



本使用说明内容适合R系列斜齿轮减速电机、S系列斜齿轮—蜗轮减速电机、F系列平行轴斜齿轮减速电机、K系列斜齿轮—锥齿轮减速电机、摆线针轮减速机、T系列螺旋锥齿轮转向箱、H、B系列标准工业齿轮箱、蜗轮丝杆升降机、RV系列蜗轮蜗杆减速机、MB系列无级变速机等齿轮类、蜗轮类、摆线类产品。

This connect is suitable for the R Rigid tooth flank helical gear units, S Helical-worm gear units, F Parallel shaft helical gear units, K Helical-bevel gear units, Cycloid reducer, T Spiral bevel gear units, H. B Rigid tooth flank gear units, worm screw jack, RV Worm screw reducer, MB Speed variator and so on.

## 一、使用范围 Range of usage

1、使用环境温度一般 $-40^{\circ}\text{C}\sim 50^{\circ}\text{C}$ ，当环境温度低于 $0^{\circ}\text{C}$ 时，起动前应将润滑油加热到 $0^{\circ}\text{C}$ 以上。

2、输入转速一般不大于1500rpm，高速输入订货时须特别说明。

3、一般情况下，R、F、H系列斜齿轮减速机线速度不大于20m/s；S、RV系列蜗轮蜗杆减速机线速度不大于17m/s；K、T、B系列弧齿锥齿轮减速机线速度不大于15m/s。

4、适用于连续工作制，允许正反向运转，其中MB系列每分钟最多起动次数为5次，梯形丝杆升降机负荷时间率不得超过20%ED，滚珠丝杆升降机的负荷时间率不得超过30%ED。

5、直联电机时，要注意电动机对使用条件的限制。

1. Temperature of working atmosphere:  $-40^{\circ}\text{C}\sim 50^{\circ}\text{C}$ , when the ambient temperature are below  $0^{\circ}\text{C}$ , the lubrication oil should be heated up to above  $0^{\circ}\text{C}$ .

2. The input rotating speed should not higher than 1500r/m, WB. X. B Series cycloid reducer should not higher than 2000r/m.

3. Generally, linear velocity of R. F Series helical gear reducer should not higher than 20m/s, linear velocity of RV. S Series worm speed reducer should not higher than 17m/s, linear velocity of R Series spiral bevel reducer should not higher than 15m/s.

4. It is applicable for various working systems. and allows rotation in positive and negative direction. The number of starts of MB Series 5 times per minute at most, the load hour factor of trapezoidal screw jack 20% ED at most. The load hour factor of general ball screw 30% ED at most.

5. Pay attention to the limitation of using condition of motor during direct connection.

## 二、产品结构示意图 The structural drawing of product

R系列见图1，S系列见图2，K系列见图3，F系列见图4，H、B系列见图5，T系列见图6

R Series structural drawing (PIC 1),

S Series structural drawing (PIC 2),

K Series structural drawing (PIC 3),

F Series structural drawing (PIC 4),

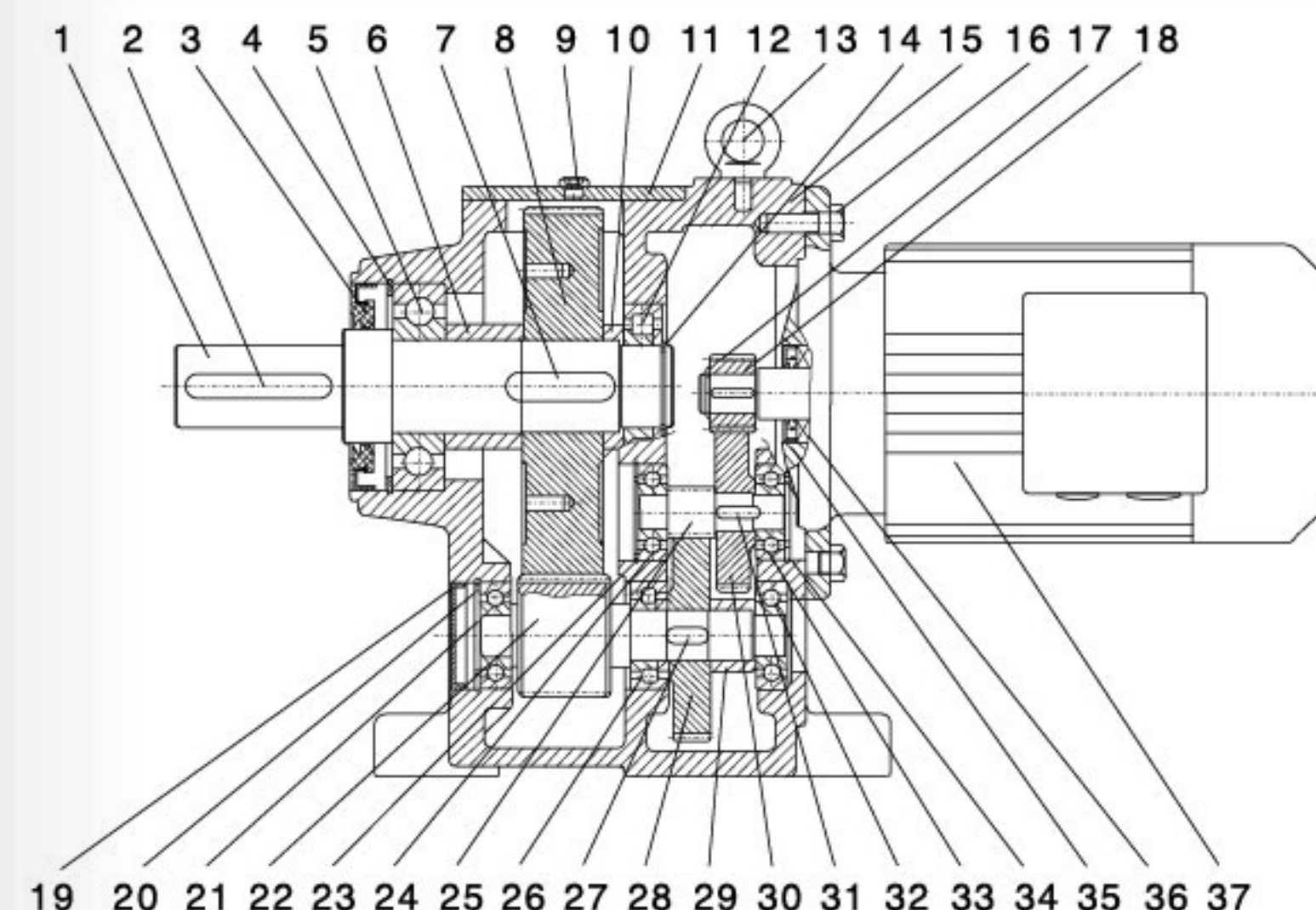
H.B Series structural drawing (PIC 5),

T Series structural drawing (PIC 6)



图1 R系列产品结构示意图

PIC 1 R Series The structural drawing of product



|         |           |            |           |
|---------|-----------|------------|-----------|
| 1.输出轴   | 10.轴套II   | 19.封盖      | 28.齿轮II   |
| 2.平键I   | 11.盖      | 20.孔用挡圈II  | 29.轴套III  |
| 3.输出轴油封 | 12.轴承II   | 21.轴承III   | 30.齿轮I    |
| 4.孔用挡圈I | 13.吊环     | 22.齿轮轴III  | 31.平键IV   |
| 5.轴承I   | 14.轴用挡圈I  | 23.孔用挡圈III | 32.轴承VI   |
| 6.轴套I   | 15.箱体     | 24.轴承IV    | 33.轴承VII  |
| 7.平键II  | 16.螺栓     | 25.齿轮轴II   | 34.孔用挡圈IV |
| 8.齿轮III | 17.轴用挡圈II | 26.轴承V     | 35.电机油封   |
| 9.通气帽   | 18.输入齿轮   | 27.平键III   | 36.电机轴承   |
|         |           |            | 37.电机     |

|                     |                   |                     |
|---------------------|-------------------|---------------------|
| 1.Output shaft      | 13.Hoisting ring  | 25.Gear shaft II    |
| 2.Parallel key      | 14.Circlip II     | 26.Bearing V        |
| 3.Output shaft seal | 15.Housing        | 27.Parallel key III |
| 4.Circlip I         | 16.Bolts          | 28.Gear II          |
| 5.Bearing I         | 17.Circlip II     | 29.Bush III         |
| 6.Bush I            | 18.Input gear     | 30.Gear I           |
| 7.Parallel key II   | 19.Cover          | 31.Parallel key IV  |
| 8.Gear III          | 20.Circlip II     | 32.Bearing VI       |
| 9.Breather valve    | 21.Bearing III    | 33.Bearing VIII     |
| 10.Bush II          | 22.Gear shaft III | 34.Circlip IV       |
| 11.Cover            | 23.Circlip III    | 35.Motor seal       |
| 12.Bearing II       | 24.Bearing IV     | 36.Motor bearing    |
|                     |                   | 37.Motor            |



