



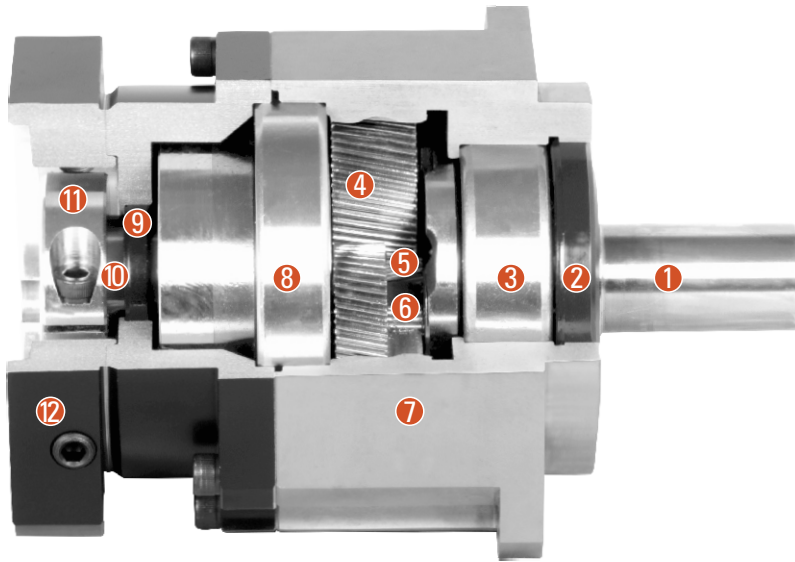
PLANETARY GEAR BOX

ZB/ZE系列
高精度行星减速机

中大电机
ZD MOTOR

ZB系列减速机 ZB SERIES GEAR BOX

剖视图 Sectional Drawing



- ① 输出轴 Output shaft
- ② 油封 Oil seal
- ③ 输出轴前轴承 Output shaft front bearing
- ④ 行星轮 Planetary gear
- ⑤ 太阳轮 Solar wheel
- ⑥ 满针轴承 Full needle bearing
- ⑦ 前盖 Front cover
- ⑧ 输出轴后轴承 Output shaft rear bearing
- ⑨ 油封 Oil seal
- ⑩ 联轴器 Coupling
- ⑪ 锁紧环 Lock ring
- ⑫ 后盖 Rear cover

系列号、机座标识说明 Type And Model Number

| ZB减速机 ZB Reducers | | | | | 伺服电机 Servo Motor | | | |
|--|----|----|-----|------|--|-----|----|----------------------|
| 090 | ZB | 20 | () | (S1) | - | 750 | T1 | <input type="text"/> |
| ① | ② | ③ | ④ | ⑤ | | ⑥ | ⑦ | ⑧ |
| ① 减速机机座号: 090 具体见P04 | | | | | Gear head frame size: 090, (P04) | | | |
| ② 减速机系列代号: ZB | | | | | Gear head series code: ZB | | | |
| ③ 减速比: 20 具体见P04 | | | | | Gear Ratio: Single Stage 20, (P04) | | | |
| ④ 精度 具体见P04 标准型P2(省略) 精密型P1 高精型P0 输出轴负荷量为容许输出扭矩的±5%时的值 | | | | | Amount of backlash, (P04) Standard type P2 (Omission), precision P1, high precision P0 Precision (The load of output shaft is ±5% of allowable output torque) | | | |
| ⑤ 输入轴型式 S1: 带锁紧环锁紧(省略) (无论马达是否有键槽都可使用, 但“D”字型不适用) S2: 带键槽锁紧(输入轴带键) A: 其他适配器(请与本公司联系) | | | | | Input shaft type S1: Locking with locking ring (Omission) (Regardless whether the motor with keyway can use it. But “D” cut can't use) S2: Locking with keyway (Input shaft with key) A: Other type (Please contact with us) | | | |
| ⑥ 适用伺服马达功率(W) | | | | | Applicable servo motor power (W) | | | |
| ⑦ 伺服马达厂家名称(P11~P12) | | | | | Manufacturer name of servo motor (P11~P12) | | | |
| ⑧ 伺服马达型号 | | | | | Model of servo motor | | | |

