TRANSTECNO®
the modular gearmotor
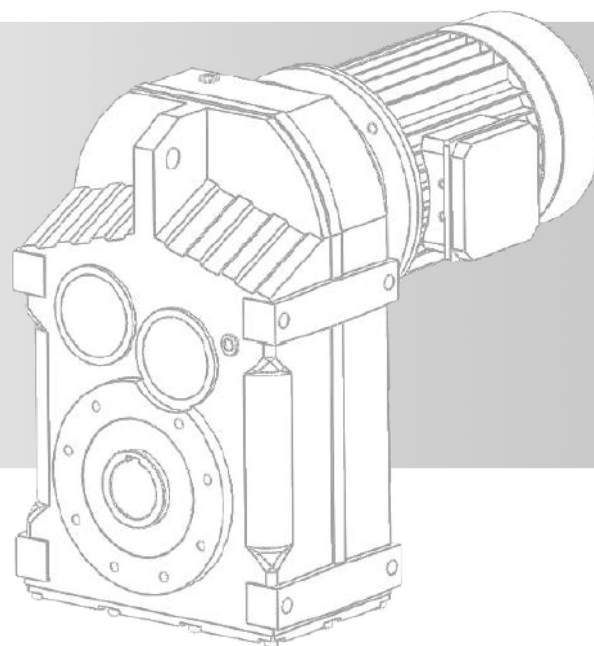
ITS

ITS

ITS
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HELICAL PARALLEL GEARMOTORS

Introduction

General information

Information in this manual is provided with symbols in order to understand the subject matter and data. These symbols are intended to aid the user in selecting the right gearmotors.

Input speed

• This is the input speed at the gearbox related to the type of drive unit selected.
• When different speeds are required, contact our Technical Service.

Gear ratio

• This value is strictly related to the size and number of teeth gears inside the gearbox.
• From the data given in the catalogue, the value can be calculated using the following formula:

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

Output speed

This is the gearbox output speed calculated using the formula given above:

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

Requested torque

This is the torque needed for the application and must be known when selecting a drive system. It can either be provided by the user or calculated according to the application data (if provided).

Nominal torque

This is the output torque that can be transmitted by the gearbox according to input speed n1 and gear ratio i. It is calculated based on service with a continuous steady load corresponding to a service factor equal to 1. This value is not given in the catalogue but can be calculated approximately with the following formula between M2 (output torque) and sf (service factor):

$$Mn_2 = M_2 \cdot sf$$

Output torque

This is the gearbox's output torque. It is strictly related to power P1 ofthe motor installed, output rpm n2 and dynamic efficiency Rd. It can be calculated with the following formula:

$$M_2 = \frac{9550 \cdot P_2 \cdot Rd}{n_2}$$

Or :

$$M_2 = \frac{9550 \cdot P_2}{n_2}$$ Where : $$P_2 = P_1 \cdot Rd$$

Efficiency

Efficiency is caculated based on dynamic efficiency Rd of the gearboxes.
On helical gearboxes the average efficiency is 94%.

Input power

This is the power applied by the motor at the gearbox input in reference to speed n1.
It can be calculated with the following formula:

$$P_1 = \frac{M_2 \cdot n_2}{9550 \cdot Rd}$$

Service factor

This value indicates how a certain drive system is to be over sized in order to assure the requested service and stand up to shocks. The tables given in the catalogue offer a wide range of drive systems with different service factors able to satisfy most types of applications. To correctly understand service factor values sf given for each item, approximate values for load classes A, B and C along with the number of hours of daily operation h/d and number of start-ups/hours need to be known.
Once the load class required for the application has been determined, locate corresponding value sf to be used when selecting the most suitable drive system.

Type of load	**A** - *Uniform*	*fa ≤ 0.3*
	B - *Moderate shocks*	*fa ≤ 3*
	C - *Heavy shocks*	*fa ≤ 10*

$$fa = \frac{Je}{Jm}$$

• Je (kgm^2) moment of reduced external inertia at the drive-shaft
• Jm (kgm^2) moment of inertia of motor.
  If fa > 10 call our Technical Service.

A			Uniform load						

sf									
h/d	start-up / hour								
	2	4	8	16	32	63	125	250	500
4	0.8	0.8	0.9	0.9	1.0	1.1	1.1	1.2	1.2
8	1.0	1.0	1.1	1.1	1.3	1.3	1.3	1.3	1.3
16	1.3	1.3	1.3	1.3	1.5	1.5	1.5	1.5	1.5
24	1.5	1.5	1.5	1.5	1.8	1.8	1.8	1.8	1.8

B			Moderate shock load						

sf									
h/d	start-up / hour								
	2	4	8	16	32	63	125	250	500
4	1.0	1.0	1.0	1.0	1.3	1.3	1.3	1.3	1.3
8	1.3	1.3	1.3	1.3	1.5	1.5	1.5	1.5	1.5
16	1.5	1.5	1.5	1.5	1.8	1.8	1.8	1.8	1.8
24	1.8	1.8	1.8	1.8	2.2	2.2	2.2	2.2	2.2

C			Heavy shock load						

sf									
h/d	start-up / hour								
	2	4	8	16	32	63	125	250	500
4	1.3	1.3	1.3	1.3	1.5	1.5	1.5	1.5	1.5
8	1.5	1.5	1.5	1.5	1.8	1.8	1.8	1.8	1.8
16	1.8	1.8	1.8	1.8	2.2	2.2	2.2	2.2	2.2
24	2.2	2.2	2.2	2.2	2.5	2.5	2.5	2.5	2.5

Radial load

Pinions, pulleys, etc applied on the output shaft of the gearboxes create radial forces that must be taken into consideration to avoid excessive stress risking damage to the gearbox itself.
External radial load R that acts on the gearbox shaft can be calculated as follows:

$$R = \frac{2000 \cdot M_2 \cdot kr}{d} \leq R_2$$

where :

d [mm]   diameter of the pinion or pulley

kr coefficiency in relation to type of transmission :

    $kr = 1.4$ sprocket wheel

    $kr = 1.1$ gear

    $kr = 1.5 - 2.5$ pulley for V belts

Keep in mind that values R2 refer to loads that act on the center line of the output shaft (considering the shaft protrudes). As a result, the value should be compared under the same conditions.

Axial load

At times, along with the radial load, force A may be present that acts axially on the output shaft. In this case, keep in mind allowable axial load A2 that can be applied on the shaft is:

$$A_2 = R_2 \cdot 0.2$$

If axial load A that acts on the shaft is greater than A2, contact our Technical Service.

Selecting the gearmotors

To select the required gearmotor, perform the procedure below:
1. Determine the service factor sf for the desired application by referring to the charts given on page A4. This is to be done by considering the class of load, the operational hours/day and the number of start-ups/ hour.
2. If the required motor power output P is known, go to item 3); if the required output torque M is known, determine motor output P by using the following formulas:

$$P = \frac{M \cdot n_2}{9550 \cdot Rd}$$

Where Rd stands for the dynamic efficiency and n2 indicates the required output rpm of the gearmotor.

3. Use the specification chart to search for the power unit where P1 is greater than or equal to P with a speed n2/n2max that approximates the desired one. Choose a power unit where the indicated service factor sf is equal to or greater than that cal culated at point 1).

Lubrication

All unit sizes of ITH series are complete with mineral oil, viscosity 220.
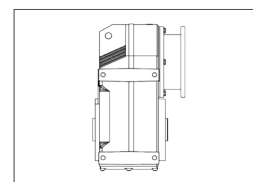
ITS

SHELL	MOBIL	KLUB
Omala S2 G 220	Mobilgear 660 XP 2	Kluberoil GEM 1-220 N

CASTROL	FUCHS	B
Tribol 1100/220 Optigear BM 220	Renolin CLP 220	Energol GR-XP 220

The tables contain the approximate amount of lubricant held and/or to be put in.
Always specify the desired installation position at the time of order.

Operating temperature

Standard temperature range

ITS	-25°C / +50°C

Standard temperature range

	< -15°C	> +50°C
ITS	Output radial load halved	• Use Viton (FPM) oil seals • Use high temperatue lubricant

For temperature <0°C refer to the following notes:
- Check if the motor is suitable for low temperature;
- Due to the high viscosity of the lubricant, check if the motor can supply high starting torque;
- Let the group run for a few minutes without load to guarantee good lubrication;

Installation and inspection

While installing the gearbox always make sure that:
• The specifications stamped on the rating plate match those indicated for the unit actually ordered;
• The mating surfaces and the shafts are thoroughly clean and free of dents;
• The surfaces where the gearbox to be mounted on are flat and strong enough;
• The machine drive shaft and the gearbox shaft are perfectly aligned;
• The required torque limiters have been installed if the machine is likely to produce shocks or blockages during operation;
• The rotary parts have been provided with the required safety guards;
• Adequate weatherproof covering has been provided if the machine is to be installed outdoor;
• The working environment is not exposed to corrosive agents (unless this has been indicated while placing the order so that the gearbox assembly can be adequately set up);
• The pinions or pulleys on the gearbox input/output shafts are properly fitted in order not to produce radial and/or axial loads that exceed the maximum allowable limits;
• All the couplings have been treated with adequate rust preventative in order to avoid oxidation provoked by contact;
• All the mounting screws have been securely tightened;
• Check the lubricant quantity depending on the mounting position on all gearboxes.

Critical applications

In these cases please contact the Technical Service
• Used to increase speed ;
• Used as a hoist;
• Used in mounting positions not shown in the catalogue;
• Use in environment pressure other than atmospheric pressure;
• Use in places with temperature <-25°C or >+50°C

Technical features

The ITS gearmotors are intended for heavy duty applications.
The robust one pieces casing of the main housing and the modular design of input and output sets increase application fexibility.

The main features of ITS range are:
• Robust cast iron housings;
• High degree of modularity;
• Lubrication with synthetic oil;
• Coupled to motor with input coupling;
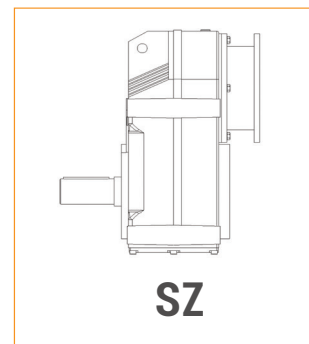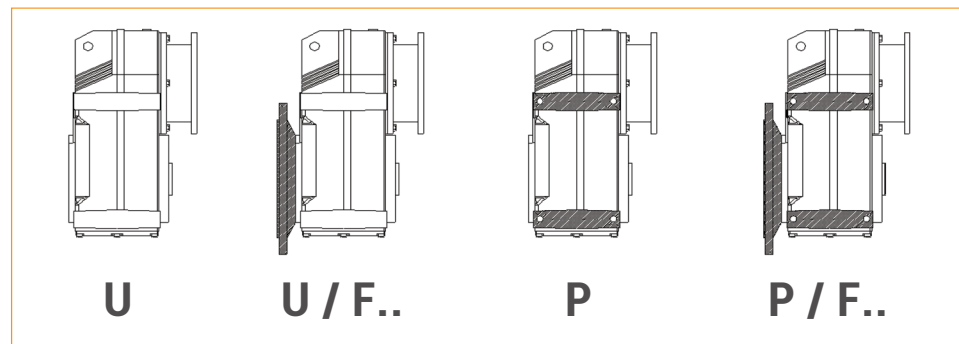• Epoxy powder coating RAL 7016 average thickness 0,10 – 0,15 mm.
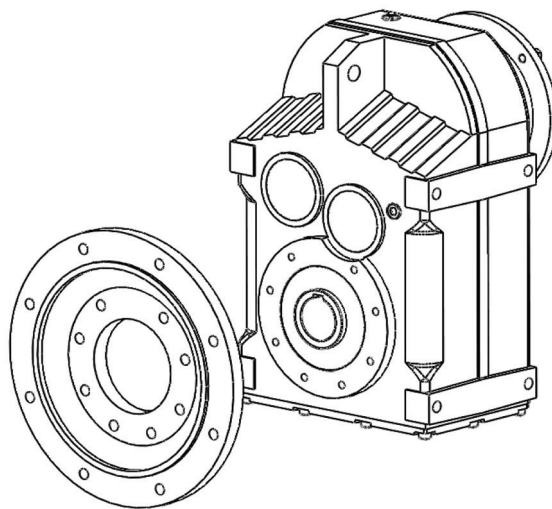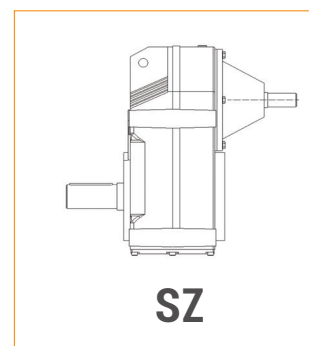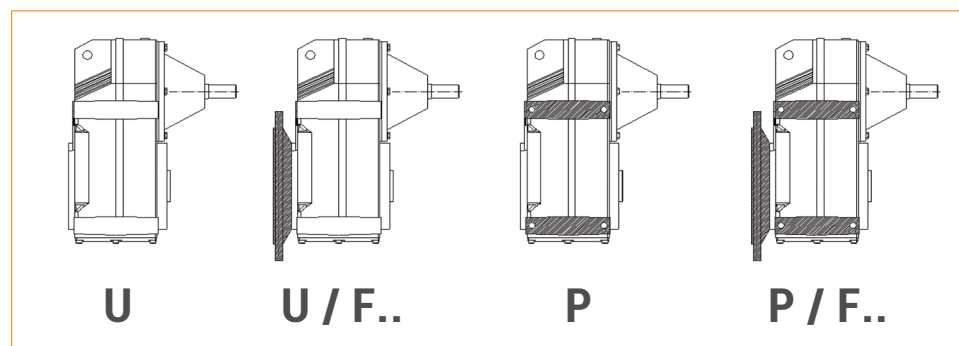
Versions

ITS...