图2 S系列产品结构示意图

PIC 2 S Series The structural drawing of product

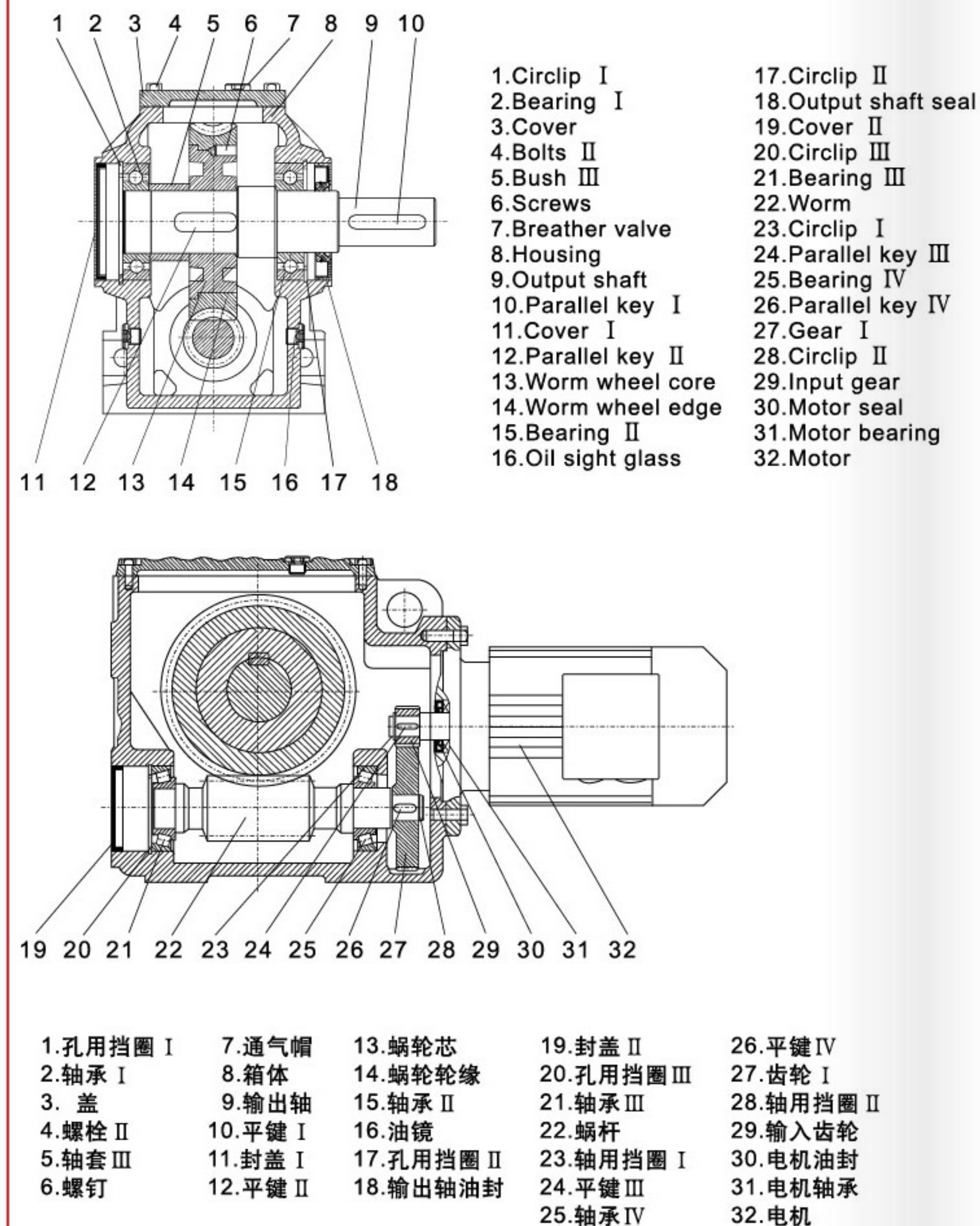


图3 K系列产品结构示意图

PIC 3 K Series The structural drawing of product

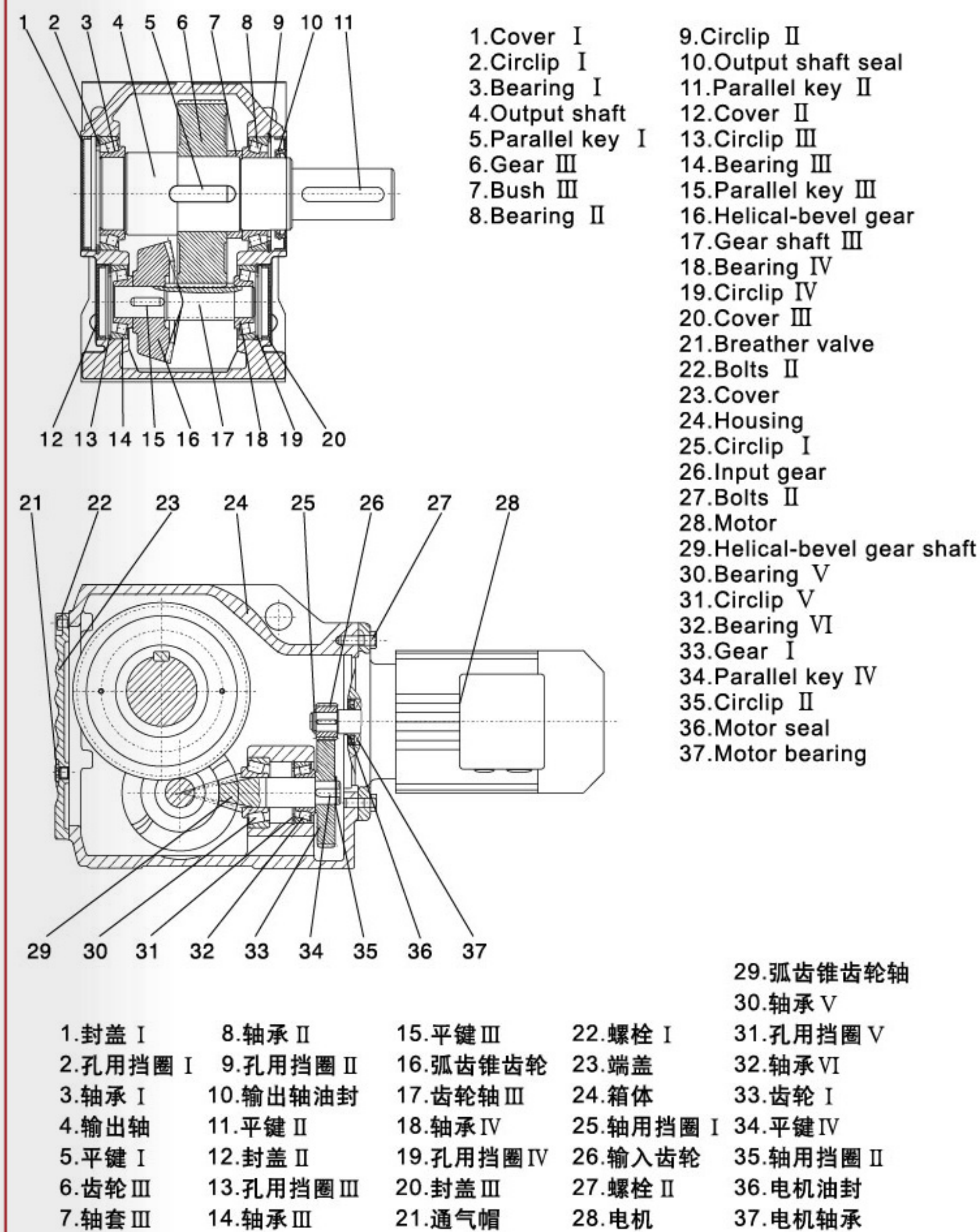
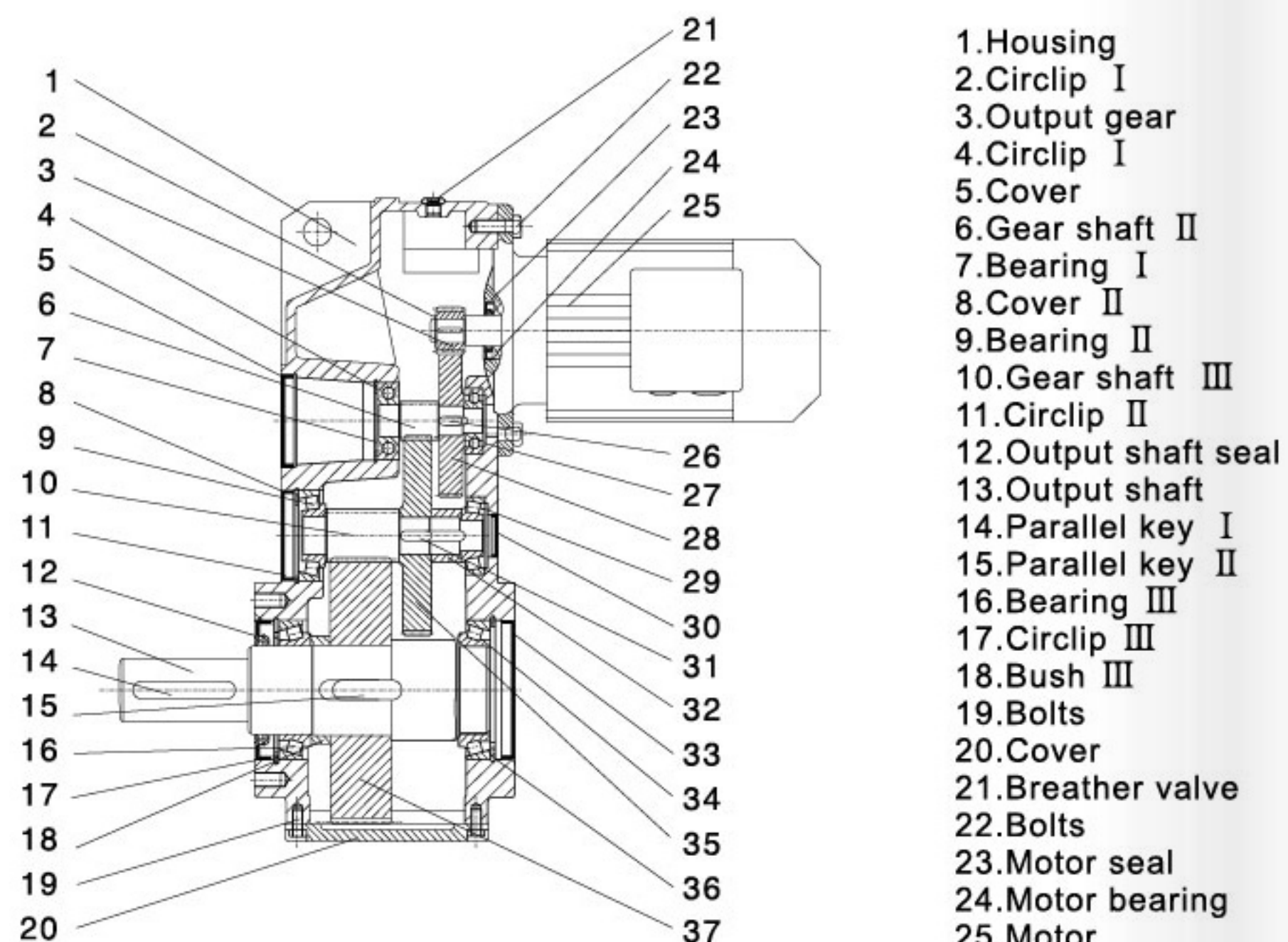




图4 F系列产品结构示意图

PIC 4 F Series The structural drawing of product



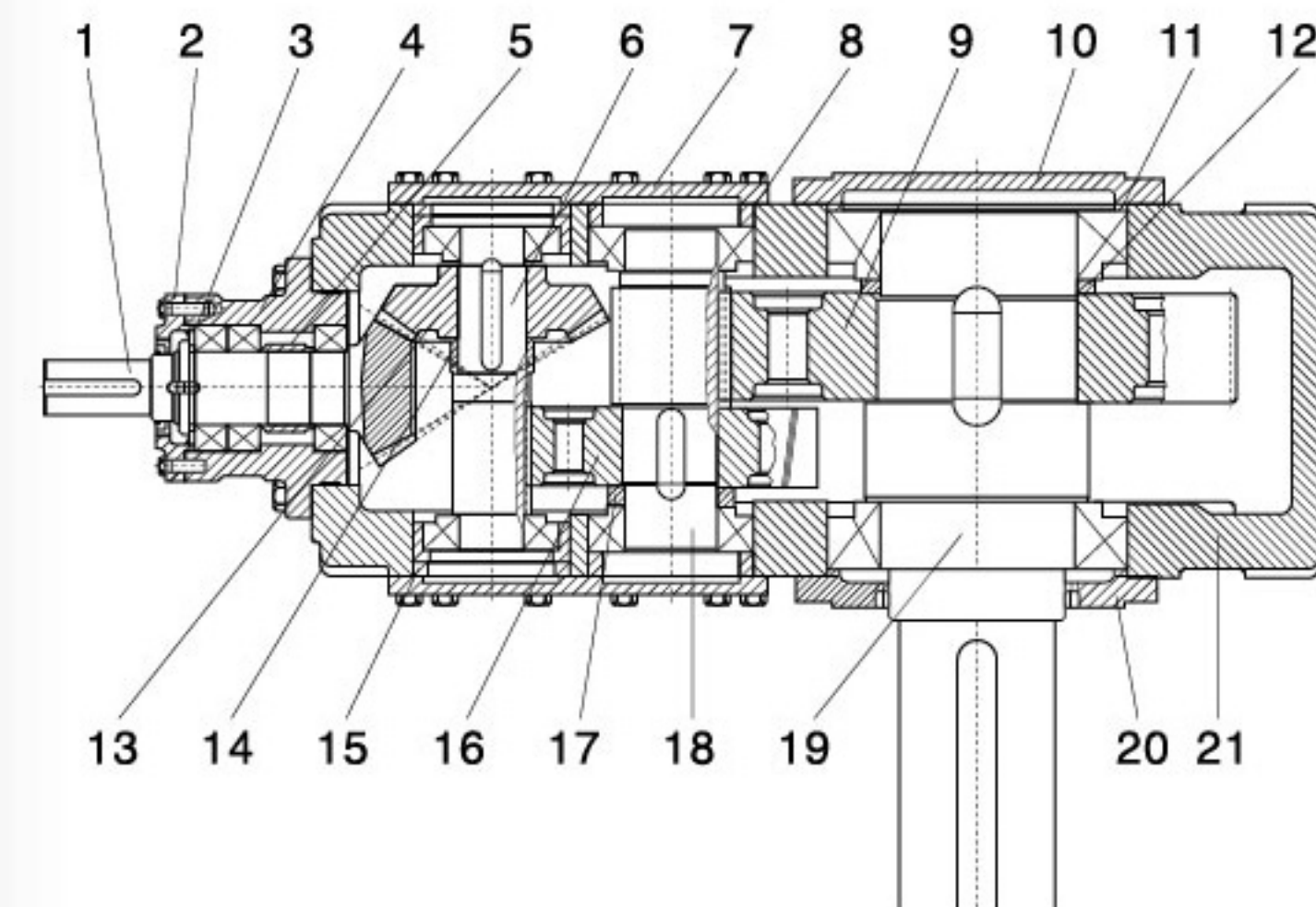
- |         |          |         |          |
|---------|----------|---------|----------|
| 1.箱体    | 10.齿轮轴Ⅲ  | 19.螺栓   | 28.齿轮Ⅰ   |
| 2.轴用挡圈Ⅰ | 11.孔用挡圈Ⅱ | 20.盖    | 29.轴承Ⅴ   |
| 3.输入齿轮  | 12.输出轴油封 | 21.通气帽  | 30.封盖Ⅲ   |
| 4.孔用挡圈Ⅰ | 13.输出轴   | 22.螺栓   | 31.平键Ⅳ   |
| 5.封盖Ⅰ   | 14.平键Ⅰ   | 23.电机油封 | 32.轴套Ⅱ   |
| 6.齿轮轴Ⅱ  | 15.平键Ⅱ   | 24.电机轴承 | 33.封盖Ⅳ   |
| 7.轴承Ⅰ   | 16.轴承Ⅲ   | 25.电机   | 34.轴承Ⅵ   |
| 8.封盖Ⅱ   | 17.孔用挡圈Ⅲ | 26.平键Ⅲ  | 35.齿轮Ⅱ   |
| 9.轴承Ⅱ   | 18.轴套Ⅲ   | 27.轴承Ⅳ  | 36.孔用挡圈Ⅳ |
|         |          |         | 37.齿轮Ⅲ   |