产品规格 PRODUCT SPECIFICATIONS

■ 减速机性能资料 Reducer Performance Data

| 规格 Specifications | 级数 Node Number | 减速比 Reduction Ratio | 060ZB | 060(A)ZB | 090ZB | 090(A)ZB | 115ZB | 142ZB | 180ZB | 220ZB | | |
|------------------------------------|-------------------|------------------------|-------------|----------|-------|----------|-------|-------|-------|-------|-------|------|
| 额定输出力矩 T_{2N} | Nm | 1 | 3 | 55 | - | 130 | - | 208 | 342 | 588 | 1140 | |
| | | | 4 | 50 | - | 140 | - | 290 | 542 | 1050 | 1700 | |
| | | | 5 | 60 | - | 160 | - | 330 | 650 | 1200 | 2000 | |
| | | | 6 | 55 | - | 150 | - | 310 | 600 | 1100 | 1900 | |
| | | | 7 | 50 | - | 140 | - | 300 | 550 | 1100 | 1800 | |
| | | | 8 | 45 | - | 120 | - | 260 | 500 | 1000 | 1600 | |
| | | | 9 | 40 | - | 100 | - | 230 | 450 | 900 | 1500 | |
| | | | 10 | 40 | - | 100 | - | 230 | 450 | 900 | 1500 | |
| | | | 2 | 15 | 55 | 55 | 130 | 130 | 208 | 342 | 588 | 1140 |
| | | | | 20 | 50 | 50 | 140 | 140 | 290 | 542 | 1050 | 1700 |
| | 25 | 60 | | 60 | 160 | 160 | 330 | 650 | 1200 | 2000 | | |
| | 30 | 55 | | 55 | 150 | 150 | 310 | 600 | 1100 | 1900 | | |
| | 35 | 50 | | 50 | 140 | 140 | 300 | 550 | 1100 | 1800 | | |
| | 40 | 45 | | 45 | 120 | 120 | 260 | 500 | 1000 | 1600 | | |
| | 45 | 40 | | 40 | 100 | 100 | 230 | 450 | 900 | 1500 | | |
| | 50 | 60 | | 60 | 160 | 160 | 330 | 650 | 1200 | 2000 | | |
| | 60 | 55 | | 55 | 150 | 150 | 310 | 600 | 1100 | 1900 | | |
| | 70 | 50 | 50 | 140 | 140 | 300 | 550 | 1100 | 1800 | | | |
| | 80 | 45 | 45 | 120 | 120 | 260 | 500 | 1000 | 1600 | | | |
| 90 | 40 | 40 | 100 | 100 | 230 | 450 | 900 | 1500 | | | | |
| 100 | 40 | 40 | 100 | 100 | 230 | 450 | 900 | 1500 | | | | |
| 急停扭矩 T_{2NOT}^2 | Nm | 1,2 | 3倍额定输出力矩 | | | | | | | | | |
| 额定输入转速 n_{1N} | rpm | 1,2 | 5000 | 5000 | 4000 | 4000 | 4000 | 3000 | 3000 | 2000 | | |
| 最大输入转速 n_{1B} | rpm | 1,2 | 3~100 | 10000 | 10000 | 8000 | 8000 | 8000 | 6000 | 6000 | 4000 | |
| 超精密回程精度 P0 | arcmin | 1 | 3~10 | - | - | - | - | ≤1 | ≤1 | ≤1 | ≤1 | |
| | | 2 | 15~100 | - | - | - | - | ≤3 | ≤3 | ≤3 | ≤3 | |
| 精密回程精度 P1 | arcmin | 1 | 3~10 | ≤3 | - | ≤3 | - | ≤3 | ≤3 | ≤3 | ≤3 | |
| | | 2 | 15~100 | - | ≤5 | ≤5 | ≤5 | ≤5 | ≤5 | ≤5 | ≤5 | |
| 标准回程精度 P2 | arcmin | 1 | 3~10 | ≤5 | - | ≤5 | - | ≤5 | ≤5 | ≤5 | ≤5 | |
| | | 2 | 15~100 | - | ≤7 | ≤7 | ≤7 | ≤7 | ≤7 | ≤7 | ≤7 | |
| 扭转刚性 | Nm/arcmin | 1,2 | 3~100 | 7 | 7 | 14 | 14 | 25 | 50 | 145 | 225 | |
| 容许径向力 F_{2RB}^3 | N | 1,2 | 3~100 | 1530 | 1530 | 3250 | 3250 | 6700 | 9400 | 14500 | 50000 | |
| 容许轴向力 F_{2aB}^3 | N | 1,2 | 3~100 | 765 | 765 | 1625 | 1625 | 3350 | 4700 | 7250 | 25000 | |
| 使用寿命 | hr | 1,2 | 20000* | | | | | | | | | |
| 效率 η | % | 1 | ≥97% | | | | | | | | | |
| | | 2 | ≥94% | | | | | | | | | |
| 重量 | Kg | 1 | 3~10 | 1.3 | - | 3.7 | - | 7.8 | 14.5 | 29 | 48 | |
| | | 2 | 15~100 | 1.5 | 1.9 | 4.1 | 5.3 | 9 | 17.5 | 33 | 60 | |
| 使用温度 | °C | 1,2 | -10°C~+90°C | | | | | | | | | |
| 润滑 | | 1,2 | 合成润滑油脂 | | | | | | | | | |
| 防护等级 | | 1,2 | IP65 | | | | | | | | | |
| 安装方向 | | 1,2 | 任意方向 | | | | | | | | | |
| 噪音值 距离1m ($n_1=3000rpm$, 无负载) | dB(A) | 1,2 | 3~100 | ≤58 | ≤60 | ≤60 | ≤63 | ≤63 | ≤65 | ≤67 | ≤70 | |

■ 减速机转动惯量 Moment Of Inertia Of The Reducer

| 规格 Specifications | 级数 Node Number | 减速比 Reduction Ratio | 060ZB | 060(A)ZB | 090ZB | 090(A)ZB | 115ZB | 142ZB | 180ZB | 220ZB | | |
|----------------------|--------------------|------------------------|-------|----------|-------|----------|-------|-------|-------|-------|-------|-------|
| 转动惯量 J_1 | Kg·cm ² | 1 | 3 | 0.16 | - | 0.61 | - | 3.25 | 9.21 | 28.98 | 69.61 | |
| | | | 4 | 0.14 | - | 0.48 | - | 2.74 | 7.54 | 23.67 | 54.37 | |
| | | | 5 | 0.13 | - | 0.47 | - | 2.71 | 7.42 | 23.29 | 53.27 | |
| | | | 6 | 0.13 | - | 0.45 | - | 2.65 | 7.25 | 22.75 | 51.72 | |
| | | | 7 | 0.13 | - | 0.45 | - | 2.62 | 7.14 | 22.48 | 50.97 | |
| | | | 8 | 0.13 | - | 0.44 | - | 2.58 | 7.07 | 22.59 | 50.84 | |
| | | | 9 | 0.13 | - | 0.44 | - | 2.57 | 7.04 | 22.53 | 50.63 | |
| | | | 10 | 0.13 | - | 0.44 | - | 2.57 | 7.03 | 22.51 | 50.56 | |
| | | | 2 | 15 | 0.03 | 0.13 | 0.13 | 0.47 | 0.47 | 2.71 | 7.42 | 23.29 |
| | | | | 20 | 0.03 | 0.13 | 0.13 | 0.47 | 0.47 | 2.71 | 7.42 | 23.29 |
| | 25 | 0.03 | | 0.13 | 0.13 | 0.47 | 0.47 | 2.71 | 7.42 | 23.29 | | |
| | 30 | 0.03 | | 0.13 | 0.13 | 0.47 | 0.47 | 2.71 | 7.42 | 23.29 | | |
| | 35 | 0.03 | | 0.13 | 0.13 | 0.47 | 0.47 | 2.71 | 7.42 | 23.29 | | |
| | 40 | 0.03 | | 0.13 | 0.13 | 0.47 | 0.47 | 2.71 | 7.42 | 23.29 | | |
| | 45 | 0.03 | | 0.13 | 0.13 | 0.47 | 0.47 | 2.71 | 7.42 | 23.29 | | |
| | 50 | 0.03 | | 0.13 | 0.13 | 0.44 | 0.44 | 2.57 | 7.03 | 22.51 | | |
| | 60 | 0.03 | | 0.13 | 0.13 | 0.44 | 0.44 | 2.57 | 7.03 | 22.51 | | |
| | 70 | 0.03 | | 0.13 | 0.13 | 0.44 | 0.44 | 2.57 | 7.03 | 22.51 | | |
| | 80 | 0.03 | 0.13 | 0.13 | 0.44 | 0.44 | 2.57 | 7.03 | 22.51 | | | |
| | 90 | 0.03 | 0.13 | 0.13 | 0.44 | 0.44 | 2.57 | 7.03 | 22.51 | | | |
| 100 | 0.03 | 0.13 | 0.13 | 0.44 | 0.44 | 2.57 | 7.03 | 22.51 | | | | |

