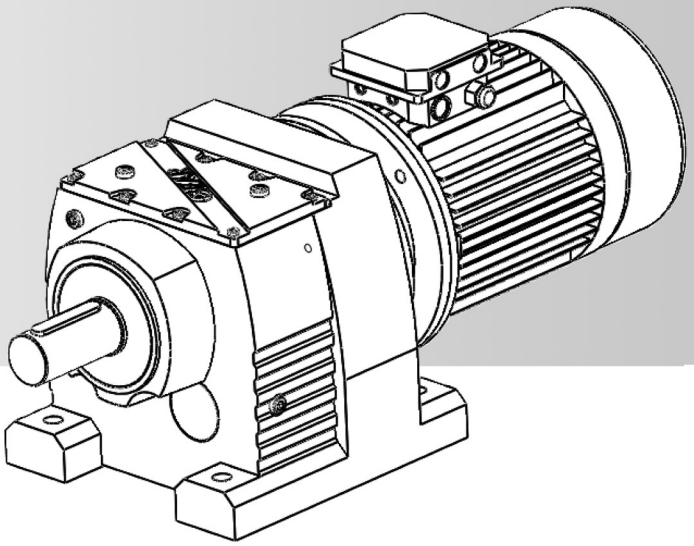
TRANSTECNO®
the modular gearmotor

ITH

ITH

ITH Iron

HELICAL IN-LINE GEARMOTORS



TRANSTECNO · GENUINE · PRODUCTS ·

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*

h/d	sf 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*

h/d	sf 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*

h/d	sf 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:

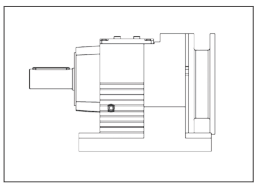
$$P = \frac{M \cdot n_2}{9550 \cdot Rd}$$

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.



ITH

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

ITH	-25°C / +50°C

Standard temperature range

	< -15°C	**> +50°C**
ITH	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.

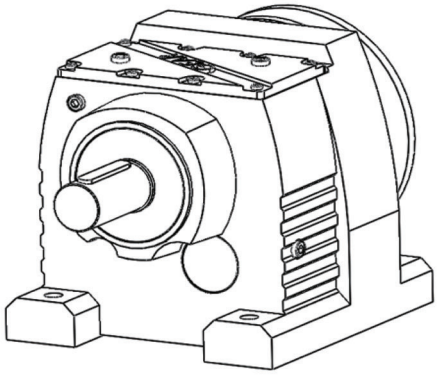
Critical applications

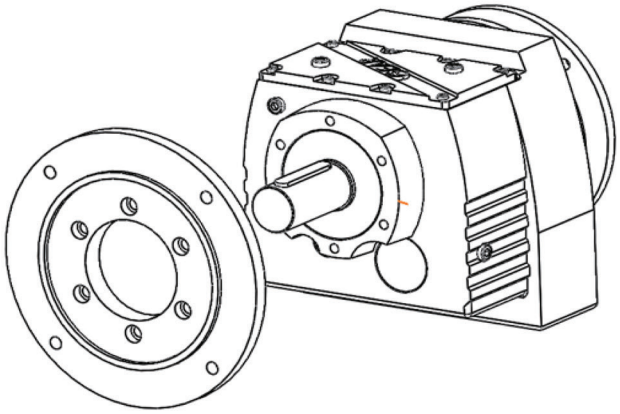
In these cases please contact the Technical Service
• Used to increase speed ;
• Used as a hoist;
• Used in mounting positions not shown in the catalogue;
• Use in environment pressure other than atmospheric pressure;
• Use in places with temperature <-25°C or >+50°C

Technical features

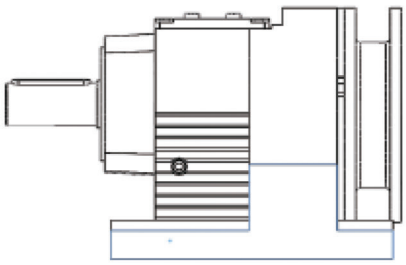
The ITH gearmotors are intended for heavy duty applications.
The robust one pieces casing of the main housing and the modular design of input and output sets increase application fexibility.

The main features of ITH range are:
- Robust cast iron housings;
- High degree of modularity;
- Lubrication with synthetic oil;
- Coupled to motor with input coupling;





Versions



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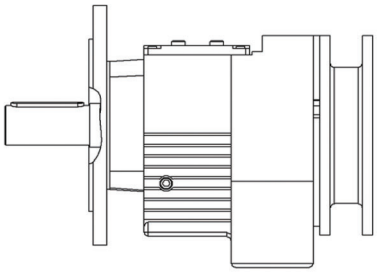
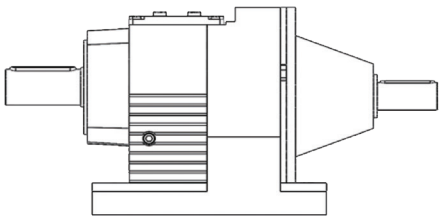


F..

GEARBOX									
ITH	6	2	H	27.58	D90	132	B5	M1	
Type	Size	Stages	Version	Ratio	Output shaft	IEC	Version	Mounting position	Backstop device
ITH 	15 16 17 18	2 3	U F	see tables	see tables	100.. --- 280..	B5 B14	M1 (B3) M2 (V6) M3 (B8) M4 (V5) M5 (B7) M6 (B6)	CW CCW

Classification



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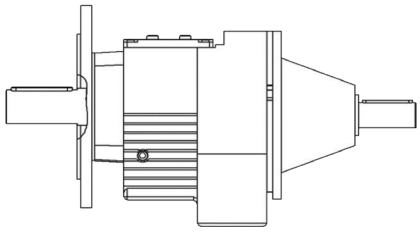

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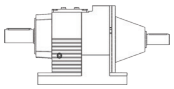
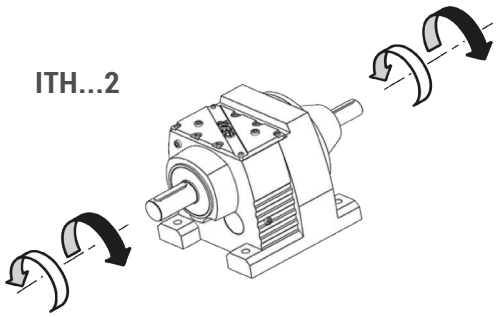
GEARBOX						
ITH	16	2	H	29.49	D90	M1
Type	Size	Stages	Version	Ratio	Output shaft	Mounting position
ITHIS 	15 16 17 18	2 3	U F..	see tables	see tables	M1 (B3) M2 (V6) M3 (B8) M4 (V5) M5 (B7) M6 (B6)

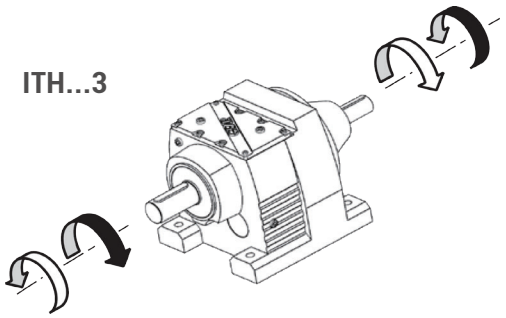
MOTOR					
5.5 kW	4P	3ph	230/400V	50Hz	T1
Power	Poles	Phases	Voltage	Frequency	Terminal box pos.
see tables	2p 4p 6p 8p	1ph 3ph	230/400V 220/380V ... 230V	50Hz 60Hz	T1 T4  T2 T3

