



# RV PLANETARY GEAR BOX

摆线针轮RV减速器



# 中大 实现自动化应用的无限可能

*Zhongda Realizes the infinite possible in automation application*

宁波中大力德智能传动股份有限公司始创于1998年，是一家专业制造电机驱动、微特电机、精密减速机的中外合资企业。公司现有员工800人，固定资产2亿元，占地面积100亩（其中杭州湾50亩）。

公司系国家级高新技术企业，浙江省级企业研发中心，获国家专利81项，参与制定国标4项，行标3项；其中以第一起草单位制定国标1项，行标1项；“永磁无刷电机行星齿轮减速机构”列入国家火炬计划，“VRSF-78VR20-200行星减速器”列入国家重点新产品计划，获中国科技部颁发“国家重点新产品证书”。

Ningbo Zhongda Leader Intelligent Transmission Co., Ltd. is a sino-foreign joint venture. specialized in micro motors, motor drivers and precision gear reducers. We have 800 employees, with two hundred million RMB of fixed assets and area of 66666m<sup>2</sup> (half in Hangzhou Wan).

We, ZD-MOTOR, is a national hi-tech enterprise, and provincial R&D center of Zhejiang, we own 81 national patents, we participated in drafting 4 national standard, 3 industry standards. As major party to draft 1 national and 1 industry standard. “gear reduced permanent brushless motor institution” is listed in National Torch Plan, “VRSF-78VR20-200 planetary gear reducer” is listed in national new major product plan, and gain the certification of “National New Major product” issued by China's Ministry of Science & Technology.

## 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 terms of the pin wheel planetary transmission and the JB/T10419 - pin wheel planetary transmission, the determination of the precision and the following terms and definitions apply to 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( $\theta$ ): 指输入任意旋转角时的理论旋转角度( $\theta_{in}$ )和实际输出旋转角度( $\theta_{out}$ )之间的差，公式表示:  $\theta = \theta_{in}/k - \theta_{out}$  ( $k$ --- 速比值)。

Transmission accuracy ( $\theta$ ): refers to the input with arbitrary rotation angle when the theory of rotation angle ( $\theta_{in}$ ) and the actual output rotation angle ( $\theta_{out}$ ) between poor and formula:  $\theta = \theta_{in}/k - \theta_{out}$  ( $k$ --- ratio values of).

### 回差 Lost Motion

指在额定转矩的 $\pm 3\%$ 处的迟滞曲线宽度的中间点的扭转角。(图1)

Of the intermediate point of 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)

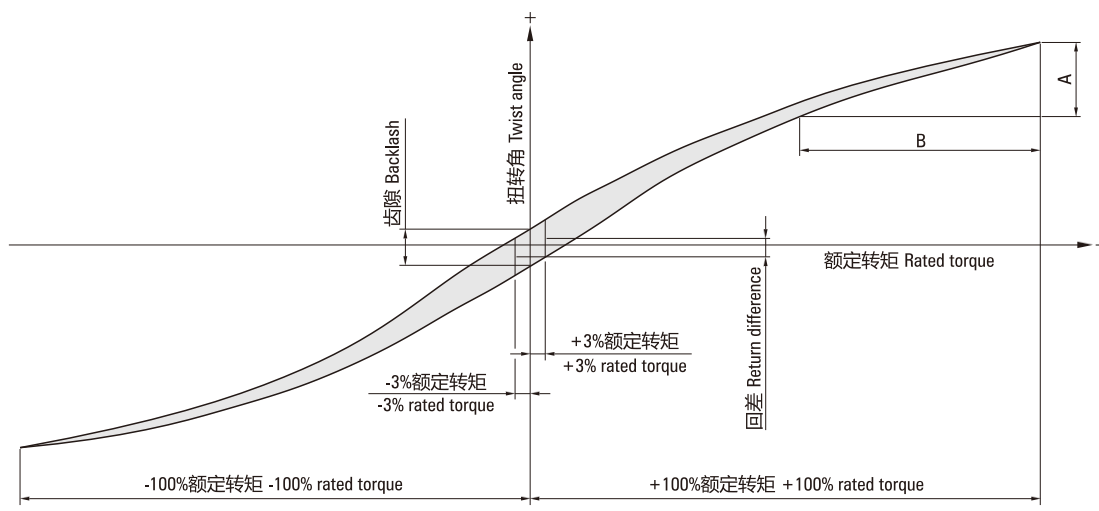
### 扭转刚度 Torsional Rigidity

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)



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

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 speed reducer by the output flange and a supporting 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, oil seal composed.

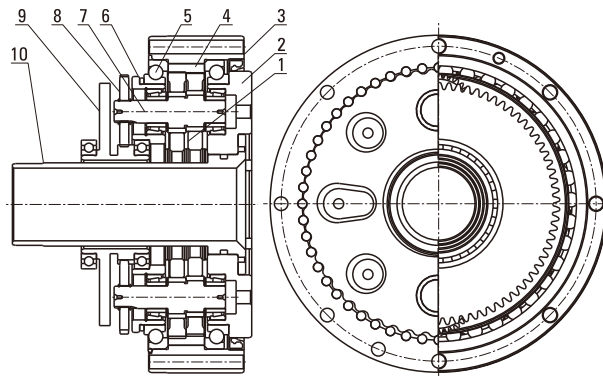
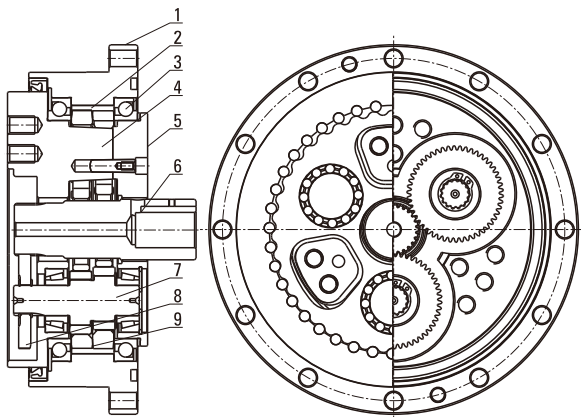
### 减速器构造 Reducer Structure

● 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 Planet 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 Planet 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

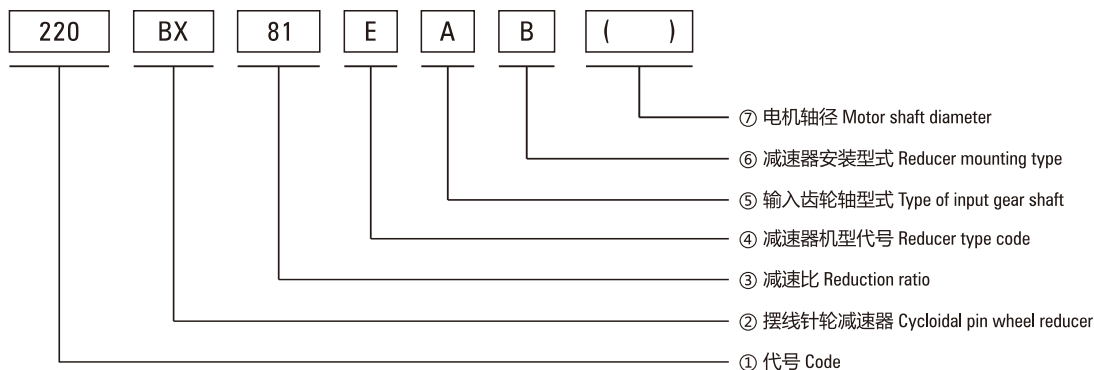
- E系列减速器外形尺寸参见P09~P14。 E series reducer outline dimensions see P09~P14.
- C系列减速器外形尺寸参见P20~P23。 C series reducer outline dimensions see P20~P23.

### 使用环境 Use 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°C。 Ambient air temperature changes with the seasons, but not more than 40°C.
- 环境空气最低温度为-10°C。 Ambient air temperature is -10°C.

## 型号命名 Model Name



- ① 代号，具体见表1 Code, specific see table 1

### 减速机代号 Reducer Code

| E 系列 E Series |                                    |                       | C 系列 C Series |                                    |                       |
|---------------|------------------------------------|-----------------------|---------------|------------------------------------|-----------------------|
| 代号 Code       | 外形尺寸(mm)<br>Outline dimension (mm) | 通用型号<br>General model | 代号 Code       | 外形尺寸(mm)<br>Outline dimension (mm) | 通用型号<br>General model |
| 120           | Φ122                               | 6E                    | 150           | Φ146                               | 10C                   |
| 150           | Φ145                               | 20E                   | 180           | Φ181                               | 27C                   |
| 190           | Φ190                               | 40E                   | 220           | Φ222                               | 50C                   |
| 220           | Φ222                               | 80E                   | 250           | Φ250                               | 100C                  |
| 250           | Φ244                               | 110E                  | 350           | Φ346                               | 200C                  |
| 280           | Φ280                               | 160E                  | 440           | Φ440                               | 320C                  |
| 320           | Φ325                               | 370E                  | 520           | Φ520                               | 522C                  |
| 370           | Φ370                               | 450E                  | /             | /                                  | /                     |

- ② BX: 摆线针轮减速机 BX: the reducer of the pin gear reducer

- ③ 81: 减速比，具体见表2 81:Reduction 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) | 代号 Code       | 单体减速比 Monomer reduction ratio |
| 120           | 43, 53.5, 59, 79, 103                               | 150           | 27.00                         |
| 150           | 81, 105, 121, 141, 161                              | 180           | 36.57                         |
| 190           | 81, 105, 121, 153                                   | 220           | 32.54                         |
| 220           | 81, 101, 121, 153                                   | 250           | 36.75                         |
| 250           | 81, 111, 161, 175.28                                | 350           | 34.86                         |
| 280           | 81, 101, 129, 145, 171                              | 440           | 35.61                         |
| 320           | 81, 101, 118.5, 129, 141, 171, 185                  | 520           | 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, reduction ratio of the corresponding reduction of 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 减速机机型代号 Reducer type code

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

C: 中空型 Hollow type

- ⑥ 减速机安装型式 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连接 Output shaft bolt and positioning pin and connected with the positioning pin

F: 配法兰安装型式 Flange mounting type

- ⑤ 输入齿轮轴型式 Type of input gear shaft

A: 标准型式A Standard type A

B: 标准型式B Standard type B

Z: 特配型式 Special matching type

W: 无 Nothing

- 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。The obvious defects of reducer surface should not have bumps, scratches, burrs, pits and corrosion 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。Sign writing should be clear and correct by the provisions of the environmental conditions after the test, marking and writing should still be clearly visible.
- 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P09~P14和P20~P23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 P09~P14 and P20~P23 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 gear shaft, the installation flange and other customer requirements can be produced, the production of the relevant drawings should be confirmed by the customer.

### 空转试验 Idle Test

- 空转运行试验：减速机在输入转速 $\leq 3000$ r/min下空载运行10min，减速机运转应平稳正常，无异常或冲击性噪声。  
Idle running test: Reducer in input speed is equal to or less than 3000r/min under no-load operation for 10r/min, reducer operation should be normal and smooth, without exception or the impact of noise.
- 速比试验：减速机速比应符合标定值。  
Ratio test: The speed ratio of the reducer should be in accordance with the calibration value.

### 噪声 Noise

- 减速机在输入转速 $\leq 3000$ r/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

- 减速机在额定输出转矩条件下连续运转2小时以上，减速机能正常运转，无异音。  
Reducer in rated output torque under the condition of continuous operation for more than 2 hours, the reducer can operate normally, no noise.
- 减速机在工作环境温度、额定负载下连续工作，减速机壳温升应小于 $45^{\circ}\text{C}$ ，轴承温度小于 $95^{\circ}\text{C}$ 。  
Reducer in the working environment temperature, rated load of continuous work, reducer shell temperature rise should be  $<45^{\circ}\text{C}$ , bearing temperature is  $<95^{\circ}\text{C}$ .
- 减速机传动效率应符合表3、表4的要求。  
Gear reducer transmission efficiency should meet the requirements of table 3, table 4.
- E系列减速机输出转矩符合表3的规定。  
E series reducer output torque in accordance with the provisions of table 3.
- C系列减速机输出转矩符合表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<br>Output Speed<br>Project<br>型号<br>Model | 5 r/min               |                     | 18 r/min              |                     |                  | 25 r/min              |                     | 30 r/min              |                     | 容许最高输出转速<br>Maximum Allowable<br>Loss Out Speed<br>r/min |
|--|-----------------------|---------------------|-----------------------|---------------------|------------------|-----------------------|---------------------|-----------------------|---------------------|--|
|  | 输出转矩<br>Output Torque | 输入功率<br>Input Power | 输出转矩<br>Output Torque | 输入功率<br>Input Power | 效率<br>Efficiency | 输出转矩<br>Output Torque | 输入功率<br>Input Power | 输出转矩<br>Output Torque | 输入功率<br>Input Power |  |
|  | N.m                   | Kw                  | N.m                   | Kw                  | %                | N.m                   | Kw                  | N.m                   | Kw                  |  |
| 120BX  | 115.0                 | 0.075               | 64.00                 | 0.15                | 80               | 62.00                 | 0.2                 | 64.00                 | 0.25                | 100  |
| 150BX  | 245.0                 | 0.160               | 170.0                 | 0.40                | 80               | 153.0                 | 0.5                 | 153.0                 | 0.60                | 75   |
| 190BX  | 612.0                 | 0.400               | 425.0                 | 1.00                | 80               | 367.0                 | 1.2                 | 382.0                 | 1.50                | 70   |
| 220BX  | 1.146                 | 0.750               | 743.0                 | 1.75                | 80               | 673.0                 | 2.2                 | 637.0                 | 2.50                | 70   |
| 250BX  | 1.528                 | 1.000               | 934.0                 | 2.20                | 80               | 978.0                 | 3.2                 | 892.0                 | 3.50                | 50   |
| 280BX  | 2.292                 | 1.500               | 1.571                 | 3.70                | 80               | 1.437                 | 4.7                 | 1.274                 | 5.00                | 45   |
| 320BX  | 4.584                 | 3.000               | 2.972                 | 7.00                | 80               | 2.903                 | 9.5                 | 2.802                 | 11.0                | 35   |
| 370BX  | 6.112                 | 4.000               | 3.905                 | 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:

$T=9549 \times P \times \eta / N$  (T: 转矩Nm, P: 功率Kw, N: 转速r/min,  $\eta$ : 效率%)。  $T=9549 \times P \times \eta / N$  (T: torque Nm, P: power Kw, N: speed r/min,  $\eta$ : efficiency%).

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

| 输出转速项目<br>Output Speed<br>Project<br>型号<br>Model | 5 r/min               |                     | 18 r/min              |                     |                  | 25 r/min              |                     | 30 r/min              |                     | 容许最高输出转速<br>Maximum Allowable<br>Loss Out Speed<br>r/min |
|--|-----------------------|---------------------|-----------------------|---------------------|------------------|-----------------------|---------------------|-----------------------|---------------------|--|
|  | 输出转矩<br>Output Torque | 输入功率<br>Input Power | 输出转矩<br>Output Torque | 输入功率<br>Input Power | 效率<br>Efficiency | 输出转矩<br>Output Torque | 输入功率<br>Input Power | 输出转矩<br>Output Torque | 输入功率<br>Input Power |  |
|  | N.m                   | Kw                  | N.m                   | Kw                  | %                | N.m                   | Kw                  | N.m                   | Kw                  |  |
| 150BX  | 134.0                 | 0.09                | 99.00                 | 0.24                | 78               | 89.00                 | 0.3                 | 87.00                 | 0.35                | 80   |
| 180BX  | 372.0                 | 0.25                | 269.0                 | 0.65                | 78               | 239.0                 | 0.8                 | 223.0                 | 0.90                | 60   |
| 220BX  | 745.0                 | 0.50                | 455.0                 | 1.10                | 78               | 447.0                 | 1.5                 | 434.0                 | 1.75                | 50   |
| 250BX  | 1,490                 | 1.00                | 994.0                 | 2.40                | 78               | 894.0                 | 3.0                 | 819.0                 | 3.30                | 40   |
| 350BX  | 2,235                 | 2.00                | 1,986                 | 4.80                | 78               | 1,788                 | 6.0                 | 1,638                 | 6.60                | 30   |
| 440BX  | 4,470                 | 3.00                | 3,103                 | 7.50                | 78               | 2,830                 | 9.5                 | /                     | /                   | 25   |
| 520BX  | 7,003                 | 4.70                | 4,966                 | 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:  
 $T=9549 \times P \times \eta / N$  (T: 转矩Nm, P: 功率Kw, N: 转速RPM,  $\eta$ : 效率%)。  $T=9549 \times P \times \eta / N$  (T: torque Nm, P: power Kw, N: speed RPM,  $\eta$ : 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.

## ■ 容许力矩 Allowable Moment

- 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 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。  
Reducer in the rated speed and rated load running, reducer working life should be more than 6000 hours.

## ■ 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。  
Speed reducer in the rated torque of 125% to carry out overload test run 5min, the operation period shall not have abnormal noise and damage and other phenomena.

## ■ 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<br>Project<br>型号<br>Model | 减速器<br>单体减速比<br>Retarder Monomer<br>Reduction Ratio | 容许力矩<br>Allowable<br>Moment<br>N.m | 扭转刚度<br>Torsional<br>Rigidity<br>N.m/(Arc.min) | 瞬时容许最大转矩<br>Instantaneous<br>Maximum Torque<br>N.m | 传动精度<br>Transmission<br>Accuracy<br>Arc.min | 齿隙回差<br>Backlash Of<br>Backlash<br>Arc.min | 寿命<br>Life<br>h | 减速器单体<br>惯性力矩<br>Retarder Inertia<br>Moment<br>Kg.m <sup>2</sup> | 重量<br>Weight<br>kg |
|------------------------------|---|------------------------------------|--|--|---|--|-----------------|--|--------------------|
| 150BX                        | 27.00   | 686.0                              | 47   | 490.0  | 1.0   | 1.0  | 6,000           | 1.380X10 <sup>-5</sup>   | 4.60               |
| 180BX                        | 36.57   | 980.0                              | 147  | 1,323  | 1.0   | 1.0  | 6,000           | 0.550X10 <sup>-4</sup>   | 8.50               |
| 220BX                        | 32.54   | 1,764                              | 255  | 2,450  | 1.0   | 1.0  | 6,000           | 1.820X10 <sup>-4</sup>   | 14.6               |
| 250BX                        | 36.75   | 2,450                              | 510  | 4,900  | 1.0   | 1.0  | 6,000           | 0.475X10 <sup>-3</sup>   | 19.5               |
| 350BX                        | 34.86   | 8,820                              | 980  | 9,800  | 1.0   | 1.0  | 6,000           | 1,390X10 <sup>-3</sup>   | 55.6               |
| 440BX                        | 35.61   | 20.58                              | 1960   | 15.68  | 1.0   | 1.0  | 6,000           | 0.518X10 <sup>-2</sup>   | 79.5               |
| 520BX                        | 37.34   | 34.30                              | 3430   | 24.50  | 1.0   | 1.0  | 6,000           | 0.996X10 <sup>-2</sup>   | 154                |

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

| 项目<br>Project | 速比值<br>Ratio Value |                     | 容许力矩<br>Allowable<br>Moment<br>N.m | 扭转刚度<br>Torsional<br>Rigidity<br>N.m/(Arc.min) | 瞬时容许最大转矩<br>Instantaneous<br>Maximum Torque<br>N.m | 传动精度<br>Transmission<br>Accuracy<br>Arc.min | 齿隙回差<br>Backlash Of<br>Backlash<br>Arc.min | 寿命<br>Life<br>h | 重量<br>Weight<br>kg |
|---------------|--------------------|---------------------|------------------------------------|--|--|---|--|-----------------|--------------------|
|               | 轴输出<br>Axis Output | 壳输出<br>Shell Output |                                    |  |  |   |  |                 |                    |
| 120BX         | 53.50              | 52.50               | 196                                | 20   | 294  | 1.5   | 1.5  | 6,000           | 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  | 6,000           | 4.70               |
|               | 105.0              | 104.0               |                                    |  |  |   |  |                 |                    |
|               | 121.0              | 120.0               |                                    |  |  |   |  |                 |                    |
|               | 141.0              | 140.0               |                                    |  |  |   |  |                 |                    |
| 190BX         | 81.00              | 80.00               | 1.60                               | 108  | 2.00   | 1.0   | 1.0  | 6,000           | 9.30               |
|               | 105.0              | 104.0               |                                    |  |  |   |  |                 |                    |
|               | 121.0              | 120.0               |                                    |  |  |   |  |                 |                    |
|               | 153.0              | 152.0               |                                    |  |  |   |  |                 |                    |
| 220BX         | 81.00              | 80.00               | 2.00                               | 196  | 3.60   | 1.0   | 1.0  | 6,000           | 13.1               |
|               | 101.0              | 100.0               |                                    |  |  |   |  |                 |                    |
|               | 121.0              | 120.0               |                                    |  |  |   |  |                 |                    |
|               | 153.0              | 152.0               |                                    |  |  |   |  |                 |                    |
| 250BX         | 81.00              | 80.00               | 2.90                               | 294  | 5.38   | 1.0   | 1.0  | 6,000           | 17.4               |
|               | 111.0              | 110.0               |                                    |  |  |   |  |                 |                    |
|               | 161.0              | 160.0               |                                    |  |  |   |  |                 |                    |
|               | 175.28             | 174.28              |                                    |  |  |   |  |                 |                    |
| 280BX         | 81.00              | 80.00               | 3.90                               | 392  | 7.80   | 1.0   | 1.0  | 6,000           | 26.4               |
|               | 101.0              | 100.0               |                                    |  |  |   |  |                 |                    |
|               | 129.0              | 128.0               |                                    |  |  |   |  |                 |                    |
|               | 145.0              | 144.0               |                                    |  |  |   |  |                 |                    |
| 320BX         | 81.00              | 80.00               | 7.00                               | 980  | 15.6   | 1.0   | 1.0  | 6,000           | 44.3               |
|               | 101.0              | 100.0               |                                    |  |  |   |  |                 |                    |
|               | 118.5              | 117.5               |                                    |  |  |   |  |                 |                    |
|               | 129.0              | 128.0               |                                    |  |  |   |  |                 |                    |
| 370BX         | 141.0              | 140.0               | 8.82                               | 1176   | 22.0   | 1.0   | 1.0  | 6,000           | 66.4               |
|               | 171.0              | 170.0               |                                    |  |  |   |  |                 |                    |
|               | 185.0              | 184.0               |                                    |  |  |   |  |                 |                    |
|               | 81.00              | 80.00               |                                    |  |  |   |  |                 |                    |
|               | 101.0              | 100.0               |                                    |  |  |   |  |                 |                    |
|               | 118.5              | 117.5               |                                    |  |  |   |  |                 |                    |

