

Page

1	▶ SUMMARIZE
1 - 2	▶ PRODUCT STRUCTURE PICTURE
2	▶ MODEL ILLUMINATE
3 - 5	▶ RELEVANT PARAMETER
6	▶ SELECTION EXAMPLE
7	▶ RATIO AND IEC MOTOR ADAPTERS
8 - 18	▶ SELECTION TABLES
19 - 26	▶ OUTLINE DIMENSION SHEET
27	▶ INSTALLATION POSITIONS
27 - 28	▶ LUBRICATION



1. SUMMARIZE

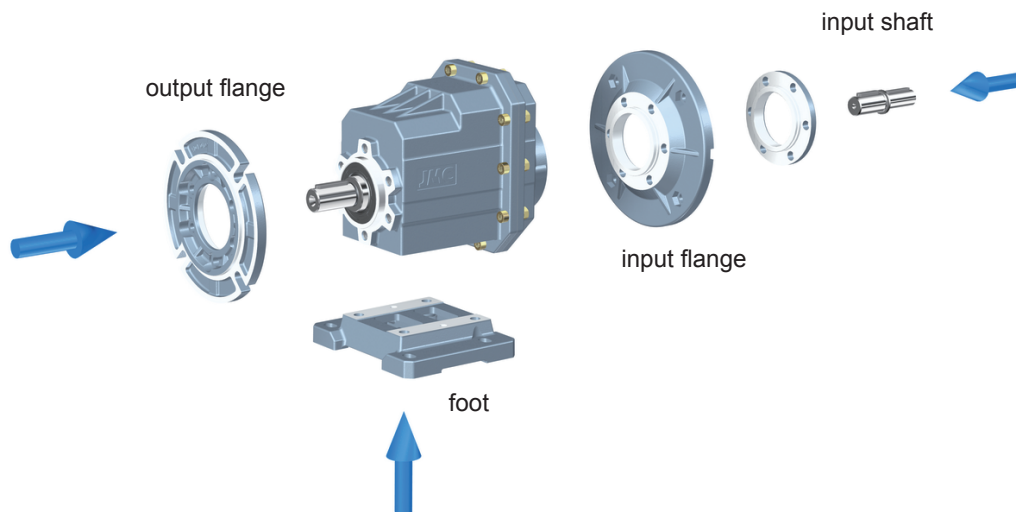
HG Series helical gearbox is designed basing on the modular system.

1.1 Products characteristics

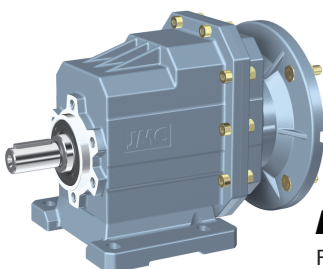
- Modularity;
- High efficiency;
- Low noise;
- Space effective, refined design;
- Universal mounting;
- Aluminium housing, light in weight;
- Gears in carbonize hard,durable;
- Multistructure, can be combined in many forms to meet needs of all kinds of transmission conditions.

HG Series helical gear units has more than 4 types. Power 0.12-4KW; Ratio 3.66-54; Torque max 120-500Nm. It can be connected (foot, flange) discretionary and use multi-mounting positions according to customers' requirements.

1.2 Structure feature

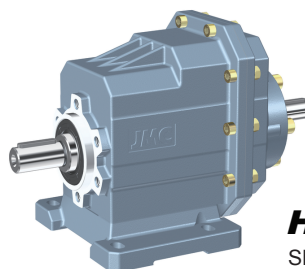


2. PRODUCT STRUCTURE PICTURE



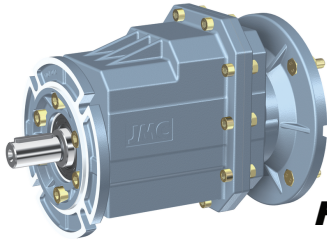
HGP..(IEC)

Foot-mounted helical gear unit



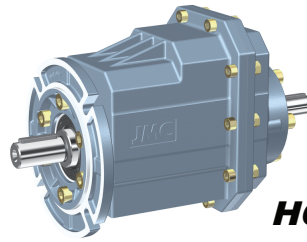
HGP..HS

Shaft input foot-mounted helical gear unit



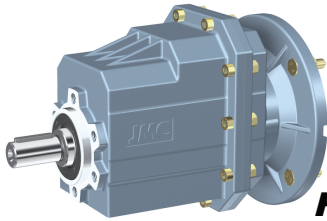
HGF..(IEC)

Flange-mounted helical gear unit



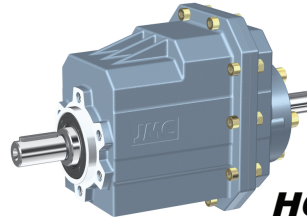
HGF..HS

Shaft input flange-mounted helical gear unit



HGZ..(IEC)

B14 Flange-mounted helical gear unit



HGZ..HS

Shaft input B14 flange-mounted helical gear unit

3. MODEL ILLUMINATE

Gear unit

HG	20	P	B01	-	B571	-	28.88	-	M6
①	②	③	④		⑤		⑥		⑦

No	Comments
1	HG: code for gear units series
2	Specification code of gear units 20, 25, 30, 35
3	1). P : Foot-mounted 2). F1: B5 flange mounted size I 2). F2: B5 flange mounted size II 2). F3: B5 flange mounted size III 3). Z : B14 flange mounted
4	Foot code: B01, B02, B03, B04, M01, M02, M03, M04
5	1). IEC Motor adapters 2). HS: Shaft input
6	Transmission ratio of gear units i
7	M1: Mounting positio, default mounting position M1 not to write out is ok

Example: **HG20PB01 - B571 - 28.50**

HG30Z - HS - 6.31

HG25F3 - B1480 - 8.78

4. RELEVANT PARAMETER

4.1 Power P

$$P_1 = \frac{P_2}{\eta} \text{ [kW]}$$

$$P_{1n} \geq P_1 \cdot f_s \text{ [kW]}$$

P_1	Input power
P_2	Output power
P_{1n}	Rated input motor power
f_s	Service factor
η	Transmission efficiency

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

4.2 Rotation speed n

n_1	Gear units input speed
n_2	Gear units output speed

If driven by the external gearing, 1400r/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 M_2 will be reduced.

4.3 Transmission ratio i

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

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

4.4 Torque M

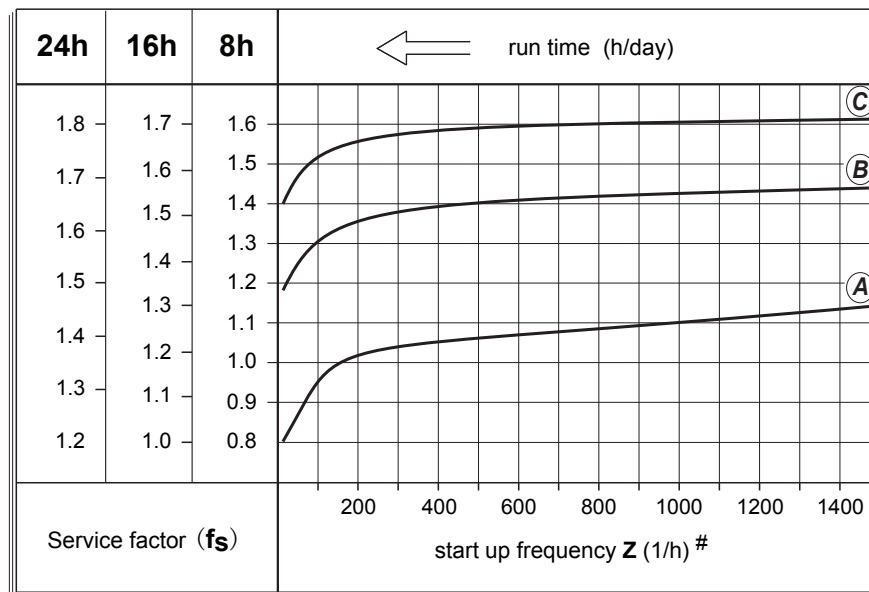
$$M_2 = \frac{9550 \cdot P_1 \cdot \eta}{n_2} \text{ [Nm]}$$

$$M_{2n} \geq M_2 \cdot f_s \text{ [Nm]}$$

M_2	Output torque
M_{2n}	Rated output torque
P_1	Input power
η	Transmission efficiency
f_s	Service factor

4.5 Service factor f_s

The effect of the driven machine on the gear unit is taken into account to a sufficient level of accuracy using the service factor f_s . 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 frequency **Z**: The cycles include all starting and braking procedures as well as change overs from low to high speed.

4.5.1 Load classifications

- (A) Uniformshock load, permitted mass acceleration factor ≤ 0.2
- (B) Moderate shock load, permitted mass acceleration factor ≤ 3
- (C) Heavy shock load, permitted mass acceleration factor ≤ 10

Load classifications see the addendum.

4.5.2 Mass acceleration factor

The mass acceleration factor is calculated as follows:

$$f_a = \frac{J_c}{J_m}$$

f_a Mass acceleration factor

J_c All external mass moments of inertia [kgm²]

J_m Mass moment of inertia on the motor end [kgm²]

If mass acceleration factors **f_a** > 10, please call our Technical Service.

To keep the service-life of gear units, the use factor **f_s** selected from the catalogue must be equal or slightly higher than the calculated use factor **f_s**.