1. 减速比($i=N_1/N_{out}$)

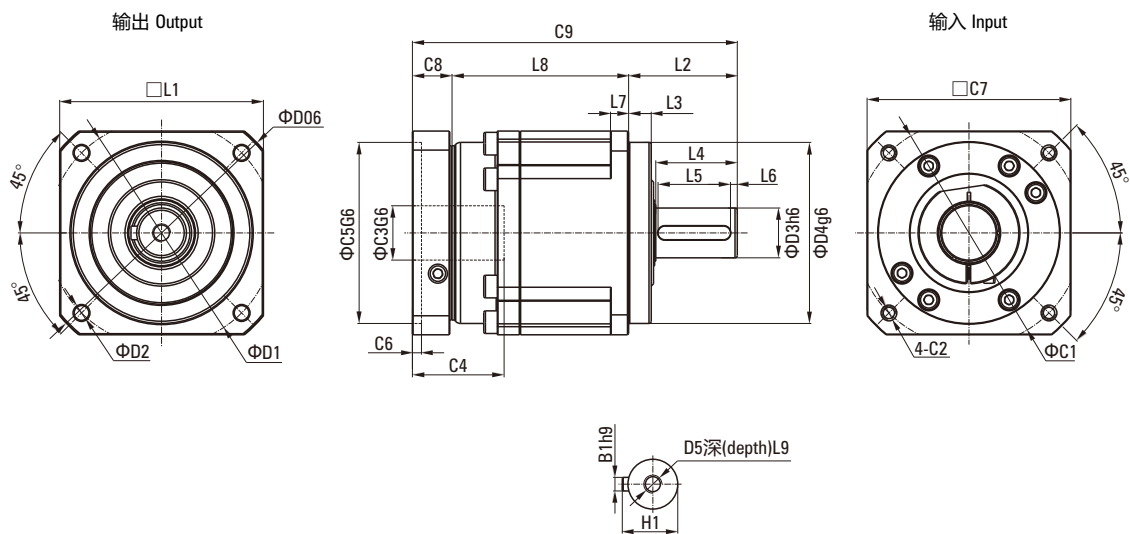
2. 最大加速力矩 $T_{2B} = 60\%$ of T_{2NOT}

3. 输出转速100rpm时, 作用于输出轴中心位置。

*连续运转, 使用寿命为10000hrs

尺寸(单级, 减速比 $i=3\sim 10$) DIMENSIONS (SINGLE SEGMENT, REDUCTION RATIO $i=3\sim 10$)

尺寸图 Dimensional Drawing



尺寸表 Dimensional Table

[单位Unit: mm]

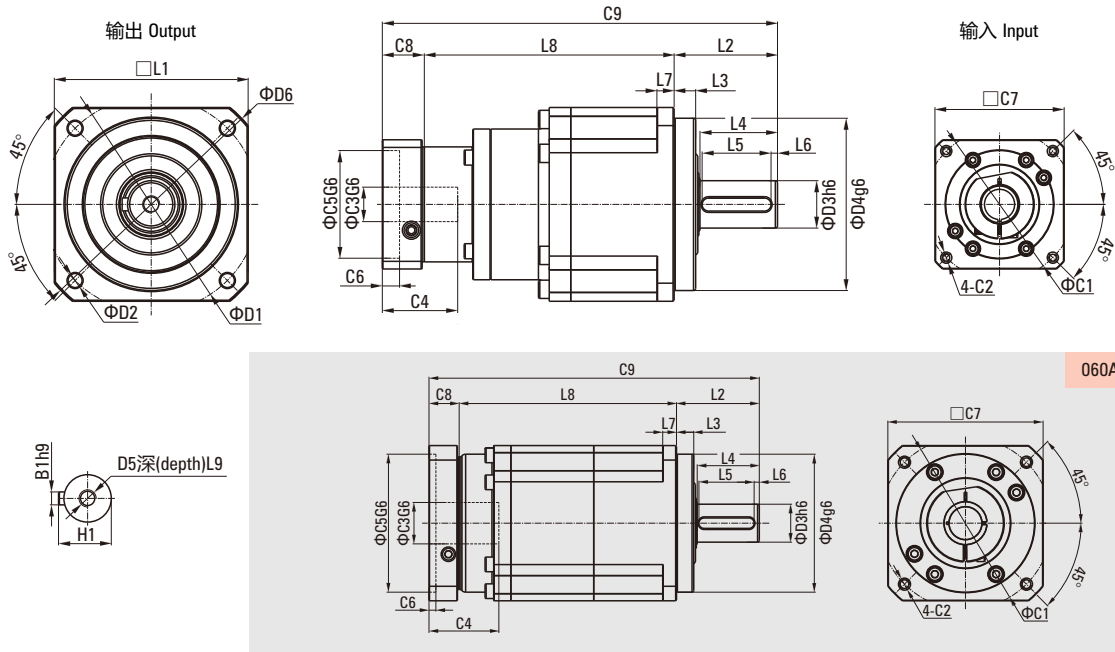
| 尺寸Size | 060ZB | 090ZB | 115ZB | 142ZB | 180ZB | 220ZB |
|------------------|----------|----------|-----------|----------|-----------|-----------|
| D1 | 70 | 100 | 130 | 165 | 215 | 250 |
| D2 | 5.5 | 6.6 | 9 | 11 | 13 | 17 |
| D3 ^{h6} | 16 | 22 | 32 | 40 | 55 | 75 |
| D4 ^{g6} | 50 | 80 | 110 | 130 | 160 | 180 |
| D5 | M5×0.8P | M8×1.25P | M12×1.75P | M16×2P | M20×2.5P | M20×2.5P |
| D6 | 80 | 116 | 152 | 185 | 240 | 292 |
| L1 | 60 | 90 | 115 | 142 | 180 | 220 |
| L2 | 37 | 48 | 65 | 97 | 105 | 138 |
| L3 | 7 | 10 | 12 | 15 | 20 | 30 |
| L4 | 28 | 36 | 51 | 79 | 82 | 105 |
| L5 | 25 | 32 | 40 | 70 | 70 | 90 |
| L6 | 2 | 3 | 5 | 4 | 6 | 7 |
| L7 | 6 | 8 | 10 | 15 | 20 | 25 |
| L8 | 65.5 | 78 | 101.5 | 119.5 | 154 | 163.5 |
| L9 | 12.5 | 19 | 28 | 36 | 42 | 42 |
| C1 | 70 | 100 | 130 | 165 | 215 | 235 |
| C2 | M5×0.8P | M6×1P | M8×1.25P | M10×1.5P | M12×1.75P | M12×1.75P |
| C3 | *≤14/≤16 | ≤19/≤24 | ≤32 | ≤35/≤38 | ≤42/≤48 | ≤55 |
| C4 | 35 | 40.5 | 51 | 60 | 85 | 116 |
| C5 ^{g6} | 50 | 80 | 110 | 130 | 180 | 200 |
| C6 | 8 | 4 | 5 | 6 | 6 | 6 |
| C7 | 60 | 90 | 115 | 142 | 190 | 220 |
| C8 | 19.5 | 17.5 | 20 | 22.5 | 29 | 63 |
| C9 | 122 | 143.5 | 186.5 | 239 | 288 | 364.5 |
| B1 ^{h9} | 5 | 6 | 10 | 12 | 16 | 20 |
| H1 | 18 | 24.5 | 35 | 43 | 59 | 79.5 |

