RV CYCLOIDAL PIN WHEEL REDUCER

摆线针轮RV减速器

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术语和定义
TERMS AND DEFINITIONS

GB/T10107.1摆线针轮行星传动基本术语和JB/T10419摆线针轮行星传动、摆线齿轮和针轮、精度中确定的和下列术语和定义适用于本标准。

GB/T10107.1 the basic planetary transmission terms of cycloidal-pin wheel and JB/T10419 cycloidal-pin wheel planetary transmission, cycloid gear, pin wheel, and accuracy terms all suitable for this standard.

迟滞曲线 Hysteresis Curve

固定输入齿轮，向输出端施加转矩，得到转矩同扭转角的对应关系，绘出迟滞曲线。(图1)

The fixed input gear is applied to the output to obtain the corresponding relationship between the torque and the torsion angle, and the hysteresis curve is drawn. (Figure 1)

传动精度 Transmission Accuracy

传动精度(θ)：指输入任意旋转角时的理论旋转角度(θin)和实际输出旋转角度(θout)之间的差，公式表示: θ=θin/k-θout (k---速比值)。

Transmission accuracy (θ): refers to the input with arbitrary rotation angle when the theory of rotation angle (θin) and the actual output rotation angle (θout) between poor and formula: θ=θin/k-θout (k---Ratio values).

回差 Backlash

指在额定转矩的±3%处的迟滞曲线宽度的中间点的扭转角。(图1)

The intermediate point of the hysteresis curve of the nominal torque of 3%. (Figure 1)

齿隙 Backlash

指在额定转矩为 "零" 处的扭转角。(图1)

Torsion angle at the rated torque of zero. (Figure 1)

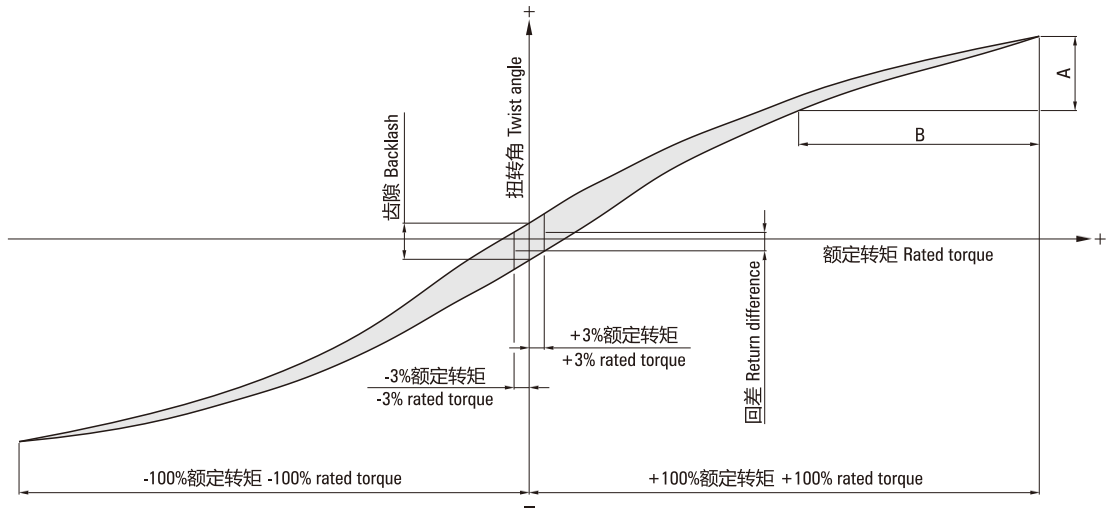
扭转刚度 Torsional Stiffness

扭转刚度 = B/A。(图1)

Torsional stiffness = B/A. (Figure 1)

● **图1—迟滞曲线** Figure 1 — Hysteresis curve

单位 Unit: (Nm/arc min)



术语和定义
TERMS AND DEFINITIONS

新增主轴承刚性定义 New Main Bearing Rigid Definition:

弯曲刚度 (Moment rigidity)

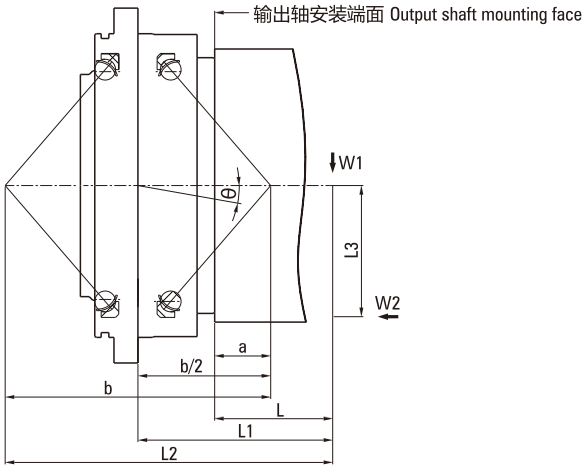
受到外部负载弯矩时，输出轴与负载弯矩成正比倾斜，产生θ角 (N·m/arc.min)。

When subjected to an external load moment, the output shaft is tilted in proportion to the load moment, resulting in an angle θ (N·m / arc.min).

θ=(W1l1+W2l3) / (Mt X 103)　Mt即为弯曲刚度（如图所示）。Mt is the bending stiffness (As shown).

弯曲刚度表示主轴承的刚度，用倾斜单位角度 (1arc.min) 所需要的载荷转矩值来表示。

Bending stiffness represents the stiffness of the main bearing, expressed in terms of the load torque required for a unit angle of inclination (1arc.min).



型号 Model	力矩刚性 Moment Of Rigidity (Nm/Arc.min)	a (mm)	b (mm)	型号 Model	力矩刚性 Moment Of Rigidity (Nm/Arc.min)	a (mm)	b (mm)
150BX	372	20.1	113.3	10CBX	421	28.0	119.2
190BX	931	29.6	143.7	27CBX	1068	38.2	150.3
220BX	1176	33.4	166.0	50CBX	1960	50.4	187.1
250BX	1470	32.2	176.6	100CBX	2813	58.7	207.6
280BX	2940	47.8	210.9	200CBX	9800	76.0	280.4
320BX	4900	56.4	251.4	320CBX	12740	114.5	360.5

术语概念解释 Explanation Of Terms Concept:

名词 Noun	解释 Explanation	作用 Effect	备注 Remarks
速比值 Speed ratio	这里指输出与输入的比值。 This refers to the output and input ratio.		RV-C的区别 RV-C difference
额定转速 Rated speed	在额定寿命实验时的转速。 Speed at rated life test.	寿命计算 Life calculation	
额定转矩 Rated torque	在额定寿命实验时的转矩。 Torque at rated life test.	寿命计算 Life calculation	
额定寿命 Rated life	指额定转速和额定力矩条件下，减速器的寿命。 Torque at rated life test.	寿命计算 Life calculation	
容许最大输出转矩 Allowable maximum output torque	是指允许的最高转速。 Refers to the maximum allowable speed.	转速校核 Speed check	主要使用时，壳体的温度不能超过60℃。 The main use, the shell temperature can not exceed 60℃.
启动、停止时的容许转矩 Permissible torque at start and stop	启动（停止）时，有惯性转矩引起，远高于减速机稳定时间转矩。 When starting (stop), there is inertia torque, which is much higher than the gearbox stable time torque.	启动，停止时力矩校核。 Start, stop when the torque check.	

