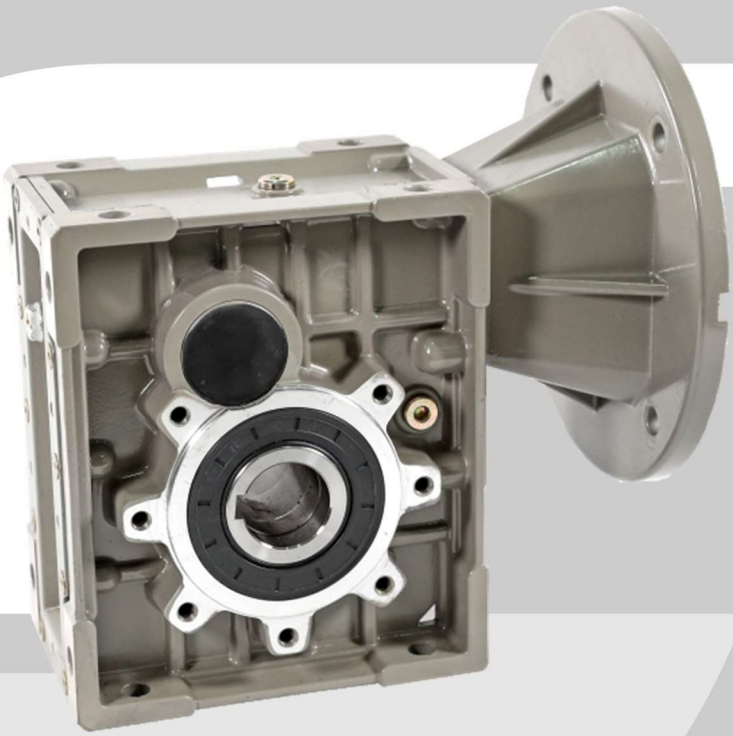
MORGENSEN
DRIVE WITH YOU



USER MANUAL

MSWH

PRODUCT PICTURE

MSWH50B~90B

MSWH50C~90C

SUMMARIZE

Products characteristics

- High quality Aluminum alloy, appearance elegant.
- Good heat dissipation capacity, high carrying ability.
- Installed in multi-surfaces,hollow output shaft, various input and output type, connect with other transmission machinery easily.
- Small size, compact structure, light weight and output type, conjoin other transmission machinery easily.
- Run steadily and low nosie.
- High reliability and high effiliency.

Technical method of main parts

- Die-casting Housing, 3D design with analysis,aluminum alloy die-casting could make sure processing precision, as well as strongness and rigidity of housing ;
- Helical Gear :20CrMnTi,carbonize & quencher heat treatment, precision level of gear grinding could reach above 6 grade, correction of gear shape and tooth curve, which could enhance the bearing capacity and stability of mesh.

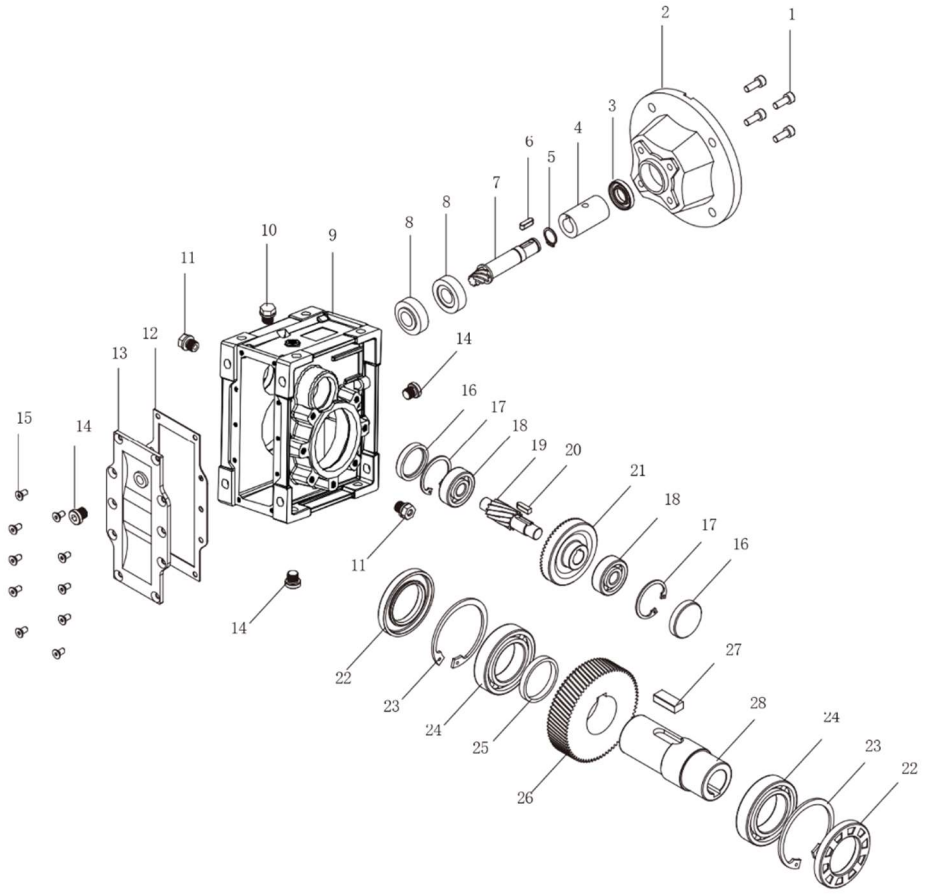
Surface painting

Aluminum alloy housing:

- Shot blasting on the surface, after die-casting of housing.
- Make plastic spray coating after passivation treatment on housing, which looks good and enhance corrision resistance.

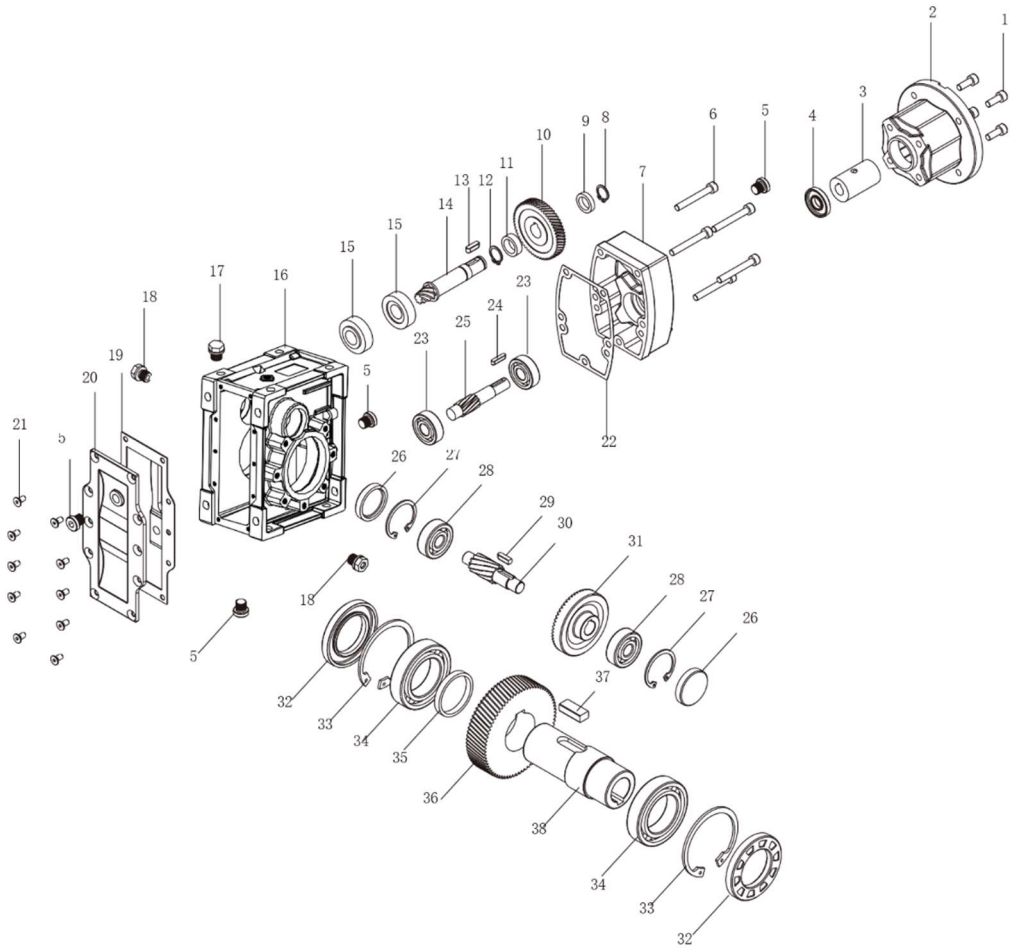
Basic structure

MSWH...B / MSWH...B Basic structure



1 Inner hex screw	11 Oil plug	21 gear
2 Intput flange	12 Rubber gasket	22 Oil seal
3 Oil seal	13 Cover	23 Hole-circlip
4 Intput adaptor	14 Oil drain plug	24 Bearing
5 Shaft-circlip	15 Hexagon sunk screw	25 Distance collar
6 Key	16 Seal cover	26 gear
7 Gear shaft	17 Hole-circlip	27 Key
8 Bearing	18 Bearing	28 Hollow shaft
9 Housing	19 Gear shaft	
10 Breather	20 Key	

MSWH...C / MSWH...C Basic structure



1 Inner hex screw	14 Gear shaft	27 Hole-circlip
2 Intput flange	15 Bearing	28 Bearing
3 Intput adaptor	16 Housing	29 Key
4 Oil seal	17 Breather	30 Gear shaft
5 Oil drain plug	18 Oil level plug	31 gear
6 Inner hex screw	19 Rubber gasket	32 Oil seal
7 Intput flange holder	20 Cover	33 Hole-circlip
8 Shaft-circlip	21 Hexagon sunk screw	34 Bearing
9 Distance collar	22 Housing gasket	35 Distance collar
10 gear	23 Bearing	36 gear
11 Distance collar	24 Key	37 Key
12 Shaft-circlip	25 Gear shaft	38 Hollow shaft
13 Key	26 Seal cover	

Model designation

MSWHS 50B - 12.5 - Y0.25-4 or 71B5- DZ1 -B3-1

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

No	Comments
1	1. MSWH:With input flange 2. MSWHS:With input shaft
2	Specification code of gear units 50 63 75 90
3	1.B:Means 2 stages 2.C:Means 3 stages
4	Reducer Ratio: i=12.5
5	1. With input flange and electric motor: Y0.25-4 2. With input flange,without electric motor:71B5
6	1. With output shaft:DZ1, DZ2, SZ 2. With output flange:FA1, FA2 3. With torque arm:TA1, TA2 （see page 7）
7	Installation position code （see page 8）
8	Position of motor terminal box （see page 8）

when ordering, you should show whether the reducers are equipped with motors, otherwise reducers aren't supplied with motors.

EXAMPLE: MSWH63B - 40 - Y0254- DZ1- B3 -1

MSWH
Modle MSWH

63
Specification code of gear units 63

2 stages transmission

i=40
Ratio of reducer i=40

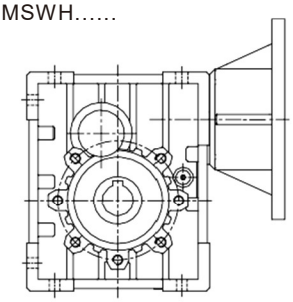
025KW,4
With 0.25KW electric motor

DZ1
With output shaft DZ1

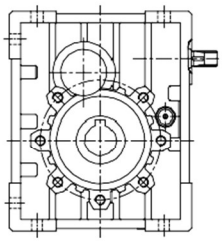
B3
Installation position B3

1 Poition of motor terminal box 1

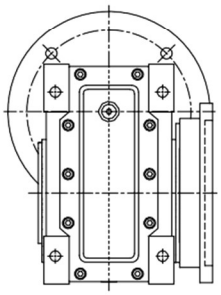
MSWH.....



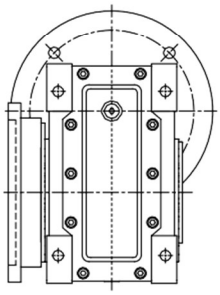
MSWHS.....



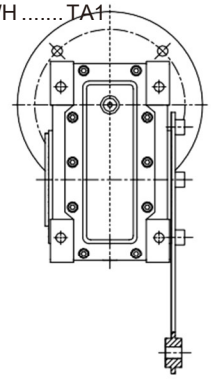
MSWH FA1



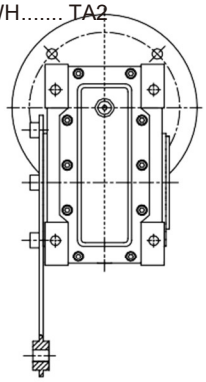
MSWH FA2



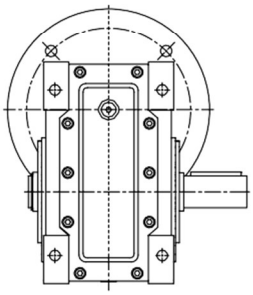
MSWH TA1



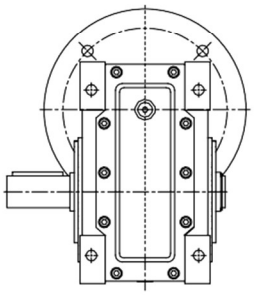
MSWH..... TA2



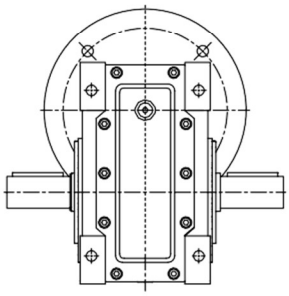
MSWH.....DZ1



MSWH DZ2

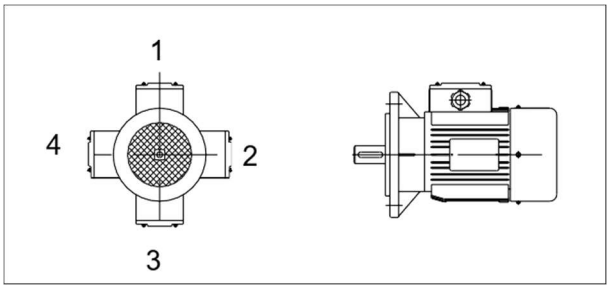


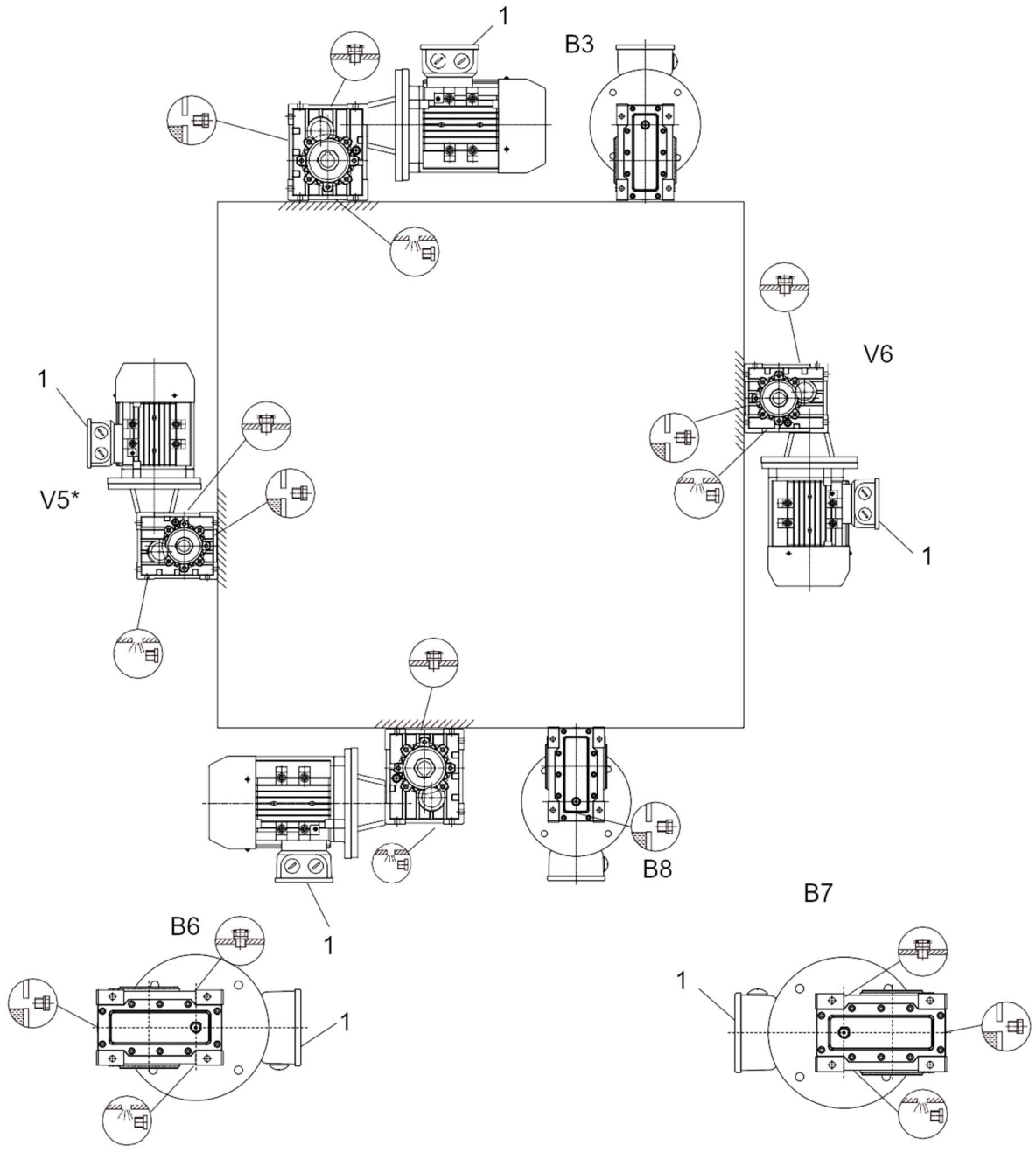
MSWH.....SZ



Symbol	Meaning
	Breather
	Oil mirror
	Oil drain plug

Position of terminal box





∗: It means the lubricant can’ t be added only according to the oil level of mirror, but also higher than it, the fill quantity as shown in the table.

