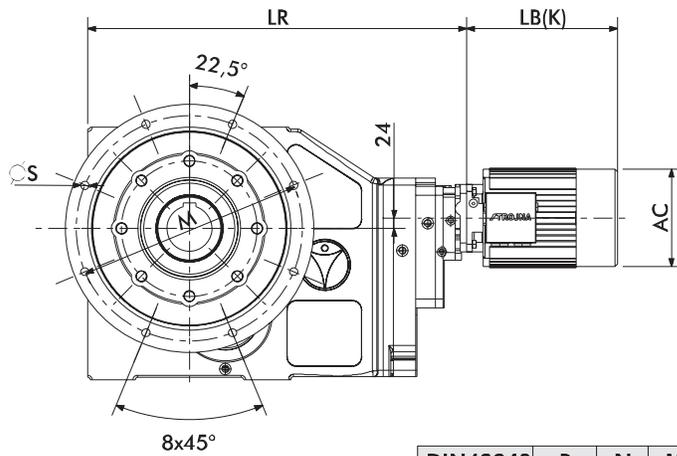
## KG95V...



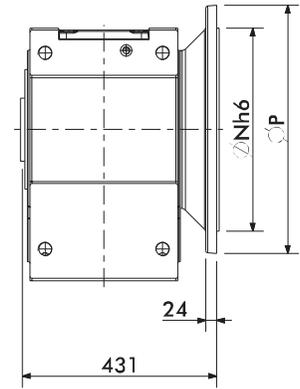
## KG95Z...



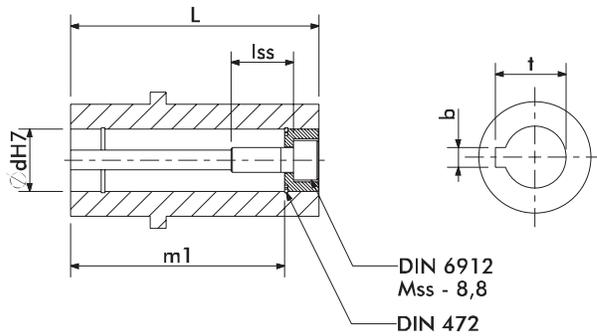
# KG95P..SMB/SMR



DIN42948	P	N	M	T	B	S
*A550	550	450	550	5	71	18

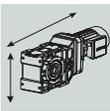
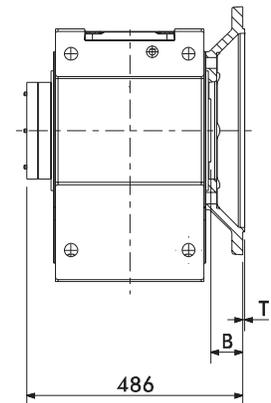


# KG95PD...



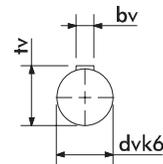
d	L	m1	lss	Mss	t	b
*100	350	325	50	M24	106,4	28

dv	tv	bv	lv	lk	tk	xv	g	lz
*110	116	28	210	180	15	135	M24	770

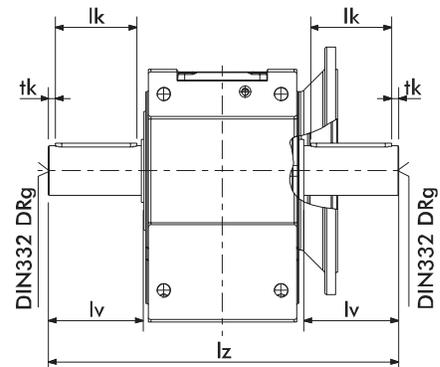
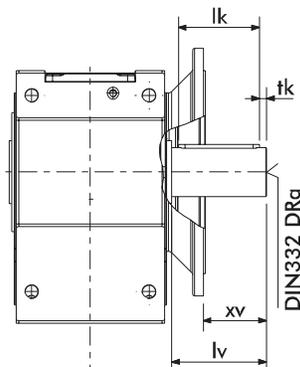


SMB/SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	836
71	223	105	280	137	140	836
80	251	110	311	147	154	836
90S	276	121	360	164	170	836
90L	301	121	385	164	170	836
100	329	157	418	174	193	842
112M	334	169	434	199	216	842
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

# KG95PV...



# KG95PZ...



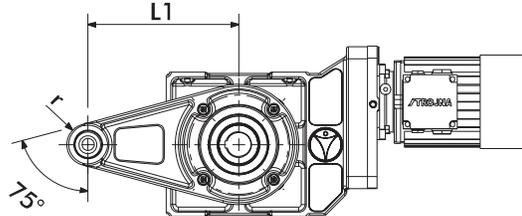
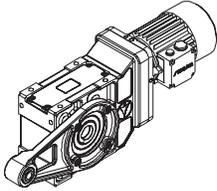
\* Standard

## Torque Arm

### KG...SM/MR

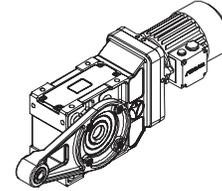
Position

KG...SM/MRL ...

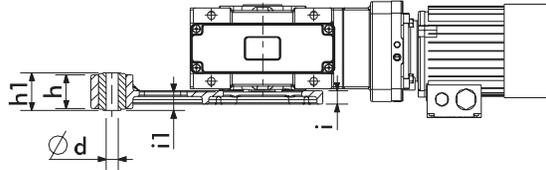
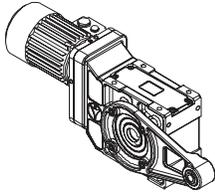


Direction

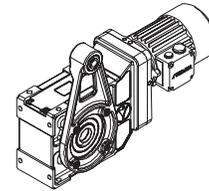
KG...SM/MR...0



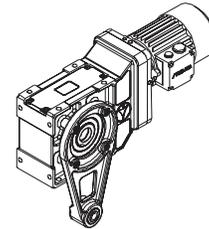
KG...SM/MRD...



KG...SM/MR...1



KG...SM/MR...2

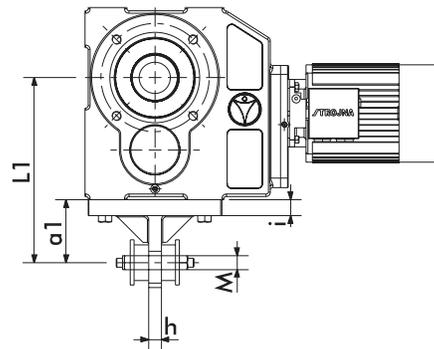
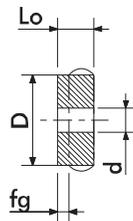
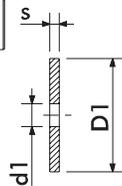
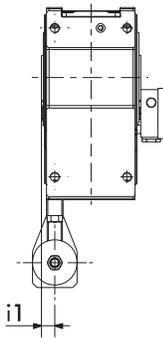
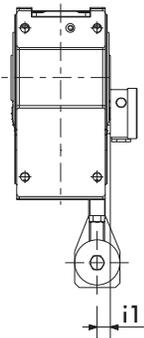


	L1	r	h	h1	d	i1	i
KG1	132	23	32	38	12	18	15
KG2	160	23	32	38	12	20	17
KG3	180	23	32	38	12	24	21
KG4	225	36	56	62,5	20	31	23

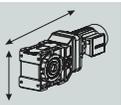
Position

KG...SM/MRL

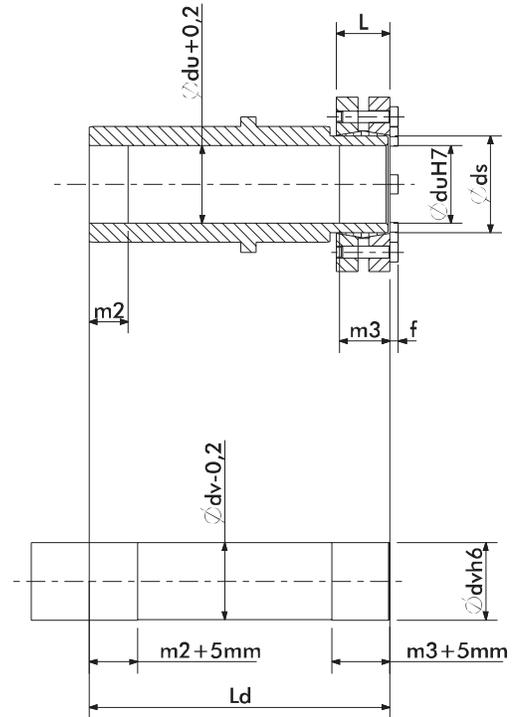
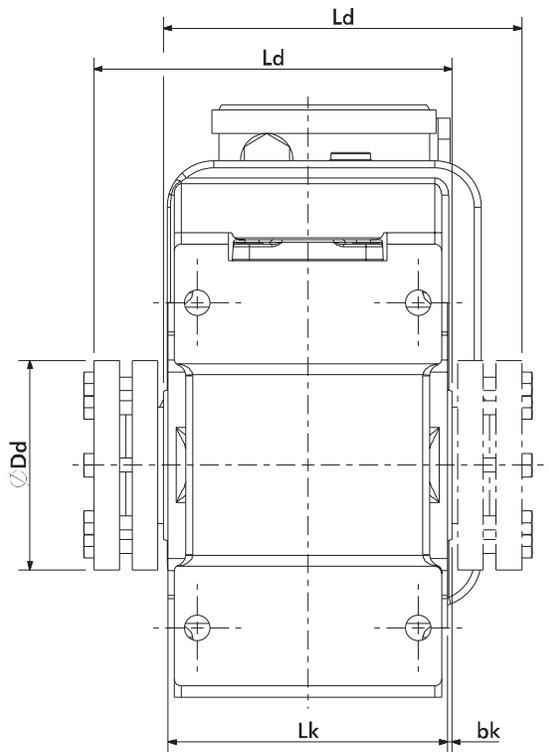
KG...SM/MRD



	L1	a1	i	h	i1	D	d	D1	d1	s	Lo	M	fg
KG5	250	70	15	20	22,5	40	13,5	50	13,5	5	32	M12	2,00
KG6	300	88	20	25	27	50	17	60	16,5	6	32	M16	2,00
KG7	350	82	20	30	32,5	63	17	80	16,5	6	32	M16	2,00
KG8	450	152	30	36	36,5	80	21	100	20,5	8	32	M20	1,50
KG9	500	160	45	40	47,5	100	21	120	20,5	8	32	M20	1,50



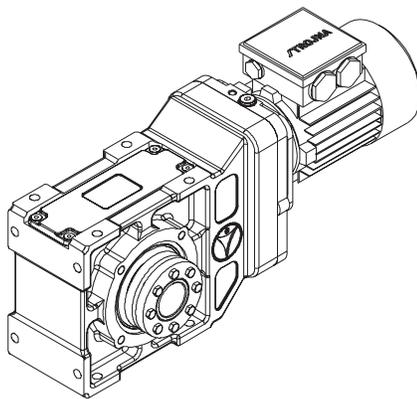
## Shrink disc KG...(P)D SM



Position

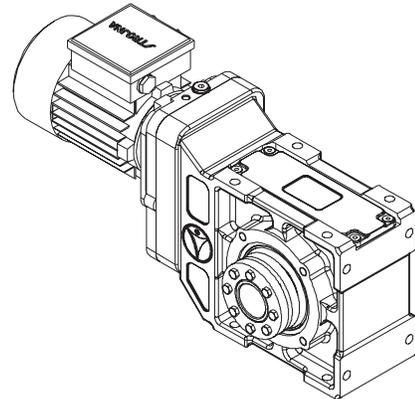
Left

KG...(P)DL SM



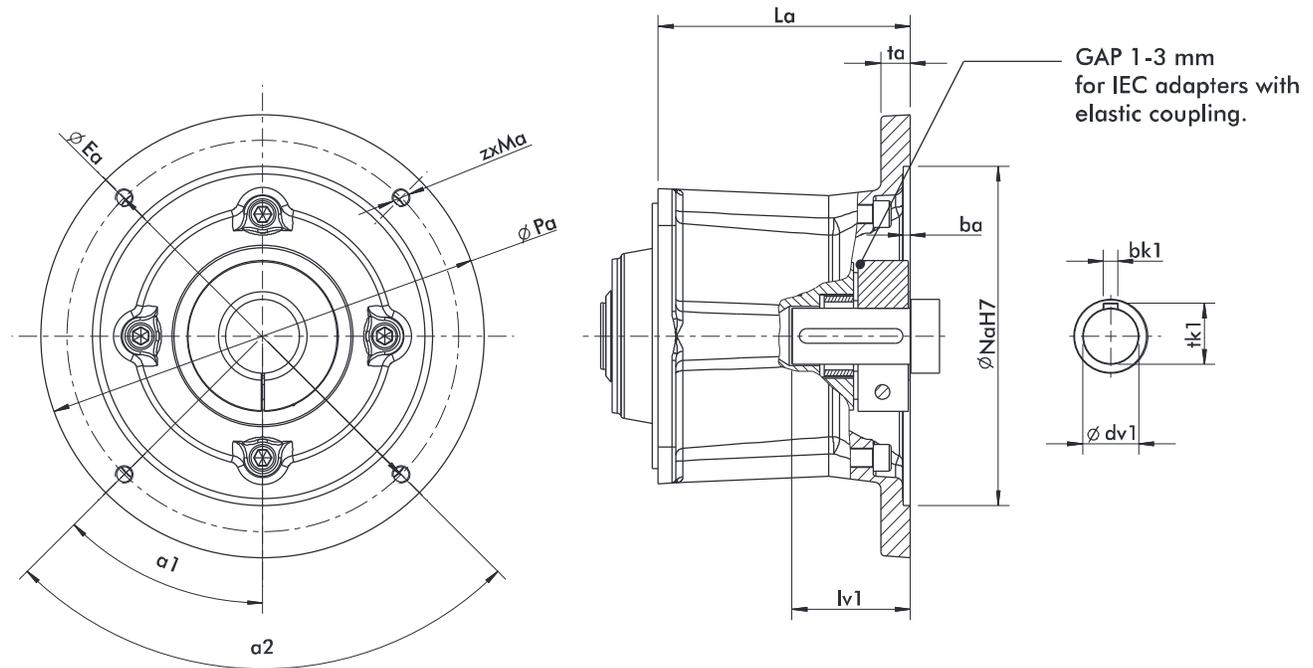
Right

KG...(P)DD SM



	m2	m3	Lk	bk	Ld	du/dv	ds	Dd	L	f	M <sub>smax</sub> [Nm]	M <sub>p</sub> [Nm]
KG1	20	20	95	5	130	30	36	72	23,5	4	570	12
KG2	20	20	105	5	140	30	36	72	23,5	4	570	12
KG3	20	25	120	5	160	35	44	80	25,5	4	780	12
KG4	30	25	140	5	180	40	50	90	27,5	4	1160	12
KG5	30	30	154	3	192	50	62	110	30,5	4	2200	12
KG6	35	30	176	7	225	65	75	138	32,5	5,3	3950	30
KG7	50	40	206	7	260	75	90	155	39	5,3	7250	30
KG8	60	45	252	8	320	90	110	185	50	6,4	13600	100
KG9	60	50	340	10	415	100	125	215	53	10	21300	121

