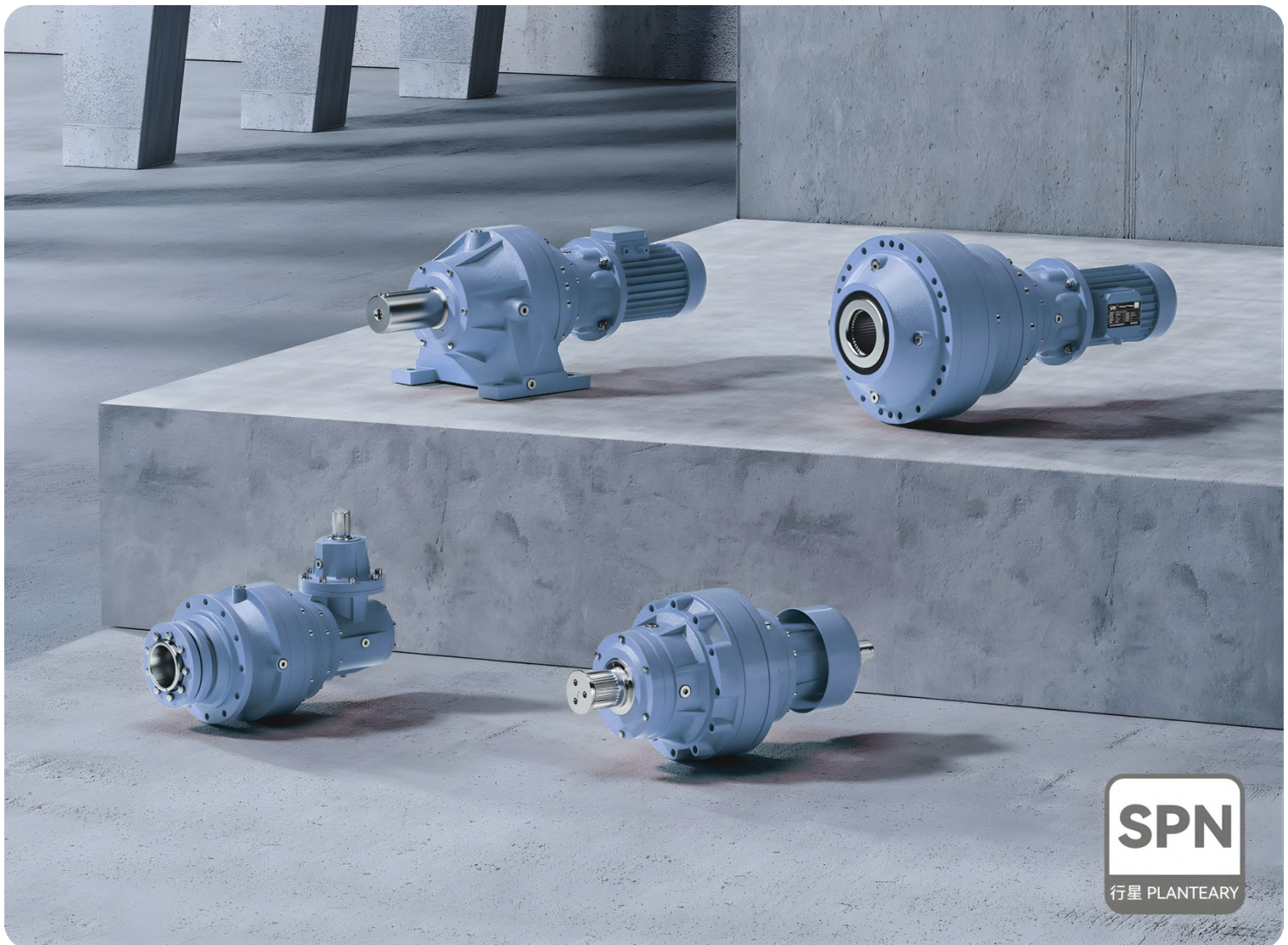


SPN PLANETARY GEAR REDUCERS

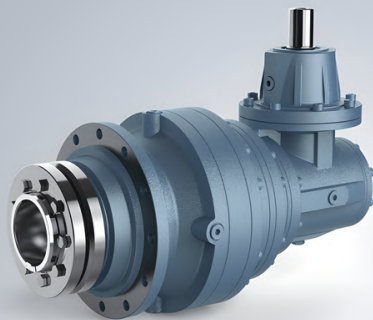
SYNERGY ASIA SOLUTION CO.,LTD

HIGH QUALITY, BETTER VALUE – SAS GEAR MOTOR

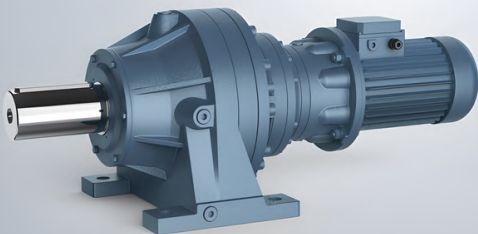
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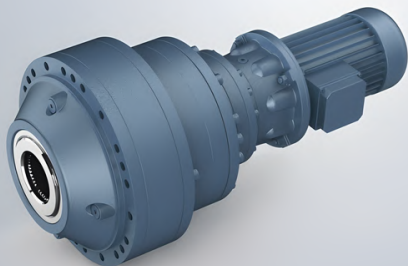
SPN
行星 PLANETARY



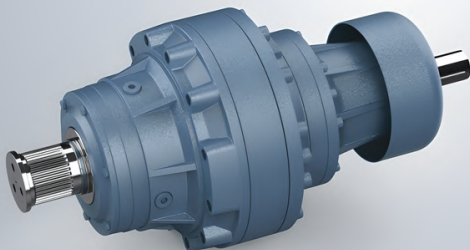
SPN.FP.AD...B....GO



SPN..L.PC.D.E



SPN.L.VK.D.T



SPN...LH. Z...FAD...O

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规格 Specifications

01

SPN系列主要特点:

- 18种机座号:
 - 输出扭矩达到500, 000 Nm
 - 输出功率达到450 kw
 - 速比 3.5:1 ~ 3000:1
- 型式:
 - 同轴式包括1至4级减速型式
 - 直角轴式包括2至4级减速型式 (第一级为螺旋伞齿轮)
- 法兰、底脚和轴装方式
- 带平键输出轴、花键输出轴、花键空心轴、带收缩盘空心输出轴
- 输入联接方式:
 - IEC 标准电机
 - 输入轴
 - 伺服电机
 - 液压马达
- 安装的附件:
 - 法兰
 - 小齿轮
 - 花键轴
 - 收缩盘
- 更多特点:
 - 可选扭矩种类繁多
 - H型使用了重型圆锥滚子轴承, 能承受很高的悬臂载荷与径向载荷
 - 高效率
 - 零件间使用花键连接, 比使用平键连接更好
 - 行星轮安装在自动定心装置上, 确保每个齿轮承受相同负载
 - 球墨铸铁箱体

SPN series basic features are:

- **18 size:**
 - output torque up to 500, 000 Nm
 - output power up to 450 kw
 - ratios from 3.5:1 to 3000:1
- **Modular design :**
 - in-line with 1 to 4 reductions
 - right angle (spiral bevel gear set into first stage)with 2 to 4 reduction.
- **Flange-mounted, foot-mounted and shaft-mounted output**
- **Output shafts with keyway, splined, splined hollow shafts, hollow shafts for shaft-mounting with shrink disc**
- **Input adaptors for :**
 - electric motors to IEC standards design B5
 - input shafts
 - servomotors
 - hydraulic motor setting
- **Installation accessories:**
 - flanges
 - pinions
 - splined bars
 - shrink discs
- **More design features:**
 - high ratio of transmissible torque to overall dimensions
 - high radial and axial load capacity of output shafts thanks to tapered roller bearings fitted on the H versions
 - high efficiency
 - inner parts are connected using grooved sections instead of tabs
 - planetary gears of reduction stages mounted to floating holders to ensure maximum load distribution among planetary gears
 - housing from ductile cast iron

结构形式 Versions

02

A

- 01 IEC电机/电机接头
- 02 实心输入轴
- 03 带风扇的实心输入轴
- 04 伺服电机
- 05 液压马达

B

- 06 直角减速机
- 07 单级行星减速机
- 08 二级行星减速机
- 09 三级行星减速机

C

- 10 MC/MZ-带平键或花键实心轴输出 (SPN00-SPN07)
- 11 HC/HZ-带平键或花键加强型实心轴输出 (SPN00-SPN07)
- 12 PC-底座支撑带平键实心轴输出
- 13 PZ-底座支撑带花键实心轴输出
- 14 HC-带平键实心轴输出 (SPN09-SPN21)
- 15 HZ-带花键实心轴输出 (SPN09-SPN21)
- 16 FP-配收缩盘空心轴输出
- 17 FZ-带花键空心轴输出
- 18 VK-搅拌机用加强型平行实心轴输出

D

- 19 法兰
- 20 齿轮
- 21 连接套管
- 22 端盖
- 23 花键轴
- 24 收缩盘

A

- 01 Electric motors IEC / Electric motor setting
- 02 Solid input shaft
- 03 Solid input shaft with fan
- 04 Servomotors
- 05 Hydraulic motor setting

B

- 06 Right angle reduction stage
- 07 Single reduction stage
- 08 Two reduction stages
- 09 Three reduction stages

C

- 10 Keyed or splined solid shaft output (SPN00-SPN07)
- 11 Keyed or splined heavy solid shaft output (SPN00-SPN07)
- 12 Output with support bracket and keyed solid shaft
- 13 Output with support bracket and splined solid shaft
- 14 Keyed solid shaft output (SPN09-SPN21)
- 15 Splined solid shaft output (SPN09-SPN21)
- 16 Hollow shaft output for shrink disc
- 17 Splined hollow shaft output
- 18 Reinforced output with parallel shaft for stirrers and mixers

D

- 19 Flange
- 20 Pinion
- 21 Sleeve coupling
- 22 Stop bottom plate
- 23 Splined bar
- 24 Shrink disc

输出扭矩 Output torque

03

3.1 减速机传递的扭矩 M2 [Nm]

基于减速机输入功率的额定输出扭矩（转矩值已考虑到齿轮箱的效率）

3.2 额定输出扭矩 Mn2 [Nm]

指齿轮箱能安全传递的扭矩，条件为：

-均匀负载，安全系数为1

-理论寿命为10000小时

3.3 最大扭矩 M2max [Nm]

指齿轮箱在静态条件或高启停运转条件下所能承受的输出转矩。通常是指峰值负载或启动负载。

3.4 实际所需扭矩 Mr2 [Nm]

所需转矩取决于应用场合的实际工况。

拟选齿轮箱的额定Mn2必须大于这个扭矩。

3.5 计算用扭矩 Mc2 [Nm]

计算用扭矩会在选择齿轮箱时被用到，可由实际所需扭矩Mr2和使用系数fs，按以下公式得出。

$$M_{c2} = M_{r2} \cdot f_s < M_{n2} \quad (1)$$

3.1 Reference torque M2 [Nm]

Indicative output torque to easily establish the performance class for each gearbox basic size.

3.2 Normal torque Mn2 [Nm]

The condition is that the torque of the gearbox can be transmitted safely:

- Uniform load, the safety factor is 1

- Theoretical life is 10000 hours

3.3 Maximum torque M2max [Nm]

It is the output torque that the reduction unit can withstand instatic or highly intermittent conditions. It is considered as instantaneous load peak torque or stanting torque under load.

3.4 Required torque Mr2 [Nm]

This is the torque corresponding to application requirement.

It must always be equal to or less than rated output torque Mn2 of the selected gearbox.

3.5 Calculated torque Mr2 [Nm]

Torque value to be used for selecting the gearbox, considering required torque Mr2 and service factor fs, and is obtained by formula.

$$M_{c2} = M_{r2} \cdot f_s < M_{n2} \quad (1)$$

符号及计量单位 Symbols and units of measure

04

符号	单位	说明
Ac1	N	输入轴计算用轴向力
Ac2	N	输出轴计算用轴向力
An1	N	输入轴所允许的轴向力
An2	N	输出轴所允许的轴向力
Fh	-	齿轮箱计算寿命系数
Fh1,Fh2	-	轴计算寿命系数
fh1,fh2	-	轴载修正系数
fm	-	调节系数
fs	-	服务系数
ft	-	热功率系数
ftp	-	温度系数
fv	-	速度系数
h	h	寿命小时
i	-	速比
ka	-	轴向载荷系数
kr	-	径向载荷系数
l	-	循环周期系数
M2	Nm	传递到输出轴的扭矩
Mb	Nm	额定制动扭矩
Mc2	Nm	计算用输出扭矩
M2max	Nm	最大输出扭矩
Mr1	Nm	输入轴所需扭矩
Mr2	Nm	输出轴所需扭矩
n1	rpm	输入转速
n2	rpm	输出转速
P1	kW	最大输入功率
P2	kW	输出功率
Pn	kW	电机额定功率
Pr1	kW	所需输入功率
Pr2	kW	最大输出转速时的输出功率
Ps	kW	损耗功率
Pt	kW	齿轮箱热功率
Rc1	N	输入轴计算用径向力
Rc2	N	输出轴计算用径向力
Rn1,Rn2	N	输入和输出轴中点的额定径向载荷
ta	°C	环境温度
X	mm	悬臂载荷的作用距离
ηd	-	动态效率
Z	-	每小时启动次数

Description

Calculated thrust load at gearbox input shaft
Calculated thrust load at gearbox output shaft
Rated thrust load at gearbox input shaft
Rated thrust load at gearbox output shaft
Lifetime factor for gearbox calculation
lifetime factor for bearing shafts calculation
load corrective factor on shafts
Increase factor
Service factor
Thermal factor
Temperature factor
Speed factor
Lifetime in hours
Reduction ratio
Axial load factor
Radial load factor
Intermittence fator
Reference torque
Rated brake torque
Calculated torque at gearbox output shaft
Gearbox max.output torque
Required torque at gearbox input shaft
Required torque at gearbox output shaft
Angular speed at gearbox input
Angular speed at gearbox output
Max transmissible power at gearbox input
Transmitted power at gearbox output
Motor rated power
Required input power
Maximun output speed
Excess power
Gearbox thermal capacity
Calculated radial load of gearbox input shaft
Calculated radial load of gearbox output shaft
Radial load at the midpoint of the input and output shaft
Ambient temperature
Action distance of cantilever load
Dynamic efficiency
Start times per hour

功率 Power

05

5.1 额定输入功率 P1 [kW]

P1是指齿轮箱安全的最大输入功率:

- 输入转速为n1
 - 安全系数S=1
 - 理论寿命为10000小时
- 请检查下面的公式:

$$P_1 \cdot f_s \leq P_1 \quad (2)$$

5.2 输出功率 P2 [kW]

输出功率是指传动到输出轴的有效功率, 可按以下公式得出:

$$P_2 = P_1 \cdot \eta_d \quad (3)$$

$$P_2 = \frac{m_{r2} \cdot n_2}{9550} \quad (4)$$

5.1 Input rated power P1 [kW]

P1 refers to the maximum input power gear box security:

- input speed n1
- theoretical duration 10000 h
- service factor fs=1

Check that the formula here below is always satisfied:

$$P_1 \cdot f_s \leq P_1 \quad (2)$$

5.2 Output rated power P2 [kW]

This value is the power transmitted at gearbox output. It can be calculated with the following formulas.

$$P_2 = P_1 \cdot \eta_d \quad (3)$$

$$P_2 = \frac{m_{r2} \cdot n_2}{9550} \quad (4)$$

热功率 Thermal power

06

热功率值与齿轮箱的发热限值相关。具体数值在齿轮箱额定值表中列出。

该参数表示在输入转速n1、环境温度为20℃、润滑油温度不超过85~90℃, 减速机温度不超过75~80℃且不带附加冷却系统的条件下, 齿轮箱能持续传递的功率。在短工作时间和长时间停止的工况中, 如果定制时间较长, 齿轮箱的温度能冷却, 则热功率就不再有意义, 在计算时可以忽略。

在工作环境不同于20℃、间歇工作制、或输入转速n1不是额定值时, Pt值应由表(A1)中的热功率系数ft或速度系数fv进行调整。

确保满足以下条件:

$$P_{rt} \leq P_t \cdot f_t \cdot f_v \quad (5)$$

n1	fv
750	1.5
950	1.2
1500	1.0
2000	0.7

循环持续时间系数是指处于负荷下的工作时间tf与周期时间(tf+tr, tr代表停止时间)的比, 并以百分数表示。

$$I = \frac{t_f}{t_f + t_r} \cdot 100 \quad (6)$$

如果常规配置中减速机热功率不足且不能满足(5)中的条件, 建议使用带冷却风扇的输入轴FAD。相关的热容量见下面列出的图表(A2)。

This parameter is linked to the gearbox thermal limit. Values for the thermal capacity are listed within the rating charts of gearboxes and gearmotors and represent the mechanical power that can be transmitted continuously at an input speed n1 and at an ambient temperature of 20℃, without the lubricant exceeding The temperature of 85~90℃ and the gear case the temperature of 75~80℃, without the use a supplementary cooling system. When the duty cycle is formed by short operating periods and rest time is long enough for the unit to cool down, the thermal capacity is hardly significant and it may be omitted from calculation.

For ambient temperatures other than 20℃, intermittent duty and drive speed n1 other than the reference speed listed in the rating charts, Pt is to be adjusted through thermal factor f1 and/or speed factor fv as listed in table (A1).

Finally, make sure that the following condition is always satisfied:

A1

		Ft			
Ta max [°C]	连续工作制 Continuous duty	间歇工作制 / Intermittent duty			
		负载持续率 % / Cyclic duration factor %			
		80	60	40	20
10	1.2	1.3	1.6	1.8	2
20	1	1.1	1.3	1.5	1.7
30	0.9	1	1.2	1.3	1.5
40	0.7	0.8	0.9	1	1.2
50	0.5	0.6	0.7	0.8	0.9

The intermittence factor (I)% is obtained from the ratio between operating time under load tf and total time (tf+tr), where rest time tr, expressed as percentage:

Should the gear unit in the conventional configuration fall short of thermal capacity and not verify the condition(5) above, it is recommended that the fan cooled input shaft-ordering code FAD__ is specified instead. The relevant thermal capacity is listed in the charts here after.

效率 Efficiency

07

动态效率 $[\eta_d]$

动态效率可以由以下公式计算得出：

$$\eta_d = \frac{p_2}{p_1} \quad (7)$$

它的值是一个传递功率的函数，其值与油的温度和粘度有关。
具体效率值如下表(A3)所示：

A3

级数 / N°			
L1	L2、R2	L3、R3	L4、R4
0.97	0.94	0.91	0.88

Dynamic efficiency $[\eta_d]$

Dynamic efficiency can be calculated by the following formula:

$$\eta_d = \frac{p_2}{p_1} \quad (7)$$

Its value is a function of the transmitted power, the reduction ratio and oil temperature and viscosity.

The maximum efficiency values are shown in table (A3) below:

A3

Stages			
L1	L2、R2	L3、R3	L4、R4
0.97	0.94	0.91	0.88

A2

		热容量 / Thermal capacity Pt [kW]						n1=1450 rpm				
		FAD3	FAD4	FAD5	FAD6	FAD7	FAD8				FAD3	FAD4
SPN03	L1	29	-	-	-	-	-		SPN07	R2	52	-
SPN05	L1	31	-	-	-	-	-		SPN09	R2	52	-
SPN06	L1	-	45	-	-	-	-		SPN10	R2(B)	-	82
	L2	31	-	-	-	-	-			R2(C)	-	82
SPN07	L1	-	-	49	-	-	-		SPN11	R2(B)	-	102
	L2	36	-	-	-	-	-			R2(C)	-	117
SPN09	L1	-	-	52	-	-	-			R3	58	-
	L2	36	-	-	-	-	-		SPN13	R2(B)	-	102
SPN10	L1	-	-	-	-	62	-			R2(C)	-	117
	L2	-	49	-	-	-	-			R3	58	-
	L3	36	-	-	-	-	-		SPN14	R3(B)	-	82
SPN11	L1	-	-	-	-	-	62			R3(C)	-	82
	L2	-	-	53	52	-	-			R4	38	-
	L3	36	-	-	-	-	-		SPN15	R3(B)	-	102
SPN13	L1	-	-	-	-	-	--			R3(C)	-	117
	L2	-	-	57	57	-	-			R4	58	-
	L3	36	-	-	-	-	-		SPN16	R3(B)	-	102
SPN14	L2	-	-	-	-	67	-			R3(C)	-	117
	L3	-	52	-	-	-	-			R4	63	-
	L4	33	-	-	-	-	-		SPN17	R3(B)	-	117
SPN15	L2	-	-	-	-	-	72			R3(C)	-	127
	L3	-	-	57	57	-	-			R4	68	-
	L4	36	-	-	-	-	-		SPN18	R4(B)	-	108
SPN16	L2	-	-	-	-	-	72			R4(C)	-	137
	L3	-	-	57	57	-	-	SPN19	R4(B)	-	122	
	L4	36	-	-	-	-	-		R4(C)	-	142	
SPN17	L2	-	-	-	-	-	77	SPN21	R4(B)	-	132	
	L3	-	-	62	62	-	-		R4(C)	-	152	
	L4	36	-	-	-	-	-					
SPN18	L3	-	-	-	-	-	62					
	L4	-	-	45	45	-	-					
SPN19	L3	-	-	-	-	-	77					
	L4	-	-	57	57	-	-					
SPN21	L3	-	-	-	-	-	87					
	L4	-	-	62	62	-	-					

传动比 Reduction ratio

08

传动比等于输入转速与输出转速的比值：

$$i = \frac{n_1}{n_2} \quad (8)$$

This is the ratio of gearbox input speed to output speed:

$$i = \frac{n_1}{n_2} \quad (8)$$

工作转速 Operating speed

09

10.1 输入转速 n_1 [min-1]

减速机的驱动速度，如减速机与电机直接相连，则转速值与电机转速相同。

如果减速机有外部传动装置驱动，在间接驱动的情况下，这个值是由电机的转速除以间接驱动附件（皮带、链条等）的传动比。

输入转速不得超过减速机额定值表中规定的值。

在工业应用中的连续操作，我们建议速度不超过1750 min-1.

10.1 Input speed n_1 [min-1]

The driving speed of the gear box, if gear box and motor directly connect, then the speed value and motor speed are the same.

In the case of an indirect drive, this value is the speed of the motor divided by the transmission ratio of the indirect drive accessory (belt, chain, etc.).

Input speed shall not exceed the value specified in the gear box.

As for continuous operation in industrial applications, We recommend that speed of 1750 min-1 be never exceeded.

10.2 输出转速 n_2 [min-1]

输出转速按照下列公式通过输入转速 n_1 和传动比 i 计算出来的：

$$n_2 = \frac{n_1}{i} \quad (9)$$

10.2 output speed n_2 [min-1]

Calculated from input speed n_1 and transmission ratio i according to the following equation:

$$n_2 = \frac{n_1}{i} \quad (9)$$

使用系数 Service factor

10

使用系数表现减速机的应用特性。它考虑到减速机的负载类型和每日工作时间。

可以参照表（A4）所列的值选取合适使用系数。

Factor depending on the application type. This factor takes into consideration (with sufficient approximation) load variations which the gearbox may undergo for a specific type of duty.

Table (A4) gives indications for the service factor to be selected according to the application and operation type.

A4

使用系数 / Service factors						
负载类型 Type of load	每小时启动次数 Type of drive unit	Number of starts/hour 运行总时间(h)				
		≅ 5000	10000	15000	20000	50000
		每日运行时间 (h)				
		$h < 4$	$4 < h < 8$	$8 < h < 12$	$12 < h < 16$	$16 < h < 24$
均匀负载 Uniform load	$Z < 10$	0.9	1.0	1.15	1.3	1.6
	$10 < Z < 30$	0.95	1.15	1.30	1.5	1.8
	$30 < Z < 100$	1.0	1.25	1.45	1.6	2.0
中等负载 Moderate shock load	$Z < 10$	1.0	1.25	1.45	1.6	2.0
	$10 < Z < 30$	1.1	1.4	1.6	1.8	2.2
	$30 < Z < 100$	1.2	1.5	1.7	2.0	2.4
重负载 Heavy shock load	$Z < 10$	1.2	1.5	1.7	2.0	2.4
	$10 < Z < 30$	1.3	1.6	1.8	2.1	2.6
	$30 < Z < 100$	1.4	1.75	2.0	2.3	2.8

寿命系数 Life factor

11

输入转速 n_1 或输出转速乘以实际工作时间（休息时间除外）所得出为寿命系数。

寿命系数与齿轮箱的转速成正比。

Factor resulting by multiplying angular speed at input (n_1) or output (n_2) by actual operating working hours h , break times excluded.

Life factor is directly proportional to gearbox rpms during the whole duty time.

$$Fh_1 = (n_1 * h)$$

$$Fh_2 = (n_2 * h)$$

$$Fh_1 = (n_1 * h)$$

$$Fh_2 = (n_2 * h)$$

选型 Selection

12

减速机选型

- 根据应用所需的确定以下数据：
 - 使用系数 f_s (表A4)
 - 减速机要求
 - 工作寿命, (小时)
- 根据所需输出转矩 M_{r2} 按照以下公式得出计算用转矩 M_{c2} :
- 根据工作寿命、输出转速 n_2 , 得出寿命系数

$$F_{h2} = (n_2 \cdot h) \quad (13)$$

- 计算需要的速比:

$$i = \frac{n_1}{n_2} \quad (14)$$

- 选择最接近的传动比以及满足以下条件的减速机机座号:

$$M_{c2} \leq M_{n2} \quad (15)$$

$$F_{h2} \leq (n_2 \cdot h) \quad (16)$$

Gearbox selection

- Determine the following according to the required application:
 - Service factor f_s (tab.A4)
 - Required gearbox
 - Working life h
- Define the calculated torque with the required output torque M_{r2}
- Calculate the life factor with required working life H and output speed n_2 :

$$F_{h2} = (n_2 \cdot h) \quad (13)$$

- Calculate the required reduction ratio:

$$i = \frac{n_1}{n_2} \quad (14)$$

- Select gearbox featuring the ratio I nearest to calculated ratio that also satisfies the condition.

$$M_{c2} \leq M_{n2} \quad (15)$$

$$F_{h2} \leq (n_2 \cdot h) \quad (16)$$

校核 Verification

13

完成减速机选型后, 执行以下校核工作:

a)热功率

确保减速机热功率大于或等于应用的机械功率, 见公式 (5) .如果不能满足, 应选择较大的减速机或增加一个辅助冷却系统.

