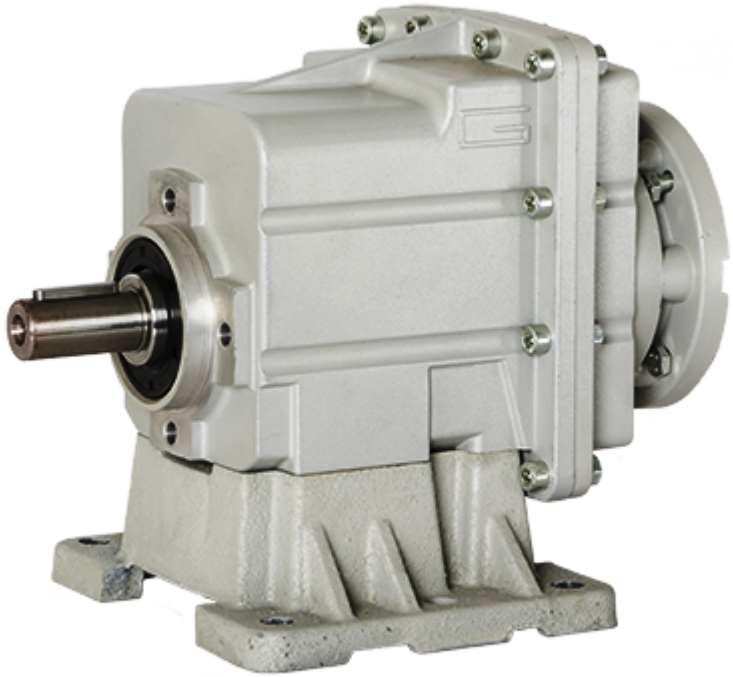


Helical gears reducers

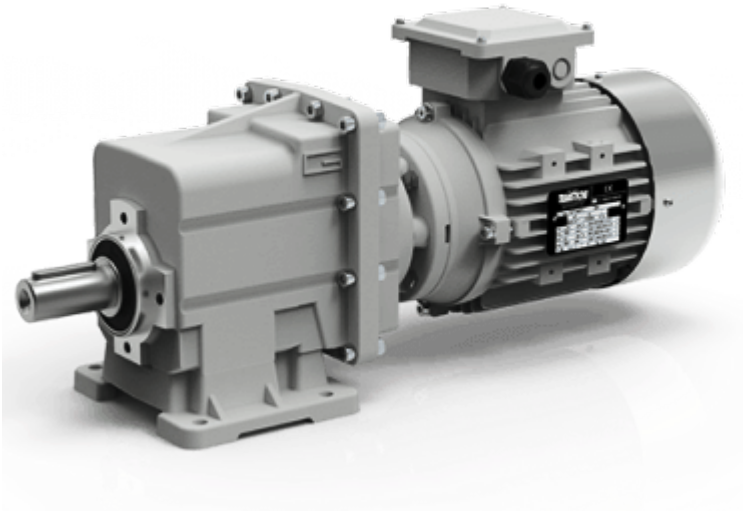
HGX Series

Powerful, efficient and flexible...

Technical catalogue

VYBO Electric

Quality management and certificates



VYBO Electric is a modern High-tech energy saving company that pays high attention to quality, environment, safety and precision and efficiency of work and energy in production. Therefore, it holds a lot of certificates and quality control systems. **Our priority is quality control.**

Basic certificates include:

ISO9001

The primary task of the ISO 9001 standard is to focus on system management and quality management in the organization. The satisfaction of the customer and the fulfillment of his requirements, which are specified in contracts, orders, or technical drawings, are in the first place. The quality management system is linked to all processes in the company. The standard focuses on the management of human and financial resources, on the stability of infrastructure, including buildings, transport, hardware, software and other communication or information technologies. An important part is also the planning of production and services, the management of the purchasing process, but also the management of non-conforming products.

ISO14001

The main priority of the ISO 14001 standard is to identify and understand the environmental aspects and activities that are related to the entire infrastructure of the company and, based on this, to regulate the environmental impact on the environment.

In its scope, the ISO 14001 standard creates the conditions for determining environmental goals and plans, the fulfillment of which is examined at regular intervals by top management and also by an independent body during internal audits.

This standard is intended for all organizations and companies that consider environmental protection as their primary goal.

The benefit of the standard for society is mainly:

- control over the environmental impact on the environment
- control over produced emissions and waste
- saving material and energy
- prevention of accidents
- compliance of the company's activities with legal requirements
- zero fines for environmental behavior
- creation of a good reputation and prestige of the company

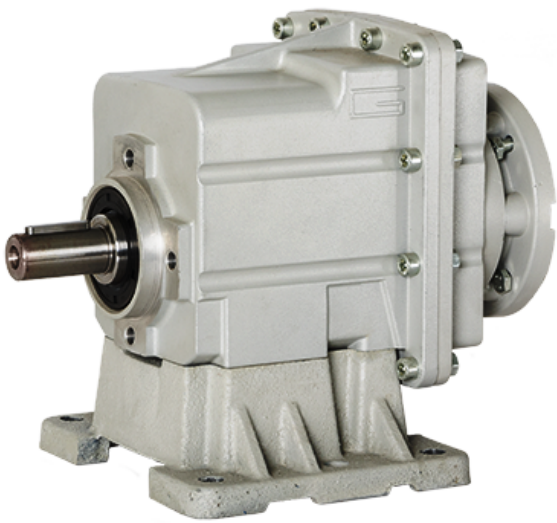
The ISO 45001

Specification (formerly known as OHSAS 18001) is an internationally recognized standard that declares compliance with the principles of a safe enterprise, managing risks at work and protecting the health of workers during work. It does not only concern danger and accidents, but also emphasizes other aspects such as the good condition and mental well-being of the employee.

The certificate is held in Slovakia as STN ISO 45001:2019 and is under the title Management systems of safety and health protection at work. Requirements with guidance for use. It replaces the STN OHSAS 18001 standard.

ISO50001

Energy management systems Energy efficiency help organizations save money, save energy resources and also help to prevent climate change. ISO 50001 encourages organizations in all sectors to use energy more efficiently through the development of an energy management system. The international standard ISO 50001: 2011 specifies the requirements for building, maintaining and improving the energy system. It aims to enable organizations to implement a systematic approach that will help achieve lasting improvements in energy efficiency, energy use and consumption.



Summarize

HGX series helical gear units is a new generation mechanic-electrical integrated product, which designed basing on the modular system. It can be connected respectively with motors such as normal motor, brake motor, frequency conversion motor, servo motor, IEC motor and so on. It can be mounted discretionary six orientation in solid space. This kind of product is widely used in drive fields such as textile, foodstuff, beverage, chemical industry, automatic arm ladder, automatic storage equipment, metallurgy, tobacco, environment protection, logistics and so on.

Product characteristics

· Modularity;
· High efficiency;
· Low noise;
· Space effective, refined design;
· Universal mounting;
· Aluminium housing, light weight;
· Gears in carbonize hard, durable;
· Multistructure, can be combined in many forms to meet needs of all kinds of transmission conditions.

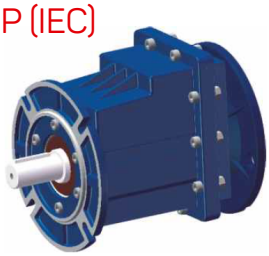
HGX series helical hear units has more than 4 types. Power 0,12-4 kW; Ratio: 3.66-54; Torque max 120-500Nm. It can be connected (foot, max 120-500 Nm. It can be connected (foot, flange) discretionary and use multi-mounting positions according to customer's requirements.

TYPES

HGX..P (IEC)

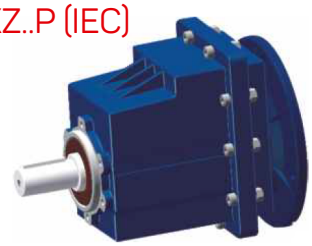
Foot-mounted helical gear unit

HGXF...P (IEC)



Flange-mounted helical gear unit

HGXZ..P (IEC)

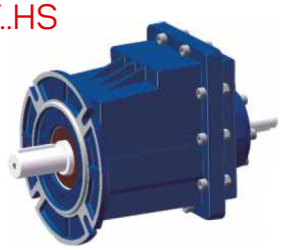


B14 Flange-mounted helical gear unit

HGX..HS

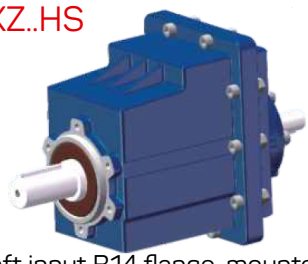
Shaft input foot-mounted helical gear unit

HGXF..HS



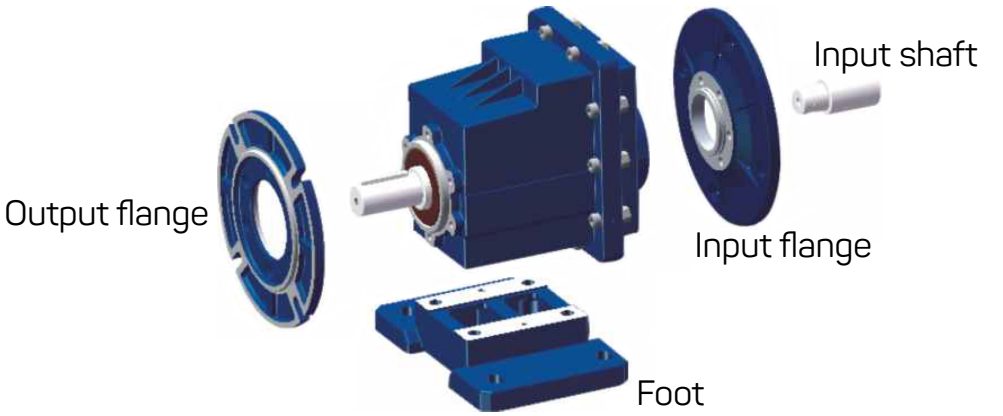
Shaft input flange-mounted helical gear unit

HGXZ..HS

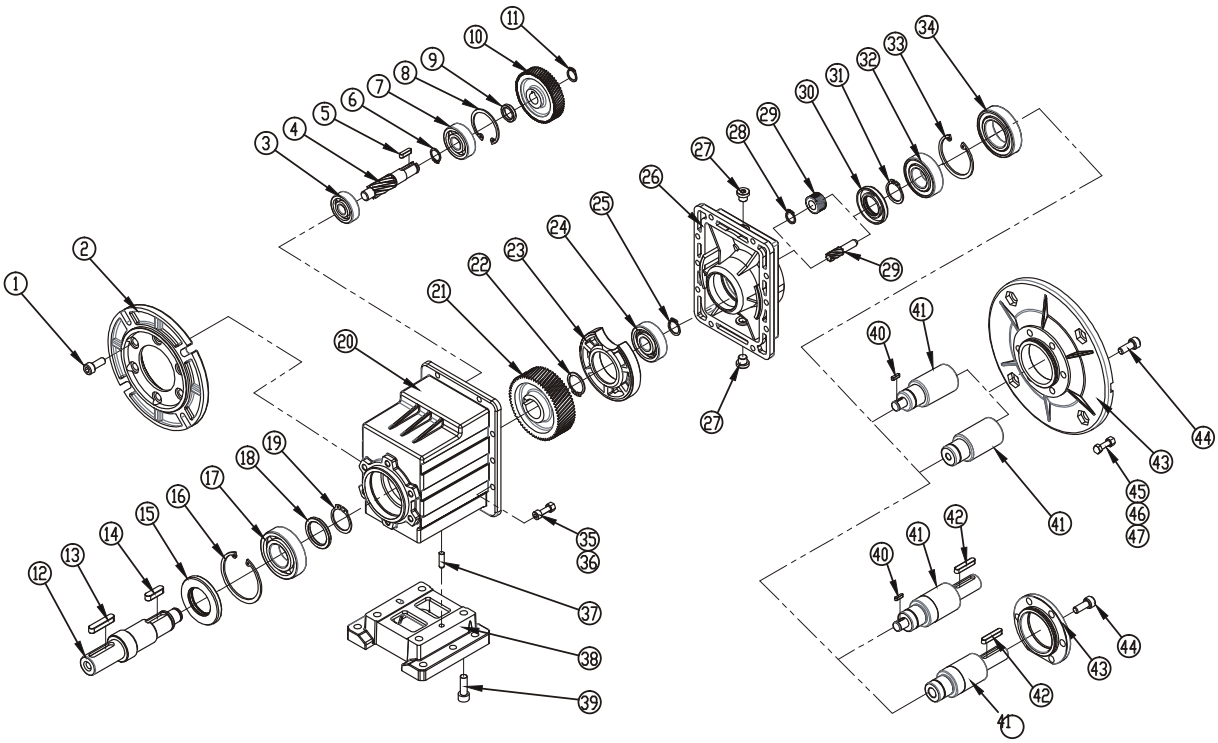


Shaft input B14 flange-mounted helical gear unit

Structure form



Basic structure



1	Socket head cap screw	11	Shaft circlip	21	Gear	31	Shaft circlip	41	Input shaft
2	Output flange	12	Output shaft	22	Shaft circlip	32	Bearing	42	Key
3	Bearing	13	Key	23	Support seat	33	Hole circlip	43	Input flange
4	Pinion shaft	14	Key	24	Bearing	34	Bearing	44	Socket head cap screw
5	Key	15	Oil seal	25	Shaft circlip	35	Socket head cap screw	45	Hex head bolt
6	Retaining ring	16	Hole circlip	26	Input cover	36	Hex nut	46	Washe
7	Bearing	17	Bearing	27	Oil plug	37	Cylindical pin	47	Hex nut
8	Hole circlip	18	Washer	28	Shaft circlip	38	Foot		
9	Spacer ring	19	Shaft circlip	29	Pinion	39	Socket head cap screw		
10	Gear	20	Gear box	30	Oil seal	40	Key		