## Dimensions - IEC adapter



IEC-B5	Pa	Na	ba	Ea	zxMa	$\alpha 1$	$\alpha 2$	La	ta	dv1	lv1	tk1	bk1	m (kg)
A63	140	95	3,5	115	4xM8	45°	90°	68	10	11j6	23	12,5	4	3
A71	160	110	4	130	4xM8	45°	90°	68	10	14j6	30	16	5	3
A80	200	130	4	165	4xM10	45°	90°	96	14	19j6	40	21,5	6	6
A90	200	130	4	165	4xM10	45°	90°	96	14	24j6	50	27	8	6
A100	250	180	4,5	215	4xM12	45°	90°	113	18	28j6	60	31	8	13
A112	250	180	4,5	215	4xM12	45°	90°	113	18	28j6	60	31	8	13
A132	300	230	4,5	265	4xM12	45°	90°	170,5	20	38k6	80	41	10	26
A160	350	250	4,5	300	4xM16	45°	90°	233	20	42k6	110	45	12	52
A180	350	250	5,5	300	4xM16	45°	90°	233	20	48k6	110	51,5	14	52
A200	400	300	6	350	4xM16	45°	90°	239	24	55m6	110	59	14	75
A225	450	350	6	400	8xM16	22,5°	45°	239	24	60m6	140	64	18	80
A250	550	450	6	500	8xM16	22,5°	45°	245	24	65m6	140	69	18	140
A280	550	450	6	500	8xM16	22,5°	45°	245	24	65m6	140	69	18	160
A315	660	550	7	600	8xM20	22,5°	45°	381	26	80m6	170	85,4	22	250



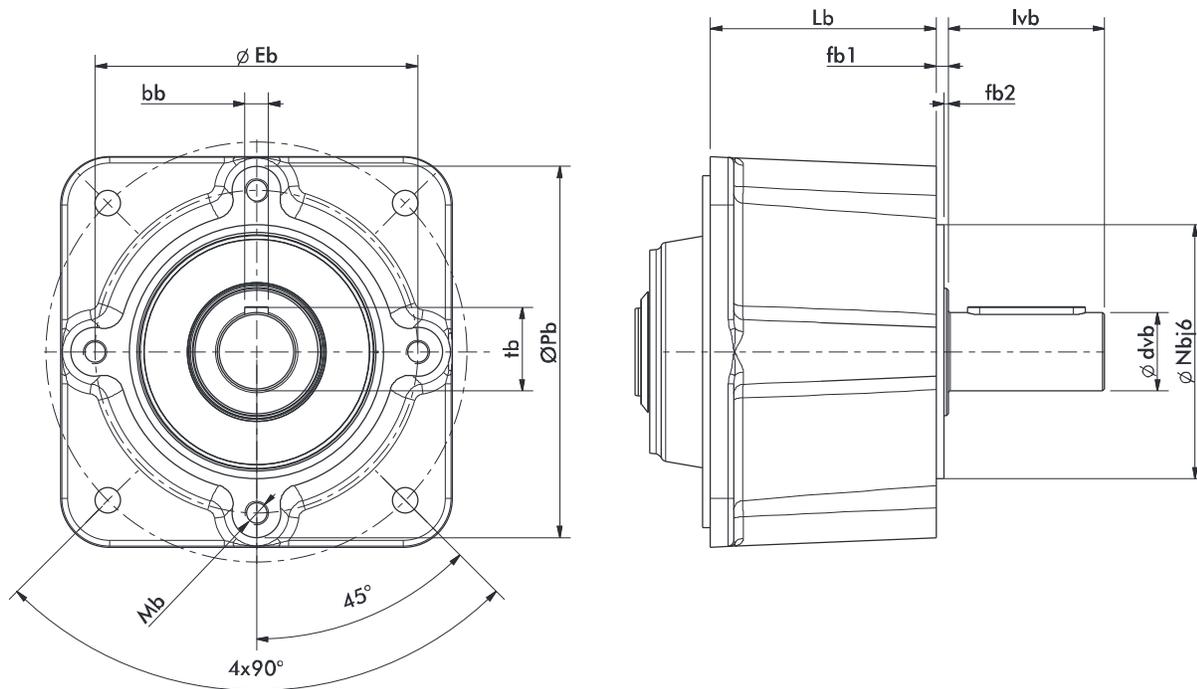
IEC-B14	Pa	Na	ba	Ea	zxMa	$\alpha 1$	$\alpha 2$	La	ta	dv1	lv1	tk1	bk1	m (kg)
A63	120	80	3,5	100	4x $\phi$ 7	45°	90°	68	8	11j6	23	12,5	4	2,5
A71	140	95	3,5	115	4x $\phi$ 9	45°	90°	68	10	14j6	30	16	5	3
A80	160	110	4	130	4x $\phi$ 9	45°	90°	96	14	19j6	40	21,5	6	5
A90	160	110	4	130	4x $\phi$ 9	45°	90°	96	14	24j6	50	27	8	5
A100	200	130	4	165	4x $\phi$ 11	45°	90°	113	18	28j6	60	31	8	11
A112	200	130	4	165	4x $\phi$ 11	45°	90°	113	18	28j6	60	31	8	11
A132	250	180	4,5	215	4x $\phi$ 13	45°	90°	140	20	38j6	80	41	10	23

IEC adapters are delivered by standard without elastic coupling with direct mounting.

For IEC adapter with elastic coupling please specify request in order.

NOTICE: Please check with Stroina on using 2-pole IEC motors

## Dimensions Input shaft



Input shaft													
Type		Lb	lvb	fb1	fb2	dvb	tb	bb	Nb	Eb	Mb	Pb	m (kg)
B1	(63-71)	48,5	40	5	2	20j6	22,5	6	55	68	M6X10	80	2,5
B2	(80-90)	61	50	5	2	25j6	28	8	80	100	M8X14	116	4
B3	(100-112)	78	60	5	2	30k6	33	8	110	130	M10X17	150	8
B4	(132)	116	80	6	2	40k6	43	12	130	165	M12x20	190	17
B5	(160-180)	158	110	6	2	60m6	64	18	180	215	M16X24	245	38
B6	(200-225)	156	120	9	4	70m6	74,5	20	200	240	M20X35	280	60
B7	(250-280)	164	140	9	4	80m6	85	22	265	300	M24x36	350	110
B8	(315)	177	170	10	5	90m6	95	25	300	350	M24x36	450	200



## Introduction on IEC motors:

New efficiency classes for the low-voltage three-phase motors (IE = International Efficiency)

Along with the international discussion on the energy efficiency a worldwide harmonized energy efficiency classification system has been established for low-voltage three-phase asynchronous motors.

For many years low-voltage three-phase motors in the European Union have been sold in three efficiency classes EFF3, EFF2 and EFF1. Aside from this, many different efficiency classification systems have been introduced and well-proven in many countries all over the world.

This was the reason for the International Electrotechnical Commission IEC to develop and publish an energy efficiency standard which replaces all previous national issues. In parallel IEC developed and issued a new standard for determining motor efficiency. The new standard IEC 60034-30 defines and harmonizes worldwide the efficiency classes IE1, IE2 and IE3 for low-voltage three-phase motors in the power range from 0.75 kW to 375 kW (2p=2, 4, 6):

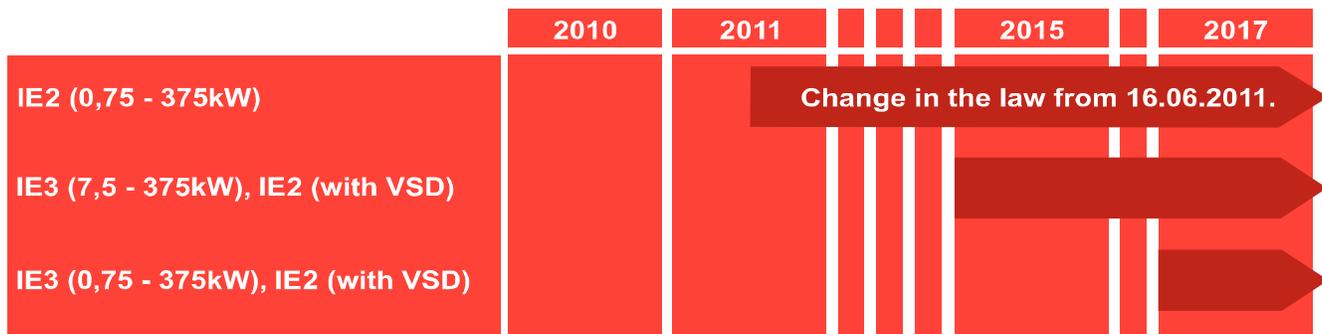
$$IE1 = \frac{P_{out}}{P_{in}} \geq 0.94$$

$$IE2 = \frac{P_{out}}{P_{in}} \geq 0.92$$

$$IE3 = \frac{P_{out}}{P_{in}} \geq 0.90$$

From now motors can be offered and sold with the new classes IE1, IE2 and IE3.

In that case the efficiency has to be determined according to the new requirements given in the IEC 60034-2-1 standard.

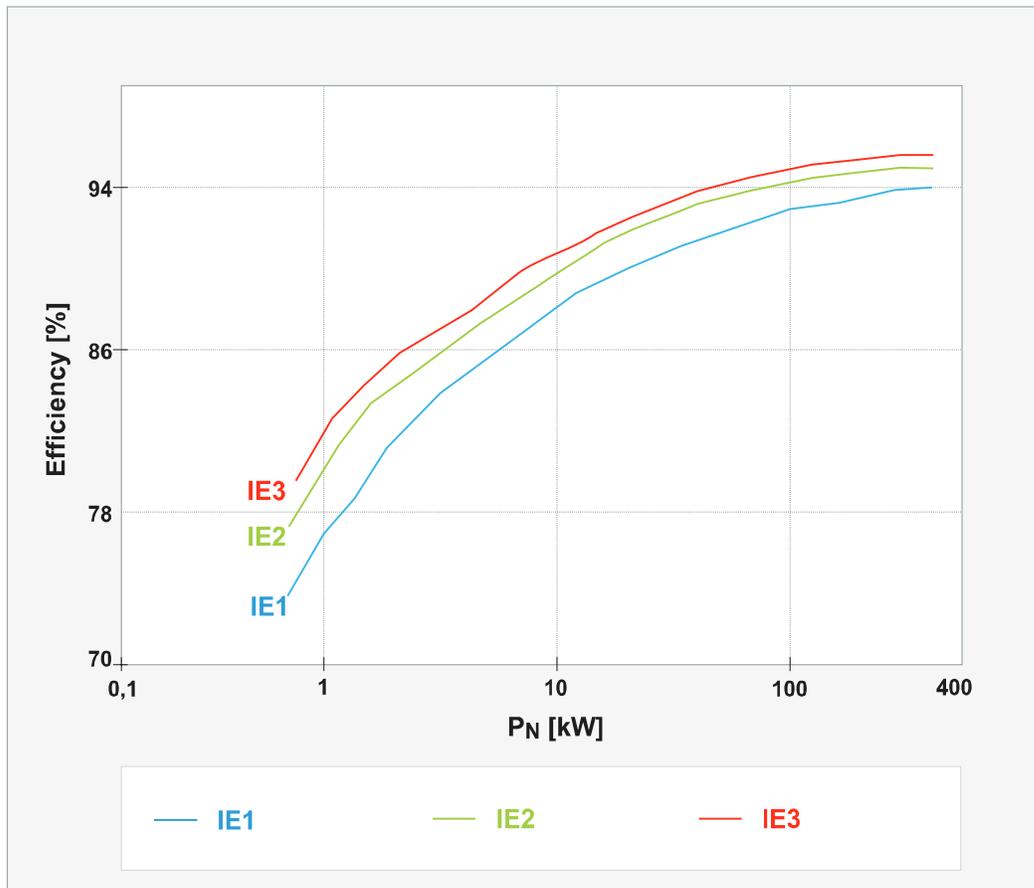


According to the Commission Regulation (EC) No 640/2009 (introduced in July 2009) the required efficiency class of general-purpose motors (introduced to the market in future) will be as follows:

- From 16 June 2011, motors placed for the first time on the market shall have a minimum efficiency class of IE2.
- From 1 January 2015, motors with a rated output between 7.5 - 375 kW shall have a minimum efficiency class of IE3, or IE2 if they are operated / equipped with electronic speed control (VSD).
- From 1 January 2017, motors with a rated output between 0.75 - 375 kW shall have a minimum efficiency class of IE3, or IE2 if they are operated / equipped with electronic speed control (VSD).

Electronic speed control is carried out using frequency converter (VSD) that adjusts the speed of the motor - and therefore the torque produced - based on the energy needed.





The efficiency class system specified under IEC60034-30 is valid for low voltage three phase squirrel cage induction motors with the following specifications:

-  Rated voltage up to 1000V
-  Rated output between 0,75kW and 375kW
-  Either 2,4 or 6 poles
-  Rated on the basis of continuous duty (S1) or intermittent periodic duty (S3) with cyclic duration factor of 80% or higher
-  Capable of operating direct on-line
-  Rated for operating conditions in accordance with IEC60034-1 (temperature, installation altitude, etc.)

In accordance with IEC34-1 the normal climate is characterized by:

-  Environment temperature:  $-16\text{ }^{\circ}\text{C} \div +40\text{ }^{\circ}\text{C}$
-  Altitude: up to 1000m
-  Atmospheric pressure: 1050mbar
-  Relative humidity: 60% ÷ 90%

This regulation shall not apply to:

-  Motors specified to operate wholly immersed in a liquid
-  Motors completely integrated into a product (for example pump, fan or compressor) of which the energy performance cannot be tested independently from the product
-  At altitudes exceeding 4000 meters above sea level
-  Where ambient air temperatures exceed  $60\text{ }^{\circ}\text{C}$
-  Where ambient air temperatures are less than  $-30\text{ }^{\circ}\text{C}$  for any motor or less than  $0\text{ }^{\circ}\text{C}$  for a motor with water cooling
-  In potentially explosive atmospheres as defined in Directive 94/4EC of the European Parliament
-  Break motors





### 1. Housing:

The housing of the frame sizes 63 to 112 is made of Aluminium.

The feet for the motors:

-  frame size 63 to 112 - Aluminium - screwed
-  frame size 132 - Cast iron - screwed or integrated
-  frame size 160 to 280 - Cast iron - integrated
-  frame size 315 - Cast iron - screwed or integrated

Cable glands:

Frame size 63-100 : M20 / 112 and 132: M25 / 160 and 180: M40 / 200 and 255: M50 / 250 and 280 : M63 / 315 and 355ML : M76

### 2. End-shields:

End-shields for motors of the frame sizes 63 to 100 are made of Aluminium (flange B5 and B14 are made of cast iron). End-shields and flanges for motors of the frame sizes 112 to 355 are made of cast iron. Motors of frame 80, 90 and 100 : on request end shields may be made of cast iron.

### 3. Rotor:

The winding of the rotor is made of die-casted aluminium. The rotor together with the shaft is dynamically balanced with half key according to DIN ISO 8821.

### 4. Terminal boxes located on top

For request, the position of the terminal box can be located at the right or left side looking from the shaft end, for frame size 80 to 315. The terminal box can be rotated in steps of 180° at frame size 63 to 180. The terminal box can be rotated in steps of 90° at frame size 200 to 355.