RELEVANT PARAMETER

Power P

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

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

P_1	Input power
P_2	Output power
P_{1n}	Rated power of motor
η	Transmission efficiency

The efficiency of MSWH gear units varies with the number of gear stages, between 92 % (2-stage), 90%(3- stage).

Rotation speed n

n_1	Input speed of reducer
n_2	Output speed of reducer

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

Transmission ratio i

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

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

Torque M

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

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

M_2	**Output torque**
M_{2MAX}	Max. permissible output torque [Nm]
P_1	Input power
η	Transmission efficiency
f_S	Service factor

Service factor

We must take service factor into consideration when we use reducer .
f_S service factor is determined according to the daily operating and the starting frequency Z.
f_B torque.
service factor is determined gear unit output
Pleas requirement when choosp:

Three load classifications are considered depending on the inertia coefficient. 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.

Load classifications

A Uniform shock load, permitted mass acceleration factor fa≤0. 2

B Moderate shock load, permitted mass acceleration

C Heavy shock load, permitted mass acceleration

Load classifications:

A Screw feeders, fans, assembly lines, conveyor belts, small mixers, lifts, cleaning machines, fillers, control machines.

B Winding devices, woodworking machine feeders, goods lifts, balancers, threading machines, medium mixers, conveyor belts for heavy materials, winches, sliding doors, fertilizer scrapers, packing machines, concrete mixers, crane mechanisms, milling cutters, folding machines, gear pumps.

C Mixers for heavy materials, shears, presses, centrifuges, rotating supports, winches and lifts for heavy materials, grinding lathes, stone mills, bucket elevators, drilling machines, hammer mills, cam presses, folding machines, turntables, tumbling barrels, vibrators, shredders

Interial coefficient

The interial coefficient is calculated as follows

$f_a = \frac{J_c}{J_m} f_a$ Coefficient of inertia

J_C All external moments of inertia(kgm^2) J_m Moment of inertia of the motor (kgm^2)

If coefficient of inertia $f_a >$ 10, please call our

To keep the lifetime of reducer, the use factor f_B selected from the catalogue must be equal or slightly

Example:

Inertial coefficient of 2.5(load classification),14 hours/day operating time (read off at 16 h/d) and 200

stop/hour result in a service factor f_s = 1.48. According to the parameter sheet, we choose the service factor

$f_B \geqslant 1.48$

Radial loads and axial forces

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	Additional transmission factor f_Z	Comments
Gears	1.15	< 17 teeth
Chain sprockets	1.40	< 13 teeth
	1.25	< 20 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 radial loads exerted on the motor or gear shaft is then calculated as follows:

$F_r = \frac{M*2000*f_z}{d_o}$] [N]

F_r Resulting radial load [N] M Torque on the shaft [Nm]

d_o Mean diameter of transmission element mounted on shaft [mm]

f_z Additional transmission factor

The basis for determining the permitted radial loads is based on the rated service life L_{10h} of the bearings (according to ISO281).Function point is placed in the middle of exposed part of output shaft. The permitted radial loads given in the selection tables must be calculated using the following formula in the event of force application not in the center of the shaft end. The smaller of the two calues F_{XL}(according to bearing service life) according to bearing service life:

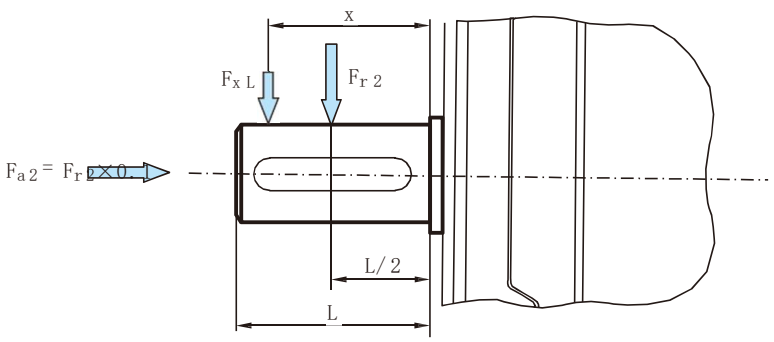
$$F_{XL} = F_{r2} * \frac{a}{b-x}[\mathrm{N}]$$

F_{r2}: Permitted radial load(x=L/2) according to he selection tables in [N]

x: Distance from the shaft shoulder to the force application point$F$

a, b: Constant conversion of radial load [mm]

F_{r2} / radial loads of output shaft F_{r2}



F_{a2} = Output axial loads

MSWH Constants conversion of radial load of MSWH reduer:

	MSWH50B	MSWH50C	MSWH63B	MSWH63C	MSWH75B	MSWH75C	MSWH90B	MSWH90C
a	105.5	105.5	120	120	133	133	163	163
b	80.5	80.5	95	95	103	103	123	123

Remark:This reducer is not suitable to connect with gear,pulley and so on,which have big radial force as input.If it has special requests,please contact our technical department.

Selection tables comments

Combination with the motor in the header row is possible

Combination with the motor in the header row is not possible

	Combination with the motor in the header row is possible
	Combination with the motor in the header
*	It means ratio is divisible
P_{1n}	Rated power of motor [kW]
P_{1MAX}	Max. motor power [kW]
n_2	Output speed [r/min]
M_2	Output torque [Nm]
M_{2MAX}	Max. allowed output torque [Nm]
F_{r2}	Radial load of output shaft [N]
i	Nominal ratio of reducer
i_a	Actual ratio of reducer

SELECTION EXAMPLE

Gear motor

Example: Required power 0.66kW on driven machine, work for 16 h/day, moderate shock load, start up frequency

50(1/h), n_2=28r/min, B3 mounted, So:

Check the service factor table,choose f_s=1.4

$$l = \frac{n_1}{n_2} = \frac{1400}{28} = 50$$

$$P_{1n} \geq P_1 = \frac{P_2}{\eta} = \frac{0{,}66}{0{,}92} = 0{,}72[\mathrm{kW}]$$

$$f_B \geq f_s$$

MSWH75B - 48.18 - Y0.75-4 - B3

$f_B = 1.5 \geqslant f_S = 1.4$

Must meet requirement when $f_B \geqslant f_s$

Gear units

Example: Required torque is 260Nm on driven machine, work 16 h/day, uniform load, start up frequency 200(1/h), FA1 mounted, n_1=1400 r/min, n_2=12 r/min, please choose suitable reducer:

Check the service factor table, choose f_s=1.47

ratio: $i = \frac{n_1}{n_2} = \frac{1400}{12} = 125$ (the only selection 3 stage)

1 MAX torque: $M_{2MA} \geq M_2 * f_S = 2600 * 1.47 = 382[\mathrm{Nm}]$

3 power of motor: $P_{1n} \geq P_1 = \frac{M_2 * n_1}{9550 * \eta * i} = \frac{260 * 1400}{9550 * 0{,}90 * 125} = 0{,}34$ [kW]

4 $f_B \geqslant f_S$

MSWHS90C-125.95-FA1 Shaft input reducer

$f_B = 1.7 \geqslant f_S = 1.47$

$f_B \geqslant f_S$

Must meet requirement when $f_B \geqslant f_s$

Advice to take 0.37KW,1400r/min motor as drive,we use coupling to connect reducer and motor.

GEAR UNIT SELECTION TABLES

Possible geometrical combinations

MSWH 50.. n_1=1400 r/min

130Nm

Gear units	i Nominal	i Actual	n_2 [r/min]	M_{2MAX} [Nm]	F_{r2} [N]	63B5	71B5 71B14	80B5 80B14	90B5 90B14
3 Stage									
MSWH50C	300	291.79	4.8	130	4100				
MSWH50C	250	244.29	5.7	130	4100				
MSWH50C	200	200.44	7.0	130	4100				
MSWH50C	150	146.67	9.5	130	4000				
MSWH50C	125	120.34	11.6	100	3770				
MSWH50C	100	101.04	13.9	80	3560				
MSWH50C	75	74.62	18.8	130	3220				
MSWH50C	60	62.36	22	100	3030				
MSWH50C	50	52.36	27	110	2860				
					2 Stage				
MSWH50B	60	58.36	24	130	2960				
MSWH50B	50	48.86	29	130	2790				
MSWH50B	40	40.09	35	130	2610				
MSWH50B	30	29.33	48	130	2350				
MSWH50B	25	24.07	59	130	2200				
MSWH50B	20	20.21	70	100	2080				
MSWH50B	15	14.92	94	80	1880				
MSWH50B	12.5	12.47	113	130	1770				
MSWH50B	10	10.47	134	100	1670				
MSWH50B	7.5	7.73	182	80	1510				

MSWH 63.. n_1=1400 r/min

200Nm

Gear units	i Nominal	i Actual	n_2 [r/min]	M_{2MAX} [Nm]	F_{r2} [N]	63B5	71B5 71B14	80B5 80B14	90B5 90B14
					3 Stage				
MSWH63C	300	304.46	4.7	200	4800				
MSWH63C	250	242.26	5.8	200	4800				
MSWH63C	200	196.43	7.2	180	4800				
MSWH63C	150	150.74	9.3	200	4650				
MSWH63C	125	122.22	12	180	4330				
MSWH63C	100	101.27	14	150	4070				
MSWH63C	75	73.33	20	110	3650				
MSWH63C	60	63.33	23	180	3480				
MSWH63C	50	52.48	27	150	3270				
					2 Stage				
MSWH63B	60	60.89	24	200	3430				
MSWH63B	50	48.45	29	200	3190				
MSWH63B	40	39.29	36	180	2970				
MSWH63B	30	30.15	47	200	2720				
MSWH63B	25	24.44	58	180	2530				
MSWH63B	20	20.25	70	150	2380				
MSWH63B	15	14.67	96	110	2130				
MSWH63B	12.5	12.67	111	180	2030				
MSWH63B	10	10.50	134	150	1910				
MSWH63B	7.5	7.60	185	110	1710				

MSWH 75..

n_1 =1400 r/min

350Nm

Gear units	i Nominal	i Actual	n_2 [r/min]	M_{2MAX} [Nm]	F_{r2} [N]	63B5	71B5	80B5 80B14	90B5 90B14	100B5 100B14	112B5 112B14
Stage											
MSWH75C	300	295.18	4.8	350	6500						
MSWH75C	250	240.89	5.9	350	6500						
MSWH75C	200	200.66	7.0	300	6500						
MSWH75C	150	149.29	9.3	350	6500						
MSWH75C	125	121.02	12	300	5980						
MSWH75C	100	100.81	15	240	5520						
MSWH75C	75	79.41	19	200	5040						
MSWH75C	60	62.43	23	300	4730						
MSWH75C	50	49.18	29	240	4370						
Stage											
MSWH75B	60	59.04	24	350	4660						
MSWH75B	50	48.18	30	350	4340						
MSWH75B	40	40.13	35	300	4080						
MSWH75B	30	29.66	47	350	3720						
MSWH75B	25	24.20	56	300	3500						
MSWH75B	20	20.16	71	240	3230						
MSWH75B	15	15.88	93	200	2950						
MSWH75B	12.5	12.49	113	300	2770						
MSWH75B	10	9.84	143	240	2550						
MSWH75B	7.5	7.48	188	200	2330						

MSWH 90..

n_1 =1400 r/min

500Nm

Gear units	i Nominal	i Actual	n_2 [r/min]	M_{2MAX} [Nm]	F_{r2} [N]	63B5	71B5	80B5 80B14	90B5 90B14	100B5 100B14	112B5 112B14
3 Stage											
MSWH90C	300	295.18	4.8	500	8300						
MSWH90C	250	240.89	5.9	500	8300						
MSWH90C	200	200.66	7.0	480	8300						
MSWH90C	150	151.20	9.3	500	8050						
MSWH90C	125	125.95	12	480	7580						
MSWH90C	100	99.22	15	380	7000						
MSWH90C	75	75.45	19	300	6390						
MSWH90C	60	62.43	23	480	6000						
MSWH90C	50	49.18	29	380	5540						
2 Stage											
MSWH90B	60	59.04	24	500	5890						
MSWH90B	50	48.18	30	500	5500						
MSWH90B	40	40.13	35	480	5170						
MSWH90B	30	30.24	47	500	4710						
MSWH90B	25	25.19	56	480	4430						
MSWH90B	20	19.84	71	380	4090						
MSWH90B	15	15.09	93	300	3730						
MSWH90B	12.5	12.49	113	480	3510						
MSWH90B	10	9.84	143	380	3240						
MSWH90B	7.5	7.48	188	300	2950						

MSWH.. Performance parameter

P_{1n} [kW]	n_2 [r/min]	M_2 [Nm]	i 公称 Nominal	i 实际 Actual	F_{r2} [N]	f_B		
0.12	5.7	180	250	244.29	4100	0.7	MSWH50C	63B5-4
	7.0	148	200	200.44	4100	0.9		
	9.5	108	150	146.67	4000	1.2		
	11.6	89	125	120.34	3770	1.1		
	13.9	74	100	101.04	3560	1.0		
	18.8	55	75	74.62	3220	2.3		
	22.5	46	60	62.36	3030	2.1		
	26.7	39	50	52.36	2860	2.8		
	24.0	44	60	58.36	2960	3.0	MSWH50B	63B5-4
	28.7	37	50	48.86	2790	3.5		
	35	30	40	40.09	2610	4.2		
	48	22	30	29.33	2350	5.8		
	58	18	25	24.07	2200	7.0		
	69	15.2	20	20.21	2080	6.6		
	94	11.2	15	14.92	1880	7.1		
	112	9.4	12.5	12.47	1770	13.5		
	134	7.9	10	10.47	1670	12.7		
	181	5.8	7.5	7.73	1510	13.7		
	5.7	179	250	242.26	4800	1.1	MSWH63C	63B5-4
	7.1	145	200	196.43	4800	1.2		
	9.2	112	150	150.74	4650	1.8		
	11.5	90	125	122.22	4330	2.0		
	13.8	75	100	101.27	4070	2.0		
	19.1	54	75	73.33	3650	2.0		
	22.1	47	60	63.33	3480	3.9		
	26.7	39	50	52.48	3270	3.9		
	23.1	46	60	60.89	3430	4.4	MSWH63B	63B5-4
	28.7	37	50	48.45	3190	5.5		
	36	30	40	39.29	2970	6.1		
	46	23	30	30.15	2720	8.8		
	4.7	219	300	295.18	6500	1.6	MSWH75C	63B5-4
	5.8	177	250	240.89	6500	2.0		
	7.0	148	200	200.66	6500	2.0		
	9.3	111	150	149.28	6500	3.1		
	11.1	93	125	121.42	5980	3.2		
	4.7	217	300	295.18	8300	2.3	MSWH90C	63B5-4
	5.8	177	250	240.89	8300	2.8		
	7.0	148	200	200.66	8300	3.2		
	9	111	150	151.20	8050	4.5		
0.18	9.6	161	300	291.79	4000	0.8	MSWH50C	63B5-2
	11.5	135	250	244.29	3790	0.9		
	14.0	111	200	200.44	3550	1.2		
	19.1	81	150	146.67	3200	1.6		
	23.3	66	125	120.34	2990	2.0		
	27.7	56	100	101.04	2820	1.8		
	38	41	75	74.62	2550	1.9		
	45	34	60	62.36	2400	3.8		
	53	29	50	52.36	2270	3.5		
	48	33	60	58.36	2350	3.8	MSWH50B	63B5-2
	57	27	50	48.86	2220	4.6		
	70	22	40	40.09	2070	5.6		
	95	16	30	29.33	1870	7.7		
	116	13	25	24.07	1750	9.4		