B)最大转矩

确保瞬时峰值扭矩和带载启动转矩不超过减速机的额定最大转矩 M_{2max} (见表A5)

A5

减速机 Gearbox	SPN00	SPN01	SPN03	SPN05	SPN06	SPN07	SPN09	SPN10
Mn2 [Nm]	1000	1750	2500	5000	8500	12500	18000	25000
M2max [Nm]	1200	2100	3500	7000	12000	18000	27000	36000
减速机 Gearbox	SPN11	SPN13	SPN14	SPN16	SPN17	SPN18	SPN19	SPN21
Mn2 [Nm]	40000	55000	80000	135000	170000	250000	350000	500000
M2max [Nm]	54000	66000	100000	162000	216000	300000	420000	650000

C) 悬臂载荷

检查所选配置并确定:

输入轴和输出轴上的悬臂载荷可通过下列公式求出:

$$R_{c1-2} = \frac{2000 \cdot M_{c1-2} \cdot K_2}{d} \quad (17)$$

R_{c1-2} 悬臂载荷 (N)

1 = 表示输入轴

2 = 表示输出轴

M_{c1-2} 轴上的转矩 (Nm)

d P,C,D(mm)传动部件分度圆直径
(链轮, 齿轮, 带轮等)

$K_r = 1$ 链条传动

$K_r = 1.25$ 齿轮传动

$K_r = 1.5 \sim 2.5$ V形带传动

定义可靠载荷位置 x 轴。用图表示减速机 R_{x1} 和 R_{x2} 承受载荷值。

检查以下是否满足要求:

$$R_{c1-2} \leq R_{x1-2} \cdot f_h \quad (18)$$

径向和轴向负荷修正系数 f_{h1-2} 取决于所要求的寿命系数 F_{h1} 和 F_{h2} 。

After selecting the drive units, please check the following:

a) Thermal capacity

Make sure that the thermal power of the gearbox is equal to or greater than the mechanical power required by the application, as per equation (5).

If this is not the case provide a supplementary cooling system (see chap.29) or select a larger gearbox.

b) Maximum torque

Make sure that either the momentary peak torque nor the starting torque under load ever exceed the M_{2max} value that the gearbox is rated for (see tab.A5)

C) Overhung load

Examine the application and establish:

overhung load applying to input and/or output shaft through the following formula:

$$R_{c1-2} = \frac{2000 \cdot M_{c1-2} \cdot K_2}{d} \quad (17)$$

R_{c1-2} Overhung load (N)

1 = for input shaft

2 = for output shaft

M_{c1-2} Torque at the shaft (Nm)

d P,C,D(mm) of transmission element
(sprcket, gear, pulley, etc)

$K_r = 1$ chain transmission

$K_r = 1.25$ gear transmission

$K_r = 1.5 \sim 2.5$ V-belt transmission

Define the trust load position X onto shaft .Check this value with the chart indicating the load R_{x1} and R_{x2} bearable by the gearbox. Check that the following is satisfied:

$$R_{c1-2} \leq R_{x1-2} \cdot f_h \quad (18)$$

Where f_{h1-2} the radial and thrust load corrective factor depending on the required life factor F_{h1} and F_{h2} .

d) 轴向力

当施加到输出轴上的径向载荷为指定时，请检查轴向力。满足以下要求：

±A_{c2} ≤ ±A_{n2} • fh₂ (19)

Ac2 输出轴计算用轴向力 [N]

An2 输出轴所允许的轴向力 [N]

d) Thrust loads

Check the thrust load,when exerted onto the output shaft,as specified for the radial load. The following should be satisfied:

±A_{c2} ≤ ±A_{n2} • fh₂ (19)

Ac2 Calculated thrust load at gearbox output shaft [N]

An2 Rated thrust load at gearbox output shaft [N]

选择电机
Motor selection

14

根据以下公式计算减速机所需的输入功率。
须提前确定以下参数：

- 所需扭矩Mr2
- 输出转速n2
- 效率 η d

P_{r1} = $\frac{M_{r2} \cdot n_2}{9550 \cdot \eta_d}$ (20)

表（A3）列出了不同型号减速机的效率 η d；

根据以下条件，在电机选型标准选择合适的电机：

P_{r1} ≤ P_n (21)

对于非连续工作制S1条件下使用的电机，电机额定值可使用系数fm进行调整。见表（A6）
优先选择四级电机或较低转速的电机。

$\frac{P_{r1}}{f_m} \leq P_n$ (22)

A6

	工作制 / DUTY						
	S2			S3			S4-S8
	循环周期 / Cycle time			循环周期系数 / Cyclic duration rate			请与我们联系！ Please contact us
	10	30	60	25%	40%	60%	
fm	1.3	1.15	1.05	1.25	1.15	1.1	

Through the formula here after calculate the power required to gearbox input shaft.

The following paramenters must be determined on beforehand:

- required torque Mr2
- output speed n2
- efficiency η d

P_{r1} = $\frac{M_{r2} \cdot n_2}{9550 \cdot \eta_d}$ (20)

Table (A3) lists the efficiency value η d for the vsrious types of gearboxes.

In the electric motor section select a motor that is sufficiently rated,as per the following condition:

P_{r1} ≤ P_n (21)

For duties other than continuous S1 the motor rating can be upgraded through the factor fm listed in table (A6)
4-pole motors or over should be preferred.

$\frac{P_{r1}}{f_m} \leq P_n$ (22)

安装
Installation

15

为保证减速机正确可靠运行，需要遵守几条安装准则。

此处所列准则可用作减速机选型指南。

遵循我们公司提供的减速机安装、使用和维护手册，就能正确、有效地进行安装。
以下是安装准则的简要描述：

Observing a few rules for correct installation is essential to the reliable and proper operation of the gearbox.

The rules set out here are intended as a preliminary guide to selecting gearbox.

For effective and proper installation, following the instructions given in the Installation, use and maintenance manual available from us.
Following is a rief outline of installation rules:

a) 固定

- 将减速机安放在一个足够坚硬的表面上，结合面应经过机加工且保持平坦。
- 对法兰安装的带花键空心输出轴的减速机尤其重要。
- 在输出端有较大径向载荷的应用中，建议使用法兰安装，因为这种安装方式能在减速机上实现双导径。
- 确保减速机适合于所需的安装位置。
- 使用8.8或更高等级的螺栓固定减速机，拧紧螺栓至相应图表中规定的额定值。

当传递的扭矩大于或等于给定的M2max值70%并频繁换向时，使用等级高于10.9的螺栓。

部分减速机可以使用螺栓和销进行固定。如果使用了销，插入减速机的长度至少为直径的1.5倍。

b) 连接

装配传动装置零件至减速机上时，禁止使用铁锤或类似工具进行敲打压入零件，可使用维护螺钉和轴端螺纹。装配前务必清除轴上的油脂或防锈剂。

c) 油漆

使用和减速机底漆一致的油漆，请参照：供货条件。
在油漆之前，保护好装在轴上的密封件。
与溶剂接触会损坏密封件并导致漏油。

d) 润滑

调试前，在减速机中装入指定型号和数量的润滑油（参照：润滑）。
可通过合适的油位塞或观察孔检测油位，每个减速机都装有观察孔，位置与安装方式相关。

a) Fastening

- Please place the gearbox on a surface providing adequate rigidity. Mating surfaces should be machined and flat.
- This applies especially to flange-mounted gearboxes with splined hollow output shafts.
- In applications that involve high radial loads at the output end, flange mounting is recommended for some gearboxes as. This mounting pattern benefits from the double pilot diameters provided on these gearboxes.
- Make sure the gearbox is suitable for the required mounting position.
- Use bolts of grade 8.8 or greater to secure the gearbox. Tighten the bolts to the rated values specified in the relevant charts.

With transmitted torque greater than or equal to 70% of the given M2max and with frequent reversals, use bolts with minimum grade 10.9.

Some gearboxes can be fastened using both bolts and pins. If a pin is used, the portion of the pin inserted into the structure the gearbox is being installed to should be at least 1.5 times its diameter.

b) Connections

When fitting transmission elements onto the gearbox do not tap them with hammers or similar tools. To slide these parts in, use the service screws and taps provided at the shaft ends. Be sure to clean off any grease or rust preventative from the shafts before fitting any parts.

c) Paint coating

Use paints compatible with the primer applied to the gearbox, see :Supply conditions. Before painting, protect the seal rings installed on the shafts. Contact with paint may deteriorate the seals with subsequent oil leakage.

d) Lubrication

Before start-up, fill the gearbox with the recommended lube oil (see lubrication) up to correct level.
level is checked through the suitable plug or sight glass provided on each gearbox depending on designated mounting position.

维护 Maintenance

16

初次运行50小时后需要检查安装螺栓是否松动，运行100-150小时后必须进行首次换油。随后每运行2000-3000小时更换一次润滑油，具体取决于应用情况。也可以选择一年更换一次油。

然而，必须每隔一段时期检查油面并按规定注油。
间歇工作制条件下应每月检查设备，连续工作制条件下需经常检查。

Check the tightness of mounting bolts after the initial 50 hours of operation. Change the oil first after 100-150 hours operation. Subsequently, change the oil every 2000-3000 hours operation depending on the application. Alternatively change oil once a year.

However, oil level should be checked at regular intervals and topped up as required. Check monthly if unit operates under intermittent duty, more frequently if duty is continuous.

存放 Storage

17

遵循以下说明正确存放产品。

- 不要存放在户外露天或过于潮湿的地方。
- 始终在设备和地板之间垫有木板、木材或其它材料，减速机不得与地板直接接触。
- 对于存放时间超过60天的减速机，所有加工面如法兰、轴和联轴器必须涂刷防锈产品。
- 当减速机存放时间可能超过6个月时，必须采取以下额外措施：
 - 所以加工部件需涂上油脂防止生锈。
 - 放置减速机时必须使透气塞处于顶部并注满润滑油（不适用于终身润滑减速机）。减速机投入运转前，要重新注入适当型号的润滑油。

Observe the following instructions to ensure correct storage of the products.

- Do not store outdoors, in areas exposed to weather or with excessive humidity.
- Always place boards, wood, or other material between the products and the floor. The gearbox should not have direct contact with the floor.
- For storage periods of over 60 days, oil machined surfaces such as flanges, shafts and couplings must be protected with a suitable anti-oxidation product.
- The following measures must be taken in respect of products for which the expected storage period exceeds 6 months:
 - Cover outer machined parts and mating parts with grease to avoid.
 - Position the gearboxes with the breather plug up and fill them with oil. Before use, the gearboxes should be filled with the proper amount of lubricant of the recommended type.

供货条件
Supply conditions

18

减速机通常按以下标准进行供货：

- a) 安装方式符合订单要求；
- b) 无润滑油的内部零件受到测试时的润滑油膜的保护。
- c) 安装表面不涂漆。
- d) 根据出厂规范进行测试
- e) 适当包装
- f) 提供IEC电机安装配件
- g) 需终身润滑的减速机在制造厂内加注润滑油。

Gearboxes are generally supplied as follows:

- a) Ready for installation in the mounting position specified in the purchase order.
- b) Dry;inner parts are protected by a film of the oil used for final testing;
- c) Mating surfaces are not painted.
- d) Tested to in-house specifications;
- e) Suitably packed;
- f) Complete with mounting hardware for IEC electric Motors;
- g) Gearboxes outbicated “for life” are factory filled with oil.

润滑
Lubrication

19

减速机采用润滑油润滑作为标准方式。

对于竖直安装的减速机，鉴于润滑油可能不能保证最高处的轴承的可靠润滑，因此需采用其他润滑措施。

减速机可以在环境温度为-20℃~+40℃之间运行。当温度为-20℃和-10℃之间时，减速机启动前必须充分且均匀预热，或者空载启动。

当减速机温度达到-10℃或更高温度时，方可加载。

运行之前，在减速机中注入适量的润滑油，润滑油的粘性根据列表（A7）进行选择。

Gear units are provided with dip lubrication as a standard feature.

For gearboxes specified for vertical installation,whereas the oil coverage may not be sufficient to ensure proper lubrication of the uppermost bearings,extra lubrication provisions are used.

Operation of gear units is permitted at ambient temperatures between -20℃ and +40℃ .However,for temperatures between -20℃and -10℃ unit may only start up after it has been progressively and evenly pre-heated,or otherwise initially operated unloaded.

Load may then be connected to the output shaft when the gear unit has reached the temperature of -10℃,or higher.

Prior to start-up ,fill the gearbox with the appropriate quantity of oil, selecting the viscosity as per table(A7).

A7

在40℃时粘度 (ISO-VG) Viscosity ISO-VG at 40℃ mm2/S (CST)	浸油润滑容许的最低临界温度℃ Permissible temperature limit in ℃ for dip lubrication		在泵速为1500 min-1时强制润滑容许的 最低临界温度℃ Permissible temperature limit in ℃ for forced feed lubrication at a pump speed of 1500 min-1	
	矿物油/MINERAL OIL	合成油/SYNTHETIC OIL	矿物油/MINERAL OIL	合成油/SYNTHETIC OIL
VG320	-12	-25	+5	-5

减速机通常备有注油孔、油位塞和放油塞，因此在订购减速机时必须指定安装位置。

表（A7）列出了常规应用中做推荐的润滑油品牌和型号。

- 注意：对于非常规工作条件下的应用，应征询制造商的意见。
- 工作油温不得超过85-90℃。
- 除非另有说明，减速机供货时通常是不带润滑油的。
- 不同型号减速机所列的油量只是估计值，根据订货时指定的安装位置设置油位塞的位置，从而确保正确注油。
- 如果传送功率超过减速机的热容量，需提供辅助冷却装置。
- 减速机最高温度不超过80-85℃。

Gearboxes are generally provided with oil fill, leveled and drain plugs. as such, the mounting position needs always to be specified when ordering the gearbox.

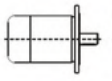
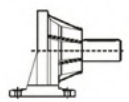
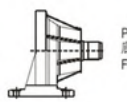
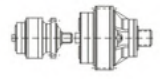
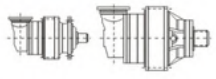
The table (A7) lists the most common brands of lubricant and the types recommended for normal applications.

- Note :For applications with non-routine operating conditions, consult factory with complete information.
- Oil temperature must not exceed 85-90℃in operation.
- Unless otherwise specified,gear units are supplied unlub-ricated
- The oil capacities listed for the various types of unit are indicative only. fill the gearbox up to the level plug located as per the mounting position specified when ordering to ensure the gearbox is properly filled.
- Should transmitted power exceed the thermal capacity of the unit a supplementary cooling unit must be provided.
- The temperature of the gear case should never exceed 80-85℃at the hottest point.

SPN 减速机命名说明

SPN Gearbox designation

20

SPN	06	L	2	18.1	HC	D100	A	W	...	...
										可选项 OPTIONS 密封件 GASKET LX = 左旋 Left RX = 右旋 Right 外置冷却系统 SUPPLEMENTARY COOLING SYSTEM CS1, CS2, CS3
										输出配件 OUTPUT FITTINGS  P 小齿轮 Pinions  BO 花键棒 Splined bar  MO 套筒联轴节 Sleeve coupling  GO 收缩盘 Shrink disc  WO 法兰 Flange
										安装位置 MOUNTING POSITION
										输入型式 INPUT  AD... 平键输入轴 Input keyed shaft  FAD... 带风扇实心轴输入 Solid input shaft with fan  AM...(71,80,90...)/AQA...(80,100,115,140...) IEC电机联接/伺服电机联接 IEC electric motor connection/ Servo motor connection  ABA... 液压马达联接 Hydraulic motor connection  RV 减速机输入 RV reducer input  RSKF 齿轮减速机输入 RSKF gear reducer input
										输出型式 OUTPUT VERSION  PC 底座安装平键实心轴输出 Foot base with solid keyed shaft  PZ 底座安装花键实心轴输出 Foot base with splined shaft  MC 平键实心轴输出 Solid keyed shaft  MZ 花键实心轴输出 Splined shaft  HC 重型平键实心轴输出 Heavy solid keyed shaft  HZ 重型花键实心轴输出 Heavy solid splined shaft  FP 配收缩盘空心轴输出 Hollow shaft for shrink  FZ 花键空心轴输出 Hollow splined shaft  VK 搅拌机用加强型平键实心轴输出 Reinforced output with parallel shaft for stirres and mixers
										速比 GEAR RATIO 传动级数 REDUCTIONS 1,2,3,4
										设计型式 DESIGN L 同轴式 In line  R 直角轴式 Right angle 
										减速机型号 GEARBOX FRAME SIZE 00 = SPN00 06 = SPN06 11 = SPN11 16 = SPN16 21 = SPN21 01 = SPN01 07 = SPN07 13 = SPN13 17 = SPN17 03 = SPN03 09 = SPN09 14 = SPN14 18 = SPN18 05 = SPN05 10 = SPN10 15 = SPN15 19 = SPN19

安装位置 Mounting positions

21

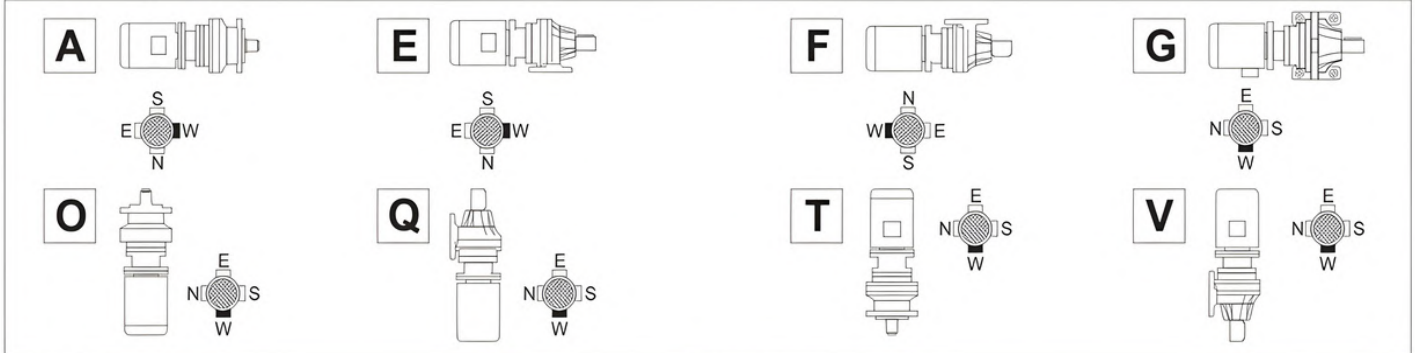
一个产品完整的型号必须包含安装位置，同轴式减速机请参阅表 (A8)，直角轴式减速机请参阅表 (A9)

The product designation is only complete when the mounting position is also specified. Please refer to table (A8) for in-line gear units and to (A9) for right angle drives.

21.1 同轴式减速机

21.1 In-line units

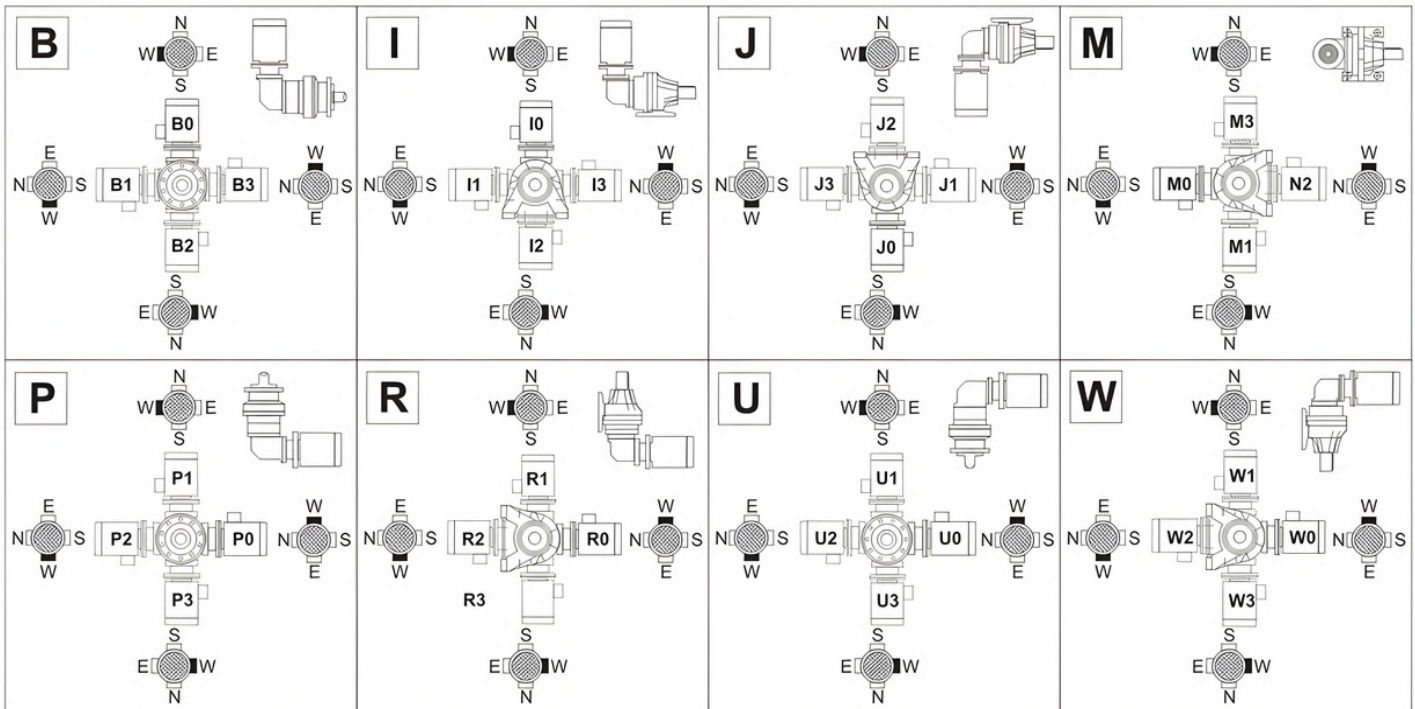
A8



21.2 直角轴式减速机

21.2 Right angle units

A9



SPN 系列减速机油堵位置 SPN Series oil plug positions

22

所有减速机

- 1 注油塞/透气塞
- 2 油位塞
- 3 放油塞
- 2A 透明油位管
- 5 连续工况中的附加油罐

1 级同轴式行星减速机 (表A10)

- 1A 注油塞/透气塞
- 3A 放油塞

2 级直角轴式行星减速机 (表A11)

- 1B 注油塞/透气塞
- 3B 放油塞

ALL UNITS

- 1 Filler/breather oil plug
- 2 Oil level plug
- 3 Oil draining plug
- 2A Transparent oil level pipe
- 4 Expansion tank for continuous duty

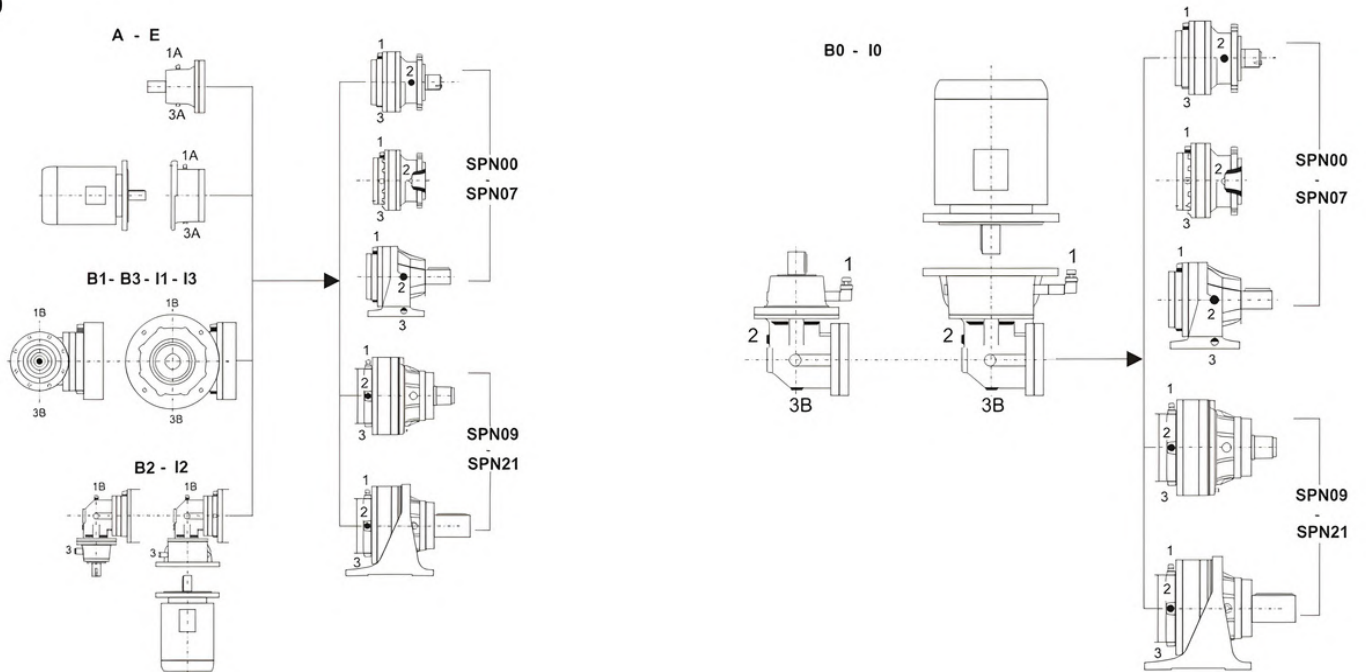
1 STAGE IN-LINE GEAR UNITS (Table A10)