## 润滑 LUBRICATION

### ■ 减速机使用润滑油脂：Molywhite RE-00 或 VIGO-grease REO 其它相同品级精密减速机专用润滑脂

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

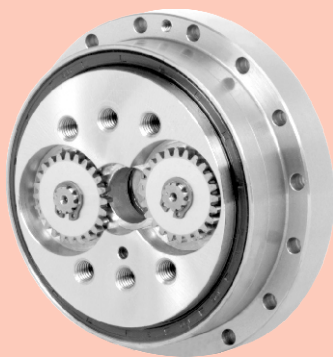
### ■ 减速机出厂时未填充润滑油脂，在安装时填充建议的润滑油脂，充填量约为减速机内部空腔体积的90%

Reducer factory without filling lubricating oil, lubricating grease in the installation of filling proposal, filling weight reducer internal cavity volume 90%

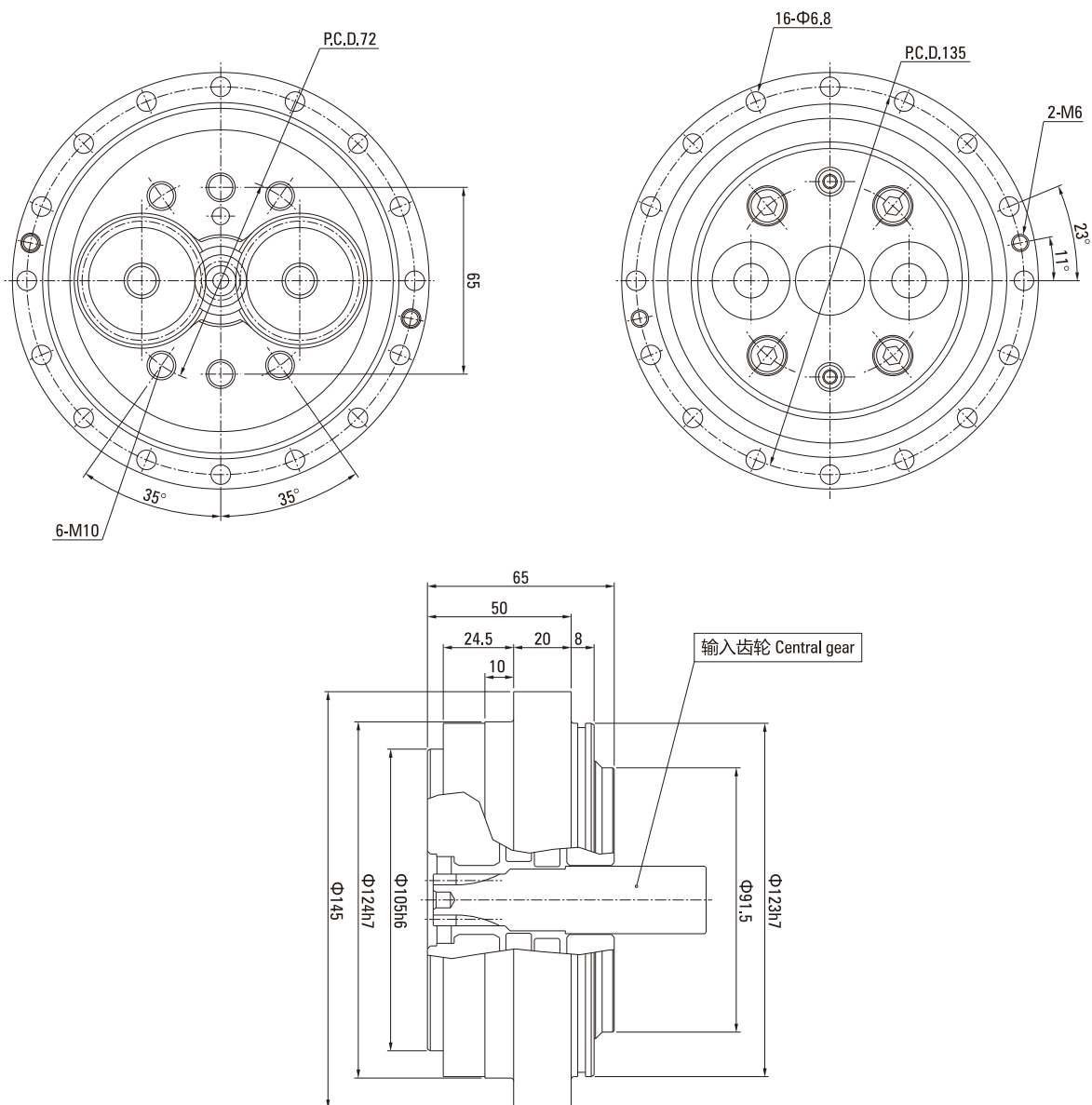
### ■ 润滑油脂标准更换时间为20,000小时。润滑油脂被污染或在恶劣的环境下使用时，需检查润滑油脂老化、被污染的情况，并规定更换时间

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

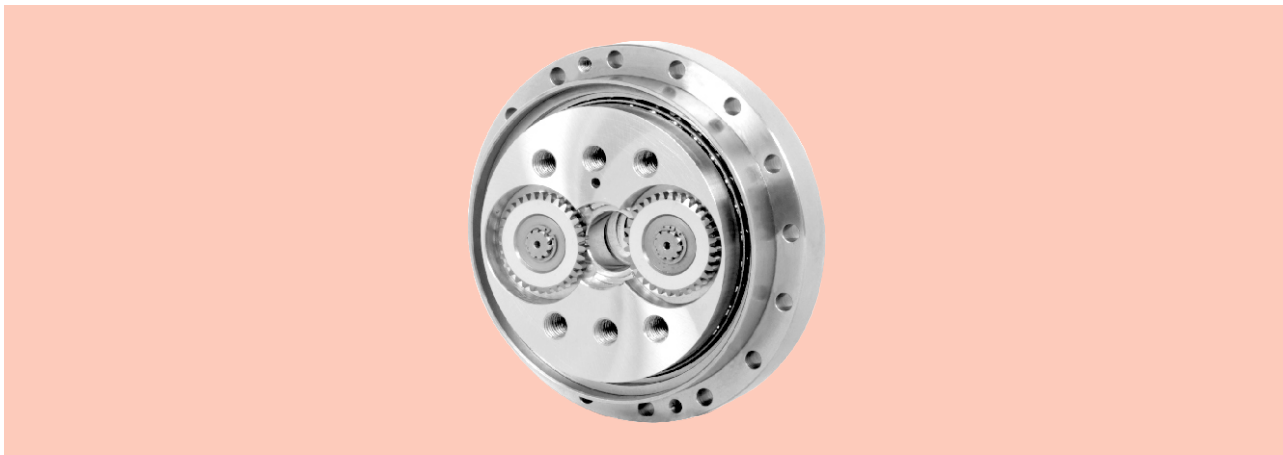
# E系列外形尺寸图 E SERIES OUTLINE SIZE CHART



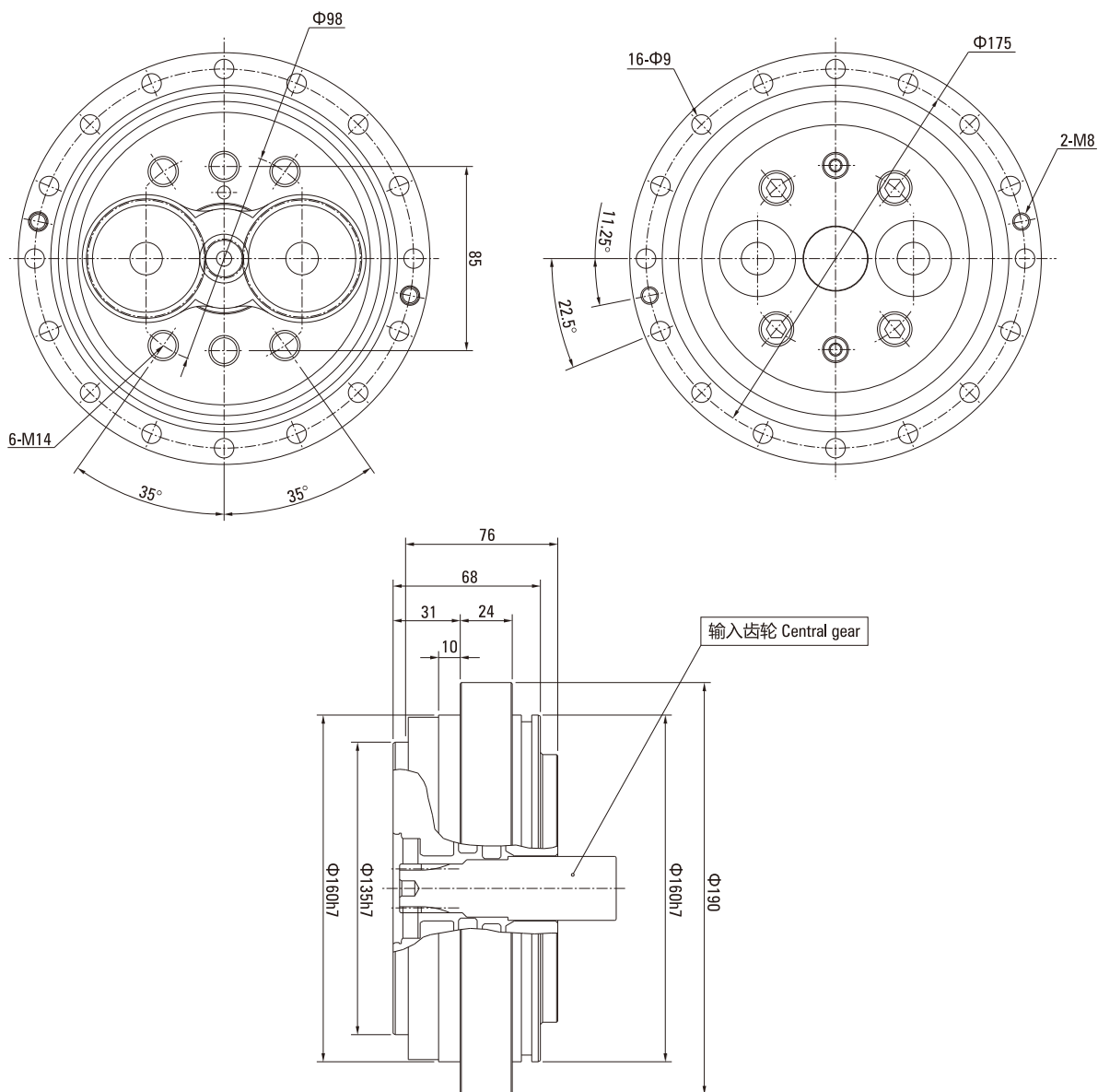
150BX-E 外形图 150BX-E Outline Drawing



E系列外形尺寸图  
E SERIES OUTLINE SIZE CHART



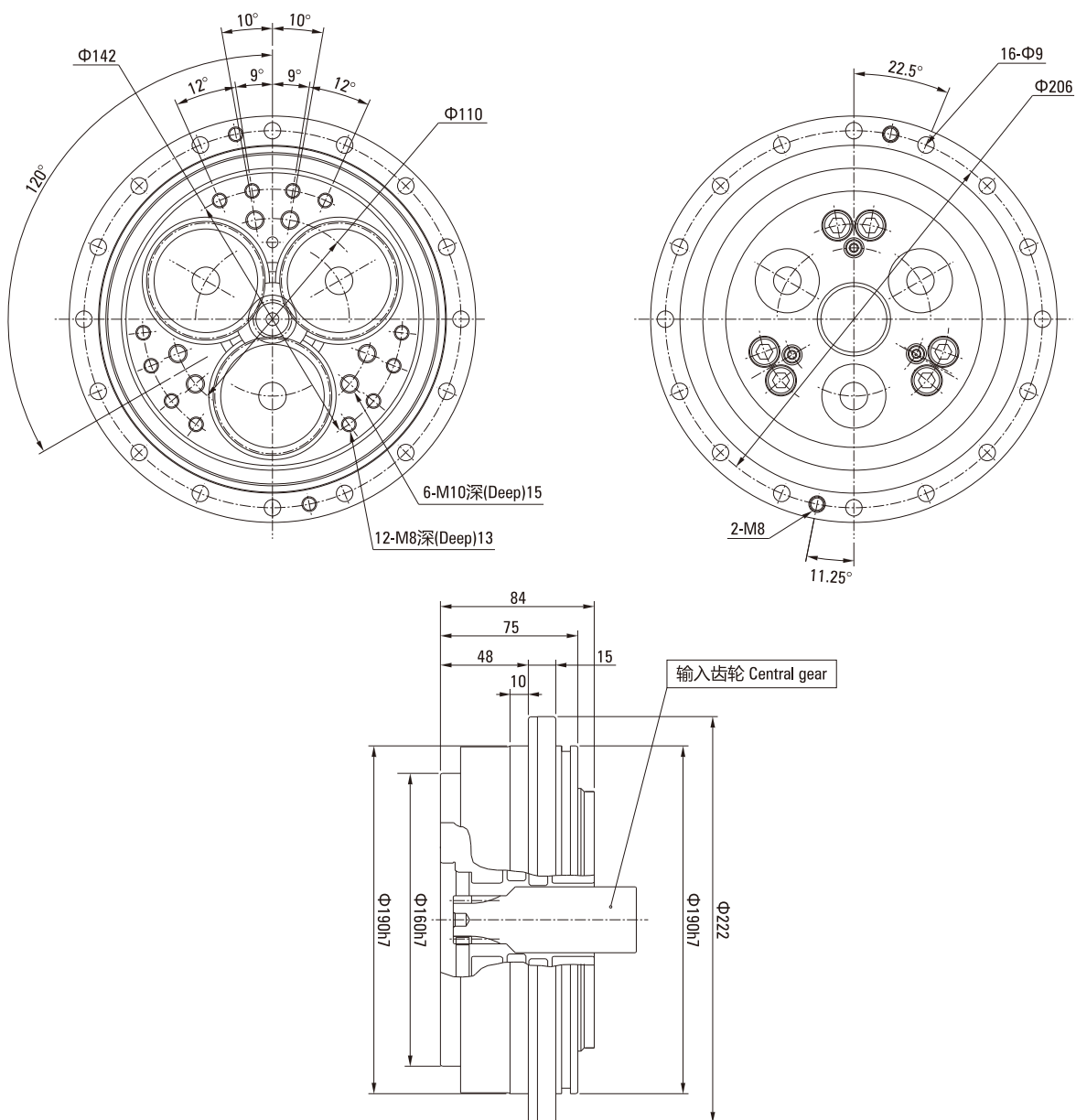
190BX-E 外形图 190BX-E Outline Drawing



# E系列外形尺寸图 E SERIES OUTLINE SIZE CHART



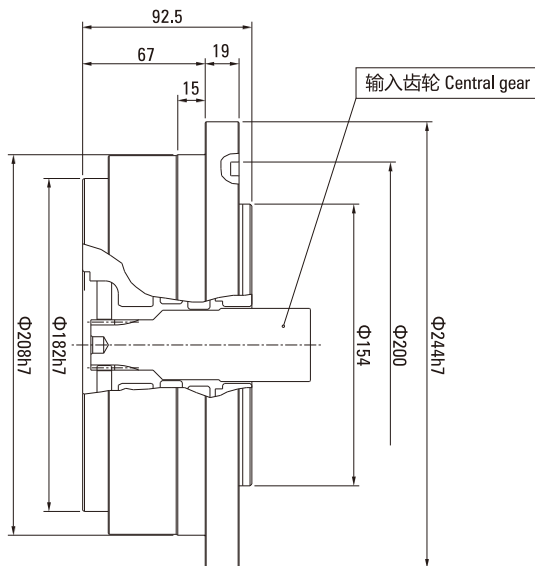
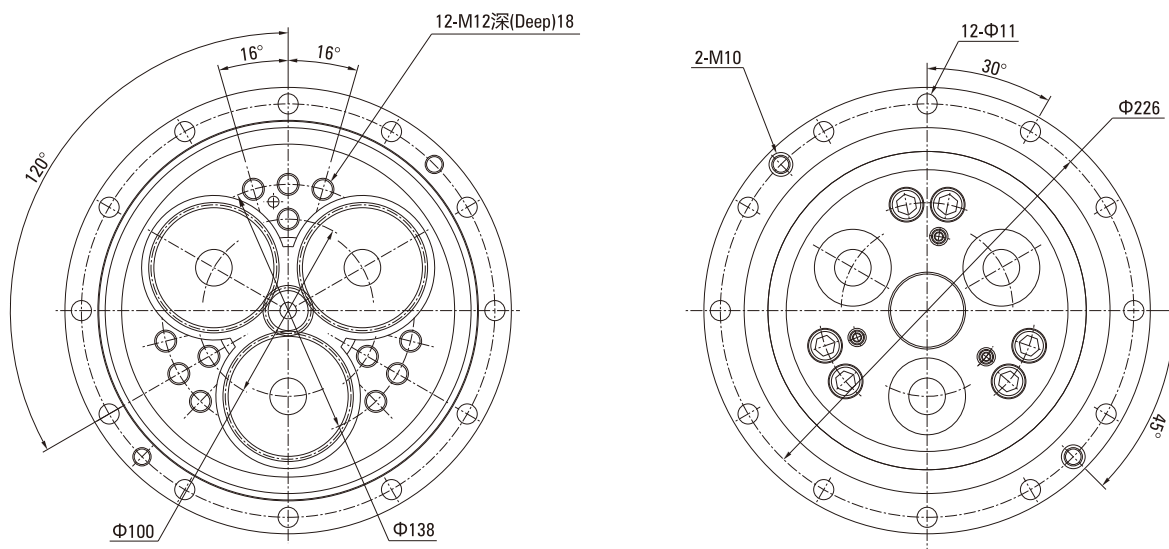
220BX-E 外形图 220BX-E Outline Drawing