P_{1n} [kW]	n_2 [r/min]	M_2 [Nm]	i 公称 Nominal	i 实际 Actual	F_{r2} [N]	f_B		
0.18	11.6	133	125	120.34	3770	1.0	MSWH50C	63B5-4
	13.9	112	100	101.04	3560	0.9		
	18.8	82	75	74.62	3220	1.0		
	22.5	69	60	62.36	3030	1.9		
	26.7	58	50	52.36	2860	1.7		
	24.0	66	60	58.36	2960	2.0	MSWH50B	63B5-4
	28.7	55	50	48.86	2790	2.4		
	35	45	40	40.09	2610	2.9		
	48	33	30	29.33	2350	3.9		
	58	27	25	24.07	2200	4.7		
	69	23	20	20.21	2080	4.4		
	94	16.9	15	14.92	1880	4.7		
	112	14.1	12.5	12.47	1770	9.0		
	134	11.8	10	10.47	1670	8.3		
	181	8.7	7.5	7.73	1510	9.0		
	12.1	128	75	74.62	3730	1.0	MSWH50C	71B5/B14-6
	14.4	107	60	62.36	3510	0.9		
	17.2	90	50	52.36	3310	1.2		
	15.4	103	60	58.36	3430	1.3	MSWH50B	71B5/B14-6
	18.4	86	50	48.86	3240	1.5		
	22.4	70	40	40.09	3030	1.8		
	31	52	30	29.33	2730	2.5		
	37	42	25	24.07	2550	3.1		
	45	36	20	20.21	2410	2.8		
	60	26	15	14.92	2180	3.1		
	72	22	12.5	12.47	2050	5.9		
	9.3	167	300	304.46	4650	1.2	MSWH63C	63B5-2
	11.5	135	250	242.26	4330	1.5		
	14.3	109	200	196.43	4030	1.7		
	18.5	84	150	150.74	3690	2.4		
	22.9	68	125	122.22	3440	2.7		
	27.6	56	100	101.27	3230	2.7		
	38	41	75	73.33	2900	2.7		
	44	35	60	63.33	2760	5.1		
	53	29	50	52.48	2590	5.2		
	7.1	217	200	196.43	4800	0.8	MSWH63C	63B5-4
	9.2	167	150	150.74	4650	1.2		
	11.5	135	125	122.22	4330	1.3		
	13.8	112	100	101.27	4070	1.3		
	19.1	81	75	73.33	3650	1.4		
	22.1	70	60	63.33	3480	2.6		
	26.7	58	50	52.48	3270	2.6		
	23.1	68	60	60.89	3430	2.9	MSWH63B	63B5-4
	28.7	55	50	48.45	3190	3.6		
	36	44	40	39.29	2970	4.1		
	7.4	210	125	122.22	4800	0.9	MSWH63C	71B5/B14-6
	8.9	174	100	101.27	4720	0.9		
	12.3	126	75	73.33	4230	0.9		
	14.2	109	60	63.33	4030	1.7		
	17.1	90	50	52.48	3790	1.7		
	14.9	106	60	60.89	3970	1.9	MSWH63B	71B5/B14-6
	18.5	86	50	48.45	3690	2.3		
	22.9	69	40	39.29	3440	2.6		
	29.7	53	30	30.15	3150	3.8		
	9.4	164	300	295.18	6320	2.1	MSWH75C	63B5-2
	11.6	133	250	240.89	5890	2.6		
	14.0	111	200	200.66	5540	2.7		
	18.5	84	150	149.29	5040	4.2		

P_{1n} [kW]	n_2 [r/min]	M_2 [Nm]	i 公称 Nominal	i 实际 Actual	F_{r2} [N]	f_B		
0.18	4.7	328	300	295.18	6500	1.1	MSWH75C	63B5-4
	5.8	266	250	240.89	6500	1.3		
	7.0	222	200	200.66	6500	1.4		
	9.3	167	150	149.29	6500	2.1		
	11.1	139	125	121.02	5980	2.2		
	14.1	110	100	100.81	5520	2.2		
	18.6	83	75	79.46	5040	2.4		
	4.5	345	200	200.66	6500	0.87	MSWH75C	71B5-6
	6.0	260	150	149.29	6500	1.3		
	7.1	217	125	121.02	6500	1.4		
	9.1	171	100	100.81	6400	1.4		
	11.9	130	75	79.46	5840	1.5		
	14.4	107	60	62.43	5480	2.8		
	18.3	85	50	49.18	5060	2.8		
	15.1	104	60	59.04	5390	3.4	MSWH75B	71B5-6
	18.7	85	50	48.18	5030	4.1		
	9.5	163	300	295.18	7990	3.1	MSWH90C	63B5-2
	11.6	133	250	240.89	7470	3.8		
	4.7	326	300	295.18	8300	1.5	MSWH90C	63B5-4
	5.8	266	250	240.89	8300	1.9		
	7.0	222	200	200.66	8300	2.2		
	9.3	167	150	151.20	8050	3.0		
	11.1	139	125	125.95	7580	3.4		
	3.7	414	250	240.89	8300	1.2	MSWH90C	71B5-6
	4.5	345	200	200.66	8300	1.4		
	6.0	260	150	151.20	8300	1.9		
	7.1	217	125	125.95	8300	2.2		
	9.1	171	100	99.22	8110	2.2		
	11.9	130	75	75.45	7400	2.3		
	14.4	107	60	62.43	6950	4.5		
0.25	19.1	113	150	146.67	3200	1.2	MSWH50C	63B5-2
	23.3	92	125	120.34	2990	1.4		
	27.7	78	100	101.04	2820	1.3		
	38	57	75	74.62	2550	1.4		
	45	48	60	62.36	2400	2.7		
	53	40	50	52.36	2270	2.4		
	48	46	60	58.36	2350	2.7	MSWH50B	63B5-2
	57	38	50	48.86	2220	3.3		
	70	31	40	40.09	2070	4.0		
	18.8	114	75	74.62	3220	0.94	MSWH50C	71B5/B14-4
	22.5	96	60	62.36	3030	1.4		
	26.7	80	50	52.36	2860	1.2		
	24.0	92	60	58.36	2960	1.4	MSWH50B	71B5/B14-4
	28.7	77	50	48.86	2790	1.7		
	35	63	40	40.09	2610	2.1		
	48	46	30	29.33	2350	2.8		
	58	38	25	24.07	2200	3.4		
	69	32	20	20.21	2080	3.2		
	94	23	15	14.92	1880	3.4		
	18.4	119	50	48.86	3240	1.1	MSWH50B	71B5/B14-6
	22.4	98	40	40.09	3030	1.3		
	31	72	30	29.33	2730	1.8		
	37	59	25	24.07	2550	2.2		
	45	49	20	20.21	2410	2.0		
	60	36	15	14.92	2180	2.2		
	72	30	12.5	12.47	2050	4.3		
	86	26	10	10.47	1930	3.9		
	116	19	7.5	7.73	1750	4.2		

P_{1n} [kW]	n_2 [r/min]	M_2 [Nm]	i 公称 Nominal	i 实际 Actual	F_{r2} [N]	f_B		
0.25	11.5	187	250	242.26	4330	1.1	MSWH63C	63B5-2
	14.3	151	200	196.43	4030	1.2		
	18.5	116	150	150.24	3690	1.7		
	22.9	94	125	122.22	3440	1.9		
	27.6	78	100	101.27	3230	1.9		
	38	56	75	73.33	2900	2.0		
	44	49	60	63.33	2760	3.7		
	53	40	50	52.48	2590	3.7		
	11.5	188	125	122.22	4330	1.0	MSWH63C	71B5/B14-4
	13.8	155	100	101.27	4070	1.0		
	19.1	113	75	73.33	3650	1.0		
	22.1	97	60	63.33	3480	1.9		
	26.7	81	50	52.48	3270	1.9		
	23.1	95	60	60.89	3430	2.1	MSWH63B	71B5/B14-4
	28.7	76	50	48.45	3190	2.6		
	36	62	40	39.29	2970	2.9		
	46	48	30	30.15	2720	4.2		
	14.2	151	60	63.33	4030	1.2	MSWH63C	71B5/B14-6
	17.1	125	50	52.48	3790	1.2		
	14.9	148	60	60.89	3970	1.4	MSWH63B	71B5/B14-6
	18.5	119	50	48.45	3690	1.7		
	22.9	96	40	39.29	3440	1.9		
	29.7	74	30	30.15	3150	2.7		
	37	60	25	24.44	2930	3.0		
	44	49	20	20.25	2760	3.0		
	9.4	228	300	295.18	6320	1.5	MSWH75C	63B5-2
	11.6	185	250	240.89	5890	1.9		
	14.0	154	200	200.66	5540	1.9		
	18.5	116	150	149.29	5040	3.0		
	22.2	97	125	121.02	4750	3.1		
	5.8	370	250	240.89	6500	0.95	MSWH75C	71B5-4
	7.0	308	200	200.66	6500	0.97		
	9.3	232	150	149.29	6500	1.5		
	11.1	193	125	121.02	5980	1.6		
	14.1	152	100	100.81	5520	1.6		
	18.6	116	75	79.46	5040	1.7		
	22.4	96	60	62.43	4730	3.1		
	6.0	361	150	149.29	6500	0.97	MSWH75C	71B5-6
	7.1	301	125	121.02	6500	1.0		
	9.1	237	100	100.81	6400	1.0		
	11.9	180	75	79.46	5840	1.1		
	14.4	149	60	62.43	5480	2.0		
	18.3	117	50	49.18	5060	2.0		
	15.1	145	60	59.04	5390	2.4	MSWH75B	71B5-6
	18.7	118	50	48.18	5030	3.0		
	22.4	98	40	40.13	4730	3.1		
	9.5	227	300	295.18	7990	2.2	MSWH90C	63B5-2
	11.6	185	250	240.89	7470	2.7		
	14.0	154	200	200.66	7030	3.1		
	18.5	116	150	151.20	6390	4.3		
	4.7	453	300	295.18	8300	1.1	MSWH90C	71B5-4
	5.8	370	250	240.89	8300	1.4		
	7.0	308	200	200.66	8300	1.6		
	9.3	232	150	151.20	8050	2.2		
	11.1	193	125	125.95	7580	2.5		
	14.1	152	100	99.22	7000	2.5		
	18.6	116	75	75.45	6390	2.6		

P_{1n} [kW]	n_2 [r/min]	M_2 [Nm]	i 公称 Nominal	i 实际 Actual	F_{r2} [N]	f_B		
0.25	4.5	479	200	200.66	8300	1.0	MSWH90C	71B5-6
	6.0	361	150	151.20	8300	1.4		
	7.1	301	125	125.95	8300	1.6		
	9.1	237	100	99.22	8110	1.6		
	11.9	180	75	75.45	7400	1.7		
	14.4	149	60	62.43	6950	3.2		
	18.3	117	50	49.18	6420	3.2		
	15.2	144	60	59.04	6820	3.5	MSWH90B	71B5-6
	18.7	118	50	48.18	6370	4.3		
0.37	23.3	137	125	120.34	2990	0.95	MSWH50C	71B5/B14-2
	27.7	115	100	101.04	2820	0.87		
	38	85	75	74.62	2550	0.94		
	45	71	60	62.36	2400	1.8		
	53	59	50	52.36	2270	1.7		
	48	67	60	58.36	2350	1.9	MSWH50B	71B5/B14-2
	57	57	50	48.86	2220	2.2		
	70	47	40	40.09	2070	2.7		
	95	34	30	29.33	1870	3.7		
	28.7	113	50	48.86	2790	1.1	MSWH50B	71B5/B14-4
	35	93	40	40.09	2610	1.4		
	48	68	30	29.33	2350	1.9		
	58	56	25	24.07	2200	2.3		
	69	47	20	20.21	2080	2.1		
	94	35	15	14.92	1880	2.3		
	112	29	12.5	12.47	1770	4.5		
	134	24	10	10.47	1670	4.1		
	181	18	7.5	7.73	1510	4.5		
	31	106	30	29.33	2730	1.2	MSWH50B	80B5/B14-6
	37	87	25	24.07	2550	1.5		
	45	73	20	20.21	2410	1.4		
	60	54	15	14.92	2180	1.5		
	72	45	12.5	12.47	2050	2.9		
	86	38	10	10.47	1930	2.6		
	116	28	7.5	7.73	1750	2.9		
	14.3	223	200	196.43	4030	0.78	MSWH63C	71B5/B14-2
	18.5	172	150	150.74	3690	1.2		
	22.9	139	125	122.22	3440	1.3		
	27.6	115	100	101.27	3230	1.3		
	38	83	75	73.33	2900	1.3		
	44	72	60	63.33	2760	2.5		
	53	60	50	52.48	2590	2.5		
	46	70.5	60	60.89	2720	2.7	MSWH63B	71B5/B14-2
	57	57	50	48.45	2530	3.5		
	71	46	40	39.29	2350	3.8		
	22.1	144	60	63.33	3480	1.3	MSWH63C	71B5/B14-4
	26.7	119	50	52.48	3270	1.3		
	23.1	140	60	60.89	3430	1.4	MSWH63B	71B5/B14-4
	28.7	113	50	48.45	3190	1.8		
	36	91	40	39.29	2970	2.0		
	46	70	30	30.15	2720	2.8		
	57	57	25	24.44	2530	3.2		
	69	47	20	20.25	2380	3.2		
	18.5	176	50	48.45	3690	1.1	MSWH63B	80B5/B14-6
	22.9	142	40	39.29	3440	1.3		
	29.7	109	30	30.15	3150	1.8		

P_{1n} [kW]	n_2 [r/min]	M_2 [Nm]	i 公称 Nominal	i 实际 Actual	F_{r2} [N]	f_B		
0.37	37	88	25	24.44	2930	2.0	MSWH63B	80B5/B14-6
	44	73	20	20.25	2760	2.1		
	61	53	15	14.67	2470	2.1		
	71	46	12.5	12.67	2360	3.9		
	86	38	10	10.50	2210	4.0		
	118	27	7.5	7.60	1990	4.0		
	9.4	338	300	295.18	6320	1.0	MSWH75C	71B5-2
	11.6	274	250	240.89	5890	1.3		
	14.0	228	200	200.66	5540	1.3		
	18.5	172	150	149.29	5040	2.0		
	22.2	143	125	121.02	4750	2.1		
	28.2	113	100	100.81	4380	2.1		
	37	86	75	79.41	4000	2.3		
	9.3	343	150	149.29	6500	1.0	MSWH75C	71B5-4
	11.1	286	125	121.02	5980	1.0		
	14.1	225	100	100.81	5520	1.1		
	18.6	171	75	79.41	5040	1.2		
	22.4	142	60	62.43	4730	2.1		
	28.5	112	50	49.18	4370	2.1		
	23.6	138	60	59.04	4660	2.5	MSWH75B	71B5-4
	29.1	112	50	48.18	4340	3.1		
	35	93	40	40.13	4080	3.2		
	14.4	221	60	62.43	5480	1.4	MSWH75C	80B5/B14-6
	18.3	174	50	49.18	5060	1.4		
	15.1	215	60	59.04	5390	1.6	MSWH75B	80B5/B14-6
	18.7	174	50	48.18	5030	2.0		
	22.4	145	40	40.13	4730	2.1		
	29.8	109	30	29.66	4310	3.2		
	36	91	25	24.20	4050	3.3		
	9.5	335	300	295.18	7990	1.5	MSWH90C	71B5-2
	11.6	274	250	240.89	7470	1.8		
	14.0	228	200	200.66	7030	2.1		
	18.5	172	150	151.20	6390	2.8		
	22.2	143	125	125.95	6010	3.4		
	5.8	547	250	240.89	8300	0.9	MSWH90C	71B5-4
	7.0	456	200	200.66	8300	1.1		
	9.3	343	150	151.20	8050	1.5		
	11.1	286	125	125.95	7580	1.7		
	14.1	225	100	99.22	7000	1.7		
	18.6	171	75	75.45	6390	1.8		
	22.4	142	60	62.43	6000	3.4		
	28.5	112	50	49.18	5540	3.4		
	23.7	137	60	59.04	5890	3.6	MSWH90B	71B5-4
	29.1	112	50	48.18	5500	4.5		
	6.0	534	150	151.20	8300	0.94	MSWH90C	80B5/B14-6
	7.1	445	125	125.95	8300	1.1		
	9.1	351	100	99.22	8110	1.1		
	11.9	267	75	75.45	7400	1.1		
	14.4	221	60	62.43	6950	2.2		
	18.3	174	50	49.18	6420	2.2		
	15.2	213	60	59.04	6820	2.3	MSWH90B	80B5/B14-6
	18.7	174	50	48.18	6370	2.9		
	22.4	145	40	40.13	6000	3.3		
0.55	38	126	75	74.62	2550	0.77	MSWH50C	71B5/B14-2
	45	105	60	62.36	2400	1.2		
	53	88	50	52.36	2270	1.1		