*060ZB 5,10 减速比提供C3≤16可选。

尺寸(两级, 减速比 $i=15\sim 100$)

DIMENSIONS (DOUBLR, REDUCTION RATIO $i=15\sim 100$)

尺寸图 Dimensional Drawing



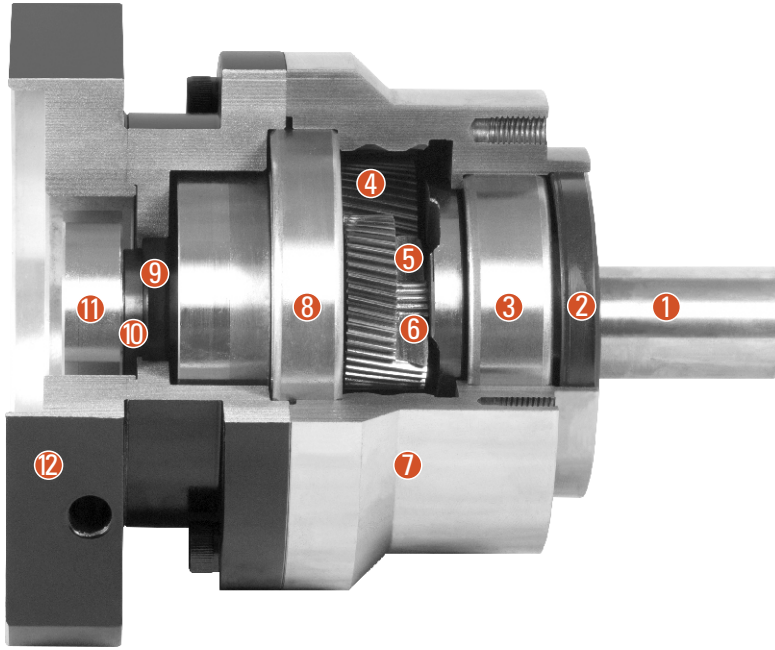
尺寸表 Dimensional Table

[单位Unit: mm]

| 尺寸Size | 060AZB | 090ZB | 090AZB | 115ZB | 142ZB | 180ZB | 220ZB |
|------------------|---------|-----------------|-----------|---------|----------|----------|-----------|
| D1 | 70 | 100 | 130 | 165 | 215 | 250 | |
| D2 | 5.5 | 6.6 | 9 | 11 | 13 | 17 | |
| D3 ^{h6} | 16 | 22 | 32 | 40 | 55 | 75 | |
| D4 ^{g6} | 50 | 80 | 110 | 130 | 160 | 180 | |
| D5 | M5×0.8P | M8×1.25P | M12×1.75P | M16×2P | M20×2.5P | M20×2.5P | |
| D6 | 80 | 116 | 152 | 185 | 240 | 292 | |
| L1 | 60 | 90 | 115 | 142 | 180 | 220 | |
| L2 | 37 | 48 | 65 | 97 | 105 | 138 | |
| L3 | 7 | 10 | 12 | 15 | 20 | 30 | |
| L4 | 28 | 36 | 51 | 79 | 82 | 105 | |
| L5 | 25 | 32 | 40 | 70 | 70 | 90 | |
| L6 | 2 | 3 | 5 | 4 | 6 | 7 | |
| L7 | 6 | 8 | 10 | 15 | 20 | 25 | |
| L8 | 102.5 | 116 | 126 | 143 | 169.5 | 207.5 | 246 |
| L9 | 12.5 | 19 | 28 | 36 | 42 | 42 | |
| C1 | 70 | 70 | 100 | 100 | 130 | 165 | 215 |
| C2 | M5×0.8P | M5×0.8P | M6×1P | M6×1P | M8×1.25P | M10×1.5P | M12×1.75P |
| C3 | ≤14/≤16 | ≤14/≤15.875/≤16 | ≤19/≤24 | ≤19/≤24 | ≤32 | ≤35/≤38 | ≤42/≤48 |
| C4 | 35 | 35 | 40.5 | 40 | 50 | 60 | 85 |
| C5 ^{g6} | 50 | 50 | 80 | 80 | 110 | 130 | 180 |
| C6 | 8 | 8 | 4 | 4 | 5 | 6 | 6 |
| C7 | 60 | 60 | 90 | 90 | 115 | 142 | 190 |
| C8 | 19.5 | 19.5 | 17.5 | 17.5 | 12.5 | 22.5 | 29 |
| C9 | 159 | 183.5 | 191.5 | 225.5 | 283.5 | 335 | 409 |
| B1 ^{h9} | 5 | 6 | 10 | 12 | 16 | 20 | |
| H1 | 18 | 24.5 | 35 | 43 | 59 | 79.5 | |