Direction of rotation

ITH...2



ITH...3

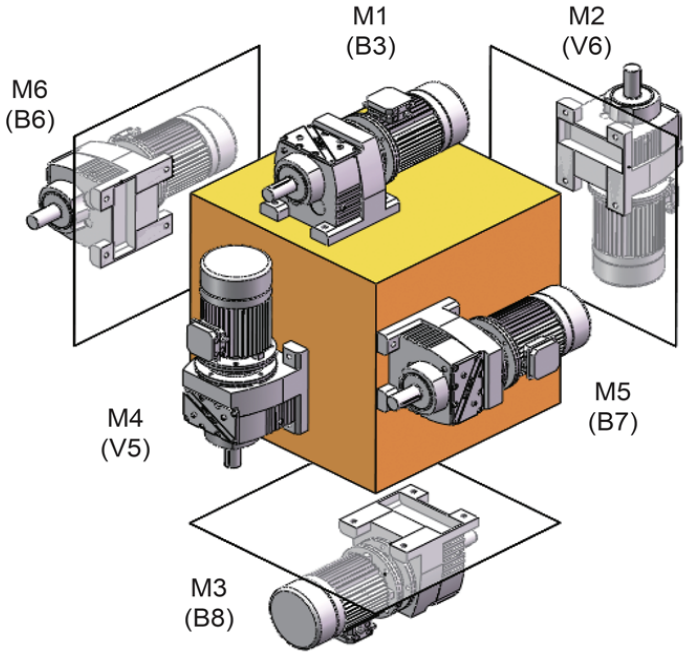


Symbols

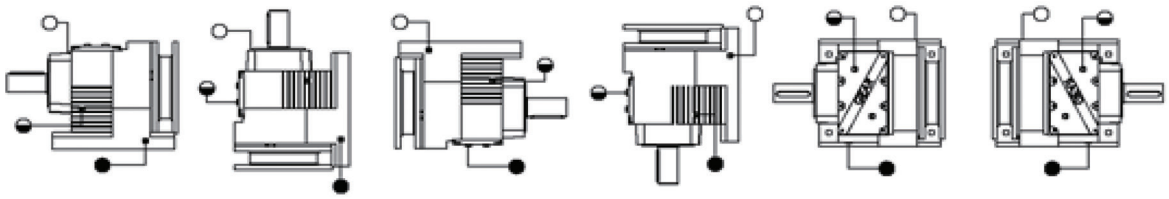
n_1	[min^{-1}]	Input speed
n_2	[min^{-1}]	Output speed
i		Ratio
P_1	[kW]	Input power
M_2	[Nm]	Output torque referred to P_1
Pn_1	[kW]	Nominal in put power
Mn_2	[Nm]	Nominal output torque referred to Pn_1
sf		Service factor
R_1	[N]	Permitted input radial load
A_1	[N]	Permitted input axial load
R_2	[N]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

Lubrication

- ITH series gearmotors come complete with mineral oil.
- The lubricant quantity depends on mounting position.



ITH	Oil quantity *(litres)*					
	M1 (B3)	**M2** (V6)	**M3** (B8)	**M4** (V5)	**M5** (B7)	**M6** (B6)
152 153	6 / 13.7	16.3	16.9	19.2	13.2	15.9
162 163	10 / 25	28	29.5	31.5	25	25
172 173	15.4 / 40	46.5	48	52	39.5	41
182 183	27 / 70	82	78	88	66	69



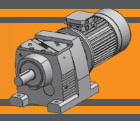
M1 (B3) **M2** (V6) **M3** (B8) **M4** (V5) **M5** (B7) **M6** (B6)

Breather and filling plug
Oil level plug
Oil drain plug

Technical data

P_1 [kw]	n_2 [min^{-1}]	M_2 [Nm]	sf	i		IEC	R_2 [N]
2.2							
100LA4	15	1267	3.19	92.70	ITH153	B5/B14	26280
1400min^{-1}	14	1401	2.88	102.53		B5/B14	26280
	12	1580	2.56	115.63		B5/B14	26280
	11	1745	2.32	127.68		B5/B14	26280
	10	1939	2.09	141.83		B5/B14	26280
	8.8	2169	1.86	158.68		B5/B14	26280
	8.1	2355	1.72	172.34		B5/B14	26280
	6.9	2777	1.46	203.16		B5/B14	26280
	6.1	3143	1.29	229.95		B5/B14	26280
	5.6	3433	1.18	251.15		B5/B14	26280
3							
100LB4	19	1358	3.0	72.88	ITH153	B5/B14	26280
1400min^{-1}	18	1464	2.8	78.57		B5/B14	26280
	15	1728	2.3	92.70		B5/B14	26280
	14	1911	2.1	102.53		B5/B14	26280
	12	2155	1.9	115.63		B5/B14	26280
	11	2380	1.7	127.68		B5/B14	26280
	10	2643	1.5	141.83		B5/B14	26280
	8.8	2957	1.4	158.68		B5/B14	26280
	8.1	3212	1.3	172.34		B5/B14	26280
	6.9	3786	1.1	203.16		B5/B14	26280
	6.1	4286	0.9	229.95		B5/B14	26280
4							
112M4	27	1305	3.10	52.68	ITH153	B5/B14	26280
1400min^{-1}	24	1471	2.75	59.41		B5/B14	26280
	21	1625	2.49	65.60		B5/B14	26280
	19	1805	2.24	72.88		B5/B14	26280
	18	1946	2.08	78.57		B5/B14	26280
	15	2296	1.76	92.70		B5/B14	26280
	14	2539	1.59	102.53		B5/B14	26280
	12	2863	1.41	115.63		B5/B14	26280
	11	3162	1.28	127.68		B5/B14	26280
	10	3512	1.15	141.83		B5/B14	26280
	8.8	3930	1.03	158.68		B5/B14	26280
	8.1	4268	0.95	172.34		B5/B14	26280
5.5							
132S4	35	1365	2.96	40.37	ITH153	B5/B14	26280
1400min^{-1}	29	1611	2.51	47.63		B5/B14	26280
	27	1782	2.27	52.68		B5/B14	26280
	24	2009	2.01	59.41		B5/B14	26280
	21	2219	1.82	65.60		B5/B14	26280
	19	2464	1.64	72.88		B5/B14	26280
	18	2657	1.52	78.57		B5/B14	26280
	15	3135	1.29	92.70		B5/B14	26280
	14	3467	1.17	102.53		B5/B14	26280
	12	3910	1.03	115.63		B5/B14	26280
	11	4318	0.94	127.68		B5/B14	26280
	28	1720	4.37	50.86	ITH163	B5/B14	48060
	24	2001	3.76	59.17		B5/B14	48060
	21	2205	3.41	65.20		B5/B14	48060
	19	2485	3.03	73.49		B5/B14	48060
	17	2736	2.75	80.91		B5/B14	48060
	16	3000	2.51	88.70		B5/B14	48060

P_1 [kw]	n_2 [min^{-1}]	M_2 [Nm]	sf	i		IEC	R_2 [N]
5.5							
132S4	14	3490	2.15	103.20		B5/B14	48060
1400min^{-1}	12	3846	1.96	113.72		B5/B14	48060
	11	4335	1.73	128.18		B5/B14	48060
	10	4772	1.58	141.12	ITH163	B5/B14	48060
	9	5286	1.42	156.31		B5/B14	48060
	8	5898	1.28	174.40		B5/B14	48060
	8	6258	1.20	188.45		B5/B14	48060
	6.4	7439	1.01	219.97		B5/B14	48060
7.5							
132MA4	62	1043	3.88	22.62	ITH152	B5/B14	17280
1400min^{-1}	56	1148	3.52	24.90		B5/B14	18090
	51	1272	3.18	27.58		B5/B14	18090
	47	1360	2.97	29.49	ITH153	B5/B14	20700
	40	1626	2.49	35.26		B5/B14	22050
	35	1862	2.17	40.37		B5/B14	22950
	29	2197	1.84	47.63		B5/B14	23940
	27	2429	1.66	52.68		B5/B14	25200
	24	2740	1.48	59.41		B5/B14	23940
	21	3025	1.34	65.60		B5/B14	25200
	19	3361	1.20	72.88		B5/B14	26280
	18	3623	1.12	78.57		B5/B14	26280
	15	4275	0.95	92.70		B5/B14	26280
	28	2345	3.21	50.86	ITH163	B5/B14	48060
	24	2729	2.76	59.17		B5/B14	48060
	21	3007	2.50	65.20		B5/B14	48060
	19	3389	2.22	73.49		B5/B14	48060
	17	3731	2.02	80.91		B5/B14	48060
	16	4091	1.84	88.70		B5/B14	48060
	14	4759	1.58	103.20		B5/B14	48060
	12	5244	1.43	113.72		B5/B14	48060
	11	5911	1.27	128.18		B5/B14	48060
	10	6508	1.16	141.12		B5/B14	48060
	9	7208	1.04	156.31		B5/B14	48060
	8	8042	0.94	174.40		B5/B14	48060
	8	8534	0.88	188.45		B5/B14	48060
11							
160M4	77	1223	3.30	18.21	IHT152	B5	14740
1400min^{-1}	70	1348	3.00	20.07		B5	15540
	62	1519	2.66	22.62		B5	17280
	56	1673	2.42	24.90		B5	18090
	51	1853	2.18	27.58		B5	18090
	47	1981	2.04	29.49	IHT153	B5	18090
	40	2369	1.71	35.26		B5	20700
	35	2712	1.49	40.37		B5	22050
	29	3200	1.26	47.63		B5	22950
	27	3539	1.14	52.68		B5	23940
	24	3991	1.01	59.41		B5	25200
	21	4407	0.92	65.60		B5	26280
	43	2211	3.40	32.91	IHT163	B5	48060
	37	2529	2.97	37.65		B5	48060
	32	2982	2.52	44.39		B5	48060
	28	3416	2.20	50.86		B5	48060