P_{1n} [kW]	n_2 [r/min]	M_2 [Nm]	i 公称 Nominal	i 实际 Actual	F_{r2} [N]	f_B		
0.55	48	101	60	58.36	2350	1.26	MSWH50B	71B5/B14-2
	57	84	50	48.86	2220	1.5		
	70	69	40	40.09	2070	1.8		
	95	51	30	29.33	1870	2.5		
	116	41	25	24.07	1750	3.1		
	139	35	20	20.21	1650	2.7		
	35	138	40	40.09	2610	0.9	MSWH50B	80B5/B14-4
	48	101	30	29.33	2350	1.3		
	58	83	25	24.07	2200	1.6		
	69	70	20	20.21	2080	1.4		
	94	51	15	14.92	1880	1.6		
	112	43	12.5	12.47	1770	3.0		
	134	36	10	10.47	1670	2.8		
	181	27	7.5	7.73	1510	3.0		
	37	129	25	24.07	2550	1.0	MSWH50B	80B5/B14-6
	45	109	20	20.21	2410	0.92		
	60	80	15	14.92	2180	1.0		
	72	67	12.5	12.47	2050	1.9		
	86	56	10	10.47	1930	1.8		
	116	42	7.5	7.73	1750	1.9		
	22.9	206	125	122.22	3440	0.9	MSWH63C	71B5/B14-2
	27.6	171	100	101.27	3230	0.9		
	38	124	75	73.33	2900	0.9		
	44	107	60	63.33	2760	1.7		
	53	89	50	52.48	2590	1.7		
	46	105	60	60.89	2720	1.86	MSWH63B	71B5/B14-2
	57	84	50	48.45	2530	2.3		
	71	67.5	40	39.29	2350	2.6		
	92	52	30	30.15	2160	3.7		
	28.7	168	50	48.45	3190	1.2	MSWH63B	80B5/B14-4
	36	136	40	39.29	2970	1.3		
	46	105	30	30.15	2720	1.9		
	57	84	25	24.44	2530	2.1		
	69	70	20	20.25	2380	2.1		
	95	51	15	14.67	2130	2.2		
	100	44	12.5	12.67	2030	4.1		
	133	36	10	10.50	1910	4.1		
	184	26	7.5	7.60	1710	4.2		
	22.9	211	40	39.29	3440	0.9	MSWH63B	80B5/B14-6
	29.7	163	30	30.15	3150	1.2		
	37	131	25	24.44	2930	1.4		
	44	109	20	20.25	2760	1.4		
	61	79	15	14.67	2470	1.4		
	71	68	12.5	12.67	2360	2.6		
	86	58	10	10.50	2210	2.7		
	118	41	7.5	7.60	1990	2.7		
	14.0	339	200	200.66	5540	0.89	MSWH75C	71B5-2
	18.5	255	150	149.29	5040	1.4		
	22.2	213	125	121.02	4750	1.4		
	28.2	168	100	100.81	4380	1.4		
	37	127	75	79.46	4000	1.6		
	45	105	60	62.43	3750	2.8		
	57	83	50	49.18	3470	2.9		
	47	103	60	59.04	3690	3.3	MSWH75B	71B5-2
	58	83	50	48.18	3440	4.1		
	14.1	334	100	100.81	5520	0.7	MSWH75C	80B5/B14-4
	18.6	255	50	79.46	5040	0.79		

P_{1n} [kW]	n_2 [r/min]	M_2 [Nm]	i 公称 Nominal	i 实际 Actual	F_{r2} [N]	f_B		
0.55	22.4	211	60	62.43	4730	1.4	MSWH75C	80B5/B14-4
	28.5	166	50	49.18	4370	1.4		
	23.6	205	60	59.04	4660	1.7	MSWH75B	80B5/B14-4
	29.1	166	50	48.18	4340	2.1		
	35	139	40	40.13	4080	2.2		
	46	104	30	29.66	3720	3.4		
	56	87	25	24.20	3500	3.5		
	14.4	328	60	62.43	5480	0.91	MSWH75C	80B5/B14-6
	18.3	258	50	49.18	5060	0.93		
	15.1	319	60	59.04	5390	1.1	MSWH75B	80B5/B14-6
	18.7	259	50	48.18	5030	1.4		
	22.4	215	40	40.13	4730	1.4		
	29.8	162	30	29.66	4310	2.2		
	36	135	25	24.20	4050	2.2		
	45	107	20	20.16	3740	2.3		
	60	81	15	15.88	3410	2.5		
	9.5	498	300	295.18	7990	1.0	MSWH90C	71B5-2
	11.6	407	250	240.89	7470	1.2		
	14.0	339	200	200.66	7030	1.4		
	18.5	255	150	151.20	6390	2.0		
	22.2	213	125	125.95	6010	2.3		
	28.2	168	100	99.22	5550	2.3		
	37	127	75	75.45	5070	2.4		
	45	105	60	62.43	4760	4.6		
	57	83	50	49.18	4390	4.6		
	9.3	511	150	151.20	8050	1.0	MSWH90C	80B5/B14-4
	11.1	425	125	125.95	7580	1.1		
	14.1	335	100	99.22	7000	1.1		
	18.6	255	75	75.45	6390	1.2		
	22.4	211	60	62.43	6000	2.3		
	28.5	166	50	49.18	5540	2.3		
	23.7	204	60	59.04	5890	2.5	MSWH90B	80B5/B14-4
	29.1	166	50	48.18	5500	3.0		
	35	139	40	40.13	5170	3.5		
	9.1	521	100	99.22	8110	0.71	MSWH90C	80B5/B14-6
	11.9	396	75	75.45	7400	0.74		
	14.4	328	60	62.43	6950	1.5		
	18.3	258	50	49.18	6420	1.5		
	15.2	317	60	59.04	6820	1.6	MSWH90B	80B5/B14-6
	18.7	259	50	48.18	6370	1.9		
	22.4	215	40	40.13	6000	2.2		
	29.8	162	30	30.24	5460	3.1		
	36	135	25	25.19	5130	3.5		
0.75	57	114.5	50	48.86	2220	1.1	MSWH50B	80B5/B14-2
	70	94	40	40.09	2070	1.3		
	95	69	30	29.33	1870	1.8		
	116	57	25	24.07	1750	2.2		
	139	48	20	20.21	1650	2.0		
	188	35	15	14.92	1490	2.2		
	48	138	30	29.33	2350	0.9	MSWH50B	80B5/B14-4
	58	113	25	24.07	2200	1.1		
	69	95	20	20.21	2080	1.1		
	94	70	15	14.92	1880	1.1		
	112	59	12.5	12.47	1770	2.2		
	134	49	10	10.47	1670	2.0		
	181	36	7.5	7.73	1510	2.2		

P_{1n} [kW]	n_2 [r/min]	M_2 [Nm]	i 公称 Nominal	i 实际 Actual	F_{r2} [N]	f_B		
0.75	60	110	15	14.92	2180	0.71	MSWH50B	90B5/B14-6
	72	91	12.5	12.47	2050	1.4		
	86	77	10	10.47	1930	1.3		
	116	57	7.5	7.73	1750	1.4		
	38	169	75	73.33	2900	0.63	MSWH63C	80B5/B14-2
	44	146	60	63.33	2760	1.2		
	53	121	50	52.48	2590	1.2		
	46	142	60	60.89	2720	1.38	MSWH63B	80B5/B14-2
	57	114.5	50	48.45	2530	1.7		
	71	92	40	39.29	2350	1.9		
	92	71	30	30.15	2160	2.7		
	115	58	25	24.44	2010	3.0		
	138	48	20	20.25	1890	3.0		
	28.7	229	50	48.45	3190	0.9	MSWH63B	80B5/B14-4
	36	185	40	39.29	2970	1.0		
	46	143	30	30.15	2720	1.4		
	57	115	25	24.44	2530	1.6		
	69	95	20	20.25	2360	1.6		
	95	69	15	14.67	2130	1.6		
	110	60	12.5	12.67	2030	3.0		
	133	49	10	10.50	1910	3.0		
	184	36	7.5	7.60	1710	3.1		
	37	179	25	24.44	2930	1.0	MSWH63B	90B5/B14-6
	44	148	20	20.25	2760	1.0		
	61	107	15	14.67	2470	1.0		
	71	93	12.5	12.67	2360	1.9		
	86	77	10	10.50	2210	2.0		
	118	56	7.5	7.60	1990	2.0		
	18.5	348	150	149.29	5040	1.0	MSWH75C	80B5/B14-2
	22.2	290	125	121.02	4750	1.0		
	28.2	228	100	100.81	4380	1.1		
	37	174	75	79.41	4000	1.2		
	45	144	60	62.43	3750	2.1		
	57	113	50	49.18	3470	2.1		
	47	140	60	59.04	3690	2.4	MSWH75B	80B5/B14-2
	58	113.5	50	48.18	3440	3.0		
	70	94	40	40.13	3240	3.1		
	22.4	287	60	62.43	4730	1.0	MSWH75C	80B5/B14-4
	28.5	226	50	49.18	4370	1.1		
	23.6	280	60	59.04	4660	1.3	MSWH75B	80B5/B14-4
	29.1	227	50	48.18	4340	1.5		
	35	189	40	40.13	4080	1.6		
	46	142	30	29.66	3720	2.5		
	56	119	25	24.20	3500	2.5		
	71	93	20	20.16	3230	2.8		
	18.7	353	50	48.18	5030	1.0	MSWH75B	90B5/B14-6
	22.4	294	40	40.13	4730	1.0		
	29.8	221	30	29.66	4310	1.6		
	36	184	25	24.20	4050	1.6		
	45	145	20	19.84	3740	1.7		
	60	110	15	15.88	3410	1.8		
	72	91	12.5	12.49	3210	3.3		
	11.6	555	250	240.89	7470	0.9	MSWH90C	80B5/B14-2
	14.0	462	200	200.66	7030	1.0		
	18.5	348	150	151.20	6390	1.4		
	22.2	290	125	125.95	6010	1.7		

P_{1n} [kW]	n_2 [r/min]	M_2 [Nm]	i 公称 Nominal	i 实际 Actual	F_{r2} [N]	f_B		
0.75	28.2	228	100	99.22	5550	1.7	MSWH90C	80B5/B14-2
	37	174	75	75.45	5070	1.7		
	45	144	60	62.43	4760	3.3		
	57	113	50	49.18	4390	3.4		
	14.1	457	100	99.22	7000	0.83	MSWH90C	80B5/B14-4
	18.6	347	75	75.45	6390	0.86		
	22.4	287	60	62.43	6000	1.7		
	28.5	226	50	49.18	5540	1.7		
	23.7	278	60	59.04	5890	1.8	MSWH90B	80B5/B14-4
	29.1	227	50	48.18	5500	2.2		
	35	189	40	40.13	5170	2.5		
	46	142	30	30.24	4710	3.5		
	56	119	25	25.19	4430	4.0		
	14.4	447	60	62.43	6950	1.1	MSWH90C	90B5/B14-6
	18.3	352	50	49.18	6420	1.1		
	15.2	432	60	59.04	6820	1.2	MSWH90B	90B5/B14-6
	18.7	353	50	48.18	6370	1.4		
	22.4	294	40	40.13	6000	1.6		
	29.8	221	30	30.24	5460	2.3		
	36	184	25	25.19	5130	2.6		
	45	145	20	19.84	4740	2.6		
	60	110	15	15.09	4330	2.7		
1.1	70	138	40	40.09	2070	0.9	MSWH50B	80B5/B14-2
	95	101	30	29.33	1870	1.3		
	116	83	25	24.07	1750	1.5		
	139	69	20	20.21	1650	1.4		
	188	52	15	14.92	1490	1.5		
	225	43	12.5	12.47	1400	2.9		
	267	36	10	10.47	1320	2.7		
	362	26	7.5	7.73	1200	2.9		
	69	140	20	20.21	2080	0.7	MSWH50B	90B5/B14-4
	94	103	15	14.92	1880	0.76		
	112	86	12.5	12.47	1770	1.5		
	134	72	10	10.47	1670	1.4		
	181	53	7.5	7.73	1510	1.5		
	72	134	12.5	12.47	2050	1.0	MSWH50B	90B5/B14-6
	86	112	10	10.47	1930	0.9		
	116	83	7.5	7.73	1750	1.0		
	57	168	50	48.45	2530	1.2	MSWH63B	80B5/B14-2
	71	136	40	39.29	2350	1.3		
	92	105	30	30.15	2160	1.9		
	115	84	25	24.44	2010	2.1		
	138	69	20	20.25	1890	2.1		
	191	51	15	14.67	1690	2.1		
	221	44	12.5	12.67	1610	4.0		
	267	36	10	10.50	1510	4.0		
	368	26	7.5	7.60	1360	4.1		
	46	209	30	30.15	2720	1.0	MSWH63B	90B5/B14-4
	57	169	25	24.44	2530	1.1		
	69	140	20	20.25	2380	1.1		
	95	101	15	14.67	2130	1.1		
	110	87	12.5	12.67	2030	2.1		
	133	72	10	10.50	1910	2.1		
	184	52	7.5	7.60	1710	2.1		

P_{1n} [kW]	n_2 [r/min]	M_2 [Nm]	i 公称 Nominal	i 实际 Actual	F_{r2} [N]	f_B		
1.1	71	136	12.5	12.67	2360	1.3	MSWH63B	90B5/B14-6
	86	113	10	10.50	2210	1.3		
	118	82	7.5	7.60	1990	1.3		
	28.2	334.5	100	100.81	4380	0.58	MSWH75C	80B5/B14-2
	37	254	75	79.46	4000	1.15		
	45	211	60	62.43	3750	1.4		
	57	166	50	49.18	3470	1.4		
	47	205.5	60	59.04	3690	1.7	MSWH75B	80B5/B14-2
	58	166	50	48.18	3440	2.1		
	70	139	40	40.13	3240	2.1		
	93	105	30	29.66	2950	3.3		
	111	87	25	24.20	2770	3.3		
	29.1	333	50	48.18	4340	1.1	MSWH75B	90B5/B14-4
	35	277	40	40.13	4080	1.1		
	46	209	30	29.66	3720	1.7		
	56	174	25	24.20	3500	1.7		
	71	137	20	20.16	3230	1.8		
	93	104	15	15.88	2950	1.9		
	112	86	12.5	12.49	2770	3.5		
	29.8	325	30	29.66	4310	1.1	MSWH75B	90B5/B14-6
	36	271	25	24.20	4050	1.1		
	45	213	20	20.16	3740	1.1		
	60	162	15	15.88	3410	1.2		
	72	134	12.5	12.49	3210	2.2		
	91	106	10	9.84	2960	2.3		
	120	80	7.5	7.48	2700	2.5		
	18.5	511	150	151.20	6390	1.0	MSWH90C	80B5/B14-2
	22.2	425	125	125.95	6010	1.1		
	28.2	335	100	99.22	5550	1.1		
	37	255	75	75.45	5070	1.2		
	45	211	60	62.43	4760	2.3		
	57	166	50	49.18	4390	2.3		
	47	203.5	60	59.04	4670	2.4	MSWH90B	80B5/B14-2
	58	166	50	48.18	4360	2.9		
	70	162	40	40.13	4110	3.3		
	22.4	422	60	62.43	6000	1.1	MSWH90C	90B5/B14-4
	28.5	332	50	49.18	5540	1.1		
	23.7	408	60	59.04	5890	1.2	MSWH90B	90B5/B14-4
	29.1	333	50	48.18	5500	1.5		
	35	277	40	40.13	5170	1.7		
	46	209	30	30.24	4710	2.4		
	56	174	25	25.19	4430	2.8		
	71	137	20	19.84	4090	2.8		
	18.7	517	50	48.18	6370	1.0	MSWH90B	90B5/B14-6
	22.4	431	40	40.13	6000	1.1		
	29.8	325	30	30.24	5460	1.5		
	36	271	25	25.19	5130	1.8		
	45	213	20	19.84	4740	1.8		
	60	162	15	15.09	4330	1.9		
	72	134	12.5	12.49	4060	3.6		
	91	106	10	9.84	3750	3.6		
	120	80	7.5	7.48	3420	3.7		
1.5	116	113.5	25	24.07	1750	1.1	MSWH50B	90B5/B14-2
	139	95	20	20.21	1650	1.03		
	188	70	15	14.92	1490	1.1		
	225	59	12.5	12.47	1400	2.2		

