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 began 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.

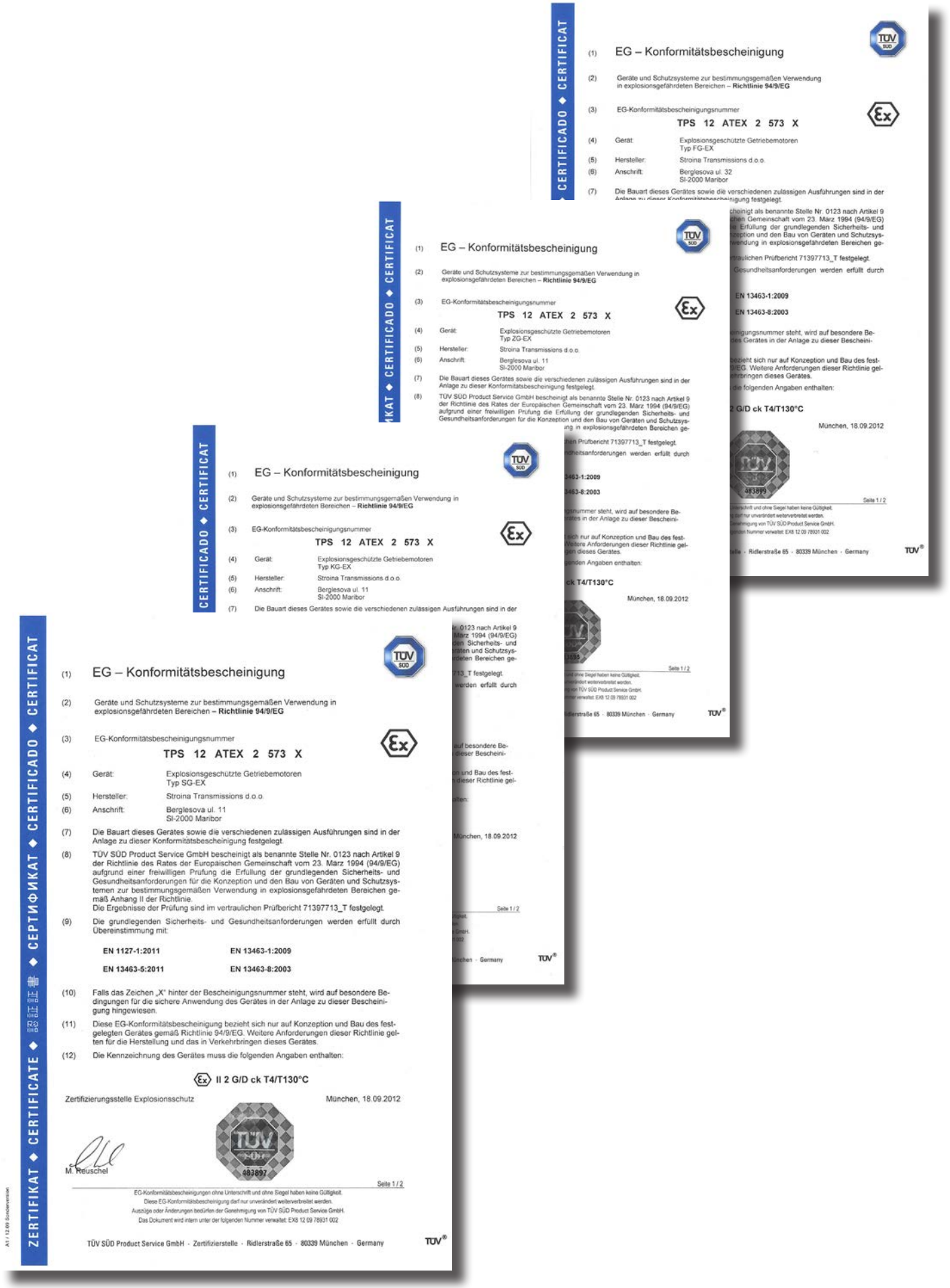
Durch die Jahre haben wir ein komplettes Program für Antriebstechnik entwickelt, dass Stirnradgetriebe, Schneckengetriebe, Stirnschneckenradgetriebe, Planetengetriebe, Variatoren, Hubspindelgetriebe, TA-STA Getriebe, modifizierte Getriebe, elastische Kupplungen und Elemente für die Antriebstechnik beinhaltet.

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 Konkurenz mithalten. In unserer Entwicklungsabteilung entwickeln wir, im Bereich Antriebstechnik, in Zusammenarbeit mit der Marburger Fakultät für Maschienenbau 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 ebenbürdigen 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 optimalisieren und Kundenorientiert zu sein.



ZERTIFIKAT ◆ CERTIFICATE ◆ 認証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

(1) EG – Konformitätsbescheinigung

(2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen – **Richtlinie 94/9/EG**

(3) EG-Konformitätsbescheinigungsnummer

TPS 12 ATEX 2 573 X

(4) Gerät: Explosionsgeschützte Getriebemotoren Typ SG-EX

(5) Hersteller: Stroina Transmissions d.o.o.

(6) Anschrift: Berglesova ul. 11 SI-2000 Maribor

(7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Konformitätsbescheinigung festgelegt.

(8) TÜV SÜD Product Service GmbH bescheinigt als benannte Stelle Nr. 0123 nach Artikel 9 der Richtlinie des Rates der Europäischen Gemeinschaft vom 23. März 1994 (94/9/EG) aufgrund einer freiwilligen Prüfung die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie.
Die Ergebnisse der Prüfung sind im vertraulichen Prüfbericht 71397713_T festgelegt.

(9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit:

EN 1127-1:2011 **EN 13463-1:2009**

EN 13463-5:2011 **EN 13463-8:2003**

(10) Falls das Zeichen „X" hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser Bescheinigung hingewiesen.

(11) Diese EG-Konformitätsbescheinigung bezieht sich nur auf Konzeption und Bau des festgelegten Gerätes gemäß Richtlinie 94/9/EG. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das in Verkehrbringen dieses Gerätes.

(12) Die Kennzeichnung des Gerätes muss die folgenden Angaben enthalten:

Ex II 2 G/D ck T4/T130°C

Zertifizierungsstelle Explosionsschutz — München, 18.09.2012

M. Reuschel

483897

Seite 1 / 2

EG-Konformitätsbescheinigungen ohne Unterschrift und ohne Siegel haben keine Gültigkeit.
Diese EG-Konformitätsbescheinigung darf nur unverändert weiterverbreitet werden.
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Das Dokument wird intern unter der folgenden Nummer verwaltet: EX8 12 09 78931 002

TÜV SÜD Product Service GmbH · Zertifizierstelle · Ridlerstraße 65 · 80339 München · Germany

TÜV®

A1 / 12.09 Sonderversion

WORLD INTELLECTUAL PROPERTY ORGANIZATION

THE HAGUE AGREEMENT CONCERNING THE INTERNATIONAL REGISTRATION OF INDUSTRIAL DESIGNS

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**

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

Filing date: 16.09.2009
Contracting Party of whic
European Community.
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commercial establishment
Applicant's Contracting P
Name and address of th
D.O.O. Čopova 14, POB 1
Number of designs: 1.
Locarno Classification: C
Indication of products: 1.
Contracting Parties desig
gro, Serbia.
Contracting Parties desig
and Herzegovina, Croatia
Macedonia.
Data relating to priority a
for designs No(s) 1: 21.05
munity.

URAD - ZA USKLAJEVANJE NA NOTRANJEM TRGU
BLAGOVNE ZNAMKE IN MODELI

OHIM – OFFICE FOR HARMONIZATION IN THE INTERNAL MARKET
TRADE MARKS AND DESIGNS

(21) 001520115-0001
(25) SL - EN
(22) 21/05/2009
(15) 21/05/2009
(45) 31/08/2009
(11) 001520115-0001
(73) Nanotehnologija d.o.o.
Pohorska ulica 13A
SI-2000 Maribor
ESLOVENIA
(74) PATENTNA PISARNA d.o.o. Ljubljana
Čopova 14
SI-1001 Ljubljana
ESLOVENIA
(51) 15 - 01
(54) BG - Редуктори (Калъфи за -)
ES - Reductores (Estuches para -)
CS - Reduktory (Pouzdra na -)
DA - Reduktionsenheder (Etuier til -)
DE - Untersetzungsgetriebe (Etuis für -)
ET - Reduktorid (Karbid -)
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EN - Reducers (Cases for -)
FR - Réducteurs (Etuis pour -)
IT - Riduttori (Astucci per -)
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LT - Riboluvai (Dažuiės -/ Dėtiuiu
HU - Redukторok (Tásкák -/ Tokok
MT - Attrazzatura li tghaqqad żew
differenti (Kaxxelli ghal -)
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PL - Ograniczniki (Etui na -)
PT - Redutores (Estojos para -)
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SK - Znižovače (Puzdrá na -)
SL - Reduktorji (Etuiji za -)
FI - Planetvaihteet (Kotelot -)
SV - Reducerväxlar (Fodral för -)

0001.1

BUREAU VERITAS Certification

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** *Revision date:* **11/07/2014**

Certification Authority

Certification body address: Brandon House, 180 Borough High Street, London SE1 1LB, United Kingdom
Local office: Linhartova cesta 49a, 1000 Ljubljana, 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 57 670.

Page 1 of 1

UKAS MANAGEMENT SYSTEMS
008

1. Data for drive selection

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 an changing at the input or output,
- other... ,

the following information in this questionnaire is important, for selecting the right gear unit:

Required information	simbol	units / dimension	value / description
Type designation			
Geometric shape			
Mounting position			
Output speed (min max)	n_2	min^{-1}	
Gear ratio	i		
Output torque (min max)	Mt_2	Nm	
Braking torque	Tk	Nm	
Minimal operating coefficient 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 installation location	H	m	
*Type of load	I, II, III		
*Relative cyclic duration factor	ED	%	
*Duration of work	T	h/dan	
*Number of starts per hour	Z	1/h	
*Shaft execution			

The gear units are made in according to 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.

2. Type designation geared units

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		P/V			300/50		B7				...		
	7		P/D			300		A63						
	8		P/Z			300/50		...						
	...		M					...						
	13		S					A250						

LEGEND:

1. Gear unit type
2. Size of gear unit
3. Gear stages code
4. Shaft execution
   - `-` hollow shaft
   - V output shaft
   - FV output shaft
   - D hollow shaft whit shrink disc
   - Z with outputshaft on both sides
   - P hollow shaft with bolt-on flange
   - P/V output shaft with bolt-on flange
   - P/D hollow shaft with bolt-on flange and shrink disc
   - P/Z with output shaft on both sides and with flange
   - FP/V outfut shaft whit bolt-on flange
   - M mixer
   - S separator

4a. Shaft position
   - L left side from electric motor point of view
   - D right side from electric motor point of view

5. Dimensions output shafts, see dimensioned drawing
   - Whitout 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 P/V, diameter of flange in mm / diameter of shaft in mm
   - Variant P/D, diameter of flange in mm
   - Variant P/Z, diameter of flange in mm / diameter of shaft in mm

6. Additional elements
   - MR -torque arm
   - VS -link circuit
   - ZP -protective lid
   - ZD -protective lid for shrink disc

7. Input connector
   - SMB STROJNA motor type B
   - SMR STROJNA motor type R
   - B with input shaft from size 1 - 7
   - A IEC adapter for motors with axle height 63 - 250 mm

8. Motor flange according to IEC
9. Motor size and number of poles
10. Additional marking motor
    - K1 brake without arm
    - K2 brake with arm
    - EN encoder
    - PH forced cooling
11. Basic mounting position
12. Position of the terminal box
13. Position of the cable entry

General tehnical data:

Case

Material	Cast iron

Solid shaft

Shaft diameter	to D = 50 mm in ISO k6 (DIN 748 Page1) as of D = 50 mm in ISO m6 (DIN 748 Page 1)
Keyway	ISO P9 (DIN 6885 Page 1)
Key, height	ISO h9 (DIN 6885 Page 1 and DIN 6880)
Bore - customer	ISO H7

Cirucal error of the shaft ends DIN EN 50347

Material	42CrMo4 or C45E

Hollow shaft with keyway

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

Hollow shaft for shrink-on disc coupling

Outside diameter	ISO f7
Inside diameter	ISO H7
Customer shaft	ISO h6

Flanges

Outside diameter	to D = 230 mm ISO j6 as of D = 230 mm ISO h6

Coaxial error and axial run out of the fixing flanges DIN 42955-N

Gears

Material	16MnCr5, 20MnCr5 or 18CrNiMo7-6

Shaft seals

Type	with dust lip according to DIN3760 AS
Material	NBR/FPM

Bearing

Type	ball bearings or tapered roller bearings

3. Drive selection

The gear units are made in according to 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 i as well.

Determination of service factor

The gear unit reliable 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.

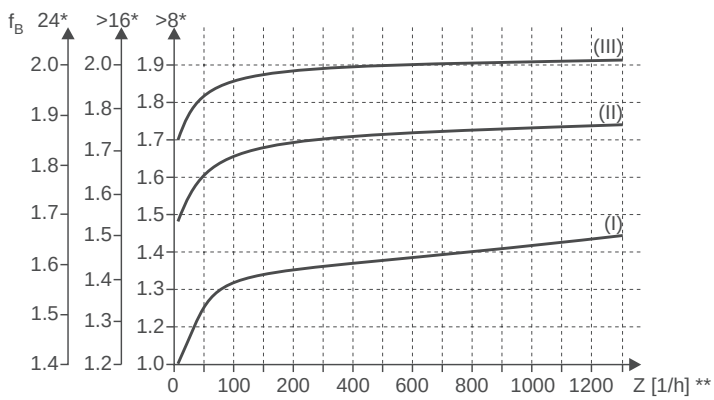
The way of determining the service factor f_B is not standardized. The gear units with electro motor's SMR or SMB have got f_B=1.0, and it is satisfied then, when by long-term load with output torque does not come to permanent damage of the gear (or / and pitting).

The chosen service factor must be multiply 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}≥0.8, according to AGMA standards. The gear unit made by ATEX requirements has to have the service factor f_{Bmin}≥1.25.

The factor of the driven machine on the gear unit is taken into account to a sufficient level of accuracy useing 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

Load factor

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, conveyer 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: conveyer belts, lifts, winches, masticating 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.

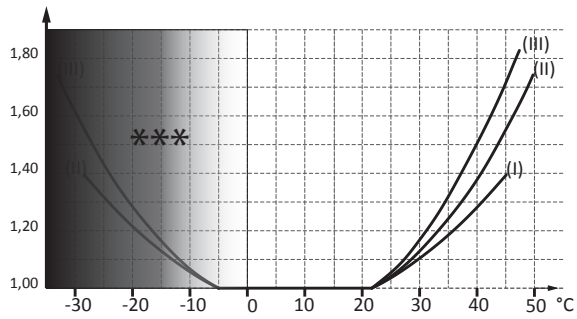
The method for determining the maximum permitted continuous torque M_a max and using this value to derive the service factor $f_B = M_a max/M$ is not defined in a standard and varies greatly from manufacturer to manufacturer. Under certain circumstances, the service factor may not be comparable with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

Operating time h/day	4 h			8 h			16 h			24 h		
Number of starts/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 classification 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.

****Contact Strojna / Stroina Transmissions in case of temperatures below -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.

Mt2 [Nm] = F2 [N] x r2 [m]

Radial and axial loads

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

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

Actual radial force depends on the transmission element mounted.

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

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

Transmission element	$f_=$	Note
Gear wheel	1,15	Z≤17
Sprocket	1,25	Z>13
Sprocket	1,4	Z≥13
V- belt	1,8	Influence of tensile force
Flat belt	2,5	Influence of tensile force

Thermal power limit

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

Data in tables are valid for:
- standard gear unit with STROJNA motor
- mountig position B7, B6, B3, N1, N2, N3, N4, N5, V1, V2
- input speed ≤ 1700 min^{-1}
- operating mode: S1

FG	Thermal power limit P_t [kW]								
	Ambient temperature Θ [°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 Θ [°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 Θ [°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_g [kW]								
	Ambient temperature, Θ [°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 Pg for the ambient temperature of 30 °C is 0,18kW; (Pg=0,18kW).

If we include this in formula Pt we get:

$$Pt = \frac{Pg}{1 - \frac{\eta}{100}} \; [kW] \qquad Pt = \frac{0,18}{1 - \frac{62}{100}} = 0,47 \; [kW]$$

The value Ptd according to the following formula represents maximum permissible input power of the gear unit:

$$Ptd = P_1 \times k_1 \times k_2 \times k_3 \times k_4 \times k_5$$

IEC adapter or input shaft		k1	0,70
Mounting position: N4, N5, N6		k2	0,75
Input speed > 1700 min^{-1}		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 STROJNA motor
- mountig position B7, B6, B3, N1, N2, N3, N4, N5, V1, V2
- input speed ≤ 1700 min^{-1}
- operating mode: S1

4. Gear unit Mounting positions

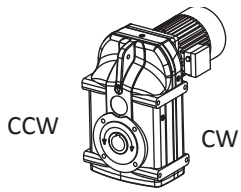
Stroina differentiates between six mounting positions for gear units and gearmotors.

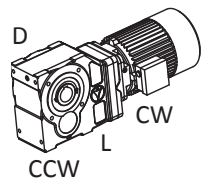
Output direction of rotation with backstop.

If the drive has a backstop, you also have to indicate the direction of rotation of the output for the drive. The following definition applies:

As viewed at the output shaft:

- Clockwise (CW)
- Counterclockwise (CCW)





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

Position of the output shaft and output flange:

In right-angle gear units, you also have to indicate the position of the output shaft and the output flange:

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

<u>The position of the output shaft will be determined from the motor side</u>

Changing the mounting position:

It is important that you read the following information when you operate the gearmotor in a mounting position other then indicated in the order:

- Adjust the lubricant fill quantity to match new mounting position
- Adjust the position of the breather valve
- For helical-bevel gearmotors: contact Stroina customer service prior to changing to mounting position V1 to V2 or vice versa
- For helical-worm gearmotors: contact Stroina customer service when changing to mounting position N5 or N4

INFORMATION	
	Notes on the shafts illustrated on the mounting position sheets: -For gear units with solid shaft: The displayed shaft is always on the L end. -For shaft-mounted gear units: The shaft with dashed lines represents the customer shaft. the output end (shaft position) is always shown on the L end.

INFORMATION	
	Notes on the depicted motors. Motors are only represented symbolically on the mounting position sheets.

INFORMATION	
	When the terminal box is in the 3 position, check to see if the gearmotor has to be supported. Not all cable entry positions (0,1,2,3) and terminal box positions (0,1,2,3) can be selected. Some additional features for the motor require a connection inside the terminal box, wich means this terminal box is larger then the standard terminal box due to the normative air gaps. The dimension sheets only depic the standard terminal box.

5. Oil type and quantity

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	CLP PG	460	Degol GS 460	Alphasyn PG 460	Tivela S 460	Glygoyle 460
ZG	-25°C ... +60°C	CLP PG	220	Degol GS 220	Alphasyn PG 220	Tivela S 220	Glygoyle 220
	-40°C ... +60°C	CLP HC	220	Degol PAS 220	Alphasyn T 220	Omala S4 GX 220	SHC 630
KG	-20°C ... +40°C	HCE	220	Eural gear 220	Optileb GT 220	Cassida GL 220	SHC Cibus 220
	-20°C ... +80°C	CLP PG	460	Degol GS 460	Alphasyn PG 460	Tivela S 460	Glygoyle 460
SG	-25°C ... +60°C	CLP PG	220	Degol GS 220	Alphasyn PG 220	Tivela S 220	Glygoyle 220
	-40°C ... +20°C	CLP-HC	220	Degol PAS 220	Alphasyn T 220	Omala 220 HD	SHC 630
	-20°C ... +40°C	HCE	460	-	-	-	Glygoyle 460

CLP -Mineral oil

CLP PG -Polyglycol oil

CLP HC -Polyalphaolefin oil

HCE -Lubricants for food processing industry

1) Standard lubrication according DIN 51517 - CLP ISO 220

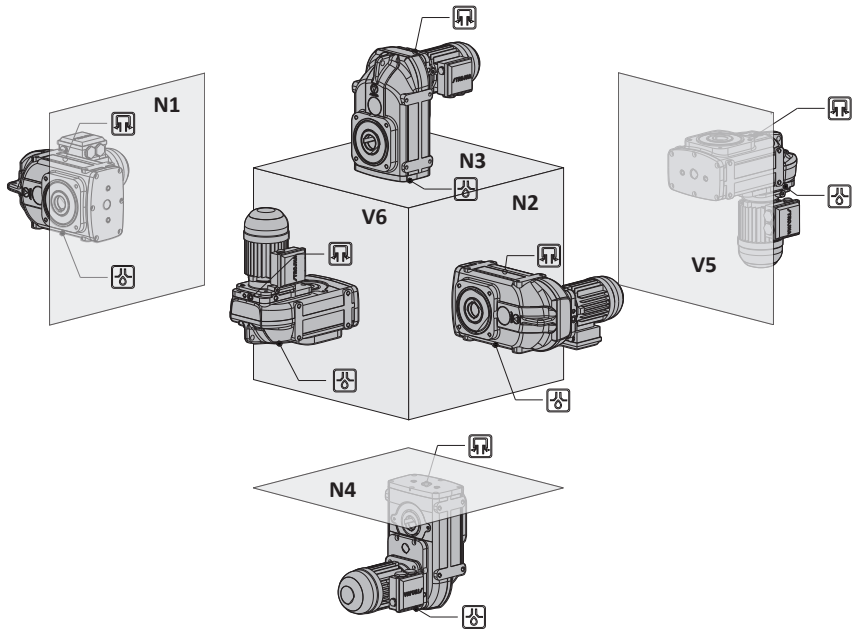
2) Standard lubrication according DIN 51517 - CLP ISO VG 460

3) Special starting procedure

Special lubricants on inquiry

***Standard**

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

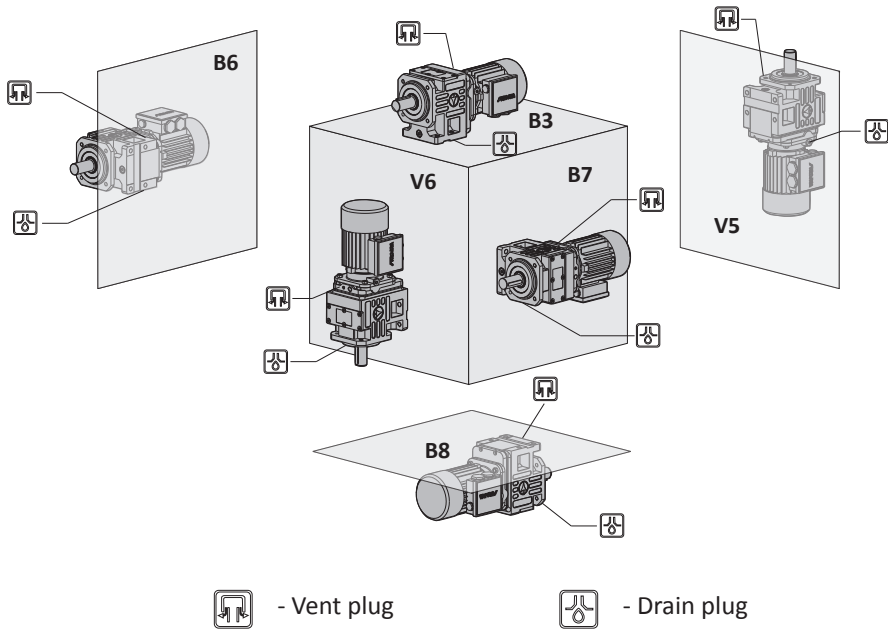


- Vent plug

- Drain plug

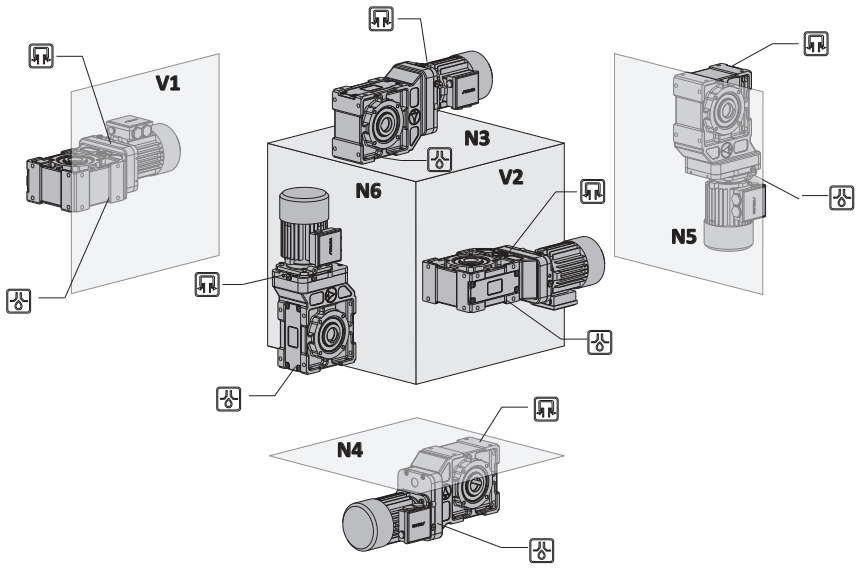
Gear units and geared motors are supplied ready for operation. Gear units sizes FG1, FG2, FG3 are filled with synthetic gear oil labeling according to DIN51502 CLP PG ISO VG220 (according to ISO viscosity grade VG 220 from DIN51519). Sizes from FG4 to FG8 have standard filling with mineral gear oil labeling according to DIN51502 CLP ISO VG220 (acording 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

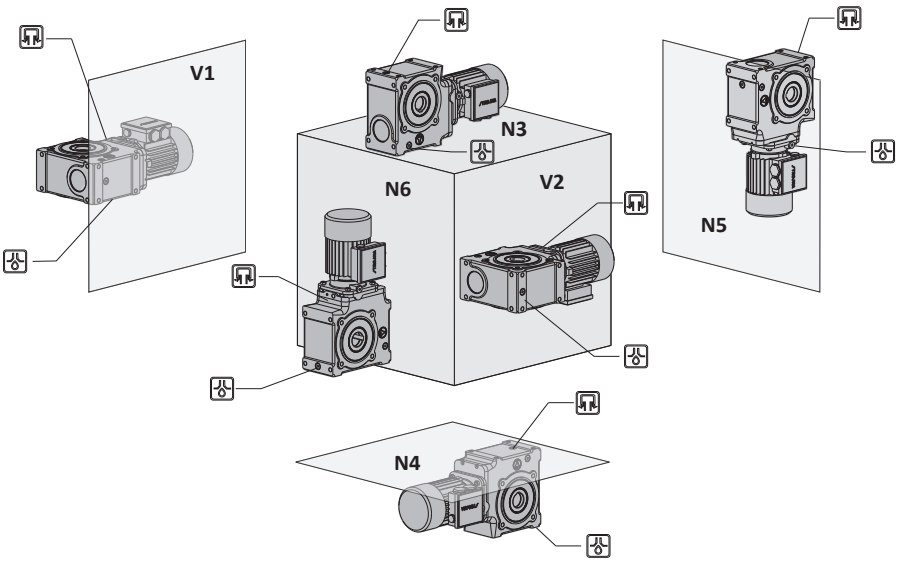


- Vent plug

- 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

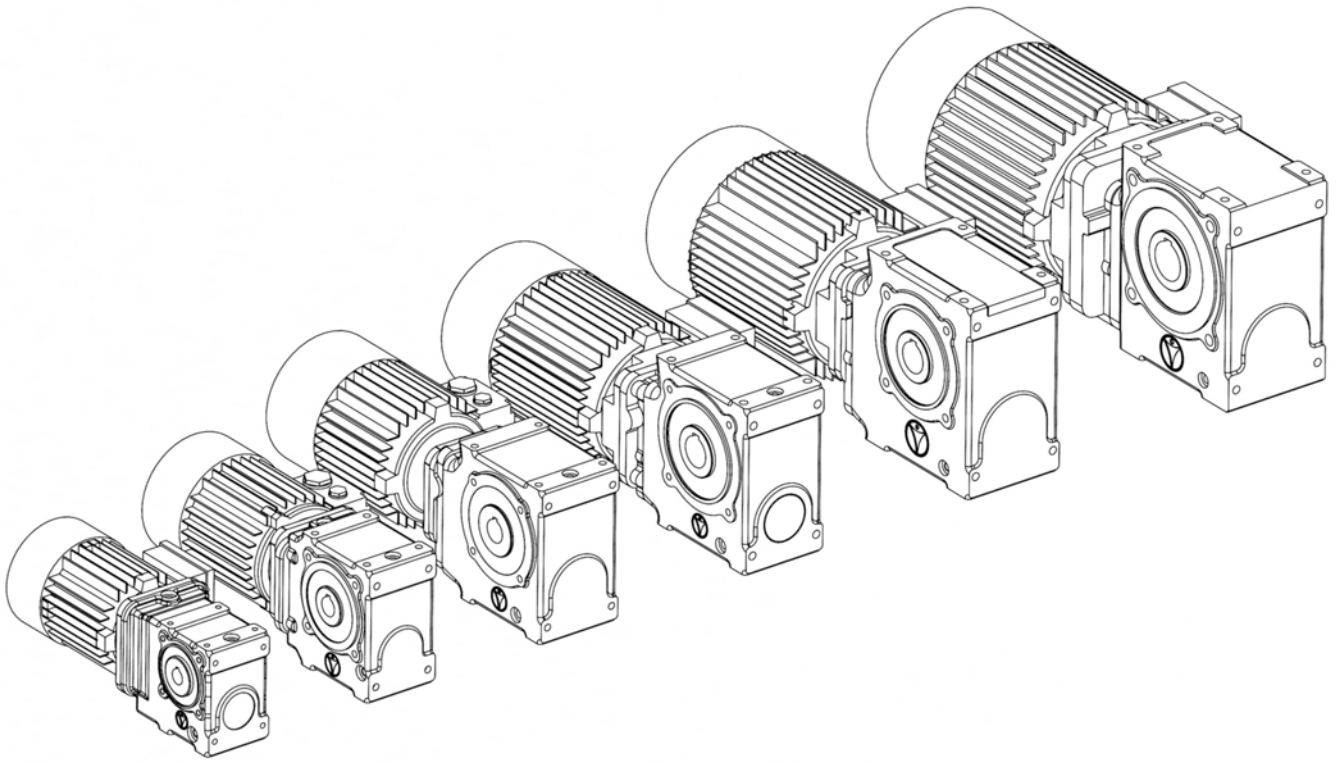
- Drain plug

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).

SG

HELICAL WORM GEAR UNITS

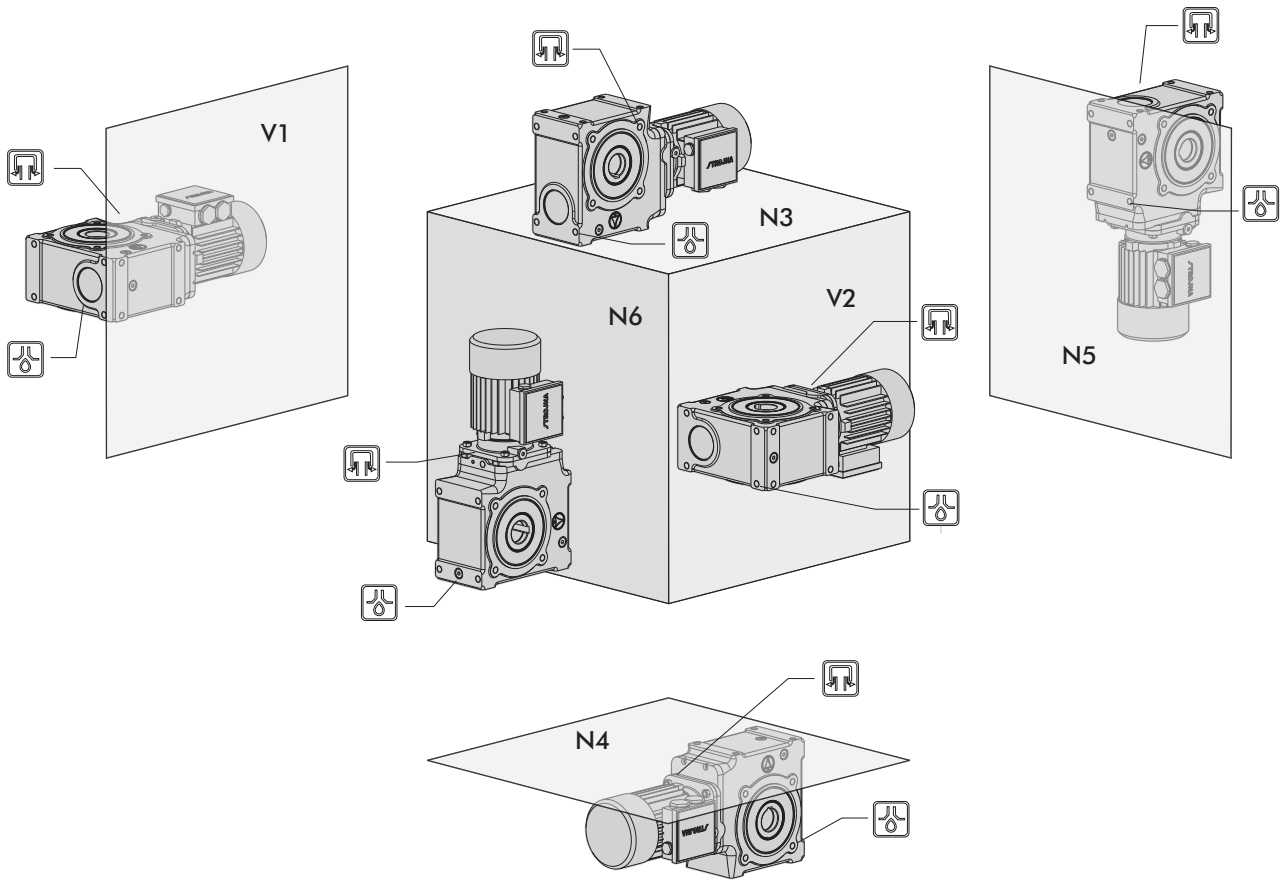
Power:	0,12 kW - 9,2 kW
Torque:	100 - 1.250 Nm
Ratio:	7,7 - 3208

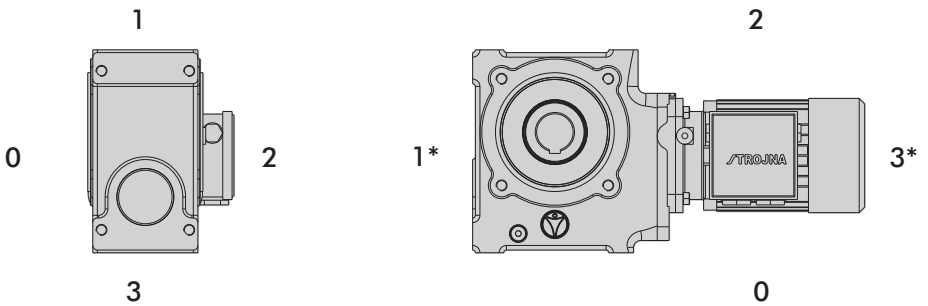


4. Mounting positions SG

Vent plug

Drain plug

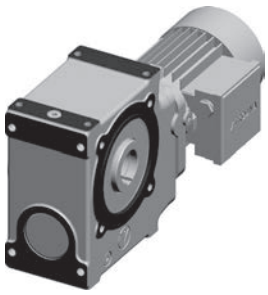




*Check for availability

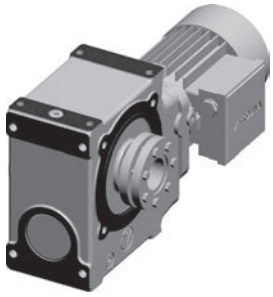
Gear unit design

SG...SMB/SMR

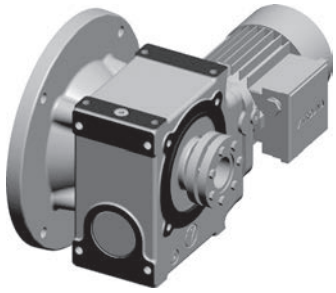


SG...P...

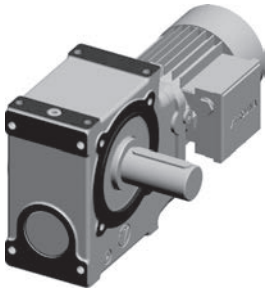
SG...D...



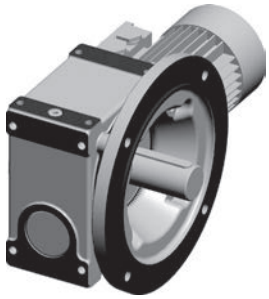
SG...PD...



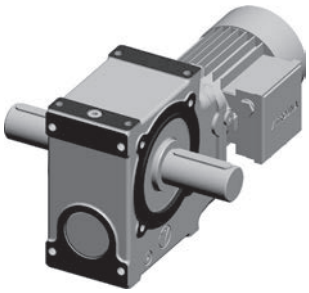
SG...V...



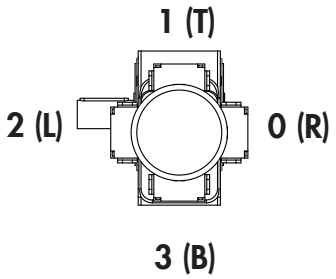
SG...PV...

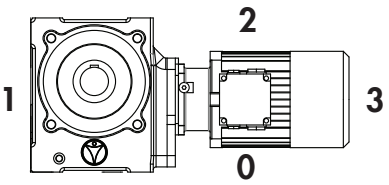


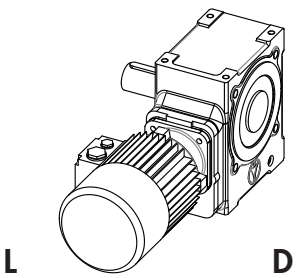
SG...Z...



SG...PZ...