- 1.Housing
- 2.Circlip I
- 3.Output gear
- 4.Circlip I
- 5.Cover
- 6.Gear shaft II
- 7.Bearing I
- 8.Cover II
- 9.Bearing II
- 10.Gear shaft III
- 11.Circlip II
- 12.Output shaft seal
- 13.Output shaft
- 14.Parallel key I
- 15.Parallel key II
- 16.Bearing III
- 17.Circlip III
- 18.Bush III
- 19.Bolts
- 20.Cover
- 21.Breather valve
- 22.Bolts
- 23.Motor seal
- 24.Motor bearing
- 25.Motor
- 26.Parallel key III
- 27.Bearing IV
- 28.Gear I
- 29.Bearing V
- 30.Cover III
- 31.Parallel key IV
- 32.Bush II
- 33.Cover IV
- 34.Bearing VI
- 35.Gear II
- 36.Circlip IV
- 37.Gear III



图5 H、B系列产品结构示意图

PIC 5 H、B Series The structural drawing of product



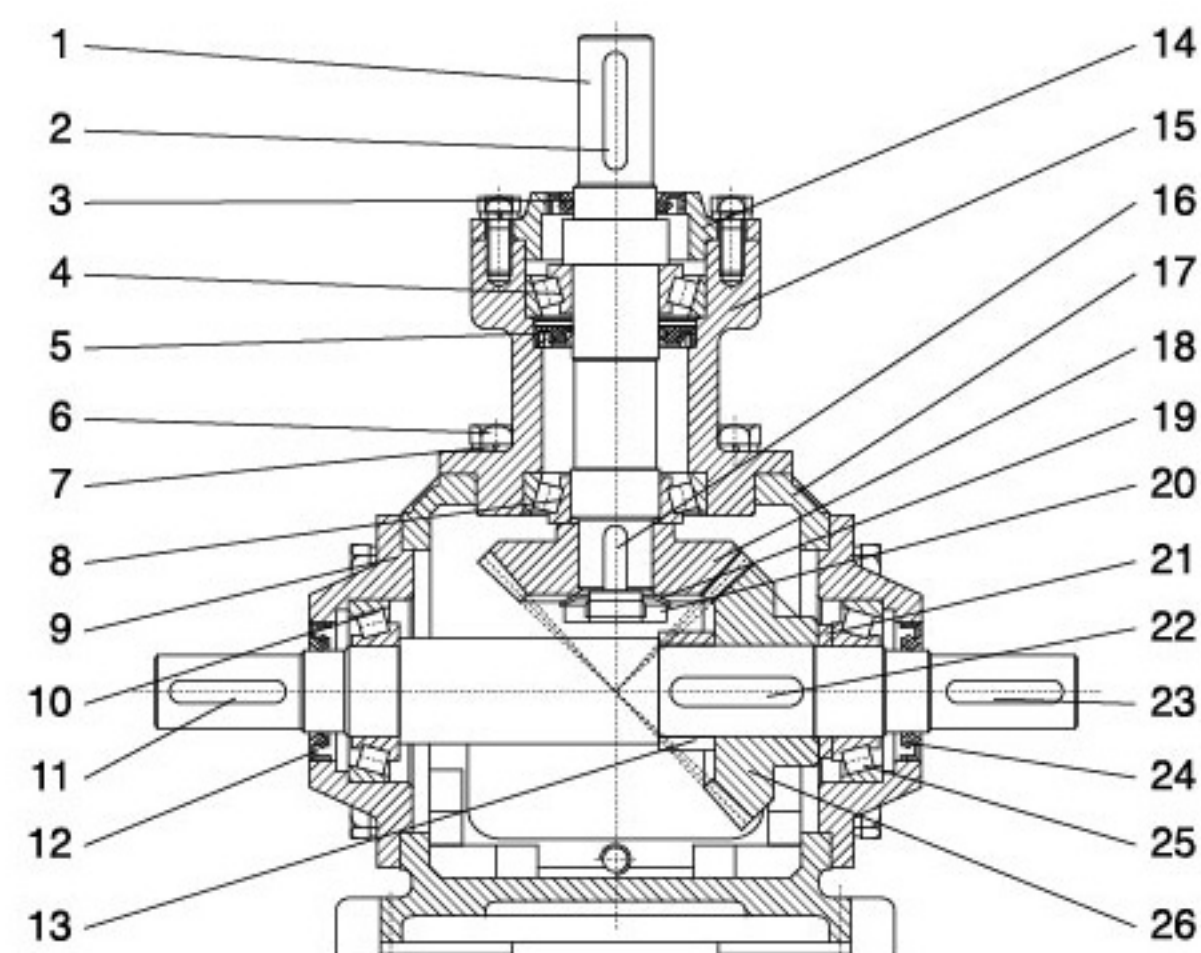
- |          |          |         |
|----------|----------|---------|
| 1.弧齿锥齿轮轴 | 8.调整环Ⅲ   | 15.调整环Ⅱ |
| 2.通盖Ⅰ    | 9.齿轮Ⅲ    | 16.齿轮Ⅱ  |
| 3.调整环Ⅰ   | 10.止盖Ⅱ   | 17.定距环Ⅲ |
| 4.轴承座    | 11.调整环Ⅳ  | 18.齿轮轴Ⅱ |
| 5.定距环Ⅰ   | 12.定距环Ⅳ  | 19.输出轴  |
| 6.齿轮轴Ⅰ   | 13.弧齿锥齿轮 | 20.通盖Ⅱ  |
| 7.止盖Ⅰ    | 14.定距环Ⅱ  | 21.机体   |

- |                            |                       |                  |
|----------------------------|-----------------------|------------------|
| 1.Helical-bevel gear shaft | 8.Ring III            | 15.Ring II       |
| 2.Cover I                  | 9.Gear III            | 16.Gear II       |
| 3.Ring I                   | 10.Cover II           | 17.Ring III      |
| 4.Bearing seat             | 11.Ring IV            | 18.Gear shaft II |
| 5.Ring I                   | 12.Ring IV            | 19.Output shaft  |
| 6.Gear shaft I             | 13.Helical-bevel gear | 20.Cover II      |
| 7.Cover I                  | 14.Ring II            | 21.Housing       |