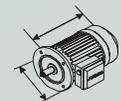
### 5. Cooling

The motors are air cooled by means of external surface ventilation (standard IEC60034-6; cooling according to IC411). Standard motors have a radial flow centrifugal fan allowing fully reversible rotation. Please check the minimum distance between cover and wall by mounting the motor.

### 6. Degree of protection:

All motors of this catalogue are manufactured with the degree of protection IP55 (IP - International Protection). On request the motors are available with a higher degree of protection.

IP	Protection of work equipment	Protection of people	IP	Protection of work equipment
 x	Against penetrate of solid foreign bodies	Against access of dangerous parts with	 x	Against penetrate of water with detrimental action
0.	(no protection)	(no protection)	.0	(no protection)
1.	≥50 mm diameter	back of hand	.1	drip - proof vertical
2.	≥12,5 mm diameter	finger	.2	drip - proof (15° inclination)
3.	≥2,5 mm diameter	tool	.3	spray - proof
4.	≥1,0 mm diameter	wire	.4	splash - proof
5.	dustproof	wire	.5	jet - proof
6.	dust - tight	wire	.6	strong jet - proof
			.7	short-time immersion
			.8	permanent immersion



### 7. Nominal voltage and frequency

The nominal voltage of three phase motors is 400 V at the nominal frequency of 50Hz. Motors for another nominal voltage and / or another nominal frequency are available on request.

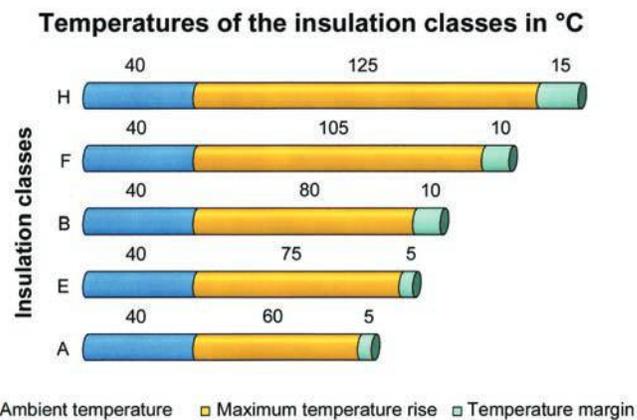
### 8. Nominal output

The motors will properly operate with the nominal output at continuous duty (S1) when the following conditions are observed:

- Motor is supplied with nominal voltage and frequency
- Ambient temperature is not higher than +40°C
- Altitude of site is up to 1000m above sea level

### 9. Insulation

Standard motors are manufactured in the insulation class F.



### 10. Options

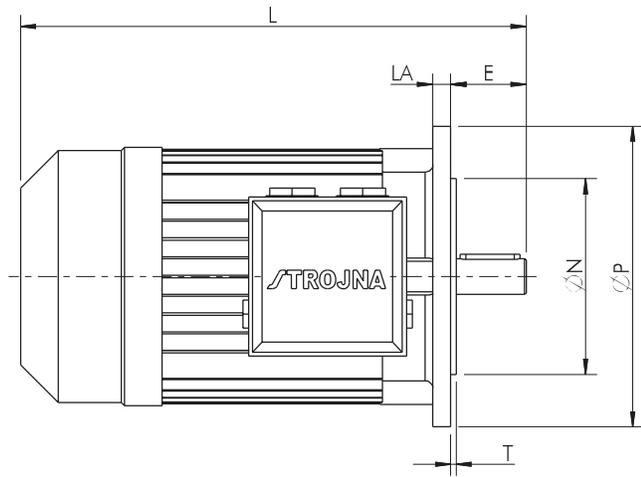
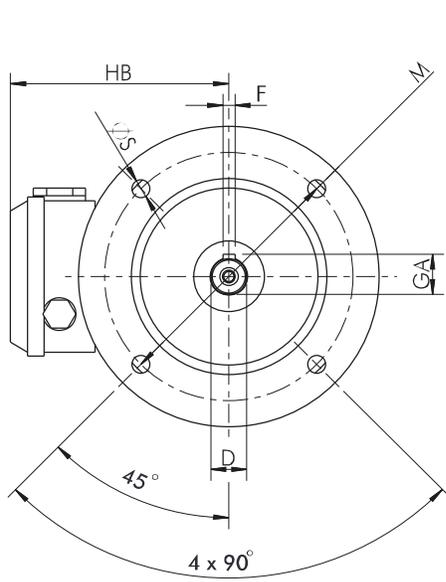
The motors can be equipped with optional accessories (e.g. PTC, Pt 100, anti-condensation heater, external fan).

### 11. Ordering

When ordering motors please specify the following information:

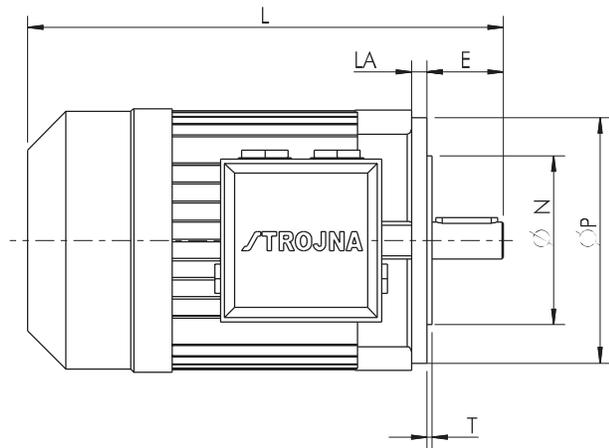
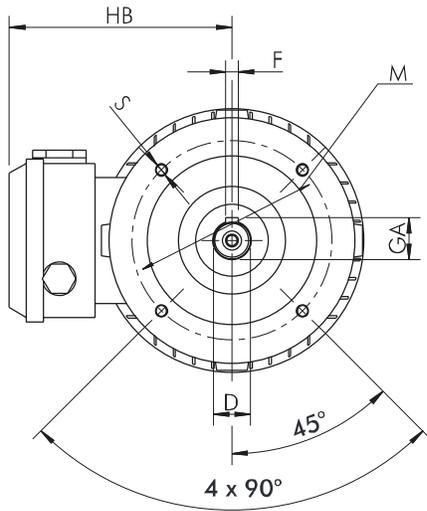
- Quantity
- Motor size
- Nominal output, kW
- Rated speed
- Type of mounting
- Nominal voltage and frequency
- Any special features or options





Type		D	E	F	GA	M	N	P	LA	T	S	HB	L	Pole
63	A	11j6	23	4h9	12,5	115	95j6	140	9	3	10	102	200	2, 4, 6, 8
	B												210	2, 4, 6, 8
71	A	14j6	30	5h9	16	130	110j6	160	9	3,5	10	111	223	2, 4, 6, 8
	B												245	2, 4, 6, 8
80	A	19j6	40	6h9	21,5	165	130j6	200	10	3,5	12	120	266	2, 4, 6, 8
	B													2, 4, 6, 8
90	S												330	2, 4, 6
		24j6	50	8h9	27	165	130j6	200	8	3,5	12	130	305	8
	L												330	2, 8
													355	4, 6
100	LA												420	2, 4
	LB	28j6	60	8h9	31	215	180j6	250	11	4	15	140	440	4
	L												376	6, 8
112	M	28j6	60	8h9	31	215	180j6	250	12	4	15	164	384	2, 6, 8
													411	4
132	S												463	2, 6, 8
	M	38k6	80	10h9	41	265	230j6	300	12	4	15	178	501	2, 4
160	M	42k6	110	12h9	45	300	250j6	350	13	5	19	210	612	2, 4, 6, 8
	L	42k6	110	12h9	45	300	250j6	350	13	5	19	210	612	2, 4, 6, 8
180	M	48k6	110	14h9	51,5	300	250j6	350	13	5	19	228	705	2, 4
	L	48k6	110	14h9	51,5	300	250j6	350	13	5	19	228	705	4, 6, 8
200	L	55	110	16	59	350	300	400	16,5	5	19	320	850	2, 4, 6, 8
225	S	60	140	18	64	400	350	450	18	5	19	345	960	4, 8
	M	55	110	16	59	400	350	450	18	5	19	345	930	2
250		60	140	18	64	400	350	450	18	5	19	345	960	4, 6, 8
	M	60	140	18	64	500	450	550	23	5	19	385	1010	2
		65	140	18	64	500	450	550	23	5	19	385	1040	4, 6, 8

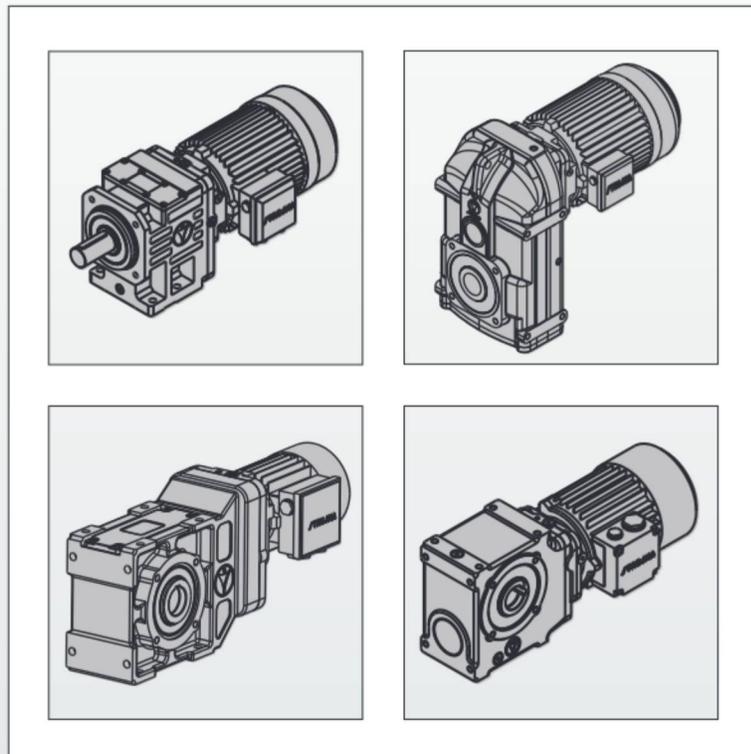




Type		D	E	F	GA	M	N	P	S	T	LE	HB	L	Pole
63	A	11j6	23	4h9	12,5	100	80j6	120	M5	3	14	102	210	2, 4, 6, 8
	B												210	2, 4, 6, 8
71	A	14j6	30	5h9	16	115	95j6	140	M8	3	14	111	223	2, 4, 6, 8
	B												245	2, 4, 6, 8
80	A	19j6	40	6h9	21,5	130	110j6	160	M8	3,5	14	120	266	2, 4, 6, 8
	B												278	2, 4, 6, 8
90	S	24j6	50	8h9	27	130	110j6	160	M8	3,5	10	130	330	2, 4, 6, 8
	L												330	2, 4, 6, 8
100	LA												420	2, 4
	LB	28j6	60	8h9	31	165	130j6	200	M10	3,5	12	140	440	4
	L												376	6, 8
112	M	28j6	60	8h9	31	165	130j6	200	M10	3,5	12	164	384	2, 6, 8
													411	4







## OPERATING AND MAINTENANCE MANUAL



**GEAR UNITS**



## 1. INFORMATION

### 1.1 General information

This Operating manual (OM) is part of the gear unit as supplied, and you must read them before you work with the gear unit. The instructions in the OM must be followed. Keep the OM close to the gear unit.



We assume no liability for damages or disruptions of operations resulting from the failure to observe this OM

### 1.2 Safety instructions

- After being delivered, the unit must be inspected for any damage that may have occurred during transport. If the unit's condition warrants, it may be necessary to take action to prevent the unit from being put into operation.
- The customer is responsible for setting up the drive in accordance with good engineering practices. The instructions in these Operation Manual must be followed to achieve the confirmed characteristics of the drive units and if any warranty claims are to be met.
- Make certain that you never put damaged products into operation!
- Read these Operating Manual carefully before you begin any setup, installation, or maintenance work. Installation, startup, maintenance and repair work on the gear unit / gear motor as well as on electrical accessory equipment may only be performed by qualified technical personnel, taking the following items into account:
  - the operating manual, information labels/tags on the gear unit / geared motor,
  - all other project documents, setup manuals, operating manuals,
  - the applicable regional and national regulations on safety and accident prevention.

## 2. STORAGE

The following items must be taken into account when storing the gear units:

- In general, the storage of drive units must be done in closed rooms.
- Ambient temperature max. 25 °C (77 °F)
- Relative humidity max. 80%
- The drive units are to be protected from exposure to the sun or UV light.
- No aggressive or corrosive materials are to be stored in the vicinity of the unit.
- The gear units are to be stored in the same position that is intended for a later use.
- The gear units are to be rotated 1-2 revolutions on the output side every 6 months to ensure that the interior parts are wetted with lubricant.
- The units are to be protected from mechanical loads and exposure to outside forces.

### 2.1 Lubrication

- When the gear units are to be stored for longer than 12 months, they must be completely filled with lubricant per the nameplate or lubricant plate.
- Unfinished, bare-metal parts on the outside of the unit are to be protected with a corrosion protection product (inspection every 6 months is recommended). The corrosion protection must be replaced after one year.
- Before starting the gear unit, drain the lubricant from it. If more than one lubricant chamber is present, make certain that all of the lubricant chambers have been drained out.
- If the gear units are stored for longer than 24 months before being put into service, they must be checked for leaks. If there are any visible cracks on the surfaces of sealing elements, such parts must be replaced.



### 3. MECHANICAL INSTALLATION - PREPARATIONS

The gear unit must not be put into operation unless:

- The information on the gear unit specification plate matches the permissible local usage conditions.
- No damage caused, for example, by storage or transport, is apparent.
- And in particular, the shaft seals, cover caps, and guard hoods are not damaged.
- No leaks or loss of oil are visible.
- No corrosion or other indication of improper storage or storage under damp conditions is present.
- All of the packaging materials were removed.

As a general rule, drive shafts and flange surfaces must have all corrosion protection products and dirt cleaned from them, standard commercial solvents can be used.



**IMPORTANT!** The sealing lips on the shaft seals must not be allowed to come in contact with the solvent. Material can be damaged!

#### 3.1

Case 1: Gear drives lacking a vent plug: Sealed-design gear drives are supplied without a vent plug.

Case 2: The vent plug with transport locking device is installed at the proper position for the mounting position. The rubber strip must be completely turned off before the unit is put into operation.



The rubber strip must be completely turned off!

Gear units that are ordered without oil filling are supplied with internal rust proofing consisting of an anti-corrosion oil. The anti-corrosion oil can however be mixed with the recommended lubricant indicated on the nameplate. This means that the unit does not have to be flushed before filling with oil.

### 4. SETTING UP THE GEAR UNIT

The proper oil level for the mounting position is designed by the plant.

When installing please ensure that the unit is not exposed to any shocks or vibrations in order to avoid noise during operation. The mounting surface should be even and torsionally rigid. Distortion of the gear case should also be avoided. The cooling air for gear unit motors must be able to flow unhindered around the gear unit.

Reduce reaction torque with a torque arm or a rubber buffer kit (no rigid joints!).

#### 4.1

The customer-side machine shaft must be carefully cleaned and checked for any damage such as grooves or compressed areas before the hollow-shaft gear unit is installed.

The hollow-shafts are manufactured with tolerance ISO H7 class.

Before tightening the hollow-shaft gear unit on to the machine shaft, paint the surface of the machine shaft with lubricating pastes such as Klüber Paste 46MR401.

