



**NER GROUP CO.,LIMITED**  
Yantai Bonway Manufacturer Co.,Ltd



**一.DP系列行星减速器类型**

DP2N— 二级行星齿轮传动;

DP2L— 直交轴、二级行星齿轮传动;

DP2S— 平行轴、二级行星齿轮传动;

DP2K— 直交轴、平行轴、二级行星齿轮传动;

DP3N— 三级行星齿轮传动;

DP3S— 平行轴、三级行星齿轮传动;

DP3K— 直交轴、平行轴、三级行星齿轮传动;

**一.DP series planetary gear units type**

DP2N— 2-stage planetary gear units;

DP2L— Bevel,2-stage planetary gear units;

DP2S— Helical,2-stage planetary gear units;

DP2K— Bevel-helical,2-stage planetary gear units;

DP3N— 3-stage planetary gear units;

DP3S— Helical,3-stage planetary gear units;

DP3K— Bevel-helical,3-stage planetary gear units;

**一.DP系列行星减速器型号与标记 Type designations of DP series planetary gear units**

型号说明	上例说明
减速器类型: DP系列行星减速器	DP系列行星减速器
行星传动级数: 2 二级传动 3 三级传动	二级行星传动
传动结构形式: N 标准型 L 带直交轴传动 S 带平行轴传动 K 带直交轴、平行轴传动	带平行轴传动
输出轴形式: AZ 胀紧盘空心轴 AH 渐开线花键空心轴 BS 平键实心轴 BH 渐开线花键实心轴	胀紧盘空心轴输出
机座号: 9~36 (见选型表)	12号机座号
传动比: (见选型表) (实际传动比见22~24页)	公称传动比 i=80
安装布置形式: B500~B556 水平 V100~V130 立式 (低速轴向下) V300~V330 立式 (低速轴向上) 见 36 页	安装布置形式为B512B553 水平安装输入轴在右边 扭转支撑臂(一侧)在下边
带直交轴传动输入轴旋转方 向代号 (面对输入轴方向看): CW 顺时针 CCW 逆时针 其它省略	平行轴传动省略
附件: 99 无附件 96 减速器底座 70 电机钟形支座(输入) 71 电机托架 72 电机支架 73 摆动底座 74 钟形支座 (输出) 75 扭矩支撑臂 (一侧) 76 扭矩支撑臂 (二侧) 77 扭力轴支撑 见 37 页	带减速器底座 电机钟形支座(输入)
Explanation of types Gear units type: DP series planetary gear units Number of planetary gear stages: 2 two stages 3 three stages Structure: N Standard L Bevel gear stage S Helical gear stage K Bevel-helical gear stage Output shaft: AZ hollow shaft with shrink disk AH hollow shaft with involute splines BS solid shaft with parallel key BH solid shaft with involute splines Size: 9~36(see selection table) Size 12 Ratio: (see selection table) (for the actual ratio see pages 22-24) Mounting position: B500~B556 Horizontal V100~V130 Vertical(output shaft is downward) V300~V330 Vertical(output shaft is upward) Direction code of rotation of input shaft for bevel gear stage (viewing on input shaft): CW Clockwise CCW Counter clockwise The others can be omitted Add-on pieces: 99 without add-on piece 96 gear housing base 70 motor bell housing(input) 71 motor bracket 72 motor bracket 73 motor swing-base 74 bell-housing(output) 75 torque reaction arm(on one side) 76 torque reaction arm(on both sides) 77 torsion shaft support see page 37	

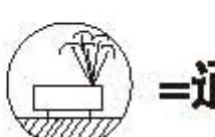
## 要求和说明

- ★为选择合适的DP系列行星减速器请按样本中的详细说明进行。
- ★提供行星减速器可以直接安装。但不提供润滑油。
- ★给出的加油量只作为参考值，实际加油量应以油标的标记为准。
- ★减速器若未注明要求时一般为浸油润滑，若需要采用强制润滑请联系我们。
- ★对于B521、B351安装形式的全部规格和B511安装形式的21号规格以上的减速器，为了润滑输入部分轴承需加油泵润滑。
- ★对于V100/V300、V110/V310、V120/V320、V130/V330安装形式的减速器，为了确保润滑，必须相应提高油位，需加装补偿油箱。补偿油箱可装在减速器上也可装在用户主机上确定该项时请联系我们。
- ★使用环境温度低于0℃时润滑油应预热到0℃以上。环境温度高于40℃以上时应采取隔热和冷却措施。使用场地应避开恶劣的环境比如：盐水、含盐的空气、刺激性物质、灰尘、泥、落石或飞石、过重的压力、强烈振动和冲击载荷等。
- ★胀紧盘空心输出轴减速器按标准提供胀紧盘，但不提供防护装置。为防止发生事故，所有旋转部位应按安全规定加罩防护。
- ★基础螺栓的最低性能等级为8.8级，有水平垫板并进行防腐处理。
- ★样本中的附图只属范例，并不要求严格一致，所注尺寸可能有所变动。有关参数可能改进。
- ★所注重量仅为平均值，不要求严格一致。

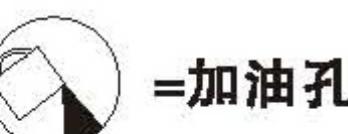
有关符号说明如下：



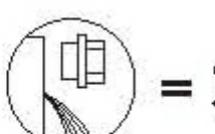
=油标



=通气孔



=加油孔

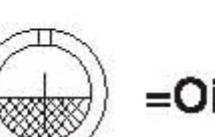


=放油孔

## Requirement and Specification

- ★For selection of suitable DP series planetary gear units please observe the details given in this brochure.
- ★The gear units supplied can be mounted directly .But the oil is not supplied.
- ★Oil quantities given are guide values only, the exact Quantity of oil depends on the marks on the oil dipstick.
- ★The gear units are supplied with dip lubrication without requirement,if required forced lubrication please refer to us.
- ★For all sizes of B521、B351and above size 21 of B511, a motor pump is required for lubrication of the input bearing.
- ★For V100/V300、V110/V310、V120/V320/V130/V330, the oil level must be increased for ensure lubricant supply, it should mount a oil compensating tank. The oil compensating tank can be mounted on the gear units or the user's driven machine,please refer to us for choice.
- ★Where ambient temperatures are lower than 0℃,the oil must be pre-heated above 0℃.Where ambient temperatures are higher than 40℃,the heat insulation and cooling should be considered.Environmental conditions such as salt water,salt-laden air,aggressive substances, dust,mud,falling or flying stones,excessive pressure,heavy vibrations and extreme shock loads must be disclosed.
- ★Shrink disk is supplied for the gear units of hollow output shaft for shrink disk,but not supply the guard .To prevent accidents,all rotating parts should be guarded according to safety regulations.
- ★Foundation bolts of min. Property class 8.8,it has levelling pads and treated with anti-corrosion.
- ★The attached picture is only example,not strictly binding, the noted dimension may be changed.Some parameters referring to may be improved.
- ★The noted weights are only mean values,not strictly binding.

The signs specification is as following:



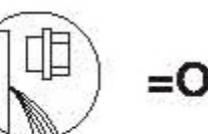
=Oil dipstick



=Breather



=Oil-filler



=Oil-drain

## 选型指南

减速器的承载能力受机械强度和热平衡许用功率两方面的限制，选用减速器时必须通过这两项功率核算。

### 1) 计算传动比

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

式中：

$i_s$ —要求的传动比

$n_1$ —输入转速 (r/min)

$n_2$ —输出转速 (r/min)

### 2) 确定减速器的额定功率，应满足：

$$P_N \geq P_2 \times f_1 \times f_2 \times f_3 \times f_4$$

式中：

$P_N$ —减速器额定功率 (见额定功率表)

$P_2$ —载荷功率 (即工作机所需功率)

$f_1$ —工作机系数 (见表1)

$f_2$ —原动机系数 (见表2)

$f_3$ —减速器安全系数 (见表3)

$f_4$ —启动系数 (见表4)

### 3) 校核最大扭矩，如峰值工作扭矩，起动扭矩或制动扭矩应满足要求：

$$P_N \geq \frac{T_A \times n_1}{9550} \times f_5$$

式中：

$T_A$ —输入轴最大扭矩，如峰值工作扭矩、起动扭矩、制动扭矩 (N.m)

$f_5$ —峰值扭矩系数 (见表 5)

### 4) 检查输出轴上是否允许有附加载荷，许用附加径向力见27~28页。

### 5) 检查实际传动比是否满足要求，实际传动比见22~24页。

### 6) 校核热平衡功率

减速器不带辅助冷却装置，应满足：

$$P_2 \leq P_G = P_{G1} \times f_6 \times f_8$$

式中：

$P_G$ —减速器热功率

$P_{G1}$ —无辅助冷却装置时的热功率  
(见热功率表)

$f_6$ —环境温度系数 (见表6)

$f_8$ —功率利用率系数 (见表8)

注：减速器服务系数见43~47页

## Guidelines for the Selection

The loading capacity of gear units is restricted by the permissible powers of mechanical tension and the thermal balance, it should meet the following powers in selecting:

### 1) Calculate the transmission ratio:

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

$i_s$ —the required transmission ratio

$n_1$ —the input speed (r/min)

$n_2$ —the output speed (r/min)

### 2) Determine the nominal power ratings of gear units:

$$P_N \geq P_2 \times f_1 \times f_2 \times f_3 \times f_4$$

$P_N$ —the nominal power ratings of gear units  
(see nominal power ratings table)

$P_2$ —loading power(the required power of driven machine)

$f_1$ —factor ofr driven machine(see table 1)

$f_2$ —factor for prime mover(see table2)

$f_3$ —safety factor for gear units(see table 3)

$f_4$ —starting factor(see table 4)

### 3) Check the max. torque,the peak operating-, starting-or brading torque should meet the following requirement:

$$P_N \geq \frac{T_A \times n_1}{9550} \times f_5$$

$T_A$ —the max. torque of input shaft,such as peak operating-,starting-or braking torque,

$f_5$ —peak torque factor(see table 5)

### 4) Check whether it permits the additional force of output shaft,for the permissible additional radial force see pages 27~28

### 5) Check whether the actual transmission ratio meets the requirement,the actual transmission ratio see pages 22~24

### 6) Check the power of thermal balance a.the gear units without auxiliary cooling, should meet:

$$P_2 \leq P_G = P_{G1} \times f_6 \times f_8$$

$P_G$ —the thermal capacities of gear units  
 $P_{G1}$ —the thermal capacities without auxiliary cooling(see thermal capacities table)

$f_6$ —factor for ambient temperature  
(see table 6)

$f_8$ —utilization factor(see table 8)