ZE系列减速机 ZE SERIES GEAR BOX

剖视图 Sectional Drawing



- ① 输出轴 Output shaft
- ② 油封 Oil seal
- ③ 输出轴前轴承 Output shaft front bearing
- ④ 行星轮 Planetary gear
- ⑤ 太阳轮 Solar wheel
- ⑥ 满针轴承 Full needle bearing
- ⑦ 前盖 Front cover
- ⑧ 输出轴后轴承 Output shaft rear bearing
- ⑨ 油封 Oil seal
- ⑩ 联轴器 Coupling
- ⑪ 锁紧环 Lock ring
- ⑫ 后盖 Rear cover

系列号、机座标识说明 Type And Model Number

| ZE减速机 ZE Reducers | | | | | 伺服电机 Servo Motor | | | |
|--|---------------|------------------|---|--|---|---------------|---------------------|----------------------|
| 090 | ZE | 20 | () | (S1) | - | 750 | T1 | <input type="text"/> |
| ① | ② | ③ | ④ | ⑤ | | ⑥ | ⑦ | ⑧ |
| ① 减速机机座号: 090 具体见P08 | ② 减速机系列代号: ZE | ③ 减速比: 20 具体见P08 | ④ 精度 具体见P08 标准型P2(省略) 精密型P1 高精度型P0 输出轴负荷量为容许输出扭矩的±5%时的值 | ⑤ 输入轴型式 S1: 带锁紧环锁紧(省略) (无论马达是否有键槽都可使用, 但“D”字型不适用) S2: 带键槽锁紧(输入轴带键) A: 其他适配器(请与本公司联系) | | ⑥ 适用伺服马达功率(W) | ⑦ 伺服马达厂家名称(P11~P12) | ⑧ 伺服马达型号 |
| Gear head frame size: 090, (P08) | | | | | Gear head series code: ZE | | | |
| Gear Ratio: Single Stage 20, (P08) | | | | | Amount of backlash, (P08) Standard type P2 (Omission), precision P1, high precision P0 Precision (The load of output shaft is ±5% of allowable output torque) | | | |
| Input shaft type S1: Locking with locking ring (Omission) (Regardless whether the motor with keyway can use it. But “D” cut can’t use) S2: Locking with keyway (Input shaft with key) A: Other type (Please contact with us) | | | | | Applicable servo motor power (W) | | | |
| Manufacturer name of servo motor (P11~P12) | | | | | Model of servo motor | | | |

产品规格 PRODUCT SPECIFICATIONS

减速机性能资料 Reducer Performance Data

| 规格 Specifications | | 级数 Node Number | 减速比 Reduction Ratio | 070ZE | 090ZE | 120ZE | 155ZE | 205ZE | 235ZE | |
|---|-----------|----------------|---------------------|---------------|-------|-------|-------|-------|-------|------|
| 额定输出力矩 T_{2N} | Nm | 1 | 3 | 55 | 130 | 208 | 342 | 588 | 1140 | |
| | | | 4 | 50 | 140 | 290 | 542 | 1050 | 1700 | |
| | | | 5 | 60 | 160 | 330 | 650 | 1200 | 2000 | |
| | | | 6 | 55 | 150 | 310 | 600 | 1100 | 1900 | |
| | | | 7 | 50 | 140 | 300 | 550 | 1100 | 1800 | |
| | | | 8 | 45 | 120 | 260 | 500 | 1000 | 1600 | |
| | | | 9 | 40 | 100 | 230 | 450 | 900 | 1500 | |
| | | | 10 | 40 | 100 | 230 | 450 | 900 | 1500 | |
| | | | 2 | 15 | 55 | 130 | 208 | 342 | 588 | 1140 |
| | | | | 20 | 50 | 140 | 290 | 542 | 1050 | 1700 |
| | | 25 | | 60 | 160 | 330 | 650 | 1200 | 2000 | |
| | | 30 | | 55 | 150 | 310 | 600 | 1100 | 1900 | |
| | | 35 | | 50 | 140 | 300 | 550 | 1100 | 1800 | |
| | | 40 | | 45 | 120 | 260 | 500 | 1000 | 1600 | |
| | | 45 | | 40 | 100 | 230 | 450 | 900 | 1500 | |
| | | 50 | | 60 | 160 | 330 | 650 | 1200 | 2000 | |
| | | 60 | | 55 | 150 | 310 | 600 | 1100 | 1900 | |
| | | 70 | 50 | 140 | 300 | 550 | 1100 | 1800 | | |
| | | 80 | 45 | 120 | 260 | 500 | 1000 | 1600 | | |
| 90 | 40 | 100 | 230 | 450 | 900 | 1500 | | | | |
| 100 | 40 | 100 | 230 | 450 | 900 | 1500 | | | | |
| 急停扭矩 T_{2NOT}^2 | Nm | 1,2 | 3倍额定输出力矩 | | | | | | | |
| 额定输入转速 n_{1N} | rpm | 1,2 | 3~100 | 5000 | 4000 | 4000 | 3000 | 3000 | 3000 | |
| 最大输入转速 n_{1B} | rpm | 1,2 | 3~100 | 10000 | 8000 | 8000 | 6000 | 6000 | 4000 | |
| 标准回程精度 | arcmin | 1 | 3~10 | ≤8 | ≤8 | ≤8 | ≤8 | ≤8 | ≤8 | |
| | | 2 | 15~100 | ≤12 | ≤12 | ≤12 | ≤12 | ≤12 | ≤12 | |
| 扭转刚性 | Nm/arcmin | 1,2 | 3~100 | 7 | 14 | 25 | 50 | 145 | 225 | |
| 容许径向力 F_{2R}^3 | N | 1,2 | 3~100 | 1377 | 2985 | 6100 | 8460 | 13050 | 8700 | |
| 容许轴向力 F_{2AB}^3 | N | 1,2 | 3~100 | 765 | 1625 | 3350 | 4700 | 7250 | 18000 | |
| 使用寿命 | hr | 1,2 | 3~100 | 20000* | | | | | | |
| 效率 η | % | 1 | 3~10 | ≥97% | | | | | | |
| | | 2 | 15~100 | ≥94% | | | | | | |
| 重量 | Kg | 1 | 3~10 | 1.4 | 3.3 | 6.9 | 13 | 31 | 53 | |
| | | 2 | 15~100 | 1.6 | 4.7 | 8.7 | 17 | 35 | 66 | |
| 使用温度 | °C | 1,2 | 3~100 | -10°C ~ +90°C | | | | | | |
| 润滑 | | 1,2 | 3~100 | 合成润滑油脂 | | | | | | |
| 防护等级 | | 1,2 | 3~100 | IP65 | | | | | | |
| 安装方向 | | 1,2 | 3~100 | 任意方向 | | | | | | |
| 噪音值 距离1m ($n_1=3000\text{rpm}$, 无负载) | dB(A) | 1,2 | 3~100 | ≤58 | ≤60 | ≤63 | ≤65 | ≤67 | ≤70 | |