图6 T系列产品结构示意图

PIC 6 T Series The structural drawing of product



- |         |            |            |
|---------|------------|------------|
| 1.输入轴   | 10.轴承Ⅲ     | 19.止动垫圈    |
| 2.平键Ⅰ   | 11.平键Ⅱ     | 20.圆螺母     |
| 3.输入轴油封 | 12.输出轴油封Ⅰ  | 21.调整垫Ⅰ    |
| 4.轴承Ⅰ   | 13.调整垫Ⅱ    | 22.平键Ⅳ     |
| 5.输入轴油封 | 14.输入法兰盖   | 23.平键Ⅴ     |
| 6.螺栓    | 15.输入法兰    | 24.输出轴油封Ⅱ  |
| 7.弹簧垫圈  | 16.平键Ⅲ     | 25.轴承Ⅳ     |
| 8.轴承Ⅱ   | 17.箱体      | 26.输出弧齿锥齿轮 |
| 9.输出法兰  | 18.输入弧齿锥齿轮 |            |

- |                    |                        |                        |
|--------------------|------------------------|------------------------|
| 1.Input shaft      | 10.Bearing Ⅲ           | 19.Washer              |
| 2.Parallel key Ⅰ   | 11.Parallel key Ⅱ      | 20.Round screw nut     |
| 3.Input shaft seal | 12.Output shaft seal Ⅰ | 21.Ring Ⅰ              |
| 4.Bearing Ⅰ        | 13.Ring Ⅱ              | 22.Parallel key Ⅳ      |
| 5.Input shaft seal | 14.Input flange cover  | 23.Parallel key Ⅴ      |
| 6.Bolts            | 15.Input flange        | 24.Output shaft seal Ⅱ |
| 7.Washer           | 16.Parallel key Ⅲ      | 25.Bearing Ⅳ           |
| 8.Bearing Ⅱ        | 17.Housing             | 26.Output helical      |
| 9.Output flange    | 18.Input helical       | -bevel gear            |



### 三、安装要求 Installation of whole units

1、底座式安装，应校准中心线标高，联轴器联接时，应校准两轴的同轴度，柔性联轴器联接时浮动量不超过联轴器的允许范围，刚性联接时须保证各安装联接的形位公差。

2、法兰式安装，止口应配合良好，法兰式安装并配空心轴联接时，特别应保证联接的形位公差。

3、扭力臂安装，主动的空心轴与被动轴应配合良好，被动轴的浮动或设备振动应小于弹性块允许的范围，力臂应固定并锁紧。

4、输出轴加装联轴器、皮带轮、齿轮、链轮等件时，请勿重击，应用输出轴外端螺孔，压入联接件。皮带轮、齿轮、链轮、搅拌式还需考虑径向力。

5、空心轴与实心轴联接时（配合公差H7/h6），应涂防锈油。

6、准备刚性好的基础或牢固的台架来安装传动设备，同时也需充分考虑即使加上最大载荷也不至于改变装配好后各部件的位置。

7、安装升降机时，台架面上的孔，在满足丝杆能方便通过的前提下，应尽可能小。

8、安装螺栓一般情况下采用8.8级，如果高温或振动冲击等情况，请打圆柱销以免松动。

1. Choosing foot-mount, the height of center line should be calibrated, choosing coupling-connect, coaxiality should be calibrated, choosing flexible coupling, run-out should keep within permissible values, choosing rigid coupling contour and position tolerance should be guaranteed, choosing long coupling, rigidity of shaft should be enough.

2. Flange-mount, protruding or concave steps should inosculate with housings, using hollow shaft, contour and position tolerance at connection parts should be guaranteed.

3. Torque-arm-mount, hollow shafts should be fit with working shafts, run-out of working shafts and vibration of units should be within ranges of vibration values, torque arm should be fixed and locked.

4. Installation couplings. belt wheels, gears, chain gears on output shafts, please use screw hole in shaft end to press them in the correct position(see following pictures). and radial force should be considered in case of belt wheel. Chain gears and agitation mode.

5. When connecting hollow shaft and solid shaft, please clean the surface and put anti-corrosive oil on it.

6. Please choose foundation with good rigidity or stable plat form to install transmission devices. In the meantime, also should take full consideration that the positions of all parts will not change even if maximum torque is loaded on units.

7. When installing screw jacks, the screw holes in mounting plate should be as small as possible up to bolts' diameter.

8. Generally fixing bolts adopt GBT8.8. In case of high temperature and vibration, please take anti-loose measures. The tightening torques of binding bolts as follows.

**四、润滑及密封 Lubrication and sealing****润滑油量表 Lubrication table**

S...:

| 规格<br>Size | 润滑油量 (升) Fill quantity in liters |     |                  |      |     |     |
|------------|----------------------------------|-----|------------------|------|-----|-----|
|            | M1                               | M2  | M3 <sup>1)</sup> | M4   | M5  | M6  |
| S37        | 0.25                             | 0.4 | 0.5              | 0.6  | 0.4 | 0.4 |
| S47        | 0.35                             | 0.8 | 0.7              | 1.1  | 0.8 | 0.8 |
| S57        | 0.5                              | 1.2 | 1                | 1.5  | 1.3 | 1.3 |
| S67        | 1                                | 2.0 | 2.2/3.1          | 3.2  | 2.6 | 2.6 |
| S77        | 1.9                              | 4.2 | 3.7/5.4          | 6    | 4.4 | 4.4 |
| S87        | 3.3                              | 8.1 | 6.9/10.4         | 12   | 8.4 | 8.4 |
| S97        | 6.8                              | 15  | 13.4/18          | 22.5 | 17  | 17  |

SF...:

| 规格<br>Size | 润滑油量 (升) Fill quantity in liters |     |                  |      |     |     |
|------------|----------------------------------|-----|------------------|------|-----|-----|
|            | M1                               | M2  | M3 <sup>1)</sup> | M4   | M5  | M6  |
| SF37       | 0.25                             | 0.4 | 0.5              | 0.6  | 0.4 | 0.4 |
| SF47       | 0.4                              | 0.9 | 0.9              | 1.2  | 1.0 | 1.0 |
| SF57       | 0.5                              | 1.2 | 1                | 1.6  | 1.4 | 1.4 |
| SF67       | 1                                | 2.2 | 2.3/3            | 3.2  | 2.7 | 2.7 |
| SF77       | 1.9                              | 4.1 | 3.9/5.8          | 6.5  | 4.9 | 4.9 |
| SF87       | 3.8                              | 8   | 7.1/10.1         | 12   | 9.1 | 9.1 |
| SF97       | 7.4                              | 15  | 13.8/18.8        | 23.6 | 18  | 18  |

SA...、SAF...、SAZ...:

| 规格<br>Size | 润滑油量 (升) Fill quantity in liters |     |                  |      |      |      |
|------------|----------------------------------|-----|------------------|------|------|------|
|            | M1                               | M2  | M3 <sup>1)</sup> | M4   | M5   | M6   |
| S..37      | 0.25                             | 0.4 | 0.5              | 0.6  | 0.4  | 0.4  |
| S..47      | 0.4                              | 0.8 | 0.7              | 1.1  | 0.8  | 0.8  |
| S..57      | 0.5                              | 1.1 | 1                | 1.6  | 1.2  | 1.2  |
| S..67      | 1                                | 2.0 | 1.8/2.6          | 2.9  | 2.5  | 2.5  |
| S..77      | 1.8                              | 3.9 | 3.6/5            | 5.9  | 4.5  | 4.5  |
| S..87      | 3.8                              | 7.4 | 6/8.7            | 11.2 | 8    | 8    |
| S..97      | 7                                | 14  | 11.4/16          | 21   | 15.7 | 15.7 |

注: 1) 表示减速机为组合型时低速级所加油量为大值。

Notes: 1) The large gear unit of multi-stage gear units must be filled with the larger oil volume.