Note:Gear units service factor see 43~47 page













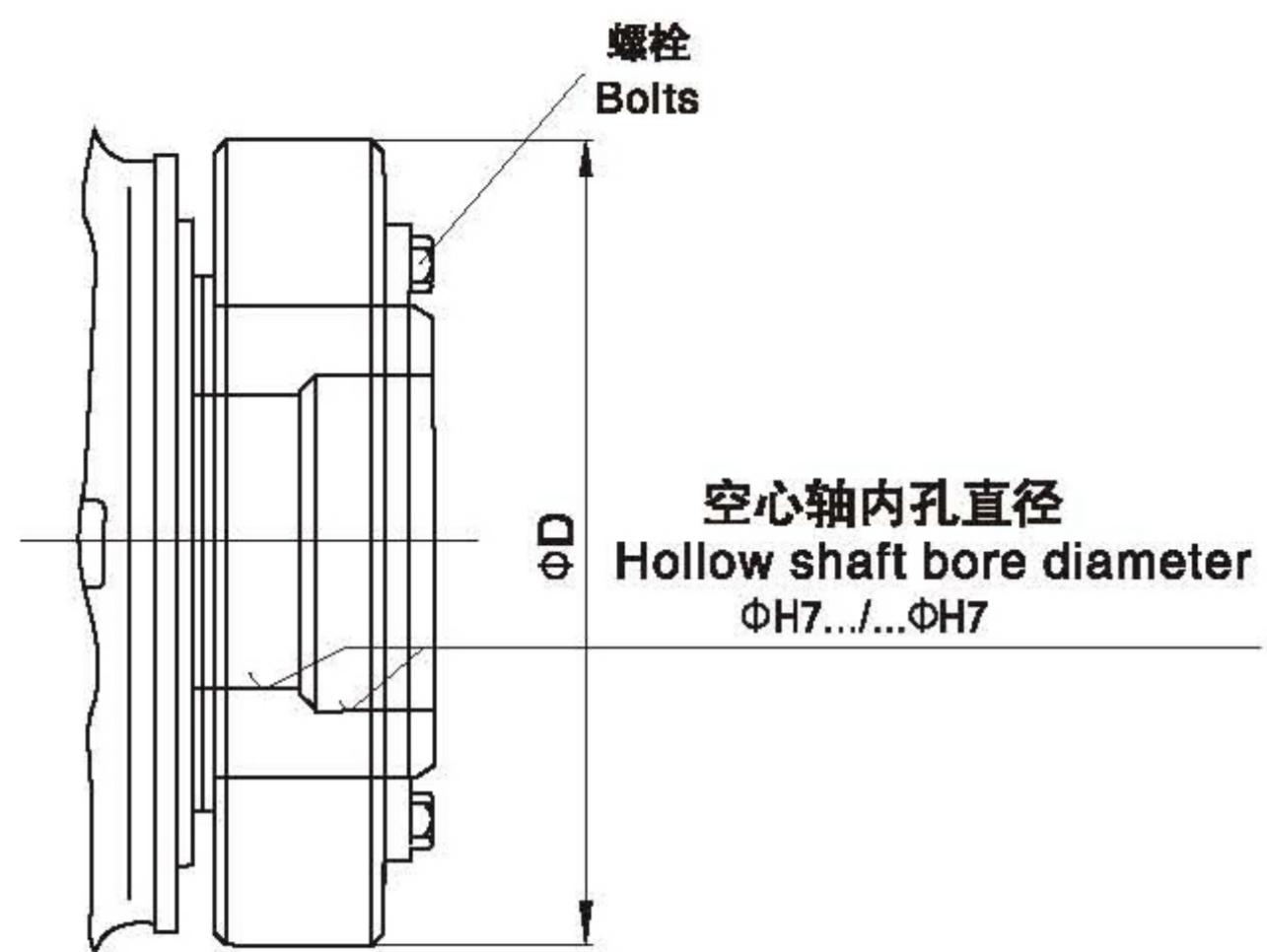




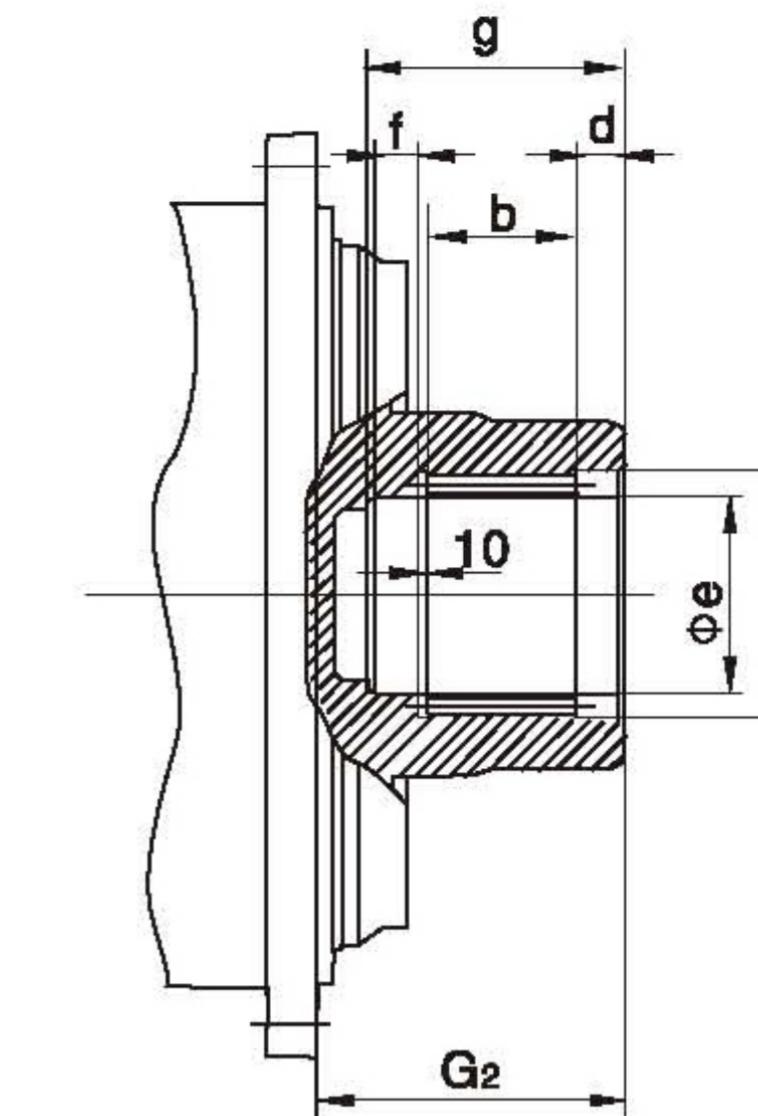




DP..AZ



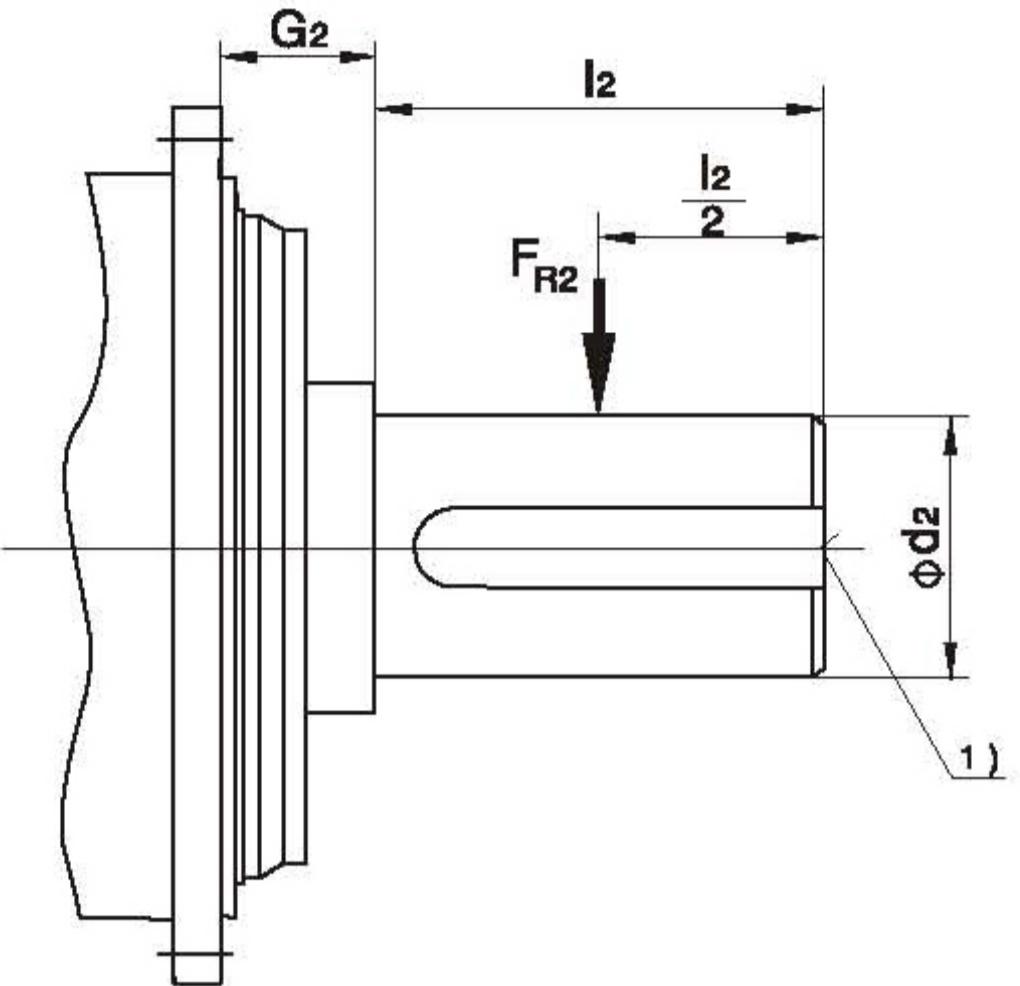
DP..AH



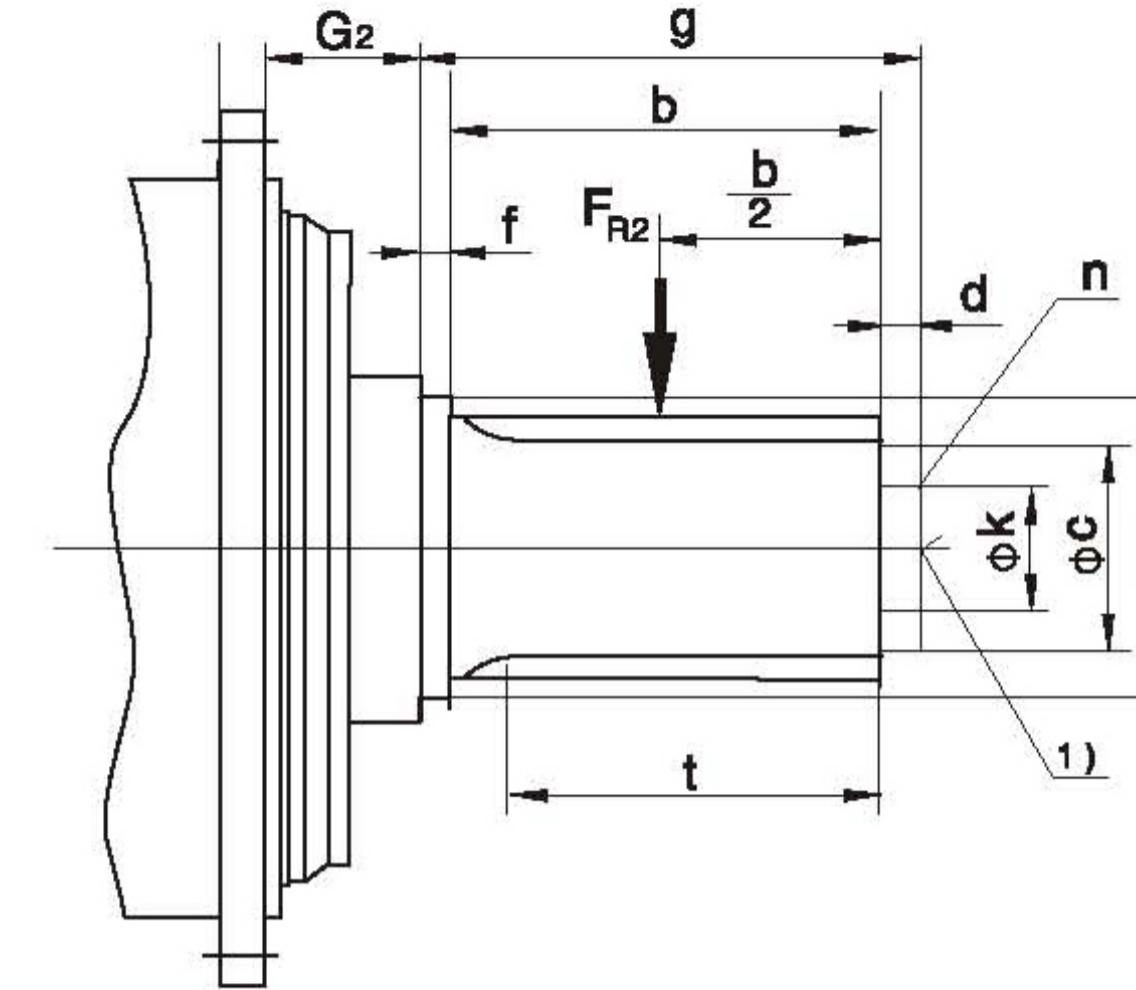
机座号 Size	输出扭矩 Output torque T <sub>2N</sub> (N.m)	胀紧盘 Shrink disk				重量 Weight (kg)
		内径 Size	D	螺栓 Bolts	型号 Size	
9	22000	155	263	M12	100	15
10	31000	165	290	M16	22	22
11	42000	185	330	M16	240	37
12	60000	220	370	M16	54	54
13	83000	240	405	M20	67	67
14	117000	280	460	M20	102	102
16	160000	300	485	M20	470	118
17	202000	320	520	M20		131
18	244000	340	570	M20		186
19	295000	360	590	M20		204
20	354000	380	650	M24		250
21	392000	390	650	M24		250
22	450000	420	670	M24	820	300
23	513000	440	740	M24		400
24	592000	460	770	M24		420
25	684000	480	800	M24		500
26	763000	500	850	M27		570
27	852000	530	910	M27		740
28	950000	560	940	M27	1210	770
29	1060000	560	940	M27		770
30	1200000	590	980	M27		900
31	1330000	590	980	M27		900
32	1500000	620	1020	M30	1640	1080
33	1680000	660	1070	M30		1178
34	1920000	700	1140	M33	2210	1345
35	2240000	750	1150	M33		1346
36	2600000	800	1230	M33		1646

机座号 Size	输出扭矩 Output torque T <sub>2N</sub> (N.m)	渐开线花键空心输出轴 Hollow output shaft with involute splines								
		内花键规格 Involute splines acc.to		b	c H7	d	e H7	f	G <sub>2</sub>	
		DIN 5480	GB/T3478.1							
9	22000	120 x 5 x 30 x 22 x 9H	22z x 5m x 30p x 6h	70	122	40	105	20	165	150
10	31000	130 x 5 x 30 x 24 x 9H	24z x 5m x 30p x 6h	80	132	40	115	20	174	160
11	42000	140 x 5 x 30 x 26 x 9H	26z x 5m x 30p x 6h	90	142	45	125	25	204	180
12	60000	160 x 5 x 30 x 30 x 9H	30z x 5m x 30p x 6h	100	162	45	145	25	223	190
13	83000	180 x 5 x 30 x 34 x 9H	34z x 5m x 30p x 6h	110	182	45	165	25	237	200
14	117000	210 x 5 x 30 x 40 x 9H	40z x 5m x 30p x 6h	125	212	45	195	25	264	215
16	160000	240 x 8 x 30 x 28 x 9H	28z x 8m x 30p x 6h	140	242	50	215	25	285	235
17	202000	250 x 8 x 30 x 30 x 9H	30z x 8m x 30p x 6h	150	255	50	230	30	290	250
18	244000	260 x 8 x 30 x 31 x 9H	31z x 8m x 30p x 6h	160	262	50	240	30	303	260
19	295000	280 x 8 x 30 x 34 x 9H	33z x 8m x 30p x 6h	170	282	50	255	30	327.5	270
20	354000	300 x 8 x 30 x 36 x 9H	36z x 8m x 30p x 6h	180	302	50	280	30	327.5	280
21	392000	310 x 8 x 30 x 37 x 9H	37z x 8m x 30p x 6h	190	312	60	285	40	354	310
22	450000	330 x 8 x 30 x 40 x 9H	40z x 8m x 30p x 6h	200	335	60	310	40	354	320
23	513000	340 x 8 x 30 x 41 x 9H	41z x 8m x 30p x 6h	200	342	60	320	40	348	320
24	592000	360 x 8 x 30 x 44 x 9H	43z x 8m x 30p x 6h	220	362	60	335	40	368	340
25	684000	380 x 8 x 30 x 46 x 9H	46z x 8m x 30p x 6h	230	382	60	360	40	372	350
26	763000	400 x 8 x 30 x 48 x 9H	48z x 8m x 30p x 6h	240	402	60	375	40	382	360
27-30		根据用户要求供货								