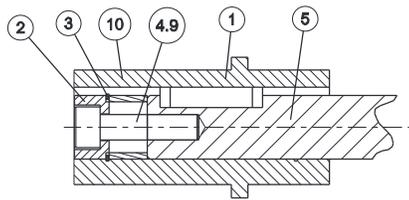
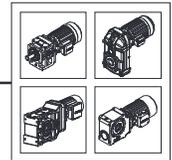


Figure 1  
Mounting the customer shaft with a shoulder

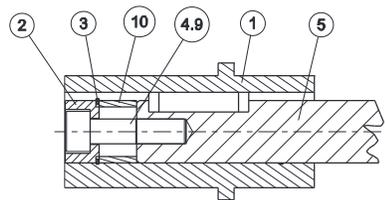


Figure 2  
Mounting the customer shaft without a shoulder

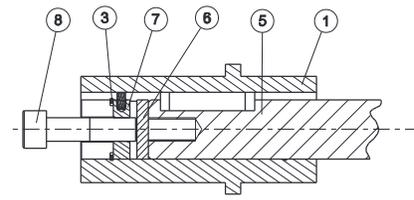


Figure 3  
Removing the customer shaft with or without shoulder

#### 4.1.1 (F 1 F 2)

Draw the gear unit with hollow shaft onto the machine shaft. Insert the spacer ring, item 10, with there is a customer shaft without a shoulder, the circlip, item 3, and washer, item 2, into the hollow shaft and attach using the bolt, item 4.

#### 4.1.2 (F 3)

Remove the screw (4), disc (2) and circlip (3), place the thrust washer (6) and jack nut (7) in the hollow shaft, insert the circlip and remove the gear unit from the shaft with jack screw (8).

Parts 4, 6, 7, 8 and 10 are not supplied with the gear unit. Parts 2, 3 and 9 are included in mounting kit.

1. Hollow shaft
2. Disc
3. Circlip DIN 472
4. Socket head screw DIN 6912 (to customer specification, length according to machine shaft length)
5. Customer's shaft with centering thread DIN332.2, Form DR
6. Thrust washer
7. Jack nut
8. Jack screw
9. Socket head screw DIN 6912
10. Spacer tube

## 5. LUBRICATION, INSPECTION AND MAINTENANCE

### 5.1

#### 5.1.1 ZG

Gear units and geared motors are supplied ready for operation. Gear units sizes from ZG1 to ZG6 are filled with synthetic gear oil labeling according to DIN51502 CLP PG ISO VG220 (according to ISO viscosity grade VG 220 from DIN51519). Sizes from ZG7 to ZG13 have standard filling with mineral gear oil labeling according to DIN51502 CLP ISO VG220 (according to ISO viscosity grade VG 220 from DIN51519) for ambient temperature -10 °C (14 °F) to +40 °C (104 °F).

#### 5.1.2 FG

Gear units and geared motors are supplied ready for operation. Gear units sizes FG1, FG2, FG3 are filled with synthetic gear oil labeling according to DIN51502 CLP PG ISO VG220 (according to ISO viscosity grade VG 220 from DIN51519). Sizes from FG4 to FG8 have standard filling with mineral gear oil labeling according to DIN51502 CLP ISO VG220 (according to ISO viscosity grade VG 220 from DIN51519) for ambient temperature -10 °C (14 °F) to +40 °C (104 °F).



5.1.3 KG

Gear units and geared motors are supplied ready for operation. Gear units sizes KG1 to KG4 are filled with synthetic gear oil labeling according to DIN51502 CLP PG ISO VG220 (according to ISO viscosity grade VG 220 from DIN51519). Sizes from KG5 to KG9 have standard filling with mineral gear oil labeling according to DIN51502 CLP ISO VG220 (according to ISO viscosity grade VG 220 from DIN51519) for ambient temperature -10 °C (14 °F) to +40 °C (104 °F).

5.1.4 SG

Gear units and geared motors are supplied ready for operation. SG gear units are filled with synthetic gear oil labeling according to DIN51502 CLP PG ISO VG460 (according to ISO viscosity grade VG 460 from DIN51519) for ambient temperature -10 °C (14 °F) to +40 °C (104 °F).

5.2

Gear units of the model range sizes ZG sizes ZG1 to ZG6; model range FG sizes FG1 to FG3; model range KG sizes KG1 to KG4, model range SG; are maintenance-free, and oil change is not necessary. The gear units are executed without breather plug, there are no oil drain, oil level respectively oil filling screws.

In the case of gear units of the model range ZG sizes ZG7 to ZG13; model range FG sizes FG4 to FG8; model range KG sizes KG5 to KG9, an oil change has to be executed corresponding to the maintenance periods. The gear units are executed with oil drain, respectively oil filling screws for the main mounting positions.



5.3

Time interval	Inspection and maintenance work
monthly	<ul style="list-style-type: none"> <li>• Gear units must be checked for noise changes (running noise of the gearing and rolling bearings)</li> <li>• Check the housing temperature (max. 90 °C, 194 °F)</li> <li>• Visible inspection of seals for leakage</li> <li>• Remove dust deposit</li> </ul>
every 3 months	<ul style="list-style-type: none"> <li>• Clean the exterior of the vent plug</li> </ul>
every half year	<ul style="list-style-type: none"> <li>• Check the rubber buffer set</li> <li>• Check the lifting bolts to make certain they are tight</li> </ul>
every 5.000 service hours, no later than every 4 years	<ul style="list-style-type: none"> <li>• Visual check of the shaft seals; if applicable replace the shaft seals</li> </ul>
every 10.000 service hours, no later than every 5 years	<ul style="list-style-type: none"> <li>• Oil change: ZG7 to ZG13</li> <li>• Oil change: FG4 to FG8</li> <li>• Oil change: KG5 to KG9</li> </ul>
every 10 years	<ul style="list-style-type: none"> <li>• General overhaul</li> </ul>



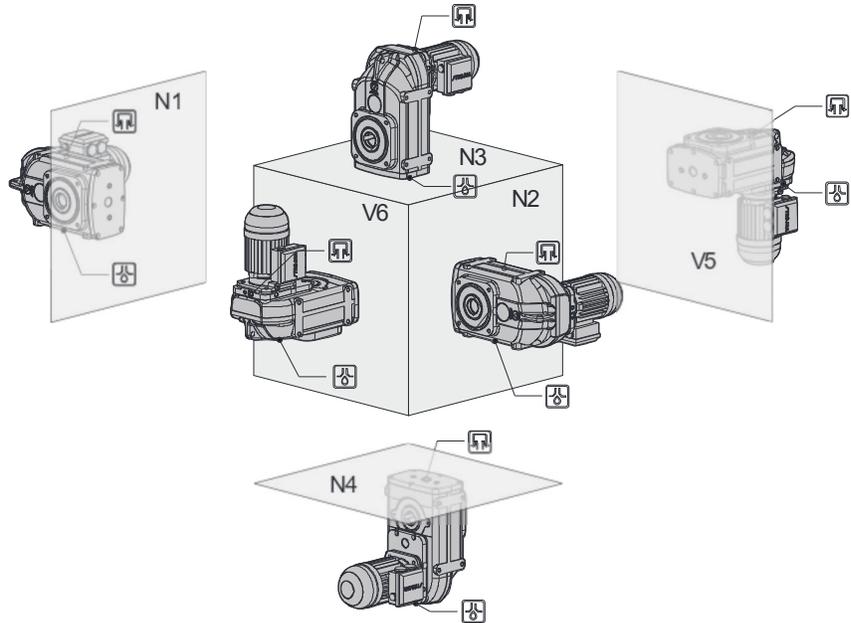
5.4 Oil filling ( )

Tip	Ambijent °C	DIN ( ISO )	ISO VG	ARAL	CASTROL	SHELL	MOBIL
FG	-10°C... +60°C	CLP	220	Degol BG 220	Alpha SP 220	Omala 220	Mobilgear 600 XP 220
	-20°C... +80°C	CLP PG	460	Degol GS460	Alphasyn PG 460	Tivela S460	Glygoyle 460
ZG	-25°C... +60°C	CLP PG	220	Degol GS220	Alphasyn PG 220	Tivela S220	Glygoyle 220
	-40°C... +60°C	CLP HC	220	Degol PAS220	Alphasyn T 220	Omala S4 GX220	SHC630
KG	-20°C... +40°C	HCE	220	Eural gear 220	OpEleb GT 220	Cassida GL 220	SHCObus 220
	-20°C... +80°C	CLP PG	460	Degol GS460	Alphasyn PG 460	Tivela S460	Glygoyle 460
SG	-25°C... +60°C	CLP PG	220	Degol GS220	Alphasyn PG 220	Tivela S220	Glygoyle 220
	-40°C... +20°C	CLP-HC	220	Degol PAS220	Alphasyn T 220	Omala 220 HD	SHC630
	-20°C... +40°C	HCE	460	-	-	-	Glygoyle 460

- CLP -Mineral oil 1) Standard lubrication according DIN 51517 - CLP ISO 220
- CLP PG -Polyglycol oil 2) Standard lubrication according DIN 51517 - CLP ISO VG 460
- CLP HC -Polyalphaolefin oil 3) Special starting procedure
- HCE -Lubricants for food processing industry Special lubricants on inquiry

5.4.1 FG ( )

FG	Mounting position					
	N1	N2	N3	N4	V5	V6
12	1,1	1,1	1,5	1,6	1,7	1,9
22	1,2	1,2	1,7	1,8	1,9	2,3
23	1,4	1,4	2,0	2,2	2,4	2,9
32	1,9	1,9	3,0	3,1	3,4	4,0
33	2,3	2,3	3,8	4,0	4,3	5,0
42	3,1	3,1	4,2	4,8	4,8	7,0
43	3,5	3,5	5,8	6,2	6,8	7,7
44	3,7	3,7	7,0	7,5	8,0	9,0
52	6,2	6,2	9	9,2	10	12
53	6,5	6,5	9,7	10	12	15
54	6,8	6,8	10	12	13	16
62	10	10	12	13	14	17
63	9,3	9,3	13	14	16	19
64	10	10	14	15	18	22
72	14	14	16	17	19	24
73	15	15	21	24	25	27
74	15,5	15,5	23,5	26	27	33
83	28	28	40	43	46	50
84	29,5	29,5	48	54	56	60
85	31	31	50	58	61	66



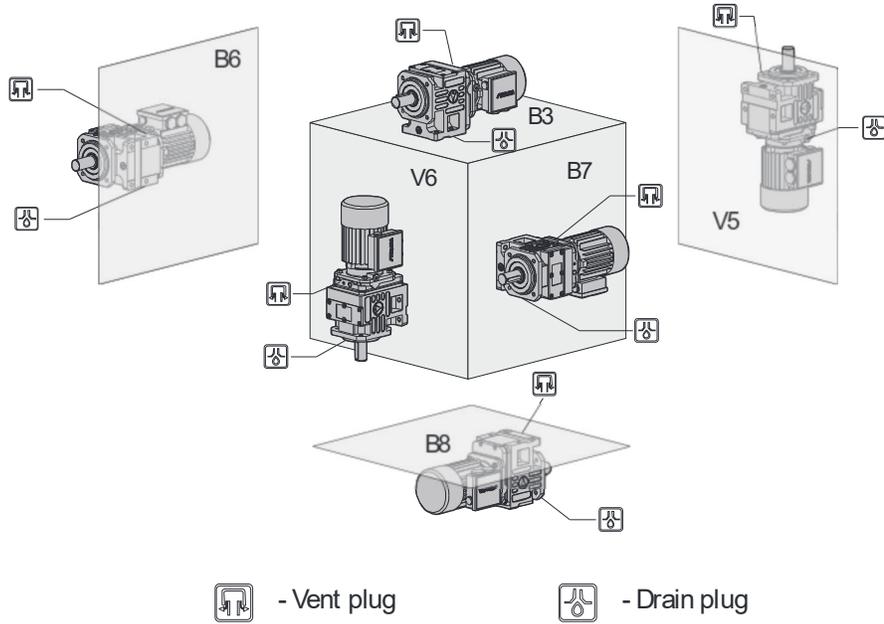
- Vent plug

- Drain plug



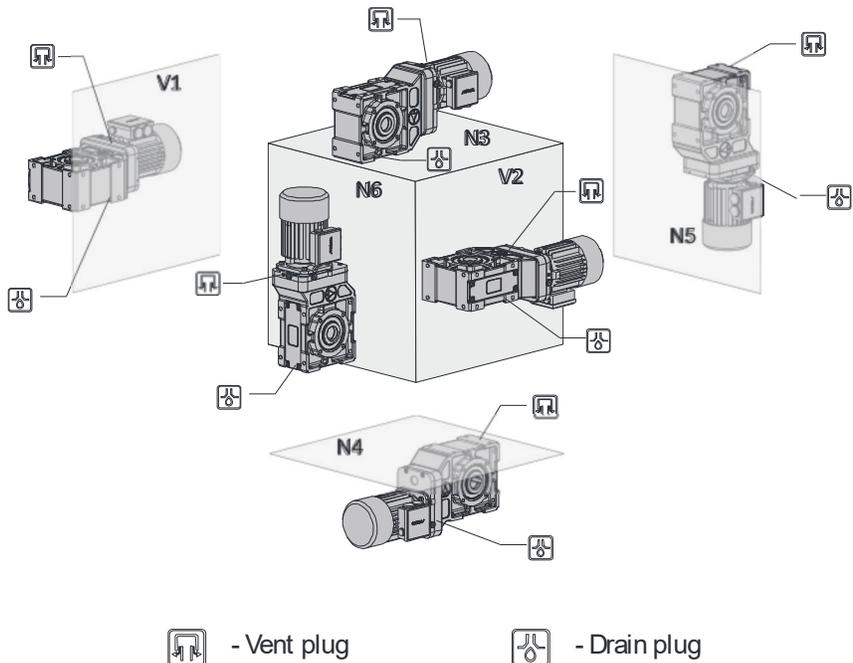
5.4.2 ZG

ZG	Mounting position					
	B7	B6	B3	B8	V6	V5
12	0,4	0,4	0,2	0,4	0,3	0,4
22	0,8	0,8	0,7	1,4	1,3	1,5
23	0,9	0,9	0,8	1,6	1,5	1,7
32	0,9	0,9	0,7	1,4	1,4	1,6
33	1	1	0,9	1,9	1,8	2
42	1,2	1,2	1	2,1	2	2,2
43	1,4	1,4	1,3	2,7	2,6	2,8
44	1,9	1,9	1,8	3,5	3,4	3,7
52	1,2	1,2	0,9	1,9	1,8	2,2
53	1,6	1,6	1,5	3,2	3,1	3,5
54	2,2	4,4	4,6	5,6	3,7	3,7
62	1,5	1,5	1,2	2,5	2,6	2,7
63	2,1	2,1	1,8	3,5	3,7	3,7
64	2,7	2,7	2,3	4,5	4,6	4,8
72	2,9	2,9	2,1	4,3	4,5	4,5
73	3,6	3,6	3,2	6,4	6,5	6,8
74	4,2	4,2	3,7	7,5	7,5	7,8
82	3,3	3,3	2,7	5,5	5,7	5,9
83	3,9	3,9	3,5	7,2	7,4	7,8
84	5,2	5	4,6	9,3	9,5	10,5
92	8,1	8,1	7	14,4	14,3	15
93	9,3	9,3	8,5	17,5	17,2	18,5
94	10,5	10,5	8,5	18,5	18,5	20
102	11	11,8	10,2	20,6	20,3	22
103	13,8	13,8	12,5	25,6	25,2	27
104	15,7	15,7	14,3	28,5	28,9	31
112	17	17	15,9	32	32,5	33
113	18,4	18,4	17,5	36	37	39
114	24	24	22	45	46	48
122	24	24	22	45	46	46
123	28	28	26	54	56	59
124	36	36	34	68	69	72
132	33	33	31	63	64	65
133	41	41	39	81	83	88
134	55	55	50	101	104	108