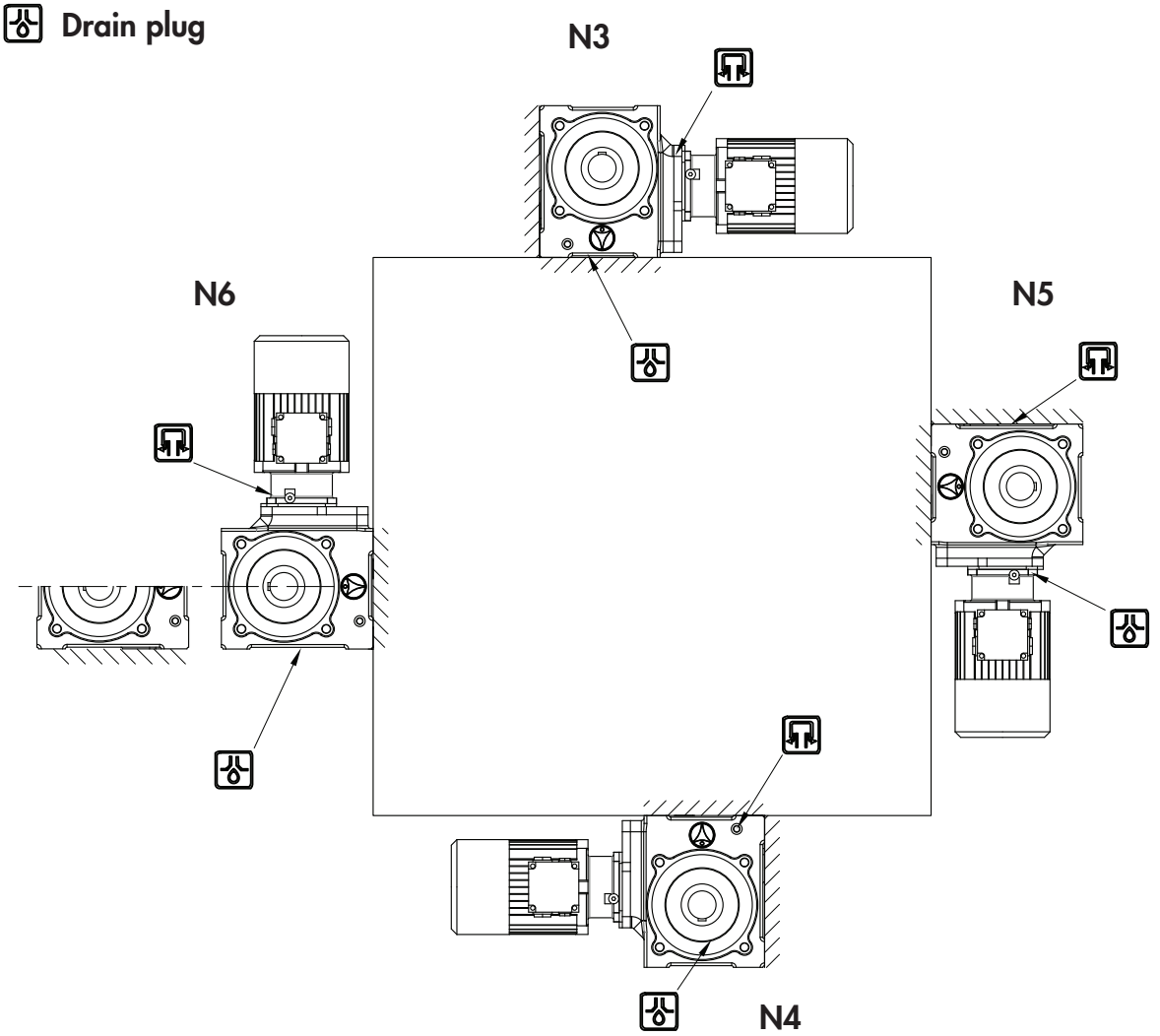


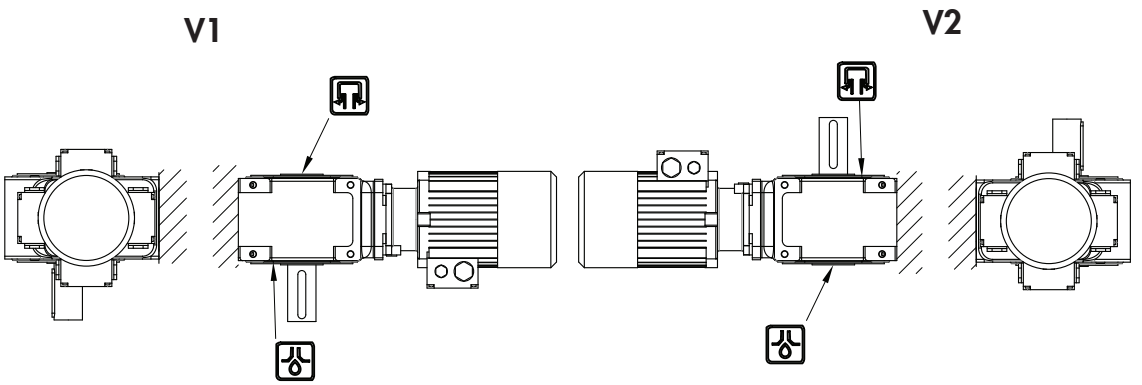


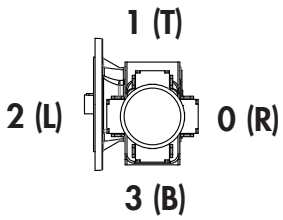


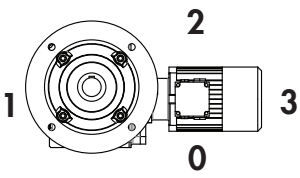
Vent plug

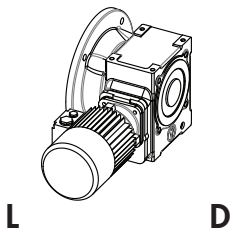
Drain plug







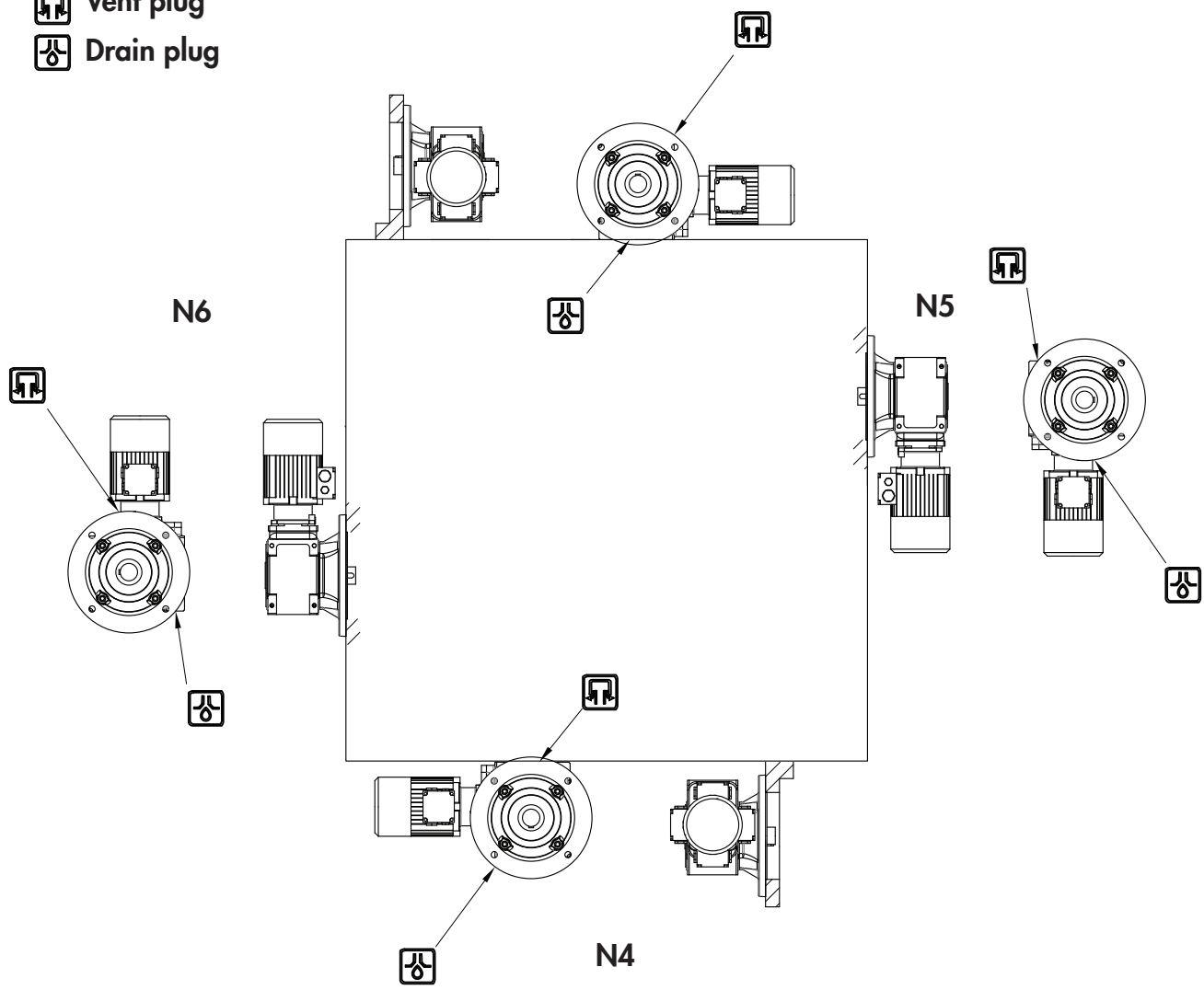




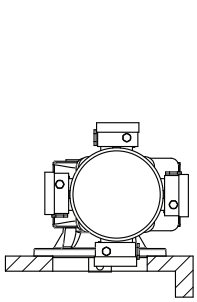
Vent plug

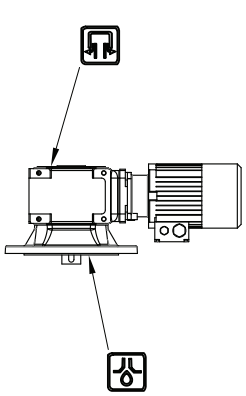
Drain plug

N3

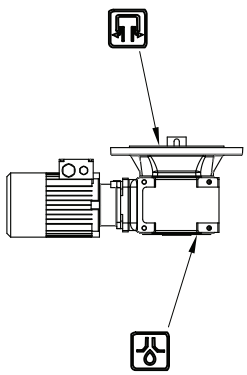


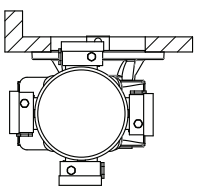
V1

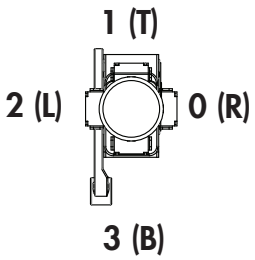


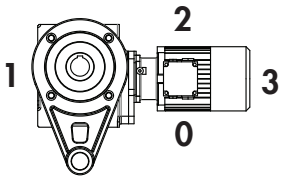


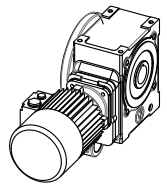
V2





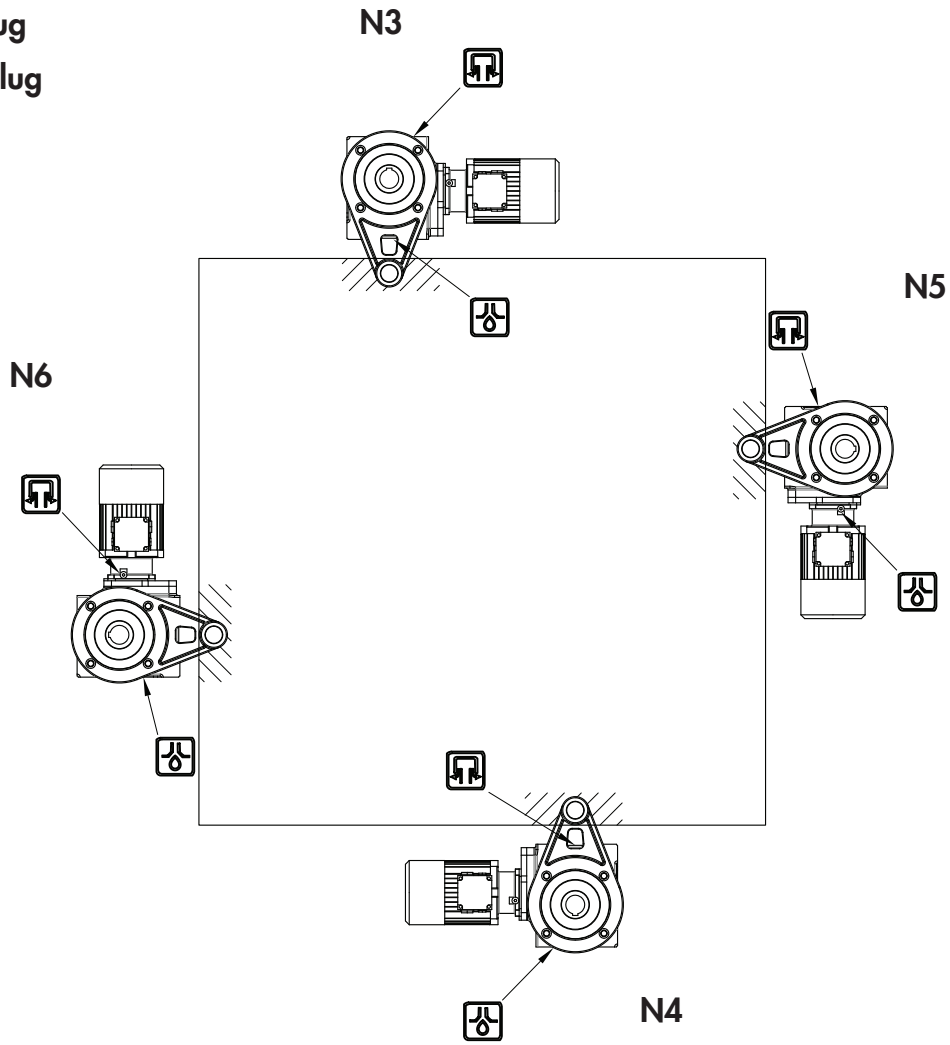


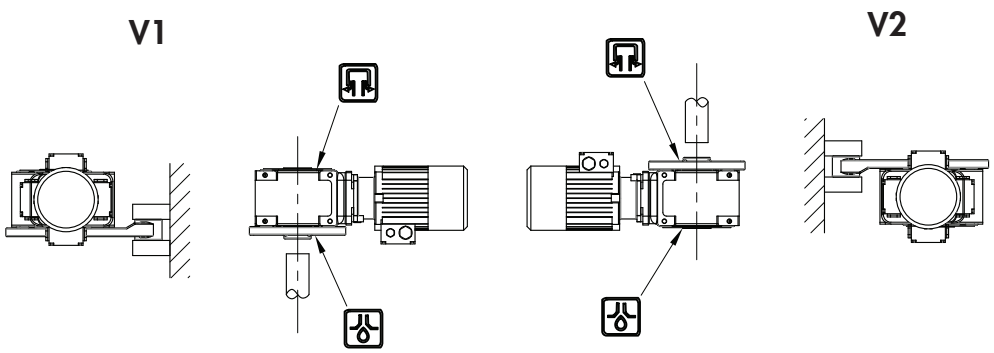




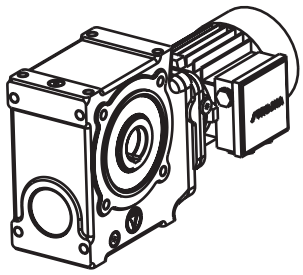
Vent plug

Drain plug





Structure of selection tables



SG

HELICAL WORM GEAR UNITS

Gear unit type

Motor frame size

SG12																
Mt_{2max}	(F_r=0) Fa	(F_a=0) Fr	j_t	i	IEC/SMB/SMR											
[Nm]	[kN]	[kN]	[']		63	71	80	90	100	112	132	160	180	200	225	250
210	7,1	7,3	8,9	94,16												

Total ratio

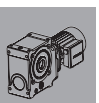
Backlash

Permissible radial load

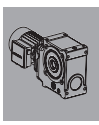
Permissible axial load

Permissible output torque

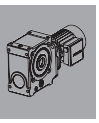
SG12																	
Mt_{2max}	(F_r=0) Fa	(F_a=0) Fr	j_t	i	IEC/SMB/SMR												
[Nm]	[kN]	[kN]	[']		63	71	80	90	100	112	132	160	180	200	225	250
164	7,30	7,80	*	245,78												
163	7,30	7,80	*	218,40												
163	7,30	7,80	*	201,09												
162	7,30	7,80	*	182,00												
160	7,30	7,80	*	161,54												
159	7,30	7,80	*	140,00												
158	7,30	7,80	*	126,00												
156	7,30	7,80	*	114,15												
155	7,30	7,80	*	104,00												
153	7,30	7,80	*	93,33												
152	7,30	7,80	*	88,31												
150	7,30	7,80	*	77,00												
147	7,30	7,80	*	66,50												
144	7,30	7,80	*	59,29												
142	7,30	7,76	*	52,89												
139	7,30	7,61	*	47,60												
137	7,30	7,50	*	44,15												
133	7,30	7,30	*	38,00												
127	7,30	7,00	*	31,61												
123	7,30	6,60	*	28,00												
137	7,30	7,90	*	67,30												
136	7,30	7,90	*	59,80												
136	7,30	7,90	*	55,06												
135	7,30	7,50	*	49,83												
134	7,30	7,40	*	44,23												
132	7,30	7,10	*	38,33												
131	7,30	6,85	*	34,50												
130	7,30	6,40	*	31,26												
129	7,30	6,20	*	28,48												
127	7,30	5,94	*	25,56												
127	7,30	5,70	*	24,18												
124	7,30	5,50	*	21,08												
122	7,30	5,30	*	18,21												
120	7,30	5,20	*	16,24												
117	7,16	5,07	*	14,48												
115	6,40	4,85	*	13,03												
111	5,94	4,60	*	12,09												
108	5,55	4,40	*	10,40												
104	4,90	4,00	*	8,66												
101	4,80	3,80	*	7,67												



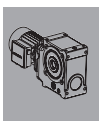
SG22																	
Mt_{2max}	(F_r=0) Fa	(F_a=0) Fr	j_t	i	IEC/SMB/SMR												
[Nm]	[kN]	[kN]	[']		63	71	80	90	100	112	132	160	180	200	225	250
222	11,6	10,8	*	333,56												
222	11,6	10,9	*	296,40												
222	11,6	10,9	*	272,91												
222	11,6	10,9	*	247,00												
222	11,6	10,9	*	219,23												
222	11,6	10,9	*	190,00												
222	11,6	10,9	*	171,00												
222	11,6	10,9	*	154,92												
222	11,6	10,9	*	141,14												
222	11,6	10,9	*	126,67												
222	11,6	10,9	*	119,85												
222	11,6	10,9	*	104,50												
222	11,6	10,9	*	90,25												
222	11,6	10,9	*	80,47												
222	11,6	10,9	*	71,78												
219	11,6	10,9	*	64,60												
216	11,6	10,9	*	59,92												
210	11,6	10,9	*	51,57												
200	11,6	10,9	*	42,90												
194	11,6	10,9	*	38,00												
270	11,6	10,9	*	93,63												
268	11,6	10,9	*	83,20												
267	11,6	10,9	*	76,61												
265	11,6	10,9	*	69,33												
263	11,6	10,9	*	61,54												
260	11,6	10,9	*	53,33												
258	11,6	10,9	*	48,00												
255	11,6	11	*	43,49												
253	11,6	11	*	39,62												
250	11,6	11	*	35,56												
248	11,6	10,91	*	33,64												
243	11,6	10,76	*	29,33												
238	11,6	10,6	*	25,33												
234	11,6	10,35	*	22,59												
229	11,6	10,1	*	20,15												
224	11,6	9,8	*	18,13												
223	11,6	9,6	*	16,82												
213	11,6	9,2	*	14,48												
202	11,6	8,7	*	12,04												
195	11,5	8,3	*	10,67												



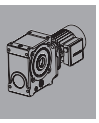
SG33																	
Mt_{2max}	(F_r=0) Fa	(F_a=0) Fr	j_t	i	IEC/SMB/SMR												
[Nm]	[kN]	[kN]	[']		63	71	80	90	100	112	132	160	180	200	225	250
530	18,00	11,00	*	1446,90												
522	18,00	11,30	*	1332,23												
515	18,00	11,50	*	1205,75												
508	18,00	11,70	*	1070,19												
497	18,00	11,87	*	927,50												
487	18,00	12,10	*	834,75												
478	18,00	12,30	*	756,27												
474	18,00	12,32	*	689,00												
464	18,00	12,35	*	618,33												
461	18,00	12,35	*	585,04												
458	18,00	12,36	*	510,13												
458	18,00	12,36	*	440,56												
458	18,00	12,37	*	392,82												
458	18,00	12,40	*	350,39												
458	18,00	12,44	*	315,35												
458	18,00	12,48	*	292,52												
458	18,00	12,52	*	251,75												
458	18,00	12,57	*	209,44												
458	18,00	12,59	*	185,50												



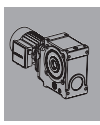
SG32																	
Mt_{2max}	(F_r=0) Fa	(F_a=0) Fr	j_t	i	IEC/SMB/SMR												
[Nm]	[kN]	[kN]	[']		63	71	80	90	100	112	132	160	180	200	225	250
458	18,00	12,30	*	385,00												
458	18,00	12,60	*	343,00												
458	18,00	12,70	*	308,64												
458	18,00	12,71	*	285,83												
458	18,00	12,72	*	261,15												
458	18,00	12,75	*	222,73												
458	18,00	12,77	*	201,25												
458	18,00	12,80	*	183,08												
458	18,00	12,82	*	167,50												
458	18,00	12,83	*	157,50												
458	18,00	12,90	*	142,69												
458	18,00	12,97	*	125,42												
458	18,00	13,10	*	109,38												
458	18,00	13,14	*	100,88												
458	18,00	13,20	*	93,33												
458	18,00	13,23	*	80,50												
458	18,00	13,23	*	76,73												
458	18,00	13,23	*	68,75												
448	18,00	13,25	*	58,71												
428	18,00	13,27	*	50,44												
407	18,00	13,30	*	43,51												
379	18,00	13,30	*	35,85												
489	18,00	13,50	*	95,33												
485	18,00	13,30	*	84,93												
481	18,00	13,30	*	76,42												
478	18,00	13,30	*	70,78												
475	18,00	13,30	*	64,67												
468	18,00	13,30	*	55,15												
463	18,00	13,30	*	49,83												
458	18,00	13,30	*	45,33												
453	18,00	13,30	*	41,48												
449	18,00	13,30	*	39,00												
443	18,00	13,30	*	35,33												
434	18,00	13,30	*	31,06												
423	18,00	13,30	*	27,08												
417	18,00	13,30	*	24,98												
410	18,00	13,30	*	23,11												
397	18,00	13,30	*	19,93												
392	17,00	13,23	*	19,00												
381	16,00	12,90	*	17,02												
365	14,80	11,10	*	14,54												
348	13,50	10,60	*	12,49												
330	13,40	10,20	*	10,77												
306	13,10	9,90	*	8,88												



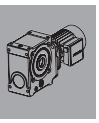
SG43																	
Mt_{2max}	(F_r=0) Fa	(F_a=0) Fr	j_t	i	IEC/SMB/SMR												
[Nm]	[kN]	[kN]	[']		63	71	80	90	100	112	132	160	180	200	225	250
744	*	*	*	1953,93												
729	*	*	*	1736,28												
715	*	*	*	1598,67												
703	20,30	14,60	*	1446,90												
693	20,30	14,60	*	1284,23												
674	20,30	14,60	*	1113,00												
666	20,30	14,60	*	1001,70												
659	20,30	14,60	*	907,52												
646	20,30	14,60	*	826,80												
635	20,30	14,60	*	742,00												
629	20,30	14,60	*	702,05												
616	20,30	15,00	*	612,15												
607	20,30	15,30	*	528,68												
607	20,30	15,50	*	471,39												
607	20,30	15,50	*	420,47												
607	20,30	15,50	*	378,42												
607	20,30	15,50	*	351,02												
607	20,30	15,50	*	302,10												
607	20,30	15,50	*	251,32												
607	20,30	15,50	*	222,60												



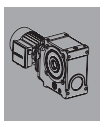
SG42																	
Mt_{2max}	(F_r=0) Fa	(F_a=0) Fr	j_t	i	IEC/SMB/SMR												
[Nm]	[kN]	[kN]	[']		63	71	80	90	100	112	132	160	180	200	225	250
607	20,30	15,50	*	462,00												
607	20,30	15,50	*	411,60												
607	20,30	15,50	*	370,36												
607	20,30	15,50	*	343,00												
607	20,30	15,50	*	313,38												
607	20,30	15,52	*	267,27												
607	20,30	15,55	*	241,50												
607	20,30	15,60	*	219,69												
607	20,30	15,68	*	201,00												
607	20,30	15,86	*	189,00												
607	20,30	16,00	*	171,23												
607	20,30	16,07	*	150,50												
607	20,30	16,11	*	131,25												
607	20,30	16,14	*	121,06												
607	20,30	16,17	*	112,00												
607	20,30	16,31	*	96,60												
607	20,30	16,40	*	92,08												
607	20,30	16,60	*	82,50												
607	20,30	16,92	*	70,45												
607	20,30	17,00	*	60,53												
607	20,30	17,00	*	52,22												
607	20,30	17,00	*	43,02												
768	20,30	17,50	*	113,67												
762	20,30	17,20	*	101,27												
756	20,30	16,77	*	91,12												
752	20,30	16,50	*	84,39												
746	20,30	16,50	*	77,10												
735	20,30	16,50	*	65,76												
727	20,30	16,50	*	59,42												
719	20,30	16,50	*	54,05												
711	20,30	16,50	*	49,45												
705	20,30	16,04	*	46,50												
696	20,30	15,57	*	42,13												
681	20,30	14,90	*	37,03												
665	20,30	14,60	*	32,29												
655	20,20	14,40	*	29,78												
645	19,70	13,90	*	27,56												
624	18,40	13,30	*	23,77												
616	17,80	12,92	*	22,65												
599	17,30	12,30	*	20,30												
573	16,80	11,90	*	17,33												
546	15,20	11,40	*	14,89												
519	14,00	11,00	*	12,85												
495	13,30	10,40	*	10,59												



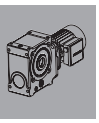
SG53																	
Mt_{2max}	(F_r=0) Fa	(F_a=0) Fr	j_t	i	IEC/SMB/SMR												
[Nm]	[kN]	[kN]	[']		63	71	80	90	100	112	132	160	180	200	225	250
1174	*	*	*	2760,61												
1172	*	*	*	2453,10												
1172	*	*	*	2258,68												
1170	*	*	*	2044,25												
1148	*	*	*	1814,42												
1146	*	*	*	1572,50												
1127	20,30	8,90	*	1415,25												
1110	20,30	8,90	*	1282,19												
1095	20,30	8,90	*	1168,14												
1080	20,30	8,90	*	1048,33												
1068	20,30	8,90	*	991,88												
1045	20,30	8,90	*	864,88												
1017	20,30	9,50	*	746,94												
1001	20,30	10,40	*	666,00												
979	20,30	10,50	*	594,06												
973	20,30	10,50	*	534,65												
973	20,30	10,60	*	495,94												
973	20,30	10,70	*	426,82												
973	20,30	10,70	*	355,08												
973	20,30	10,90	*	314,50												



SG52																	
Mt_{2max}	(F_r=0) Fa	(F_a=0) Fr	j_t	i	IEC/SMB/SMR												
[Nm]	[kN]	[kN]	[']		63	71	80	90	100	112	132	160	180	200	225	250
973	20,30	10,70	*	430,55												
973	20,30	10,70	*	391,58												
973	20,30	10,70	*	364,31												
973	20,30	11,10	*	312,82												
973	20,30	11,40	*	283,67												
973	20,30	11,60	*	264,69												
973	20,30	11,80	*	240,50												
973	20,30	12,10	*	218,92												
973	20,30	12,46	*	199,23												
973	20,30	12,80	*	175,75												
973	20,30	12,80	*	159,56												
973	20,30	12,90	*	145,82												
973	20,30	13,00	*	137,72												
973	20,30	13,25	*	120,25												
961	20,30	13,54	*	106,89												
944	20,30	13,88	*	97,37												
915	20,30	14,33	*	84,57												
887	20,30	14,60	*	74,00												
843	20,30	14,90	*	61,19												
797	20,30	15,00	*	51,03												
750	20,30	15,00	*	42,78												
717	20,10	14,70	*	38,06												
948	20,30	17,50	*	104,73												
942	20,30	16,50	*	95,25												
938	20,30	16,20	*	88,62												
927	20,30	15,00	*	76,09												
920	20,30	14,80	*	69,00												
914	20,30	14,60	*	64,38												
908	20,30	14,40	*	58,50												
897	20,30	14,30	*	53,25												
887	20,30	14,30	*	48,46												
873	20,30	14,20	*	42,75												
861	20,30	14,10	*	38,81												
850	20,10	14,00	*	35,47												
842	18,75	13,90	*	33,50												
822	17,70	13,80	*	29,25												
804	16,86	13,60	*	26,00												
788	16,34	13,20	*	23,68												
763	15,36	12,24	*	20,57												
738	15,00	11,60	*	18,00												
698	14,70	11,30	*	14,88												
658	14,50	11,10	*	12,41												
617	14,30	10,90	*	10,41												
589	13,90	10,50	*	9,26												



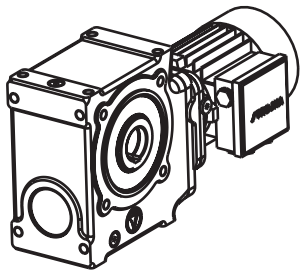
SG63																	
Mt_{2max}	(F_r=0) Fa	(F_a=0) Fr	j_t	i	IEC/SMB/SMR												
[Nm]	[kN]	[kN]	[']		63	71	80	90	100	112	132	160	180	200	225	250
1413	*	*	*	3208,28												
1413	*	*	*	2850,90												
1413	*	*	*	2624,95												
1413	*	*	*	2375,75												
1386	*	*	*	2108,65												
1357	*	*	*	1827,50												
1331	*	*	*	1644,75												
1331	*	*	*	1490,12												
1309	24,50	17,00	*	1357,57												
1289	24,50	17,00	*	1218,33												
1271	24,50	17,00	*	1152,73												
1240	24,50	17,00	*	1005,13												
1215	24,50	17,00	*	868,06												
1192	24,50	17,00	*	774,00												
1172	24,50	16,80	*	690,39												
1146	24,50	16,70	*	621,35												
1138	24,50	16,60	*	576,37												
1131	24,50	16,40	*	496,04												
1131	24,50	16,30	*	412,66												
1131	24,50	16,20	*	365,50												



SG62																	
Mt_{2max}	(F_r=0) Fa	(F_a=0) Fr	j_t	i	IEC/SMB/SMR												
[Nm]	[kN]	[kN]	[']		63	71	80	90	100	112	132	160	180	200	225	250
1131	24,50	16,20	*	500,36												
1131	24,50	16,20	*	455,08												
1131	24,50	16,20	*	423,38												
1131	24,50	16,55	*	363,55												
1131	24,50	16,60	*	329,67												
1131	24,50	16,66	*	307,62												
1131	24,50	16,70	*	279,50												
1131	24,50	16,70	*	254,42												
1131	24,50	16,70	*	231,54												
1131	24,50	16,70	*	204,25												
1131	24,50	16,70	*	185,44												
1131	24,50	16,70	*	169,47												
1131	24,50	16,70	*	160,06												
1131	24,50	16,76	*	139,75												
1131	24,50	16,80	*	124,22												
1131	24,50	16,90	*	113,16												
1131	24,50	17,20	*	98,29												
1131	24,50	17,40	*	86,00												
1093	24,50	17,60	*	71,12												
1034	24,50	17,70	*	59,31												
972	24,50	17,70	*	49,72												
930	22,50	17,69	*	44,23												
1249	24,50	19,60	*	120,24												
1241	24,50	19,10	*	109,36												
1235	24,50	18,40	*	101,74												
1221	24,50	18,20	*	87,36												
1211	24,50	18,00	*	79,22												
1204	24,50	17,90	*	73,92												
1193	24,50	17,80	*	67,17												
1181	24,50	17,70	*	61,14												
1168	24,50	17,60	*	55,64												
1150	24,50	17,60	*	49,08												
1135	23,36	17,60	*	44,56												
1119	22,30	17,40	*	40,73												
1109	21,56	17,20	*	38,46												
1083	20,78	16,70	*	33,58												
1059	19,84	15,90	*	29,85												
1038	19,10	15,00	*	27,19												
1005	17,27	13,40	*	23,62												
972	16,50	13,20	*	20,67												
920	16,30	12,80	*	17,09												
867	16,00	12,40	*	14,25												
813	15,60	12,00	*	11,95												
775	14,80	11,00	*	10,63												

Structure of selection tables.

Calculated for input speed n_1=1400 min^{-1}



SG

HELICAL WORM GEAR UNITS

SG12				
i	**i**	**M**	**P**	**η**
		[Nm]	[kW]	[%]
245,78	28/1	164	0,37	57

Efficiency of gear unit

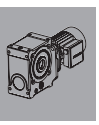
Max. permissible Input power

Premissible output torque

Worm pair ratio

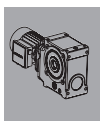
Total ratio

SG12					SG22				
i	i	M	P	η	i	i	M	P	η
		[Nm]	[kW]	[%]			[Nm]	[kW]	[%]
245,78		164	0,37	57	333,56		222	0,75	55
218,40		163	0,37	58	296,40		222	0,75	56
201,09		163	0,37	59	272,91		222	0,75	57
182,00		162	0,37	60	247,00		222	0,75	58
161,54		160	0,37	61	219,23		222	0,75	59
140,00		159	0,37	63	190,00		222	0,75	60
126,00		158	0,37	64	171,00		222	0,75	61
114,15		156	0,37	65	154,92		222	0,75	62
104,00		155	0,37	65	141,14		222	0,75	63
93,33		153	0,37	66	126,67		222	0,75	64
88,31	28/1	152	0,37	67	119,85	38/1	222	0,75	65
77,00		150	0,37	68	104,50		222	0,75	66
66,50		147	0,37	69	90,25		222	0,75	67
59,29		144	0,37	70	80,47		222	0,75	68
52,89		142	0,37	71	71,78		222	0,75	69
47,60		139	0,37	72	64,60		219	0,75	70
44,15		137	0,37	72	59,92		216	0,75	70
38,00		133	0,37	73	51,57		210	0,75	71
31,61		127	0,37	74	42,90		200	0,75	72
28,00		123	0,37	75	38,00		194	0,75	73
67,30		137	1,10	82	93,63		270	1,5	80
59,80		136	1,10	83	83,20		268	1,5	80
55,06		136	1,10	83	76,61		267	1,5	81
49,83		135	1,10	84	69,33		265	1,5	81
44,23		134	1,10	84	61,54		263	1,5	82
38,33		132	1,10	85	53,33		260	1,5	83
34,50		131	1,10	86	48,00		258	1,5	84
31,26		130	1,10	86	43,49		255	1,5	84
28,48		129	1,10	86	39,62		253	1,5	85
25,56		127	1,10	87	35,56		250	1,5	85
24,18	23/3	127	1,10	87	33,64	32/3	248	1,5	85
21,08		124	1,10	88	29,33		243	1,5	86
18,21		122	1,10	88	25,33		238	1,5	87
16,24		120	1,10	88	22,59		234	1,5	87
14,48		117	1,10	89	20,15		229	1,5	88
13,03		115	1,10	89	18,13		224	1,5	88
12,09		111	1,10	90	16,82		223	1,5	88
10,40		108	1,10	90	14,48		213	1,5	89
8,66		104	1,10	91	12,04		202	1,5	89
7,67		101	1,10	91	10,67		195	1,5	89



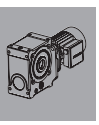
SG33				
i	i	M	P	η
		[Nm]	[kW]	[%]
1628,28		539	1,50	41
1446,90		530	1,50	42
1332,23		522	1,50	43
1205,75		515	1,50	43
1070,19		508	1,50	44
927,50		497	1,50	44
834,75		487	1,50	45
756,27		478	1,50	46
689,00		474	1,50	47
618,33	35/1	464	1,50	48
585,04		461	1,50	48
510,13		458	1,50	49
440,56		458	1,50	51
392,82		458	1,50	52
350,39		458	1,50	53
315,35		458	1,50	54
292,52		458	1,50	55
251,75		458	1,50	56
209,44		458	1,50	58
185,50		458	1,50	59

SG32				
i	i	M	P	η
		[Nm]	[kW]	[%]
385,00		458	1,1	52
343,00		458	1,1	53
308,64		458	1,1	54
285,83		458	1,1	55
261,15		458	1,1	56
222,73		458	1,1	57
201,25		458	1,1	58
183,08		458	1,1	59
167,50		458	1,1	60
157,50		458	1,1	61
142,69	35/1	458	1,1	61
125,42		458	1,1	63
109,38		458	1,1	64
100,88		458	1,1	64
93,33		458	1,1	65
80,50		458	1,1	66
76,73		458	1,1	66
68,75		458	1,1	67
58,71		448	1,1	68
50,44		428	1,1	68
43,51		407	1,1	69
35,85		379	1,1	70
95,33		489	3,00	80
84,93		485	3,00	81
76,42		481	3,00	82
70,78		478	3,00	82
64,67		475	3,00	83
55,15		468	3,00	84
49,83		463	3,00	84
45,33		458	3,00	85
41,48		453	3,00	85
39,00		449	3,00	85
35,33	26/3	443	3,00	86
31,06		434	3,00	86
27,08		423	3,00	87
24,98		417	3,00	87
23,11		410	3,00	88
19,93		397	3,00	88
19,00		392	3,00	88
17,02		381	3,00	88
14,54		365	3,00	89
12,49		348	3,00	89
10,77		330	3,00	89
8,88		306	3,00	90



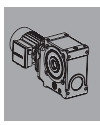
SG43				
i	i	M	P	η
		[Nm]	[kW]	[%]
1953,93		744	1,50	41
1736,28		729	1,50	42
1598,67		715	1,50	42
1446,90		703	1,50	43
1284,23		693	1,50	44
1113,00		674	1,50	45
1001,70		666	1,50	45
907,52		659	1,50	46
826,80		646	1,50	46
742,00	42/1	635	1,50	47
702,05		629	1,50	48
612,15		616	1,50	49
528,68		607	1,50	50
471,39		607	1,50	52
420,47		607	1,50	53
378,42		607	1,50	54
351,02		607	1,50	55
302,10		607	1,50	56
251,32		607	1,50	58
222,60		607	1,50	59

SG42				
i	i	M	P	η
		[Nm]	[kW]	[%]
462,00		607	1,50	52
411,60		607	1,50	53
370,36		607	1,50	54
343,00		607	1,50	55
313,38		607	1,50	56
267,27		607	1,50	57
241,50		607	1,50	58
219,69		607	1,50	59
201,00		607	1,50	60
189,00		607	1,50	61
171,23	42/1	607	1,50	61
150,50		607	1,50	63
131,25		607	1,50	64
121,06		607	1,50	64
112,00		607	1,50	65
96,60		607	1,50	66
92,08		607	1,50	66
82,50		607	1,50	67
70,45		607	1,50	68
60,53		607	1,50	68
52,22		607	1,50	69
43,02		607	1,50	70
113,67		768	4,00	80
101,27		762	4,00	81
91,12		756	4,00	82
84,39		752	4,00	82
77,10		746	4,00	83
65,76		735	4,00	84
59,42		727	4,00	84
54,05		719	4,00	85
49,45		711	4,00	85
46,50		705	4,00	85
42,13	31/3	696	4,00	86
37,03		681	4,00	86
32,29		665	4,00	87
29,78		655	4,00	87
27,56		645	4,00	87
23,77		624	4,00	88
22,65		616	4,00	88
20,30		599	4,00	88
17,33		573	4,00	89
14,89		546	4,00	89
12,85		519	4,00	89
10,59		495	4,00	90



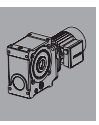
SG53				
i	i	M	P	η
		[Nm]	[kW]	[%]
2760,61		1174	1,50	47
2453,10		1172	1,50	48
2258,68		1172	1,50	48
2044,25		1170	1,50	49
1814,42		1148	1,50	49
1572,50		1146	1,50	50
1415,25		1127	1,50	50
1282,19		1110	1,50	51
1168,14		1095	1,50	51
1048,33		1080	1,50	52
991,88	37/1	1068	1,50	52
864,88		1045	1,50	53
746,94		1017	1,50	55
666,00		1001	1,50	55
594,06		979	1,50	57
534,65		973	1,50	57
495,94		973	1,50	58
426,82		973	1,50	59
355,08		973	1,50	61
314,50		973	1,50	62

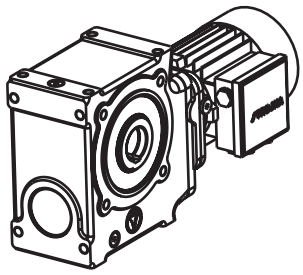
SG52				
i	i	M	P	η
		[Nm]	[kW]	[%]
430,55		973	2,20	59
391,58		973	2,20	60
364,31		973	2,20	61
312,82		973	2,20	62
283,67		973	2,20	63
264,69		973	2,20	64
240,50		973	2,20	65
218,92		973	2,20	66
199,23		973	2,20	66
175,75		973	2,20	68
159,56		973	2,20	68
145,82	37/1	973	2,20	69
137,72		973	2,20	70
120,25		973	2,20	70
106,89		961	2,20	71
97,37		944	2,20	72
84,57		915	2,20	73
74,00		887	2,20	73
61,19		843	2,20	74
51,03		797	2,20	75
42,78		750	2,20	76
38,06		717	2,20	76
104,73		948	7,50	84
95,25		942	7,50	85
88,62		938	7,50	85
76,09		927	7,50	86
69,00		920	7,50	86
64,38		914	7,50	87
58,50		908	7,50	87
53,25		897	7,50	88
48,46		887	7,50	88
42,75		873	7,50	89
38,81		861	7,50	89
35,47	27/3	850	7,50	89
33,50		842	7,50	89
29,25		822	7,50	90
26,00		804	7,50	90
23,68		788	7,50	90
20,57		763	7,50	91
18,00		738	7,50	91
14,88		698	7,50	91
12,41		658	7,50	92
10,41		617	7,50	92
9,26		589	7,50	92



SG63				
i	i	M	P	η
		[Nm]	[kW]	[%]
3208,28		1413	1,50	48
2850,90		1413	1,50	48
2624,95		1413	1,50	48
2375,75		1413	1,50	49
2108,65		1386	1,50	50
1827,50		1357	1,50	50
1644,75		1331	1,50	51
1490,12		1331	1,50	51
1357,57		1309	1,50	52
1218,33	43/1	1289	1,50	52
1152,73		1271	1,50	53
1005,13		1240	1,50	54
868,06		1215	1,50	55
774,00		1192	1,50	56
690,39		1172	1,50	57
621,35		1146	1,50	58
576,37		1138	1,50	58
496,04		1131	1,50	60
412,66		1131	1,50	62
365,50		1131	1,50	63

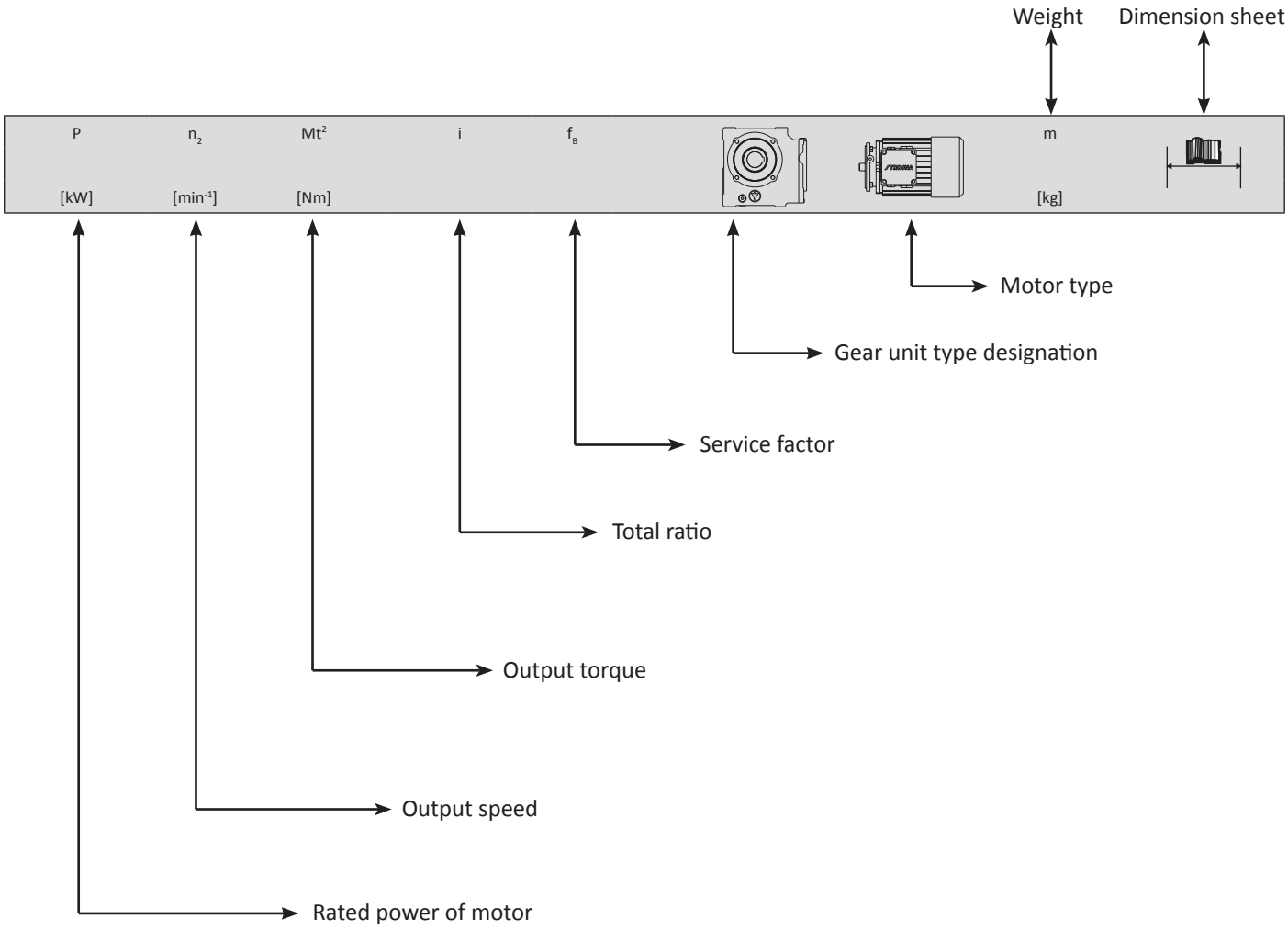
SG62				
i	i	M	P	η
		[Nm]	[kW]	[%]
500,36		1131	3,00	60
455,08		1131	3,00	61
423,38		1131	3,00	61
363,55		1131	3,00	63
329,67		1131	3,00	63
307,62		1131	3,00	64
279,50		1131	3,00	65
254,42		1131	3,00	66
231,54		1131	3,00	67
204,25		1131	3,00	68
185,44	43/1	1131	3,00	69
169,47		1131	3,00	69
160,06		1131	3,00	70
139,75		1131	3,00	71
124,22		1131	3,00	72
113,16		1131	3,00	72
98,29		1131	3,00	73
86,00		1131	3,00	74
71,12		1093	3,00	75
59,31		1034	3,00	76
49,72		972	3,00	76
44,23		930	3,00	77
120,24		1249	9,20	85
109,36		1241	9,20	85
101,74		1235	9,20	86
87,36		1221	9,20	86
79,22		1211	9,20	87
73,92		1204	9,20	87
67,17		1193	9,20	88
61,14		1181	9,20	88
55,64		1168	9,20	88
49,08		1150	9,20	89
44,56	31/3	1135	9,20	89
40,73		1119	9,20	89
38,46		1109	9,20	90
33,58		1083	9,20	90
29,85		1059	9,20	90
27,19		1038	9,20	91
23,62		1005	9,20	91
20,67		972	9,20	91
17,09		920	9,20	92
14,25		867	9,20	92
11,95		813	9,20	92
10,63		775	9,20	92