4.6 Radial loads *Fr*

When determining 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 **f_z**:

Transmission element	Transmission element factor F_z	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 loads exerted on the motor or gear shaft is then calculated as follows:

$$F_r = \frac{M \cdot 2000 \cdot f_z}{d_0} \text{ [N]}$$

Fr Resulting radial load [N]

M Torque on the shaft [Nm]

d₀ Mean diameter of the mounted transmission element in [mm]

f_z Transmission element factor

The allowed radial load force on the shaft is calculated with the following formula:

$$F_{xL} \leq \frac{Fr_2 \cdot a}{(b+x)} \text{ [N]}$$

Fr₂ Permitted overhung load ($x = L/2$) for foot-mounted gear units according to the selection tables in [N]

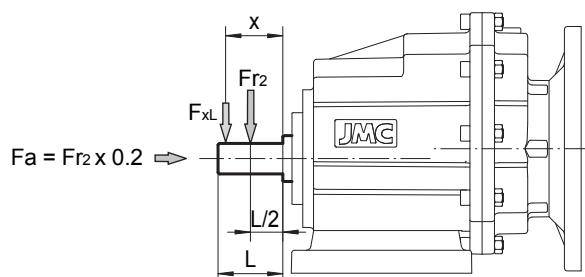
a, b Gear unit constant for overhung load conversion [mm]

x Distance from the shaft shoulder to the force application point in (mm)

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

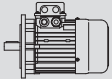
	HG20	HG25	HG30	HG35
a	103	116.5	130	147
b	83	91.5	100	112

Output shafts radial loads & axial loads Fr₂, Fa



n2 [min ⁻¹]		10	40	60	80	100	120	150	180	250	400
Fr2 [N]	HG20	2500	2500	2180	1980	1840	1630	1400	1320	1080	920
	HG25	5000	5000	4370	3970	3680	3470	2710	2550	2150	1840
	HG35	6500	6500	5550	5040	4510	3800	3530	3320	2800	2390
	HG35	8000	8000	6590	5990	5230	4570	4240	3900	3350	2860

4.7 SELECTION TABLES COMMENTS

P_{1n} [kW]	n_2 [r/min]	M_{2n} [Nm]	i	f_s			Page 
------------------	------------------	------------------	-----	-------	--	---	---

P_{1n} Rated power driving motor [kW];

n_2 Output speed [r/min];

M_{2n} Rated output torque [Nm];

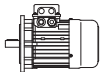
$M_{2 \max}$ Permissible output torque [Nm];

i Gear unit ratio;

f_s Service factor;



Gear unit type;



Motor type;

page Dimension sheet page no;

* Finite gear unit reduction ratio.

5. SELECTION EXAMPLE

5.1 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, Ø200mm output flange-mounted, $n_2=30$ r/min.

see tables, $f_s=1.05$

$$M_{2n} \geq M_2 \cdot f_s = 400 \times 1.05 = 420[\text{Nm}]$$

$$i = \frac{n_1}{n_2} = \frac{1400}{30} = 46.67$$

Choose type:

HG35F2 - B590 - 44.18

5.2 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, foot code is B01, $n_2=95$ r/min.

see tables, $f_s=1.35$

$$i = \frac{n_1}{n_2} = \frac{1400}{95} = 14.74$$

$$P_{1n} \geq P_1 \cdot f_s = \frac{P_2}{\eta} \cdot f_s = \frac{1}{0.96} \times 1.35 = 1.41[\text{kW}]$$

Choose type:

HG25PB01- B590 - 14.81 - M6

6. RATIO AND IEC MOTOR ADAPTERS

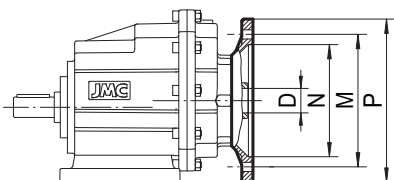
HG20(IEC)				
i	B563	B571 B1471	B580 B1480	B590 B1490
53.33				
45.89				
40.10				
35.47				
28.50				
23.56				
19.83				
17.86				
14.62				
13.80*				
11.90				
9.81				
9.17				
7.72				
5.69				
4.63				
3.82				

HG25(IEC)				
i	B563	B571 B1471	B580 B1480	B590 B1490
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				

HG30(IEC)					
i	B571	B580 B1480	B590 B1490	B5100 B14100	B5112 B14112
51.30*					
44.18*					
38.63					
34.20*					
30.57					
24.99					
21.15*					
19.24*					
18.21*					
15.30*					
13.30*					
12.60					
10.93*					
9.08					
7.93*					
6.31					
5.48					
4.50					
3.74					

HG35(IEC)				
i	B580 B1480	B590 B1490	B5100 B14100	B5112 B14112
51.30*				
44.18*				
38.63				
34.20*				
30.57				
24.99				
21.15*				
19.24*				
18.21*				
15.30*				
13.30*				
12.60				
10.93*				
9.08				
7.93*				
6.31				
5.48				
4.50				
3.74				

“*” Finite gear unit reduction ratio

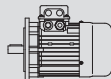


IEC	B563	B571	B1471	B580	B1480	B590	B1490	B5100	B14100	B5112	B14112
D _{E8}	11	14		19		24		28		28	
P	140	160	105	200	140	200	140	250	160	250	160
M	115	130	85	165	115	165	115	215	130	215	130
N	95	110	70	130	95	130	95	180	110	180	110

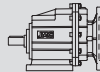
7. GEAR UNIT SELECTION TABLES

7.1 HG..(IEC).. Performance parameter

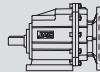
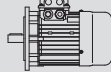
P _{1n} [kW]	n ₂ [r/min]	M _{2n} [Nm]	i	fs			Page
0.12	26.3	42	53.33	2.9	HG20P	B563	63A4 21
	30.5	36	45.89	3.3	HG20F	B563	63A4 21
	34.9	32	40.10	3.8	HG20Z	B563	63A4 21
	39.5	28	35.47	4.3			
	49.1	22	28.50	5.4			
	59.4	18.5	23.56	6.5			
	70.6	15.6	19.83	7.7			
	78.4	14.0	17.86	7.1			
	95.8	11.5	14.62	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			
0.18	16.9	98	53.33	1.2	HG20P	B571	71A6 21
	19.6	84	45.89	1.4	HG20F	B571	71A6 21
	22.4	74	40.10	1.6	HG20Z	B571	71A6 21
	25.4	65	35.47	1.8			
	31.6	52	28.50	2.3			
	26.3	63	53.33	1.9	HG20P	B563	63B4 21
	30.5	54	45.89	2.2	HG20F	B563	63B4 21
	34.9	47	40.10	2.5	HG20Z	B563	63B4 21
	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			
	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	HG25P	B571	71A6 23
	19.4	85	46.46*	2.3	HG25F	B571	71A6 23
	22.2	74	40.60*	2.7	HG25Z	B571	71A6 23
	25.1	66	35.91*	3.0			
	31.2	53	28.88*	3.8			
	25.9	64	54.00*	3.1	HG25P	B563	63B4 23
	30.1	55	46.46*	3.7	HG25F	B563	63B4 23
	34.5	48	40.60*	4.2	HG25Z	B563	63B4 23

P _{1n} [kW]	n ₂ [r/min]	M _{2n} [Nm]	i	fs			Page	
0.25	16.9	136	53.33	0.88	HG20P	B5/B1471	71B6	21
	19.6	117	45.89	1.0	HG20F	B5/B1471	71B6	21
	22.4	102	40.10	1.2	HG20Z	B5/B1471	71B6	21
	25.4	90	35.47	1.3				
	31.6	73	28.50	1.7				
	26.3	87	53.33	1.4	HG20P	B5/B1471	71A4	21
	30.5	75	45.89	1.6	HG20F	B5/B1471	71A4	21
	34.9	66	40.10	1.8	HG20Z	B5/B1471	71A4	21
	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	HG25P	B5/B1471	71B6	23
	19.4	118	46.46*	1.7	HG25F	B5/B1471	71B6	23
	22.2	103	40.60*	1.9	HG25Z	B5/B1471	71B6	23
	25.1	91	35.91*	2.2				
	31.2	74	28.88*	2.7				
	25.9	88	54.00*	2.3	HG25P	B5/B1471	71A4	23
	30.1	76	46.46*	2.6	HG25F	B5/B1471	71A4	23
	34.5	66	40.60*	3.0	HG25Z	B5/B1471	71A4	23
	39.0	59	35.91*	3.4				
	48.5	47	28.88*	4.2				
0.37	22.4	151	40.10	0.79	HG20P	B5/B1480	80A6	21
	25.4	134	35.47	0.90	HG20F	B5/B1480	80A6	21
	31.6	107	28.50	1.1	HG20Z	B5/B1480	80A6	21
	38.2	89	23.56	1.4				
	26.3	129	53.33	0.93	HG20P	B5/B1471	71B4	21
	30.5	111	45.89	1.1	HG20F	B5/B1471	71B4	21
	34.9	97	40.10	1.2	HG20Z	B5/B1471	71B4	21
	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					