- 1A Filler/breather oil plug
- 3A Oil draining plug

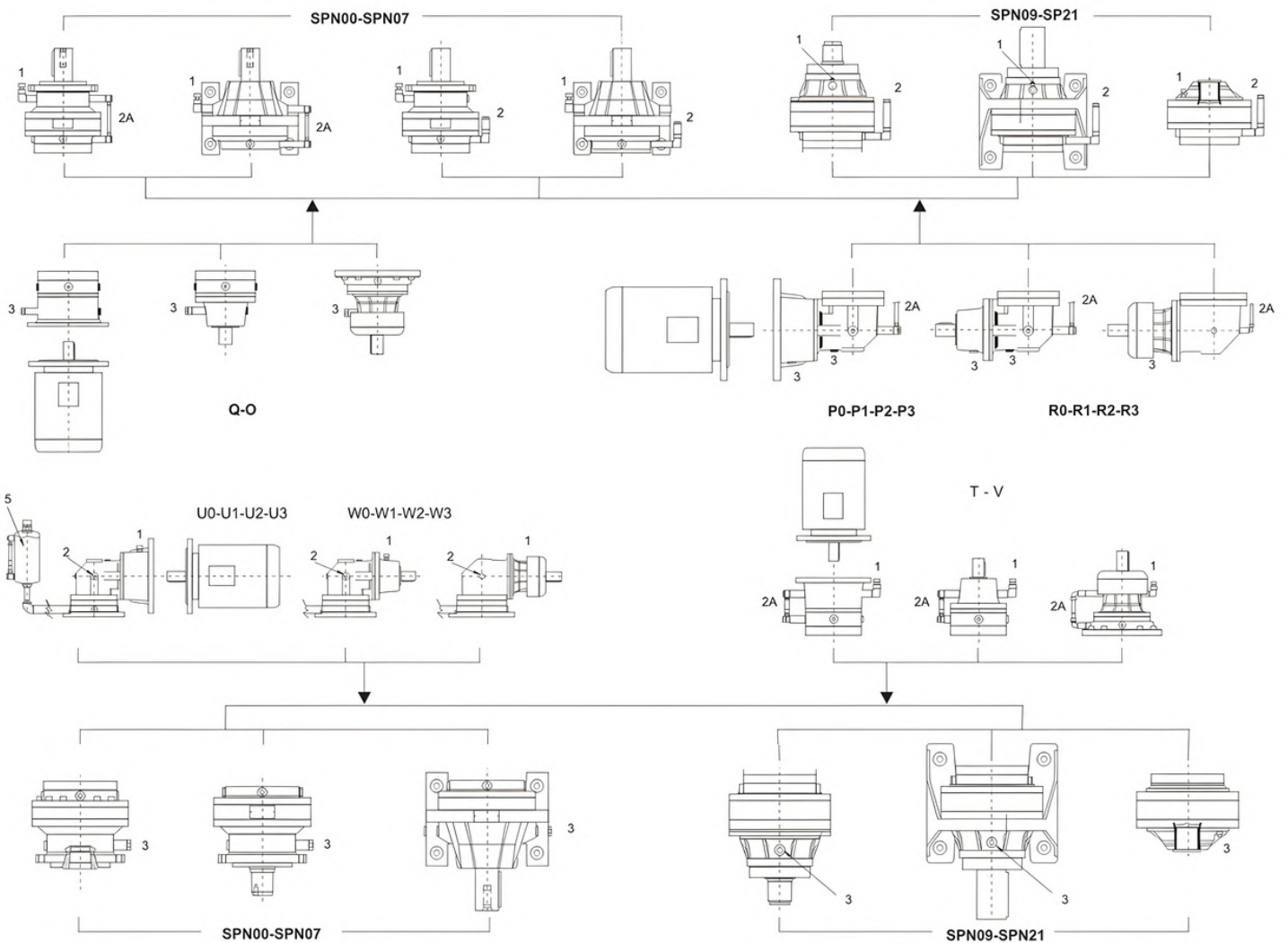
2 STAGE RIGHT ANGLE UNITS (Table A11)

- 1B Filler/breather oil plug
- 3B Oil draining plug

A10



A11



系列润滑油量 (L) Series oil quantity (L)

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A12 L同轴式

		安装位置 Mounting position		
		A	T	O
SPN00	L1	0.6	1.0	0.9
	L2	0.9	1.3	1.2
	L3	1.2	1.6	1.5
	L4	1.5	1.9	1.8
SPN01	L1	0.8	1.2	1.1
	L2	1.1	1.5	1.4
	L3	1.4	1.8	1.7
	L4	1.7	2.1	2.0
SPN03	L1	1.3	2.3	2.0
	L2	1.6	2.6	2.3
	L3	1.9	2.9	2.6
	L4	2.2	3.2	2.9
SPN05	L1	1.6	2.6	2.4
	L2	2.1	3.1	2.9
	L3	2.4	3.4	3.2
	L4	2.7	3.7	3.5
SPN06	L1	2.5	3.5	3.2
	L2	3.3	4.3	4.0
	L3	3.6	4.6	4.3
	L4	3.9	4.9	4.6
SPN07	L1	3.5	5.0	4.5
	L2	4.5	6.0	5.5
	L3	5.0	6.5	6.0
	L4	5.3	6.8	6.3
SPN09	L1	4.0	5.5	5.0
	L2	5.0	6.5	6.0
	L3	5.5	7.0	6.5
	L4	5.8	7.3	6.8
SPN10	L1	5.0	6.5	6.0
	L2	6.3	7.8	7.3
	L3	7.1	8.6	8.1
	L4	7.4	8.9	8.4

L In-line

		安装位置 Mounting position		
		A	T	O
SPN11	L1	7.0	12	10
	L2	9.0	14	12
	L3	10	15	13
	L4	11	16	14
SPN13	L1	9.0	14	12
	L2	12	17	15
	L3	13	18	16
	L4	13	18	16
SPN14	L2	17	25	21
	L3	19	27	23
	L4	20	28	24
SPN15	L1	15	23	29
	L2	19	27	23
	L3	21	29	25
	L4	22	30	26
SPN16	L2	22	30	26
	L3	24	32	28
	L4	25	33	29
SPN17	L2	26	41	36
	L3	29	44	39
	L4	30	45	40
SPN18	L2	35	50	45
	L3	40	55	50
	L4	43	58	53
	L2	45	65	55
SPN19	L3	50	70	60
	L4	53	73	63
	L3	56	76	66
SPN21	L4	60	80	70

A13 R 直角轴式

		安装位置 Mounting position		
		BO	U	P
SPN00	R2	1.2	1.7	1.5
	R3	1.5	2.0	1.8
	R4	1.8	2.3	2.1
SPN01	R2	1.6	2.1	1.9
	R3	1.9	2.4	2.2
	R4	2.2	2.7	2.5
SPN03	R2	2.2	2.8	2.6
	R3	2.5	3.1	2.9
	R4	2.8	3.4	3.2
SPN05	R2	2.5	3.1	2.9
	R3	3.0	3.6	3.4
	R4	3.3	3.9	3.7
SPN06	R2	4.0	5.0	4.8
	R3	4.8	5.8	5.6
	R4	5.1	6.1	5.9
SPN07	R2	6.0	8.0	7.0
	R3	7.0	9.0	8.0
	R4	7.5	9.5	8.5
SPN09	R2	6.5	8.5	7.5
	R3	7.5	9.5	8.5
	R4	8.0	10	9.0

R Right angle

		安装位置 Mounting position		
		BO	U	P
SPN10	R2	13	15	14
	R3	11	13	12
	R4	12	14	13
SPN11	R2	14	19	17
	R3	16	21	19
	R4	17	22	20
SPN13	R2	16	21	19
	R3	19	24	22
	R4	20	25	23
SPN14	R3	25	33	29
	R4	28	36	32
SPN15	R3	27	35	31
	R4	30	38	34
SPN16	R3	30	38	34
	R4	33	41	37
SPN17	R3	38	52	48
	R4	42	56	52
SPN18	R4	48	63	58

注：所有润滑油量为估计值，注油后专门的油堵检查实际油位。

N.b.oil quantities are indicative. Check actual level after filling through the appropriate plug.

减速机额定值表

Gearmotor rating charts

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24.1 SPN...L同轴式减速机额定值表

	i	Mn2 [Nm]	P1 [kW]	Pt [kW]	Rn2 [N]			
					MC/PC MZ/PZ			
					HC HZ FZ			
L1	3.48	470	20	7.5	1610	4970	5710	1060
	4.26	490	18.8	7.5	1720	5280	6070	1130
	5.77	470	13.3	7.5	1910	5790	6650	1250
	7.2	410	9.2	7.5	2050	6180	7100	1350
L2	12.1	680	9.4	7.5	2440	7230	8300	1600
	14.8	720	8.1	7.5	2610	7680	8820	1720
	18.2	750	6.9	7.5	2790	8160	9380	1840
	20.1	640	5.3	7.5	2890	8410	9660	1900
	24.6	800	5.5	7.5	3090	8940	10300	2030
	30.7	840	4.6	7.5	3330	9550	11000	2190
	33.3	650	3.3	7.5	3420	9790	11200	2250
	41.5	650	2.6	7.5	3680	10500	12000	2420
	51.9	650	2.1	7.5	3970	11200	12900	2610
L3	51.6	850	2.8	7.5	3960	11200	12800	2600
	63.2	850	2.3	7.5	4240	11900	13600	2780
	69.9	650	1.6	7.5	4380	12200	14000	28800
	77.5	850	1.9	7.5	4530	12600	14500	29800
	85.6	850	1.7	7.5	4680	13000	14900	3080
	105	860	1.4	7.5	5010	13800	15900	3300
	116	650	0.97	7.5	5180	14200	16300	3410
	131	860	1.1	7.5	5400	14800	17000	3550
	142	860	1	7.5	5540	15100	17400	3650
	177	880	0.86	7.5	5970	16200	18600	3920
	192	650	0.58	7.5	6130	16600	19000	4030
	221	910	0.71	7.5	6430	17300	19800	4230
	240	650	0.47	7.5	6600	17700	20300	4340
L4	299	650	0.37	7.5	7110	18900	21700	4670
	330	970	0.52	6	7350	19500	22400	4830
	403	680	0.3	6	7850	20700	23800	5160
	447	1020	0.4	6	8130	21300	24500	5340
	494	1030	0.37	6	8400	22000	25300	5520
	558	1060	0.34	6	8750	22800	26200	5750
	616	1070	0.31	6	9050	23500	27000	5950
	755	1110	0.26	6	9680	25000	28700	6360
	819	1130	0.24	6	9940	25600	29400	6540
	942	1160	0.22	6	10400	26700	30700	6850
	1022	1170	0.2	6	10700	27300	31400	7040
	1108	810	0.13	6	11000	28000	32200	7230
	1275	1220	0.17	6	11500	29200	33600	7580
	1383	850	0.11	6	11800	29900	34000	7790
	1591	1250	0.14	6	12000	31000	34000	8000
	1725	860	0.09	6	12000	31000	34000	8000
	2153	860	0.07	6	12000	31000	34000	8000

24.1 Rating charts for in-lineunits SPN...L

i	Mn2 [Nm]	P1 [kW]	Pt [kW]	Rn2 [N]			
				MC/MZ			
				HC/PC HZ/PZ FZ			
3.48	840	30	7.5	1610	4970	5710	1060
4.26	880	30	7.5	1720	5280	6070	1130
5.77	930	26	7.5	1910	5790	6650	1250
7.2	750	17	7.5	2050	6180	7100	1350
12.1	1220	16.8	7.5	2440	7230	8300	1600
14.8	1280	14.4	7.5	2610	7680	8820	1720
18.2	1360	12.5	7.5	2790	8160	9380	1840
20.1	1260	10.5	7.5	2890	8410	9660	1900
24.6	1490	10.1	7.5	3090	8940	10300	2030
30.7	1580	8.6	7.5	3330	9550	11000	2190
33.3	1300	6.5	7.5	3420	9790	11200	2250
41.5	1300	5.2	7.5	3680	10500	12000	

减速机额定值表

Gearmotor rating charts

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	i	Mn2 [Nm]	P1 [kW]	Pt [kW]	SPN03				
					Rn2 [N]				
					MC	MZ	HC/PC	HZ/PZ	FZ
L1	3.6	1380	40	11	5010	5780	10300	12300	3210
	4.25	1430	40	11	5290	6110	10800	13000	3400
	5.33	1490	40	11	5710	6590	11500	13900	3660
	6.2	1400	36	11	6000	6930	12100	14500	3850
	7.5	1220	26	11	6400	7390	12800	15400	4100
	9.67	750	12.6	11	6960	8040	13800	16600	4470
L2	12.5	1640	20	9	7590	8760	14900	17900	4870
	15.3	1710	18.6	9	8120	9380	15800	19100	5210
	18.1	2020	18.6	9	8580	9910	16600	20000	5510
	20.8	1820	14.6	9	8980	10400	17300	20900	5760
	22.7	2100	15.4	9	9260	10700	17800	21400	5940
	24.5	2150	14.6	9	9490	11000	18200	21900	6090
	26.4	1820	11.5	9	9740	11200	18600	22400	6250
	30.8	2140	11.6	9	10200	11800	19500	23500	6570
	35.8	1820	8.5	9	10800	12400	20400	24600	6910
	38.4	2150	9.3	9	11000	12700	20900	25100	7070
L3	44.6	1820	6.8	9	11600	13400	21800	26300	7440
	53.4	2170	7	7.5	12300	14200	23000	27700	7900
	63.1	2510	6.8	7.5	13000	15000	24200	29100	8340
	72.3	2230	5.3	7.5	13600	15700	25200	30300	8730
	77.2	2520	5.6	7.5	13900	16100	25700	30900	8930
	90.2	2250	4.3	7.5	14700	16900	26900	32400	9400
	105	2580	4.2	7.5	15400	17300	28200	33900	9880
	113	1820	2.8	7.5	15800	18200	28800	34700	10100
	124	1820	2.5	7.5	16300	18800	29700	35700	10500
	141	2610	3.2	7.5	17000	19700	30800	37100	10900
	152	1820	2.1	7.5	17500	20200	31500	37900	11200
	164	2200	2.3	7.5	17900	20600	32200	38800	11500
	178	2210	2.1	7.5	18400	21200	33000	39700	11800
	190	1830	1.7	7.5	18800	21700	33700	40600	12100
	220	2250	1.8	7.5	19700	22800	35200	42400	12700
L4	258	1840	1.2	7.5	20800	24000	36900	44400	13300
	276	2230	1.4	7.5	21300	24600	37700	45400	13700
	321	1860	1	7.5	22400	25800	39400	47500	14400
	389	1690	0.75	7.5	23900	27500	41800	50300	15300
	413	2360	1	6	24300	28100	42500	51200	15600
	446	2810	1.1	6	25000	28800	43500	52400	16000
	492	2690	0.97	6	25800	29800	44800	53900	16600
	556	2810	0.9	6	26900	31000	46500	55900	17200
	649	2320	0.63	6	28300	32700	48700	58600	18200
	718	2150		6	29300	33800	50200	60400	18800
	816	2720	0.53	6	30500	35300	52200	62800	19600
	896	2230	0.59	6	31500	36400	53700	64600	20200
	1018	2740	0.44	6	32900	38000	55800	67100	21100
	1098	2310	0.48	6	33700	38900	57000	68600	21600
	1278	2790	0.37	6	35500	40900	59700	71800	22800
L5	1370	2400	0.39	6	36000	41900	60900	73300	23300
	1586	2250	0.31	6	36000	42000	63700	74000	24000
	1854	2440	0.25	6	36000	42000	64000	74000	24000
	1991	2850	0.23	6	36000	4200			

	SPN06										SPN07																
	i	Mn2 [Nm]	P1 [kW]	Pt [kW]	Rn2 [N]					i	Mn2 [Nm]	P1 [kW]	Pt [kW]	Rn2 [N]					i	Mn2 [Nm]	P1 [kW]	Pt [kW]	Rn2 [N]				
					MC	MZ	HC/PC	HZ/PZ	FZ					MC	MZ	HC/PC	HZ/PZ	MC					MZ	HC/PC	HZ/PZ	FZ	
L1	3.6	3760	75	18	6240	7070	16800	19500	4690	3.43	5110	115	22	6820	8560	17800	23300	5930	4.09	5260	115	22	7230	9070	18700	24600	6290
	4.25	3890	75	18	6590	7470	17600	20500	4950	5.25	5540	115	22	7860	9860	20200	26500	6830	6.23	5750	115	22	8320	10400	21300	27900	7230
	5.33	4060	75	18	7110	8060	18900	22000	5340																		
	6.2	4200	75	18	7480	8470	19700	23000	5620																		
	7.5	4090	75	18	7970	9030	20900	24300	5980																		
L2	13	4820	40	13	9560	10800	24600	28700	7180	12.3	7510	60	18	10500	13100	26100	34200	9080	14.7	7730	60	18	11100	13900	27500	36100	9640
	15.3	4990	40	13	10100	11400	25900	30100	7590	17.4	8120	60	18	11700	14700	28900	37900	10200	21.8	8690	60	18	12600	15900	31000	40600	11000
	18.1	5890	40	13	10700	12100	27200	31700	8020	25.4	9090	60	18	13300	16700	32400	42500	11600	28	9150	55	18	13700	17200	33400	43700	11900
	22.7	6140	40	13	11500	13000	29100	33900	8650	30.7	9590	52	18	14200	17800	34300	45000	12300	32.6	9410	48	18	14400	18100	34900	45800	12600
	26.4	6370	40	13	12100	13700	30500	35500	9100	38.6	8310	36	18	15300	19200	36800	48200	13300	46.7	8360	30	18	16300	20400	38900	51000	14200
	28.4	6700	39	13	12400	14100	31200	36300	9330																		
	33.1	6870	35	13	13100	14800	32600	38000	9810																		
	38.4	6470	28	13	13700	15600	34100	39700	10300																		
	46.5	6470	23	13	14600	16600	36100	42100	11000																		
	56.3	5210	15.5	13	15600	17700	38300	44500	11700																		
L3	53.2	7100	20	7.5	15300	17300	37600	43800	11500	51.3	10700	30	11	16800	21100	40000	52400	14600	60.5	11100	30	11	17800	22300	42100	55100	15400
	65.2	7480	19.7	7.5	18600	18600	40000	46600	12300	74.1	11600	27	11	19000	23800	44700	58600	16500	80.6	10200	22	11	19500	24500	45800	60100	17000
	77	8350	18.7	7.5	17300	19600	42000	48900	13000	93	12200	23	11	20500	25700	47900	62700	17800	100	12400	21	11	21000	26400	49000	64100	18300
	81.9	6890	14.5	7.5	17700	20000	42800	49900	13300	113	10500	16	11	21900	27500	50800	66500	19000	126	13000	17.8	11	22700	28400	52400	68700	19700
	88.3	8550	16.7	7.5	18100	20500	43800	51000	13600	139	10700	13.3	11	23400	29400	54000	70700	20400	146	13400	15.8	11	23800	29900	54800	71800	20700

减速机额定值表

Gearmotor rating charts

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	SPN09							SPN10						
	i	Mn2 [Nm]	P1 [kW]	Pt [kW]	Rn2 [N]			i	Mn2 [Nm]	P1 [kW]	Pt [kW]	Rn2 [N]		
					HC/PC	HZ/PZ	FZ					HC/PC	HZ/PZ	FZ
L1	3.43	7010	150	25	18100	23300	4740	4.09	7330	175	35	22600	28400	9080
	4.09	7220	150	25	19000	24600	5030	5.25	7710	175	35	24300	30600	9870
	5.25	7600	150	25	20500	26500	5470	6.23	8020	175	35	25600	32200	10400
	6.23	7900	150	25	21600	27900	5790							
L2	12.3	7890	60	18	26500	34200	7270	14.7	10800	75	22	33100	41700	13900
	14.7	9410	60	18	28000	36100	7710	17.4	11300	75	22	34800	43800	14700
	17.4	9730	60	18	29400	37900	8150	21.8	12100	75	22	37300	46900	15900
	21.8	10100	60	18	31500	40600	8790	25.4	12700	75	22	39000	49100	16700
	25.4	10500	60	18	32900	42500	9240	28	12800	75	22	40200	50500	17200
	28	12500	60	18	33900	43700	9550	30.7	13400	73	22	41300	51900	17800
	32.6	13000	60	18	35500	45800	10000	32.6	13300	68	22	42000	52900	18100
	38.6	12500	54	18	37400	48200	10600	38.6	13600	59	22	44300	55700	19200
	46.7	12500	45	18	39600	51000	11300	46.7	14200	51	22	46900	58900	20500
L3	51.3	13400	30	11	40700	52400	11700	53	15800	40	18	48700	61200	21300
	60.5	14100	30	11	42700	55100	12300	62.6	16600	40	18	51200	64300	22500
	74.1	15000	30	11	45400	58600	13200	73.9	17500	40	18	53800	67600	23800
	80.6	14800	30	11	46600	60100	13600	80.3	17500	37	18	55100	69300	24500
	93	15100	28	11	48600	62700	14200	91.3	18600	35	18	57300	72100	25600
	100	16500	28	11	49700	64100	14600	101	18700	32	18	59000	74200	26400
	113	15500	24	11	51600	66500	15200	110	19700	31	18	60700	76300	27200
	126	16400	22	11	53200	68700	15800	119	19700	28	18	62000	78000	27900
	139	16000	19.9	11	54800	70700	16300	130	20700	27	18	63800	80200	28800
	162	16300	17.3	11	57400	74000	17100	142	20700	25	18	65400	82200	29600
	183	14300	13.5	11	59500	76800	17800	164	22200	23	18	68300	85800	31100
	202	16500	14.1	11	61300	79100	18400	174	18300	17.7	18	69900	87900	31900
	223	13000	10	11	63200	81500	19100	190	20700	17.0	18	65400	82200	29600
	234	13000	9.4	11	64600	83300	19500	202	22000	18.8	18	72700	91400	33300
	284	15700	9.6	11	67900	87600	20700	230	21200	15.8	18	75600	95100	34800
	336	13200	6.8	11	71500	92200	21900	244	18400	12.7	18	77400	97400	35700
								295	23300	13.6	18	81500	102500	37800
								350	19000	9.3	18	85800	107900	40000
L4	349	21300	10.8	7.5	72300	93300	22100	392	19400	8.8	11	88700	111500	41500
	406	17800	7.8	7.5	75600	97500	23300	451	29800	11.7	11	92500	116300	43500
	450	18300	7	7.5	78800	101600	24400	507	25500	8.9	11	95800	120500	45300
	509	14300	5	7.5	81000	104400	25100	556	31600	10.1	11	98500		

	SPN11						
	i	Mn2 [Nm]	P1 [kW]	Pt [kW]	Rn2 [N]		
					HC/PC	HZ/PZ	FZ
L1	4.09	10600	200	35	26700	33200	9080
	5.25	11700	200	35	28700	35800	9870
	6.23	11600	200	35	30300	37700	10400
L2	14	15300	115	26	38600	48100	13700
	16.7	16100	115	26	40700	50700	14500
	18	16900	115	26	41600	51800	14900
	21.5	17400	115	26	43900	54600	15800
	25.5	18300	115	26	46200	57500	16700
	27.6	19200	115	26	47300	58900	17200
	32.7	20200	103	26	49800	62000	18200
	38.8	19700	85	26	52400	65300	19200
L3	50.5	22400	60	18	56700	70600	21000
	60.2	23700	60	18	59800	74500	22300
	71.1	24900	60	18	62800	78300	23500
	77.3	25500	57	18	64400	80200	24200
	89.3	26600	51	18	67300	83800	25400
	104	27800	46	18	70400	87600	26700
	115	28700	43	18	72500	90300	27600
	126	29500	40	18	74500	92800	28400
	133	30000	39	18	75800	94500	29000
	147	31800	37	18	78100	97300	30000
	161	31800	34	18	80300	100000	30900
	171	32600	33	18	81700	101800	31500
	191	32200	29	18	84500	105300	32700
	203	33400	28	18	86000	107200	33400
	245	34300	24	18	91100	113500	35500
L4	291	27000	16	18	95900	119400	37600
	348	39800	20	11	101100	126000	39900
	410	41500	18	11	106300	132400	42200
	512	44000	15.2	11	113600	141500	45400
	568	43000	13.4	11	117200	145900	47000
	627	39800	11.3	11	120700	150300	48600
	724	46300	11.4	11	126000	157000	51000
	825	44600	9.6	11	131000	163200	53300
	904	46900	9.2	11	134700	167800	54900
	959	44600	7.4	11	131000	163200	53300
	986	42500	7.7	11	138300	172200	56500
	1058	43000	7.2	11	141200	175900	57900
	1170	42500	5.8	11	138300	172200	56500
	1230	43900	6.3	11	147800	184000	60800
	1377	39800	4.6	11	120700	150300	48600
	1415	42800	5.4	11	154100	191900	63800
	1488	43000	4.6	11	141200	175900	57900
	1680	34000	3.6	11	157000	195000	65000
	1766	43000	4.3	11	157000	195000	65000
	2096	34000	2.9	11	157000	195000	65000

i -实际速比, 输入转速 $n_1=1500 \text{ min}^{-1}$

Mn2 -减速机额定输出扭矩,

P1 -电机额定功率

Pt -减速机热功率

Rn2 -输出轴上允许的悬臂载荷, 根据:

-安全系数 $S=1$,

-10000小时使用寿命。

当作用力没有应用在轴中点时, 按照具体减速机的尺寸查看相应图表。

i - Gear ratio, gearbox drive-speed is 1500 min^{-1}

Mn2 - Reference torque

P1 - Reference power

Pt - Thermal Power

Rn2 - Permitted overhung loading on output shaft ,based on:

- safety factor $S=1$

- 10000 hrs theoretical lifetime

For forces not applying at shaft midpoint, see diagrams provided in the pages following dimensions of the specific gearbox .