DP..BS



DP..BH



机座号 Size	输出扭矩 Output torque T <sub>2N</sub> (N.m)	实 心 轴 Solid shaft			
		d <sub>2</sub> n <sub>6</sub>	l <sub>2</sub>	G <sub>2</sub>	F <sub>R2</sub>
9	22000	120	210	95	
10	31000	130	210	95	
11	42000	150	240	109	
12	60000	160	270	106	
13	83000	180	310	118	
14	117000	210	350	139	
16	160000	230	350	142	
17	202000	250	400	139	
18	244000	260	400	134	
19	295000	280	400	148.5	
20	354000	300	500	148.5	
21	392000	310	500	158	
22	450000	330	500	158	
23	513000	350	550	175	
24	592000	360	590	175	
25	684000	380	590	182	
26	763000	400	650	182	
27	852000	430	690	196.5	
28	950000	450	750	196.5	
29	1060000	460	750	209	
30	1200000	480	790	209	
31	1330000	500	790	232	
32	1500000	510	850	232	
33	1680000	530	900	251	
34	1920000	570	950	251	
35	2240000	600	1000	267	
36	2600000	640	1000	267	

请 咨 询  
Please consult us

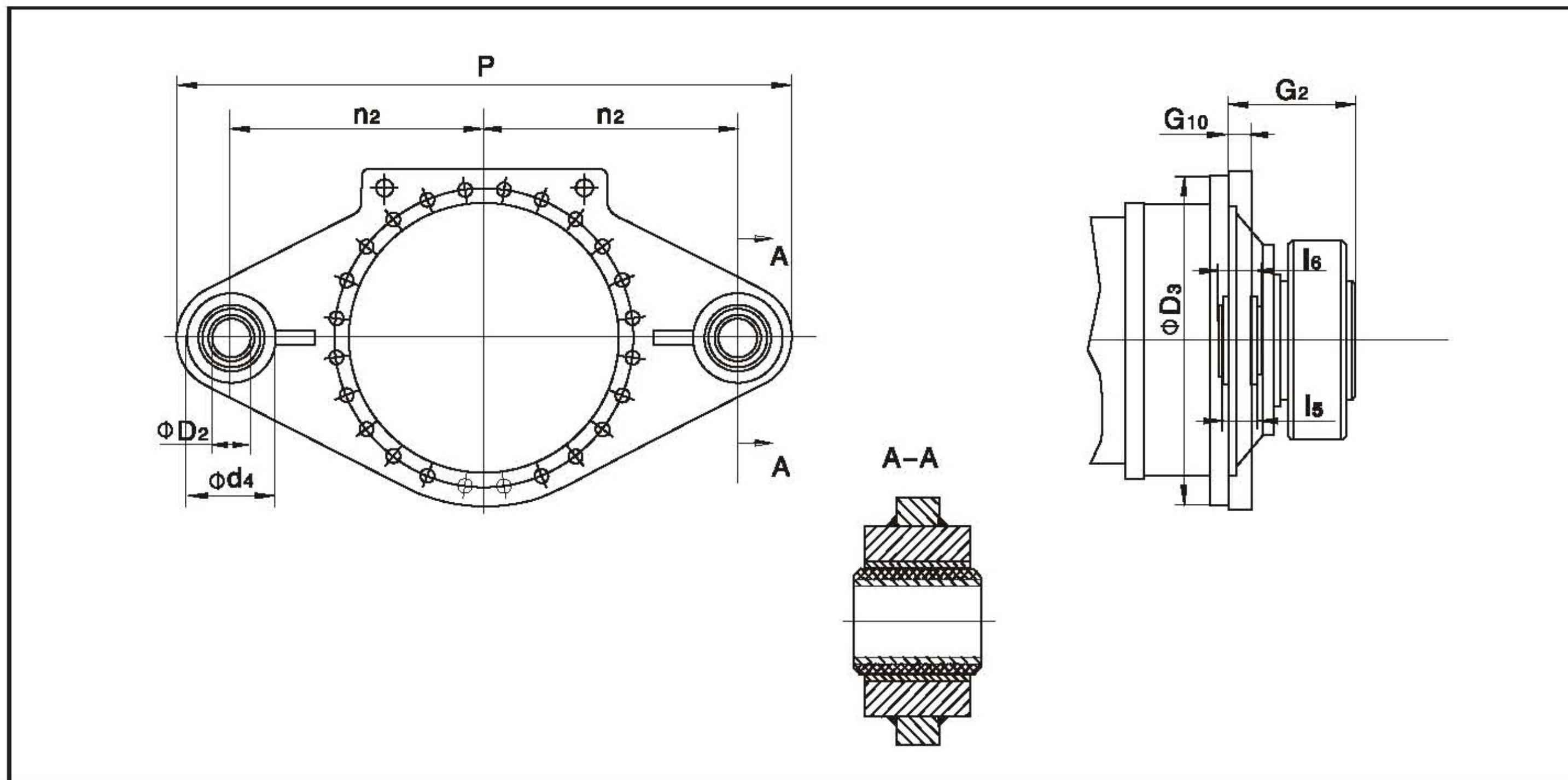
机座号 Size	输出扭矩 Output torque T <sub>2N</sub> (N.m)	渐开线花键空心输出轴 Solid output shaft with involute splines											
		外花键规格 Involute splines acc.to		t	b	c <sub>k6</sub>	d	e <sub>k6</sub>	f	g	k	n	G <sub>2</sub>
DIN 5480	GB/T3478.1												
9	22000	130 x 5 x 30 x 24 x 8m	25z x 5m x 30p x 5h	70	80	110	20	132	20	120	80	3 x M16 x 24	95
10	31000	140 x 5 x 30 x 26 x 8m	27z x 5m x 30p x 5h	80	90	120	20	142	20	130	90	3 x M16 x 24	95
11	42000	160 x 5 x 30 x 30 x 8m	31z x 5m x 30p x 5h	90	100	140	25	162	25	150	110	3 x M16 x 24	109
12	60000	180 x 5 x 30 x 34 x 8m	35z x 5m x 30p x 5h	100	110	90	25	182	25	160	130	3 x M16 x 24	106
13	83000	200 x 5 x 30 x 38 x 8m	39z x 5m x 30p x 5h	110	120	100	30	202	25	175	140	3 x M16 x 24	118
14	117000	220 x 5 x 30 x 42 x 8m	43z x 5m x 30p x 5h	125	135	120	30	222	30	195	160	3 x M16 x 24	139
16	160000	250 x 8 x 30 x 30 x 8m	30z x 8m x 30p x 5h	140	155	140	35	252	30	220	185	3 x M20 x 30	142
17	202000	260 x 8 x 30 x 31 x 8m	31z x 8m x 30p x 5h	150	165	155	40	262	35	240	200	3 x M20 x 30	139
18	244000	280 x 8 x 30 x 34 x 8m	34z x 8m x 30p x 5h	160	175	170	40	282	35	250	215	3 x M20 x 30	134
19	295000	300 x 8 x 30 x 36 x 8m	36z x 8m x 30p x 5h	170	185	180	40	302	35	260	225	3 x M20 x 30	148.5
20	354000	310 x 8 x 30 x 37 x 8m	37z x 8m x 30p x 5h	180	195	190	40	312	35	270	235	6 x M20 x 30	148.5
21	392000	320 x 8 x 30 x 38 x 8m	39z x 8m x 30p x 5h	190	205	200	40	322	35	280	250	6 x M20 x 30	158
22	450000	340 x 8 x 30 x 41 x 8m	41z x 8m x 30p x 5h	200	215	210	40	342	35	290	265	6 x M20 x 30	158
23	513000	360 x 8 x 30 x 44 x 8m	44z x 8m x 30p x 5h	200	215	230	40	362	35	290	275	6 x M20 x 30	175
24	592000	380 x 8 x 30 x 46 x 8m	46z x 8m x 30p x 5h	220	235	245	40	382	35	310	290	6 x M20 x 30	175
25	684000	400 x 8 x 30 x 48 x 8m	49z x 8m x 30p x 5h	230	245	260	40	402	35	320	310	6 x M24 x 36	182
26	763000	420 x 8 x 30 x 51 x 8m	51z x 8m x 30p x 5h	240	255	280	40	422	35	330	330	6 x M24 x 36	182
27-30													根据用户要求供货

1) 有关平键 (符合GB/T1095-1979) 与中心孔请参照 21 页 1) For parallel key (GB/T1095-1979) and centre hole see page 21



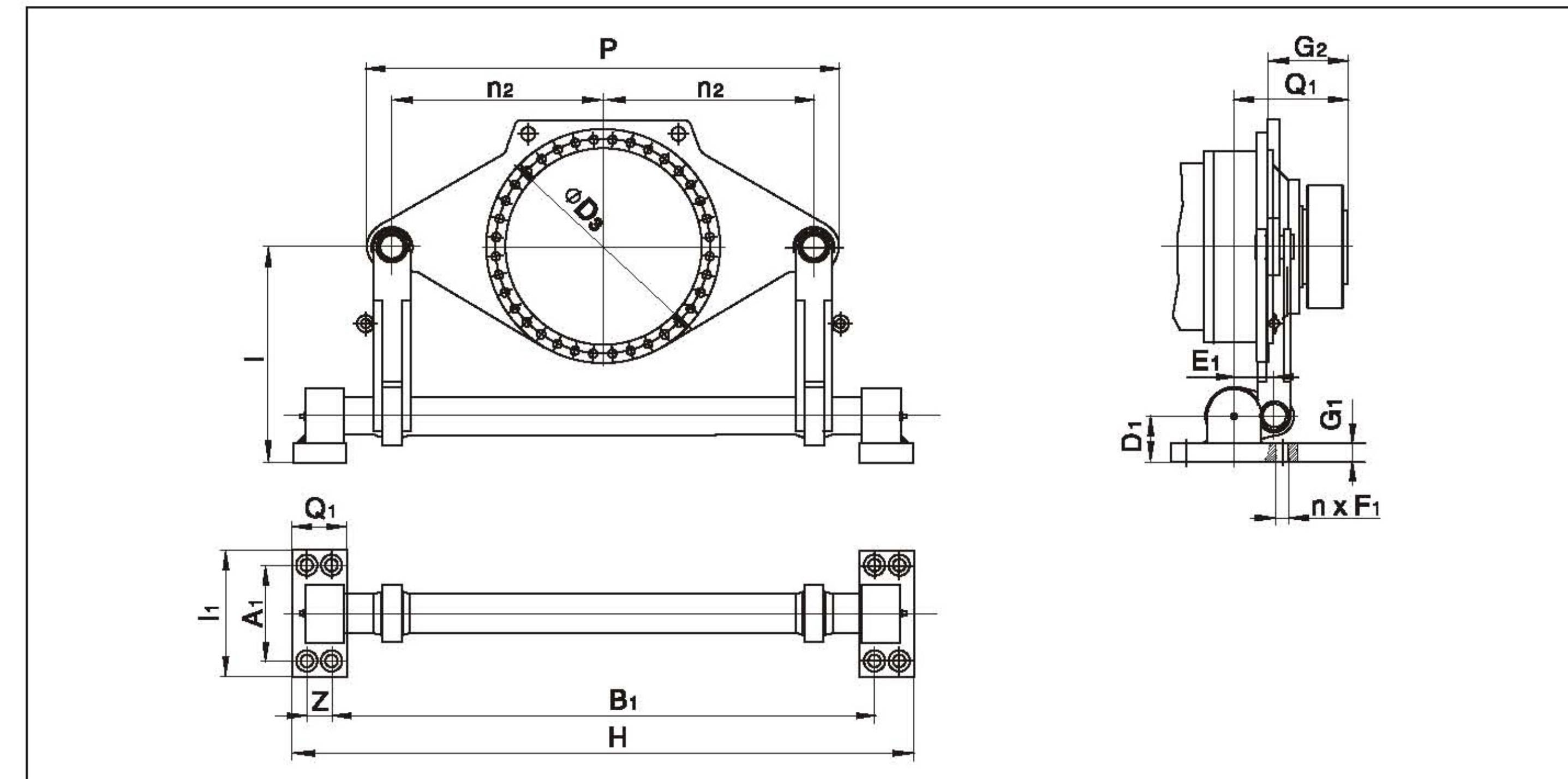
### 附 件 / Add-on Piece 76

带橡胶衬套的两侧扭矩支撑臂 / Torque Reaction Arm on Two Sides with Rubber Bushes



### 附 件 / Add-on Piece 77

扭力轴支撑架 / Torsion Shaft Support



机座号 Size	输出扭矩 Output torque $T_{2N}$ (N.m)	$D_2$ *) $H_8$	$D_3$	$d_4$	$G_2$	$G_{10}$	$l_5$	$l_6$	$n_2$	P	重量 Weight
9	22000	50	440	115	165	30	100	110	500	1140	58
10	31000	50	485	115	174	30	100	110	550	1240	72
11	42000	100	540	180	204	30	110	120	575	1355	95
12	60000	100	620	180	224	35	110	120	625	1455	120
13	83000	110	665	210	241	35	170	180	600	1435	145
14	117000	110	740	210	278	40	170	180	650	1535	170
16	160000	124	790	240	285	40	220	230	700	1670	230
17	202000	124	915	240	288	40	220	230	750	1770	300
18	244000	124	955	240	303	50	220	230	900	2070	400