名词 Noun	解释 Explanation	作用 Effect	备注 Remarks
瞬间最大容许转矩 Instantaneous maximum allowable torque	由于紧急停止或外部的冲击，可能会使减速机承受较大转矩。 Due to an emergency stop or an external shock, the gear unit may be subjected to a large torque.	冲击寿命计算 Impact life calculation	
力矩刚性 Moment of rigidity	当减速机输出轴的偏斜1arc min时，减速机承受的弯矩。 When the reducer output shaft deflection 1arc min, the reducer to withstand the bending moment.		
扭转刚性 Torsion rigidity	当减速机输出轴的转动1arc min时，减速机承受的转矩。 When the reducer output shaft rotation 1arc min, the reducer to withstand the torque.		
容许力矩 Allowable moment	指减速机能承受的外部弯矩。 Refers to the reducer can bear external bending moment.		
瞬时容许力矩 Instantaneous allowable moment	由于紧急停止等，特殊情况引起的瞬时最大弯矩。 Due to emergency stop, etc., caused by special circumstances instantaneous maximum moment.	弯矩校核 Bending moment check	
容许推力 Allow thrust	减速机能承受的最大负载力。 Reducer can withstand the maximum load force.	推力校核 Thrust check	
空程 Empty trip	在额定转矩±3%处的迟滞曲线宽度的重点的扭转角。 Hysteresis curve at the rated torque ±3% of the width of the focus of the torsion angle.	精度 Accuracy	
齿隙 Backlash	迟滞曲线的转矩“零”处的转角。 Hysteresis Curve Torque at "zero".	精度 Accuracy	
角度传动误差 Angle of transmission error	角度传递误差是指输入任意角度时，理论输出选择角度与实际输出旋转角之间的误差。 Angle of transmission error refers to the input of any angle, the theoretical output choice angle and the actual output angle between the error.	精度 Accuracy	
无负载运行转矩 No load running torque	无负载运转减速机所需要输入转矩。 No load operation reducer input torque required.		
增速启动转矩 Increase speed start torque	使减速器反转的最小输出端加载转矩。 The minimum output torque that reverses the gear unit is applied.		

产品构造、型号和尺寸
PRODUCT STRUCTURE, MODEL AND DIMENSION

减速器由输出法兰、支撑法兰、针齿壳、摆线齿轮、曲柄轴、行星齿轮、针齿、输入齿轮（选件）、主轴承、圆锥滚子轴承、滚针轴承连保持架、油封等组成。

The reducer is composed by output flange,s upporting flange, needle gear housing, cycloid gear, crank shaft, planetary gear, gear pin, input gear (optional), main bearing, cone roller bearings, needle roller bearings to keep frame and oil seal.

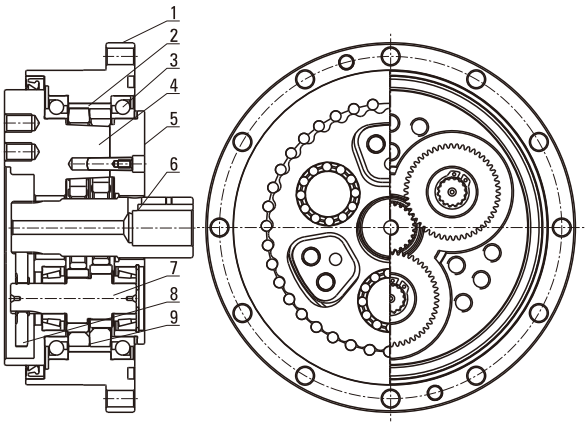
减速器构造 Reducer Structure

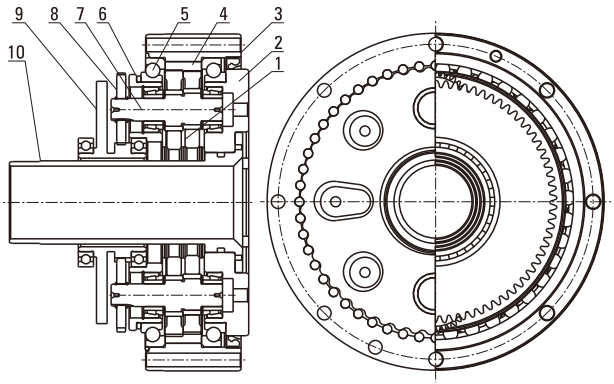
● **图2-E系列减速器构造** Figure 2-E series reducer structure

1-针齿壳 Needle tooth shell
2-针齿 Pin gear
3-主轴承 Main bearing
4-输出法兰 Output flange
5-支撑法兰 Supporting flange
6-输入轴 Input shaft
7-曲轴 Crankshaft
8-行星齿轮 Planetary gear
9-摆线齿轮 Cycloidal gear

● **图3-C系列减速器构造** Figure 3-C series reducer structure

1-摆线齿轮 Cycloidal gear
2-输出法兰 Output flange
3-针齿壳 Needle tooth shell
4-针齿 Pin gear
5-主轴承 Main bearing
6-支撑法兰 Supporting flange
7-曲轴 Crankshaft
8-行星齿轮 Planetary gear
9-中心齿轮 Central gear
10-低速管 Low speed tube





减速器外形尺寸 Reducer Outline Dimension

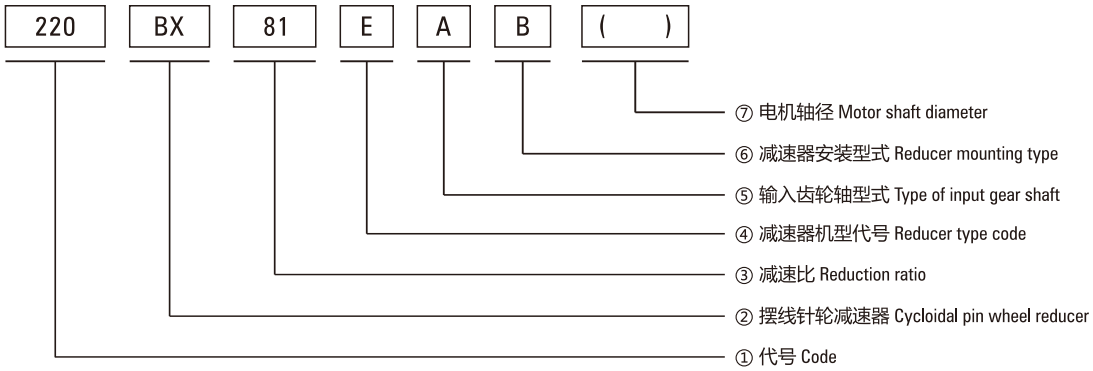
- E系列减速器外形尺寸参见P11~P21。 E series reducer outline dimensions see P11~P21.
- C系列减速器外形尺寸参见P22~P30。 C series reducer outline dimensions see P22~P30.

使用环境 Using Environment

● **在下列的环境条件下，减速器应能正常运行** In the following environmental conditions, the reducer should be able to operate normally:

——环境空气最高温度随季节而变化，但不超过40℃。The highest ambient temperature is changed by seasons and less than 40℃.
——环境空气最低温度为-10℃。The lowest ambient temperature is -10℃.

型号命名 Model Number



● ① **代号，具体见表1** Code, specific see table 1

减速器代号 Reducer Code

E 系列 E Series			C 系列 C Series		
代号 Code	外形尺寸(mm) Outline dimension (mm)	通用型号 General model	代号 Code	外形尺寸(mm) Outline dimension (mm)	原代号 The original code
120	Φ122	6E	10C	Φ145	150
150	Φ145	20E	27C	Φ181	180
190	Φ190	40E	50C	Φ222	220
220	Φ222	80E	100C	Φ250	250
250	Φ244	110E	200C	Φ345	350
280	Φ280	160E	320C	Φ440	440
320	Φ325	320E	500C	Φ520	520
370	Φ370	450E	/	/	/

● ② **BX：摆线针轮减速器** BX: Cycloidal pin wheel reducer

● ③ **81：减速比，具体见表2** 81: Gear ratio, specific see table 2

减速比 Reduction Ratio

E 系列 E Series		C 系列 C Series	
代号 Code	减速比 (输出法兰输出) Reduction ratio (output flange output)	新代号 New code	单体减速比 Monomer reduction ratio
120	43, 53.5, 59, 79, 103	10CBX	27.00
150	81, 105, 121, 141, 161	27CBX	36.57
190	81, 105, 121, 153	50CBX	32.54
220	81, 101, 121, 153	100CBX	36.75
250	81, 111, 161, 175.28	200CBX	34.86
280	81, 101, 129, 145, 171	320CBX	35.61
320	81, 101, 118.5, 129, 141, 171, 185	500CBX	37.34
370	81, 101, 118.5, 129, 154.8, 171, 192.4	/	/

注1: E系列如由外壳 (针齿壳) 输出，减速比相应减1。Note 1: E series, such as by the shell (pin shell) output, the corresponding reduction ratio by 1.