F...:

| 规格<br>Size | 润滑油量 (升) Fill quantity in liters |      |      |      |      |     |
|------------|----------------------------------|------|------|------|------|-----|
|            | M1                               | M2   | M3   | M4   | M5   | M6  |
| F37        | 1                                | 1.2  | 0.7  | 1.2  | 1    | 1.1 |
| F47        | 1.5                              | 1.8  | 1.1  | 1.9  | 1.5  | 1.7 |
| F57        | 2.6                              | 3.7  | 2.1  | 3.5  | 2.8  | 2.9 |
| F67        | 2.7                              | 3.8  | 1.9  | 3.8  | 2.9  | 3.2 |
| F77        | 5                                | 7.3  | 4.3  | 8    | 6    | 6.3 |
| F87        | 10                               | 13.0 | 7.7  | 13.8 | 10.8 | 11  |
| F97        | 18.5                             | 22.5 | 12.6 | 25.2 | 18.5 | 20  |
| F107       | 24.5                             | 32   | 19.5 | 37.5 | 27   | 27  |
| F127       | 40.5                             | 55   | 34   | 61   | 46.5 | 47  |
| F157       | 69                               | 104  | 63   | 105  | 86   | 78  |

FF...:

| 规格<br>Size | 润滑油量 (升) Fill quantity in liters |      |      |      |      |      |
|------------|----------------------------------|------|------|------|------|------|
|            | M1                               | M2   | M3   | M4   | M5   | M6   |
| FF37       | 1                                | 1.2  | 0.7  | 1.3  | 1    | 1.1  |
| FF47       | 1.6                              | 1.9  | 1.1  | 1.9  | 1.5  | 1.7  |
| FF57       | 2.8                              | 3.8  | 2.1  | 3.7  | 2.9  | 3    |
| FF67       | 2.7                              | 3.8  | 1.9  | 3.8  | 2.9  | 3.2  |
| FF77       | 5.1                              | 7.3  | 4.3  | 8.1  | 6    | 6.3  |
| FF87       | 10.3                             | 13.2 | 7.8  | 14.1 | 11   | 11.2 |
| FF97       | 19                               | 22.5 | 12.6 | 25.5 | 18.9 | 20.5 |
| FF107      | 25.5                             | 32   | 19.5 | 38.5 | 27.5 | 28   |
| FF127      | 41.5                             | 56   | 34   | 63   | 46.5 | 49   |
| FF157      | 72                               | 105  | 64   | 106  | 87   | 79   |

FA...、FAF...、FAZ...:

| 规格<br>Size | 润滑油量 (升) Fill quantity in liters |      |      |      |      |      |
|------------|----------------------------------|------|------|------|------|------|
|            | M1                               | M2   | M3   | M4   | M5   | M6   |
| F..37      | 1                                | 1.2  | 0.7  | 1.2  | 1    | 1.1  |
| F..47      | 1.5                              | 1.8  | 1.1  | 1.9  | 1.5  | 1.7  |
| F..57      | 2.7                              | 3.8  | 2.1  | 3.6  | 2.9  | 3    |
| F..67      | 2.7                              | 3.8  | 1.9  | 3.8  | 2.9  | 3.2  |
| F..77      | 5                                | 7.3  | 4.3  | 8    | 6    | 6.3  |
| F..87      | 10                               | 13.0 | 7.7  | 13.8 | 10.8 | 11   |
| F..97      | 18.5                             | 22.5 | 12.6 | 25.0 | 18.5 | 20   |
| F..107     | 24.5                             | 32   | 19.5 | 37.5 | 27   | 27   |
| F..127     | 39                               | 55   | 34   | 61   | 45   | 46.5 |
| F..157     | 68                               | 103  | 62   | 104  | 85   | 77   |



## 润滑油量表 Lubrication table

| 规格<br>Size | 润滑油量 (升) Fill quantity in liters |                  |      |      |      |      |
|------------|----------------------------------|------------------|------|------|------|------|
|            | M1 <sup>1)</sup>                 | M2 <sup>1)</sup> | M3   | M4   | M5   | M6   |
| R17        | 0.25                             | 0.6              | 0.35 | 0.6  | 0.35 | 0.35 |
| R27        | 0.25/0.4                         | 0.7              | 0.4  | 0.7  | 0.4  | 0.4  |
| R37        | 0.3/1                            | 0.9              | 1    | 1.1  | 0.8  | 1    |
| R47        | 0.7/1.5                          | 1.6              | 1.5  | 1.7  | 1.5  | 1.5  |
| R57        | 0.8/1.7                          | 1.9              | 1.7  | 2.1  | 1.7  | 1.7  |
| R67        | 1.1/2.3                          | 2.6/3.5          | 2.8  | 3.2  | 1.8  | 2    |
| R77        | 1.2/3                            | 3.8/4.3          | 3.6  | 4.3  | 2.5  | 3.4  |
| R87        | 2.3/6                            | 6.7/8.4          | 7.2  | 7.7  | 6.3  | 6.5  |
| R97        | 4.6/9.8                          | 11.7/14          | 11.7 | 13.4 | 11.3 | 11.7 |
| R107       | 6/13.7                           | 16.3             | 16.9 | 19.2 | 13.2 | 15.9 |
| R137       | 10/25                            | 28               | 29.5 | 31.5 | 25   | 25   |
| R147       | 15.4/40                          | 46.5             | 48   | 52   | 39.5 | 41   |
| R167       | 27/70                            | 82               | 78   | 88   | 66   | 69   |

| 规格<br>Size | 润滑油量 (升) Fill quantity in liters |                  |      |      |      |      |
|------------|----------------------------------|------------------|------|------|------|------|
|            | M1 <sup>1)</sup>                 | M2 <sup>1)</sup> | M3   | M4   | M5   | M6   |
| RF17       | 0.25                             | 0.6              | 0.35 | 0.6  | 0.35 | 0.35 |
| RF27       | 0.25/0.4                         | 0.7              | 0.4  | 0.7  | 0.4  | 0.4  |
| RF37       | 0.4/1                            | 0.9              | 1    | 1.1  | 0.8  | 1    |
| RF47       | 0.75/1.5                         | 1.6              | 1.5  | 1.7  | 1.5  | 1.5  |
| RF57       | 0.8/1.7                          | 1.8              | 1.7  | 2    | 1.7  | 1.7  |
| RF67       | 1.2/2.5                          | 2.7/3.6          | 2.7  | 3.1  | 1.9  | 2.1  |
| RF77       | 1.2/2.6                          | 3.8/4.1          | 3.3  | 4.1  | 2.4  | 3    |
| RF87       | 2.4/6                            | 6.8/7.9          | 7.1  | 7.7  | 6.3  | 6.4  |
| RF97       | 5.1/10.2                         | 11.9/14          | 11.2 | 14   | 11.2 | 11.8 |
| RF107      | 6.3/14.9                         | 15.9             | 17   | 19.2 | 13.1 | 15.9 |
| RF137      | 9.5/25                           | 27               | 29   | 32.5 | 25   | 25   |
| RF147      | 16.4/42                          | 47               | 48   | 52   | 42   | 42   |
| RF167      | 26/70                            | 82               | 78   | 88   | 65   | 71   |

| 规格<br>Size   | 润滑油量 (升) Fill quantity in liters |           |           |           |           |           |
|--------------|----------------------------------|-----------|-----------|-----------|-----------|-----------|
|              | M1                               | M2        | M3        | M4        | M5        | M6        |
| RX37/RXF37   | 0.45/0.4                         | 0.6       | 1.1/0.9   | 1.1/0.9   | 0.7/0.6   | 0.7/0.6   |
| RX57/RXF57   | 0.6/0.5                          | 0.8       | 1.3/1.1   | 1.3/1.1   | 0.9/0.7   | 0.9/0.7   |
| RX67/RXF67   | 0.8/0.7                          | 0.8       | 1.7/1.5   | 1.9/1.7   | 1.1/1     | 1.1/1     |
| RX77/RXF77   | 1.1/0.9                          | 1.5       | 2.6/2.4   | 2.7/2.5   | 1.6       | 1.6       |
| RX87/RXF87   | 1.7/1.6                          | 2.5       | 4.8/4.9   | 4.8/4.7   | 2.9       | 2.9       |
| RX97/RXF97   | 2.1                              | 3.4/3.6   | 7.4/7.1   | 7         | 4.8       | 4.8       |
| RX107/RXF107 | 3.9/3.1                          | 5.6/5.9   | 11.6/11.2 | 11.9/10.5 | 7.7/7.2   | 7.7/7.2   |
| RX127/RXF127 | 5.6/5.9                          | 11.6/11.2 | 21.9/20.5 | 22.7/22.2 | 9.7/9.2   | 9.7/9.2   |
| RX157/RXF157 | 11.6/11.2                        | 21.9/20.5 | 31.3/30.5 | 32.7/32.2 | 13.2/12.7 | 13.2/12.7 |

注: 1) 表示减速机为组合型时低速级所加油量为大值。

Notes: 1) The large gear unit of multi-stage gear units must be filled with the larger oil volume.



