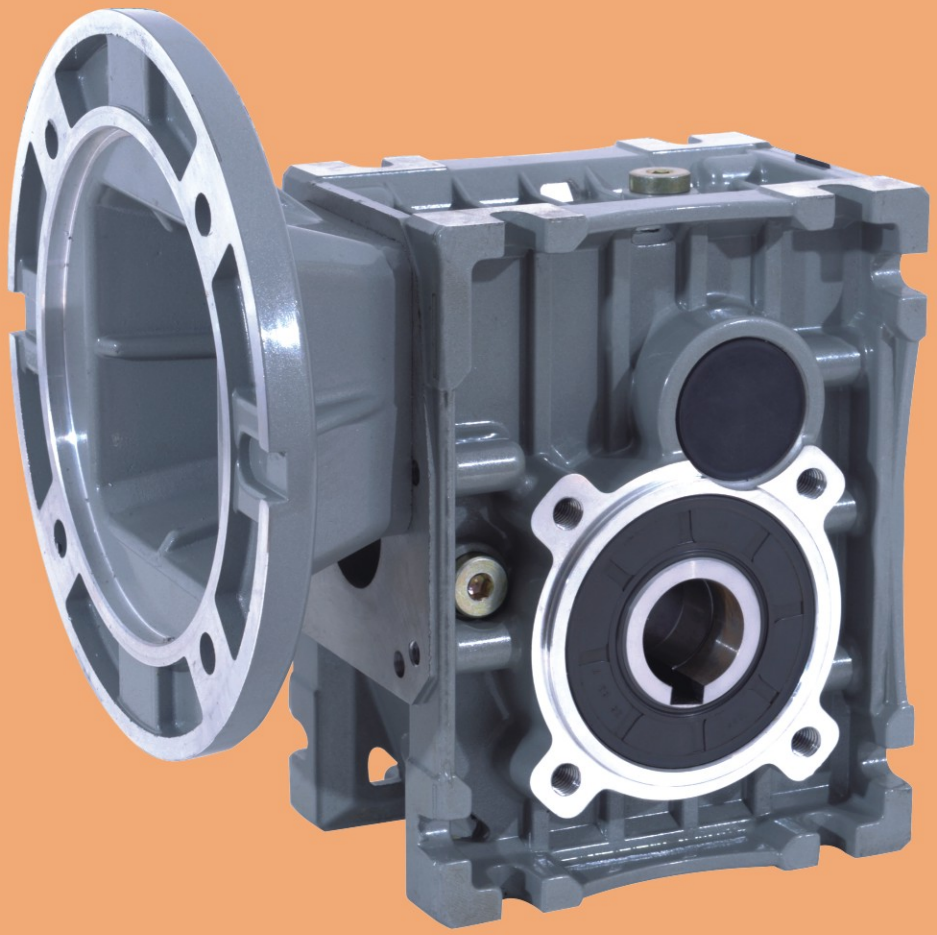
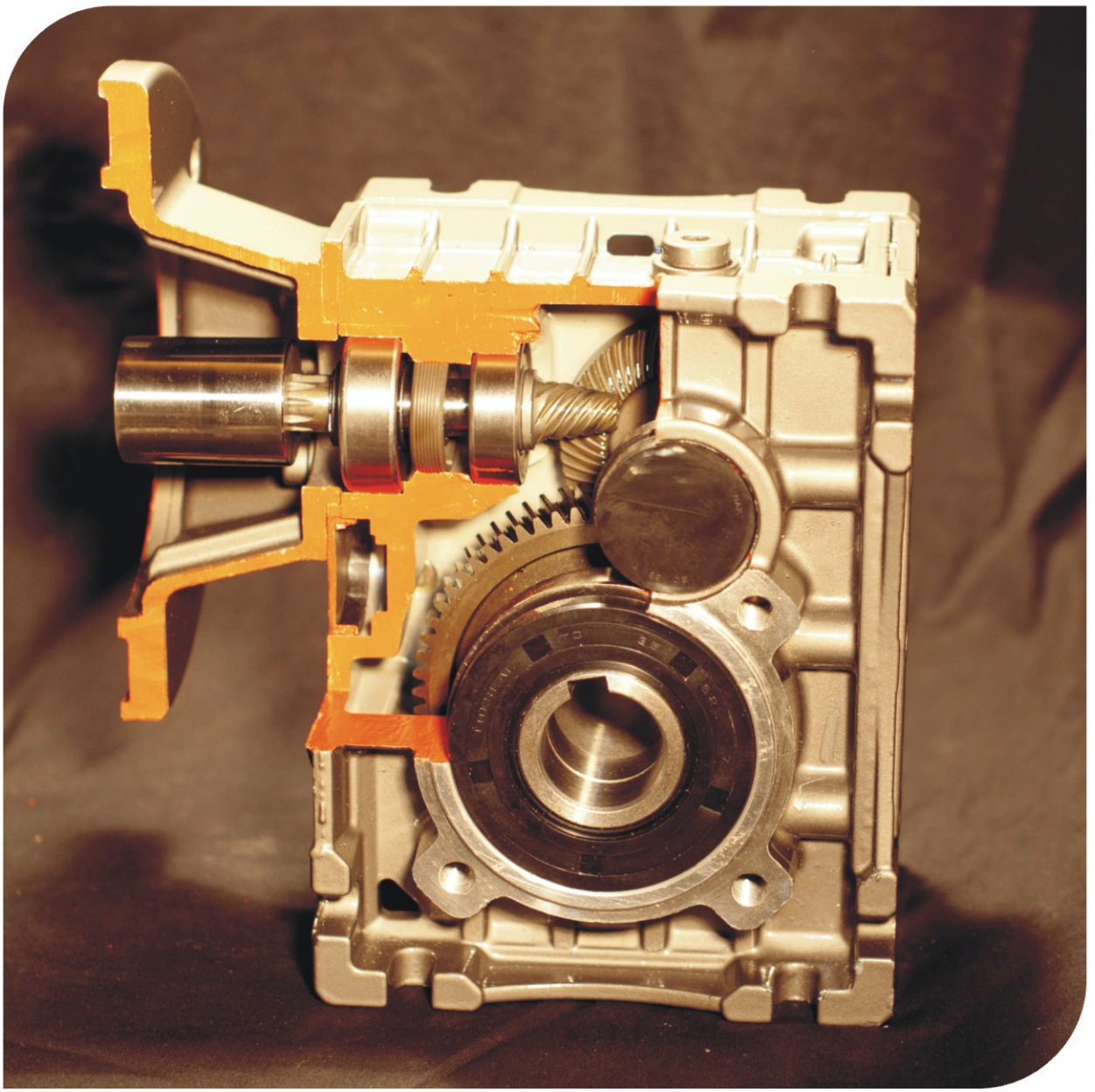
HYPOID HELICAL GEARBOX



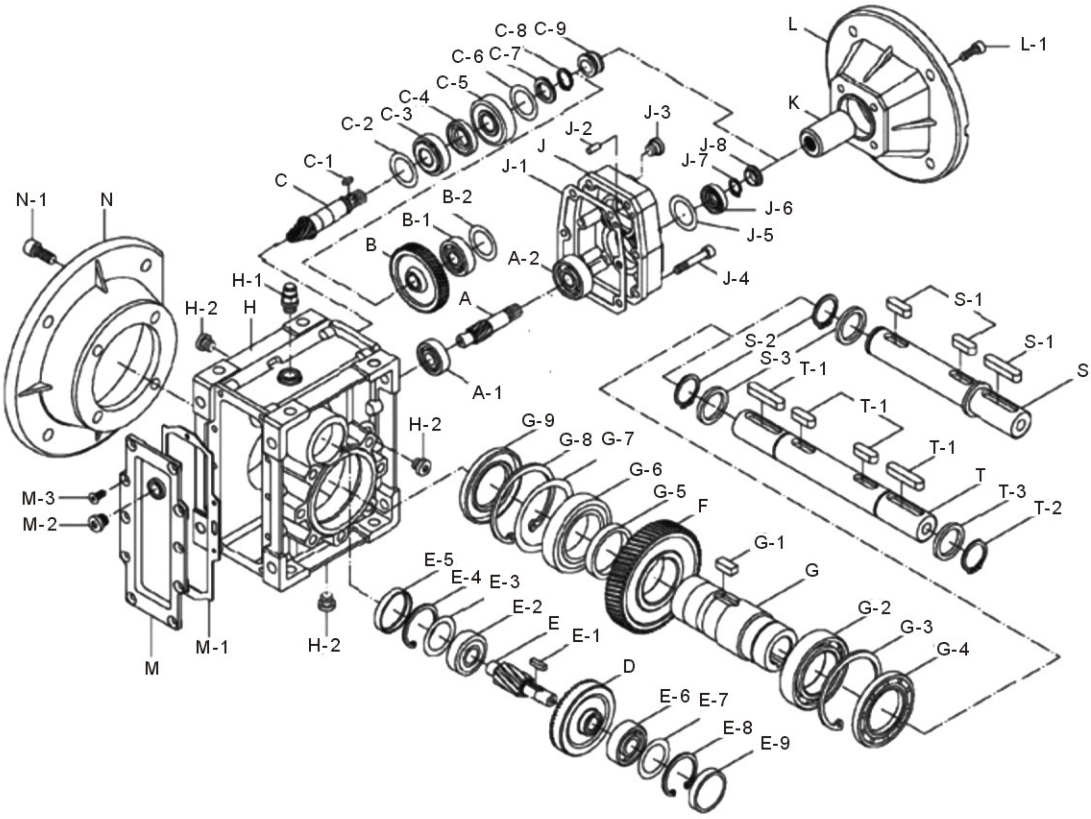
HYPOID HELICAL GEARBOX

CONTENT

CUTAWAY VIEW



STRUCTURE



A	driving pinion	C-4	oil seal	G-9	oil seal
B	driven gear	C-5	bearing	H-1	air vent valve
C	driving gear shaft	C-6	adjusting shim	H-2	oil plug
D	driven gear	C-7	gasket	J-1	seal spacer
E	driving gear shaft	C-8	shaft circlip	J-2	straight pin
F	driven gear	C-9	rubber sleeve	J-3	oil plug
G	output shaft	E-1	flat key	J-4	inner hexagon screw
H	housing	E-2	bearing	J-5	adjusting shim
J	3 stage housing	E-3	adjusting shim	J-6	oil seal
K	input bushing	E-4	hole circlip	J-7	shaft circlip
L	input flange	E-5	oil seal cover	J-8	rubber sleeve
M	side cover	E-6	bearing	L-1	inner hexagon screw
N	output flange	E-7	adjusting shim	M-1	sealed gasket
S	single output shaft	E-8	hole circlip	M-2	oil plug
T	double output shaft	E-9	oil seal cover	M-3	inner hexagon sunk screw
		G-1	flat key	N-1	inner hexagon screw
A-1	bearing	G-2	bearing	S-1	flat key
A-2	bearing	G-3	hole circlip	S-2	shaft circlip
B-1	bearing	G-4	oil seal	S-3	gasket
B-2	adjusting shim	G-5	spacer sleeve	T-1	flat key
C-1	flat key	G-6	bearing	T-2	shaft circlip
C-2	adjusting shim	G-7	adjusting shim	T-3	gasket
C-3	bearing	G-8	hole circlip		

ADVANTAGE

KPM and KPB are the advanced new generation hypoid helical gearbox in the world, the advantages are as follows:

1，Large output torque: more than RV series worm gearbox
2，High efficiency: up to 92%
3，Wide ratio range: from 7.5 to 300
4，Strong substitute: can replace RV and W series worm gearbox(50 is little different)

Material
1，Housing: High quality aluminum alloy
2，Gears: 20CrMnTi
3，Hardness: 56-62HRC

1. MODEL INSTRUCTION

KPM 50 B - 12.25 - FA 1 - 63B5 - SS 1 - V5
1 2 3 4 5 6 7 8 9 10

NO	Instruction
1	Gearbox series name: KPM, KPB
2	Gearbox types: 50, 63,75,90
3	B: 2 stage
	C: 3 stage
4	Ratio
5	Output flange types
	No symbol means without output flange
6	Output flange position
7	Input flange
8	SS: single output shaft
	DS: double output shaft
	No symbol means without output shaft
9	Output shaft position
10	Gearbox mounting position

Example: **KPM63C-100-FB2-71B14-SS1-V6**
KPB75B-20-FA1-80B5-DS-V5

2. SELECTING PARAMETER

2.1 Power *P*

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

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

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

2.2 Rotation speed *n*

n_1	Gear units input speed
n_2	Gear units output speed

For optimizing working condition and improving the life when the gearbox driven by the external device, please use the speed at 1400rpm or lower. High input speed is allowed but the rated torque M_2 will be decreased under such case.

2.3 Transmission ratio *i*

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

Generally ratio is decimal fraction with 2 radix points tagged in selecting table.

2.4 Torque *M*

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

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

M_2	Output torque
M_{2n}	Selected output torque
P_1	Input power
η	Efficiency
f_s	Service factor

2.5 Service factor f_s

Please consider the service factor f_s when used the gearbox, the service factor is decided by running time and frequency of on–off Z per day.

Confirming the 3 kind of loadtypes according to the inertial accelerating factor, the practical application service factors (fs) can be read in the below table, the selected fs from the below table must be less than or equal to the fs provided in the performance parameter table.