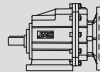
P _{1n} [kW]	n ₂ [r/min]	M _{2n} [Nm]	i	fs			Page
0.37	16.7	204	54.00*	1.0	HG25P	B5/B1480	80A6 23
	19.4	175	46.46*	1.1	HG25F	B5/B1480	80A6 23
	22.2	153	40.60*	1.3	HG25Z	B5/B1480	80A6 23
	25.1	135	35.91*	1.5			
	31.2	109	28.88*	1.8			
	25.9	131	54.00*	1.5	HG25P	B5/B1471	71B4 23
	30.1	113	46.46*	1.8	HG25F	B5/B1471	71B4 23
	34.5	98	40.60*	2.0	HG25Z	B5/B1471	71B4 23
	39.0	87	35.91*	2.3			
	48.5	70	28.88*	2.9			
	58.7	58	23.85*	3.5			
	81.9	41	17.10	3.9			
	17.5	193	51.30*	1.6	HG30P	B5/B1480	80A6 25
	20.4	167	44.18*	1.8	HG30F	B5/B1480	80A6 25
	23.3	146	38.63	2.1	HG30Z	B5/B1480	80A6 25
	26.3	129	34.20*	2.3			
	29.4	115	30.57	2.6			
	27.3	124	51.30*	2.4	HG30P	B571	71B4 25
	31.7	107	44.18*	2.8	HG30F	B571	71B4 25
	36.2	94	38.63	3.2	HG30Z	B571	71B4 25
	40.9	83	34.20*	3.6			
0.55	31.6	160	28.50	0.75	HG20P	B5/B1480	80B6 21
	38.2	132	23.56	0.91	HG20F	B5/B1480	80B6 21
	45.4	111	19.83	1.1	HG20Z	B5/B1480	80B6 21
	34.9	144	40.10	0.8	HG20P	B5/B1480	80A4 21
	39.5	128	35.47	0.9	HG20F	B5/B1480	80A4 21
	49.1	103	28.50	1.2	HG20Z	B5/B1480	80A4 21
	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			
	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	HG25P	B5/B1480	80B6 23
	22.2	227	40.60*	0.88	HG25F	B5/B1480	80B6 23
	25.1	201	35.91*	1.0	HG25Z	B5/B1480	80B6 23
	31.2	162	28.88*	1.2			
	37.7	134	23.85*	1.5			
	25.9	194	54.00*	1.0	HG25P	B5/B1480	80A4 23
	30.1	167	46.46*	1.2	HG25F	B5/B1480	80A4 23
	34.5	146	40.60*	1.4	HG25Z	B5/B1480	80A4 23
	39.0	129	35.91*	1.5			
	48.5	104	28.88*	1.9			
	58.7	86	23.85*	2.3			

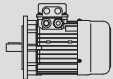
P _{1n} [kW]	n ₂ [r/min]	M _{2n} [Nm]	i	fs			Page		
0.55	69.7	72	20.08*	2.8	HG25P	B5/B1480	80A4	23	
	81.9	62	17.10	2.6	HG25F	B5/B1480	80A4	23	
	94.5	53	14.81*	3.7	HG25Z	B5/B1480	80A4	23	
	17.5	287	51.30*	1.0	HG30P	B5/B1480	80B6	25	
	20.4	248	44.18*	1.2	HG30F	B5/B1480	80B6	25	
	23.3	216	38.63	1.4	HG30Z	B5/B1480	80B6	25	
	26.3	192	34.20*	1.6					
	29.4	171	30.57	1.8					
	27.3	185	51.30*	1.6	HG30P	B5/B1480	80A4	25	
	31.7	159	44.18*	1.9	HG30F	B5/B1480	80A4	25	
	36.2	139	38.63	2.2	HG30Z	B5/B1480	80A4	25	
	40.9	123	34.20*	2.4					
	45.8	110	30.57	2.7					
	56.0	90	24.99	3.3					
	0.75	49.1	140	28.50	0.86	HG20P	B5/B1480	80B4	21
		59.4	116	23.56	1.0	HG20F	B5/B1480	80B4	21
		70.6	97	19.83	1.2	HG20Z	B5/B1480	80B4	21
		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	HG25P	B5/B1490	90S6	23	
37.7		182	23.85*	1.1	HG25F	B5/B1490	90S6	23	
44.8		153	20.08*	1.3	HG25Z	B5/B1490	90S6	23	
30.1		228	46.46*	0.88	HG25P	B5/B1480	80B4	23	
34.5		199	40.60*	1.0	HG25F	B5/B1480	80B4	23	
39.0		176	35.91*	1.1	HG25Z	B5/B1480	80B4	23	
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	HG25P	B5/B1480	80A2	23	
117.4		59	23.85*	3.4	HG25F	B5/B1480	80A2	23	
139.4		49	20.08*	4.1	HG25Z	B5/B1480	80A2	23	
163.7		42	17.10	3.8					

P_{1n} [kW]	n₂ [r/min]	M_{2n} [Nm]	i	fs			Page
0.75	17.5	392	51.30*	0.77	HG30P	B5/B1490	90S6 25
	20.4	338	44.18*	0.89	HG30F	B5/B1490	90S6 25
	23.3	295	38.63	1.0	HG30Z	B5/B1490	90S6 25
	26.3	261	34.20*	1.1			
	29.4	234	30.57	1.3			
	36.0	191	24.99	1.6			
	27.3	252	51.30*	1.2	HG30P	B5/B1480	80B4 25
	31.7	217	44.18*	1.4	HG30F	B5/B1480	80B4 25
	36.2	190	38.63	1.6	HG30Z	B5/B1480	80B4 25
	40.9	168	34.20*	1.8			
	45.8	150	30.57	2.0			
	56.0	123	24.99	2.4			
	66.2	104	21.15*	2.7			
	72.8	94	19.24*	3.0			
	76.9	89	18.21*	3.1			
	91.5	75	15.30*	3.7			
	105	65	13.30*	3.8			
	111	62	12.60	4.0			
	17.5	392	51.30*	1.3	HG35P	B5/B1490	90S6 27
	20.4	338	44.18*	1.5	HG35F	B5/B1490	90S6 27
	23.3	295	38.63	1.7	HG35Z	B5/B1490	90S6 27
	26.3	261	34.20*	1.8			
	29.4	234	30.57	2.1			
	27.3	252	51.30*	2.0	HG35P	B5/B1480	80B4 27
	31.7	217	44.18*	2.3	HG35F	B5/B1480	80B4 27
	36.2	190	38.63	2.6	HG35Z	B5/B1480	80B4 27
	40.9	168	34.20*	2.9			
	45.8	150	30.57	3.2			
	56.0	123	24.99	3.9			
	66.2	104	21.15*	4.0			
1.1	70.6	143	19.83	0.84	HG20P	B5/B1490	90S4 21
	78.4	129	17.86	0.78	HG20F	B5/B1490	90S4 21
	95.8	105	14.62	1.1	HG20Z	B5/B1490	90S4 21
	101	99	13.80*	1.0			
	118	86	11.90	1.4			
	143	71	9.81	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	HG20P	B5/B1480	80B2 21
	305	33	9.17	2.4	HG20F	B5/B1480	80B2 21
	363	28	7.72	2.9	HG20Z	B5/B1480	80B2 21
	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	HG25P	B5/B1490	90S4 23
	48.5	208	28.88*	1.0	HG25F	B5/B1490	90S4 23
	58.7	172	23.85*	1.2	HG25Z	B5/B1490	90S4 23
	69.7	145	20.08*	1.4			
	81.9	123	17.10	1.3			

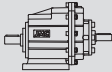
P _{1n} [kW]	n ₂ [r/min]	M _{2n} [Nm]	i	fs			Page	
1.1	94.5	107	14.81*	1.9	HG25P	B5/B1490	90S4	23
	106	95	13.21	1.7	HG25F	B5/B1490	90S4	23
	116	87	12.05	2.3	HG25Z	B5/B1490	90S4	23
	141	72	9.93	2.2				
	159	63	8.78	1.9				
	189	53	7.39	2.3				
	257	39	5.45	2.5				
	316	32	4.43	3.1				
	383	26	3.66	3.8				
	27.3	370	51.30*	0.81	HG30P	B5/B1490	90S4	25
	31.7	318	44.18*	0.94	HG30F	B5/B1490	90S4	25
	36.2	278	38.63	1.1	HG30Z	B5/B1490	90S4	25
	40.9	246	34.20*	1.2				
	45.8	220	30.57	1.4				
	56.0	180	24.99	1.7				
	66.2	152	21.15*	1.8				
	72.8	139	19.24*	2.0				
	76.9	131	18.21*	2.1				
	91.5	110	15.30*	2.5				
	72.5	139	38.63	2.2	HG30P	B5/B1480	80B2	25
	81.9	123	34.20*	2.4	HG30F	B5/B1480	80B2	25
	91.6	110	30.57	2.7	HG30Z	B5/B1480	80B2	25
	112.0	90	24.99	3.3				
	132.4	76	21.15*	3.7				
	145.5	69	19.24*	4.0				
	153.8	66	18.21*	4.3				
	27.3	370	51.30*	1.4	HG35P	B5/B1490	90S4	27
	31.7	318	44.18*	1.6	HG35F	B5/B1490	90S4	27
	36.2	278	38.63	1.8	HG35Z	B5/B1490	90S4	27
	40.9	246	34.20*	1.9				
	45.8	220	30.57	2.2				
	56.0	180	24.99	2.7				
	66.2	152	21.15*	2.8				
	72.8	139	19.24*	3.0				
	76.9	131	18.21*	3.2				
	91.5	110	15.30*	3.8				
	105	96	13.30*	3.7				
1.5	118	117	11.90	1.0	HG20P	B5/B1490	90L4	21
	143	96	9.81	1.0	HG20F	B5/B1490	90L4	21
	153	90	9.17	0.9	HG20Z	B5/B1490	90L4	21
	181	76	7.72	1.1				
	246	56	5.69	1.1				
	302	45	4.63	1.3				
	366	38	3.82	1.6				
	305	45	9.17	1.8	HG20P	B5/B1490	90S2	21
	363	38	7.72	2.1	HG20F	B5/B1490	90S2	21
	492	28	5.69	2.1	HG20Z	B5/B1490	90S2	21
	605	23	4.63	2.6				
	733	19	3.82	3.2				