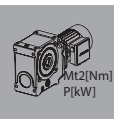


SG

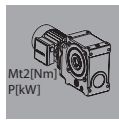
HELICAL WORM GEAR UNITS



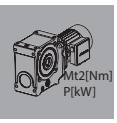
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
0,12	0.41	1342	3208,28	1,05	SG63	SMB	63A4		
	0.46	1196	2850,90	1,18	SG63	SMB	63A4		
	0.50	1100	2624,95	1,28	SG63	SMB	63A4		
	0.55	1021	2375,75	1,38	SG63	SMB	63A4		
	0.62	924	2108,65	1,50	SG63	SMB	63A4		
	0.72	796	1827,50	1,71	SG63	SMB	63A4		
	0.80	731	1644,75	1,82	SG63	SMB	63A4		
	0.88	664	1490,12	2,00	SG63	SMB	63A4		
	0.96	621	1357,57	2,11	SG63	SMB	63A4	50	536
	1.1	542	1218,33	2,38	SG63	SMB	63A4		
	1.2	552	1152,73	2,30	SG63	SMB	63A4		
	1.3	476	1005,13	2,60	SG63	SMB	63A4		
	1.5	420	868,06	2,89	SG63	SMR	63A4		
	1.7	378	774,00	3,16	SG63	SMR	63A4		
	1.9	344	690,39	3,41	SG63	SMR	63A4		
	2.1	317	621,35	3,62	SG63	SMR	63A4		
	2.3	289	576,37	3,94	SG63	SMR	63A4		
	2.6	264	496,04	4,28	SG63	SMR	63A4		
	2.6	264	500,36	4,28	SG62	SMB	63A4	46	534
	0.47	1146	2760,61	1,02	SG53	SMB	63A4		
	0.53	1038	2453,10	1,13	SG53	SMB	63A4		
	0.58	948	2258,68	1,24	SG53	SMB	63A4		
	0.64	877	2044,25	1,33	SG53	SMB	63A4		
	0.72	780	1814,42	1,47	SG53	SMB	63A4		
	0.83	690	1572,50	1,66	SG53	SMB	63A4		
	0.93	616	1415,25	1,83	SG53	SMB	63A4		
	1.0	584	1282,19	1,90	SG53	SMB	63A4		
	1.1	531	1168,14	2,06	SG53	SMB	63A4	42	532
	1.2	497	1048,33	2,17	SG53	SMB	63A4		
	1.3	458	991,88	2,33	SG53	SMB	63A4		
	1.5	405	864,88	2,58	SG53	SMB	63A4		
	1.8	350	746,94	2,90	SG53	SMR	63A4		
	2.0	315	666,00	3,18	SG53	SMR	63A4		
	2.2	297	594,06	3,30	SG53	SMR	63A4		
	2.5	261	534,65	3,72	SG53	SMR	63A4		
	2.6	256	495,94	3,81	SG53	SMR	63A4		
	3.1	218	426,82	4,46	SG53	SMR	63A4		
	3.0	225	430,55	4,32	SG52	SMB	63A4	39	530
	0.67	701	1953,93	1,06	SG43	SMB	63A4		
	0.75	642	1736,28	1,14	SG43	SMB	63A4		
	0.82	587	1598,67	1,22	SG43	SMB	63A4		
	0.91	542	1446,90	1,30	SG43	SMB	63A4		
	1.0	504	1284,23	1,37	SG43	SMB	63A4	30	528
	1.2	430	1113,00	1,57	SG43	SMB	63A4		
	1.3	397	1001,70	1,68	SG43	SMB	63A4		
	1.4	377	907,52	1,75	SG43	SMB	63A4		
	1.6	329	826,80	1,96	SG43	SMB	63A4		
	1.8	299	742,00	2,12	SG43	SMB	63A4		



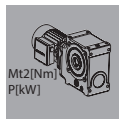
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
0,12	1.9	290	702,05	2,17	SG43	SMB	63A4		
	2.1	267	612,15	2,30	SG43	SMB	63A4		
	2.5	229	528,68	2,65	SG43	SMR	63A4		
	2.8	213	471,39	2,85	SG43	SMR	63A4	30	528
	3.1	196	420,47	3,10	SG43	SMR	63A4		
	3.5	177	378,42	3,43	SG43	SMR	63A4		
	3.7	170	351,02	3,56	SG43	SMR	63A4		
	4.3	149	302,10	4,07	SG43	SMR	63A4		
	2.8	213	462,00	2,85	SG42	SMB	63A4		
	3.2	190	411,60	3,20	SG42	SMB	63A4		
	3.5	177	370,36	3,43	SG42	SMB	63A4	28	526
	3.8	166	343,00	3,66	SG42	SMB	63A4		
	4.2	153	313,38	3,97	SG42	SMB	63A4		
	0.91	529	1446,90	1,00	SG33	SMB	63A4		
	0.98	503	1332,23	1,04	SG33	SMB	63A4		
	1.1	448	1205,75	1,15	SG33	SMB	63A4		
	1.2	420	1070,19	1,21	SG33	SMB	63A4		
	1.4	360	927,50	1,38	SG33	SMB	63A4		
	1.6	322	834,75	1,51	SG33	SMB	63A4		
	1.7	310	756,27	1,54	SG33	SMB	63A4		
	1.9	283	689,00	1,67	SG33	SMB	63A4		
	2.1	262	618,33	1,77	SG33	SMB	63A4	26	524
	2.2	250	585,04	1,84	SG33	SMB	63A4		
	2.6	216	510,13	2,12	SG33	SMB	63A4		
	3.0	195	440,56	2,35	SG33	SMR	63A4		
	3.3	181	392,82	2,54	SG33	SMR	63A4		
	3.7	164	350,39	2,79	SG33	SMR	63A4		
	4.2	147	315,35	3,11	SG33	SMR	63A4		
	4.5	140	292,52	3,27	SG33	SMR	63A4		
	5.2	123	251,75	3,71	SG33	SMR	63A4		
	6.3	106	209,44	4,34	SG33	SMR	63A4		
	3.4	175	385,00	2,61	SG32	SMB	63A4		
	3.8	160	343,00	2,87	SG32	SMB	63A4		
	4.2	147	308,64	3,11	SG32	SMB	63A4		
	4.6	137	285,83	3,34	SG32	SMB	63A4	24	522
	5.0	128	261,15	3,57	SG32	SMB	63A4		
	5.9	111	222,73	4,14	SG32	SMB	63A4		
	6.5	102	201,25	4,48	SG32	SMB	63A4		
	3.9	162	333,56	1,37	SG22	SMB	63A4		
	4.4	146	296,40	1,52	SG22	SMB	63A4		
	4.8	136	272,91	1,63	SG22	SMB	63A4		
	5.3	125	247,00	1,77	SG22	SMB	63A4		
	6.0	113	219,23	1,97	SG22	SMB	63A4	16	520
	6.9	100	190,00	2,23	SG22	SMB	63A4		
	7.7	91	171,00	2,45	SG22	SMB	63A4		
	8.5	84	154,92	2,66	SG22	SMB	63A4		
	9.3	78	141,14	2,86	SG22	SMB	63A4		
	10	73	126,67	3,03	SG22	SMB	63A4		



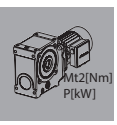
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
0,12	11	68	119,85	3,28	SG22	SMB	63A4		
	13	58	104,50	3,82	SG22	SMB	63A4		
	15	51	90,25	4,34	SG22	SMR	63A4		
	18	44	71,78	5,05	SG22	SMR	63A4		
	20	40	64,60	5,46	SG22	SMR	63A4		
	22	36	59,92	5,92	SG22	SMR	63A4		
	31	27	42,90	7,51	SG22	SMR	63A4		
	34	25	38,00	7,88	SG22	SMR	63A4		
	14	65	93,63	4,12	SG22	SMB	63A4		
	16	57	83,20	4,68	SG22	SMB	63A4		
	17	55	76,61	4,89	SG22	SMB	63A4		
	19	49	69,33	5,42	SG22	SMB	63A4	16	520
	21	45	61,54	5,88	SG22	SMB	63A4		
	25	38	53,33	6,83	SG22	SMB	63A4		
	27	36	48,00	7,24	SG22	SMB	63A4		
	30	32	43,49	7,95	SG22	SMB	63A4		
	33	30	39,62	8,57	SG22	SMB	63A4		
	37	26	35,56	9,50	SG22	SMB	63A4		
	39	25	33,64	9,93	SG22	SMB	63A4		
	45	22	29,33	11,10	SG22	SMB	63A4		
	52	19	25,33	12,41	SG22	SMR	63A4		
	58	17	22,59	13,61	SG22	SMR	63A4		
	65	16	20,15	14,76	SG22	SMR	63A4		
	5.3	123	245,78	1,33	SG12	SMB	63A4		
	6.0	111	218,40	1,47	SG12	SMB	63A4		
	6.5	104	201,09	1,57	SG12	SMB	63A4		
	7.2	96	182,00	1,70	SG12	SMB	63A4		
	8.1	86	161,54	1,85	SG12	SMB	63A4		
	9.4	77	140,00	2,07	SG12	SMB	63A4		
	10	73	126,00	2,15	SG12	SMB	63A4		
	11	68	114,15	2,30	SG12	SMB	63A4		
	13	57	104,00	2,71	SG12	SMB	63A4		
	14	54	93,33	2,83	SG12	SMB	63A4		
	15	51	88,31	2,97	SG12	SMB	63A4		
	17	46	77,00	3,27	SG12	SMB	63A4		
	20	40	66,50	3,72	SG12	SMR	63A4	12	518
	22	36	59,29	3,95	SG12	SMR	63A4		
	25	33	52,89	4,36	SG12	SMR	63A4		
	28	29	47,60	4,72	SG12	SMR	63A4		
	30	28	44,15	4,98	SG12	SMR	63A4		
	34	25	38,00	5,41	SG12	SMR	63A4		
	41	21	31,61	6,14	SG12	SMR	63A4		
	47	18	28,00	6,73	SG12	SMR	63A4		
	19	49	67,30	2,77	SG12	SMB	63A4		
	24	40	55,06	3,43	SG12	SMB	63A4		
	26	37	49,83	3,65	SG12	SMB	63A4		
	38	26	34,50	5,05	SG12	SMB	63A4		
	42	23	31,26	5,54	SG12	SMB	63A4		

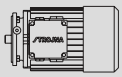


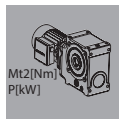
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
0,12	46	21	28,48	6,02	SG12	SMB	63A4		
	51	20	25,56	6,50	SG12	SMB	63A4		
	54	18	24,18	6,88	SG12	SMB	63A4		
	62	16	21,08	7,62	SG12	SMB	63A4		
	72	14	18,21	8,71	SG12	SMR	63A4	12	518
	81	12	16,24	9,64	SG12	SMR	63A4		
	90	11	14,48	10,32	SG12	SMR	63A4		
	101	10	13,03	11,39	SG12	SMR	63A4		
	108	10	12,09	11,62	SG12	SMR	63A4		
	126	8	10,40	13,19	SG12	SMR	63A4		
0,18	0.63	1364	2108,65	1,02	SG63	SMB	63B4		
	0.73	1177	1827,50	1,15	SG63	SMB	63B4		
	0.81	1082	1644,75	1,23	SG63	SMB	63B4		
	0.89	985	1490,12	1,35	SG63	SMB	63B4		
	0.98	912	1357,57	1,44	SG63	SMB	63B4		
	1.1	813	1218,33	1,59	SG63	SMB	63B4		
	1.2	759	1152,73	1,67	SG63	SMB	63B4		
	1.3	714	1005,13	1,74	SG63	SMB	63B4	51	536
	1.5	630	868,06	1,93	SG63	SMR	63B4		
	1.7	566	774,00	2,11	SG63	SMR	63B4		
	1.9	516	690,39	2,27	SG63	SMR	63B4		
	2.1	475	621,35	2,41	SG63	SMR	63B4		
	2.3	433	576,37	2,63	SG63	SMR	63B4		
	2.7	382	496,04	2,96	SG63	SMR	63B4		
	3.2	333	412,66	3,40	SG63	SMR	63B4		
	3.6	301	365,50	3,76	SG63	SMR	63B4		
	2.7	382	500,36	2,96	SG62	SMB	63B4		
	2.9	362	455,08	3,13	SG62	SMB	63B4		
	3.1	338	423,38	3,34	SG62	SMB	63B4	47	534
	3.7	293	363,55	3,86	SG62	SMB	63B4		
	4.0	271	329,67	4,18	SG62	SMB	63B4		
	4.3	256	307,62	4,42	SG62	SMB	63B4		
	0.73	1154	1814,42	0,99	SG53	SMB	63B4		
	0.85	1011	1572,50	1,13	SG53	SMB	63B4		
	0.94	914	1415,25	1,23	SG53	SMB	63B4		
	1.0	877	1282,19	1,27	SG53	SMB	63B4		
	1.1	797	1168,14	1,37	SG53	SMB	63B4		
	1.3	688	991,88	1,55	SG53	SMB	63B4		
	1.5	607	864,88	1,72	SG53	SMB	63B4		
	1.8	525	746,94	1,94	SG53	SMR	63B4	43	532
	2.0	473	666,00	2,12	SG53	SMR	63B4		
	2.2	445	594,06	2,20	SG53	SMR	63B4		
	2.5	392	534,65	2,48	SG53	SMR	63B4		
	2.7	369	495,94	2,63	SG53	SMR	63B4		
	3.1	327	426,82	2,97	SG53	SMR	63B4		
	3.7	283	355,08	3,43	SG53	SMR	63B4		
	4.2	254	314,50	3,83	SG53	SMR	63B4		
	3.1	327	430,55	2,97	SG52	SMB	63B4	40	530



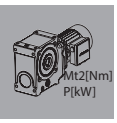
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
0,18	3.4	303	391,58	3,21		SG52	SMB	63B4		
	3.7	283	364,31	3,43		SG52	SMB	63B4		
	4.3	248	312,82	3,93		SG52	SMB	63B4	40	530
	4.7	230	283,67	4,22		SG52	SMB	63B4		
	5.0	220	264,69	4,42		SG52	SMB	63B4		
	1.2	645	1113,00	1,05		SG43	SMB	63B4		
	1.3	595	1001,70	1,12		SG43	SMB	63B4		
	1.5	527	907,52	1,25		SG43	SMB	63B4		
	1.6	494	826,80	1,31		SG43	SMB	63B4		
	1.8	449	742,00	1,41		SG43	SMB	63B4		
	1.9	434	702,05	1,45		SG43	SMB	63B4		
	2.2	383	612,15	1,61		SG43	SMB	63B4		
	2.5	344	528,68	1,77		SG43	SMR	63B4	31	528
	2.8	319	471,39	1,90		SG43	SMR	63B4		
	3.2	285	420,47	2,13		SG43	SMR	63B4		
	3.5	265	378,42	2,29		SG43	SMR	63B4		
	3.8	249	351,02	2,44		SG43	SMR	63B4		
	4.4	219	302,10	2,77		SG43	SMR	63B4		
	5.3	188	251,32	3,23		SG43	SMR	63B4		
	6.0	169	222,60	3,59		SG43	SMR	63B4		
	2.9	308	462,00	1,97		SG42	SMB	63B4		
	3.2	285	411,60	2,13		SG42	SMB	63B4		
	3.6	258	370,36	2,35		SG42	SMB	63B4		
	3.9	242	343,00	2,50		SG42	SMB	63B4		
	4.2	229	313,38	2,65		SG42	SMB	63B4	29	526
	5.0	196	267,27	3,10		SG42	SMB	63B4		
	5.5	181	241,50	3,35		SG42	SMB	63B4		
	6.1	166	219,69	3,65		SG42	SMB	63B4		
	6.6	156	201,00	3,88		SG42	SMB	63B4		
	7.0	150	189,00	4,05		SG42	SMB	63B4		
	1.6	483	834,75	1,01		SG33	SMB	63B4		
	1.8	439	756,27	1,09		SG33	SMB	63B4		
	1.9	425	689,00	1,11		SG33	SMB	63B4		
	2.2	375	618,33	1,24		SG33	SMB	63B4		
	2.3	359	585,04	1,29		SG33	SMB	63B4		
	2.6	324	510,13	1,41		SG33	SMB	63B4		
	3.0	292	440,56	1,57		SG33	SMR	63B4	27	524
	3.4	263	392,82	1,74		SG33	SMR	63B4		
	3.8	240	350,39	1,91		SG33	SMR	63B4		
	4.2	221	315,35	2,07		SG33	SMR	63B4		
	4.5	210	292,52	2,18		SG33	SMR	63B4		
	5.3	182	251,75	2,52		SG33	SMR	63B4		
	6.4	156	209,44	2,94		SG33	SMR	63B4		
	7.2	141	185,50	3,25		SG33	SMR	63B4		
	3.5	255	385,00	1,79		SG32	SMB	63B4		
	3.9	234	343,00	1,96		SG32	SMB	63B4	25	522
	4.3	216	308,64	2,12		SG32	SMB	63B4		
	4.7	201	285,83	2,28		SG32	SMB	63B4		



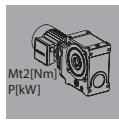
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
0,18	5.1	189	261,15	2,43	SG32	SMB	63B4		
	6.0	163	222,73	2,80	SG32	SMB	63B4		
	6.6	151	201,25	3,03	SG32	SMB	63B4		
	7.3	139	183,08	3,30	SG32	SMB	63B4	25	522
	7.9	131	167,50	3,51	SG32	SMB	63B4		
	8.4	125	157,50	3,67	SG32	SMB	63B4		
	9.3	113	142,69	4,06	SG32	SMB	63B4		
	4.5	214	296,40	1,04	SG22	SMB	63B4		
	4.9	200	272,91	1,11	SG22	SMB	63B4		
	5.4	185	247,00	1,20	SG22	SMB	63B4		
	6.1	166	219,23	1,34	SG22	SMB	63B4		
	7.0	147	190,00	1,51	SG22	SMB	63B4		
	7.8	134	171,00	1,65	SG22	SMB	63B4		
	8.6	124	154,92	1,79	SG22	SMB	63B4		
	9.4	115	141,14	1,93	SG22	SMB	63B4		
	11	102	119,85	2,19	SG22	SMB	63B4		
	13	87	104,50	2,54	SG22	SMB	63B4		
	15	77	90,25	2,89	SG22	SMR	63B4		
	17	69	80,47	3,23	SG22	SMR	63B4		
	21	57	64,60	3,82	SG22	SMR	63B4		
	26	47	51,57	4,47	SG22	SMR	63B4		
	35	36	38,00	5,41	SG22	SMR	63B4		
	14	98	93,63	2,75	SG22	SMB	63B4		
	16	86	83,20	3,12	SG22	SMB	63B4	17	520
	19	73	69,33	3,62	SG22	SMB	63B4		
	22	64	61,54	4,10	SG22	SMB	63B4		
	25	57	53,33	4,56	SG22	SMB	63B4		
	28	52	48,00	5,00	SG22	SMB	63B4		
	31	47	43,49	5,47	SG22	SMB	63B4		
	34	43	39,62	5,89	SG22	SMB	63B4		
	37	39	35,56	6,33	SG22	SMB	63B4		
	40	37	33,64	6,79	SG22	SMB	63B4		
	45	33	29,33	7,40	SG22	SMB	63B4		
	53	28	25,33	8,43	SG22	SMR	63B4		
	59	25	22,59	9,23	SG22	SMR	63B4		
	66	23	20,15	9,99	SG22	SMR	63B4		
	73	21	18,13	10,81	SG22	SMR	63B4		
	79	19	16,82	11,65	SG22	SMR	63B4		
	92	17	14,48	12,81	SG22	SMR	63B4		
	110	14	12,04	14,52	SG22	SMR	63B4		
	6.1	163	218,40	1,00	SG12	SMB	63B4		
	6.6	154	201,09	1,06	SG12	SMB	63B4		
	7.3	141	182,00	1,15	SG12	SMB	63B4		
	8.2	128	161,54	1,25	SG12	SMB	63B4	13	518
	9.5	114	140,00	1,39	SG12	SMB	63B4		
	11	100	126,00	1,58	SG12	SMB	63B4		
	12	93	114,15	1,68	SG12	SMB	63B4		
	13	86	104,00	1,80	SG12	SMB	63B4		



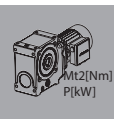
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
0,18	14	81	93,33	1,89	SG12	SMB	63B4		
	15	77	88,31	1,98	SG12	SMB	63B4		
	17	69	77,00	2,18	SG12	SMB	63B4		
	20	59	66,50	2,48	SG12	SMR	63B4		
	22	55	59,29	2,63	SG12	SMR	63B4		
	25	49	52,89	2,91	SG12	SMR	63B4		
	28	44	47,60	3,14	SG12	SMR	63B4		
	30	41	44,15	3,32	SG12	SMR	63B4		
	35	36	38,00	3,71	SG12	SMR	63B4		
	42	30	31,61	4,19	SG12	SMR	63B4		
	48	27	28,00	4,58	SG12	SMR	63B4		
	24	59	55,06	2,29	SG12	SMB	63B4		
	27	53	49,83	2,52	SG12	SMB	63B4		
	39	38	34,50	3,46	SG12	SMB	63B4	13	518
	43	34	31,26	3,78	SG12	SMB	63B4		
	47	31	28,48	4,10	SG12	SMB	63B4		
	52	29	25,56	4,42	SG12	SMB	63B4		
	55	27	24,18	4,67	SG12	SMB	63B4		
	63	24	21,08	5,16	SG12	SMB	63B4		
	73	21	18,21	5,89	SG12	SMR	63B4		
	82	18	16,24	6,50	SG12	SMR	63B4		
	92	17	14,48	7,04	SG12	SMR	63B4		
	102	15	13,03	7,67	SG12	SMR	63B4		
	110	14	12,09	7,89	SG12	SMR	63B4		
	128	12	10,40	8,94	SG12	SMR	63B4		
	154	10	8,66	10,24	SG12	SMR	63B4		
	173	9	7,67	11,17	SG12	SMR	63B4		
0,25	0.90	1353	1490,12	0,98	SG63	SMB	71A4		
	0.99	1254	1357,57	1,04	SG63	SMB	71A4		
	1.1	1129	1218,33	1,14	SG63	SMB	71A4		
	1.2	1054	1152,73	1,21	SG63	SMB	71A4		
	1.3	992	1005,13	1,25	SG63	SMB	71A4		
	1.5	875	868,06	1,39	SG63	SMR	71A4		
	1.7	786	774,00	1,52	SG63	SMR	71A4	51	536
	1.9	716	690,39	1,64	SG63	SMR	71A4		
	2.2	629	621,35	1,82	SG63	SMR	71A4		
	2.3	602	576,37	1,89	SG63	SMR	71A4		
	2.7	531	496,04	2,13	SG63	SMR	71A4		
	3.2	463	412,66	2,44	SG63	SMR	71A4		
	3.7	407	365,50	2,78	SG63	SMR	71A4		
	2.7	531	500,36	2,13	SG62	SMB	71A4		
	2.9	502	455,08	2,25	SG62	SMB	71A4		
	3.2	455	423,38	2,49	SG62	SMB	71A4		
	3.7	407	363,55	2,78	SG62	SMB	71A4	47	534
	4.1	367	329,67	3,08	SG62	SMB	71A4		
	4.4	347	307,62	3,26	SG62	SMB	71A4		
	4.8	323	279,50	3,50	SG62	SMB	71A4		
	5.3	297	254,42	3,80	SG62	SMB	71A4		



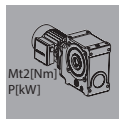
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
0,25	5.8	276	231,54	4,10	SG62	SMB	71A4	47	534
	1.1	1107	1168,14	0,99	SG53	SMB	71A4		
	1.3	955	1048,33	1,13	SG53	SMB	71A4		
	1.4	887	991,88	1,20	SG53	SMB	71A4		
	1.5	844	864,88	1,24	SG53	SMB	71A4		
	1.8	730	746,94	1,39	SG53	SMR	71A4		
	2.0	657	666,00	1,52	SG53	SMR	71A4	43	532
	2.3	592	594,06	1,65	SG53	SMR	71A4		
	2.5	544	534,65	1,79	SG53	SMR	71A4		
	2.7	513	495,94	1,90	SG53	SMR	71A4		
	3.1	454	426,82	2,14	SG53	SMR	71A4		
	3.8	383	355,08	2,54	SG53	SMR	71A4		
	4.3	344	314,50	2,83	SG53	SMR	71A4		
	3.1	454	430,55	2,14	SG52	SMB	71A4		
	3.4	421	391,58	2,31	SG52	SMB	71A4		
	3.7	394	364,31	2,47	SG52	SMB	71A4		
	4.3	344	312,82	2,83	SG52	SMB	71A4		
	4.7	320	283,67	3,04	SG52	SMB	71A4	40	530
	5.1	300	264,69	3,25	SG52	SMB	71A4		
	5.6	277	240,50	3,51	SG52	SMB	71A4		
	6.1	258	218,92	3,77	SG52	SMB	71A4		
	6.7	235	199,23	4,14	SG52	SMB	71A4		
	1.8	623	742,00	1,02	SG43	SMB	71A4		
	1.9	603	702,05	1,04	SG43	SMB	71A4		
	2.2	532	612,15	1,16	SG43	SMB	71A4		
	2.5	478	528,68	1,27	SG43	SMR	71A4		
	2.8	443	471,39	1,37	SG43	SMR	71A4		
	3.2	395	420,47	1,54	SG43	SMR	71A4	31	528
	3.5	368	378,42	1,65	SG43	SMR	71A4		
	3.8	346	351,02	1,76	SG43	SMR	71A4		
	4.4	304	302,10	2,00	SG43	SMR	71A4		
	5.3	261	251,32	2,32	SG43	SMR	71A4		
	6.0	235	222,60	2,59	SG43	SMR	71A4		
	2.9	428	462,00	1,42	SG42	SMB	71A4		
	3.3	383	411,60	1,58	SG42	SMB	71A4		
	3.6	358	370,36	1,69	SG42	SMB	71A4		
	3.9	337	343,00	1,80	SG42	SMB	71A4		
	4.3	311	313,38	1,95	SG42	SMB	71A4		
	5.0	272	267,27	2,23	SG42	SMB	71A4		
	5.5	252	241,50	2,41	SG42	SMB	71A4	29	526
	6.1	231	219,69	2,63	SG42	SMB	71A4		
	6.7	214	201,00	2,84	SG42	SMB	71A4		
	7.1	205	189,00	2,96	SG42	SMB	71A4		
	7.8	187	171,23	3,25	SG42	SMB	71A4		
	8.9	169	150,50	3,59	SG42	SMB	71A4		
	10	153	131,25	3,97	SG42	SMR	71A4		
	11	139	121,06	4,37	SG42	SMR	71A4		
	2.6	450	510,13	1,02	SG33	SMB	71A4	27	524



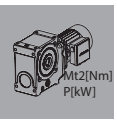
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
0,25	3.0	406	440,56	1,13	SG33	SMR	71A4	27	524
	3.4	365	392,82	1,25	SG33	SMR	71A4		
	3.8	333	350,39	1,38	SG33	SMR	71A4		
	4.2	307	315,35	1,49	SG33	SMR	71A4		
	4.6	285	292,52	1,60	SG33	SMR	71A4		
	5.3	252	251,75	1,82	SG33	SMR	71A4		
	6.4	216	209,44	2,12	SG33	SMR	71A4		
	7.2	196	185,50	2,34	SG33	SMR	71A4		
	3.5	355	385,00	1,29	SG32	SMB	71A4	25	522
	3.9	324	343,00	1,41	SG32	SMB	71A4		
	4.3	300	308,64	1,53	SG32	SMB	71A4		
	4.7	279	285,83	1,64	SG32	SMB	71A4		
	5.1	262	261,15	1,75	SG32	SMB	71A4		
	6.0	227	222,73	2,02	SG32	SMB	71A4		
	6.7	207	201,25	2,22	SG32	SMB	71A4		
	7.3	193	183,08	2,37	SG32	SMB	71A4		
	8.0	179	167,50	2,56	SG32	SMB	71A4		
	8.5	171	157,50	2,67	SG32	SMB	71A4		
	9.4	155	142,69	2,96	SG32	SMB	71A4		
	11	137	125,42	3,35	SG32	SMB	71A4		
	12	127	109,38	3,60	SG32	SMR	71A4		
	13	118	100,88	3,90	SG32	SMR	71A4		
	14	111	93,33	4,13	SG32	SMR	71A4		
	14	136	95,33	3,58	SG32	SMB	71A4		
	16	121	84,93	4,01	SG32	SMB	71A4		
	18	109	76,42	4,42	SG32	SMB	71A4		
	6.1	231	219,23	0,96	SG22	SMB	71A4	17	520
	7.1	202	190,00	1,10	SG22	SMB	71A4		
	7.8	187	171,00	1,19	SG22	SMB	71A4		
	8.6	172	154,92	1,29	SG22	SMB	71A4		
	9.5	158	141,14	1,40	SG22	SMB	71A4		
	11	141	119,85	1,57	SG22	SMB	71A4		
	13	121	104,50	1,83	SG22	SMB	71A4		
	15	107	90,25	2,08	SG22	SMR	71A4		
	21	80	64,60	2,75	SG22	SMR	71A4		
	26	65	51,57	3,22	SG22	SMR	71A4		
	35	50	38,00	3,90	SG22	SMR	71A4		
	14	136	93,63	1,98	SG22	SMB	71A4		
	16	119	83,20	2,25	SG22	SMB	71A4		
	17	114	76,61	2,35	SG22	SMB	71A4		
	19	102	69,33	2,60	SG22	SMB	71A4		
	22	89	61,54	2,96	SG22	SMB	71A4		
	25	79	53,33	3,28	SG22	SMB	71A4		
	28	72	48,00	3,60	SG22	SMB	71A4		
	31	65	43,49	3,94	SG22	SMB	71A4		
	34	60	39,62	4,24	SG22	SMB	71A4		
	38	53	35,56	4,68	SG22	SMB	71A4		
	40	51	33,64	4,89	SG22	SMB	71A4		



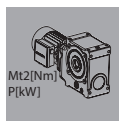
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
0,25	46	45	29,33	5,44		SG22	SMB	71A4		
	53	39	25,33	6,07		SG22	SMR	71A4		
	59	35	22,59	6,65		SG22	SMR	71A4		
	67	31	20,15	7,30		SG22	SMR	71A4		
	74	28	18,13	7,89		SG22	SMR	71A4	17	520
	80	26	16,82	8,49		SG22	SMR	71A4		
	93	23	14,48	9,32		SG22	SMR	71A4		
	111	19	12,04	10,55		SG22	SMR	71A4		
	126	17	10,67	11,56		SG22	SMR	71A4		
	9.6	157	140,00	1,01		SG12	SMB	71A4		
	11	139	126,00	1,14		SG12	SMB	71A4		
	12	129	114,15	1,21		SG12	SMB	71A4		
	13	119	104,00	1,30		SG12	SMB	71A4		
	14	113	93,33	1,36		SG12	SMB	71A4		
	15	107	88,31	1,43		SG12	SMB	71A4		
	17	96	77,00	1,57		SG12	SMB	71A4		
	20	82	66,50	1,78		SG12	SMR	71A4		
	23	73	59,29	1,98		SG12	SMR	71A4		
	25	68	52,89	2,09		SG12	SMR	71A4		
	28	61	47,60	2,26		SG12	SMR	71A4		
	30	57	44,15	2,39		SG12	SMR	71A4		
	35	50	38,00	2,67		SG12	SMR	71A4		
	42	42	31,61	3,02		SG12	SMR	71A4		
	48	37	28,00	3,30		SG12	SMR	71A4		
	22	90	59,80	1,51		SG12	SMB	71A4	13	518
	24	83	55,06	1,65		SG12	SMB	71A4		
	27	74	49,83	1,82		SG12	SMB	71A4		
	39	53	34,50	2,49		SG12	SMB	71A4		
	43	48	31,26	2,72		SG12	SMB	71A4		
	47	44	28,48	2,95		SG12	SMB	71A4		
	52	40	25,56	3,18		SG12	SMB	71A4		
	55	38	24,18	3,36		SG12	SMB	71A4		
	64	33	21,08	3,78		SG12	SMB	71A4		
	74	28	18,21	4,30		SG12	SMR	71A4		
	83	25	16,24	4,74		SG12	SMR	71A4		
	93	23	14,48	5,12		SG12	SMR	71A4		
	103	21	13,03	5,57		SG12	SMR	71A4		
	111	19	12,09	5,73		SG12	SMR	71A4		
	129	17	10,40	6,48		SG12	SMR	71A4		
	155	14	8,66	7,42		SG12	SMR	71A4		
	175	12	7,67	8,14		SG12	SMR	71A4		
0,37	1.7	1164	774,00	1,02		SG63	SMR	71B4		
	1.9	1060	690,39	1,11		SG63	SMR	71B4		
	2.2	932	621,35	1,23		SG63	SMR	71B4		
	2.3	891	576,37	1,28		SG63	SMR	71B4	52	536
	2.7	785	496,04	1,44		SG63	SMR	71B4		
	3.2	685	412,66	1,65		SG63	SMR	71B4		
	3.7	602	365,50	1,88		SG63	SMR	71B4		



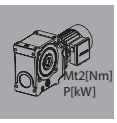
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
0,37	2.7	785	500,36	1,44		SG62	SMB	71B4		
	2.9	743	455,08	1,52		SG62	SMB	71B4		
	3.2	674	423,38	1,68		SG62	SMB	71B4		
	3.7	602	363,55	1,88		SG62	SMB	71B4		
	4.1	543	329,67	2,08		SG62	SMB	71B4		
	4.4	514	307,62	2,20		SG62	SMB	71B4		
	4.8	478	279,50	2,36		SG62	SMB	71B4	48	534
	5.3	440	254,42	2,57		SG62	SMB	71B4		
	5.8	408	231,54	2,77		SG62	SMB	71B4		
	6.6	364	204,25	3,11		SG62	SMB	71B4		
	7.2	339	185,44	3,34		SG62	SMR	71B4		
	7.9	309	169,47	3,66		SG62	SMR	71B4		
	8.4	294	160,06	3,84		SG62	SMR	71B4		
	9.6	261	139,75	4,33		SG62	SMR	71B4		
	2.0	972	666,00	1,03		SG53	SMR	71B4		
	2.3	876	594,06	1,12		SG53	SMR	71B4		
	2.5	806	534,65	1,21		SG53	SMR	71B4		
	2.7	759	495,94	1,28		SG53	SMR	71B4	44	532
	3.1	673	426,82	1,45		SG53	SMR	71B4		
	3.8	567	355,08	1,72		SG53	SMR	71B4		
	4.3	509	314,50	1,91		SG53	SMR	71B4		
	3.1	673	430,55	1,45		SG52	SMB	71B4		
	3.4	624	391,58	1,56		SG52	SMB	71B4		
	3.7	583	364,31	1,67		SG52	SMB	71B4		
	4.3	509	312,82	1,91		SG52	SMB	71B4		
	4.7	474	283,67	2,05		SG52	SMB	71B4		
	5.1	443	264,69	2,19		SG52	SMB	71B4		
	5.6	410	240,50	2,37		SG52	SMB	71B4		
	6.1	382	218,92	2,55		SG52	SMB	71B4	41	530
	6.7	348	199,23	2,80		SG52	SMB	71B4		
	7.6	316	175,75	3,08		SG52	SMB	71B4		
	8.4	286	159,56	3,40		SG52	SMR	71B4		
	9.2	265	145,82	3,67		SG52	SMR	71B4		
	9.7	255	137,72	3,82		SG52	SMR	71B4		
	11	225	120,25	4,33		SG52	SMR	71B4		
	13	228	104,73	4,15		SG52	SMB	71B4		
	14	215	95,25	4,39		SG52	SMB	71B4		
	3.2	585	420,47	1,04		SG43	SMR	71B4		
	3.5	545	378,42	1,11		SG43	SMR	71B4		
	3.8	511	351,02	1,19		SG43	SMR	71B4	32	528
	4.4	450	302,10	1,35		SG43	SMR	71B4		
	5.3	387	251,32	1,57		SG43	SMR	71B4		
	6.0	347	222,60	1,75		SG43	SMR	71B4		
	2.9	634	462,00	0,96		SG42	SMB	71B4		
	3.3	568	411,60	1,07		SG42	SMB	71B4		
	3.6	530	370,36	1,15		SG42	SMB	71B4	30	526
	3.9	498	343,00	1,22		SG42	SMB	71B4		
	4.3	460	313,38	1,32		SG42	SMB	71B4		



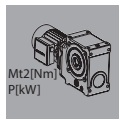
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
0,37	5.0	403	267,27	1,51		SG42	SMB	71B4		
	5.5	373	241,50	1,63		SG42	SMB	71B4		
	6.1	342	219,69	1,78		SG42	SMB	71B4		
	6.7	316	201,00	1,92		SG42	SMB	71B4		
	7.1	304	189,00	2,00		SG42	SMB	71B4		
	7.8	276	171,23	2,20		SG42	SMB	71B4		
	8.9	250	150,50	2,43		SG42	SMB	71B4		
	10	226	131,25	2,68		SG42	SMR	71B4		
	11	206	121,06	2,95		SG42	SMR	71B4	30	526
	12	191	112,00	3,17		SG42	SMR	71B4		
	14	167	96,60	3,64		SG42	SMR	71B4		
	15	155	92,08	3,90		SG42	SMR	71B4		
	16	148	82,50	4,10		SG42	SMR	71B4		
	12	236	113,67	3,26		SG42	SMB	71B4		
	13	220	101,27	3,46		SG42	SMB	71B4		
	15	193	91,12	3,91		SG42	SMB	71B4		
	16	181	84,39	4,15		SG42	SMB	71B4		
	17	173	77,10	4,32		SG42	SMB	71B4		
	4.2	454	315,35	1,01		SG33	SMR	71B4		
	4.6	422	292,52	1,08		SG33	SMR	71B4		
	5.3	373	251,75	1,23		SG33	SMR	71B4	28	524
	6.4	320	209,44	1,43		SG33	SMR	71B4		
	7.2	290	185,50	1,58		SG33	SMR	71B4		
	3.9	480	343,00	0,95		SG32	SMB	71B4		
	4.3	444	308,64	1,03		SG32	SMB	71B4		
	4.7	413	285,83	1,11		SG32	SMB	71B4		
	5.1	388	261,15	1,18		SG32	SMB	71B4		
	6.0	336	222,73	1,36		SG32	SMB	71B4		
	6.7	306	201,25	1,50		SG32	SMB	71B4		
	7.3	286	183,08	1,60		SG32	SMB	71B4		
	8.0	265	167,50	1,73		SG32	SMB	71B4		
	8.5	254	157,50	1,81		SG32	SMB	71B4		
	9.4	229	142,69	2,00		SG32	SMB	71B4		
	11	202	125,42	2,26		SG32	SMB	71B4		
	12	188	109,38	2,43		SG32	SMR	71B4	26	522
	13	174	100,88	2,63		SG32	SMR	71B4		
	14	164	93,33	2,79		SG32	SMR	71B4		
	17	137	76,73	3,34		SG32	SMR	71B4		
	19	125	68,75	3,68		SG32	SMR	71B4		
	23	104	58,71	4,29		SG32	SMR	71B4		
	14	202	95,33	2,42		SG32	SMB	71B4		
	16	179	84,93	2,71		SG32	SMB	71B4		
	18	161	76,42	2,99		SG32	SMB	71B4		
	19	152	70,78	3,13		SG32	SMB	71B4		
	21	140	64,67	3,40		SG32	SMB	71B4		
	24	124	55,15	3,78		SG32	SMB	71B4		
	27	110	49,83	4,21		SG32	SMB	71B4		
	11	209	119,85	1,06		SG22	SMB	71B4	18	520



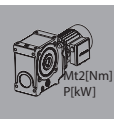
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
0,37	13	179	104,50	1,24	SG22	SMB	71B4		
	15	158	90,25	1,41	SG22	SMR	71B4		
	21	118	64,60	1,86	SG22	SMR	71B4		
	26	96	51,57	2,18	SG22	SMR	71B4		
	35	74	38,00	2,63	SG22	SMR	71B4		
	14	202	93,63	1,34	SG22	SMB	71B4		
	16	177	83,20	1,52	SG22	SMB	71B4		
	17	168	76,61	1,59	SG22	SMB	71B4		
	19	151	69,33	1,76	SG22	SMB	71B4		
	22	132	61,54	2,00	SG22	SMB	71B4		
	25	117	53,33	2,22	SG22	SMB	71B4		
	28	106	48,00	2,43	SG22	SMB	71B4		
	31	96	43,49	2,66	SG22	SMB	71B4	18	520
	34	88	39,62	2,86	SG22	SMB	71B4		
	38	79	35,56	3,16	SG22	SMB	71B4		
	40	75	33,64	3,30	SG22	SMB	71B4		
	46	66	29,33	3,68	SG22	SMB	71B4		
	53	58	25,33	4,10	SG22	SMR	71B4		
	59	52	22,59	4,49	SG22	SMR	71B4		
	67	46	20,15	4,93	SG22	SMR	71B4		
	74	42	18,13	5,33	SG22	SMR	71B4		
	80	39	16,82	5,74	SG22	SMR	71B4		
	93	34	14,48	6,30	SG22	SMR	71B4		
	111	28	12,04	7,13	SG22	SMR	71B4		
	126	25	10,67	7,81	SG22	SMR	71B4		
	15	158	88,31	0,96	SG12	SMB	71B4		
	17	141	77,00	1,06	SG12	SMB	71B4		
	20	122	66,50	1,21	SG12	SMR	71B4		
	23	108	59,29	1,34	SG12	SMR	71B4		
	25	100	52,89	1,42	SG12	SMR	71B4		
	28	91	47,60	1,53	SG12	SMR	71B4		
	30	85	44,15	1,62	SG12	SMR	71B4		
	35	74	38,00	1,80	SG12	SMR	71B4		
	42	62	31,61	2,04	SG12	SMR	71B4		
	48	55	28,00	2,23	SG12	SMR	71B4		
	22	133	59,80	1,02	SG12	SMB	71B4		
	24	122	55,06	1,11	SG12	SMB	71B4	14	518
	27	110	49,83	1,23	SG12	SMB	71B4		
	39	78	34,50	1,68	SG12	SMB	71B4		
	43	71	31,26	1,84	SG12	SMB	71B4		
	47	65	28,48	2,00	SG12	SMB	71B4		
	52	59	25,56	2,15	SG12	SMB	71B4		
	55	56	24,18	2,27	SG12	SMB	71B4		
	64	49	21,08	2,55	SG12	SMB	71B4		
	74	42	18,21	2,90	SG12	SMR	71B4		
	83	37	16,24	3,20	SG12	SMR	71B4		
	93	34	14,48	3,46	SG12	SMR	71B4		
	103	31	13,03	3,77	SG12	SMR	71B4		



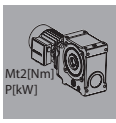
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
0,37	111	29	12,09	3,87		SG12	SMR	71B4		
	129	25	10,40	4,38		SG12	SMR	71B4	14	518
	155	21	8,66	5,01		SG12	SMR	71B4		
	175	18	7,67	5,50		SG12	SMR	71B4		
0,55	2.8	1126	496,04	1,00		SG63	SMR	80A4		
	3.3	987	412,66	1,15		SG63	SMR	80A4	54	536
	3.8	871	365,50	1,30		SG63	SMR	80A4		
	2.7	1167	500,36	0,97		SG62	SMB	80A4		
	3.0	1068	455,08	1,06		SG62	SMB	80A4		
	3.2	1001	423,38	1,13		SG62	SMB	80A4		
	3.8	871	363,55	1,30		SG62	SMB	80A4		
	4.2	788	329,67	1,44		SG62	SMB	80A4		
	4.5	747	307,62	1,51		SG62	SMB	80A4		
	4.9	697	279,50	1,62		SG62	SMB	80A4		
	5.4	642	254,42	1,76		SG62	SMB	80A4		
	5.9	596	231,54	1,90		SG62	SMB	80A4		
	6.7	533	204,25	2,12		SG62	SMB	80A4	50	534
	7.4	490	185,44	2,31		SG62	SMR	80A4		
	8.1	447	169,47	2,53		SG62	SMR	80A4		
	8.6	428	160,06	2,65		SG62	SMR	80A4		
	9.8	381	139,75	2,97		SG62	SMR	80A4		
	11	344	124,22	3,29		SG62	SMR	80A4		
	11	406	120,24	3,08		SG62	SMB	80A4		
	13	343	109,36	3,61		SG62	SMB	80A4		
	14	323	101,74	3,83		SG62	SMB	80A4		
	16	282	87,36	4,32		SG62	SMB	80A4		
	3.2	968	426,82	1,00		SG53	SMR	80A4		
	3.9	822	355,08	1,18		SG53	SMR	80A4	46	532
	4.4	740	314,50	1,31		SG53	SMR	80A4		
	3.2	968	430,55	1,00		SG52	SMB	80A4		
	3.5	900	391,58	1,08		SG52	SMB	80A4		
	3.8	843	364,31	1,15		SG52	SMB	80A4		
	4.4	740	312,82	1,31		SG52	SMB	80A4		
	4.8	689	283,67	1,41		SG52	SMB	80A4		
	5.2	646	264,69	1,51		SG52	SMB	80A4		
	5.7	599	240,50	1,62		SG52	SMB	80A4		
	6.3	550	218,92	1,77		SG52	SMB	80A4		
	6.9	502	199,23	1,94		SG52	SMB	80A4		
	7.8	458	175,75	2,12		SG52	SMB	80A4	43	530
	8.6	415	159,56	2,34		SG52	SMR	80A4		
	9.4	386	145,82	2,52		SG52	SMR	80A4		
	10.0	368	137,72	2,65		SG52	SMR	80A4		
	11	334	120,25	2,91		SG52	SMR	80A4		
	13	287	106,89	3,35		SG52	SMR	80A4		
	13	339	104,73	2,79		SG52	SMB	80A4		
	14	319	95,25	2,95		SG52	SMB	80A4		
	16	279	88,62	3,36		SG52	SMB	80A4		
	18	251	76,09	3,69		SG52	SMB	80A4		