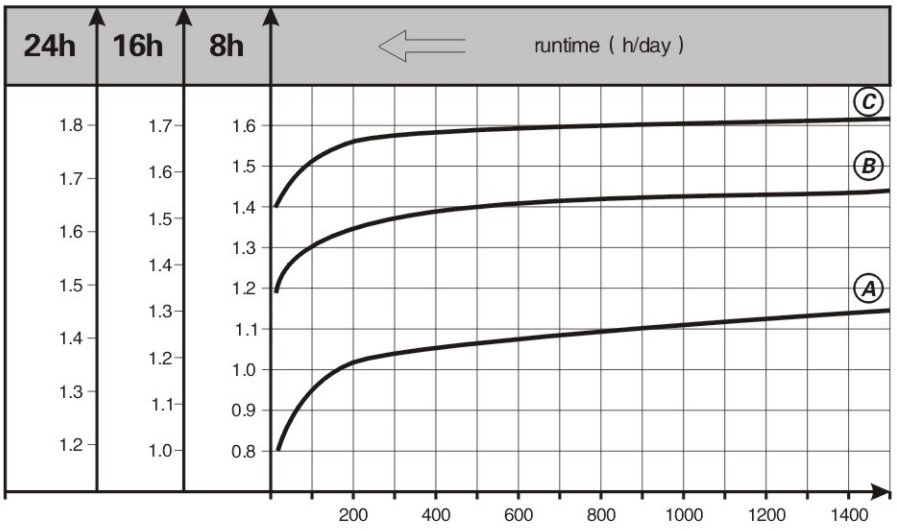


Fig:Service factor (f_S) start up frequency **Z** (1/h) #

Start up frequency Z: The cycle includes all start and brake times,also the times of speed changing on geared motor.

2.5.1 Load classifications

Ⓐ Uniform,permitted mass acceleration factor **fa**≤0.2

Ⓑ Moderate shock load,permitted mass acceleration factor **fa**≤3

Ⓒ Heavy shock load,permitted mass acceleration factor **fa**≤10

2.5.2 Inertial accelerating factor

The Inertial accelerating factor is calculated as follows:

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

f_a Inertial accelerating factor

J_c All external mass moments of inertia (kgm^2)

J_m Mass moment of inertia on the motor end (kgm^2)

Please contact with our technology department if the inertial accelerating factor fa > 10.

To keep the service–life of gearbox,the use factor f_S selected from the catalogue must be equal or slightly higher than the calculated use factor f_S.

Example:

Inertial accelerating factor 2.5(load classification f_s),10hours/day operating time (read off at 16h/d)and100 cycles/hour result in a service factor Ⓑ=1.45.

Choose the service factor f_s = 1.45 according to theparameter sheet.

2.6 Radial load and axial load

The types of transmission parts that mounted on the shaft end must be considered when the radial load was affected. Various transmission parts are corresponding with following transmission parts factors f_z:

Transmission element	Transmission part factor Fz	Comments
Gears	1.15	< 17 teeth
Chain sprockets	1.25	< 20 teeth
	1.40	< 13 teeth
Narrow V–belt pulleys	1.75	Influence of tensile force
Toothed belt pulleys	2.50	Influence of tensile force
Flat belt pulleys	2.50	Influence of tensile force

The radial load forced on the motor and gear shaft is calculated as follows:

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

F_r Radial load [N]

M Torque on the shaft [Nm]

d_0 Average diameter of the mounted transmission part in [mm]

f_z Transmission part factor

The permitted radial load is estimated by bearing rated service life L_{10h} (according to **ISO281**), and it confirmed by modificatory service life L_{na} under special running condition.

The permitted radial load must be calculated by the following formula when the loading point is deflected from the shaft center, and choose the permissible value F_{xl} on the point X(according to bearing service life)

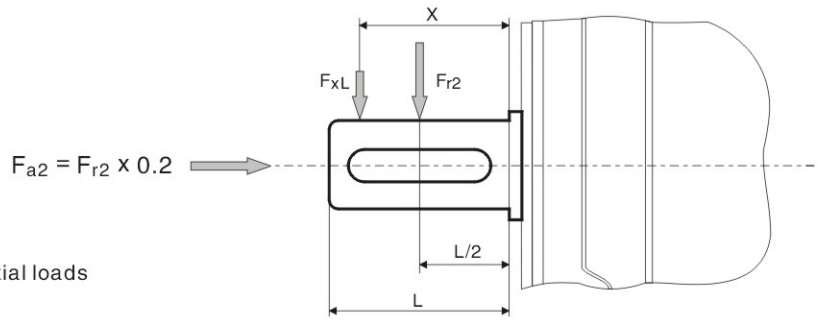
$$F_{xl} = F_{r(1,2)} \cdot \frac{a}{b+x} \text{ [N]}$$

F_{r1}, F_{r2} = Permitted radial load (x=L/2) for footmounted gearbox according to the selection tables [N]

x = Distance from shaft shoulder to the pressure point [mm]

$a,b,$ = Gearbox radial conversion constant [mm]

Ouput shaft radial loads



F_{a2} = Output axial loads

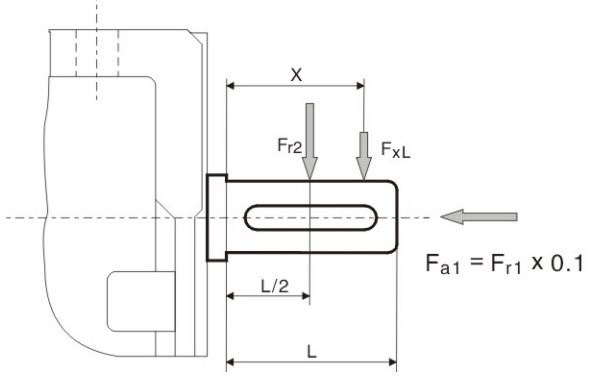
KPM Gearbox radial conversion constant

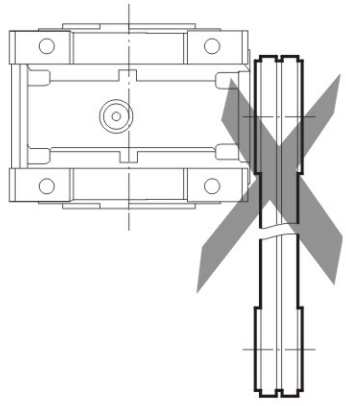
	KPM50B	KPM50C	KPM63B	KPM63C	KPM75B	KPM75C	KPM90B	KPM90C
a	104	104	118	118	131	131	159	159
b	78	78	93	93	101	101	119	119

KPB Gearbox radial conversion constant

			KPB63B	KPB63C	KPB75B	KPB75C	KPB86B	KPB86C
a			128	128	135	135	148.5	148.5
b			98	98	105	105	118.5	118.5

Input shaft radial loads





Output Structure
Narrow V-belt pulleys
Flat belt pulleys
Toothed belt pulleys

F_{a1} = Input axial loads

It is forbidden to use the input on the right chart (including 3 stage input).

KPM Gearbox radial conversion constant

	KPM50B	KPM50C	KPM63B KPB63B	KPM63C KPB63C	KPM75B KPB75B	KPM75C KPB75C	KPM90B KPB86B	KPM90C KPB86C
a	51.5	56	58	56	73	70	81	70
b	40	44.5	43	44.5	53	55	61	55

2.7 Selection table instruction

	Gearbox with such input flange is applicable
N/A	Gearbox with such input flange is not applicable
*	Ratio is divisible;
P_{1n}	Rated motor power;
n_2	Output speed;
M_{2n}	Output torque;
M_{2max}	Max.permissible output torque
F_{r2}	Ouput shaft radial load
i	Gearbox nominal ratio;
ia	Gearbox actual ratio;
f_s	Service factor;
	Gearbox type;
	Motor type;
Page	Dimension sheet page no;

3. SELECTION EXAMPLE

3.1 Geared motor

Example: Required power 0.37kW on driven machine, work for 8 h/day, moderate shock load,start up frequency 100(1/h),n_2=7r/min,**B3** mounted,

So:

Check the service factor table at page 6 ,choose f_s =1.3

$$i = \frac{n_1}{n_2} = \frac{1400}{7} = 200$$

$$P_{1n} \geqslant P_1 \cdot f_s = \frac{P_2}{\eta} \cdot f_s = \frac{0.37}{0.94} \times 1.3 = 0.512\ [kW]$$

Choose type:

KPM75C–200–71B5–7124–B3

3.2 Gearbox

Example: Required 130Nrn on driven machine, work for 8 h/day, start up frequency 200(1/h), **FA1** mounted n_1=1400r/min,n_2=90r/min,so the only selection is 3 stage after checked the table:

Check the service factor table at page 6 ,
choose f_s=1.02

$$i = \frac{1}{n_2} = \frac{1400}{90} = 15.5$$

$$M_{2n} \geqslant M_2 \cdot f_s = 130 \times 1.02 = 132.6\ [Nm]$$

$$P_{1n} \geqslant P_1 \cdot f_s = \frac{M_2 \cdot n_1}{9550 \cdot \eta \cdot i} \cdot f_s = \frac{132.6 \times 1400}{9550 \times 0.94 \times 15} \times 1.02 = 1.4\ [kW]$$

Choose type:

KPM63B–15–FA1–90B5

4. GEARBOX SELECTING

4.1 Gearbox and input flange combination

KPM50.. n_1=1400r/min 160Nm

Model		i Nominal	i Actual	n_2 [r/min]	M_2max [Nm]	F_{r2} [N]	63B5	71B5 71B14	80B5 80B14	90B5 90B14
3 Stage										
KPM50C		300	294.05	4.8	130	4100		N/A	N/A	N/A
KPM50C		250	244.29	5.8	130	4100		N/A	N/A	N/A
KPM50C		200	200.44	7.0	130	4100		N/A	N/A	N/A
KPM50C		150	146.67	9.6	160	4000		N/A	N/A	N/A
KPM50C		125	120.34	12	160	3770			N/A	N/A
KPM50C		100	101.04	14	160	3560			N/A	N/A
KPM50C		75	74.62	19	160	3220			N/A	N/A
KPM50C		60	62.36	23	160	3030			N/A	N/A
KPM50C		50	52.36	27	160	2860			N/A	N/A
2 Stage										
KPM50B		60	58.36	24	130	2960			N/A	N/A
KPM50B		50	48.86	29	130	2790				N/A
KPM50B		40	40.09	35	130	2610				N/A
KPM50B		30	29.33	48	160	2350				N/A
KPM50B		25	24.07	59	160	2200				
KPM50B		20	20.21	70	160	2080				
KPM50B		15	14.92	94	160	1880				
KPM50B		12.5	12.47	113	160	1770				
KPM50B		10	10.47	134	160	1670				
KPM50B		7.5	7.73	182	160	1510				

KPM63.., KPB63.., n_1=1400r/min 180Nm

Model		i Nominal	i Actual	n_2 [r/min]	M_2max [Nm]	F_{r2} [N]	63B5	71B5 71B14	80B5 80B14	90B5 90B14
3 Stage										
KPM63C	KPB63C	300	302.50	4.7	160	4800		N/A	N/A	N/A
KPM63C	KPB63C	250	243.57	5.8	160	4800		N/A	N/A	N/A
KPM63C	KPB63C	200	196.43	7.2	160	4800			N/A	N/A
KPM63C	KPB63C	150	151.56	9.3	180	4650			N/A	N/A
KPM63C	KPB63C	125	122.22	12	180	4330			N/A	N/A
KPM63C	KPB63C	100	94.50	14	180	4070			N/A	N/A
KPM63C	KPB63C	75	73.33	20	180	3650				N/A
KPM63C	KPB63C	60	63.33	23	180	3480				N/A
KPM63C	KPB63C	50	52.48	27	180	3270				N/A
2 Stage										
KPM63B	KPB63B	60	60.50	24	160	3430				N/A
KPM63B	KPB63B	50	48.71	29	160	3190				
KPM63B	KPB63B	40	39.29	36	160	2970				
KPM63B	KPB63B	30	30.31	47	180	2720				
KPM63B	KPB63B	25	24.44	58	180	2530	N/A			
KPM63B	KPB63B	20	18.90	70	180	2380	N/A			
KPM63B	KPB63B	15	14.67	96	180	2130	N/A	N/A		
KPM63B	KPB63B	12.5	12.67	111	180	2030	N/A	N/A		
KPM63B	KPB63B	10	10.50	134	180	1910	N/A	N/A		
KPM63B	KPB63B	7.5	7.60	185	180	1710	N/A	N/A		

KPM75..,KPB75..

n_1=1400r/min

350Nm

Model		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												
KPM75C	KPB75C	300	297.21	4.8	300	6500			N/A	N/A	N/A	N/A
KPM75C	KPB75C	250	240.89	5.9	300	6500			N/A	N/A	N/A	N/A
KPM75C	KPB75C	200	200.66	7.0	300	6500			N/A	N/A	N/A	N/A
KPM75C	KPB75C	150	149.30	9.3	350	6500				N/A	N/A	N/A
KPM75C	KPB75C	125	121.00	12	350	5980				N/A	N/A	N/A
KPM75C	KPB75C	100	100.80	15	350	5520				N/A	N/A	N/A
KPM75C	KPB75C	75	79.40	19	350	5040					N/A	N/A
KPM75C	KPB75C	60	62.43	23	350	4730	N/A				N/A	N/A
KPM75C	KPB75C	50	49.18	29	350	4370	N/A				N/A	N/A
2 Stage												
KPM75B	KPB75B	60	59.44	24	300	4660	N/A				N/A	N/A
KPM75B	KPB75B	50	48.18	30	300	4.40	N/A				N/A	N/A
KPM75B	KPB75B	40	40.13	35	300	4080	N/A					N/A
KPM75B	KPB75B	30	29.86	47	350	3720	N/A	N/A				N/A
KPM75B	KPB75B	25	24.20	56	350	3500	N/A	N/A				
KPM75B	KPB75B	20	20.16	71	350	3230	N/A	N/A				
KPM75B	KPB75B	15	15.88	93	350	2950	N/A	N/A				
KPM75B	KPB75B	12.5	12.49	113	350	2770	N/A	N/A	N/A			
KPM75B	KPB75B	10	9.84	143	350	2550	N/A	N/A	N/A			
KPM75B	KPB75B	7.5	7.48	188	350	2330	N/A	N/A	N/A			