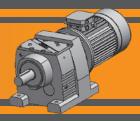


P_1 [kw]	n_2 [min^{-1}]	M_2 [Nm]	sf	i		IEC	R_2 [N]
11							
160M4	24	3975	1.89	59.17	ITH163	B5	48060
1400min^{-1}	21	4380	1.72	65.20		B5	48060
	19	4937	1.52	73.49		B5	48060
	17	5435	1.38	80.91		B5	48060
	16	5959	1.26	88.70		B5	48060
	14	6932	1.08	103.20		B5	48060
	12	7639	0.98	113.72		B5	48060
	11	8610	0.87	128.18		B5	48060
	10	9480	0.79	141.12		B5	48060
	26	3557	3.44	52.95	ITH173	B5	56430
	23	4110	2.97	61.18		B5	56430
	21	4507	2.71	67.09		B5	56430
	19	4850	2.52	72.20		B5	56430
	17	5616	2.18	83.60		B5	56430
	15	6365	1.92	94.75		B5	56430
	13	7354	1.66	109.48		B5	56430
	12	8064	1.52	120.05		B5	56430
	10	9884	1.24	147.14		B5	56430
	9	10983	1.11	163.50		B5	56430
	17	5570	3.04	82.91	ITH183	B5	108000
	15	6260	2.7	93.19		B5	108000
	13	7221	2.34	107.49		B5	108000
	11	8182	2.07	121.81		B5	108000
	10	9403	1.80	139.98		B5	108000
	9	10282	1.65	153.07		B5	108000
	7	12557	1.35	186.93		B5	108000
	6	15307	1.11	227.87		B5	108000
15							
160L4	102	1251	3.23	13.66	ITH152	B5	12960
1400min^{-1}	89	1434	2.82	15.65		B5	14400
	77	1668	2.42	18.21		B5	14740
	70	1838	2.20	20.07		B5	15570
	62	2072	1.95	22.62		B5	17280
	56	2281	1.77	24.90		B5	18090
	51	2526	1.60	27.58		B5	18090
	47	2702	1.50	29.49	ITH153	B5	20700
	40	3230	1.25	35.26		B5	22050
	35	3698	1.09	40.37		B5	22950
	29	4363	0.93	47.63		B5	23940
	50	2549	2.83	27.83	ITH163	B5	48690
	43	3015	2.49	32.91		B5	48060
	37	3449	2.18	37.65		B5	48060
	32	4066	1.85	44.39		B5	48060
	28	4659	1.61	50.86		B5	48060
	24	5420	1.39	59.17		B5	48060
	21	5973	1.26	65.20		B5	48060
	19	6732	1.12	73.49		B5	48060
	17	7411	1.01	80.91		B5	48060
	16	8125	0.93	88.70		B5	48060
	14	9453	0.80	103.20		B5	48060

P_1 [kw]	n_2 [min^{-1}]	M_2 [Nm]	sf	i		IEC	R_2 [N]
15							
160L4	30	4280	2.86	46.72	ITH173	B5	56430
1400min^{-1}	26	4850	2.52	52.95		B5	56430
	23	5604	2.18	61.18		B5	56430
	21	6146	1.99	67.09		B5	56430
	19	6614	1.85	72.20		B5	56430
	17	7658	1.60	83.60		B5	56430
	15	8679	1.41	94.75		B5	56430
	13	10029	1.22	109.48		B5	56430
	12	10996	1.11	120.05		B5	56430
	10	13478	0.91	147.14		B5	56430
	9	14977	0.82	163.50		B5	56430
	21	6156	2.75	67.20	ITH183	B5	108000
	19	6731	2.51	73.48		B5	108000
	17	7595	2.23	82.91		B5	108000
	15	8536	1.98	93.19		B5	108000
	13	9846	1.72	107.49		B5	108000
	11	11158	1.52	121.81		B5	108000
	10	12823	1.32	139.98		B5	108000
	9	14021	1.21	153.07		B5	108000
	7	17123	0.99	186.93		B5	108000
	6	20873	0.81	227.87		B5	108000
18.5							
160L4	210	753	3.71	6.66	ITH152	B5	11520
1400min^{-1}	178	888	3.15	7.86		B5	10170
	163	967	4.18	8.56		B5	10170
	138	1144	3.53	10.13		B5	11160
	121	1309	3.09	11.59		B5	12420
	102	1543	2.62	13.66		B5	12960
	89	1768	2.29	15.65		B5	14400
	77	2057	1.96	18.21			14740
	70	2267	1.78	20.07		B5	15570
	62	2555	1.58	22.62		B5	17280
	56	2813	1.44	24.90		B5	18090
	47	3332	1.21	29.49	ITH153	B5	18090
	40	3984	1.01	35.26		B5	20700
	35	4561	0.89	40.37		B5	22050
	83	1898	3.96	16.80	ITH162	B5	36540
	74	2151	3.50	19.04		B5	39150
	64	2485	3.03	22.00		B5	39150
	58	2725	2.76	24.12		B5	44460
	50	3144	2.30	27.83	ITH163	B5	48690
	47	3340	2.19	29.57		B5	48690
	43	3718	2.02	32.91		B5	48060
	37	4254	1.77	37.65		B5	48060
	32	5015	1.50	44.39		B5	48060
	28	5746	1.31	50.86		B5	48060
	24	6685	1.12	59.17		B5	48060
	21	7366	1.02	65.20		B5	48060
	19	8302	0.91	73.49		B5	48060
	17	9141	0.82	80.91		B5	48060