Product notes

Gear unit | **Motor**

HGX F 02 II - P71B5 - 28,88 - M6 / 270° - 7124(or0,37-4) - 220/380-50 / X

1 2 3 4 5 6 7 8 9 10 11

No	Comments
1	HGX: code for gear units series
2	1) No code means foot-mounted
	2) F: B5 flange mounted
	3) Z: B14 flange mounted
3	Specifiaction code of gear units 01.02.03.04
4	1) B01. M01...means foot code, without flange
	2) I, II, III: B5 Output flange specification
5	1) IEC input flange
	2) HS: shaft input
6	Transmission ratio of gear units i
7	M1: Mounting position, default mounting position 0°(R)
8	Position diagram for motor terminal box, default position 0°(R)
9	1) No mark means without motor
	2) Model of motor
10	Voltage - frequency
11	Coil in position for motor

Example: HGX01B01-P71B5-28.50

HGXZ03-HS-6.31

HGXF02 III-P80B14-8.78-7124-220/380-50/2

Relevant parameters

Power

$P1 = \frac{P2}{\eta}[kW]$

$P1 >= P1 * K\ [kW]$

P1 - Input power

P2 - Output power

P1n - Rated input motor power

K - Service factor

η - Transmission efficiency

HGX Series helical gear units has 2 stage and the efficiency is about 96%.

Relevant parameters

Rotation speed n

n1 - Gear units input speed

n2 - Gear units output speed

If driven by the external gearing, 1400 r/min or lower rotation speed is suggested so as to optimize the working conditions and prolong the service life. Higher input rotation speed is permitted, but in this situation, the rated torque M2 will be reduced.

Transmission ratio i

$$i = \frac{n1}{n2}$$

Usually transmission ratio is decimal fraction with 2 radix point tagged in selection tables.

Torque M

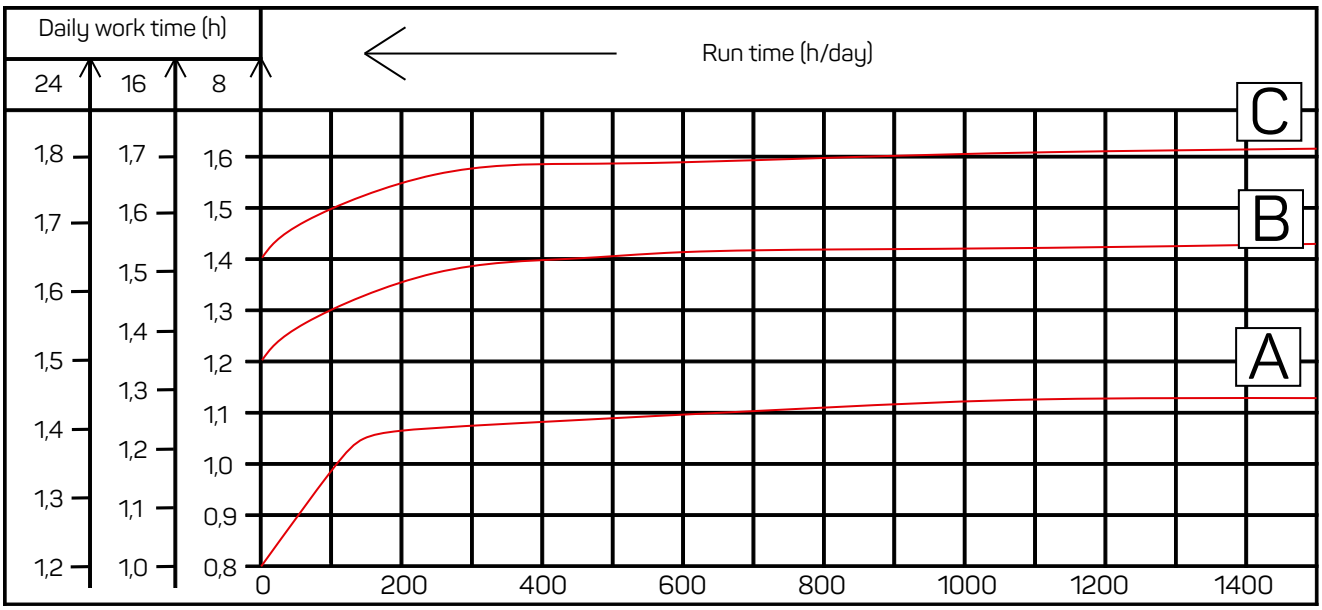
$$M2 = \frac{9550*P1*\eta}{n2} [Nm|$$

M2n>=M2*K[Nm]
M2 - Output torque
M2n - Rated output torque
P1 - Input power
η - Transmission efficiency
K - Service factor

Relevant parameters

Service Factor K

The effect of the driven machine on the gear unit is taken into account to a sufficient level of accuracy using the service factor K. The service factor is determined according to the daily operating time and the starting frequency Z. Three load classifications are considered depending on the mass acceleration factor. You can read off the service factor applicable to your application in following figure. The service factor selected using this diagram must be less than or equal to the service factor as given in the performance parameter table.



Starting up freqency z (1/h)
starting frequency z: the cycles include all starting and braking procedures as well as change overs from low to high speed.

Load classifications
A Uniformshock load, permitted mass acceleration factor ≤0,2
B Moderate shock load, permitted mass acceleration factor ≤0,3
C Heavy shock load, permitted mass acceleration factor ≤10
Load classifications see the addendum.

Mass acceleration factor
The mass acceleration factor is calculated as follows: $fa = \frac{Jc}{Jm}$
fa: Mass acceleration factor
Jc: All external mass moments of inertia [kgm2]
Jm: Mss moment of inertia on the motor end [kgm2]

Relevant parameters

Radial loads Fr

While determinig the resulting radial loads, the type of transmission elements, mounted on the shaft end must be considered. Various transmission elements are corresponding with following transmission element factors fz:

Transmission element	Transmission element factor Fz	Comments
Gears	1,00	≥17 teeth
	1,15	<17 teeth
Chain sprockets	1,00	≥20 teeth
	1,25	<20 teeth
	1,40	<13 teeth
Narrow V - belt pulleys	1,75	Influence of the tensile force
Flat belt pulleys	2,50	Influence of the tensile force
Toothed belt pulleys	2,50	Influence of the tensile force

The overhung load exerted on the motor or gear shaft is then calculated as follows:

$$Fr = \frac{M \times 2000 \times fz}{(b + x)} [N]$$

Fr: Resulting radial load [N]
M: Torque on the shaft [N]
d: Mean diameter of the mounted transmission element in [mm]
fz: Transmission element factor

The overhung loads exerted on the motor or gear shaft is then calculated as follows:

$$FxL \leq \frac{M \times 2000 \times fz}{(b + x)} [N]$$

Fr2: Permitted overhung load (x=L/2) for foot-mounted gear units according to the selection tables in [N] a, b gear unit constant for overhung load conversion [mm]

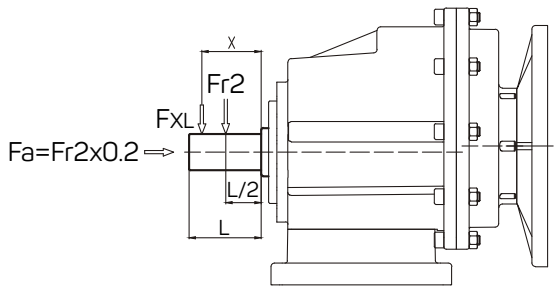
Relevant parameters

Distance from the shaft shoulder to the force application point in [mm]

The values of a, b, Fr2 are given in the following tables:

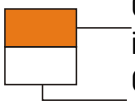
	HGX01	HGX02	HGX03	HGX04
a	103	116,5	130	147
b	83	91,5	100	112

Fr2, Fa / Output shafts radial loads & axial loads Fr2, Fa



n2[min-1]		10	40	60	80	100	120	150	180	250	400
Fr2[N]	HGX01	2500	2500	2180	1980	1840	1630	1400	1320	1080	920
	HGX02	5000	5000	4370	3970	3680	3470	2710	2550	2150	1840
	HGX03	6500	6500	5550	5040	4510	3800	3530	3320	2800	2390
	HGX04	8000	8000	6590	5990	5230	4570	4240	3900	3350	2860

Selection tables comments



Combination with the IEC in the header row is possible

Combination with the IEC in the header row is not possible

P1n Rated power driving motor [kW];
n2 Output speed [r/min];
M2n Rated output torque [Nm];
M2 max Permissible output torque [Nm];
i Gear unit ratio;
k Service factor;

Gear unit type;

Motor type

Selection examples

Gear units

Example: The required torque on driven machine is 400Nm, works for 6 hours per day, uniform shock load, start-up frequency is 400 times per hour, Φ 200mm output flange-mounted, n2=30r/min see tables, K=1.05

M2n ≥ M2 x K = 400 x 1,05 = 420 [Nm]

$$i = \frac{n1}{n2} = \frac{1400}{30} = 46{,}67$$

Choose type:
HGXF04 II - P90B5 - 44.18

Gear motor

Example: The required power on driven machine 1kW, works for 8 hours per day, moderate shock load, start-up continuously, M6 foot-mounted, n2=95r/min, see tables, K=1,35

$$i = \frac{n1}{n2} = \frac{1400}{95} = 14{,}74$$

P1n ≥ P1 x K = P2/n x K = 1/0,96 x 1,35 = 1,41 [kW]

Choose type:
HGXF02 - P90B5 - 14,81 - 1.5 -4 - M6

Ratio and IEC motor adapters

HGX...01...P (IEC) — 120 N.M

i	63B5	71B5 71B14	80B5 80B14	90B5 90B14
53,33				
45,89				
40,10				
35,47				
28,50				
23,56				
19,83				
17,86				
14,62				
13,80				
11,90				
9,81				
9,17				
7,72				
5,69				
4,63				
3,82				

HGX...02...P (IEC) — 200 N.M

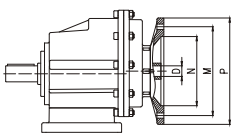
i	63B5	71B5 71B14	80B5 80B14	90B5 90B14
54,00				
46,46				
40,60				
35,91				
28,88				
23,85				
20,08				
17,10				
14,81				
13,21				
12,05				
9,93				
8,78				
7,39				
5,45				
4,43				
3,66				

HGX...03...P (IEC) — 300 N.M

i	71B5	80B5 80B14	90B5 90B14	100B5 100B14	112B5 112B14
58,09					
50,02					
43,75					
38,73					
34,62					
28,30					
21,78					
17,33					
15,06					
12,37					
10,28					
7,93					
6,31					
5,48					
4,50					
3,74					