减速机额定值表

Gearmotor rating charts

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	SPN13						
	i	Mn2 [Nm]	P1 [kW]	Pt [kW]	Rn2 [N]		
					HC/PC	HZ/PZ	FZ
L2	14.2	22600	150	30	47900	56700	16900
	16.9	23500	150	30	50500	59700	18000
	18.5	24100	150	30	51800	61400	18500
	21.8	25500	150	30	54400	64400	19500
	25.8	26700	150	30	57300	67800	20700
	28.4	27300	150	30	58900	69700	21300
	33.6	28800	143	30	62000	73400	22600
	40.5	29500	122	30	65600	77600	24000
L3	51.1	32700	60	18	70300	83200	25900
	61	34500	60	18	74100	87700	27500
	72	36300	60	18	77900	92200	29100
	78.3	37300	60	18	79900	94600	29900
	92.4	39300	60	18	84000	99400	31600
	110	41200	60	18	88400	104600	33500
	120	42100	60	18	90900	107600	34500
	135	44000	56	18	94100	111300	35800
	143	44400	53	18	95700	113300	36500
	151	45000	51	18	97300	115200	37200
	163	46000	49	18	99600	117800	38200
	176	45000	44	18	101800	120500	39100
	182	39000	37	18	102900	121800	39600
	194	47600	42	18	104800	124100	40400
	209	45000	37	18	107200	126900	41400
	252	45000	31	18	113500	134300	44200
L4	304	39100	22	18	120000	142000	47000
	352	52500	26	11	125400	148400	49300
	394	55000	25	11	129700	153500	51200
	452	54000	21	11	135200	160000	53600
	514	48600	16.8	11	140500	166300	56000
	564	54800	17.2	11	144500	171000	57700
	633	52000	14.6	11	149600	177000	60000
	695	51000	13	11	153800	182100	61900
	790	52200	11.7	11	159800	189200	64600
	889	53100	10.6	11	165600	196000	67200
	1014	54300	9.5	11	172300	203900	70200
	1117	52500	8.3	11	177300	209900	72500
	1266	56300	7.9	11	184100	217900	75600
	1394	52700	6.7	11	189500	224300	78100
L5	1502	58000	6.8	11	192000	229400	80000
	1817	58000	5.7	11	192000	231000	80000
	2187	49000	4	11	192000	231000	80000

	SPN17						
	i	Mn2 [Nm]	P1 [kW]	Pt [kW]	Rn2 [N]		
					HC/PC	HZ/PZ	FZ
L3	58.1	90300	150	35	166800	177500	50800
	69.3	93300	150	35	175800	187200	53800
	89	101000	150	35	189500	201800	58500
	106	105800	150	35	199500	212400	61900
	116	108300	150	35	205200	218400	63900
	138	114000	143	35	216000	230000	67700
	166	120500	125	35	228300	243100	72000
	179	136600	131	35	233800	248900	73900
	213	142200	115	35	246100	262000	78200
	252	119700	82	35	259100	275800	82800
L4	310	146200	60	18	275500	293400	88700
	360	152900	60	18	288300	306900	93200
	449	163300	60	18	307900	327800	100300
	493	166900	60	18	316700	337200	103500
	552	174500	56	18	327		

	SPN15							SPN16						
	i	Mn2 [Nm]	P1 [kW]	Pt [kW]	Rn2 [N]			i	Mn2 [Nm]	P1 [kW]	Pt [kW]	Rn2 [N]		
					HC/PC	HZ/PZ	FZ					HC/PC	HZ/PZ	FZ
L2	17.4	41400	200	45	54300	63800	20400	17.4	43900	200	50	90300	100400	33900
	22.3	46800	200	45	58500	68700	22100	22.3	48500	200	50	97300	108200	36900
	26.5	46600	200	45	61600	72300	23400	26.5	47700	200	50	102500	113900	39100
	28	47800	200	45	62700	73600	23900							
	33.2	50300	200	45	66000	77400	25300							
	38.6	44100	190	45	69000	81000	26600							
L3	59.6	59900	115	30	78600	92300	30700	59.6	63400	115	35	130700	145300	51200
	71.1	63100	115	30	82900	97300	32600	71.1	66900	115	35	137800	153300	54300
	91.3	68000	115	30	89300	104900	35400	76.5	70100	115	35	140800	156600	55600
	108	71600	114	30	94000	110400	37500	91.3	72100	115	35	148500	165200	59000
	139	81100	100	30	101300	119000	40700	108	75900	115	35	156300	173900	62500
	165	80400	84	30	106700	125200	43100	117	79400	115	35	160000	178000	64100
	174	78800	78	30	108500	127400	43900	139	81800	101	35	168500	187400	67900
	207	79800	66	30	114200	134100	46500	165	82500	86	35	177400	197300	71900
	241	65000	46	30	119500	140300	48900							
L4	302	97000	57	18	127900	150200	52800	215	93200	60	18	191900	213500	78500
	370	97900	47	18	135900	159500	56400	256	98200	60	18	202400	225100	83200
	441	98700	40	18	143300	168200	59800	302	103200	60	18	212700	236600	87900
	487	99100	36	18	147600	173300	61800	329	105800	57	18	218100	242600	90400
	533	99500	33	18	151700	178100	63800	370	109400	53	18	225900	251300	94000
	591	99900	30	18	156400	183600	66000	441	115200	46	18	238200	264900	99700
	672	100600	27	18	162500	190800	68900	487	118600	43	18	245400	272900	103100
	741	101100	24	18	167400	196600	71200	533	121800	40	18	252200	280500	106300
	862	101900	21	18	175200	205700	74800	566	123900	39	18	256700	285500	108400
	930	92600	17.6	18	179200	210400	76800	591	122500	37	18	260100	289200	110000
	1043	103000	17.5	18	185500	217800	79700	625	126500	36	18	264500	294100	112000
	1104	94800	15.2	18	188700	221500	81300	685	127800	33	18	271800	302300	115500
	1284	96900	13.4	18	197400	231800	85400	726	128600	31	18	276700	307700	117800
	1492	83400	9.9	18	206000	242500	89800	741	126500	30	18	278400	309600	118600
	1805	83500	8.2	18	206000	243000	90000	812	130000	28	18	286100	318200	122300
								862	129000	27	18	291300	323900	124700
								1043	132300	23	18	308400	343000	132900
								1237	122100	17.5	18	324600	361100	140700

	SPN19							SPN21						
	i	Mn2 [Nm]	P1 [kW											

减速机额定值表 Gearmotor rating charts

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24.2 SPN...R 直角轴式减速机额定值表

	i	Mn2 [Nm]	P1 [kW]	Pt [kW]	SPN00				
					Rn2 [N]				
					MC/PC	MZ/PZ	HC	HZ	FZ
R2	7.13	580	13.7	12	2050	2050	6170	7080	1350
	8.74	610	11.7	12	2190	2190	6550	7530	1440
	11.8	590	8.3	12	2420	2420	7180	8240	1590
	14.8	510	5.7	12	2610	2610	7670	8810	1710
R3	24.8	730	5.1	12	3100	3100	8960	10300	2040
	30.4	840	4.8	12	3320	3320	9530	10900	2180
	37.3	840	3.9	12	3550	3550	10100	11600	2330
	41.2	650	2.7	12	3670	3670	10400	12000	2410
	50.4	850	2.9	12	3930	3930	11100	12700	2580
	62.9	850	2.3	12	4230	4230	11800	13600	2780
	68.2	650	1.6	12	4340	4340	12100	13900	2860
	78.7	850	1.9	12	4550	4550	12700	14600	2990
R4	85.2	650	1.3	12	4680	4680	13000	14900	3070
	106	860	1.4	10	5030	5030	13800	15900	3310
	130	860	1.2	10	5380	5380	14700	16900	3540
	143	650	0.81	10	5560	5560	15200	17400	3660
	159	870	0.97	10	5760	5760	15600	18000	3780
	175	880	0.89	10	5950	5950	16100	18500	3910
	215	910	0.75	10	6370	6370	17100	19700	4190
	237	650	0.49	10	6580	6580	17600	20300	4330
	268	930	0.62	10	6860	6860	18300	21000	4510
	291	950	0.58	10	7040	7040	18800	21500	4630
	363	980	0.48	10	7580	7580	20000	23000	4990
	394	680	0.31	10	7790	7790	20500	23600	5120
	453	1020	0.4	10	8160	8160	2140	24600	5370
	491	710	0.25	10	8390	8390	21900	25200	5510
	613	730	0.21	10	9030	9030	23500	27000	5940

24.2 Rating charts for right-angle units SPN...R

	i	Mn2 [Nm]	P1 [kW]	Pt [kW]	SPN01				
					Rn2 [N]				
					MC	MZ	HC/PC	HZ/PZ	FZ
	7.13	1040	15	12	2050	2050	6170	7080	1350
	8.74	1090	15	12	2190	2190	6550	7530	1440
	11.8	1150	15	12	2420	2420	7180	8240	1590
	14.8	940	10.6	12	2610	2610	7670	8810	1710
	24.8	1390	9.7	12	3100	3100	8960	10300	2040
	30.4	1580	8.9	12	3320	3320	9530	10900	2180
	37.3	1600	7.4	12	3550	3550	10100	11600	2330
	41.2	1300	5.4	12	3670	3670	10400	12000	2410
	50.4	1630	5.6	12	3930	3930	11100	12700	2580
	62.9	1650	4.5	12	4230	4230	11800	13600	2780
	68.2	1300	3.3	12	4340	4340	12100	13900	2860
	78.7	1570	3.4	12	4550	4550	12700	14600	2990
	85.2	1300	2.6	12	4680	4680	13000	14900	3070
	106	1700	2.8	10	5030	5030	13800	15900	3310
	130	1720	2.3	10	5380	5380	14700	16900	3540
	143	1300	1.6	10	5560	5560	15200	17400	3660
	159	1740	1.9	10	5760	5760	15600	18000	3780
	175	1770	1.8	10	5950	5950	16100	18500	3910
	215	1820	1.5	10	6370	6370	17100	19700	4190
	237	1300	0.97	10	6580	6580	17600	20300	4330
	268	1870	1.2	10	6860	6860	18300	21000	4510
	291	1890	1.2	10	7040	7040	18800	21500	4630
	363	1960	0.96	10	7580	7580	20000	23000	4990

	SPN05										SPN06																
	i	Mn2 [Nm]	P1 [kW]	Pt [kW]	Rn2 [N]					i	Mn2 [Nm]	P1 [kW]	Pt [kW]	Rn2 [N]					i	Mn2 [Nm]	P1 [kW]	Pt [kW]	Rn2 [N]				
					MC/PC	MZ/PZ	HC	HZ	FZ					MC	MZ	HC/PC	HZ/PZ	FZ	MC				MZ	HC/PC	HZ/PZ	FZ	
R2	9.23	1680	30	18	6850	7910	13600	16400	4400	9.23	1680	30	18	8540	9670	22200	25900	6410	9.23	1680	30	18	8540	9670	22200	25900	6410
	10.9	1980	30	18	7240	8360	14300	17200	4650	10.9	1980	30	18	9020	10200	23400	27200	6780	10.9	1980	30	18	9020	10200	23400	27200	6780
	13.7	2490	30	18	7810	9020	15300	18400	5010	13.7	2490	30	18	9730	11000	25000	29100	7310	13.7	2490	30	18	9730	11000	25000	29100	7310
	15.9	2890	30	18	8220	9480	16000	19300	5270	15.9	2890	30	18	10200	11600	26200	30500	7690	15.9	2890	30	18	10200	11600	26200	30500	7690
	19.2	2860	25	18	8750	10100	16900	20400	5620	19.2	3490	30	18	10900	12400	27700	32300	8190	19.2	3490	30	18	10900	12400	27700	32300	8190
R3	25.7	3630	15	14	9640	11100	18500	22200	6190	33.2	5810	30	14	13100	14800	32700	38000	9830	33.2	5810	30	14	13100	14800	32700	38000	9830
	31.5	3770	15	14	10300	11900	19600	23600	6620	39.2	6550	29	14	13800	15700	34300	40000	10400	39.2	6550	29	14	13800	15700	34300	40000	10400
	37.1	4340	15	14	10900	12600	20600	24800	7000	46.3	7510	28	14	14600	16600	36100	42000	11000	46.3	7510	28	14	14600	16600	36100	42000	11000
	42.6	3790	15	14	11400	13200	21500	25900	7320	58.1	7580	22	14	15800	17900	38600	45000	11800	58.1	7580	22	14	15800	17900	38600	45000	11800
	46.6	4310	15	14	11800	13600	22100	26600	7550	67.5	7090	18.1	14	16600	18800	40400	47100	12500	67.5	7090	18.1	14	16600	18800	40400	47100	12500
	50.3	4410	15	14	12100	13900	22600	27200	7740	72.9	7420	17.5	14	17000	19300	41300	48100	12800	72.9	7420	17.5	14	17000	19300	41300	48100	12800
	54.2	3570	11.3	14	12400	14300	23100	27800	7930	84.7	7530	15.3	14	17900	20300	43300	50400	13400	84.7	7530	15.3	14	17900	20300	43300	50400	13400
	63.1	4330	11.8	14	13000	15000	24200	29100	8350	98.5	6490	11.3	14	18800	21300	45300	52700	14100	98.5	6490	11.3	14	18800	21300	45300	52700	14100
	73.3	3580	8.4	14	13700	15800	25300	30500	8780	119	6490	9.4	14	20000	22700	47900	55800	15000	119	6490	9.4	14	20000	22700	47900	55800	15000
	78.7	4350	9.5	14	14000	16200	25900	31100	8990	144	5490	6.6	14	21300	24200	50700	59100	16000	144	5490	6.6	14	21300	24200	50700	59100	16000
	91.5	3580	6.7	14	14700	17000	27100	32600	9450																		
R4	129	5200	7.1	12	16500	19100	30000	36100	10600	158	9620	10.8	12	22000	24900	52100	60700	16500	158	9620	10.8	12	22000	24900	52100	60700	16500
	148	448																									

减速机额定值表

Gearmotor rating charts

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	SPN10						
	i	Mn2 [Nm]	P1 [kW]	Pt [kW]	Rn2 [N]		
					HC/PC	HZ/PZ	FZ
R2(B)	12	10100	130	55	31200	39200	13000
	15.4	10700	115	55	33600	42300	14100
	18.3	11100	101	55	35400	44500	15000
R2(C)	16.6	11200	112	55	34400	43200	14500
	21.3	11800	92	55	37100	46600	15800
	25.3	12200	81	55	39000	49000	16700
R3	37.7	6650	30	22	44000	55300	19000
	44.6	7860	30	22	46200	58100	20100
	55.9	9860	30	22	49500	62200	21700
	65	11500	30	22	51700	65100	22800
	71.8	12700	30	22	53300	67000	23600
	78.6	13900	30	22	54800	68900	24300
	83.4	14700	30	22	55800	70100	24800
	99	16400	29	22	58700	73800	26300
	120	17400	25	22	62200	78200	28000
R4	136	21000	27	15	64600	81200	29200
	160	22000	24	15	67800	85300	30900
	189	23200	22	15	71300	89700	32600
	206	22100	19	15	73100	91900	33500
	234	24700	18.7	15	76000	95600	35000
	258	22800	15.7	15	78300	98400	36200
	298	26100	16.4	15	80500	101200	37300
	305	23400	13.6	15	82300	103500	38200
	334	27400	14.6	15	84600	106300	39400
	363	24100	11.8	15	86700	109000	40500
	419	29000	12.3	15	90500	113800	42500
	445	20000	7.8	15	92700	116600	43600
	517	25600	8.8	15	96400	121200	45600
	590	21800	6.6	15	100300	126100	47600
	626	21500	6	15	102700	129100	48900
	757	26400	6.2	15	108100	135900	51700
	898	23200	4.6	15	113800	143100	54800

	SPN11						
	i	Mn2 [Nm]	P1 [kW]	Pt [kW]	Rn2 [N]		
					HC/PC	HZ/PZ	FZ
R2(B)	12	11900	150	75	36900	45900	13000
	15.4	15400	150	75	39700	49500	14100
	18.3	16000	146	75	41800	52100	15000
R2(C)	16.6	14400	144	90	40600	50600	14500
	21.3	16900	132	90	43800	54500	15800
	25.3	17600	116	90	46100	57400	16700
R3	53	20300	66	40	57500	71600	21300
	63.2	24000	65	40	60600	75500	22600
	68	24000	61	40	62000	77200	23200
	81.1	25900	55	40	65400	81400	24600
	96.3	27200	49	40	68800	85700	26000
	104	28700	47	40	70400	87700	26700
	124	30200	42	40	74100	92400	28300
	147	26900	32	40	78100	97200	29900
R4	154	26400	30	22	79300	98700	30500
	182	31200	30	22	83300	103800	32200
	198	33800	30	22	85400	106400	33100
	229	35300	27	22	89200	11100	34700
	266	36900	25	22	93300	116200	36500
	294	38000	23	22	96100	119700	37700
	322	39000	22	22	98800	123100	38900
	341	39200	20	22	100600	125300	39700
	413	40600	17.4	22	106500	132600	42300
	438	37500	15.2	22	108400	135000	43100
	490	34500	12.5	22	112100	139600	44800
	520						

	SPN15						
	i	Mn2 [Nm]	P1 [kW]	Pt [kW]	Rn2 [N]		
					HC/PC	HZ/PZ	FZ
R3(B)	51.1	48100	150	75	75000	88100	29200
	65.5	62100	150	75	80900	94900	31700
	77.8	64400	143	75	85100	100000	33600
	82.3	65500	137	75	86600	101600	34200
	97.6	68800	121	75	91100	107000	36200
R3(C)	113	64000	91	75	95300	111900	38100
	70.7	54900	134	90	82700	97100	32500
	90.7	59200	112	90	89200	104700	35300
	108	62300	100	90	93900	110200	37400
	114	64700	98	90	95400	112100	38100
R4	135	75700	96	90	100500	118000	40300
	157	65000	71	90	105100	123400	42400
	225	77700	61	40	117100	137500	47800
	269	82000	54	40	123500	145000	50700
	345	96000	49	40	133100	156200	55100
R3(B)	409	98300	43	40	140100	164500	58400
	525	99400	34	40	151000	177300	63400
	623	100200	29	40	158900	186600	67200
	659	88200	24	40	161600	189800	68400
	782	90300	20	40	170200	199800	72400
	909	76900	15	40	178000	209000	76200

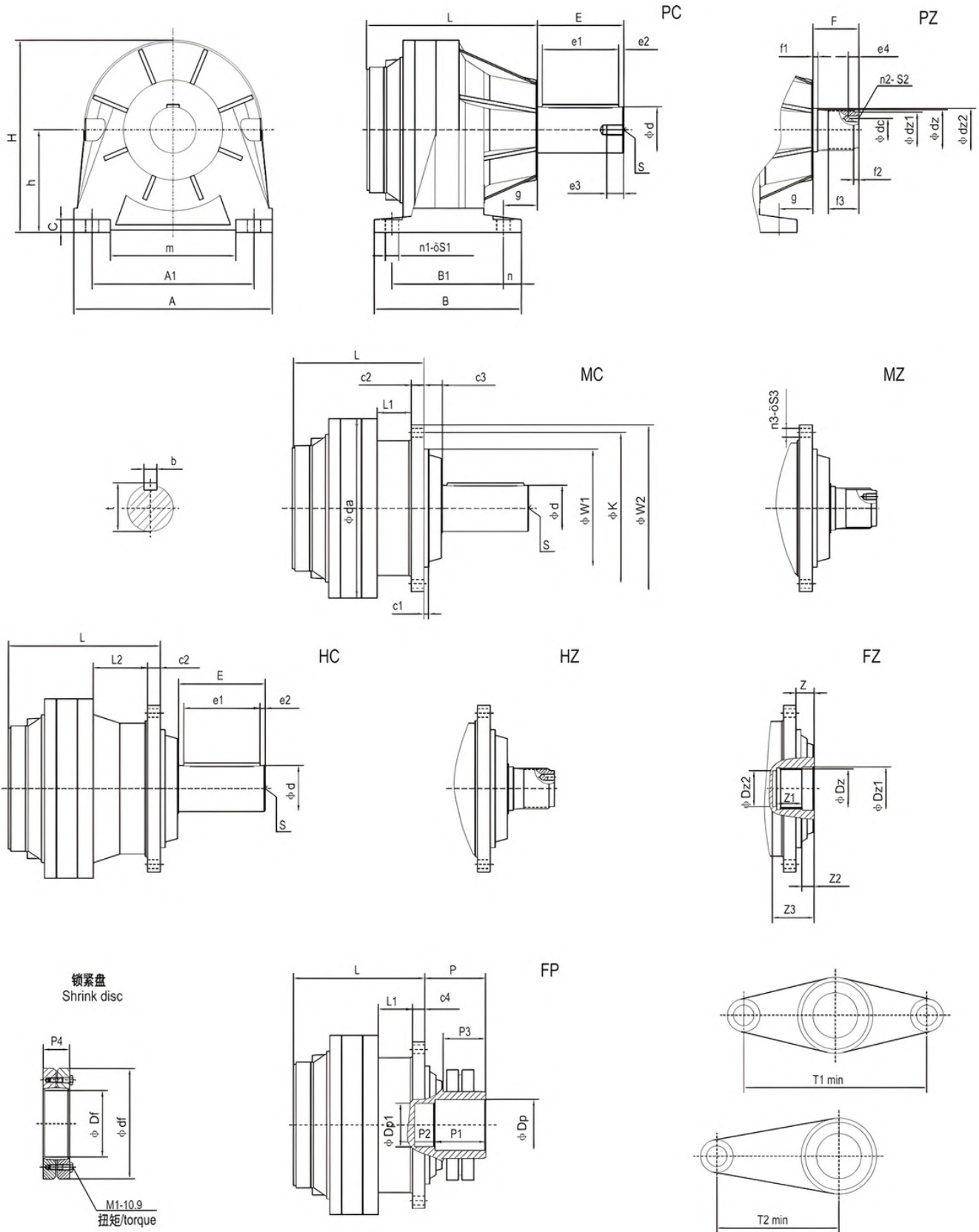
	SPN16						
	i	Mn2 [Nm]	P1 [kW]	Pt [kW]	Rn2 [N]		
					HC/PC	HZ/PZ	FZ
R3(B)	51.1	50000	150	75	124800	138800	48600
	65.5	63800	150	75	134500	149500	52800
	77.8	65800	146	75	141600	157400	55900
R3(C)	70.7	59300	144	90	137600	153000	54200
	90.7	69800	132	90	148200	164900	58900
	108	72500	116	90	156100	173600	62300
R4	225	94500	74	45	194700	216600	79700
	269	99700	66	45	205300	228300	84600
	289	105700	65	45	209900	233400	86600
	345	107300	55	45	221300	246100	91900
	409	112700	49	45	232900	259100	97300
	443	117300	47	45	238500	265200	99900
	525	118900	40	45	251000	279200	105700
	623	115400	33	45	264300	293900	111900

	SPN17						
	i	Mn2 [Nm]	P1 [kW]	Pt [kW]	Rn2 [N]		
					HC/PC	HZ/PZ	FZ
R3(B)	49.8	46900	150	90	159200	169500	48200
	64.9	61200	150	90	172400	183500	52700
	78.1	75100	150	90	182200	194000	56000
	83.3	80200	150	90	185800	197800	57200
	100	96200	150	90	196400	209100	60900
	119	111000	150	90	206700	220100	64400
R3(C)	68.9	57800	144	100	175500	186900	53700
	89.8	75300	144	100	190000	202300	58700
	108	90600	144	100	200900	213900	62400
	115	96600	144	100	204800	218100	63800
	139	116300	144	100	216500	230500	67800
	165	118900	124	100	227900	242700	71800
R4	220	81400	66	50	248500	264500	79000
	262	97200	66	50	262000	278900	83800
	336	124700	66	50	282300	300600	91100
	399	148000	66	50	297200	316500	96500
	438	157000	64	50	305700	325500	99500
	520	164800	56	50	321800	342600	105400
	626	155000	44	50	340200	362200	112100
	677	164700	43	50	348300	370800	115000
	803	165900	37				

尺寸 Dimensions

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SPN00 L... ~ SPN07 L...



SPN00 L... ~ SPN07 L...

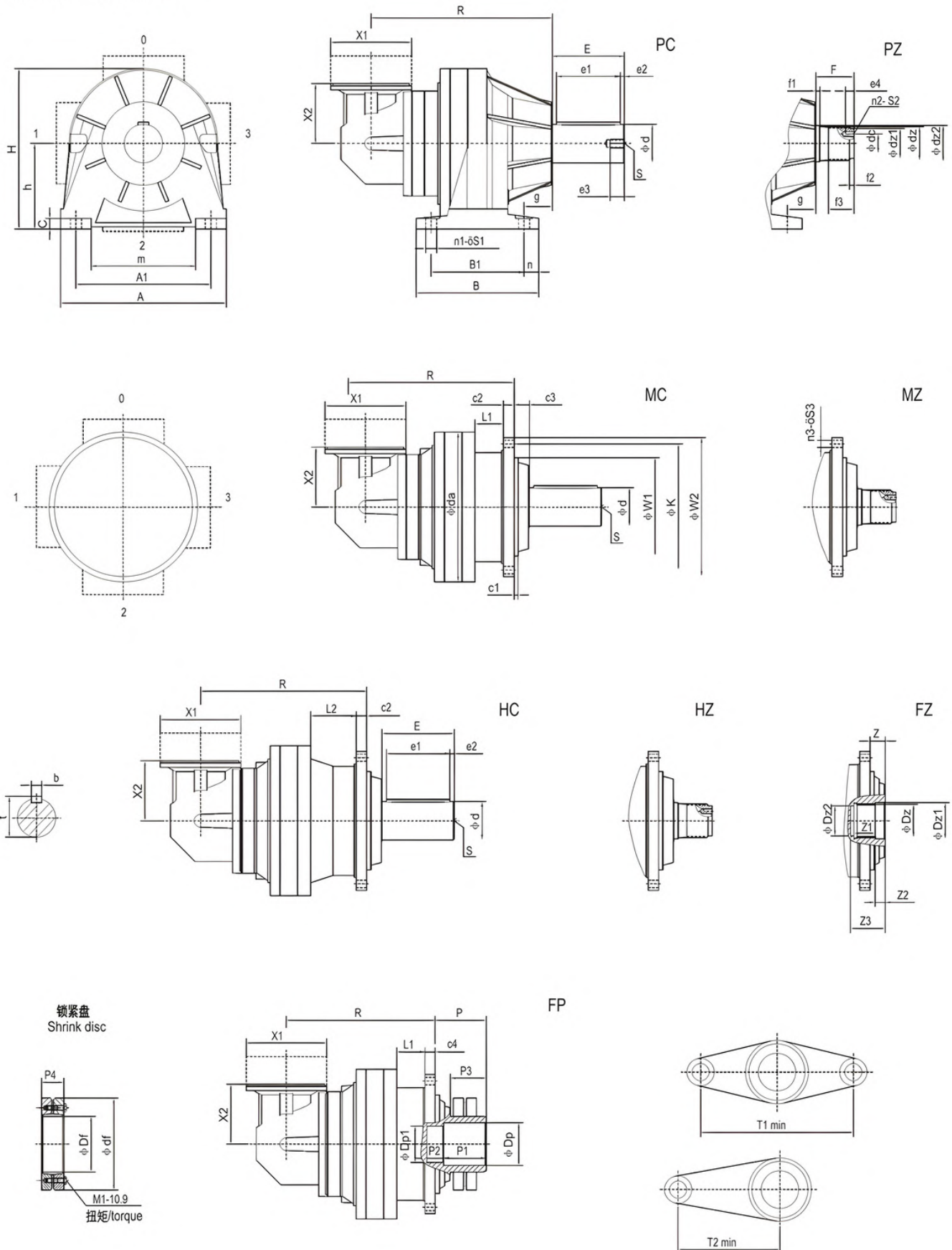
型号 size	级数 Stage	L			 Kg				底脚尺寸 foot dimension					MZ,PZ 花键尺寸 splined shaft dimension (DIN5482)			
		PC PZ	MZ/MC FP/FZ	HC HZ	MZ MC	FZ FP	HZ HC	PC PZ	h H	A B C	A1 B1	m n	n1 φ S1 g	dc n2 S2	dz1 dz2 e4	f1 f2 f3	F dz
SPN00	L1	86	80	115	19	17	21	24		205			4	24	35 f7	7	
	L2	139	133	168	23	21	25	28	100	160	165	125	φ 11	3	42 f7	5	55
	L3	192	186	221	27	25	29	33	195		120	20	16	M6	13	35	B40*36
	L4	245	239	274	32	29	33	37		13							
SPN01	L1	132	92	126	22	20	24	27		260			4	24	35 f7	7	
	L2	185	145	176	26	24	28	32	132	180	216	172	φ 17	3	42 f7	5	55
	L3	238	198	232	30	28	33	36	227		138	21	24	M6	13	35	B40*36
	L4	291	251	285	35	33	37	40		15							
SPN03	L1	165	125	150	33	33	37	42		310			4	32	50 f7	10	
	L2	218	178	203	37	37	41	46	160	235	254	198	φ 18	3	60 f7	8	68
	L3	271	231	256	41	41	45	50	282		169	33	39	M10	20	46	B58*53
	L4	324	284	309	45	45	49	54		22							
SPN05	L1	183	143	168	38	38	42	47		310			4	32	50 f7	10	
	L2	248	208	233	45	45	49	54	160	235	254	198	φ 18	3	60 f7	8	68
	L3	301	261	286	49	49	53	58	282		169	33	39	M10	20	46	B58*53
	L4	354	314	339	53	53	57	62		22							
SPN06	L1	235	160	195	68	68	73	84		350			4	45	62 f7	10	
	L2	300	225	260	77	77	83	93	180	281	279	200	φ 22	3	72 f7	10	90
	L3	353	278	313	81	81	87	97	327		201	40	65	M10	20	61.5	B70*64
	L4	406	331	366	86	86	91	101		25							
SPN07	L1	246	165	210	99	89	110	125		390			4	45	70 f7	10	
	L2	335	254	299	112	101	122	138	200	289	318	246	φ 26	3	85 f7	10	90
	L3	400	319	364	119	109	129	145	375		219	35	66	M12	20		B80*74
	L4	453	372	417	123	113	133	149		25							

型号 size	da L1 L2	轴伸尺寸 * shaft dimension			法兰尺寸 flange dimension			FP 锁紧盘空心轴尺寸 hollow shaft for shrink disc dimension				FZ 内花键空心轴尺寸 hollow splined shaft dimension			
		d E S	e1 e2	b t e3	c1 c2 c3	W1 K W2	n3 s3 c4	DP DP1 P	P1 P2 P3	φ Df * φ df * P4 M1 扭矩/torque	T1 T2	Dz1 Dz2	z1 z2 z3	Z Dz(DIN5482)	
SPN00	190	38/50 h6	50/70	10/14	5	110 f7	8	42 H7	42	φ 50x φ 90x26	450	42 H7	22	14	
	36	58/82	4/6	41/53.5	12	165	10.5	35 H7	18	M6-10.9	300	35 H8	12.5	A40*36 H10	
	71	M12		28/36	6	185	12	50	44	12 Nm			42.5		
SPN01	190	38/50 h6	50/70	10/14	5	110 f7	8	52 H7	42	φ 62x φ 110x30	450	42 H7	22	14	
	36	58/82	4/6	41/53.5	12	165	10.5	35 H7	18	M6-10.9	300	35 H8	12.5	A40*36 H10	
	71	M12		28/36	6	185	12	50	44	12 Nm			42.5		
SPN03	245	60 h6	90	18	13	150 f7	10	75 H7	70	φ 100x φ 170x44	500	60 H7	29	15	
	70	105	7.5	64	20	195	12.5	65 H7	30	M8-10.9	350	50 H8	15	A58*53 H10	
	91	M20		50	15	222	20	85	70	30 Nm			54		
SPN05	245	60 h6	90	18	13	150 f7	10	75 H7	70	φ 100x φ 170x44	500	60 H7	29	15	
	70														

尺寸 Dimensions

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SPN00 R... ~ SPN07 R...