P_1 [kw]	n_2 [min^{-1}]	M_2 [Nm]	sf	i		IEC	R_2 [N]
18.5							
160L4	35	4559	2.68	40.35	ITH173	B5	56430
1400min^{-1}	30	5278	2.32	46.72		B5	56430
	26	5982	2.04	52.95		B5	56430
	23	6912	1.77	61.18		B5	56430
	21	7580	1.61	67.09		B5	56430
	19	8157	1.50	72.20		B5	56430
	17	9445	1.29	83.60		B5	56430
	15	10704	1.14	94.75		B5	56430
	13	12369	0.99	109.48		B5	56430
	12	13562	0.90	120.05		B5	56430
	24	6606	2.56	58.47	ITH183	B5	108000
	21	7592	2.23	67.20		B5	108000
	19	8301	2.04	73.48		B5	108000
	17	9367	1.81	82.91		B5	108000
	15	10528	1.61	93.19		B5	108000
	13	12144	1.39	107.49		B5	108000
	11	13761	1.23	121.81		B5	108000
	10	15815	1.07	139.98		B5	108000
	9	17293	0.98	153.07		B5	108000
	7	21119	0.80	186.93		B5	108000
22							
180L4	240	782	3.57	5.82	ITH152	B5	11160
1400min^{-1}	210	895	3.12	6.66		B5	11520
	178	1055	2.65	7.86		B5	10170
	163	1151	3.51	8.56		B5	10170
	138	1361	2.97	10.13		B5	11160
	121	1557	2.60	11.59		B5	12420
	102	1835	2.20	13.66		B5	12960
	89	2103	1.92	15.65		B5	14400
	77	2446	1.65	18.21		B5	14740
	70	2696	1.50	20.07		B5	15570
	62	3039	1.33	22.62		B5	17280
	56	3345	1.21	24.90		B5	18090
	47	3962	1.02	29.49	ITH153	B5	18090
	40	4737	0.85	35.26		B5	18090
	109	1724	4.36	12.83	ITH162	B5	32400
	96	1949	3.86	14.51		B5	34650
	83	2257	3.33	16.80		B5	39150
	74	2558	2.94	19.04		B5	39150
	64	2956	2.54	22.00		B5	44460
	58	3241	2.32	24.12	ITH163	B5	48690
	50	3738	1.93	27.83		B5	48690
	47	3972	1.84	29.57		B5	48060
	43	4421	1.70	32.91		B5	48060
	37	5059	1.49	37.65		B5	48060
	32	5964	1.26	44.39		B5	48060
	28	6833	1.10	50.86		B5	48060
	24	7949	0.95	59.17		B5	48060
	21	8760	0.86	65.20		B5	48060

P_1 [kw]	n_2 [min^{-1}]	M_2 [Nm]	sf	i		IEC	R_2 [N]
22							
180L4	47	4030	3.03	30.00	ITH173	B5	56430
1400min^{-1}	39	4795	2.55	35.69		B5	56430
	35	5421	2.25	40.35		B5	56430
	30	6277	1.95	46.72		B5	56430
	26	7114	1.72	52.95		B5	56430
	23	8220	1.49	61.18		B5	56430
	21	9014	1.36	67.09		B5	56430
	19	9700	1.26	72.20		B5	56430
	17	11232	1.09	83.60		B5	56430
	15	12730	0.96	94.75		B5	56430
	13	14709	0.83	109.48		B5	56430
	31	6011	2.81	44.74	ITH183	B5	108000
	27	6933	2.44	51.61		B5	108000
	24	7856	2.15	58.47		B5	108000
	21	9028	1.87	67.20		B5	108000
	19	9872	1.71	73.48		B5	108000
	17	11139	1.52	82.91		B5	108000
	15	12520	1.35	93.19		B5	108000
	13	14441	1.17	107.49		B5	108000
	11	16365	1.03	121.81		B5	108000
	10	18807	0.90	139.98		B5	108000
	9	20565	0.82	153.07		B5	108000
30							
200L4	284	899	3.03	4.92	ITH152	B5	10170
1400min^{-1}	240	1063	2.63	5.82		B5	11160
	210	1217	2.29	6.66		B5	11520
	178	1434	1.95	7.86		B5	10170
	163	1564	2.59	8.56		B5	10170
	138	1849	2.19	10.13		B5	11160
	121	2116	1.91	11.59		B5	12420
	102	2494	1.62	13.66		B5	12960
	89	2858	1.41	15.65		B5	14400
	77	3325	1.22	18.21		B5	14740
	70	3664	1.10	20.07		B5	15570
	219	1165	4.12	6.38	ITH162	B5	33750
	184	1386	3.47	7.59		B5	35100
	161	1591	4.63	8.71		B5	24840
	130	1969	3.82	10.79		B5	27990
	109	2343	3.21	12.83		B5	32400
	96	2649	2.84	14.51		B5	34650
	83	3067	2.45	16.80		B5	36540
	74	3476	2.16	19.04		B5	39150
	64	4017	1.87	22.00		B5	39150
	58	4404	1.71	24.12		B5	44460
	50	5081	1.42	27.83	ITH163	B5	48690
	43	6009	1.25	32.91		B5	48060
	37	6875	1.09	37.65		B5	48060
	32	8105	0.93	44.39		B5	48060
	28	9286	0.81	50.86		B5	48060



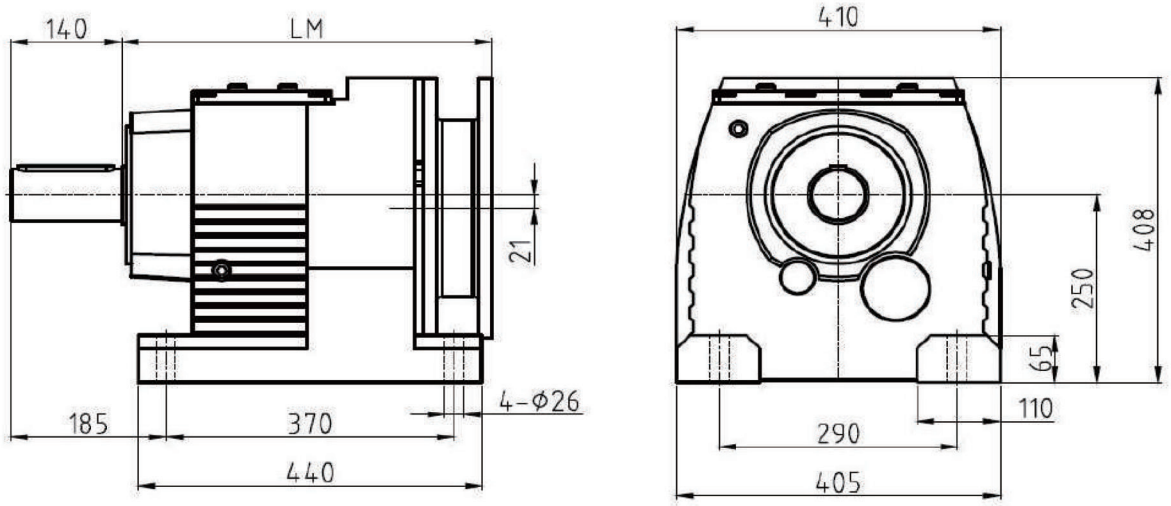
P_1 [kw]	n_2 [min^{-1}]	M_2 [Nm]	sf	i		IEC	R_2 [N]
30							
200L4	89	2859	4.27	15.66	ITH172	B5	60300
1400min^{-1}	77	3299	2.99	18.07		B5	60300
	68	3737	3.02	20.47		B5	58140
	58	4424	2.53	24.23	ITH173	B5	58140
	47	5477	2.23	30.00		B5	56430
	39	6516	1.88	35.69		B5	56430
	35	7367	1.66	40.35		B5	56430
	30	8530	1.43	46.72		B5	56430
	26	9668	1.26	52.95		B5	56430
	23	11170	1.09	61.18		B5	56430
	21	12249	1.00	67.09		B5	56430
	19	13182	0.93	72.20		B5	56430
	17	15264	0.80	83.60		B5	56430
	59	4314	3.92	23.63	ITH183	B5	108000
	50	5090	3.32	27.88		B5	108000
	41	6264	2.70	34.31		B5	108000
	35	7267	2.33	39.80		B5	108000
	31	8169	2.07	44.74		B5	108000
	27	9422	1.80	51.61		B5	108000
	24	10676	1.58	58.47		B5	108000
	21	12270	1.38	67.20		B5	108000
	19	13416	1.26	73.48		B5	108000
	17	15138	1.12	82.91		B5	108000
	15	17015	0.99	93.19		B5	108000
	13	19626	0.86	107.49		B5	108000
37							
225S4	284	1105	2.47	4.92	ITH152	B5	10170
1400min^{-1}	240	1307	2.14	5.82		B5	11160
	210	1495	1.87	6.66		B5	11520
	178	1763	1.58	7.86		B5	10170
	163	1922	2.10	8.56		B5	10170
	138	2273	1.78	10.13		B5	11160
	121	2601	1.55	11.59		B5	12420
	102	3066	1.32	13.66		B5	12960
	89	3513	1.15	15.65		B5	14400
	77	4087	0.99	18.21		B5	14740
	70	4503	0.90	20.07		B5	15570
	272	1156	3.74	5.15	ITH162	B5	31050
	219	1432	3.35	6.38		B5	33750
	184	1704	2.82	7.59		B5	35100
	161	1955	3.77	8.71		B5	24840
	130	2420	3.11	10.79		B5	27990
	109	2880	2.61	12.83		B5	32400
	96	3256	2.31	14.51		B5	34650
	83	3770	1.99	16.80		B5	36540
	74	4273	1.76	19.04		B5	39150
	64	4937	1.52	22.00		B5	39150
	58	5414	1.39	24.12		B5	44460
	50	6245	1.16	27.83	ITH163	B5	48690
	43	7386	1.02	32.91		B5	48060
	37	8450	0.89	37.65		B5	48060