HGX...04...P (IEC) — 500 N.M

i	80B5 80B14	90B5 90B14	100B5 100B14	112B5 112B14
58,09				
50,02				
43,75				
38,73				
34,62				
28,30				
21,78				
17,33				
15,06				
12,37				
10,28				
7,93				
6,31				
5,48				
4,50				
3,74				



IEC	63B5	71B5	71B14	80B5	80B14	90B5	90B14	100B5	100B14	112B5	112B14
D_{e8}	11	14		19		24		28		28	
P	140	160	105	200	140	200	140	250	160	250	160
M	115	130	85	165	115	165	115	215	130	215	130
N	95	110	70	130	95	130	95	180	110	180	110

Gear unit selection tables

Performance parameter of HGX..P (IEC)

P_{1n} kW	n_2 r/min	M_{2n} Nm	i	k			
	26,3	42	53,33	2,9	HGX01	63B5	6314
	30,5	36	45,89	3,3	HGXF01	63B5	6314
	34,9	32	40,10	3,8	HGXZ01	63B5	6314
	39,5	28	35,47	4,3			
	49,1	22	28,50	5,4			
	59,4	18,5	23,56	6,5			
	70,6	15,6	19,83	7,7			
	78,4	14,0	17,86	7,1			
0,12	95,8	11,5	14,62	10,4			
	101	10,8	13,80	9,2			
	118	9,4	11,90	12,8			
	143	7,7	9,81	13,0			
	153	7,2	9,17	11,1			
	181	6,1	7,72	13,2			
	246	4,5	5,69	13,4			
	302	3,6	4,63	16,5			
	366	3,0	3,82	20,0			
	16,9	98	53,33	1,2	HGX01	71B5	7116
	19,6	84	45,89	1,4	HGXF01	71B5	7116
	22,4	74	40,10	1,6	HGXZ01	71B5	7116
	25,4	65	35,47	1,8			
	31,6	52	28,50	2,3			
	26,3	63	53,33	1,9	HGX01	63B5	6324
	30,5	54	45,89	2,2	HGXF01	63B5	6324
	34,9	47	40,10	2,5	HGXZ01	63B5	6324
	39,5	42	35,47	2,9			
	49,1	34	28,50	3,6			
	59,4	28	23,56	4,3			
	70,6	23	19,83	5,1			
	78,4	21	17,86	4,8			
	95,8	17,2	14,62	7,0			
0,18	101	16,3	13,80	6,1			
	118	14,0	11,90	8,6			
	143	11,6	9,81	8,6			
	153	10,8	9,17	7,4			
	181	9,1	7,72	8,8			
	246	6,7	5,69	8,9			
	302	5,5	4,63	11,0			
	366	4,5	3,82	13,3			
	16,7	99	54,00	2,0	HGX02	71B5	7116
	19,4	85	46,46	2,3	HGXF02	71B5	7116
	22,2	74	40,60	2,7	HGXZ02	71B5	7116
	25,1	66	35,91	3,0			
	31,2	53	28,88	3,8			
	25,9	64	54,00	3,1	HGX02	63B5	6324
	30,1	55	46,46	3,7	HGXF02	63B5	6324
	34,5	48	40,46	4,2	HGXZ02	63B5	6324

Gear unit selection tables

Performance parameter of HGX..P (IEC)

P_{1n} kW	n_2 r/min	M_{2n} Nm	i	k			
0,25	16,9	136	53,33	0,88	HGX01	71B5/B14	7126
	19,6	117	45,89	1,0	HGXF01	71B5/B14	7126
	22,4	102	40,10	1,2	HGXZ01	71B5/B14	7126
	25,4	90	35,47	1,3			
	31,6	73	28,50	1,7			
	26,3	87	53,33	1,4	HGX01	71B5/B14	7114
	30,5	75	45,89	1,6	HGXF01	71B5/B14	7114
	34,9	66	40,10	1,8	HGXZ01	71B5/B14	7114
	39,5	58	35,47	2,1			
	49,1	47	28,50	2,6			
	59,4	39	23,56	3,1			
	70,6	32	19,83	3,7			
	78,4	29	17,86	3,4			
	95,8	24	14,62	5,0			
	101	23	13,80	4,4			
	118	19,5	11,90	6,2			
	143	16,1	9,81	6,2			
	153	15,0	9,17	5,3			
	181	12,6	7,72	6,3			
	246	9,3	5,69	6,4			
	302	7,6	4,63	7,9			
	366	6,3	3,82	9,6			
	16,7	138	54,00	1,5	HGX02	71B5/B14	7126
	19,4	118	46,46	1,7	HGXF02	71B5/B14	7126
	22,2	103	40,60	1,9	HGXZ02	71B5/B14	7126
	25,1	91	35,91	2,2			
	31,2	74	28,88	2,7			
	25,9	88	54,00	2,3	HGX02	71B5/B14	7114
	30,1	76	46,46	2,6	HGXF02	71B5/B14	7114
	34,5	66	40,60	3,0	HGXZ02	71B5/B14	7114
	39,0	59	35,91	3,4			
	48,5	47	28,88	4,2			
0,37	22,4	151	40,10	0,79	HGX01	80B5/B14	8016
	25,4	134	35,47	0,90	HGXF01	80B5/B14	8016
	31,6	107	28,50	1,1	HGXZ01	80B5/B14	8016
	38,2	89	23,56	1,4			
	26,3	129	53,33	0,93	HGX01	71B5/B14	7124
	30,5	111	45,89	1,1	HGXF01	71B5/B14	7124
	34,9	97	40,10	1,2	HGXZ01	71B5/B14	7124
	39,5	86	35,47	1,4			
	49,1	69	28,50	1,7			
	59,4	57	23,56	2,1			
	70,6	48	19,83	2,5			
	78,4	43	17,86	2,3			
	95,8	35	14,62	3,4			
	101	33	13,80	3,0			
	118	29	11,90	4,2			
	143	24	9,81	4,2			
	153	22	9,17	3,6			
	181	19	7,72	4,3			
	246	14	5,69	4,4			
	302	11	4,63	5,3			
	366	9	3,82	6,5			

Gear unit selection tables

Performance parameter of HGX..P (IEC)

P_{1n} kW	n_2 r/min	M_{2n} Nm	i	k			
	16,7	204	54,00	1,0	HGX02	80B5/B14	8016
	19,4	175	46,46	1,1	HGXF02	80B5/B14	8016
	22,2	153	40,60	1,3	HGXZ02	80B5/B14	8016
	25,1	135	35,91	1,5			
	31,2	109	28,88	1,8			
	25,9	131	54,00	1,5	HGX02	71B5/B14	7124
	30,1	113	46,46	1,8	HGXF02	71B5/B14	7124
	34,5	98	40,60	2,0	HGXZ02	71B5/B14	7124
	39,0	87	35,91	2,3			
	48,5	70	28,88	2,9			
	58,7	58	23,85	3,5			
0,37	81,9	41	17,10	3,9			
	24,1	141	58,09	2,1	HGX03	71B5	7124
	28,0	121	50,02	2,5	HGXF03	71B5	7124
	32,0	106	43,75	2,8	HGXZ03	71B5	7124
	36,1	94	38,73	3,2			
	40,4	84	34,62	3,6			
	15,5	219	58,09	1,4	HGX03	80B5/B14	8016
	18,0	189	50,02	1,6	HGXF03	80B5/B14	8016
	20,5	165	43,75	1,8	HGXZ03	80B5/B14	8016
	23,2	146	38,73	2,1			
	26,0	130	34,62	2,3			
	31,8	107	28,30	2,8			
	41,3	82	21,78	3,4			
	31,6	160	28,50	0,75	HGX01	80B5/B14	8026
	38,2	132	23,56	0,91	HGXF01	80B5/B14	8026
	45,4	111	19,83	1,1	HGXZ01	80B5/B14	8026
	34,9	144	40,10	0,8	HGX01	80B5/B14	8014
	39,5	128	35,47	0,9	HGXF01	80B5/B14	8014
	49,1	103	28,50	1,2	HGXZ01	80B5/B14	8014
	59,4	85	23,56	1,4			
	70,6	71	19,83	1,7			
	78,4	64	17,86	1,6			
	95,8	53	14,62	2,3			
	101	50	13,80	2,0			
	118	43	11,90	2,8			
	143	35	9,81	2,8			
	153	33	9,17	2,4			
0,55	181	28	7,72	2,9			
	246	20	5,69	2,9			
	302	17	4,63	3,6			
	366	14	3,82	4,4			
	19,4	260	46,46	0,77	HGX02	80B5/B14	8026
	22,2	227	40,60	0,88	HGXF02	80B5/B14	8026
	25,1	201	35,91	1,0	HGXZ02	80B5/B14	8026
	31,2	162	28,88	1,2			
	37,7	134	23,85	1,5			
	25,9	194	54,00	1,0	HGX02	80B5/B14	8014
	30,1	167	46,46	1,2	HGXF02	80B5/B14	8014
	34,5	146	40,60	1,4	HGXZ02	80B5/B14	8014
	39,0	129	35,91	1,5			
	48,5	104	28,88	1,9			
	58,7	86	23,85	2,3			

Gear unit selection tables

Performance parameter of HGX..P (IEC)

P_{1n} kW	n_2 r/min	M_{2n} Nm	i	k			
0,55	69,7	72	20,08	2,8	HGX02	80B5/B14	8014
	81,9	62	17,10	2,6	HGXF02	80B5/B14	8014
	94,5	53	14,81	3,7	HGXZ02	80B5/B14	8014
	15,5	325	58,09	0,92	HGX03	80B5/B14	8026
	18,0	280	50,02	1,1	HGXF03	80B5/B14	8026
	20,6	245	43,75	1,2	HGXZ03	80B5/B14	8026
	23,2	217	38,73	1,4			
	26,0	194	34,62	1,5			
	31,8	159	28,30	1,9			
	41,3	122	21,78	2,3			
	24,1	209	58,09	1,4	HGX03	80B5/B14	8014
	28,0	180	50,02	1,7	HGXF03	80B5/B14	8014
	32,0	158	43,75	1,9	HGXZ03	80B5/B14	8014
	36,1	139	38,73	2,2			
	40,4	125	34,62	2,4			
	49,5	102	28,30	2,9			
	64,3	78	21,78	3,6			
0,75	49,1	140	28,50	0,86	HGX01	80B5/B14	8024
	59,4	116	23,56	1,0	HGXF01	80B5/B14	8024
	70,6	97	19,83	1,2	HGXZ01	80B5/B14	8024
	78,4	88	17,86	1,1			
	95,8	72	14,62	1,7			
	101	68	13,80	1,5			
	118	58	11,90	2,1			
	143	48	9,81	2,1			
	153	45	9,17	1,8			
	181	38	7,72	2,1			
	246	28	5,69	2,1			
	302	23	4,63	2,6			
	366	19	3,82	3,2			
	31,2	221	28,88	0,91	HGX02	90B5/B14	90S6
	37,7	182	23,85	1,1	HGXF02	90B5/B14	90S6
	44,8	153	20,08	1,3	HGXZ02	90B5/B14	90S6
	30,1	228	46,46	0,88	HGX02	80B5/B14	8024
	43,5	199	40,60	1,0	HGXF02	80B5/B14	8024
	39,0	176	35,91	1,1	HGXZ02	80B5/B14	8024
	48,5	142	28,88	1,4			
	58,7	117	23,85	1,7			
	69,7	99	20,08	2,0			
	81,9	84	17,10	1,9			
	94,5	73	14,81	2,7			
	106	65	13,21	2,5			
	116,2	59	12,05	3,4			
	141	49	9,93	3,3			
	159	43	8,78	2,8			
	189	36	7,39	3,3			
	257	27	5,45	3,7			
	97,0	71	28,88	2,8	HGX02	80B5/B14	8012
	117,4	59	23,85	3,4	HGXF02	80B5/B14	8012
	139,4	49	20,08	4,1	HGXZ02	80B5/B14	8012
	163,7	42	17,10	3,8			

Gear unit selection tables

Performance parameter of HGX..P (IEC)