KPM90..,KPB86..

n_1=1400r/min

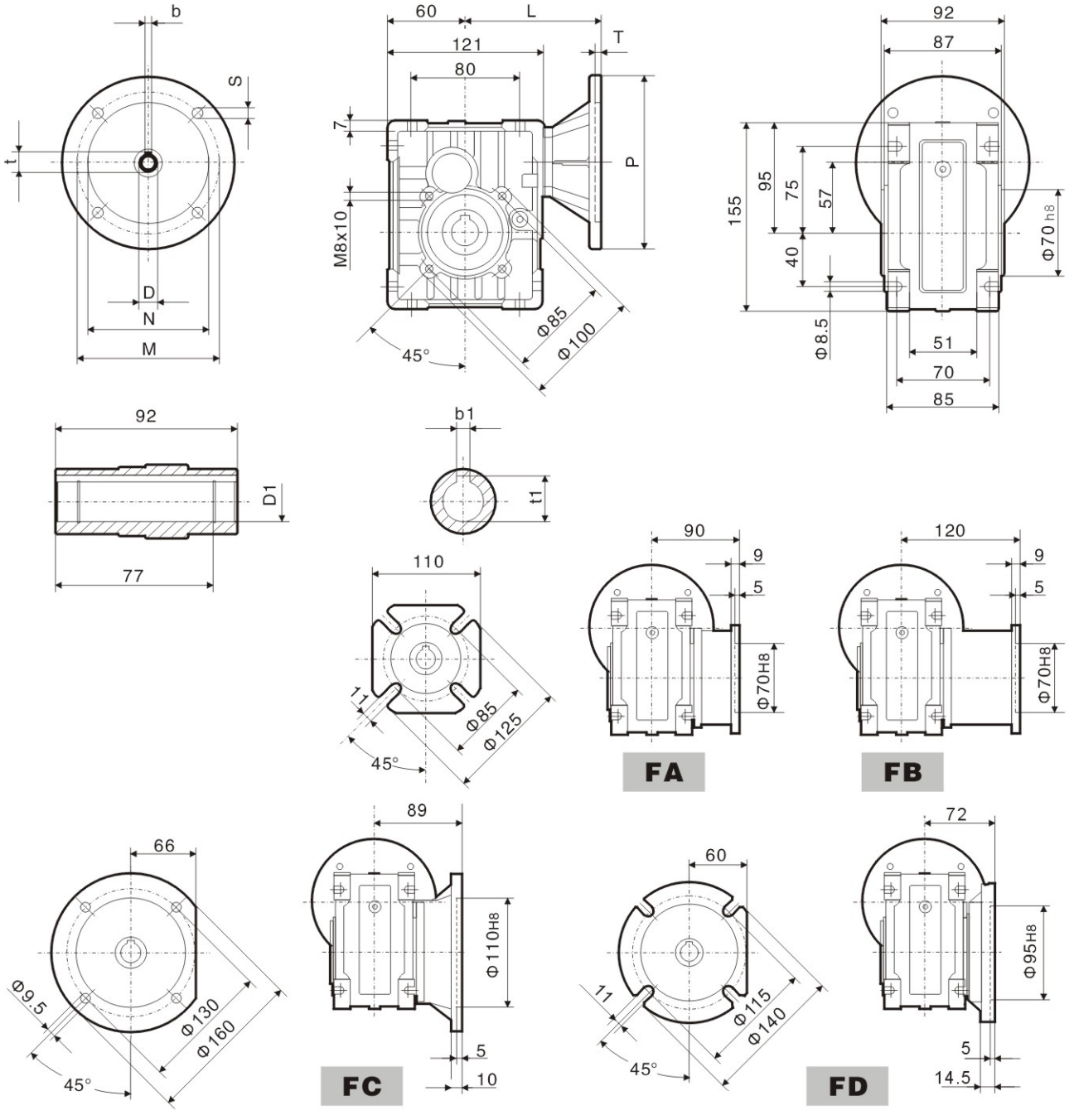
500Nm

Model		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												
KPM90C	KPB86C	300	297.21	4.8	450	6500			N/A	N/A	N/A	N/A
KPM90C	KPB86C	250	240.89	5.9	450	6500				N/A	N/A	N/A
KPM90C	KPB86C	200	200.66	7.0	450	6500				N/A	N/A	N/A
KPM90C	KPB86C	150	151.20	9.3	500	6500				N/A	N/A	N/A
KPM90C	KPB86C	125	125.95	12	500	5980				N/A	N/A	N/A
KPM90C	KPB86C	100	99.22	15	500	5520	N/A				N/A	N/A
KPM90C	KPB86C	75	75.45	19	500	5040	N/A				N/A	N/A
KPM90C	KPB86C	60	62.43	23	500	4730	N/A				N/A	N/A
KPM90C	KPB86C	50	49.18	29	500	4370	N/A				N/A	N/A
2 Stage												
KPM90B	KPB86B	60	59.44	24	450	5890	N/A					N/A
KPM90B	KPB86B	50	48.18	30	450	5500	N/A					N/A
KPM90B	KPB86B	40	40.13	35	450	5170	N/A	N/A				
KPM90B	KPB86B	30	30.24	47	500	4710	N/A	N/A				
KPM90B	KPB86B	25	25.19	56	500	4430	N/A	N/A				
KPM90B	KPB86B	20	19.84	71	500	4090	N/A	N/A	N/A			
KPM90B	KPB86B	15	15.09	93	500	3730	N/A	N/A	N/A			
KPM90B	KPB86B	12.5	12.49	113	500	3510	N/A	N/A	N/A			
KPM90B	KPB86B	10	9.84	143	500	3240	N/A	N/A	N/A			
KPM90B	KPB86B	7.5	7.48	188	500	2950	N/A	N/A	N/A			

5. GEARBOX OUTSIDE DIMENSION

5.1 KPM Outside dimension drawing

KPM50B..



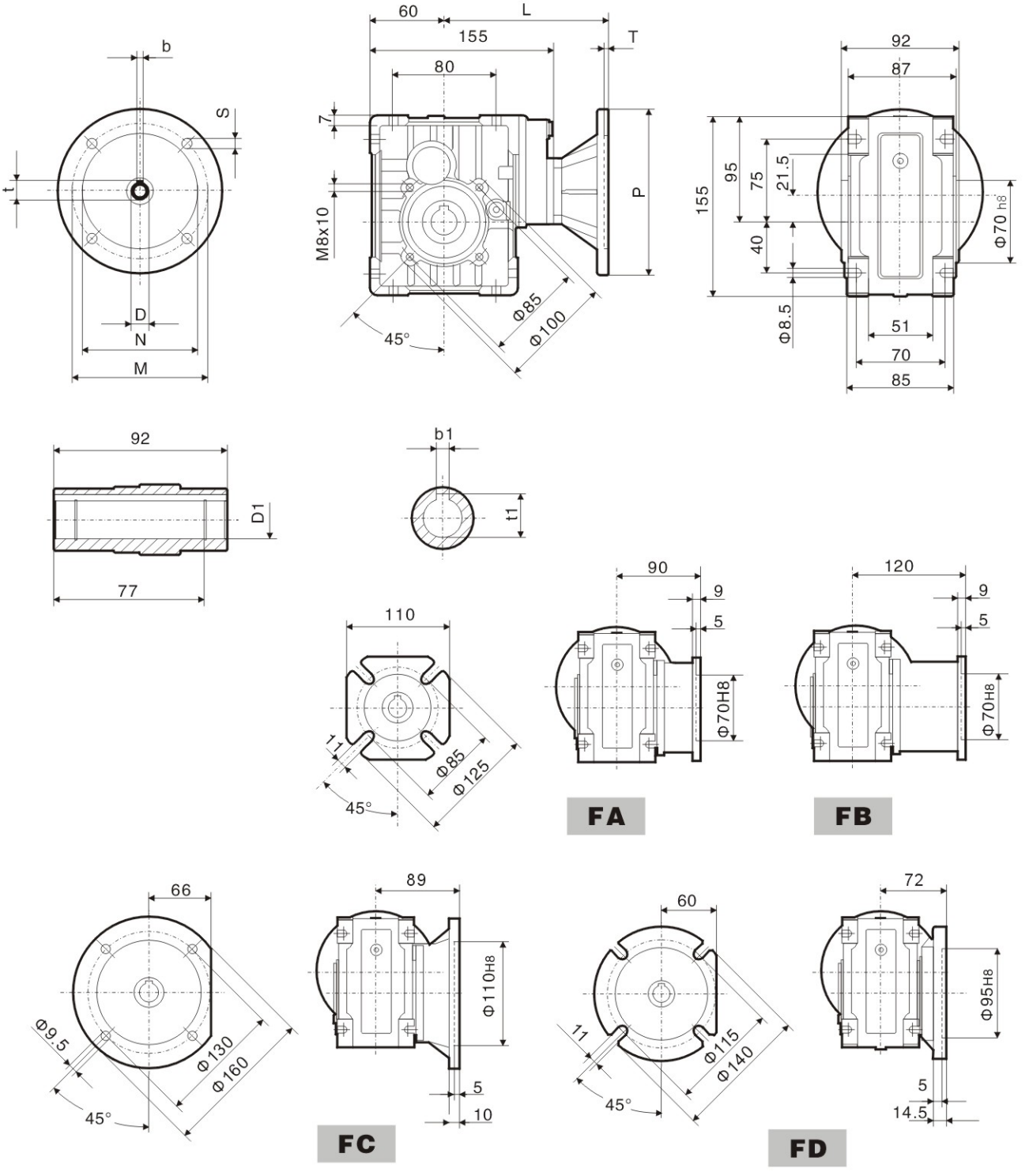
IEC	DE8	b	t	P	M	N	S	T	L
63B5	11	4	12.8	140	115	95	9	4	106
71B5	14	5	16.3	160	130	110	9	4	113
71B14	14	5	16.3	105	85	70	7	4	113
80B5	19	6	21.8	200	165	130	11	4	133
80B14	19	6	21.8	120	100	80	7	4	133
90B14	24	8	27.3	140	115	95	9	4	133

D1H8	b1	t1
20*	6*	22.8*
24*	8*	27.3*
25	8	28.3

*Special request

Weight without motor
≈4.2kg

KPM50C..



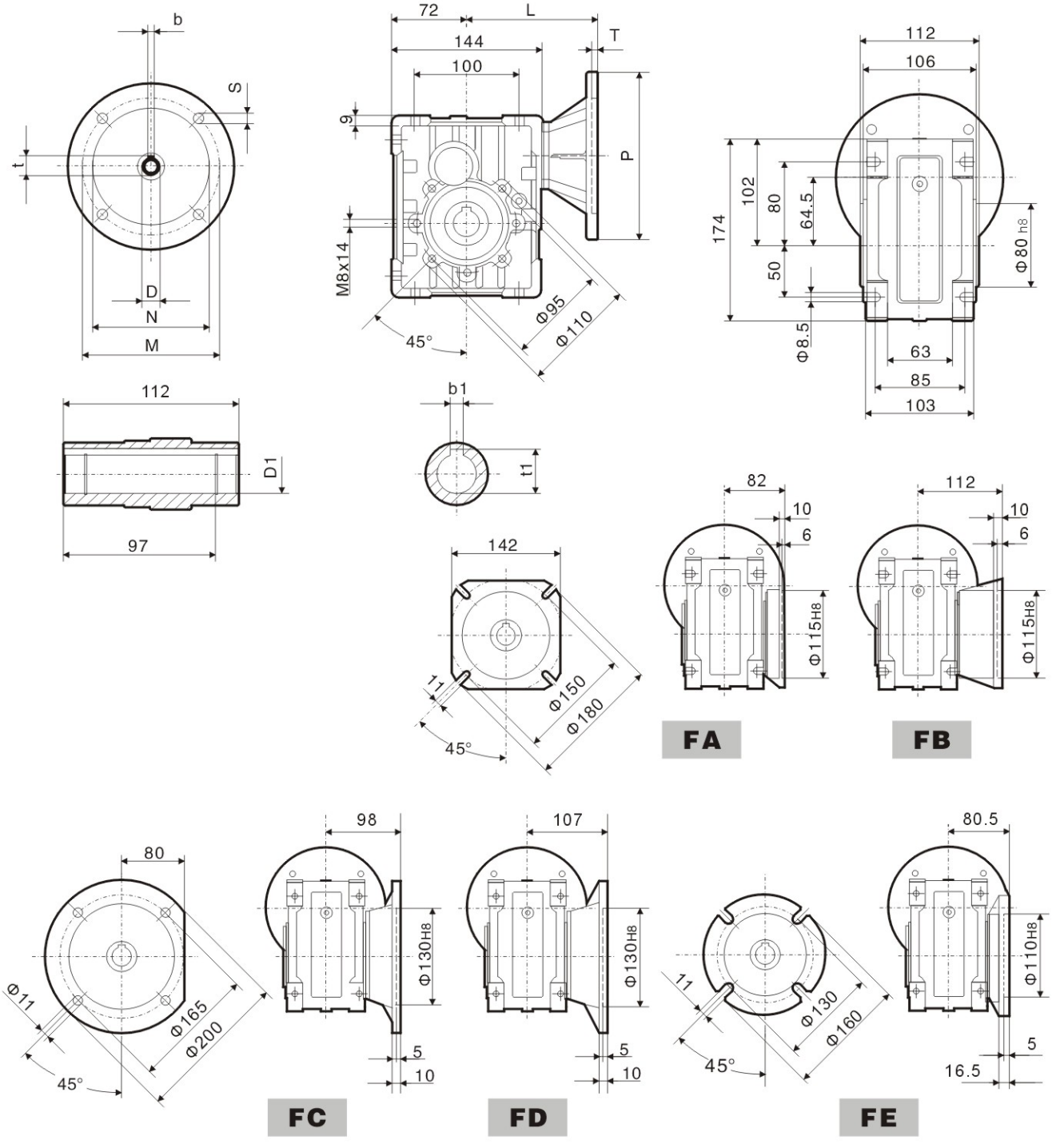
Weight without motor
≈5.0kg

IEC	DE8	b	t	P	M	N	S	T	L
63B5	11	4	12.8	140	115	95	9	4	140
71B5	14	5	16.3	160	130	110	9	4	147
71B14	14	5	16.3	105	85	70	7	4	147
80B5	19	6	21.8	200	165	130	11	4	167
80B14	19	6	21.8	120	100	80	7	4	167
90B14	24	8	27.3	140	115	95	9	4	167

D1H8	b1	t1
20*	6*	22.8*
24*	8*	27.3*
25	8	28.3

*Special request

KPM63B..