\*) 销轴:  $\Phi h8$     \*) Pin:  $\Phi h8$

机座号 Size	输出扭矩 Output torque $T_{2N}$ (N.m)	A1	B1	D3	D1	E1	F1 2)	数量 Qty. n	G1	G2	H	I 1)	I1	n2	O1	P	Q1	Z	重量 Weight
9	22000	250	1414	610	120	105	33	8	48.5	165	1619	560	330	550	140	1230	247.5	65	300
10	31000	250	1414	610	120	105	33	8	48.5	174	1619	560	330	550	140	1230	256.5	65	300
11	42000	250	1414	610	120	105	33	8	48.5	204	1619	560	330	550	140	1230	286.5	65	300
12	60000	250	1414	610	120	105	33	8	48.5	224	1619	560	330	550	140	1230	306.5	65	300
13	83000	280	1604	775	155	145	39	8	68.5	241	1837	620	380	650	158	1450	358.5	75	600
14	117000	280	1604	775	155	145	39	8	68.5	278	1837	620	380	650	158	1450	395.5	75	600
16	160000	280	1604	775	155	145	39	8	68.5	285	1837	620	380	650	158	1450	402.5	75	600
17	202000	315	1777	955	170	165	39	8	73.5	294	2041	700	400	750	180	1680	431.5	84	900
18	244000	315	1777	955	170	165	39	8	73.5	303	2041	700	400	750	180	1680	440.5	84	900
19	295000	350	2000	985	195	175	45	8	83.5	328	2300	860	450	850	200	1900	470.5	100	1400
20	354000	350	2000	985	195	175	45	8	83.5	328	2300	860	450	850	200	1900	470.5	100	1400
21	392000	400	2254	1120	210	190	45	8	88.5	354	2591	900	530	950	225	2110	506.5	113	1700
22	450000	400	2254	1120	210	190	45	8	88.5	354	2591	900	530	950	225	2110	506.5	113	1700
23	513000	450	2496	1215	235	220	45	8	98.5	380	2871	1060	590	1063	250	2385	562.5	125	2150
24	592000	450	2496	1215	235	220	45	8	98.5	380	2871	1060	590	1063	250	2385	562.5	125	2150
25	684000	500	2816	1350	275	245	52	8	118.5	407	3236	1200	650	1150	280	2600	614.5	140	2700
26	763000	500	2816	1350	275	245	52	8	118.5	407	3236	1200	650	1150	280	2600	614.5	140	2700
27	852000	530	2887	1490	300	255	52	8	128.5	453	3327	1250	700	1250	290	2820	670.5	150	3400
28	950000	530	2887	1490	300	255	52	8	128.5	453	3327	1250	700	1250	290	2820	670.5	150	3400
29	1060000	560	3200	1565	300	280	62	8	128.5	483	3673	1350	750	1360	315	3080	718	158	4350
30	1200000	560	3200	1565	300	280	62	8	128.5	483	3673	1350	750	1360	315	3080	718	158	4350
31	1330000	590	3408	1695	340	300	70	8	148.5	538	3906	1400	790	1450	330	3260	788	168	5500
32	1500000	590	3408	1695	340	300	70	8	148.5	538	3906	1400	790	1450	330	3260	788	168	5500
33	1680000	620	3588	1785	375	320	70	8	158.5	573	4116	1500	840	1550	350	3520	840.5	178	7000
34	1920000	620	3588	1785	375	320	70	8	158.5	573	4116	1500	840	1550	350	3520	840.5	178	7000

35+36

根据用户要求供货

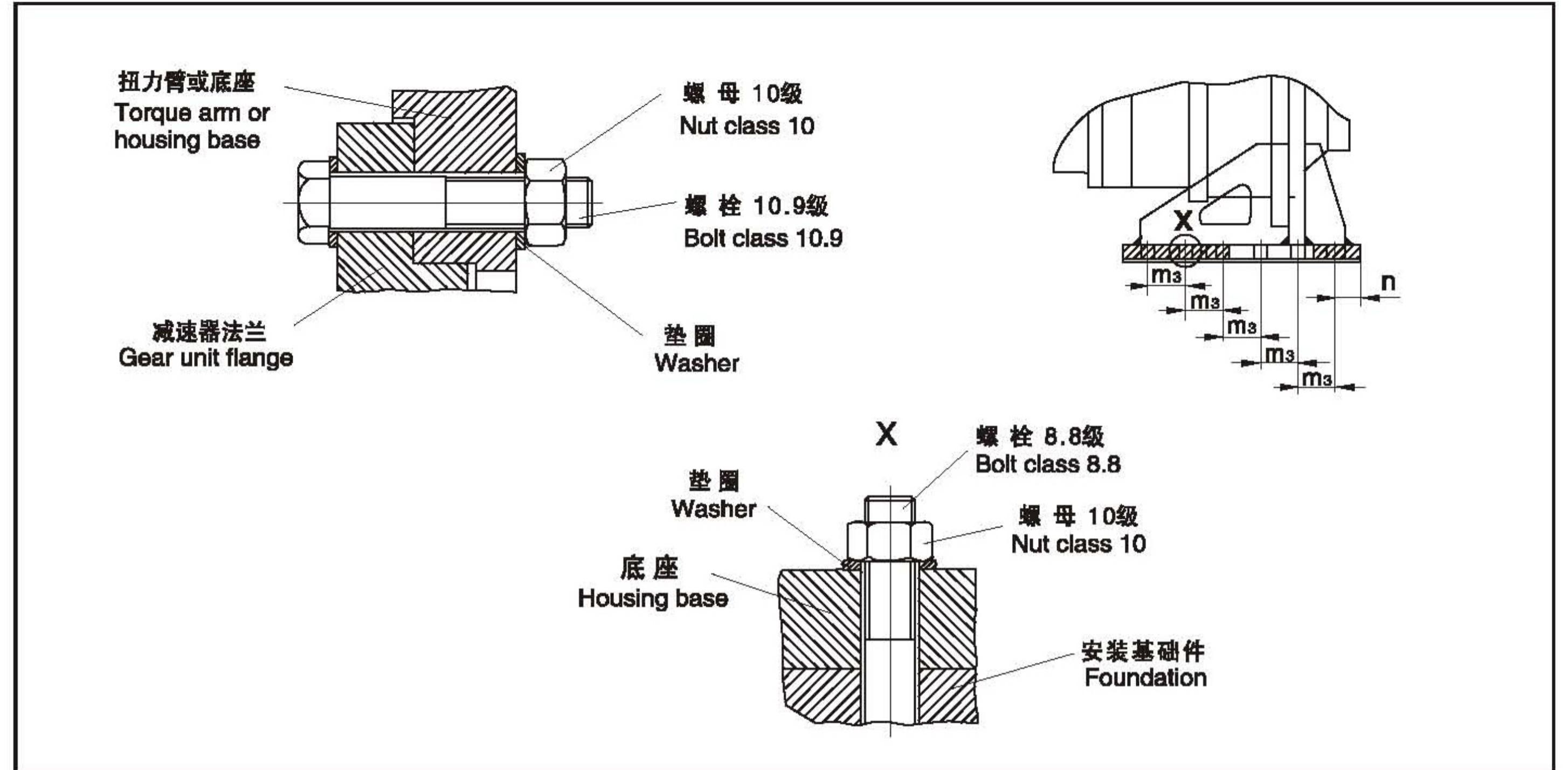
On request

1) 标准尺寸, 整体高度可修正到2000mm

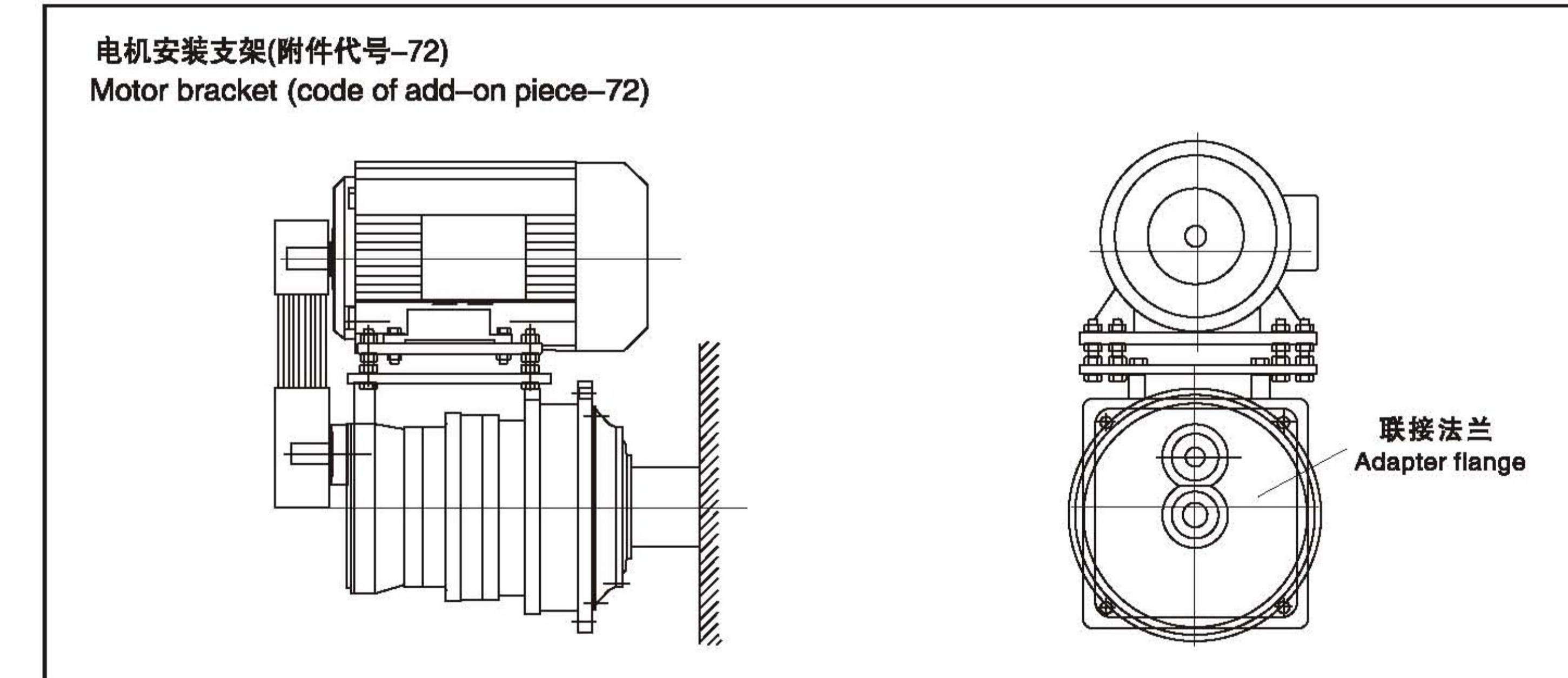
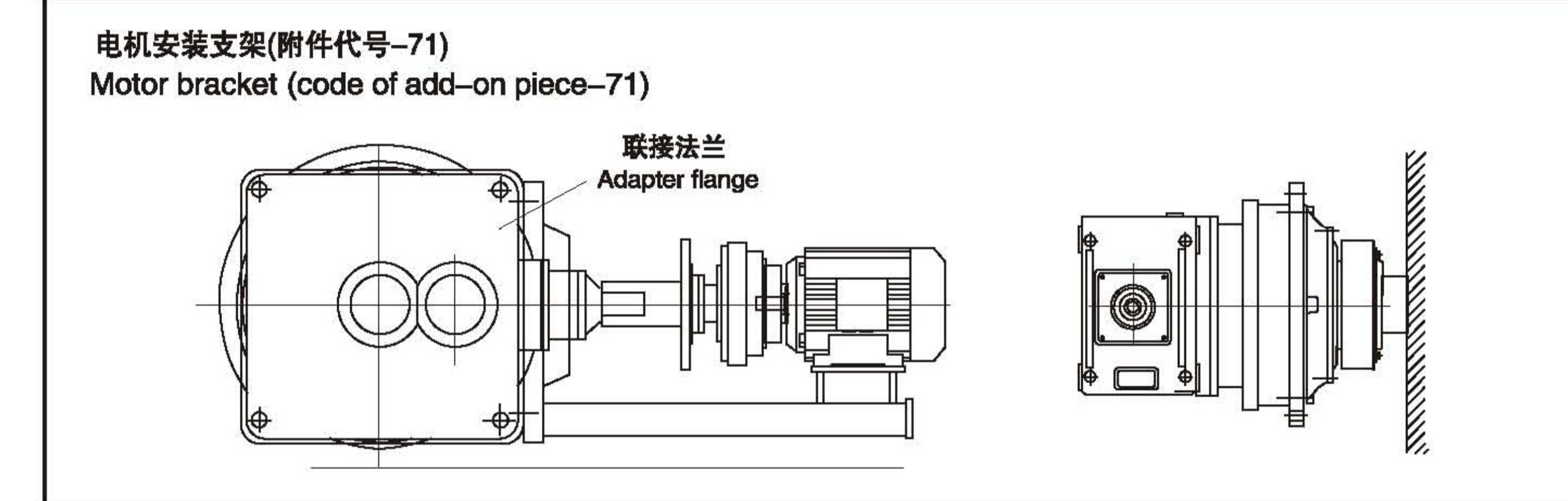
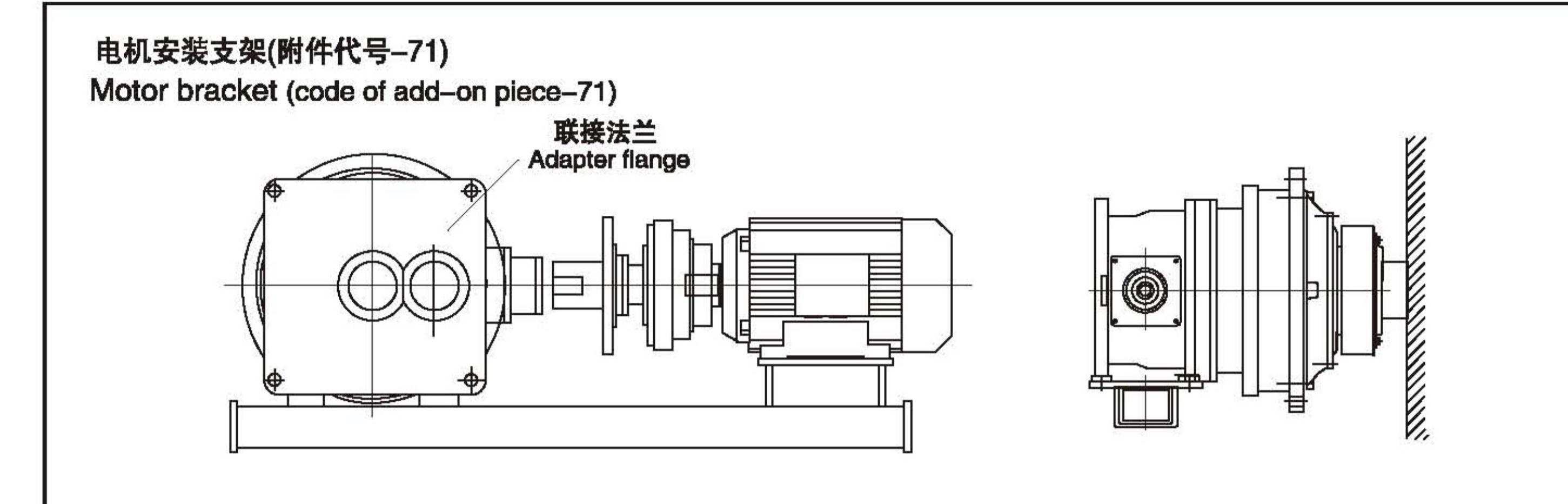
2) 锁紧用螺栓强度不得低于6.8级