## K...,KAB...:

| 规格<br>Size | 润滑油量 (升) Fill quantity in liters |      |      |      |      |      |
|------------|----------------------------------|------|------|------|------|------|
|            | M1                               | M2   | M3   | M4   | M5   | M6   |
| K..37      | 0.5                              | 1    | 1    | 1.3  | 1    | 1    |
| K..47      | 0.8                              | 1.3  | 1.5  | 2    | 1.6  | 1.6  |
| K..57      | 1.2                              | 2.3  | 2.5  | 3    | 2.6  | 2.4  |
| K..67      | 1.1                              | 2.4  | 2.6  | 3.4  | 2.6  | 2.6  |
| K..77      | 2.2                              | 4.1  | 4.4  | 5.9  | 4.2  | 4.4  |
| K..87      | 3.7                              | 8    | 8.7  | 10.9 | 7.8  | 8    |
| K..97      | 7                                | 14   | 15.7 | 20   | 15.7 | 15.5 |
| K..107     | 10                               | 21   | 25.5 | 33.5 | 24   | 24   |
| K..127     | 21                               | 41.5 | 44   | 54   | 40   | 41   |
| K..157     | 31                               | 62   | 65   | 90   | 58   | 62   |
| K..167     | 35                               | 100  | 100  | 125  | 85   | 85   |
| K..187     | 60                               | 170  | 170  | 205  | 130  | 130  |

## KF...:

| 规格<br>Size | 润滑油量 (升) Fill quantity in liters |      |      |      |      |      |
|------------|----------------------------------|------|------|------|------|------|
|            | M1                               | M2   | M3   | M4   | M5   | M6   |
| KF37       | 0.5                              | 1.1  | 1.1  | 1.5  | 1    | 1    |
| KF47       | 0.8                              | 1.3  | 1.7  | 2.2  | 1.6  | 1.6  |
| KF57       | 1.3                              | 2.3  | 2.7  | 3    | 2.9  | 2.7  |
| KF67       | 1.1                              | 2.4  | 2.8  | 3.6  | 2.7  | 2.7  |
| KF77       | 2.1                              | 4.1  | 4.4  | 6    | 4.5  | 4.5  |
| KF87       | 3.7                              | 8.2  | 9    | 11.9 | 8.4  | 8.4  |
| KF97       | 7                                | 14.7 | 17.3 | 21.5 | 15.7 | 16.5 |
| KF107      | 10                               | 22   | 26   | 35   | 25   | 25   |
| KF127      | 21                               | 41.5 | 46   | 55   | 41   | 41   |
| KF157      | 31                               | 66   | 69   | 92   | 62   | 62   |

## KA..., KAF..., KAZ...:

| 规格<br>Size | 润滑油量 (升) Fill quantity in liters |      |      |      |      |      |
|------------|----------------------------------|------|------|------|------|------|
|            | M1                               | M2   | M3   | M4   | M5   | M6   |
| K..37      | 0.5                              | 1    | 1    | 1.4  | 1    | 1    |
| K..47      | 0.8                              | 1.3  | 1.6  | 2.1  | 1.6  | 1.6  |
| K..57      | 1.3                              | 2.3  | 2.7  | 3    | 2.9  | 2.7  |
| K..67      | 1.1                              | 2.4  | 2.7  | 3.6  | 2.6  | 2.6  |
| K..77      | 2.1                              | 4.1  | 4.6  | 6    | 4.4  | 4.4  |
| K..87      | 3.7                              | 8.2  | 8.8  | 11.1 | 8    | 8    |
| K..97      | 7                                | 14.7 | 15.7 | 20   | 15.7 | 15.7 |
| K..107     | 10                               | 20.5 | 24   | 32   | 24   | 24   |
| K..127     | 21                               | 41.5 | 43   | 52   | 40   | 40   |
| K..157     | 31                               | 66   | 67   | 87   | 62   | 62   |
| KA..167    | 35                               | 100  | 100  | 125  | 85   | 85   |
| KA..187    | 60                               | 170  | 170  | 205  | 130  | 130  |



1、**密封性**：骨架双唇油封属于易损件，由于使用条件的较大差异，骨架油封的使用寿命很难确定，失效后须及时更换并补充新油。

2、**润滑油**：减速机一般采用油池飞溅润滑。对环境温度高于40℃或减速机工作时温度超过100℃时应采用循环油润滑。油池润滑的油面高度，规定当减速器静止不运转时，油面控制在圆油标中心以上的位置。

1. Sealing: The two-lip seal belongs to wearing parts; it's difficult to decide the useful time because of the different condition of the use condition, after invalidation, updating new oil timely.

2. Lubrication: generally, gear units should adopt splash lubrication. It should adopt circulation oil if the ambient temperature above 40℃ or reducer working temperature above 100℃. The grease surface splash lubrication should be above the center of oil scale when the reducer keep still.

\* R、F、K、T、H、B系列齿轮类减速机的润滑一般采用中负荷工业齿轮油，牌号见表1

\* Generally, R. F. K. T. H. B Series gear reducer adopt the moderate lode industrial gear oil, check the oil number on table 1

**中负荷工业齿轮油 (表1)**

Moderate lode industrial gear oil (table 1)

| 输入功率(KW)<br>Output power | ≤1.5                      | 2.2~7.5                   | 11~22                     | ≥30                                 |
|--------------------------|---------------------------|---------------------------|---------------------------|-------------------------------------|
| 润滑油牌号<br>Oil number      | N150或N220<br>N150 or N220 | N220或N320<br>N220 or N320 | N320或N460<br>N320 or N460 | N320、N460或N680<br>N320、N460 or N680 |

\* S、RV系列蜗轮类减速机的润滑一般采用蜗轮蜗杆油，牌号见表2

\* The lubrication of S. RV Worm reducer adopt worm gear oil. check the oil number on table 2

**蜗轮蜗杆油 (表2)**

Worm gear oil (table 2)

| 输入功率(KW)<br>Output power | ≤1.5 | 2.2~7.5               | ≥11 |
|--------------------------|------|-----------------------|-----|
| 润滑油牌号<br>Oil number      | 320  | 320或460<br>320 or 460 | 460 |

\* 摆线类减速机小机型 (X4以下) 采用油脂润滑，建议采用4#二硫化钼锂基脂，出厂时机内已加满。中等以上机型 (X5以上) 采用油浴循环润滑，建议采用50#机械油或90#工业齿轮油，出厂时未加，用户在开机前应接油标注入润滑油。

\* MB无级变速器必须使用Ub—3牵引液。



\* 蜗轮丝杆升降机一般采用3#二硫化钼锂基润滑脂。

以上所选用的润滑油可以满足一般使用要求。若有特殊要求或有经验的用户，可另行选择其它牌号的润滑油。环境温度低时应降低牌号。

一般来说，润滑油牌号由小增大时，对减速机性能有如下影响；

A、温度升度，线速度高时程度较明显；

B、效率降低；

C、噪声降低；

D、密封性能加强；

E、蜗轮或齿轮承载能力增加。

3、新机在使用运转400小时后，应更换一次润滑油并清理内部油污。以后的换油周期在正常情况下为：变速器专用油2000小时；齿轮油8000小时。使用环境恶劣或8小时以上连续工作制的场合，应缩短换油时间。

4、严禁不同品质的润滑油混合使用。因为混合使用时可能发生化学反应从而降低或失去润滑作用。

\* The small type of Cycloid reducer (under X 4) adopt grease lubrication, you'd better adopt number 4 molybdenum disulphide grease. all machines have enough lubrication before leaving factory. Above middle type (above X 5) adopt lubrication by oil circulation, you'd better adopt number 50 machinery oil or number 90 industry gear oil. No oil before leaving factory, users have to fill oil before the machine start up.