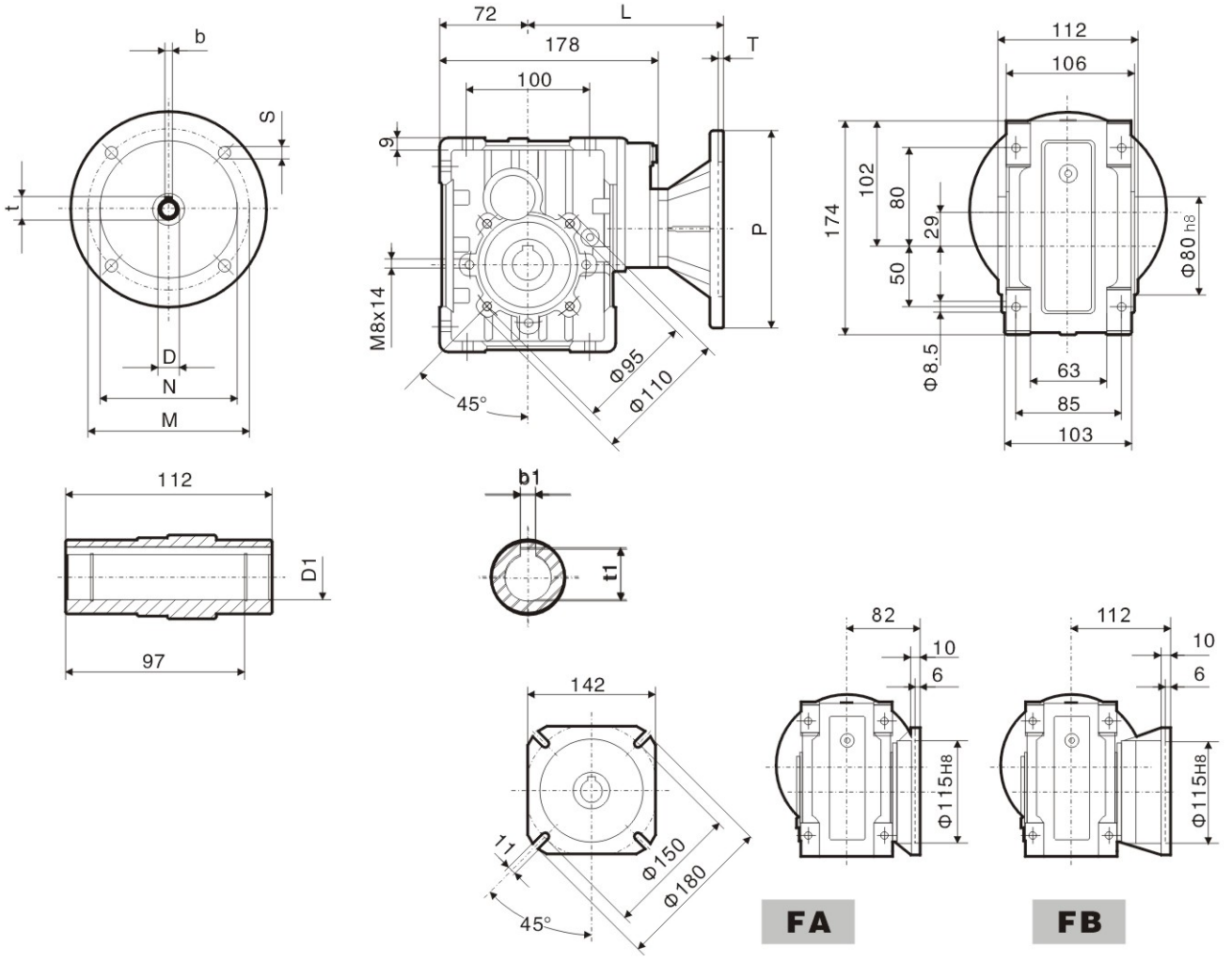
IEC	DE8	b	t	P	M	N	S	T	L
63B5	11	4	12.8	140	115	95	9	4	117
71B5	14	5	16.3	160	130	110	9	4	124
71B14	14	5	16.3	105	85	70	7	4	124
80B5	19	6	21.8	200	165	130	11	4	144
80B14	19	6	21.8	120	100	80	7	4	144
90B5	24	8	27.3	200	165	130	11	4	144
90B14	24	8	27.3	140	115	95	9	4	144

D1H8	b1	t1
25	8	28.3
28*	8	31.3
30*	8	33.3

*Special request

Weight without motor
≈6.0kg

KPM63C..



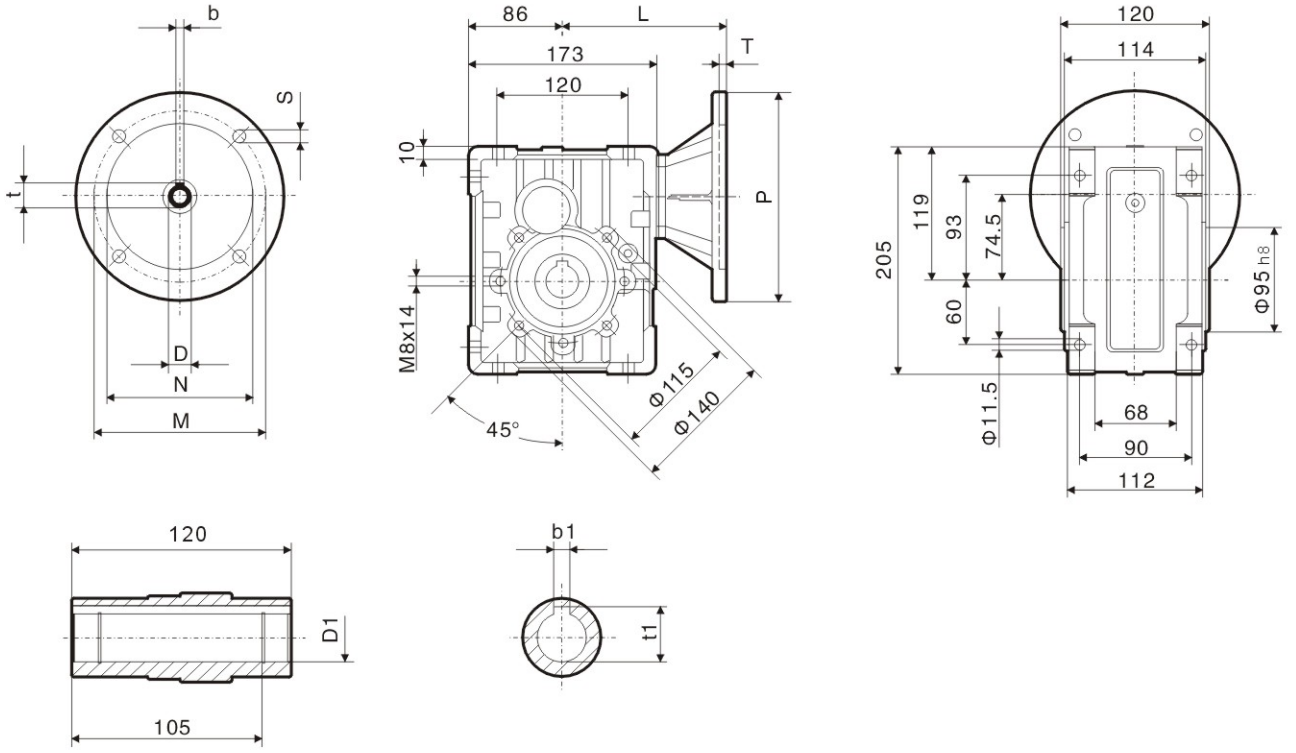
IEC	DE8	b	t	P	M	N	S	T	L
63B5	11	4	12.8	140	115	95	9	4	151
71B5	14	5	16.3	160	130	110	9	4	158
71B14	14	5	16.3	105	85	70	7	4	158
80B5	19	6	21.8	200	165	130	11	4	178
80B14	19	6	21.8	120	100	80	7	4	178
90B5	24	8	27.3	200	165	130	11	4	178
90B14	24	8	27.3	140	115	95	9	4	178

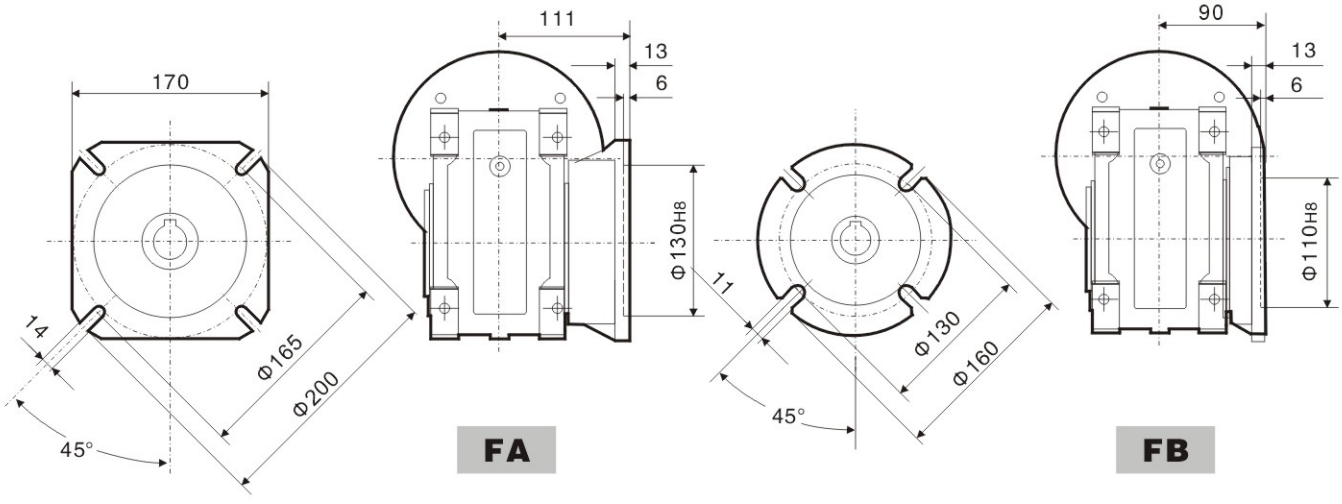
D1H8	b1	t1
25	8	28.3
28*	8	31.3
30*	8	33.3

*Special request

Weight without motor
≈6.8kg

KPM75B..