1) Standard dimension, overall height modifiable up to 2000 mm

2) The bolts used for lock are not lower than class 6.8

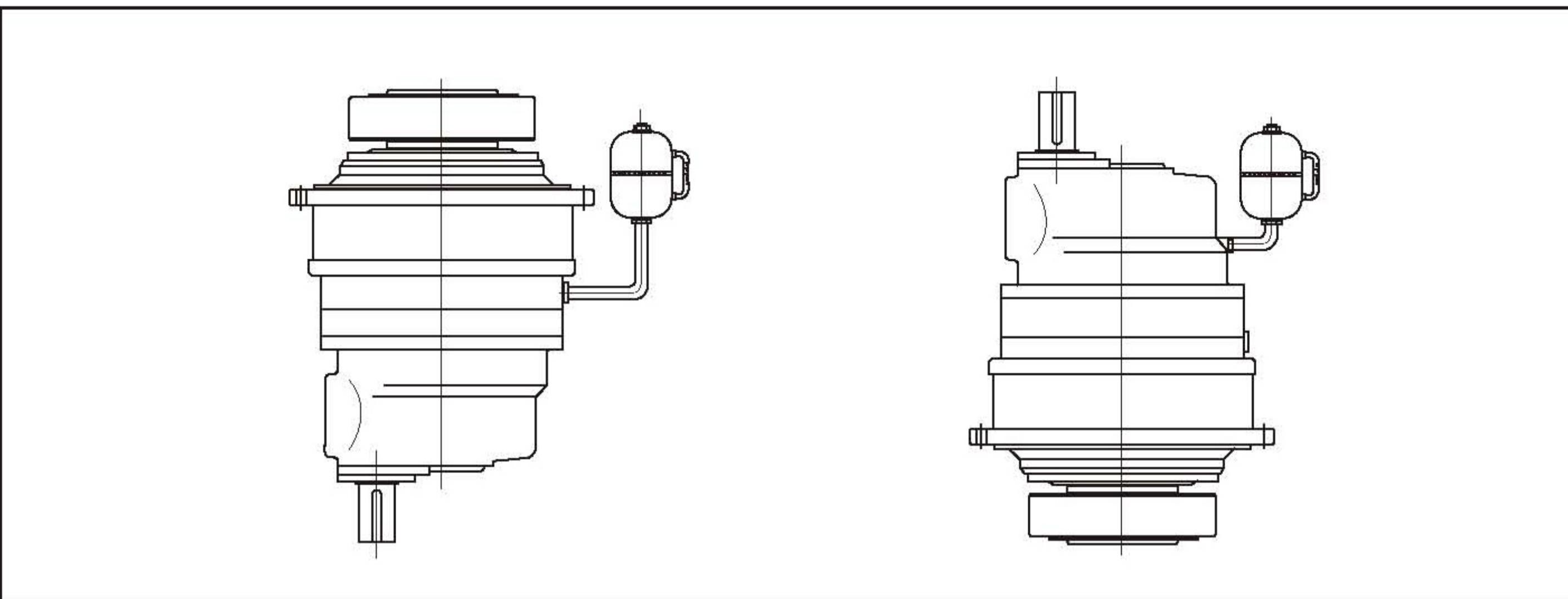


机座号 Size	法兰联接 Flange attachment		底座联接 Base attachment	
	螺栓 Thread (10.9)	预紧扭矩 (N.m) Tightening torque	螺栓 Thread (8.8)	预紧扭矩 (N.m) Tightening torque
9	M16	295	M24	710
10	M16	295	M24	710
11	M20	580	M24	710
12	M24	1000	M24	710
13	M24	1000	M24	710
14	M24	1000	M30	1450
16	M24	1000	M30	1450
17	M30	2000	M36	2530
18	M30	2000	M36	2530
19/20	M30	2000	M42	4070
21/22	M36	3560	M48	6140
23/24	M36	3560	M48	6140
25/26	M42	5720	M56	9840
27/28	M48	8640	M56	9840
29/30	M48	8640	M64	14300
31/32	M56	13580	M64	14300
33/34	M56	13580	M64	14300
35/36	M56	13580	M72 x 6	20800



如果不用钟表电机支座，可以采用法兰联接的电机支架，如上图所示。

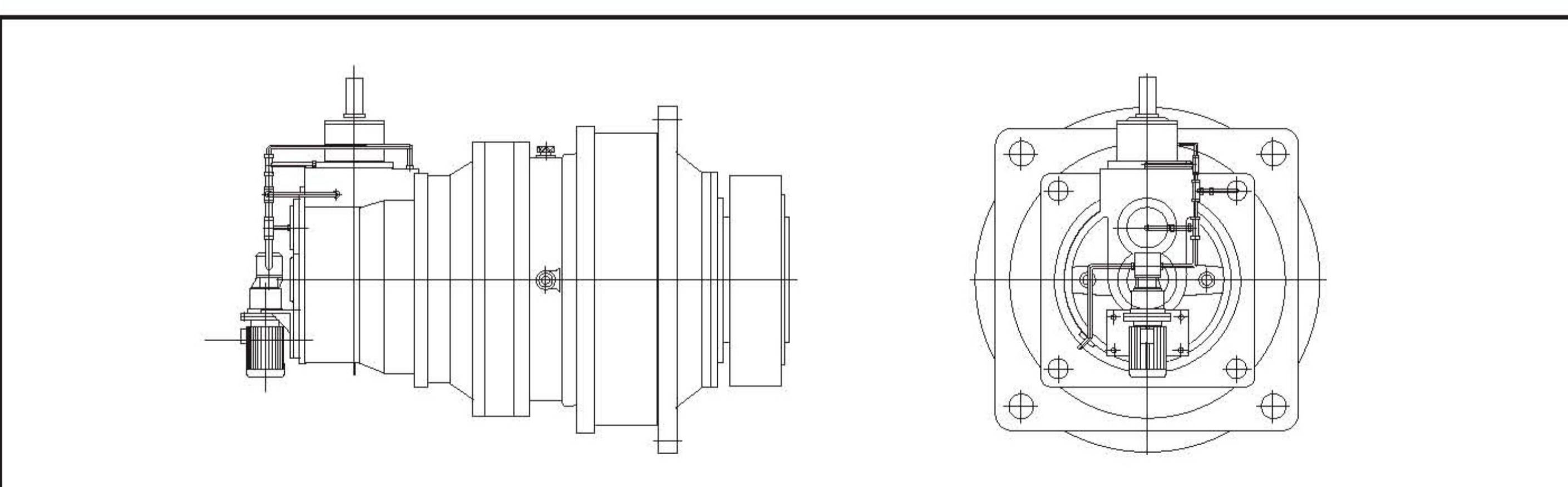
In cases where no motor bell housings are provided we use an adapter flange to attach motor brackets, they are shown in the above drawings.



立式安装时,为保证上端的轴承得到可靠润滑必须相应的提高油位,油位通过加装的补偿油箱来加高和检查。补偿油箱上装有通气孔器,如上图所示。

油箱可安装在减速器上,也可安装在客户的机器上。

DPS、DPK、DPL当安装布置方位为B511、B521、B531的卧式安装时需配备电动油泵强制润滑,如下图:

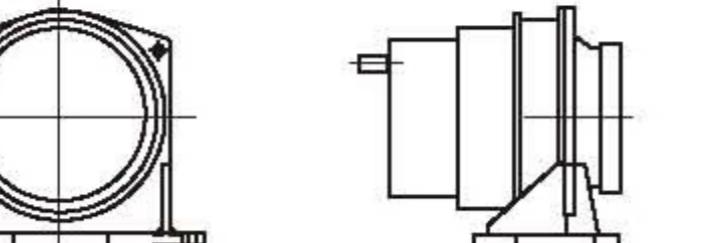
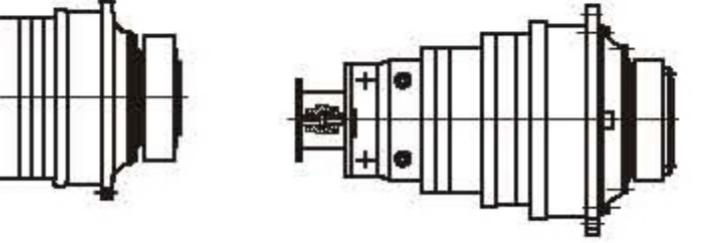
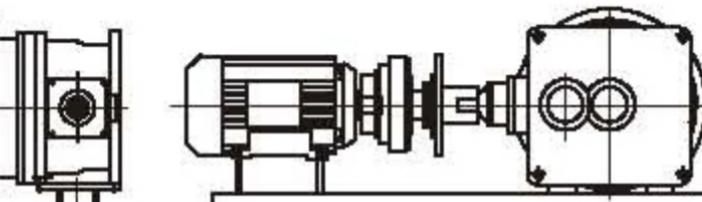
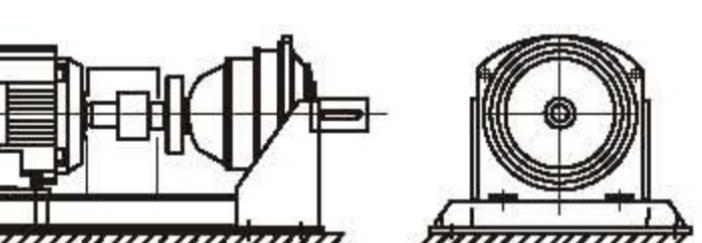
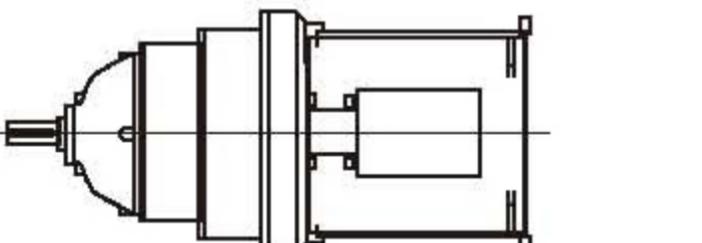
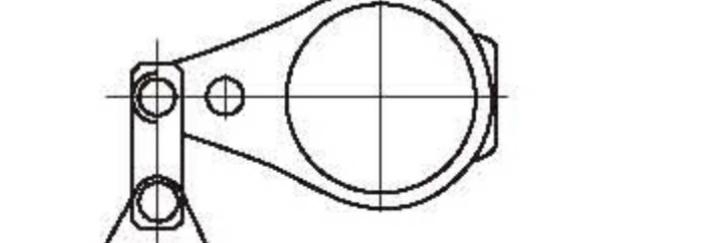
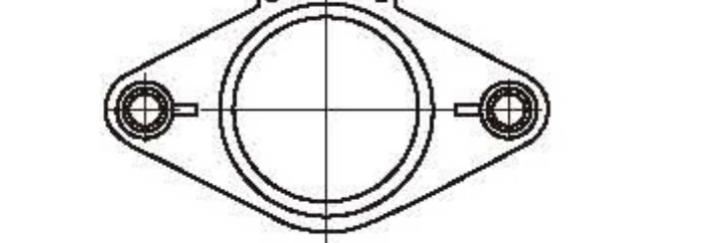
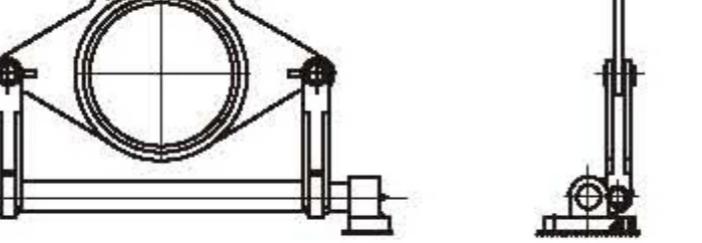


水平安装 Horizontal gear unit position			立式安装 <sup>1)</sup> Vertical gear unit position	
同轴式 行星减速器 Coaxial planetary gear units	0 DP.N.			
斜齿轮- 行星减速器 Combined helical gear planetary gear units	1 DPS.			
锥齿轮-斜齿轮 -行星减速器 Combined bevel gear planetary gear units	2 DP.K.			
锥齿轮- 行星减速器 Combined bevel-helical gear planetary gear units	3 DPL.			
扭矩支撑臂 Torque reaction arm	5			