P_{1n} [kW]	n_2 [r/min]	M_2 [Nm]	i 公称 Nominal	i 实际 Actual	F_{r2} [N]	f_B		
1.5	267	49	10	10.47	1320	2.0	MSWH50B	90B5/B14-2
	362	36	7.5	7.73	1200	2.2		
	94	141	15	14.92	1880	0.6	MSWH50B	90B5/B14-4
	112	117	12.5	12.47	1770	1.1		
	134	99	10	10.47	1670	1.0		
	181	73	7.5	7.73	1510	1.1		
	57	229	50	48.45	2530	0.9	MSWH63B	90B5/B14-2
	71	185	40	39.29	2350	0.95		
	92	143	30	30.15	2160	1.4		
	115	115	25	24.44	2010	1.5		
	138	95	20	20.25	1890	1.5		
	191	69	15	14.67	1690	1.5		
	221	60	12.5	12.67	1610	3.0		
	267	49	10	10.50	1510	3.0		
	368	36	7.5	7.60	1360	3.0		
	57	230	25	24.44	2530	0.8	MSWH63B	90B5/B14-4
	69	191	20	20.25	2380	0.8		
	95	138	15	14.67	2130	0.8		
	110	119	12.5	12.67	2030	1.5		
	133	99	10	10.50	1910	1.5		
	184	72	7.5	7.60	1710	1.5		
	37	347	75	79.46	4000	0.6	MSWH75C	90B5/B14-2
	45	287	60	62.43	3750	1.0		
	57	226	50	49.18	3470	1.1		
	47	280	60	59.04	3690	1.2	MSWH75B	90B5/B14-2
	58	227	50	48.18	3440	1.5		
	70	189	40	40.13	3240	1.5		
	93	142	30	29.66	2950	2.4		
	111	118	25	24.20	2770	2.5		
	141	93	20	20.16	2560	2.5		
	35	378	40	40.13	4080	0.8	MSWH75B	90B5/B14-4
	46	285	30	29.66	3720	1.2		
	56	237	25	24.20	3500	1.3		
	71	187	20	20.16	3230	1.3		
	93	142	15	15.88	2950	1.4		
	112	118	12.5	12.49	2770	2.6		
	142	93	10	9.84	2550	2.6		
	187	70	7.5	7.48	2330	2.8		
	45	291	20	20.16	3740	0.83	MSWH75B	100B5/B14-6
	60	221	15	15.88	3410	0.91		
	72	183	12.5	12.49	3210	1.6		
	91	144	10	9.84	2960	1.7		
	120	110	7.5	7.48	2700	1.8		
	28.2	457	100	99.22	5550	0.83	MSWH90C	90B5/B14-2
	37	347	75	75.45	5070	0.86		
	45	287	60	62.43	4760	1.7		
	57	226	50	49.18	4390	1.7		
	47	278	60	59.04	4670	1.8	MSWH90B	90B5/B14-2
	58	227	50	48.18	4360	2.2		
	70	189	40	40.13	4110	2.5		
	93	142	30	30.24	3740	3.4		
	111	118	25	25.19	3520	4.0		
	29.1	454	50	48.18	5500	1.1	MSWH90B	90B5/B14-4
	35	378	40	40.13	5170	1.3		
	46	285	30	30.24	4710	1.8		
	56	237	25	25.19	4430	2.0		

P_{1n} [kW]	n_2 [r/min]	M_2 [Nm]	i 公称 Nominal	i 实际 Actual	F_{r2} [N]	f_B		
1.5	71	187	20	19.84	4090	2.0	MSWH90B	90B5/B14-4
	93	142	15	15.09	3730	2.1		
	112	118	12.5	12.49	3510	4.1		
	142	93	10	9.84	3240	4.1		
	187	70	7.5	7.48	2950	4.3		
	30	443	30	30.24	5460	1.1	MSWH90B	100B5/B14-6
	36	369	25	25.19	5130	1.3		
	45	291	20	19.84	4740	1.3		
	60	221	15	15.09	4330	1.4		
	72	183	12.5	12.49	4060	2.6		
	91	144	10	9.84	3750	2.6		
	120	110	7.5	7.48	3420	2.7		
2.2	139	140	20	20.21	1650	0.7	MSWH50B	90B5/B14-2
	188	103	15	14.92	1490	0.76		
	225	86	12.5	12.47	1400	1.5		
	267	72	10	10.47	1320	1.35		
	362	54	7.5	7.73	1200	1.5		
	92	209	30	30.15	2160	0.9	MSWH63B	90B5/B14-2
	115	168	25	24.44	2010	1.0		
	138	140	20	20.25	1890	1.0		
	191	101	15	14.67	1690	1.0		
	221	87	12.5	12.67	1610	2.0		
	267	72	10	10.50	1510	2.0		
	368	53	7.5	7.60	1360	2.0		
	58	333	50	48.18	3440	1.0	MSWH75B	90B5/B14-2
	70	277	40	40.13	3240	1.0		
	93	208	30	29.66	2950	1.6		
	111	174	25	24.20	2770	1.7		
	141	137	20	20.16	2560	1.7		
	186	104	15	15.88	2340	1.9		
	224	86	12.5	12.49	2190	3.4		
	56	348	25	24.20	3500	0.86	MSWH75B	100B5/B14-4
	71	274	20	20.16	3230	0.9		
	93	208	15	15.88	2950	1.0		
	112	172	12.5	12.49	2770	1.7		
	142	136	10	9.84	2550	1.8		
	187	103	7.5	7.48	2330	1.9		
	60	324	15	15.88	3410	0.6	MSWH75B	112B5/B14-6
	72	268	12.5	12.49	3210	1.1		
	91	211	10	9.84	2960	1.1		
	120	161	7.5	7.48	2700	1.2		
	37	510	75	75.45	5070	0.6	MSWH90C	90B5/B14-2
	45	422	60	62.43	4760	1.1		
	57	332	50	49.18	4390	1.1		
	47	407	60	59.04	4670	1.2	MSWH90B	90B5/B14-2
	58	333	50	48.18	4360	1.5		
	70	277	40	40.13	4110	1.7		
	93	208	30	30.24	3740	2.3		
	111	174	25	25.19	3520	2.7		
	141	137	20	19.84	3250	2.7		
	35	554	40	40.13	5170	0.9	MSWH90B	100B5/B14-4
	46	418	30	30.24	4710	1.2		
	56	348	25	25.19	4430	1.4		
	71	274	20	19.84	4090	1.4		
	93	208	15	15.09	3730	1.4		
	112	172	12.5	12.49	3510	2.8		

P_{1n} [kW]	n_2 [r/min]	M_2 [Nm]	i 公称 Nominal	i 实际 Actual	F_{r2} [N]	f_B		
2.2	142	136	10	9.84	3240	2.8	MSWH90B	100B5/B14-
	4							
	187	103	7.5	7.48	2950	2.9		
	36	541	25	25.19	5130	0.9	MSWH90B	112B5/B14-
	6							
	45	426	20	19.84	4740	0.9		
	60	324	15	15.09	4330	0.93		
	72	268	12.5	12.49	4060	1.8		
	91	211	10	9.84	3750	1.8		
	120	161	7.5	7.48	3420	1.9		
3	70	378	40	40.13	3240	0.77	MSWH75B	112B5/B14-
	2							
	93	285	30	29.66	2950	1.2		
	111	237	25	24.20	2770	1.2		
	141	187	20	20.16	2560	1.25		
	186	142	15	15.88	2340	1.4		
	224	117	12.5	12.49	2190	2.5		
	285	93	10	9.84	2030	2.5		
	374	70	7.5	7.48	1850	2.7		
	9.3	284	15	15.88	2950	0.7	MSWH75B	100B5/B14-4
	112	235	12.5	12.49	2770	1.3		
	142	185	10	9.84	2550	1.3		
	187	141	7.5	7.48	2330	1.4		
	47	556	60	59.04	4670	0.9	MSWH90B	100B5/B14-2
	58	453	50	48.18	4360	1.1		
	70	378	40	40.13	4110	1.24		
	93	285	30	30.24	3740	1.7		
	111	237	25	25.19	3520	2.0		
	141	187	20	19.84	3250	2.0		
	186	142	15	15.09	2960	2.1		
	224	117	12.5	12.49	2780	4.0		
	285	93	10	9.84	2570	4.0		
	374	70	7.5	7.48	2340	4.2		
	56	474	25	25.19	4430	1.0	MSWH90B	100B5/B14-4
	71	374	20	19.84	4090	1.0		
	93	284	15	15.09	3730	1.1		
	112	235	12.5	12.49	3510	2.0		
	142	185	10	9.84	3240	2.1		
	187	141	7.5	7.48	2950	2.1		
4	111	316	25	24.20	2770	0.9	MSWH75B	112B5/B14-2
	141	248.5	20	20.16	2560	0.9		
	186	190	15	15.88	2340	1.0		
	224	156.5	12.5	12.49	2190	1.8		
	285	123	10	9.84	2030	1.9		
	374	94	7.5	7.48	1850	2.1		
	112	314	12.5	12.49	2770	1.0	MSWH75B	112B5/B14-
	4							
	142	247	10	9.84	2550	1.0		
	187	188	7.5	7.48	2330	1.1		
	70	504	40	40.13	4110	0.9	MSWH90B	112B5/B14-
	2							
	93	380	30	30.24	3740	1.3		
	111	316	25	25.19	3520	1.5		
	141	248.5	20	19.84	3250	1.5		
	186	190	15	15.09	2960	1.5		
	224	156.5	12.5	12.49	2780	3.0		
	285	123	10	9.84	2570	3.0		
	374	94	7.5	7.48	2340	3.1		

	714	498	20	19.84	4090	0.74	MSWH90B	112B5/B14-
	93	379	15	15.09	3730	0.77		
	112	314	12.5	12.49	3510	1.5		
	142	247	10	9.84	3240	1.5		
	187	188	7.5	7.48	2950	1.6		

MSWHS Performance parameter

n_1=1400r/min f_B=1

	$M_{2\,max}$	n_2	i	i	$P_{1\,MAX}$	F_{r2}	F_r
	[Nm]	[r/min]	Nominal	Actual	[kW]	[N]	[N]
	130	4.8	300	291.79	0.07	4100	400
	130	5.7	250	244.29	0.09	4100	400
	130	7	200	200.44	0.11	4100	400
	130	10	150	146.67	0.14	4000	400
	130	12	125	120.34	0.18	3770	400
	100	14	100	101.04	0.16	3560	400
	80	19	75	74.62	0.17	3220	400
	130	22	60	62.36	0.34	3030	400
	100	27	50	52.36	0.31	2860	400
	130	24	60	58.36	0.35	2960	400
	130	29	50	48.86	0.42	2790	400
	130	35	40	40.09	0.52	2610	400
	130	48	30	29.33	0.71	2350	400
	130	58	25	24.07	0.86	2200	400
	100	69	20	20.21	0.79	2080	400
	80	94	15	14.92	0.85	1880	400
	130	112	12.5	12.47	1.7	1770	400
	100	134	10	10.47	1.5	1670	400
	80	181	7.5	7.73	1.6	1510	400
	200	4.6	300	304.46	0.11	4800	400
	200	5.7	250	242.26	0.13	4800	400
	180	7.1	200	196.43	0.15	4800	400
	200	9.2	150	150.74	0.21	4650	400
	180	11	125	122.22	0.24	4330	400
	150	14	100	101.27	0.24	4070	400
	110	19	75	73.33	0.24	3650	400
	180	22	60	63.33	0.46	3480	400
	150	27	50	52.48	0.47	3270	400
	200	23	60	60.89	0.53	3430	530
	200	29	50	48.45	0.65	3190	530
	180	36	40	39.29	0.73	2970	530
	200	46	30	30.15	1.1	2720	530
	180	57	25	24.44	1.2	2530	530
	150	69	20	20.25	1.2	2380	530
	110	95	15	14.67	1.2	2130	530
	180	110	12.5	12.67	2.3	2030	530
	150	133	10	10.50	2.3	1910	530
	110	184	7.5	7.60	2.3	1710	530
	350	4.7	300	295.18	0.19	6500	560
	350	5.8	250	240.89	0.24	6500	560
	300	7	200	200.66	0.24	6500	560
	350	9.3	150	149.29	0.38	6500	560
	300	11	125	121.02	0.39	5980	560
	240	14	100	100.81	0.39	5520	560
	200	19	75	79.41	0.43	5040	560
	300	22	60	62.43	0.78	4730	560
	240	28	50	49.18	0.79	4370	560
	350	24	60	59.04	0.94	4660	860
	350	29	50	48.18	1.2	4340	860
	300	35	40	40.13	1.2	4080	860
	350	46	30	29.66	1.8	3720	860
	300	56	25	24.20	1.9	3500	860

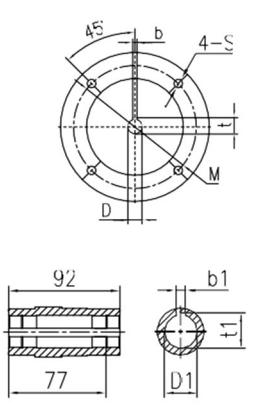
n1=1400r/min

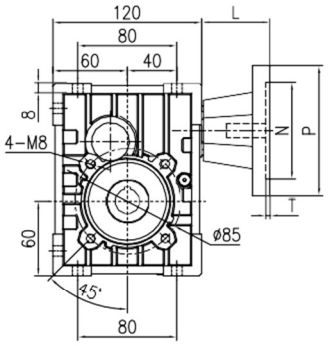
	240	71	20	20.16	1.9	3230	860
	200	93	15	15.88	2.1	2950	860
	300	112	12.5	12.49	3.8	2770	860
	240	142	10	9.84	3.9	2550	860
	200	187	7.5	7.48	4.3	2330	860
	500	4.7	300	295.18	0.27	8300	560
	500	5.8	250	240.89	0.34	8300	560
	480	7	200	200.66	0.39	8300	560
	500	9.3	150	151.20	0.54	8050	560
	480	11	125	125.95	0.62	7580	560
	380	14	100	99.22	0.62	7000	560
	300	19	75	75.45	0.65	6390	560
	480	22	60	62.43	1.3	6000	560
	380	28	50	49.18	1.3	5540	560
	500	24	60	59.04	1.3	5890	1260
	500	29	50	48.18	1.7	5500	1260
	480	35	40	40.13	1.9	5170	1260
	500	46	30	30.24	2.6	4710	1260
	480	56	25	25.19	3.0	4430	1260
	380	71	20	19.84	3.1	4090	1260
	300	93	15	15.09	3.2	3730	1260
	480	112	12.5	12.49	6.1	3510	1260
	380	142	10	9.84	6.2	3240	1260
	300	187	7.5	7.48	6.4	2950	1260

OUTLINE DIMENSION SHEET

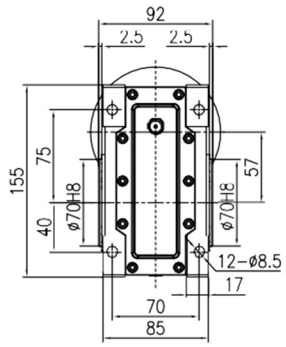
MSWH.. Outline Dimension

MSWH 50B..