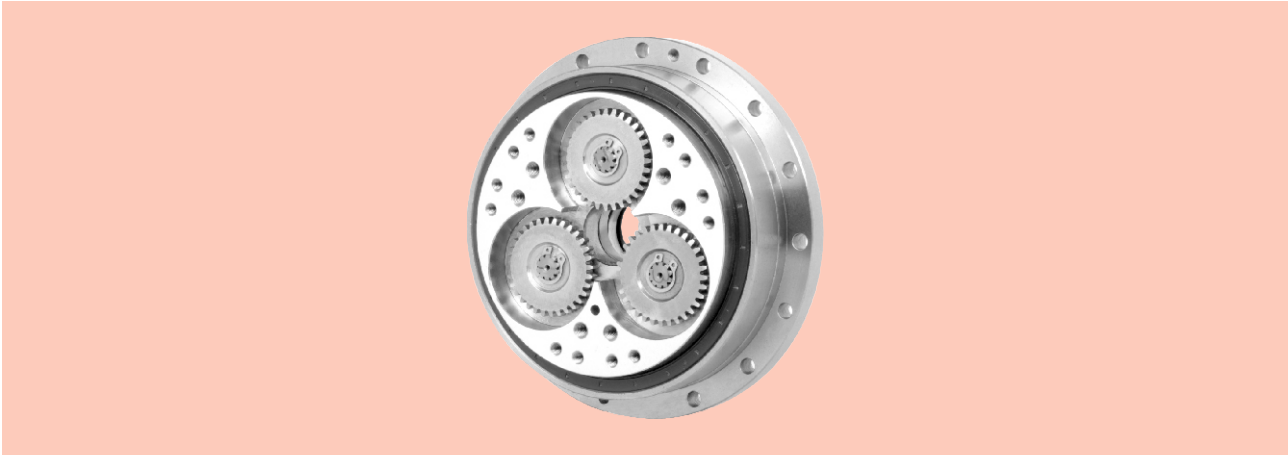
# E系列外形尺寸图 E SERIES OUTLINE SIZE CHART



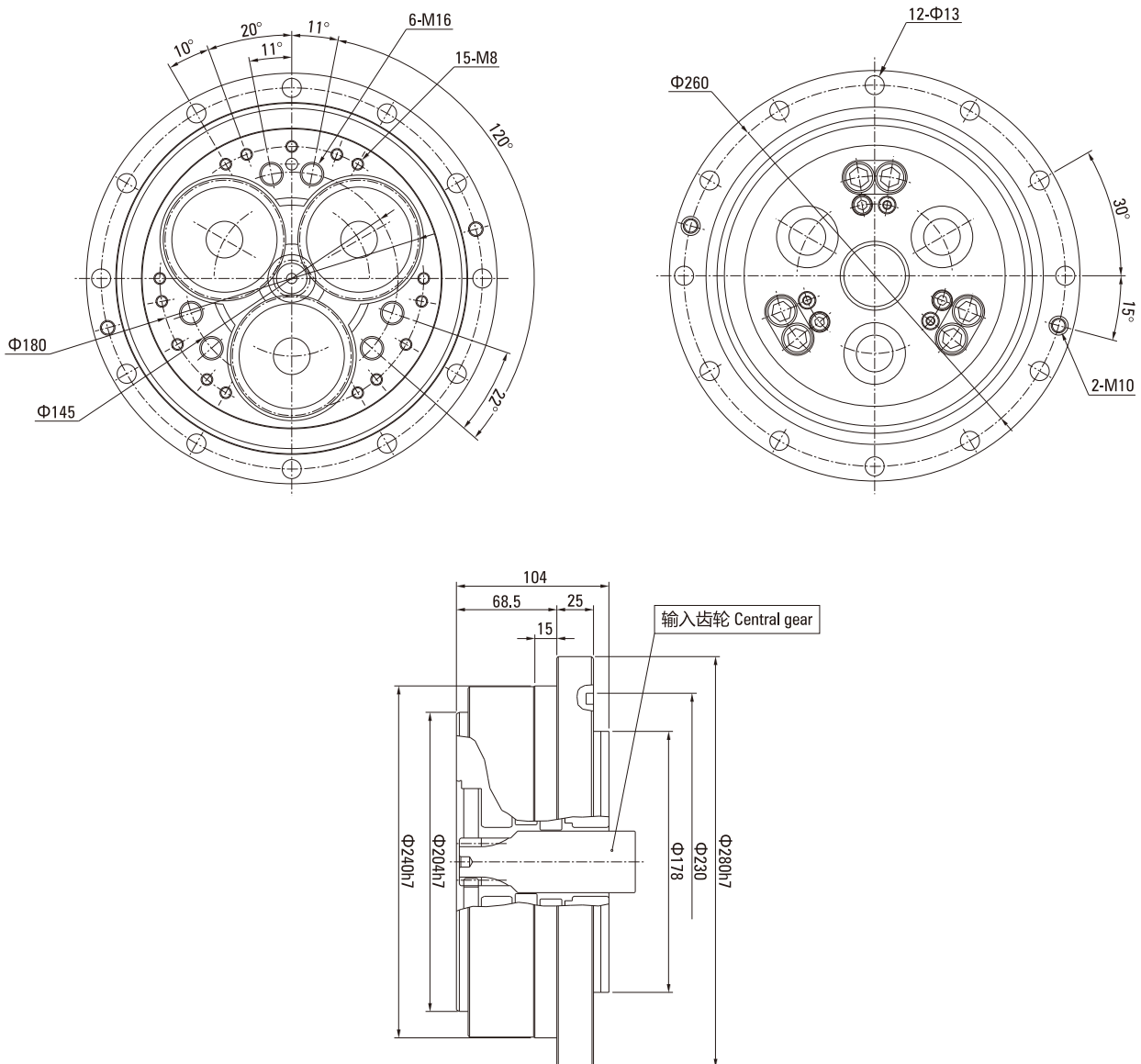
250BX-E 外形图 250BX-E Outline Drawing



E系列外形尺寸图  
E SERIES OUTLINE SIZE CHART



280BX-E 外形图 280BX-E Outline Drawing

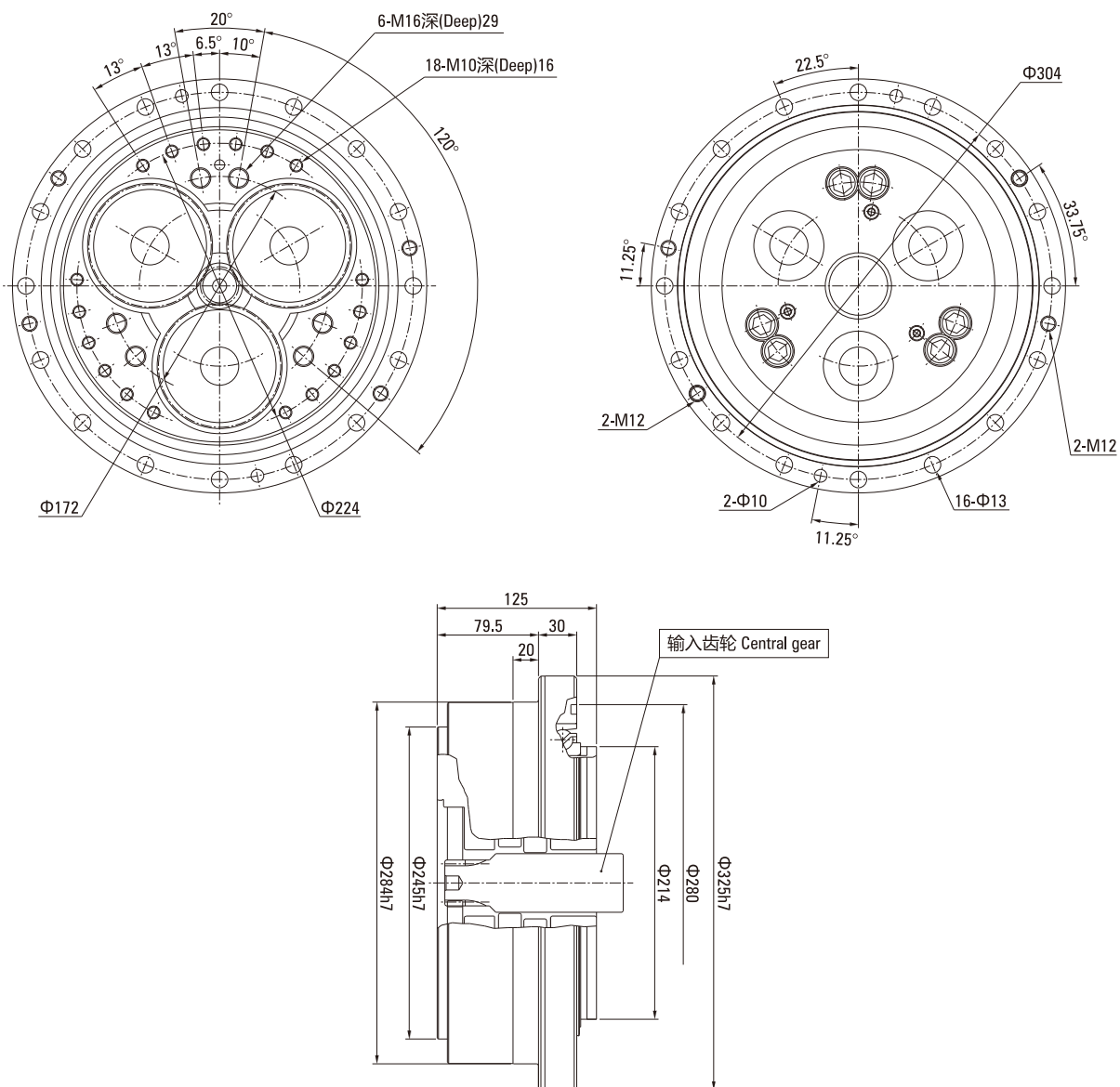


# E系列外形尺寸图 E SERIES OUTLINE SIZE CHART



P14

320BX-E 外形图 320BX-E Outline Drawing



# E型减速器安装要领 E TYPE REDUCER INSTALLATION ESSENTIALS

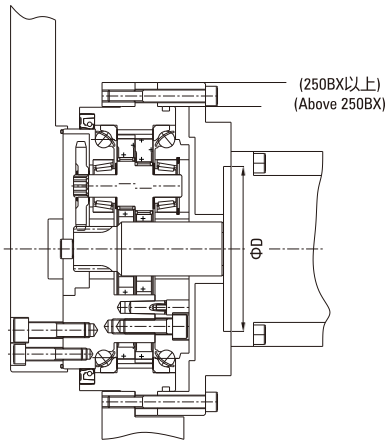
为了充分发挥RVE减速器的性能，需要对减速器安装精度、安装方法、润滑以及密封进行最佳设计。

In order to make full use of the performance of RVE reducer, the installation accuracy, installation method, lubrication and sealing of the reducer are required.

## 装配精度 Assembly Precision

电机轴同减速器的同轴度误差 $a$ 小于0.03mm (280BX以上机型小于0.05)。  
The coaxial degree error  $a$  of the motor shaft reducer is less than 0.03mm (280BX above models are less than 0.05).  
如安装精度不良，特别容易造成振动及噪音。  
If the installation accuracy is poor, especially easy to cause vibration and noise.

● 图C.1: 装配精度 Figure C.1: Assembly precision

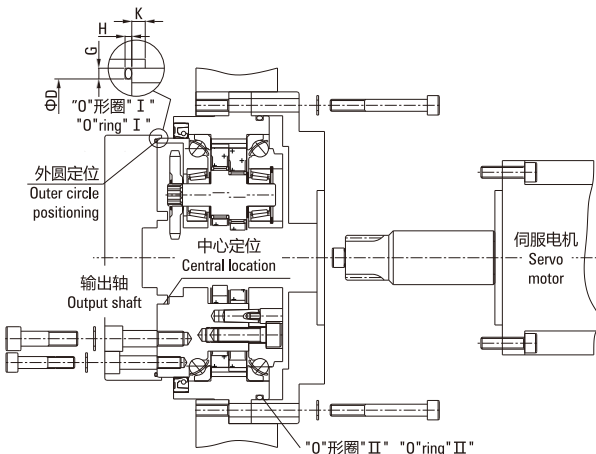


## 装配要领 Assembly Method

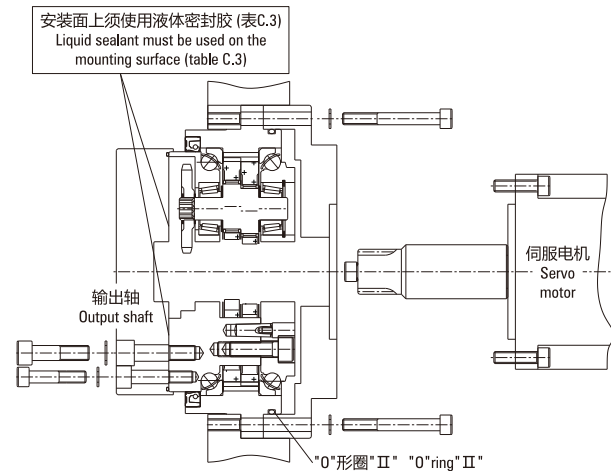
- 装配时须按指定用量封入指定润滑油脂。  
The assembly according to the specified dosage specified sealed grease.
- 减速器装配在配套部件时的标准图示，图C.2所示，图C.2中的“O”形圈位置需进行密封。  
Reducer assembly in the supporting parts of the standard icon, shown in figure C.2, figure C.2 in the "O" ring position to be sealed.
- 如结构上不允许使用“O”型圈，请使用表C.3的液体密封胶。  
If the structure is not allowed to use the "O" - shaped ring, please use the table C.3 liquid sealant.
- 装配图示及“O”型圈密封尺寸，见图C.2, 图C.3, 图C.4, 及表C.1, 表C.2。  
Assembly diagram and "O" - shaped ring seal size, see figure C.2, figure C.3, figure C.4, and table C.1, table C.2.

## 150BX、190BX、220BX:

● 图C.3: 装配示例 Figure C.3: Assembly example

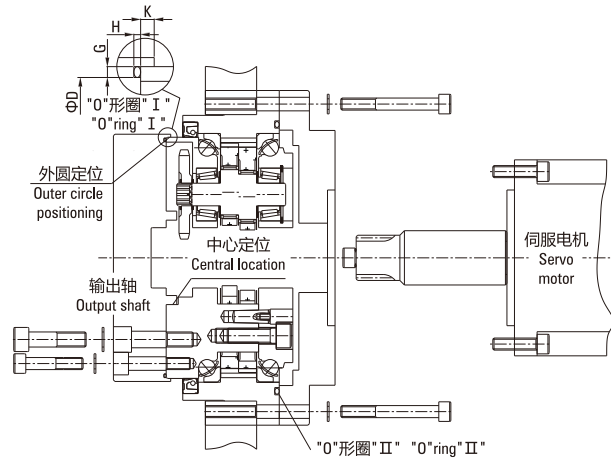


● 图C.2: 装配密封 Figure C.2: Assembly seal



## 250BX、280BX、320BX:

● 图C.4: 装配示例 Figure C.4: Assembly example



● 表C.1: “O”型圈(II): Table C.1: "O" - shaped ring (II)

| 机型 Model | 适用“O”型圈 Apply The "O" Shape Ring |
|----------|----------------------------------|
| 150BX    | S120                             |
| 190BX    | AS568-258                        |
| 220BX    | AS568-263                        |
| 240BX    | G190 (B2401)                     |
| 280BX    | G220 (B2401)                     |
| 320BX    | G270 (B2401)                     |

◀ 图C.3注: 中心定位和外圆定位选其一。

Figure C.3 note: Center positioning and outer circle positioning.

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

| 机型 Model        |                            | 150BX (A)              | 150BX (B)           | 190BX                | 220BX                  | 240BX                  | 280BX                  | 320BX                  |            |
|-----------------|----------------------------|------------------------|---------------------|----------------------|------------------------|------------------------|------------------------|------------------------|------------|
| 参数<br>Parameter | 代号 Code                    | AS568-045              | S100                | S132                 | AS568-163              | AS568-167              | AS568-265              | AS568-271              |            |
|                 | 0形圈<br>O ring              | 代号 Code                | AS568-045           | S100                 | S132                   | AS568-163              | AS568-167              | AS568-265              | AS568-271  |
|                 | 线径 Wire diameter           | $\Phi 1.78 \pm 0.07$   | $\Phi 2 \pm 0.1$    | $\Phi 2 \pm 0.1$     | $\Phi 2.62 \pm 0.07$   | $\Phi 2.62 \pm 0.07$   | $\Phi 3.53 \pm 0.1$    | $\Phi 3.53 \pm 0.1$    |            |
|                 | 内径 Internal diameter       | $\Phi 101.32 \pm 0.38$ | $\Phi 99.5 \pm 0.4$ | $\Phi 131.5 \pm 0.6$ | $\Phi 152.07 \pm 0.58$ | $\Phi 177.47 \pm 0.58$ | $\Phi 196.44 \pm 0.76$ | $\Phi 234.54 \pm 0.76$ |            |
|                 | 凹槽<br>Groove<br>尺寸<br>size | 外径D Outside diameter D | $\Phi 105$          | $\Phi 105$           | $\Phi 135$             | $\Phi 160$             | $\Phi 182$             | $\Phi 204$             | $\Phi 243$ |
|                 | 深度H Depth H                | $1.27 \pm 0.05$        | $1.5_{-0.1}^0$      | $1.5_{-0.1}^0$       | $2.06 \pm 0.05$        | $2.06 \pm 0.05$        | $2.82 \pm 0.05$        | $2.82 \pm 0.05$        |            |
|                 | 宽度G Width G                | $2.39_{-0}^{+0.25}$    | $2.70_{-0}^{+0.25}$ | $2.70_{-0}^{+0.25}$  | $3.58_{-0}^{+0.25}$    | $3.58_{-0}^{+0.25}$    | $4.78_{-0}^{+0.25}$    | $4.78_{-0}^{+0.25}$    |            |
| 高度K Height K    | 3                          | 3                      | 3                   | 3                    | 3                      | 4                      | 4                      |                        |            |

注: 上表中“O”形圈A, B任选一个。Note: On the table in the "O" - shaped circle A, B optional one.

● 表C.3: 推荐液体密封胶 Table C.3: Recommended liquid sealant

| 名称 (制造商)<br>Name (Manufacturer)       | 性质及用途<br>Properties And Uses   |
|---------------------------------------|--|
| Three Bond 1211<br>(Three Bond)       | <ul style="list-style-type: none"> <li>■ 硅系无溶剂型 Silicone based non solvent type</li> <li>■ 半干性充填 Half dry filling</li> </ul>   |
| HERME SERL SS-60F<br>(Nihon-Hermetic) | <ul style="list-style-type: none"> <li>■ 无溶剂弹性密封 Solvent free elastic seal</li> <li>■ 金属接触面适用 Metal contact surface</li> </ul> |

注: 螺栓和销并用型装配请询问本公司技术人员  
Note: Bolt and pin and assembly please ask the company's technical staff

## 螺钉的紧固转矩 Fastening Torque Of Screw

E型减速器, 使用内六角螺钉 (GB/T 70.1 12.9级), 请按表C.4紧固转矩进行紧固。输出轴螺钉及销并用型 (P型), 请用圆锥销 (GB/T 118-2000)。为了防止内六角螺栓松动, 建议使用碟形弹簧垫圈。

E type gear reducer, using six hexagon screw (GB/T 70.1 12.9 level), please fasten on table C.4 fastening torque. The output shaft and pin and screw type (P type), please use the taper pin (GB/T 118-2000). In order to prevent the inner six angle bolts loose, recommend the use of dish spring washer.

● 表C.4: 螺钉紧固转矩 Table C.4: Screw fastening torque

| 内六角螺钉 Inner Six Angle Screw | 紧固转矩(Nm) Fastening Torque (Nm) | 螺钉参数 Screw Parameters           |
|-----------------------------|--------------------------------|---------------------------------|
| M5X0.8                      | $9 \pm 0.5$                    | 1- GB/T 70.1                    |
| M6X1.0                      | $16 \pm 0.8$                   | 2- 12.9级 12.9 level             |
| M8X1.25                     | $37 \pm 1.8$                   | 3- 发黑处理 Blackening              |
| M10X1.5                     | $73 \pm 3.5$                   | 4- 圆柱头 Cylinder head            |
| M12X1.75                    | $129 \pm 6.5$                  | 5- 螺纹精度: 6g或2级                  |
| M14X2.0                     | $205 \pm 10$                   | Thread precision: 6g or 2 class |
| M16X2.0                     | $318 \pm 16$                   |                                 |

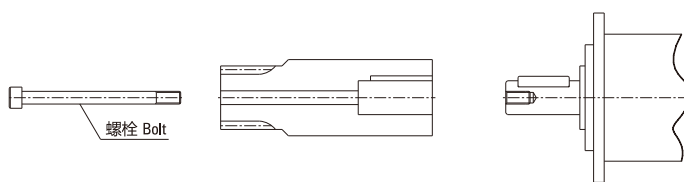
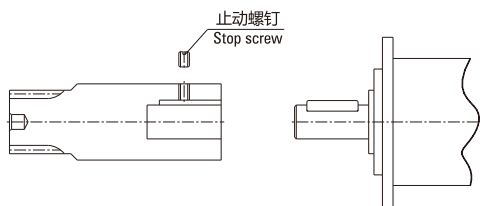
## 输入齿轮 Input Gear

- 标准输入齿轮是未进行电机轴安装孔加工的产品。  
Standard input gear is not installed in the motor shaft processing products.
- 安装示例如图C.5: (共三种)  
Installation example is shown in figure C.5: (A total of three species)

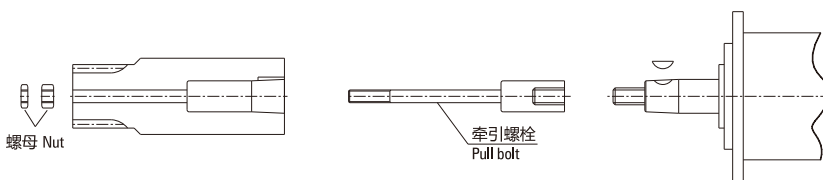
● 图C.5: 输入齿轮装配 Figure C.5: Input gear assembly

(直轴: 伺服马达轴没螺孔 Direct axis: No screw axis servo motor)

(直轴: 伺服马达轴有螺孔 Direct axis: Servo motor shaft with a screw hole)



(锥轴: 伺服马达轴有螺栓 Cone shaft: Servo motor shaft with bolt)