Gearbox version

| U | U / F.. | P | P / F.. |

Output shaft

SZ
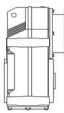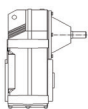
ITSIS...

Gearbox version

| U | U / F.. | P | P / F.. |

Output shaft

SZ

GEARBOX									
ITS	95	2	U	13.70	D70	132	B5	SZ	M1	CW
Type	Size	Stages	Version	Ratio	Output shaft	IEC	Version	Solid outout shaft	Mounting position	Backstop device
ITS	95 96 97 98	2 3	U.. U / F.. P.. P / F..	see tables	see tables	80... --- 180...	B5 B14	SZ	M1 (B3) M2 (V6) M3 (B8) M4 (V5) M5 (B7) M6 (B6)	CW CCW

GEARBOX							
ITSIS	95	2	U	13.70	D70	SZ	M1
Type	Size	Stages	Version	Ratio	Output shaft	Solid outout shaft	Mounting position
ITSIS	95 96 97 98	2 3	U.. U / F.. P.. P / F..	see tables	see tables	SZ	M1 (B3) M2 (V6) M3 (B8) M4 (V5) M5 (B7) M6 (B6)

MOTOR					
5.5 kW	4p	3ph	230 / 400V	50Hz	T1
Power	**Poles**	**Phases**	**Voltage**	**Frequency**	**Terminal box pos.**
see tables	2p 4p 6p 8p	1ph 3ph	230 / 400V 220 / 380V ... 230V	50 Hz 60Hz	T1 T4 T2 T3

Direction of rotation

ITS...2

ITS...3
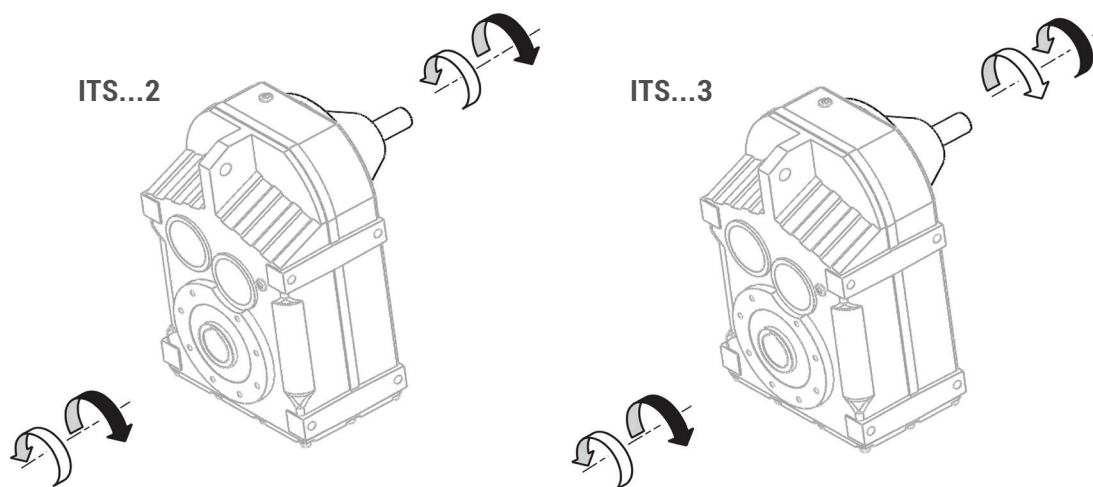
Symbols

n_1	[min^{-1}]	Input speed	sf		Service factor
n_2	[min^{-1}]	Output speed	R_1	[N]	Permitted input radial load
i		Ratio	A_1	[N]	Permitted input axial load
P_1	[kW]	Input power	R_2U	[N]	Permitted output radial load for "U..." version
M_2	[Nm]	Output torque referred to P_1	R_2P	[N]	Permitted output radial load for "P..." version
Pn_1	[kW]	Nominal in put power	R_2	[N]	Permitted output radial load
Mn_2	[Nm]	Nominal output torque referred to Pn_1	A_2	[N]	Permitted output axial load

Lubrication

• ITS series gearmotors come complete with mineral oil.
• The lubricant quantity depends on mounting position.
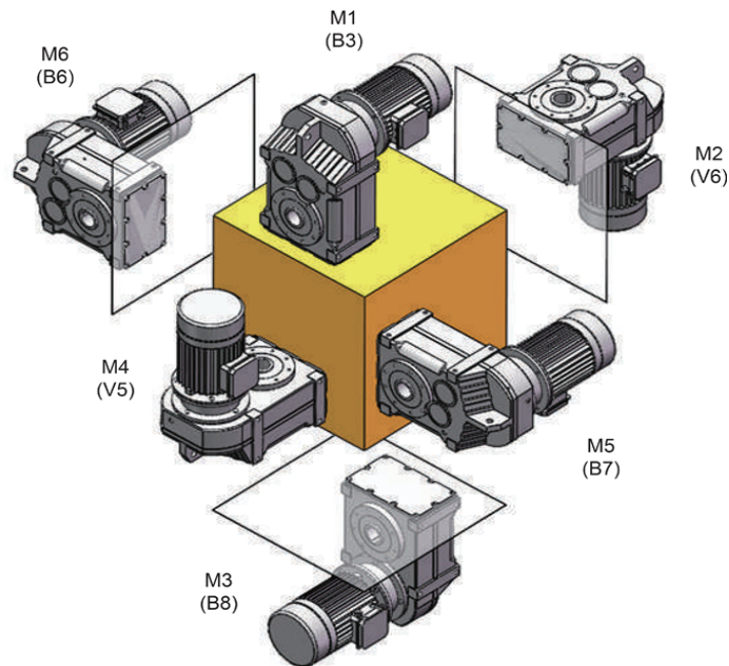
ITS	Oil quantity *(litres)*					
	M1 (B3)	**M2** (V6)	**M3** (B8)	**M4** (V5)	**M5** (B7)	**M6** (B6)
952	18.5	22.5	12.6	25.2	18.5	20
953						
962	24.5	32	19.5	37.5	27	27
963						
972	40.5	55	34	61	46.5	47
973						
982	69	104	63	105	86	78
983						

| **M1** (B3) | **M2** (V6) | **M3** (B8) | **M4** (V5) | **M5** (B7) | **M6** (B6) |
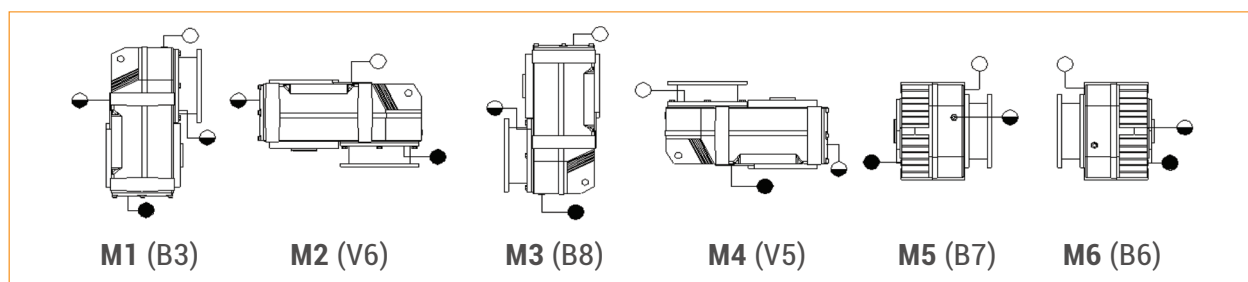
○ Breather and filling plug
◐ Oil level plug
● Oil drain plug

Technical data

Left column

P$_1$ [kw]	n$_2$ [min^{-1}]	M$_2$ [Nm]	sf	i		IEC	R$_2$ [N]
1.1							
90S4 1400min^{-1}	6.4	1518	2.69	219.76	ITS953	B5	26910
	5.6	1714	2.38	248.24		B5	26910
	5.2	1872	2.18	271.13		B5	26910
1.5							
90L4 1400min^{-1}	7.9	1674	2.44	177.76	ITS953	B5	26910
	7.0	1895	2.16	201.21		B5	26910
	6.4	2069	1.97	219.76		B5	26910
	5.6	2338	1.75	248.24		B5	26910
	5.2	2553	1.6	271.13		B5	26910
2.2							
100LA4 1400min^{-1}	11.3	1696	2.41	124.11	ITS953	B5	26910
	10.1	1898	2.15	138.85		B5	26910
	9.3	2061	1.98	150.79		B5	26910
	7.9	2430	1.68	177.76		B5	26910
	7.0	2750	1.49	201.21		B5	26910
	6.4	3004	1.36	219.76		B5	26910
	5.6	3393	1.2	248.24		B5	26910
	5.2	3706	1.1	271.13		B5	26910
	8.1	2357	3.10	172.47	ITS963	B5	44820
	7.8	2442	2.99	178.64		B5	44820
	7.0	2724	2.68	199.31		B5	44820
	6.5	2944	2.48	215.37		B5	44820
	5.5	3477	2.10	254.4		B5	44820
3							
100LB4 1400min^{-1}	15.6	1672	2.44	89.72	ITS953	B5	26910
	13.8	1886	2.17	101.17		B5	26910
	12.5	2082	1.96	111.72		B5	26910
	11.3	2313	1.77	124.11		B5	26910
	10.1	2588	1.58	138.85		B5	26910
	9.3	2810	1.45	150.79		B5	26910
	7.9	3313	1.23	177.76		B5	26910
	7.0	3750	1.09	201.21		B5	26910
	6.4	4096	1.00	219.76		B5	26910
	8.8	2975	2.45	159.61	ITS963	B5	44820
	8.1	3214	2.27	172.47		B5	44820
	7.8	3329	2.19	178.64		B5	44820
	7.0	3715	1.96	199.31		B5	44820
	6.5	4014	1.82	215.37		B5	44820
	5.5	4741	1.54	254.4		B5	44820
4							
112M4 1400min^{-1}	22	1579	2.59	63.77	ITS953	B5	26910
	20	1703	2.40	68.75		B5	26910
	20	1767	2.31	71.34		B5	26910
	18.1	1919	2.13	77.48		B5	26910
	17.3	2009	2.03	81.12		B5	26910
	15.6	2222	1.84	89.72		B5	26910
	13.8	2505	1.63	101.17		B5	26910
	12.5	2767	1.48	111.72		B5	26910
	11.3	3073	1.33	124.11		B5	26910
	10.1	3438	1.19	138.85		B5	26910
	9.3	3734	1.09	150.79		B5	26910
	7.9	4402	0.93	177.76		B5	26910

Right column

P$_1$ [kw]	n$_2$ [min^{-1}]	M$_2$ [Nm]	sf	i		IEC	R$_2$ [N]
4							
112M4 1400min^{-1}	13.5	2577	2.83	104.08	ITS963	B5	44820
	11.9	2905	2.51	117.31		B5	44820
	10.8	3198	2.28	129.15		B5	44820
	9.8	3543	2.06	143.05		B5	44820
	8.8	3953	1.85	159.61		B5	44820
	8.1	4271	1.71	172.47		B5	44820
	7.8	4424	1.65	178.64		B5	44820
	7.0	4936	1.48	199.31		B5	44820
	6.5	5334	1.37	215.37		B5	44820
	5.5	6300	1.16	254.4		B5	44820
5.5							
132S4 1400min^{-1}	27	1758	2.32	51.98	ITS953	B5	23220
	24	1941	2.10	57.4		B5	26100
	23	2031	2.01	60.05		B5	24100
	22	2156	1.89	63.77		B5	26910
	20	2325	1.76	68.75		B5	26910
	20	2413	1.69	71.34		B5	26910
	18.1	2620	1.56	77.48		B5	26910
	17.3	2743	1.49	81.12		B5	26910
	15.6	3034	1.35	89.72		B5	26910
	13.8	3421	1.19	101.17		B5	26910
	12.5	3778	1.08	111.72		B5	26910
	11.3	4197	0.97	124.11		B5	26910
	17.2	2745	2.66	81.18	ITS963	B5	44820
	14.8	3194	2.28	94.45		B5	44820
	13.5	3520	2.07	104.08		B5	44820
	11.9	3967	1.84	117.31		B5	44820
	10.8	4368	1.67	129.15		B5	44820
	9.8	4838	1.51	143.05		B5	44820
	8.8	5398	1.35	159.61		B5	44820
	8.1	5832	1.25	172.47		B5	44820
	7.8	6041	1.21	178.64		B5	44820
	7.0	6740	1.08	199.31		B5	44820
	6.5	7283	1.00	215.37		B5	44820
7.5							
132MA4 1400min^{-1}	54	1190	3.43	25.81	ITS953	B5	16110
	48	1333	3.06	28.91		B5	16110
	45	1423	2.87	30.85		B5	18270
	40	1629	2.51	35.32		B5	23400
	34	1922	2.13	41.68		B5	21240
	30	2126	1.92	46.10		B5	23220
	27	2397	1.70	51.98		B5	23220
	24	2647	1.54	57.40		B5	26100
	23	2769	1.48	60.05		B5	24100
	22	2941	1.39	63.77		B5	26910
	20	3170	1.29	68.75		B5	26910
	20	3290	1.24	71.34		B5	26910
	18.1	3573	1.14	77.48		B5	26910
	17.3	3741	1.09	81.12		B5	26910
	15.6	4137	0.99	89.72		B5	26910
	13.8	4666	0.88	101.17		B5	26910