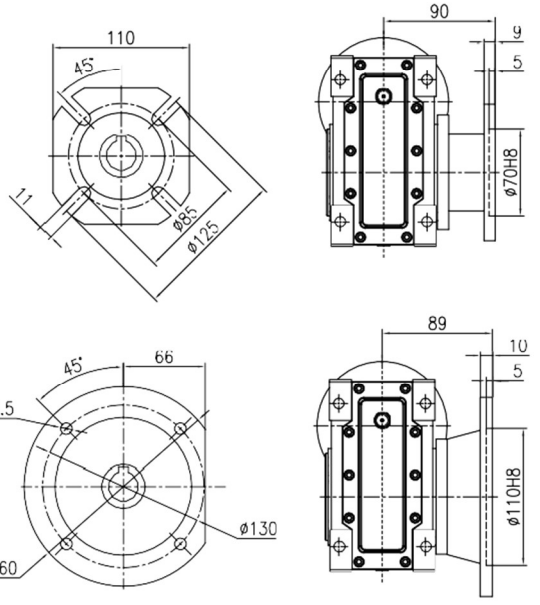




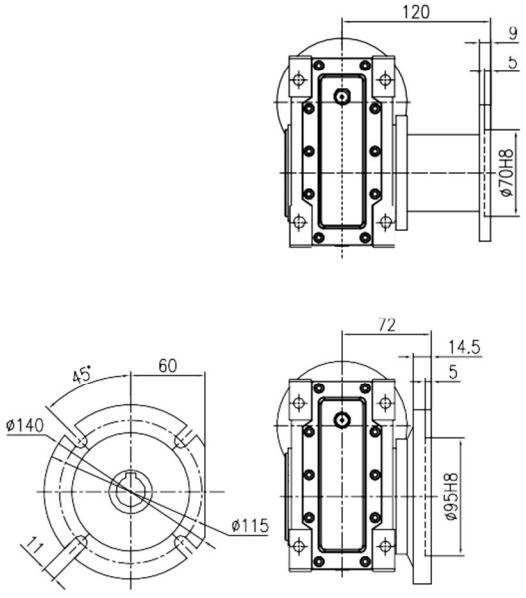
FA



FB



FC



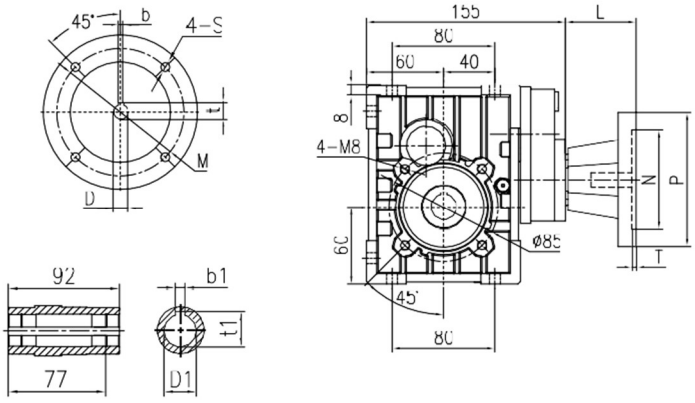
FD

IEC	DE 8	b	t	P	M	N	S	T	L	D1 H7	b1	t1
63B5	11	4	12.8	140	115	95	9	3.5	45	20*	6*	22.8*
71B5	14	5	16.3	160	130	110	9	4	52	24	8	27.3
71B14	14	5	16.3	105	85	70	7	3	52	25*	8*	28.1*
80B5	19	6	21.8	200	165	130	11	4	62			
80B14	19	6	21.8	120	100	80	7	3.5	62	*		
90B5	24	8	27.3	200	165	130	11	4	72	* Only on request		
90B14	24	8	27.3	140	115	95	9	3.5	72			

≈4.1kg

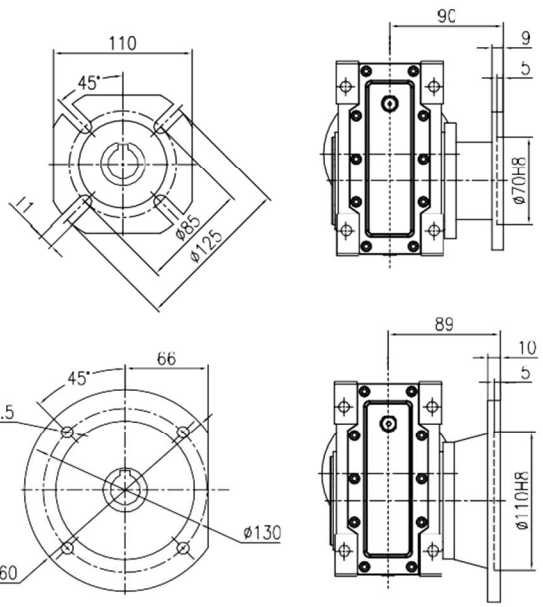
Weight without motor
≈4. 1kg

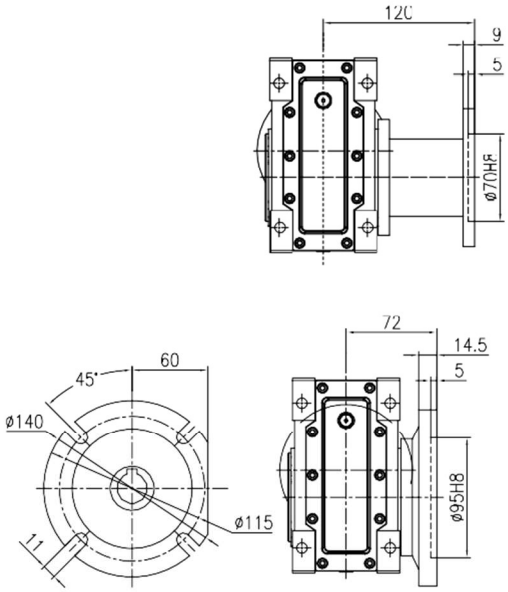
MSWH 50C..



FA

FB





FC

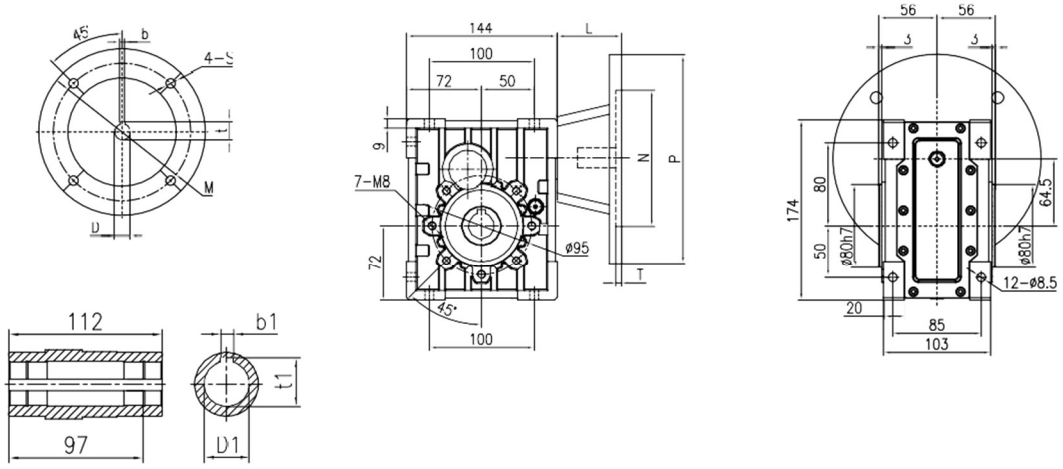
FD

IEC	DE 8	b	t	P	M	N	S	T	L	D1 H7	b1	t1
63B5	11	4	12.8	140	115	95	9	3.5	45	20*	6*	22.8*
71B5	14	5	16.3	160	130	110	9	4	52	24	8	27.3
71B14	14	5	16.3	105	85	70	7	3	52	25*	8*	28.1*
										* Only on request		

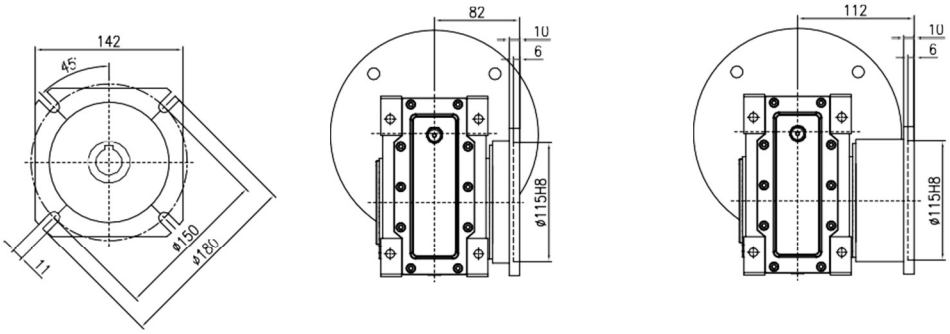
≈4.7kg

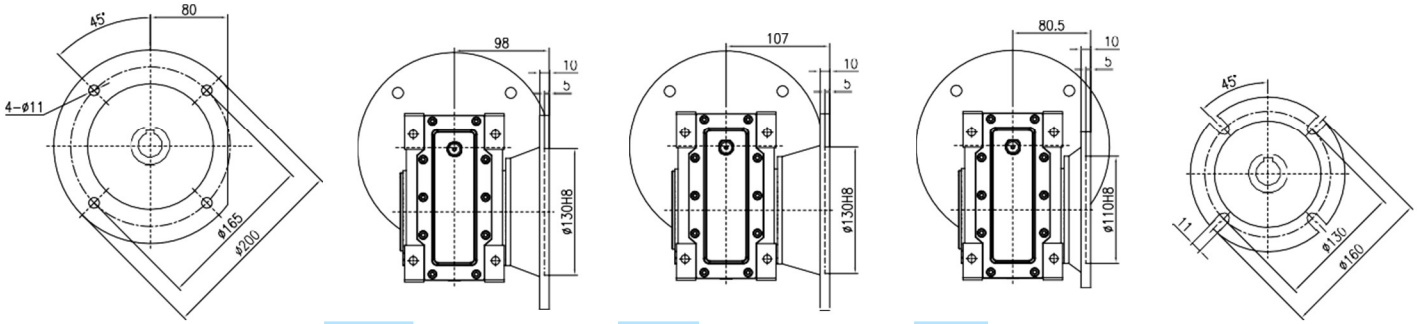
Weight without motor ≈4.7kg

MSWH 63B..



FA FB





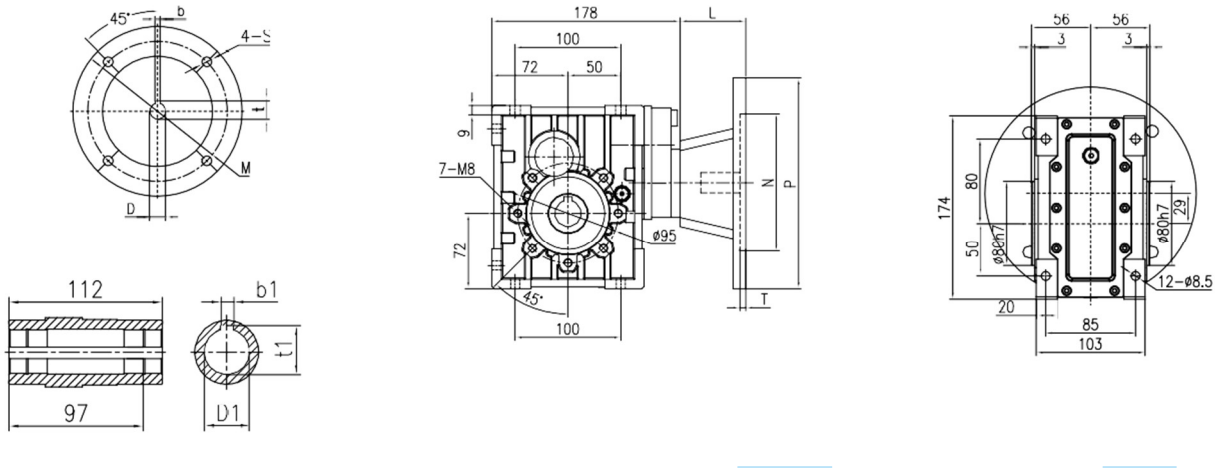
FC FD FE

IEC	DE 8	b	t	P	M	N	S	T	L	D1 H7	b1	t1
63B5	11	4	12.8	140	115	95	9	3.5	45	25	8	28.3
71B5	14	5	16.3	160	130	110	9	4	52			
71B14	14	5	16.3	105	85	70	7	3	52			
80B5	19	6	21.8	200	165	130	11	4	62			
80B14	19	6	21.8	120	100	80	7	3.5	62	* Only on request		
90B5	24	8	27.3	200	165	130	11	4	72			
90B14	24	8	27.3	140	115	95	9	3.5	72			

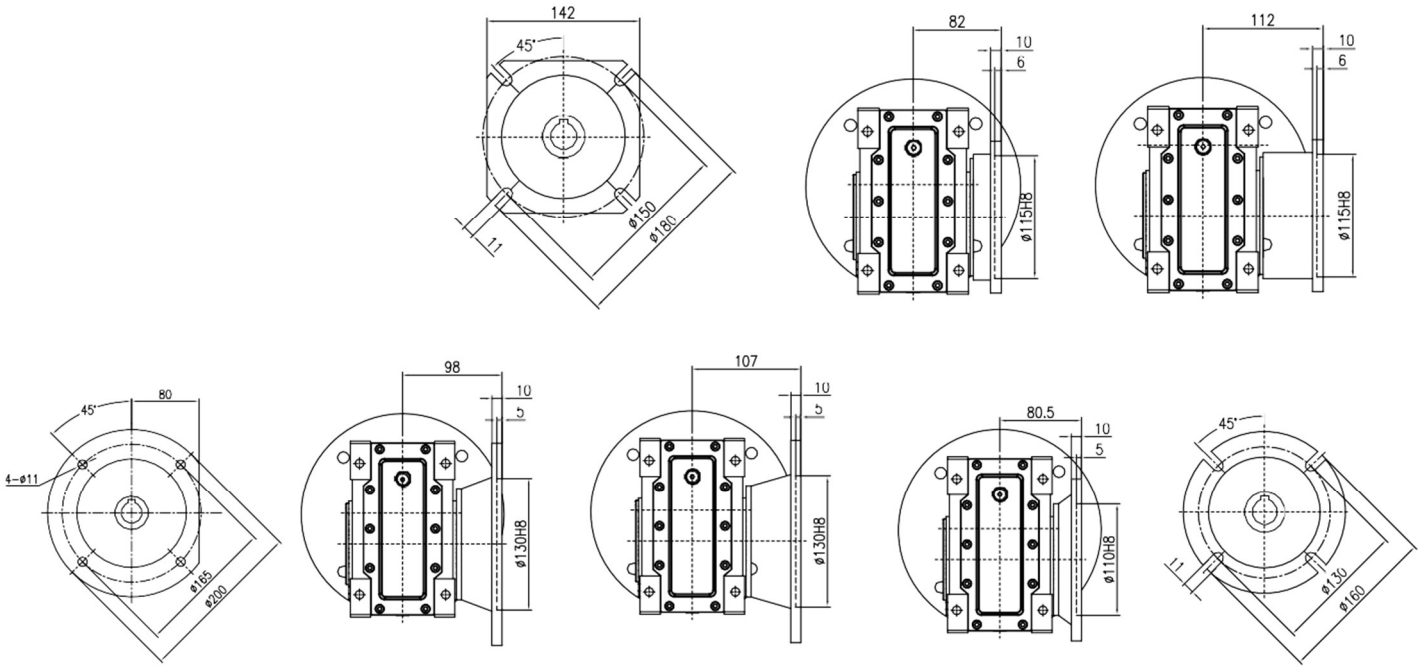
≈6. 1kg

Weight without motor
≈6.1kg

MSWH 63C..