减速机转动惯量 Moment Of Inertia Of The Reducer

| 规格 Specifications | | 级数 Node Number | 减速比 Reduction Ratio | 070ZE | 090ZE | 120ZE | 155ZE | 205ZE | 235ZE | |
|-------------------|--------------------|----------------|---------------------|-------|-------|-------|-------|-------|-------|-------|
| 转动惯量 J_i | Kg·cm ² | 1 | 3 | 0.16 | 0.61 | 3.25 | 9.21 | 28.98 | 69.61 | |
| | | | 4 | 0.14 | 0.48 | 2.74 | 7.54 | 23.67 | 54.37 | |
| | | | 5 | 0.13 | 0.47 | 2.71 | 7.42 | 23.29 | 53.27 | |
| | | | 6 | 0.13 | 0.45 | 2.65 | 7.25 | 22.75 | 51.72 | |
| | | | 7 | 0.13 | 0.45 | 2.62 | 7.14 | 22.48 | 50.97 | |
| | | | 8 | 0.13 | 0.44 | 2.58 | 7.07 | 22.59 | 50.84 | |
| | | | 9 | 0.13 | 0.44 | 2.57 | 7.04 | 22.53 | 50.63 | |
| | | | 10 | 0.13 | 0.44 | 2.57 | 7.03 | 22.51 | 50.56 | |
| | | | 2 | 15 | 0.03 | 0.13 | 0.47 | 2.71 | 7.42 | 23.29 |
| | | | | 20 | 0.03 | 0.13 | 0.47 | 2.71 | 7.42 | 23.29 |
| | | 25 | | 0.03 | 0.13 | 0.47 | 2.71 | 7.42 | 23.29 | |
| | | 30 | | 0.03 | 0.13 | 0.47 | 2.71 | 7.42 | 23.29 | |
| | | 35 | | 0.03 | 0.13 | 0.47 | 2.71 | 7.42 | 23.29 | |
| | | 40 | | 0.03 | 0.13 | 0.47 | 2.71 | 7.42 | 23.29 | |
| | | 45 | | 0.03 | 0.13 | 0.47 | 2.71 | 7.42 | 23.29 | |
| | | 50 | | 0.03 | 0.13 | 0.44 | 2.57 | 7.03 | 22.51 | |
| | | 60 | | 0.03 | 0.13 | 0.44 | 2.57 | 7.03 | 22.51 | |
| | | 70 | 0.03 | 0.13 | 0.44 | 2.57 | 7.03 | 22.51 | | |
| | | 80 | 0.03 | 0.13 | 0.44 | 2.57 | 7.03 | 22.51 | | |
| 90 | 0.03 | 0.13 | 0.44 | 2.57 | 7.03 | 22.51 | | | | |
| 100 | 0.03 | 0.13 | 0.44 | 2.57 | 7.03 | 22.51 | | | | |

1. 减速比($i=N_1/N_{out}$)

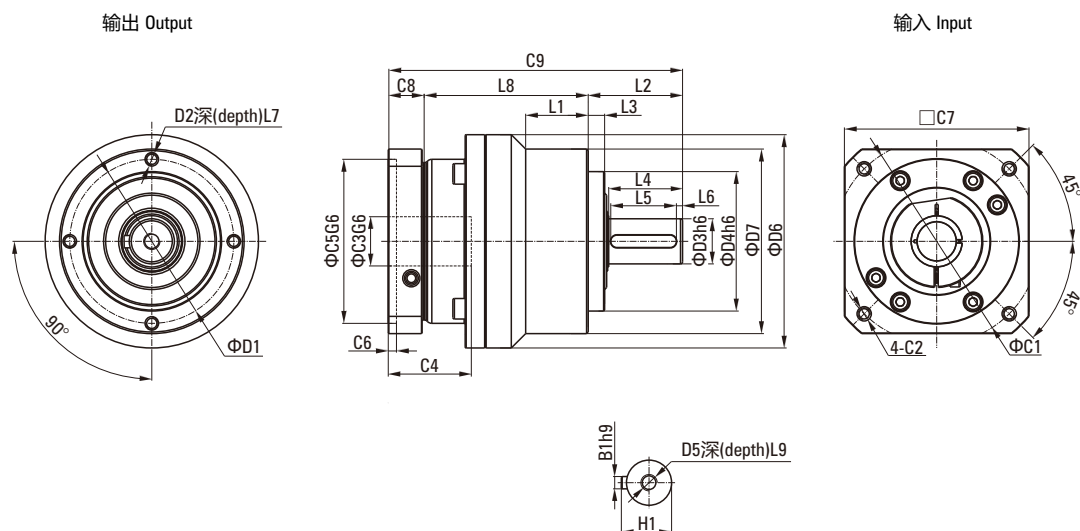
2. 最大加速力矩 $T_{2B}=60\%$ of T_{2NOT}

3. 输出转速100rpm时, 作用于输出轴中心位置。

*连续运转, 使用寿命为10000hrs

尺寸(单级, 减速比 $i=3\sim 10$) DIMENSIONS (SINGLE SEGMENT, REDUCTION RATIO $i=3\sim 10$)

尺寸图 Dimensional Drawing



尺寸表 Dimensional Table

[单位Unit: mm]