P_{1n} kW	n_2 r/min	M_{2n} Nm	i	k			
0,75	23,2	296	38,73	1,0	HGX03	90B5/B14	90S6
	26,0	264	34,62	1,1	HGXF03	90B5/B14	90S6
	31,8	216	28,3	1,4	HGXZ03	90B5/B14	90S6
	41,3	166	21,78	1,7			
	51,9	132	17,33	2,1			
	59,8	115	15,06	2,3			
	24,1	285	58,09	1,1	HGX03	80B5/B14	8024
	28,0	246	50,02	1,2	HGXF03	80B5/B14	8024
	32,0	215	43,75	1,4	HGXZ03	80B5/B14	8024
	36,1	190	38,73	1,6			
	40,4	170	34,62	1,8			
	49,5	139	28,30	2,2			
	64,3	107	21,78	2,6			
	80,8	85	17,33	3,3			
	93,0	74	15,06	3,5			
	15,5	444	58,09	1,1	HGX04	90B5/B14	90S6
	18,0	382	50,02	1,3	HGXF04	90B5/B14	90S6
	20,6	334	43,75	1,5	HGXZ04	90B5/B14	90S6
	23,3	296	38,73	1,7			
	26,0	264	34,62	1,9			
	31,8	216	28,30	2,3			
	41,3	166	21,78	2,9			
	51,9	132	17,33	3,6			
	24,1	285	58,09	1,8	HGX04	80B5/B14	8024
	28,0	246	50,02	2,0	HGXF04	80B5/B14	8024
	32,0	215	43,75	2,3	HGXZ04	80B5/B14	8024
	36,1	190	38,73	2,6			
	40,4	170	34,62	2,9			
	49,5	139	28,30	3,6			
	64,3	107	21,78	4,5			
1,1	70,6	143	19,83	0,84	HGX01	90B5/B14	90S4
	78,4	129	17,86	0,78	HGXF01	90B5/B14	90S4
	95,8	105	14,62	1,1	HGXZ01	90B5/B14	90S4
	101	99	13,80	1,0			
	118	86	11,90	1,4			
	143	71	9,87	1,4			
	153	66	9,17	1,2			
	181	56	7,72	1,4			
	246	41	5,69	1,5			
	302	33	4,63	1,8			
	366	28	3,82	2,2			
	285	35	9,81	2,8	HGX01	80B5/B14	8022
	305	33	9,17	2,4	HGXF01	80B5/B14	8022
	363	28	7,72	2,9	HGXZ01	80B5/B14	8022
	492	20	5,69	2,9			
	605	17	4,63	3,6			
	733	14	3,82	4,4			
	39,0	259	35,91	0,77	HGX02	90B5/B14	90S4
	48,5	208	28,88	1,0	HGXF02	90B5/B14	90S4
	58,7	172	23,85	1,2	HGXZ02	90B5/B14	90S4
	69,7	145	20,08	1,4			
	81,9	123	17,10	1,3			

Gear unit selection tables

Performance parameter of HGX..P (IEC)

P_{1n} kW	n_2 r/min	M_{2n} Nm	i	k			
	94,5	107	14,81	1,9	HGX02	90B5/B14	90S4
	106	95	13,21	1,7	HGXF02	90B5/B14	90S4
	116	87	12,05	2,3	HGXZ02	90B5/B14	90S4
	141	72	9,93	2,2			
	159	63	8,78	1,9			
	189	53	7,39	2,3			
	257	39	5,45	2,5			
	316	32	4,43	3,1			
	383	26	3,66	3,8			
	32,0	315	43,75	0,95	HGX03	90B5/B14	90S4
	36,1	279	38,73	1,1	HGXF03	90B5/B14	90S4
	40,4	249	34,62	1,2	HGXZ03	90B5/B14	90S4
	49,5	204	28,30	1,5			
	64,3	157	21,78	1,8			
	80,8	125	17,33	2,2			
	93,0	108	15,06	2,4			
	113	89	12,37	2,9			
	136	74	10,28	3,2			
1,1	177	57	7,93	3,2			
	222	45	6,31	4,0			
	255	39	5,48	3,8			
	48,2	209	58,09	1,4	HGX03	80B5/B14	8022
	56,0	180	50,02	1,7	HGXF03	80B5/B14	8022
	64,0	158	43,75	1,9	HGXZ03	80B5/B14	8022
	72,3	139	38,73	2,2			
	80,9	125	34,62	2,4			
	99,0	102	28,30	2,9			
	129	78	21,78	3,6			
	24,1	418	58,09	1,2	HGX04	90B5/B14	90S4
	28,0	360	50,02	1,4	HGXF04	90B5/B14	90S4
	32,0	315	43,75	1,6	HGXZ04	90B5/B14	90S4
	36,1	279	38,73	1,8			
	40,4	249	34,62	2,0			
	49,5	204	28,30	2,5			
	64,3	157	21,78	3,1			
	80,8	125	17,33	3,8			
	93,0	108	15,06	4,2			
	118	117	11,90	1,0	HGX01	90B5/B14	90L4
	143	96	9,81	1,0	HGXF01	90B5/B14	90L4
	153	90	9,17	0,9	HGXZ01	90B5/B14	90L4
	181	76	7,72	1,12			
	246	56	5,69	1,1			
1,5	302	45	4,63	1,3			
	366	38	3,82	1,6			
	305	45	9,17	1,8	HGX01	90B5/B14	90S2
	363	38	7,72	2,1	HGXF01	90B5/B14	90S2
	492	28	5,69	2,1	HGXZ01	90B5/B14	90S2
	605	23	4,63	2,6			
	733	19	3,82	3,2			

Gear unit selection tables

Performance parameter of HGX..P (IEC)

P_{1n} kW	n_2 r/min	M_{2n} Nm	i	k			
1,5	58,7	234	23,85	0,85	HGX02	90B5/B14	90L4
	69,7	197	20,08	1,0	HGXF02	90B5/B14	90L4
	81,9	168	17,10	1,0	HGXZ02	90B5/B14	90L4
	94,5	145	14,81	1,4			
	106	130	13,21	1,2			
	116	118	12,05	1,7			
	141	98	9,93	1,6			
	159	86	8,78	1,4			
	189	73	7,39	1,7			
	257	54	5,45	1,9			
	316	44	4,43	2,3			
	383	36	3,66	2,8			
	212	65	13,21	2,5	HGX02	90B5/B14	90S2
	232	59	12,05	3,4	HGXF02	90B5/B14	90S2
	282	49	9,93	3,3	HGXZ02	90B5/B14	90S2
	319	43	8,78	2,8			
	379	36	7,39	3,3			
	514	27	5,45	3,7			
	40,4	340	34,62	0,88	HGX03	90B5/B14	90L4
	49,5	278	28,3	1,1	HGXF03	90B5/B14	90L4
	64,3	214	21,78	1,3	HGXZ03	90B5/B14	90L4
	80,8	170	17,33	1,6			
	93,0	148	15,06	1,8			
	113	122	12,37	2,1			
	136	101	10,28	2,4			
	177	78	7,93	2,3			
	222	62	6,31	2,9			
	255	54	5,48	2,8			
	311	44	4,50	3,4			
	374	37	3,74	4,1			
	48,2	285	58,09	1,1	HGX03	90B5/B14	90S2
	56,0	246	50,02	1,2	HGXF03	90B5/B14	90S2
	64,0	215	43,75	1,4	HGXZ03	90B5/B14	90S2
	72,3	190	38,73	1,6			
	80,9	170	34,62	1,8			
	99,0	139	28,30	2,2			
	129	107	21,78	2,6			
	162	85	17,33	3,3			
	186	74	15,06	3,5			
	26,0	529	34,62	0,95	HGX04	100B5/B14	100L6
	31,8	432	28,30	1,2	HGXF04	100B5/B14	100L6
	41,3	333	21,78	1,4	HGXZ04	100B5/B14	100L6
	51,9	265	17,33	1,8			
	59,8	230	15,06	2,0			
	24,1	571	58,09	0,88	HGX04	90B5/B14	90L4
	28,0	491	50,02	1,0	HGXF04	90B5/B14	90L4
	32,0	430	43,75	1,2	HGXZ04	90B5/B14	90L4
	36,1	380	38,73	1,3			
	40,4	340	34,62	1,5			
	49,5	278	28,30	1,8			
	64,3	214	21,78	2,2			
	80,8	170	17,33	2,8			
	93,0	148	15,06	3,1			
	113	122	12,37	3,8			
	136	101	10,28	4,4			
	177	78	7,93	3,3			
	222	62	6,31	4,2			
	255	54	5,48	4,3			

Gear unit selection tables

Performance parameter of HGX..P (IEC)

P_{1n} kW	n_2 r/min	M_{2n} Nm	i	k			
2,2	64,3	314	21,78	0,89	HGX03	100B5/B14	100L1-4
	80,8	250	17,33	1,1	HGXF03	100B5/B14	100L1-4
	93,0	217	15,06	1,2	HGXZ03	100B5/B14	100L1-4
	113	178	12,37	1,5			
	136	148	10,28	1,6			
	177	114	7,93	1,6			
	222	91	6,31	2,0			
	155	79	5,48	1,9			
	311	65	4,50	2,3			
	374	54	3,74	2,8			
	186	108	15,06	2,4	HGX03	90B5/B14	90L2
	226	89	12,37	2,9	HGXF03	90B5/B14	90L2
	272	74	10,28	3,2	HGXZ03	90B5/B14	90L2
	353	57	7,93	3,2			
	444	45	6,31	4,0			
	511	39	5,48	3,8			
	41,3	488	21,78	1,0	HGX04	112B5/B14	112M6
	51,9	388	17,33	1,2	HGXF04	112B5/B14	112M6
	59,8	338	15,06	1,4	HGXZ04	112B5/B14	112M6
	72,8	277	12,37	1,7			
	40,4	499	34,62	1,0	HGX04	100B5/B14	100L1-4
	49,5	408	28,30	1,2	HGXF04	100B5/B14	100L1-4
	64,3	314	21,78	1,5	HGXZ04	100B5/B14	100L1-4
	80,8	250	17,33	1,9			
	93,0	217	15,06	2,1			
	113	178	12,37	2,6			
	136	148	10,28	3,0			
	177	114	7,93	2,3			
	222	91	6,31	2,9			
	255	79	5,48	2,9			
	311	65	4,50	3,5			
	374	54	3,74	3,7			
3	93,0	296	15,06	0,88	HGX03	100B5/B14	100L2-4
	113	243	12,37	1,1	HGXF03	100B5/B14	100L2-4
	136	202	10,28	1,2	HGXZ03	100B5/B14	100L2-4
	177	156	7,93	1,2			
	222	124	6,31	1,5			
	255	108	5,48	1,4			
	311	88	4,50	1,7			
	374	73	3,74	2,0			
	49,5	556	28,30	0,90			
	64,3	428	21,78	1,1	HGX04	100B5/B14	100L2-4
	80,8	340	17,33	1,4	HGXF04	100B5/B14	100L2-4
	93,0	296	15,06	1,6	HGXZ04	100B5/B14	100L2-4
	113	243	12,37	1,9			
	136	202	10,28	2,2			
	177	156	7,93	1,7			

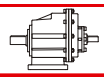
Gear unit selection tables

Performance parameter of HGX..P (IEC)

P_{1n} kW	n_2 r/min	M_{2n} Nm	i	k			
	222	124	6,31	2,1	HGX04	100B5/B14	100L2-4
	255	108	5,48	2,1	HGXF04	100B5/B14	100L2-4
	311	88	4,50	2,6	HGXZ04	100B5/B14	100L2-4
	374	73	3,74	2,7			
	186	148	15,06	3,1	HGX04	100B5/B14	100L-2
	226	122	12,37	3,8	HGXF04	100B5/B14	100L-2
	272	101	10,28	4,4	HGXZ04	100B5/B14	100L-2
3	353	78	7,93	3,3			
	444	62	6,31	4,2			
	136	269	10,28	0,89	HGX03	112B5/B14	112M4
	177	208	7,93	0,87	HGXF03	112B5/B14	112M4
	222	165	6,31	1,1	HGXZ03	112B5/B14	112M4
	255	144	5,48	1,0			
	311	118	4,50	1,3			
	374	98	3,74	1,5			
	80,8	454	17,33	1,1	HGX04	112B5/B14	112M4
	93,0	394	15,06	1,2	HGXF04	112B5/B14	112M4
	113	324	12,37	1,4	HGXZ04	112B5/B14	112M4
	136	269	10,28	1,6			
	177	208	7,93	1,3			
	222	165	6,31	1,6			
	255	144	5,48	1,6			
	311	118	4,50	2,0			
4	374	98	3,74	2,0			
	186	197	15,06	2,3	HGX04	112B5/B14	112M2
	226	162	12,37	2,8	HGXF04	112B5/B14	112M2
	272	135	10,28	3,3	HGXZ04	112B5/B14	112M2
	353	104	7,93	2,5			
	444	83	6,31	3,1			
	511	72	5,48	3,2			
	622	59	4,50	3,9			
	749	49	3,74	4,1			