● 表C.5: 输入齿轮轴A型 Table C.5 : Input gear shaft A type

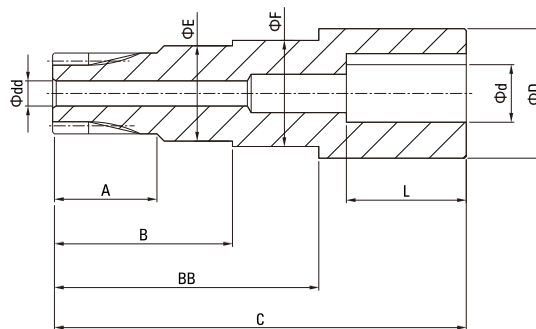
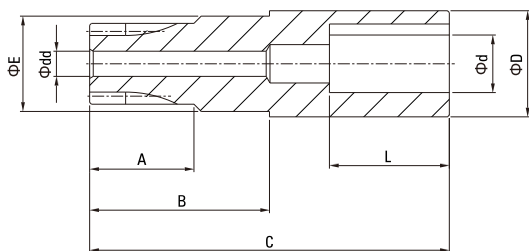
| 尺寸代号 Size Code | A  | B  | C   | D    | d        | dd  | E    | L | NOTE |
|----------------|----|----|-----|------|----------|-----|------|---|------|
| 150BX-E        | 25 | 46 | 95  | 23.5 | 11,14    | 5.5 | 21.5 | - | -    |
| 190BX-E        | 29 | 53 | 100 | 29.5 | 14,19    | 6.5 | 29.5 | - | -    |
| 220BX-E        | 29 | -  | 100 | 36.0 | 19,22    | 7.0 | -    | - | -    |
| 250BX-E        | 34 | 70 | 120 | 40.0 | 19,22,24 | 9.0 | 38.0 | - | -    |
| 280BX-E        | 35 | -  | 120 | 42.0 | 22,24,28 | 7.0 | -    | - | -    |
| 320BX-E        | 35 | -  | 140 | 46.0 | 24,28    | 11  | -    | - | -    |
| 370BX-E        | 38 | -  | 155 | 56.0 | 28,35    | 11  | -    | - | -    |

● 表C.6: 输入齿轮轴B型 Table C.6 : Input gear shaft B type

| 尺寸代号 Size Code | A  | B   | BB | C   | D  | E    | F    | d        | dd  | L | NOTE |
|----------------|----|-----|----|-----|----|------|------|----------|-----|---|------|
| 150BX-E        | 25 | 50  | 66 | 100 | 30 | 23.5 | 21.5 | 11,14    | 5.5 | - | -    |
| 190BX-E        | 29 | 33  | 76 | 115 | 36 | 29.5 | 26.5 | 14,19    | 6.5 | - | -    |
| 220BX-E        | 29 | 80  | -  | 130 | 42 | 36.0 | -    | 19,22,24 | 7.0 | - | -    |
| 280BX-E        | 35 | 105 | -  | 170 | 50 | 42.0 | -    | 24,28,35 | 9.0 | - | -    |
| 320BX-E        | 35 | 122 | -  | 185 | 50 | 46.0 | -    | 24,28,35 | 11  | - | -    |
| 370BX-E        | 38 | 139 | -  | 215 | 58 | 56.0 | -    | 35       | 11  | - | -    |

(输入齿轮轴A型 Input gear shaft A type)

(输入齿轮轴B型 Input gear shaft B type)



● 输入齿轮定制服务 Input gear customization service

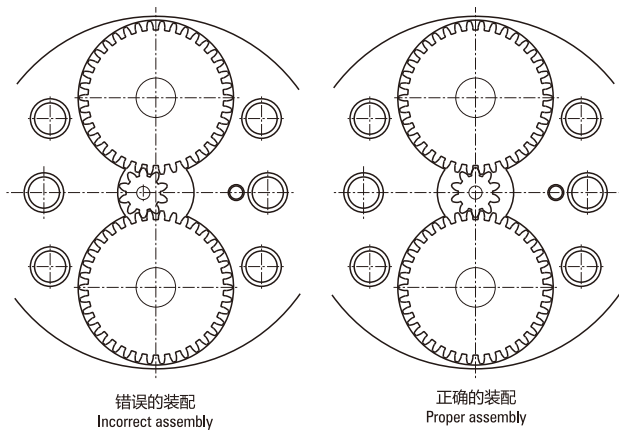
本公司可提供依所选电机型式进行输入齿轮的定制、加工服务。

The company can provide according to the selected motor type for the input gear customization, processing services.

150BX、190BX的行星齿轮是二个，装配输入齿轮时需特别注意输入齿轮要径直插入，位置正确，插入时要轻轻旋入，不可强制插入，也不可倾斜插入。(图C.6)

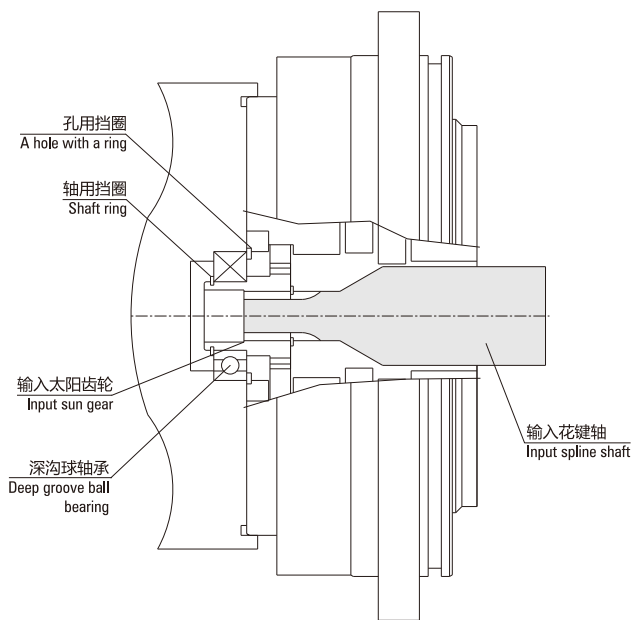
Is second planet gear 150BX, 190BX, input assembly gear when special attention should be paid to the input gear to straight into, the correct position, insert to gently into the rotation, not can force the insertion of, nor inclined inserted. (Figure C.6)

● 图C.6: 装配位置 Figure C.6: Assembly position



● 图C.8: 不能贯通减速器内部的速比安装示例

Figure C.8: Can not through the reducer internal ratio installation example



● 能贯通减速器内部的速比和不能贯通的速比。

To be able to through the internal speed ratio and the speed ratio can not be through.

不能贯通的速比如表C.7，安装示例见图C.8。

Can not run through the speed of such as table C.7, installation example see figure C.8.

● 表C.7: 不能贯通的速比 Table C.7: Speed ratio can not be through

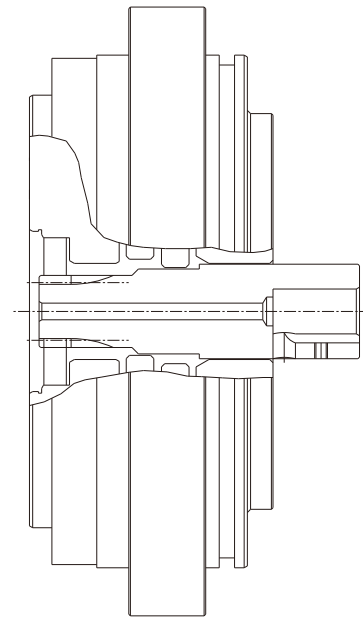
|                              | 150BX | 190BX | 220BX |
|------------------------------|-------|-------|-------|
| 输出轴输出<br>Output shaft output | 57    | 57    | 57    |
| 外壳输出<br>Shell output         | 56    | 56    | 56    |

注: 表2中速比为能贯通的速比。能贯通减速器内部的速比安装示例图C.7:

Note: The ratio of the speed ratio is the ratio of the speed through. Can through the gear reducer internal ratio installation example diagram C.7:

● 图C.7: 能贯通减速器内部的速比安装示例

Figure C.7: Example of the installation of speed ratio through the internal reducer



## 润滑 Lubrication

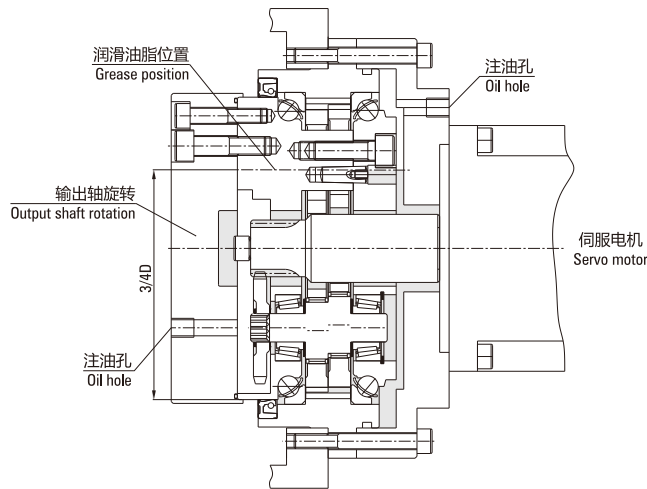
- 减速机使用润滑油脂: Molywhite RE-00或VIGO-Grease RE0其它相同品级精密减速机专用润滑油脂。  
Reducer using lubricating oil: Molywhite RE-00 or VIGO-Grease RE0 other similar grade precision reducer special grease.
- 减速机出厂时未填充润滑油脂, 在安装时填充建议的润滑油脂, 填充量约为减速机内部空腔体积的90%。  
When the gear reducer is not filled with grease, it is recommended to fill the grease at the time of installation, and the filling amount is about 90% of the internal cavity volume of the reducer.
- 润滑油脂标准更换时间为20000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.
- 减速机润滑油脂建议用量如表C.8:  
Reducer lubrication grease recommended dosage as shown in table C.8:
- 润滑油脂填充位置如图C.9, 图C.10:  
Grease filling position as shown in figure C.9, figure C.10:

● 表C.8: 润滑油脂注入量 Table C.8: Lubricating oil injection

| 型号 Model  | 填充量 Filling Amount | 水平安装 Horizontal Installation | 垂直安装 Vertical Installation |
|-----------|--------------------|------------------------------|----------------------------|
|           |                    | (cc)                         | (cc)                       |
| 150BX-RVE |                    | 87                           | 100                        |
| 190BX-RVE |                    | 195                          | 224                        |
| 220BX-RVE |                    | 383                          | 439                        |
| 240BX-RVE |                    | 432                          | 495                        |
| 280BX-RVE |                    | 630                          | 694                        |
| 320BX-RVE |                    | 1040                         | 1193                       |

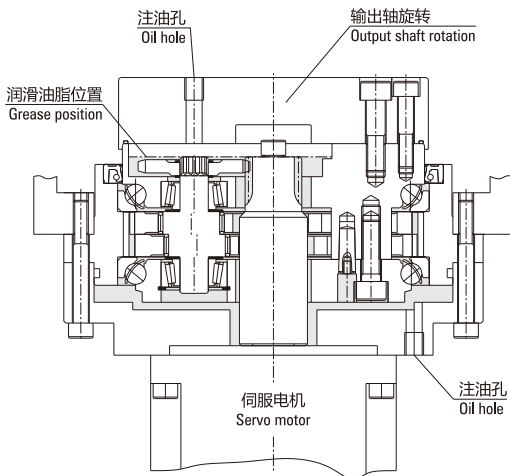
● 图C.9: 润滑油注入位置(水平) Figure C.9: Lubricating oil injection position (horizontal)

(安装水平轴 Install horizontal axis)

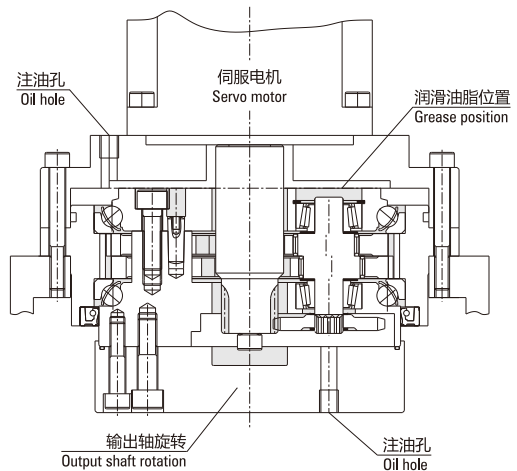


● 图C.10: 润滑油注入位置(垂直) Figure C.10: Lubricating oil injection position (vertical)

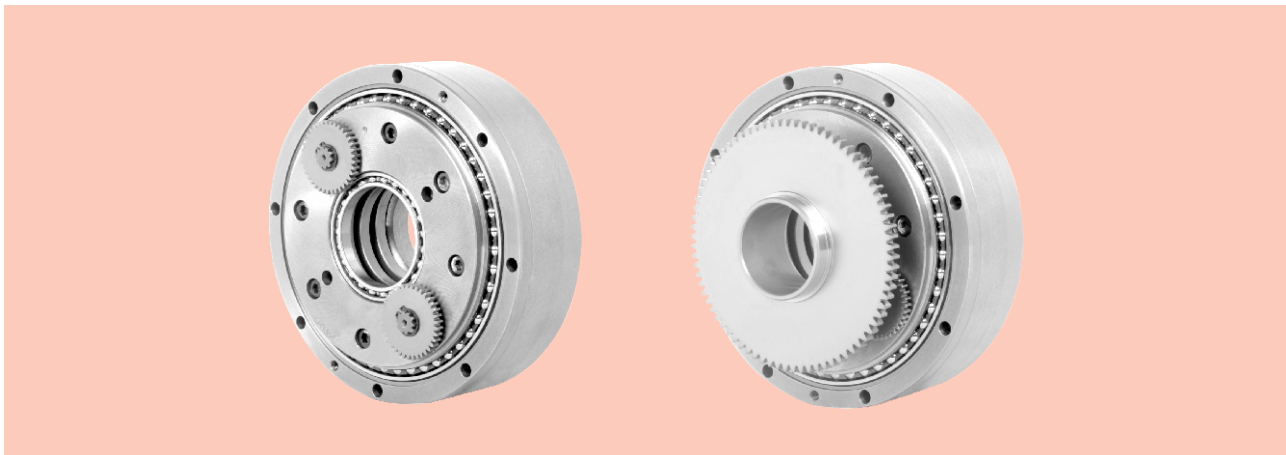
(安装垂直轴-1 Install vertical axis-1)



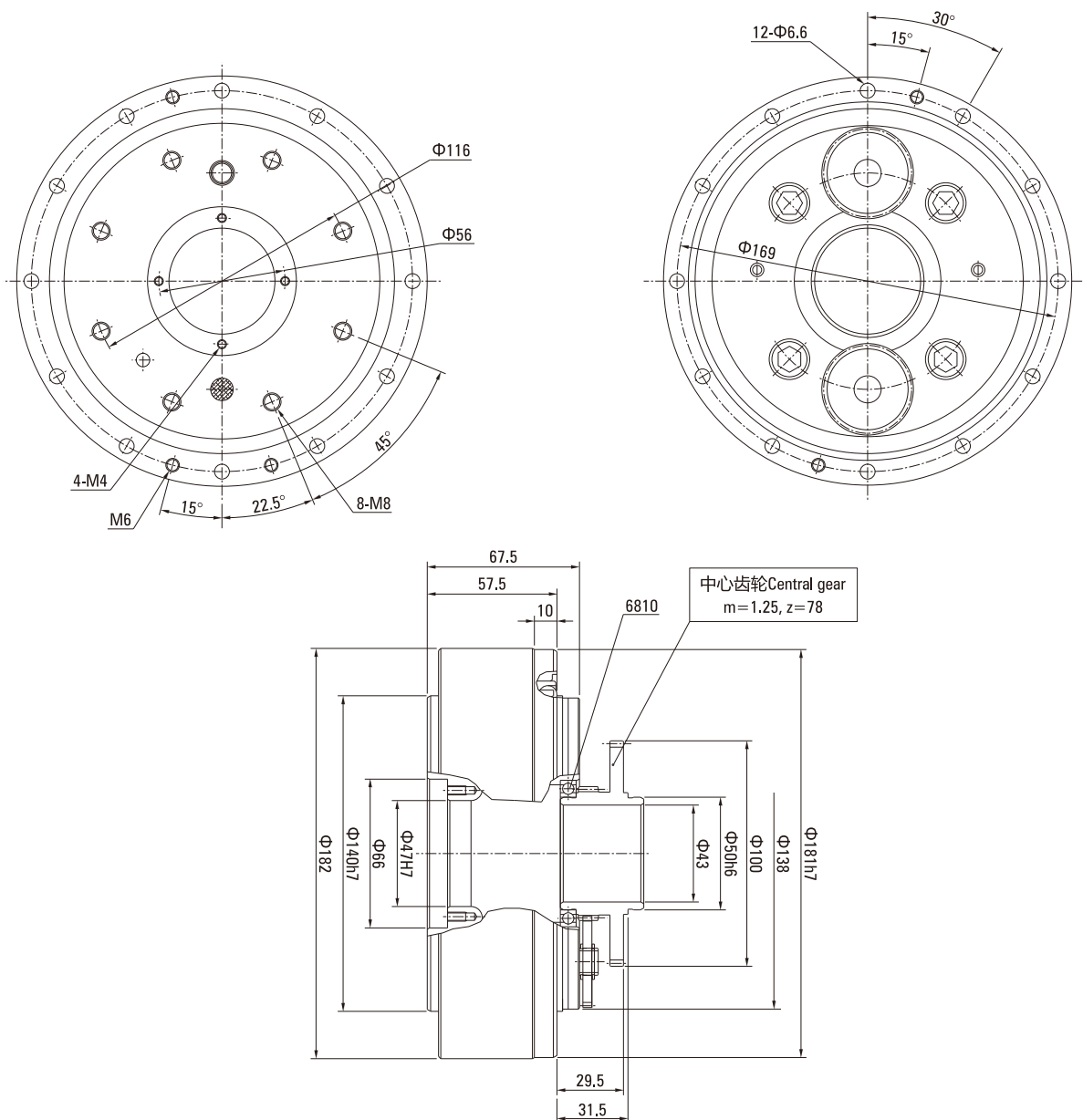
(安装垂直轴-2 Install vertical axis-2)