P_1 [kw]	n_2 [min^{-1}]	M_2 [Nm]	sf	i		IEC	R_2 [N]
37							
225S4	101	3126	3.79	13.93	ITH172	B5	57060
1400min^{-1}	89	3514	3.48	15.66		B5	60300
	77	4055	2.43	18.07		B5	60300
	68	4594	2.46	20.47		B5	58140
	58	5438	2.06	24.23	ITH173	B5	58140
	47	6733	1.82	30.00		B5	56430
	39	8010	1.53	35.69		B5	56430
	35	9056	1.35	40.35		B5	56430
	30	10485	1.17	46.72		B5	56430
	26	11883	1.03	52.95		B5	56430
	23	13730	0.89	61.18		B5	56430
	21	15057	0.81	67.09		B5	56430
	82	3811	3.70	16.98	ITH182	B5	98010
	74	4220	3.56	18.80		B5	100260
	64	4903	2.49	21.85		B5	108000
	57	5513	2.39	24.57	ITH183	B5	108000
	50	6257	2.70	27.88		B5	108000
	46	6892	1.36	30.71		B5	108000
	41	7700	2.20	34.31		B5	108000
	35	8932	1.89	39.80		B5	108000
	31	10041	1.69	44.74		B5	108000
	27	11581	1.46	51.61		B5	108000
	24	13123	1.29	58.47		B5	108000
	21	15081	1.12	67.20		B5	108000
	19	16491	1.03	73.48		B5	108000
	17	18608	0.91	82.91		B5	108000
	15	20914	0.81	93.19		B5	108000
45							
225M4	284	1358	3.01	4.92	ITH152	B5	10170
1400min^{-1}	240	1607	1.74	5.82		B5	11160
	210	1838	1.52	6.66		B5	11520
	178	2167	1.29	7.86		B5	10170
	163	2362	1.71	8.56		B5	10170
	138	2794	1.45	10.13		B5	11160
	121	3196	1.26	11.59		B5	12420
	102	3769	1.07	13.66		B5	12960
	89	4317	0.94	15.65		B5	14400
	272	1406	3.07	5.15	ITH162	B5	31050
	219	1741	2.76	6.38		B5	33750
	184	2072	2.32	7.59		B5	35100
	161	2378	3.10	8.71		B5	24840
	130	2944	2.55	10.79		B5	27990
	109	3503	2.15	12.83		B5	32400
	96	3960	1.90	14.51		B5	34650
	83	4586	1.64	16.80		B5	36540
	74	5197	1.45	19.04		B5	39150
	64	6005	1.25	22.00		B5	39150
	58	6584	1.14	24.12		B5	44460
	50	7595	0.95	27.83	ITH163	B5	48690
	43	8983	0.84	32.91		B5	48060

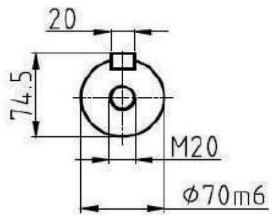
Dimensions

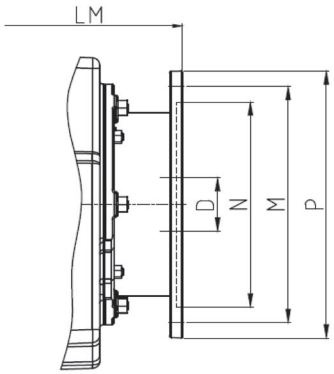
ITH 152 - ITH 153

ITH152U
ITH153U



Output shaft

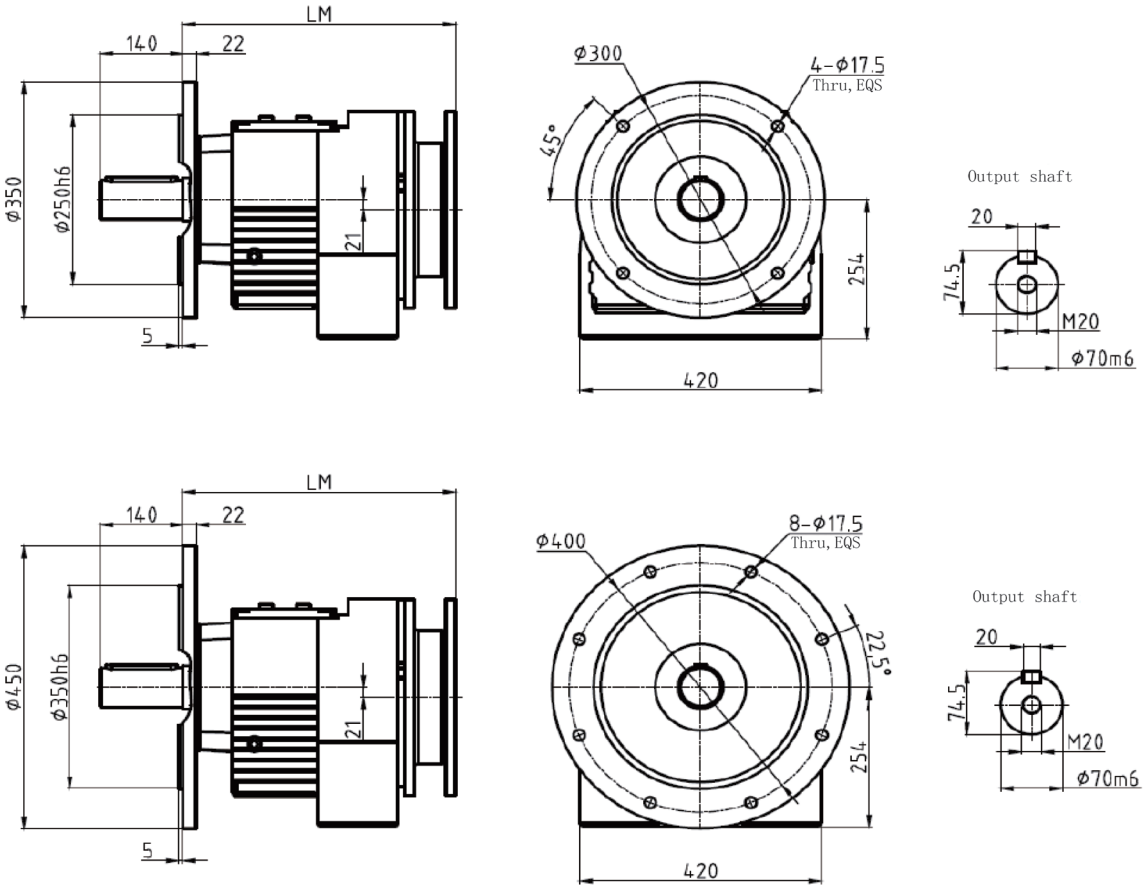




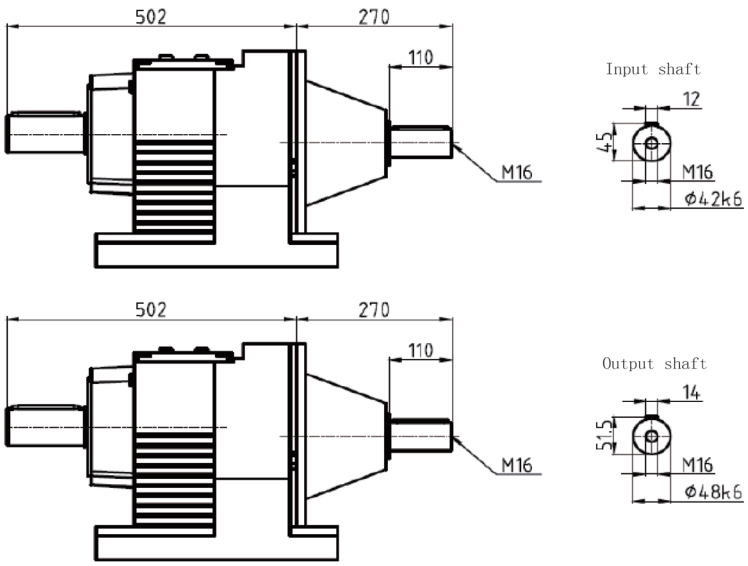
IEC Dimensions								
	100 B5/112 B5	100 B14/112B 14	132 B5	132 B14	160 B5	180 B5	200 B5	225 B5
LM	417	417	438		474		492	513
N	180	110	230	130	250		300	350
M	215	130	265	165	300		350	400
P	250	160	300	200	350		400	450
D	28		38		42	48	55	60

ITH 152 - ITH 153

ITH152F...
ITH153F...