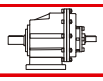
Gear unit selection tables

Performance parameter

M_{2n} Nm	n_1 r/min	i	P_{1n} kW	n_2 r/min	
120	1400	53,33	0,34	26,3	HGX01-HS
120	1400	45,89	0,40	30,5	HGXF01-HS
120	1400	40,01	0,46	34,9	HGXZ01-HS
120	1400	35,47	0,52	39,5	
120	1400	28,50	0,64	49,1	
120	1400	23,56	0,78	59,4	
120	1400	19,83	0,92	70,6	
100	1400	17,86	0,86	78,4	
120	1400	14,62	1,25	95,7	
100	1400	13,80	1,10	101	
120	1400	11,90	1,54	118	
100	1400	9,81	1,56	143	
80	1400	9,17	1,34	153	
80	1400	7,72	1,58	181	
60	1400	5,69	1,61	246	
60	1400	4,63	1,98	302	
60	1400	3,82	2,40	367	
200	1400	54,00	0,57	25,9	HGX02-HS
200	1400	46,46	0,66	30,1	HGXF02-HS
200	1400	40,60	0,75	34,5	HGXZ02-HS
200	1400	35,91	0,85	39,0	
200	1400	28,88	1,06	48,5	
200	1400	23,85	1,28	58,7	
200	1400	20,08	1,52	69,7	
160	1400	17,10	1,43	81,9	
200	1400	14,81	2,06	94,6	
160	1400	13,21	1,85	106	
200	1400	12,05	2,53	116	
160	1400	9,93	2,46	141	
120	1400	8,78	2,08	159	
120	1400	7,39	2,49	190	
100	1400	5,45	2,80	257	
100	1400	4,43	3,45	316	
100	1400	3,66	4,18	383	

Gear unit selection tables

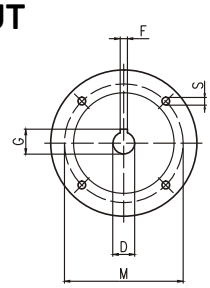
Performance parameter

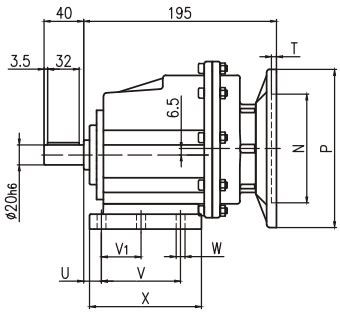
M_{2n} Nm	n_1 r/min	i	P_{1n} kW	n_2 r/min	
300	24,1	58,09	0,79	1400	HGX03-HS
300	28,0	50,02	0,92	1400	HGXF03-HS
300	32,0	43,75	1,05	1400	HGXZ03-HS
300	36,1	38,73	1,18	1400	
300	40,4	34,62	1,32	1400	
300	49,5	28,30	1,62	1400	
280	64,3	21,78	1,96	1400	
280	80,8	17,33	2,47	1400	
260	93,0	16,06	2,64	1400	
260	113	12,37	3,21	1400	
240	136	10,28	3,57	1400	
180	177	7,93	3,47	1400	
180	222	6,31	4,36	1400	
150	255	5,48	4,18	1400	
150	311	4,50	5,09	1400	
150	374	3,74	6,12	1400	
500	24,1	58,09	1,31	1400	HGX04-HS
500	28,0	50,02	1,53	1400	HGXF04-HS
500	32,0	43,75	1,75	1400	HGXZ04-HS
500	36,1	38,73	1,97	1400	
500	40,4	34,62	2,21	1400	
500	49,5	28,30	2,70	1400	
480	64,3	21,78	3,37	1400	
480	80,8	17,33	4,23	1400	
460	93,0	16,06	4,66	1400	
460	113	12,37	5,68	1400	
440	136	10,28	6,54	1400	
260	177	7,93	5,01	1400	
260	222	6,31	6,29	1400	
230	255	5,48	6,41	1400	
230	311	4,50	7,80	1400	
200	374	3,74	8,17	1400	

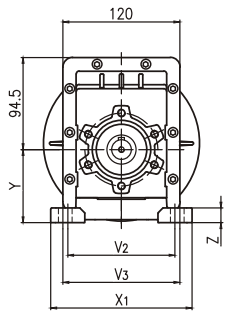
Outline dimension sheet

HGX01..P(IEC)

INPUT

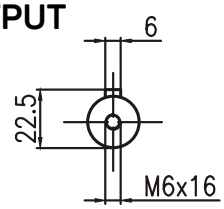






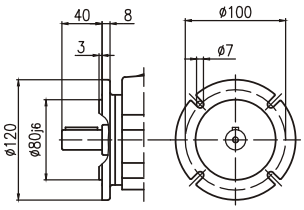
HGXF01..P(IEC)

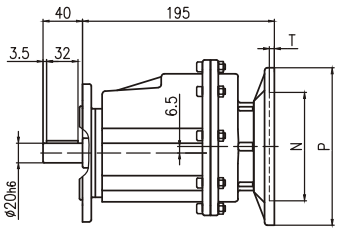
OUTPUT



I

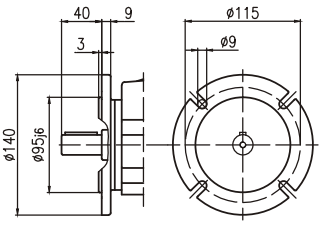
ϕ 120

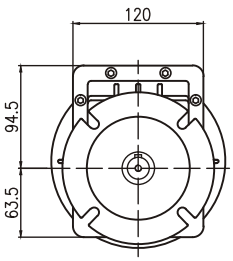




II

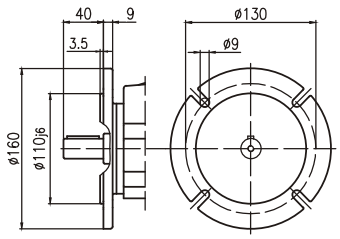
ϕ 140



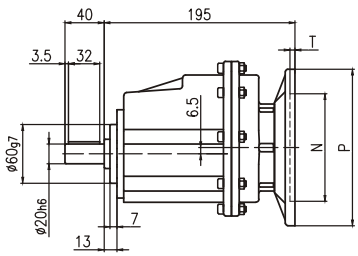


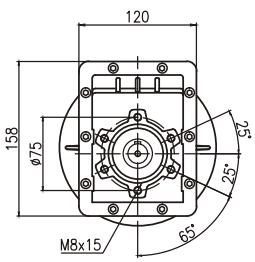
III

ϕ 160



HGXZ01..P(IEC)





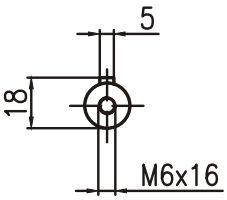
IEC	D	F	G	P	M	N	S	T
63B5	11	4	13	140	115	95	9	4
71B5	14	5	16	160	130	110	9	4
71B14	14	5	16	105	85	70	7	4
80B5	19	6	22	200	165	130	11	4
80B14	19	6	22	120	100	80	7	4
90B5	24	8	27	200	165	130	11	4
90B14	24	8	27	140	115	95	9	4

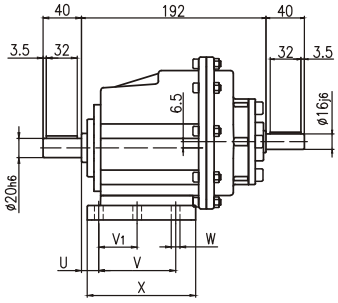
foot code	U	V	V1	V2	V3	W	X	X1	Y	Z
B01	18	87	50	110	-	9	118	130	85	15
M01	18	80	-	110	120	9	113	145	75	15
M02	25	95	-	110	120	9	112	145	75	15
B02	18	108	60	-	130	11	136	155	95	17

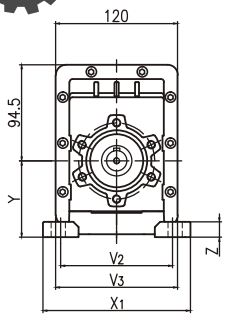
Outline dimension sheet

HGXO1..HS

INPUT

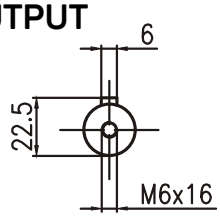






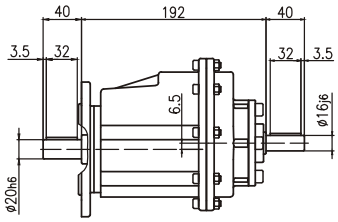
HGXFO1..HS

OUTPUT



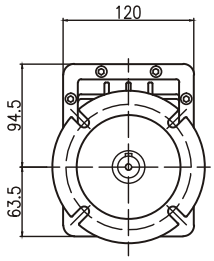
I

ϕ 120



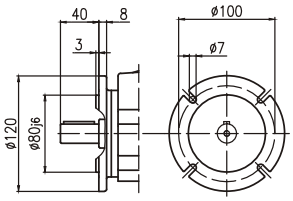
II

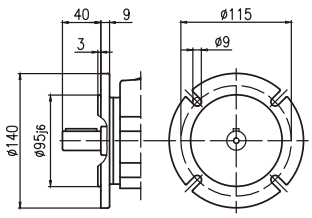
ϕ 140

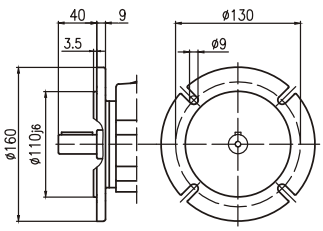


III

ϕ 160

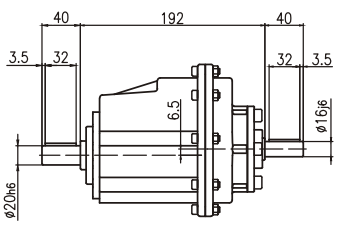


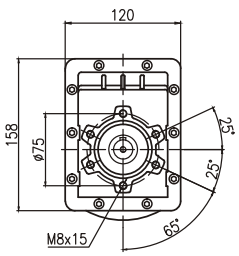




HGXZO1..HS

foot code	U	V	V1	V2	V3	W	X	X1	Y	Z
B01	18	87	50	110	-	9	118	130	85	15
M01	18	80	-	110	120	9	113	145	75	15
M02	25	95	-	110	120	9	112	145	75	15
B02	18	108	60	-	130	11	136	155	95	17

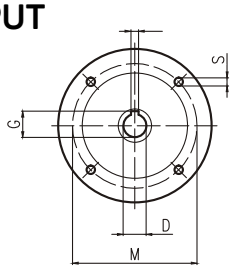


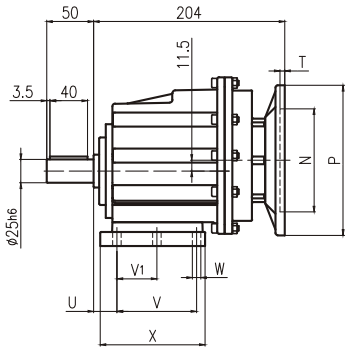


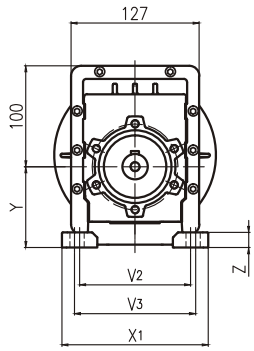
Outline dimension sheet

HGX02..P(IEC)

INPUT

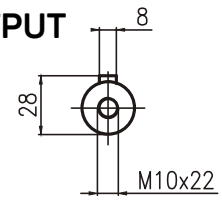


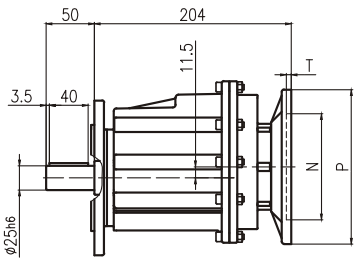


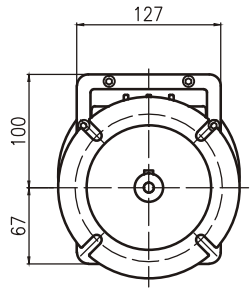


HGXF02..P(IEC)