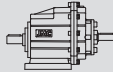
P _{1n} [kW]	n ₂ [r/min]	M _{2n} [Nm]	i	fs			Page
1.5	58.7	234	23.85*	0.85	HG25P	B5/B1490	90L4 23
	69.7	197	20.08*	1.0	HG25F	B5/B1490	90L4 23
	81.9	168	17.10	1.0	HG25Z	B5/B1490	90L4 23
	94.5	145	14.81*	1.4			
	106	130	13.21	1.2			
	116	118	12.05	1.7			
	141	98	9.93	1.6			
	159	86	8.78	1.4			
	189	73	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	HG25P	B5/B1490	90S2 23
	232	59	12.05	3.4	HG25F	B5/B1490	90S2 23
	282	49	9.93	3.3	HG25Z	B5/B1490	90S2 23
	319	43	8.78	2.8			
	379	36	7.39	3.3			
	514	27	5.45	3.7			
	40.9	336	34.20*	0.89	HG30P	B5/B1490	90L4 25
	45.8	300	30.57	1.0	HG30F	B5/B1490	90L4 25
	56.0	245	24.99	1.2	HG30Z	B5/B1490	90L4 25
	66.2	208	21.15*	1.3			
	72.8	189	19.24*	1.5			
	76.9	179	18.21*	1.6			
	91.5	150	15.30*	1.9			
	105	131	13.30*	1.9			
	111	124	12.60	2.0			
	128	107	10.93*	1.7			
	154	89	9.08	2.0			
	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			
	256	54	10.93*	3.4	HG30P	B5/B1490	90S2 25
	308	45	9.08	4.0	HG30F	B5/B1490	90S2 25
	353	39	7.93*	4.6	HG30Z	B5/B1490	90S2 25
	26.3	523	34.20*	0.92	HG35P	B5/B14100	100L6 27
	29.4	467	30.57	1.0	HG35F	B5/B14100	100L6 27
	36.0	382	24.99	1.3	HG35Z	B5/B14100	100L6 27
	27.3	504	51.30*	1.0	HG35P	B5/B1490	90L4 27
	31.7	434	44.18*	1.2	HG35F	B5/B1490	90L4 27
	36.2	379	38.63	1.3	HG35Z	B5/B1490	90L4 27
	40.9	336	34.20*	1.4			
	45.8	300	30.57	1.6			
	56.0	245	24.99	2.0			
	66.2	208	21.15*	2.0			
	72.8	189	19.24*	2.2			
	76.9	179	18.21*	2.3			
	91.5	150	15.30*	2.8			
	105	131	13.30*	2.7			
	111	124	12.60	2.8			
	128	107	10.93*	2.6			
	154	89	9.08	3.1			
	177	78	7.93*	3.3			

P _{1n} [kW]	n ₂ [r/min]	M _{2n} [Nm]	i	fs			Page	
2.2	66.2	305	21.15*	0.92	HG30P	B5/B14100	100LA4	25
	72.8	277	19.24*	1.0	HG30F	B5/B14100	100LA4	25
	76.9	262	18.21*	1.1	HG30Z	B5/B14100	100LA4	25
	91.5	220	15.30*	1.1				
	105	192	13.30*	1.3				
	111	182	12.60	1.4				
	128	157	10.93*	1.1				
	154	131	9.08	1.4				
	177	114	7.93*	1.6				
	222	91	6.31	2.0				
	255	79	5.48	1.9				
	311	65	4.50	2.3				
	374	54	3.74	2.8				
	308	65	9.08	2.8	HG30P	B5/B1490	90L2	25
	353	57	7.93*	3.2	HG30F	B5/B1490	90L2	25
	444	45	6.31	4.0	HG30Z	B5/B1490	90L2	25
	511	39	5.48	3.8				
	36.0	560	24.99	0.86	HG35P	B5/B14112	112M6	27
	42.6	474	21.15*	0.9	HG35F	B5/B14112	112M6	27
	46.8	431	19.24*	1.0	HG35Z	B5/B14112	112M6	27
	49.4	408	18.21*	1.0				
	40.9	493	34.20*	1.0	HG35P	B5/B14100	100LA4	27
	45.8	440	30.57	1.1	HG35F	B5/B14100	100LA4	27
	56.0	360	24.99	1.3	HG35Z	B5/B14100	100LA4	27
	66.2	305	21.15*	1.4				
	72.8	277	19.24*	1.5				
	76.9	262	18.21*	1.6				
	91.5	220	15.30*	1.9				
	105	192	13.30*	1.8				
	111	182	12.60	1.9				
	128	157	10.93*	1.8				
	154	131	9.08	2.1				
	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	4.3				
3	91.5	301	15.30*	0.93	HG30P	B5/B14100	100LB4	25
	105	261	13.30*	1.0	HG30F	B5/B14100	100LB4	25
	111	248	12.60	1.0	HG30Z	B5/B14100	100LB4	25
	128	215	10.93*	0.8				
	154	178	9.08	1.0				
	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				
	45.8	601	30.57	0.80	HG35P	B5/B14100	100LB4	27
	56.0	491	24.99	1.0	HG35F	B5/B14100	100LB4	27
	66.2	416	21.15*	1.0	HG35Z	B5/B14100	100LB4	27
	72.8	378	19.24*	1.1				

P_{1n} [kW]	n₂ [r/min]	M_{2n} [Nm]	i	fs			Page
3	76.9	358	18.21*	1.2	HG35P	B5/B14100	100LB4 27
	91.5	301	15.30*	1.4	HG35F	B5/B14100	100LB4 27
	105	261	13.30*	1.3	HG35Z	B5/B14100	100LB4 27
	111	248	12.60	1.4			
	128	215	10.93*	1.3			
	154	178	9.08	1.6			
	177	156	7.93*	1.7			
	222	124	6.31	2.1			
	255	108	5.48	2.1			
	311	88	4.50	2.6			
	374	73	3.74	3.1			
	308	89	9.08	3.1	HG35P	B5/B14100	100L2 27
	353	78	7.93*	3.3	HG35F	B5/B14100	100L2 27
	444	62	6.31	4.2	HG35Z	B5/B14100	100L2 27
	511	54	5.48	4.3			
4	177	208	7.93*	0.87	HG30P	B5/B14112	112M4 25
	222	165	6.31	1.1	HG30F	B5/B14112	112M4 25
	255	144	5.48	1.0	HG30Z	B5/B14112	112M4 25
	311	118	4.50	1.3			
	374	98	3.74	1.5			
	105	348	13.30*	1.0	HG35P	B5/B14112	112M4 27
	111	330	12.60	1.1	HG35F	B5/B14112	112M4 27
	128	286	10.93*	1.0	HG35Z	B5/B14112	112M4 27
	154	238	9.08	1.2			
	177	208	7.93*	1.3			
	222	165	6.31	1.6			
	255	144	5.48	1.6			
	311	118	4.50	2.0			
	374	98	3.74	2.3			
	308	119	9.08	2.4	HG35P	B5/B14112	112M2 27
	353	104	7.93*	2.5	HG35F	B5/B14112	112M2 27
	444	83	6.31	3.1	HG35Z	B5/B14112	112M2 27
	511	72	5.48	3.2			
	622	59	4.50	3.9			

7.2 HG..HS.. Performance parameter

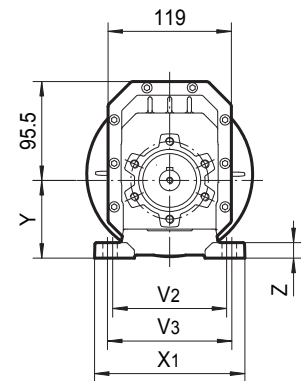
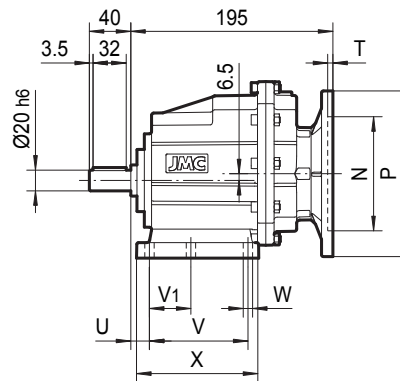
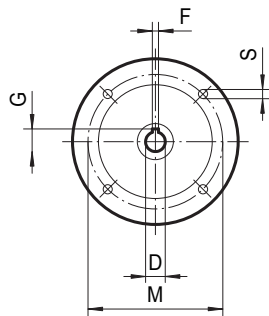
M_{2max} [Nm]	n₁ [r/min]	i	P_{1n} [kW]	n₂ [r/min]		Page 
120	1400	53.3	0.34	26.3	HG20P-HS	22
120	1400	45.9	0.40	30.5	HG20F-HS	22
120	1400	40.1	0.46	34.9	HG20Z-HS	22
120	1400	35.5	0.52	39.5		
120	1400	28.5	0.64	49.1		
120	1400	23.6	0.78	59.4		
120	1400	19.8	0.92	70.6		
100	1400	17.9	0.86	78.4		
120	1400	14.6	1.25	95.7		
100	1400	13.8	1.10	101		
120	1400	11.9	1.54	118		
100	1400	9.8	1.56	143		
80	1400	9.2	1.34	153		
80	1400	7.7	1.58	181		
60	1400	5.7	1.61	246		
60	1400	4.6	1.98	302		
60	1400	3.8	2.40	367		
200	1400	54.0	0.57	25.9	HG25P-HS	24
200	1400	46.5	0.66	30.1	HG25F-HS	24
200	1400	40.6	0.75	34.5	HG25Z-HS	24
200	1400	35.9	0.85	39.0		
200	1400	28.9	1.06	48.5		
200	1400	23.9	1.28	58.7		
200	1400	20.1	1.52	69.7		
160	1400	17.1	1.43	81.9		
200	1400	14.8	2.06	94.6		
160	1400	13.2	1.85	106		
200	1400	12.1	2.53	116		
160	1400	9.9	2.46	141		
120	1400	8.8	2.08	159		
120	1400	7.4	2.49	190		
100	1400	5.5	2.80	257		
100	1400	4.4	3.45	316		
100	1400	3.7	4.18	383		