5.4.3 KG

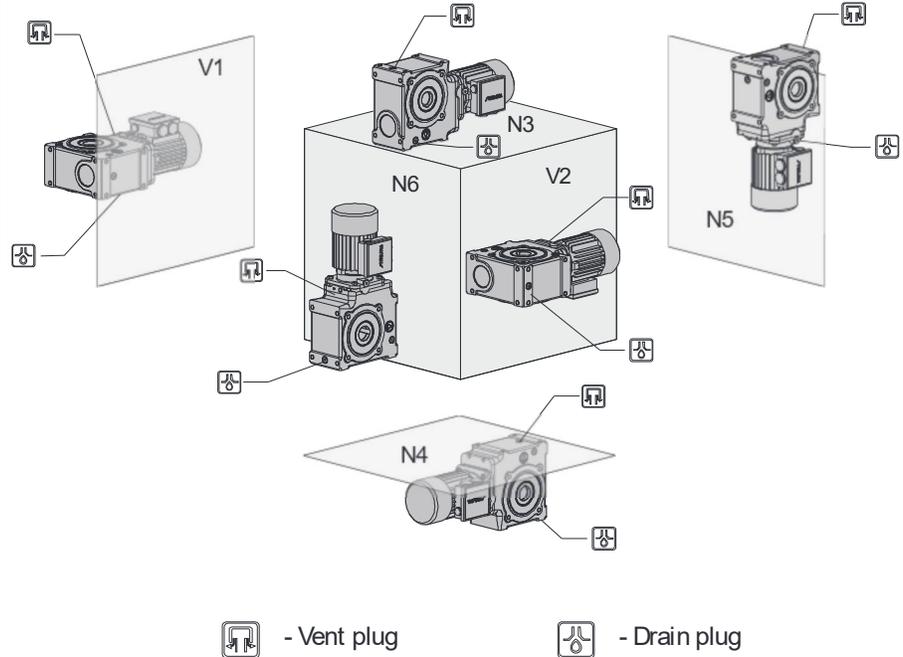
KG	Mounting position					
	N3	N4	N5	N6	V1	V2
12	0,8	0,9	1,2	1,5	1,3	1,4
22	1	1	1,45	1,6	1,5	1,6
23	1	1,1	1,45	1,8	1,7	1,8
32	1,6	1,6	2,2	2,1	2,2	2,2
33	1,7	1,8	2,6	2,8	2,6	2,7
42	2,5	2,6	3,0	4,5	4,5	4,0
43	2,6	2,7	3,3	4,7	4,3	4,4
44	2,8	3,2	3,5	5,0	4,8	4,8
53	3,0	3,8	4,2	5,3	3,2	3,3
54	3,5	4,1	4,7	5,7	3,8	4
55	4,2	4,8	5,3	6,2	5,6	6,0
63	5,0	6,8	7,0	9,2	5,2	5,4
64	5,8	7,5	7,5	9,8	6,0	6,5
65	6,7	8,2	7,9	10,5	7,5	8,0
73	7,8	11	14	16	8	8,2
74	8,5	12	15	17	15	15
75	9,6	12,8	16,5	18,5	17	17
83	17	20	22	28	18	19
84	17	18,5	25	32	20	21
85	20	21,5	26,5	36	23	25
93	35	48	45	67	40	42
94	38	52	48	72	45	47
95	42	56	53	77	52	56





5.4.4 SG

SG	Mounting position					
	N1	N2	N3	N4	N5	N6
12	0,9	0,9	0,9	1,1	1,1	0,9
22	0,9	1,2	1,2	1,2	1,2	1,2
32	1,1	1,6	1,6	1,6	1,6	1,6
33	1,7	1,7	2,5	2,5	2,5	2,9
42	2	2	3,4	3,4	3,4	3,4
43	3,1	3	4,5	4,5	4,5	5,1
52	3,2	3,2	5,5	5,5	5,5	5,5
53	3,5	3,5	6,3	6,3	6,3	6,3
62	5,6	5,6	9	9	9	9,6
63	5,9	5,9	10,3	10,3	10,3	10,3
55	4,4	4,4	4,6	5,6	3,7	3,7
63	6,2	6,2	6,8	8,2	4,8	4,8



6. ELECTRICAL CONNECTION

Work is only permitted to be carried out by qualified specialists on the stationary motor while disconnected and prevented from being switched on again. This also applies for the auxiliary power circuits (e.g. optional anti-condensation heaters).

Before starting work, make sure that a protective conductor is securely connected! Check for isolation from supply! Observe the rules of electrical engineering and electronics in the applicable rules and regulations, particularly with regard to protective measures. Observe requirements of the national or local energy companies.

- check that the mains voltage and frequency correspond to the data on the motor rating plate;
- connect the motor only as shown in the wiring diagram included in the terminal box of the motor;
- implement safe installation;
- correct the direction of rotation by replacing 2 phases;
- terminal box must be dust and watertight;
- protect phases with the safety switch;
- the insulation resistance needs to be checked prior to start-up and again after any extended periods of storage; Exceeding the tolerances in EN 60034-1/IEC 34-1 – voltage + 5 %, frequency +2 %, curve shape, symmetry – increases the temperature and influences electromagnetic compatibility. Observe nameplate data and the wiring diagram in the terminal box. Connections must be made in such a way as to ensure that a permanently safe electrical connection is maintained (no protruding wire ends); use the corresponding cable end pieces.

Air clearances between bare live parts themselves and between bare live parts and earth must be 5.5 mm (0.2 inch) (Un = 690 V).



### 6.1 Preparing the terminal box



#### 6.1.1 Removing the terminal box cover

- Put on the terminal box cover and fasten with screws.
- Determine which cable entries to open.
- Open the cable entries:
  - with a chisel or similar (hold at angle),
  - by a light tap with a hammer



#### 6.1.2 Sealing the terminal box

- Open the terminal box, remove blasted lid
- With provided lock nuts fix the cable entry,
- Seal the cable entry.

Terminal box should be free of any foreign objects, dirt and moisture. Unused cable entries and terminal box seal tightly. For a test run, secure electrical motor shaft key. For the break motors, please ensure that brake is functioning properly before putting electrical motor in to the operation.



It is mandatory to install protective switch with for an over current protection for windings of electrical motor. Voltage fuses does not protect the motor against overload, only the supply system leads or switching devices.

### 6.2 Connecting the motor

Use the circuit diagrams in the terminal box and the motor nameplate data to connect a motor on electrical grid. For electric motor with Y/Δ starting it is necessary to remove all bridging (connecting sheets), and connect all six terminal strips according to motor circuit diagram. For electrical motors with direct start (Y or Δ) it is necessary to connect all bridging according to circuit diagram.

### 6.3 Direction of rotation

The standard motors are suitable for clockwise and counter-clockwise rotation. Connection of the power cables in the phase sequence L1, L2, L3 to U1, V1, W1 results in clockwise rotation (looking at the shaft end on the drive side). If two connections are interchanged, this results in counter-clockwise rotation

### 6.4 Motor temperature

Standard motors are designed for use at temperatures of -20°C (-4 °F) to +40 °C (104 °F) and altitudes of 1,000 m (3280 ft) above sea level. When installing the motor, ensure that the intake is not obstructed and air can circulate freely. Do not remove the fan blade or cowl, or enclose the motor with a casing because in both cases there would not be enough air for cooling and the motor could overheat.

### 6.5 Vibration

Vibration levels of  $V_{e\bar{i}} = 3,5 \text{ mm/s}$  for  $P_n \leq 15 \text{ kW}$  ( $V_{e\bar{i}} = 0,14 \text{ inch/sec}$  for  $P_n \leq 20 \text{ HP}$ ) or  $V_{e\bar{i}} = 4,5 \text{ mm/s}$  for  $P_n > 15 \text{ kW}$  ( $V_{e\bar{i}} = 0,18 \text{ inch/sec}$  for  $P_n > 20 \text{ HP}$ ) are quiet acceptable in the coupled state. Whenever changes occur in relation to normal operation, such as increased temperatures, noise, oscillation, determine the cause and contact the manufacturer, if required. Never bypass or disable protection devices, not even in test mode. If you are in doubt, switch off the motor. Regularly clean air ducts in dusty or dirty environments. Remove the optionally condensation water plug to drain from the motor and reinsert the plug!

For motors without re-lubrication facility: change the bearings or grease but no later than every 3 years (see manufacturer's specifications).

For motors without re-lubrication facility: see the maintenance interval!

Switch on forced cooling every time when you start the motor (if you have that option).

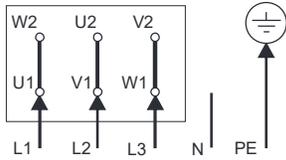


7. MOTOR CIRCUIT DIAGRAM

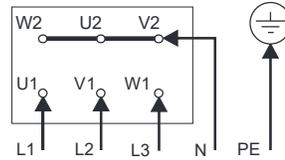
7.1

- numbers of poles:  $2p = 2$ ,  $2p = 4$ ,  $2p = 6$ ,  $2p = 8$

$\Delta$  CONNECTION



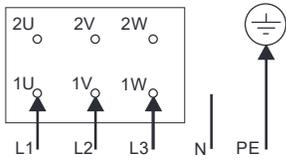
Y CONNECTION



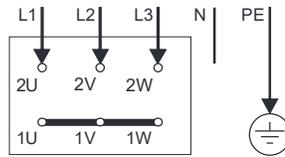
7.2

- numbers of poles:  $2p = 4/2$  and  $2p = 8/4$  (single-winding)

$\Delta$  CONNECTION

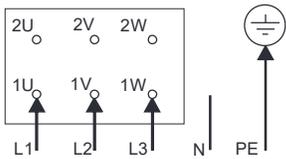


YY CONNECTION

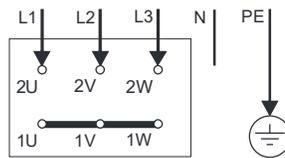


- number of poles  $2p = 4/2$  and  $2p = 8/4$  (single-winding, for venGator drive)

$2p = 4(8)$   
Y CONNECTION

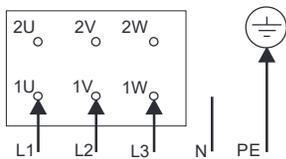


$2p = 2(4)$   
YY CONNECTION

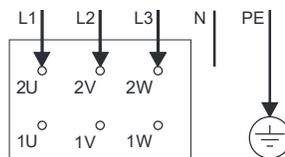


- number of poles  $2p = 6/4$  and  $2p = 8/6$  (double-winding)

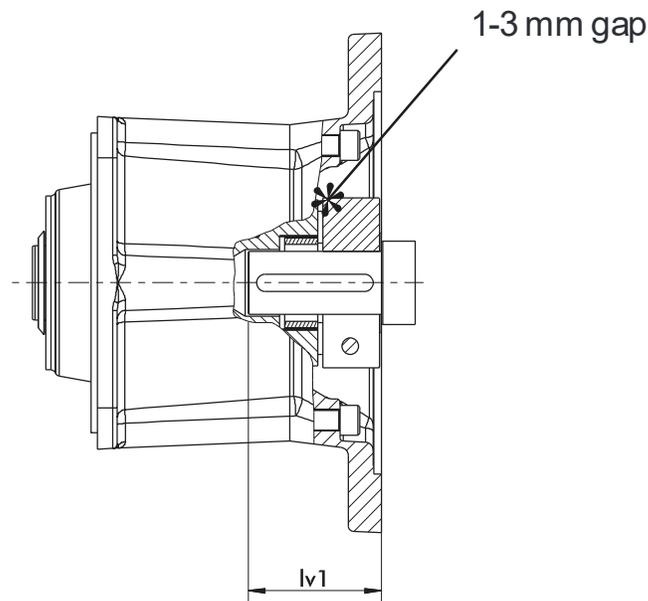
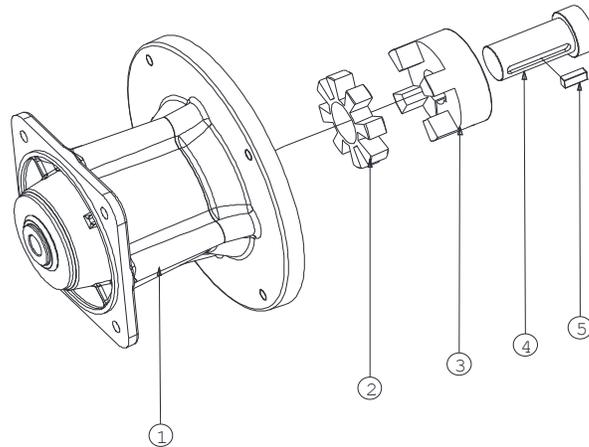
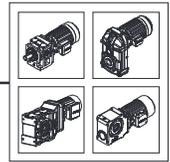
$2p = 6(8)$   
Y CONNECTION



$2p = 4(6)$   
Y CONNECTION







IEC adapter (1) is delivered with following parts:

- Elastic insert (2)
- Jaw (3)

## 8.2

To mount your IEC motor on IEC adapter it is necessary to follow following procedure:

1. Remove the jaw (3) from IEC adapter.
2. Remove key from the motor shaft keyway (4).
3. Reduce the key length to fit jaw length.
4. Clear motor shaft (4) from dirt and grease.
5. Put reduced key (5) on the motor shaft keyway.
6. Loosen mounting screw on the jaw (3), put the jaw on the motor shaft (4), up to the motor shaft shoulder.
7. Tighten the mounting screw using tightening torque given in the table.
8. Assemble the motor with the jaw with elastic insert (2). Ensure that foreign objects do not come to the junction between the jaw (3) and elastic insert (2).
9. Use the screws to tighten the motor on the IEC adapter Flange.

	A63/71	A80/90	A100/112	A132	A160/180	A200/225	A250/280
Mounting screw (ISO 4762/12.9)	M4	M6	M8	M12	M12	M16	M16
Tightening torque of the mounting screw (Nm)	4	15	35	120	120	290	290



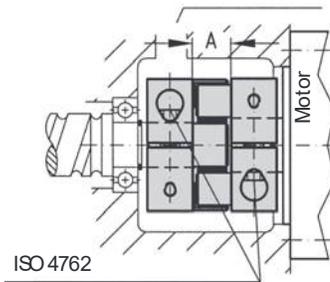
8.3 Adjustment

- I
- S
- S
- R
- A
- D

- When aligning the cold equipment take into account the expected thermal growth of the components, so that the permissible misalignment values for the coupling are not exceeded in operation.
- Be aware that the coupling under misalignment imposes restoring forces on the adjacent shafts and bearings. Take into account that the larger the misalignment, the greater the restoring forces will be.
- The displacements values indicated in the tables are maximum permissible guide numbers. We recommend not to fully use these values during the alignment, so that in operation sufficient reserves remain for thermal expansions, foundation settlements etc.
- In special cases with high demands on quiet running or high rotating speeds it is possible that, in the three displacement levels, an alignment accuracy of  $\leq 0,1$  mm is necessary.
- If the coupling is mounted in a closed housing / casing so that a subsequent alignment is not possible any more, it must be guaranteed that the geometry and fit accuracy of the contact surfaces in operation aligns the shafts exactly within the mentioned tolerances.