FA FB



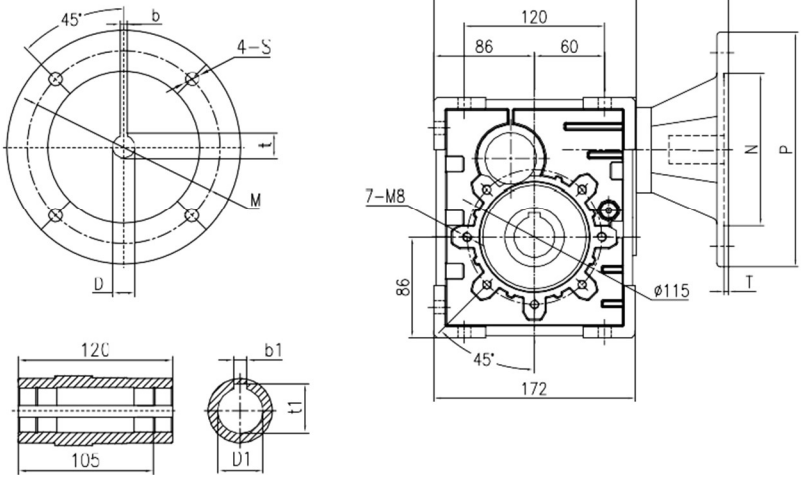
FC FD FE

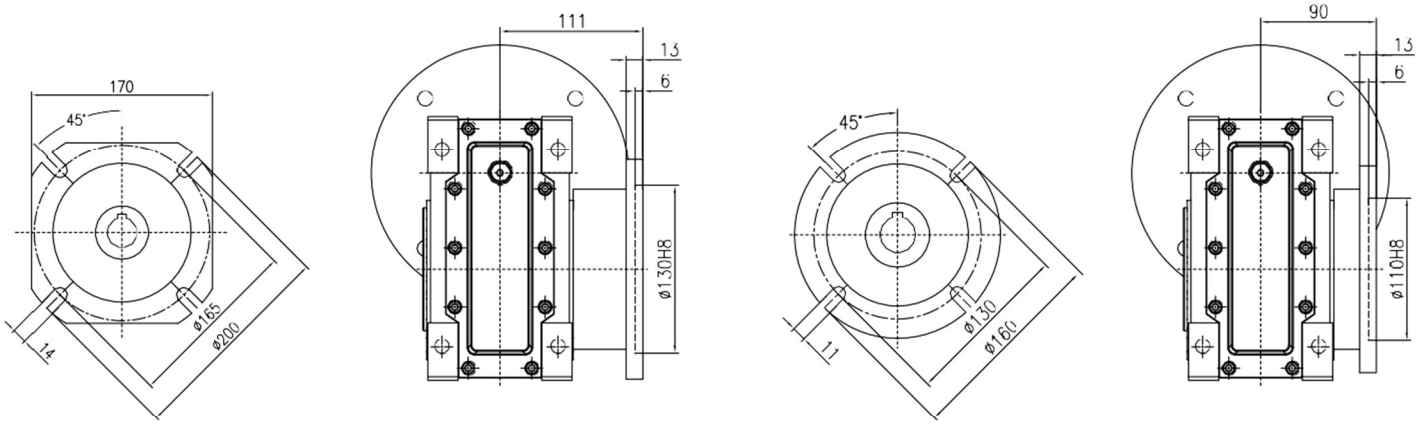
IEC	DE 8	b	t	P	M	N	S	T	L	D1 H7	b1	t1
63B5	11	4	12.8	140	115	95	9	3.5	45	25	8	28.3
71B5	14	5	16.3	160	130	110	9	4	52			
71B14	14	5	16.3	105	85	70	7	3	52			
80B5	19	6	21.8	200	165	130	11	4	62	* Only on request		
80B14	19	6	21.8	120	100	80	7	3.5	62			

≈6.7kg

Weight without motor ≈6.7kg

MSWH 75B..





FA

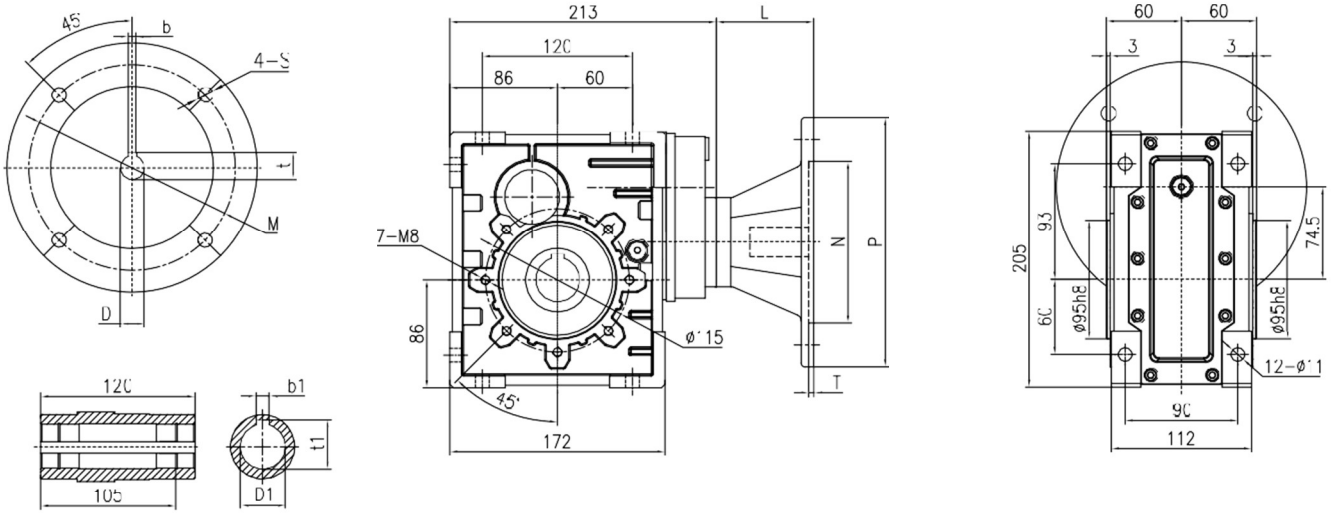
FB

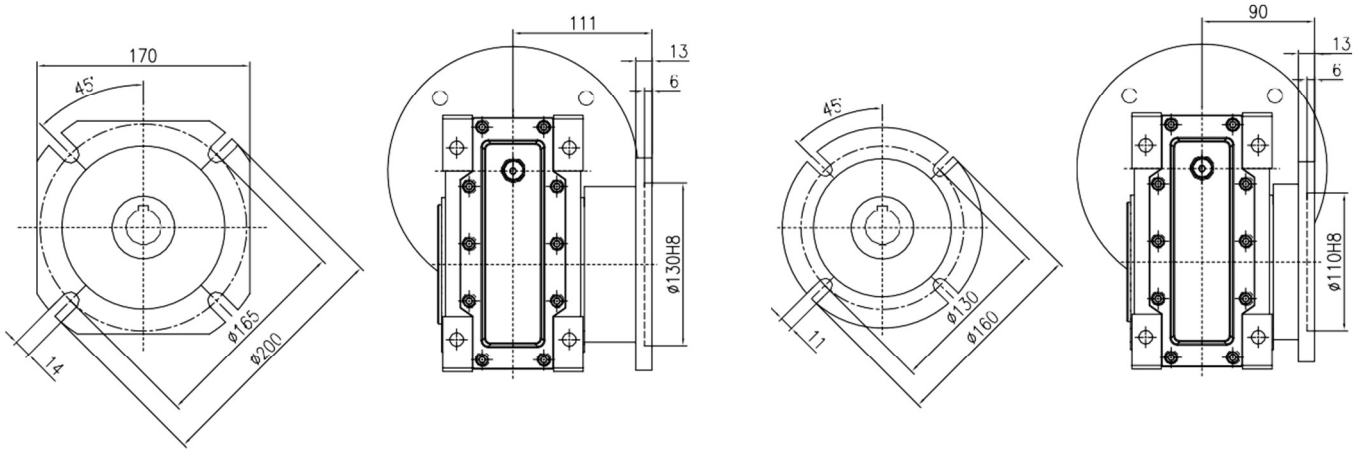
IEC	DE8	b	t	P	M	N	S	T	L	D1 H8	b1	t1
63B5	11	4	12.8	140	115	95	9	3.5	53	28	8	31.3
71B5	14	5	16.3	160	130	110	9	4	60	30*	8*	33.3*
80B5	19	6	21.8	200	165	130	11	4	79	35*	10*	38.3*
80B14	19	6	21.8	120	100	80	6.5	3.5	69	** Only on request		
90B5	24	8	27.3	200	165	130	11	4	79			
90B14	24	8	27.3	140	115	95	9	3.5	79			
100/112B5	28	8	31.3	250	215	180	13.5	4	89			
100/112B14	28	8	31.3	160	130	110	9	4.5	89			

≈9.5kg

Weight without motor
≈9.5kg

MSWH 75C..





FA

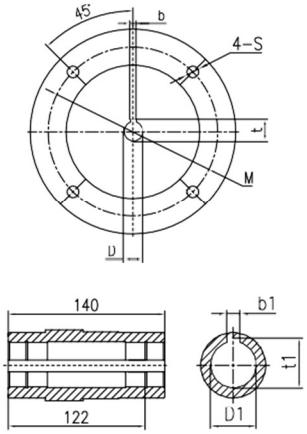
FB

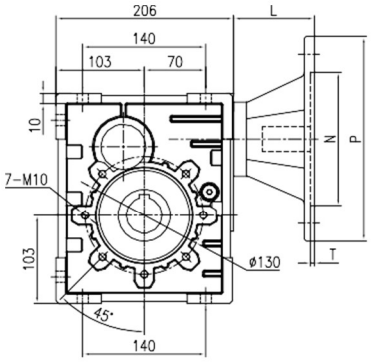
IEC	DE 8	b	t	P	M	N	S	T	L	D1 H8	b1	t1
63B5	11	4	12.8	140	115	95	9	3.5	53	28	8	31.3
71B5	14	5	16.3	160	130	110	9	4	60	30*	8*	33.3*
80B5	19	6	21.8	200	165	130	11	4	79	35*	10*	38.3*
80B14	19	6	21.8	120	100	80	6.5	3.5	69	* Only on request		
90B5	24	8	27.3	200	165	130	11	4	79			
90B14	24	8	27.3	140	115	95	9	3.5	79			

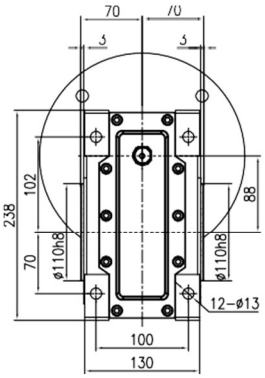
≈10.9kg

Weight without motor
≈10.9kg

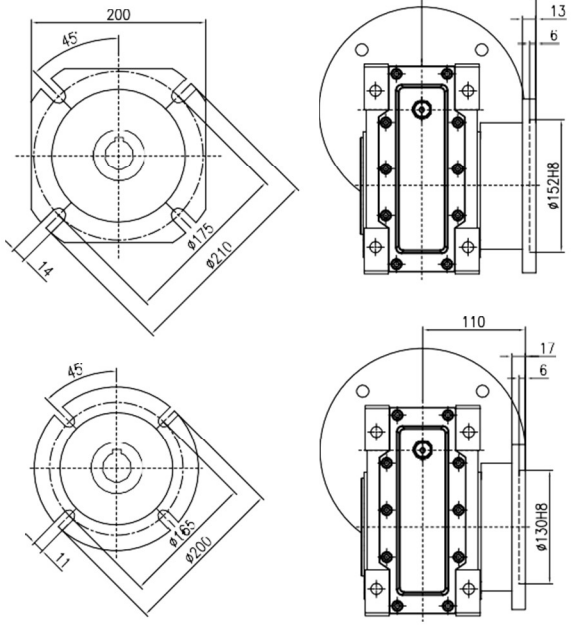
MSWH 90B..



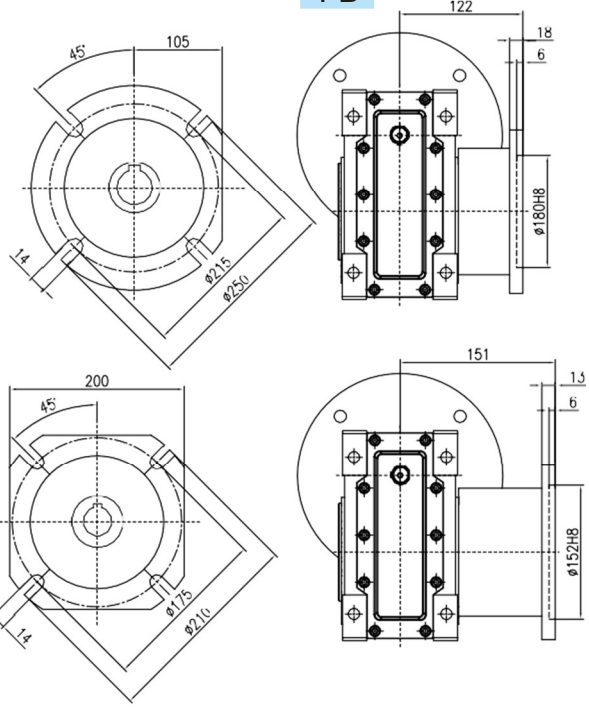




FA



FB



FC

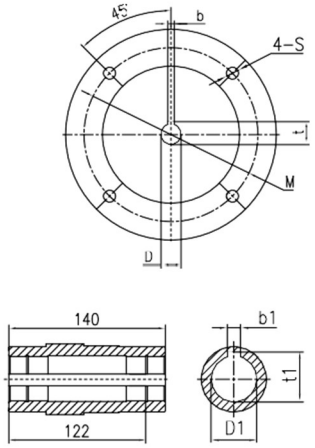
FD

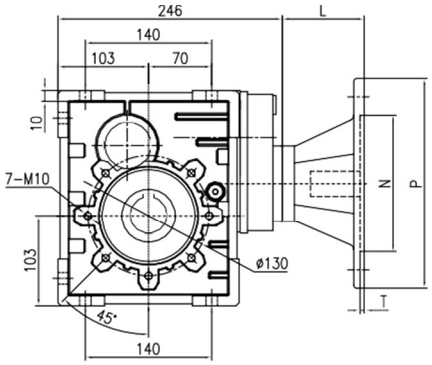
IEC	DE 8	b	t	P	M	N	S	T	L	D1 H8	b1	t1
63B5	11	4	12.8	140	115	95	9	3.5	53	35	10	38.3
71B5	14	5	16.3	160	130	110	9	4	60	38*	10*	41.3*
80B5	19	6	21.8	200	165	130	11	4	79			
80B14	19	6	21.8	120	100	80	6.5	3.5	69	* Only on request		
90B5	24	8	27.3	200	165	130	11	4	79			
90B14	24	8	27.3	140	115	95	9	3.5	79			
100/112B5	28	8	31.3	250	215	180	13.5	4	89			
100/112B14	28	8	31.3	160	130	110	9	4.5	89			

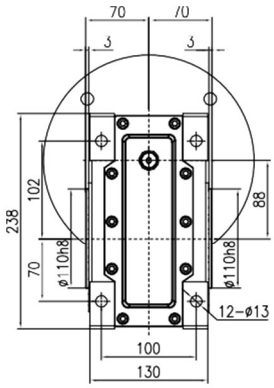
≈13．4kg

Weight without motor
≈13.4kg

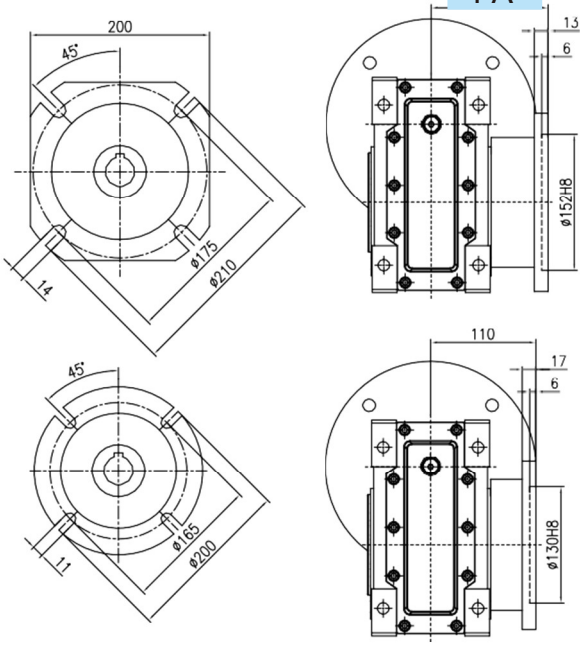
MSWH 90C..