M_{2max} [Nm]	n₁ [r/min]	i	P_{1n} [kW]	n₂ [r/min]		Page 
300	1400	51.3	0.89	27.3	HG30P-HS	26
300	1400	44.2	1.04	31.7	HG30F-HS	26
300	1400	38.6	1.19	36.2	HG30Z-HS	26
300	1400	34.2	1.34	40.9		
300	1400	30.6	1.50	45.8		
300	1400	25.0	1.83	56.0		
280	1400	21.2	2.02	66.2		
280	1400	19.2	2.22	72.8		
280	1400	18.2	2.35	76.9		
280	1400	15.3	2.79	91.5		
250	1400	13.3	2.86	105		
250	1400	12.6	3.03	111		
180	1400	10.9	2.51	128		
180	1400	9.1	3.02	154		
180	1400	7.9	3.46	176		
180	1400	6.3	4.36	222		
150	1400	5.5	4.17	255		
150	1400	4.5	5.09	311		
150	1400	3.7	6.12	374		
500	1400	51.3	1.49	27.3	HG35P-HS	28
500	1400	44.2	1.73	31.7	HG35F-HS	28
500	1400	38.6	1.98	36.2	HG35Z-HS	28
480	1400	34.2	2.14	40.9		
480	1400	30.6	2.40	45.8		
480	1400	25.0	2.93	56.0		
420	1400	21.2	3.03	66.2		
420	1400	19.2	3.34	72.8		
420	1400	18.2	3.52	76.9		
420	1400	15.3	4.19	91.5		
350	1400	13.3	4.01	105		
350	1400	12.6	4.24	111		
280	1400	10.9	3.91	128		
280	1400	9.1	4.70	154		
260	1400	7.9	4.99	176		
260	1400	6.3	6.30	222		
230	1400	5.5	6.40	255		
230	1400	4.5	7.80	311		
230	1400	3.7	9.38	374		

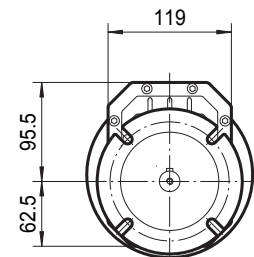
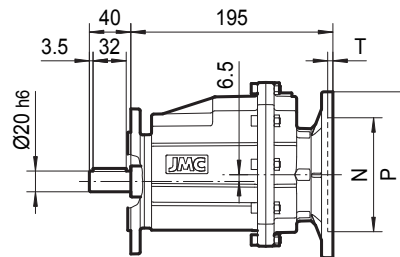
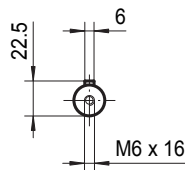
8. OUTLINE DIMENSION SHEET

HG20P..(IEC)

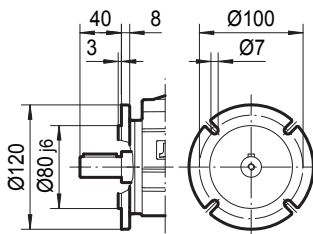
INPUT

**HG20F..(IEC)**

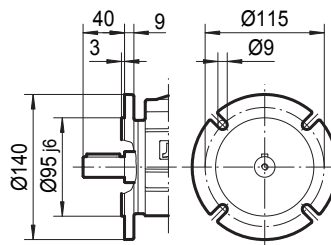
OUTPUT



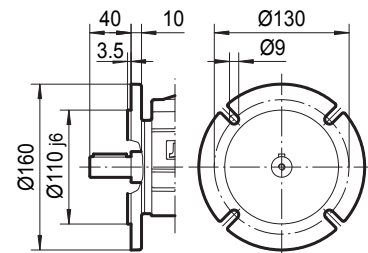
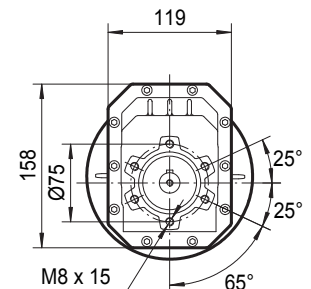
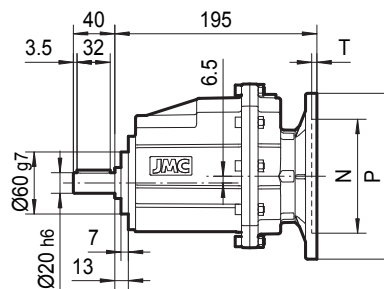
I

Ø120

II

Ø140

III

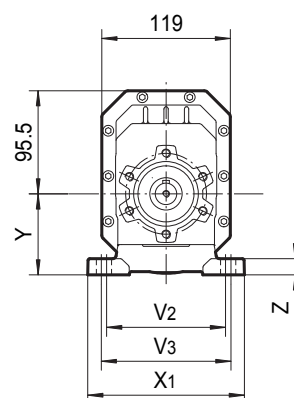
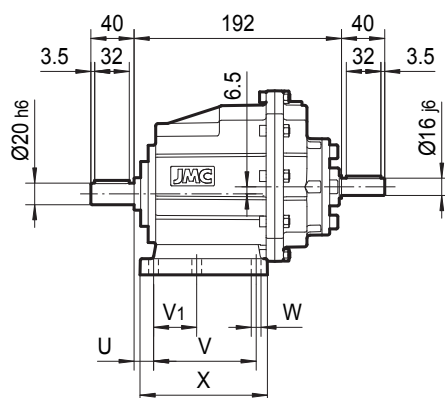
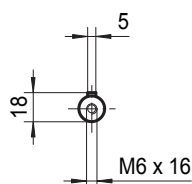
Ø160**HG20Z..(IEC)**

IEC	D	F	G	P	M	N	S	T
B563	11	4	12.8	140	115	95	9	5
B571	14	5	16.3	160	130	110	9	5
B1471	14	5	16.3	105	85	70	7	5
B580	19	6	21.8	200	165	130	11	5
B1480	19	6	21.8	120	100	80	7	5
B590	24	8	27.3	200	165	130	11	5
B1490	24	8	27.3	140	115	95	9	5

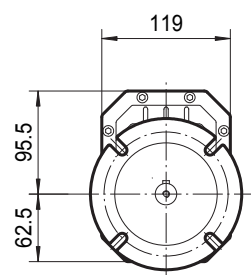
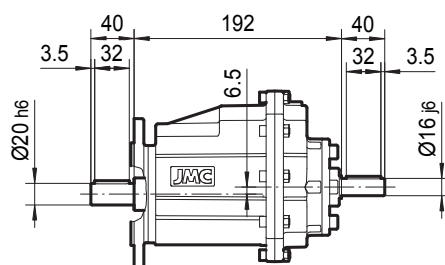
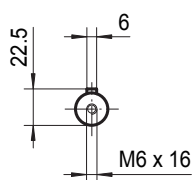
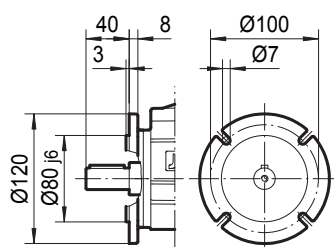
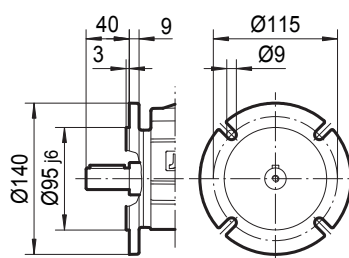
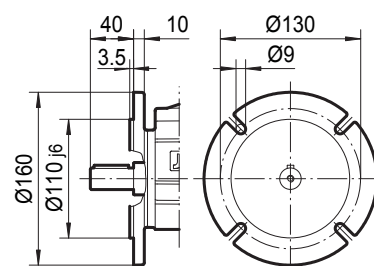
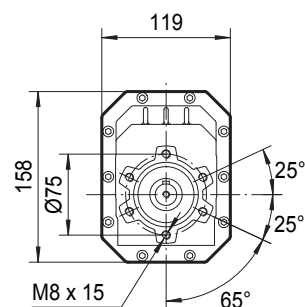
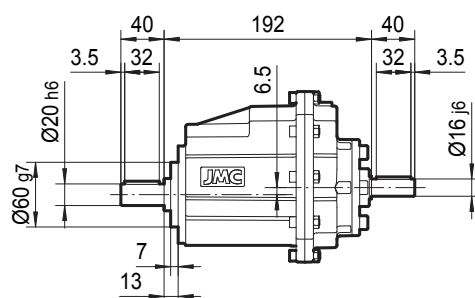
Foot Code	U	V	V1	V2	V3	W	X	X1	Y	Z
B01	18	87	50	110	—	9	118	130	85	15
M01	18	80	—	110	120	9	118	145	75	15
M02	25	85	—	110	120	9	112	145	75	15
B02	18	107.5	60	—	130	11	136	155	95	17