Left table

P_1 [kw]	n_2 [min^{-1}]	M_2 [Nm]	sf	i		IEC	R_2 [N]
7.5							
132MA4 1400min^{-1}	21	3101	2.35	67.26	ITS963	B5	44820
	20	3252	2.24	70.52		B5	44820
	18.9	3415	2.14	74.05		B5	44820
	17.2	3744	1.95	81.18		B5	44820
	14.8	4355	1.68	94.45		B5	44820
	13.5	4799	1.52	104.08		B5	44820
	11.9	5410	1.35	117.31		B5	44820
	10.8	5956	1.23	129.15		B5	44820
	9.8	6597	1.11	143.05		B5	44820
	8.8	7360	0.99	159.61		B5	44820
	8.1	7953	0.92	172.47		B5	44820
	11	5853	1.95	126.92	ITS973	B5	63450
	9	7174	1.59	155.57		B5	63450
	8.1	7975	1.43	172.94		B5	63450
11							
160M4 1400min^{-1}	58	1621	2.52	24.13	ITS952	B5	16110
	54	1733	2.36	25.81	ITS953	B5	16110
	52	1806	2.26	26.88		B5	16110
	48	1942	2.10	28.91		B5	16110
	45	2073	1.97	30.85		B5	18270
	40	2373	1.72	35.32		B5	23400
	34	2800	1.46	41.68		B5	21240
	30	3097	1.32	46.10		B5	23220
	27	3492	1.17	51.98		B5	23220
	24	3856	1.06	57.40		B5	26100
	23	4034	1.01	60.05		B5	24100
	22	4283	0.95	63.77		B5	26910
	70	1352	5.51	20.13	ITS962	B5	27000
	63	1483	5.02	22.08		B5	28980
	55	1711	4.35	25.47	ITS963	B5	30330
	51	1852	4.02	27.57		B5	30330
	46	2023	3.61	30.12		B5	34470
	41	2315	3.15	34.46		B5	34470
	34	2729	2.67	40.63		B5	37800
	30	3127	2.33	46.54		B5	39150
	26	3637	2.01	54.15		B5	41850
	23	4008	1.82	59.67		B5	43020
	21	4518	1.61	67.26		B5	44820
	20	4737	1.54	70.52		B5	44820
	18.9	4974	1.47	74.05		B5	44820
	17.2	5453	1.34	81.18		B5	44820
	14.8	6344	1.15	94.45		B5	44820
	13.5	6991	1.04	104.08		B5	44820
	11.9	7880	0.93	117.31		B5	44820
	18.3	5128	2.22	76.34	ITS973	B5	63450
	15.8	5938	1.92	88.39		B5	63450
	14.0	6729	1.69	100.18		B5	63450
	12.1	7776	1.47	115.75		B5	63450
	11.0	8526	1.34	126.92		B5	63450
	9.0	10450	1.09	155.57		B5	63450
	8.1	11617	0.98	172.94		B5	63450
	23	4127	4.14	61.44	ITS983	B5	74250
	20	4788	3.57	71.28		B5	78300
	17.5	5382	3.18	80.12		B5	78300
	15.1	6208	2.75	92.14		B5	78300
	13.4	7034	2.43	104.72		B5	78300
	11.6	8084	2.12	120.34		B5	78300
	10.6	8840	1.93	131.59		B5	78300

Right table

P_1 [kw]	n_2 [min^{-1}]	M_2 [Nm]	sf	i		IEC	R_2 [N]
11							
160M4 1400min^{-1}	8.7	10795	1.58	160.70	ITS983	B5	78300
	7.0	13429	1.27	199.90		B5	78300
	6.7	14056	1.22	209.25		B5	78300
	5.4	17274	0.99	257.14		B5	78300
15							
160M4 1400min^{-1}	138	929	2.41	10.14	ITS952	B5	12240
	117	1095	3.56	11.95		B5	9450
	102	1254	3.26	13.70		B5	9900
	88	1459	2.80	15.93		B5	11880
	80	1608	2.54	17.56		B5	13140
	71	1800	2.27	19.56		B5	13500
	65	1984	2.06	21.66		B5	15120
	58	2211	1.85	24.13		B5	16110
	54	2364	1.73	25.81	ITS953	B5	16110
	52	2462	1.66	26.88		B5	16110
	48	2648	1.54	28.91		B5	16110
	45	2826	1.45	30.85		B5	18270
	40	3236	1.26	35.32		B5	23400
	34	3818	1.07	41.68		B5	21240
	30	4223	0.97	46.10		B5	23220
	70	1844	4.04	20.13	ITS962	B5	27000
	63	2022	3.68	22.08		B5	28980
	51	2525	2.95	27.57	ITS963	B5	30330
	46	2759	2.64	30.12		B5	34470
	41	3156	2.31	34.46		B5	34470
	34	3721	1.96	40.63		B5	37800
	30	4263	1.71	46.54		B5	39150
	26	4960	1.47	54.15		B5	41850
	23	5466	1.33	59.67		B5	43020
	21	6161	1.18	67.26		B5	44820
	20	6783	1.13	70.52		B5	44820
	18.9	7436	1.08	74.05		B5	44820
	17.2	8651	0.98	81.18		B5	44820
	20	6498	1.75	70.94	ITS973	B5	63450
	18.3	6993	1.63	76.34		B5	63450
	15.8	8097	1.41	88.39		B5	63450
	14.0	9177	1.24	100.18		B5	63450
	12.1	10603	1.08	115.75		B5	63450
	11.0	11626	0.98	126.92		B5	63450
	24	5257	3.25	57.39	ITS983	B5	74250
	23	5628	3.04	61.44		B5	74250
	20	6529	2.62	71.28		B5	78300
	17.5	7339	2.33	80.12		B5	78300
	15.1	8465	2.02	92.14		B5	78300
	13.4	9592	1.78	104.72		B5	78300
	11.6	11024	1.55	120.34		B5	78300
	10.6	12054	1.42	131.59		B5	78300
	8.7	14721	1.16	160.70		B5	78300
	7.0	18312	0.93	199.90		B5	78300
	6.7	19168	0.89	209.25		B5	78300

18.5

P1 [kw]	n2 [min⁻¹]	M2 [Nm]	sf	i		IEC	R2 [N]
160L4 1400min⁻¹	117	1350	2.88	11.95	ITS952	B5	9450
	102	1547	2.64	13.70		B5	9900
	88	1800	2.27	15.93		B5	11880
	80	1984	2.06	17.56		B5	13140
	71	2220	1.84	19.56		B5	13500
	65	2447	1.67	21.66		B5	15120
	58	2726	1.50	24.13		B5	16110
	54	2915	1.40	25.81	ITS953	B5	16110
	52	3037	1.35	26.88		B5	16110
	48	3266	1.25	28.91		B5	16110
	45	3486	1.17	30.85		B5	18270
	40	3991	1.02	35.32		B5	23400
	70	2275	3.27	20.13	ITS962	B5	27000
	63	2494	2.99	22.08		B5	28980
	55	2877	2.59	25.47	ITS963	B5	30330
	51	3115	2.39	27.57		B5	30330
	46	3403	2.14	30.12		B5	34470
	41	3893	1.87	34.46		B5	34470
	34	4590	1.59	40.63		B5	37800
	30	5258	1.39	46.54		B5	39150
	26	6118	1.19	54.15		B5	41850
	23	6741	1.08	59.67		B5	43020
	21	7598	0.96	67.26		B5	44820
	20	7967	0.92	70.52		B5	44820
	28	5582	2.04	49.40	ITS973	B5	58770
	25	6326	1.80	55.99		B5	60660
	22	7309	1.56	64.70		B5	63450
	20	8015	1.42	70.94		B5	63450
	18.3	8624	1.32	76.34		B5	63450
	15.8	9986	1.14	88.39		B5	63450
	14.0	11318	1.01	100.18		B5	63450
	28	5679	3.01	50.27	ITS983	B5	88470
	24	6484	2.64	57.39		B5	74250
	23	6941	2.46	61.44		B5	74250
	20	8053	2.12	71.28		B5	78300
	17.5	9051	1.89	80.12		B5	78300
	15.1	10440	1.64	92.14		B5	78300
	13.4	11830	1.45	104.72		B5	78300
	11.6	13596	1.26	120.34		B5	78300
	10.6	14867	1.15	131.59		B5	78300
	8.7	18156	0.94	160.70		B5	78300

22

P1 [kw]	n2 [min⁻¹]	M2 [Nm]	sf	i		IEC	R2 [N]
180L4 1400min⁻¹	117	1606	2.43	11.95	ITS952	B5	9450
	102	1840	2.22	13.70		B5	9900
	88	2141	1.91	15.93		B5	11880
	80	2359	1.73	17.56		B5	13140
	71	2640	1.55	19.56		B5	13500
	65	2910	1.40	21.66		B5	15120
	58	3242	1.26	24.13		B5	16110
	52	3636	1.13	26.88	ITS953	B5	16110

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P1 [kw]	n2 [min⁻¹]	M2 [Nm]	sf	i		IEC	R2 [N]
180L4 1400min⁻¹	80	2341	3.18	20.13	ITS962	B5	25290
	70	2705	2.75	20.13		B5	27000
	63	2966	2.51	22.08		B5	28980
	55	3421	2.18	25.47	ITS963	B5	30330
	51	3704	2.01	27.57		B5	30330
	46	4046	1.80	30.12		B5	34470
	41	4630	1.58	34.46		B5	34470
	34	5458	1.34	40.63		B5	37800
	30	6253	1.17	46.54		B5	39150
	26	7275	1.00	54.15		B5	41850
	23	8017	0.91	59.67		B5	43020
	33	5732	1.99	42.67	ITS973	B5	52110
	28	6638	1.72	49.40		B5	58770
	25	7523	1.52	55.99		B5	60660
	22	8692	1.31	64.70		B5	63450
	20	9531	1.20	70.94		B5	63450
	18.3	10256	1.11	76.34		B5	63450
	15.8	11876	0.96	88.39		B5	63450
	41	4597	3.72	34.22	ITS983	B5	71370
	36	5167	3.31	38.46		B5	74070
	32	5958	2.87	44.35		B5	79020
	28	6754	2.53	50.27		B5	88470
	24	7711	2.22	57.39		B5	74250
	23	8254	2.07	61.44		B5	74250
	20	9576	1.79	71.28		B5	78300
	17.5	10764	1.59	80.12		B5	78300
	15.1	12415	1.38	92.14		B5	78300
	13.4	14069	1.22	104.72		B5	78300
	11.6	16168	1.06	120.34		B5	78300
	10.6	17680	0.97	131.59		B5	78300

30

P1 [kw]	n2 [min⁻¹]	M2 [Nm]	sf	i		IEC	R2 [N]
200L4 1400min⁻¹	307	832	2.34	4.56	ITS952	B5	9540
	269	952	2.15	5.21		B5	10080
	228	1122	1.91	6.14		B5	10080
	199	1285	1.74	7.04		B5	10530
	171	1495	1.50	8.19		B5	11520
	158	1618	1.39	8.86		B5	12240
	155	1648	1.36	9.03		B5	12240
	138	1851	1.21	10.14		B5	9450
	117	2183	1.78	11.95		B5	9450
	102	2500	1.63	13.70		B5	9900
	88	2909	1.40	15.93		B5	11880
	80	3206	1.27	17.56		B5	13140
	71	3588	1.14	19.56		B5	13500
	65	3955	1.03	21.66		B5	15120

30

225L4 — 1400min⁻¹ represented below; section header "30", motor 200L4 1400min⁻¹

P₁ [kw]	n₂ [min⁻¹]	M₂ [Nm]	sf	i		IEC	R₂ [N]
200L4 1400min⁻¹	142	1802	3.34	9.87	ITS962	B5	22500
	119	2144	3.10	11.74		B5	21870
	105	2424	2.74	13.28		B5	22050
	91	2807	2.60	15.38		B5	22700
	80	3182	2.34	17.43		B5	25290
	70	3676	2.03	20.13		B5	27000
	63	4031	1.85	22.08		B5	28980
	51	5034	1.48	27.57	ITS963	B5	30330
	46	5499	1.33	30.12		B5	34470
	41	6292	1.16	34.46		B5	34470
	34	7418	0.98	40.63		B5	37800
	73	3487	3.00	19.10	ITS972	B5	37800
	65	3952	2.88	21.64		B5	37800
	56	4541	1.78	24.87		B5	42750
	51	4966	1.63	27.20		B5	42750
	55	4677	2.44	25.62	ITS973	B5	42750
	44	5791	1.97	31.72		B5	47340
	37	6891	1.65	37.74		B5	49320
	33	7790	1.46	42.67		B5	52110
	28	9020	1.26	49.40		B5	58770
	25	10223	1.12	55.99		B5	60660
	22	11813	0.97	64.70		B5	63450
	41	6248	2.74	34.22	ITS983	B5	71370
	36	7022	2.44	38.46		B5	74070
	32	8098	2.11	44.35		B5	79020
	28	9178	1.86	50.27		B5	88470
	24	10479	1.63	57.39		B5	74250
	23	11218	1.52	61.44		B5	74250
	20	13015	1.31	71.28		B5	78300
	17.5	14628	1.17	80.12		B5	78300
	15.1	16873	1.01	92.14		B5	78300