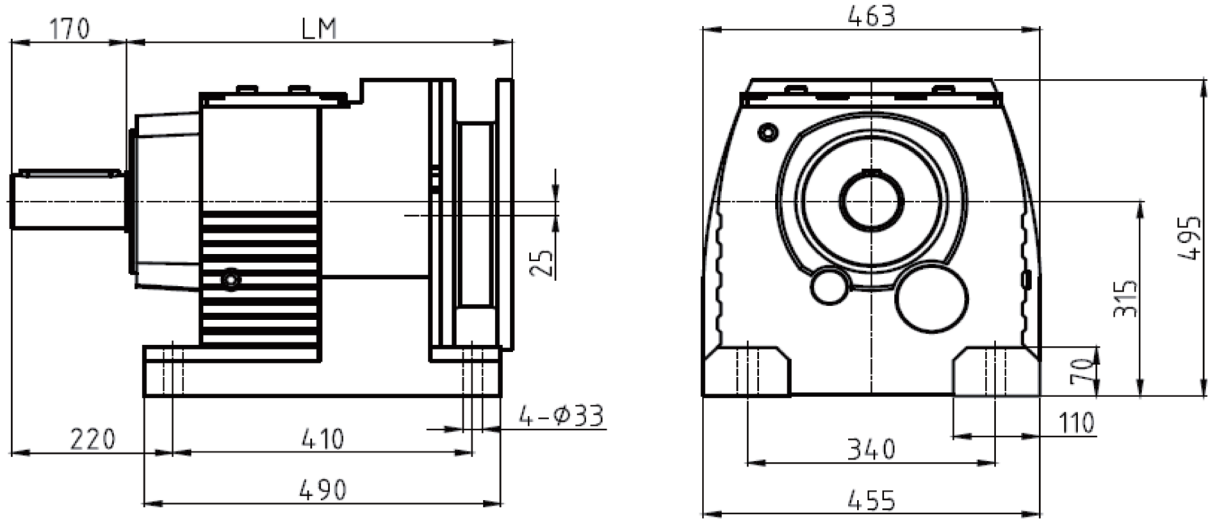


ITHIS152...
ITHIS153...

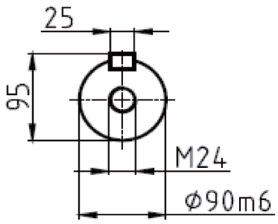


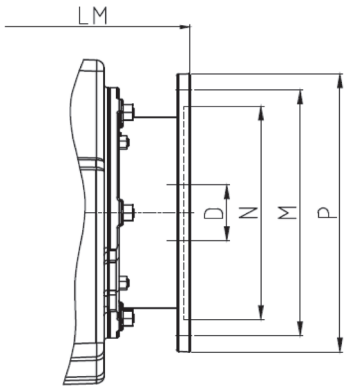
ITH 162 - ITH 163

ITH162U
ITH163U



Output shaft

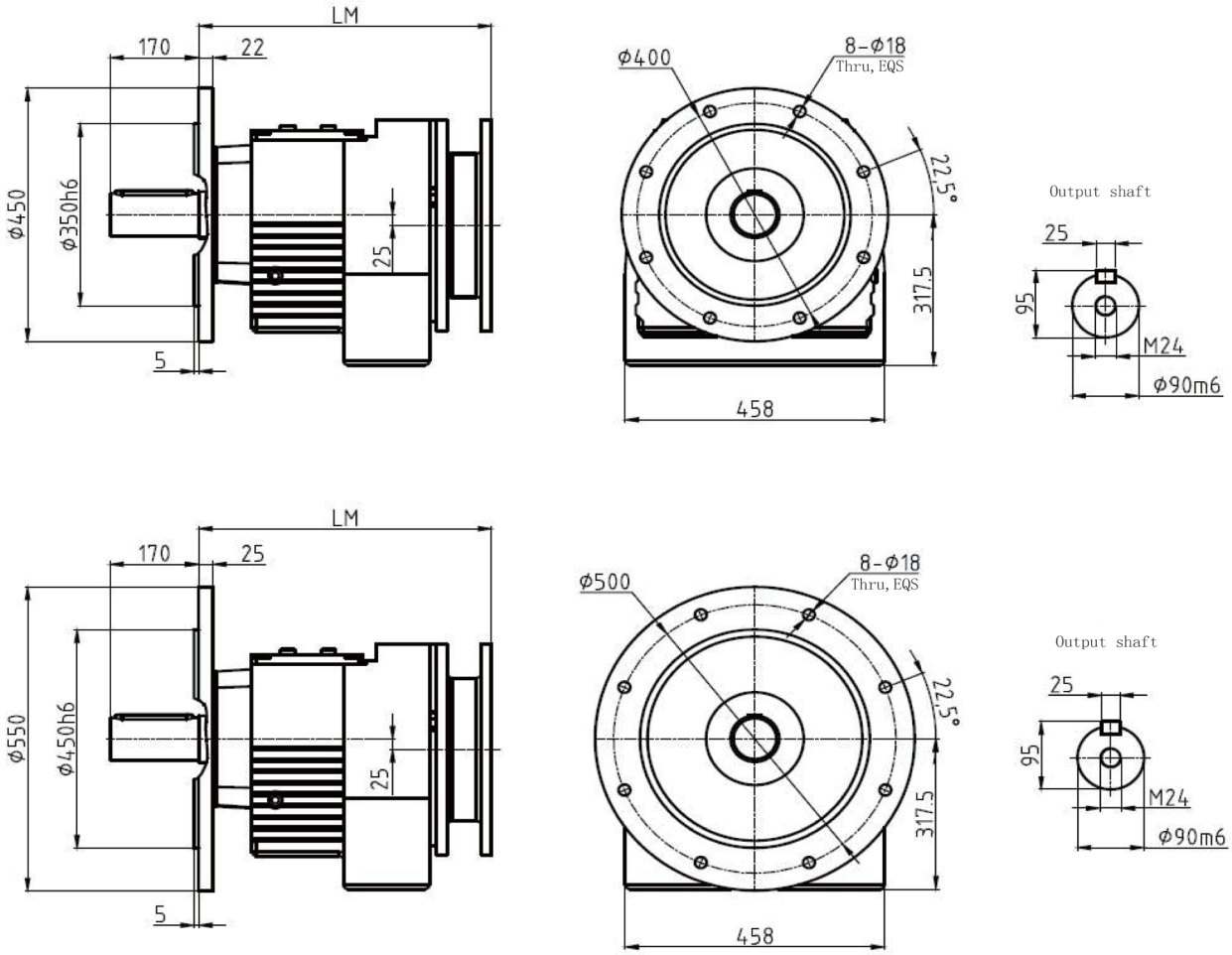




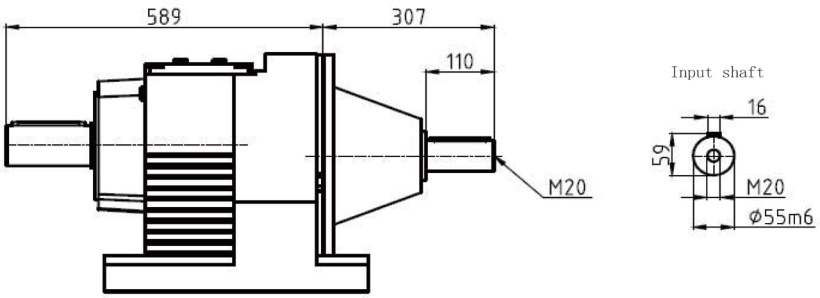
IEC Dimensions							
	132 B5	132 B14	160 B5	180 B5	200 B5	225 B5	250 B5
LM	503		531		549	570	574
N	493	130	250		300	350	450
M	265	165	300		350	400	500
P	300	200	350		400	450	550
D	38		42	48	55	60	65

ITH 162 - ITH 163

ITH162F...
ITH163F...