8.4 Axial gap measurement:

- Calculate the axial gap measurement. Symbolic image for reference.
- Keep, when aligning the gap measurement A, to the maximum permissible tolerance according to table.



ATTENTION!

STROINA

8.5 Radial displacement

- Measure a complete rotation (360°) between coupling and shaft.
- The values of the table are valid for reference rotation speed of 1500 min<sup>-1</sup>

8.6 Angular displacement

- Measure the face of shaft and coupling on complete rotation (360°)
- The values of the table are valid for reference rotation speed of 1500 min<sup>-1</sup>

IEC Size		63-71	80-90	100-112	132-180	200-250
Distance A (mm)	A	11,5	18	20	26	31
Radial displacement (mm)	Max. Values	0,1	0,12	0,15	0,2	0,25
Angular misalignment (Grad)		1	1	1	1	1
Axial displacement (mm)		±1	±2	±2	±2	±2



8.3    

IEC adapter is delivered filled with grease, so there is no additional maintenance.

Daily check: housing temperature and oil leakage.

Monthly check: clear IEC adapter from dirt and dust to ensure appropriate cooling.

Every 10 years or 10 000 working hours (whatever comes first) general overhaul the IEC adapter.

On the occasion of routine inspection or maintenance work on the drive equipment, or after 3 year at least:

-  Replace the elastomer ring.
-  If the wear limit has been reached or exceeded, replace the elastomer ring immediately, irrespective of the inspection intervals of the equipment.
-  Check the alignment of the coupling.
-  Remove dust deposits from the coupling components and elastomer ring.



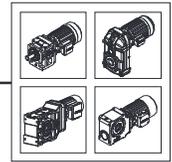
**ATTENTION!** Risk of burns! During operation IEC adapter housing temperature can arise up to to 90 °C (194 °F)!

In case there is a strange noise or the housing temperature over 90 °C (194 °F), switch of the motor and disconnect it from the electrical power supply. Inform your dealer about the improper work of the IEC adapter.

8.8      

 Problem	 Cause	 Risk	 Action
Irregular running noises / vibration	Alignment fault	Considerable increase in coupling temperature. Premature wear of elastomer bushings. Increased reaction forces act on connected machines.	-Disconnect drive
			-Remove cause for alignment fault
	-Re-align coupling		
	-Inspect elastomer for wear		
Elastomer worn out	Coupling claws strike against each other. Spark formation, claw fracture, increased reaction forces.	-Disconnect drive	
		-Check coupling components for damages and replace parts, if necessary	
-Replace elastomer			
Unbalance	Considerable increase in coupling temperature. Premature wear of elastomer bushings. Increased reaction forces act on connected machines.	-Disconnect drive	
		-Verify balance state of plant components and correct it, if necessary	
-Inspect elastomer for wear			
Loose screw connections	Flying off parts can cause serious injuries and considerable damages.	-Disconnect drive	
		-Check coupling parts for damages, replace parts, if necessary	
		-Verify alignment of coupling	
		-Tighten screws to the specified tightening torque and secure them against working loose, if necessary	
-Inspect elastomer for wear			





## 9. INSTALLATION AND REMOVAL INSTRUCTION FOR SHRINK DISCS

Shrink discs are supplied ready for installation. However, prior to tightening of locking screws it is necessary to remove wooden spacers that may have been used during shipping.

### 9.1

Important! Never tighten locking screws prior to shaft installation, as inner ring of shrink disc and/or hub can be permanently contracted even at relatively low tightening torques.

1. Clean hub OD and shrink disc bore. Lightly lubricate hub OD before assembling shrink disc on hub.
2. Carefully solvent clean and dry shaft and hub bore of any lubricant prior to mounting hub onto shaft. This step is critical, as any lubricant on the shaft/hub bore interface will greatly reduce the torque transmitting capacity of the shrink disc connection.
3. Insert shaft into hub, then position shrink disc onto hub. After confirming correct position of hub and shrink disc, hand-tighten three (3) or four (4) evenly spaced locking screws and make sure that outer collars of shrink disc are parallel. Hand-tighten remaining locking screws.
4. Use torque wrench and set it approximately 5% higher than specified locking screw tightening torque  $M_p$ . Tighten locking screws in either a clockwise or counterclockwise sequence, using approx.  $\frac{1}{4}$  (i.e.,  $90^\circ$ ) turns (even if initially some locking screws require a very low tightening torque to achieve  $\frac{1}{4}$  turns) for several passes until  $\frac{1}{4}$  turns can no longer be achieved.
5. Continue to apply overtorque for 1 or 2 more passes. This is required to compensate for a system-related relaxation of locking screws since tightening of a given screw will always relax adjacent screws. Without overtorquing, an infinite number of passes would be needed to reach specified tightening torque.
6. Reset torque wrench to specified torque ( $M_p$ ) and check all locking screws. No screw should turn at this point, otherwise repeat Step 5 for 1 or 2 more passes. Once the screws are tightened, check the parallelism of the outer collars, considering that the maximum allowed error is 0.35% of the outer diameter of shrink disc. A larger error could cause a loss of pressure and, as a consequence, reduced performances.

It is not necessary to re-check tightening torque after equipment has been in operation.

### 9.2

Prior to initiating the following removal procedure, check to ensure that no torque or thrust loads are acting on the shrink disc, shaft or any mounted components.

Loosen all locking screws in several stages by using approx.  $\frac{1}{2}$  turns, following either a clockwise or counterclockwise sequence, until shrink disc can be moved on hub. The shrink disc, hub and shaft will return to their original fit clearances.

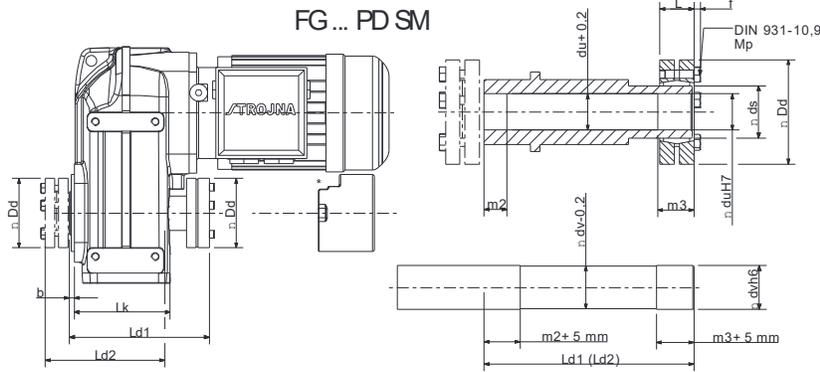


**WARNING! DO NOT** completely remove locking screws before locking rings are disengaged. As sudden separation of locking rings could involve high separation forces that may result in permanent injury or death. Be certain that locking rings are disengaged before completely removing locking screws.

### 9.3

In relatively clean operating conditions, shrink discs may be reused without prior cleaning. In all other cases, shrink discs require thorough cleaning and re-lubrication as follows:

- Dow Corning® Molykote BR2 Plus (or equivalent) on locking screw threads and under screw heads;
- Dow Corning® Molykote G-Rapid Plus (or equivalent) on inner and outer ring tapers.

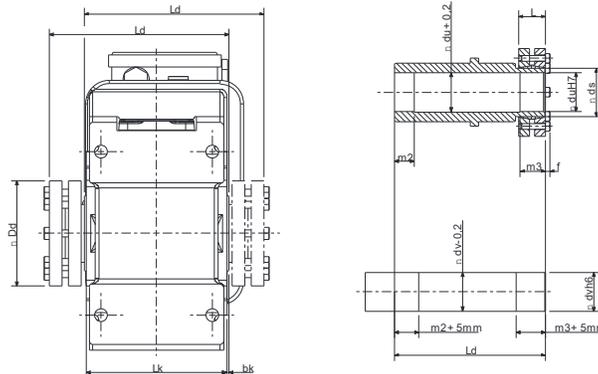


	SMB/SMR		m2	m3	Lk	b	Ld1	Ld2	du/ dv	ds	Dd	L	f	Msmax	Famax	Mp
	max	max*												[Nm] [Lb-Ft]	[kN] [Lbf]	[Nm] [Lb-Ft]
FG1		63	20	21	99,5	5	150	130	30	36	72	23.5	4	570 (420)	58 (13000)	12 (9)
FG2	80	71	20	24	112	5	169	143	35	44	80	25.5	4	780 (575)	74 (16600)	12 (9)
FG3	112	100	20	27	141	5	205	180	40	50	90	27.5	4	1160 (855)	86 (19300)	12 (9)
FG4	132	112	30	28	149	5	221	192	50	62	110	30.5	4	2200 (1623)	111 (25000)	12 (9)
FG5	160	132	30	29	177	5	247	220	65	75	138	32.5	5.3	3200 (2360)	137 (30800)	30 (22)
FG6	200	200	50	40	247	5	323	280	75	90	155	39	5.3	7250 (5350)	210 (47200)	30 (22)
FG7	225	225	60	45	269	5	365	330	90	110	185	49	6.4	13600 (10030)	302 (67900)	59 (44)
FG8	250	250	60	50	343	6	415	415	100	125	215	53	10	21300 (15710)	395 (88800)	59 (44)

\* Maximum possible motor frame size when using shrink disc protective lid.

All other units in mm!

KG...(PD) SM

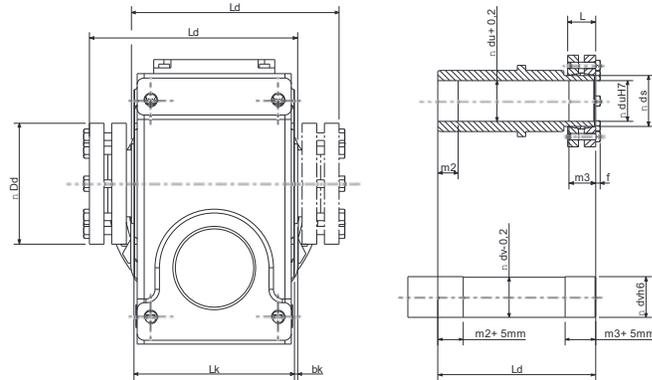


	SMB/SMR		m2	m3	Lk	b	Ld1	Ld2	du/ dv	ds	Dd	L	f	Msmax	Famax	Mp
	max	max*												[Nm] [Lb-Ft]	[kN] [Lbf]	[Nm] [Lb-Ft]
KG1			20	20	95	5	130	130	30	36	72	23.5	4	570 (420)	58 (13000)	12 (9)
KG2			20	20	105	5	140	140	30	36	72	23.5	4	570 (420)	58 (13000)	12 (9)
KG3			20	25	120	5	160	160	35	44	80	25.5	4	780 (575)	74 (16600)	12 (9)
KG4			30	25	140	5	180	180	40	50	90	27.5	4	1160 (855)	86 (19300)	12 (9)
KG5			30	30	154	3	192	192	50	62	110	30.5	4	2200 (1623)	111 (25000)	12 (9)
KG6			30	30	176	7	195	195	65	75	138	32.5	5.3	3200 (2360)	137 (30800)	30 (22)
KG7			50	40	206	7	260	260	75	90	155	39	5.3	7250 (5350)	210 (47200)	30 (22)
KG8			60	45	252	8	320	320	90	110	185	49	6.4	13600 (10030)	302 (67900)	59 (44)
KG9			60	50	340	10	415	415	100	125	215	53	10	21300 (15710)	395 (88800)	59 (44)

All other units in mm!



SG...(P)D SM



	SMB/SMR		m2	m3	Lk	b	Ld1	Ld2	du/dv	ds	Dd	L	f	Msmax	Famax	Mp
	max	max*												[Nm] [Lb-Ft]	[kN] [Lbf]	[Nm] [Lb-Ft]
SG1			20	20	95	5	130	130	30	36	72	23.5	4	570 (420)	58 (13000)	12 (9)
SG2			20	25	105	5	140	140	35	44	80	25.5	4	780 (575)	74 (16600)	12 (9)
SG3			30	25	124	3	160	160	40	50	90	27.5	4	1160 (855)	86 (19300)	12 (9)
SG4			30	25	120	5	160	160	40	50	90	27.5	4	1160 (855)	86 (19300)	12 (9)
SG5			30	30	140	5	180	180	50	62	110	30.5	4	2200 (1623)	111 (25000)	12 (9)
SG6			30	30	150	5	192	192	50	62	110	30.5	4	2200 (1623)	111 (25000)	12 (9)

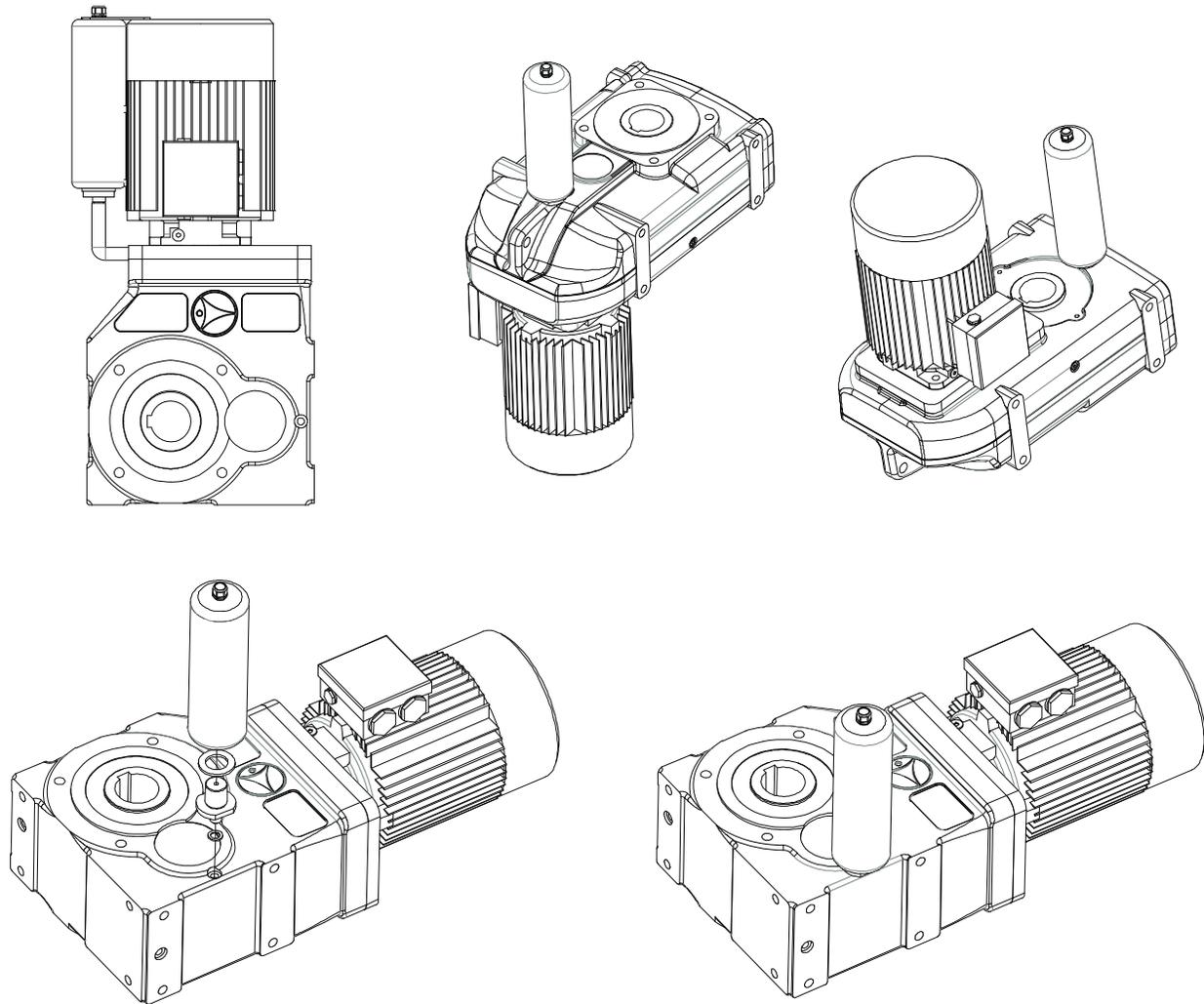
All other units in mm!