注2: C系列减速比是指电机安装在外壳的减速比，如安装在输出法兰侧，减速比相应减1。Note 2: C series gear ratio refers to the motor installed in the casing of the reduction ratio, if installed on the output flange side, the corresponding reduction ratio by 1.

● ④ **减速器机型代号** Reducer type code

RVE: 主轴承内置E型 Main bearing built-in E type

RVC: 中空型 Hollow type

REA: 带输入法兰E型 With input flange E type

RCA: 带输入法兰中空型 With input flange hollow type

● ⑤ **输入齿轮轴型式及电机轴径**
Enter the gear shaft type and motor shaft diameter

A: 标准型式A, E系列输入齿轮A轴 (P19) 。
Standard Type A, E Series Input Gear A-axis (P19).
C系列代表标准中心齿轮。C Series represents the standard sun gear.

B: 标准型式B, E系列输入齿轮B轴 (P19) 。
Standard Type B, E Series Input Gear B-axis (P19).

Z: 特配型式。 Special matching type.

W: 无。 Nothing.

TB: C系列 同步带轮输入型式 C series synchronous pulley input type.

● ⑥ **减速器安装型式** Reducer mounting type

B: 输出轴螺栓紧固连接 Output shaft bolt fastening connection

P: 输出轴螺栓及定位销并用型式
Output shaft bolts and locating pins with the type

● ⑦ **电机轴径** Motor shaft diameter

技术要求
TECHNICAL REQUIREMENT

外观质量、标志：减速机外观应整洁、美观，标志清晰、正确
Appearance Quality, Marks: Reducer Appearance Should Be Neat, Beautiful, Clear, Correct

- 减速机表面不应有碰伤、划痕、毛刺、凹坑和锈蚀等明显缺陷。Reducer's appearance should not be bumps, scratches, burrs, pits and coeeosion etc.
- 紧固件连接应牢靠，锁紧，密封应可靠。Fastener connection should be firm, lock, seal should be reliable.
- 标志的字迹应清晰、正确，经规定的环境条件试验后，标记和字迹仍应清晰可见。Mark should be clear and correct after the testing, the mark should be clearly.
- 减速器应有可靠的防锈措施。Reducer should have reliable anti rust measures.

基本尺寸 Basic Dimensions

- 减速器的外形尺寸、安装尺寸应符合P11~P21和P22~P30的图纸或客户要求并得到客户确认的图纸要求。
  Deceleration device installation size, size should be consistent with the P11~P21 and P22~P30 of the drawing or customer requirements and customer confirmation drawings.
- 输入齿轮轴、安装法兰等可依客户要求生产，生产前相关图纸应得到客户的确认。
  Input shaft and installation flange can be produced as customer's requirements. before the producting, it should get customer's comfirmation drawing.

空转试验 Idle Test

- 空转运行试验：减速器在输入转速≤3000r/min下空载运行10min，减速器运转应平稳正常，无异常或冲击性噪声。
  Noload operating test: After reducers work under noload for 10min with input speed ≤3000r/min, reducer can run steadily, no abnormal or impacting noise.
- 速比试验: 减速器速比应符合标定值。
  Ratio test: The speed ratio of the reducer should be in accordance with the calibration value.

噪声 Noise

- 减速器在输入转速≤3000r/min下空载运行，其噪声应小于70^{+3}dB(A)。
  The reducer running in no-load input speed is less than or equal to 3000r/min, the noise should be less than 70^{+3}dB(A).

转矩 Torque

- 减速器在额定输出转矩条件下连续运转2小时以上，减速器能正常运转，无异音。
  Reducers work continuously for over 2 hours at rated torque, no abnormal noise.
- 减速器在工作环境温度,额定负载下连续工作，减速器壳温升应小于45℃，轴承温度小于95℃。
  After reducers work continuously, reducer's temperature should less than 45℃, bearing temperature is ＜95℃.
- 减速器传动效率应符合表3、表4的要求。
  Gear reducer transmission efficiency should meet the requirements of table 3, table 4.
- E系列减速器输出转矩符合表3的规定。
  E series reducer output torque in accordance with the provisions of table 3.
- C系列减速器输出转矩符合表4的规定。
  C series reducer output torque in accordance with the provisions of table 4.

● **表3-E系列输出转矩及效率** Table 3-E series output torque and efficiency

输出转速项目 Output Speed Project / 型号 Model	5 r/min		18 r/min			25 r/min		30 r/min		容许最高输出转速 Maximum Allowable Loss Out Speed
	输出转矩 Output Torque	输入功率 Input Power	输出转矩 Output Torque	输入功率 Input Power	效率 Efficiency	输出转矩 Output Torque	输入功率 Input Power	输出转矩 Output Torque	输入功率 Input Power	
	N.m	Kw	N.m	Kw	%	N.m	Kw	N.m	Kw	r/min
120BX	115	0.075	64	0.15	80	62	0.2	64	0.25	100
150BX	245	0.160	170	0.40	80	153	0.5	153	0.60	75
190BX	612	0.400	425	1.00	80	367	1.2	382	1.50	70
220BX	1146	0.750	743	1.75	80	673	2.2	637	2.50	70
250BX	1528	1.000	934	2.20	80	978	3.2	892	3.50	50
280BX	2292	1.500	1571	3.70	80	1437	4.7	1274	5.00	45
320BX	4584	3.000	2972	7.00	80	2903	9.5	2802	11.0	35
370BX	6112	4.000	3905	9.20	80	/	/	/	/	25

注1: 额定转矩是指输出转速为18 r/min时的输出转矩。输入功率考虑了减速器的效率。
Note 1: The rated torque is the output torque of the output speed of 18 r/min. The input power considers the efficiency of the reducer.

注2: 转矩计算公式 Note 2: Torque calculation formula:
T=9549XPXη/N （T: 转矩Nm, P: 功率Kw, N: 转速r/min, η: 效率% ）。T=9549XPXη/N (T: Torque Nm, P: Power Kw, N: Speed r/min, η: Efficiency %).

● **表4-C系列输出转矩及效率** Table 4-C output series torque and efficiency

输出转速项目 Output Speed Project / 型号 Model	5 r/min		18 r/min			25 r/min		30 r/min		容许最高输出转速 Maximum Allowable Loss Out Speed
	输出转矩 Output Torque	输入功率 Input Power	输出转矩 Output Torque	输入功率 Input Power	效率 Efficiency	输出转矩 Output Torque	输入功率 Input Power	输出转矩 Output Torque	输入功率 Input Power	
	N.m	Kw	N.m	Kw	%	N.m	Kw	N.m	Kw	r/min
10CBX	134	0.09	99	0.24	78	89	0.3	87	0.35	80
27CBX	372	0.25	269	0.65	78	239	0.8	223	0.90	60
50CBX	745	0.50	455	1.10	78	447	1.5	434	1.75	50
100CBX	1490	1.00	994	2.40	78	894	3.0	819	3.30	40
200CBX	2235	2.00	1986	4.80	78	1788	6.0	1638	6.60	30
320CBX	4470	3.00	3103	7.50	78	2830	9.5	/	/	25
500CBX	7003	4.70	4966	12.0	78	/	/	/	/	20

注1: 额定转矩是指输出转速为18rpm时的输出转矩。输入功率考虑了减速器的效率。
Note 1: The rated torque is the output torque of the output speed of 18rpm. The input power considers the efficiency of the reducer.

注2: 转矩计算公式 Note 2: Torque calculation formula:
T=9549XPXη/N （T: 转矩Nm, P: 功率Kw, N: 转速RPM, η: 效率% ）。T=9549XPXη/N (T: Torque Nm, P: Power Kw, N: Speed RPM, η: Efficiency %).

传动精度、扭转刚度、齿隙与回差 Transmission Precision, Torsional Stiffness, Backlash And Backlash

- 减速器扭转刚度、齿隙和回差应符合表5及表6的要求。
  The torsional stiffness, backlash and backlash of the gear reducer shall meet the requirements of table 5 and table 6.
- 减速器传动精度应符合表5及表6的要求。
  The transmission accuracy of gear reducer shall conform to the requirements of table 5 and table 6.