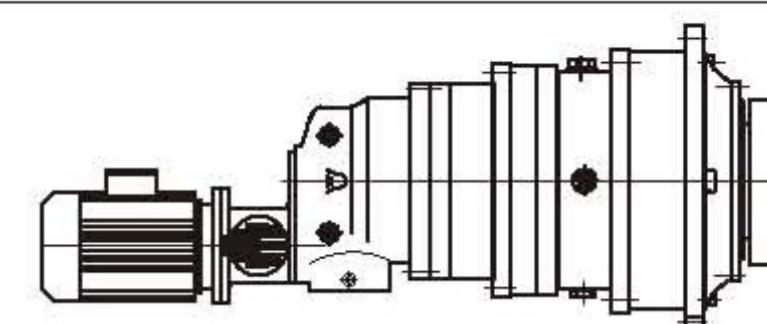
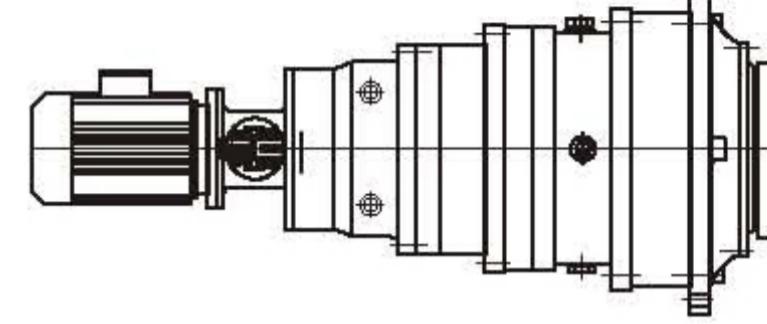
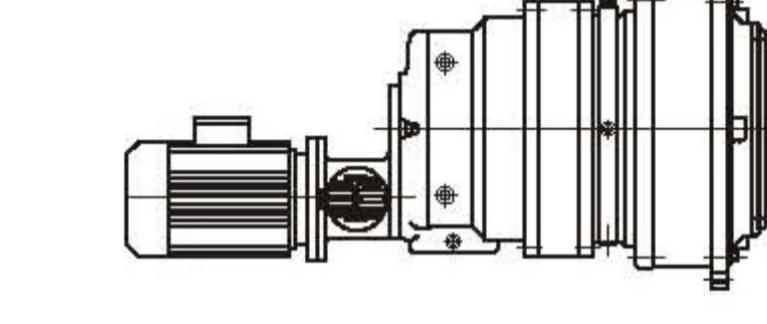
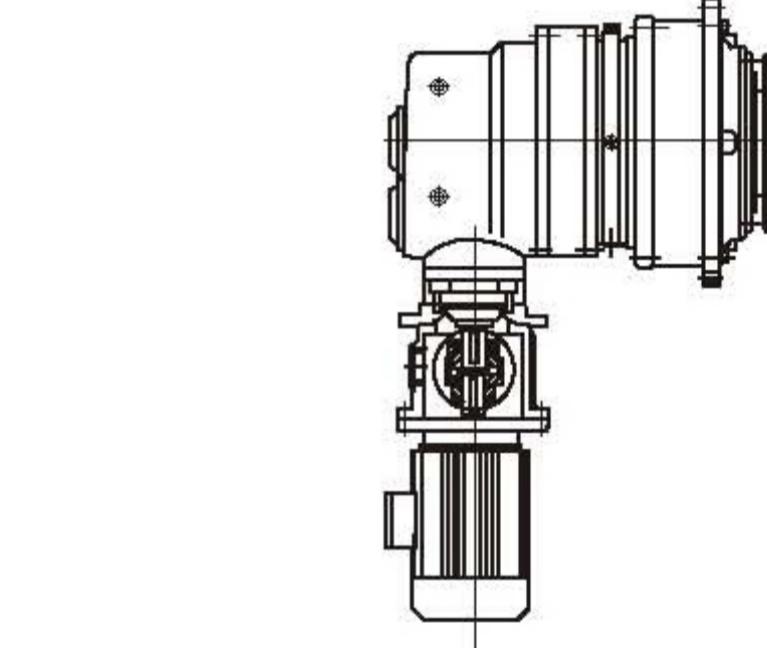
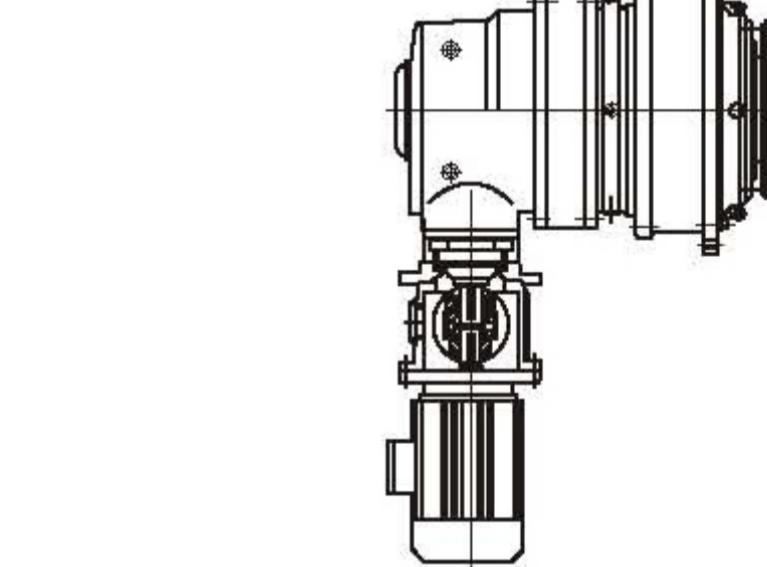
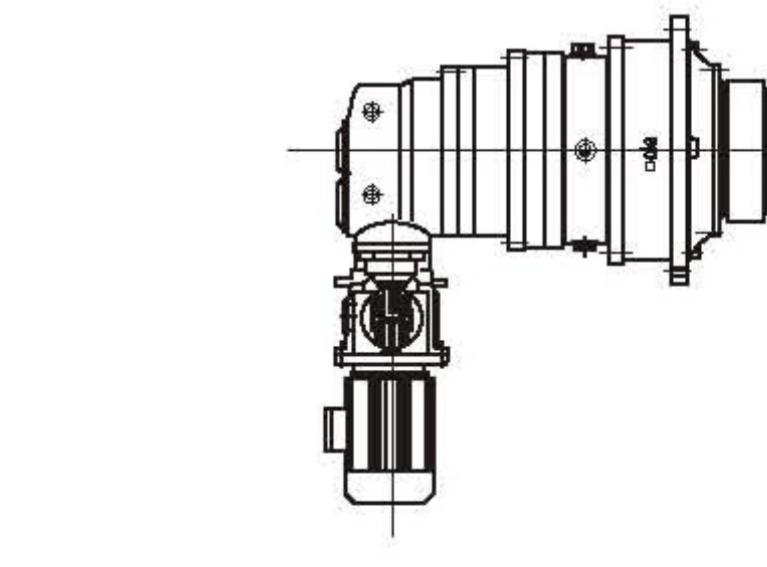
1) 请注意B5\*1、V1\*\*、V3\*\* 安装布置形式时润滑方面有特殊要求。

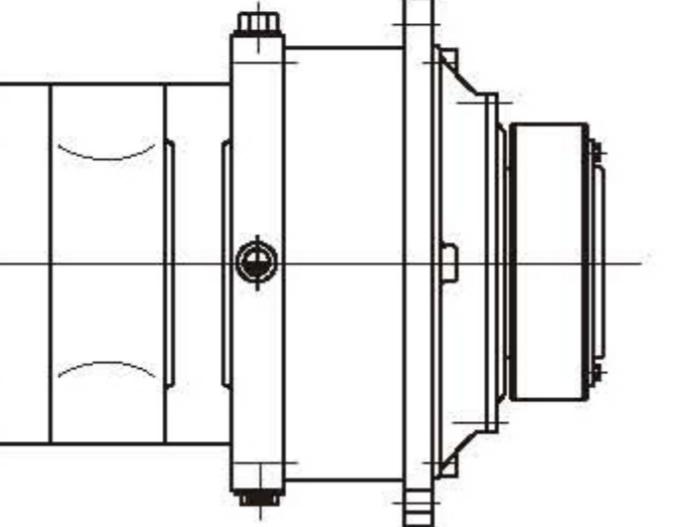
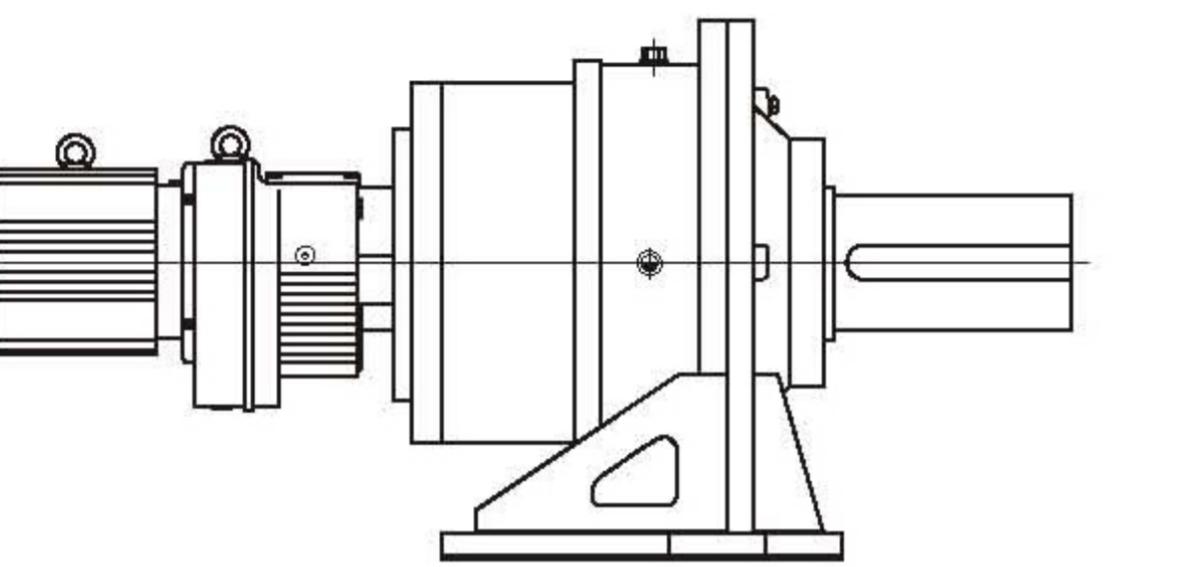
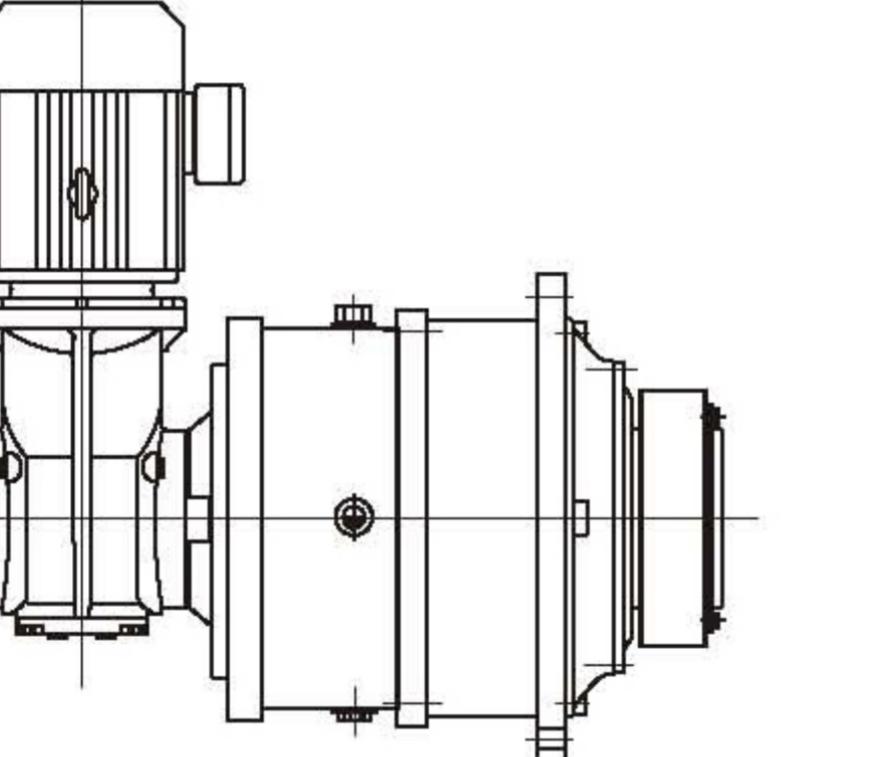
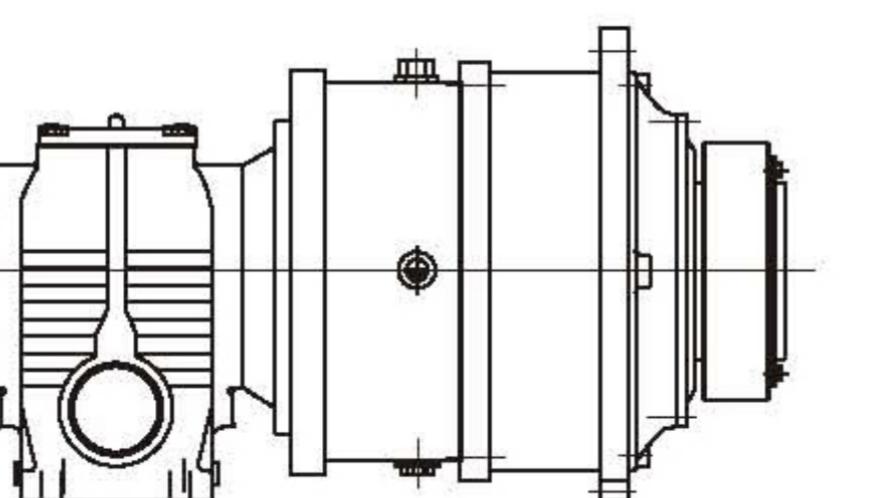
1) Please notice that there are special requirements in lubrication when mounting positions B5\*1、V1\*\*、V3\*\*