### 10. OIL COMPENSATOR

Oil compensator allows the lubricant/air space in gear unit to expand. This means lowering pressure inside gear unit at high operation temperatures and preventing lubrication to escape into breather valve.

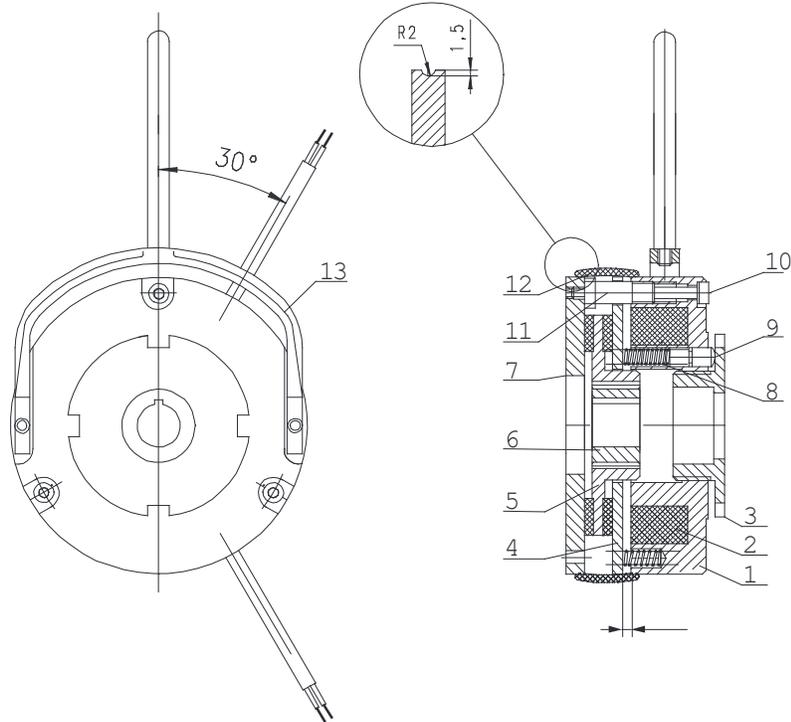
The oil compensator is supplied as assembly kit. It is intended for mounting onto the highest point of gear unit. However, if installation space is limited, there are many variations how to mount oil compensator. And on request and order-specific dimension from STROINA can be made.



V k d c d d d



11. OPERATING INSTRUCTION OF DIRECT CURRENT ELECTROMAGNETIC BRAKE



- |                       |                          |
|-----------------------|--------------------------|
| 1. Electromagnet body | 8. Spring                |
| 2. Coil               | 9. Thrust pin            |
| 3. Nut                | 10. Mounting bolt        |
| 4. Armature           | 11. Adjusting bolt       |
| 5. Brake disk         | 12. Brake casing         |
| 6. Gear wheel         | 13. manual release lever |
| 7. Spring             |                          |

11.1

The brake design is presented in the drawing. When coil (2) is not energized, the brake disk (5) with the friction linings is pressed by armature (4) to the mounting disk (7) or directly to the friction surface of the given equipment with force of springs (8), the brake then being in the on state (braking). The braking torque is transferred via the brake disk (5) onto the gear wheel (6) mounted on the shaft of the motor or equipment cooperating with the brake, secured against axial displacement by circlip. The amount of torque can be regulated by screwing in the nut (3) or reducing the number of springs.

The direct current fed to the electromagnetic winding (2), through its induction causes attraction of the armature  $|a=0|$  simultaneously eliminating the pressure of springs on the armature and brake disk (5). The brake is released. In case of voltage failure or damaged electromagnet, in brakes with release lever - it is possible to release the brake by shifting the lever. Releasing the pressure on the lever causes its return and re-braking.

The distance between electromagnet and disc brake (5) that is, a width of air gap, is adjusted by means of adjusting bolts (11). Type HPS brake is mounted to motor bearing cover with mounting bolts (19). The air gap «a» is set in factory for its nominal value which is later reduced by screwing in the adjusting bolts (11) to compensate for the progressive wear of brake disc lining.



11.2 Mounting 

Mounting procedure of brake is very simple. The gear (6) is mounted to the shaft and protected with circlip against axial movement. Then couple the brake disc (5) with gear (6) and fix the brake using mounting bolts (10) to the motor bearing cover or to the wall of device to be braked. When the brake is provided with locking elements (14), these should be removed after the brake is installed. Check the value of air gap width as instructed in 10.3. Install the brake casing.

To disassembly, reverse the above procedure.

Type	HPS06	HPS08	HPS10	HPS12	HPS14	HPS16	HPS18	HPS20	HPS25
a nom.	0,2 <sup>+/-</sup> - 0,05	0,2 <sup>+/-</sup> - 0,05	0,3 <sup>+/-</sup> - 0,05	0,4 <sup>+/-</sup> - 0,05	0,4 <sup>+/-</sup> - 0,05	0,5 <sup>+/-</sup> - 0,05			
a max.	0,5	0,5	0,5	0,7	0,8	1,0	1,0	1,2	1,4

11.3 Adjustment 

The air gap »a« grows gradually larger in consequence of wear of brake disc lining (5). The nominal value of the air gap »a nom« may be restored by screwing in the adjusting bolts (11). Prior to adjustment, slacken mounting bolts (10) and then set the nominal value of air gap using the feeler gauge inserted between armature (4) and body and screwing in the adjusting bolts (11). Tighten the mounting (10) and secure the position by screwing out the adjusting bolts as far as they go.

11.4 Warning 

When the DC brake is to be connected to the AC source, a rectifying circuit must be used. The solenoid of in electromagnet circuit may be disconnected either on DC side or on AC side.

DISCONNECTION ON AC SIDE

The coil current is broken between the coil and the supply (rectifying) system. The magnetic field reduces gradually causing extension of brake actuation time and simultaneous delay in rise of braking torque. If actuation times are not of significance, the brake on the alternating current side should be actuated since no protection facilities are then required for the coil and contacts. While switching off, the supply systems operate as unidirectional diodes.

DISCONNECTION ON DC SIDE

The coil current is broken between the coil and the supply (rectifying) system. The magnetic field is reduced very rapidly, short brake actuation time, resulting in rapid rise in braking torque. While switching off on direct current side, high peak voltage is formed in the coil causing rapid wear of contacts due to sparking.

11.5 Maintenance 

The brakes do not require special maintenance procedures, however during regular intervals of time depending on intensity of brake operation, perform inspections and regulation of air gap »a«. When the brake disk reaches maximum wear, replace it with a new one.

While replacing the brake disk, take care that the friction surface of the disk, armature and elements cooperating with the friction linings are free from grease and oil. Remove all dirt accumulated from the brake interior. If in spite of correct mounting and proper regulation, the brake does not operate, failure is due to:

- electromagnet : burnt coil, damaged supply cable
- rectifier system ( installed in the motor terminal box )
- electrical connections : check for correctness and quality of connections
- damaged elements - replace them with new ones.



## 12. DC BRAKE SUPPLY CIRCUITS

### 12.1 Circuit PS1

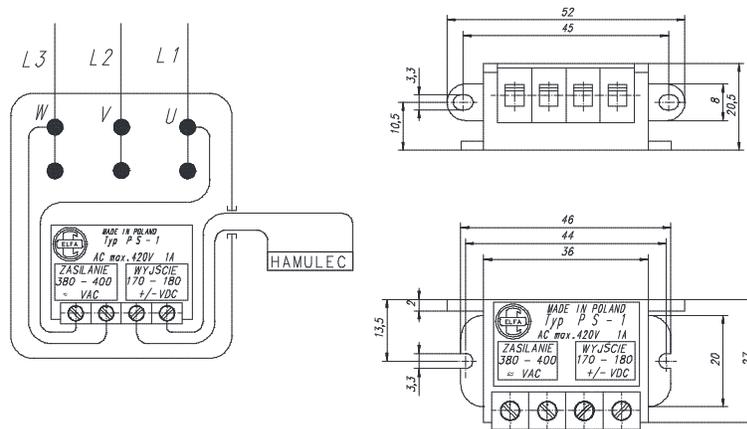
Circuit PS1 is built on the basis of MOSFET type semiconductor technique which enabled achieving effects not available in traditional designs. The brake electromagnet energized through circuit of this construction enables the brake to achieve connection and disconnection time parameters analogous to breaking of circuit on direct current side. The parameters obtained are not however gained through utilization of additional electrical circuits and switches.

Simplicity of installation and parameters achieved enable very wide application, particularly in cases requiring positioning of drives, operation with high frequency of actuations compounded with repeatability of brake connecting and disconnecting times.

Supply circuit PS1 forms a complete unit for direct installation. Provided with a four-terminal strip, it enables unhindered adaptation in every cooperating circuit.

The circuit is adapted for supply from alternating current source of 380-400 VAC max. 420 VAC which after rectification and appropriate formation enables obtaining direct voltage of 170V-180 VDC for brake supply.

The diagram below shows the method of connecting the circuit PS1 into supply circuit of brake cooperating with 3x400 VAC electric motor with star-connected winding.





12.2  PS2

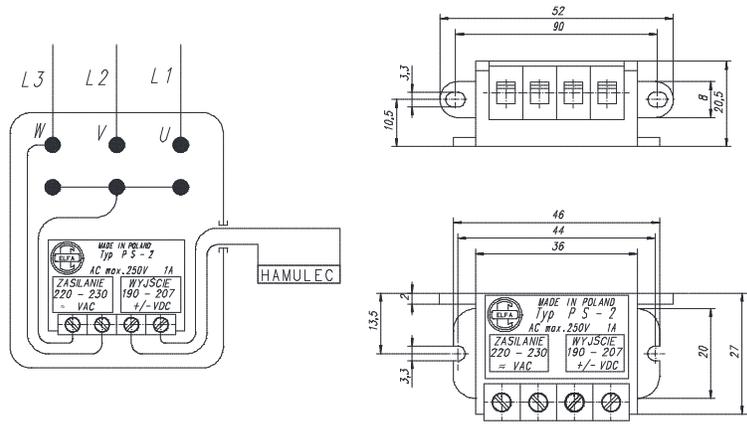
Circuit PS2 is built on the basis of MOSFET type semiconductor technique which enabled achieving effects not available in traditional designs. The brake electromagnet energized through circuit of this construction enables the brake to achieve connection and disconnection time parameters analogous to breaking of circuit on direct current side. The parameters obtained are not however gained through utilization of additional electrical circuits and switches.

Simplicity of installation and parameters achieved enable very wide application, particularly in cases requiring positioning of drives, operation with high frequency of actuations compounded with repeatability of brake connecting and disconnecting times.

Supply circuit PS2 forms a complete unit for direct installation. Provided with a four-terminal strip, it enables unhindered adaptation in every cooperating circuit.

The circuit is adapted for supply from alternating current source of 220-230 VAC max. 250 VAC which after rectification and appropriate formation enables obtaining direct voltage of 190V-207 VDC for brake supply.

The diagram below shows the method of connecting the circuit PS2 into supply circuit of brake cooperating with 3x400 VAC electric motor with star-connected winding.



# SINGLE ELECTROMAGNETIC BRAKES

## DISK TYPE HPS



Spring actuated and electromagnetically released disk brake type HPS by direct current. Designed for braking rotating machine parts and their precision positioning. Utilized as safety brake. High repeatability even with large number of actuations. The brake characterizes relatively simple construction, facility for regulating brake parameters such as braking torque, braking time and also possibility of supply from alternating current source after connecting up a rectifier circuit delivered at customer's request along with the brake. An additional feature is quiet operation, particularly important when the equipment is operated by a number of drives operating additionally with high frequency of actuations. Braking torque can be accurately set by means of regulation nut. Brake design guarantees simple and problem-free installation. Various options of executions are at disposal with respect to fittings/accessories, brake supply, dimatic conditions of utilization, enabling selection of appropriate option for definite utilization conditions.

Parameters	Unit	Brake type										
		HPS 04	HPS 06	HPS 08	HPS 10	HPS 12	HPS 14	HPS 16	HPS 18	HPS 20	HPS 25	
Supply voltage $U_n$	V	24, 104, 180, 207 VDC										
Power drawn $P_{20}$	W	16	20	25	30	40	50	55	65	75	100	
Power drawn $n_{max}$	min <sup>-1</sup>	3000										
Braking torque $M_h$	Nm	4	4	8	16	32	60	80	150	240	360	
Weight	kg	0,5	0,7	1,8	3,2	6,6	7,5	11,2	17,0	24,8	29,0	
Ambient temperature	°C	- 25 – + 40										
Operating time	on direct voltage side	$t_{01}$	20	35	65	90	120	150	180	300	400	500
		$t_{03}$	10	17	35	40	50	65	90	110	200	270
	on alternating voltage side	$t_{01}$	20	35	65	90	120	150	180	300	400	500
		$t_{03}$	Brake disconnection on alternating current side causes about five-times growth in braking time $t_{03}$ with respect to disconnection on direct current side									

$t_{0,1}$  - releasing time (from switching on current to drop in braking torque to 10%  $M_{nom}$ )

$t_{0,9}$  - braking time (from switching off current to attaining 90%  $M_{nom}$ )

Values of releasing and braking times are given as approximations, since they depend on mode of assembly/installation, temperature and power supply.