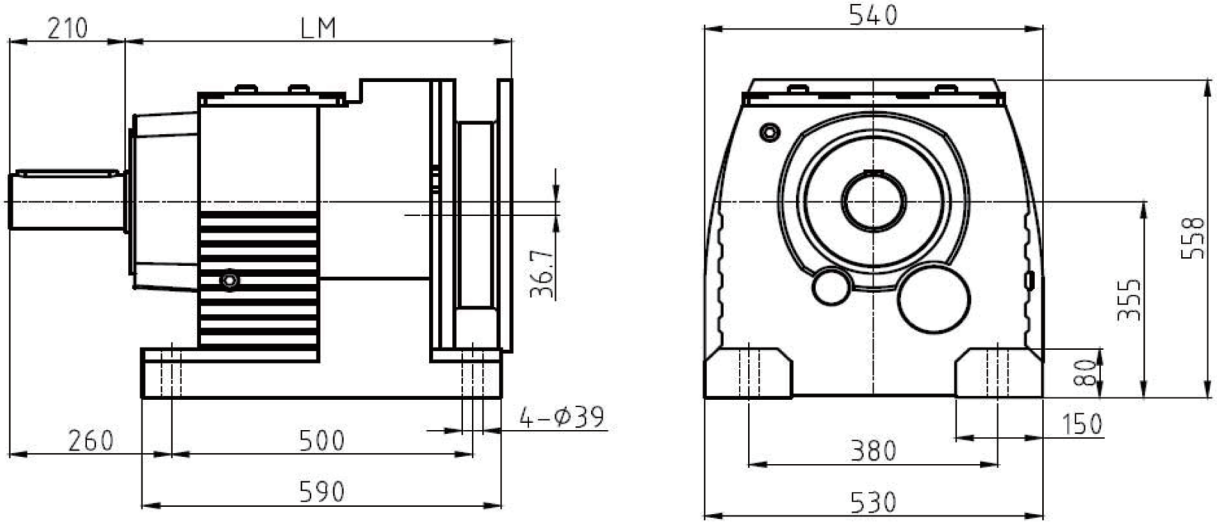


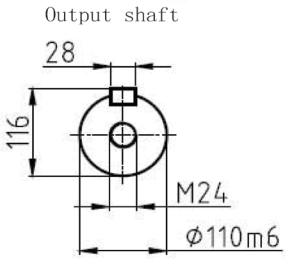
ITHIS162...
ITHIS163...

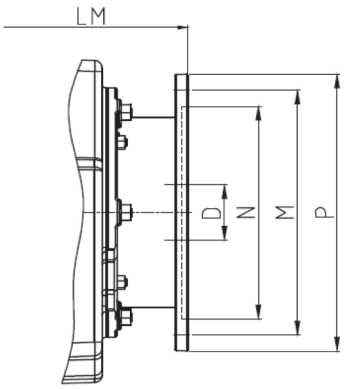


ITH 172 - ITH 173

ITH172U
ITH173U



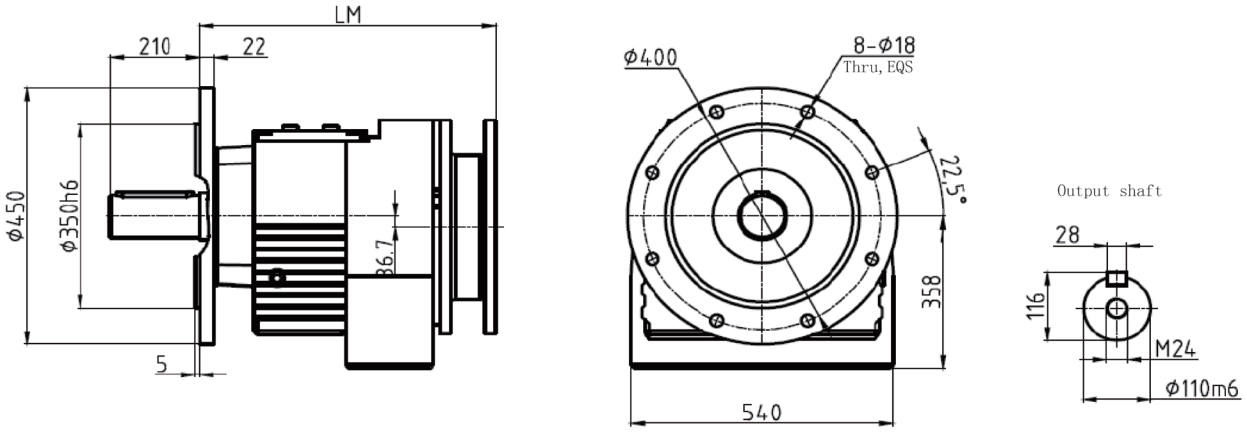


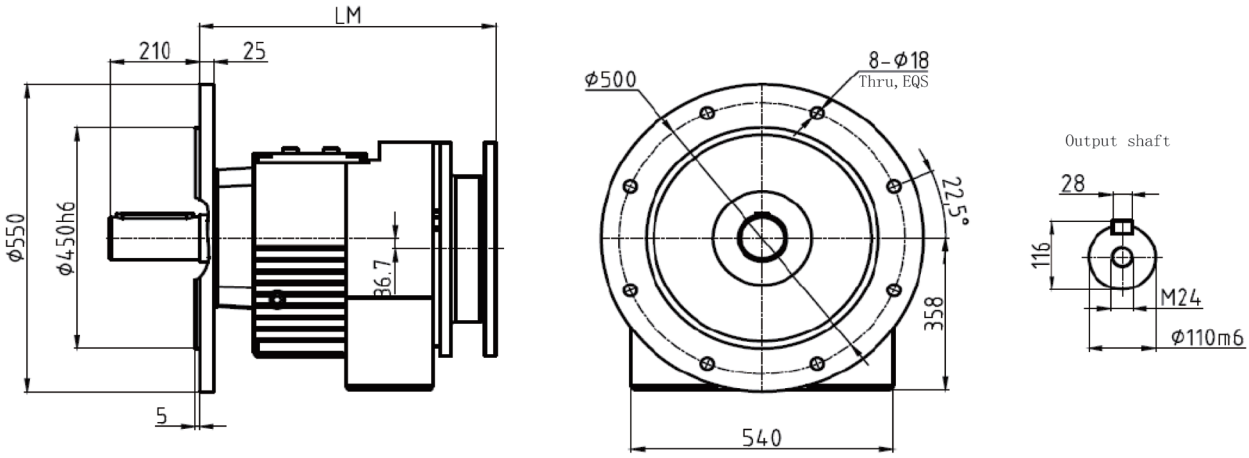


IEC Dimensions						
	160 B5	180 B5	200 B5	225 B5	250 B5	280 B5
LM	597		615	620	624	624
N	250		300	350	450	
M	300		350	400	500	
P	350		400	450	550	
D	42	48	55	60	65	75

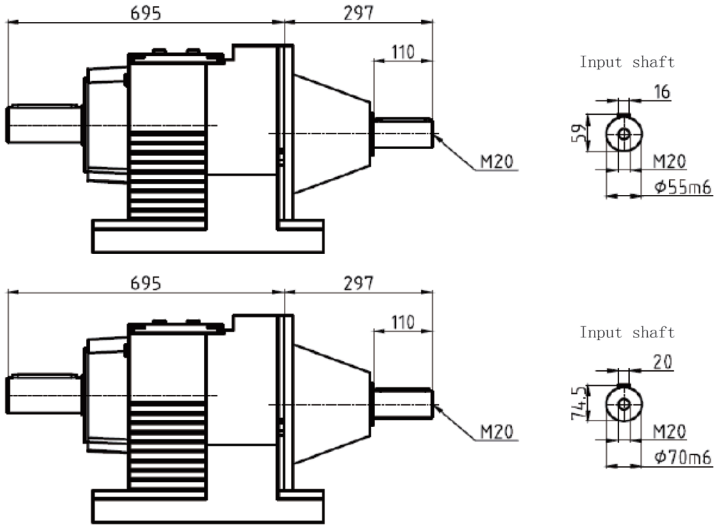
ITH 172 - ITH 173

ITH172F...
ITH173F...