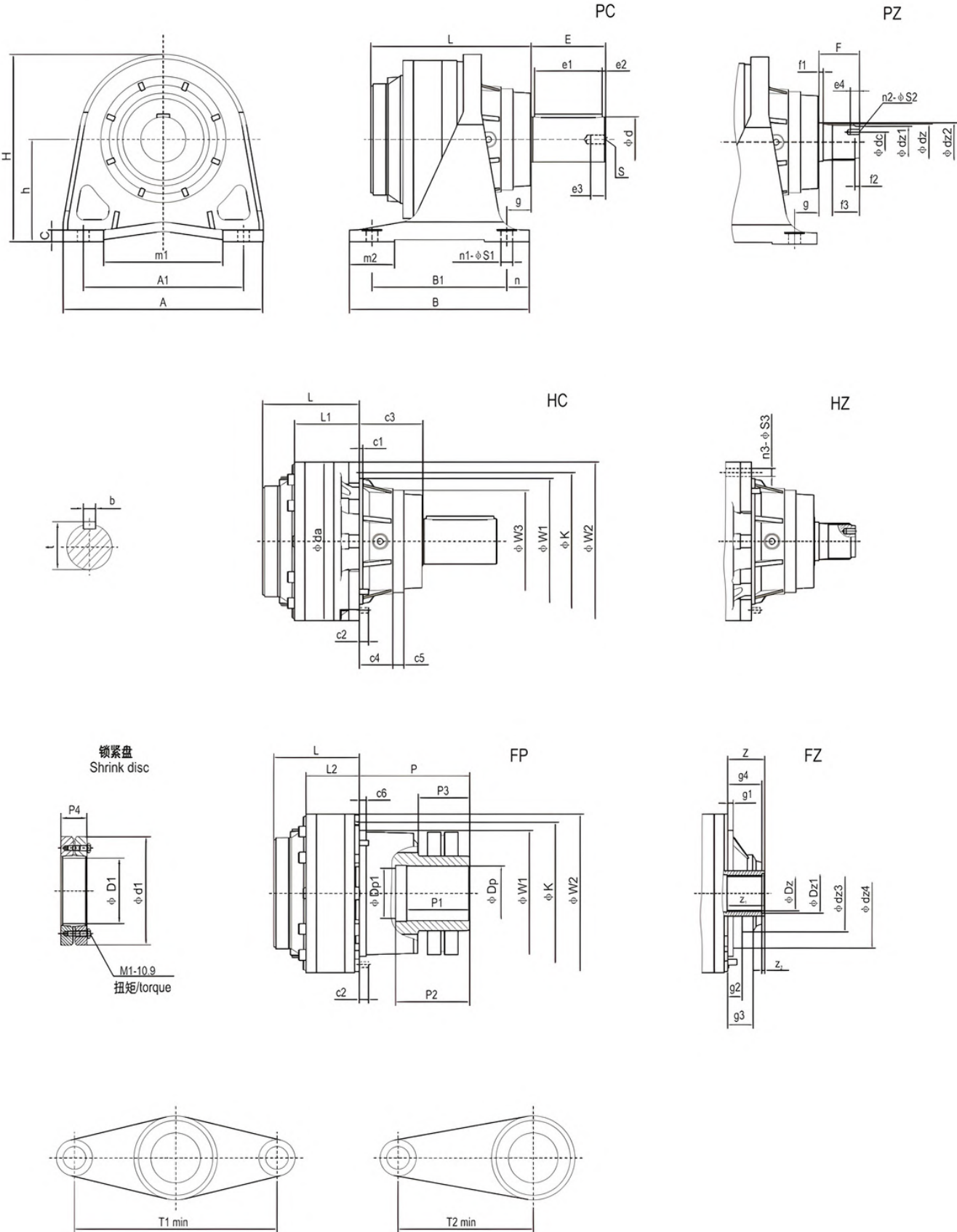
SPN00 R... ~ SPN07 R...

型号 size	级数 Stage	R			Kg				X1	X2	底脚尺寸 foot dimension					MZ,PZ 花键尺寸 splined shaft dimension (DIN5482)			
		PC	MZ/MC	HC	MZ	FZ	HZ	PC			h	A	A1	m	n1	dc	dz1	f1	F
		PZ	FP/FZ	HZ	MC	FP	HC	PZ			H	B	B1	n	φS1	n2	dz2	f2	dz
SPN00	R2	178	172	207	34	31	36	39	190	122	100	205	165	125	4	24	35 f7	7	55 B40*36
	R3	231	225	260	38	36	40	43	190	122	195	160	120	20	11	3	42 f7	5	
	R4	284	278	313	42	40	44	47	190	122		13			16	M6	13	35	
SPN01	R2	225	184	219	37	35	39	42	190	122	132	260	216	172	4	24	35 f7	7	55 B40*36
	R3	278	237	272	41	39	43	46	190	122	227	180	138	21	17	3	42 f7	5	
	R4	331	290	325	45	43	47	50	190	122		15			24	M6	13	35	
SPN03	R2	257	217	242	53	53	57	62	190	140	160	310	254	198	4	32	50 f7	10	68 B58*53
	R3	310	270	295	51	51	55	60	190	122	282	235	169	33	18	3	60 f7	8	
	R4	363	323	350	55	55	59	64	190	122		22			39	M10	20	46	
SPN05	R2	275	235	260	58	58	62	67	190	140	160	310	254	198	4	32	50 f7	10	68 B58*53
	R3	340	300	325	59	59	63	68	190	122	282	235	169	33	18	3	60 f7	8	
	R4	393	353	378	63	63	67	72	190	122		22			39	M10	20	46	
SPN06	R2	372	297	332	93	93	97	109	190	140	180	350	279	200	4	45	62 f7	10	90 B70*64
	R3	392	317	352	89	89	94	105	190	140	327	281	201	40	22	3	72 f7	10	
	R4	445	370	405	83	83	88	98	190	122		25			65	M10	20	61.5	
SPN07	R2	365	284	329	151	141	161	177	245	225	200	390	318	246	4	45	70 f7	10	90 B80*74
	R3	427	346	391	132	122	143	158	190	140	375	289	219	35	26	3	85 f7	10	
	R4	492	411	456	133	123	144	160	190	122		25			66	M12	20	60	

型号 size	da L1 L2	轴伸尺寸 * shaft dimension			法兰尺寸 flange dimension			FP 锁紧盘空心轴尺寸 hollow shaft for shrink disc dimension				FZ 内花键空心轴尺寸 hollow splined shaft dimension			
		d	e1	b	c1	W1	n3	DP	P1	φ Df * φ df * P4	T1	Dz1	z1	Z	
		E	e2	t	c2	K	s3	DP1	P2	M1	T2	Dz2	z2	Dz(DIN5482)	
SPN00	190	38/50 h6	50/70	10/14	5	110 f7	8	42 H7	42	φ 50x φ 90x26	450	42 H7	22	14 A40*36 H10	
	36	58/82	4/6	41/53.5	12	165	10.5	35 H7	18	M6-10.9	300	35 H8	12.5		
	71	M12		28/36	6	185	12	50	44	12 Nm			42.5		
SPN01	190	38/50 h6	50/70	10/14	5	110 f7	8	52 H7	42	φ 62x φ 110x30	450	42 H7	22	14 A40*36 H10	
	36	58/82	4/6	41/53.5	12	165	10.5	35 H7	18	M6-10.9	300	35 H8	12.5		
	71	M12		28/36	6	185	12	50	44	12 Nm			42.5		
SPN03	245	60 h6	90	18	13	150 f7	10	75 H7	70	φ 100x φ 170x44	500	60 H7	29	15 A58*53 H10	
	70	105	7.5	64	20	195	12.5	65 H7	30	M8-10.9	350	50 H8	15		
	91	M20		50	15	222	20	85	70	30 Nm			54		
SPN05	245	60 h6	90	18	13	150 f7	10	75 H7	70	φ 100x φ 170x44	500	60 H7	29	15 A58*53 H10	
	70	105	7.5	64	20	195	12.5	65 H7	30	M8-10.9					

尺寸
Dimensions 25

SPN09 L... ~ SPN17 L...



SPN09 L... ~ SPN17 L...

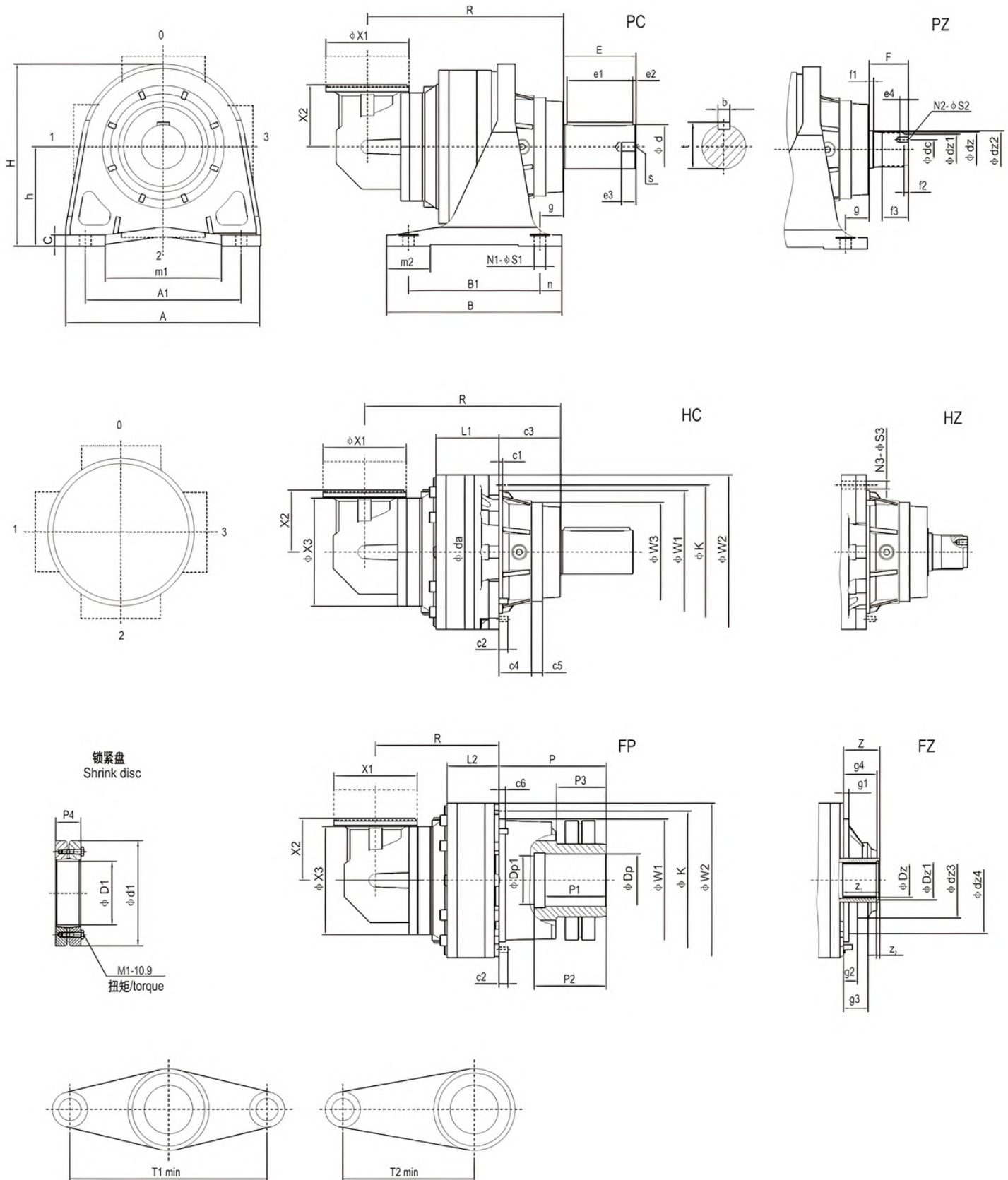
型号 size	级数 Stage	L			 Kg				da L1 L2	底脚尺寸 foot dimension					MZ,PZ 花键尺寸 splined shaft dimension (DIN5482)			
		PC PZ	HC HZ	FP FZ	HZ HC	PC PZ	FZ	FP		h H	A B C	A1 B1	m1 m2 n	n1 S1 g	dc n2 S2	dz1 dz2 e4	f1 f2 f3	F dz
SPN09	L1	267	126	101	120	136	99	105	350		445		265	4	45	70 f7	10	90
	L2	356	215	190	133	148	112	117	144	225	400	356	100	26	3	85 f7	9	B80*74*36*9e
	L3	421	280	255	140	155	119	124		414		300	50	54	M12	20	60	(DIN5482)
	L4	474	333	308	144	159	123	128	119		24							
SPN10	L1	288	108	88	141	162	115	120	400		500		300	4	65	85 f7	12	110
	L2	424	244	224	173	194	146	152	130	250	420	406	100	26	3	105 f7	12	B100*94
	L3	489	309	289	182	203	155	161		469		320	50	90	M12	20	78	(DIN5482)
	L4	542	362	342	186	207	158	166	110		26							
SPN11	L1	325	115	115	187	260	166	176	428		550		330	4	65	85 f7	12	110
	L2	458	248	248	234	306	213	223	134	280	430	457	120	33	3	105 f7	12	B100*94
	L3	547	337	337	246	319	225	236		516		334	48	110	M12	20	78	(DIN5482)
	L4	612	402	402	253	326	232	243	134		30							
SPN13	L2	531	304	304	301	395	270	291	445		550		330	4	70	100 f7	14	130
	L3	620	393	393	317	407	283	301	169	280	520	457	120	33	3	122 f7	10	W120*3
	L4	685	458	458	321	415	290	311	169	523		400	60	111	M16	30	98	(DIN5480)
											30							
SPN14	L2	641	362	362	415	545	325	375	542		620		280	8	70	125 f6	14	150
	L3	777	498	498	460	590	370	420	192	315	556	508	140	33	3	151 f6	12	W150*5
	L4	842	563	563	470	600	380	430	192	613		(368) 412	72	169	M16	30	119	(DIN5480)
											35							
SPN15	L2	665	386	386	473	608	379	431	542		620		280	8	70	125 f6	14	150
	L3	798	519	519	520	655	426	478	192	315	556	508	140	33	3	151 f6	12	W150*5
	L4	887	608	608	532	667	439	491	192	613		(368) 412	72	169	M16	30	119	(DIN5480)
											35							
SPN17	L2	624	475	475	960	1120	910	960	695	详见附图					140	170 f7	30	200
	L3	774	622	622	1030	1180	970	1030	200						6	200 f7	20	W200*5
	L4	862	710	710	1040	1200	990	1040	200						M16	30	150	(DIN5480)

型号 size	轴伸尺寸 * shaft dimension			法兰尺寸 flange dimension				FP 锁紧盘空心轴尺寸 hollow shaft for shrink disc dimension					FZ 内花键空心轴尺寸 hollow splined shaft dimension				
	d E S	e1 e2 e3	b t	c1 c2 c3	c4 c5 c6	n3 S3 W3	W1 K W2	DP DP1 P	P1 P2 P3	φ Df * φ df * P4 M1 扭矩/torque	T1 T2	Z Z1 Z2	g1 g2 g3	g4 dz3 dz4	Dz (DIN...) Dz1		
SPN09	100 m6	150		7	74	12	278 f7	120 H7	140	φ 165x φ 290x68		82	11	76	A80*74*36*10H		
	165	7.5	28	20	25	17	314	-	165	M16-10.9		84	32	170±2	(DIN5482)		
	M24	50	106.4	141	14/11	225 f7	350</										

尺寸 Dimensions

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SPN09 R... ~ SPN17 R...



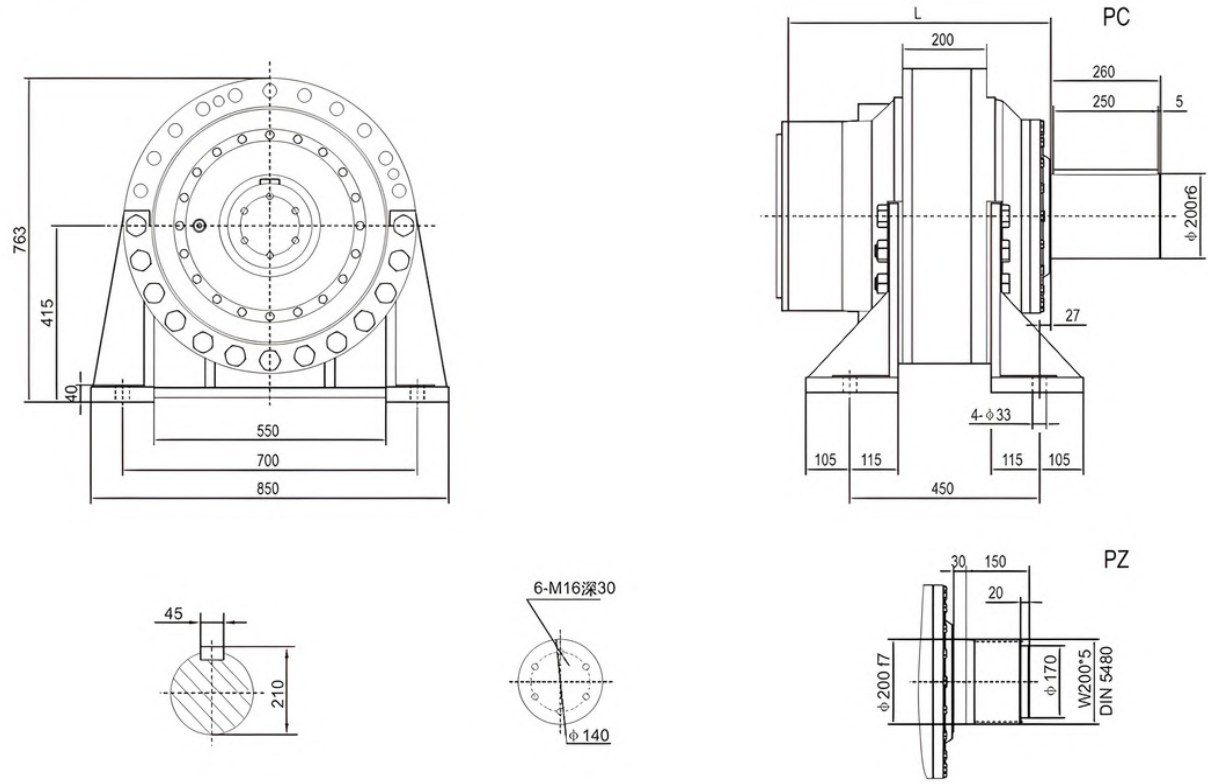
SPN09 R... ~ SPN17 R...

型号 size	级数 Stage	R			Kg			X1	X2	X3	da L1 L2	底脚尺寸 foot dimension					PC/HC 轴伸尺寸 shaft dimension		
		PC PZ	HC HZ	FP FZ	HZ HC	PC PZ	FZ					h H	A B C	A1 B1	m1 m2 n	n1 S1 g	d E S	e1 e2 e3	S1 d t
SPN09	R2	386	245	220	172	188	152	157	245	225	350		445		265	4	100m6	150	
	R3	448	307	282	153	170	133	138	190	140	144	225 414	400	356 300	100	26	165	7.5	28 106.4
	R4	513	372	347	154	171	135	139	190	122	119		24		50	54	M24	50	
SPN10	R2(B)	495	315	295	270	290	250	260	294	345	400		500		300	4	110m6	200	
	R2(C)	513	333	313	290	311	270	280	294	390	480	250 469	420	406 320	100	26	210	5	28 116
	R3	561	381	361	198	217	170	175	190	140	245		26		50	90	M24	50	
	R4	581	401	381	203	222	177	181	190	140	245	110							
SPN11	R2(B)	550	340	340	322	395	301	312	294	345	400	428	550		330	4	120m6	180	
	R2(C)	550	340	340	333	405	312	322	294	390	480	134	430	457 334	120	33	210	15	32 127
	R3	577	367	367	286	358	265	275	245	225	345	280 516	30		48	110	M24	50	
	R4	639	429	429	267	340	246	256	190	140	245	134							
SPN13	R2(B)	611	384	384	374	468	343	364	294	345	400	445	550		330	4	140m6	180	
	R2(C)	611	384	384	384	478	353	374	294	390	480	280 528	520	457 400	120	33	200	10	36 148
	R3	650	423	423	353	447	322	343	245	225	345	169	30		60	111	M24	50	
	R4	712	485	485	335	428	303	324	190	140	245	169							
SPN14	R3(B)	848	569	569	590	720	500	550	294	345	400	542	620	508	280	8	160m6	220	
	R3(C)	856	587	587	600	730	510	560	294	390	480	192	556	368	140	33	240	10	40 169.4
	R4	914	635	635	550	680	460	510	245	225	345	192	35	412	72	169	M24	50	
SPN15	R3(B)	890	611	611	613	748	520	572	294	345	400	542	620	508	280	8	160m6	220	
	R3(C)	890	611	611	624	759	530	582	294	390	480	192	556	368	140	33	240	10	40 169.4
	R4	917	638	638	572	707	478	530	245	225	345	192	35	412	72	169	M24	50	
SPN17	R3(B)	853	701	701	1100	1260	1050	1100	294	345	400	695	详见附图					250	
	R3(C)	853	701	701	1110	1270	1060	1110	294	390	480	200						5	45 210
	R4	892	740	740	1080	1230	1030	1080	245	225	345	200						30	