HG20P..HS

INPUT


HG20F..HS

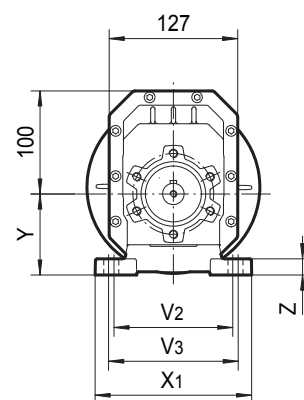
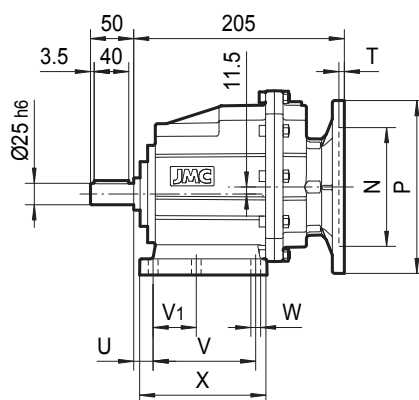
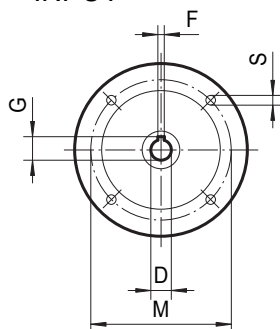
OUTPUT


I
Ø120

II
Ø140

III
Ø160

HG20Z..HS


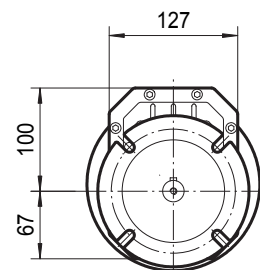
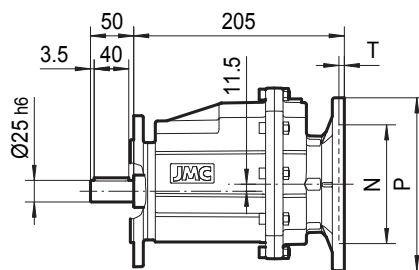
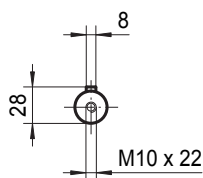
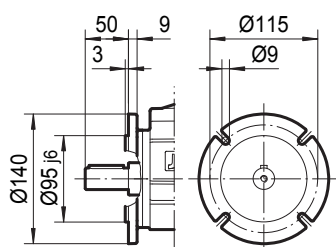
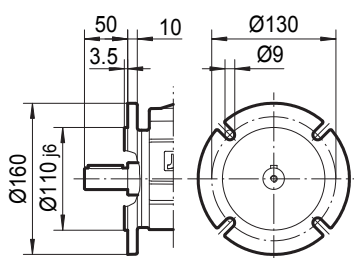
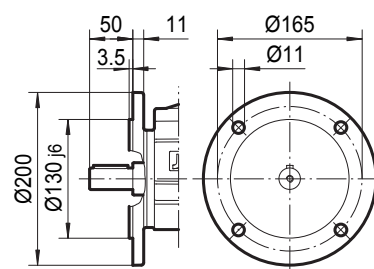
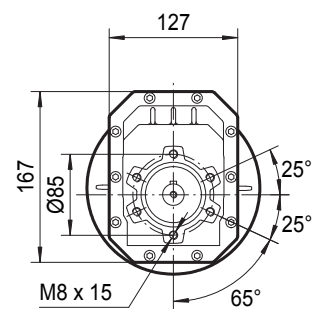
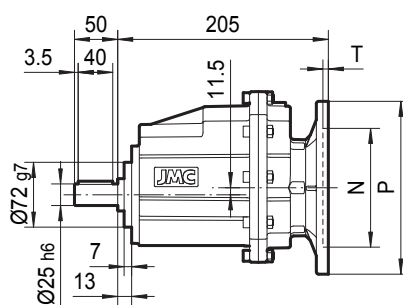
Foot Code	U	V	V1	V2	V3	W	X	X1	Y	Z
B01	18	87	50	110	—	9	118	130	85	15
M01	18	80	—	110	120	9	118	145	75	15
M02	25	85	—	110	120	9	112	145	75	15
B02	18	107.5	60	—	130	11	136	155	95	17

HG25P..(IEC)

INPUT

**HG25F..(IEC)**

OUTPUT

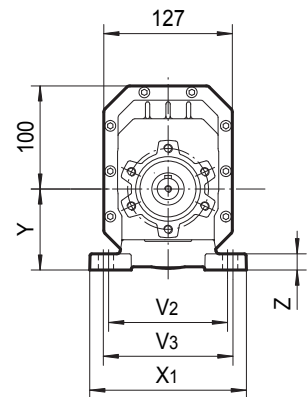
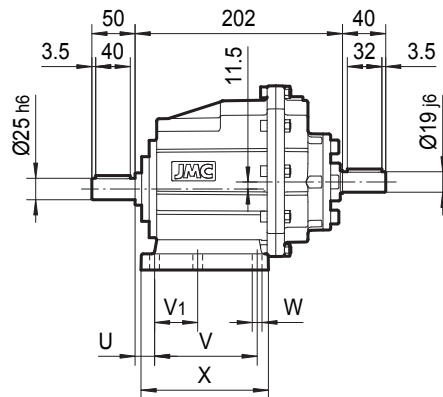
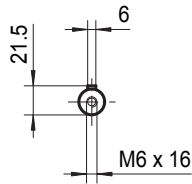
**I****Ø140****II****Ø160****III****Ø200****HG25Z..(IEC)**

IEC	D	F	G	P	M	N	S	T
B563	11	4	12.8	140	115	95	9	5
B571	14	5	16.3	160	130	110	9	5
B1471	14	5	16.3	105	85	70	7	5
B580	19	6	21.8	200	165	130	11	5
B1480	19	6	21.8	120	100	80	7	5
B590	24	8	27.3	200	165	130	11	5
B1490	24	8	27.3	140	115	95	9	5

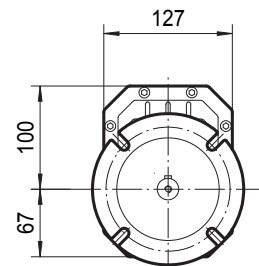
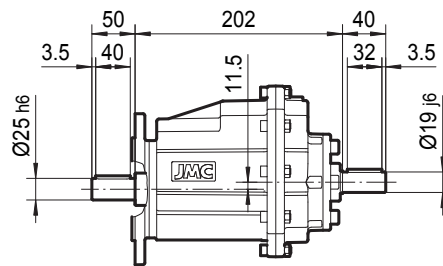
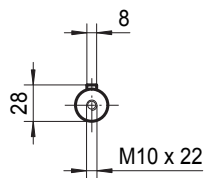
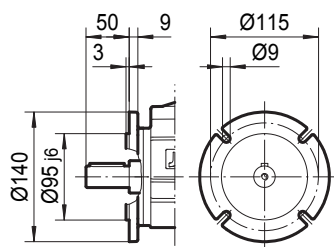
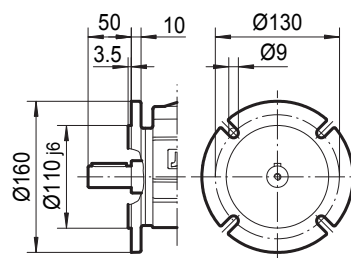
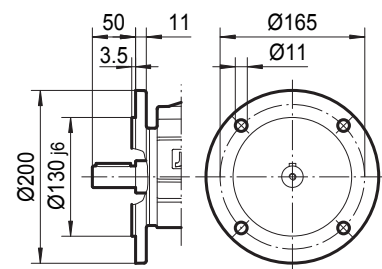
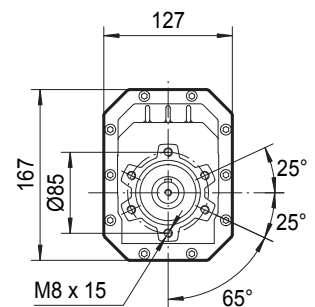
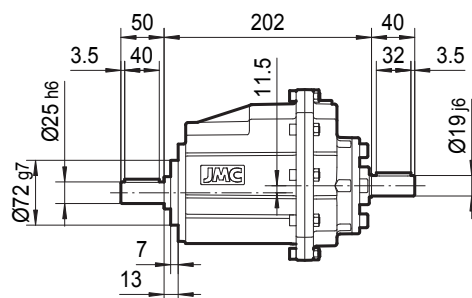
Foot Code	U	V	V1	V2	V3	W	X	X1	Y	Z
B02	18	107.5	60	—	130	11	136	155	100	17
M02	25	85	—	110	120	9	112	145	80	15
M01	18	80	—	110	120	9	118	145	80	15
B01	18	87	50	110	—	9	118	130	90	15

HG25P..HS

INPUT


HG25F..HS

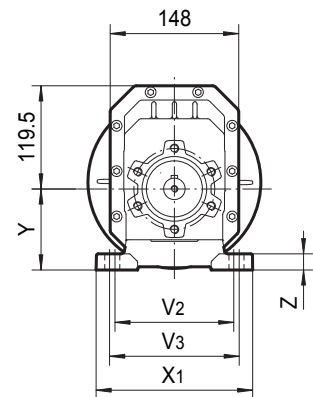
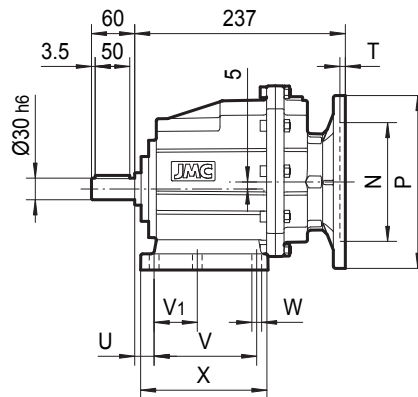
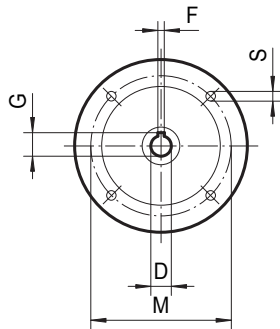
OUTPUT