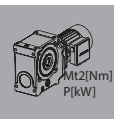
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
0,55	20	226	69,00	4,07	SG52	SMB	80A4	43	530
	21	218	64,38	4,20	SG52	SMB	80A4		
	5.5	554	251,32	1,10	SG43	SMR	80A4	34	528
	6.2	500	222,60	1,21	SG43	SMR	80A4		
	5.1	587	267,27	1,03	SG42	SMB	80A4		
	5.7	534	241,50	1,14	SG42	SMB	80A4		
	6.3	492	219,69	1,23	SG42	SMB	80A4		
	6.8	463	201,00	1,31	SG42	SMB	80A4		
	7.3	439	189,00	1,38	SG42	SMB	80A4		
	8.0	401	171,23	1,52	SG42	SMB	80A4		
	9.1	364	150,50	1,67	SG42	SMB	80A4		
	10	336	131,25	1,81	SG42	SMR	80A4		
	11	306	121,06	1,99	SG42	SMR	80A4		
	12	285	112,00	2,13	SG42	SMR	80A4		
	14	248	96,60	2,45	SG42	SMR	80A4		
	15	231	92,08	2,63	SG42	SMR	80A4	32	526
	17	207	82,50	2,93	SG42	SMR	80A4		
	20	179	70,45	3,40	SG42	SMR	80A4		
	23	155	60,53	3,91	SG42	SMR	80A4		
	26	139	52,22	4,35	SG42	SMR	80A4		
	14	304	101,27	2,51	SG42	SMB	80A4		
	15	287	91,12	2,63	SG42	SMB	80A4		
	16	269	84,39	2,79	SG42	SMB	80A4		
	18	242	77,10	3,08	SG42	SMB	80A4		
	21	210	65,76	3,50	SG42	SMB	80A4		
	23	192	59,42	3,79	SG42	SMB	80A4		
	25	179	54,05	4,03	SG42	SMB	80A4		
	28	159	49,45	4,46	SG42	SMB	80A4		
	6.6	462	209,44	0,99	SG33	SMR	80A4	30	524
	7.4	419	185,50	1,09	SG33	SMR	80A4		
	6.8	448	201,25	1,02	SG32	SMB	80A4		
	7.5	413	183,08	1,11	SG32	SMB	80A4		
	8.2	384	167,50	1,19	SG32	SMB	80A4		
	8.7	368	157,50	1,24	SG32	SMB	80A4		
	9.6	334	142,69	1,37	SG32	SMB	80A4		
	11	301	125,42	1,52	SG32	SMB	80A4		
	13	259	109,38	1,77	SG32	SMR	80A4		
	14	240	100,88	1,91	SG32	SMR	80A4		
	15	228	93,33	2,01	SG32	SMR	80A4	28	522
	17	204	80,50	2,25	SG32	SMR	80A4		
	18	193	76,73	2,38	SG32	SMR	80A4		
	20	176	68,75	2,60	SG32	SMR	80A4		
	23	155	58,71	2,88	SG32	SMR	80A4		
	27	132	50,44	3,24	SG32	SMR	80A4		
	32	113	43,51	3,59	SG32	SMR	80A4		
	38	97	35,85	3,92	SG32	SMR	80A4		
	16	266	84,93	1,82	SG32	SMB	80A4		
	18	239	76,42	2,01	SG32	SMB	80A4		



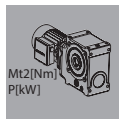
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
0,55	19	227	70,78	2,11	SG32	SMB	80A4		
	21	208	64,67	2,29	SG32	SMB	80A4		
	25	176	55,15	2,65	SG32	SMB	80A4		
	28	158	49,83	2,94	SG32	SMB	80A4		
	30	149	45,33	3,08	SG32	SMB	80A4	28	522
	33	135	41,48	3,35	SG32	SMB	80A4		
	35	128	39,00	3,52	SG32	SMB	80A4		
	39	116	35,33	3,82	SG32	SMB	80A4		
	44	103	31,06	4,23	SG32	SMB	80A4		
	19	191	71,78	1,16	SG22	SMR	80A4		
	21	175	64,60	1,25	SG22	SMR	80A4		
	23	160	59,92	1,35	SG22	SMR	80A4		
	27	138	51,57	1,52	SG22	SMR	80A4		
	36	107	38,00	1,82	SG22	SMR	80A4		
	17	247	83,20	1,08	SG22	SMB	80A4		
	18	236	76,61	1,13	SG22	SMB	80A4		
	20	213	69,33	1,25	SG22	SMB	80A4		
	22	196	61,54	1,34	SG22	SMB	80A4		
	26	168	53,33	1,55	SG22	SMB	80A4		
	29	152	48,00	1,70	SG22	SMB	80A4	20	520
	32	138	43,49	1,85	SG22	SMB	80A4		
	35	128	39,62	1,98	SG22	SMB	80A4		
	39	114	35,56	2,18	SG22	SMB	80A4		
	41	109	33,64	2,28	SG22	SMB	80A4		
	47	96	29,33	2,53	SG22	SMB	80A4		
	54	85	25,33	2,81	SG22	SMR	80A4		
	61	75	22,59	3,12	SG22	SMR	80A4		
	68	68	20,15	3,37	SG22	SMR	80A4		
	76	61	18,13	3,68	SG22	SMR	80A4		
	82	56	16,82	3,96	SG22	SMR	80A4		
	95	49	14,48	4,33	SG22	SMR	80A4		
	36	107	38,00	1,25	SG12	SMR	80A4		
	36	124	38,33	1,06	SG12	SMB	80A4		
	40	113	34,50	1,16	SG12	SMB	80A4		
	44	103	31,26	1,27	SG12	SMB	80A4		
	48	94	28,48	1,37	SG12	SMB	80A4		
	54	85	25,56	1,50	SG12	SMB	80A4		
	57	80	24,18	1,58	SG12	SMB	80A4		
	65	71	21,08	1,74	SG12	SMB	80A4	16	518
	76	61	18,21	2,01	SG12	SMR	80A4		
	85	54	16,24	2,21	SG12	SMR	80A4		
	95	49	14,48	2,38	SG12	SMR	80A4		
	105	45	13,03	2,58	SG12	SMR	80A4		
	114	41	12,09	2,68	SG12	SMR	80A4		
	132	36	10,40	3,02	SG12	SMR	80A4		
	159	30	8,66	3,46	SG12	SMR	80A4		
	179	27	7,67	3,78	SG12	SMR	80A4		
0,75	3.8	1187	365,50	0,95	SG63	SMR	80B4	55	536



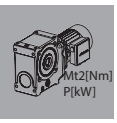
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
0,75	3.8	1187	363,55	0,95	SG62	SMB	80B4		
	4.2	1074	329,67	1,05	SG62	SMB	80B4		
	4.5	1019	307,62	1,11	SG62	SMB	80B4		
	4.9	950	279,50	1,19	SG62	SMB	80B4		
	5.4	875	254,42	1,29	SG62	SMB	80B4		
	5.9	813	231,54	1,39	SG62	SMB	80B4		
	6.7	727	204,25	1,56	SG62	SMB	80B4		
	7.4	668	185,44	1,69	SG62	SMR	80B4		
	8.1	610	169,47	1,85	SG62	SMR	80B4		
	8.6	583	160,06	1,94	SG62	SMR	80B4	51	534
	9.8	519	139,75	2,18	SG62	SMR	80B4		
	11	469	124,22	2,41	SG62	SMR	80B4		
	11	553	120,24	2,26	SG62	SMB	80B4		
	13	468	109,36	2,65	SG62	SMB	80B4		
	14	440	101,74	2,81	SG62	SMB	80B4		
	16	385	87,36	3,17	SG62	SMB	80B4		
	17	367	79,22	3,30	SG62	SMB	80B4		
	19	328	73,92	3,67	SG62	SMB	80B4		
	20	315	67,17	3,79	SG62	SMB	80B4		
	22	287	61,14	4,12	SG62	SMB	80B4		
	4.4	1009	314,50	0,96	SG53	SMR	80B4	47	532
	4.4	1009	312,82	0,96	SG52	SMB	80B4		
	4.8	940	283,67	1,04	SG52	SMB	80B4		
	5.2	882	264,69	1,10	SG52	SMB	80B4		
	5.7	817	240,50	1,19	SG52	SMB	80B4		
	6.3	750	218,92	1,30	SG52	SMB	80B4		
	6.9	685	199,23	1,42	SG52	SMB	80B4		
	7.8	624	175,75	1,56	SG52	SMB	80B4		
	8.6	566	159,56	1,72	SG52	SMR	80B4		
	9.4	526	145,82	1,85	SG52	SMR	80B4		
	10.0	501	137,72	1,94	SG52	SMR	80B4		
	11	456	120,25	2,13	SG52	SMR	80B4	44	530
	13	391	106,89	2,46	SG52	SMR	80B4		
	13	463	104,73	2,05	SG52	SMB	80B4		
	14	435	95,25	2,17	SG52	SMB	80B4		
	16	381	88,62	2,47	SG52	SMB	80B4		
	18	342	76,09	2,71	SG52	SMB	80B4		
	20	308	69,00	2,99	SG52	SMB	80B4		
	21	297	64,38	3,08	SG52	SMB	80B4		
	24	260	58,50	3,50	SG52	SMB	80B4		
	26	242	53,25	3,70	SG52	SMB	80B4		
	28	225	48,46	3,94	SG52	SMB	80B4		
	32	199	42,75	4,38	SG52	SMB	80B4		
	6.8	632	201,00	0,96	SG42	SMB	80B4		
	7.3	599	189,00	1,01	SG42	SMB	80B4		
	8.0	546	171,23	1,11	SG42	SMB	80B4	33	526
	9.1	496	150,50	1,22	SG42	SMB	80B4		
	10	458	131,25	1,32	SG42	SMR	80B4		



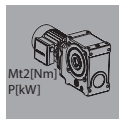
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
0,75	11	417	121,06	1,46		SG42	SMR	80B4		
	12	388	112,00	1,56		SG42	SMR	80B4		
	15	315	92,08	1,93		SG42	SMR	80B4		
	17	282	82,50	2,15		SG42	SMR	80B4		
	20	244	70,45	2,49		SG42	SMR	80B4		
	23	212	60,53	2,87		SG42	SMR	80B4		
	26	190	52,22	3,19		SG42	SMR	80B4		
	32	157	43,02	3,87		SG42	SMR	80B4		
	14	414	101,27	1,84		SG42	SMB	80B4	33	526
	15	392	91,12	1,93		SG42	SMB	80B4		
	16	367	84,39	2,05		SG42	SMB	80B4		
	18	330	77,10	2,26		SG42	SMB	80B4		
	21	287	65,76	2,57		SG42	SMB	80B4		
	25	244	54,05	2,95		SG42	SMB	80B4		
	28	217	49,45	3,27		SG42	SMB	80B4		
	30	203	46,50	3,47		SG42	SMB	80B4		
	33	187	42,13	3,73		SG42	SMB	80B4		
	37	166	37,03	4,09		SG42	SMB	80B4		
	9.6	455	142,69	1,01		SG32	SMB	80B4		
	11	410	125,42	1,12		SG32	SMB	80B4		
	13	353	109,38	1,30		SG32	SMR	80B4		
	14	327	100,88	1,40		SG32	SMR	80B4		
	15	310	93,33	1,48		SG32	SMR	80B4		
	17	278	80,50	1,65		SG32	SMR	80B4		
	18	263	76,73	1,74		SG32	SMR	80B4		
	20	240	68,75	1,91		SG32	SMR	80B4		
	23	212	58,71	2,12		SG32	SMR	80B4		
	27	180	50,44	2,37		SG32	SMR	80B4		
	32	154	43,51	2,64		SG32	SMR	80B4		
	38	132	35,85	2,87		SG32	SMR	80B4		
	16	363	84,93	1,34		SG32	SMB	80B4		
	19	309	70,78	1,55		SG32	SMB	80B4	29	522
	21	283	64,67	1,68		SG32	SMB	80B4		
	25	241	55,15	1,94		SG32	SMB	80B4		
	28	215	49,83	2,15		SG32	SMB	80B4		
	30	203	45,33	2,26		SG32	SMB	80B4		
	33	184	41,48	2,46		SG32	SMB	80B4		
	35	174	39,00	2,58		SG32	SMB	80B4		
	39	158	35,33	2,80		SG32	SMB	80B4		
	44	140	31,06	3,10		SG32	SMB	80B4		
	51	122	27,08	3,46		SG32	SMR	80B4		
	55	113	24,98	3,68		SG32	SMR	80B4		
	59	107	23,11	3,84		SG32	SMR	80B4		
	69	91	19,93	4,35		SG32	SMR	80B4		
	72	88	19,00	4,48		SG32	SMR	80B4		
	23	218	59,92	0,99		SG22	SMR	80B4		
	27	188	51,57	1,11		SG22	SMR	80B4	21	520
	36	145	38,00	1,34		SG22	SMR	80B4		



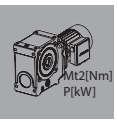
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
0,75	22	267	61,54	0,99		SG22	SMB	80B4		
	26	229	53,33	1,14		SG22	SMB	80B4		
	29	207	48,00	1,24		SG22	SMB	80B4		
	32	188	43,49	1,36		SG22	SMB	80B4		
	35	174	39,62	1,45		SG22	SMB	80B4		
	39	156	35,56	1,60		SG22	SMB	80B4		
	41	148	33,64	1,67		SG22	SMB	80B4		
	47	131	29,33	1,85		SG22	SMB	80B4	21	520
	54	115	25,33	2,06		SG22	SMR	80B4		
	61	102	22,59	2,29		SG22	SMR	80B4		
	68	93	20,15	2,47		SG22	SMR	80B4		
	76	83	18,13	2,70		SG22	SMR	80B4		
	82	77	16,82	2,90		SG22	SMR	80B4		
	95	67	14,48	3,17		SG22	SMR	80B4		
	114	56	12,04	3,61		SG22	SMR	80B4		
	129	49	10,67	3,95		SG22	SMR	80B4		
	48	128	28,48	1,01		SG12	SMB	80B4		
	54	115	25,56	1,10		SG12	SMB	80B4		
	57	109	24,18	1,16		SG12	SMB	80B4		
	65	97	21,08	1,28		SG12	SMB	80B4		
	76	83	18,21	1,47		SG12	SMR	80B4		
	85	74	16,24	1,62		SG12	SMR	80B4	17	518
	95	67	14,48	1,74		SG12	SMR	80B4		
	105	61	13,03	1,89		SG12	SMR	80B4		
	114	57	12,09	1,96		SG12	SMR	80B4		
	132	49	10,40	2,21		SG12	SMR	80B4		
	159	41	8,66	2,54		SG12	SMR	80B4		
	179	36	7,67	2,77		SG12	SMR	80B4		
1,10	6.1	1154	231,54	0,98		SG62	SMB	90S4		
	6.9	1035	204,25	1,09		SG62	SMB	90S4		
	7.6	954	185,44	1,19		SG62	SMB	90S4		
	8.3	873	169,47	1,30		SG62	SMB	90S4		
	8.8	836	160,06	1,35		SG62	SMR	90S4		
	10	746	139,75	1,52		SG62	SMR	90S4		
	11	688	124,22	1,64		SG62	SMR	90S4		
	12	630	113,16	1,79		SG62	SMR	90S4		
	14	548	98,29	2,06		SG62	SMR	90S4		
	16	486	86,00	2,33		SG62	SMR	90S4		
	13	687	109,36	1,81		SG62	SMB	90S4	55	534
	18	508	79,22	2,39		SG62	SMB	90S4		
	19	481	73,92	2,50		SG62	SMB	90S4		
	21	440	67,17	2,71		SG62	SMB	90S4		
	23	402	61,14	2,94		SG62	SMB	90S4		
	25	370	55,64	3,16		SG62	SMB	90S4		
	29	322	49,08	3,57		SG62	SMB	90S4		
	32	292	44,56	3,88		SG62	SMB	90S4		
	35	267	40,73	4,19		SG62	SMB	90S4		
	37	256	38,46	4,34		SG62	SMR	90S4		



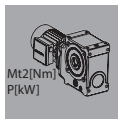
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
1,10	7.1	977	199,23	1,00		SG52	SMB	90S4		
	8.0	893	175,75	1,09		SG52	SMB	90S4		
	8.8	812	159,56	1,20		SG52	SMB	90S4		
	9.7	747	145,82	1,30		SG52	SMB	90S4		
	10	735	137,72	1,32		SG52	SMR	90S4		
	12	613	120,25	1,59		SG52	SMR	90S4		
	13	574	106,89	1,67		SG52	SMR	90S4		
	14	540	97,37	1,75		SG52	SMR	90S4		
	17	451	84,57	2,03		SG52	SMR	90S4		
	19	404	74,00	2,20		SG52	SMR	90S4		
	15	595	95,25	1,58		SG52	SMB	90S4	48	530
	16	558	88,62	1,68		SG52	SMB	90S4		
	20	452	69,00	2,04		SG52	SMB	90S4		
	22	415	64,38	2,20		SG52	SMB	90S4		
	24	381	58,50	2,38		SG52	SMB	90S4		
	26	356	53,25	2,52		SG52	SMB	90S4		
	29	319	48,46	2,78		SG52	SMB	90S4		
	33	283	42,75	3,08		SG52	SMB	90S4		
	36	260	38,81	3,32		SG52	SMB	90S4		
	40	234	35,47	3,64		SG52	SMB	90S4		
	42	223	33,50	3,78		SG52	SMR	90S4		
	48	197	29,25	4,17		SG52	SMR	90S4		
	11	611	131,25	0,99		SG42	SMB	90S4		
	12	560	121,06	1,08		SG42	SMB	90S4		
	13	525	112,00	1,16		SG42	SMR	90S4		
	15	462	96,60	1,31		SG42	SMR	90S4		
	15	462	92,08	1,31		SG42	SMR	90S4		
	20	357	70,45	1,70		SG42	SMR	90S4		
	23	311	60,53	1,95		SG42	SMR	90S4		
	27	268	52,22	2,26		SG42	SMR	90S4		
	33	223	43,02	2,72		SG42	SMR	90S4		
	17	507	84,39	1,48		SG42	SMB	90S4		
	18	484	77,10	1,54		SG42	SMB	90S4		
	21	420	65,76	1,75		SG42	SMB	90S4	37	526
	24	368	59,42	1,98		SG42	SMB	90S4		
	26	343	54,05	2,09		SG42	SMB	90S4		
	29	308	49,45	2,31		SG42	SMB	90S4		
	30	298	46,50	2,37		SG42	SMB	90S4		
	38	238	37,03	2,86		SG42	SMB	90S4		
	44	208	32,29	3,20		SG42	SMB	90S4		
	47	194	29,78	3,37		SG42	SMB	90S4		
	51	179	27,56	3,60		SG42	SMR	90S4		
	59	157	23,77	3,98		SG42	SMR	90S4		
	62	149	22,65	4,13		SG42	SMR	90S4		
	69	134	20,30	4,47		SG42	SMR	90S4		
	14	480	100,88	0,95		SG32	SMB	90S4		
	15	455	93,33	1,01		SG32	SMR	90S4	33	522
	18	385	80,50	1,19		SG32	SMR	90S4		



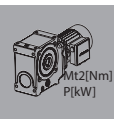
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
1,10	18	385	76,73	1,19	SG32	SMR	90S4		
	21	335	68,75	1,37	SG32	SMR	90S4		
	24	298	58,71	1,51	SG32	SMR	90S4		
	28	255	50,44	1,68	SG32	SMR	90S4		
	32	227	43,51	1,80	SG32	SMR	90S4		
	39	189	35,85	2,01	SG32	SMR	90S4		
	20	431	70,78	1,11	SG32	SMB	90S4		
	22	396	64,67	1,20	SG32	SMB	90S4		
	26	339	55,15	1,38	SG32	SMB	90S4		
	31	288	45,33	1,59	SG32	SMB	90S4		
	34	263	41,48	1,72	SG32	SMB	90S4	33	522
	36	248	39,00	1,81	SG32	SMB	90S4		
	40	226	35,33	1,96	SG32	SMB	90S4		
	45	201	31,06	2,16	SG32	SMB	90S4		
	52	176	27,08	2,41	SG32	SMB	90S4		
	56	163	24,98	2,56	SG32	SMB	90S4		
	61	152	23,11	2,71	SG32	SMR	90S4		
	71	130	19,93	3,05	SG32	SMR	90S4		
	74	125	19,00	3,14	SG32	SMR	90S4		
	83	111	17,02	3,42	SG32	SMR	90S4		
	97	96	14,54	3,79	SG32	SMR	90S4		
	113	83	12,49	4,21	SG32	SMR	90S4		
	36	248	39,62	1,02	SG22	SMB	90S4		
	40	223	35,56	1,12	SG22	SMB	90S4		
	42	213	33,64	1,17	SG22	SMB	90S4		
	48	188	29,33	1,29	SG22	SMB	90S4		
	56	163	25,33	1,46	SG22	SMB	90S4		
	62	147	22,59	1,59	SG22	SMB	90S4	25	520
	70	132	20,15	1,73	SG22	SMR	90S4		
	78	119	18,13	1,89	SG22	SMR	90S4		
	84	110	16,82	2,03	SG22	SMR	90S4		
	97	96	14,48	2,21	SG22	SMR	90S4		
	117	80	12,04	2,53	SG22	SMR	90S4		
	132	71	10,67	2,75	SG22	SMR	90S4		
	77	120	18,21	1,02	SG12	SMB	90S4		
	87	106	16,24	1,13	SG12	SMB	90S4		
	97	96	14,48	1,21	SG12	SMR	90S4		
	108	87	13,03	1,33	SG12	SMR	90S4	21	518
	117	81	12,09	1,37	SG12	SMR	90S4		
	136	70	10,40	1,55	SG12	SMR	90S4		
	163	59	8,66	1,77	SG12	SMR	90S4		
	184	52	7,67	1,94	SG12	SMR	90S4		
1,50	8.8	1139	160,06	0,99	SG62	SMR	90L4		
	10	1017	139,75	1,11	SG62	SMR	90L4		
	11	938	124,22	1,21	SG62	SMR	90L4	58	534
	12	860	113,16	1,32	SG62	SMR	90L4		
	14	747	98,29	1,51	SG62	SMR	90L4		
	16	663	86,00	1,71	SG62	SMR	90L4		



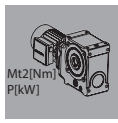
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
1,50	13	937	109,36	1,32	SG62	SMB	90L4		
	14	880	101,74	1,40	SG62	SMB	90L4		
	16	770	87,36	1,59	SG62	SMB	90L4		
	18	692	79,22	1,75	SG62	SMB	90L4		
	19	656	73,92	1,84	SG62	SMB	90L4		
	21	600	67,17	1,99	SG62	SMB	90L4		
	23	548	61,14	2,15	SG62	SMB	90L4		
	25	504	55,64	2,32	SG62	SMB	90L4	58	534
	29	440	49,08	2,62	SG62	SMB	90L4		
	32	398	44,56	2,85	SG62	SMB	90L4		
	34	375	40,73	2,98	SG62	SMB	90L4		
	37	348	38,46	3,18	SG62	SMR	90L4		
	42	307	33,58	3,53	SG62	SMR	90L4		
	47	274	29,85	3,86	SG62	SMR	90L4		
	52	251	27,19	4,14	SG62	SMR	90L4		
	10	1003	137,72	0,97	SG52	SMR	90L4		
	12	836	120,25	1,16	SG52	SMR	90L4		
	13	782	106,89	1,23	SG52	SMR	90L4		
	14	737	97,37	1,28	SG52	SMR	90L4		
	17	615	84,57	1,49	SG52	SMR	90L4		
	19	550	74,00	1,61	SG52	SMR	90L4		
	15	812	95,25	1,16	SG52	SMB	90L4		
	16	761	88,62	1,23	SG52	SMB	90L4		
	18	684	76,09	1,35	SG52	SMB	90L4		
	20	616	69,00	1,49	SG52	SMB	90L4		
	22	566	64,38	1,61	SG52	SMB	90L4		
	24	519	58,50	1,75	SG52	SMB	90L4	51	530
	26	485	53,25	1,85	SG52	SMB	90L4		
	29	435	48,46	2,04	SG52	SMB	90L4		
	33	386	42,75	2,26	SG52	SMB	90L4		
	36	354	38,81	2,43	SG52	SMB	90L4		
	40	319	35,47	2,67	SG52	SMB	90L4		
	42	304	33,50	2,77	SG52	SMR	90L4		
	48	269	29,25	3,06	SG52	SMR	90L4		
	54	239	26,00	3,37	SG52	SMR	90L4		
	59	219	23,68	3,61	SG52	SMR	90L4		
	68	192	20,57	3,98	SG52	SMR	90L4		
	78	167	18,00	4,42	SG52	SMR	90L4		
	15	630	92,08	0,96	SG42	SMR	90L4		
	17	565	82,50	1,08	SG42	SMR	90L4		
	20	487	70,45	1,25	SG42	SMR	90L4		
	23	424	60,53	1,43	SG42	SMR	90L4		
	27	366	52,22	1,66	SG42	SMR	90L4	40	526
	33	304	43,02	2,00	SG42	SMR	90L4		
	17	691	84,39	1,09	SG42	SMB	90L4		
	18	661	77,10	1,13	SG42	SMB	90L4		
	21	573	65,76	1,28	SG42	SMB	90L4		
	24	501	59,42	1,45	SG42	SMB	90L4		



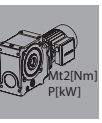
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
1,50	26	468	54,05	1,54	SG42	SMB	90L4		
	28	435	49,45	1,63	SG42	SMB	90L4		
	30	406	46,50	1,74	SG42	SMB	90L4		
	33	373	42,13	1,86	SG42	SMB	90L4		
	38	324	37,03	2,10	SG42	SMB	90L4		
	44	283	32,29	2,35	SG42	SMB	90L4		
	47	265	29,78	2,47	SG42	SMB	90L4	40	526
	51	244	27,56	2,64	SG42	SMR	90L4		
	59	214	23,77	2,92	SG42	SMR	90L4		
	62	203	22,65	3,03	SG42	SMR	90L4		
	69	183	20,30	3,28	SG42	SMR	90L4		
	81	157	17,33	3,64	SG42	SMR	90L4		
	94	136	14,89	4,03	SG42	SMR	90L4		
	109	117	12,85	4,44	SG42	SMR	90L4		
	25	481	55,15	0,97	SG32	SMB	90L4		
	28	430	49,83	1,08	SG32	SMB	90L4		
	31	393	45,33	1,17	SG32	SMB	90L4		
	34	358	41,48	1,26	SG32	SMB	90L4		
	36	338	39,00	1,33	SG32	SMB	90L4		
	40	308	35,33	1,44	SG32	SMB	90L4		
	45	274	31,06	1,59	SG32	SMB	90L4		
	52	240	27,08	1,76	SG32	SMB	90L4		
	56	223	24,98	1,87	SG32	SMB	90L4	36	522
	61	207	23,11	1,98	SG32	SMR	90L4		
	70	180	19,93	2,20	SG32	SMR	90L4		
	74	170	19,00	2,30	SG32	SMR	90L4		
	83	152	17,02	2,51	SG32	SMR	90L4		
	97	131	14,54	2,78	SG32	SMR	90L4		
	112	114	12,49	3,06	SG32	SMR	90L4		
	130	98	10,77	3,36	SG32	SMR	90L4		
	158	82	8,88	3,75	SG32	SMR	90L4		
	55	227	25,33	1,05	SG22	SMB	90L4		
	62	201	22,59	1,16	SG22	SMB	90L4		
	70	180	20,15	1,27	SG22	SMR	90L4		
	77	164	18,13	1,37	SG22	SMR	90L4	27	520
	84	150	16,82	1,49	SG22	SMR	90L4		
	97	131	14,48	1,62	SG22	SMR	90L4		
	117	109	12,04	1,85	SG22	SMR	90L4		
	132	97	10,67	2,02	SG22	SMR	90L4		
2,20	14	1096	98,29	1,03	SG62	SMR	100L4		
	16	972	86,00	1,16	SG62	SMR	100L4		
	20	788	71,12	1,39	SG62	SMR	100L4		
	24	665	59,31	1,55	SG62	SMR	100L4		
	28	570	49,72	1,70	SG62	SMR	100L4	63	534
	32	506	44,23	1,84	SG62	SMR	100L4		
	18	1015	79,22	1,19	SG62	SMB	100L4		
	19	962	73,92	1,25	SG62	SMB	100L4		
	21	880	67,17	1,36	SG62	SMB	100L4		



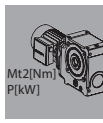
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B					m [kg]	
2,20	23	804	61,14	1,47		SG62	SMB	100L4		
	25	740	55,64	1,58		SG62	SMB	100L4		
	29	645	49,08	1,78		SG62	SMB	100L4		
	32	584	44,56	1,94		SG62	SMB	100L4		
	35	534	40,73	2,09		SG62	SMB	100L4		
	37	511	38,46	2,17		SG62	SMB	100L4		
	42	450	33,58	2,41		SG62	SMR	100L4	63	534
	47	402	29,85	2,63		SG62	SMR	100L4		
	52	368	27,19	2,82		SG62	SMR	100L4		
	60	319	23,62	3,15		SG62	SMR	100L4		
	68	281	20,67	3,46		SG62	SMR	100L4		
	83	233	17,09	3,95		SG62	SMR	100L4		
	99	195	14,25	4,44		SG62	SMR	100L4		
	17	902	84,57	1,01		SG52	SMR	100L4		
	19	807	74,00	1,10		SG52	SMR	100L4		
	23	676	61,19	1,25		SG52	SMR	100L4		
	28	563	51,03	1,42		SG52	SMR	100L4		
	33	484	42,78	1,55		SG52	SMR	100L4		
	37	432	38,06	1,66		SG52	SMR	100L4		
	20	903	69,00	1,02		SG52	SMB	100L4		
	22	831	64,38	1,10		SG52	SMB	100L4		
	24	762	58,50	1,19		SG52	SMB	100L4		
	26	711	53,25	1,26		SG52	SMB	100L4		
	29	638	48,46	1,39		SG52	SMB	100L4		
	33	567	42,75	1,54		SG52	SMB	100L4	56	530
	36	519	38,81	1,66		SG52	SMB	100L4		
	40	467	35,47	1,82		SG52	SMB	100L4		
	42	445	33,50	1,89		SG52	SMB	100L4		
	48	394	29,25	2,09		SG52	SMR	100L4		
	54	350	26,00	2,30		SG52	SMR	100L4		
	60	315	23,68	2,50		SG52	SMR	100L4		
	69	277	20,57	2,75		SG52	SMR	100L4		
	78	245	18,00	3,01		SG52	SMR	100L4		
	95	201	14,88	3,47		SG52	SMR	100L4		
	114	170	12,41	3,88		SG52	SMR	100L4		
	135	143	10,41	4,31		SG52	SMR	100L4		
	24	735	59,42	0,99		SG42	SMB	100L4		
	26	687	54,05	1,05		SG42	SMB	100L4		
	29	616	49,45	1,15		SG42	SMB	100L4		
	30	595	46,50	1,18		SG42	SMB	100L4		
	33	548	42,13	1,27		SG42	SMB	100L4		
	38	475	37,03	1,43		SG42	SMB	100L4	45	526
	44	415	32,29	1,60		SG42	SMB	100L4		
	47	389	29,78	1,68		SG42	SMB	100L4		
	51	358	27,56	1,80		SG42	SMB	100L4		
	59	313	23,77	1,99		SG42	SMR	100L4		
	62	298	22,65	2,07		SG42	SMR	100L4		
	69	268	20,30	2,24		SG42	SMR	100L4		



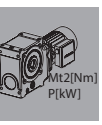
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
2,20	81	231	17,33	2,48		SG42	SMR	100L4	45	526
	95	197	14,89	2,77		SG42	SMR	100L4		
	110	170	12,85	3,05		SG42	SMR	100L4		
	133	142	10,59	3,48		SG42	SMR	100L4		
	40	452	35,33	0,98		SG32	SMB	100L4	41	522
	45	402	31,06	1,08		SG32	SMB	100L4		
	52	352	27,08	1,20		SG32	SMB	100L4		
	56	326	24,98	1,28		SG32	SMB	100L4		
	61	303	23,11	1,35		SG32	SMB	100L4		
	71	260	19,93	1,52		SG32	SMR	100L4		
	74	250	19,00	1,57		SG32	SMR	100L4		
	83	223	17,02	1,71		SG32	SMR	100L4		
	97	193	14,54	1,89		SG32	SMR	100L4		
	113	165	12,49	2,10		SG32	SMR	100L4		
	131	143	10,77	2,31		SG32	SMR	100L4		
	159	119	8,88	2,57		SG32	SMR	100L4		
3,00	20	1074	71,12	1,02		SG62	SMR	100Ld4	65	534
	24	907	59,31	1,14		SG62	SMR	100Ld4		
	28	778	49,72	1,25		SG62	SMR	100Ld4		
	32	689	44,23	1,35		SG62	SMR	100Ld4		
	21	1201	67,17	0,99		SG62	SMB	100Ld4		
	23	1096	61,14	1,08		SG62	SMB	100Ld4		
	25	1008	55,64	1,16		SG62	SMB	100Ld4		
	29	879	49,08	1,31		SG62	SMB	100Ld4		
	32	797	44,56	1,42		SG62	SMB	100Ld4		
	35	729	40,73	1,54		SG62	SMB	100Ld4		
	37	697	38,46	1,59		SG62	SMB	100Ld4		
	42	614	33,58	1,76		SG62	SMR	100Ld4		
	47	549	29,85	1,93		SG62	SMR	100Ld4		
	52	501	27,19	2,07		SG62	SMR	100Ld4		
	60	435	23,62	2,31		SG62	SMR	100Ld4		
	68	383	20,67	2,54		SG62	SMR	100Ld4		
	83	318	17,09	2,90		SG62	SMR	100Ld4		
	99	266	14,25	3,26		SG62	SMR	100Ld4		
	118	223	11,95	3,64		SG62	SMR	100Ld4		
	133	198	10,63	3,91		SG62	SMR	100Ld4		
	29	869	48,46	1,02		SG52	SMB	100Ld4	58	530
	33	773	42,75	1,13		SG52	SMB	100Ld4		
	36	708	38,81	1,22		SG52	SMB	100Ld4		
	40	637	35,47	1,33		SG52	SMB	100Ld4		
	42	607	33,50	1,39		SG52	SMB	100Ld4		
	48	537	29,25	1,53		SG52	SMR	100Ld4		
	54	478	26,00	1,68		SG52	SMR	100Ld4		
	60	430	23,68	1,83		SG52	SMR	100Ld4		
	69	378	20,57	2,02		SG52	SMR	100Ld4		
	78	334	18,00	2,21		SG52	SMR	100Ld4		
	95	274	14,88	2,54		SG52	SMR	100Ld4		
	114	231	12,41	2,85		SG52	SMR	100Ld4		



P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
3,00	135	195	10,41	3,16	SG52	SMR	100Ld4	58	530
	152	173	9,26	3,40	SG52	SMR	100Ld4		
	38	648	37,03	1,05	SG42	SMB	100Ld4		
	44	566	32,29	1,17	SG42	SMB	100Ld4		
	47	530	29,78	1,24	SG42	SMB	100Ld4		
	51	489	27,56	1,32	SG42	SMB	100Ld4		
	59	427	23,77	1,46	SG42	SMR	100Ld4		
	62	407	22,65	1,51	SG42	SMR	100Ld4	47	526
	69	365	20,30	1,64	SG42	SMR	100Ld4		
	81	315	17,33	1,82	SG42	SMR	100Ld4		
	95	268	14,89	2,03	SG42	SMR	100Ld4		
	110	232	12,85	2,24	SG42	SMR	100Ld4		
	133	194	10,59	2,55	SG42	SMR	100Ld4		
	61	413	23,11	0,99	SG32	SMB	100Ld4		
	71	355	19,93	1,12	SG32	SMR	100Ld4		
	74	341	19,00	1,15	SG32	SMR	100Ld4		
	83	304	17,02	1,25	SG32	SMR	100Ld4	43	522
	97	263	14,54	1,39	SG32	SMR	100Ld4		
	113	226	12,49	1,54	SG32	SMR	100Ld4		
	131	195	10,77	1,70	SG32	SMR	100Ld4		
	159	162	8,88	1,89	SG32	SMR	100Ld4		
4,00	29	1001	49,72	0,97	SG62	SMR	112M4		
	32	919	44,23	1,01	SG62	SMR	112M4		
	29	1172	49,08	0,98	SG62	SMB	112M4		
	32	1062	44,56	1,07	SG62	SMB	112M4		
	35	971	40,73	1,15	SG62	SMB	112M4		
	37	929	38,46	1,19	SG62	SMB	112M4		
	42	819	33,58	1,32	SG62	SMR	112M4		
	48	716	29,85	1,48	SG62	SMR	112M4	70	534
	52	669	27,19	1,55	SG62	SMR	112M4		
	60	579	23,62	1,73	SG62	SMR	112M4		
	69	504	20,67	1,93	SG62	SMR	112M4		
	83	423	17,09	2,17	SG62	SMR	112M4		
	100	351	14,25	2,47	SG62	SMR	112M4		
	119	295	11,95	2,75	SG62	SMR	112M4		
	134	262	10,63	2,95	SG62	SMR	112M4		
	40	850	35,47	1,00	SG52	SMB	112M4		
	42	809	33,50	1,04	SG52	SMB	112M4		
	49	702	29,25	1,17	SG52	SMR	112M4		
	55	625	26,00	1,29	SG52	SMR	112M4		
	60	573	23,68	1,38	SG52	SMR	112M4		
	69	504	20,57	1,51	SG52	SMR	112M4	63	530
	79	440	18,00	1,68	SG52	SMR	112M4		
	95	366	14,88	1,91	SG52	SMR	112M4		
	114	308	12,41	2,13	SG52	SMR	112M4		
	136	258	10,41	2,39	SG52	SMR	112M4		
	153	230	9,26	2,56	SG52	SMR	112M4		
	52	639	27,56	1,01	SG42	SMB	112M4	52	526



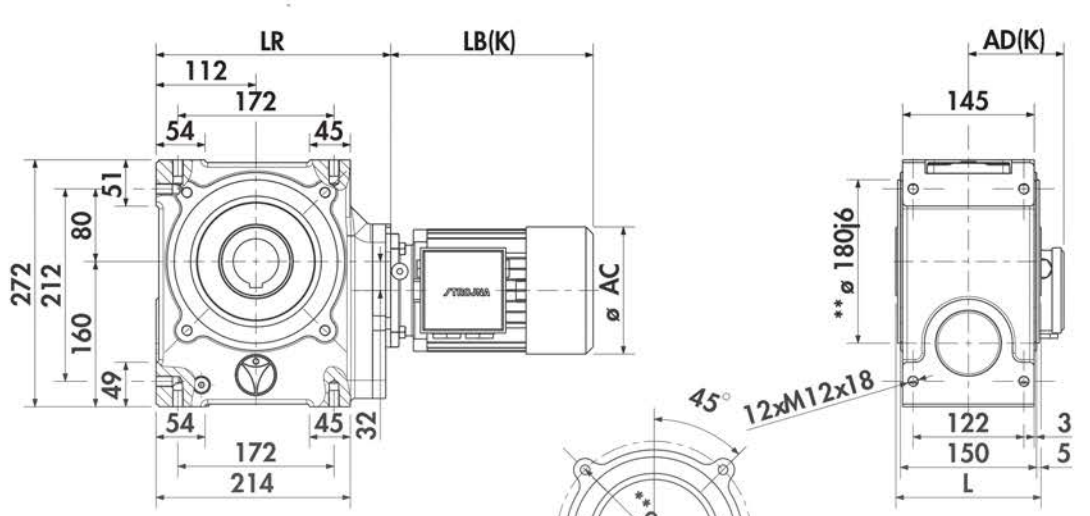
P [kW]	n_2 [min^{-1}]	Mt_2 [Nm]	i	f_B				m [kg]	
4,00	60	560	23,77	1,11		SG42	SMR	112M4		
	63	534	22,65	1,15		SG42	SMR	112M4		
	70	480	20,30	1,25		SG42	SMR	112M4		
	82	415	17,33	1,38		SG42	SMR	112M4	52	526
	95	358	14,89	1,53		SG42	SMR	112M4		
	111	306	12,85	1,69		SG42	SMR	112M4		
	134	257	10,59	1,93		SG42	SMR	112M4		
5,50	43	1099	33,58	0,99		SG62	SMB	132S4		
	49	965	29,85	1,10		SG62	SMB	132S4		
	53	902	27,19	1,15		SG62	SMB	132S4		
	61	784	23,62	1,28		SG62	SMR	132S4		
	70	683	20,67	1,42		SG62	SMR	132S4	95	534
	85	569	17,09	1,62		SG62	SMR	132S4		
	102	474	14,25	1,83		SG62	SMR	132S4		
	121	399	11,95	2,04		SG62	SMR	132S4		
	136	355	10,63	2,18		SG62	SMR	132S4		
	56	844	26,00	0,95		SG52	SMB	132S4		
	61	775	23,68	1,02		SG52	SMB	132S4		
	70	683	20,57	1,12		SG52	SMR	132S4		
	81	590	18,00	1,25		SG52	SMR	132S4	88	530
	97	493	14,88	1,42		SG52	SMR	132S4		
	117	413	12,41	1,59		SG52	SMR	132S4		
	139	348	10,41	1,77		SG52	SMR	132S4		
	157	308	9,26	1,91		SG52	SMR	132S4		
7,50	70	931	20,67	1,04		SG62	SMR	132M4		
	85	775	17,09	1,19		SG62	SMR	132M4		
	102	646	14,25	1,34		SG62	SMR	132M4	106	534
	121	545	11,95	1,49		SG62	SMR	132M4		
	136	485	10,63	1,60		SG62	SMR	132M4		
	97	672	14,88	1,04		SG52	SMR	132M4		
	117	563	12,41	1,17		SG52	SMR	132M4	99	530
	139	474	10,41	1,30		SG52	SMR	132M4		
	157	420	9,26	1,40		SG52	SMR	132M4		
9,20	84	962	17,09	0,96		SG62	SMR	132Ma4		
	101	800	14,25	1,08		SG62	SMR	132Ma4	117	534
	121	668	11,95	1,22		SG62	SMR	132Ma4		
	135	599	10,63	1,29		SG62	SMR	132Ma4		

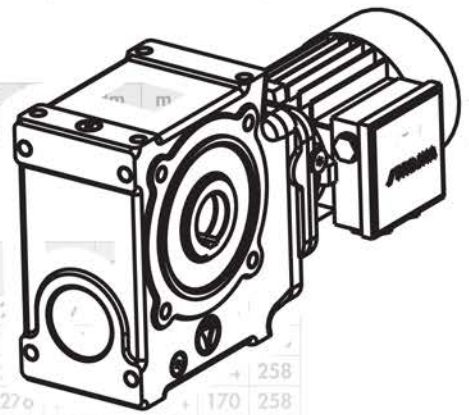


SG

HELICAL WORM GEAR UNIT

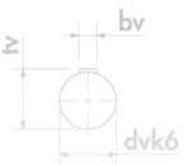
Dimension sheets - Geared motors

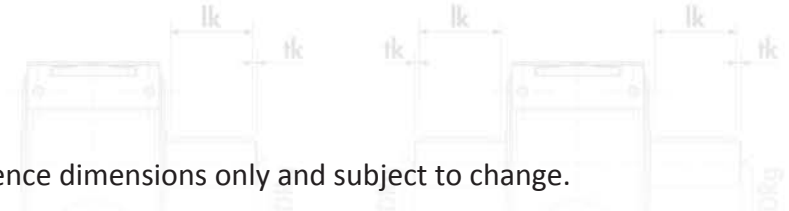




d	L	m	m1	bv	lv	lk	tk	g	lz
*50	1(			14	100	80	10	M16	360

SMB/ SMR						
63						
71						
80						258
90S	276				170	258
90L	301	121	385	164	170	258
100	329	157	418	174	193	362
112M	334	169	413	199	216	362
132S	377	190	492	183	247	375
132M	415	190	532	183	247	375
132Ma	415	190	532	183	247	375
160S						
160M						
160L						
180M						
180L						

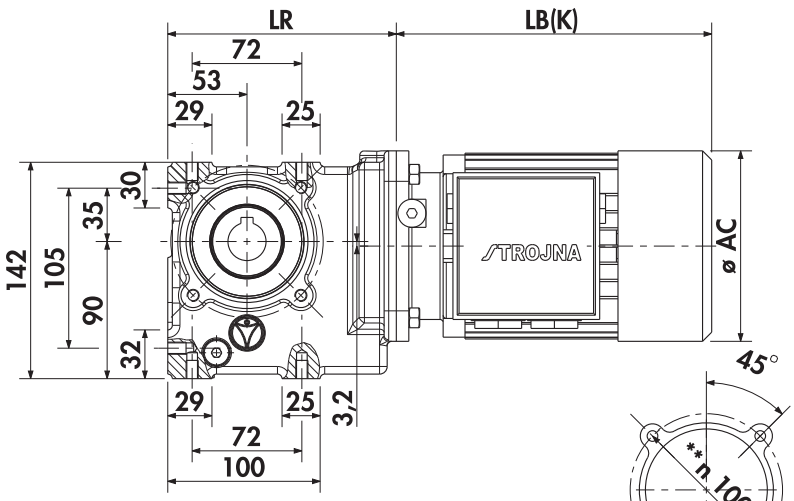


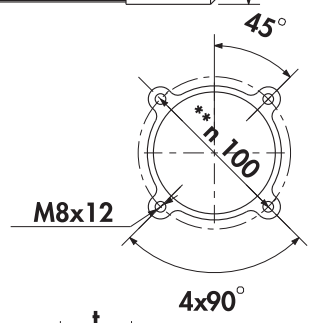


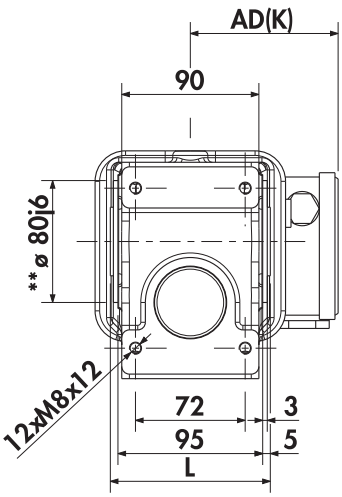
Drawings are for reference dimensions only and subject to change.