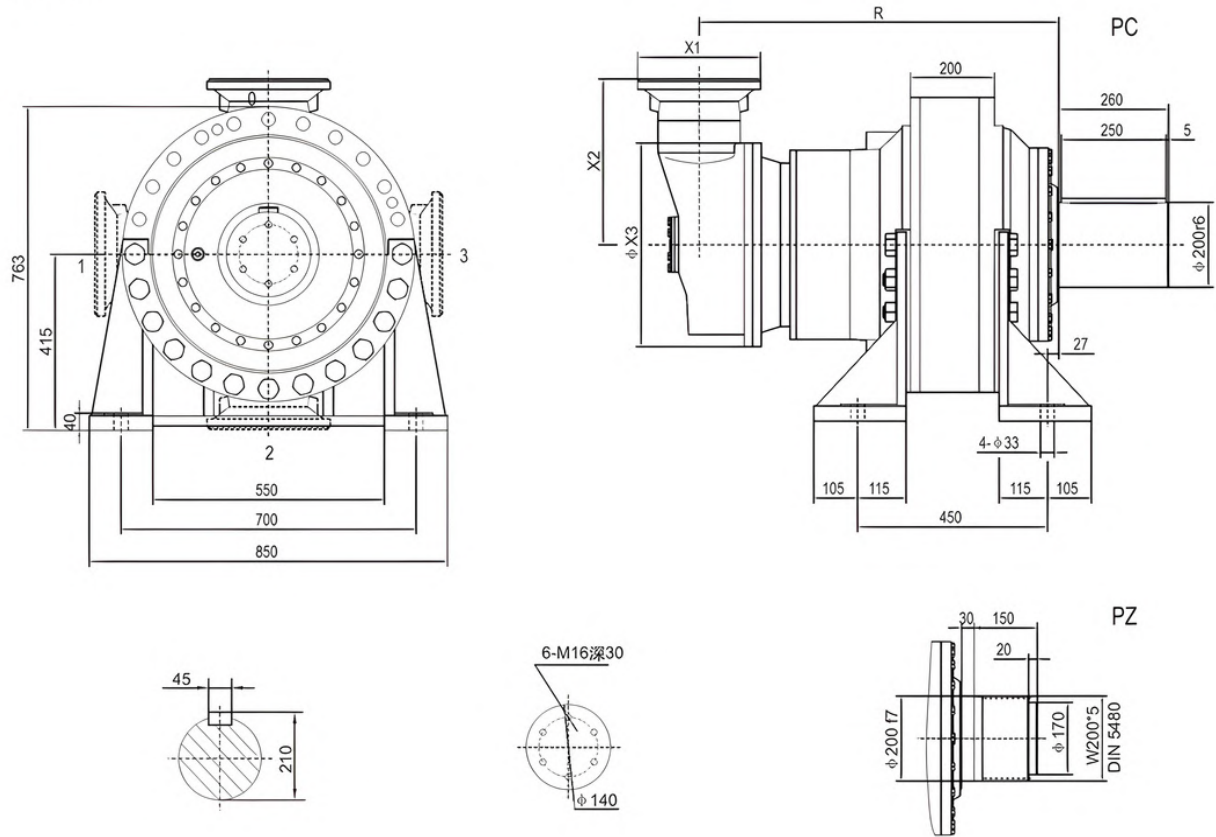
型号 size	PZ,HZ 花键尺寸 splined shaft dimension				法兰尺寸 flange dimension				FP 锁紧盘空心轴尺寸 hollow shaft for shrink disc dimension				FZ 内花键空心轴尺寸 hollow splined shaft dimension			
	dc n2 S2	dz1 dz2 e4	f1 f2 f3	F dz	c1 c2 c3	c4 c5 c6	n3 S3 W3	W1 K W2	DP DP1 P	P1 P2 P3	φ Df * φ df * P4 M1 扭矩/torque	T1 T2	Z Z1 Z2	g1 g2 g3	g4 dz3 dz4	Dz (DIN...) Dz1
SPN09	45	70 f7	10	90	7	74	12	278 f7	120 H7	140	φ 165x φ 290x68		82	11	76	A80*74*36*10H
	3	85 f7	9	B80*74*36*9e	20	25	17	314	-	165	M16-10.9		84	32	170 ±	

尺寸
Dimensions 25

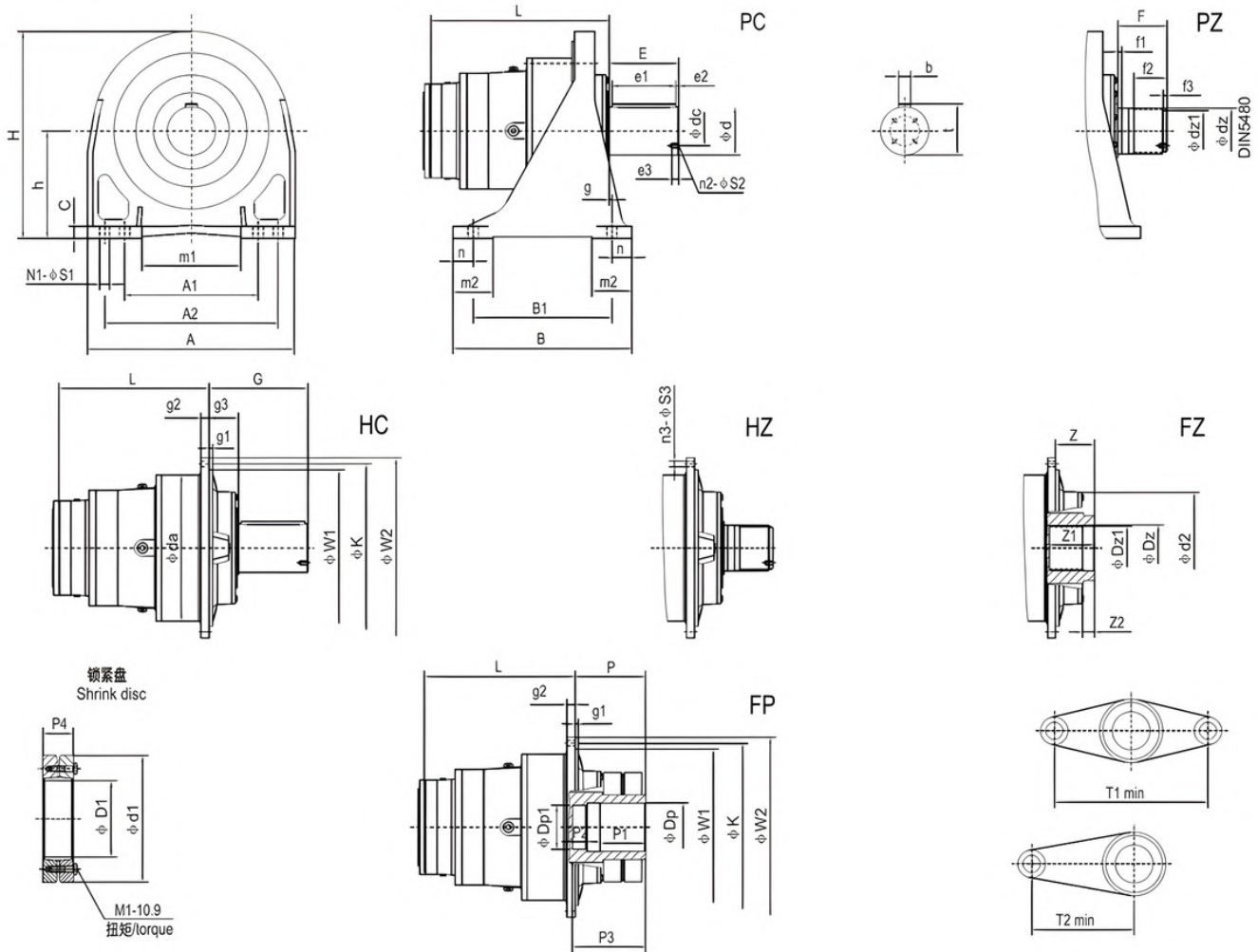
SPN17 L...



SPN17 R...



SPN16 L... ~ SPN18 L...



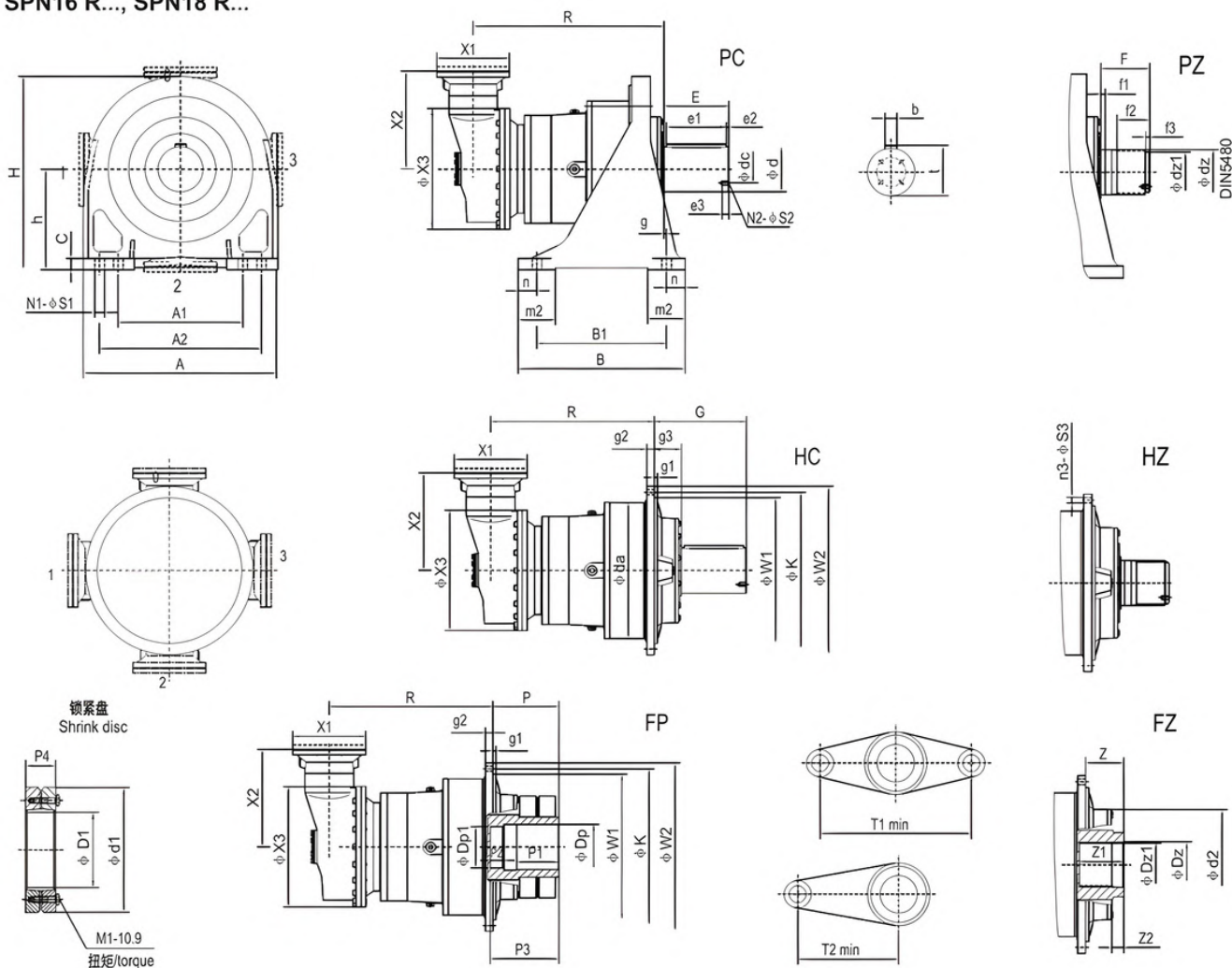
型号 size	级数 Stage	L		Kg				底脚尺寸 foot dimension					PC/HC 轴伸尺寸 shaft dimension			
		PC PZ	HC/HZ FP FZ	HZ HC	PC PZ	FZ	FP	h H	A B C	A1 A2 B1	m1 m2 n	n1 S1 g	d dc	n2 S2	E e1 e2	b t e3
SPN16	L2	541	431	610	830	540	560	400 770	780	500	370	8	180 110	4 M16	260	45
	L3	674	564	660	870	590	610		670	650	150	38			240	190
	L4	763	653	680	890	610	630		45	520	75	10			10	26
SPN18	L2	677	547	990	1300	830	860	500 935	900	610	460	8	250 150	4 M24	330	56
	L3	889	759	1350	1660	1190	1230		800	760	190	38			310	262
	L4	1022	892	1400	1710	1250	1280		50	650	75	30			10	41

型号 size	PZ,HZ 花键尺寸 splined shaft dimension		法兰尺寸 flange dimension			FP 锁紧盘空心轴尺寸 hollow shaft for shrink disc dimension				FZ 内花键空心轴尺寸 hollow splined shaft dimension	
	f1 f2 f3	dz (DIN5480) dz1 F	g1 g2 g3	W1 K W2	G n3 S3	P1 P2 P3	DP DP1 P	T1 T2	φ D1 * φ d1 * P4 M2 扭矩/torque	Z Z1 Z2	Dz-H9 (DIN5480) Dz1 d2
SPN16	15	W170*5*32	13	580 f7	370	170	182 H7	1500 1200	φ 240* φ 405*144 M20 490	145	N170*5*32
	125	150 f6	30	625	30	45	165 H7			169	172 H7
	15	165	110	670	22	275	265			44	415
SPN18	15	W220*5*42	15	700 f7	460	170	220 H7	1800 1400	φ 280* φ 460*172 M20 490	155	N220*5*42
	160	200 f7	35	750	32	30	200 H7			187	222 H7
	20	210	130	800	26	315	305			45	480

尺寸 Dimensions

25

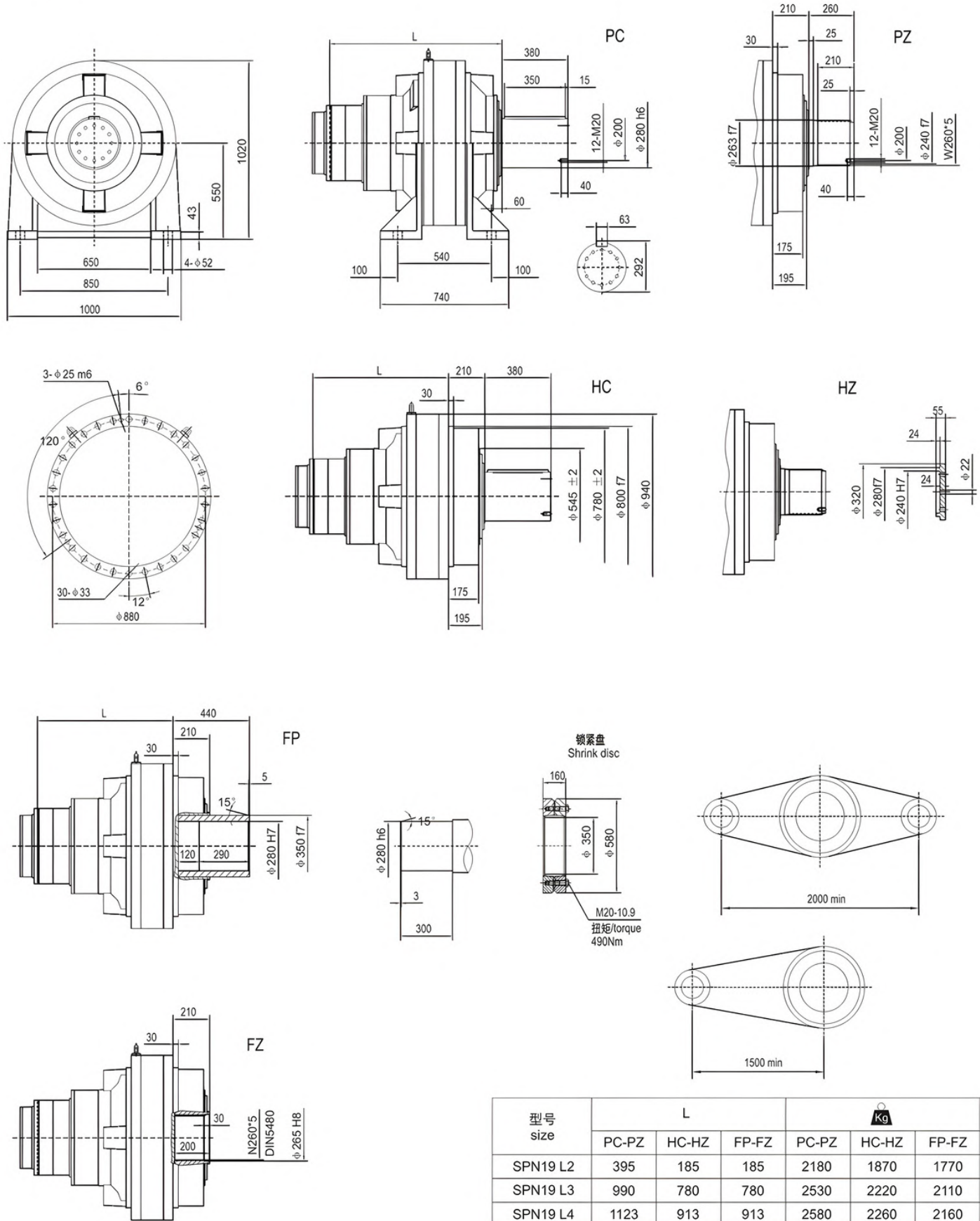
SPN16 R..., SPN18 R...



型号 size	级数 Stage	R		Kg				X1	X2	X3	底脚尺寸 foot dimension				PZ,HZ 花键尺寸 splined shaft dimension		
		PC PZ	HC/HZ FP FZ		PC PZ	FZ	FP				h H	A B C	A1 A2 B1	m1 m2 n	n1 S1 g	f1 f2 f3	Dz(DIN5480) dz1 F
SPN 16	R3(B)	766	656	740	950	660	680	294	345	400	400	780	500	370	8	15	W170*5*32
	R3(C)	766	656	750	960	670	690	294	390	480	770	670	650	150	38	125	150 f6
	R4	793	683	720	930	640	660	245	225	345		45	520	75	10	15	165
SPN 18	R4(B)	1115	985	1470	1790	1320	1350	294	345	400	500	900	610	460	8	15	W220*5*42
	R4 c	1115	985	1485	1800	1330	1360	294	390	480	935	800	760	190	38	160	200 f6
												50	650	75	30	20	210

型号 size	PC/HC 轴伸尺寸 shaft dimension				法兰尺寸 flange dimension			FP 锁紧盘空心轴尺寸 hollow shaft for shrink disc dimension				FZ 内花键空心轴尺寸 hollow splined shaft dimension	
	d dc	n2 S2	E e1 e2	b t e3	g1 g2 g3	W1 K W2	G n3 S3	P1 P2 P3	DP DP1 P	T1 T2	φ D1 * φ d1 * P4 M2 扭矩/torque	Z Z1 Z2	Dz-H9 (DIN5480) Dz1 d2
SPN 16	180	4	260	45	13	580 f7	370	170	182 H7	1500	φ 240* φ 405*144	145	N170*5*32
	110	M16	240	190	30	625	30	45	165 H7	1200	M20	169	172 H7
			10	26	110	670	22	275	265		490	44	415
SPN 18	250	4	330	56	15	700 f7	460	170	220 H7	1800	φ 280* φ 460*172	155	N220*5*42
	150	M24	310	262	35	750	32	30	200 H7	1400	M20	187	222 H7
			10	41	130	800	26	315	305		490	45	480

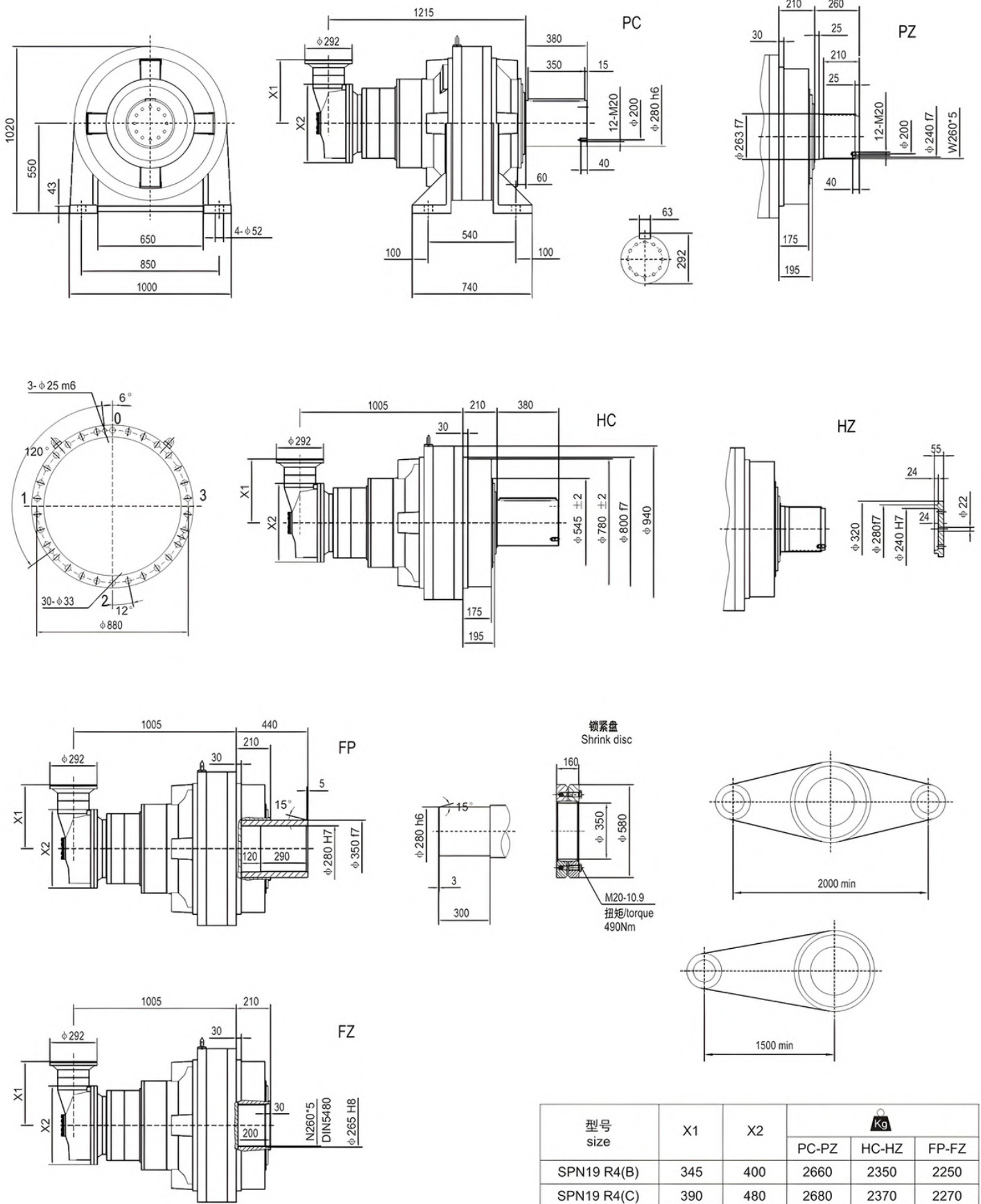
SPN19 L...



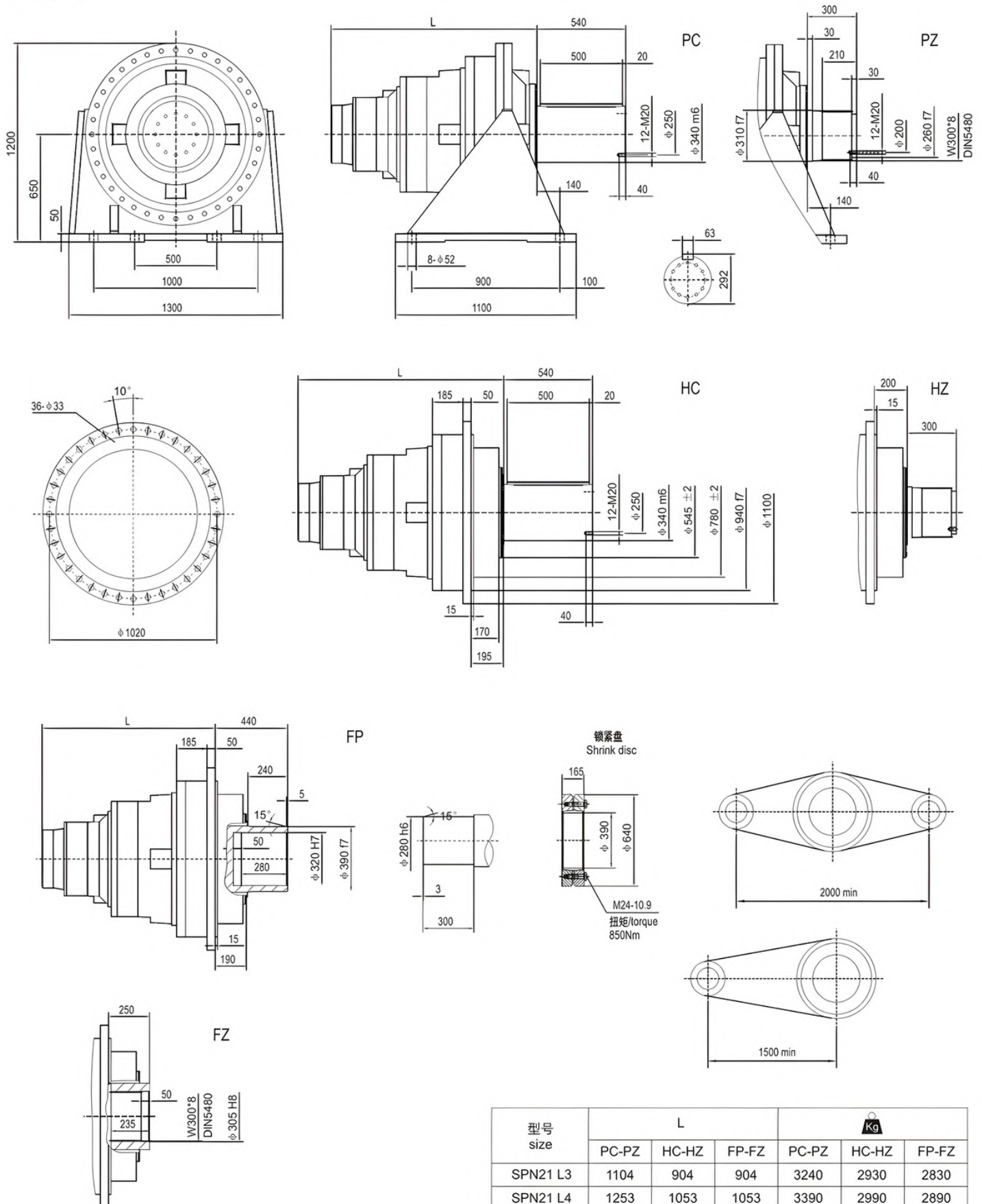
尺寸 Dimensions

25

SPN19 R...