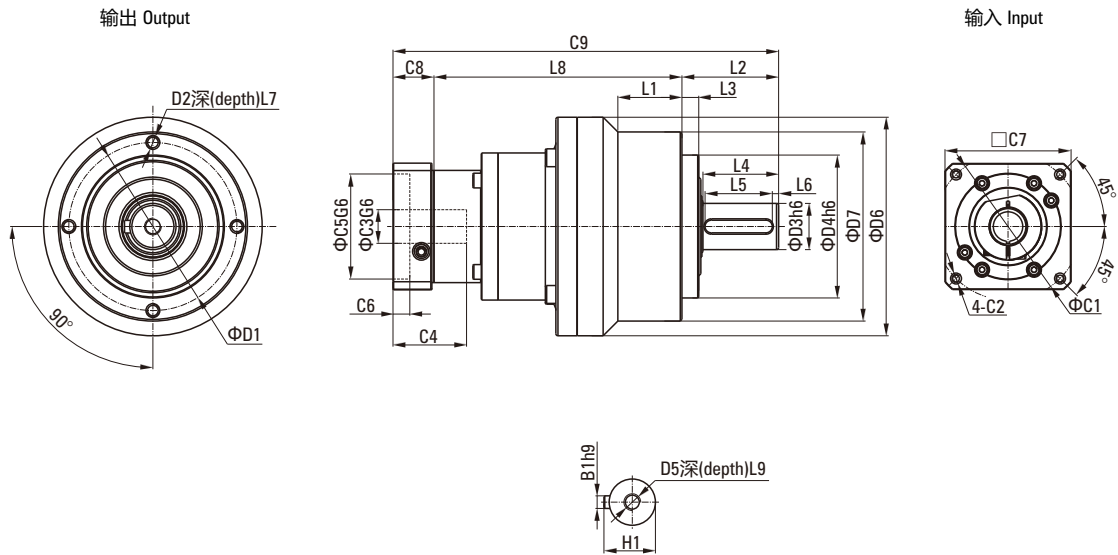
| 尺寸Size | 070ZE | 090ZE | 120ZE | 155ZE | 205ZE | 235ZE |
|------------------|----------|----------|-----------|----------|-----------|-----------|
| D1 | 62 | 80 | 108 | 140 | 184 | 210 |
| D2 | M5×0.8P | M6×1P | M8×1.25P | M10×1.5P | M12×1.75P | M16×2P |
| D3 _{h6} | 16 | 22 | 32 | 40 | 55 | 75 |
| D4 _{g6} | 52 | 68 | 90 | 120 | 160 | 180 |
| D5 | M5×0.8P | M8×1.25P | M12×1.75P | M16×2P | M20×2.5P | M20×2.5P |
| D6 | 70 | 104 | 130 | 162 | 205 | 260 |
| D7 | 70 | 90 | 120 | 155 | 205 | 235 |
| L1 | - | 31.5 | 36 | 50 | - | 70 |
| L2 | 36 | 46 | 70 | 97 | 100 | 126 |
| L3 | 6 | 8 | 17 | 15 | 15 | 18 |
| L4 | 28 | 36 | 51 | 79 | 82 | 105 |
| L5 | 25 | 32 | 40 | 70 | 70 | 90 |
| L6 | 2 | 3 | 5 | 4 | 6 | 7 |
| L7 | 10 | 12 | 16 | 20 | 22 | 28 |
| L8 | 66.5 | 80 | 96.5 | 119.5 | 154 | 175.5 |
| L9 | 12.5 | 19 | 28 | 36 | 42 | 42 |
| C1 | 70 | 100 | 130 | 165 | 215 | 235 |
| C2 | M5×0.8P | M6×1P | M8×1.25P | M10×1.5P | M12×1.75P | M12×1.75P |
| C3 | *≤14/≤16 | ≤19/≤24 | ≤32 | ≤35/≤38 | ≤42/≤48 | ≤55 |
| C4 | 35 | 40.5 | 51 | 60 | 85 | 116 |
| C5 _{g6} | 50 | 80 | 110 | 130 | 180 | 200 |
| C6 | 8 | 4 | 5 | 6 | 6 | 6 |
| C7 | 60 | 90 | 115 | 142 | 190 | 220 |
| C8 | 19.5 | 17.5 | 20 | 22.5 | 29 | 63 |
| C9 | 117 | 143.5 | 186.5 | 239 | 288 | 364.5 |
| B1 _{h9} | 5 | 6 | 10 | 12 | 16 | 20 |
| H1 | 18 | 24.5 | 35 | 43 | 59 | 79.5 |

*070ZE 5,10 减速比提供C3≤16可选。

尺寸(两级, 减速比 $i=15\sim 100$)

DIMENSIONS (DOUBLR, REDUCTION RATIO $i=15\sim 100$)

尺寸图 Dimensional Drawing



尺寸表 Dimensional Table

[单位Unit: mm]

| 尺寸Size | 090ZE | 120ZE | 155ZE | 205ZE | 235ZE |
|------------------|-----------------|-----------|----------|-----------|-----------|
| D1 | 80 | 108 | 140 | 184 | 210 |
| D2 | M6×1P | M8×1.25P | M10×1.5P | M12×1.75P | M16×2P |
| D3 ^{h6} | 22 | 32 | 40 | 55 | 75 |
| D4 ^{g6} | 68 | 90 | 120 | 160 | 180 |
| D5 | M8×1.25P | M12×1.75P | M16×2P | M20×2.5P | M20×2.5P |
| D6 | 104 | 130 | 162 | 205 | 260 |
| D7 | 90 | 120 | 155 | 205 | 235 |
| L1 | 31.5 | 36 | 50 | - | 70 |
| L2 | 46 | 70 | 97 | 100 | 126 |
| L3 | 8 | 17 | 15 | 15 | 18 |
| L4 | 36 | 51 | 79 | 82 | 105 |
| L5 | 32 | 40 | 63 | 70 | 90 |
| L6 | 3 | 5 | 5 | 6 | 7 |
| L7 | 12 | 16 | 20 | 22 | 28 |
| L8 | 118 | 138 | 169.5 | 207.5 | 246 |
| L9 | 19 | 28 | 36 | 42 | 42 |
| C1 | 70 | 100 | 130 | 165 | 215 |
| C2 | M5×0.8P | M6×1P | M8×1.25P | M10×1.5P | M12×1.75P |
| C3 | ≤14/≤15.875/≤16 | ≤19/≤24 | ≤32 | ≤35/≤38 | ≤42/≤48 |
| C4 | 35 | 40.5 | 50 | 60 | 85 |
| C5 ^{g6} | 50 | 80 | 110 | 130 | 180 |
| C6 | 8 | 4 | 5 | 6 | 6 |
| C7 | 60 | 90 | 115 | 142 | 190 |
| C8 | 19.5 | 17.5 | 12.5 | 22.5 | 29 |
| C9 | 183.5 | 225.5 | 283.5 | 335 | 409 |
| B1 ^{h9} | 6 | 10 | 12 | 16 | 20 |
| H1 | 24.5 | 35 | 43 | 59 | 79.5 |