I
Ø140

II
Ø160

III
Ø200

HG25Z..HS


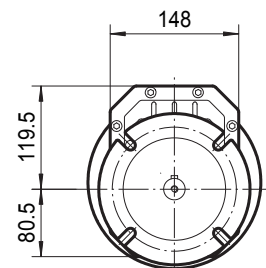
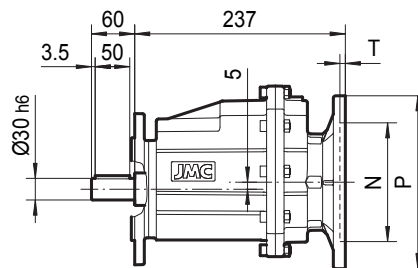
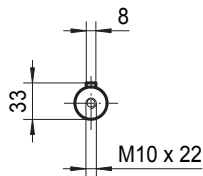
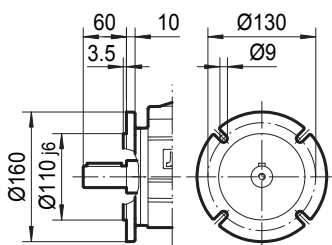
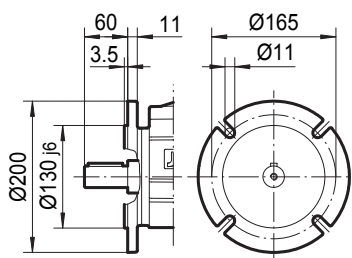
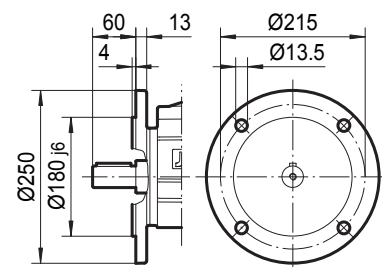
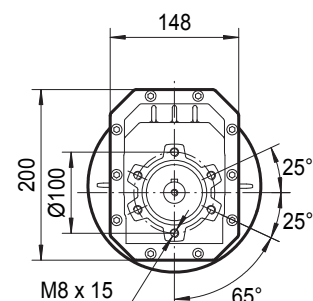
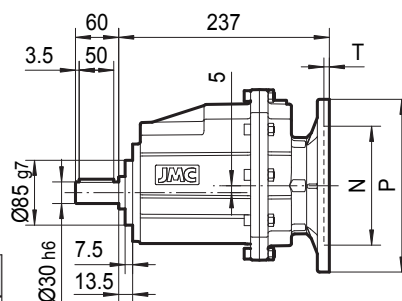
Foot Code	U	V	V1	V2	V3	W	X	X1	Y	Z
B02	18	107.5	60	—	130	11	136	155	100	17
M02	25	85	—	110	120	9	112	145	80	15
M01	18	80	—	110	120	9	118	145	80	15
B01	18	87	50	110	—	9	118	130	90	15

HG30P..(IEC)

INPUT

**HG30F..(IEC)**

OUTPUT

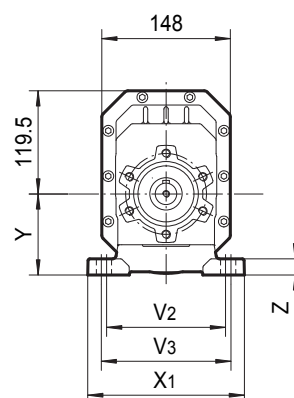
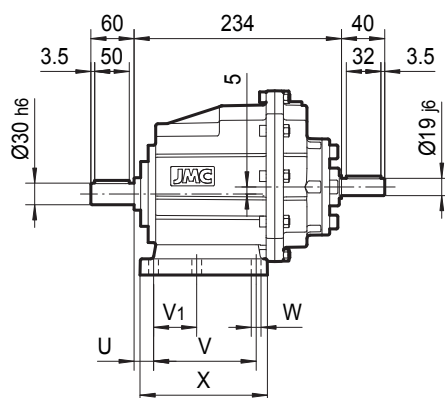
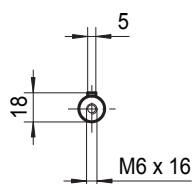
**I****Ø160****II****Ø200****III****Ø250****HG30Z..(IEC)**

IEC	D	F	G	P	M	N	S	T
B571	14	5	16.3	160	130	110	9	5
B580	19	6	21.8	200	165	130	11	5
B1480	19	6	21.8	120	100	80	7	5
B590	24	8	27.3	200	165	130	11	5
B1490	24	8	27.3	140	115	95	9	5
B5100/112	28	8	31.3	250	215	180	13.5	5
B14100/112	28	8	31.3	160	130	110	9	5

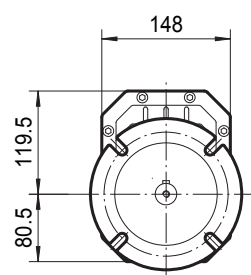
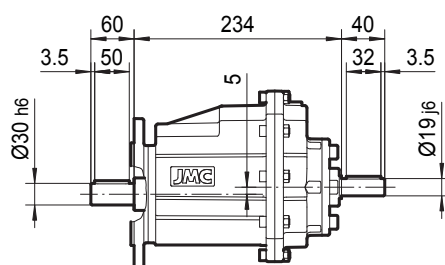
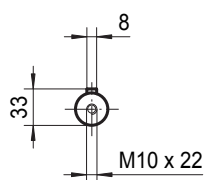
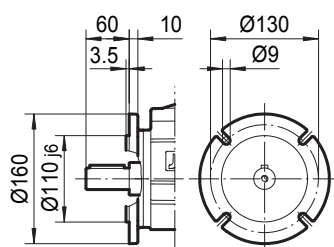
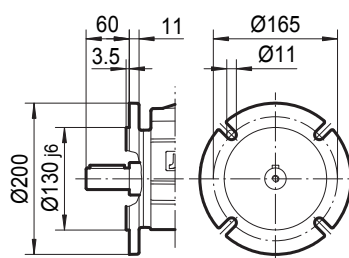
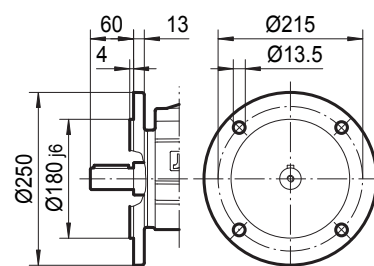
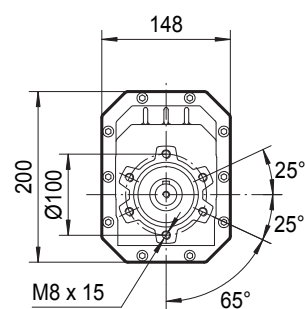
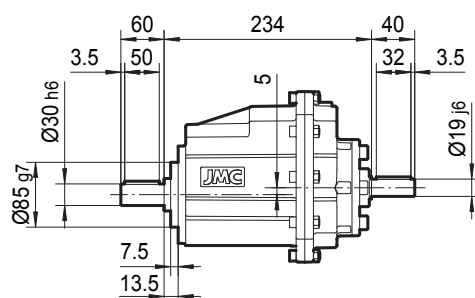
Foot Code	U	V	V1	V2	V3	W	X	X1	Y	Z
B03	18	130	70	—	160	11	156	190	110	20
M03	30	100	—	135	150	11	150	190	110	18
M04	32	110	—	170	185	14	150	230	110	20
B04	20.5	130	—	170	—	14	168	205	105	20

HG30P..HS

INPUT


HG30F..HS

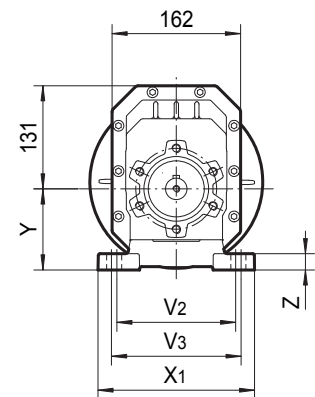
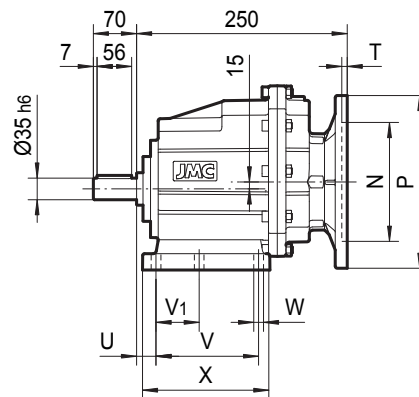
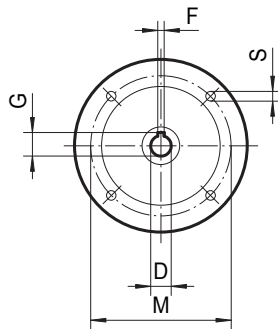
OUTPUT