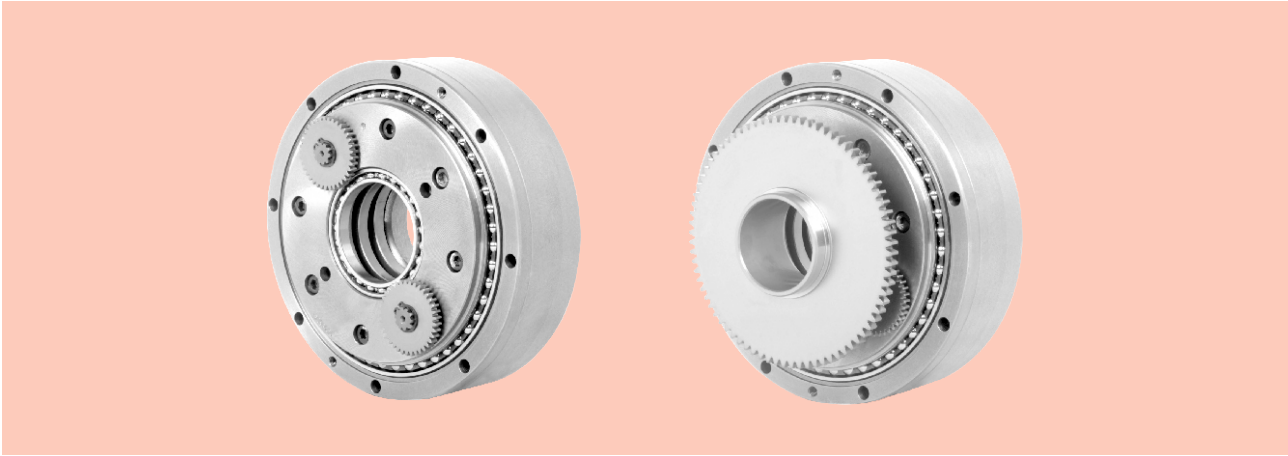
# C系列外形尺寸图 C SERIES OUTLINE SIZE CHART



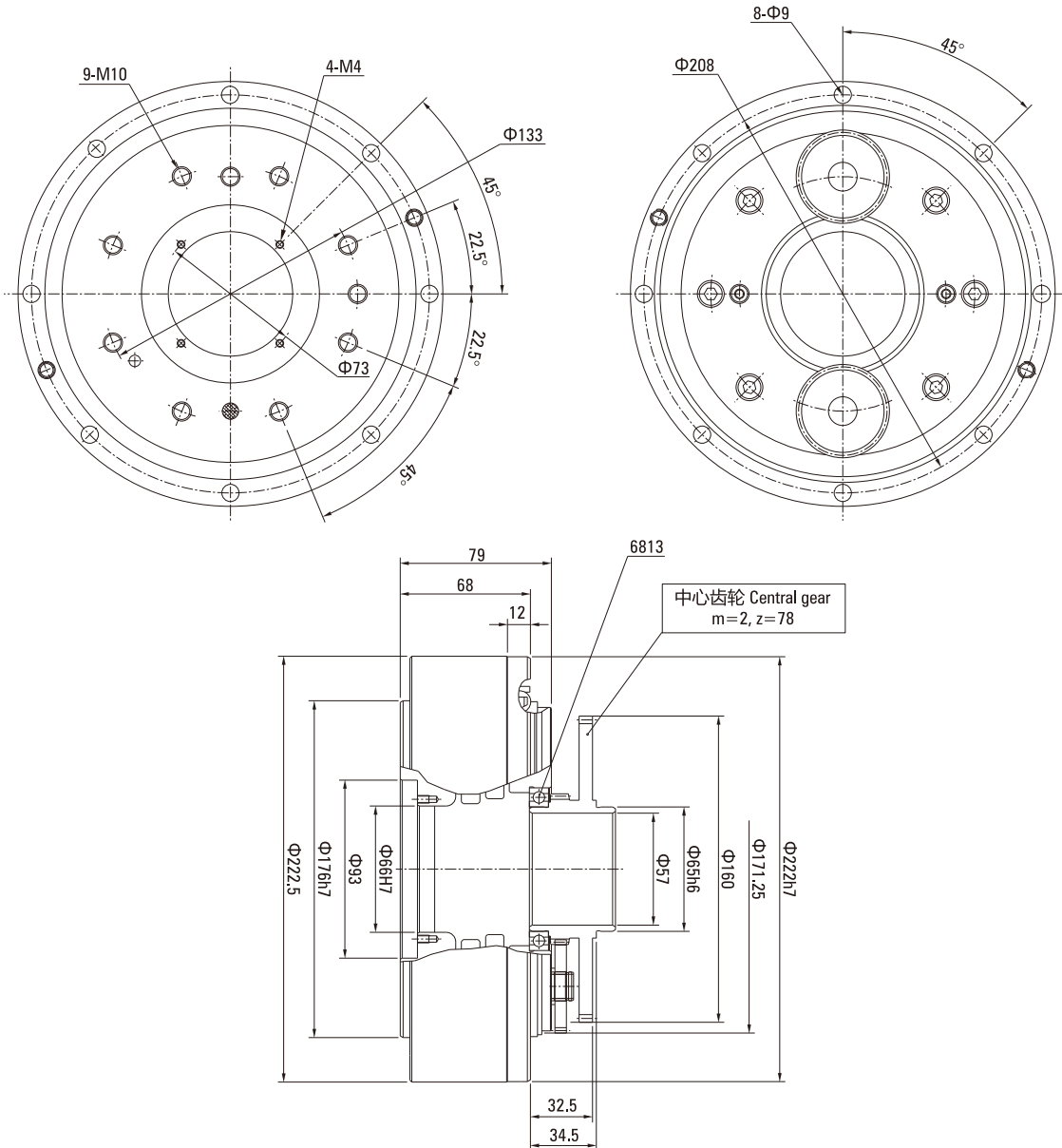
180BX-C 外形图 180BX-C Outline Drawing



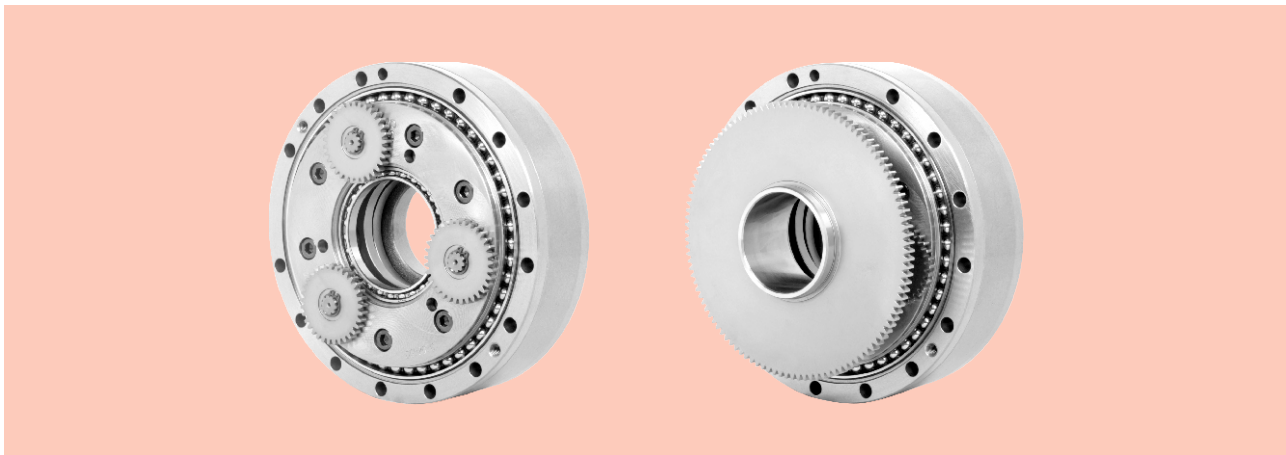
C系列外形尺寸图  
C SERIES OUTLINE SIZE CHART



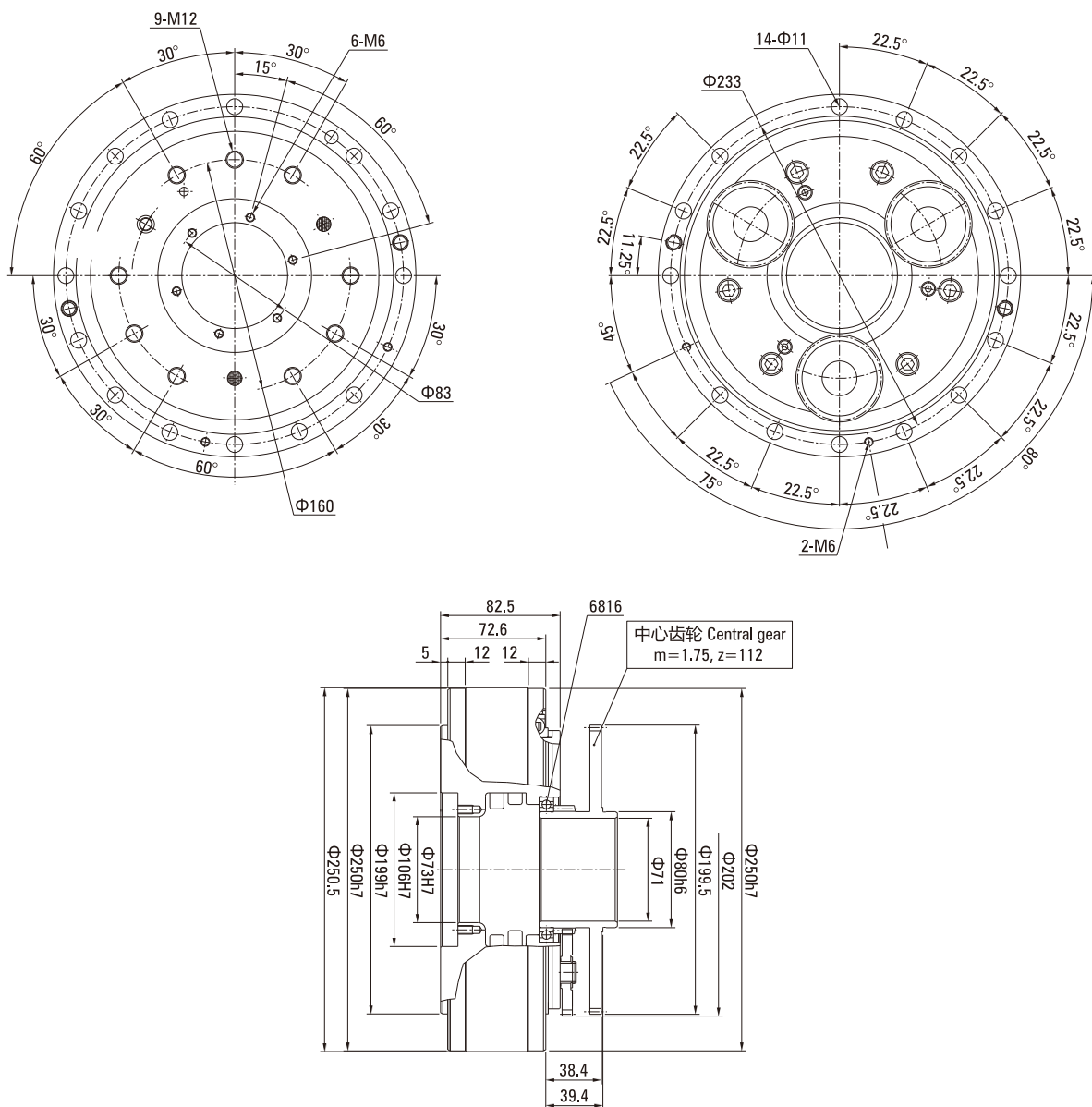
220BX-C 外形图 220BX-C Outline Drawing



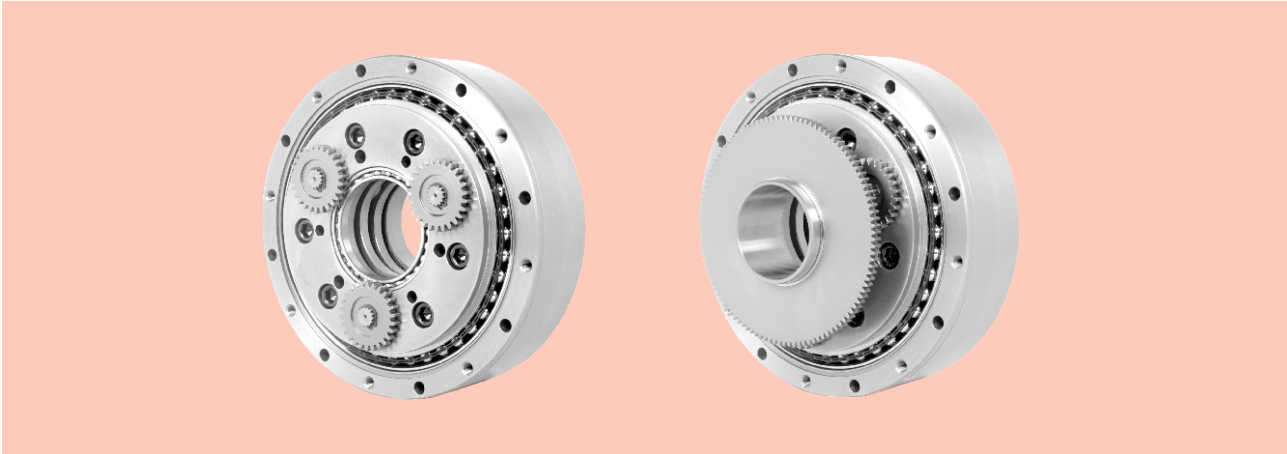
# C系列外形尺寸图 C SERIES OUTLINE SIZE CHART



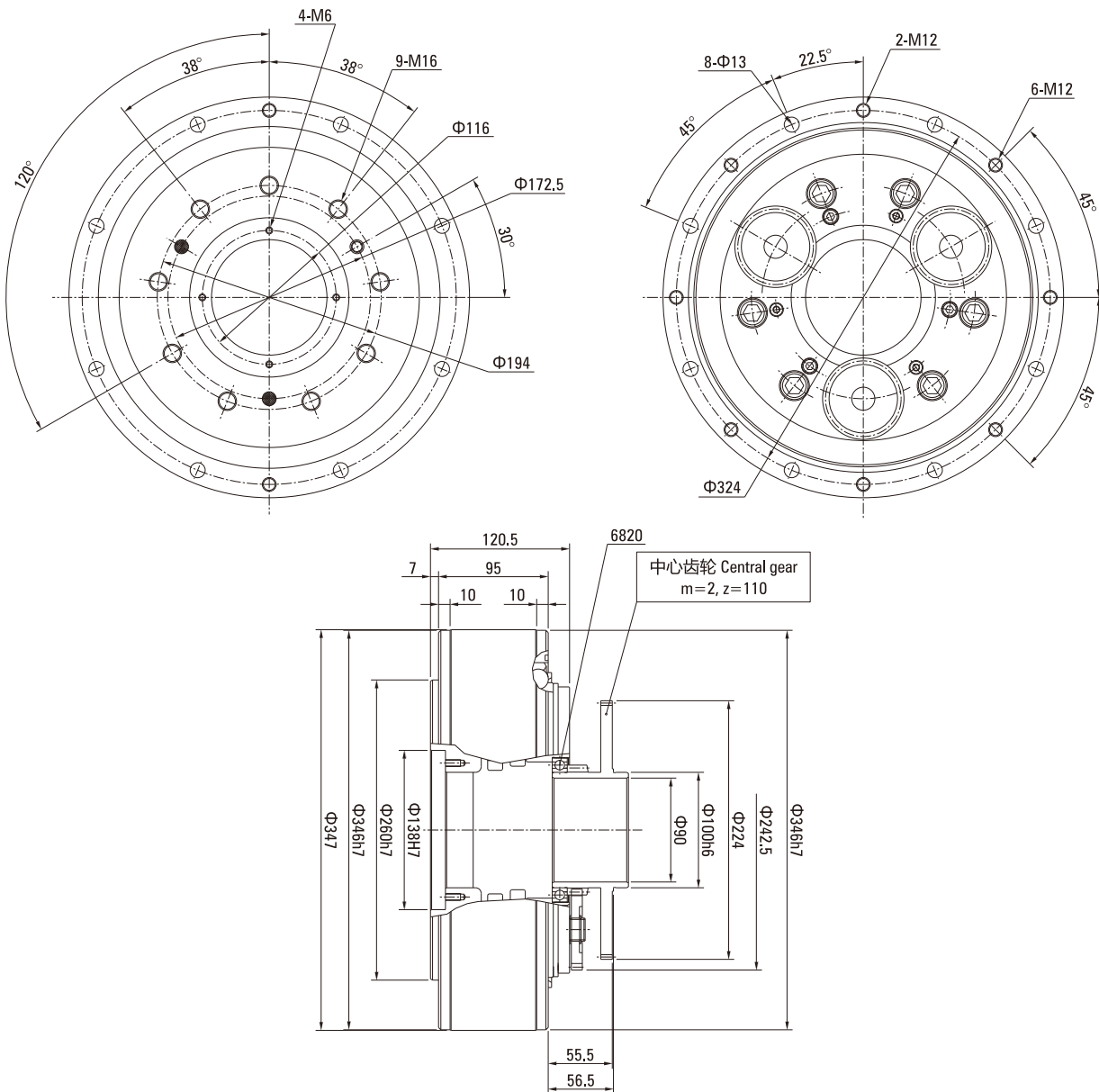
250BX-C 外形图 250BX-C Outline Drawing



C系列外形尺寸图  
C SERIES OUTLINE SIZE CHART



350BX-C 外形图 350BX-C Outline Drawing



# C型减速器安装要领

## C TYPE REDUCER INSTALLATION ESSENTIALS

为了充分发挥RVC型减速器的性能，对装配精度、安装方法、润滑以及密封进行最佳设计是十分重要的。

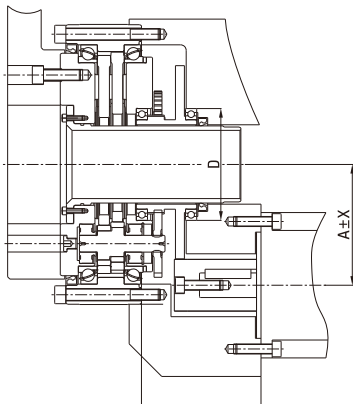
In order to give full play to the performance of the RVC type reducer, it is very important to the assembly precision, installation method, lubrication and the optimum design of the seal. Please carefully read the following notes.

### ■ 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。

RVC type reducer installation side component is designed according to the drawings please D.1. If poor assembly can cause vibration, noise, tooth gap and other issues.

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



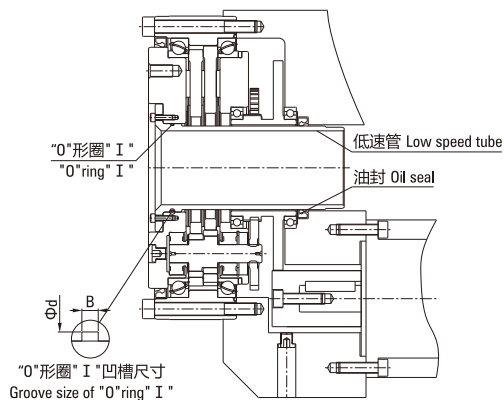
(A为减速机中心到电机中心的距离)  
(A is the distance from the center of the speed reducer to the motor center)

● 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   | 中心间距离公差 Center Distance Tolerance | 同心度公差 Concentric Tolerance | 平行度公差 Parallelism Tolerance |
|-----------|-----------------------------------|----------------------------|-----------------------------|
| 型号 Model  | X                                 | a                          | b                           |
| 150BX-RVC | ±0.03                             | Max0.03                    | Max0.03                     |
| 180BX-RVC |                                   |                            |                             |
| 220BX-RVC |                                   |                            |                             |
| 250BX-RVC |                                   |                            |                             |
| 350BX-RVC |                                   |                            |                             |
| 440BX-RVC |                                   |                            |                             |
| 520BX-RVC |                                   |                            |                             |

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



"O"形圈 I 凹槽尺寸  
Groove size of "O"ring I "

### ■ 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

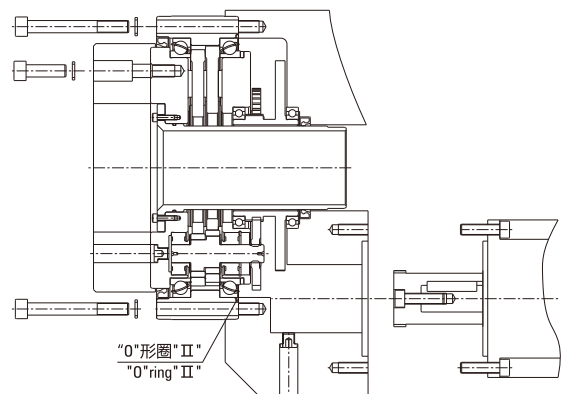
低速管用于保护通过中空部位的电缆以及密封减速器内部的润滑脂。图D.2是低速管的安装参考示例。

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

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



"O"形圈 II  
"O"ring II "

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

| 机型 Model            |                        | 150BX-RVC | 180BX-RVC | 220BX-RVC | 250BX-RVC | 350BX-RVC | 440BX-RVC | 520BX-RVC |
|---------------------|------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| O形圈<br>O ring       | 代号 Code                |           |           |           |           |           |           |           |
|                     | 公称号码 Nominal number    | CO-0625   | CO-0634   | CO-0643   | S70       | G95       | G135      | G145      |
|                     | 线径 Wire diameter       | Φ2.4      | Φ2.4      | Φ3.5      | Φ2.0      | Φ3.1      | Φ3.1      | Φ3.1      |
| 凹槽尺寸<br>Groove size | 内径 Internal diameter d | Φ29.7     | Φ42.2     | Φ59.6     | Φ69.5     | Φ94.4     | Φ134.4    | Φ144.4    |
|                     | 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 |
|-----------|----------------------------------|
| 150BX-RVC | AS568-048                        |
| 180BX-RVC | AS568-163                        |
| 220BX-RVC | AS568-169                        |
| 250BX-RVC | AS568-173                        |
| 350BX-RVC | AS568-277                        |
| 440BX-RVC | AS568-281                        |
| 520BX-RVC | G460、B2401                       |

### ■ 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.

● 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<br>Fit Tolerance<br>X | 同心度公差<br>Concentric Tolerance<br>a | 中心齿轮小齿轮<br>Central Gear Pinion<br>精度等级 Precision Grade | 中心齿轮大齿轮<br>Central Gear<br>精度等级 Precision Grade | 输入齿轮<br>Input Gear<br>精度等级 Precision Grade |
|----------------------------|------------------------------------|--|---|--|
| h6                         | Max0.03                            | 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)

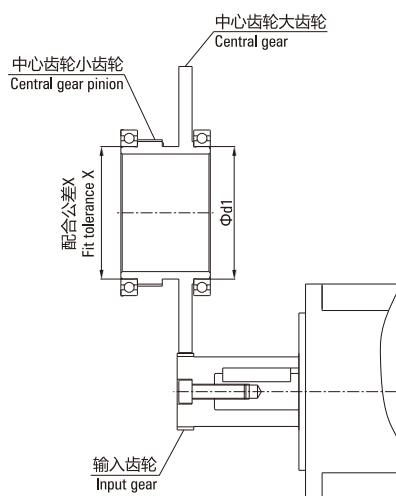
| 机型 Model  | 齿隙(公法线) Tooth Gap (Common Law) (mm) |
|-----------|-------------------------------------|
| 150BX-RVC | 0.035~0.090                         |
| 180BX-RVC | 0.040~0.110                         |
| 220BX-RVC | 0.050~0.130                         |
| 250BX-RVC | 0.060~0.140                         |
| 350BX-RVC | 0.075~0.180                         |
| 440BX-RVC |                                     |
| 520BX-RVC |                                     |

### ■ 输出轴通孔螺栓坚固型装配, 请问公司相关技术人员。

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

● 图 D.4: 中心齿轮、输入齿轮的精度

Figure D.4: Center gear, input gear precision



● 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 |
|-----------|---------------------|-----------|---------------------------------|
| 150BX-RVC | 1.00                | 48        | -0.04                           |
| 180BX-RVC | 1.00                | 57        | +0.2                            |
| 220BX-RVC | 1.25                | 61        | 0                               |
| 250BX-RVC | 1.75                | 48        | +0.3                            |
| 350BX-RVC | 2.50                | 43        | 0                               |
| 440BX-RVC | 2.00                | 78        | 0                               |
| 520BX-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<br>Model | 齿轮模数<br>Gear Modulus<br>m | 齿轮<br>Gear<br>z | 变位系数<br>Coefficient Of Variation<br>x |
|-------------|---------------------------|-----------------|---------------------------------------|
| 150BX-RVC   | 2.00                      | 57              | 0                                     |
| 180BX-RVC   | 1.25                      | 78              | 0                                     |
| 220BX-RVC   | 2.00                      | 78              | 0                                     |
| 250BX-RVC   | 1.75                      | 112             | 0                                     |
| 350BX-RVC   | 2.00                      | 110             | 0                                     |
| 440BX-RVC   | 2.00                      | 125             | 0                                     |
| 520BX-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.