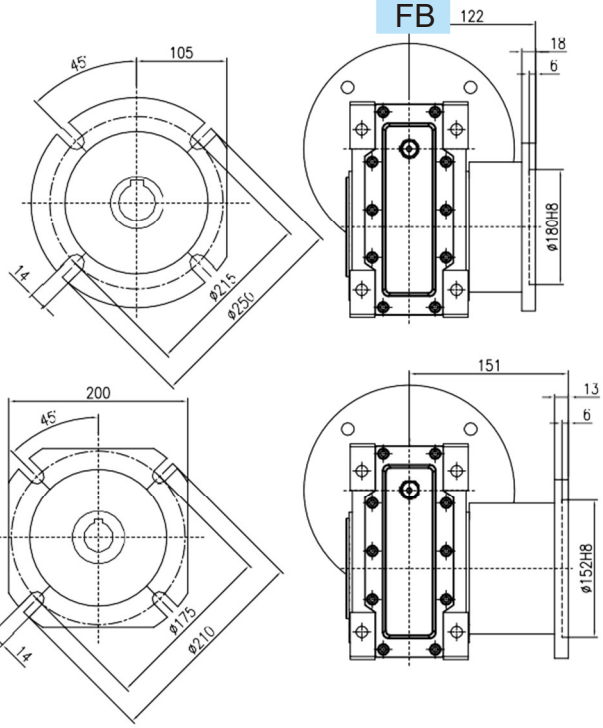




FA



FB



FC

FD

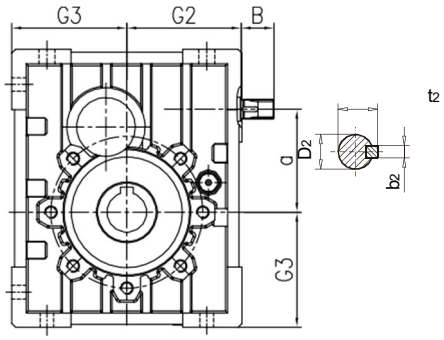
IEC	DE 8	b	t	P	M	N	S	T	L	D1 H8	b1	t1
63B5	11	4	12.8	140	115	95	9	3.5	53	35	10	38.3
71B5	14	5	16.3	160	130	110	9	4	60	38*	10*	41.3*
80B5	19	6	21.8	200	165	130	11	4	79			
80B14	19	6	21.8	120	100	80	6.5	3.5	69	* Only on request		
90B5	24	8	27.3	200	165	130	11	4	79			
90B14	24	8	27.3	140	115	95	9	3.5	79			

≈14.6kg

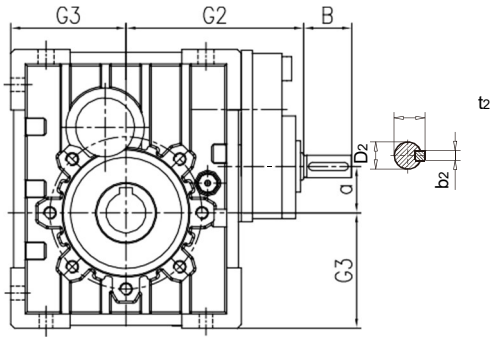
Weight without motor
≈14.6kg

MSWHS.. / Outline Dimension

MSWHS..B



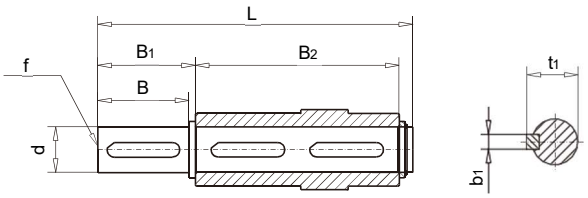
MSWHS..C



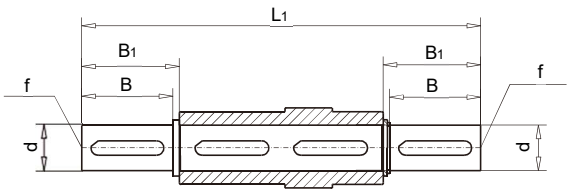
	B	$D_{2\,j6}$	G_2	G_3	a	b_2	f_2	t_2
MSWH50	20.5	12	60	60	57	3	M5	13.2
B	23	11	100	60	21.5	4	M5	12.5
MSWH50	20.5	12	71.5	72	64.5	3	M5	13.2
C	23	11	111	72	29	4	M5	12.5
MSWH63	26.2	17	87	86	74.5	5	M5	19
B	30	14	127	86	30.5	5	M5	16
MSWH63	28	17	102	103	88	5	M5	19
C	30	17	143	103	44	5	M5	16

ACCESSORIES OUTLINE DIMENSION SHEET

Output Shafts



DZ1,DZ2



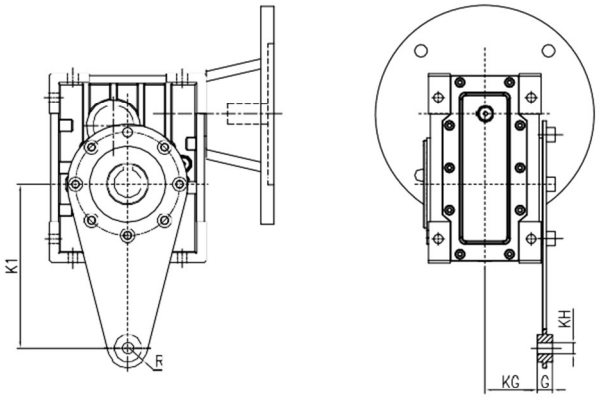
SZ

	d_{h6}	B	B_1	G_1	L	L_1	f	b_1	t_1
MSWH5	25	50	53.5	92	153	199	M10	8	28
0	25	50	53.5	112	173	219	M10	8	28
MSWH6	28	60	63.5	120	192	247	M10	8	31
3	35	80	84.5	140	234	309	M12	10	38

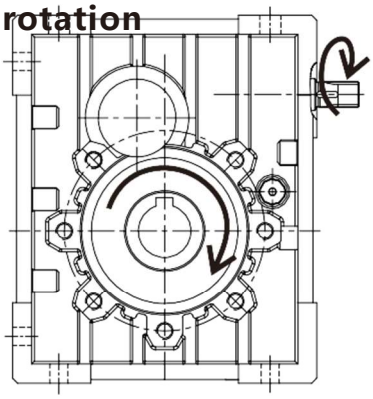
∗ Only on request

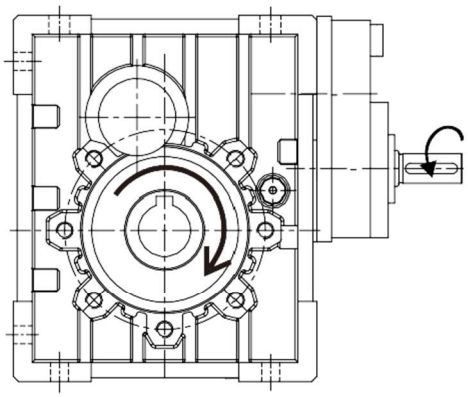
MSWH.. Torque Arm

	K1	G	KG	KH	R
MSWH50	100	14	38.5	10	18
MSWH63	150	14	49	10	18
MSWH75	200	25	48	20	30
MSWH90	200	25	57.5	20	30



Direction of rotation





The motor can be run either CW or CCW. When using with gearbox, the direction on chart is recommended

INSTALLATION

Note recommendations

- Check whether the rotation direction of output shaft of reducer is correct before fitting to the machine.
- Before connect with the prime mover and device, please check the reducer's every axial diameter, aperture, key and key slot, to be sure their dimensions are not deviation, and avoid assembling too tight or too loose, unless it will influence the reducer's performance
- The mounting on the machine must be stable to avoid any vibration
- Whenever possible, protect the reduction unit against solar radiation and bad weather
- In the case of particularly lengthy periods of storage (4-6 months), if the oil seal is not immersed in the lubricant inside the unit, it is recommended to change it. It is because the rubber could stick to the shaft or may even have lost the elasticity
- When connect with hollow or solid shaft, please grease the joint to avoid lock or oxidation
- Check the correct level of the lubricant through the oil mirror, if there is one
- Starting must take place gradually, without immediately applying the maximum load
- Supporting unit is required when using reducer that connect with motor directly, if the weight of motor is comparatively heavy
- Ensure the motor cools correctly by assuring good passage of air from the fan side
- Standard working temperatures should be between -5℃ to + 40℃, if not, please call the Technical Service

Service restrictions

Specification on this catalogue is organized according to standard of general reducer. It is also necessary to take due consideration of and carefully assess the following applications by calling our Technical Service:

- As speed increase based on datasheet
- Applications when f_a>10 .
- Use in services that could be hazardous for people if the reduction unit fails.
- Applications with high dynamic strain on the case of the reduction unit.
- When working temperature is under －5℃ or over
- 40℃.
- Use in chemically aggressive environments.
- Use in a salty environment.
- Use in radioactive environments.
- Use in environments pressures other than atmospheric pressure.
- Mounting positions not mentioned in the catalogue.

Avoid applications where even partial immersion of the reduction unit is required.

The maximum torque that the gear reducer can support must not exceed two times the nominal torque (f_s=1) stated in the performance tables. Intended for momentary overloads due to starting at full load, braking, shocks or other causes, particularly those that are dynamic.

LUBRICATION

Types of lubrication

	°C	ISO	SHELL	MOBIL	BP	lubrication type
MSWH	-10 +40	VG 220	Shell Omala 220	Mobilgear 630	BP Energo 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 VH 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 +80	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		

MSWH.. Lubricant fill quantity

			Fill quantity in liters			(L)
Gear units	B3	B6	B7	B8	V5	V6
MSWH50B	0.22	0.20*	0.13*	0.15	0.25	0.14
MSWH50C#	0.07	0.04	0.31	0.05	0.08	0.09
MSWH63B	0.42	0.35*	0.24*	0.22	0.46	0.25
MSWH63C#	0.07	0.04	0.04	0.05	0.08	0.09
MSWH75B	0.70	0.58*	0.42*	0.42	0.75	0.45
MSWH75C#	0.13	0.09	0.09	0.09	0.15	0.17
MSWH90B	1.21	0.95*	0.72*	0.67	1.3	0.74
MSWH90C#	0.13	0.09	0.09	0.09	0.15	0.17

The specified filling amount is a reference value. The change of the precision value is related to the number of stages and the transmission ratio. Please pay attention to the precise amount of oil indicated by the oil level bolt when adding lubricating oil. When you adjust the installation method later, you must adjust the lubricant according to the changed installation method.The above table lists the corresponding standard reference lubricant injection values for reducers with different installation methods (B3, B6, B7...).

#: When using a 3-stage transmission reducer, fill the lubricating oil of the 3-stage tank and the 2-stage tank respectively, and the lubricating oil is not connected to each other. The filling amount in the table is the filling amount of the 3-stage tank.

*: It means that in this installation method, the oil level plug cannot be filled with lubricating oil only, the oil level must be higher than the oil level plug, and the filling amount is as shown in the table.

STORAGE

Protected against rain and snow, no shock loads.

Lay the block or other material between the ground and equipment.

The opened but not used gear units should be added with the anti-corrosive oil on its surface, and then return to the packing containers intime.

If reducer is storage for 2 years or more, please check cleanliness and mechanical damage, and whether corrosion protection is still there.

NOTICE FOR ORDER

Please offer the following information when place the orders:

Type of the reducer(type,ratio,power and mounting position).

generally the gear units paint in silver.

Order quantity.

Other special requirements.

Company, contact person and telephone no.

MALFUNCTIONS

Gear unit malfunctions

Problem	Possible cause	Remedy
Unusual, regular running noise	A. Meshing/grinding noise: Bearing damage. B. Knocking noise: Irregularity in the gearing	A. Check the oil, change bearings B. Contact customer service
Unusual, irregular running noise	impurity in the oil	• Check the oil • Stop the drive, contact customer service
Oil leaking1) • From the gear cover plate • From the motor flange • From the motor oil seal • From the gear unit flange • From the output end oil sea	A. Rubber seal on the gear cover plate is leaking B. defective seal C. Reducer is not vented	A. Tighten the bolts on the gear cover plate and observe the gear unit. If oil is still leaking, contact customer service B. Contact customer service C. Vent the gear unit (see “Mounting Positions”)
Oil leaking from breaking valve	A. Too much oil B. Drive mounted in wrong mounting position C. Frequent cold starts(oil foams) and/or high oil level	A. Correct the oil level (see Sec. “Inspection and Maintenance”) B. Mount the breather correctly (see Sec. “Mounting Positions”)and correct the oil level (see “Lubricants”)
Output shaft does not turn although the motor is running or the input shaft is rotated	Connection between shaft and hub in reducer is cracked	Send reducer to factory for repair

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

Charge Characteristic Chart (for reference)

AIR BLOWERS		Hoisst gear assembly	A
Air blower(axial or radial)	A	Derrick gear assembly	B
Fan of cooling tower	B	Stering gear assembly	B
Induced draught fan	B	Moving gear assembly	C
Rotary piston type fan	B	LAND DREDGER	
Turbo-fan	A	Drum-type coveyer	C
CONSTRUCTION MACHINERY		Drum-type rotation wheel	C
Concrete mixer	B	Dredger head	C
Hoist	B	Powered crab	B
Road building machinery	B	Pump	B
Boring mill	B	Pump turning gear assembly	B
CHEMICAL MACHINERY		Moving gear assembly (apron wheel)	C
Mixer (liquid)	A	Moving gear assembly(track)	B
Mixer (half liquid)	B	FOODSTUFF PROCESSING MACHINERY	
Centrifuge (heavy)	B	Placer or box filler	A
Centrifuge (light)	A	Cane crusher	A
Cooling rolling drum	B	Cane cutter	B
Dry rolling drum	B	Cane crasher	C
Mixer	B	Mixer	B
COMPRESSOR		Paste bucket	B
Piston type compressor	C	Packager	A
Turbo-compressor	B	Beet slicer	B
TRANSMISSION FREIGHTER		Beet washing machine	B
Pan conveyer	B	MOTOR AND CONVERSION EQUIPMENTS	
Balance lifter	B	Frequency converter	C
Trough conveyer	B	Motor	C
Ribbon conveyer (large piece)	C	Welding motor	C
Ribbon conveyer (small piece)	B	WASHING MACHINE	
Drum-type flour conveyer	A	Rolling drum	B
Chain conveyer	B	Washing machine	B
Ring type conveyer	B	METAL ROLLER MACHINE	
Lifter	B	Steel cutter	C
Hoist	B	Chain conveyer	B
Crank-connecting conveyer	B	Cold mill	C
Lifter	B	Continuous casting equipments	B
Worm conveyer	B	Cold bed	B
Steel-band conveyer	B	Cropper	C
Chain reed-type conveyer	B	Cross steering transmitter	B
Crab freighter	B	Deruster	C
HOIST		Heavy and medium steel mill	C
Bracket swing gear assembly	B	Bar mill	C

BAR TRANSMISSION EQUIPMENTS	B	PUMPS	
Bar pusher	B	Centrifugal pump （thin liquid）	A
Push bed	B	Centrifugal pump （half liquid）	B
Shears	C	Displacement pump	C
Lumber elevator platform	B	Plunger pump	C
ROLL ADJUSTING EQUIPMENTS	B	Force pump	C
Roller lvevling machine	B	PLASTIC EQUIPMENTS	
Mill rolling way （heavy）	C	Glazing press	B
Mill rolling way (light)	B	Ejecting press	B
Sheet rolling mill	C	Spiral extruding machine	B
Trimming shears	B	Mixing machine	B
Pipe welder	C	RUBBER EQUIPMENT	
Soldering machine（belt material and wire rod）	B	Glazing press	B
Wire drawbench	B	Ejecting press	C
METAL PROCESSING MACHINE TOOLS		Mixing stir machine	B
Power shaft	A	Kneading machine	B
Drop hammer	C	Roller machine	C
Machine tool and necessary	C		
Machine tool and necessary	A	STONE PORCELAIN CLAY PROCESSING EQUIPMENTS	
Machine tool and main driving equipment	B	Ball crusher	B
Metal facing machine	C	Ejecting press and breaker	C
Plate-leveling machine tool	C	Breaker	C
Backing-out punch	C	Brick press	C
Press machine tool	C	Beating crusher	C
Cutting machine	B	Converter	C
Sheet bending machine tool	B	Cylinder mill	C
PETROLEUM PROCESSING MACHINERY		TEXTILE MACHINERY	
Pump of oil pipe line	B	Feeding machine	B
Rotary drilling equipment	C	Loom machine	B
PAPERING MACHINE		Dyeing machine	B
Glazing press	C	Purified drum	B
Multilayer paper board machine	C	Welon machine	B
Drying cylinder	C	WASTER TREATMENT EQUIPMENTS	
Glazing cylinder	C	Air blast	B
Masher	C	Screw pump	B
Mashing and breaking machine	C	WOOD PROCESSING MACHINE TOOL	
Suction roll	C	Barker	C
Wet oaoer roller machine	C	Facing machine	B
Water absorbing roller machine	C	Saw bench	C
Welon machine	C	Wood processing machine tool	A

Note: A - Uniform bad; B - Moderate shock load; C - Heavy shock load; ** - for 24hour system.