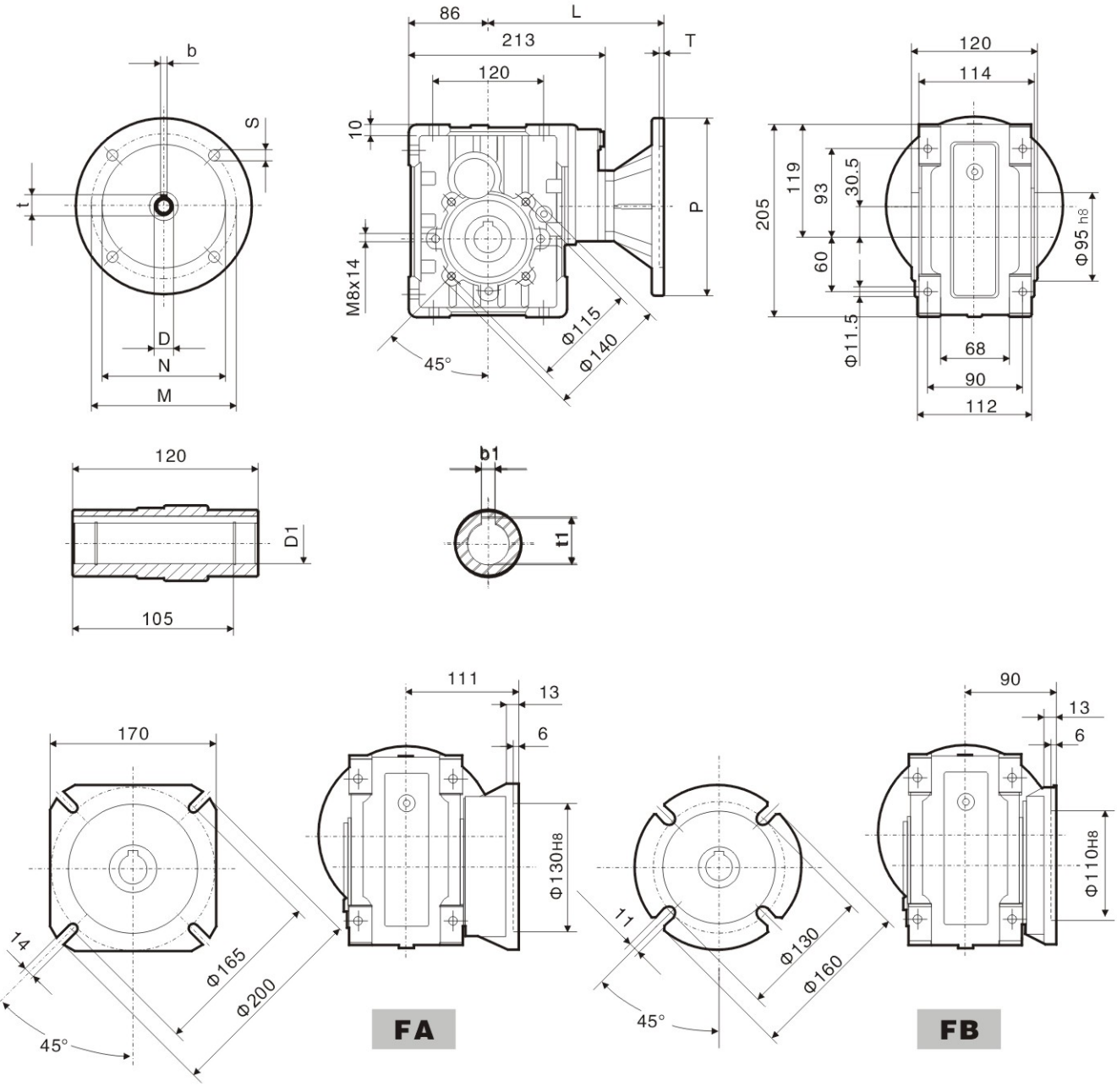
IEC	DE8	b	t	P	M	N	S	T	L
63B5	11	4	12.8	140	115	95	9	4	139
71B5	14	5	16.3	160	130	110	9	4	146
80B5	19	6	21.8	200	165	130	11	4	166
80B14	19	6	21.8	120	100	80	7	4	166
90B5	24	8	27.3	200	165	130	11	4	166
90B14	24	8	27.3	140	115	95	9	4	166
100/112B5	28	8	31.3	250	215	180	13.5	4.5	176
100/112B14	28	8	31.3	160	130	110	9	4.5	176

D1H8	b1	t1
28	8	31.3
30*	8*	33.3*
35*	10*	38.3*

*Special request

Weight without motor
≈9.2kg

KPM75C..



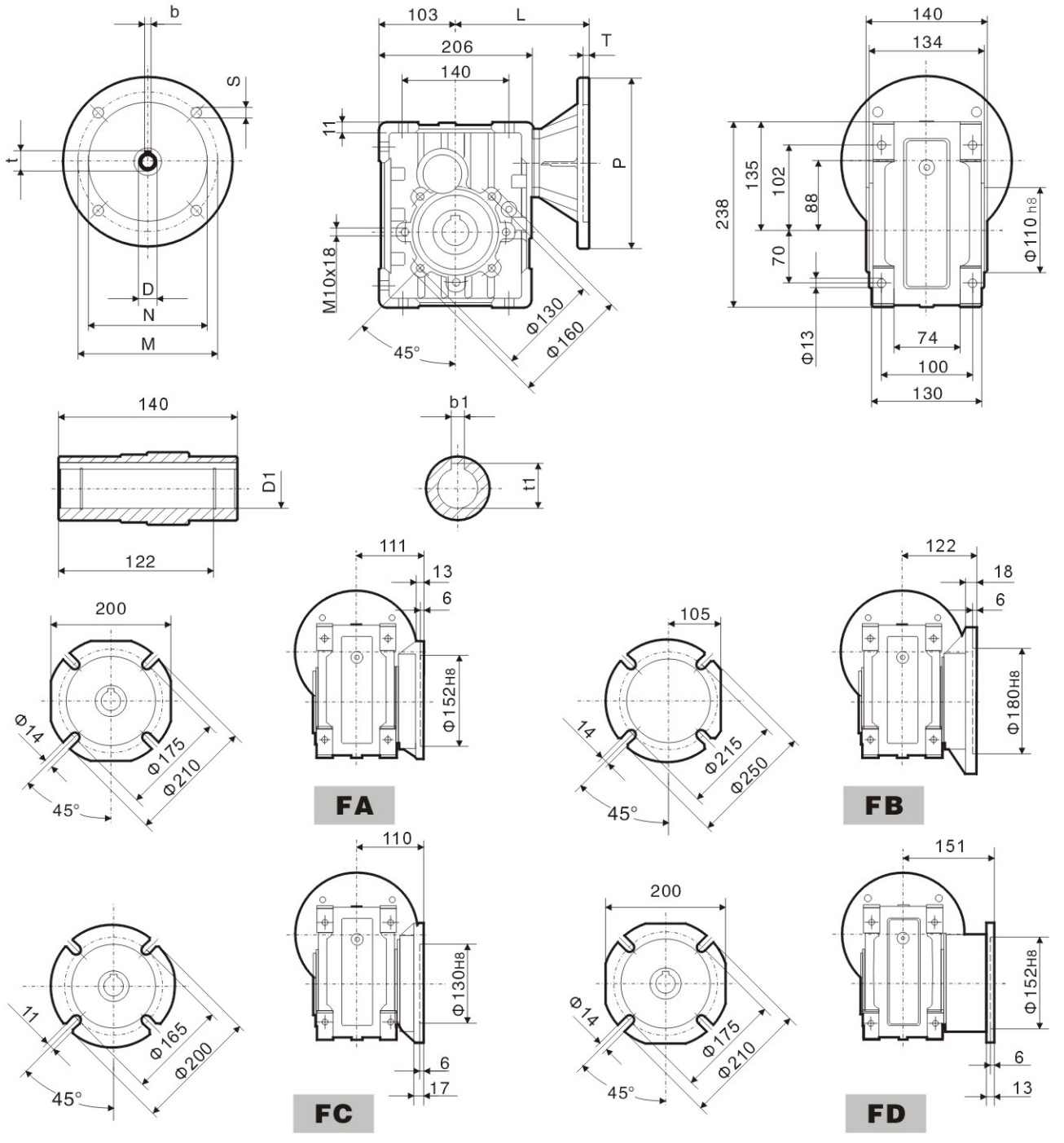
IEC	DE8	b	t	P	M	N	S	T	L
63B5	11	4	12.8	140	115	95	9	4	179
71B5	14	5	16.3	160	130	110	9	4	186
80B5	19	6	21.8	200	165	130	11	4	206
80B14	19	6	21.8	120	100	80	7	4	206
90B5	24	8	27.3	200	165	130	11	4	206
90B14	24	8	27.3	140	115	95	9	4	206
100/112B5	28	8	31.3	250	215	180	13.5	4.5	216
100/112B14	28	8	31.3	160	130	110	9	4.5	216

D1H8	b1	t1
28	8	31.3
30*	8*	33.3*
35*	10*	38.3*

*Special request

Weight without motor
≈10.8kg

KPM90B..



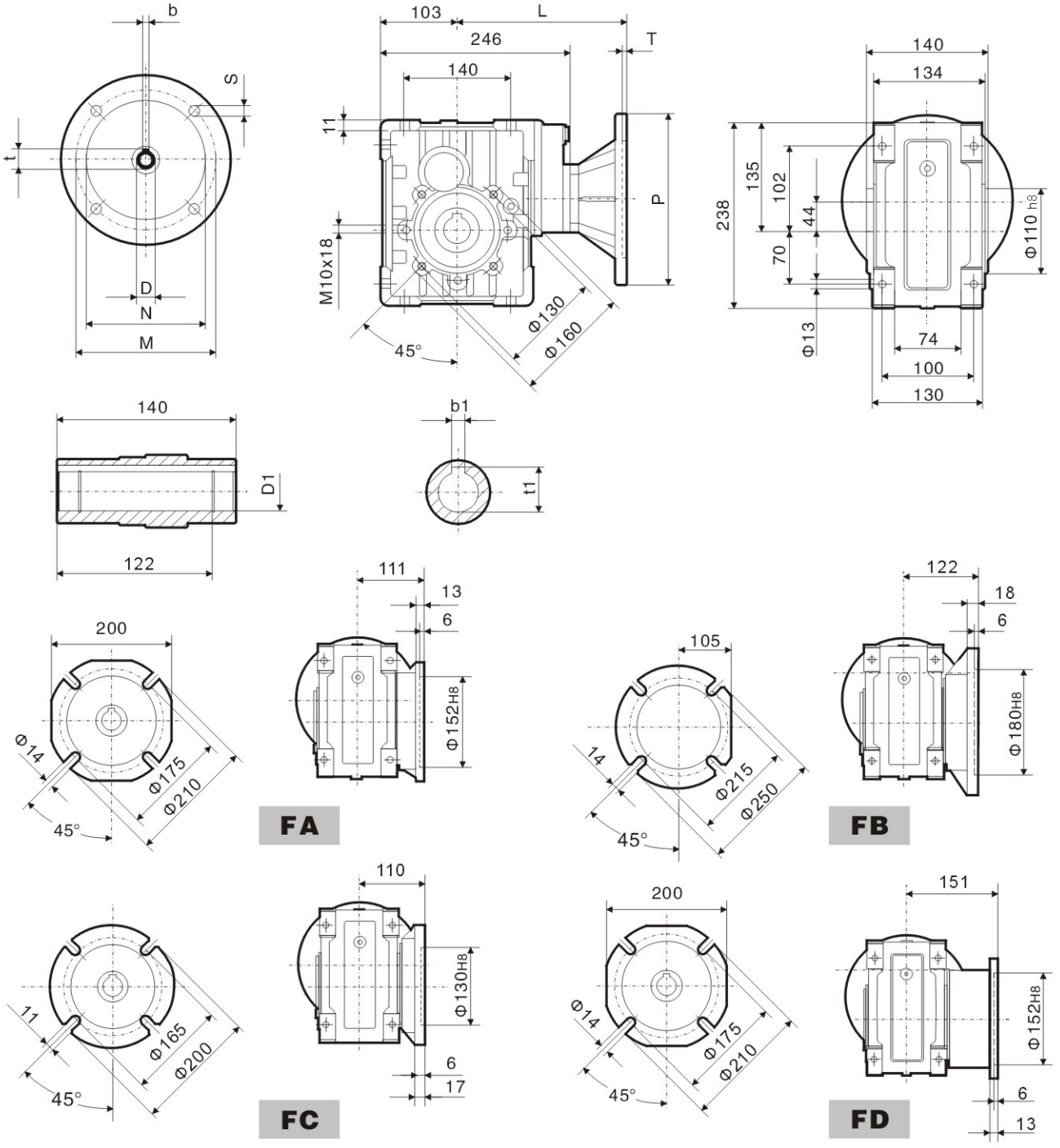
IEC	DE8	b	t	P	M	N	S	T	L
63B5	11	4	12.8	140	115	95	9	4	155
71B5	14	5	16.3	160	130	110	9	4	162
80B5	19	6	21.8	200	165	130	11	4	182
80B14	19	6	21.8	120	100	80	7	4	182
90B5	24	8	27.3	200	165	130	11	4	182
90B14	24	8	27.3	140	115	95	9	4	182
100/112B5	28	8	31.3	250	215	180	13.5	4.5	192
100/112B14	28	8	31.3	160	130	110	9	4.5	192

D1H8	b1	t1
35	10	38.3
38*	10*	41.3*

*Special request

Weight without motor
≈13.3kg

KPM90C..