# SINGLE ELECTROMAGNETIC BRAKES WITH HAND RELEASE

Disk brakes HPS...AT



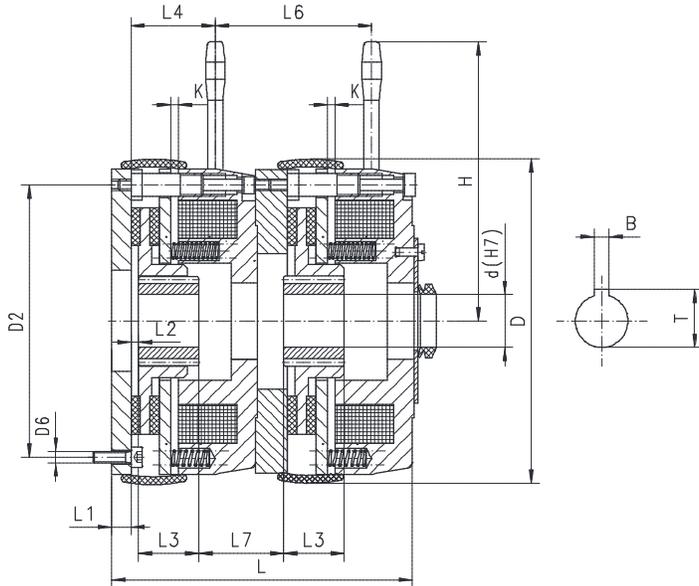
Spring actuated and electromagnetically released disk brake type HPS...AT forms a variation of HPS brake. Designed for braking rotating machine parts and their precision positioning, in all applications where the drive is required to have limited level of noise. The specifics of this type of drive has made us draw up a brake version whose crucial units are so designed that the »quiet operation« requirement demanded by the user is fulfilled. Drives equipped with brake series HPS...AT can be used in objects where limited level of noise has huge significance, e.g. theatres, concert halls, etc. where, as stage equipment drives, they meet strict safety requirements. Brake construction is analogous to variant HPS, and the diagram below facilitates selection of appropriate option.

<b>HPS</b>		<b>AT</b>		•		<b>V DC</b>		<b>Nm</b>																																																							
<b>Mechanical size</b>				<b>Operating voltage</b>				<b>Climatic version according to standard: e.g. MT, TH</b>																																																							
04, 06, 08, 10, 12, 14, 16, 18, 20, 25				24, 104, 180, 207 VDC																																																											
								<b>Nominal braking torque Nm</b>																																																							
								<table border="1"> <thead> <tr> <th>HPS 06AT</th> <th>HPS 08AT</th> <th>HPS 10AT</th> <th>HPS 12AT</th> <th>HPS 14AT</th> <th>HPS 16AT</th> <th>HPS 18AT</th> <th>HPS 20AT</th> <th>HPS 25AT</th> </tr> </thead> <tbody> <tr> <td>4</td> <td>8</td> <td>20</td> <td>32</td> <td>60</td> <td>80</td> <td>150</td> <td>240</td> <td>360</td> </tr> <tr> <td></td> <td>6</td> <td>16</td> <td>24</td> <td>45</td> <td>60</td> <td>120</td> <td>180</td> <td>270</td> </tr> <tr> <td></td> <td>3</td> <td>12</td> <td>16</td> <td>30</td> <td>40</td> <td>75</td> <td>120</td> <td>180</td> </tr> <tr> <td></td> <td></td> <td>5</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>4</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		HPS 06AT	HPS 08AT	HPS 10AT	HPS 12AT	HPS 14AT	HPS 16AT	HPS 18AT	HPS 20AT	HPS 25AT	4	8	20	32	60	80	150	240	360		6	16	24	45	60	120	180	270		3	12	16	30	40	75	120	180			5									4						
HPS 06AT	HPS 08AT	HPS 10AT	HPS 12AT	HPS 14AT	HPS 16AT	HPS 18AT	HPS 20AT	HPS 25AT																																																							
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### Ordering example:

HPS 12AT 20. 180 V DC 2x32 Nm

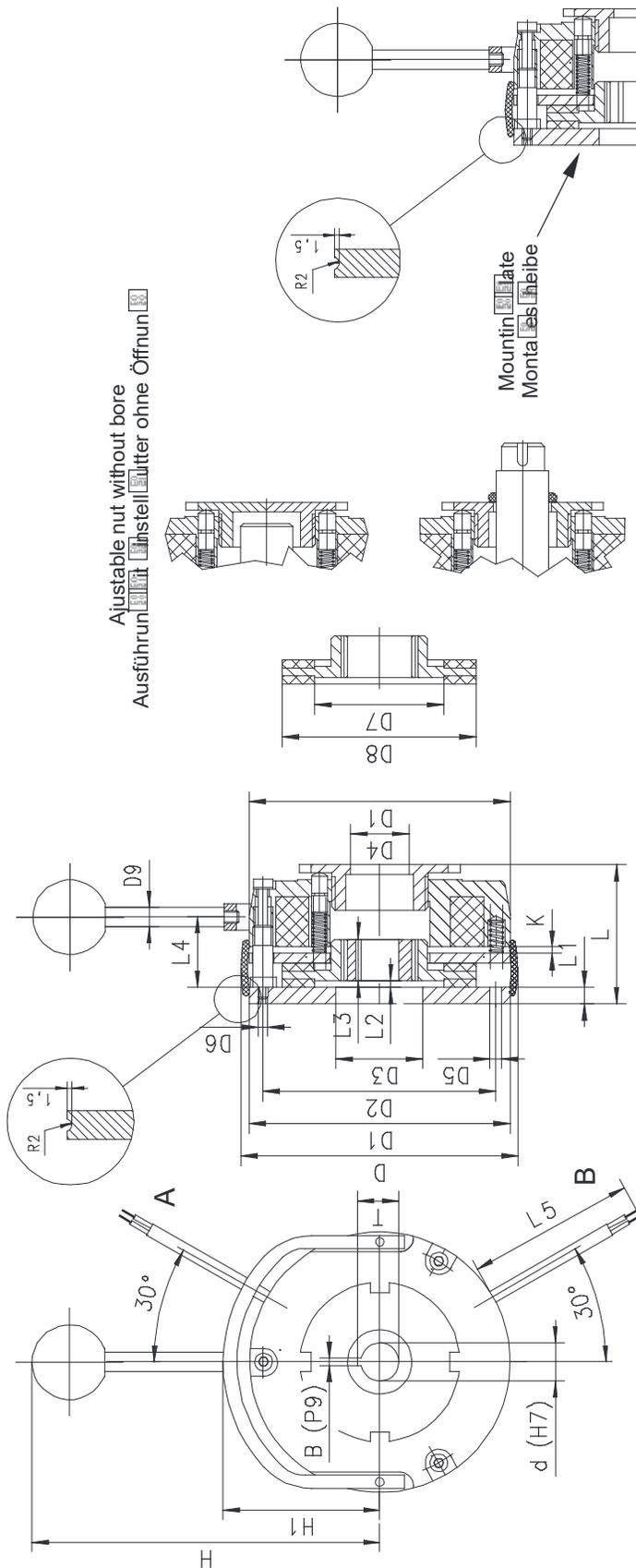
Overall dimensions



Type	d	D	D2	D6	L	L7	L3	L1	L2	L4	L6	H	K	B	T
2HPS06	15	87	72	3xM4	76	14	24	6	1,8	25	40	100	0,2	5	17,3
2HPS08	15	106	90	3xM6	90	18	27	7	2,5	28	48	115	0,2	5	17,3
2HPS10	19	132	112	3xM6	110	25	28	9	3,5	34	61	170	0,2	8	27,3
2HPS12	25	157	132	3xM6	128	25	34	9	3,0	37	69	184	0,3	8	28,3
2HPS14	30	169	145	3xM8	145	25	42	11	3,0	40	74	191	0,3	8	33,3
2HPS16	35	195	170	3xM8	160	33	42	11	3,0	40	88	204	0,3	8	38,3
2HPS18	40	221	196	4xM8	180	48	45	11	4,5	52	98	230	0,3	12	43,3
2HPS20	42	257	230	6xM10	215	45	55	11	5	62	115	270	0,3	12	45,3
2HPS25	42	308	278	6xM10	230	42	65	12,5	6	80	123	360	0,4	12	45,3

Used in lifting mechanisms are mechanical brakes, electrically released spring actuated disk brakes, designed on the basis of brake HPS. This brake immobilizes the weight during damage, incorrect manoeuvre or breakdown. The brake must transfer all forces occurring in such situations. To meet such requirements while maintaining the drive as simple as possible in the mechanical part and definite in operation, simple asynchronous motor is used controlled by frequency converters, provided with electromagnetic disk brake of design specific for hoisting system. Safety considerations have required designing a braking mechanism with dual safety circuit and maximum reduction of noise level during dynamic operation of brake unit. Drive system used with brake 2HPS operates very quietly in spite of maintaining all electrical and mechanical parameters. This brake is characterized by two brake disks being mounted on common motor shaft, with independent electromagnetic circuits while maintaining required braking torque for proper operation of the drive. The simple and compact construction enables utilization in motors for driving lifting mechanisms required of which is smooth operation along with dual safety circuit. Brake of such design has the mechanical parameters indispensable for functioning of the drive, whereas assembly and mounting dimensions analogous as for traditional brake enabling mounting within dimensions of the drive motor. Applications: drives of passenger lifts, cranes, hoists and wherever compliance with rigorous regulations of Technical Inspection Office in the scope of lifting equipment is essential.

# DIMENSION OF BRAKES



Adjustable nut without bore  
Ausführung ohne Öffnung

Adjustable nut with bore  
Ausführung mit Öffnung

Typ	D	D1	D2	D3	D4	D5	D6	D7	D8	D9	L	L1	L2	L3	L4	L5	K	H	H1	d	d <sup>*</sup> <sub>max</sub>	B	T
HPS04	80	74	62	25	13	4,3x3	M4x3	30	50	6	40	6	1,8	18	22	450	0,2	90	45	11	11	4	12,8
HPS06	87	84	72	25	17	4,5x3	M4x3	47	62	8	46	6	1,8	18	25	450	0,2	100	56	15	15	5	17,3
HPS08	106	102	90	30	17	5,5x3	M5x3	59	76	8	53	7	2,5	20	28	450	0,2	115	66	15	15	5	17,3
HPS10	132	125	112	40	26	6,4x3	M6x3	61	95	10	63	9	3,5	20	34	450	0,2	170	82	24	25	6	21,8
HPS12	157	148	132	45	27	6,4x3	M6x3	74	114	10	72	9	3	25	37	450	0,3	184	92	25	25	8	28,3
HPS14	169	162	145	55	27	8,4x3	M8x3	90	124	12	83	11	3	30	40	450	0,3	191	102	25	25	8	28,3
HPS16	195	188	170	65	38	8,4x3	M8x3	100	154	12	89	11	3	30	40	450	0,3	204	115	35	35	8	38,3
HPS18	221	215	196	75	43	9,0x4	M8x4	130	176	12	104	11	4,5	35	52	450	0,3	230	125	40	45	12	43,3
HPS20	257	252	230	90	45	11x6	M10x6	176	207	14	122	11	5	40	62	450	0,3	270	152	42	45	12	45,3
HPS25	308	302	278	120	45	11x6	M10x6	198	255	14	135	12,5	6	50	80	450	0,4	360	176	42	45	12	45,3

## Systems of foreign ventilation - single phase supply

### Application

- System of foreign ventilation should be used in case adjusting speed under 60% rated speed of motor,
- System of foreign ventilation can be assembled on standard motors after removing the fan cover and fan without necessity of cutting the shaft.

### Factory production

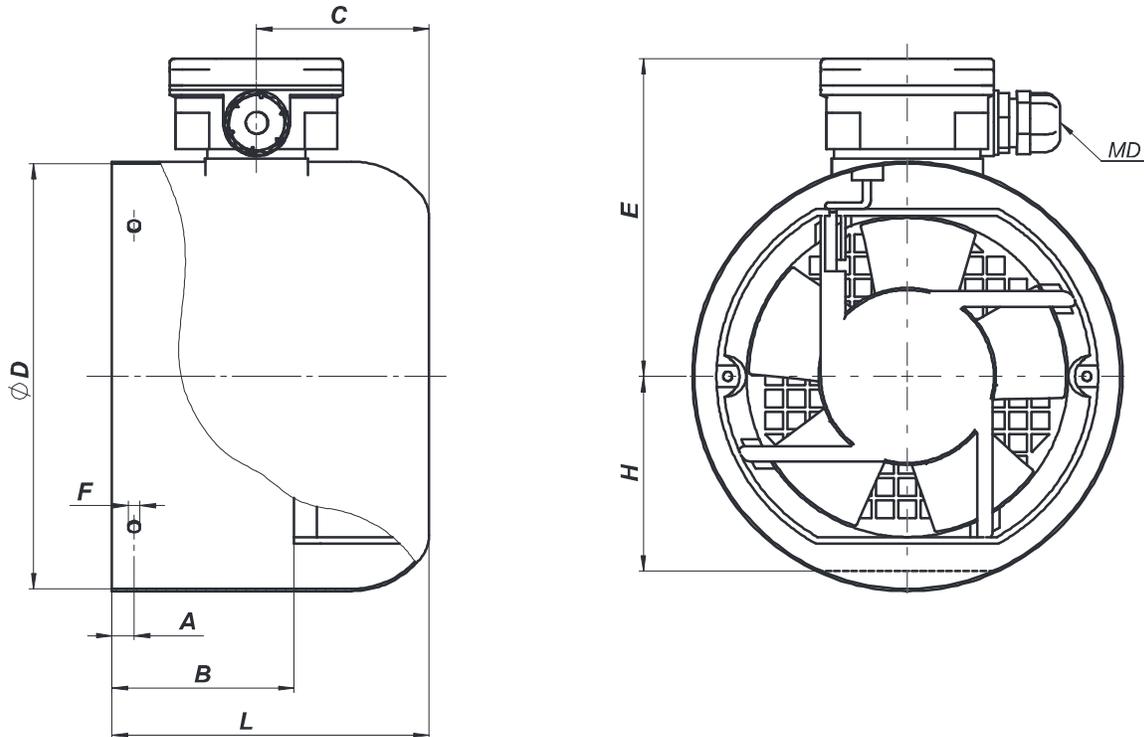
- Factory produces various types of system ventilation but constructional details and delivery time are to be individual agreed.

## SPECIFICATION OF COOLING FAN

Motor size	Rated voltage	Frequency	Rated current	Input power	Speed	Air flow	Noise level	Thermal protection
	[V]	[Hz]	[A]	[W]	[min <sup>-1</sup> ]	[m <sup>3</sup> /min]	[dB]	
90/ 100/ 112	1 x 230	50/ 60	0,23/ 0,21	32/ 31	2800/ 3100	5,40/ 6,60	50/ 55	Impedance protection
132/ 160/ 180	1 x 230	50/ 60	0,24/ 0,27	56/ 60	2100/ 1900	24,0/ 21,8	57/ 55	Thermally protection

- Environment temperature -20 to +80[°C]
- Altitude up to 1000 [m] above sea level,
- Life – 50 000 h at temperature 30°C,
- Insulation class B,
- Motor safety protection:
  - thermally protection - auto power off after motor coil winding temperature reaches 110°C, restart at temperature down to 70°C,
  - impedance protection – the motor withstands work even, in abnormal situations such as a locked rotor condition,
- Protection degree IP 55,
- Ball bearing.

## Dimensions



Typ	A	B	C	D	E	F	H	L	MD
Type	[mm]								
FVS 90S	5	75	105	174	134	φ4,6	-	150	M20 x 1,5
FVS 90L	5	100	105	174	134	φ4,6	-	175	M20 x 1,5
FVS 100	5,5	80	75	192	145	φ6,0	-	153	M20 x 1,5
FVS 112	13	93	75	231	163	φ7,0	108	156	M20 x 1,5
FVS 132	18	121	80	264	180	φ7,0	127	237	M20 x 1,5
FVS 160	23	158	80	313	204	φ7,0	-	271	M20 x 1,5
FVS 180	21	143	80	348	221	φ7,0	-	246	M20 x 1,5