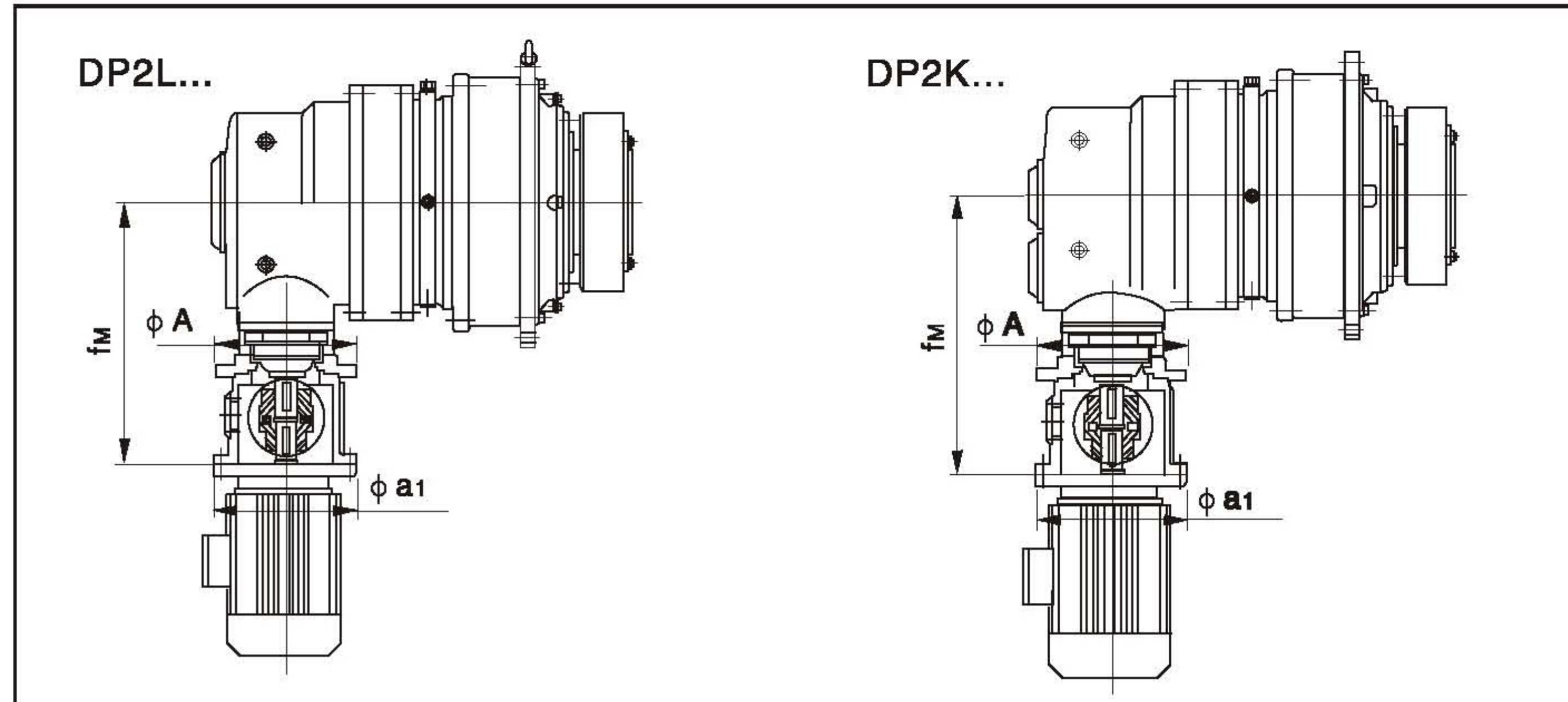
附 件 / Add-on Piece

代号 Code	附 件 Add-on piece		示 例 Representation
99	无附件 Without add-on piece		
96	减速器底座 Gear housing base	见 29页 See page 29	
70	电机钟形支座 Motor bell housing	见 38页 See page 38	
71	电机托架 Motor bracket	见 34 页 See page 34	
72	电机支架 Motor bracket	见 34 页 See page 34	
73	摆动底座 Motor swing-base		
74	钟形支座(输出) Bell housing(output)		
75	扭矩支撑臂(一端) Torque reaction arm(on one side)	见 30 页 See page 30	
76	扭矩支撑臂(二端) Torque reaction arm(on two sides)	见 31 页 See page 31	
77	扭力轴支撑 Torsion shaft support	见 32 页 See page 32	

电 机、减 速 器 直 联 方 式 / Connection-directly Mode of Motor and Gear Unit

安装布置形式 Mounting position	类 型 Type	图 示 Representation
水平安装 Horizontal	DP2S 电机直联 DP2S motor connect-directly	
水平安装 Horizontal	DP3N 电机直联 DP3N motor connect-directly	
水平安装 Horizontal	DP3S 电机直联 DP3S motor connect-directly	
水平安装 Horizontal	DP2K 电机直联 DP2K motor connect-directly	
水平安装 Horizontal	DP2L 电机直联 DP2L motor connect-directly	
水平安装 Horizontal	DP3K 电机直联 DP3K motor connect-directly	

组合形式说明 Identifications of combinations	例 子 Example
单级空心轴行星减速器 带液压马达 Two stages solid shaft planetary gear units with hydraulic motor	
两级空心轴行星减速器 带DR斜齿轮减速机、电机和底座 Two stages solid shaft planetary gear units with DR helical gear units, motor and housing base	
两级空心轴行星减速器 带DK锥齿轮减速机、电机 Two stages hollow shaft planetary gear units with DK helical-bevel gear units, motor	
两级空心轴行星减速器 带DS蜗轮蜗杆减速机、电机 Two stages hollow shaft planetary gear units with DS helical-worm gear units, motor	



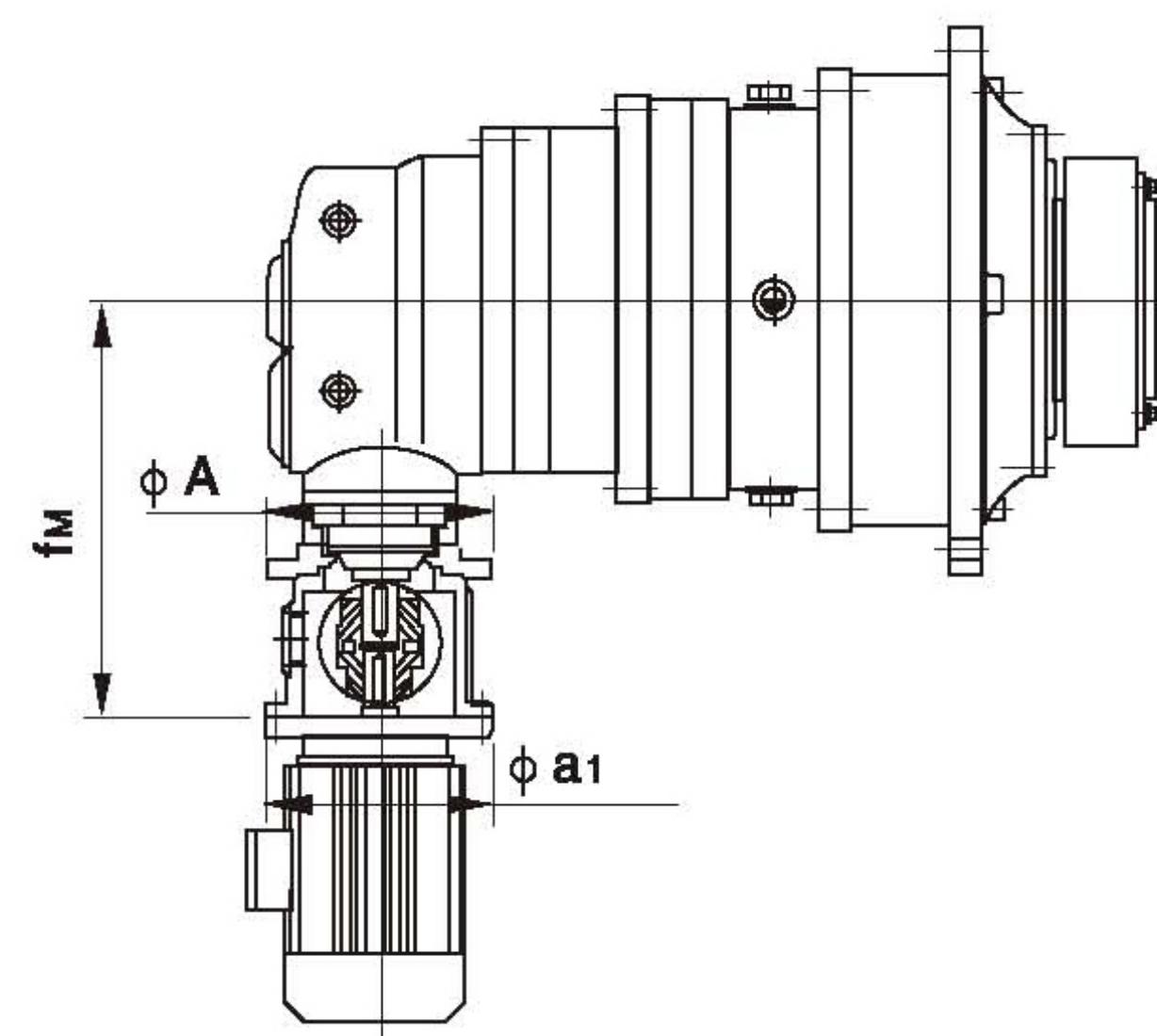
电机功率 Motor Power	规格 / Size								
	9/10			11/12			13/14		
	f_M	a_1	A	f_M	a_1	A	f_M	a_1	A
mm									
11-15kW	548	350	350						
18.5-22kW	548	350		603	350	400			
30kW	550	400		605	400		695	400	400
37-45kW	587	450		642	450		732	450	
55kW				642	550		732	550	
75-90kW							732	550	

电机功率 Motor Power	规格 / Size														
	9/10			11/12			13/14			16/17			18/19		
	f_M	a_1	A	f_M	a_1	A	f_M	a_1	A	f_M	a_1	A	f_M	a_1	A
mm															
2.2-4kW	468	250	250				350			400			420		
5.5-7.5kW	491	300		556	300										
11-15kW	533	350		588	350			688	350		773	350			
18.5-22kW	533	350		588	350			688	350		775	400		895	400
30kW	535	400		590	400			690	400		812	450		932	450
37.45kW				627	450			727	450		812	550		932	550
55kW								727	550		812	550		932	550
75-90kW								727	550		812	550		932	550

详情请与我们联系

Please refer to us for the details

DP3K...				
规格 / Size	电机功率 Motor Power	f <sub>M</sub>	a <sub>1</sub>	A
		mm		
9-14	2.2-4kW	468	250	250
	5.5-7.5kW	491	300	
	11-15kW	533	350	
	18.5-22kW	533	350	
	30kW	535	400	
16/17	5.5-7.5kW	556	300	350
	11-15kW	588	350	
	18.5-22kW	588	350	
	30kW	590	400	
	37-45kW	627	450	
18-22	11-15kW	688	350	400
	18.5-22kW	688	350	
	30kW	690	400	
	37.45kW	727	450	
	55kW	727	550	
	75-90kW	727	550	
23-26	18.5-22kW	773	350	420
	30kW	775	400	
	37-45kW	812	450	
	55kW	812	550	
	75-90kW	812	550	
27-30	30kW	895	400	400
	37-45kW	932	450	
	55kW	932	550	
	75-90kW	932		



## 润滑油种类选择

减速器使用工况	润滑油种类
冶金轧钢、井下采掘、高温有冲击、含水等	L-CKD 重载荷工业齿轮油 ( GB5903-1995 )
其余工况	L-CKC 中载荷工业齿轮油 ( GB5903-1995 )

注:若选用合成齿轮油则更具有良好的抗老化性能,  
可有效地提高减速器的机械效率。

## 润滑油粘度

条 件	润滑油粘度等级 40℃温度下的ISO-VG 粘度mm <sup>2</sup> /s(cst)
高速级圆周速度v<2.5m/s, 或环境温度在35-50℃之间	VG320(或VG460)
高速级齿轮圆周速度v>2.5m/s, 或环境温度在35℃以下, 或采用循环油润滑	VG220

## 浸油润滑润滑油的工作温度

润滑油种类	工作温度/℃
中载荷工业齿轮油L-CKC	-8℃至+90℃(瞬时可达100℃)
重载荷工业齿轮油L-CKD	-5℃至+100℃(瞬时可达110℃)

注意:如果减速器的工作温度高于或低于表中规定极限值则应重新确定合适的润滑油。

当环境温度低于0℃时启动前油温需加热到0℃以上。

## 强制润滑润滑油允许的极限温度

40℃温度下的 ISO-VG粘度 mm <sup>2</sup> /s(cst)	强制润滑允许的极限温度/℃	
	矿物油	合成油
VG220	10-80	0-90
VG320	15-90	5-100
VG460	20-95	10-105

注意:当油温低于表中所列数值时,必须提供浸油润滑方式,  
或对润滑油加热。

## Lubricant selection

Operating conditions of gear units	Lubricant specification
Steel rolling,excavating, high temperature with shock,moisture,etc.	L-CKD heavy load industrial gear oil(GB5903-1995)
Others	L-CKC moderate load industrial gear oil(GB5903-1995)

Note:It adopts the synthetic oil which has the better performance of anti-ageing so that improves the mechanical efficiency effectively.

## Lubricant viscosity

Conditions	Lubricant viscosity classification Viscosity ISO-VG at 40 ℃ in mm <sup>2</sup> s(cst)
Rotation velocity of high speed stage v < 2.5m/s, or ambient temperature between 35-50℃	VG320(or VG460)
Rotation velocity of high speed stage v < 2.5m/s, or ambient temperature at 35℃, or lubrication with circulating oil	VG220

## Working temperature for dip feed lubrication

Lubricant specification	Working temperature/℃
L-CKC moderate load industrial gear oil	From -8℃ to +90℃(upto 100℃ at moment)
L-CKD heavy load industrial gear oil	From -5℃ to +100℃(up to 100℃ at moment)

Notes:If the temperatures of gear units are above or below the values as listed in table, it determines the proper oil again.  
If the ambient temperatures are below 0℃,the oil has to be heated above 0℃.

## Permissible temperature limit for forced feed lubrication

Viscosity ISO-VG at 40℃ in mm <sup>2</sup> /s(cst)	Permissible temperature limit for forced feed lubrication/℃	
	Mineral oil	Synthetic oil
VG220	10-80	0-90
VG320	15-90	5-100
VG460	20-95	10-105

Notes:If the temperatures are below the values as listed in table,  
dip lubrication has to be provided or the oil must be heated.