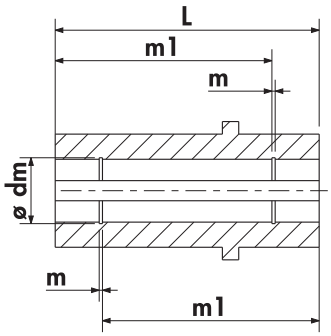
We reserve the right to change tehnical data or dimensions due to modifications.

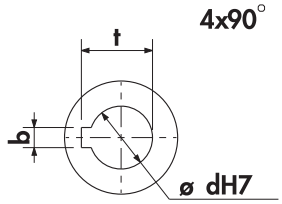
SG12...SMB/SMR



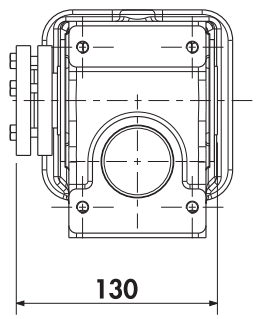








SG12D...



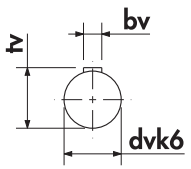
d	L	m1	dm	m	t	b
20	105	97	21	1,3	22,8	6
*25	105	91	26,2	1,3	28,3	8

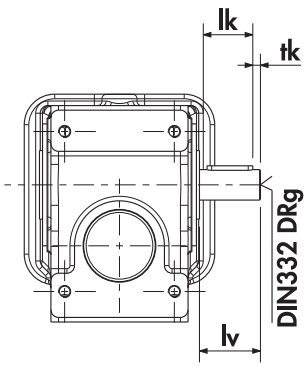
dv	tv	bv	lv	lk	tk	g	lz
20	22,5	6	40	30	5	M6	185
*25	28	8	50	40	5	M10	205

SMB/ SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	151
71	223	105	280	137	140	151
80	251	110	311	147	154	151
90S	276	121	360	164	170	151
90L	301	121	385	164	170	151
100						
112M						
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

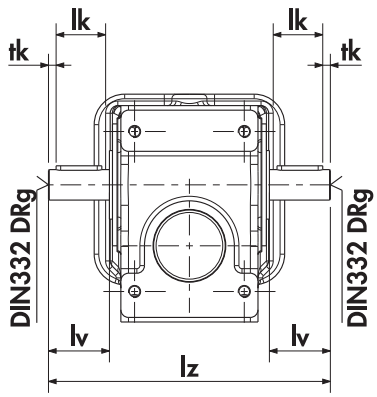
* Standard ** C Flange DIN42948

SG12V...

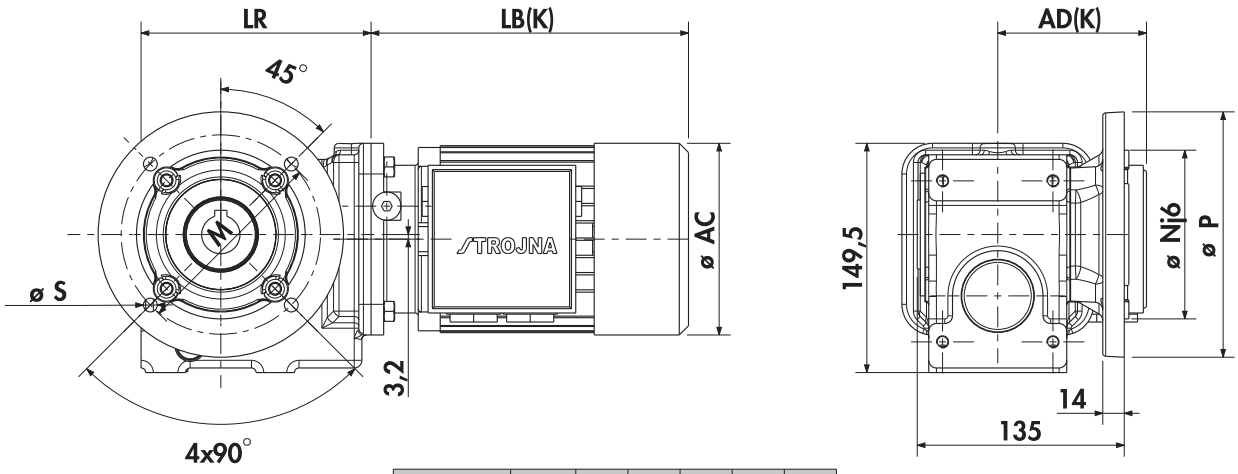




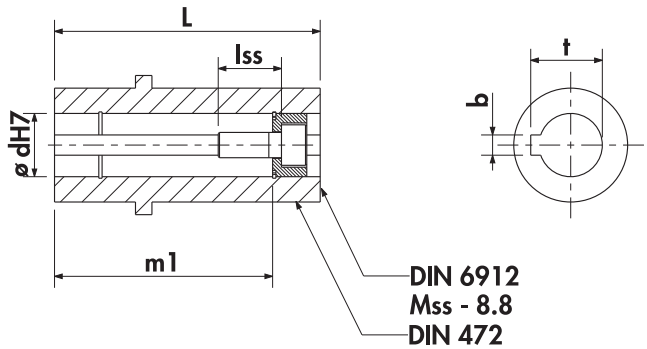
SG12Z...



SG12P...SMB/SMR

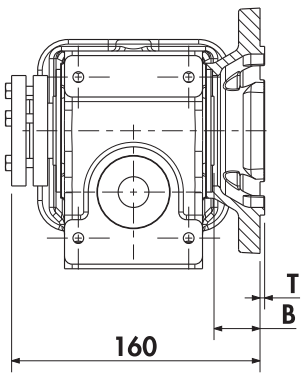


DIN42948	P	N	M	T	B	S
*A160	160	110	130	3	30	9
A200	200	130	165	3	30	11



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

SG12PD...

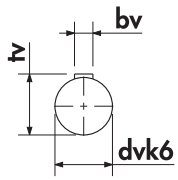


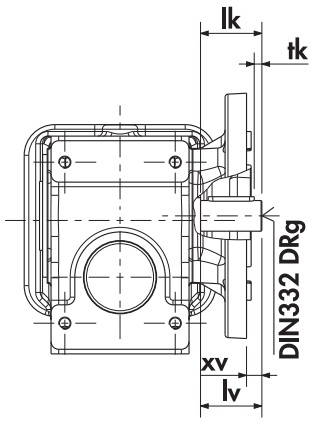
dv	tv	bv	lv	lk	tk	xv	g	lz
20	22,5	6	40	30	5	7	M6	185
*25	28	8	50	40	5	17	M10	205

SMB/ SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	151
71	223	105	280	137	140	151
80	251	110	311	147	154	151
90S	276	121	360	164	170	151
90L	301	121	385	164	170	151
100						
112M						
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

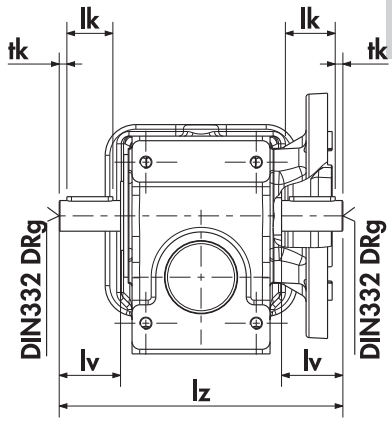
* Standard

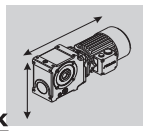
SG12PV...



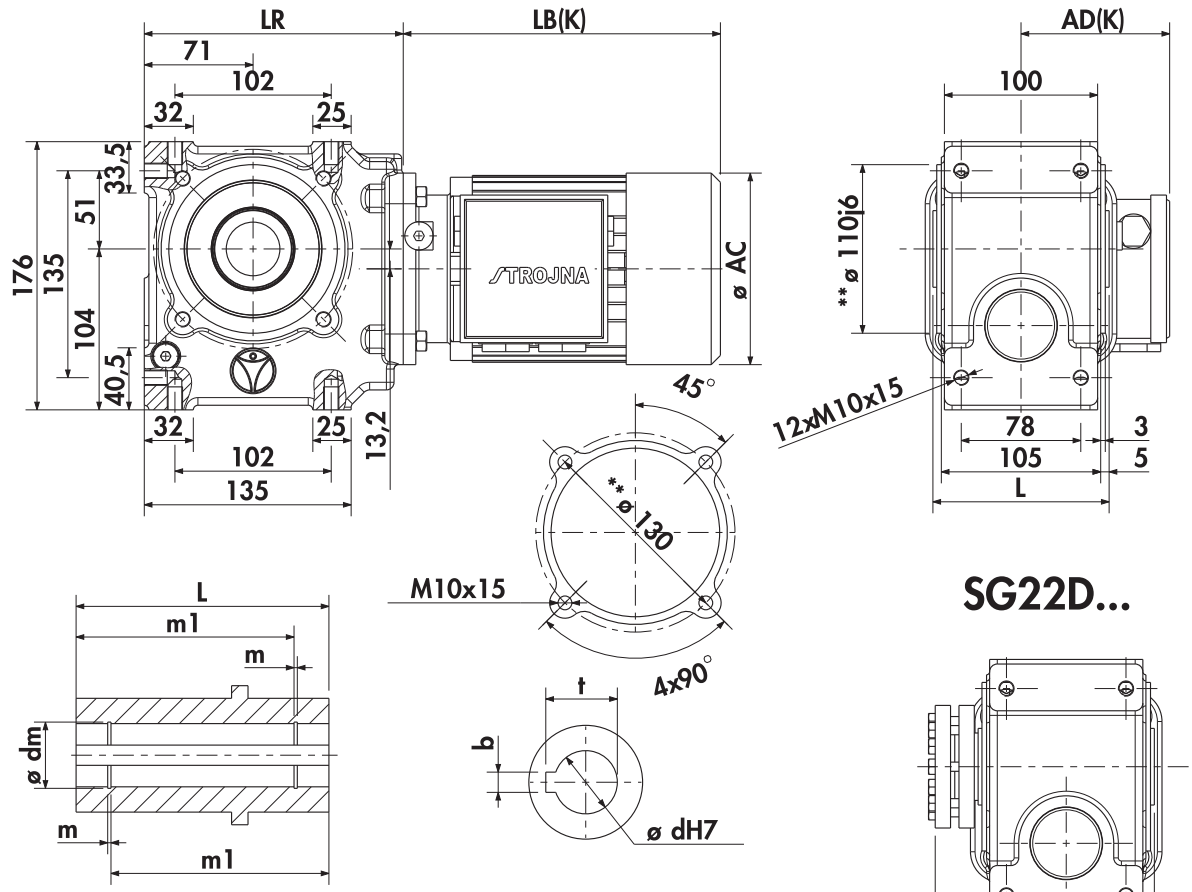


SG12PZ...





SG22...SMB/SMR



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

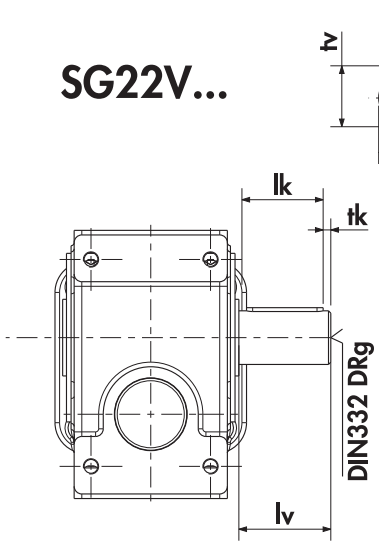
dv	tv	bv	lv	lk	tk	g	lz
25	28	8	50	40	5	M10	215
*30	33	8	60	50	5	M10	235

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

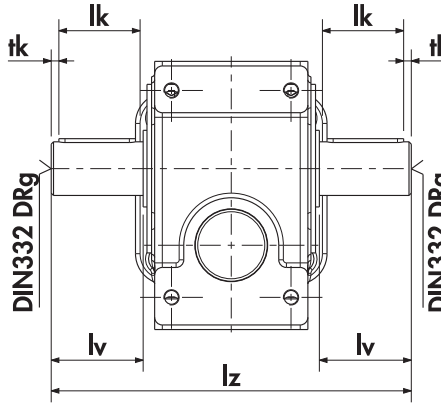
* Standard ** C Flange DIN42948

SG22D...

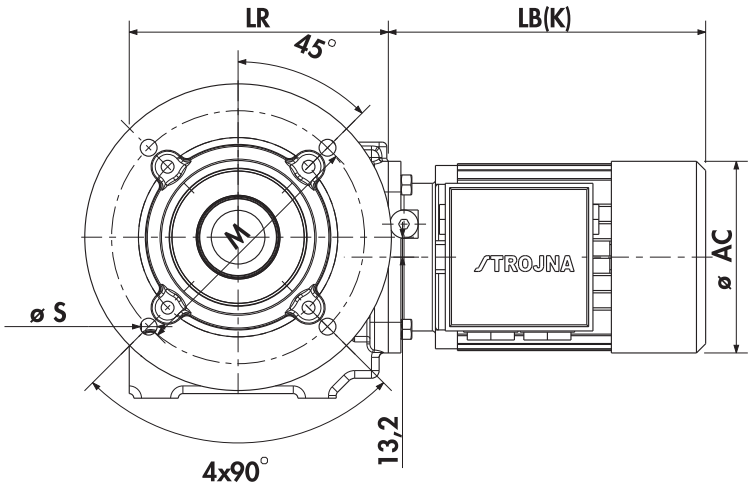
SG22V...

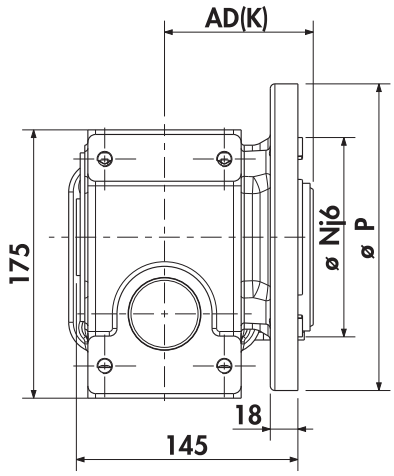


SG22Z...

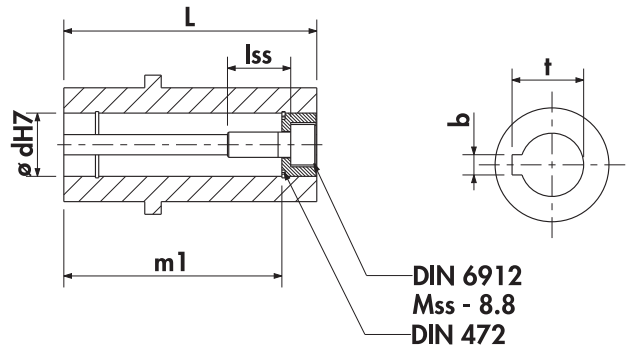


SG22P...SMB/SMR



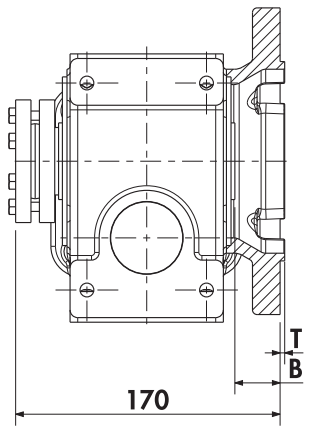


DIN42948	P	N	M	T	B	S
*A200	200	130	165	3	30	11
A250	250	180	215	4	30	14



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

SG22PD...

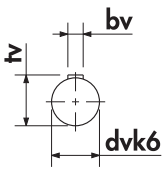


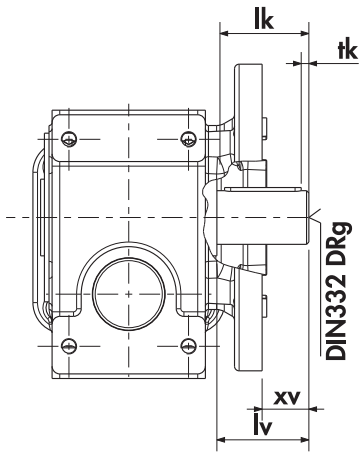
dv	tv	bv	lv	lk	tk	xv	g	lz
25	28	8	50	40	5	17	M10	215
*30	33	8	60	50	5	27	M10	235

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

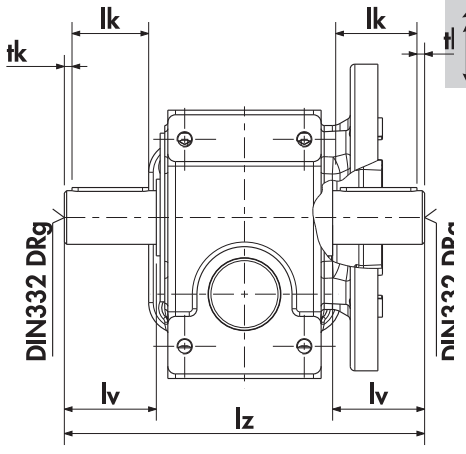
* Standard

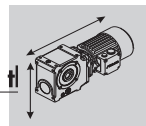
SG22PV...



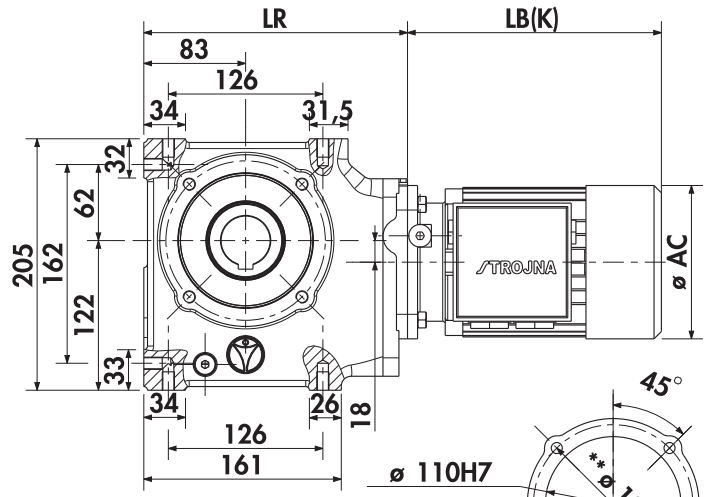


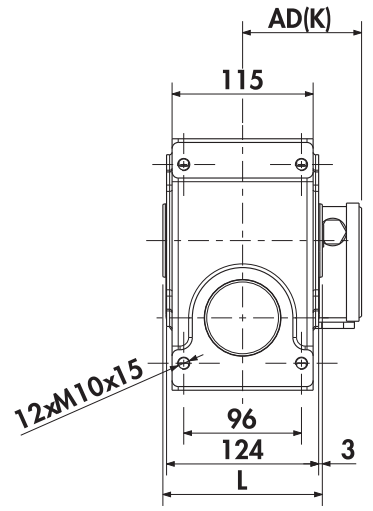
SG22PZ...

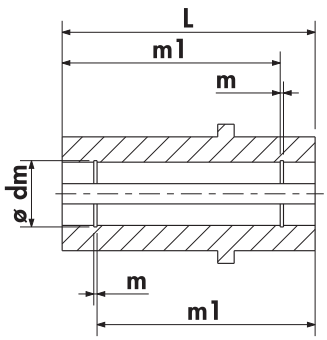


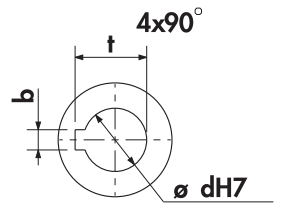


SG32...SMB/SMR

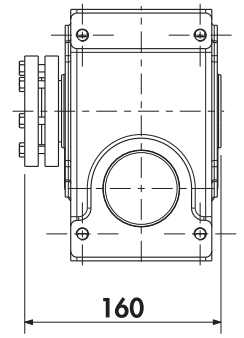








SG32D...



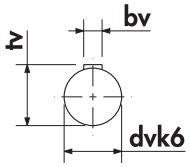
d	L	m1	dm	m	t	b
30	130	122	31,4	1,3	33,3	8
*35	130	115	37	1,6	38,3	10

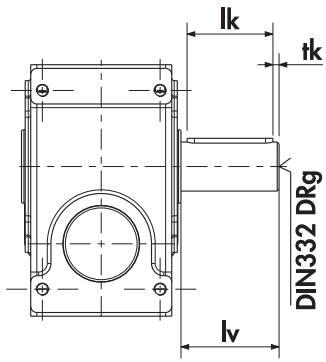
dv	tv	bv	lv	lk	tk	g	lz
30	33	8	60	50	5	M10	250
*35	38	10	70	60	5	M12	270

SMB/ SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	216
71	223	105	280	137	140	216
80	251	110	311	147	154	216
90S	276	121	360	164	170	216
90L	301	121	385	164	170	216
100	329	157	418	174	193	220
112M	334	169	413	199	216	220
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

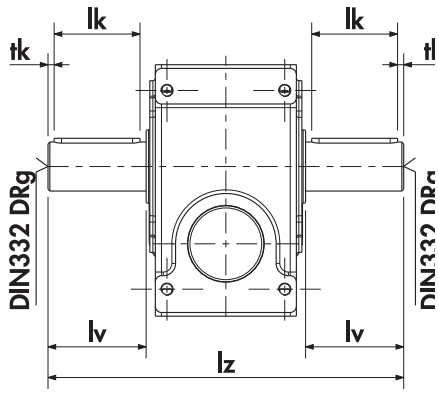
* Standard ** C Flange DIN42948

SG32V...

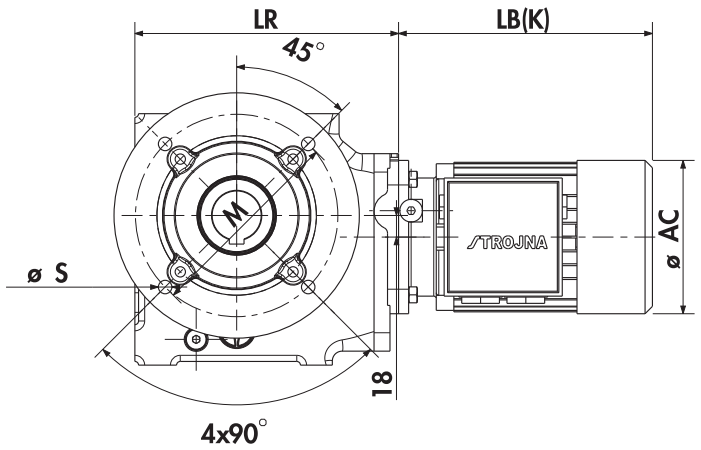


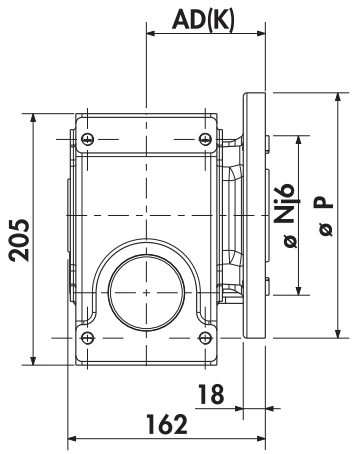


SG32Z...



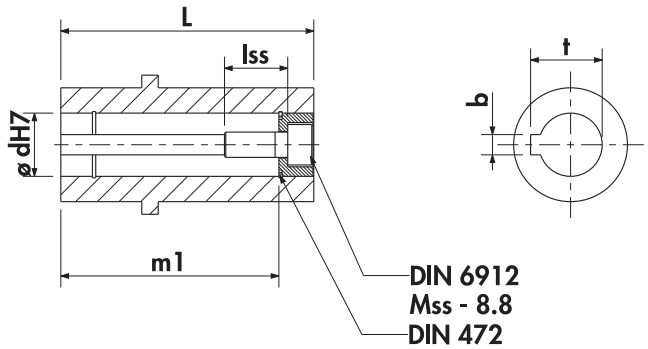
SG32P...SMB/SMR

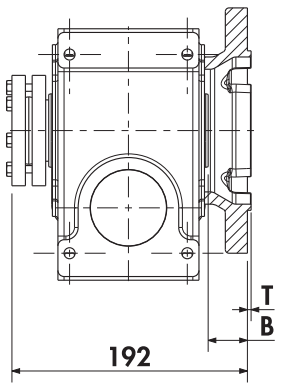




DIN42948	P	N	M	T	B	S
*A200	200	130	165	3	32	11
A250	250	180	215	4	32	14

SG32PD...





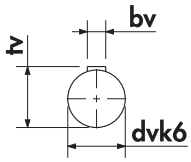
d	L	m1	lss	Mss	t	b
30	130	122	25	M10	33,3	8
*35	130	115	30	M12	38,3	10

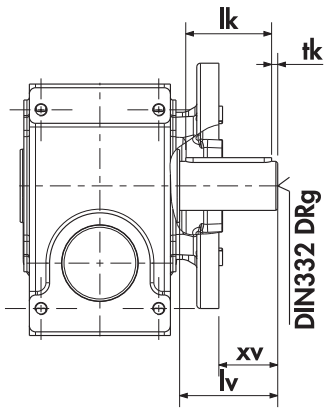
dv	tv	bv	lv	lk	tk	xv	g	lz
30	33	8	60	50	5	27	M10	250
*35	38	10	70	40	5	37	M12	270

SMB/ SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	216
71	223	105	280	137	140	216
80	251	110	311	147	154	216
90S	276	121	360	164	170	216
90L	301	121	385	164	170	216
100	329	157	418	174	193	220
112M	334	169	413	199	216	220
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

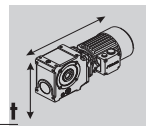
* Standard

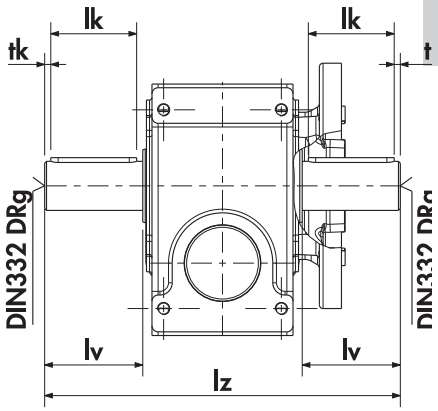
SG32PV...



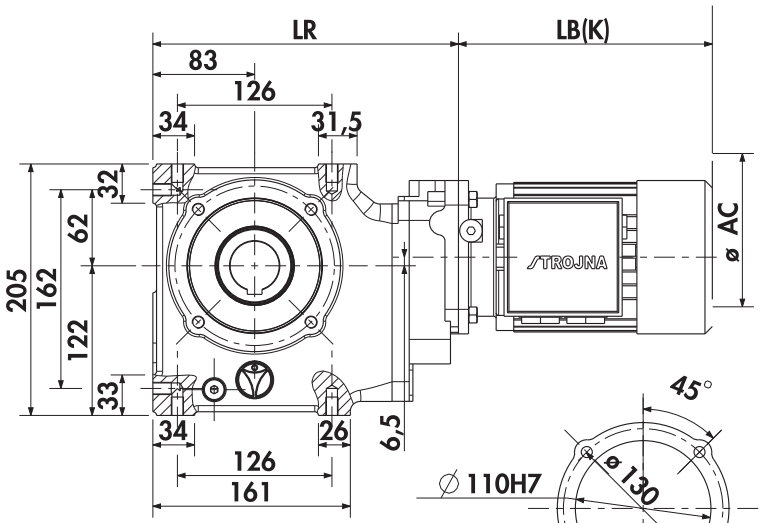


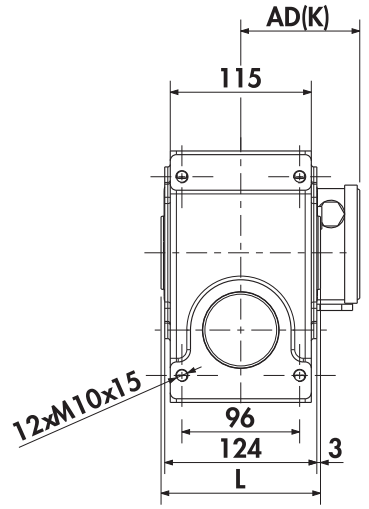
SG32PZ...

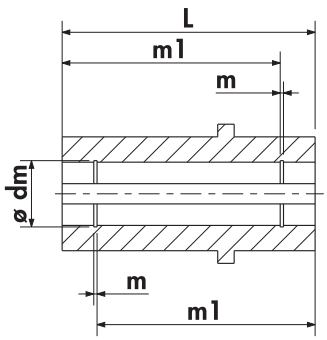


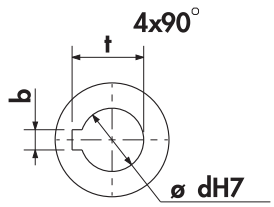


SG33...SMB/SMR

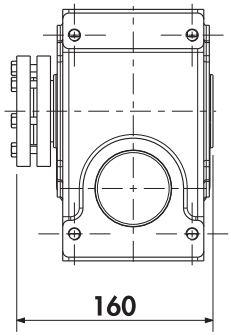








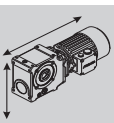
SG33D...



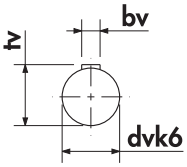
d	L	m1	dm	m	t	b
30	130	122	31,4	1,3	33,3	8
*35	130	115	37	1,6	38,3	10

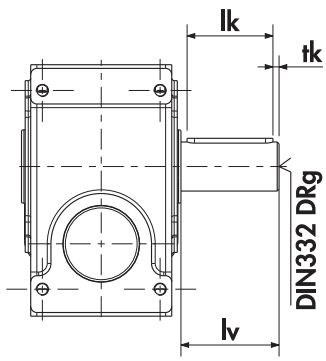
dv	tv	bv	lv	lk	tk	g	lz
30	33	8	60	50	5	M10	250
*35	38	10	70	60	5	M12	270

SMB/ SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	249
71	223	105	280	137	140	249
80	251	110	311	147	154	249
90S	276	121	360	164	170	249
90L	301	121	385	164	170	249
100						
112M						
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

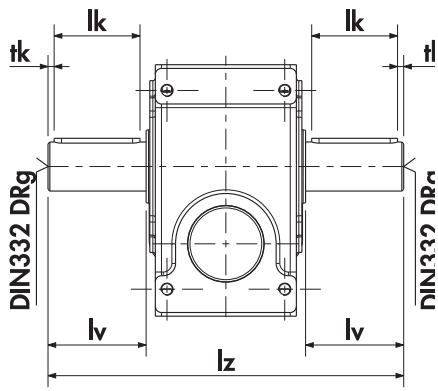


SG33V...

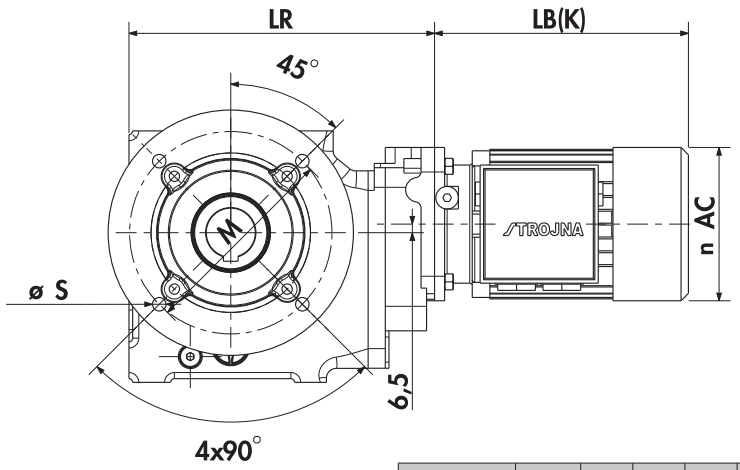


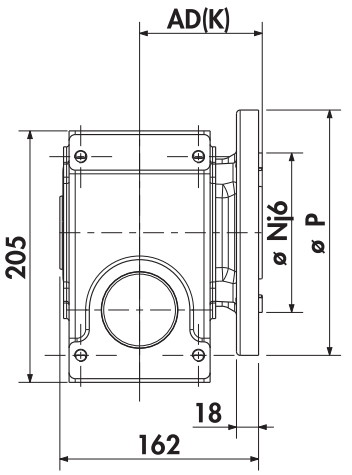


SG33Z...



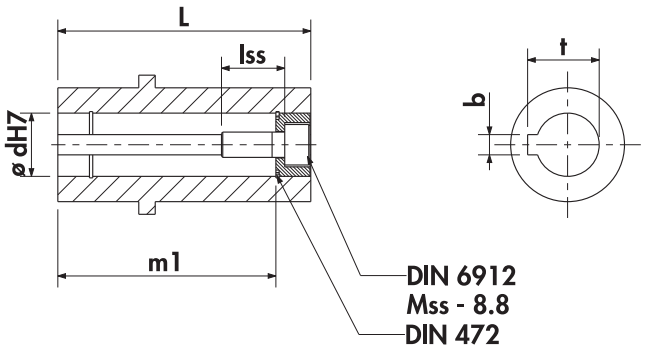
SG33P...SMB/SMR

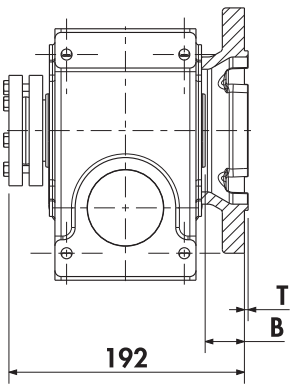




DIN42948	P	N	M	T	B	S
*A200	200	130	165	3	32	11
A250	250	180	215	4	32	14

SG33PD...



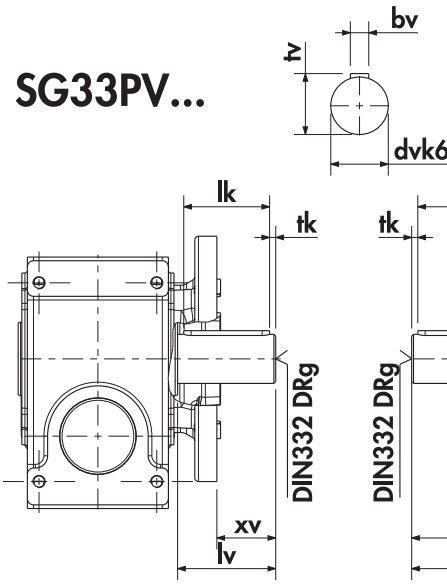


d	L	m1	lss	Mss	t	b
30	130	122	25	M10	33,3	8
*35	130	115	30	M12	38,3	10

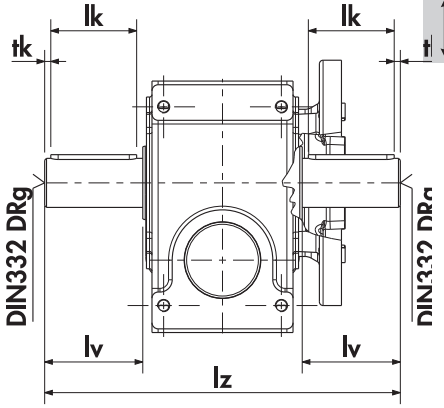
dv	tv	bv	lv	lk	tk	xv	g	lz
30	33	8	60	50	5	27	M10	250
*35	38	10	70	60	5	37	M12	270

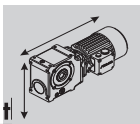
SMB/ SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	249
71	223	105	280	137	140	249
80	251	110	311	147	154	249
90S	276	121	360	164	170	249
90L	301	121	385	164	170	249
100						
112M						
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

SG33PV...

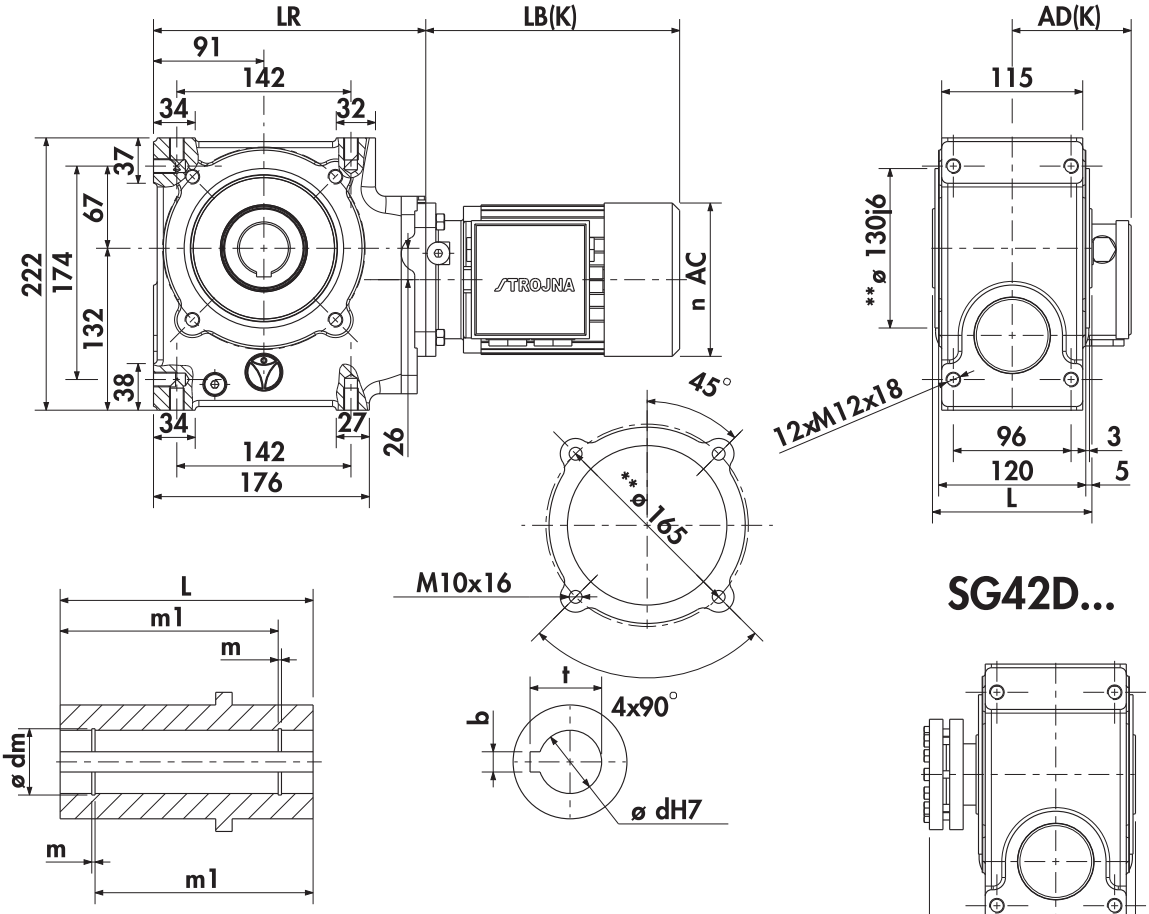


SG33PZ...





SG42...SMB/SMR



SG42D...