OUTPUT

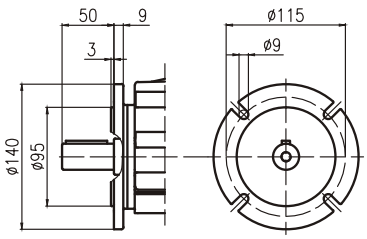






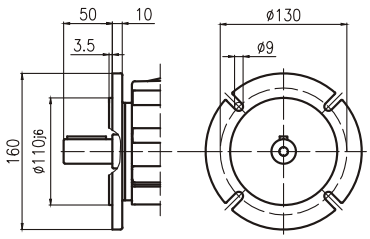
I

ϕ 140



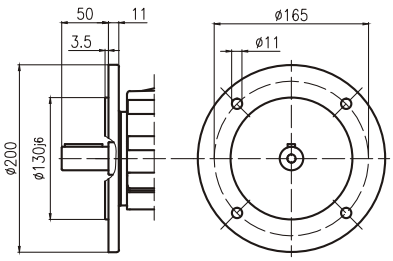
II

ϕ 160

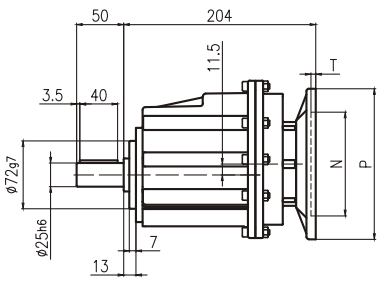


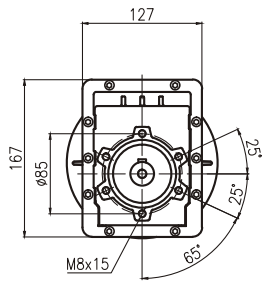
III

ϕ 200



HGXZ02..P(IEC)





IEC	D	F	G	P	M	N	S	T
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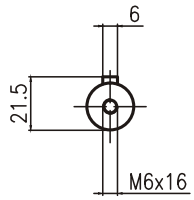
71B5	14	5	16	160	130	110	9	4
71B14	14	5	16	105	85	70	7	4
80B5	19	6	22	200	165	130	11	4
80B14	19	6	22	120	100	80	7	4
90B5	24	8	27	200	165	130	11	4
90B14	24	8	27	140	115	95	9	4

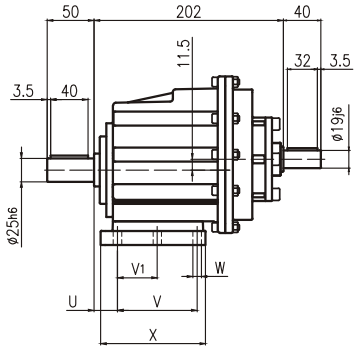
foot code	U	V	V1	V2	V3	W	X	X1	Y	Z
B02	18	108	60	-	130	11	136	155	100	17
M02	25	95	-	110	120	9	112	145	80	15
M01	18	80	-	110	120	9	118	145	80	15
B01	18	87	50	110	-	9	118	130	90	15

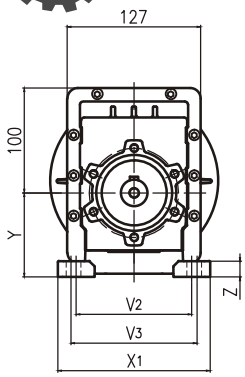
Outline dimension sheet

HGX02..HS

INPUT

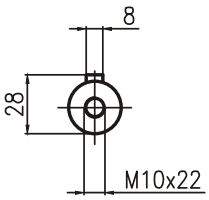


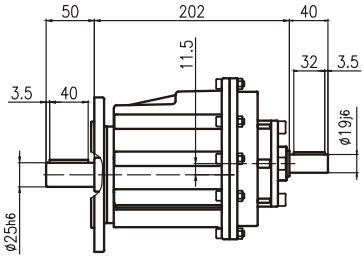


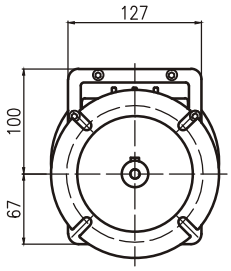


HGXF02..HS

OUTPUT

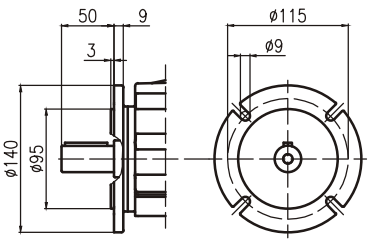






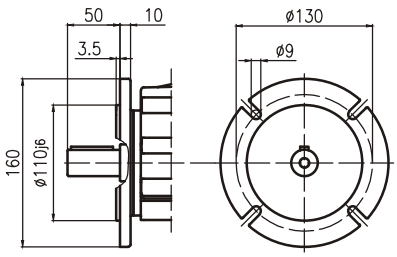
I

ϕ 140



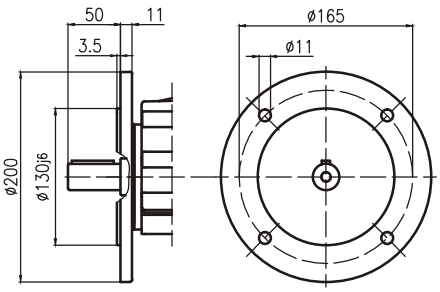
II

ϕ 160



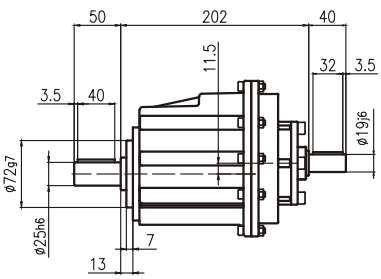
III

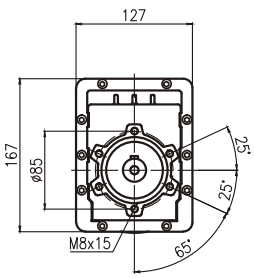
ϕ 200



HGXZ02..HS

foot code	U	V	V1	V2	V3	W	X	X1	Y	Z
B02	18	108	60	-	130	11	136	155	100	17
M02	25	95	-	110	120	9	112	145	80	15
M01	18	80	-	110	120	9	118	145	80	15
B01	18	87	50	110	-	9	118	130	90	15

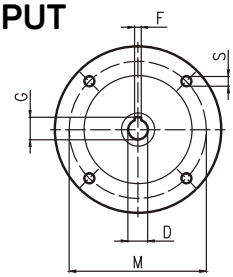


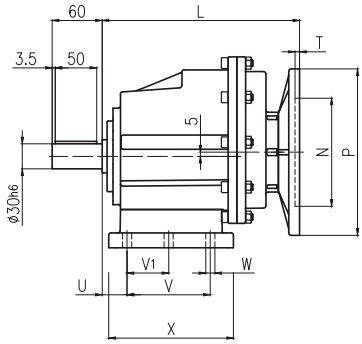


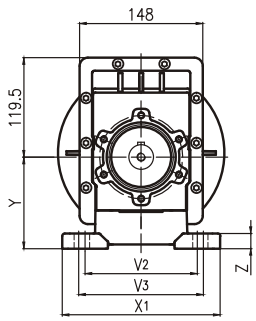
Outline dimension sheet

HGX03..P(IEC)

INPUT

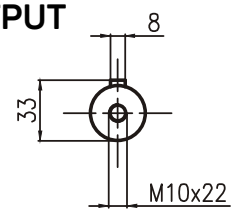


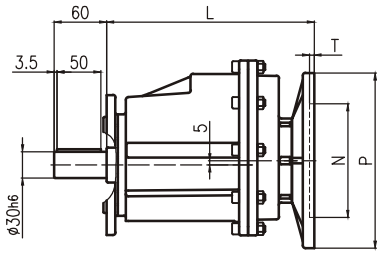


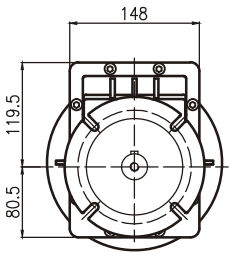


HGXF03..P(IEC)

OUTPUT

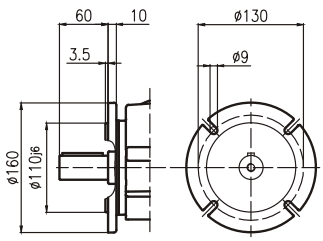






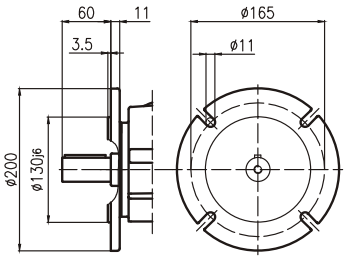
I

ϕ 160



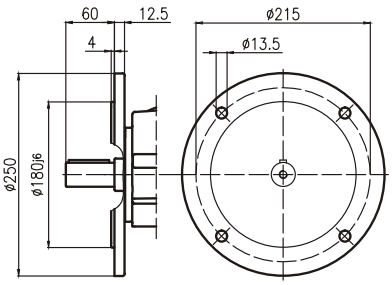
II

ϕ 200



III

ϕ 250



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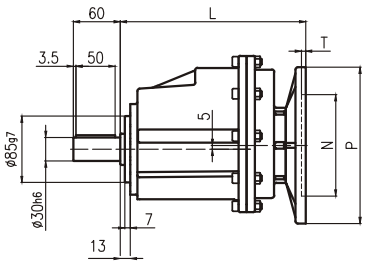
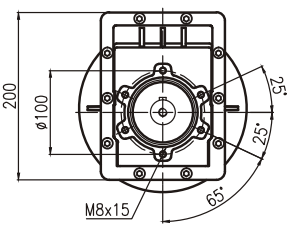




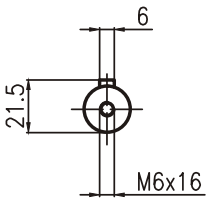
IEC	D	F	G	P	M	N	S	T	L
71B5	14	5	16	160	130	110	9	4	220
80B5	19	6	22	200	165	130	11	4	220
80B14	19	6	22	120	100	80	7	4	220
90B5	24	8	27	200	165	130	11	4	220
90B14	24	8	27	140	115	95	9	4	220
100/112B5	28	8	31	250	215	180	14	5	238
100/112B14	28	8	31	160	130	110	9	5	238

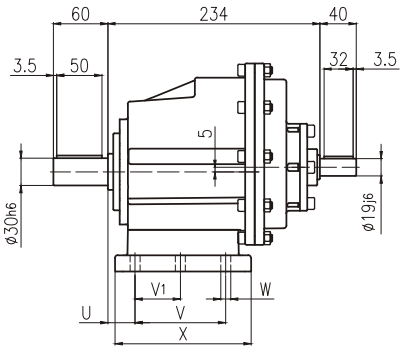
foot code	U	V	V1	V2	V3	W	X	X1	Y	Z
B03	18	130	70	-	160	11	156	190	110	20
M03	30	100	-	135	150	11	150	190	110	18
M04	32	110	-	170	185	14	150	230	110	20
B04	21	130	-	170	-	14	168	205	105	20