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P₁ [kw]	n₂ [min⁻¹]	M₂ [Nm]	sf	i		IEC	R₂ [N]
225S4 1400min⁻¹	239	1317	3.32	5.87	ITS962	B5	15300
	200	1567	2.79	6.98		B5	20880
	177	1772	2.47	7.90		B5	21600
	176	1789	2.44	7.97		B5	21600
	153	2052	2.27	9.14		B5	22500
	142	2215	2.79	9.87		B5	22500
	119	2636	2.52	11.74		B5	21870
	105	2980	2.23	13.28		B5	22050
	91	3451	2.11	15.38		B5	22700
	80	3911	1.90	17.43		B5	25290
	70	4519	1.65	20.13		B5	27000
	63	4955	1.50	22.08		B5	28980
	51	6187	1.20	27.57	ITS963	B5	30330
	177	1771	3.22	7.89	ITS972	B5	32760
	158	1991	3.34	8.87		B5	31500
	136	2315	3.90	10.32		B5	30600
	110	2850	3.33	12.70		B5	32760
	95	3306	3.16	14.73		B5	33840
	85	3716	2.81	16.56		B5	36000
	73	4286	2.44	19.10		B5	37800
	65	4857	2.35	21.64		B5	37800
	56	5582	1.45	24.87		B5	37800
	51	6104	1.32	27.20		B5	42750

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P₁ [kw]	n₂ [min⁻¹]	M₂ [Nm]	sf	i		IEC	R₂ [N]
225S4 1400min⁻¹	55	5749	1.98	25.62	ITS973	B5	42750
	44	7118	1.60	31.72		B5	47340
	37	8470	1.35	37.74		B5	49320
	33	9576	1.19	42.67		B5	52110
	28	11088	1.03	49.40		B5	58770
	47	6618	2.58	29.49	ITS983	B5	54720
	41	7680	2.23	34.22		B5	71370
	36	8631	1.98	38.46		B5	74070
	32	9953	1.72	44.35		B5	79020
	28	11282	1.52	50.27		B5	88470
	24	12881	1.33	57.39		B5	74250
	23	13789	1.24	61.44		B5	74250
	20	15997	1.07	71.28		B5	78300
	17.5	17980	0.95	80.12		B5	78300

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P₁ [kw]	n₂ [min⁻¹]	M₂ [Nm]	sf	i		IEC	R₂ [N]
225M4 1400min⁻¹	239	1602	2.73	5.87	ITS962	B5	15300
	200	1906	2.29	6.98		B5	20880
	177	2155	2.03	7.90		B5	21600
	176	2176	2.01	7.97		B5	21600
	153	2496	1.87	9.14		B5	22500
	142	2694	2.29	9.87		B5	22500
	119	3206	2.07	11.74		B5	21870
	105	3624	1.83	13.28		B5	22050
	91	4197	1.74	15.38		B5	22700
	80	4756	1.57	17.43		B5	25290
	70	5496	1.36	20.13		B5	27000
	63	6026	1.24	22.08		B5	28980
	51	7525	0.99	27.57	ITS963	B5	30330
	299	1279	4.46	4.69	ITS972	B5	28530
	253	1508	3.78	5.53		B5	28800
	206	1857	3.58	6.80		B5	28980
	177	2154	2.65	7.89		B5	32760
	158	2421	2.75	8.87		B5	31500
	136	2816	3.20	10.32		B5	30600
	110	3466	2.74	12.70		B5	32760
	95	4021	2.60	14.73		B5	33840
	85	4520	2.31	16.56		B5	36000
	73	5213	2.00	19.10		B5	37800
	65	5907	1.93	21.64		B5	37800
	56	6789	1.19	24.87		B5	37800
	51	7424	1.09	27.20		B5	42750
	55	6992	1.63	25.62	ITS973	B5	42750
	44	8657	1.32	31.72		B5	47340
	37	10301	1.11	37.74		B5	49320
	33	11646	0.98	42.67		B5	52110
	58	6543	2.61	23.97	ITS983	B5	55350
	47	8049	2.12	29.49		B5	54720
	41	9340	1.83	34.22		B5	71370
	36	10498	1.63	38.46		B5	74070
	32	12105	1.41	44.35		B5	79020
	28	13721	1.25	50.27		B5	88470
	24	15666	1.09	57.39		B5	74250
	23	16770	1.02	61.44		B5	74250

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P₁ [kw]	n₂ [min⁻¹]	M₂ [Nm]	sf	i		IEC	R₂ [N]
250M4 1400min⁻¹	299	1564	3.65	4.69	ITS972	B5	28530
	253	1844	3.09	5.53		B5	28800
	206	2269	2.93	6.80		B5	28980
	177	2633	2.17	7.89		B5	32760
	158	2959	2.25	8.87		B5	31500
	136	3442	2.62	10.32		B5	30600
	110	4236	2.24	12.70		B5	32760
	95	4915	2.13	14.73		B5	33840
	85	5524	1.89	16.56		B5	36000
	73	6372	1.64	19.10		B5	37800
	65	7220	1.58	21.64		B5	37800
	55	8546	1.33	25.62	ITS973	B5	42750
	44	10581	1.08	31.72		B5	47340
	86	5406	3.16	16.20	ITS982	B5	42300
	74	6342	2.55	19.01		B5	45810
	69	6782	2.38	20.33	ITS983	B5	45900
	66	7108	2.27	21.31		B5	45900
	53	8730	1.96	26.17		B5	54720
	47	9838	1.74	29.49		B5	54720
	43	10792	1.58	32.35		B5	71370
	41	11416	1.50	34.22		B5	71370
	36	12830	1.33	38.46		B5	74070
	32	14795	1.16	44.35		B5	79020
	28	16770	1.02	50.27		B5	88470
	24	19147	0.89	57.39		B5	74250

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P₁ [kw]	n₂ [min⁻¹]	M₂ [Nm]	sf	i		IEC	R₂ [N]
280S4 1400min⁻¹	299	2125	2.68	4.69	ITS972	B5	28530
	253	2506	2.27	5.53		B5	28800
	206	3084	2.16	6.80		B5	28980
	177	3578	1.59	7.89		B5	32760
	158	4021	1.65	8.87		B5	31500
	136	4678	1.93	10.32		B5	30600
	110	5757	1.65	12.70		B5	32760
	95	6679	1.56	14.73		B5	33840
	85	7507	1.39	16.56		B5	36000
	73	8659	1.21	19.10		B5	37800
	65	9813	1.16	21.64		B5	37800
	55	11614	0.98	25.62	ITS973	B5	42750
	159	3990	3.81	8.80	ITS982	B5	31450
	136	4675	3.25	10.31		B5	33150
	113	5642	2.69	12.44		B5	37350
	96	6619	2.44	14.60		B5	40410
	86	7346	2.33	16.20		B5	42300
	74	8619	1.87	19.01		B5	45810
	69	9217	1.75	20.33	ITS983	B5	45900
	66	9660	1.67	21.31		B5	45900
	58	10868	1.57	23.97		B5	54720
	53	11865	1.44	26.17		B5	54720
	47	13370	1.28	29.49		B5	71370
	41	15515	1.10	34.22		B5	71370
	36	17437	0.98	38.46		B5	74070

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P₁ [kw]	n₂ [min⁻¹]	M₂ [Nm]	sf	i		IEC	R₂ [N]
280M4 1400min⁻¹	299	2550	2.24	4.69	ITS972	B5	28530
	253	3007	1.90	5.53		B5	28800
	206	3701	1.8	6.80		B5	28980
	177	4293	1.33	7.89		B5	32760
	158	4826	1.38	8.87		B5	31500
	136	5613	1.61	10.32		B5	30600
	110	6909	1.38	12.70		B5	32760
	95	8015	1.30	14.73		B5	33840
	85	9009	1.16	16.56		B5	36000
	73	10391	1.01	19.10		B5	37800
	65	11775	0.97	21.64		B5	37800
	159	4788	3.17	8.80	ITS982	B5	31450
	136	5610	2.71	10.31		B5	33150
	113	6771	2.25	12.44		B5	37350
	96	7943	2.03	14.60		B5	40410
	86	8816	1.94	16.20		B5	42300
	74	10343	1.56	19.01		B5	45810
	69	11061	1.46	20.33	ITS983	B5	45900
	66	11592	1.39	21.31		B5	45900
	58	13041	1.31	23.97		B5	54720
	53	14238	1.20	26.17		B5	54720
	47	16044	1.07	29.49		B5	71370
	41	19610	0.92	34.22		B5	71370

110

P₁ [kw]	n₂ [min⁻¹]	M₂ [Nm]	sf	i		IEC	R₂ [N]
315S4 1400min⁻¹	159	5852	2.60	8.80	ITS982	B5	31450
	136	6857	2.22	10.31		B5	33150
	113	8275	1.84	12.44		B5	37350
	96	9708	1.66	14.60		B5	40410
	86	10775	1.59	16.20		B5	42300
	74	12641	1.28	19.01		B5	45810
	69	13519	1.19	20.33	ITS983	B5	45900
	66	14168	1.14	21.31		B5	45900
	58	15939	1.07	23.97		B5	55350
	47	19610	0.87	29.49		B5	54720

Dimensions

ITS 952 - ITS 953

ITS 952 U
ITS 953 U
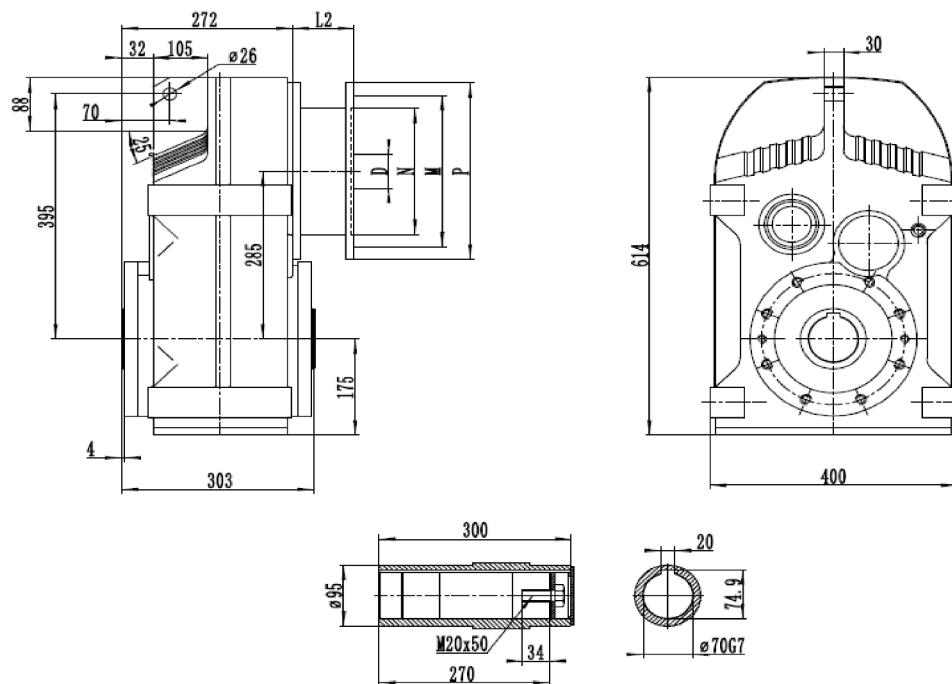
ITS 952 P
ITS 953 P
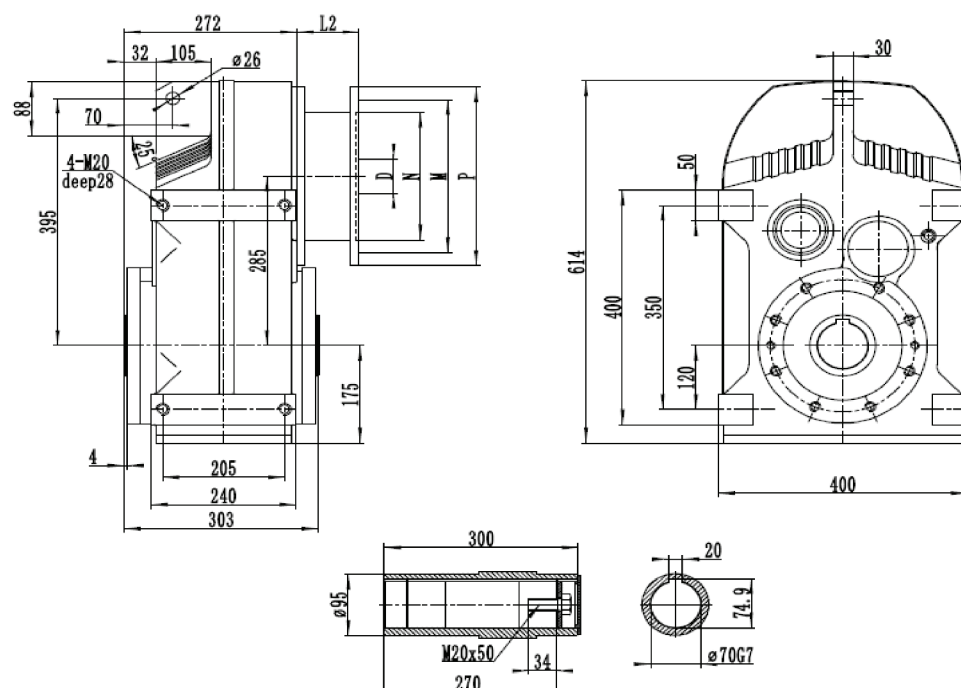
ITS 952 - ITS 953