寿命 Life

- 减速器在额定转速和额定负载下运转，减速器工作寿命应为6000小时以上。
  When the reducer is working on rated speed and on-loading, reducer 's lift time is more than 6000 hours.

容许力矩 Allowable Torque

- 减速器容许力矩应符合表5、表6的要求。
  The allowable torque of the gear reducer shall meet to the requirements of table 5 and table 6.

过载 Overload

- 减速机在额定扭矩的125%进行过载试验运行5min，运行期间不得有异常噪声和损坏等现象。
  After reducer working under over-load for 5min with 125% rated torque, dudring the running, it have no noise and other damage .

减速器技术参数参见表5及表6 Reducer Technical Parameters See Table 5 And Table 6

● **表5-C系列技术参数** Table 5-C series of technical parameters

项目 Project / 型号 Model	减速器单体减速比 Retarder Monomer Reduction Ratio	容许力矩 Allowable Moment	扭转刚度 Torsional Rigidity	瞬时容许最大转矩 Instantaneous Maximum Torque	传动精度 Transmission Accuracy	齿隙回差 Backlash Of Backlash	寿命 Life	减速器单体惯性力矩 Retarder Inertia Moment	重量 Weight
		N.m	N.m/(Arc.min)	N.m	Arc.min	Arc.min	h	Kg.m²	kg
10CBX	27.00	686	47	490	1.0	1.0	6000	$1.380X10^{-5}$	4.60
27CBX	36.57	980	147	1323	1.0	1.0	6000	$0.550X10^{-4}$	8.50
50CBX	32.54	1764	255	2450	1.0	1.0	6000	$1.820X10^{-4}$	14.6
100CBX	36.75	2450	510	4900	1.0	1.0	6000	$0.475X10^{-3}$	19.5
200CBX	34.86	8820	980	9800	1.0	1.0	6000	$1.390X10^{-3}$	55.6
320CBX	35.61	20580	1960	15680	1.0	1.0	6000	$0.518X10^{-2}$	79.5
500CBX	37.34	34300	3430	24500	1.0	1.0	6000	$0.996X10^{-2}$	154

● **表6-E系列技术参数** Table 6-E series of technical parameters

项目 Project / 型号 Model	速比值 Ratio Value		容许力矩 Allowable Moment N.m	扭转刚度 Torsional Rigidity N.m/(Arc.min)	瞬时容许最大转矩 Instantaneous Maximum Torque N.m	传动精度 Transmission Accuracy Arc.min	齿隙回差 Backlash Of Backlash Arc.min	寿命 Life h	重量 Weight kg
	轴输出 Axis Output	壳输出 Shell Output							
120BX	53.50	52.50	196	20	294	1.5	1.5	6000	2.50
	59.00	58.00							
	79.00	78.00							
	103.0	102.0							
150BX	81.00	80.00	880	49	820	1.0	1.0	6000	4.70
	105.0	104.0							
	121.0	120.0							
	141.0	140.0							
	161.0	160.0							
190BX	81.00	80.00	1600	108	2000	1.0	1.0	6000	9.30
	105.0	104.0							
	121.0	120.0							
	153.0	152.0							
220BX	81.00	80.00	2000	196	3600	1.0	1.0	6000	13.1
	101.0	100.0							
	121.0	120.0							
	153.0	152.0							
250BX	81.00	80.00	2900	294	5380	1.0	1.0	6000	17.4
	111.0	110.0							
	161.0	160.0							
	175.28	174.28							
280BX	81.00	80.00	3900	392	7800	1.0	1.0	6000	26.4
	101.0	100.0							
	129.0	128.0							
	145.0	144.0							
	171.0	170.0							
320BX	81.00	80.00	7000	980	15600	1.0	1.0	6000	44.3
	101.0	100.0							
	118.5	117.5							
	129.0	128.0							
	141.0	140.0							
	171.0	170.0							
	185.0	184.0							
370BX	81.00	80.00	8820	1176	22000	1.0	1.0	6000	66.4
	101.0	100.0							
	118.5	117.5							
	129.0	128.0							
	154.8	153.8							
	171.0	170.0							
	192.4	191.4							

润滑
LUBRICATION

■ **减速器使用润滑油脂：Molywhite RE-00 或 VIGO-grease REO 其它相同品级精密减速器专用润滑脂**

Reducer using lubricating oil: Molywhite RE-00 or VIGO-grease REO other similar grade precision reducer special grease

■ **减速器出厂时未填充润滑油脂，在安装时填充建议的润滑油脂，充填量约为减速器内部空腔体积的90%**

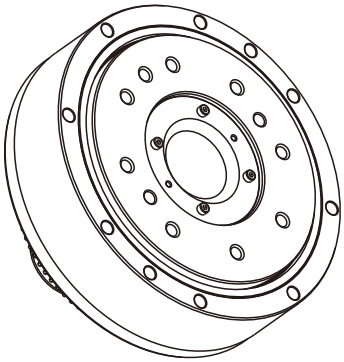
The lubrication grease is not filled before gearbox leave factory. Please fill in the suggested lubrication grease during assembly, the amount is roughly 90% of the gearbox inside cavity volume

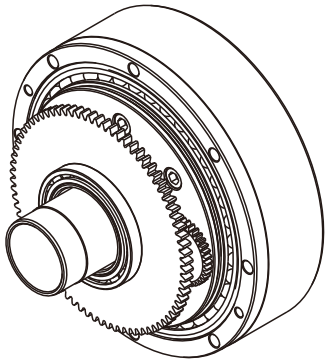
■ **润滑油脂标准更换时间为20,000小时。润滑油脂被污染或在恶劣的环境下使用时，需检查润滑油脂老化、被污染的情况，并规定更换时间**

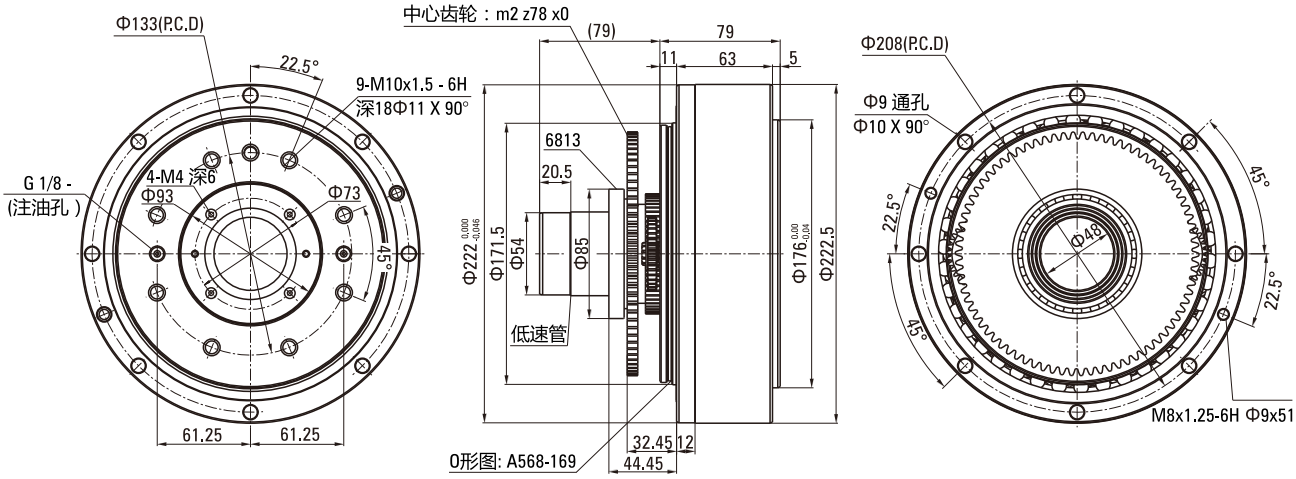
Lubricating grease standard replacement time is 20000 hours. When the grease is contaminated or is used in harsh environment, it is necessary to check the condition of aging and pollution, and to change the time