\* MB Speed variator must use UB-3 traction liquid.

\* Worm screw jack must use number 3 molybdenum disulphide grease.

The lubrication, which selected can satisfy the ordinary require. If there is special require or experienced user can use other oil. choose the low number oil when the ambient temperature is low. Generally, the lubrication influence the reducer when the lubrication number increasing as the following:

A. When the temperatures increase and linear velocity.

B. Efficiency decrease.

C. Noise decrease.

D. Leak tightness increase.

E. Carrying capacity of worm and gear increase.

3. New machine working after 400 hours, the oil should be changed and remove the deposits and old oil. The replace cycle: oil of variator: 2000 hours. Gear oil: 8000 hours. The vile using environment or over 8 hours continuous work-places should shorten the time for oil.

4. Different lubrication using mixed is prohibiting strictly, it many reduce the efficiency of the lubrication for the chemical reaction.

## 五、使用与保养 Use and maintenance

1、开机前应检查机内油面是否符合要求，按提示松开或换上通气帽使之通气顺畅，并检查转动是否灵活。

2、负载试车前要空载运行半小时左右，确认空载无故障后方可加载运行。试车应经常检查运转情况：不得有异常冲击，振动，不得渗、漏油，温升不得超过60℃，最高油温不得超



过100℃（日常工作时应进行检查）一切正常方可正式工作。

3、工作中发现异常情况应停机检查，查明、排除故障后方可继续工作。时常检查润滑油情况，注意补足油量，及时更换变质的润滑油。

4、若出现安装方位变动，一般情况下调换油镜、油塞、通气帽即可。

5、减速器应经常保持清洁，外表面不得堆积灰尘、脏物以免影响散热。

6、贮存：在干燥通风、室温环境中存放。当贮存期超过三个月时应作防锈处理。放置一年左右的机器，使用时要检查油封是否老化，油品是否变质。

1. Checking the oil level if it's in line with the require before the machine is running, loose or change the vent cap for ventilate unhindered and checking the rotating if it's flexible or not.

2. It should be running unloaded half an hours before running loaded, checking the running condition on trial run: no exceptional shock, percussion. No oil leak. The temperature is limited to 60℃. the oil is limited to 100℃. (It should be checking in routine work as well) it can be running until everything is standing by.

3. It must be stopped immediately for check once if you find any problem during running the gear units, check the condition of the oil. fill the oil, change the lubrication when it's deteriorated.

4. If mounting position changed, the position of breathe screw. Oil level. Oil drain plug will be change with each other as usual.

5. Gear units should be keeping clean. No dust accumulated on the surface in case of influencing radiator.

6. Store it in the environment of dry ventilate and room temperature when the storage time exceed 3 months, treat it with rustproof, check the oil closure and oil whether it had gone bad when the machine is placed for 1 year.

## 六、故障、原因和措施 Malfunction、cause and measure

维修工作一定要由经过培训的素质合格的人员谨慎地进行。

Maintenance should be made by qualifide workers.

| 故障<br>Malfunction                                | 原因<br>Causes                             | 措施<br>Measures                                                                                                      |
|--------------------------------------------------|------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| 在减速机的紧固件处有大的噪声<br>High noise at tightening parts | 紧固件松动了<br>Loose of tightening parts      | 将螺栓/螺母拧紧到规定的扭矩。<br>更换损坏了的螺栓/螺母。<br>Tighten nut bolt to correct state.<br>Replace damaged nut/bolt.                  |
| 减速机的噪声变化<br>Changing noise                       | 齿轮的轮齿发生了损坏<br>Teeth of gears get damaged | 和客户服务部联系。<br>检查所有零件上齿，更换损坏了的零件。<br>Consult after-sales department.<br>Check teeth of gears and replace damaged one. |
|                                                  | 轴承间隙过大<br>Clearance of bearings too big  | 和售后服务部联系。<br>调整轴承的间隙。<br>Consult after-sales department.<br>Adjust the clearance of bearings.                       |



| 故障<br>Malfunction                      | 原因<br>Causes                                                                           | 措施<br>Measures                                                                                                                                                 |
|----------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 减速机的噪声变化<br>Changing noise             | 轴承损坏<br>Bearings get damaged                                                           | 和客户服务部联系。<br>更换损坏的轴承。<br>Consult after-sales department.<br>Replace damaged bearings.                                                                          |
| 轴承温度升高<br>Bearing temperature rise     | 箱体里面的油面过高或过低<br>Oil level is too high or low                                           | 在室温下检查油面的高度并按需加油。<br>Check oil level at room temperature and add on reduce oil.                                                                                |
|                                        | 油过于陈旧<br>Oil is used too long                                                          | 和售后服务部联系。<br>—检查上次换油的时间。<br>Consult after-sales department.<br>Check the date that oil be replaced last time.                                                  |
|                                        | 油泵的机械故障<br>Malfunction of oil pump                                                     | 和售后服务部联系。<br>检查油泵的工作是否正常，修理或换新的油泵。<br>Consult after-sales department.<br>Check if pump works normally, repair or replace it.                                   |
|                                        | 轴承损坏<br>Bearing damage                                                                 | 和售后服务部联系。<br>—查阅操作人员在振动测量中所获得的数据。<br>—检查并按需更换轴承。<br>Consult after-sales department.<br>—Look up the date about vibration.<br>—Check and replace it on request. |
| 工作温度过高<br>Working temperature too high | 箱体里面的油过高<br>Oil level is too high                                                      | 检查油面的高度，如果有必要的话，调整。<br>Check oil level, and adjust if necessary.                                                                                               |
|                                        | 油过于陈旧<br>Oil is used too long                                                          | 和售后服务部联系。<br>检查上一次换油的时间，如果有必要的话就更换。<br>Consult after-sales department.<br>Check the date that oil was repced last time, replace it if necessary.               |
|                                        | 油受到严重污染<br>Oil is polluted seriously                                                   | 和售后服务部联系。<br>—换油。<br>Consult after-sales department.<br>—Replace oil.                                                                                          |
|                                        | 在配备了润滑油冷却系统的减速机上：冷却剂的流量过低或者过高<br>Flux of cooling material is too high or low           | 全面调节进口和出口管道的阀门。<br>检查水冷装置的自由流量。<br>Adjust entrance and exit valves.<br>Check the flux of water cooling devices.                                                |
|                                        | 通过水冷装置的油流过低，其原因是：滤油器严重堵塞<br>Oil flux through water cooling devices is too low          | 清理滤油器。<br>Clean oil filter.                                                                                                                                    |
|                                        | 油泵的机械故障<br>油泵损坏<br>Malfunction of oil pump<br>oil pump damage                          | 和售后服务部联系。<br>—检查油泵的功能是否正常。<br>—修理或者换新。<br>Consult after-sales department.<br>—Check of oil pump works normally.<br>—Repair or replace it.                      |
|                                        | 在配备了风扇的减速机上：风扇罩的空气入口和/或箱体严重污染<br>Entrance of fan shield and housing polluted seriously | 清理风扇罩和箱体。<br>Cleanse fan shield and housing.                                                                                                                   |
|                                        | 配备了冷却螺旋管的减速机：冷却螺旋管里面结垢<br>Residues in cooling coil                                     | 和售后服务部联系。<br>—清理或者更换螺旋管。<br>Consult after-sales department.<br>—Clean or replace cooling coil.                                                                 |