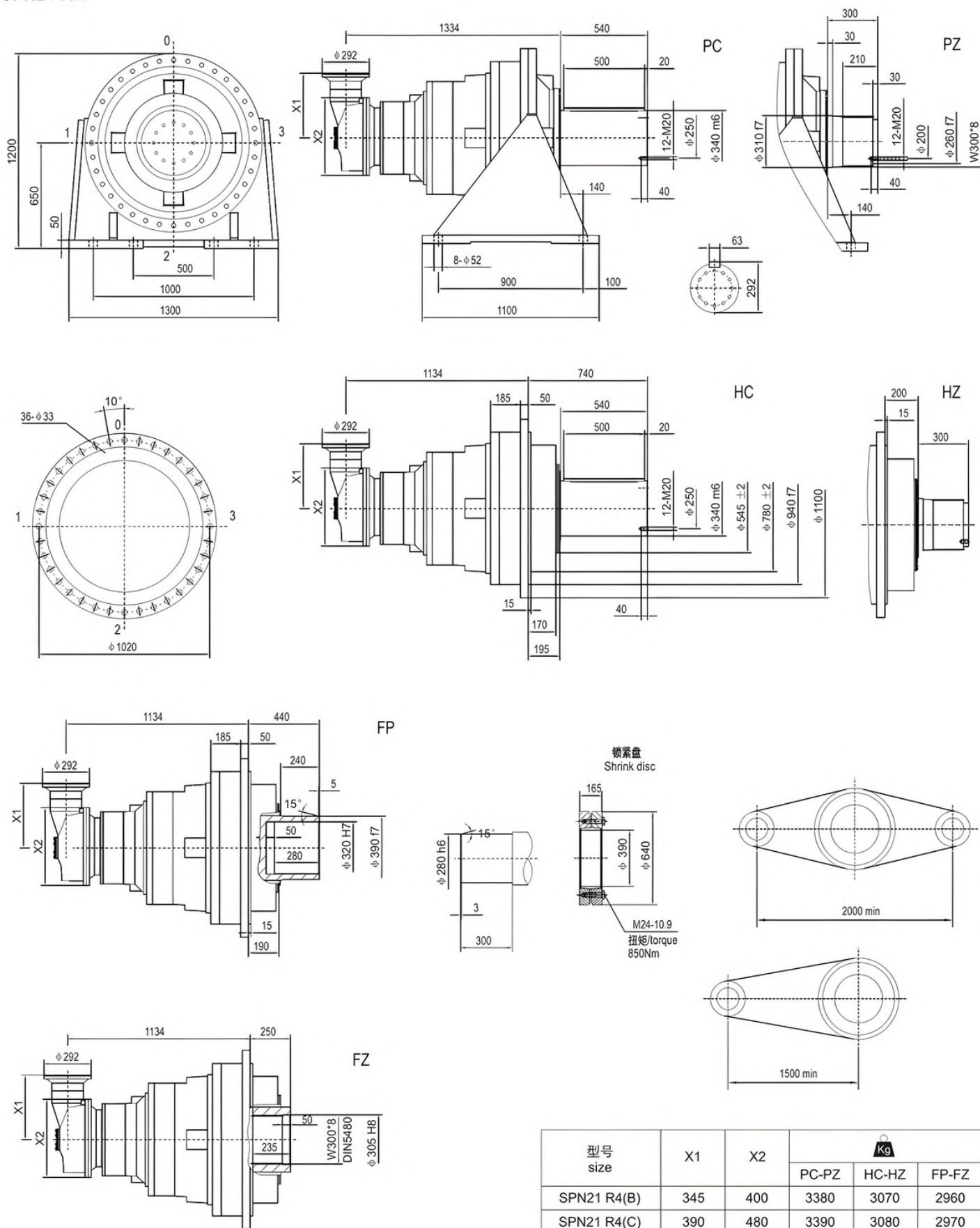
SPN21 L...



尺寸 Dimensions

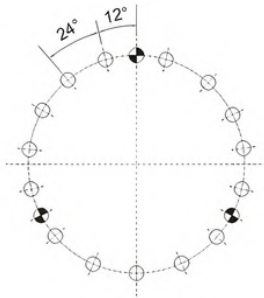
25

SPN21 R...

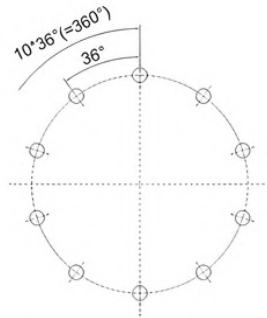


输出法兰联接孔型式 从输出轴侧观察

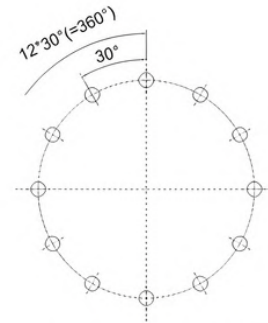
Hole Patterns on Output Flanges Viewing on output shaft



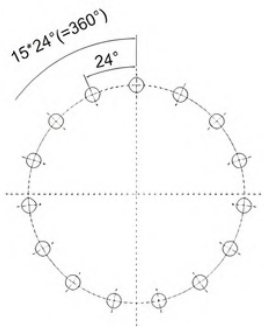
规格/Size SPN10



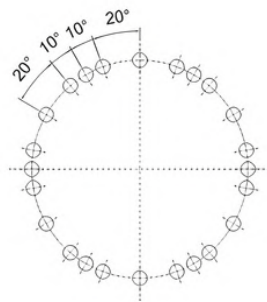
规格/Size SPN03, SPN05, SPN07



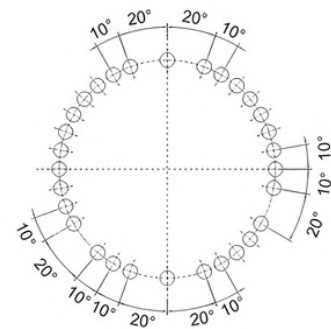
规格/Size SPN06, SPN09



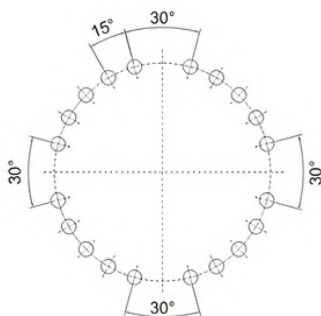
规格/Size SPN10



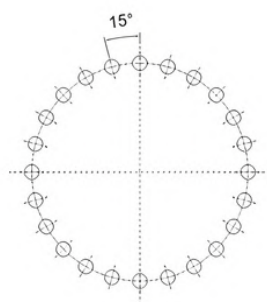
规格/Size SPN11



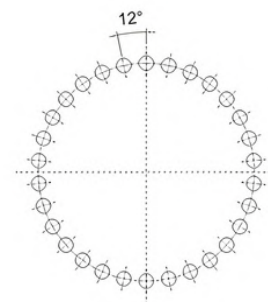
规格/Size SPN13



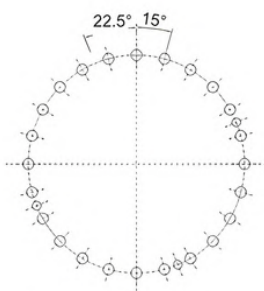
规格/Size SPN14、SPN15
(HC, HZ, FZ)



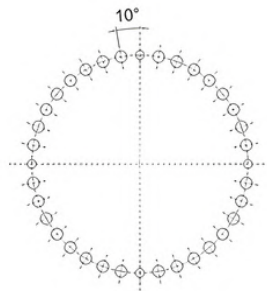
规格/Size SPN14、SPN15
(FP)



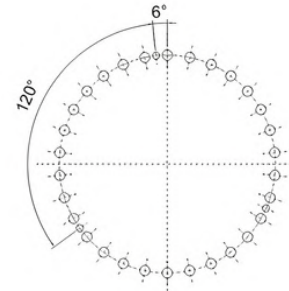
规格/Size SPN16



规格/Size SPN17



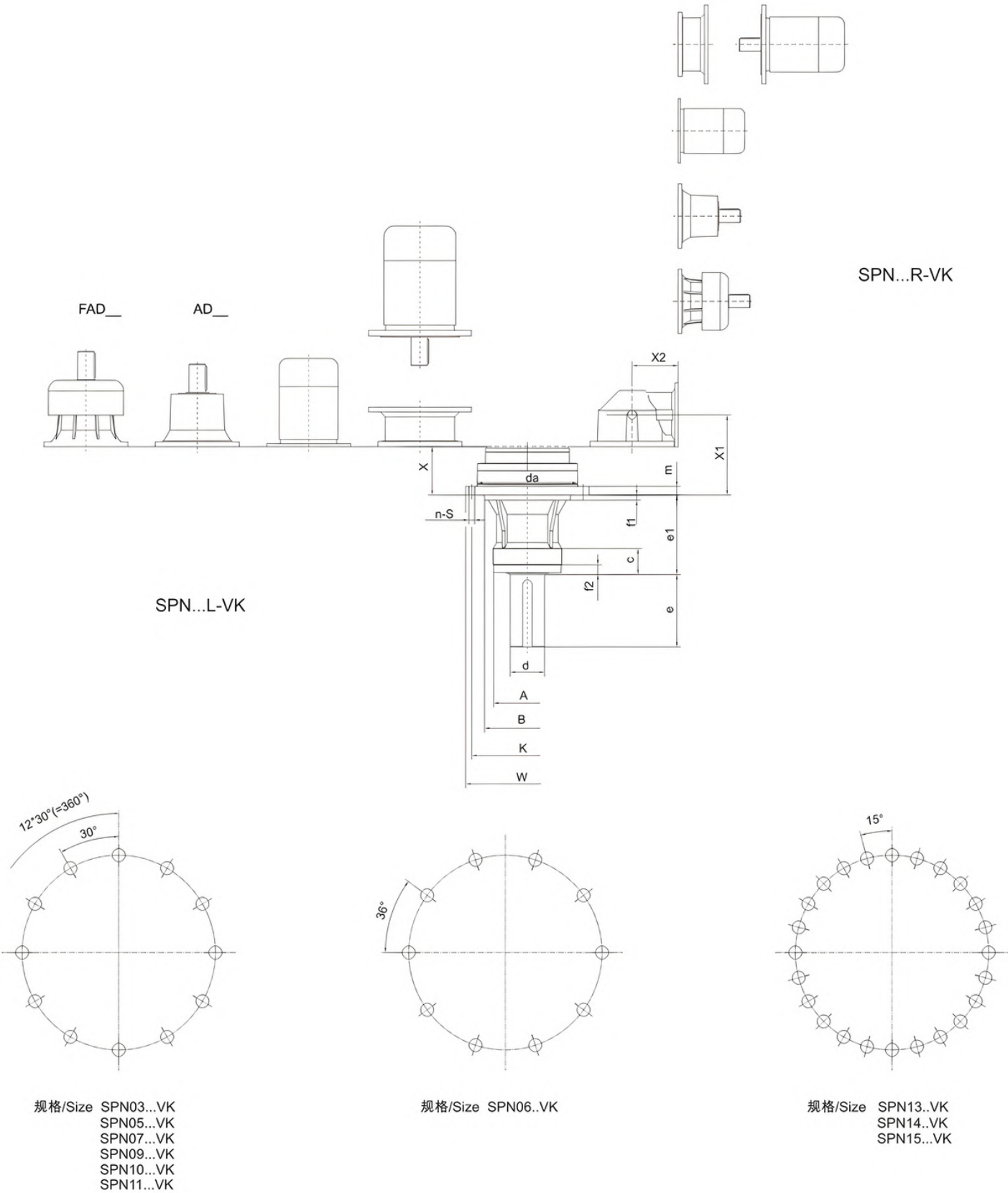
规格/Size SPN18



规格/Size SPN19

尺寸 Dimensions 25

VK - 搅拌机用加强型平行实心轴输出
VK Reinforced output with parallelshaft for stirres and mixers



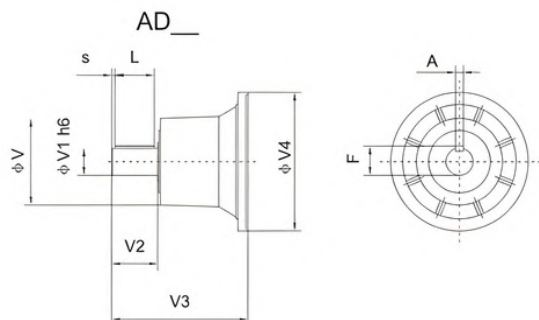
型号 size	级数 Stage	X		级数 Stage	X1	X2		ϕda ϕW m	ϕd e e1	C f1 f2	ϕA ϕB ϕK	n ϕS
SPN03	L1	51	65	R2	143	140	85	$\phi 245$	$\phi 80$ m6	75	$\phi 180$ h7	12 $\phi 13$
	L2	104	70	R3	196	122	83	$\phi 290$	170	20	$\phi 195$ h7	
	L3	157	73	R4	249	122	87	21	200	29	$\phi 265$	
	L4	210	77									
SPN05	L1	69	70	R2	161	140	90	$\phi 245$	$\phi 80$ m6	75	$\phi 180$ h7	12 $\phi 13$
	L2	134	77	R3	226	122	92	$\phi 290$	170	20	$\phi 195$ h7	
	L3	187	81	R4	279	122	95	21	200	29	$\phi 265$	
	L4	240	85									
SPN06	L1	75	110	R2	212	140	130	$\phi 294$	$\phi 100$ m6	75	$\phi 200$ h7	10 $\phi 17$
	L2	140	120	R3	232	140	125	$\phi 360$	210	15	$\phi 250$ h7	
	L3	193	125	R4	285	122	120	25	230	28	$\phi 325$	
	L4	246	130									
SPN07	L1	80	145	R2	199	225	180	$\phi 350$	$\phi 120$ m6	95	$\phi 250$ h7	12 $\phi 17$
	L2	169	160	R3	261	140	170	$\phi 420$	210	25	$\phi 280$ h7	
	L3	234	170	R4	326	122	175	30	305	30	$\phi 380$	
	L4	287	175									
SPN09	L1	102	165	R2	221	225	200	$\phi 350$	$\phi 120$ m6	95	$\phi 250$ h7	12 $\phi 17$
	L2	191	180	R3	283	140	190	$\phi 420$	210	25	$\phi 280$ h7	
	L3	256	190	R4	348	122	195	30	305	30	$\phi 380$	
	L4	309	195									
SPN10	L1	107	200	R2(B)	315	345	320	$\phi 400$	$\phi 130$ m6	105	$\phi 300$ h8	12 $\phi 22$
	L2	243	230	R2(C)	333	390	340	$\phi 500$	250	20	$\phi 425$ h8	
	L3	308	240	R3	380	140	250	40	360	42	$\phi 460$	
	L4	361	245	R4	400	140	260					
SPN11	L1	129	295	R2(B)	354	345	420	$\phi 428$	$\phi 130$ m6	105	$\phi 300$ h8	12 $\phi 22$
	L2	262	340	R2(C)	354	390	430	$\phi 500$	250	20	$\phi 425$ h8	
	L3	351	350	R3	381	225	385	40	360	42	$\phi 460$	
	L4	416	360	R4	443	140	360					
SPN13	L1	158	380	R2	388	345	510	$\phi 455$	$\phi 150$ m6	130	$\phi 340$ h8	24 $\phi 22$
	L2	308	440	R3	388	390	520	$\phi 560$	250	18	$\phi 400$ h8	
	L3	397	450	R4	427	225	490	30	425	40	$\phi 510$	
	L4	462	460		489	140	470					
SPN14	L2	386	650	R3(B)	611	345	720	$\phi 542$	$\phi 180$ m6	130	$\phi 370$ h8	24 $\phi 22$
	L3	519	700	R3(C)	611	390	730	$\phi 640$	300	30	$\phi 470$ h8	
	L4	608	710	R4	638	225	690	36	480	30	$\phi 600$	
SPN15	L2	386	650	R3(B)	611	345	720	$\phi 542$	$\phi 180$ m6	130	$\phi 370$ h8	24 $\phi 22$
	L3	519	700	R3(C)	611	390	730	$\phi 640$	300	30	$\phi 470$ h8	
	L4	608	710	R4	638	225	690	36	480	30	$\phi 600$	

尺寸 Dimensions

25

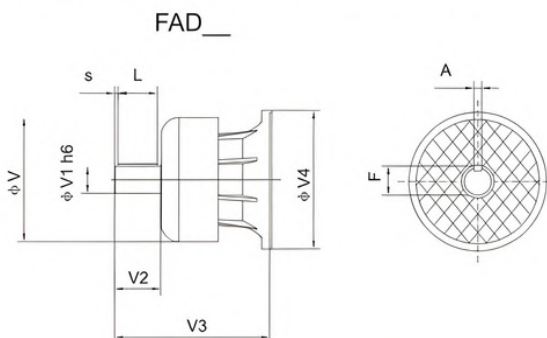
尺寸 AD_ & FAD_

输入轴 / Input shaft



Dimensions for AD_ & FAD_

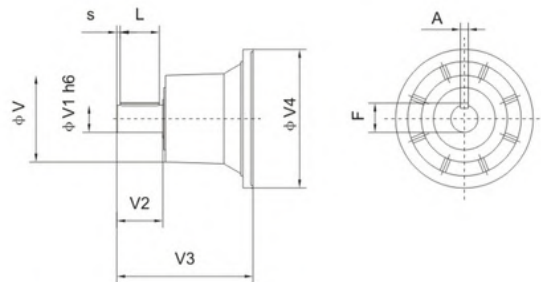
带风扇的输入轴 / Solid input shaft with fan



型号 size	级数 Stage	规格 code	V	V1	V2	V3	V4	A	F	L	S
SPN00 SPN01	L1	AD1	120	24	36	137.5	190	8	27	30	3
		AD2	120	38	58	158	190	10	41	50	4
	L2	AD1	120	24	36	137.5	190	8	27	30	3
		AD2	120	38	58	158	190	10	41	50	4
	L3	AD1	120	24	36	137.5	190	8	27	30	3
		AD2	120	38	58	158	190	10	41	50	4
	L4	AD1	120	24	36	137.5	190	8	27	30	3
		AD2	120	38	58	158	190	10	41	50	4
	R2/R3/R4	AD1	120	24	36	137.5	190	8	27	30	3
		AD2	120	38	58	158	190	10	41	50	4
SPN03 SPN05	L1	AD3	155	48	82	239	245	14	51.5	70	6
		FAD3	219.5	48	82	276	245	14	51.5	70	6
	L2	AD1	120	24	36	137.5	190	8	27	30	3
		AD2	120	38	58	158	190	10	41	50	4
	L3	AD1	120	24	36	137.5	190	8	27	30	3
		AD2	120	38	58	158	190	10	41	50	4
	L4	AD1	120	24	36	137.5	190	8	27	30	3
		AD2	120	38	58	158	190	10	41	50	4
	R2/R3/R4	AD1	120	24	36	137.5	190	8	27	30	3
		AD2	120	38	58	158	190	10	41	50	4
SPN06	L1	AD4	155	60	105	307	294	18	64	90	7.5
		FAD4	309	60	105	357	294	18	64	90	7.5
	L2	AD3	155	48	82	239	245	14	51.5	70	6
		FAD3	219.5	48	82	276	245	14	51.5	70	6
	L3	AD1	120	24	36	137.5	190	8	27	30	3
		AD2	120	38	58	158	190	10	41	50	4
	L4	AD1	120	24	36	137.5	190	8	27	30	3
		AD2	120	38	58	158	190	10	41	50	4
	R2/R3/R4	AD1	120	24	36	137.5	190	8	27	30	3
		AD2	120	38	58	158	190	10	41	50	4
SPN07 SPN09	L1	AD6	200	80	130	315	350	22	85	110	10
		FAD6	347.5	80	130	375	350	22	85	110	10
		AD5	155	60	105	313	350	18	64	90	7.5
		FAD5	309	60	105	363	350	18	64	90	7.5
	L2	AD3	155	48	82	239	245	14	51.5	70	6
		FAD3	219.5	48	82	276	245	14	51.5	70	6
	L3	AD1	120	24	36	137.5	190	8	27	30	3
		AD2	120	38	58	158	190	10	41	50	4
	L4	AD1	120	24	36	137.5	190	8	27	30	3
		AD2	120	38	58	158	190	10	41	50	4
	R2	AD3	155	48	82	239	245	14	51.5	70	6
		FAD3	219.5	48	82	276	245	14	51.5	70	6
	R3/R4	AD1	120	24	36	137.5	190	8	27	30	3
		AD2	120	38	58	158	190	10	41	50	4

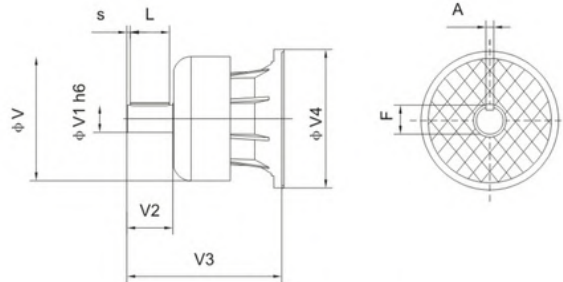
输入轴/Input shaft

AD__



带风扇的输入轴/Solid input shaft with fan

FAD__



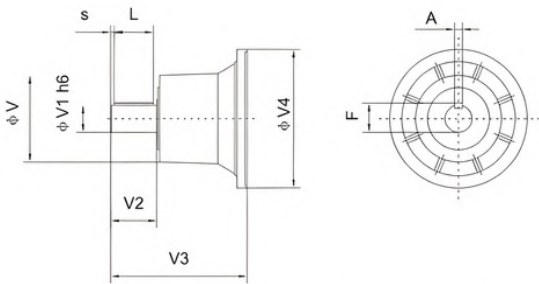
型号 size	级数 Stage	规格 code	V	V1	V2	V3	V4	A	F	L	S
SPN10	L1	AD7	200	80	130	377	400	22	85	110	10
		FAD7	347.5	80	130	457	400	22	85	110	10
	L2	AD4	155	60	105	307	294	18	64	90	7.5
		FAD4	309	60	105	357	294	18	64	90	7.5
	L3	AD3	155	48	82	239	245	14	51.5	70	6
		FAD3	219.5	48	82	276	245	14	51.5	70	6
SPN11	L4	AD1	120	24	36	137.5	190	8	27	30	3
		AD2	120	38	58	158	190	10	41	50	4
	R2	AD4	155	60	105	307	294	18	64	90	7.5
		FAD4	309	60	105	357	294	18	64	90	7.5
	R3/R4	AD1	120	24	36	137.5	190	8	27	30	3
		AD2	120	38	58	158	190	10	41	50	4
	L1	AD8	200	80	130	348	428	22	85	110	10
		FAD8	347.5	80	130	456	428	22	85	110	10
		AD6	200	80	130	315	350	22	85	110	10
		FAD6	347.5	80	130	375	350	22	85	110	10
	L2	AD5	155	60	105	313	350	18	64	90	7.5
		FAD5	309	60	105	363	350	18	64	90	7.5
SPN13	L3	AD3	155	48	82	239	245	14	51.5	70	6
		FAD3	219.5	48	82	276	245	14	51.5	70	6
	L4	AD1	120	24	36	137.5	190	8	27	30	3
		AD2	120	38	58	158	190	10	41	50	4
	R2(B) R2(C)	AD4	155	60	105	307	294	18	64	90	7.5
		FAD4	309	60	105	357	294	18	64	90	7.5
	R3	AD3	155	48	82	239	245	14	51.5	70	6
		FAD3	219.5	48	82	276	245	14	51.5	70	6
	R4	AD1	120	24	36	137.5	190	8	27	30	3
		AD2	120	38	58	158	190	10	41	50	4
SPN14	L1	AD8	200	80	130	343	445	22	85	110	10
		FAD8	347.5	80	130	451	445	22	85	110	10
	L2	AD6	200	80	130	315	350	22	85	110	10
		FAD6	347.5	80	130	375	350	22	85	110	10
	L3	AD5	155	60	105	313	350	18	64	90	7.5
		FAD5	309	60	105	363	350	18	64	90	7.5
	L4	AD3	155	48	82	239	245	14	51.5	70	6
		FAD3	219.5	48	82	276	245	14	51.5	70	6
	R2(B) R2(C)	AD4	155	60	105	307	294	18	64	90	7.5
		FAD4	309	60	105	357	294	18	64	90	7.5
	R3	AD3	155	48	82	239	245	14	51.5	70	6
		FAD3	219.5	48	82	276	245	14	51.5	70	6
SPN14	L2	AD7	200	80	130	377	400	22	85	110	10
		FAD7	347.5	80	130	457	400	22	85	110	10
	L3	AD4	155	60	105	307	294	18	64	90	7.5
		FAD4	309	60	105	357	294	18	64	90	7.5
	L4	AD3	155	48	82	239	245	14	51.5	70	6
		FAD3	219.5	48	82	276	245	14	51.5	70	6
SPN14	R3(B) R3(C)	AD4	155	60	105	307	294	18	64	90	7.5
		FAD4	309	60	105	357	294	18	64	90	7.5
	R4	AD1	120	24	36	137.5	190	8	27	30	3
		AD2	120	38	58	158	190	10	41	50	4

尺寸
Dimensions

25

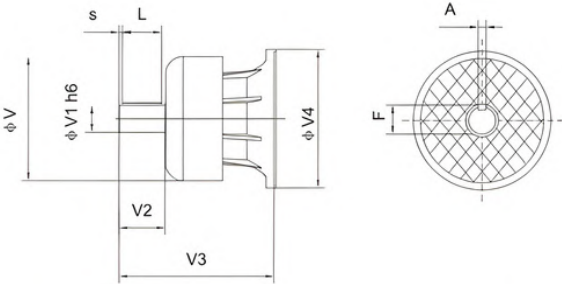
输入轴 / Input shaft

AD__



带风扇的输入轴 / Solid input shaft with fan

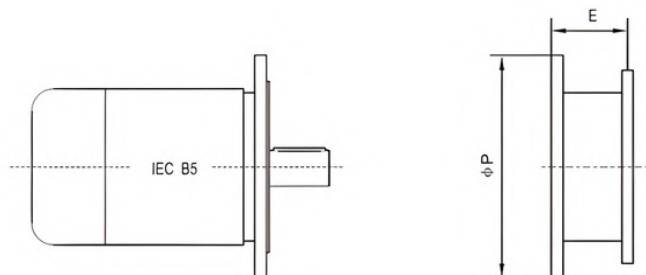
FAD__



型号 size	级数 Stage	规格 code	V	V1	V2	V3	V4	A	F	L	S
SPN15	L1	AD9	320	120	210	523	542	32	127	180	15
	L2	AD8	200	80	130	348	428	22	85	110	10
	L3	FAD8	347.5	80	130	456	428	22	85	110	10
		AD6	200	80	130	315	350	22	85	110	10
		FAD6	347.5	80	130	375	350	22	85	110	10
		AD5	155	60	105	313	350	18	64	90	7.5
SPN15 SPN16	L4	FAD5	309	60	105	363	350	18	64	90	7.5
		AD3	155	48	82	239	245	14	51.5	70	6
	R3(B) R3(C)	FAD3	219.5	48	82	276	245	14	51.5	70	6
		AD4	155	60	105	307	294	18	64	90	7.5
	R4	FAD4	309	60	105	357	294	18	64	90	7.5
		AD3	155	48	82	239	245	14	51.5	70	6
SPN17	L2	FAD3	219.5	48	82	276	245	14	51.5	70	6
		AD8	200	80	130	343	445	22	85	110	10
	L3	FAD8	347.5	80	130	451	445	22	85	110	10
		AD6	200	80	130	315	350	22	85	110	10
		FAD6	347.5	80	130	375	350	22	85	110	10
		AD5	155	60	105	313	350	18	64	90	7.5
	L4	FAD5	309	60	105	363	350	18	64	90	7.5
		AD3	155	48	82	239	245	14	51.5	70	6
	R3(B) R3(C)	FAD3	219.5	48	82	276	245	14	51.5	70	6
		AD4	155	60	105	307	294	18	64	90	7.5
SPN18	L2	FAD4	309	60	105	357	294	18	64	90	7.5
		AD3	155	48	82	239	245	14	51.5	70	6
	L3	FAD3	219.5	48	82	276	245	14	51.5	70	6
		AD8	200	80	130	348	428	22	85	110	10
	L4	FAD8	347.5	80	130	456	428	22	85	110	10
		AD6	200	80	130	315	350	22	85	110	10
		FAD6	347.5	80	130	375	350	22	85	110	10
	R4(B) R4(C)	AD5	155	60	105	313	350	18	64	90	7.5
SPN19	L3	FAD5	309	60	105	363	350	18	64	90	7.5
		AD4	155	60	105	307	294	18	64	90	7.5
	L4	FAD4	309	60	105	357	294	18	64	90	7.5
		AD3	155	48	82	239	245	14	51.5	70	6
	R4(B) R4(C)	FAD3	219.5	48	82	276	245	14	51.5	70	6
		AD4	155	60	105	307	294	18	64	90	7.5
	R4(B) R4(C)	FAD4	309	60	105	357	294	18	64	90	7.5
SPN21	L3	AD9	320	120	210	524	542	32	127	180	15
		AD8	200	80	130	348	428	22	85	110	10
	L4	FAD8	347.5	80	130	456	428	22	85	110	10
		AD6	200	80	130	315	350	22	85	110	10
		FAD6	347.5	80	130	375	350	22	85	110	10
		AD5	155	60	105	313	350	18	64	90	7.5
	R4(B) R4(C)	FAD5	309	60	105	363	350	18	64	90	7.5
		AD4	155	60	105	307	294	18	64	90	7.5