RVC系列外形尺寸图
RVC SERIES OUTLINE DIMENSION DRAWING

10CBX–RVC 外形图 10CBX-RVC Outline Drawing





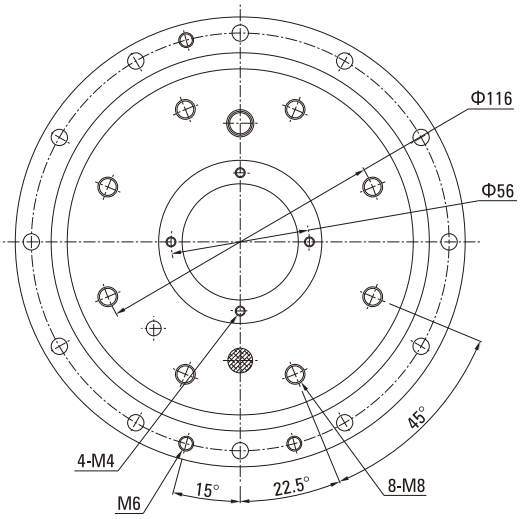


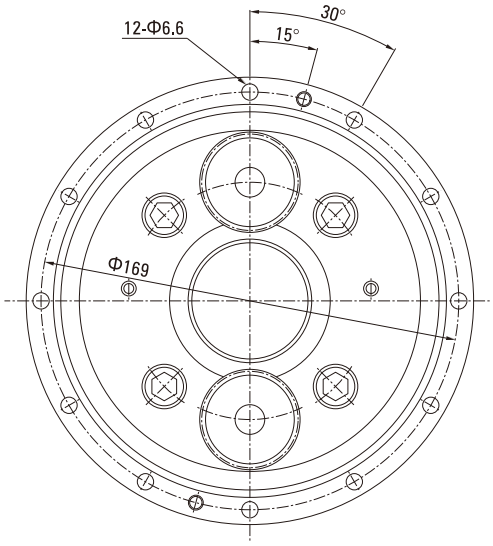
● **说明** Note:

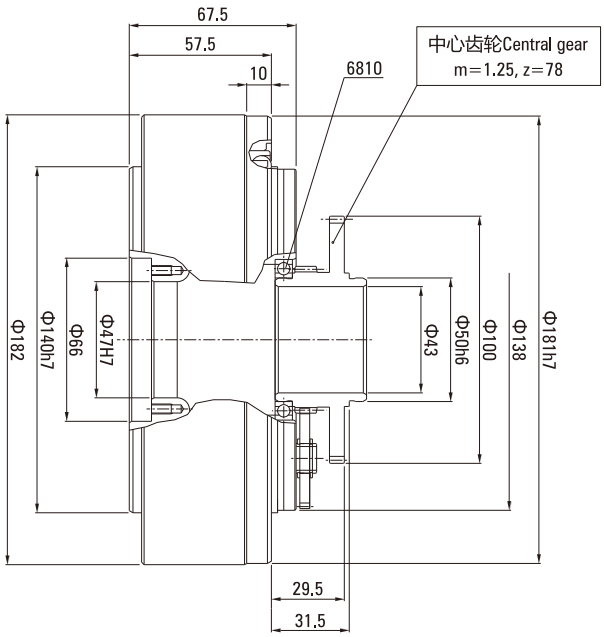
1. 本图为中空10CBX型减速器，图示为裸机；The picture shows a hollow 10CBX reducer, the picture shows bare metal;
2. 减速机速比：配备中心齿轮及输入齿轮，中心初设为60.5时，速比可取(81,108,153,189,243): 客户可自行设计;
   Reducer speed ratio: Equipped with sun gear and input gear, the center set at 60.5, Speed ratio desirable (81,108,153,189,243): customers can design their own;
3. 润滑油脂: VIGO GREASE RE0或 RE-00 (MOLYWHITE)；Grease: VIGO GREASE RE0 or RE-00 (MOLYWHITE);
4. 额定输出扭矩: 98N.m (输出转速: 15R/Min)； Rated output torque: 98N.m (output speed: 15R / Min);
5. 安装法兰需特别设计、制作，保证中心距及相关尺寸公关差要求；
   The installation flanges shall be specially designed and manufactured to ensure the center distance and the relevant requirements of the PRCs;
6. 安装时须做密封，注意同心度定位。
   Seal to be installed, pay attention to concentricity positioning.