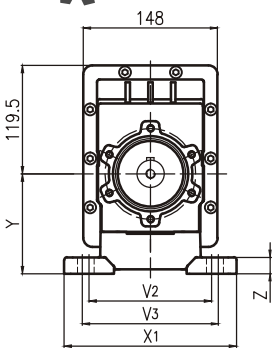
Outline dimension sheet

HGX03..HS

INPUT

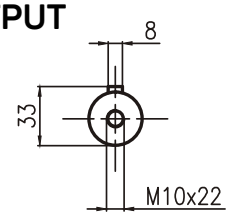


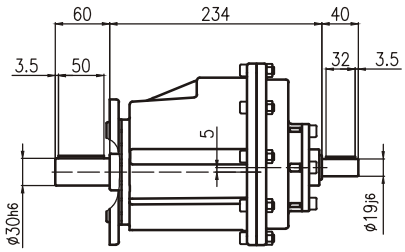


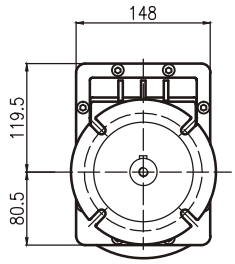


HGXF03..HS

OUTPUT

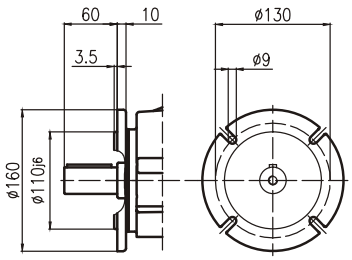






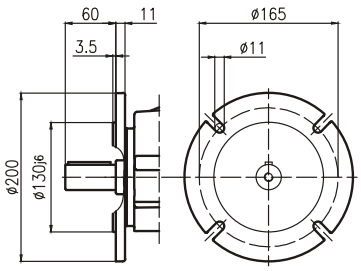
I

ϕ 160



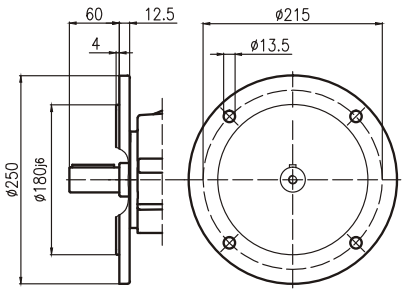
II

ϕ 200



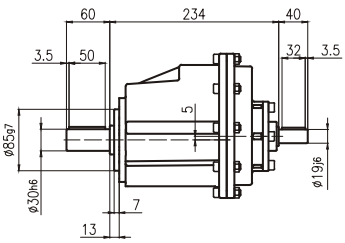
III

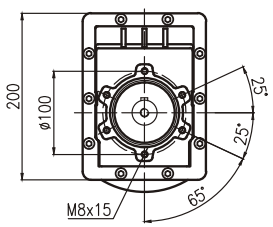
ϕ 250



HGXZ03..HS

foot code	U	V	V1	V2	V3	W	X	X1	Y	Z
B03	18	130	70	-	160	11	156	190	110	20
M03	30	100	-	135	150	11	150	190	110	18
M04	32	110	-	170	185	14	150	230	110	20
B04	21	130	-	170	-	14	168	205	105	20

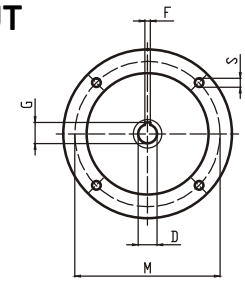


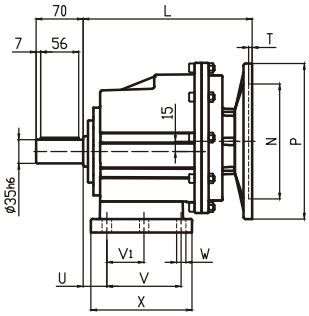


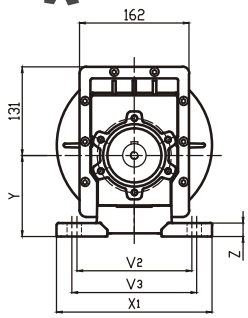
Outline dimension sheet

HGX04..P(IEC)

INPUT

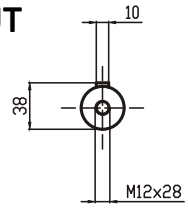


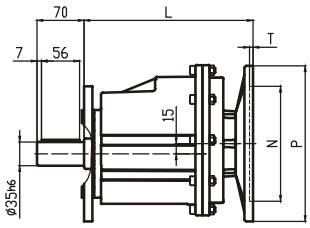


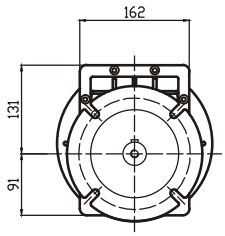


HGXF04..P(IEC)

OUTPUT

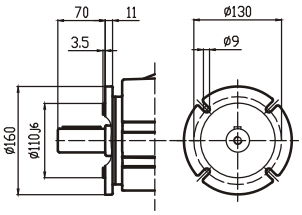






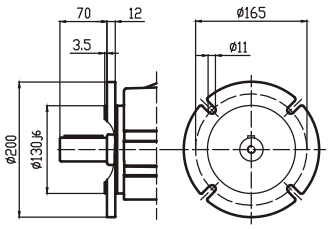
I

ϕ 160



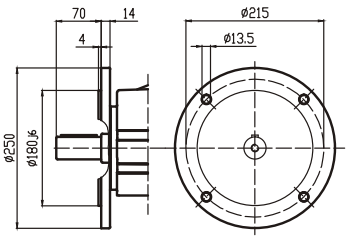
II

ϕ 200

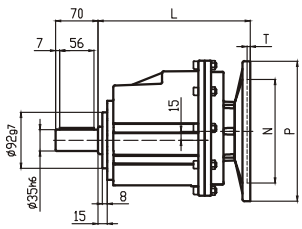


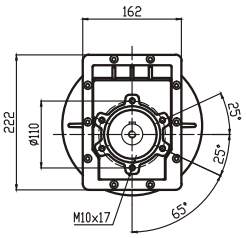
III

ϕ 250



HGXZ04..P(IEC)





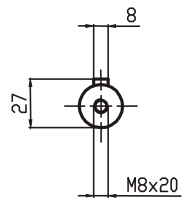
IEC	D	F	G	P	M	N	S	T	L
80B5	19	6	21,8	200	165	130	11	4	233
80B14	19	6	21,8	120	100	80	7	4	233
90B5	24	8	27,3	200	165	130	11	4	233
90B14	24	8	27,3	140	115	95	9	4	233
100/112B5	28	8	31,3	250	215	180	14	5	250
100/112B14	28	8	31,3	160	130	110	9	5	250

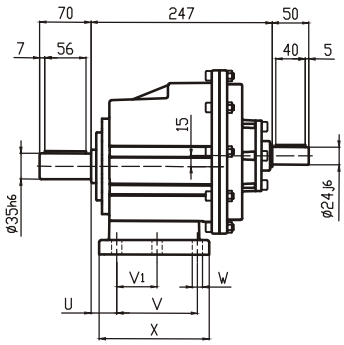
foot code	U	V	V1	V2	V3	W	X	X1	Y	Z
B04	23,5	130	-	170	-	14	168	205	115	20
B05	19,5	149,5	-	180	-	14	185	215	130	20
M04	35	110	-	170	185	14	150	230	120	20
M03	33	100	-	135	150	11	150	190	120	18
B03	21	130	70	-	160	11	156	190	120	20

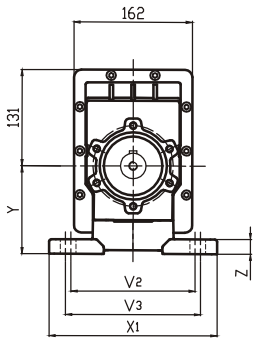
Outline dimension sheet

HGX04..HS

INPUT

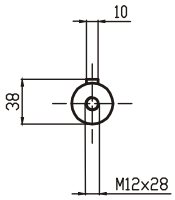


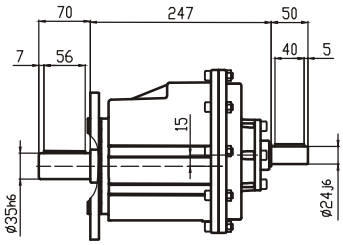


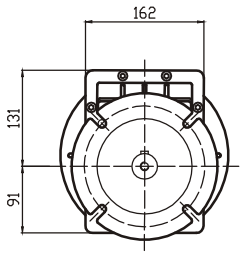


HGXF04..HS

OUTPUT

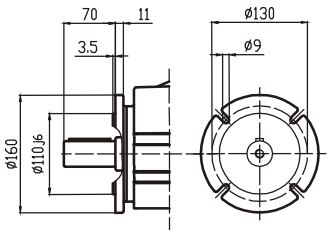






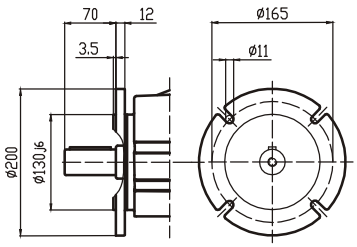
I

ϕ 160



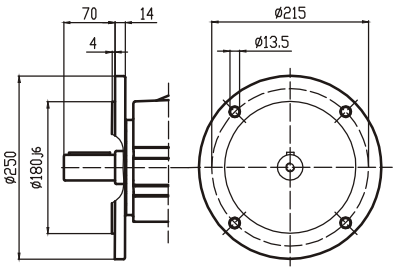
II

ϕ 200



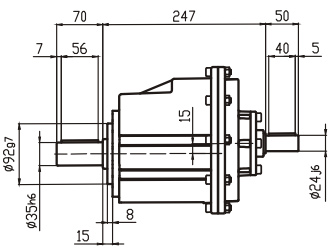
III

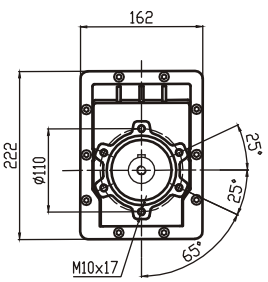
ϕ 250



HGXZ04..HS

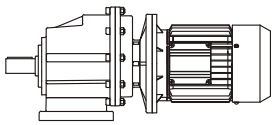
foot code	U	V	V1	V2	V3	W	X	X1	Y	Z
B04	23,5	130	-	170	-	14	168	205	115	20
B05	19,5	149,5	-	180	-	14	185	215	130	20
M04	35	110	-	170	185	14	150	230	120	20
M03	33	100	-	135	150	11	150	190	120	18
B03	21	130	70	-	160	11	156	190	120	20



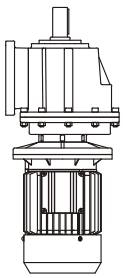


Mounting positions and terminal box orientation

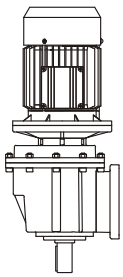
HGX..M1



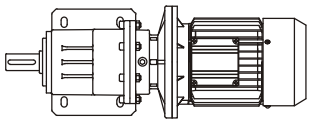
M2



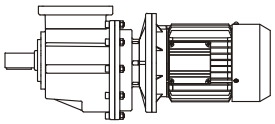
M4



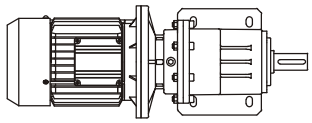
M5



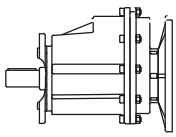
M3



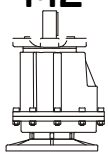
M6



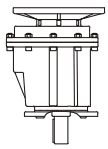
HGXF..M1

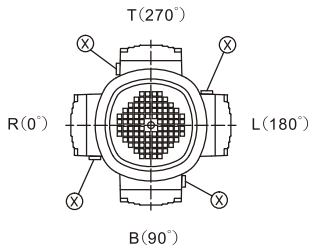


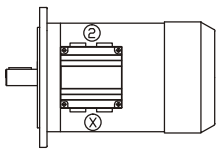
M2



M4







X: normal position

Lubrication

General information

Unless a special arrangement is made,VYBO Electric supplies the drives with a lubricant fill adapted for the specific gear unit and mounting position.

The decisive factor is the mounting position (M1...M6, sec. mounting position and important order information) specified when ordering the drive. You must adapt the lubricant fill in case of any subsequent changes made to the mounting position (Lubricant fill quantities).

Anti-friction bearing greases

The lubricant table on the following page shows the permitted lubricants for VYBO gear units. Please note the following to the lubricant table:

	Ambient temperature	Manufacturer	Model	Type of lubricating oil
Reducer rolling bearing	-20°C~+60°C	Mobil	Mobil EP 2	Mineral oil
	-20°C~+60°C	Mobil	Mobiltemp SHC100	Synthetic oil
Motor rolling bearing	-20°C~+60°C	Esso	Unirex EQ3	Mineral oil
	-20°C~+60°C	Shell	Alvania RL3	Mineral oil
	-20°C~+60°C	Shell	Aero Shell Grease 16	Synthetic oil

Lubrication

The following grease quantities are required:

· for fast-running bearings (motor and gear unit input end): Fill cavities between the rolling elements one third full will grease.
· for slow-running bearings (in gear units and gear unit output end): Fill the cavities between the rolling elements two thirds full with grease.