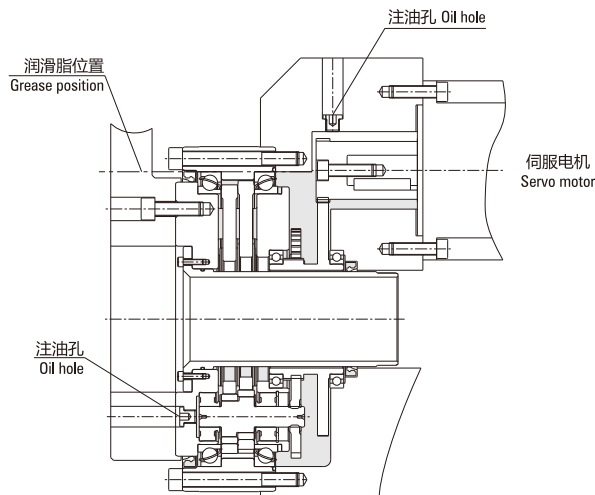
- 减速器封入油脂后，一般更换油脂时间为5000小时左右，请定期检查润滑脂的老化、污染情况，并规定更换时间。

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。

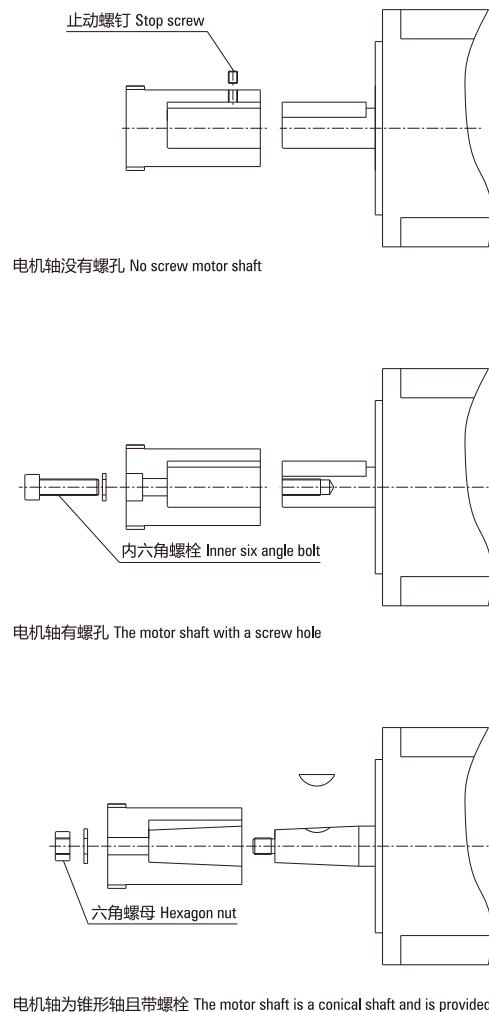
RVC type reducer using the six angle bolt, according to the table C.4 fastening torque for fastening, bolts, please use the disc spring washer, to prevent bolt loose and scratch the bolt seat.

### ■ 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。

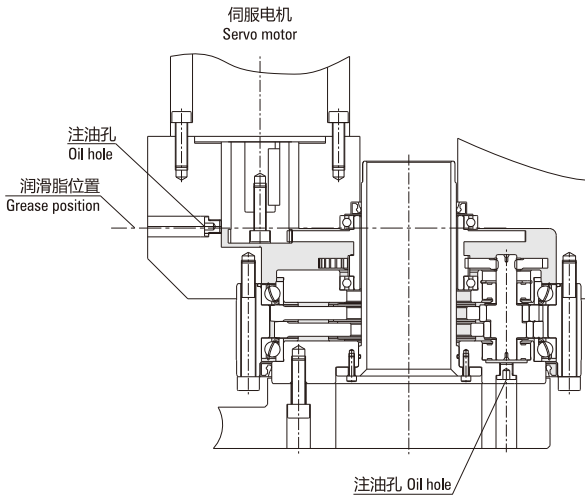
Figure D.5: indicates the shape of the servo motor shaft and the installation of the input gear sample, please refer to this diagram for design.

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

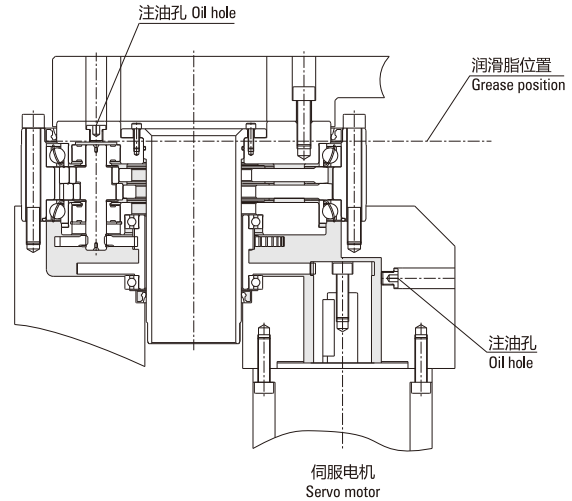


● 图 D.7: 润滑油注入位置(垂直) Figure D.7: Lubricating oil injection position (vertical)

(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<br>Model | 安装水平轴 (CC)<br>Install Horizontal Axis (CC) | 安装垂直轴 (cc)<br>Install Vertical Axis (CC) |
|-------------|--|--|
| 150BX-RVC   | 147  | 167                                      |
| 180BX-RVC   | 266  | 305                                      |
| 220BX-RVC   | 498  | 571                                      |
| 250BX-RVC   | 756  | 857                                      |
| 350BX-RVC   | 1831                                       | 2076                                     |
| 440BX-RVC   | 3536                                       | 4047                                     |
| 520BX-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, but the following conditions are not within the scope of the warranty.

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

- |                     |  |
|---------------------|--|
| ① 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                               |
| ② 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 |
| ③ 非本产品原因导致故障的       | Non product causes of failure  |
| ④ 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   |

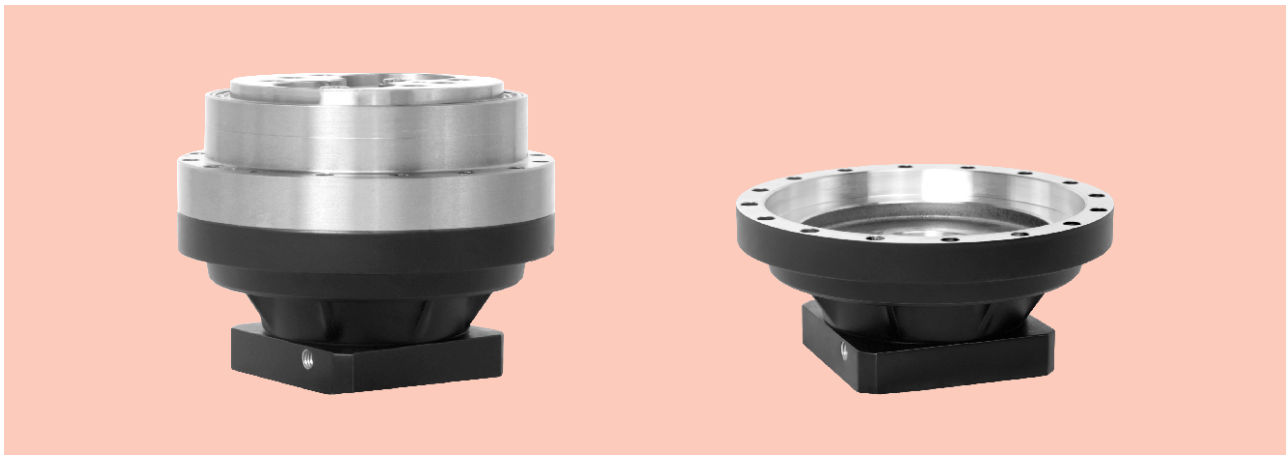
而且，这里所说的保修是指对本产品的保修。

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。

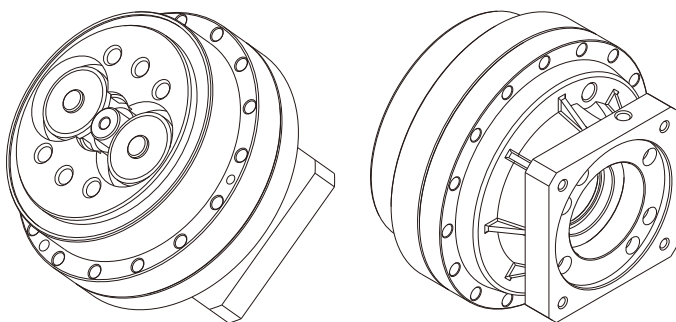
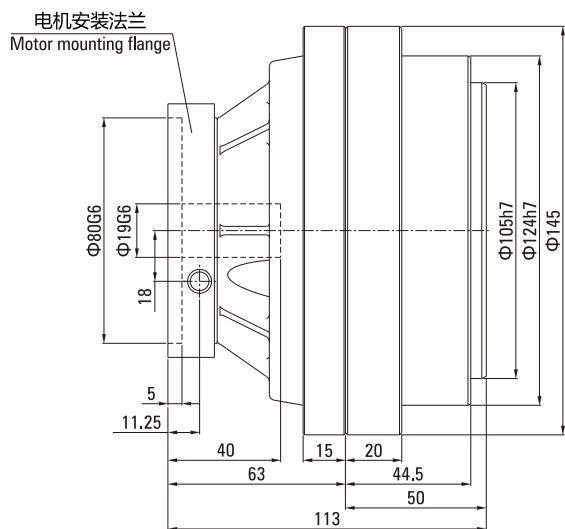
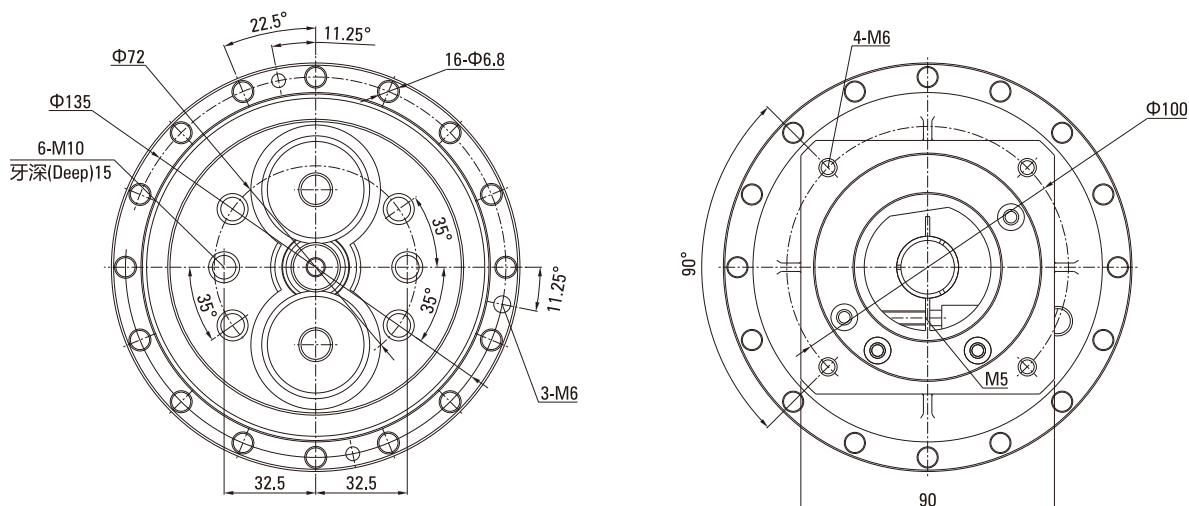
For other losses caused by the failure of this product, and the equipment on the dismantling of the hours, costs, etc., are not responsible for the company.

# A系列外形尺寸图 A SERIES OUTLINE SIZE CHART



P28

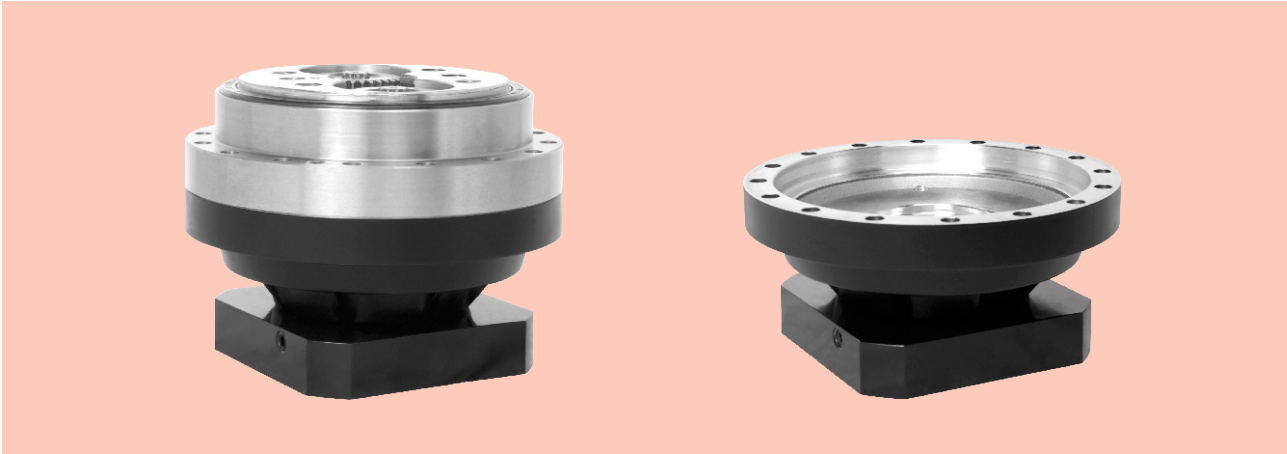
150BX-RVA-19 外形图 150BX--RVA-19 Outline Drawing



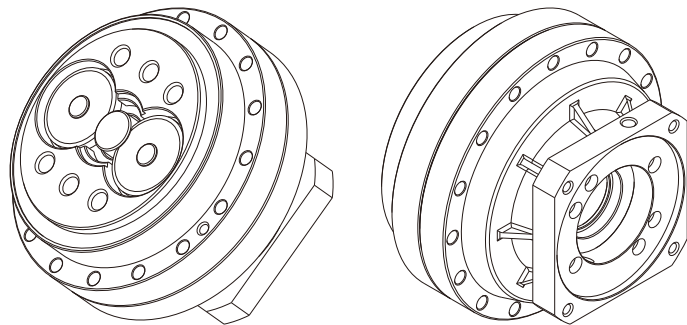
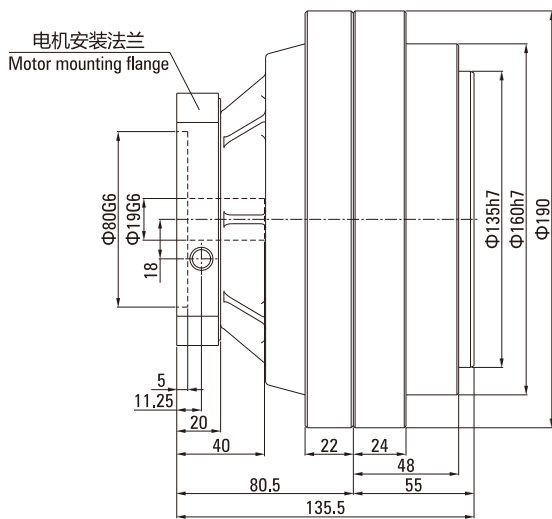
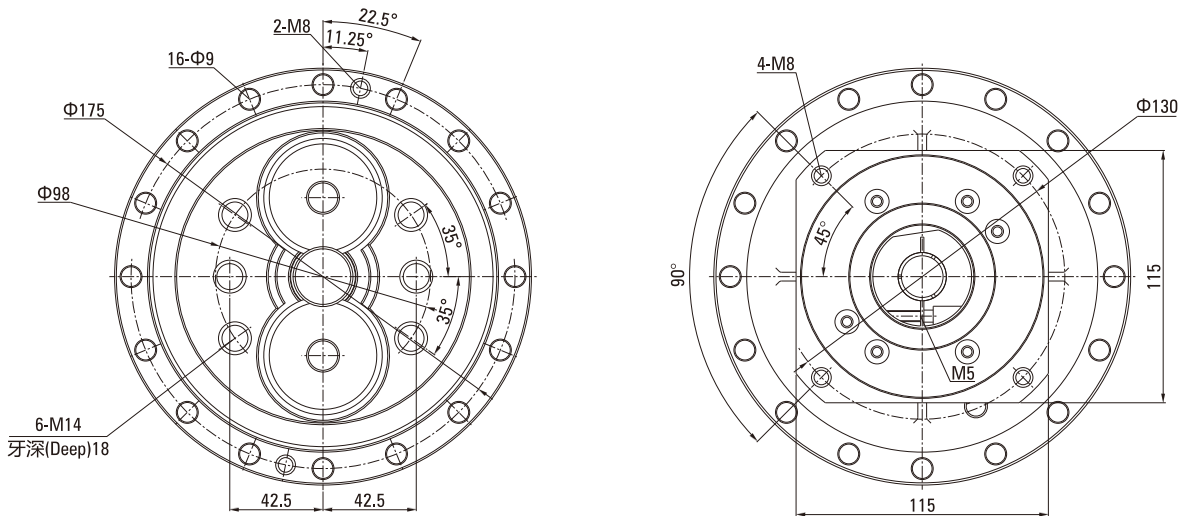
说明 Note:

1. 本图适用电机轴:  $\leq 19 \times 40L$ ; 电机轴用锁紧器锁紧; This figure applies to the motor shaft:  $\leq 19 \times 40L$ ; motor shaft with a lock lock;
2. 电机安装法兰依电机型号提供; Motor mounting flange according to motor model;

# A系列外形尺寸图 A SERIES OUTLINE SIZE CHART



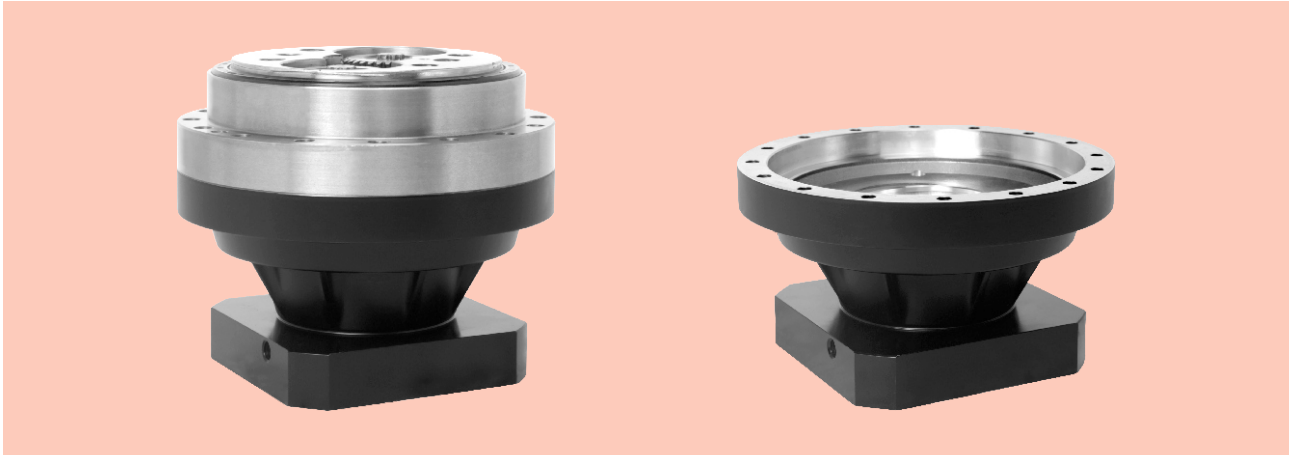
190BX-RVA-19 外形图 190BX-RVA-19 Outline Drawing



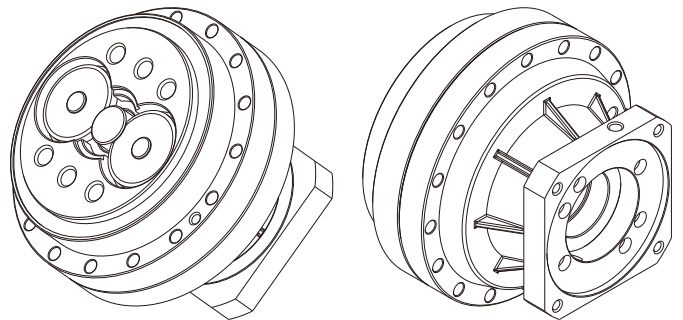
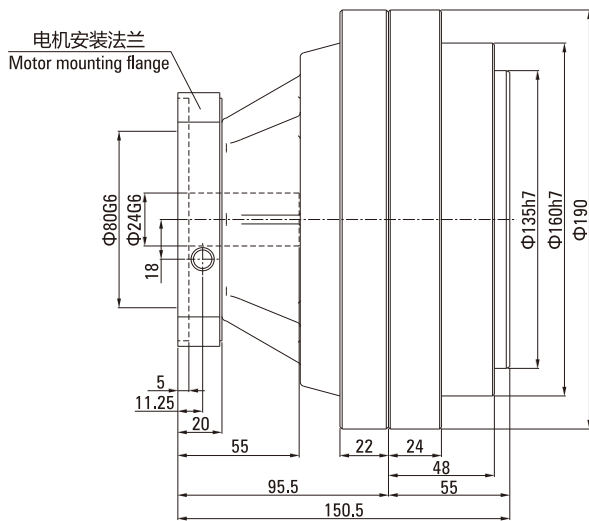
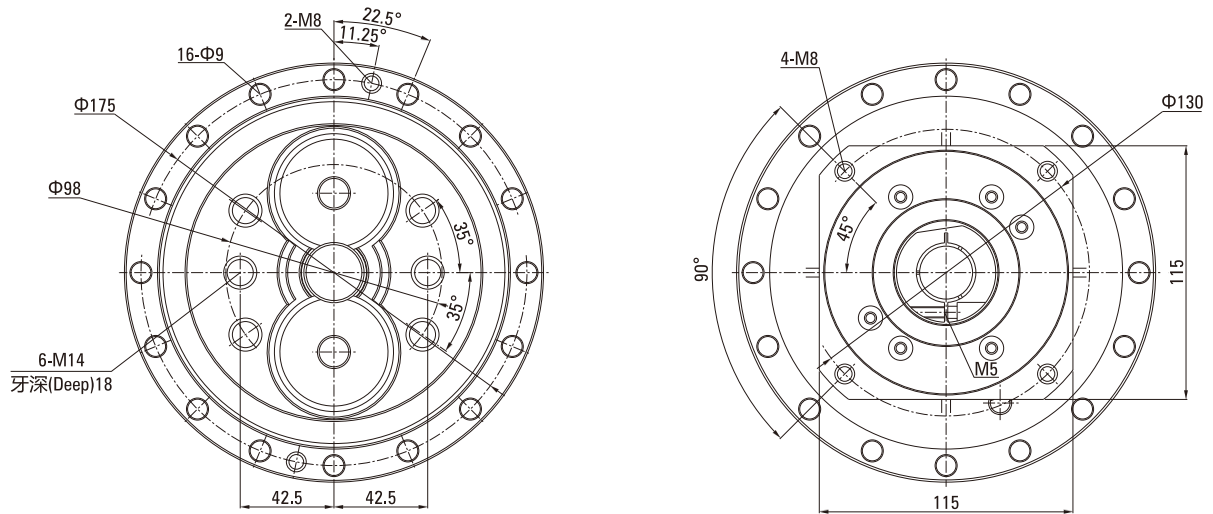
说明 Note:

1. 本图适用电机轴:  $\leq 19 \times 40L$ ; 电机轴用锁紧器锁紧; This figure applies to the motor shaft:  $\leq 19 \times 40L$ ; motor shaft with a lock lock;
2. 电机安装法兰依电机型号提供。Motor mounting flange according to motor model.