IEC	DE8	b	t	P	M	N	S	T	L
63B5	11	4	12.8	140	115	95	9	4	195
71B5	14	5	16.3	160	130	110	9	4	202
80B5	19	6	21.8	200	165	130	11	4	222
80B14	19	6	21.8	120	100	80	7	4	222
90B5	24	8	27.3	200	165	130	11	4	222
90B14	24	8	27.3	140	115	95	9	4	222
100/112B5	28	8	31.3	250	215	180	13.5	4.5	232
100/112B14	28	8	31.3	160	130	110	9	4.5	232

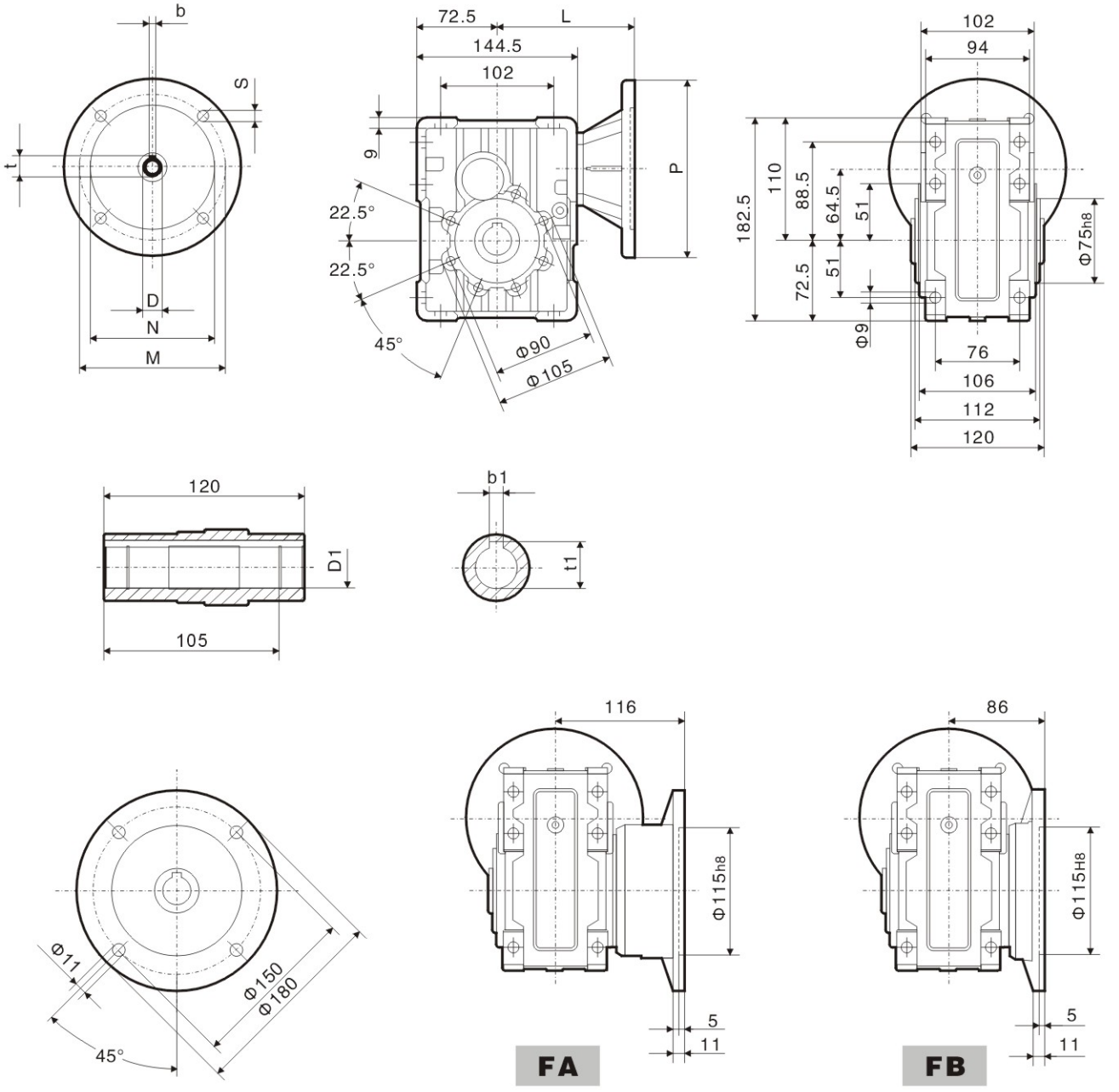
D1H8	b1	t1
35	10	38.3
38*	10*	41.3*

*Special request

Weight without motor
≈14.8kg

5.2 KPB Outside dimension drawing

KPB63B..



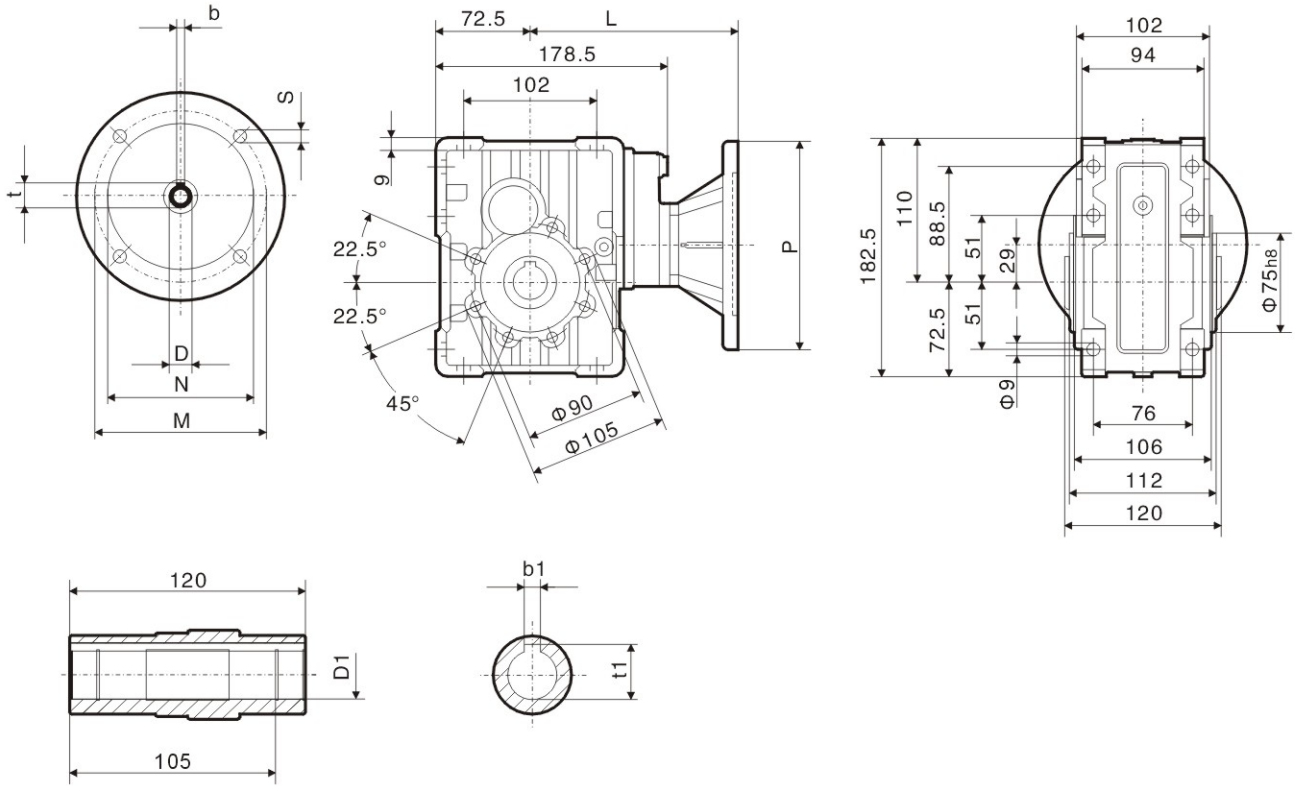
IEC	D E8	b	t	P	M	N	S	T	L
63B5	11	4	12.8	140	115	95	9	4	117
71B5	14	5	16.3	160	130	110	9	4	124
71B14	14	5	16.3	105	85	70	7	4	124
80B5	19	6	21.8	200	165	130	11	4	144
80B14	19	6	21.8	120	100	80	7	4	144
90B5	24	8	27.3	200	165	130	11	4	144
90B14	24	8	27.3	140	115	95	9	4	144

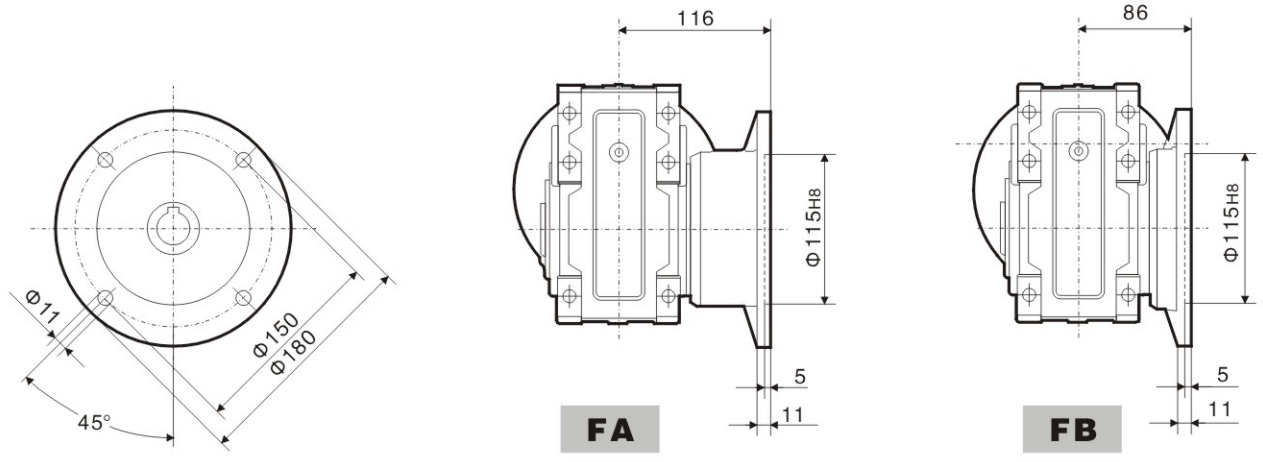
D1 H8	b1	t1
25	8	28.3
28*	8	31.3
30*	8	33.3

*Special request

Weight without motor
≈6.0kg

KPB63C..





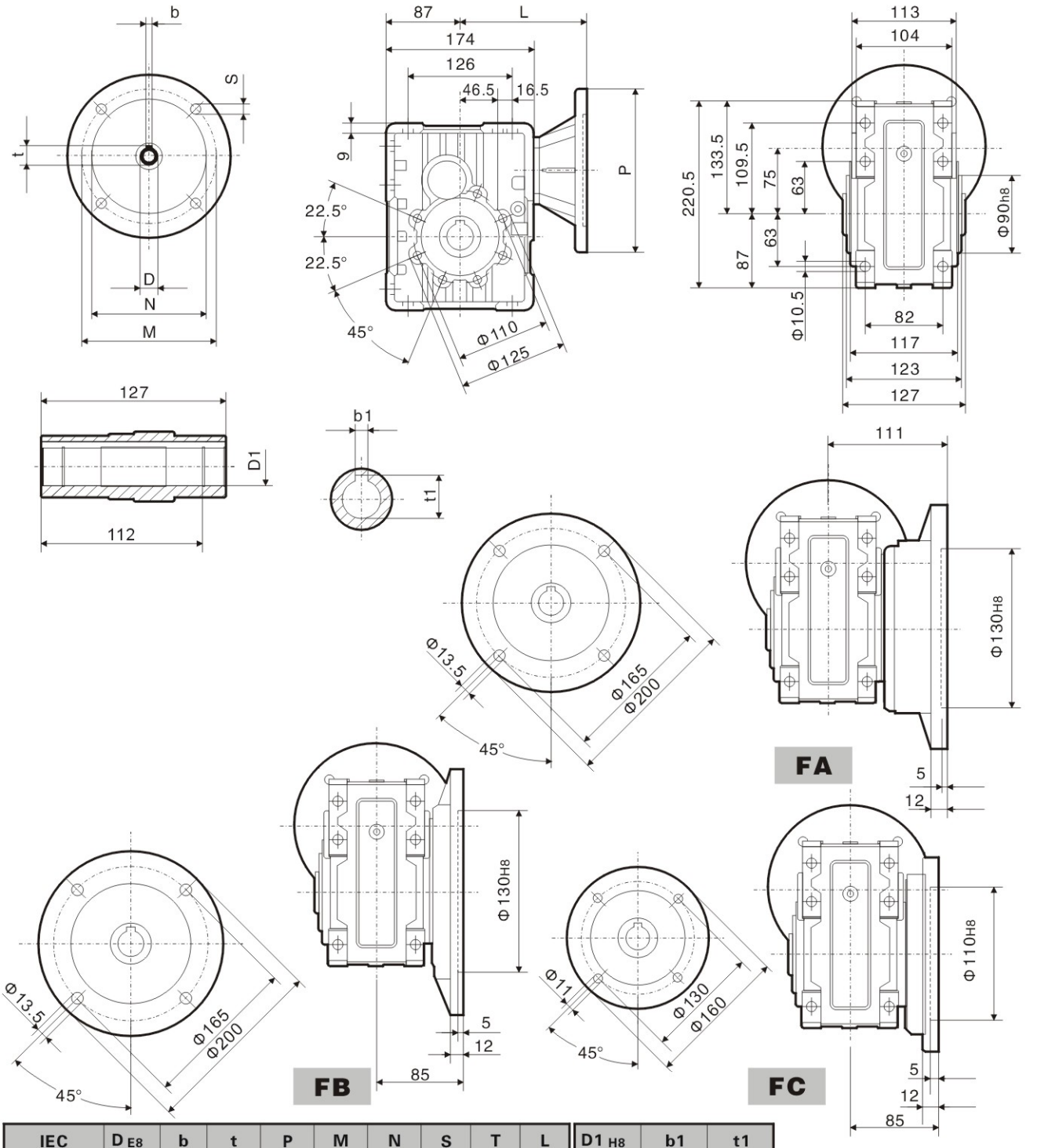
IEC	D E8	b	t	P	M	N	S	T	L
63B5	11	4	12.8	140	115	95	9	4	151
71B5	14	5	16.3	160	130	110	9	4	158
71B14	14	5	16.3	105	85	70	7	4	158
80B5	19	6	21.8	200	165	130	11	4	178
80B14	19	6	21.8	120	100	80	7	4	178
90B5	24	8	27.3	200	165	130	11	4	178
90B14	24	8	27.3	140	115	95	9	4	178

D1 H8	b1	t1
25	8	28.3
28*	8	31.3
30*	8	33.3

*Special request

Weight without motor
≈6.8kg

KPB75B..