Ambient temperature (°C)	ISO viscosity class	SHELL	MOBIL	BP	Lubrication type
-10 ~ +40	VG220	Shell Omala 220	Mobil gear 630	BP Energol GX-XP 220	Mineral oil
-20 ~ +25	VG150 VG100	Shell Omala 100	Mobil gear 627	BP Energol GX-XP 100	
-30 ~ +10	VG110-46 VG32	Shell Omala T32	Mobil D. T. E. 13M		
-40 ~ +20	VG22 VG15	Shell Omala T15	Mobil D. T. E. 11M	BP Energol HLP-HM 15	
-40 ~ +80	VG220	Shell Omala HD220	Mobil SHC630		Synthetic oil
-40 ~ +40	VG150		Mobil SHC629		
-40 ~ +10	VG32		Mobil SHC624		

Lubricant fill quantity

Gear units	Fill quantity in liters					
	M1	M2	M3	M4	M5	M6
HGX 01	0,4	0,6	0,4	0,3	0,3	0,3
HGX 02	0,5	0,7	0,5	0,4	0,4	0,4
HGX 03	0,8	1,1	0,8	0,6	0,6	0,6
HGX 04	1,2	1,6	1,0	1,0	0,9	0,9

The fill quantity in the table is referenced, the exact value relating to the ratio. All HGX series helical gear units are filled with lubrication before delivery.

Installation methods

Preparation before the installation

1) Check if the data on the nameplates of the gearmotor matches the voltage supply system.
2) For standard gear unit, the ambient temperature must be in accordance with corresponding lubricant table.
3) The drive must not be assembled in conditions such as oil, gas, vapors, acids, radiation and so on.
4) Output shaft and flange surfaced must thoroughly cleaned to ensure they are free of anticorrosion agents, contamination or similar. Use a commercially available solvent. Do not let the solvent come into contact with sealing lip of the oil seals, or will damage the material.
5) The supporting structure must have the following characteristics: level, vibration damping and torsionally rigid.

The installation of the gear units

1) Do not tighten the housing the housing legs and mounting flanges against one another and ensure that you comply with the permitted radial load an axial load.
2) Never drive belt pulleys, couplings, pinions, etc. onto the shaft end by hitting them with a hammer. This will damage the bearing housing and the shaft.
3) Prior to startup, check that if the oil level is as specified for the mounting position. If the oil checking and drain screw and the breather valves are free accessible.

Problem	Possible cause	Remedy
Unusual, regular running noise	A: Meshing/grinding noise: Bearing damage. B: Knocking noise: Irregularrity in the gearing	A: Check the oil, change bearings B: Contact customer service
Unusual, irregular running noise	Foreign bodies in the oil	· Check the oil · Stop the drive, contact customer service
Oil leaking 1) · From the gear cover plate · From the motor flange · From the motor oil seal · From the gear unit flange · From the output end oil seal	A: Rubber seal on the gear cover plate leaking B: Seal defective C: Gear unit not vented	A: Tighten the bolts on the gearcover plate and observe the gear unit. Oil still leaking: Contact customer service B: Contact customer service C: Vent the gear unit (see "Mounting positions")
Oil leaking from breaking valve	A: Too much oil B: Drive operated in incorrect mounting position C: Frequent cold starts (oil foams) and/or high oil level	A: Correct the oil level (see Sec. "Inspection and Maintenance") B: Mount the breather valve correctly (see Sec. "Mounting Positions") and correct the oil level (see "Lubricants")
Output shaft does not turn although the motor is running or the input shaft is rotated	Connection between shaft and hub in gear unit interrupted	Send in the gear unit / gearmotor for repair

Short-term oil/grease leakage at the oil seal is possible in the run-in phase (24 hours running time).

Charge characteristic chart

Charge characteristic chart (for reference)

Air blowers	
Air blower (axial or radial)	A
Fan of cooling tower	B
Induced draught fan	B
Rotary piston type fan	B
Turbo-fan	A
Construction machinery	
Concrete mixer	B
Hoist	B
Road building machinery	B
Boring mill	B
Chemical machinery	
Mixer (luquid)	A
Mixer (half liquid)	B
Centrifuge (heavy)	B
Centrifuge (light)	A
Cooling rolling drum	B
Dry rolling drum	B
Mixer	B
Compressor	
Piston type compressor	C
Turbo-compressor	B
Transmission freighter	
Pan conveyer	B
Balance lifter	B
Trough conveyer	B
Ribbon conveyer (large piece)	C
Ribbon conveyer (small) piece)	B
Drum-type flour conveyer	A
Chain conveyer	B
Ring type conveyer	B
Lifter	B
Hoist	B
Crank-connecting conveyer	B
Worm conveyer	B
Steel-band conveyer	B
Chain reed-type conveyer	B
Crab freighter	B
Hoist	
Hoist gear assembly	A
Bracket swing gear assembly	B
Derrick gear assembly	B
Steering gear assembly	B
Moving gear assembly	C

Land dredger	
Drum-type conveyer	C
Drum-type rotation wheel	C
Dredger head	C
Powered crab	B
Pump	B
Pump turning gear assembly	B
Moving gear assembly (apron wheel)	C
Moving gear assembly (track)	B
Foodstuff processing machinery	
Placer or box filler	A
Cane crusher	A
Cane cutter	B
Cane crasher	C
Mixer	B
Paste bucket	B
Packager	A
Beet slicer	B
Beet washing machine	B
Motor and conversion equipments	
Frequency converter	C
Motor	C
Welding motor	C
Washing machine	
Rolling drum	B
Washing machine	B
Metal roller machine	
Steel cutter	C
Chain converter	B
Cold mill	C
Continuous casting equipments	B
Cold bed	B
Cropper	C
Cross steering transmitter	B
Druster	C
Heavy and medium steel mill	C
Bar mill	C

Charge characteristic chart

Charge characteristic chart (for reference)

Bar transmission equipments	
Bar pusher	B
Push bed	B
Shears	C
Lumber elevator platform	B
Roll adjusting euqipments	
Roller leveling machine	B
Mill rolling way (heavy)	C
Mill rolling way (light)	B
Sheet rolling mill	C
Trimming shears	B
Pipe welder	C
Soldering machine (belt material and wire rod)	B
Wire drawbench	B
Metal processing machine tools	
Power shaft	A
Forging machine	C
Drop hammer	C
Machine tool and necessary	A
Machine tool and main driving equipment	B
Metal facing machine	C
Plate-leveling machine tool	C
Backing-out punch	C
Press machine tool	C
Cutting machine	B
Sheet bending machine tool	B
Petroleum processing machinery	
Pump of oil pipe line	B
Rotary drilling equipment	C
Papering machine	
Glazing press	C
Multilayer paper board machine	C
Drying cylinder	C
Glazing cylinder	C
Masher	C
Mashing and breaking machine	C
Suction roll	C
Wet paper roller machine	C
Water absorbing roller machine	C
Welon machine	C

Pumps	
Centrifugal pump (thin liquid)	A
Centrifugal pump (half liquid)	B
Displacement pump	C
Plunger pump	C
Force pump	C
Plastic equipments	
Glazing press	B
Ejecting press	B
Spiral extruding machine	B
Mixing machine	B
Rubber equipment	
Glazing press	B
Ejecting press	C
Mixing stir machine	B
Kneading machine	B
Roller machine	C
Stone porcelain clay processing equipments	
Ball crusher	B
Ejecting press and breaker	C
Breaker	C
Brick press	C
Beating crusher	C
Converter	C
Cylinder mill	C
Textile machinery	
Feeding machine	B
Loom machine	B
Dyeing machine	B
Purified drum	B
Welon machine	B
Waster teratment equipments	
Air blast	B
Screw pump	B
Wood processing machine tool	
Barker	C
Facing machine	B
Saw bench	C
Wood processing machine tool	A

Address

VYBO ELECTRIC a. s.
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052 01 Spišská Nová Ves
Slovenská republika

tel: +421 944 105 361
e-mail: mv@vyboelectric.eu

www.vyboelectric.com

SOLUTIONS FOR INDUSTRY

BUREAU VERITAS Certification

VYBO Electric a.s.
Radlinského 18, 052 01 Spišská Nová Ves
Slovak Republic

Bureau Veritas Certification Holding SAS – UK Branch certifies that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below

ISO 14001: 2015

Scope of certification

MANUFACTURE AND SALE OF ELECTRIC MOTORS. SALES AND DEVELOPMENT OF VARIABLE FREQUENCY DRIVES.

Original cycle start date:	**18.05.2022**
Expiry date of previous cycle:	**N/A**
Certification Audit date:	**31.03.2022**
Certification cycle start date:	**18.05.2022**

Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on: **17.05.2025**

Certificate No. ***SK-U22 055E*** *Version:* ***1*** *Issue date:* ***18.05.2022***

Certification body address: 5th Floor, 66 Prescot Street, London E1 8HG, United Kingdom
Local office: Plynárenská 7/B, BRATISLAVA 821 09, Slovak Republic

0008

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: + 421 2 5341 4165

Page 1 of 1

BUREAU VERITAS Certification

Bureau Veritas Certification

Certificate

Awarded to

VYBO Electric a.s.
Radlinského 18, 052 01 Spišská Nová Ves
Slovak Republic

BUREAU VERITAS CERTIFICATION CZ s.r.o. certifies that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standard detailed below:

Standard

ISO 45001:2018

Scope of supply

MANUFACTURE AND SALE OF ELECTRIC MOTORS. SALES AND DEVELOPMENT OF VARIABLE FREQUENCY DRIVES.

Original Approval Date:	18-05-2022
Expiry date of previous cycle:	N/A
Certification Cycle Start Date:	18-05-2022
Certification Cycle End Date:	17-05-2025

Subject to the continued satisfactory operation of the organisation's Management System, this certificate is valid until: 17-05-2025

To check this certificate validity please call: +420 210 088 215

Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organisation.

S 3100

Version 1 Issue Date: 18-05-2022

Certificate Number: CZF - 2200117

MANAGING OFFICE: BUREAU VERITAS CERTIFICATION CZ, s.r.o., Olbrachtova 1, 140 00 Praha 4, Czech Republic

ISSUING OFFICE ADDRESS: BUREAU VERITAS CERTIFICATION CZ, s.r.o., Olbrachtova 1, 140 00 Praha 4, Czech Republic

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ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

IAF MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT

SNAS Reg. No. 153/Q-011

TÜV SÜD Slovakia

CERTIFICATE

TÜV SÜD Slovakia s.r.o.
Certification Body for Management Systems
Accredited by SNAS
Certificate on accreditation No. Q-011
certifies that

VYBO Electric a.s.
Radlinského 18
SK – 052 01 Spišská Nová Ves
IČO: 45 537 143

has established and applies
a Quality Management System for

Manufacture and sale of electric motors.
Sales and development of variable frequency drives.

An audit was performed, Report No. **2264/40/22/Q/AS/C**
Proof has been furnished that the requirements
according to

STN EN ISO 9001:2016

are fulfilled. The certificate is valid from **2022-04-14** until **2025-04-13**
Certificate Registration No. **Q 2264-1**

Bratislava, 2022-04-14

TÜV SÜD Slovakia s.r.o.
Certification Body for Management Systems
Member of Group TÜV SÜD
Jašíkova 6, 821 03 Bratislava

F-Q-019/2/6

Certificate SK22/3701

The management system of

VYBO Electric a.s.
Radlinského 18
052 01 Spišská Nová Ves, Slovakia

has been assessed and certified as meeting the requirements of

EN ISO 50001:2018

For the following activities

Production & sales of electric motors.
Sales & development of variable frequency drives.

Further clarifications regarding the scope of this certificate and the applicability of EN ISO 50001:2018 requirements may be obtained by consulting the organisation.

This certificate is valid from 7 April 2022 until 6 April 2025
and remains valid subject to satisfactory surveillance audits.
Recertification audit due a minimum of 60 days
before the expiration date.
Issue 1. Certified with SGS since 7 April 2022

SYSTEM CERTIFICATION ISO 50001 SGS

SNAS Reg. No. 158/R-099

Authorised by

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