ITS 952 U/F
ITS 953 U/F

314 | L2

D N M P

22

285

5

ø450
ø350h7

175

42 | 303

614

ø400

8-ø18
Thru, EQS

22.5°

400

300

ø95

M20x50 | 34

270

20

74.9

ø70G7

ITS 952 P/F
ITS 953 P/F

314 | L2

D N M P

4-M20
deep28

22

285

5

ø450
ø350h7

175

205

42 | 303

614

50

400

350

120

ø400

8-ø18
Thru, EQS

22.5°

400

300

ø95

M20x50 | 34

270

20

74.9

ø70G7
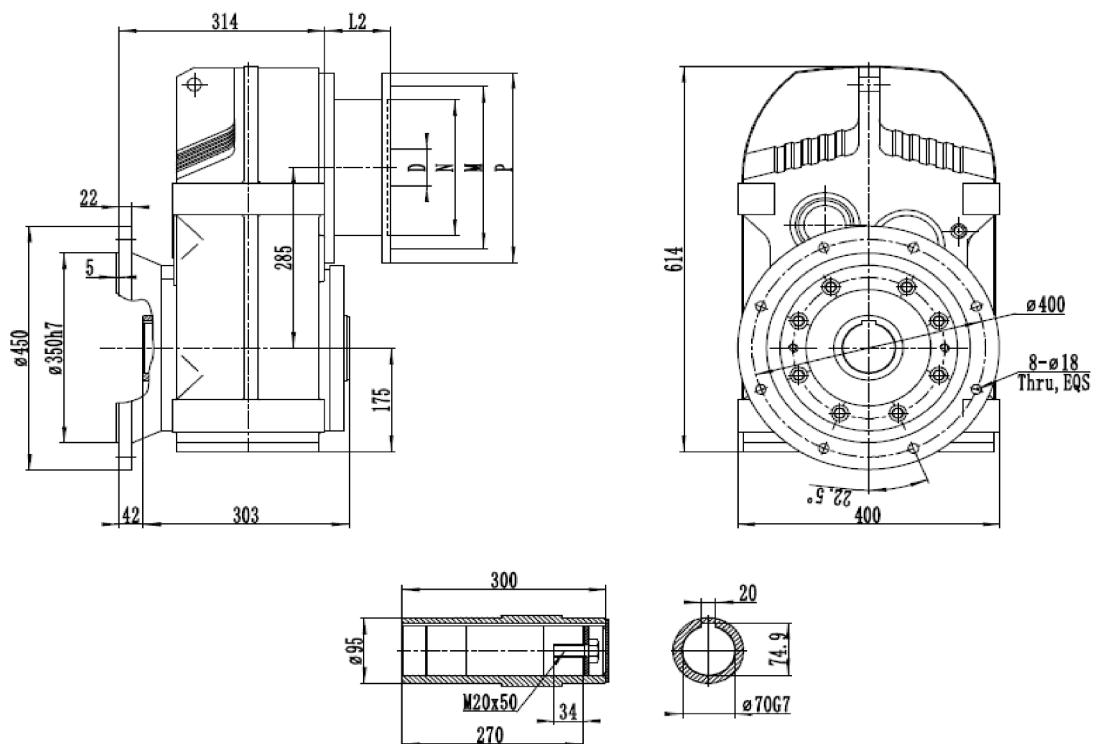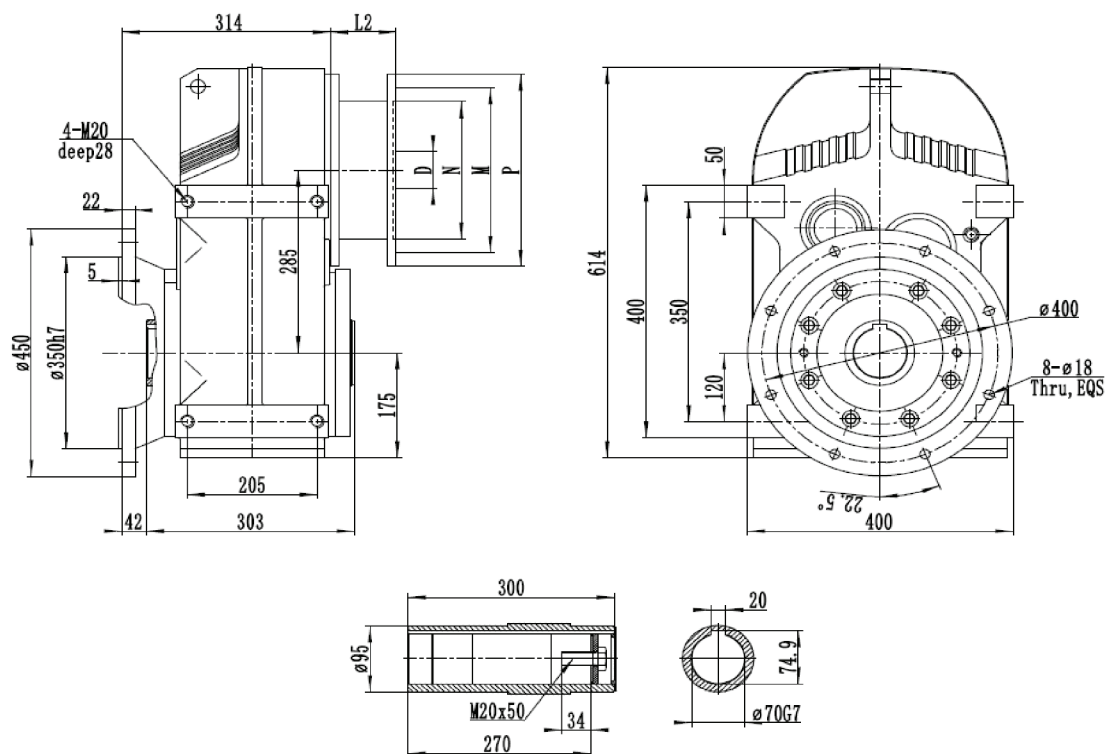
ITS 952 - ITS 953

ITS 952 P...SZ...
ITS 953 P...SZ...

ITS 952 P/F...SZ...
ITS 953 P/F...SZ...
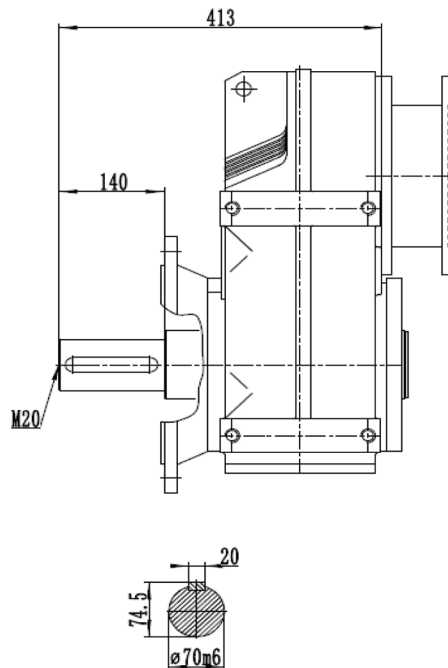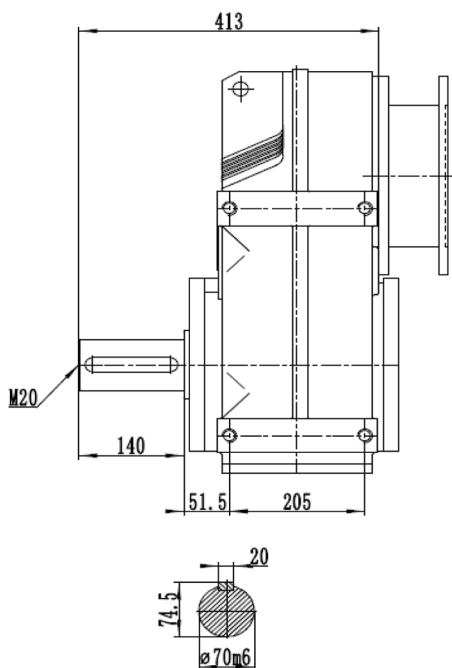
ITSIS 952 ...SZ...
ITSIS 953 ...SZ...
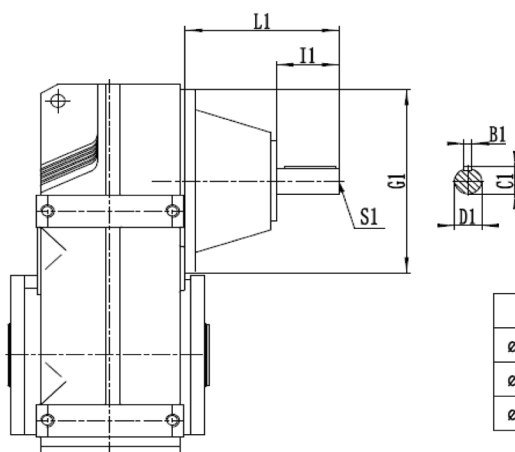
D1	L1	I1	S1	C1	B1	G1
ø38k6	220	80	M12	41	10	ø300
ø42k6	220	80	M16	45	12	ø300
ø48k6	220	80	M16	51.5	14	ø300

IEC Dimensions						
	90 B5	100 B5	112 B5	132 B5	160 B5	180 B5	200 B5
L2	50	50	50	92	113	113	123
N	130	180	180	230	250	250	300
M	165	215	215	265	300	300	350
P	200	250	250	300	350	350	400
D	24	28	28	38	42	48	55

ITS 962 - ITS 963

ITS 962 U
ITS 963 U
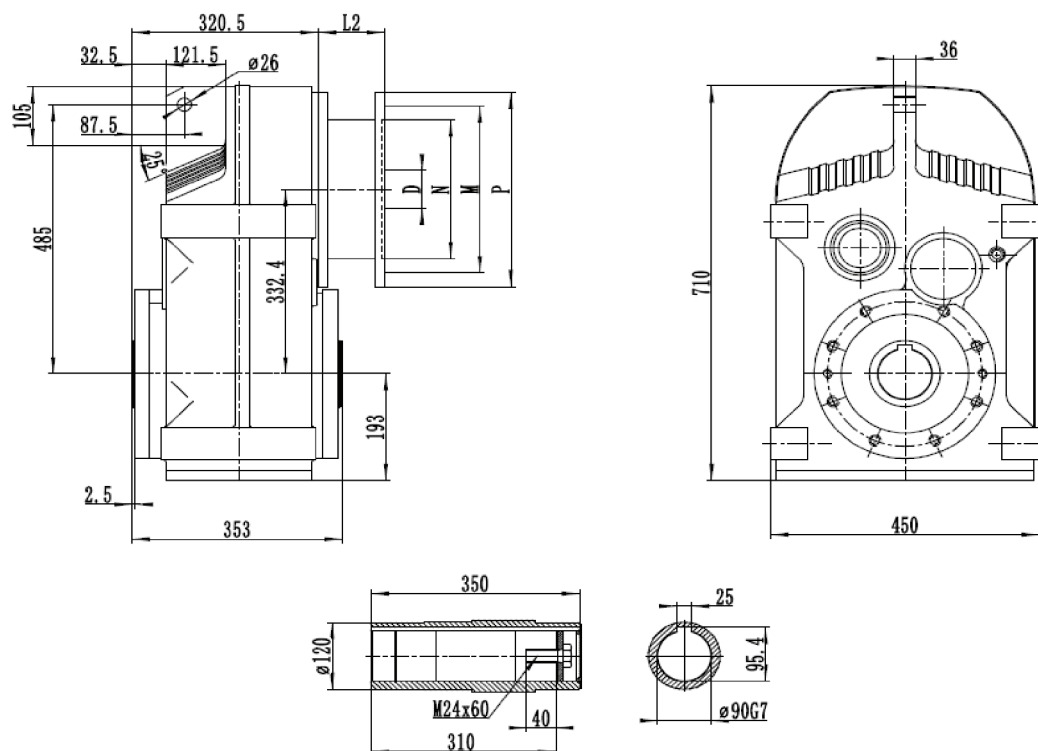
ITS 962 P
ITS 963 P
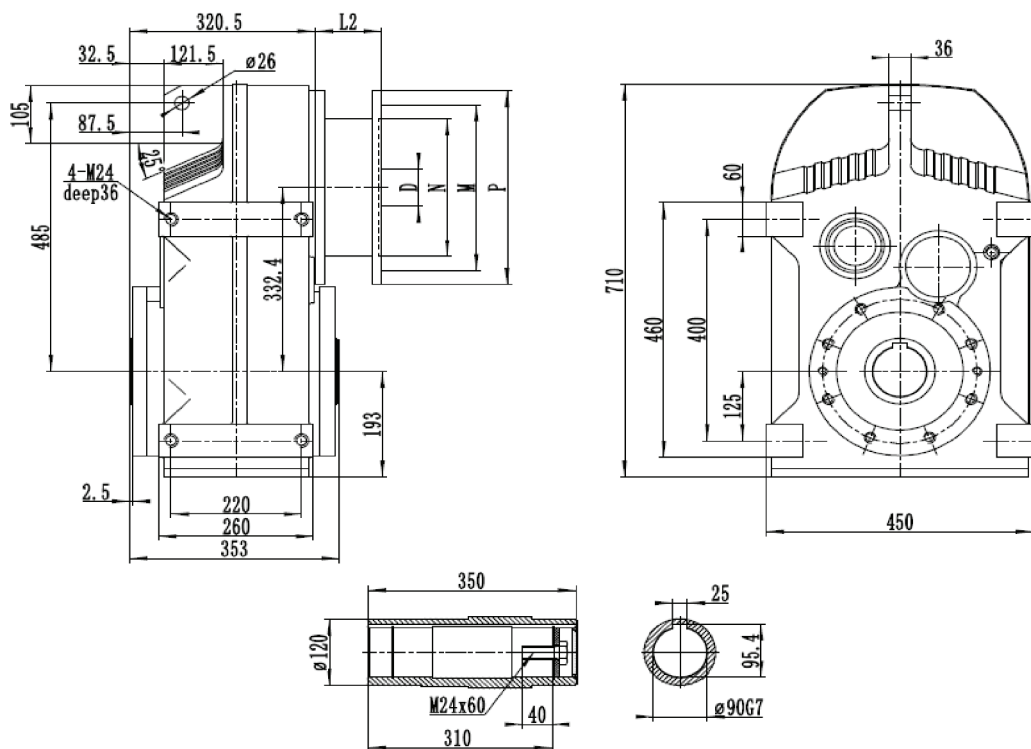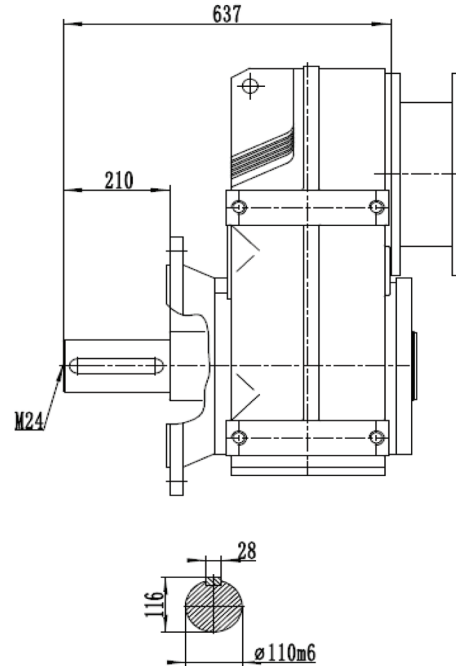
ITS 962 - ITS 963