减速器  
服务系数

工作机系数				$f_1$	
工作机	日工作小时数				
	≤0.5h	0.5~10h	>10h		
污水处理	浓缩器(中心传动)	-	-	1.2	
	压滤器	1.0	1.3	1.5	
	絮凝器	0.8	1.0	1.3	
	曝气机	-	1.8	2.0	
	搜集设备	1.0	1.2	1.3	
	纵向、回转组合搜集装置	1.0	1.3	1.5	
	预浓缩器	-	1.1	1.3	
	螺杆泵	-	1.3	1.5	
	水轮机	-	-	2.0	
	离心泵	1.0	1.2	1.3	
	1个活塞容积式泵	1.3	1.4	1.8	
	>1个活塞容积式泵	1.2	1.4	1.5	
	斗式运输机	-	1.6	1.6	
	倾卸装置	-	1.3	1.5	
	Carteypillar行走机构	1.2	1.6	1.8	
	斗轮式挖掘机(用于捡拾)	-	1.7	1.7	
	斗轮式挖掘机(用于粗料)	-	2.2	2.2	
	切碎机	-	2.2	2.2	
	行走机构*	-	1.4	1.8	
挖泥机	弯板机*	-	1.0	1.0	
	挤压机	-	-	1.6	
	调浆机	-	1.8	1.8	
	橡胶研光机	-	1.5	1.5	
	冷却圆筒	-	1.3	1.4	
	混料机,用于均匀介质	1.0	1.3	1.4	
	混料机,用于非均匀介质	1.4	1.6	1.7	
	搅拌机,用于密度均匀介质	1.0	1.3	1.5	
	搅拌机,用于非均匀介质	1.2	1.4	1.6	
	搅拌机,用于不均匀气体吸收	1.4	1.6	1.8	
	烘炉	1.0	1.3	1.5	
	离心机	1.0	1.2	1.3	
	翻板机	1.0	1.0	1.2	
	推钢机	1.0	1.2	1.2	
金属加工设备	绕线机	-	1.6	1.6	
	冷床横移架	-	1.5	1.5	
	辊式矫直机	-	1.6	1.6	
	辊道(连续式)	-	1.5	1.5	
	辊道(间歇式)	-	2.0	2.0	
	可逆式轧管机	-	1.8	1.8	
	剪切机(连续式)*	-	1.5	1.5	
	剪切机(曲柄式)*	1.0	1.0	1.0	
	连铸机驱动装置	-	1.4	1.4	
	可逆式开坯机	-	2.5	2.5	

工作机额定功率P2的确定

\*)按最大扭矩确定额定功率.

\*\*)检验热功率是绝对必要的.

Gear Units  
Service Factor

Factor for driven machine			$f_1$		
Driven machines	Effective daily operating period under load in hours		Driven machines	Effective daily operating period under load in hours	
	≤0.5h	0.5~10h		≤0.5h	0.5~10h
Thickeners(central drive)	-	-	Reversing slabbing mills	-	2.5
Filter presses	1.0	1.3	Reversing wire mills	-	1.8
Flocculation apparatus	0.8	1.0	Reversing sheet mills	-	2.0
Aerators	-	1.8	Reversing plate mills	-	1.8
Raking equipment	1.0	1.2	Roll adjustment drives	0.9	1.0
Combined longitudinal and rotary rakes	1.0	1.3	Bucket conveyors	-	1.5
Pre-thickeners	-	1.1	Hauling winches	1.4	1.6
Screw pumps	-	1.3	Hoists	-	1.8
Water turbines	-	-	Belt conveyors < 150 kw	1.0	1.2
Centrifugal pumps	1.0	1.2	Belt conveyors ≥ 150 kw	1.1	1.3
1piston positive-displacement pumps	1.3	1.4	Goods lifts *	-	1.2
>1piston positive-displacement pumps	1.2	1.4	Passenger lifts *	-	1.8
Bucket conveyors	-	1.6	Apron conveyors	-	1.2
Dumping devices	-	1.3	Escalators	-	1.4
Carterpillar travelling gears	1.2	1.6	Rail travelling gears	-	1.5
Bucket wheel excavators as pick-up	-	1.7	Frequency converters		-
Bucket wheel excavators for primitive material	-	2.2	Reciprocating compressors		-
Cutter heads	-	2.2	Cranes	Slewing gears *	1
Traversing gears *	-	1.4		Luffing gears	1
Plate bending machines *	-	1.0		Travelling gears	1.5
Extruders	-	-		Hoisting gears *	1
Dough mills	-	1.8		Derrick jib cranes	1
Rubber calenders	-	1.5	Cooling towers	Cooling tower fans	-
Cooling drums	-	1.3		Blowers(axial and radial)	-
Mixers for uniform media	1.0	1.3		Cane knives *	-
Mixers for non-uniform media	1.4	1.6		Cane mills	-
Agitators for media with uniform density	1.0	1.3		Beet cossettes macerators	-
Agitators for media with non-uniform density	1.2	1.4	Beet sugar production	Extraction plants,Mechanical refrigerators,Juice boilers,	-
Agitators for media with non-uniform gas absorption	1.4	1.6		Sugar beet washing machines	-
Toasters	1.0	1.3		Sugar beet cutters	-
Centrifuges	1.0	1.2		Of all-kind **	-
Plate tilters	1.0	1.0		Pulper drives	2.0
Ingot pushers	1.0	1.2	Cableways	Centrifugal compressors	-
Winding machines	-	1.6		Material ropeways	-
Cooling bed transfer frames	-	1.5		To-and fro system aerial ropeways	-
Roller straighteners	-	1.6		T-bar lifts	-
Roller tables continuous	-	1.5		Continuous ropeways	-
Roller tables intermittent	-	2.0	Cement industry	Concrete mixers	-
Roller tables Reversing tube mills	-	1.8		Breakers*	-
Shears continuous *	-	1.5		Rotary kilns	-
Shears crank type *	1.0	1.0		Tube mills	-
Continuous casting drivers	-	1.4		Separators	-
Reversing blooming mills	-	2.5		Roll crushers	-

Design for power rating of driven machine P2

\*)Designed power corresponding to max.torque.

\*\*)A check for thermal capacity is absolutely essential.

# 减速器服务系数

## Gear Units Service Factor

表 2 原动机系数 f <sub>2</sub>	
电机,液压马达,汽轮机	1.0
4-6 缸活塞发动机	1.25
1-3 缸活塞发动机	1.5

表 3 减速器安全系数 f <sub>3</sub>			
重要性与安全要求	一般设备,减速器失效仅引起单机停且易更换备件	重要设备,减速器失效引起机组、生产线或全厂停产.	高度安全要求,减速器失效引起设备、人身事故
f <sub>3</sub>	1.1-1.3	1.3-1.5	1.5-1.7

Table 2 Factor for prime mover f <sub>2</sub>	
Electric motors,hydraulic motors,turbines	1.0
Piston engines 4-6 cylinders	1.25
Piston engines 1-3 cylinders	1.5

Table 3 Safety factor f <sub>3</sub>			
Importance and safety request	Ordinary equipment, malfunction only cause accident of single-machine and easily replaced.	Important equipment, malfunction cause the accident of assembling unit,production-line or whole factory.	Safety request highly, malfunction cause the accident of equipment and personal injury.
f <sub>3</sub>	1.3-1.7	1.5-2.0	1.7-2.5

表4 起动系数 f <sub>4</sub>				
$f_4 \setminus f_1 \times f_2 \times f_3$ 每小时起动次数	1	1.25-1.75	2-2.75	$\geq 3$
$\leq 5$	1	1	1	1
6-25	1.2	1.12	1.06	1
26-60	1.3	1.2	1.12	1.06
61-180	1.5	1.3	1.2	1.12
> 180	1.7	1.5	1.3	1.2

Table 4 Start factor f <sub>4</sub>				
$f_4 \setminus f_1 \times f_2 \times f_3$ Starts per hour	1	1.25-1.75	2-2.75	$\geq 3$
$\leq 5$	1	1	1	1
6-25	1.2	1.12	1.06	1
26-60	1.3	1.2	1.12	1.06
61-180	1.5	1.3	1.2	1.12
> 180	1.7	1.5	1.3	1.2

表5 峰值扭矩系数 f <sub>5</sub>				
每小时峰值负荷次数				
	1-5	6-30	31-100	>100
单向载荷	0.5	0.65	0.7	0.85
交变载荷	0.7	0.95	1.10	1.25

Table 5 Peak torque factor f <sub>5</sub>				
Load peak per hour				
	1-5	6-30	31-100	>100
Steady direction of load	0.5	0.65	0.7	0.85
Alternating direction of load	0.7	0.95	1.10	1.25

表6 环境温度系数 f <sub>6</sub>					
不带辅助冷却装置或仅带冷却风扇					
环境温度	每小时工作周期(ED)百分比 %				
	100	80	60	40	20
10°C	1.11	1.31	1.60	2.14	3.64
20°C	1.00	1.18	1.44	1.93	3.28
30°C	0.88	1.04	1.27	1.70	2.89
40°C	0.75	0.89	1.08	1.45	2.46
50°C	0.63	0.74	0.91	1.22	2.07

表7 海拔高度系数 f <sub>7</sub>					
不带辅助冷却装置或仅带冷却风扇					
	海拔高度(m)				
系数	高达 1000	高达 2000	高达 3000	高达 4000	高达 5000
f <sub>7</sub>	1.0	0.95	0.90	0.85	0.80

Table 6 Thermal factor f <sub>6</sub>					
Without auxiliary cooling or with fan cooling					
Ambient temperature	Operating cycle per hour (ED) in%				
	100	80	60	40	20
10°C	1.11	1.31	1.60	2.14	3.64
20°C	1.00	1.18	1.44	1.93	3.28
30°C	0.88	1.04	1.27	1.70	2.89
40°C	0.75	0.89	1.08	1.45	2.46
50°C	0.63	0.74	0.91	1.22	2.07

Table 7 Factor for altitude f <sub>7</sub>					
Without auxiliary cooling or with fan cooling					
	Altitude (meters)				
Factor	Up to 1000	Up to 2000	Up to 3000	Up to 4000	Up to 5000
f <sub>7</sub>	1.0	0.95	0.90	0.85	0.80

Utilization factor								$f_8$
30%	40%	50%	60%	70%	80%	90%	100%	
0.66	0.77	0.83	0.90	0.90	0.95	1.0	1.0	

功率利用率系数								$f_8$
30%	40%	50%	60%	70%	80%	90%	100%	
0.66	0.77	0.83	0.90	0.90	0.95	1.0	1.0	

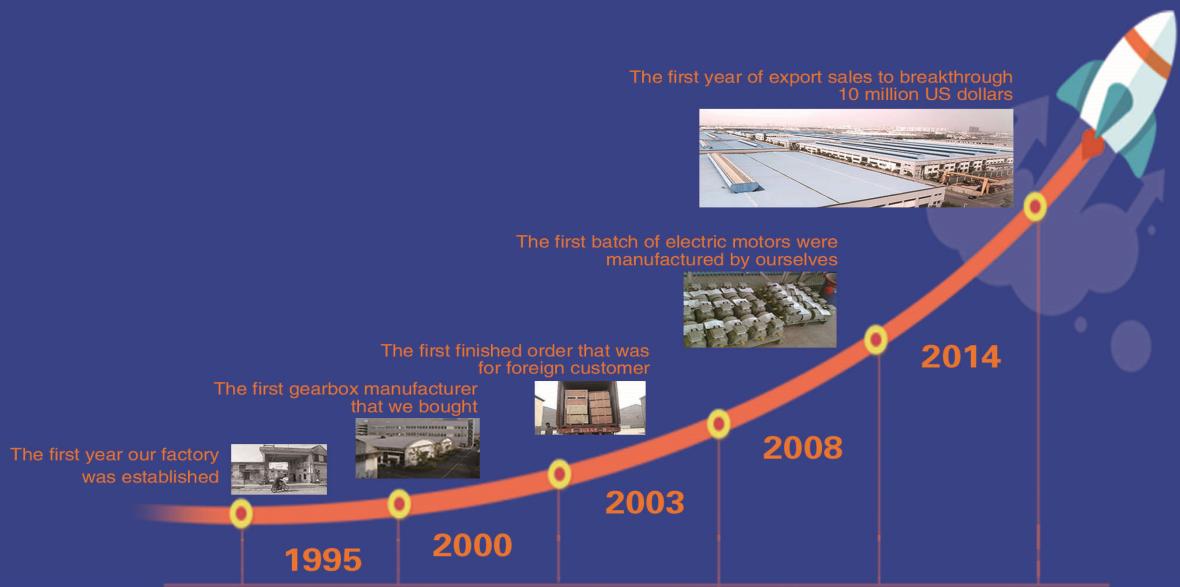
Oil supply factors for vertical gear units. For horizontal gear units $f_9=1.0$ , and in case of forced lubrication $f_9=1.05$									$f_9$	
Type	Oil supply	Sizes 1...12				Sizes 13...18				
		Without auxiliary cooling	With fan cooling	With cooling coil	With fan and cooling coil	Without auxiliary cooling	With fan cooling	With cooling coil	With fan and cooling coil	
TH2.V	Dip lubrication	0.95	....	....	....	....	....	....	....	
	Forced lubrication	1.15	....	....	....	1.15	....	....	....	
TB2.V	Dip lubrication	0.95	0.95	....	....	....	....	....	....	
	Forced lubrication	1.15	1.10	....	....	1.15	1.10	....	....	

....)On request

立式安装减速器供油系数。对于卧式安装 $f_9=1$ ; 当采用强制润滑时, $f_9=1.05$									$f_9$	
类型	供油方式	规格1...12				规格13...18				
		不带辅助冷却装置	带冷却风扇	带冷却盘管	带风扇和冷却盘管	不带辅助冷却装置	带冷却风扇	带冷却盘管	带风扇和冷却盘管	
TH2.V	浸油润滑	0.95	....	....	....	....	....	....	....	
	强制润滑	1.15	....	....	....	1.15	....	....	....	
TB2.V	浸油润滑	0.95	0.95	....	....	....	....	....	....	
	强制润滑	1.15	1.10	....	....	1.15	1.10	....	....	

....)根据用户要求供货

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