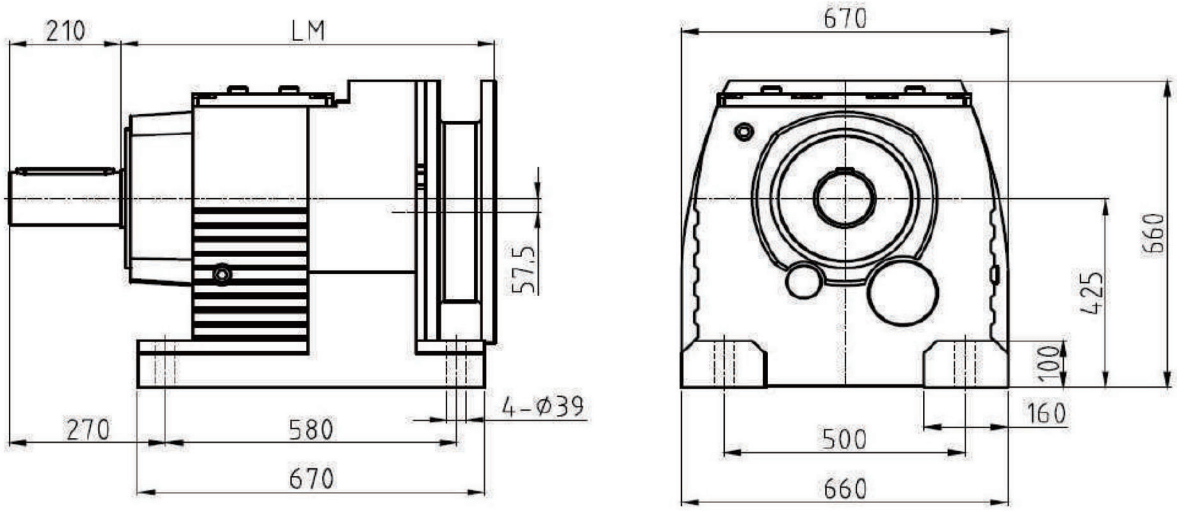


ITHIS172...
ITHIS173...

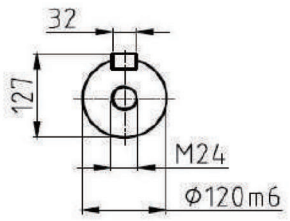


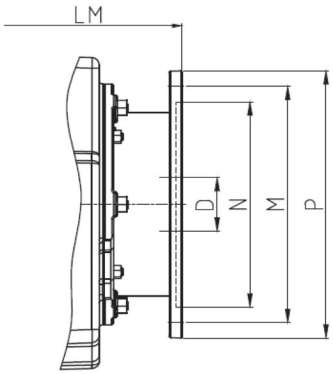
ITH 182 - ITH 183

ITH182U
ITH183U



Output shaft

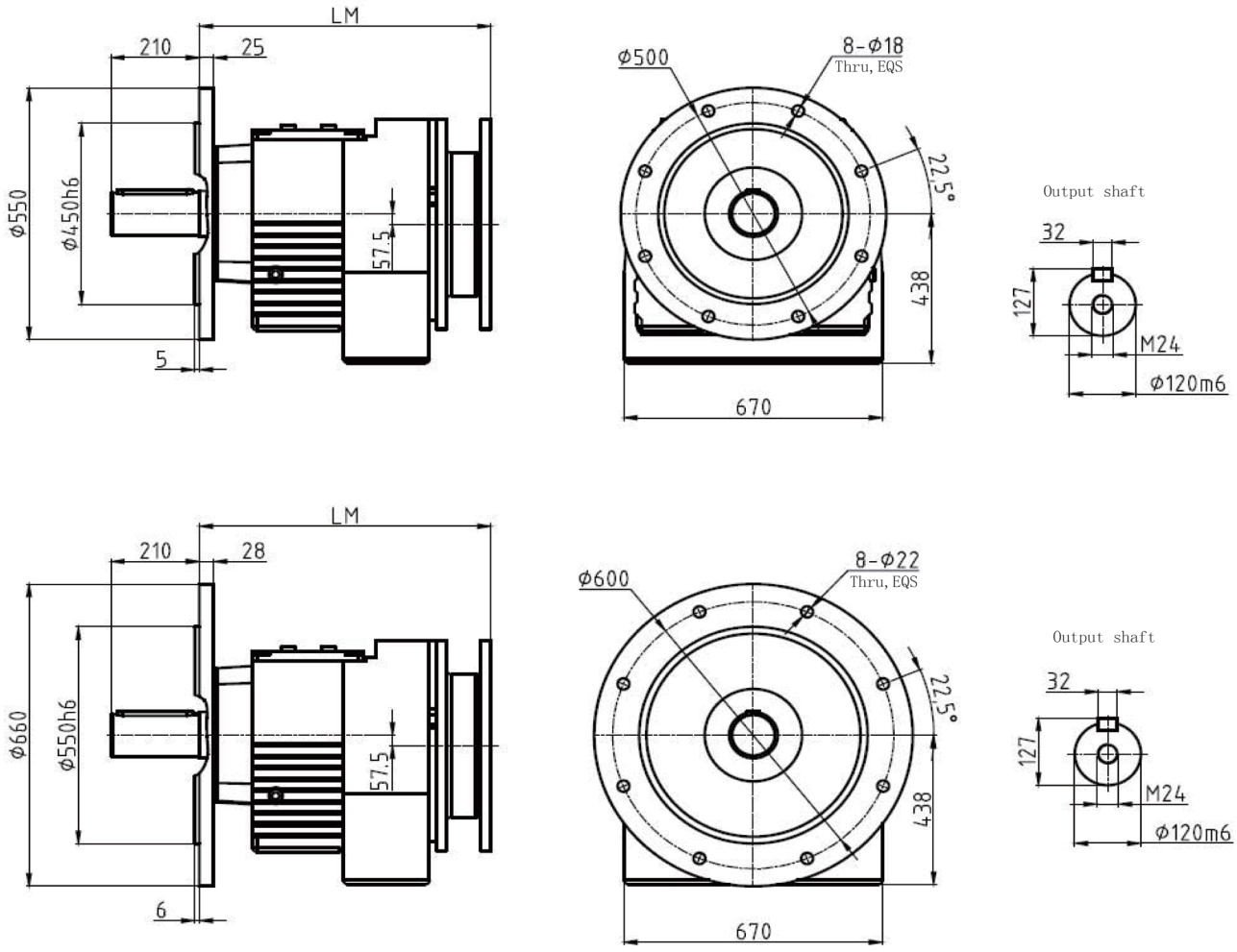




IEC Dimensions							
	160 B5	180 B5	200 B5	225 B5	250 B5	280 B5	315 B5
LM	681		691	696	700	700	750
N	250		300	350	450		550
M	300		350	400	500		600
P	350		400	450	550		660
D	42	48	55	60	65	75	80

ITH 182 - ITH 183

ITH182F...
ITH183F...



ITHIS182...
ITHIS183...