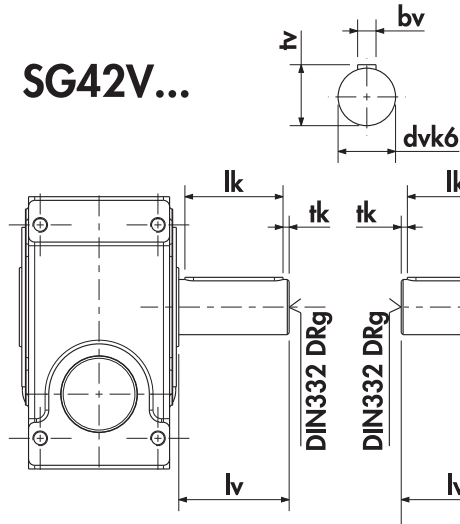
d	L	m1	dm	m	t	b
40	130	108	42,5	1,85	43,3	12
*45	130	108	47,5	1,85	48,8	14

dv	tv	bv	lv	lk	tk	g	lz
40	43	12	80	70	5	M16	290
*45	48,5	14	90	80	5	M16	310

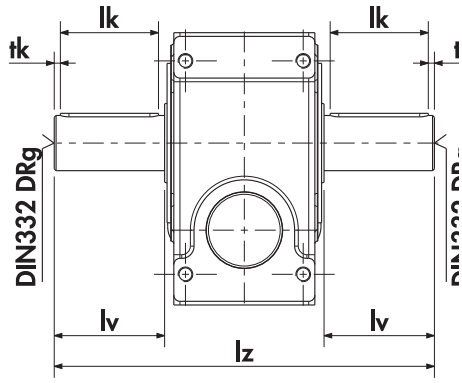
SMB/ SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	221
71	223	105	280	137	140	221
80	251	110	311	147	154	221
90S	276	121	360	164	170	221
90L	301	121	385	164	170	221
100	329	157	418	174	193	225
112M	334	169	413	199	216	225
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

* Standard ** C Flange DIN42948

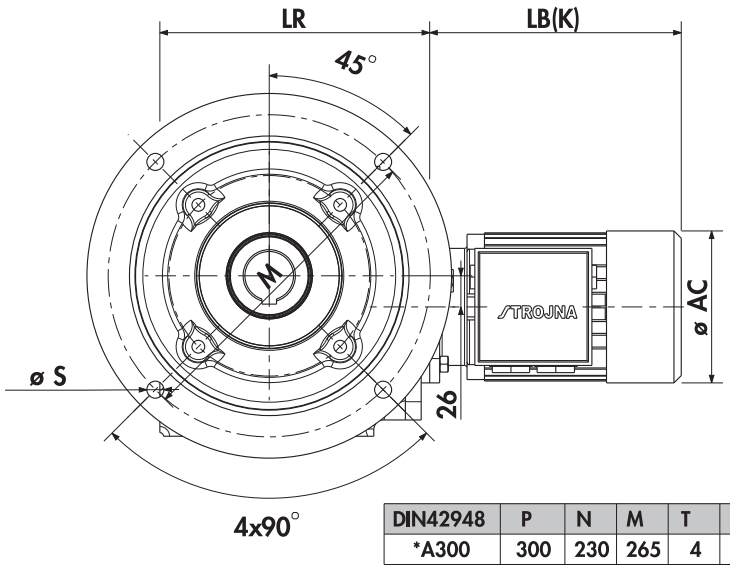
SG42V...

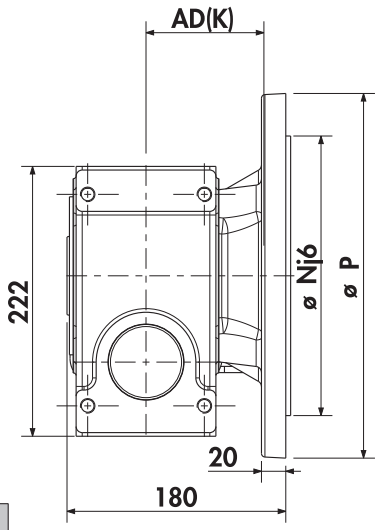


SG42Z...



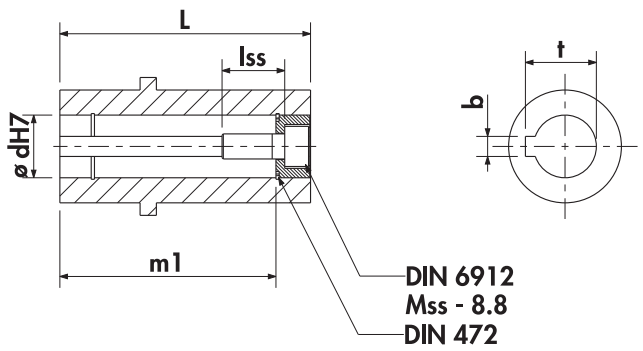
SG42P...SMB/SMR

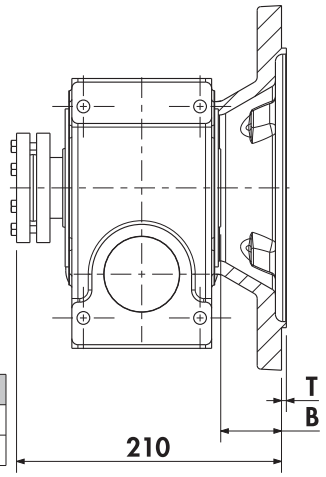




DIN42948	P	N	M	T	B	S
*A300	300	230	265	4	50	14

SG42PD...





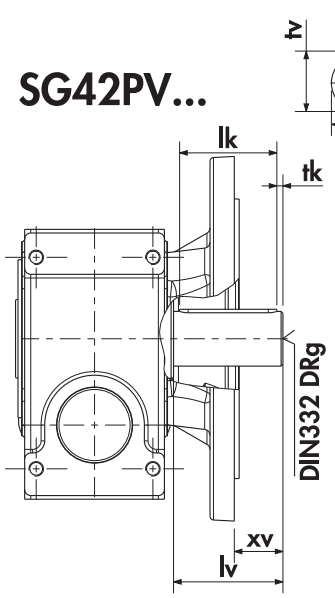
d	L	m1	lss	Mss	t	b
40	130	108	40	M16	43,3	12
*45	130	108	40	M16	48,8	14

dv	tv	bv	lv	lk	tk	xv	g	lz
40	43	12	80	70	5	27	M16	290
*45	48,5	14	90	80	5	37	M16	310

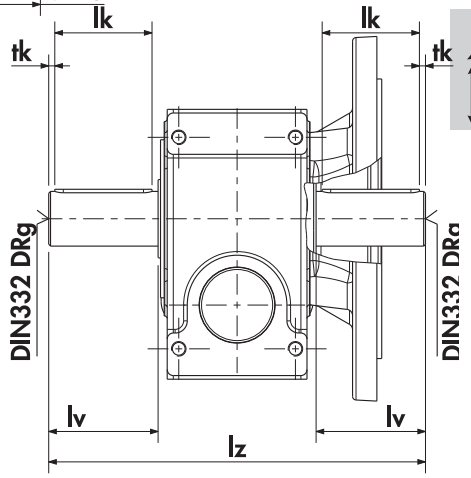
SMB/ SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	221
71	223	105	280	137	140	221
80	251	110	311	147	154	221
90S	276	121	360	164	170	221
90L	301	121	385	164	170	221
100	329	157	418	174	193	225
112M	334	169	413	199	216	225
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

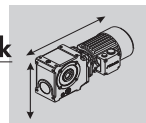
* Standard

SG42PV...

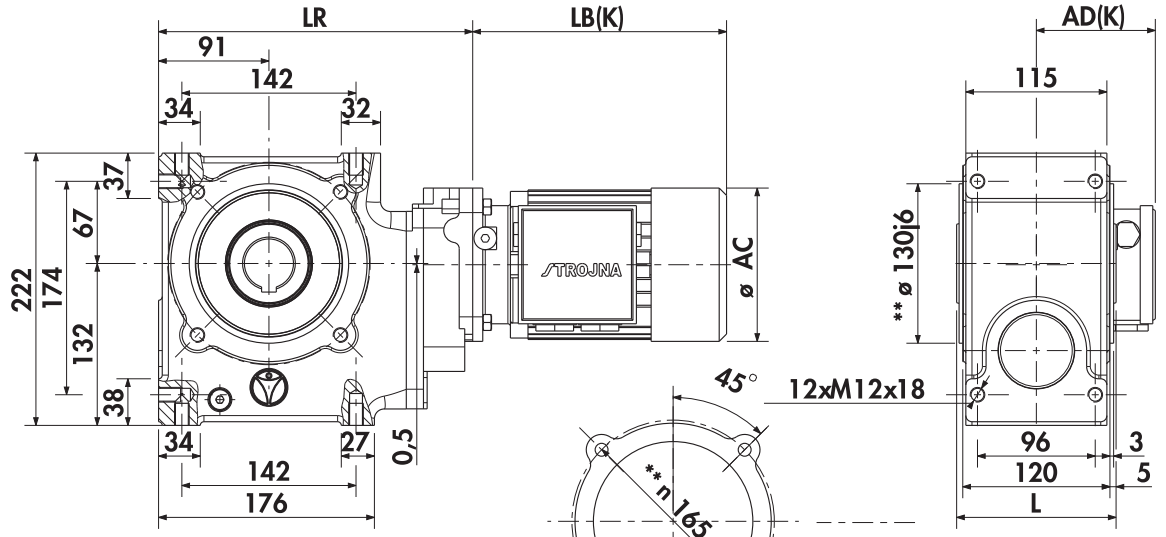


SG42PZ...

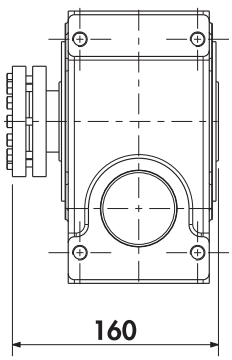




SG43...SMB/SMR



SG43D...



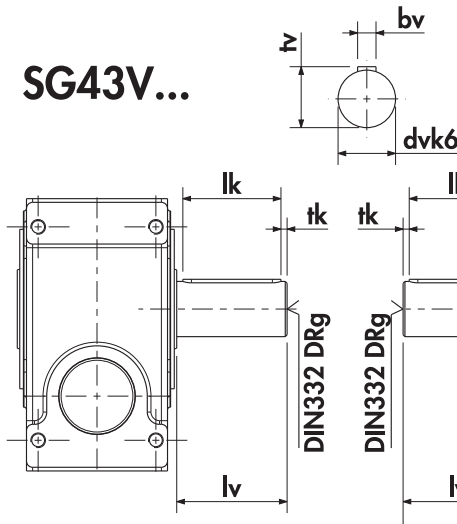
d	L	m1	dm	m	t	b
40	130	108	42,5	1,85	43,3	12
*45	130	108	47,5	1,85	48,8	14

dv	tv	bv	lv	lk	tk	g	lz
40	43	12	80	70	5	M16	290
*45	48,5	14	90	80	5	M16	310

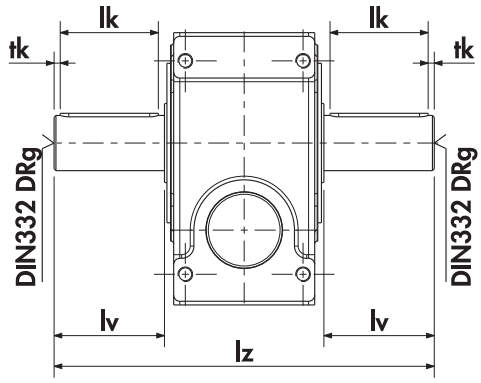
SMB/ SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	257
71	223	105	280	137	140	257
80	251	110	311	147	154	257
90S	276	121	360	164	170	257
90L	301	121	385	164	170	257
100						
112M						
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

* Standard ** C Flange DIN42948

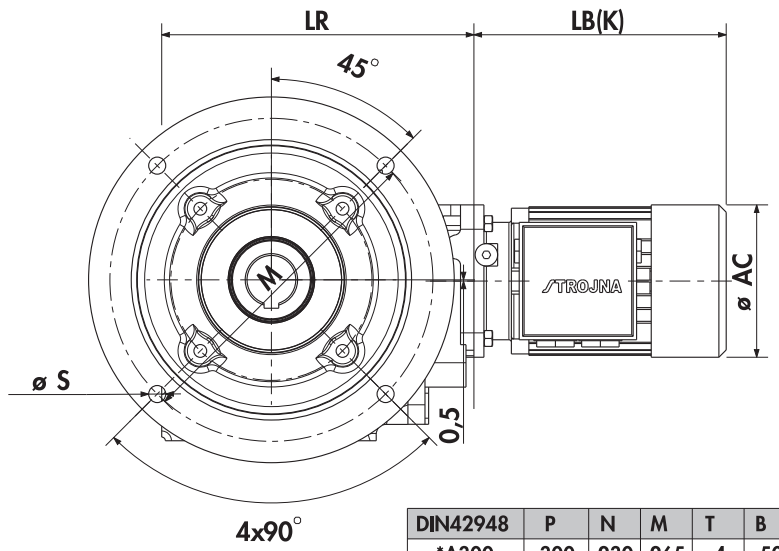
SG43V...

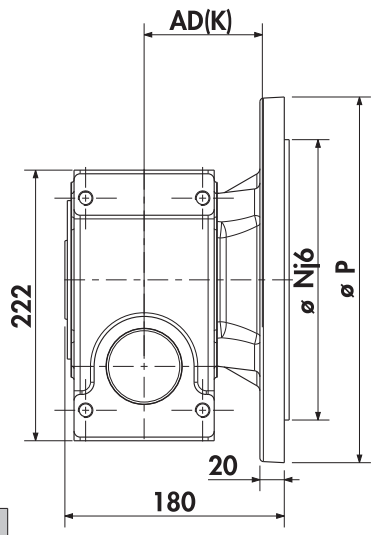


SG43Z...

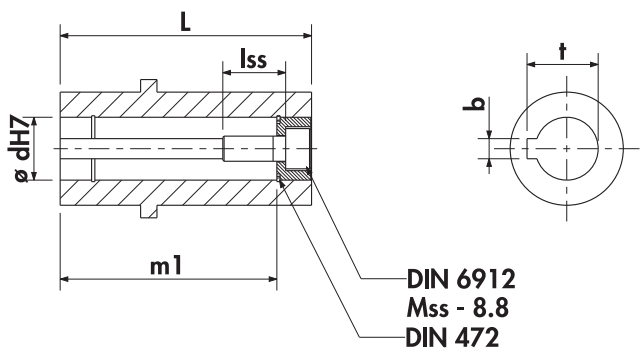


SG43P...SMB/SMR



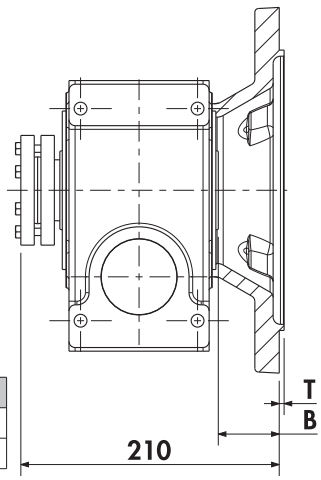


DIN42948	P	N	M	T	B	S
*A300	300	230	265	4	50	14



d	L	m1	lss	Mss	t	b
40	130	108	40	M16	43,3	12
*45	130	108	40	M16	48,8	14

SG43PD...

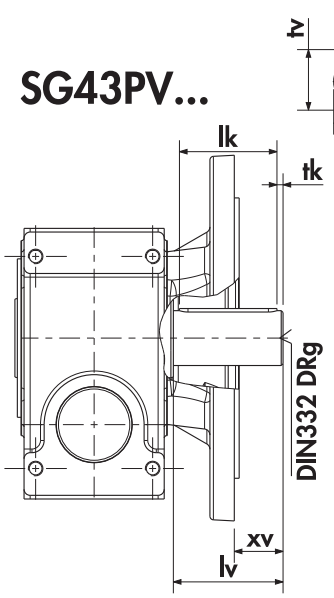


dv	tv	bv	lv	lk	tk	xv	g	lz
40	43	12	80	70	5	27	M16	290
*45	48,5	14	90	80	5	37	M16	310

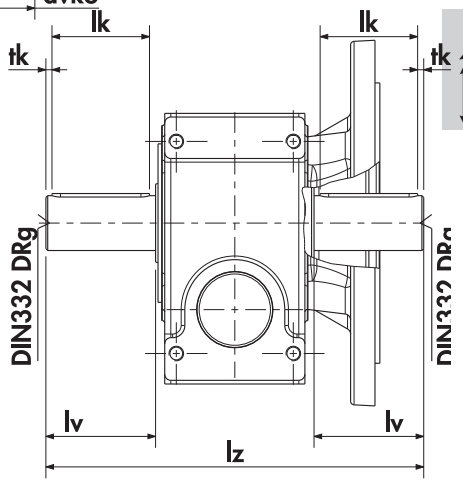
SMB/ SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	257
71	223	105	280	137	140	257
80	251	110	311	147	154	257
90S	276	121	360	164	170	257
90L	301	121	385	164	170	257
100						
112M						
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

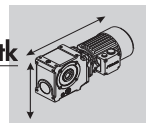
* Standard

SG43PV...

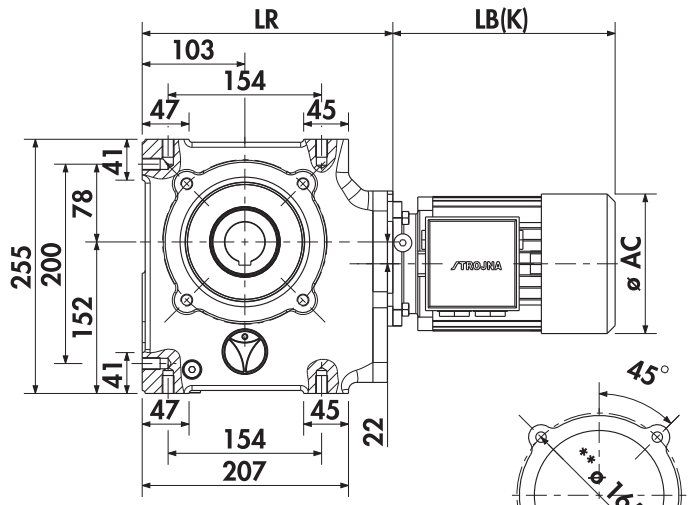


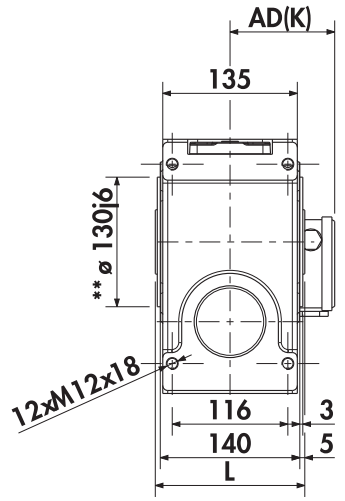
SG43PZ...

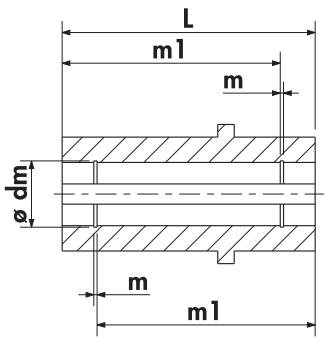


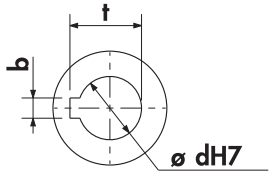


SG52...SMB/SMR

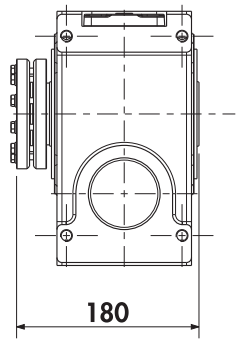








SG52D...



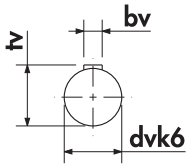
d	L	m1	dm	m	t	b
40	150	138	42,5	1,85	43,3	12
*45	150	133	47,5	1,85	48,8	14

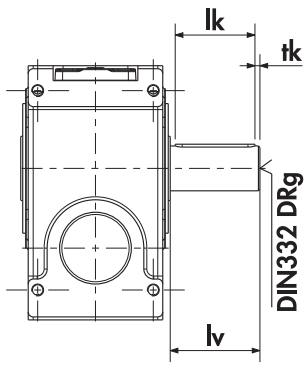
dv	tv	bv	lv	lk	tk	g	lz
40	43	12	80	70	5	M16	310
*45	48,5	14	90	80	5	M16	330

SMB/ SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	252
71	223	105	280	137	140	252
80	251	110	311	147	154	252
90S	276	121	360	164	170	252
90L	301	121	385	164	170	252
100	329	157	418	174	193	256
112M	334	169	413	199	216	256
132S	377	190	492	183	247	269
132M	415	190	532	183	247	269
132Ma	415	190	532	183	247	269
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

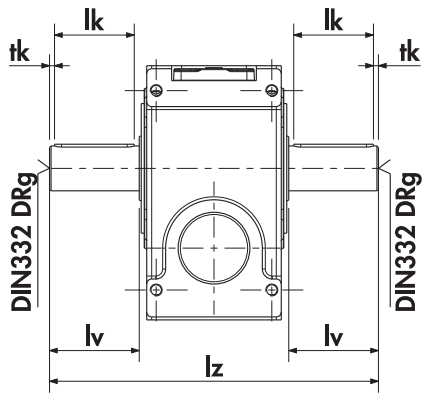
* Standard ** C Flange DIN42948

SG52V...

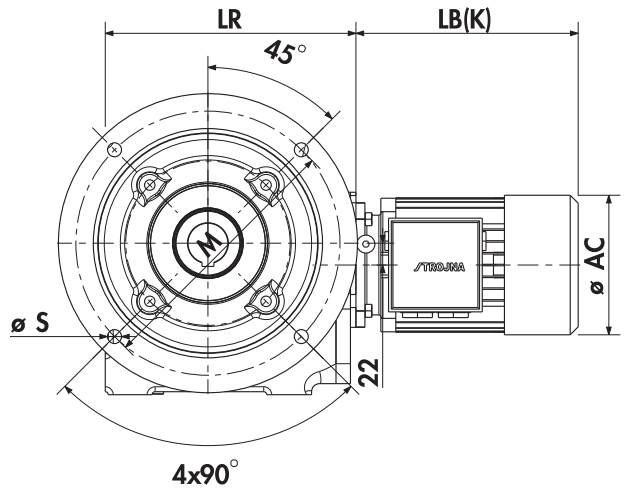


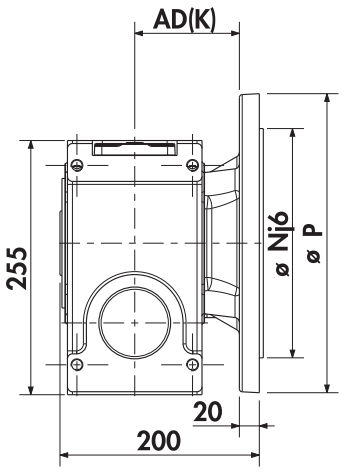


SG52Z...

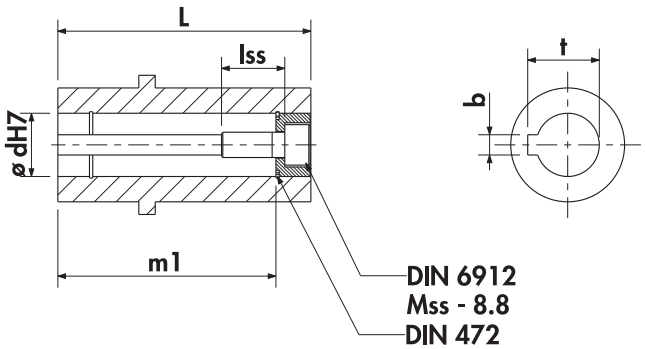


SG52P...SMB/SMR



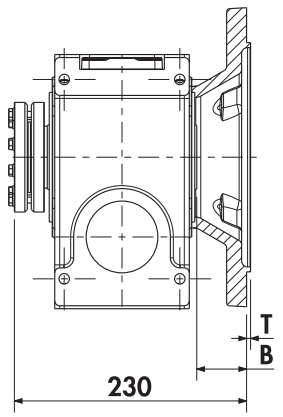


DIN42948	P	N	M	T	B	S
*A300	300	230	265	4	50	14



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

SG52PD...

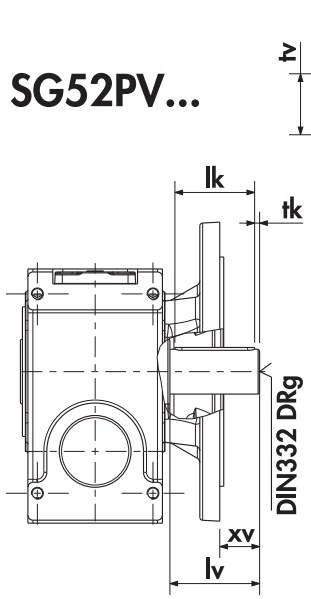


dv	tv	bv	lv	lk	tk	xv	g	lz
40	43	12	80	70	5	27	M16	310
*45	48,5	14	90	80	5	37	M16	330

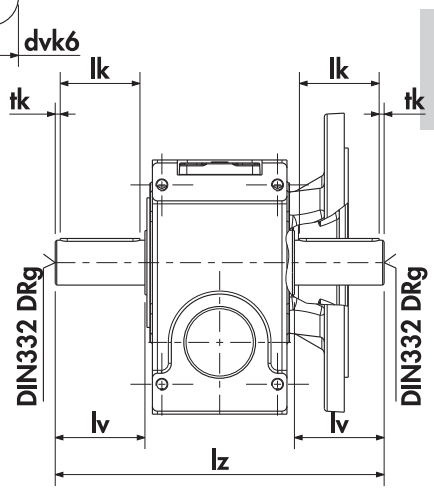
SMB/ SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	252
71	223	105	280	137	140	252
80	251	110	311	147	154	252
90S	276	121	360	164	170	252
90L	301	121	385	164	170	252
100	329	157	418	174	193	256
112M	334	169	413	199	216	256
132S	377	190	492	183	247	269
132M	415	190	532	183	247	269
132Ma	415	190	532	183	247	269
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

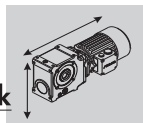
* Standard

SG52PV...

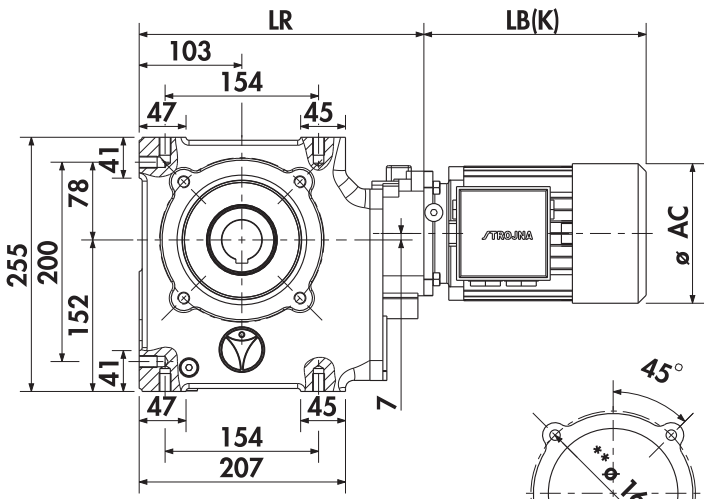


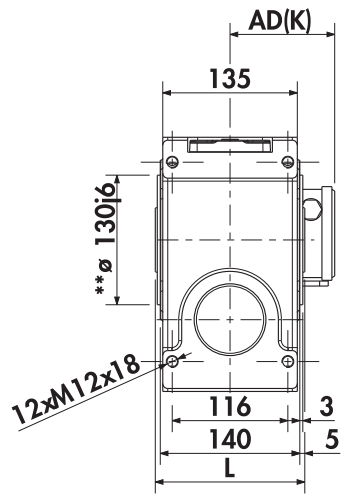
SG52PZ...

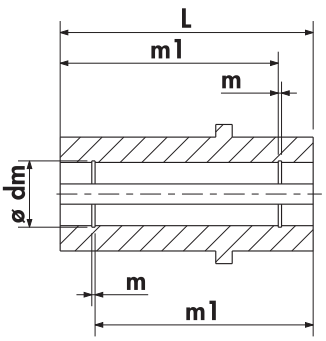


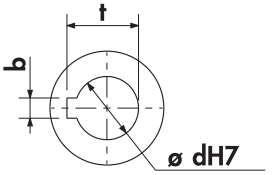


SG53...SMB/SMR

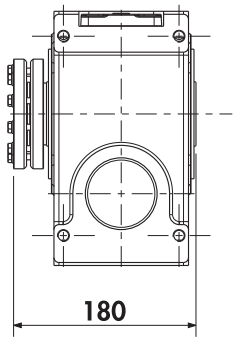








SG53D...



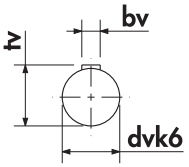
d	L	m1	dm	m	t	b
40	150	138	42,5	1,85	43,3	12
*45	150	133	47,5	1,85	48,8	14

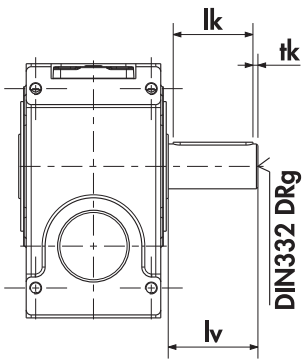
dv	tv	bv	lv	lk	tk	g	lz
40	43	12	80	70	5	M16	310
*45	48,5	14	90	80	5	M16	330

SMB/ SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	286
71	223	105	280	137	140	286
80	251	110	311	147	154	286
90S	276	121	360	164	170	286
90L	301	121	385	164	170	286
100						
112M						
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

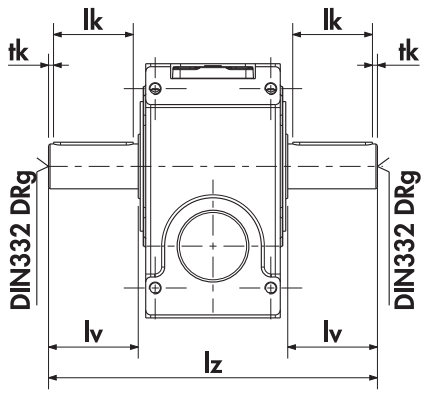
* Standard ** C Flange DIN42948

SG53V...

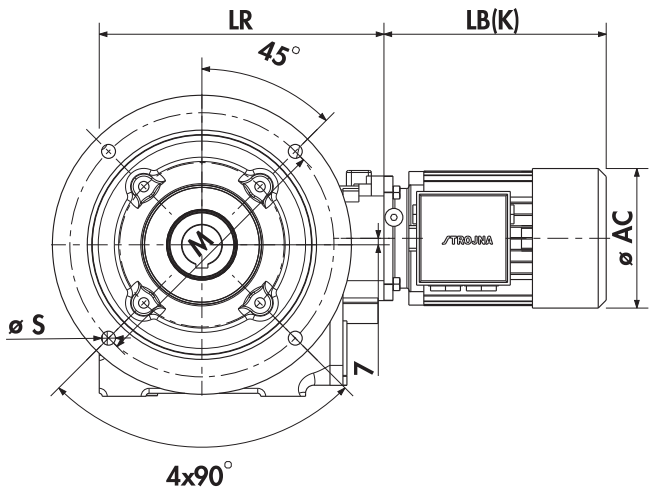


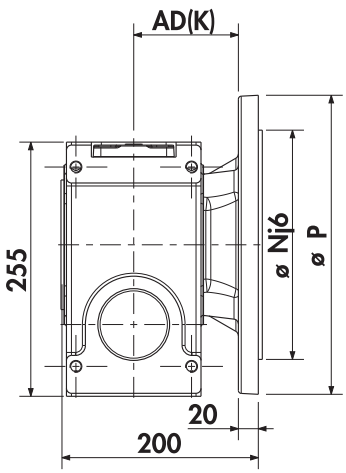


SG53Z...

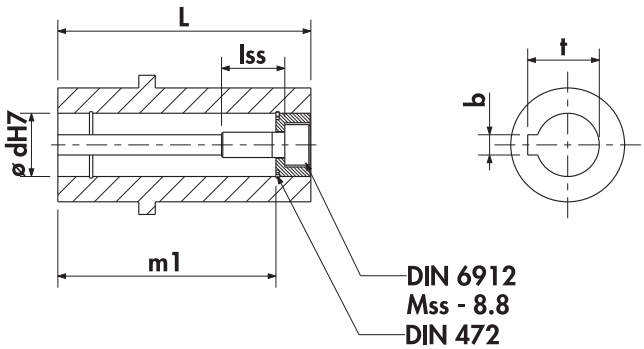


SG53P...SMB/SMR



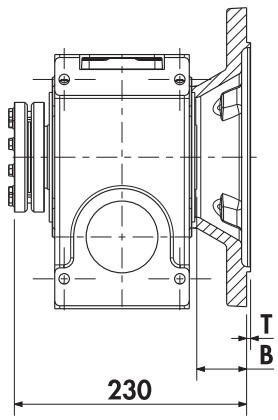


DIN42948	P	N	M	T	B	S
*A300	300	230	265	4	50	14



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

SG53PD...

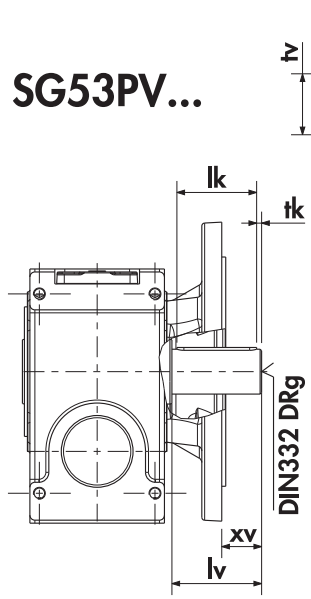


dv	tv	bv	lv	lk	tk	xv	g	lz
40	43	12	80	70	5	27	M16	310
*45	48,5	14	90	80	5	37	M16	330

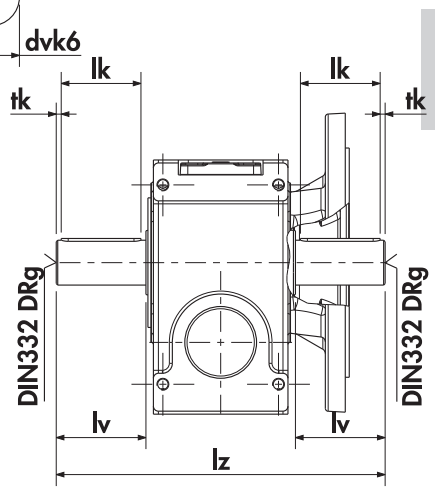
SMB/ SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	286
71	223	105	280	137	140	286
80	251	110	311	147	154	286
90S	276	121	360	164	170	286
90L	301	121	385	164	170	286
100						
112M						
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

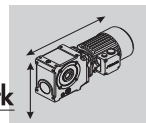
* Standard

SG53PV...

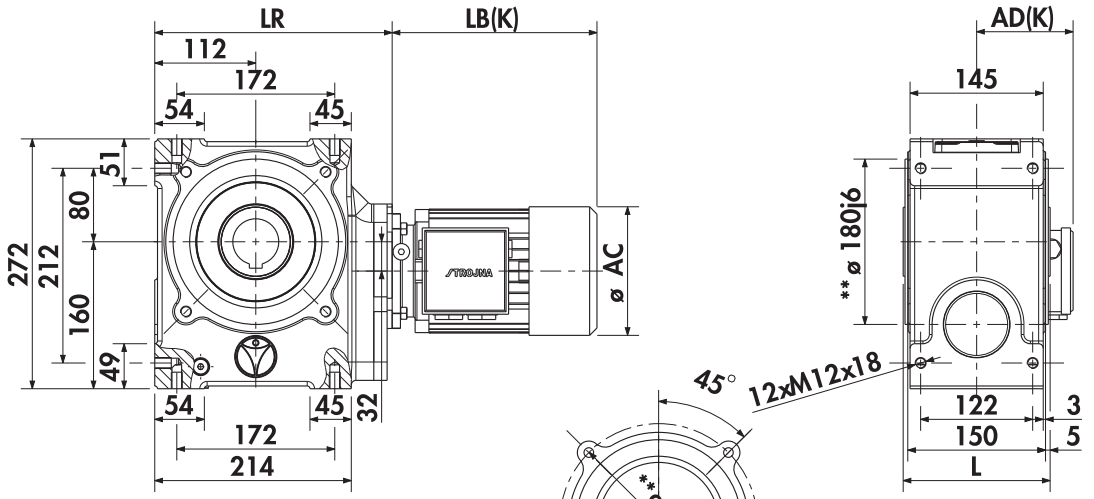


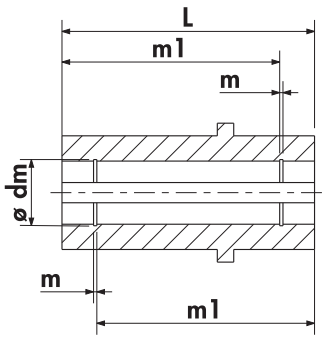
SG53PZ...

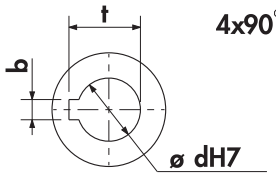




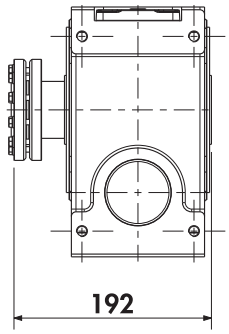
SG62...SMB/SMR







SG62D...



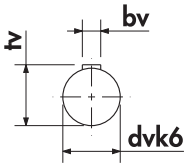
d	L	m1	dm	m	t	b
*50	160	143	53	2,15	53,8	14

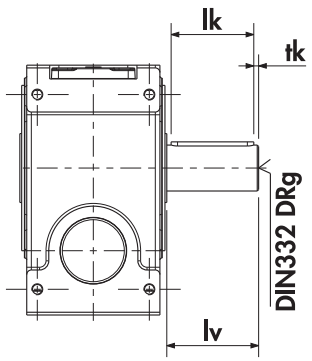
dv	tv	bv	lv	lk	tk	g	lz
*50	53,5	14	100	80	10	M16	360

SMB/ SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	258
71	223	105	280	137	140	258
80	251	110	311	147	154	258
90S	276	121	360	164	170	258
90L	301	121	385	164	170	258
100	329	157	418	174	193	362
112M	334	169	413	199	216	362
132S	377	190	492	183	247	375
132M	415	190	532	183	247	375
132Ma	415	190	532	183	247	375
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

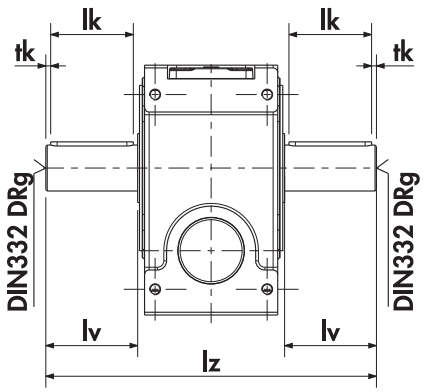
* Standard ** C Flange DIN42948

SG62V...

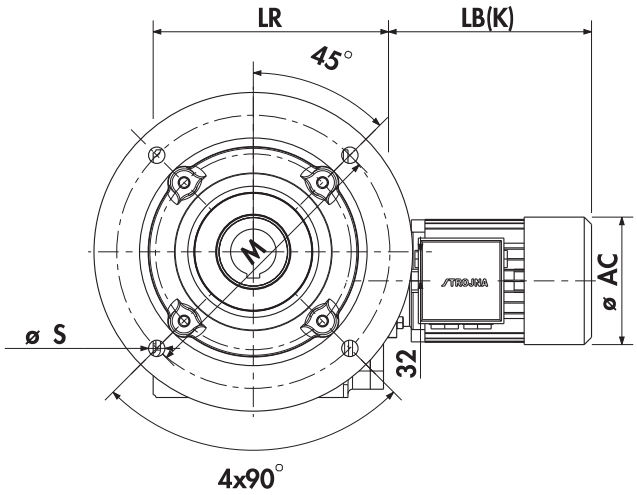


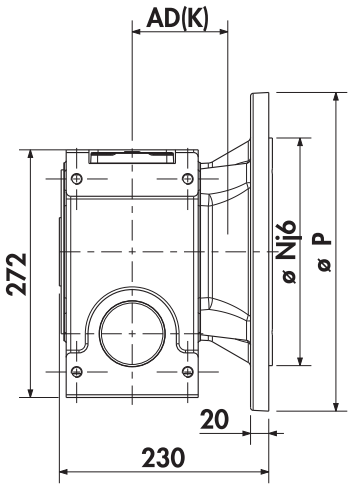


SG62Z...



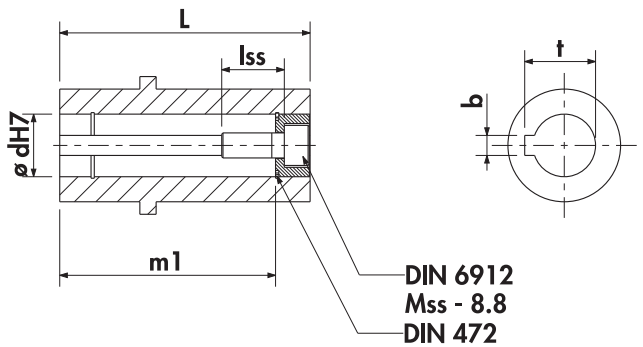
SG62P...SMB/SMR

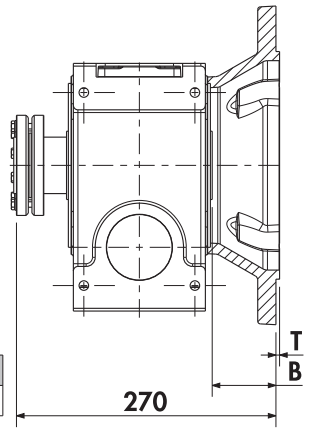




DIN42948	P	N	M	T	B	S
*A350	350	250	300	4	70	18

SG62PD...





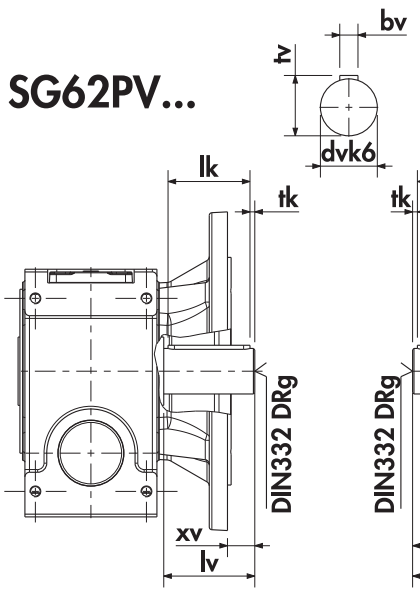
d	L	m1	lss	Mss	t	b
*50	160	143	40	M16	53,8	14

dv	tv	bv	lv	lk	tk	xv	g	lz
*50	53,5	14	100	80	10	27	M16	360

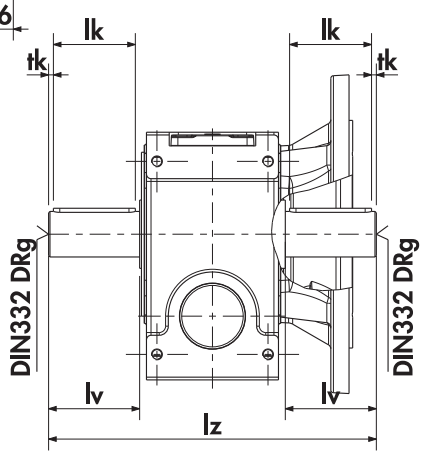
SMB/ SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	258
71	223	105	280	137	140	258
80	251	110	311	147	154	258
90S	276	121	360	164	170	258
90L	301	121	385	164	170	258
100	329	157	418	174	193	362
112M	334	169	413	199	216	362
132S	377	190	492	183	247	375
132M	415	190	532	183	247	375
132Ma	415	190	532	183	247	375
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

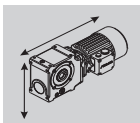
* Standard

SG62PV...