电机适配器

Electric motor setting



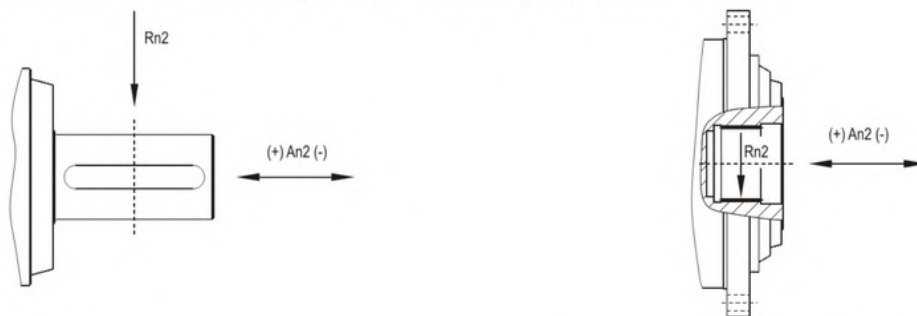
型号 size	级数 Stage	AM71		AM80/AM90		AM100/AM112		AM132		AM160		AM180		AM200		AM225		AM250					
		E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P	E	P				
SPN00	L1/L2/L3/L4	65	160	84	200	94	250	114	300	-													
SPN01	R2/R3/R4	65	160	84	200	94	250	114	300	-													
SPN03	L1	-						114	300	144	350	144	350	174	400	-							
	L2/L3/L4	65	160	84	200	94	250	114	300	144	350	-											
	R2/R3/R4	65	160	84	200	94	250	114	300	-													
SPN05	L1	-						114	300	144	350	144	350	174	400	-							
	L2/L3/L4	65	160	84	200	94	250	114	300	144	350	-											
	R2/R3/R4	65	160	84	200	94	250	114	300	-													
SPN06	L1	-								144	350	153	350	183	400	212	450	193	550				
	L2	-						114	300	144	350	144	350	174	400	-							
	L3/L4	65	160	84	200	94	250	114	300	144	350	-											
	R2/R3/R4	65	160	84	200	94	250	114	300	144	350	-											
SPN07 SPN09	L1	-										195	350	186	400	216	450	216	550				
	L2	-						114	300	144	350	144	350	174	400	-							
	L3/L4	65	160	84	200	94	250	114	300	144	350	-											
	R2	-						114	300	144	350	144	350	174	400	-							
	R3/R4	65	160	84	200	94	250	114	300	144	350	-											
SPN10	L1	-												271	400	301	450	281	550				
	L2	-								144	350	153	350	183	400	212	450	193	550				
	L3	-						114	300	144	350	144	350	174	400	-							
	L4	65	160	84	200	94	250	114	300	144	350	-											
	R2(B)	-										153	350	183	400	212	450	-					
	R2(C)	-						114	300	144	350	153	350	183	400	212	450	-					
	R3/R4	65	160	84	200	94	250	114	300	144	350	-											
SPN11 SPN13	L2	-										195	350	186	400	216	450	216	550				
	L3	-						114	300	144	350	144	350	174	400	-							
	L4	65	160	84	200	94	250	114	300	144	350	-											
	R2(B)/R(C)	-										153	350	183	400	212	450	193	550				
	R3	-						114	300	144	350	144	350	174	400	-							
	R4	65	160	84	200	94	250	114	300	144													

尺寸 Dimensions

25

输出轴上载荷

Permissible radial and axial loads on output shaft with $F_{h2}=n_2 \cdot h=10000$



型号 size	An2(+) (N)				An2(-) (N)			
	MZ-MC	PC-PZ	HZ-HC	FZ	MZ-MC	PC-PZ	HZ-HC	FZ
SPN00	20000	20000	40000	8000	15000	15000	40000	8000
SPN01	20000	40000	40000	8000	15000	40000	40000	8000
SPN03	55000	55000	55000	24000	44000	44000	44000	25000
SPN05	55000	55000	55000	24000	44000	44000	44000	25000
SPN06	70000	120000	120000	35000	44000	60000	60000	35000
SPN07	90000	160000	160000	45000	50000	80000	80000	45000
SPN09	-	160000	160000	36000	-	80000	80000	37000
SPN10	-	170000	170000	65000	-	100000	100000	52000
SPN11	-	200000	200000	65000	-	140000	140000	60000
SPN13	-	250000	250000	80000	-	160000	160000	75000
SPN14	-	280000	280000	90000	-	210000	210000	90000
SPN15	-	280000	280000	90000	-	210000	210000	90000
SPN16	-	360000	360000	150000	-	300000	300000	150000
SPN17	-	360000	360000	150000	-	300000	300000	150000
SPN18	-	500000	500000	200000	-	450000	450000	200000
SPN19	-	500000	500000	200000	-	450000	450000	200000
SPN21	-	180000	180000	1200000	-	240000	240000	180000

输出轴上径向载荷位置系数

Load application point factor for radial loading on output shaft

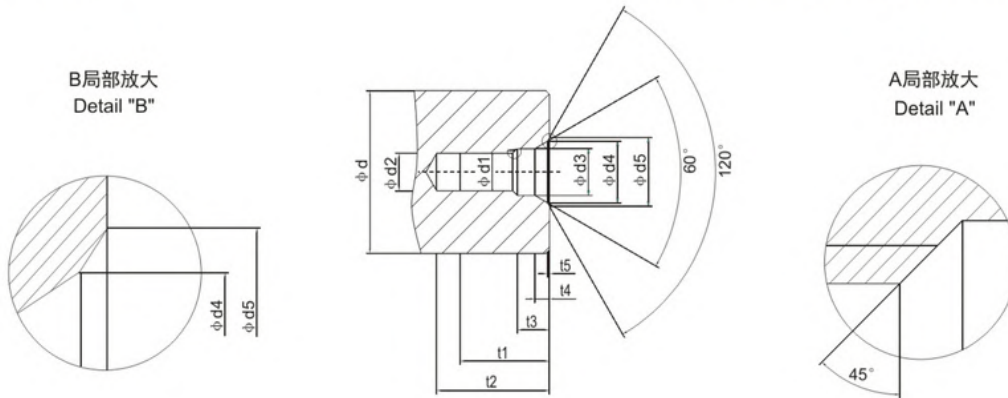
$F_{h2}=n_2 \times h$		10000	25000	50000	100000	500000	1000000
$f_{h2}(\text{SPN00-SPN07})$	MZ-MC-FZ	1	0.74	0.58	0.46	0.27	0.21
	HZ-HC-PC-PZ	1	0.76	0.61	0.50	0.31	0.25
$f_{h2}(\text{SPN09-SPN21})$	FZ	1	0.74	0.58	0.46	0.27	0.21
	HZ-HC-PC-PZ	1	0.76	0.61	0.50	0.31	0.25

C型轴伸中心孔

C型
带螺纹孔和护锥孔

Centre Holes Form C in Shaft Ends

Form C
Tapped hole, with straight running face and counterbore



推荐直径范围 Recommended diameters		C 型 / Form C												
大于/above	至/to	C型 中心孔 Centering	d1	d2(1)	d3	d4	d5	t1+2	t2		t3+1	t4≈	t5≈	
mm			mm											
16	21	CM6	M6	5	6.4	9.6	10.5	16	20	22	5	2.8	0.4	
21	24	CM8	M8	6.8	8.4	12.2	13.2	19	25	28	6	3.3	0.4	
24	30	CM10	M10	8.5	10.5	14.9	16.3	22	30	34	7.5	3.8	0.6	
30	38	CM12	M12	10.2	13	18.1	19.8	28	37	42	9.5	4.4	0.7	
38	50	CM16	M16	14	17	23	25.3	36	45	50	12	5.2	1.0	
50	85	CM20	M20	17.5	21	28.4	31.3	42	53	59	15	6.4	1.3	
85	130	CM24	M24	21	25	34.2	38	50	63	68	18	8	1.6	
130 2)	225 2)	CM30	M30 2)	26.5	31	44	48	60	77	83	17	11	1.9	
225 2)	320 2)	CM36	M36 2)	32	37	55	60	74	93	99	22	15	2.3	
320 2)	500 2)	CM42	M42 2)	37.5	43	65	71	84	105	111	26	19	2.7	
500 2)	710 2)	CM48	M48 2)	43	49	76	83	94	115	121	30	23	3.2	

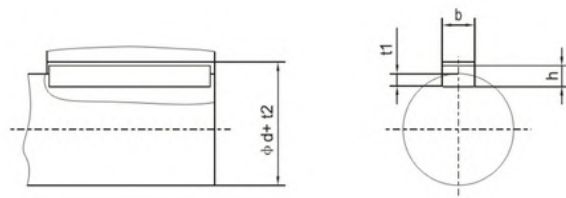
1) 螺纹底孔直径按标准GB196第一系列确定
2) 不是按照标准JB/ZQ4166确定尺寸

1) Drill diameters for tapping-size holes acc.to GB196 PT.1
2) Dimensions not acc.to JB/ZQ4166

平键和平键槽/ Parallel keyways and parallel keys

平键紧固方式，采用无锥度连接
Drive type fastening without taper action

平键和平键槽按照标准GB1096和GB1095
Parallel key acc.to GB1096 and Gb1095



直径 Nominal diameter d		宽度 Width b	高度 Height h	轴键槽深度 Depth of key -way in shaft t1	轮毂键槽深度 Depth of key -way in hub d+t2
大于 above	至/to	mm	mm	mm	mm
17	22	6	6	3.5	d+2.8
22	30	8	7	4	d+3.3
30	38	10	8	5	d+3.3
38	44	12	8	5	d+3.3
44	50	14	9	5.5	d+3.8
50	58	16	10	6	d+4.3
58	65	18	11	7	d+4.4
65	75	20	12	7.5	d+4.9
75	85	22	14	9	d+5.4
85	95	25	14	9	d+5.4
95	110	28	16	10	d+6.4
110	130	32	18	11	d+7.4
130	150	36	20	12	d+8.4
150	170	40	22	13	d+9.4
170	200	45	25	15	d+10.4
200	230	50	28	17	d+11.4
230	260	56	32	20	d+12.4
260	290	63	32	20	d+12.4
290	330	70	36	22	d+14.4
330	380	80	40	25	d+15.4
380	440	90	45	28	d+17.4

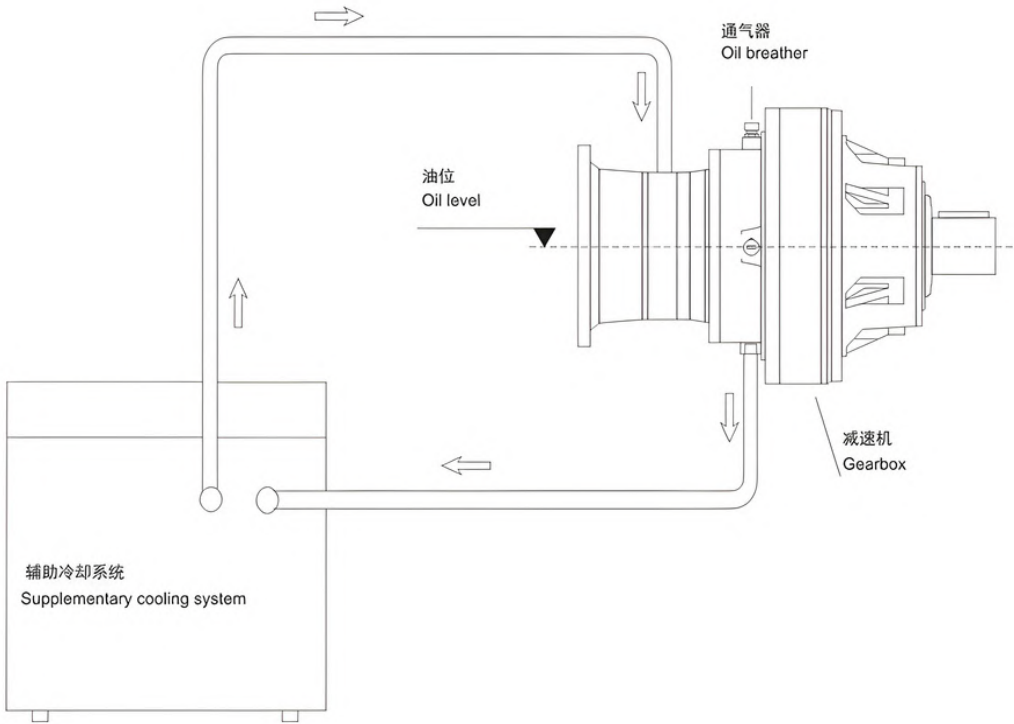
- 1) 轮毂平键键槽宽度的公差带按JS9确定，重载条件下按照P9确定
1) The tolerance zone for the hub keyway width b for Parallel keys is ISO JS9, or ISO P9 for heavy-duty operating conditions.

辅助冷却系统
Supplementary cooling systems

26

如果减速机传递的机械功率大于额定热功率，可指定使用辅助冷却系统。

Should the transmitted mechanical power be greater than the thermal capacity the unit is rated for,supplementary cooling systems can be specified.



独立冷却系统由空气-润滑油换热器、电动泵、滤清器和一套电气系统组成，电气系统含有保护电机的温度传感器。

Independent cooling systems are made up of an air-oil heat exchanger,a motor pump, a filter and an electric system that incorporates a thermostatic sensor that protects the electric momtor.

冷却单元运行时非常安静。

Cooling Uins are particulary quite in operation.

26.1 技术参数

26.1 Technical data

		CR1	CR2	CR3
消耗功率 Absorbed power	kw	0.55	0.75	1.1
润滑油流量 Oil flow rate	l/min	13	22	34
气体流量 Air flow rate	m3/h	850	1500	2000
1米处噪音值 Noise level at 1 m	dB(A)	68	70	75
重量 Weight	kg	24	36	58

26.2 选型规范

26.2 Selection criteria

如果机械功率P大于额定热功率Pt,需要冷却的热量[PS]可通过以下公式计算。

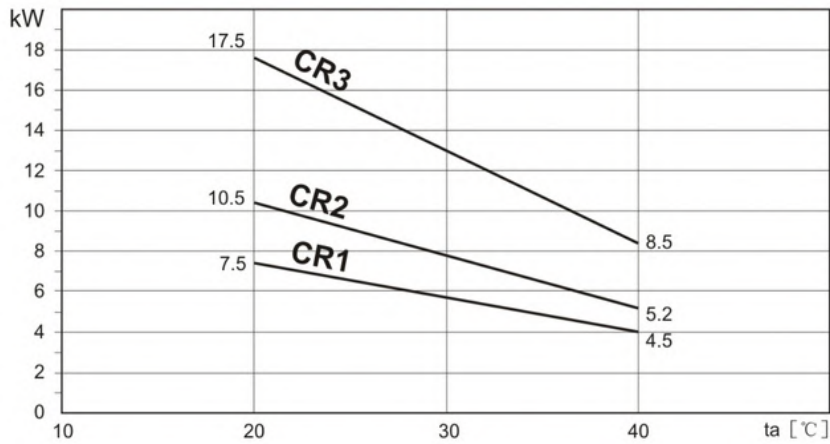
Power P to be transmitted is known.Once you have determined hat it is higher than thermal power Ps using this formula.

$$Ps=0.1 \cdot (P-Pt)$$

$$Ps=0.1 \cdot (P-Pt)$$

根据环境温度ta（20~-40℃）在图表中选取冷却系统规格。
参照表格检查所选择的冷却系统是否适合于减速机。

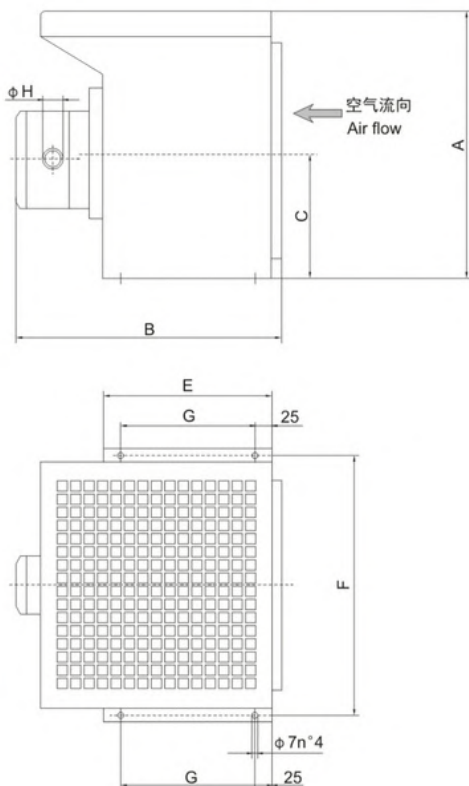
Select cooling system size in chart according to ambient temperature ta（20~-40℃）.
Check that the coolingsystem you have selected will fit The gearbox.



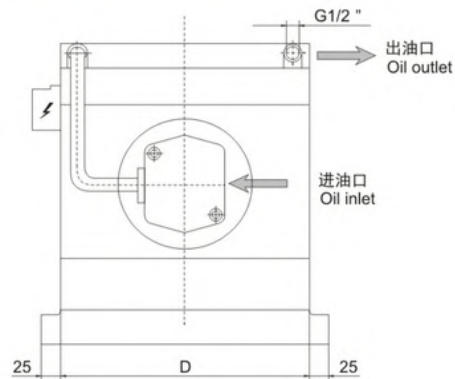
减速机 Gearbox	L1	L2	L3	L4	R2	R3	R4
SPN06	CR1	CR1	-	-	-	-	-
SPN07	CR1	CR1	-	-	CR1	-	-
SPN09	CR1	CR1	CR1	-	CR1	-	-
SPN10	CR2	CR1	CR1	-	-	CR1	-
SPN11	CR2	CR1	CR1	-	CR1	CR1	-
SPN13	CR2	CR1	CR1	-	CR1	CR1	-
SPN14	CR3	CR2	CR1	-	-	CR1	-

减速机 Gearbox	L1	L2	L3	L4	R2	R3	R4
SPN15	CR3	CR2	CR1	-	-	CR1	-
SPN16	CR3	CR2	CR1	-	-	CR1	-
SPN17	CR3	CR2	CR2	CR1	-	-	-
SPN18	CR3	CR2	CR2	CR1	-	-	-
SPN19	CR3	CR2	CR2	CR1	-	-	-
SPN21	CR3	CR2	CR2	CR2	-	-	-

26.3 尺寸



26.3 Dimensions



	A	B	C	D	E	F	G	H
CR1	410	395	193	370	250	400	200	G1/2 "
CR2	450	405	203	470	250	500	200	G3/4 "
CR3	495	455	225	520	290	550	240	G3/4 "

电机 Motor

27

27.1 电机按标准供货，若指定货高于此标准必须说明。

Y 普通三相异步电动机

电压 380V，频率 50HZ（其它电压、频率需说明）

防护等级：IP54

（指定IP55、IP56、IP65等需说明）

绝缘等级：B或F（指定F等需注明）

制动电机的制动器电压：380V或220V

（指定电压或其它电压需注明）

防爆电机防爆等级：d IIBT4（其它等级需注明）

变频电机频率范围：5-50HZ

(0-60HZ、0-120HZ或指定范围需提出)

电机的噪声、电流、效率、功率因素、额定转矩等项目按国家标准。

27.1 Motors comply with National standard ,please state if specification of other standards needed.

Y general tri-phase asynchronous motor data :

380V, 50HZ (other voltage & frequency should be stated)

Index of performance: IP54

(specification of IP55、IP56、IP65 should be stated)

Insulation class : B & F (using F should be stated)

Braking voltage of braking motor : 380V or 220V (other classes should be stated)

Explosion-proof class : d IIBT4 (other classes should be stated)

Frequency range : 5-50HZ (0-60HZ、0-120HZ or other range will be stated)

Noise、current、efficiency、power factor、nominal torque all comply with national standard.

27.2 以下要求及辅具需另行说明：

- * 指定电机配手动次方装置
- * 电机的热传感器
- * 不带风冷或强制风冷
- * 配选择编码器
- * 防水、防潮、防尘的要求

27.2 The following will be specified by customers:

- * Brake motor equipped with manual brake release
- * Thermal sensor
- * No air cooling or forced air cooling
- * Installation of rotation encoder
- * Water proof ,damp proof,dust proof

27.3 电机代号

四极三相异步电动机代号-Y

制动电机代号 - YEJ

防爆电机代号 - YB

变频电机代号 - YP

多速电机代号 - YD

变频制动电机代号 YPEJ

其它电机代号另咨询

27.3 Motor code

Y4-pole tri-phase asynchronous motor

YEJ Brake motor

YB Explosion-proof motor

YP Frequency conversion motor

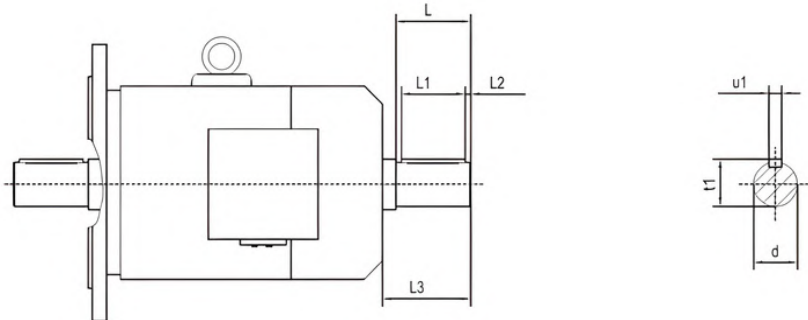
YD Multi-speed motor

YPEJ Frequency conversion brake motor

Other codes are available on request

27.4 电机双出轴

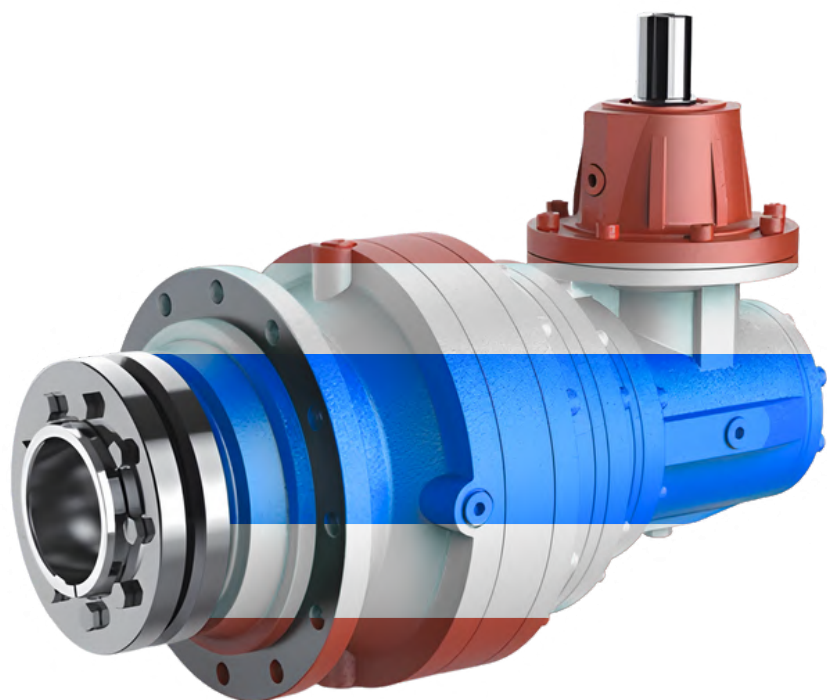
27.4 Double extended shaft motor



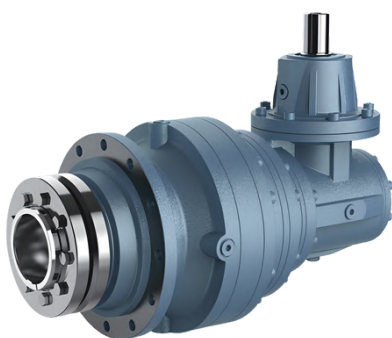
	71	80	90/100	112	132S	132M	160L	180	200-225
d	11	14	19	24	28	38	42	48	55
L	23	30	40	50	60	80	110	110	110
L1	20	22	32	40	50	70	70	80	90
L2	1	4	4	5	5	5	10	10	10
L3	25	31	42	55	65	85	115	115	115
t1	12.5	16	21.5	27	31	41	45	51.5	59
u1	4	5	6	8	8	10	12	14	16

27.4 电机接线盒未注明位置一般以0° 供货

27.4 In general, position of terminal box is at angular 0° without specification.



SPECIAL
colors



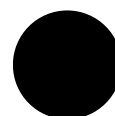
#004DBD



#02E560



#3884FF



#000000