ITS 962 U/F
ITS 963 U/F
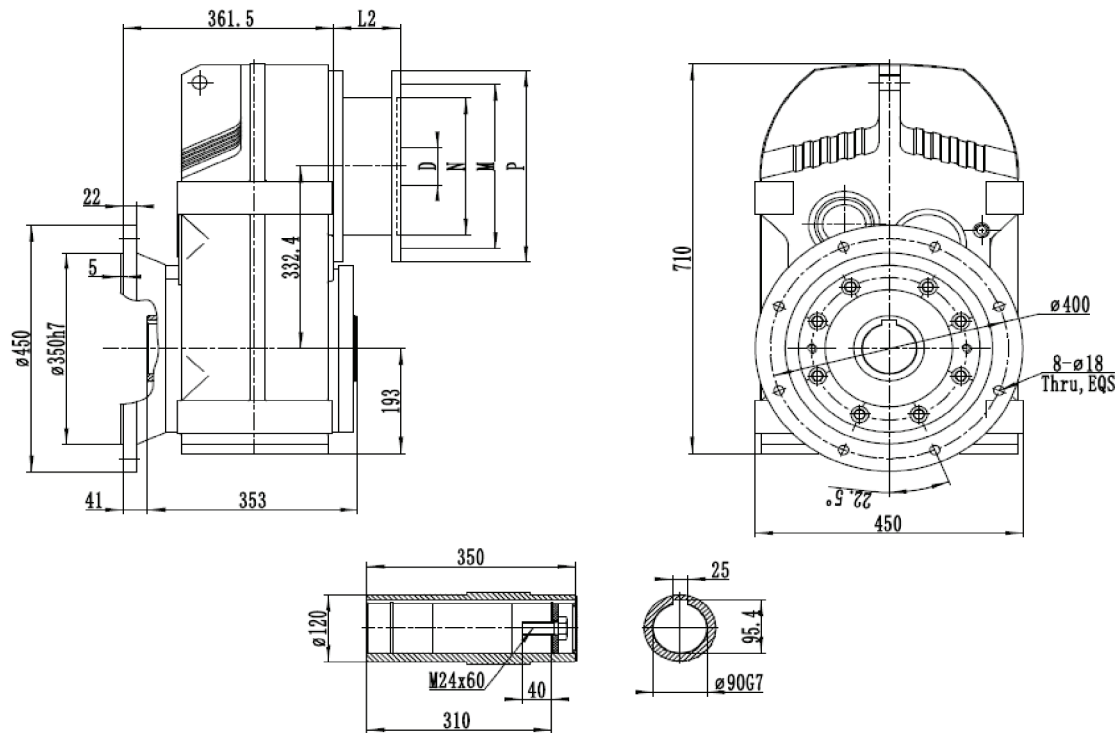
ITS 962 P/F
ITS 963 P/F
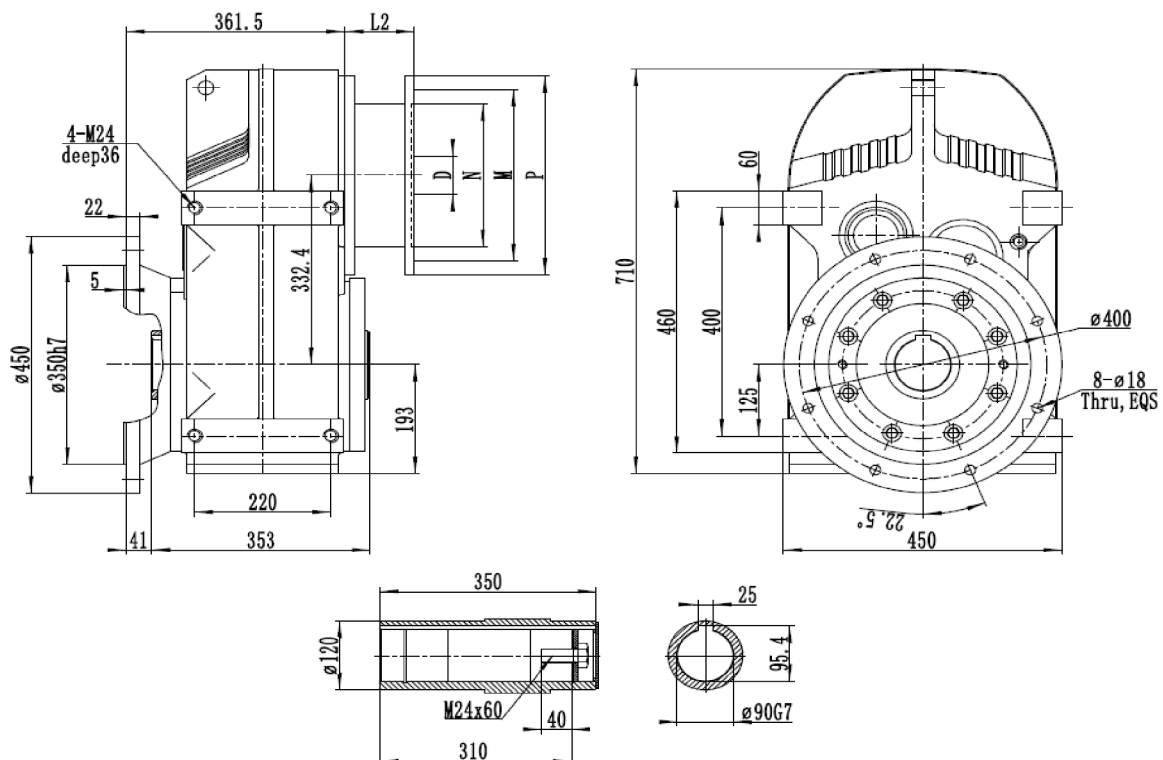
ITS 962 - ITS 963

ITS 962 P...SZ...
ITS 963 P...SZ...

ITS 962 P/F...SZ...
ITS 963 P/F...SZ...

492.5

531.5

170

M24

170

73.5   220

M24

25

95

ø90m6

25

95

ø90m6
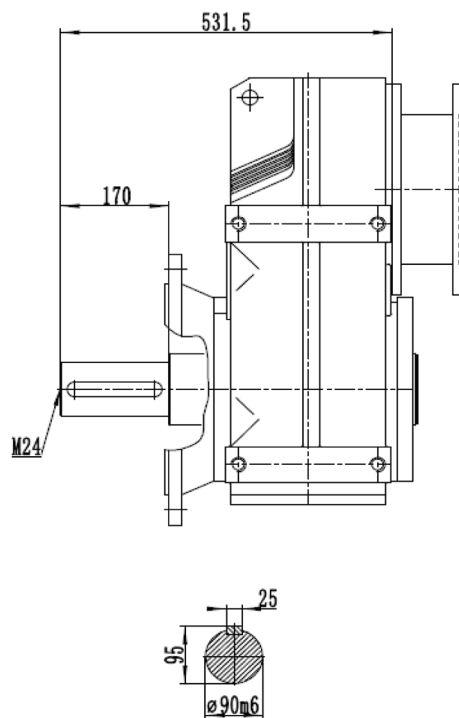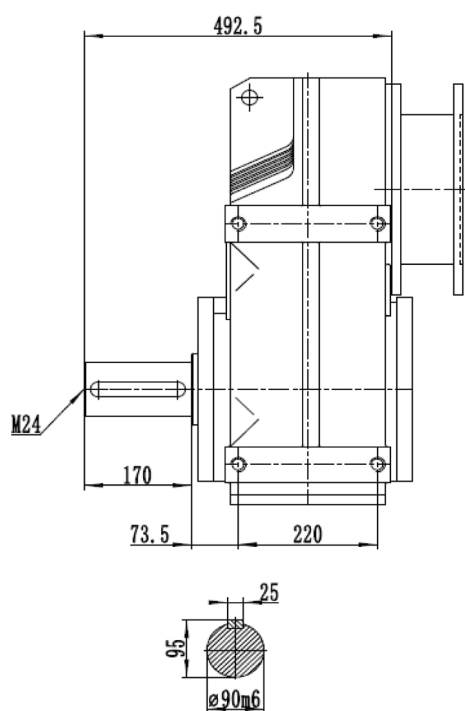
ITSIS 962 ...SZ...
ITSIS 963 ...SZ...

L1

I1

B1

G1

C1

S1

D1
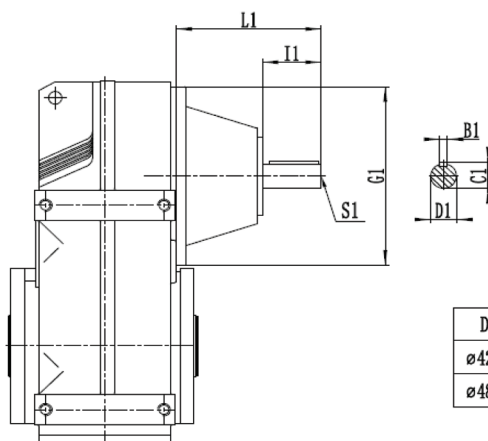
D1	L1	I1	S1	C1	B1	G1
ø42k6	270	110	M16	45	12	ø350
ø48k6	270	110	M16	51.5	14	ø350

IEC尺寸参数 / IEC Dimensions						
	100 B5	112 B5	132 B5	160 B5	180 B5	200 B5	225 B5
L2	55	55	76	112	112	130	151
N	180	180	230	250	250	300	350
M	215	215	265	300	300	350	400
P	250	250	300	350	350	400	450
D	28	28	38	42	48	55	60