RVC系列外形尺寸图
RVC SERIES OUTLINE DIMENSION DRAWING

27CBX–RVC 外形图 27CBX-RVC Outline Drawing

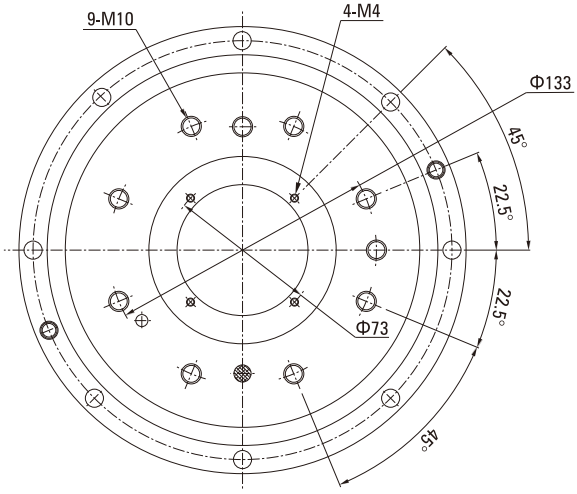


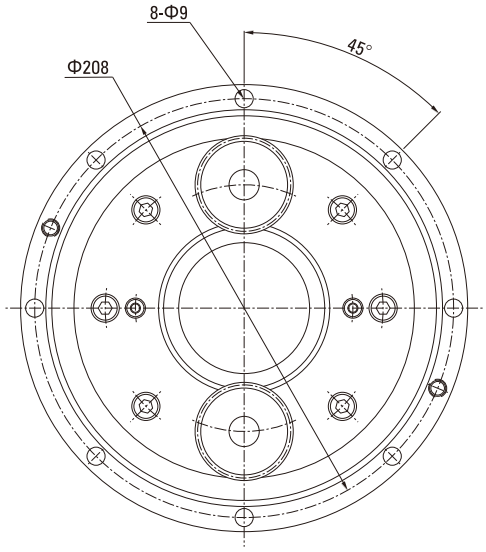


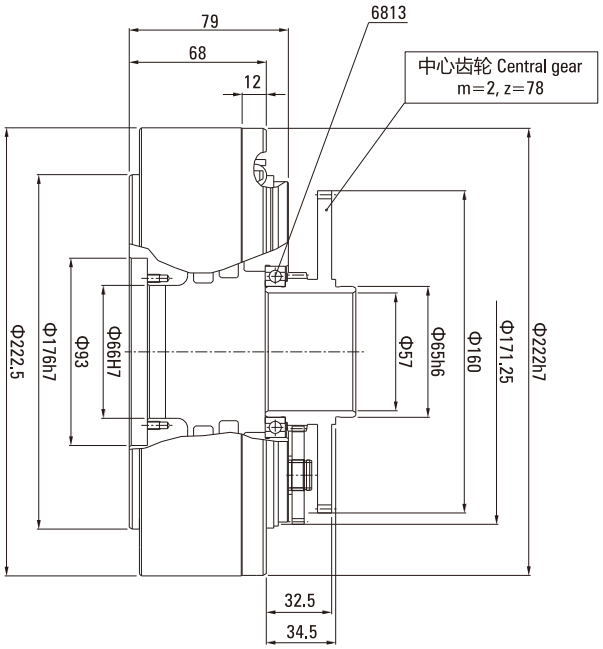


RVC系列外形尺寸图
RVC SERIES OUTLINE DIMENSION DRAWING

50CBX–RVC 外形图 50CBX-RVC Outline Drawing

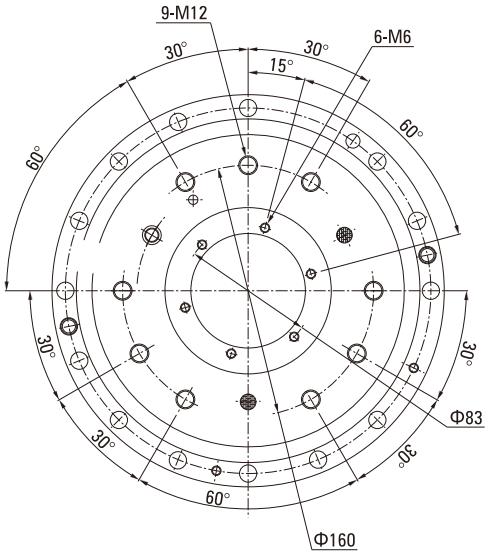


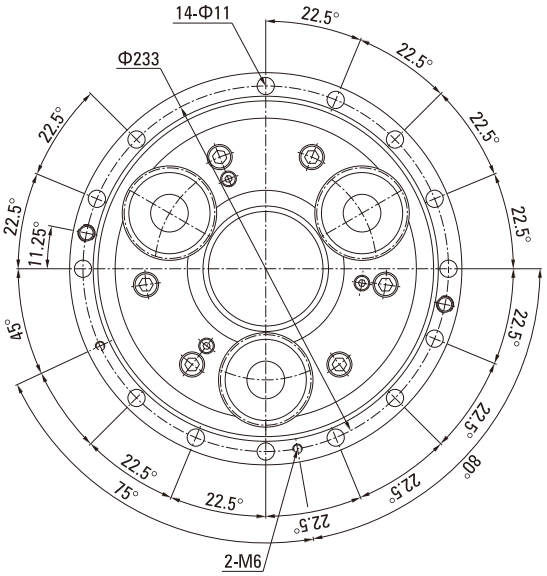


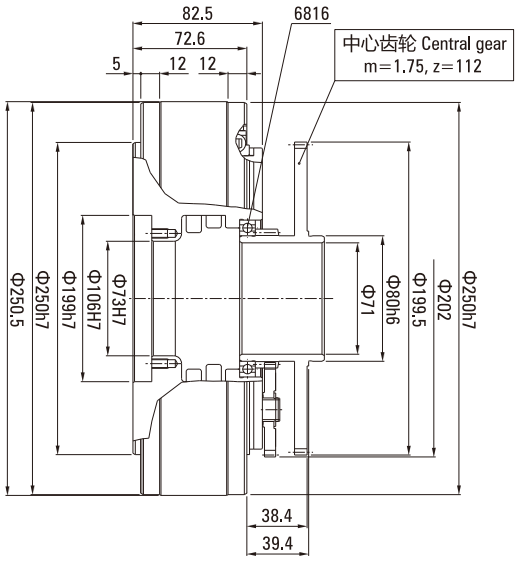


RVC系列外形尺寸图
RVC SERIES OUTLINE DIMENSION DRAWING

100CBX–RVC 外形图 100CBX-RVC Outline Drawing

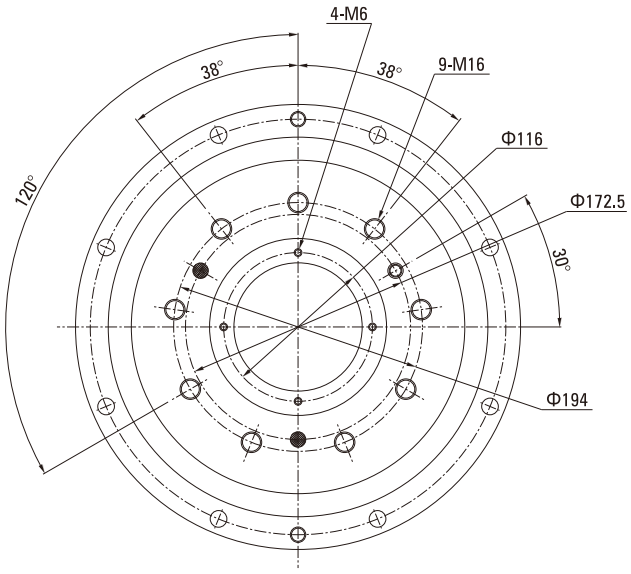


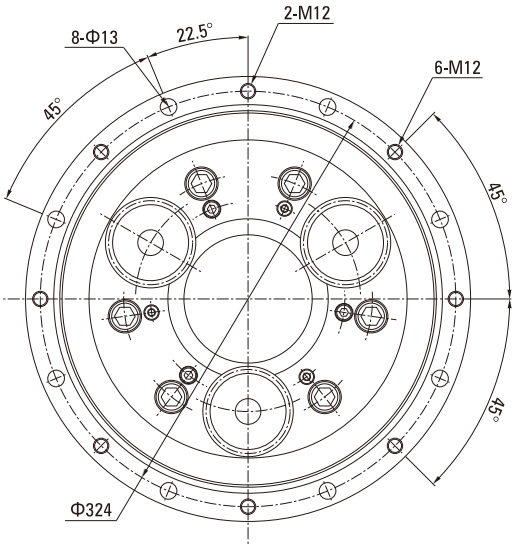


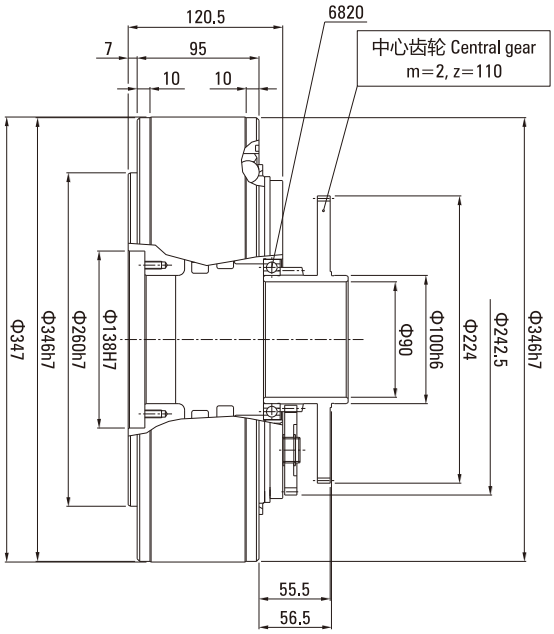


RVC系列外形尺寸图
RVC SERIES OUTLINE DIMENSION DRAWING

200CBX–RVC 外形图 200CBX-RVC Outline Drawing







RVC型减速器安装要领
RVC TYPE REDUCER INSTALLATION GUIDE

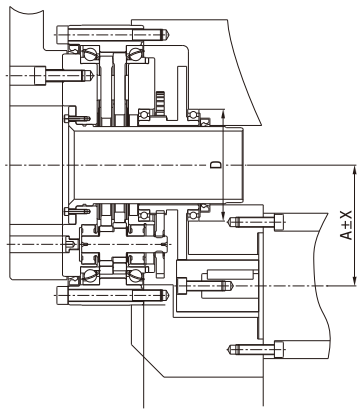
为了充分发挥RVC型减速器的性能，对装配精度、安装方法、润滑以及必封进行最佳设计是十分重要的。
In order to make fully use of RVC type reducer, it is very important to do optimal design of assembly precision, installation method, lubrication.
请认真阅读以下注意事项。Please carefully read the following notes.

装配精度 Assembly Precision

RVC型减速器的安装侧部件请按附图D.1进行设计。如果装配不良会造成振动、噪声、齿隙等问题。

The installation of side components of RVC type reducers shall be designed based on drawing D.1. Poor assembly will cause shaking, noise and tooth gap, etc.

● **图 D.1: RVC系列装配精度** Figure D.1: RVC series assembly precision



(A为减速机中心到电机中心的距离)
(A is the distance from the center of the speed reducer to the motor center)

装配要领 Assembly Method

- RVC型减速器安装在配套部件时的标准图例参见图D.2。装配时，请务必按指定量注入润滑脂。
  RVC type reducer installed on the supporting parts of standard legend for see figure D.2. When assembly, please be sure to inject the specified amount of grease.
- 图D.2，图D.3表示了"O"型圈的密封位置，因此请参照进行密封设计。
  Figure D.2, figure D.3 shows the "O" type of ring seal position, so please refer to the seal design.
- 结构上不能使用"O"型圈时，请使用表C.3的液体密封等密封剂。
  The structure can not be used "O" ring, please use the form C.3 liquid sealing sealant.