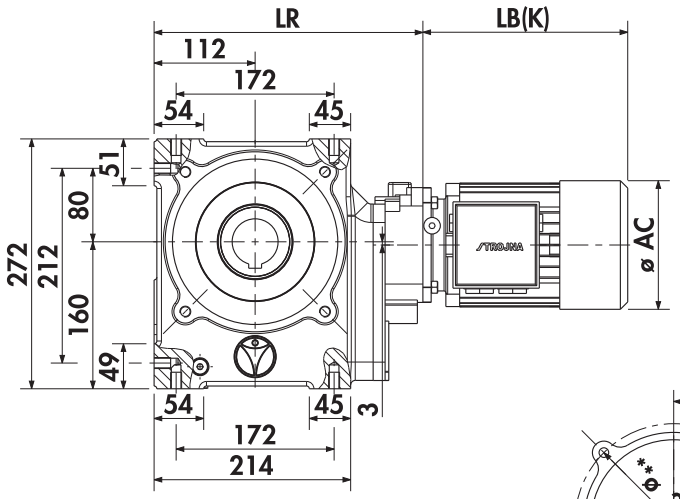


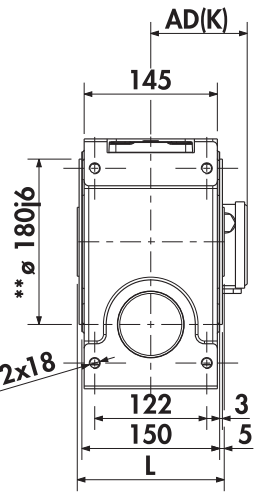
SG62PZ...

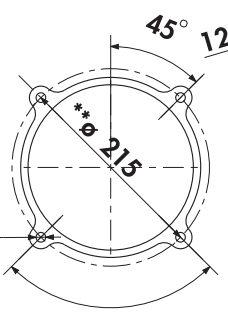


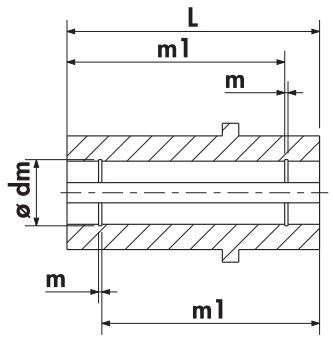


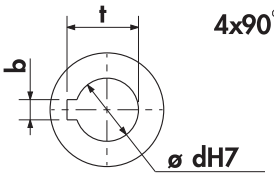
SG63...SMB/SMR





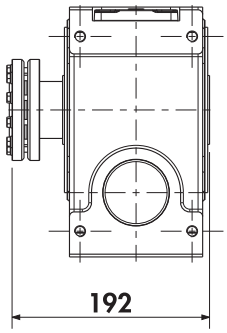






M16x24

SG63D...



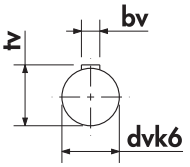
d	L	m1	dm	m	t	b
*50	160	143	53	2,15	53,8	14

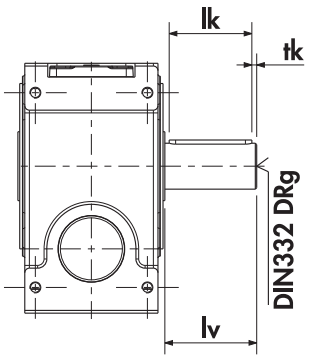
dv	tv	bv	lv	lk	tk	g	lz
*50	53,5	14	100	80	10	M16	360

SMB/ SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	292
71	223	105	280	137	140	292
80	251	110	311	147	154	292
90S	276	121	360	164	170	292
90L	301	121	385	164	170	292
100						
112M						
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

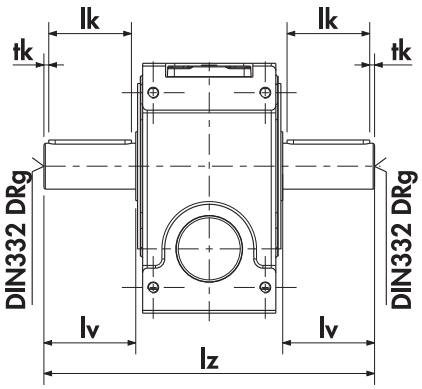
* Standard ** C Flange DIN42948

SG63V...

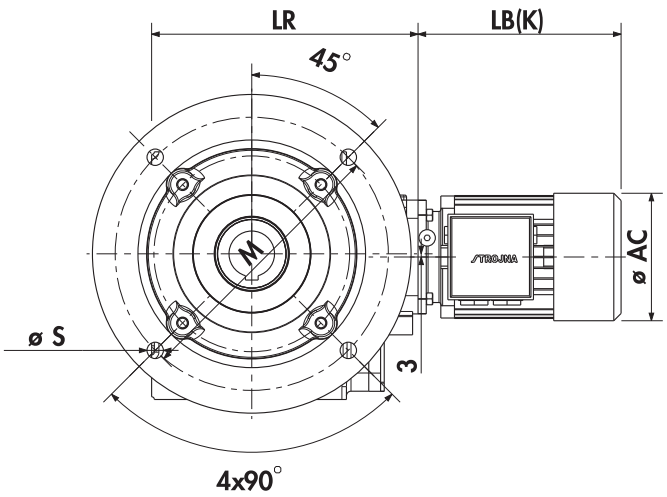


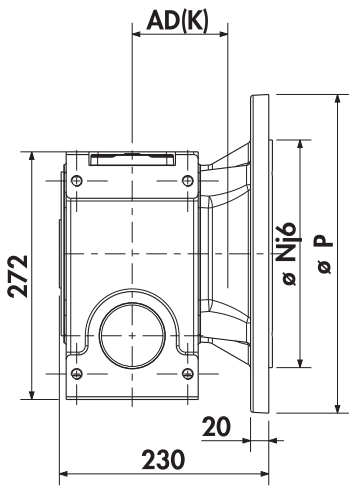


SG63Z...

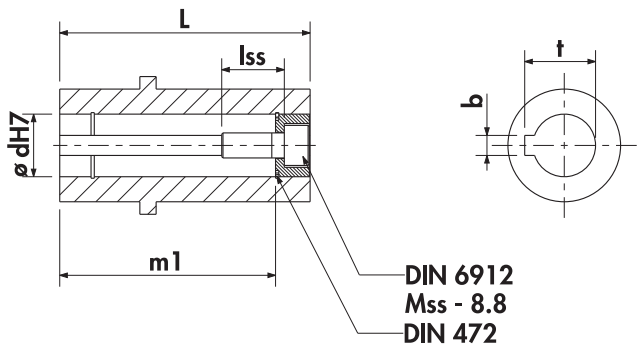


SG63P...SMB/SMR





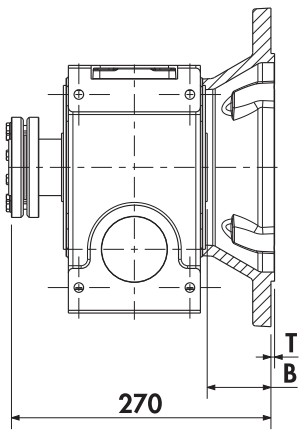
DIN42948	P	N	M	T	B	S
*A350	350	250	300	4	70	18



d	L	m1	lss	Mss	t	b
*50	160	143	40	M16	53,8	14

dv	tv	bv	lv	lk	tk	xv	g	lz
*50	53,5	14	100	80	10	27	M16	360

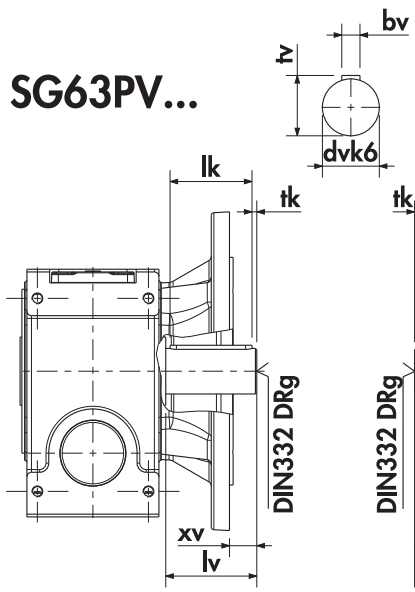
SG63PD...



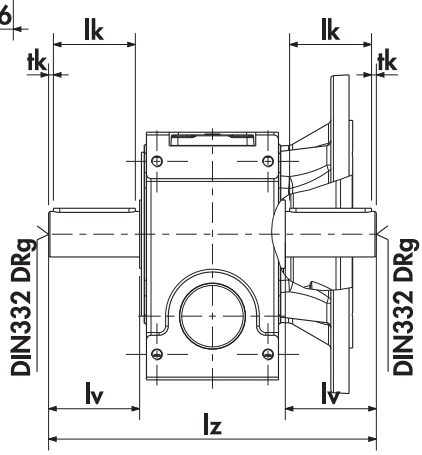
SMB/ SMR	LB	AD	LBK	ADK	AC	LR
63	207	97	260	125	125	292
71	223	105	280	137	140	292
80	251	110	311	147	154	292
90S	276	121	360	164	170	292
90L	301	121	385	164	170	292
100						
112M						
132S						
132M						
132Ma						
160M						
160L						
180M						
180L						
200L						
225S						
225M						
250M						

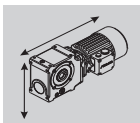
* Standard

SG63PV...



SG63PZ...





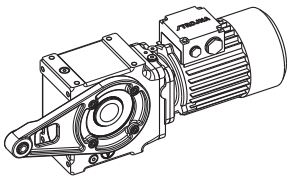
Torque Arm

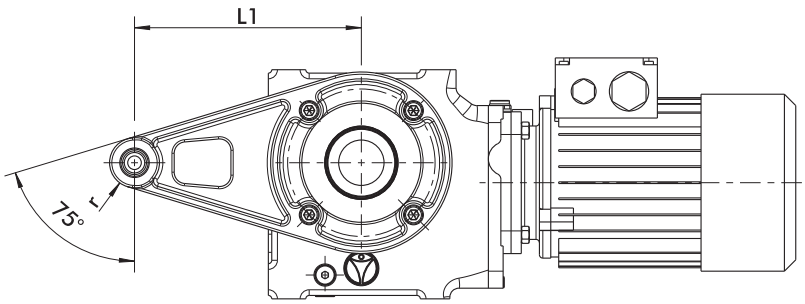
SG...SM/MR

Position

Left

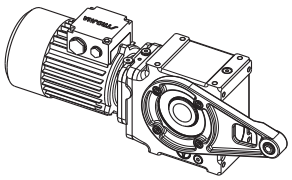
SG...SM/MRL...

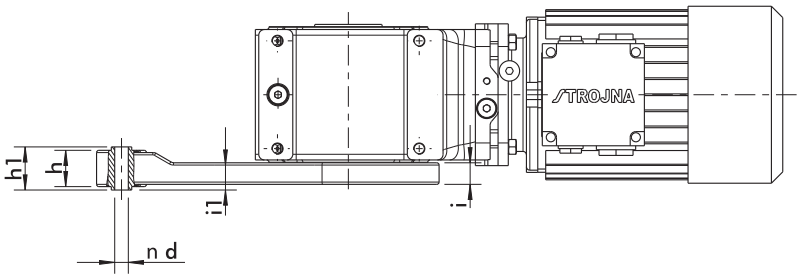




Right

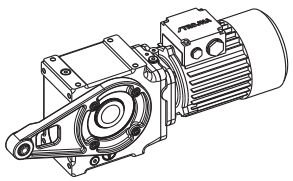
SG...SM/MRD...



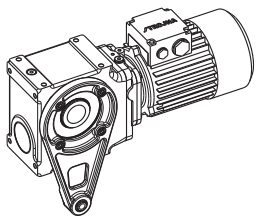


Direction

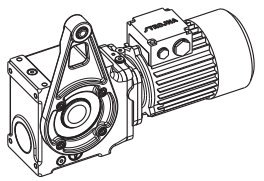
SG...SM/MR...0

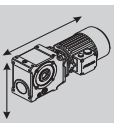


SG...SM/MR...1



SG...SM/MR...2

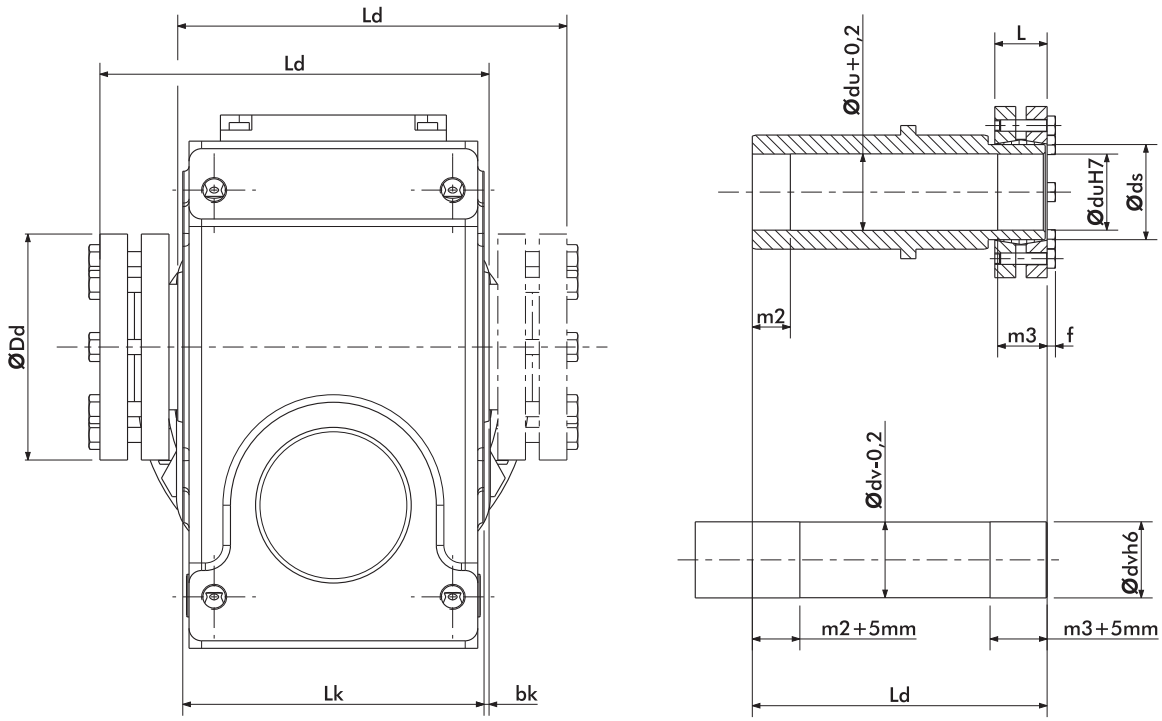




	L1	r	h	h1	d	i1	i
SG1	132	23	32	38	12	20	15
SG2	160	23	32	38	12	22	17
SG3	180	23	32	38	12	26	21
SG4	200	23	32	38	12	26	21
SG5	225	36	56	62,5	20	33	23
SG6	250	36	56	62,5	20	36,25	23

Shrink disc

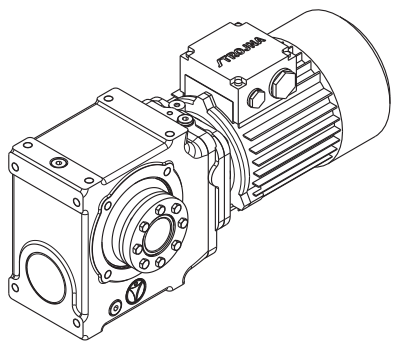
SG...(P)D SM



Position

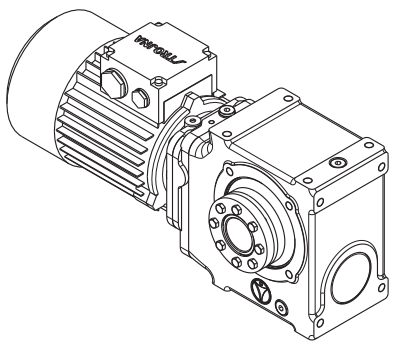
Left

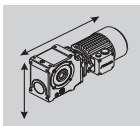
SG...(P)DL SM



Right

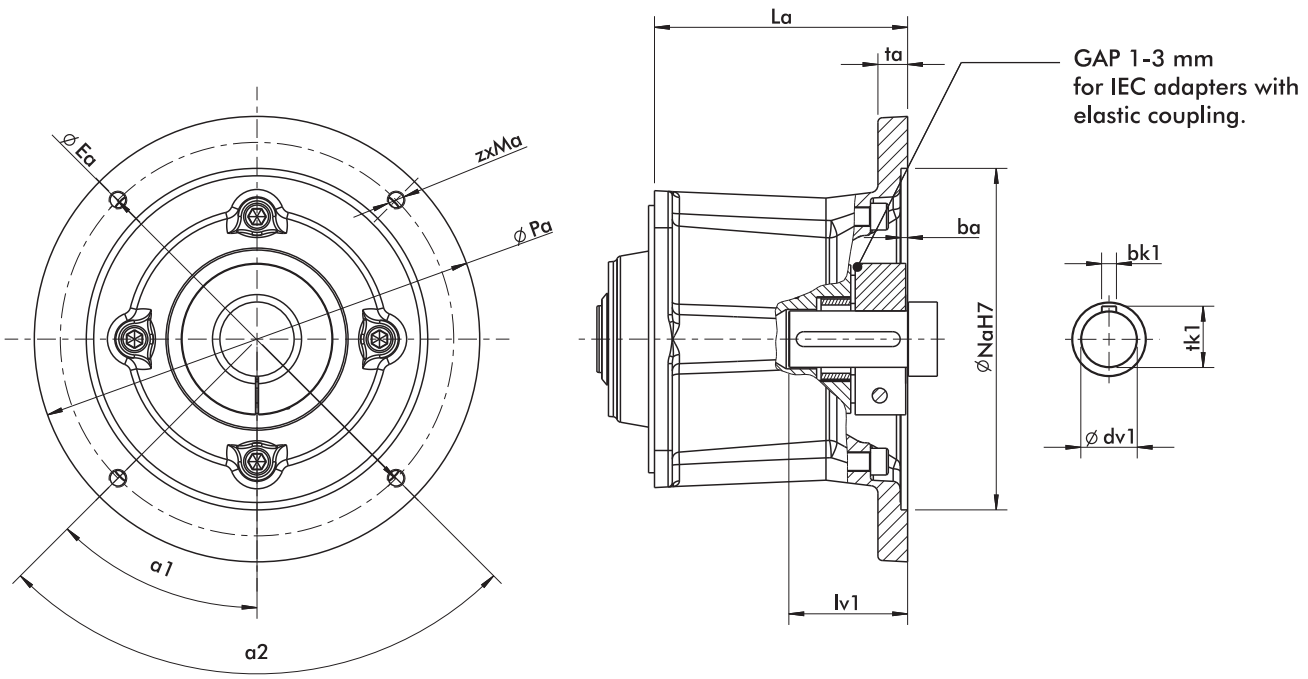
SG...(P)DD SM



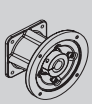


	m2	m3	Lk	bk	Ld	du/dv	ds	Dd	L	f	Msmax [Nm]	Mp [Nm]
SG1	20	20	95	5	130	30	36	72	23,5	4	570	12
SG2	20	25	105	5	140	35	44	80	25,5	4	780	12
SG3	30	25	124	3	160	40	50	90	27,5	4	1160	12
SG4	30	25	120	5	160	40	50	90	27,5	4	1160	12
SG5	30	30	140	5	180	50	62	110	30,5	4	2200	12
SG6	30	30	150	5	192	50	62	110	30,5	4	2200	12

Dimensions - IEC adapter



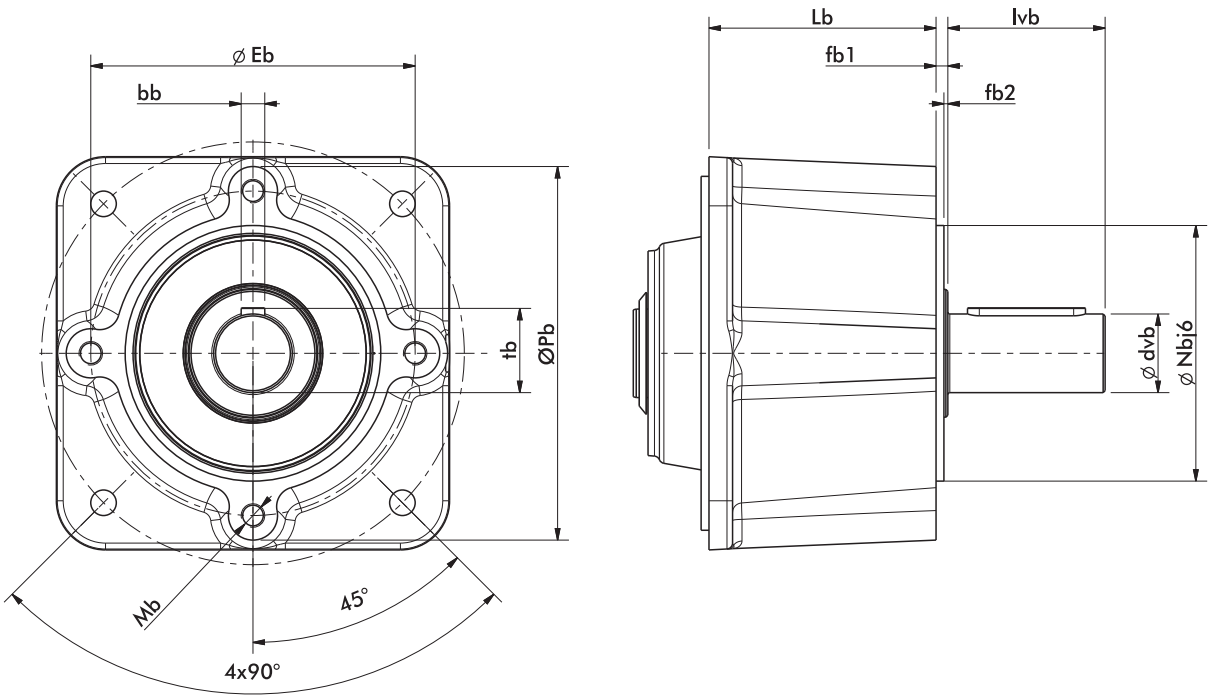
IEC-B5	Pa	Na	ba	Ea	zxMa	a1	a2	La	ta	dv1	lv1	tk1	bk1	m (kg)
A63	140	95	3,5	115	4xM8	45°	90°	68	10	11j6	23	12,5	4	3
A71	160	110	4	130	4xM8	45°	90°	68	10	14j6	30	16	5	3
A80	200	130	4	165	4xM10	45°	90°	96	14	19j6	40	21,5	6	6
A90	200	130	4	165	4xM10	45°	90°	96	14	24j6	50	27	8	6
A100	250	180	4,5	215	4xM12	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	a1	a2	La	ta	dv1	lv1	tk1	bk1	m (kg)
A63	120	80	3,5	100	4xØ 7	45°	90°	68	8	11j6	23	12,5	4	2,5
A71	140	95	3,5	115	4xØ 9	45°	90°	68	10	14j6	30	16	5	3
A80	160	110	4	130	4xØ 9	45°	90°	96	14	19j6	40	21,5	6	5
A90	160	110	4	130	4xØ 9	45°	90°	96	14	24j6	50	27	8	5
A100	200	130	4	165	4xØ 11	45°	90°	113	18	28j6	60	31	8	11
A112	200	130	4	165	4x Ø 11	45°	90°	113	18	28j6	60	31	8	11
A132	250	180	4,5	215	4XØ13	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

Intruduction on IEC motors:

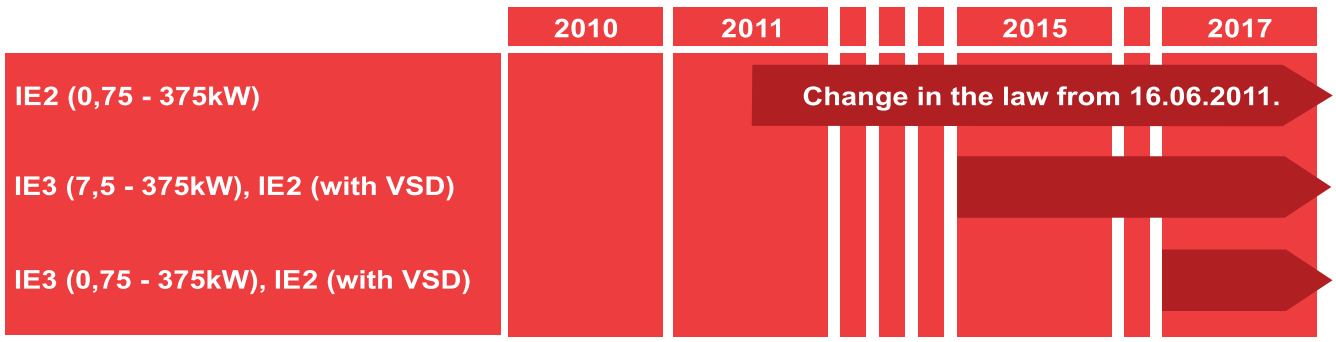
New efficiency classes for the low-voltage three-phase motors (IE = International Efficiency)

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 Electrotehnical 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):

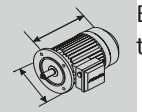
IE1 = Standard Efficiency
IE2 = High Efficiency
IE3 = Premium Efficiency

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.

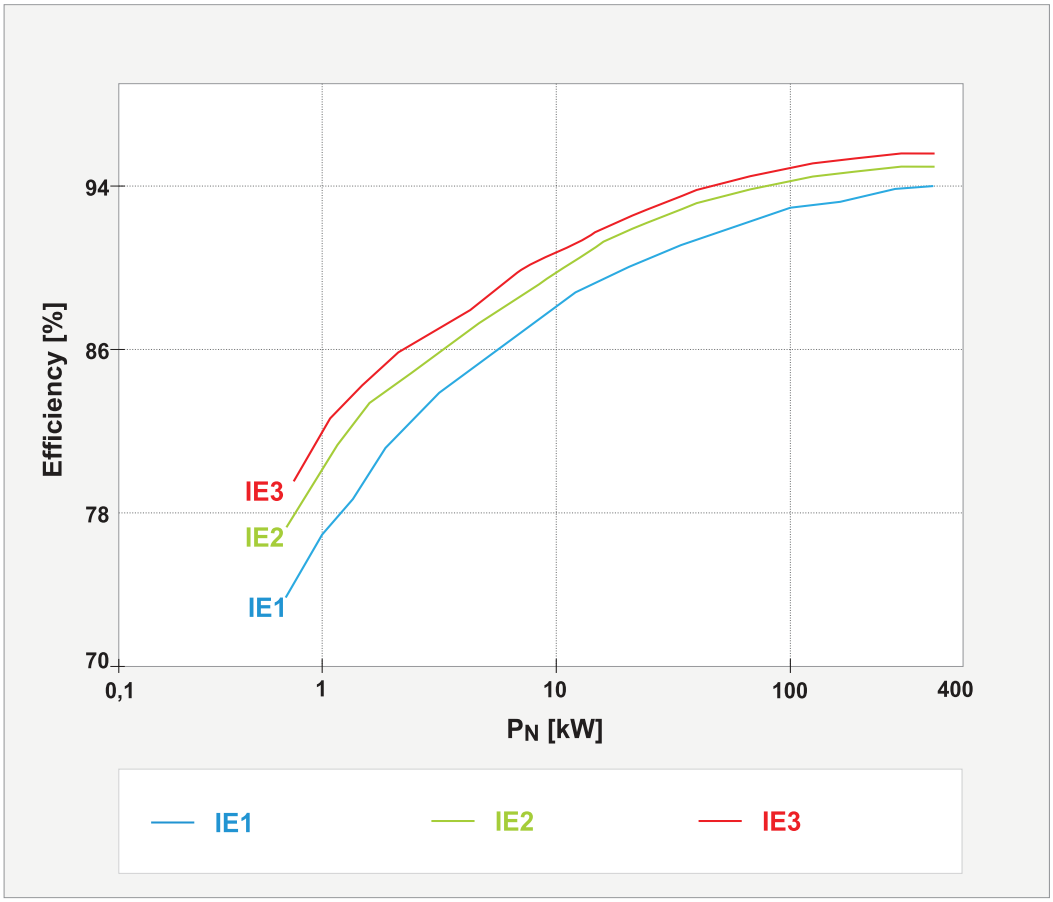


According to the Comission Regulation (EC) No 640/2009 (introduced in July 2009) the required efficiency class of general--purpose motors (introduced to the market in future) will be as follows:

- From 16 June 2011, motors placed for the first-time on the market shall have a minimum efficency 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 IEC 60034-30 is valid for low voltage three phase squirrel cage induction motors with the following specifications:

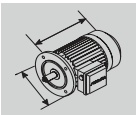
- Rated voltage up to 1000V
- Rated output between 0,75kW and 375kW
- Either 2,4 or 6 poles
- Rated on the basis of continous duty (S1) or intermittent periodic duty (S3) with cyclic duration factor of 80% or higher
- Capable of operating direct on-line
- Rated for operation conditions in accordance with IEC 60034-1 (temperature, installation altitude, etc.)

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

- Environment temperature: -16°C ÷ +40°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 completly integrated into a product (for example pump, fan or compressor) of wich the energy performance cannot be tested independently from the product
- At altitudes exceeding 4000 meters above sea level
- Where ambient air temperatures exceed 60°C
- Where ambient air temperatures are less than -30°C for any motor or less then 0°C for a motor with water cooling
- In potentially explosive atmosheres as defined in Directive 94/4EC of the European Parliament
- Break motors



Construction of the 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.

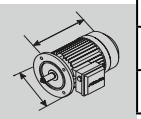
3.Rotor:
The winding of the rotor is made of die-casted aluminium. The rotor together with the shaft is dynamically balanced with half key according to DIN ISO 8821.

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 IEC 60034-6; cooling according to IC 411). Standard motors have a radial flow centrifugal fan allowing fully reversible rotation. Please chek 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 IP 55 (IP - International Protection). On request the motors are available with a higher degree of protection.

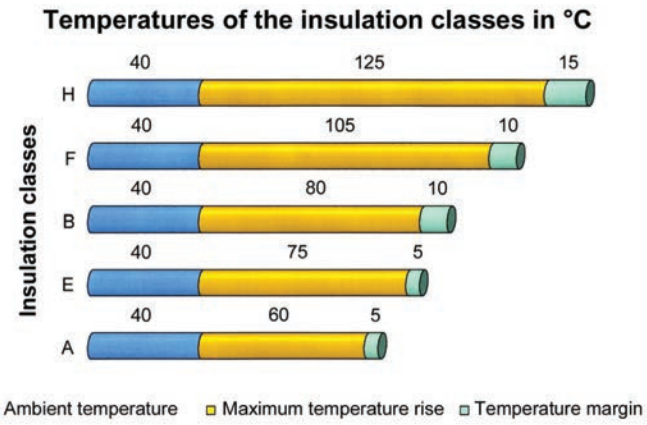
IP	Protection of work equipment	Protection of people	**IP**	Protection of work equipment
First prefix	Against penetrate of solid foreign bodies	Against access of dangerous parts with	**Second prefix**	Against penetrate of water with detrimental action
0.	(no protection)	(no protection)	**.0**	(no protection)
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.

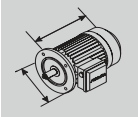
8.Nominal output
The motors will properly operate with the nominal output at continuous duty (S1) when the following conditions are observed:
- Motor is supplied with nominal voltage and frequency
- Ambient temperature is not higher than +40°C
- Altitude of site is up to 1000m above sea level

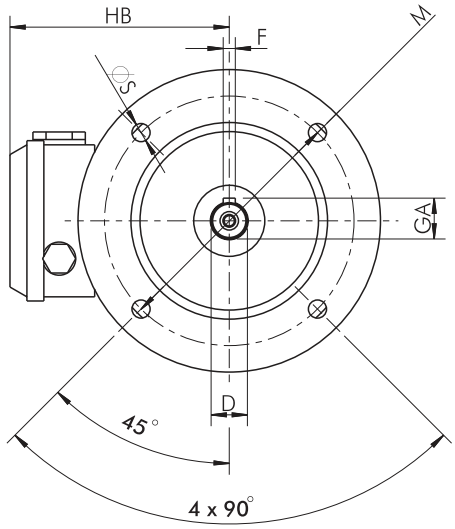
9.Insulation
Standard motors are manufactured in the insulation class F.

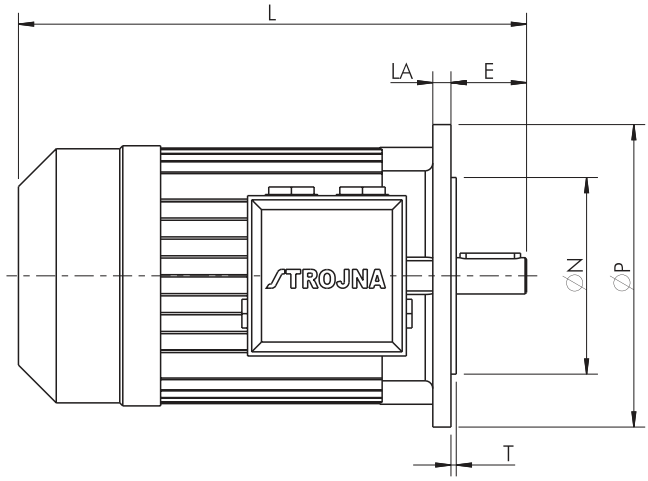


10.Options
The motors can be equipped with optional accessories (e.g. PTC, Pt100, anti-condensation heater, external fan).

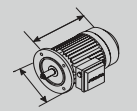
11.Ordering
When ordering motors please specify the following information:
- Quantitiy
- Motor size
- Nominal output, kW
- Rated speed
- Type of mounting
- Nominal voltage and frequency
- Any special features or options

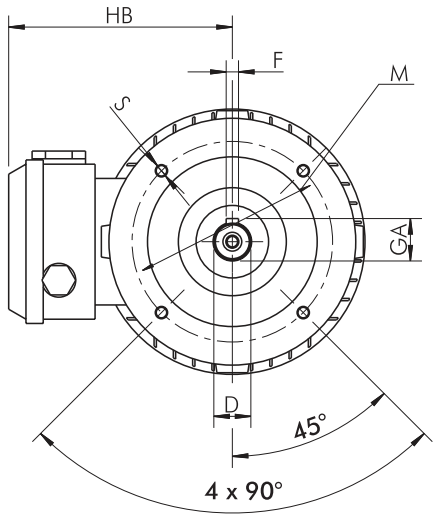


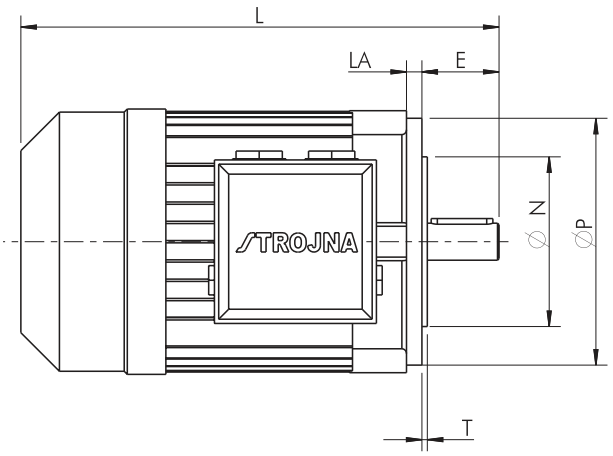




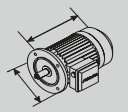
Type		D	E	F	GA	M	N	P	LA	T	S	HB	L	Pole
63	A	11j6	23	4h9	12,5	115	95j6	140	9	3	10	102	200	2, 4, 6, 8
	B												210	2, 4, 6, 8
71	A	14j6	30	5h9	16	130	110j6	160	9	3,5	10	111	223	2, 4, 6, 8
	B												245	2, 4, 6, 8
80	A	19j6	40	6h9	21,5	165	130j6	200	10	3,5	12	120	266	2, 4, 6, 8
	B													2, 4, 6, 8
90	S	24j6	50	8h9	27	165	130j6	200	8	3,5	12	130	330	2, 4, 6
													305	8
	L												330	2, 8
													355	4, 6
100	LA	28j6	60	8h9	31	215	180j6	250	11	4	15	140	420	2, 4
	LB												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	38k6	80	10h9	41	265	230j6	300	12	4	15	178	463	2, 6, 8
													501	2, 4
	M												501	4, 6, 8
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
		60	140	18	64	400	350	450	18	5	19	345	960	4, 6, 8
250	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



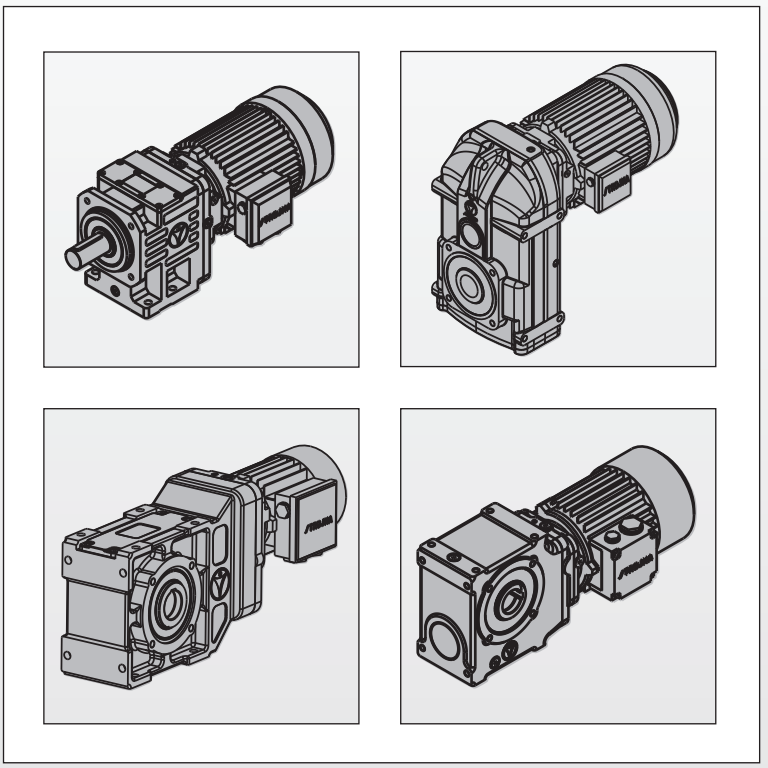




Type		D	E	F	GA	M	N	P	S	T	LE	HB	L	Pole
63	A	11j6	23	4h9	12,5	100	80j6	120	M5	3	14	102	210	2, 4, 6, 8
	B												210	2, 4, 6, 8
71	A	14j6	30	5h9	16	115	95j6	140	M8	3	14	111	223	2, 4, 6, 8
	B												245	2, 4, 6, 8
80	A	19j6	40	6h9	21,5	130	110j6	160	M8	3,5	14	120	266	2, 4, 6, 8
	B												278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



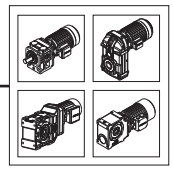
STROINA TRANSMISSIONS



OPERATING AND MAINTENANCE MANUAL

ZG FG
KG SG

GEAR UNITS



1. INFORMATION

1.1 General information

These 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.

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

1.2 Safety and information markings

- 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:
  - 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 Long-term storage:

- 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 specifications 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 Bleeding the gear unit

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 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 Installation and removal of hollow-shaft gear units

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-shaft are manufactured with tolerance ISO H7 class.

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

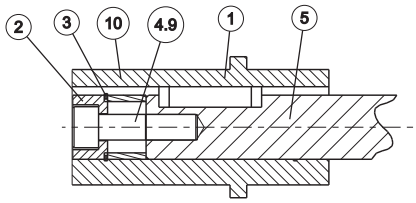


Figure 1
Mounting the customer shaft with a shoulder

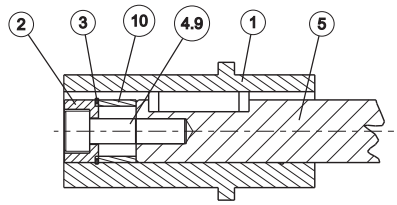


Figure 2
Mounting the customer shaft without a shoulder

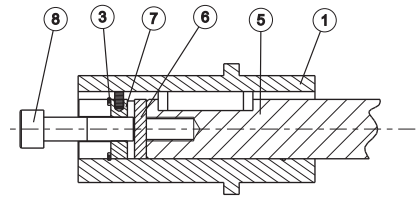


Figure 3
Removing the customer shaft with or without shoulder

4.1.1 Installation: (Figure 1 and Figure 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 Removal: (Figure 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 fixing 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 Lubrication

5.1.1 ZG gear units

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

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

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

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 Inspection and maintenance

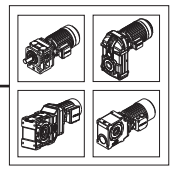
Gear units of the model range sizes ZG sizes ZG1 to ZG6; model range FG sizes FG1 to FG3; model range KG sizes KG1 to KG4, model range SG; are maintenance-free, and oil change is not necessary. The gear units are executed without breather plug, there are no oil drain, oil level respectively oil filling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

For special applications under difficult / aggressive ambient conditions, an oil change has to be done frequently! The exact quantities of oil are signs on the oil table.