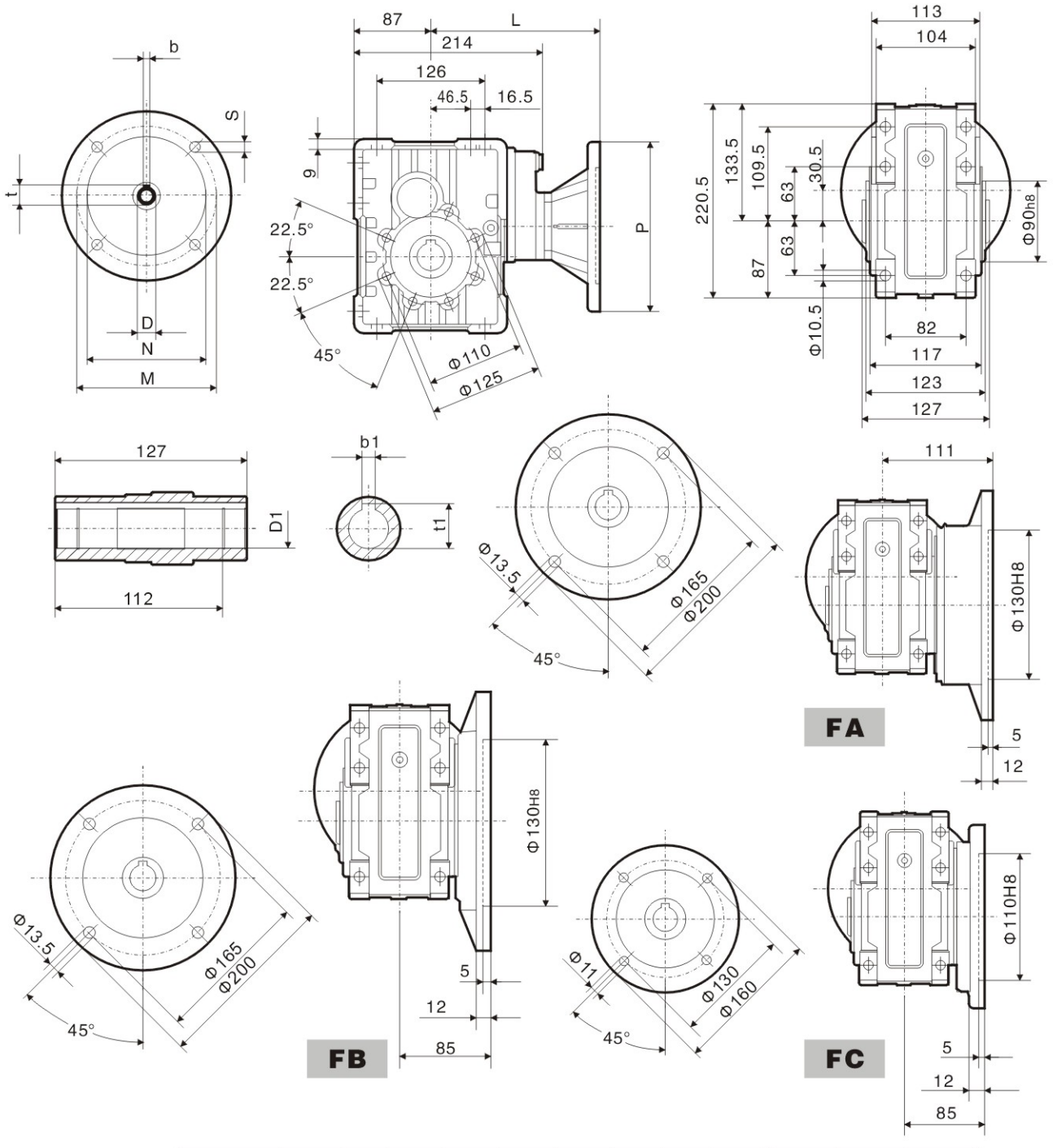
IEC	D E8	b	t	P	M	N	S	T	L
63B5	11	4	12.8	140	115	95	9	4	139
71B5	14	5	16.3	160	130	110	9	4	146
80B5	19	6	21.8	200	165	130	11	4	166
80B14	19	6	21.8	120	100	80	7	4	166
90B5	24	8	27.3	200	165	130	11	4	166
90B14	24	8	27.3	140	115	95	9	4	166
100/112B5	28	8	31.3	250	215	180	13.5	4.5	176
100/112B14	28	8	31.3	160	130	110	9	4.5	176

D1 H8	b1	t1
28*	8*	31.3*
30	8	33.3
35*	10*	38.3*

*Special request

Weight without motor
≈9.5kg

KPB75C..



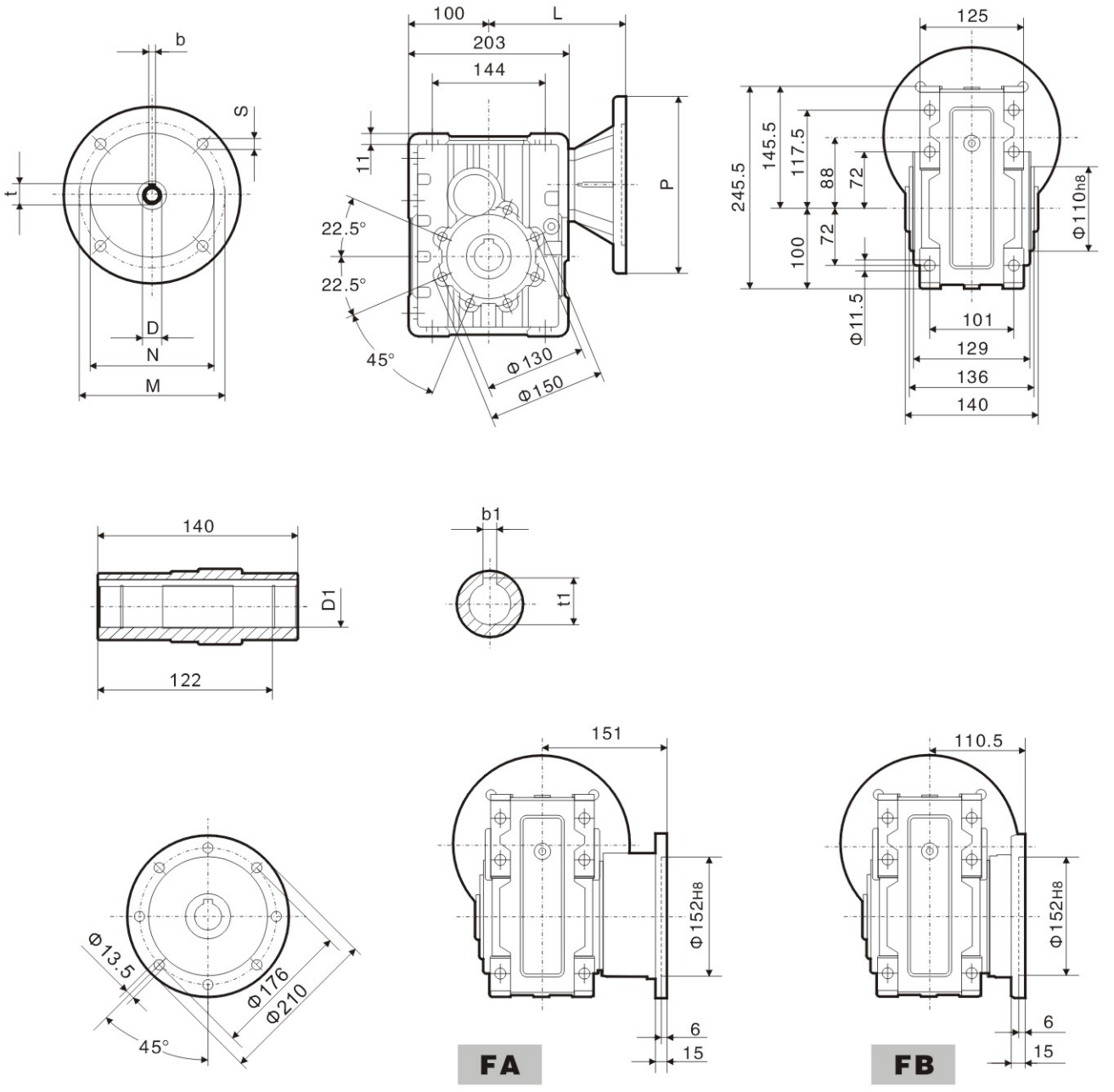
Weight without motor
≈10.8kg

IEC	D_{E8}	b	t	P	M	N	S	T	L
63B5	11	4	12.8	140	115	95	9	4	179
71B5	14	5	16.3	160	130	110	9	4	186
80B5	19	6	21.8	200	165	130	11	4	206
80B14	19	6	21.8	120	100	80	7	4	206
90B5	24	8	27.3	200	165	130	11	4	206
90B14	24	8	27.3	140	115	95	9	4	206
100/112B5	28	8	31.3	250	215	180	13.5	4.5	216
100/112B14	28	8	31.3	160	130	110	9	4.5	216

$D1_{H8}$	b1	t1
28*	8*	31.3*
30	8	33.3
35*	10*	38.3*

*Special request

KPB86B..



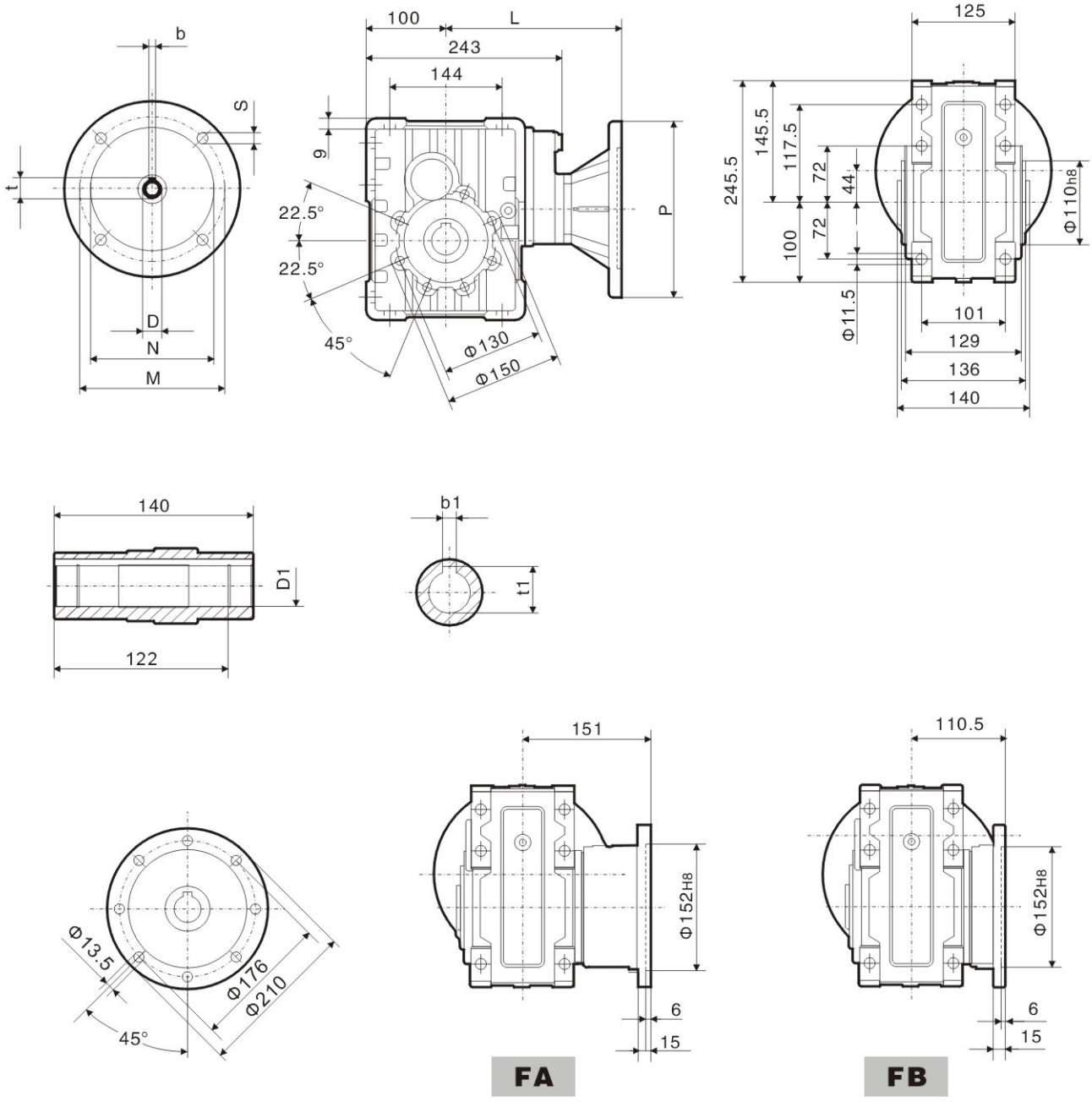
IEC	D E8	b	t	P	M	N	S	T	L
63B5	11	4	12.8	140	115	95	9	4	155
71B5	14	5	16.3	160	130	110	9	4	162
80B5	19	6	21.8	200	165	130	11	4	182
80B14	19	6	21.8	120	100	80	7	4	182
90B5	24	8	27.3	200	165	130	11	4	182
90B14	24	8	27.3	140	115	95	9	4	182
100/112B5	28	8	31.3	250	215	180	13.5	4.5	192
100/112B14	28	8	31.3	160	130	110	9	4.5	192

D1 H8	b1	t1
35	10	38.3
38*	10*	41.3*

*Special request

Weight without motor
≈ 13.5kg

KPB86C..