低速管装配示例 Example Of Low Speed Tube Assembly

低速管用于保护通过中空部位的电缆以及密封减速器内部的润滑脂。图D.2是低速管的安装参考示例。

Low speed tube for protection through the hollow part of the cable and the lubrication grease inside the seal reducer. Figure D.2 is a reference example for the installation of a low speed tube.

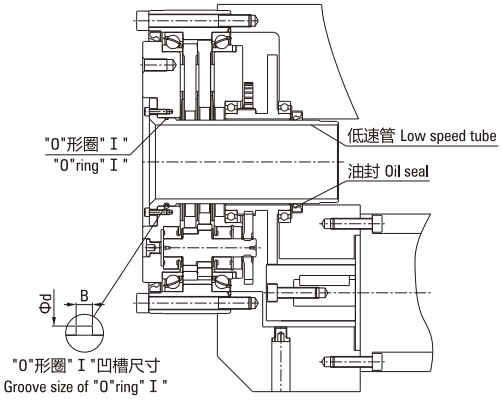
输出轴螺栓紧固装配示例：图D.3
Output Shaft Bolt Fastening Assembly Example: Figure D.3

● **表 D.1: RVC系列装配精度尺寸表** Table D.1: RVC series assembly precision size table

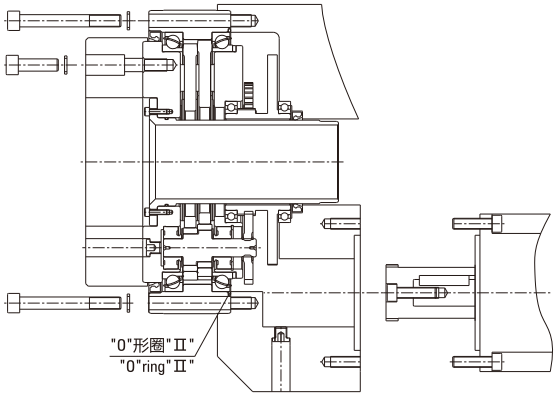
(单位 Unit: mm)

项目 Item / 型号 Model	中心间距离公差 Center Distance Tolerance	同心度公差 Concentric Tolerance	平行度公差 Parallelism Tolerance
	X	a	b
10CBX-RVC	±0.03	Max 0.03	Max 0.03
27CBX-RVC			
50CBX-RVC			
100CBX-RVC			
200CBX-RVC			
320CBX-RVC			
500CBX-RVC			

● **图 D.2: 装配示例** Figure D.2: Assembly example



● **图 D.3: 装配示例** Figure D.3: Assembly example



● **表D.2：“O”型圈（Ⅰ）密封尺寸表（mm）：** Table D.2: "O" - shaped ring (I) sealing size table (mm)

代号 Code \ 机型 Model		10CBX-RVC	27CBX-RVC	50CBX-RVC	100CBX-RVC	200CBX-RVC	320CBX-RVC	500CBX-RVC
O形圈 O ring	公称号码 Nominal number	CO-0625	CO-0634	CO-0643	S70	G95	G135	G145
	线径 Wire diameter	Φ2.40	Φ2.40	Φ3.50	Φ2.00	Φ3.10	Φ3.10	Φ3.10
	内径 Internal diameter	Φ29.7	Φ42.2	Φ59.6	Φ69.5	Φ94.4	Φ134.4	Φ144.4
凹槽尺寸 Groove size	内径d Internal diameter d	Φ30.2	Φ43.2	Φ60.3	Φ70.0	Φ95.0	Φ135.0	Φ145.0
	宽度B Width B	3.2	3.2	4.7	2.7	4.1	4.1	4.1

● **表D.3：“O”型圈（Ⅱ）：** Table D.3: "O" - shaped ring (II)

机型 Model	适用"O"型圈 Apply The "O" Shape Ring
10CBX-RVC	AS568-048
27CBX-RVC	AS568-163
50CBX-RVC	AS568-169
100CBX-RVC	AS568-173
200CBX-RVC	AS568-277
320CBX-RVC	AS568-281
500CBX-RVC	B2401-G460

输出轴通孔螺栓坚固型装配，请询问公司相关技术人员。

Output shaft through hole bolt solid assembly, please ask the company related technical personnel.

中心齿轮、输入齿轮 Central Gear, Input Gear

● **中心齿轮、输入齿轮的精度** Center gear, input gear precision

如果中心齿轮、输入齿轮的精度不良，就会产生噪声、齿隙，所以需要按以下精度进行设计。

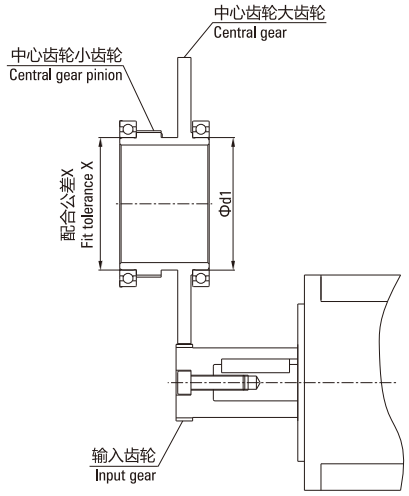
If the center gear, the input gear's precision is bad, can produce the noise, the tooth gap, therefore needs to carry on the design according to the following precision.

表D.4 中心齿轮、输入齿轮的精度。

Table D.4 center gear, the accuracy of the input gear.

● **图 D.4：中心齿轮、输入齿轮的精度**

Figure D.4: Center gear, input gear precision



● **表D.4：中心齿轮、输入齿轮的精度** Table D.4：Center gear, input gear precision

配合公差 Fit Tolerance X	同心度公差 Concentric Tolerance a	中心齿轮小齿轮 Central Gear Pinion 精度等级 Precision Grade	中心齿轮大齿轮 Central Gear 精度等级 Precision Grade	输入齿轮 Input Gear 精度等级 Precision Grade
h6	Max 0.03	GB/T10095 8级 level	GB/T10095 7级 level	GB/T10095 8级 level

● **表D.5：输入齿轮与中心齿轮大齿轮的齿隙（公法线）** Table D.5: Gear gap of the input gear and the big gear of the central gear (Normal line)

机型 Model	齿隙(公法线) Tooth Gap (Common Law) (mm)
10CBX-RVC	0.035～0.090
27CBX-RVC	0.040～0.110
50CBX-RVC	0.050～0.130
100CBX-RVC	0.060～0.140
200CBX-RVC	0.075～0.180
320CBX-RVC	
500CBX-RVC	

● **表D.6：中心齿轮小齿轮的齿轮参数**

Table D.6: Gear parameters of central gear pinion

机型 Model	齿轮模数 Gear Modulus m	齿轮 Gear z	变位系数 Coefficient Of Variation x
10CBX-RVC	1.00	48	-0.04
27CBX-RVC	1.00	57	+0.2
50CBX-RVC	1.25	61	0
100CBX-RVC	1.75	48	+0.3
200CBX-RVC	2.50	43	0
320CBX-RVC	2.00	78	0
500CBX-RVC	2.00	83	0

● **标准中心齿轮** Standard center gear

RVC型减速器备有标准中心齿轮。如果需要标准中心齿轮，请在订购时指定。表D.7为标准中心齿轮大齿轮的齿轮参数。

RVC type gear reducer with standard center gear. If you need a standard center gear, please specify when ordering. Table D.7 gear parameters of the standard center gear.