5.3 Inspection and maintenance intervals

Time interval	Inspection and maintenance work
monthly	• Gear units must be checked for noise changes (running noise of the gearing and rolling bearings) • Check the housing temperature (max. 90 °C, 194 °F) • Visible inspection of seals for leakage • Remove dust deposit
every 3 months	• Clean the exterior of the vent plug
every half year	• Check the rubber buffer set • Check the fixing bolts to make certain they are tight
every 5.000 service hours, no later than every 4 years	• Visual check of the shaft seals; if applicable replace the shaft seals
every 10.000 service hours, no later than every 5 years	• Oil change: ZG7 to ZG13 • Oil change: FG4 to FG8 • Oil change: KG5 to KG9
every 10 years	• General overhaul



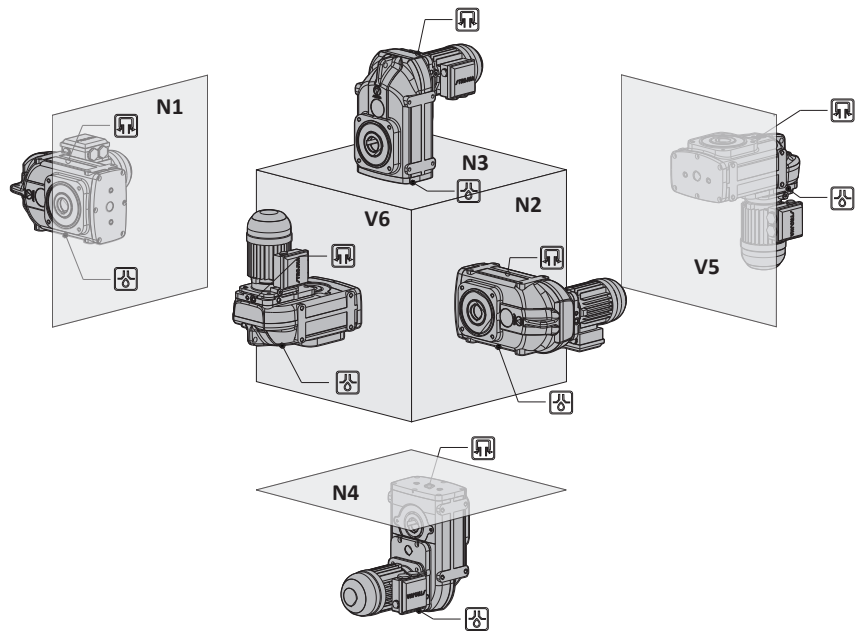
5.4 Oil quantity (in liters)

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 GS 460	Alphasyn PG 460	Tivela S 460	Glygoyle 460
ZG	-25°C ... +60°C	CLP PG	220	Degol GS 220	Alphasyn PG 220	Tivela S 220	Glygoyle 220
	-40°C ... +60°C	CLP HC	220	Degol PAS 220	Alphasyn T 220	Omala S4 GX 220	SHC 630
KG	-20°C ... +40°C	HCE	220	Eural gear 220	Optileb GT 220	Cassida GL 220	SHC Cibus 220
	-20°C ... +80°C	CLP PG	460	Degol GS 460	Alphasyn PG 460	Tivela S 460	Glygoyle 460
SG	-25°C ... +60°C	CLP PG	220	Degol GS 220	Alphasyn PG 220	Tivela S 220	Glygoyle 220
	-40°C ... +20°C	CLP-HC	220	Degol PAS 220	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
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 gear units

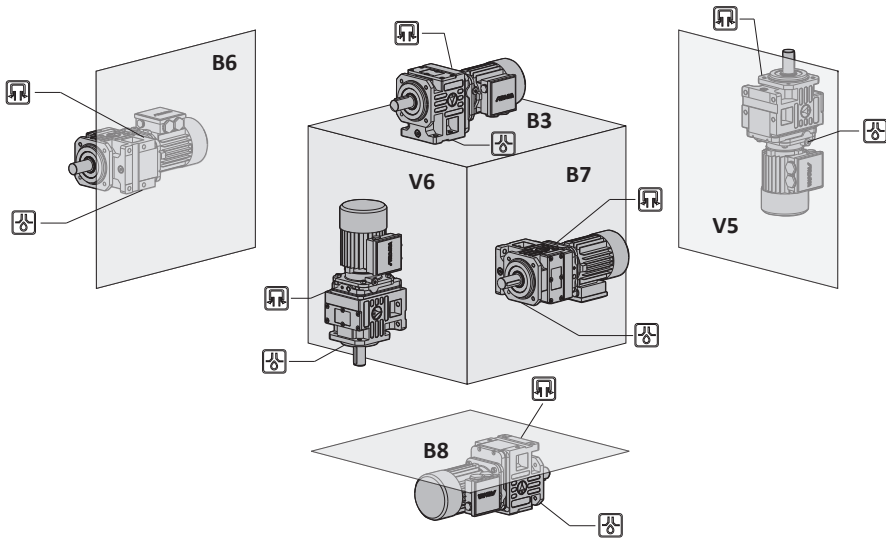
FG	Mounting position					
	N1	N2	N3	N4	V5	V6
12	1,1	1,1	1,5	1,6	1,7	1,9
22	1,2	1,2	1,7	1,8	1,9	2,3
23	1,4	1,4	2,0	2,2	2,4	2,9
32	1,9	1,9	3,0	3,1	3,4	4,0
33	2,3	2,3	3,8	4,0	4,3	5,0
42	3,1	3,1	4,2	4,8	4,8	7,0
43	3,5	3,5	5,8	6,2	6,8	7,7
44	3,7	3,7	7,0	7,5	8,0	9,0
52	6,2	6,2	9	9,2	10	12
53	6,5	6,5	9,7	10	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 gear units

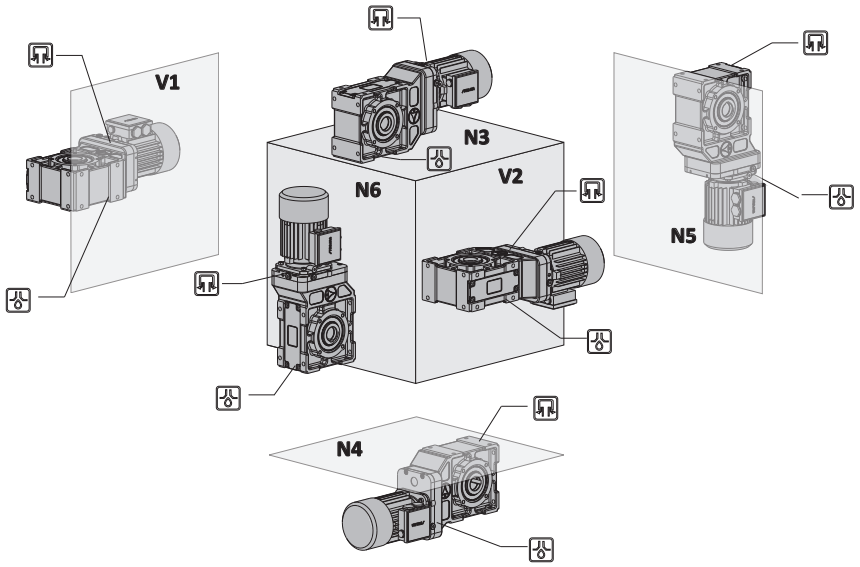
ZG	Mounting position					
	B7	B6	B3	B8	V6	V5
12	0,4	0,4	0,2	0,4	0,3	0,4
22	0,8	0,8	0,7	1,4	1,3	1,5
23	0,9	0,9	0,8	1,6	1,5	1,7
32	0,9	0,9	0,7	1,4	1,4	1,6
33	1	1	0,9	1,9	1,8	2
42	1,2	1,2	1	2,1	2	2,2
43	1,4	1,4	1,3	2,7	2,6	2,8
44	1,9	1,9	1,8	3,5	3,4	3,7
52	1,2	1,2	0,9	1,9	1,8	2,2
53	1,6	1,6	1,5	3,2	3,1	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



- Vent plug - Drain plug

5.4.3 KG gear units

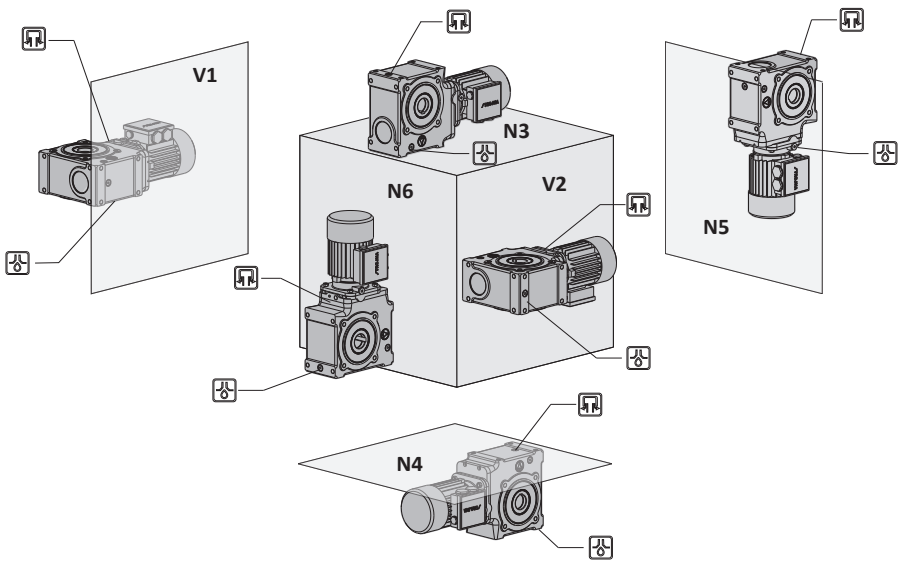
KG	Mounting position					
	N3	N4	N5	N6	V1	V2
12	0,8	0,9	1,2	1,5	1,3	1,4
22	1	1	1,45	1,6	1,5	1,6
23	1	1,1	1,45	1,8	1,7	1,8
32	1,6	1,6	2,2	2,1	2,2	2,2
33	1,7	1,8	2,6	2,8	2,6	2,7
42	2,5	2,6	3,0	4,5	4,5	4,0
43	2,6	2,7	3,3	4,7	4,3	4,4
44	2,8	3,2	3,5	5,0	4,8	4,8
53	3,0	3,8	4,2	5,3	3,2	3,3
54	3,5	4,1	4,7	5,7	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

5.4.4 SG gear units

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

6. ELECTRICAL CONNECTION

Work is only permitted to be carried out by qualified specialists on the stationary motor while disconnected and prevented form 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 Preparation for connecting the electrical motor

Attention! Wear safety glasses - danger of injury from fragments!

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

Caution! Do not penetrate inside 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.

Caution! 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 counterclockwise rotation

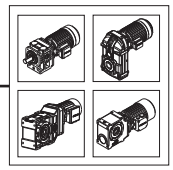
6.4 Motor installation

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 Operation

Vibration levels of Veff = 3,5 mm/s for Pn ≤ 15 kW (Veff = 0,14 inch/sec for Pn ≤ 20 HP) or. Veff = 4,5 mm/s for Pn > 15 kW (Veff = 0,18 inch/sec for Pn > 20 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 time to time 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 time interval!
Switch on forced cooling every time when you start the motor (if you have that option).

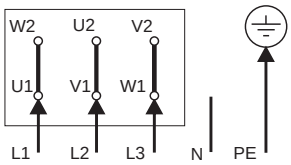


7. MOTOR CIRCUIT DIAGRAM

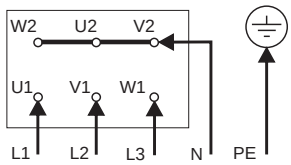
7.1 Three-phase single-speed induction motors type:

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

Δ CONNECTION



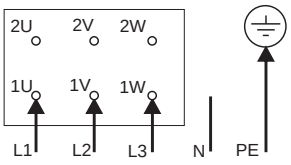
Y CONNECTION



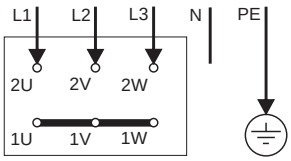
7.2 Three-phase two-speed induction motors type:

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

Δ CONNECTION

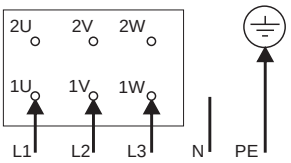


YY CONNECTION

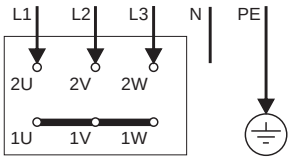


- number of poles 2p = 4/2 and 2p = 8/4 (single-winding , for ventilator drive)

2p = 4(8)
Y CONNECTION

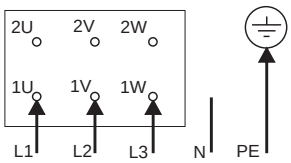


2p = 2(4)
YY CONNECTION

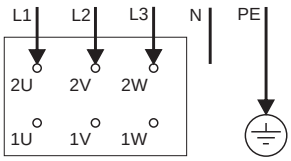


- number of poles 2p = 6/4 and 2p = 8/6 (double-winding)

2p = 6(8)
Y CONNECTION



2p = 4(6)
Y CONNECTION



8. MOTOR INSTALLATION ON IEC ADAPTER

For IEC adapters with elastic coupling.

8.1 Pay attention before assembly:

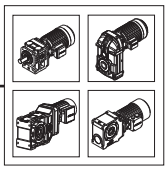
- **Danger of injuries!**
- **Disconnect the drive before carrying out any work on the coupling!**
- **Seccure the drive against unintetional re-start rotation!**
- **Incorrectly tighten bolts can cause serius personal injuries and property damages!**
- **In compliance with accident prevention regulations, you are obligated to protect all freely rotating parts by means of permanetly installed guards/ covers against unintentional contact and falling down objects.**
- **To avoid sparts, the covers for coupling used in explosive atmospheres should be made of stainless steel!**
- **As a minimum, the covers have to fulfil the requirements of protection type IP2X.**
- **The covers have to be designed to prevent dust from depositing on the coupling.**
- **The cover must not contact the coupling or impair the proper function of the coupling.**
- Make sure that the speeds, torques and ambient temperatures as stated in Tehnical Data are not exceeded.
- The maximum permissible bore diameters must not be exceeded.
- Check whether the shaft-hub connections safely transmit the occurring operating torques.
- The standard tolerance of STROJNA for finish bores is fit H7.
- Standard keyways comply with DIN 6885.
- Check the dimensions and tolerances of shafts, hub bores, keys and keyways.
- Set screws as required.

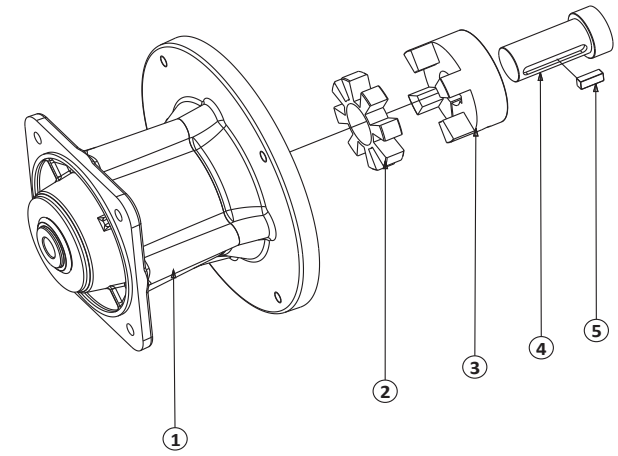
Tehnical table:

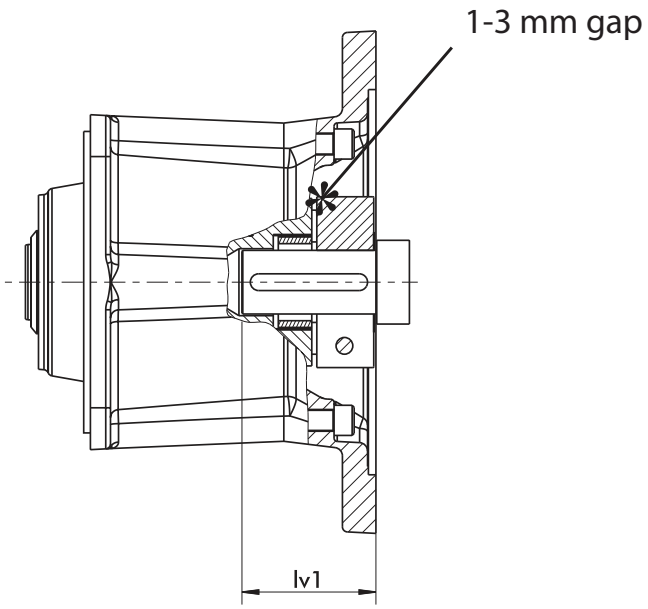
IEC Size				63-71 10	80-90 60	100-112 150	132-180 450	200-250 800
Nominal torque		(Nm)	T_{kn}	12,5	60	160	530	950
Maximal torque		(Nm)	T_{kmax}	25	120	320	1060	1900
Distance A		(mm)	A	11,5	18	20	26	31
Radial displacement		(mm)	Max. Values	0,1	0,12	0,15	0,2	0,25
Angular misalignment		(Grad)		1	1	1	1	1
Axial displacement		(mm)		±1	±2	±2	±2	±2
Moment of inertia per hub			J1/J2	0,003	0,04	0,08	0,66	8

Type	Shore hardness	Color	Material	Temperature range	Features
A*	98 Sh A	Red	TPU	-30°C to +100°C	good damping
B	64 Sh D	Green	TPU	-30°C to +120°C	high torsion
C	80 Sh A	Yellow	TPU	-30°C to +100°C	very good damping
D	64 Sh D	Beige	Hytrel	-50°C to +150°C	temperature resistant

*** Standard Strojna**







IEC adapter (1) is delivered with following parts:
- Elastic insert (2)
- Jaw (3)

8.2 Installation

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.Lose 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

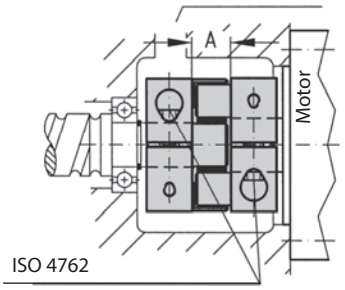
8.3 Adjusting coupling

- **Injury hazard!**
- **Switch-off the drive before all work on the coupling!**
- **Secure the drive against unintentional switching on and rotating!**
- **Reference:**
- **An exact alignment of the coupling increases the service life of the elastic intermediate.**
- **Do not exceed the maximum permissible displacement values. The overstepping of these values results in coupling damage and breakdown!**

- 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 utilise 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 ≤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 displacement ΔA:

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



ISO 4762

ATTENTION!

If greater axial displacements are expected in operation, consultation with STROJNA is necessary.

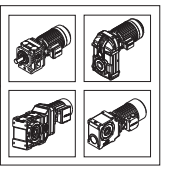
8.5 Radial displacement:

- Measure a complete rotation (360°) between coupling and flange.
- The values of the table are valid for reference rotation speed of 1500 min^{-1}

8.6 Angular misalignment:

- Measure the face of flange and coupling on complete rotation (360°)
- The values of the table are valid for reference rotation speed of 1500 min^{-1}

IEC			63-71	80-90	100-112	132-180	200-250
Size			10	60	150	450	800
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 Operation and maintenance

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

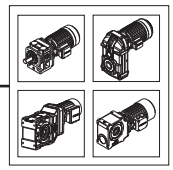
8.8 Operating faults and their possible causes

Trouble	Cause	Risk Warning	Correction
Irregular running noises / vibration	Alignment fault	Considerable increase in coupling temperature. Premature wear of elastic buffers. 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 elastic buffers. 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 serius 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

Trouble	Cause	Risk Warning	Correction
Premature wear of elastomer	Alignment fault	Considerable increase in coupling temperature. Premature wear of elastic buffers. Increased reaction forces act on connected machines.	-Disconnect drive
			-Remove cause for alignment fault
			-Re-align coupling
			-Inspect elastomer for wear
	Unacceptable temperatures	Material properties of elastic buffers change. The torque transmission capability s adversely affected	-Disconnect drive
			-Replace elastomer
			-Re-align coupling
			-Adjust ambient temperature
	Torsional vibrations in the drive line	Considerable increase in coupling temperature. Premature wear of elastic buffers. Increased reaction forces act on connected machines.	-Disconnect drive
			-Analyse and eliminate cause for torsional vibrations
			-Check coupling parts for damages, replace parts, if necessary
			-Replace elastomer and consult STROJNA concerning eventual use of another Shore-hardness*
Claw breakage	Wear limit of elastomer exceeded = contact of claws	Coupling is destroyed. Conected machines can be affected, too.	-Disconnect drive
			- Connect STROJNA for replace parts
			- inspect the elastomer for wear at shorter intervals
	Overload due to too high torque	Coupling is destroyed. Conected machines can be affected, too.	-Disconnect drive
			- Connect STROJNA for assistance

* Default Strojna Type A - 98 Sh A

When using accessories and spare parts which were not originally manufactured or supplied by STROJNA, no liability or guarantee for any damages will be accepted.



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 Installation

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, handtighten three (3) or four (4) evenly spaced locking screws and make sure that outer collars of shrink disc are parallel. Handtighten remaining locking screws.

4.Use torque wrench and set it approximately 5% higher than specified locking screw tightening torque Mp. Tighten locking screws in either a clockwise or counterclockwise sequence, using approx. ¼ (i.e., 90°) turns (even if initially some locking screws require a very low tightening torque to achieve ¼ turns) for several passes until ¼ 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 (Mp) 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 Removal

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. ½ 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.

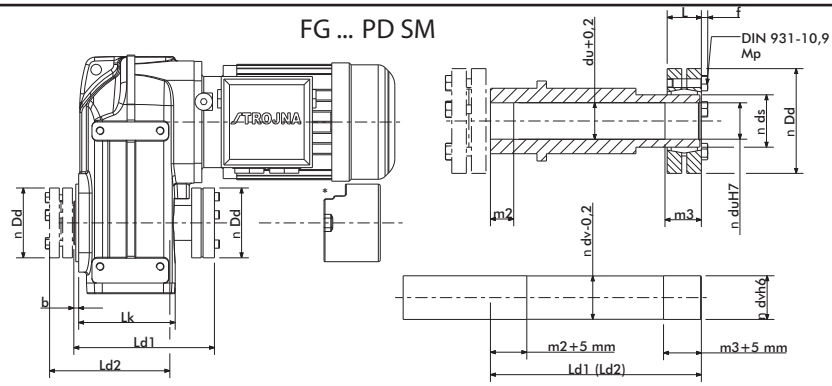
WARNING! DO NOT completely remove locking screws before locking rings are disengaged. As sudden separation of locking rings could involve high separation forces that may result in permanent injury or death. Be certain that locking rings are disengaged before completely removing locking screws.

9.3 Reinstallation of shrink discs

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

- Dow Corning® Molykote BR 2 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.

FG ... PD SM

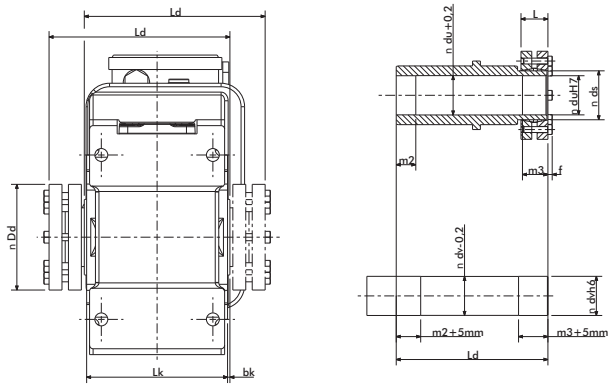


	SMB/SMR		m2	m3	Lk	b	Ld1	Ld2	du/dv	ds	Dd	L	f	Msmax [Nm] [Lb-Ft]	Famax [kN] [Lbf]	Mp [Nm] [Lb-Ft]
	max	max*														
FG1		63	20	21	99,5	5	150	130	30	36	72	23.5	4	570 (420)	58 (13000)	12 (9)
FG2	80	71	20	24	112	5	169	143	35	44	80	25.5	4	780 (575)	74 (16600)	12 (9)
FG3	112	100	20	27	141	5	205	180	40	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.

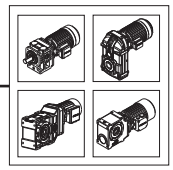
All other units in mm!

KG...(P)D SM

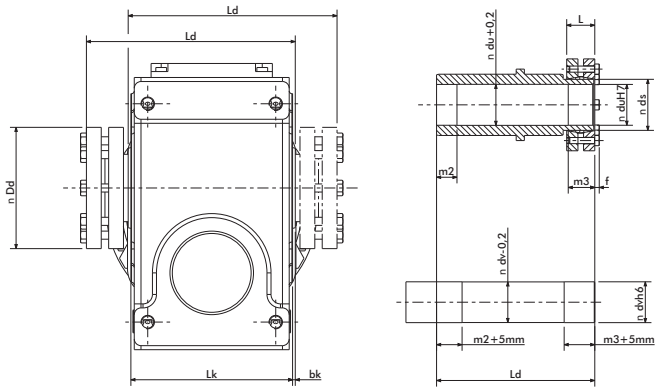


	SMB/SMR		m2	m3	Lk	b	Ld1	Ld2	du/dv	ds	Dd	L	f	Msmax [Nm] [Lb-Ft]	Famax [kN] [Lbf]	Mp [Nm] [Lb-Ft]
	max	max*														
KG1			20	20	95	5	130	130	30	36	72	23.5	4	570 (420)	58 (13000)	12 (9)
KG2			20	20	105	5	140	140	30	36	72	23.5	4	570 (420)	58 (13000)	12 (9)
KG3			20	25	120	5	160	160	35	44	80	25.5	4	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



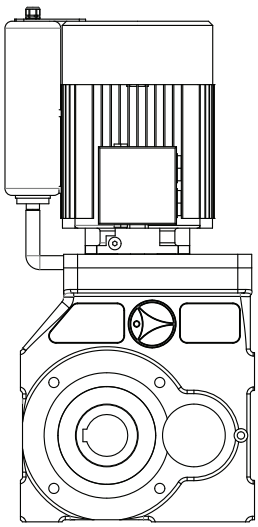
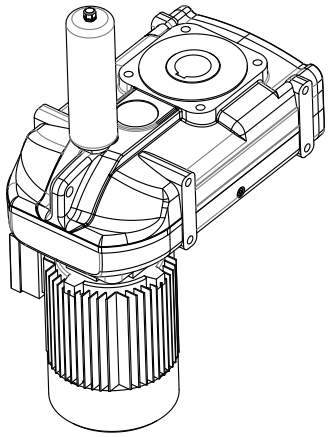
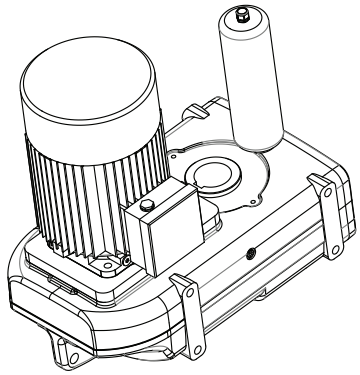
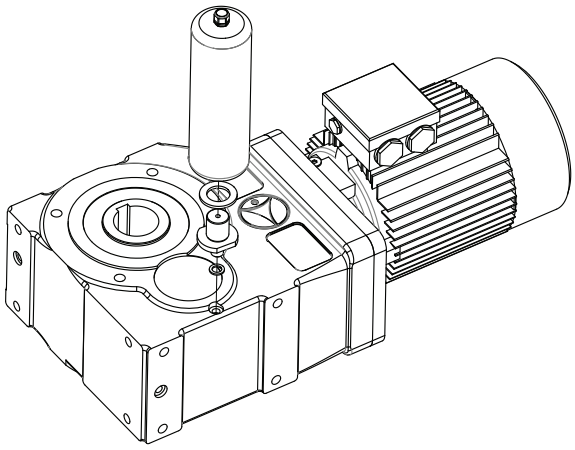
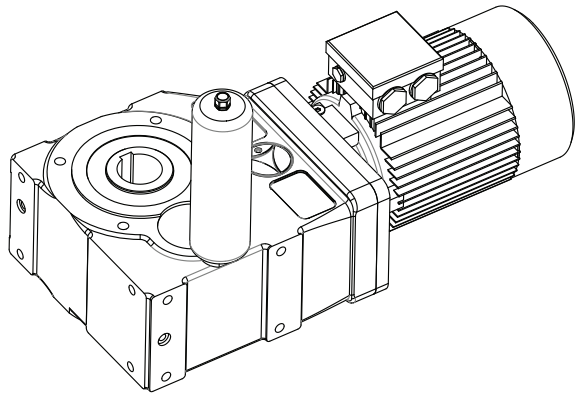
	SMB/SMR		m2	m3	Lk	b	Ld1	Ld2	du/dv	ds	Dd	L	f	Msmax [Nm] [Lb-Ft]	Famax [kN] [Lbf]	Mp [Nm] [Lb-Ft]
	max	max*														
SG1			20	20	95	5	130	130	30	36	72	23.5	4	570 (420)	58 (13000)	12 (9)
SG2			20	25	105	5	140	140	35	44	80	25.5	4	780 (575)	74 (16600)	12 (9)
SG3			30	25	124	3	160	160	40	50	90	27.5	4	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!

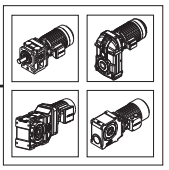
10. OIL COMPENSATOR

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.

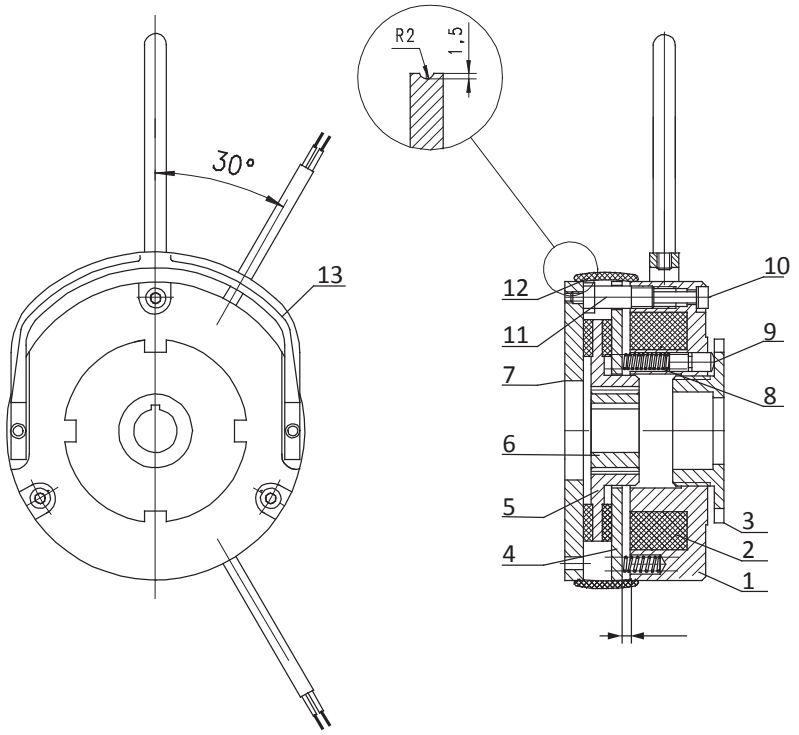
The oil compensator is supplied as assembly kit. It is intended for mounting onto the highest point of gear unit. however, if installation space is limited, there are many variations how to mount oil compensator. And on request and order-specific dimension from STROJNA can be made.

Variations and kits are adjusted to customer demands.



11. OPERATING INSTRUCTION OF DIRECT CURRENT ELECTROMAGNETIC BRAKE



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

11.1 Construction and operating principle

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 faliure 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 manes of adjusting bolts (11). Type HPS brake in 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 and dismounting of brake

Mounting procedur 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.	$0,2^{+/- 0,05}$	$0,2^{+/- 0,05}$	$0,3^{+/-0,05}$	$0,3^{+/-0,05}$	$0,3^{+/-0,05}$	$0,3^{+/-0,05}$	$0,4^{+/-0,05}$	$0,4^{+/-0,05}$	$0,5^{+/-0,05}$
a max.	0,5	0,5	0,5	0,7	0,8	1,0	1,0	1,2	1,4

11.3 Adjustment of air gap

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 guage 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 Wiring system

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

DISCONNECTION ON AC SIDE

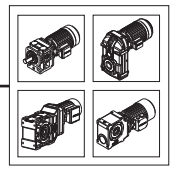
The coil current is broken between the coil and the supply (rectifying) system. The magnetic field reduces gradually causing extension of brake acuating time and simultaneous delay in rise of braking torque. If actuation times are not of significance, the brake on the alterantig current side should be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

DISCONECTION 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, daqmaged 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.

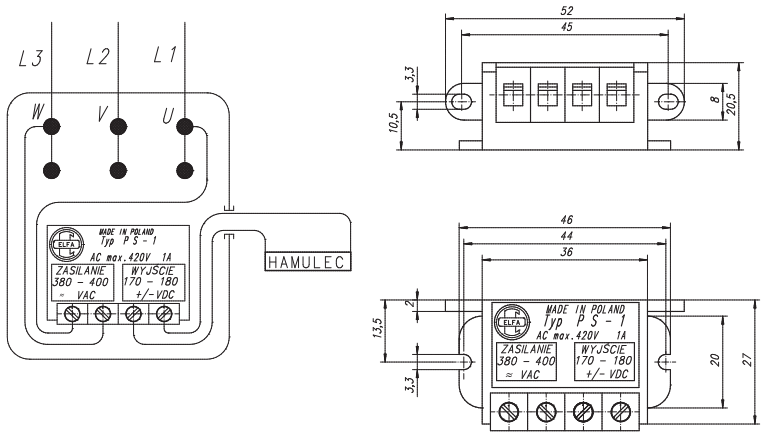


12. DC BRAKE SUPPLY CIRCUITS

12.1 Circuit PS 1

Circuit PS 1 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.

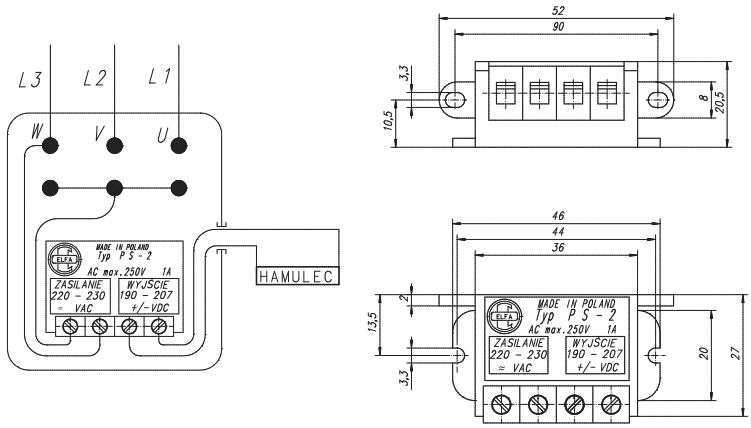
The diagram below shows the method of connecting the circuit PS 1 into supply circuit of brake cooperating with 3x400 VAC electric motor with star-connected winding.



12.2 Circuit PS 2

Circuit PS 2 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 PS 2 into supply circuit of brake cooperating with 3x400 VAC electric motor with star-connected winding.



SINGLE ELECTROMAGNETIC BRAKES:
Disk brake 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 trque 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/acessories, brake supply, climatic 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 Un			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^{-1}	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}	ms	20	35	65	90	120	150	180	300	400	500
		t_{09}		10	17	35	40	50	65	90	110	200	270
	on alternating voltage side	t_{01}	ms	20	35	65	90	120	150	180	300	400	500
		t_{09}		Brake disconnection on alternating current side causes about five-times growth in braking time t_{09} 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 HANDREALEASE:
Disk brake 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 fitted 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 configuration is analogous to variant HPS, and the diagram below facilitates selection of appropriate option.

HPS [ ] **AT** [ ] [ ] • [ ] **V DC** [ ] **Nm** [ ]

Mechanical size
04, 06, 08, 10, 12, 14, 16, 18, 20, 25

without fittings/accesories	1
lever for manual release	2
securing disk "A"	3
lever for manual release + securing disk "A"	4
securing disk "B"	8
lever for manual release + securing disk "B"	9
securing disk "C"	10
lever for manual release + securing disk "C"	11

Operating voltage
24, 104, 180, 207 VDC

Climatic version according to standard: e.g. MT, TH

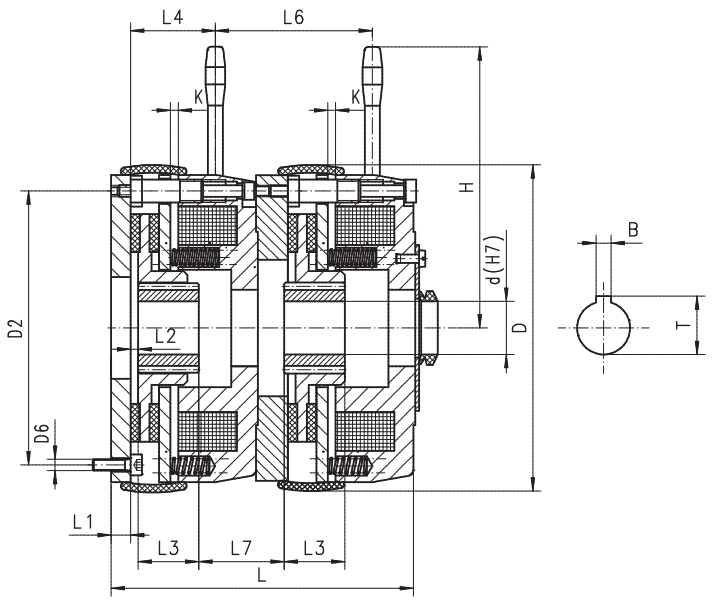
Nominal braking torque Nm								
HPS 06AT	HPS 08AT	HPS 10AT	HPS 12AT	HPS 14AT	HPS 16AT	HPS 18AT	HPS 20AT	HPS 25AT
4	8	20	32	60	80	150	240	360
	6	16	24	45	60	120	180	270
	3	12	16	30	40	75	120	180
		5						
		4						

Protection rating	
basic version – nut with hole	0
version IP 54 – nut without hole	1
version IP 54 – nut with hole + sealing V-ring	2
version IP 55 – nut without hole	3
version IP 55 – nut with hole + sealing V-ring	4

Ordering example:
HPS 12AT 20. 180 V DC 2x32 Nm

DOUBLE ELECTROMAGNETIC BRAKES WITH OR WITHOUT HANDRELEASE:
Disk brake 2HPS

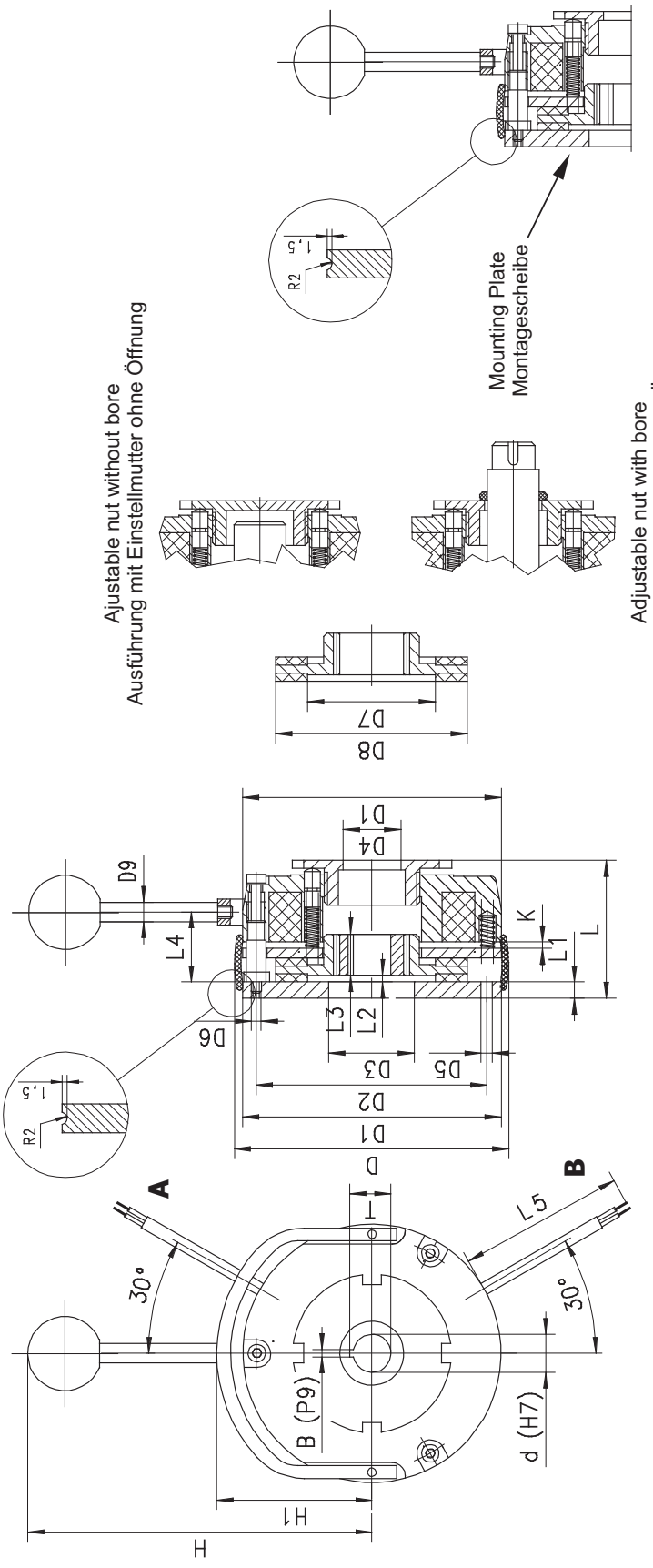
Overall dimensions



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 fitted whit 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 utillization 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 whereever compliance with rigorous regulations of Technical Inspection Office in the scope of lifting equipment is essential.

DIMENSION OF BRAKES:



Typ	D	D1	D2	D3	D4	D5	D6	D7	D8	D9	L	L1	L2	L3	L4	L5	K	H	H1	d	d max	d * smax	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	50	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	50	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	75	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.

Features on request:

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

SPECIFICATION OF COOLING FAN

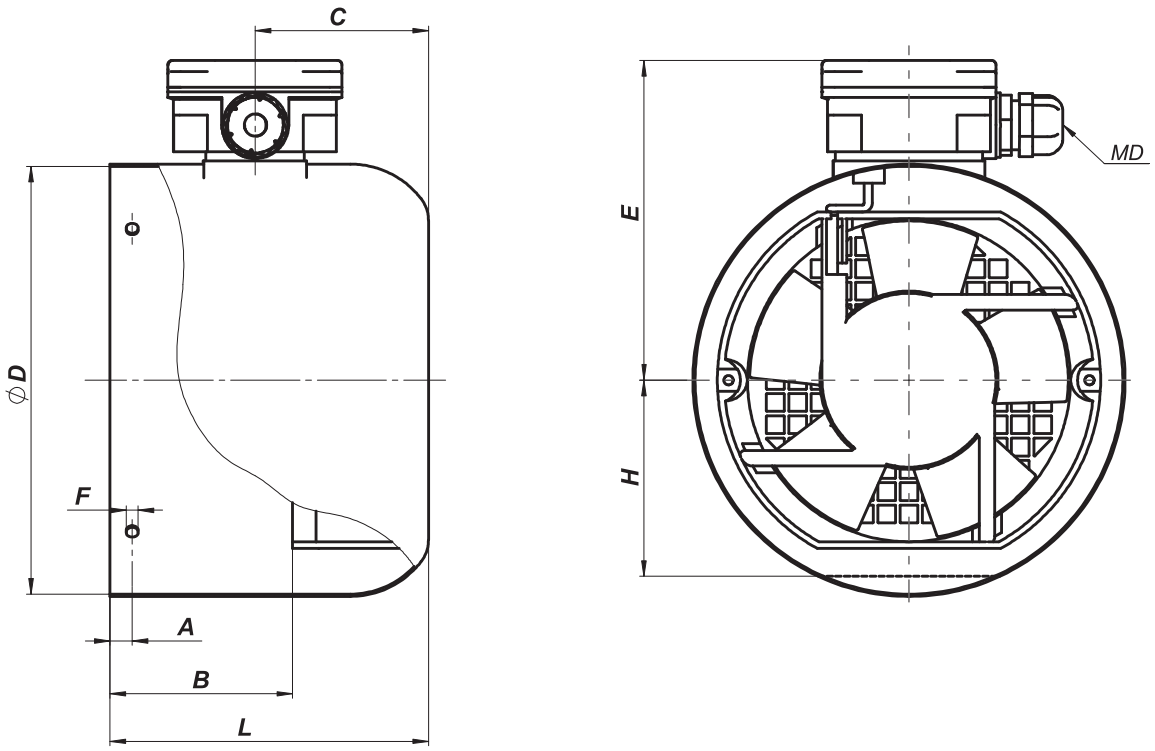
Motor size	Rated voltage	Frequency	Rated current	Input power	Speed	Air flow	Nosie level	Thermal protection
	[V]	[Hz]	[A]	[W]	[min-1]	[m3/min]	[dB]	
90/100/112	1 x 230	50/60	0,23/0,21	32/31	2800/3100	5,40/6,60	50/55	Impedance protection
132/160/180	1 x 230	50/60	0,24/0,27	56/60	2100/1900	24,0/21,8	57/55	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 lockedrotor condition,
- protection degree IP 55,
- ball bearing.

The manufacturer reserves the right to modify the performances of the products shown in this catalogue.

Dimensions



Typ / Type	A	B	C	D	E	F	H	L	MD
	[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