Weight without motor
≈14.8kg

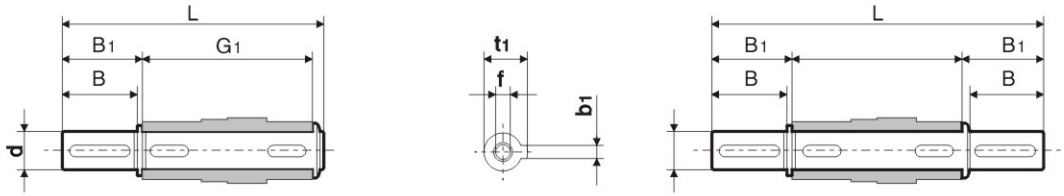
IEC	D_{E8}	b	t	P	M	N	S	T	L
63B5	11	4	12.8	140	115	95	9	4	195
71B5	14	5	16.3	160	130	110	9	4	202
80B5	19	6	21.8	200	165	130	11	4	222
80B14	19	6	21.8	120	100	80	7	4	222
90B5	24	8	27.3	200	165	130	11	4	222
90B14	24	8	27.3	140	115	95	9	4	222
100/112B5	28	8	31.3	250	215	180	13.5	4.5	232
100/112B14	28	8	31.3	160	130	110	9	4.5	232

$D1_{H8}$	b1	t1
35	10	38.3*
38*	10*	41.3

*Special request

6. PARTS DIMENSION

6.1 Output Shafts

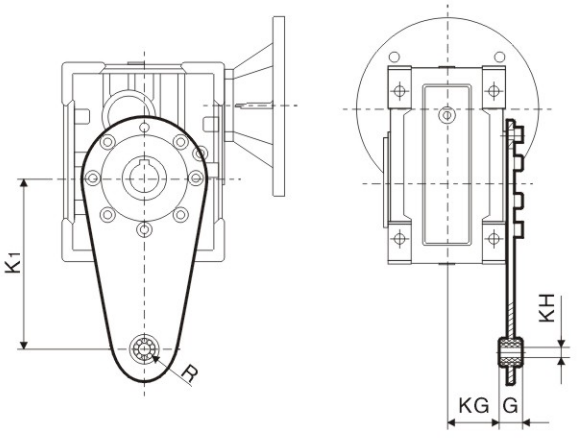


SS **DS**

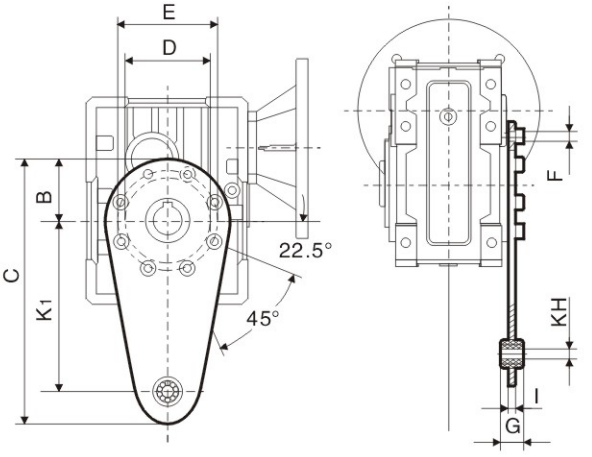
	d_{h6}	B	B_1	G_1	L	L_1	f	b_1	t_1
KPM50	25	50	53.5	92	153	199	M10	8	28
KPM63	25	50	53.5	112	173	219	M10	8	28
KPM75	28	60	63.5	120	192	247	M10	8	31
KPM90	35	80	84.5	140	234	309	M12	10	38
KPB63	25	60	65	120	192	246.4	M8	8	28
KPB75_d 28	28	60	65	127	199	255	M8	8	31
KPB75_d 30	30	60	65	127	199	255	M10	8	33
KPB86	35	60	65	140	214	268	M12	10	38

6.2 Torque Arm

6.2.1 KPM..Torque Arm



	K_1	G	KG	KH	R
KPM50	100	14	38.5	10	18
KPM63	150	14	49	10	18
KPM75	200	25	47.5	20	30
KPM90	200	25	57.5	20	30

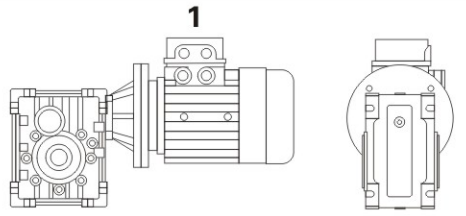
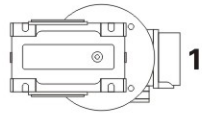
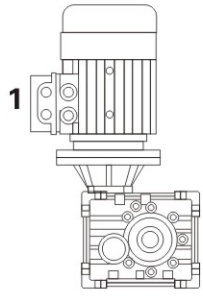
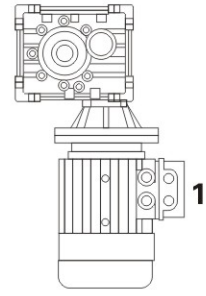
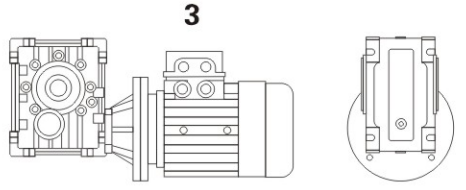
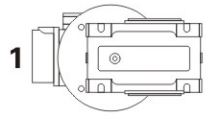


6.2.2 KPM..Torque Arm

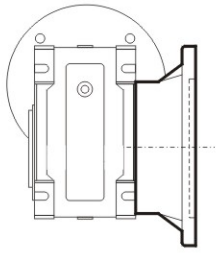
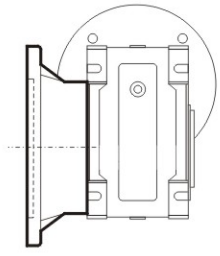
	K_1	B	C	D	E	F	G	KH	I
KPB63	150	55	233	75	90	9	20	10	6
KPB75	200	63	300	90	110	9	25	20	6
KPB86	200	80	318	110	130	11	25	20	6

7. MOUNTING POSITION

7.1 KPM/KPB Mounting position chart

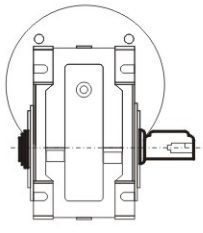
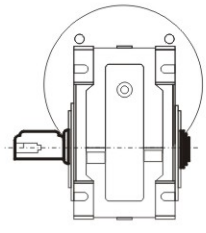
B3	B6	V5	V6
			
B8	**B7**		
			

7.2 Output flange mounting position chart

FA1,FB1,FC1,FD1,FE1	FA2,FB2,FC2,FD2,FE2
	

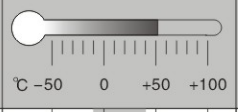
The default mounting position for gearbox and output flange are B3 and F..1

7.3 Output shaft mounting position chart

SS1	SS2
	

8. LUBRICANT

8.1 Brand of lubricant

		ISO	SHELL	MOBIL	BP	Lubricant character
KPM.. KPB..	Standard −10 +40	VG 220	Shell Omala 220	Mobilgear 630	BP Energol GR−XP 220	Mineral oil
	−20 +25	VG 150 VG 100	shell Omala 100	Mobilgear 627	BP Energol GR−XP 100	
	−30 +10	VG 68−46 VG 32	Shell Tellus T 32	Mobil D.T.E 13M		
	−40 −20	VG 22 VG 15	Shell Tellus T 15	Mobil D.T.E 11M	BP Energol HLP−HM 15	
	−40 +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		

8.2 Lubricant fill quantity

The specified fill quantities are recommended values. The precise values vary depending on the number of stages and gear ratio.When filling,it is essential to check the oil level plug since it indicates the precise oil capacity.

The following tables show guide values for lubricant fill quantities in relation to the mounting position (B3、B6、B7……)

KPM oil quantity

Model	Fill quantity in liters (L)					
	B3	B6	B7	B8	V5	V6
KPM50B	0.22	0.2*	0.13*	0.15	0.25	0.14
KPM50C'	0.07	0.04	0.04	0.05	0.08	0.09
KPM63B	0.42	0.35*	0.24*	0.22	0.46	0.25
KPM63C	0.07	0.04	0.04	0.05	0.08	0.09
KPM75B'	0.70	0.58*	0.42*	0.42	0.75	0.45
KPM75C	0.13	0.09	0.09	0.09	0.15	0.17
KPM90B	1.21	0.95*	0.72*	0.67	1.3	0.74
KPM90C'	0.13	0.09	0.09	0.09	0.15	0.17

KPB oil quantity

Model	Fill quantity in liters (L)					
	B3	B6	B7	B8	V5	V6
KPB63B	0.38	0.35*	0.25*	0.26*	0.44	0.25
KPB63C	0.07	0.04	0.04	0.05	0.08	0.09
KPB75B#	0.66	0.60*	0.45*	0.48	0.78	0.48
KPB75C	0.13	0.09	0.09	0.09	0.15	0.17
KPB86B	1.15	0.95*	0.70*	0.75*	1.25	0.75
KPB86C#	0.13	0.09	0.09	0.09	0.15	0.17

#: The 2 stage doesn't communicate with the 3 stage housing, so please fill the 2 stage and 3 stage housings respectively while 3 stage gearbox used.

*: It means the lubricant can't be added according to the oil level line plug but also higher than the plug. The fill quantity shown as in the chart.

9. MAINTENANCE

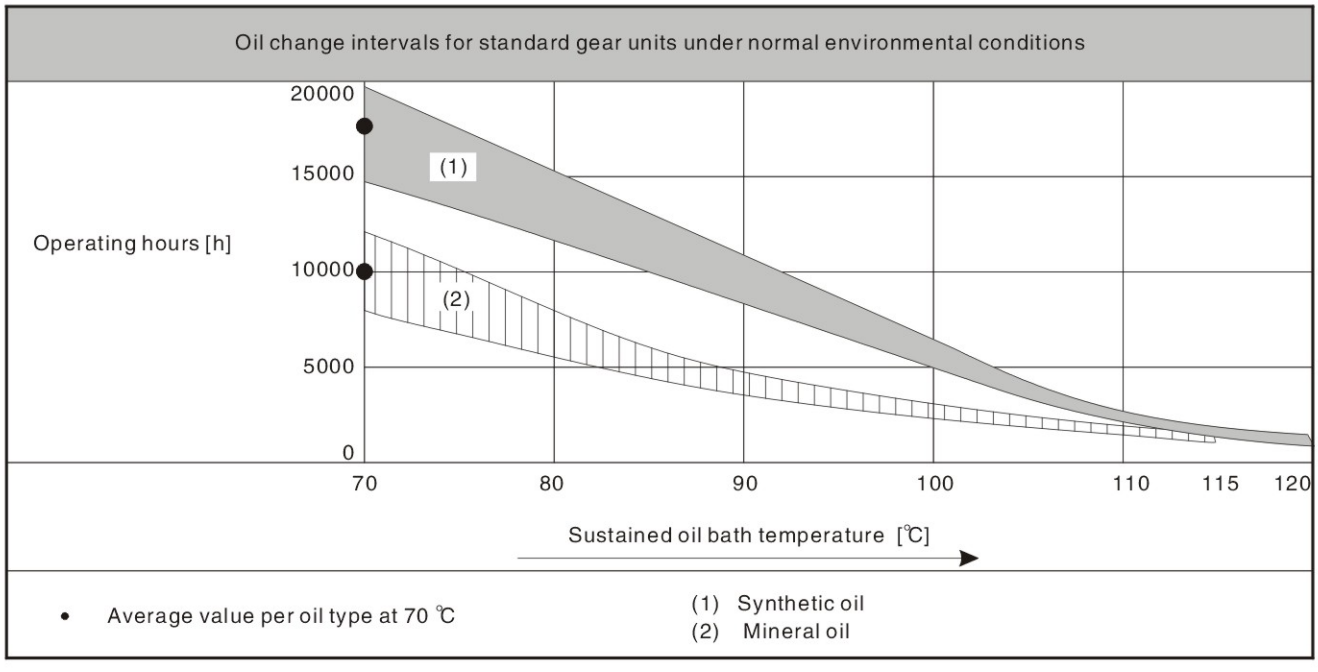
1:Change the oil after 300 hours running is necessary.Please do not mix the synthetic oil with mineral oil.

2:Check the oil and oil level at least every 6 months, and change the rubber sleeve if necessary.

3:Check the oil and oil level maximal every 3 years according to different working conditions(shown as below chart), and change the oil and lubricant on bearing if necessary.

4:Depending on the operating conditions,change the oil seals on output shaft.

5:Please do not disassemble the gearbox by yourself when it broken down, please contact us firstly.



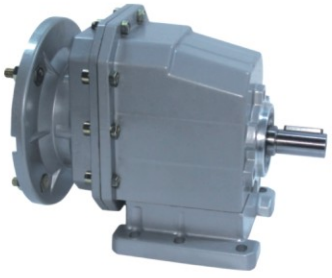
OTHER PRODUCTS

VF series worm gearbox

PC series pre-stage helical gearbox

RV series worm gearbox

UDL series stepless speed variator



KPC series helical gearbox