ITS 972 - ITS 973

ITS 972 U
ITS 973 U
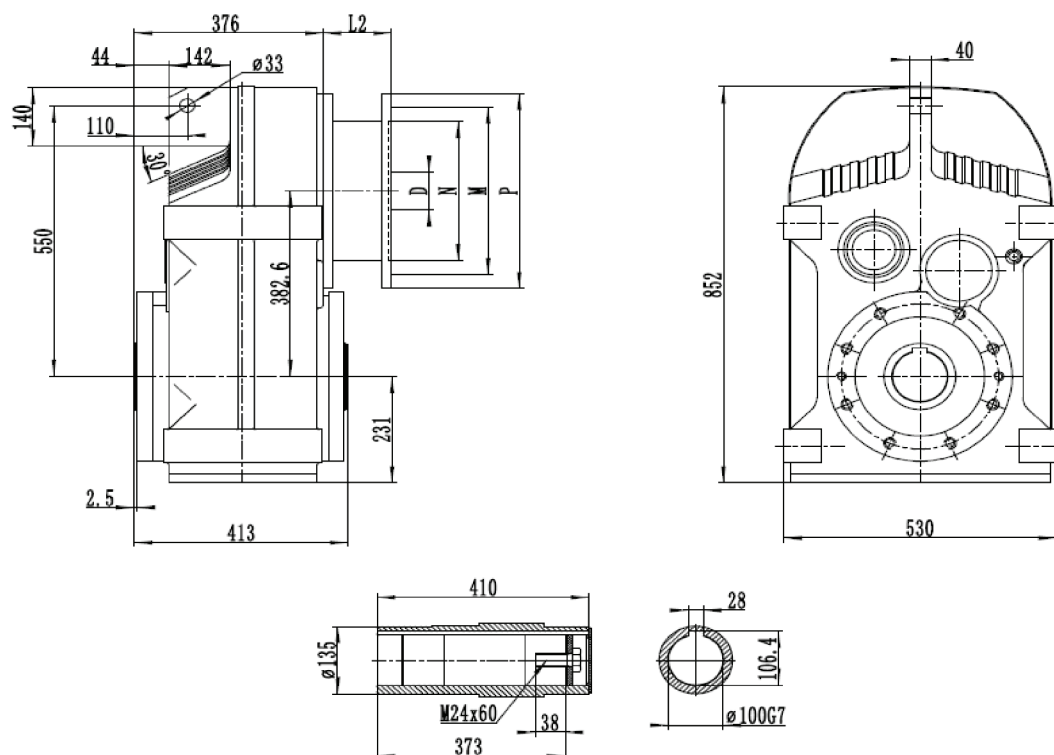
ITS 972 P
ITS 973 P
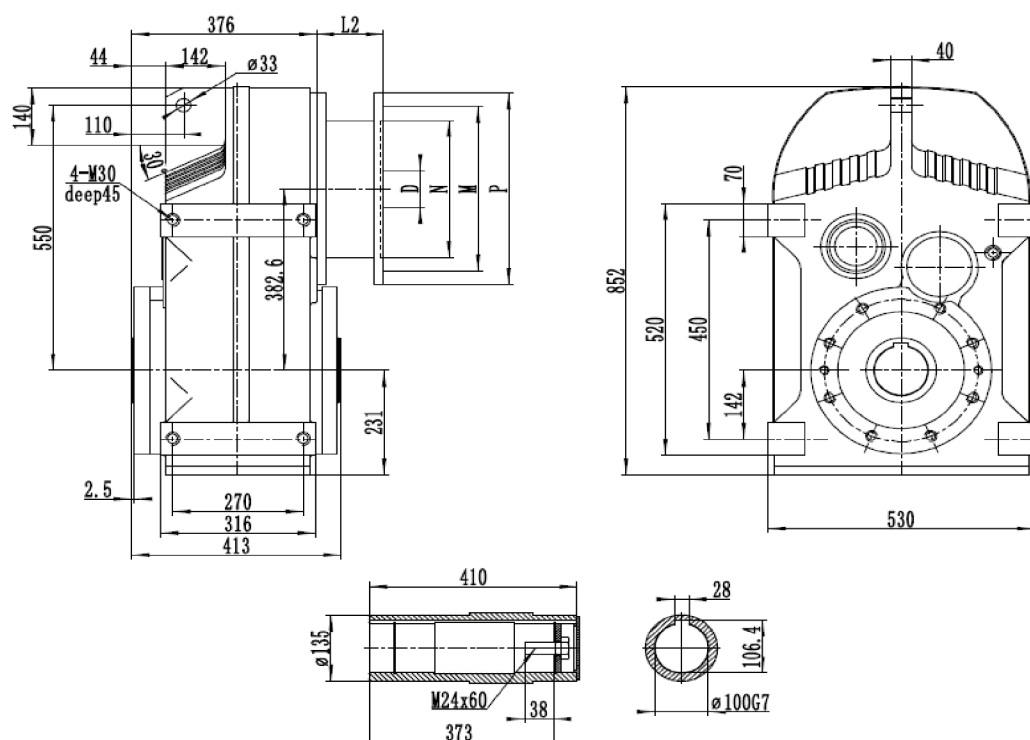
ITS 972 - ITS 973

ITS 972 U/F
ITS 973 U/F

427 · L2
25
5
ø550
ø450h7
382.6
231
51 · 413

D N M P
852
ø500
8-ø18
Thru, EQS
22.5°
530

410
ø135
M24x60
38
373

28
106.4
ø100G7

ITS 972 P/F
ITS 973 P/F

427 · L2
4-M30
deep45
25
5
ø550
ø450h7
382.6
231
270
51 · 413

D N M P
70
852
520
450
142
ø500
8-ø18
Thru, EQS
22.5°
530

410
ø135
M24x60
38
373

28
106.4
ø100G7
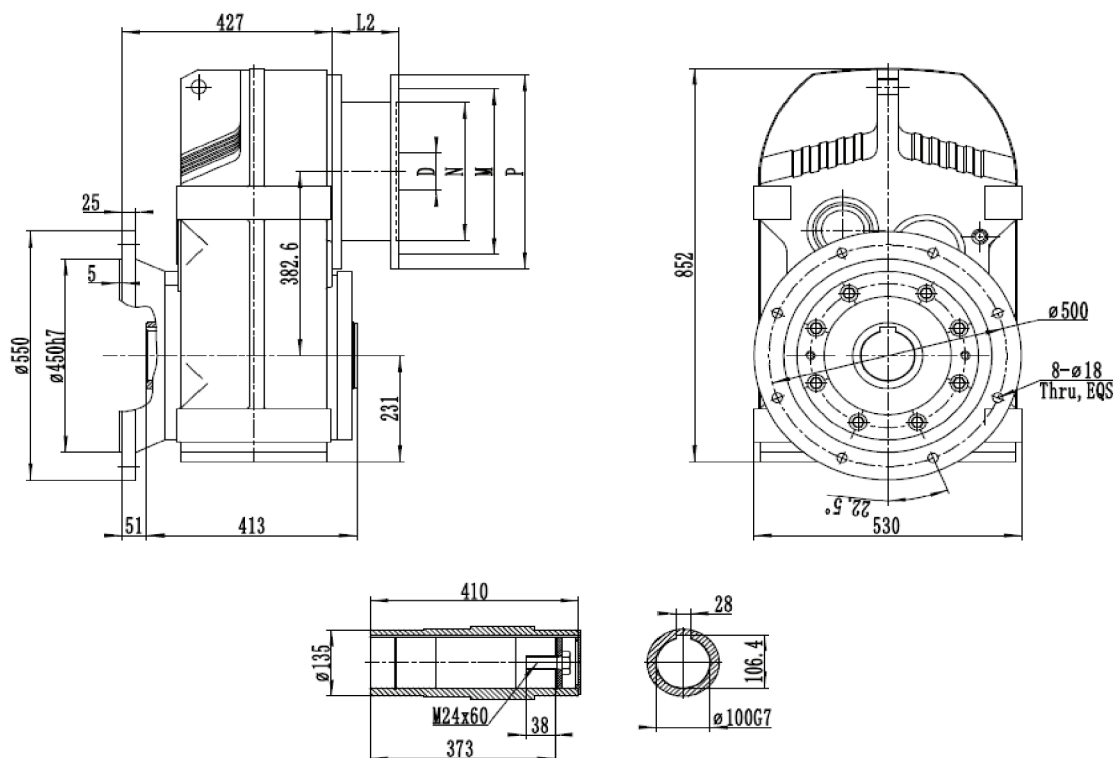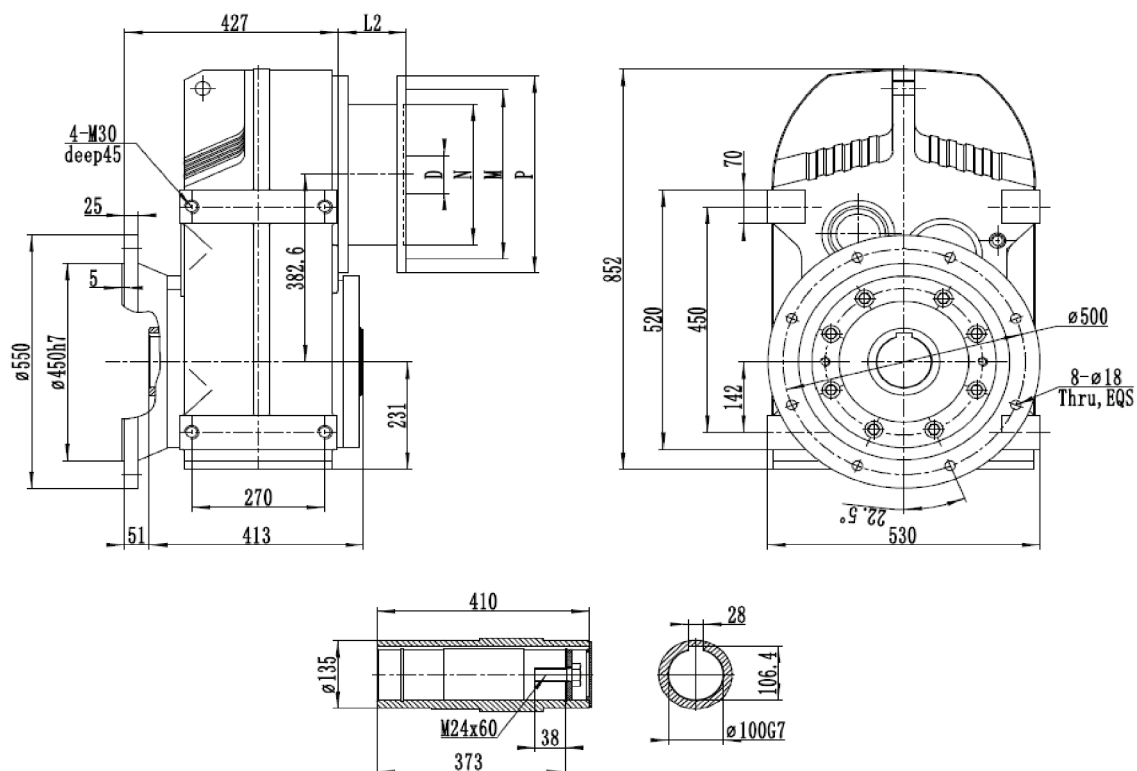
ITS 972 - ITS 973

ITS 972 P...SZ...
ITS 973 P...SZ...

ITS 972 P/F...SZ...
ITS 973 P/F...SZ...
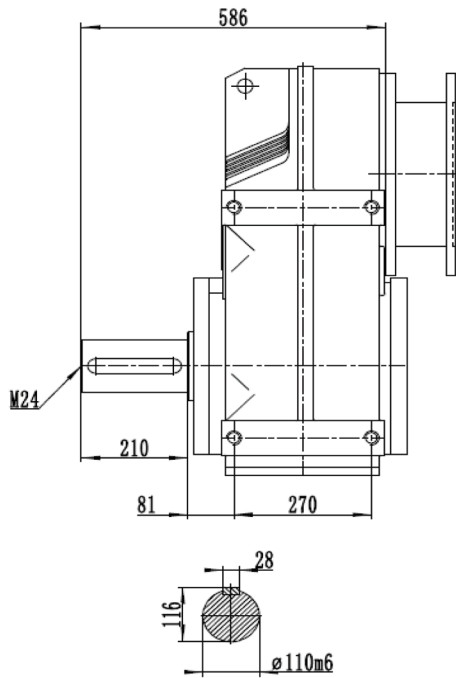
ITSIS 972 ...SZ...
ITSIS 973 ...SZ...
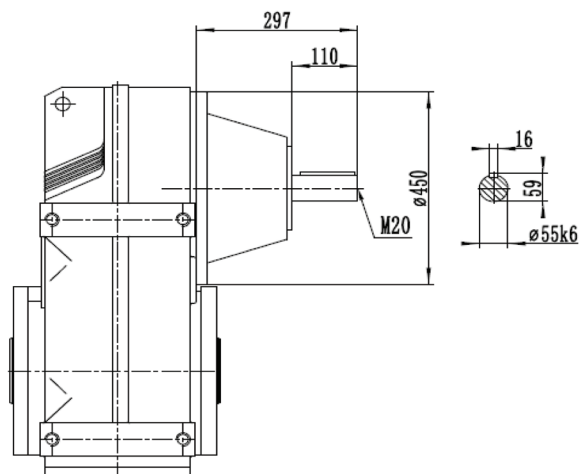
IEC尺寸参数 / IEC Dimensions							
	132 B5	160 B5	180 B5	200 B5	225 B5	250 B5	280 B5
L2	78	112	112	130	135	139	139
N	230	250	250	300	350	450	450
M	265	300	300	350	400	500	500
P	300	350	350	400	450	550	550
D	38	42	48	55	60	65	75