# A系列外形尺寸图 A SERIES OUTLINE SIZE CHART



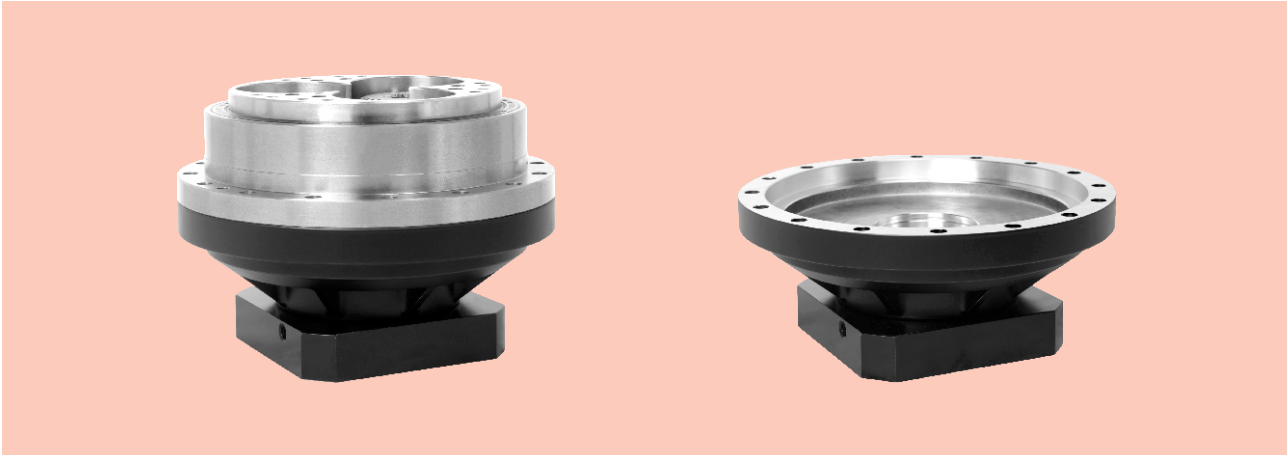
190BX-RVA-24 外形图 190BX-RVA-24 Outline Drawing



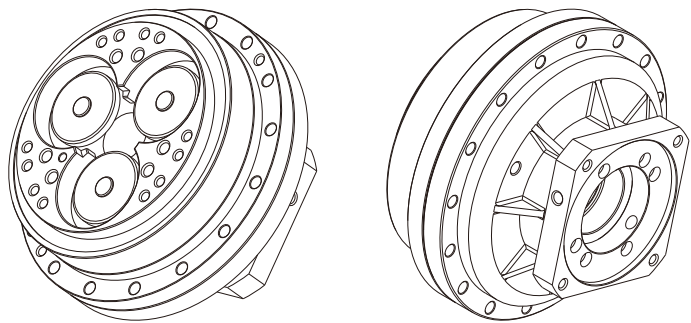
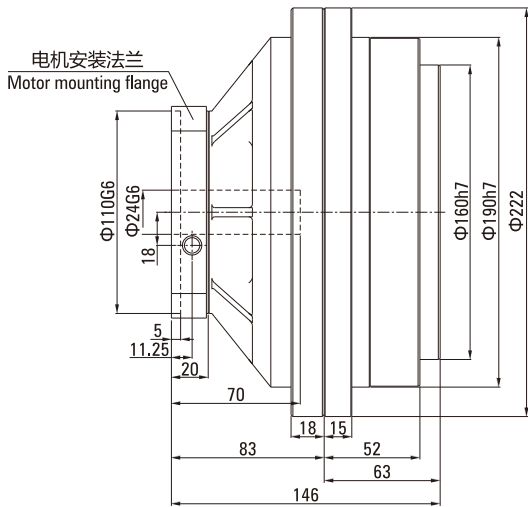
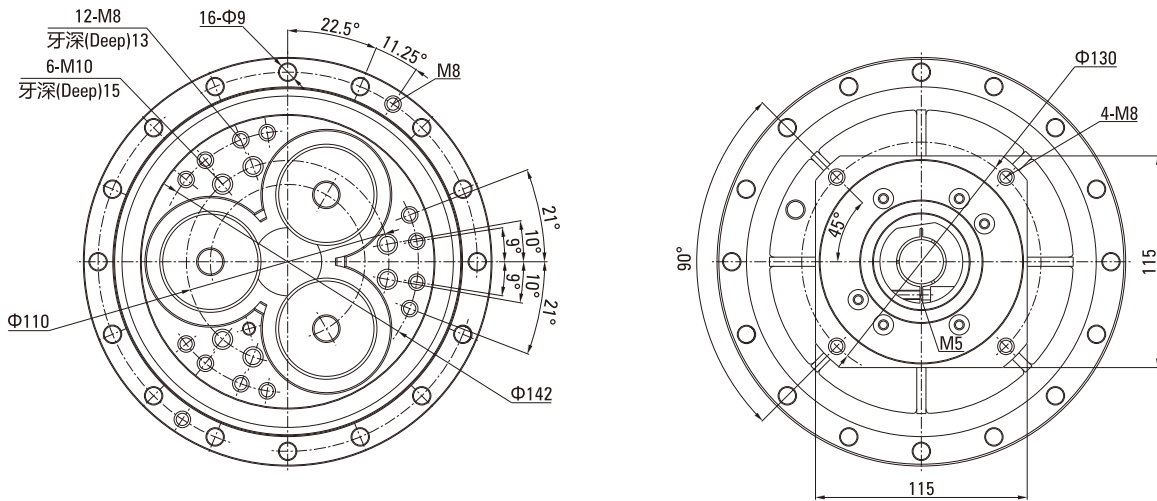
说明 Note:

1. 本图适用电机轴:  $\leq 24 \times 55L$ ; 电机轴用锁紧器锁紧; This figure applies to the motor shaft:  $\leq 24 \times 55L$ ; motor shaft with a lock lock;
2. 电机安装法兰依电机型号提供。Motor mounting flange according to motor model.

# A系列外形尺寸图 A SERIES OUTLINE SIZE CHART



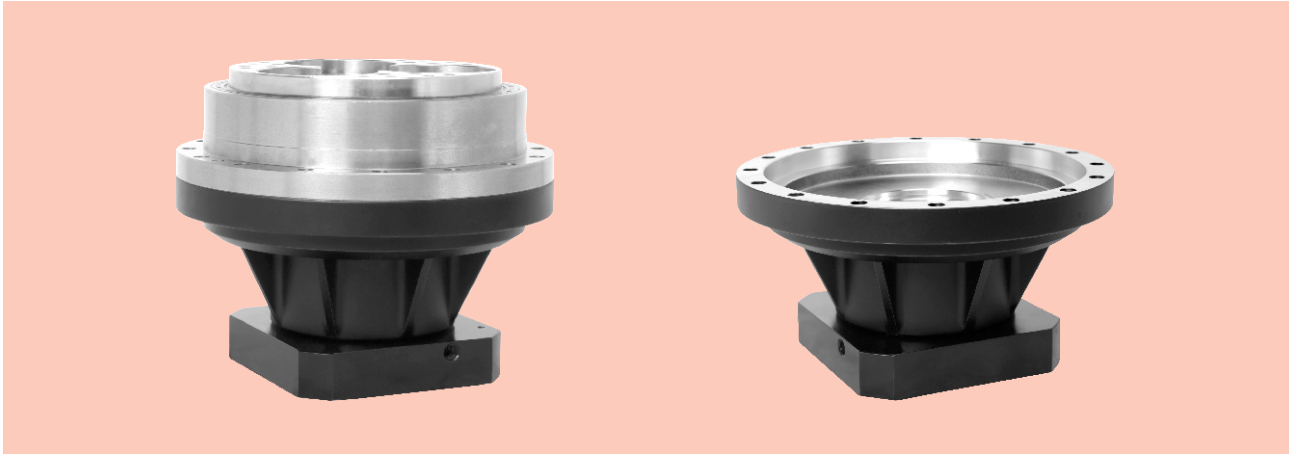
220BX-RVA-24 外形图 220BX-RVA-24 Outline Drawing



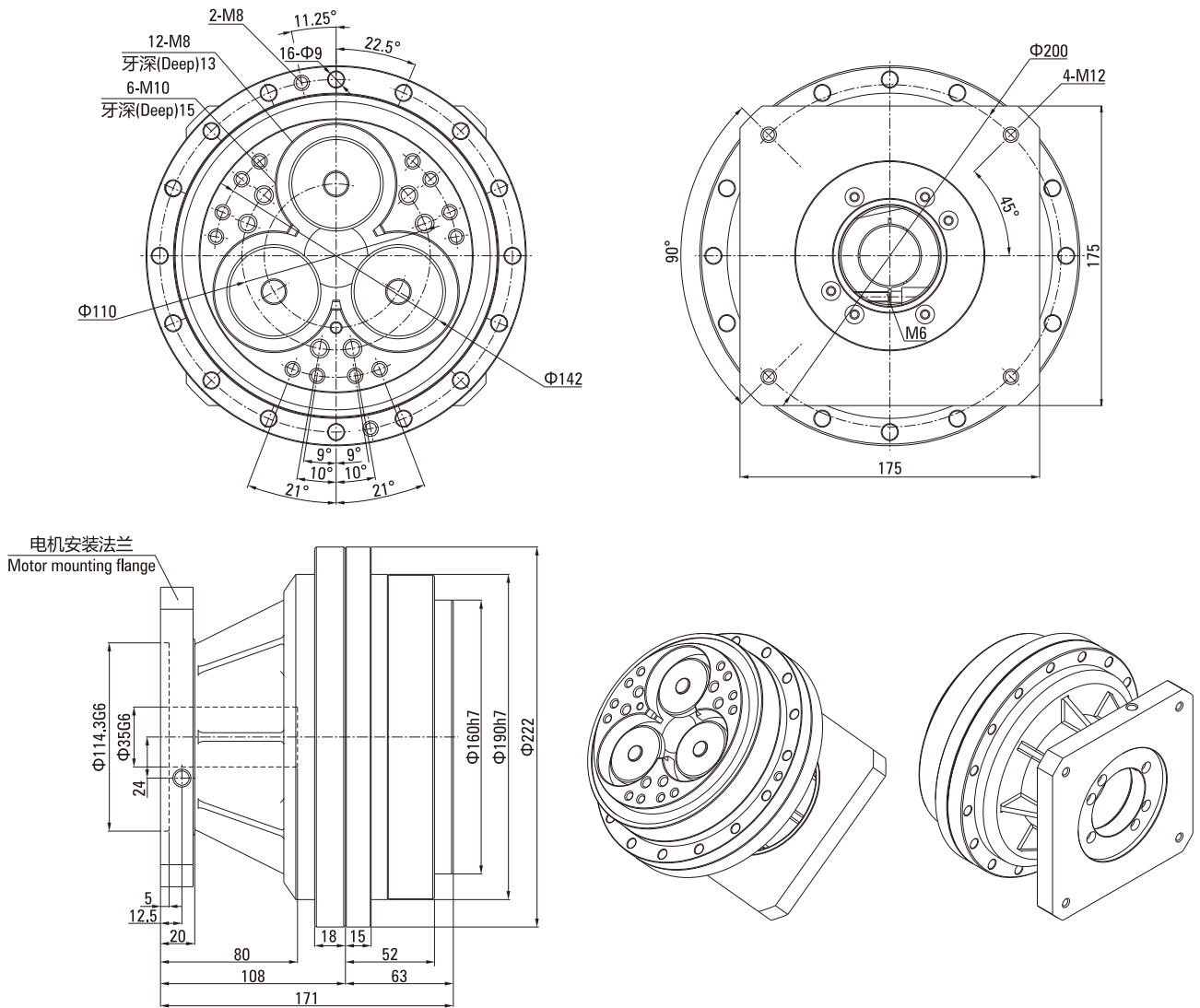
说明 Note:

1. 本图适用电机轴:  $\leq 24 \times 70L$ ; 电机轴用锁紧器锁紧; This figure applies to the motor shaft:  $\leq 24 \times 70L$ ; motor shaft with a lock lock;
2. 电机安装法兰依电机型号提供。 Motor mounting flange according to motor model.

# A系列外形尺寸图 A SERIES OUTLINE SIZE CHART



220BX-RVA-35 外形图 220BX-RVA-35 Outline Drawing

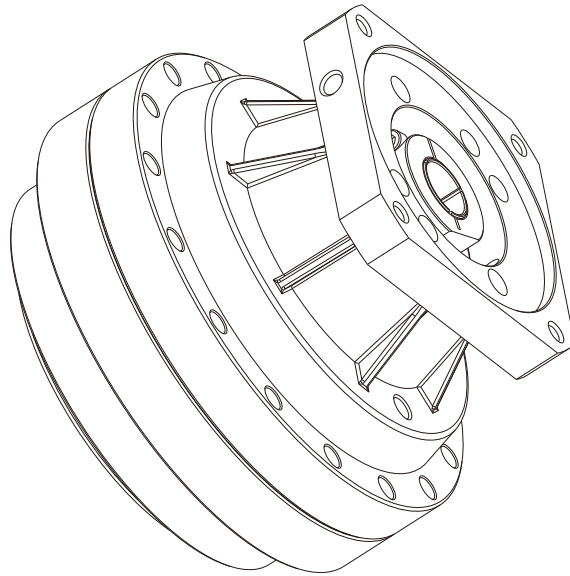


说明 Note:

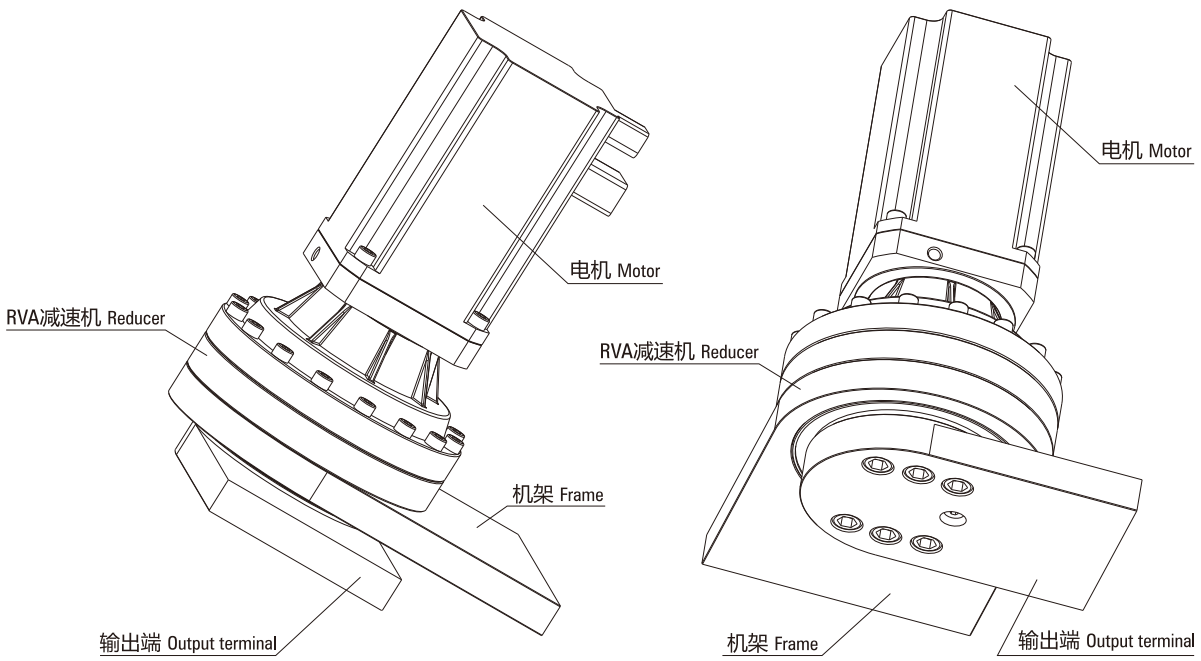
1. 本图适用电机轴:  $\leq 35 \times 80L$ ; 电机轴用锁紧器锁紧; This figure applies to the motor shaft:  $\leq 35 \times 80L$ ; motor shaft with a lock lock;
2. 电机安装法兰依电机型号提供。 Motor mounting flange according to motor model.