I
Ø160

II
Ø200

III
Ø250

HG30Z..HS


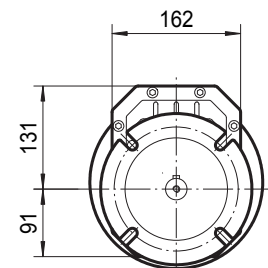
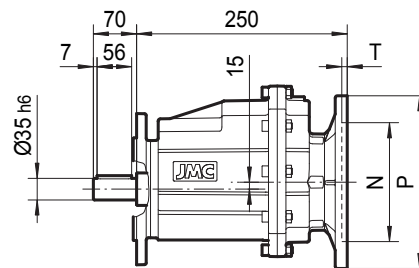
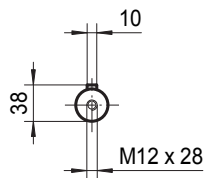
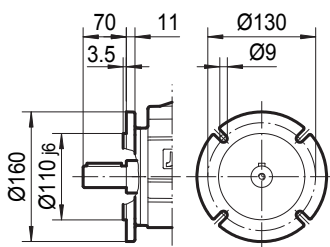
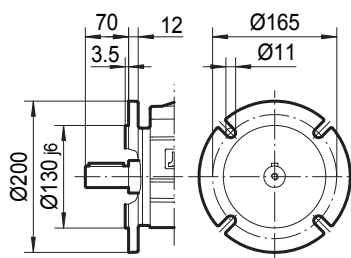
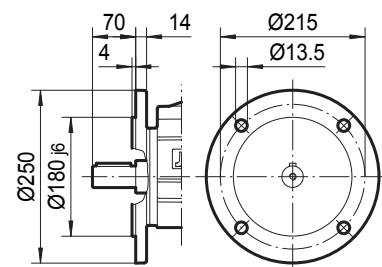
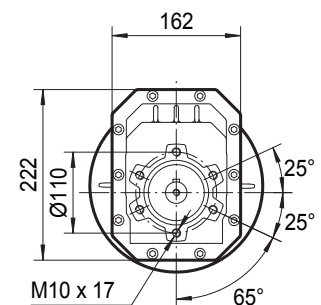
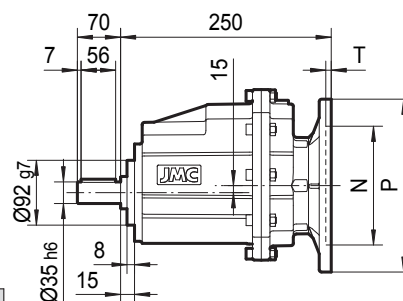
Foot Code	U	V	V1	V2	V3	W	X	X1	Y	Z
B03	18	130	70	—	160	11	156	190	110	20
M03	30	100	—	135	150	11	150	190	110	18
M04	32	110	—	170	185	14	150	230	110	20
B04	20.5	130	—	170	—	14	168	205	105	20

HG35P..(IEC)

INPUT

**HG35F..(IEC)**

OUTPUT

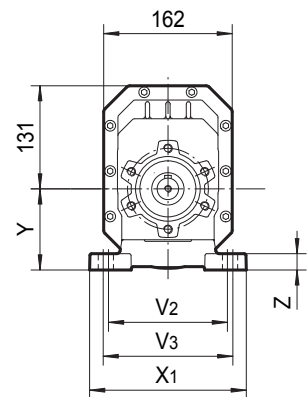
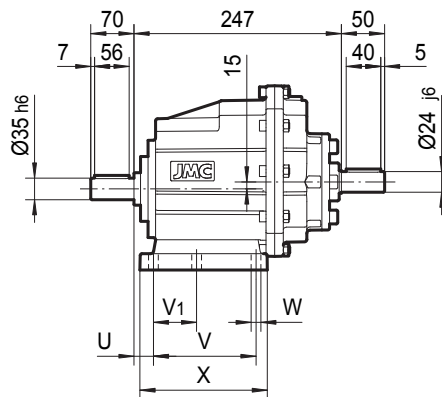
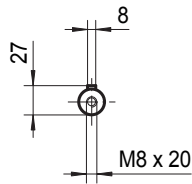
**I****Ø160****II****Ø200****III****Ø250****HG35Z..(IEC)**

IEC	D	F	G	P	M	N	S	T
B580	19	6	21.8	200	165	130	11	5
B1480	19	6	21.8	120	100	80	7	5
B590	24	8	27.3	200	165	130	11	5
B1490	24	8	27.3	140	115	95	9	5
B5100/112	28	8	31.3	250	215	180	13.5	5
B14100/112	28	8	31.3	160	130	110	9	5

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

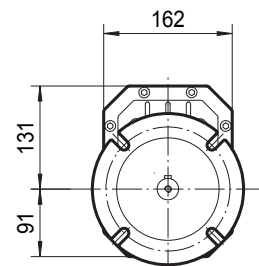
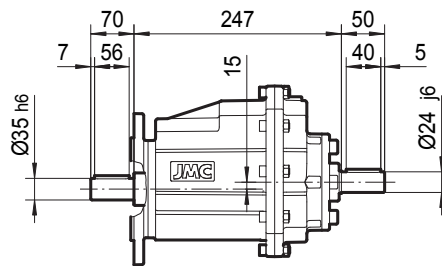
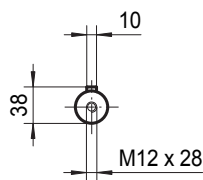
HG35P..HS

INPUT



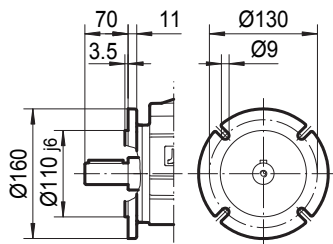
HG35F..HS

OUTPUT



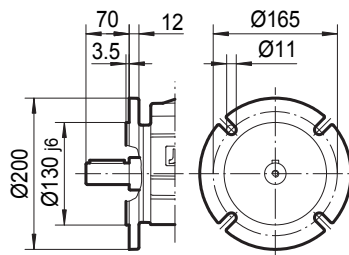
I

Ø160



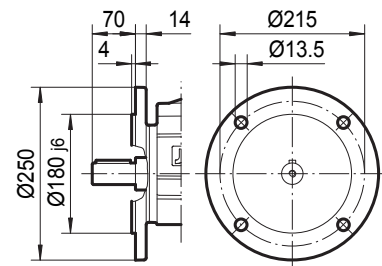
II

Ø200

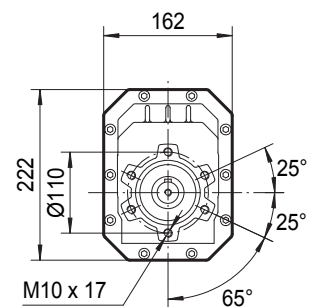
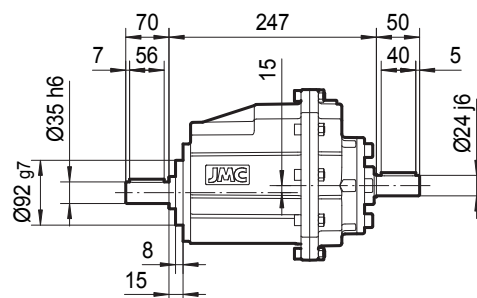


III

Ø250



HG35Z..HS

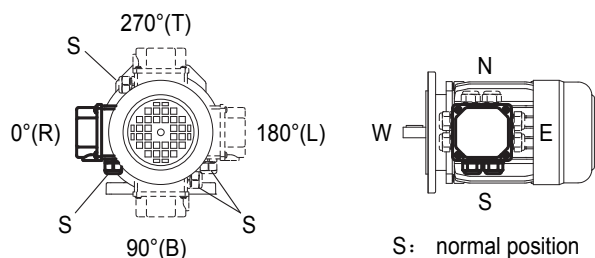


Foot Code	U	V	V1	V2	V3	W	X	X1	Y	Z
B04	23.5	130	—	170	—	14	168	205	115	20
B05	19.5	149.5	—	180	—	14	185	215	130	20
M04	35	110	—	170	185	14	150	230	120	20
M03	33	100	—	135	150	11	150	190	120	18
B03	21	130	70	—	160	11	156	190	120	20

9. MOUNTING POSITION AND TERMINAL BOX ORIENTATION

HG.. M1	M2	M4	M5
M3			M6

HGF.. M1	M2	M4



10. LUBRICATION

10.1 Types of lubrication

						lubrication type
HG..	Standard -10 +40	VG 220	Shell Omala 220	Mobilgear 630	BP Energol GR-XP 220	Mineral oil
	-20 +25	VG 150 VG 100	Shell Omala 100	Mobilgear 627	BP Energol GR-XP 100	
	-30 +10	VG 68-46 VG 32	Shell Tellus T 32	Mobil D.T.E. 13M		
	-40 -20	VG 22 VG 15	Shell Tellus T 15	Mobil D.T.E. 11M	BP Energol HLP-HM 15	
	-40 +60	VG 220	Shell Omala HD 220	Mobil SHC 630		Synthetic oil
	-40 +40	VG 150		Mobil SHC 629		
	-40 +10	VG 32		Mobil SHC 624		

10.2 Lubricant fill quantity

Gear units	Fill quantity in liters						unit: 升(L)
	M1	M2	M3	M4	M5	M6	
HG20..	0.4	0.6	0.4	0.3	0.3	0.3	
HG25..	0.5	0.7	0.5	0.4	0.4	0.4	
HG30..	0.8	1.1	0.8	0.6	0.6	0.6	
HG35..	1.2	1.6	1	1	0.9	0.9	

The fill quantity in the table is referenced,the exact value velating to the ratio. All HG Series helical gear units are filled with life lubrication before deliveny, do not need to change it in general.