● **表D.7: 标准中心齿轮大齿轮的齿轮参数**

Table D.7: Gear parameters of standard center gear

机型 Model	齿轮模数 Gear Modulus m	齿轮 Gear z	变位系数 Coefficient Of Variation x
10CBX-RVC	2.00	57	0
27CBX-RVC	1.25	78	0
50CBX-RVC	2.00	78	0
100CBX-RVC	1.75	112	0
200CBX-RVC	2.00	110	0
320CBX-RVC	2.00	125	0
500CBX-RVC	2.00	150	0

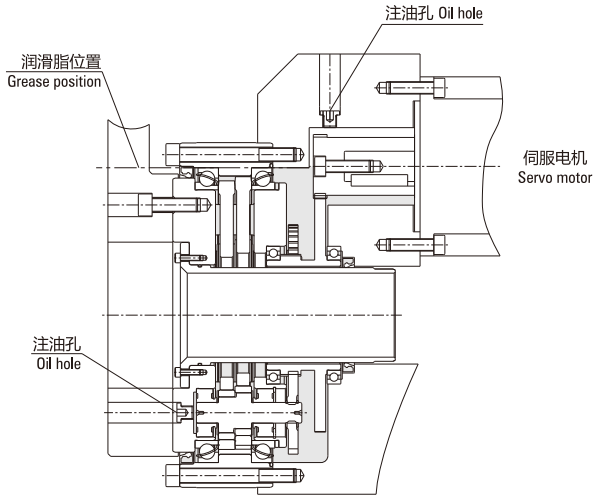
润滑 lubrication

- 减速器在出厂时未填充润滑脂，因此在安装减速器时，请务必根据所需填充量填充建议的润滑剂。
  Reducer in the factory is not filled with grease, so in the installation of the reducer, be sure to fill according to the required amount of filling the recommended lubricant.
- 减速器的润滑剂填充量一般占内部空间的70~90%，请确保有10%左右的空间未注满。
  Reducer lubricant filling amount accounts for the interior space of the 70~90%, please make sure that there are about 10% of the space is not filled up.
- 减速器安装设计时请注意需要二个注油孔，需要密封及方便加注油脂，排出油脂。
  Please note that the design of reducer installation needs two oil filling hole, need to seal and convenient oil filling, discharge of oil.
- 减速器封入油脂后，一般更换油脂时间为5000小时左右，请定期检查润滑脂的老化、污染情况，并规定更换时间。
  Reducer sealed grease, the general replacement of oil time is about 5000 hours, please regularly check the grease of aging, pollution, and the provisions of replacement time.

● **图 D.6: 润滑油注入位置(水平)**

Figure D.6: Lubricating oil injection position (Horizontal)

(安装水平轴 Install horizontal axis)



螺栓的紧固转扭 Tightening Torque Of Bolts

RVC型减速器使用内六角螺栓，请按表C.4的紧固转矩进行紧固，螺栓请使用碟形弹簧垫圈，防止螺栓松动及擦伤螺栓座面。

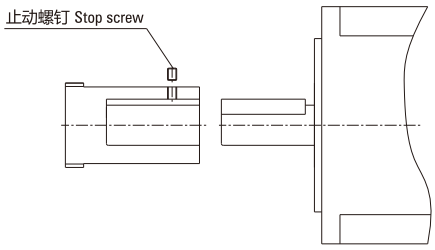
RVC type reducer using the six angle bolt, according to the table C.4 fastening torque for fastening, bolts, please use the disc spring washer, to prevent bolt loose and scratch the bolt seat.

安装输入齿轮 Install Input Gear

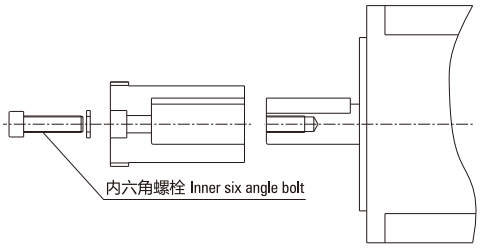
图D.5: 表示伺服电机轴的形状和输入齿轮的安装示例，请参照此图进行设计。

Figure D.5: Indicates the shape of the servo motor shaft and the installation of the input gear sample, please refer to this diagram for design.

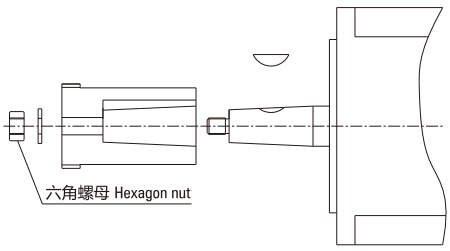
● **图 D.5: 输入齿轮装配** Figure D.5: Input gear assembly



电机轴没有螺孔 No screw motor shaft



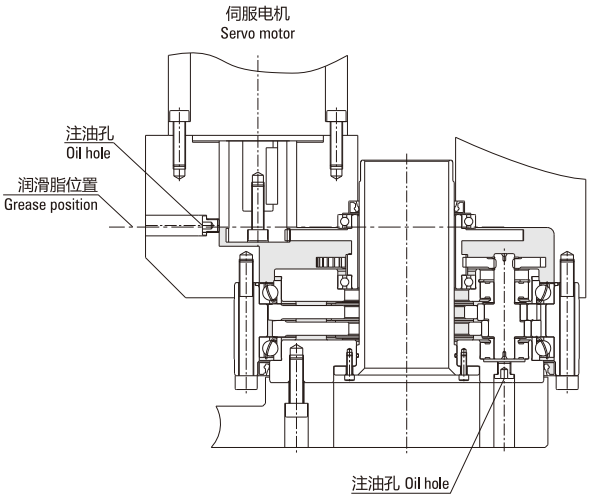
电机轴有螺孔 The motor shaft with a screw hole



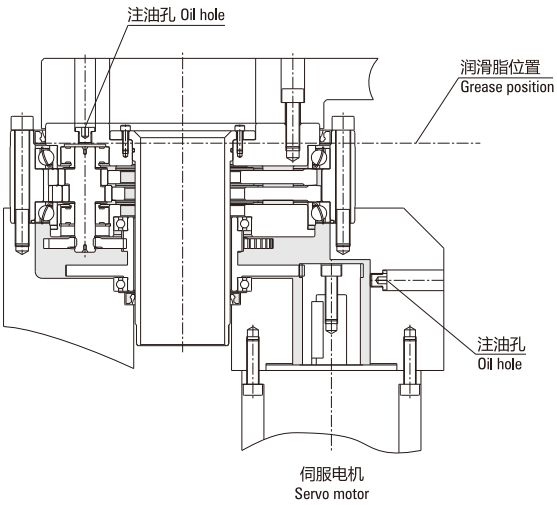
电机轴为锥形轴且带螺栓 The motor shaft is a conical shaft and is provided with a bolt

● **图 D.7: 润滑油注入位置(垂直)** Figure D.7: Lubricating oil injection position (Vertical)

(安装垂直轴-1 Install vertical axis-1)



(安装垂直轴-2 Install vertical axis-2)



● **表D.8: 润滑脂填充量** Table D.8: Grease filling amount

机型 Model	安装水平轴 (CC) Install Horizontal Axis (CC)	安装垂直轴 (CC) Install Vertical Axis (CC)
10CBX-RVC	147	167
27CBX-RVC	266	305
50CBX-RVC	498	571
100CBX-RVC	756	857
200CBX-RVC	1831	2076
320CBX-RVC	3536	4047
500CBX-RVC	5934	6900

保修 Guarantee

保修期及保修范围规定如下。 The warranty period and the scope of the warranty provisions are as follows.

● **保修期** Warranty period

在产品目录中记载的正常组装状态及润滑状态下使用的前提下，保修期为交货后的一年时间或该产品运行时间达到2000小时两者中最先达到的时间。

In the product catalog records of the normal assembly and lubrication under the condition of the use of the premise, the warranty period for the delivery of a year or the product running time of 2000 hours to reach the first time between the two.

● **保修范围** Warranty coverage

在上述保修期内，因本公司产品缺陷导致故障时，由本公司负责对本产品进行维修或更换。

During the warranty period, the company shall be responsible for the maintenance or replacement of the product as a result of the failure of the company's product defects.

但以下情况不在保修范围内。

But the following conditions are not within the scope of the warranty.

❶ 因客户不当操作或使用导致故障的	Failure due to improper operation or use of the customer
❷ 非本公司实施的改造或修理导致故障的	Non the company's implementation of the transformation or repair of the failure of the
❸ 非本产品原因导致故障的	Non product causes of failure
❹ 其它天灾等非本公司责任导致故障的	Other natural disasters and other non liability of the company led to the failure of

而且，这里所说的保修是指对本产品的保修。

Moreover, the warranty here refers to the warranty for this product.

对于因本产品故障引发的其它损失、与设备上拆装相关的工时、费用等，不在本公司负责范围内。

For other losses caused by the failure of this product, and the equipment on the dismantling of the hours, costs, etc., are not responsible for the company.