# A系列减速机安装图 A SERIES INSTALLATION DRAWING OF GEAR REDUCER

## ■ RVA系列减速机 RVA Series Reducer



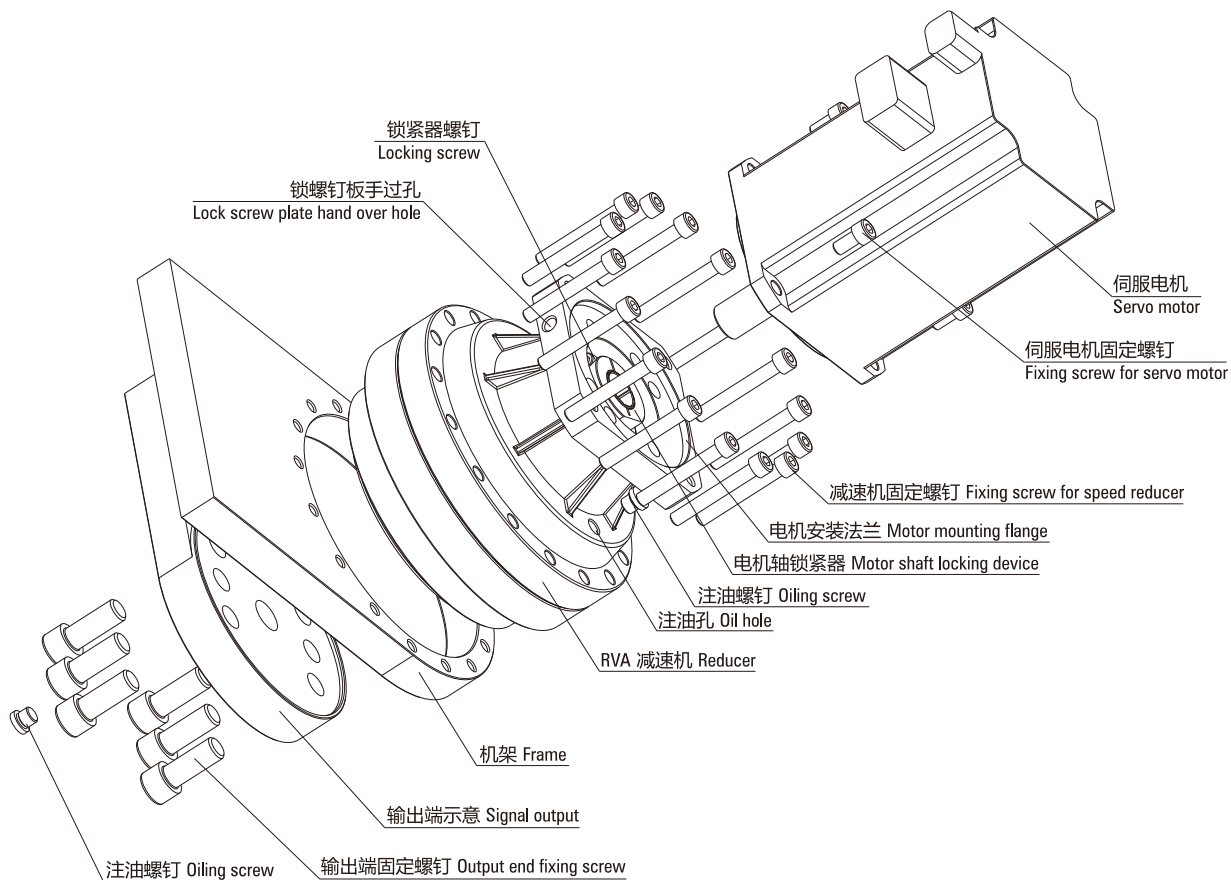
## ■ RVA系列减速机安装示例 RVA Series Reducer Installation Example



## A系列减速机安装图

## A SERIES INSTALLATION DRAWING OF GEAR REDUCER





## RVA系列减速机安装拆解示意图 Schematic Diagram Of The Installation And Disassembly Of RVA Series Reducer










## 安全使用注意事项 SAFETY PRECAUTIONS





 **警告:** 表示操作错误可能会导致人员死亡或负重伤 Warning: Indicates that an operating error can cause a person to die or be seriously injured


 **注意:** 表示操作错误可能会导致人员受伤及财产损失 Be careful: Indicates that the operation error may cause injuries and property damage

| 设计注意事项 Design Considerations<br>进行设计时，请务必阅读本产品目录。When designing, please be sure to read the product catalog. |  |   |  |
|--|--|---|--|
| <br>注意<br>Be careful        | <p><b>请在规定环境下使用。</b><br/>使用摆线针轮RV减速器时，请遵守以下条件。</p> <ul style="list-style-type: none"> <li>•环境温度：0~40℃</li> <li>•无腐蚀性、爆炸性汽车</li> <li>•不溅到水、油等</li> <li>•无金属粉等灰尘</li> </ul> <p><b>Please use in the specified environment.</b><br/>When using the RV planetary gear box, please observe the following conditions.</p> <ul style="list-style-type: none"> <li>•Ambient temperature: 0~40℃</li> <li>•No corrosive, explosive car</li> <li>•Do not splash water, oil, etc.</li> <li>•No dust and other dust</li> </ul>  | <br>注意<br>Be careful   | <p><b>请使用规定的方法安装。</b></p> <ul style="list-style-type: none"> <li>•组装方法、顺序，请按产品目录正确实施。</li> <li>•拧紧方法（使用螺栓等），请遵守本公司建议。</li> <li>•如未正确组装，运转时可能会导致振动、缩短使用寿命、精度下降、损坏等故障。</li> </ul> <p><b>Please use the specified method of installation.</b></p> <ul style="list-style-type: none"> <li>•Assembly method, order, according to the correct implementation of product catalog.</li> <li>•Tighten the method (using bolts, etc.), please follow the company's recommendations.</li> <li>•If not properly assembled, running may lead to vibration, shorten the life of the service, the accuracy of the decline, damage, etc..</li> </ul> |
| <br>注意<br>Be careful      | <p><b>请根据规定精度实施安装。</b></p> <ul style="list-style-type: none"> <li>•请正确设计、组装各种部件，确保其能够达到产品目录中的推荐安装精度。</li> <li>•达不到规定精度可能会导致振动、缩短使用寿命、精度下降、损坏等故障。</li> </ul> <p><b>Please implement the installation according to the specified accuracy.</b></p> <ul style="list-style-type: none"> <li>•Correct design and assembly of components to ensure that it is able to achieve the recommended installation accuracy in the product catalog.</li> <li>•Can not reach the specified accuracy may lead to vibration, shorten the life of the service, the accuracy of the decline, damage, etc..</li> </ul> | <br>注意<br>Be careful | <p><b>请使用规定的润滑剂。</b></p> <ul style="list-style-type: none"> <li>•不使用本公司推荐的润滑剂，可能会缩短产品的使用寿命。此外，请按规定的条件更换润滑剂。</li> <li>•组合型产品已预先封入润滑脂。请不要混入其它润滑脂。</li> </ul> <p><b>Please use the prescribed lubricant.</b></p> <ul style="list-style-type: none"> <li>•Lubricants that are not recommended by the company may shorten the service life of the product. In addition, please replace the lubricant according to the prescribed conditions.</li> <li>•The products have been pre - combined into grease. Please do not mix with other grease.</li> </ul>   |

| 设计注意事项 Design Considerations<br>执行运转时，请务必阅读产品目录。When running, please be sure to read the product catalog. |  |   |  |
|---|--|---|--|
| <br>注意<br>Be careful   | <p><b>请小心使用产品及部件。</b></p> <ul style="list-style-type: none"> <li>•请勿使用锤子等用力敲打各部件及组合单元。此外，请确保不会因坠落等原因导致裂纹、瘪痕等。否则会导致产品破损。</li> <li>•在破损状态下使用时，无法保证其性能。还可能会导致损坏等故障。</li> </ul> <p><b>Please be careful to use the products and components.</b></p> <ul style="list-style-type: none"> <li>•Do not use a hammer and other hard hit the components and combination unit. In addition, make sure not to fall and other causes of cracks, such as indentation. Otherwise it will cause damage to the product.</li> <li>•When used in the damaged condition, its performance can not be guaranteed. Can also cause damage and other faults.</li> </ul> | <br>注意<br>Be careful | <p><b>使用时，请勿超出容许转矩。</b></p> <ul style="list-style-type: none"> <li>•施加转矩请不要超出瞬间容许最大转矩。否则可能会出现拧紧部螺栓的松动、产生晃动、破坏等，导致产品故障。</li> <li>•如果输出轴直接连接关节臂等，有可能因关节臂碰撞而导致破损，输出轴不能控制。</li> </ul> <p><b>When in use, please do not exceed the allowable torque.</b></p> <ul style="list-style-type: none"> <li>•Applying torque please do not exceed the maximum torque, Otherwise, it may be possible to tighten the bolt of the screw loose, shaking, damage, etc., resulting in product failure.</li> <li>•If the output shaft is directly connected to the joint arm, it is possible to cause damage due to the collision of the joint arm, and the output shaft can not be controlled.</li> </ul> |
| <br>注意<br>Be careful   | <p><b>请勿变更部件配套。</b></p> <ul style="list-style-type: none"> <li>•本产品的各部件是配套加工而成。</li> <li>•混同其它套件使用时，无法保证其能够发挥特定性能。</li> </ul> <p><b>Do not change parts.</b></p> <ul style="list-style-type: none"> <li>•All parts of this product are processed and processed.</li> <li>•With other packages when used, can not guarantee that it can play a specific performance.</li> </ul>   | <br>注意<br>Be careful | <p><b>请勿拆解组合型产品。</b></p> <ul style="list-style-type: none"> <li>•严禁对组合型产品实施拆解、重新组装。否则，将无法恢复其原有性能。</li> </ul> <p><b>Do not disassemble the combined products.</b></p> <ul style="list-style-type: none"> <li>•It is strictly prohibited to disassemble and re assemble the assembled products. Otherwise, it will not be able to restore its original performance.</li> </ul>   |

| 设计注意事项 Design Considerations<br>执行运转时，请务必阅读产品目录。When running, please be sure to read the product catalog. |   |   |  |
|---|---|---|--|
| <br>警告<br>Warning        | <p><b>请勿将手指插入前段部并转动减速机。</b></p> <ul style="list-style-type: none"> <li>将手指插入前段部件并转动减速机时，手指可能会被齿轮绞入，造成意外受伤。严禁此操作。</li> </ul> <p><b>Do not insert your finger into the front end and turn the speed reducer.</b></p> <ul style="list-style-type: none"> <li>When the finger is inserted into the front part and rotates the speed reducer, the finger can be twisted into the gear to cause the accident injury. This operation is strictly prohibited.</li> </ul>                                    | <br>注意<br>Be careful | <p><b>发现异常时，请停止系统运行。</b></p> <ul style="list-style-type: none"> <li>设备发出异常声音及出现振动、停止运转、出现异常发热及异常电流值等时，请立即停止系统运行。否则可能会对系统造成严重影响。</li> </ul> <p><b>When the exception is found, please stop the system running.</b></p> <ul style="list-style-type: none"> <li>Equipment abnormal sound and the emergence of vibration, stop running, abnormal heating and abnormal current value, please immediately stop the system running. Otherwise, it may have a serious impact on the system.</li> </ul> |
| <br>警告<br>Warning        | <p><b>型号较大的产品为重型设备。请小心使用。</b></p> <ul style="list-style-type: none"> <li>由于设备较重，使用时可能会造成腰疼、坠落、倒地、夹伤等人员伤害。使用时，在采取穿着安全鞋等防护措施的同时，请使用支撑工具。</li> </ul> <p><b>Model large products for heavy equipment. Please be careful to use.</b></p> <ul style="list-style-type: none"> <li>Because the equipment is heavy, may cause back pain, fall, fell to the ground, crush injuries when using etc.. In use, in the use of safety shoes and other protective measures, please use the support tool.</li> </ul> | <br>注意<br>Be careful | <ul style="list-style-type: none"> <li>请注意，虽然产品出厂时已采取防锈措施，但根据用户的保管环境不同，可能会出现提前生锈的现象。本公司的部分产品进行了黑色表面处理，但并不保证能够防锈。</li> <li>Please note that although the products have been factory to take rust measures, but according to the user's storage environment is different, may occur in advance of the phenomenon of rust. Part of the company's products are black surface treatment, but does not guarantee to be able to rust.</li> </ul>  |

| 润滑剂的使用 Use of lubricants   |  |   |   |
|--|--|---|---|
| <br>警告<br>Warning | <p><b>使用注意事项</b></p> <ul style="list-style-type: none"> <li>溅入眼睛可能会引起炎症。使用时，请佩戴防护眼镜等，避免溅入眼睛。</li> <li>接触皮肤可能会引起炎症。操作时，请佩戴防护手套等，避免接触到皮肤。</li> <li>请勿食用。（食用后会引起腹痛、呕吐）。</li> <li>打开容器时，请注意不要划伤手指。请戴好防护手套。</li> <li>请放在儿童够不到的地方。</li> </ul> <p><b>Use matters needing attention</b></p> <ul style="list-style-type: none"> <li>Splashing into the eyes can cause inflammation. When using, please wear protective glasses, etc., to avoid splashing into the eyes.</li> <li>Contact with skin may cause inflammation. When operating, please wear protective gloves, etc., to avoid contact with the skin.</li> <li>Do not eat. (can cause abdominal pain, vomiting after eating).</li> <li>When opening the container, please be careful not to scratch your fingers. Please wear protective gloves.</li> <li>Please put it in a place where children can't reach.</li> </ul> | <br>注意<br>Be careful | <p><b>废油、废容器的处理</b></p> <ul style="list-style-type: none"> <li>法令规定了使用者有义务实施的处理方法。请按照相关法律法规进行正确处理。</li> <li>不清楚时，请先咨询授权代理商，然后再做处理。</li> <li>请勿对空的容器施加压力，可能会导致其破裂。</li> <li>请勿对容器进行焊接、加热、开孔或裁切。否则，可能会发生爆炸，里面的残留物会起火燃烧。</li> </ul> <p><b>Waste oil and waste containers</b></p> <ul style="list-style-type: none"> <li>The Act provides the user with the obligation to implement the treatment method. Please deal with the relevant laws and regulations.</li> <li>If you don't know, please consult the authorized agent first, and then do the processing.</li> <li>Do not put pressure on the empty container, may cause its rupture.</li> <li>Do not weld, heat, open or cut the container. Otherwise, there could be an explosion, and the residue inside will burst into flames.</li> </ul> |
| <br>警告<br>Warning | <p><b>应急处理</b></p> <ul style="list-style-type: none"> <li>万一溅入眼睛，请立即使用清水冲洗15分钟，并接受医生的治疗。</li> <li>万一接触到皮肤，请使用水及肥皂充分清洗。</li> <li>万一发生吞食，请不要用力让其呕吐，应立即接受医生治疗。</li> </ul> <p><b>Emergency Management</b></p> <ul style="list-style-type: none"> <li>In case of splashing into the eyes, rinse immediately with water for 15 minutes and receive a doctor's treatment.</li> <li>In case of exposure to the skin, please use water and soap to fully clean.</li> <li>In case of swallowed, please do not make any effort to vomiting, should immediately accept the doctor's treatment.</li> </ul>  | <br>注意<br>Be careful | <p><b>保管方法</b></p> <ul style="list-style-type: none"> <li>使用后，请将其密封好，防止灰尘，水分等混入。请在背阴处保存，避免阳光直射。</li> </ul> <p><b>Keeping method</b></p> <ul style="list-style-type: none"> <li>After use, please seal it well, to prevent dust, moisture and other mixed. Please keep in the shade, avoid direct sunlight.</li> </ul>   |

| 关于报废 About scrap  |   |
|---|---|
| <br>注意<br>Be careful | <p><b>请按工业废弃物标准进行处理</b></p> <ul style="list-style-type: none"> <li>报废时，请按工业废弃物进行处理。</li> </ul> <p><b>Please deal with industrial waste</b></p> <ul style="list-style-type: none"> <li>When scrap, please according to the industrial waste disposal.</li> </ul> |

# 订购时确认事项 CONFIRMATION OF ORDER

## 订购时确认事项 Confirmation Of Order

### 使用部位 Use site

|                       |    |             |  |
|-----------------------|----|-------------|--|
| 机械名称 Mechanical name: |    | 用途 Purpose: |  |
| 型号 Model:             | BX |             |  |

### 负载条件 Load condition

|                       |                |                   |                   |                     |                         |   |
|-----------------------|----------------|-------------------|-------------------|---------------------|-------------------------|---|
| 载荷 Load:              | 径向 Radial:     | (kg)              | 力臂长 The long arm: | (m)                 | 轴向 Axial:               | (kg)  |
| 运转时间 Running time:    | 连续 Continuity: | (s)               | 停止 Stop it:       | (s)                 | 正反转 Positive inversion: | 是 <input type="checkbox"/> 否 <input type="checkbox"/> |
| 输出转速 Output speed:    | (r/min)        |                   |                   |                     |                         |   |
| 启动转矩 Starting torque: | (Nm)           | 停止转矩 Stop torque: | (Nm)              | 稳定转矩 Stable torque: | (Nm) Max.               |   |

### 使用环境 Use environment

|                 |      |              |   |           |  |
|-----------------|------|--------------|---|-----------|--|
| 温度 Temperature: | (°C) | 湿度 Humidity: | % | 其它 Other: |  |
|-----------------|------|--------------|---|-----------|--|

### 安装方法 Installation method

|          |                          |                            |                          |                             |                          |
|----------|--------------------------|----------------------------|--------------------------|-----------------------------|--------------------------|
| 水平 Level | <input type="checkbox"/> | 垂直 (电机在上) Vertical (motor) | <input type="checkbox"/> | 垂直 (电机在下) Vertical (motor): | <input type="checkbox"/> |
|----------|--------------------------|----------------------------|--------------------------|-----------------------------|--------------------------|

安装简图 Installation diagram:

| 输入齿轮轴规格 Input gear shaft size |                            |                            |                                      |  |                                 |                            |                            |
|-------------------------------|----------------------------|----------------------------|--------------------------------------|--|---------------------------------|----------------------------|----------------------------|
| 型式 Type:                      | A <input type="checkbox"/> | B <input type="checkbox"/> | Z(附图Figure) <input type="checkbox"/> | 电机轴径X长度 Motor shaft diameter X length: | $\Phi$ <input type="checkbox"/> | X <input type="checkbox"/> | L <input type="checkbox"/> |
| 减速比 Reduction ratio:          | 其它 Other:                  |                            |                                      |  |                                 |                            |                            |

输入轴简图 Input shaft diagram:

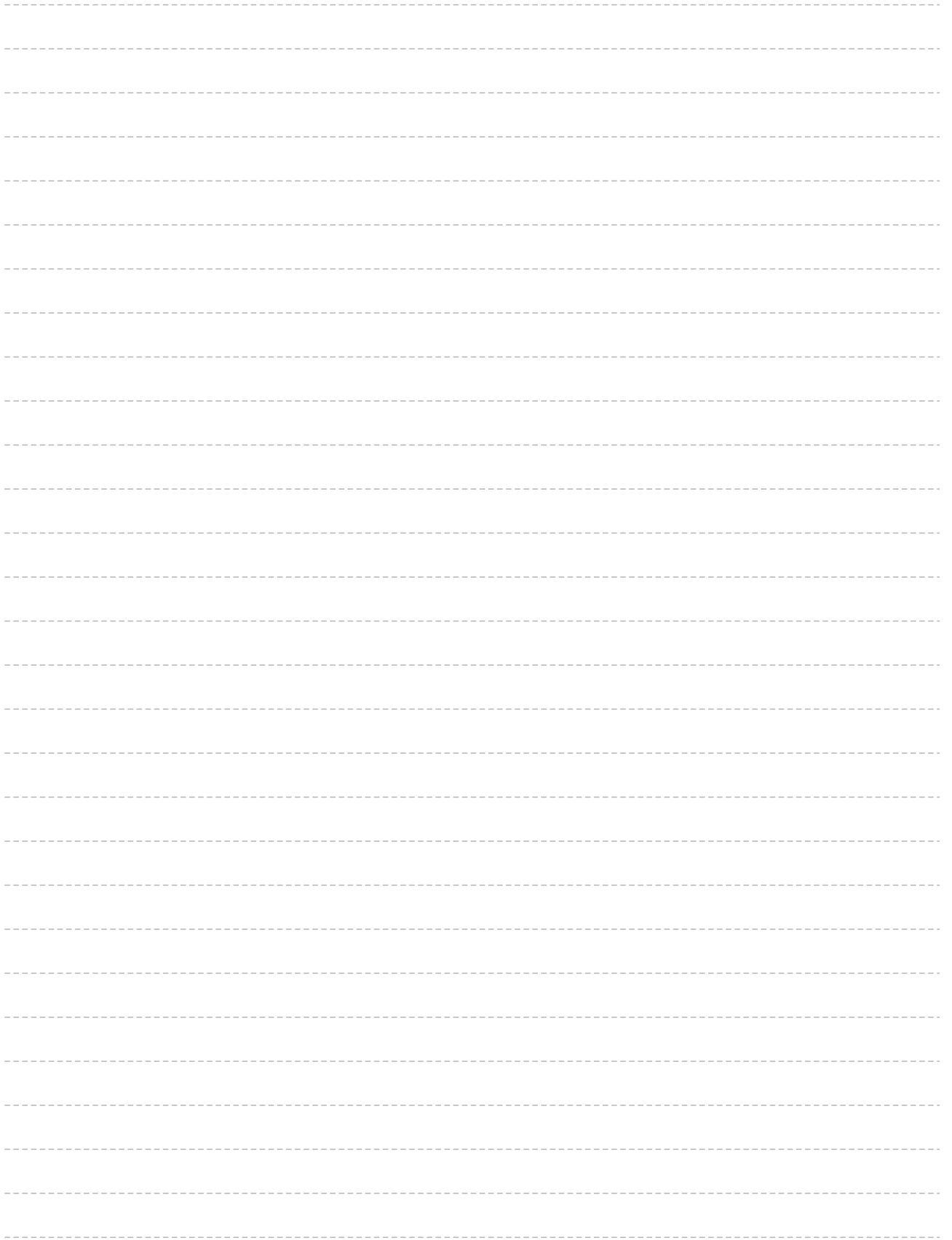
### 电机规格 Motor specifications

|           |      |           |         |                    |      |  |
|-----------|------|-----------|---------|--------------------|------|--|
| 型号 Model: |      |           |         |                    |      |  |
| 功率 Power: | (kw) | 转速 Speed: | (r/min) | 额定转矩 Rated torque: | (Nm) |  |
| 止口 Stop:  | (mm) | 螺孔 Screw: | (PCD)   | M                  | X    |  |

### 其它 Other

|                   |                          |                     |                          |
|-------------------|--------------------------|---------------------|--------------------------|
| 输入法兰 Input flange | <input type="checkbox"/> | 输出法兰 Output flange  | <input type="checkbox"/> |
| 润滑脂 Grease        | <input type="checkbox"/> | 润滑油 Lubricating oil | <input type="checkbox"/> |

其它事宜 Other matters:



# CATALOGUE



**PLANETARY GEAR BOX**  
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高精度行星减速机



**TRANSMISSION PLANETARY**  
传动行星减速电动机



**PLANETARY GEAR BOX**  
ZDE/ZDF/ZDWE/ZDWF/ZDS系列  
高精度行星减速机



**PLANETARY GEAR BOX**  
ZB/ZE系列  
高精度行星减速机



**HYPOID GEAR MOTOR**  
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小型交流平行轴齿轮减速电机



# RV PLANETARY GEAR BOX CATALOGUE

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