ITS 982 - ITS 983

ITS 982 U
ITS 983 U
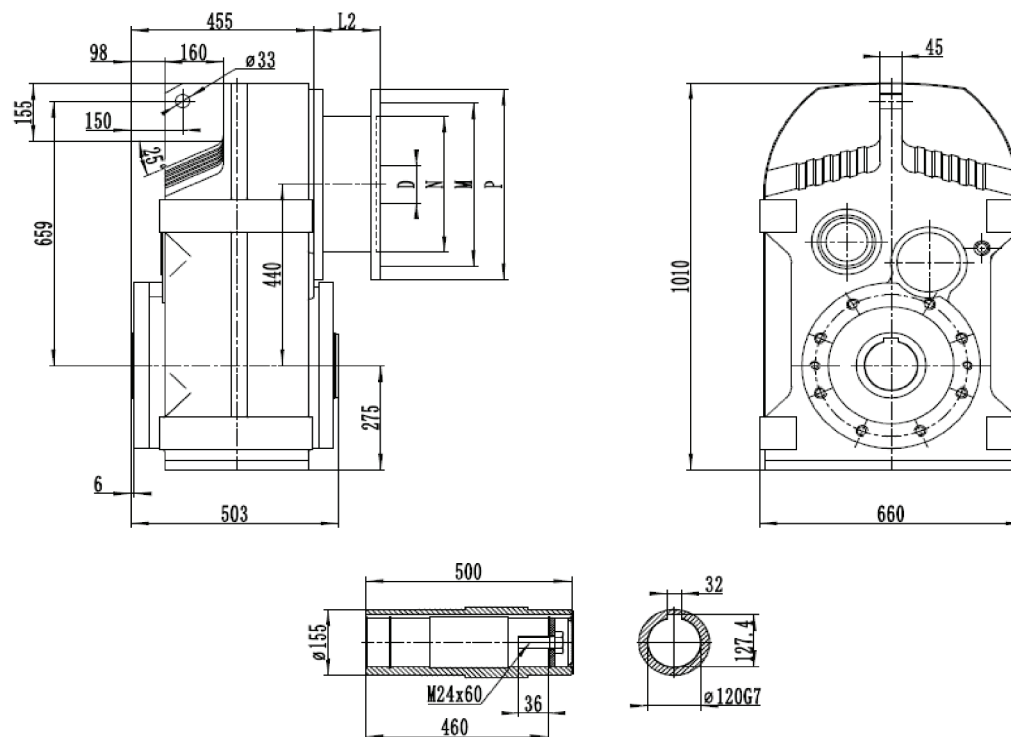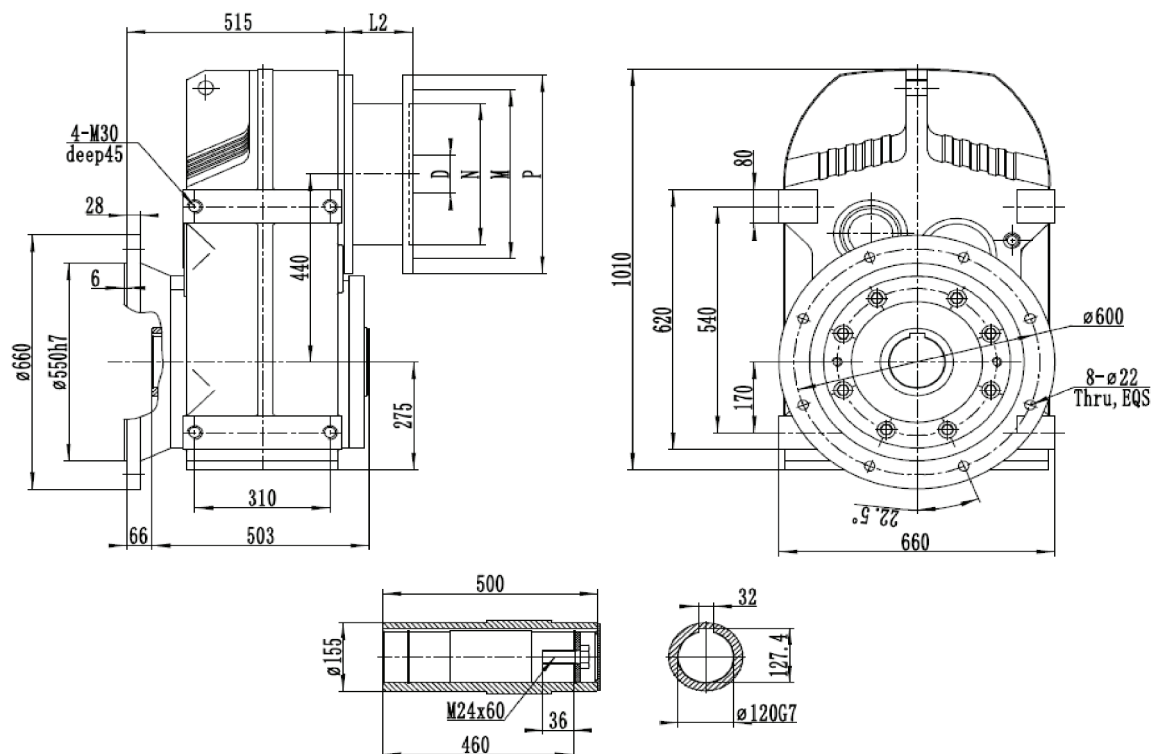

ITS 982 P
ITS 983 P
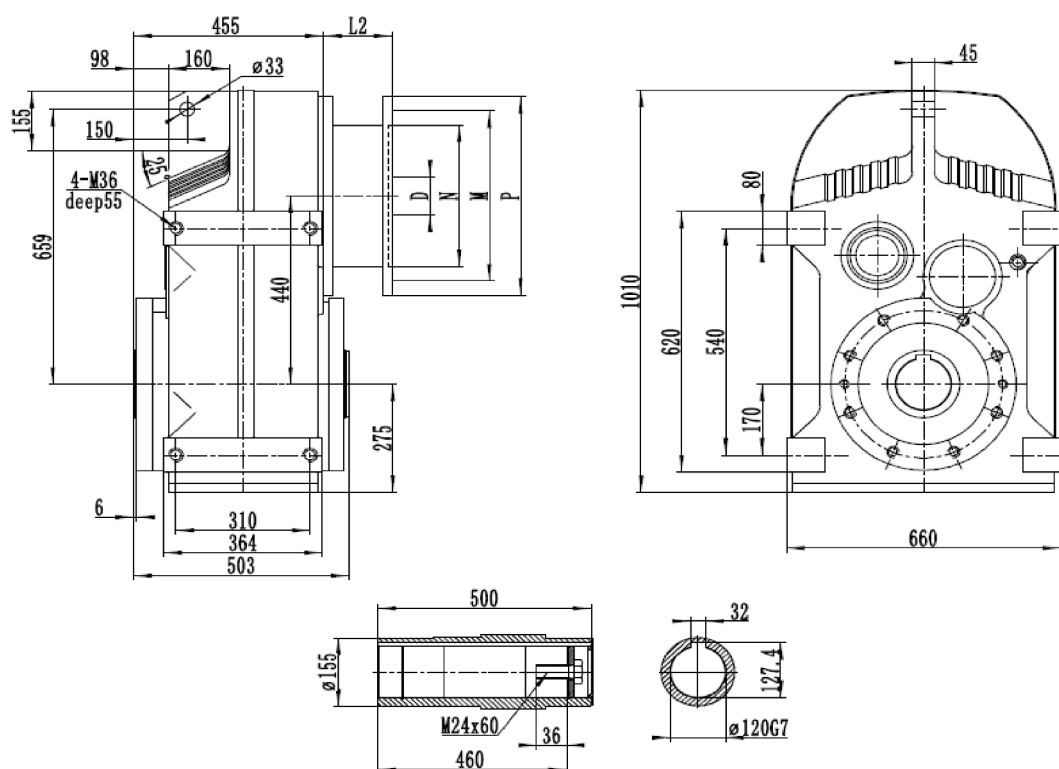
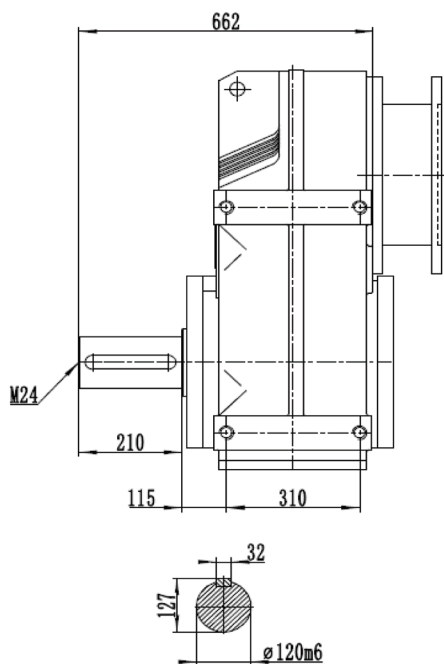# ITS 982 - ITS 983

ITS 982 U/F
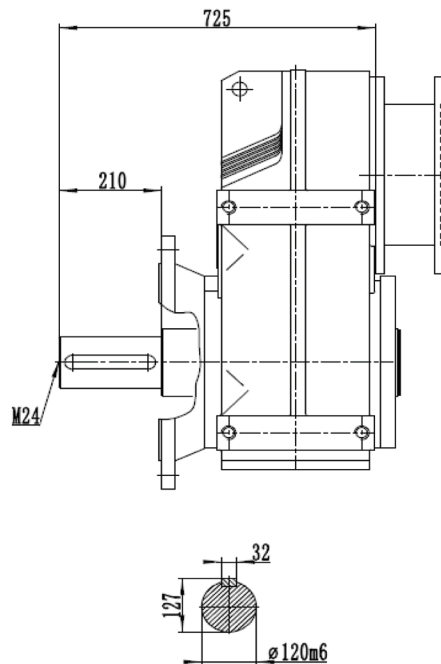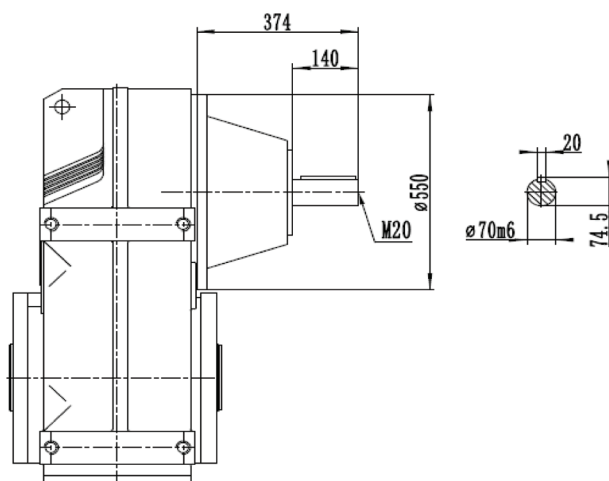ITS 983 U/F
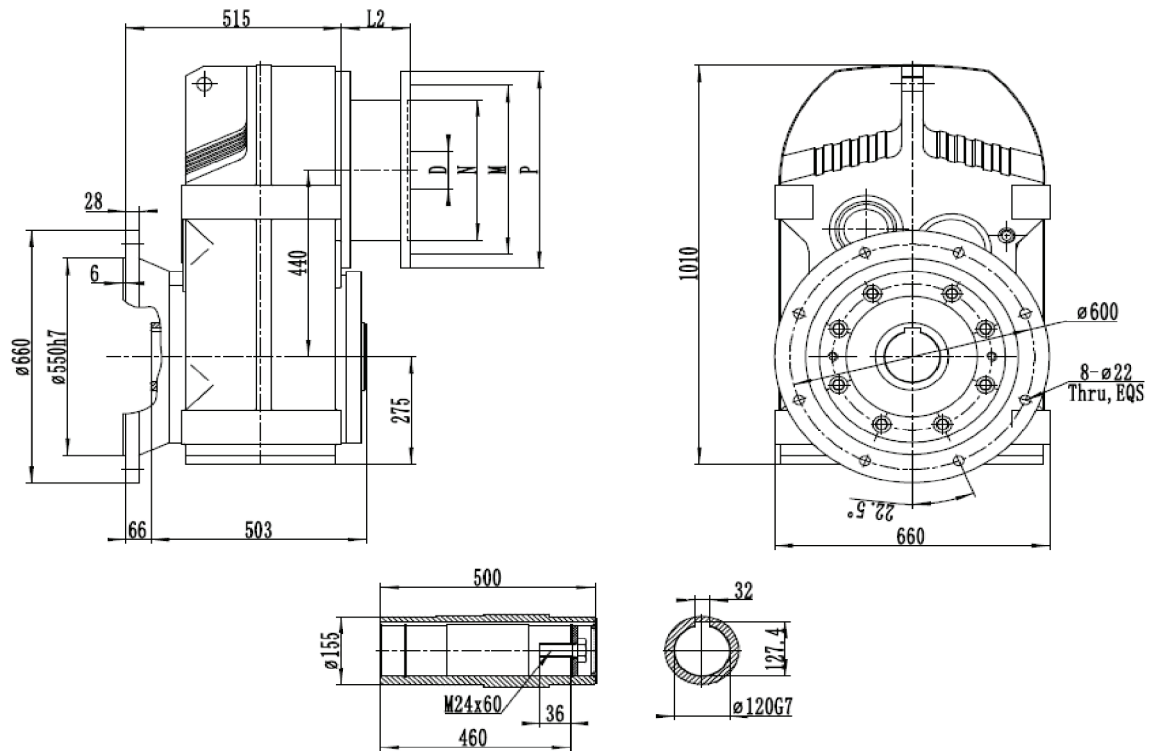
ITS 982 P/F
ITS 983 P/F

ITS 982 - ITS 983

ITS 982 P...SZ...
ITS 983 P...SZ...

ITS 982 P/F...SZ...
ITS 983 P/F...SZ...

ITSIS 982 ...SZ...
ITSIS 983 ...SZ...

IEC尺寸参数 / IEC Dimensions							
	160 B5	180 B5	200 B5	225 B5	250 B5	280 B5	315 B5
L2	101	101	111	116	120	120	170
N	250	250	300	350	450	450	550
M	300	300	350	400	500	500	600
P	350	350	400	450	550	550	660
D	42	48	55	60	65	75	80