马达对应表 (输入转速为3,000RPM时) MOTOR MATCHING TABLE (WHEN INPUT SPEED IS 3,000RPM)

对应表 Matching Table

| 生产厂家 Motor Manufacturer | 马达系列 Motor Series | 马达功率 Motor Power (W) | | | | |
|---|----------------------|----------------------|---------------------|------|---------------------|---------------------|
| | | 50W | 100W | 200W | 400W | 750W |
| 松下电器产业(株) Panasonic | MSM | T1 | | | | |
| | MSMA | T1 | | | | |
| | MSMD | T1 | | | | |
| | MUMA | 标准外 Out of standard | 标准外 Out of standard | T1 | | |
| | MBMK | T1 | 标准外 Out of standard | T1 | | |
| | MUMS | 标准外 Out of standard | | | | |
| (株)安川电机 Yaskawa electric | SGM | T2 | | | | |
| | SGMAH | T2 | | | | |
| | SGMAS | T2 | | | | |
| | SJME | 无对象 No subject | T2 | | | |
| | SGMJV | T3 | | | | |
| | SGMAV | T3 | | | | |
| 三菱电机(株) Mitsubishi wlectric | HC-KF | T3 | | | | |
| | HC-KFS | T3 | | | | |
| | HC-MF | T3 | | | | |
| | HC-MFS | T3 | | | | |
| | HA-ME | T3 | | | | |
| | HC-PQ | T3 | | | | 无对象 No subject |
| | HC-KQ | T3 | | | | 无对象 No subject |
| | HF-KP | T3 | | | | |
| 欧姆龙(株) Omron | R88M-U | T2 | | | | |
| | R88M-W | T2 | | | | |
| | R7M-A | T2 | | | | |
| | R7M-Z | T2 | | | | |
| 富士电机机器控制(株) Fuji electric systems | GYS※ | T2 | | | | |
| 山洋电气(株) Sanyo denki | P30B | T3 | | | | T2 |
| | Q1 | T3 | | | | 标准外 Out of standard |
| (株)吉恩斯特 Keyence | MV | T3 | | | | 标准外 Out of standard |
| 东芝电机(株) Toshiba machine | VLBSV-Z※ | 标准外 Out of standard | | T3 | | |
| | VLBSV-ZA※ | 标准外 Out of standard | | T3 | | |
| | VLBSVT | 标准外 Out of standard | | T3 | 标准外 Out of standard | |
| 多摩川精机(株) Tamagawa seiki | TBL-i※ | T3 | | | | 无对象 No subject |
| | TBL-ii※ | T3 | | | | 标准外 Out of standard |
| 日机电转(株) Nikki denso | NA50 | T1 | | | | |
| | NA70※ | T3 | | | | 无对象 No subject |
| | NA80※ | T3 | | | | 标准外 Out of standard |
| (株)三明 Sanmei | TS※ | T3 | | | | 标准外 Out of standard |
| | SS※ | T3 | | | | 标准外 Out of standard |
| (株)日立产机系统 Hitachi industrial equipment systems | ADMA | T3 | | | | 标准外 Out of standard |
| 三木普利 Miki pulley | SA3 | T1 | | | | |

注1)没有油封和尺寸不同时，安装带油封的马达有时需特别订货。

Note1) If an oil-seal is not present and the size is different, attachment of the oil-seal may correspond to special order, in some cases.

注2)马达轴为D形轴、锥形时需要特别订货。

Note2) If the motor shaft is of D-cut and taper type, it corresponds to a special order.

注3)因马达功率（适用表中带※的马达）与减速比的组合，出现瞬间最大输出扭矩时，产生的轴向力有时会超过伺服马达容许轴向力，因此，需要注意。

Note3) Note that thrust power arising out of instantaneous max. output torque by the combination of motor capacity (motor of the motor series table) and reduction ratio may exceed permissible thrust power of the servo motor.

注4)标准外有时需要特别订货。欲知详情，请另外与本公司联系。

Note4) Out-of-standard may correspond to a special order in some cases, For details, contact us.

马达对应表 (输入转速为3,000RPM时) MOTOR MATCHING TABLE (WHEN INPUT SPEED IS 3,000RPM)

对应表 Matching Table

| 生产厂家 Motor Manufacturer | 马达系列 Motor Series | 马达功率 Motor Power (W) | | | | | | | | | |
|--------------------------------------|----------------------|----------------------|-------|---------------|---------------|-------|---------------|---------------|-------|---------------|---------------|
| | | 1000W | 1500W | 2000W | 2500W | 3000W | 3500W | 4000W | 4500W | 5000W | |
| 松下电器产业(株) Panasonic | MSM | T1 | | | | | | | | | |
| | MSMA | T1 | | | | | | | | | |
| (株)安川电机 Yaskawa electric | SGMS | T2 | | 无对象No subject | | T2 | 无对象No subject | | T2 | 无对象No subject | |
| | SGMSH | T2 | | 无对象No subject | | T2 | 无对象No subject | | T2 | 无对象No subject | |
| | SGMSS | T2 | | | 无对象No subject | | T2 | 无对象No subject | | T2 | 无对象No subject |
| 三菱电机(株) Mitsubishi wlectric | HC-RF | T3 | | 无对象No subject | | T3 | 无对象No subject | | T3 | 无对象No subject | |
| | HC-RFS | T3 | | 无对象No subject | | T3 | 无对象No subject | | T3 | 无对象No subject | |
| | HC-RP | T3 | | 无对象No subject | | T3 | 无对象No subject | | T3 | 无对象No subject | |
| 欧姆龙(株) Omrom | R88M-U | T2 | | 无对象No subject | | T2 | 无对象No subject | | T2 | 无对象No subject | |
| | R88M-W | T2 | | 无对象No subject | | T2 | 无对象No subject | | T2 | 无对象No subject | |
| 富士电机机器控制(株) Fuji electric systems | GY5 | T3 | | 无对象No subject | | T2 | 无对象No subject | | T2 | 无对象No subject | |

下列系列马达也可以标准方式适应 Standard Compatibility With The Follwing Motor Series

| 生产厂家 Motor Manufacturer | 马达系列 Motor Series | 马达功率 Motor Power (W) |
|--------------------------------------|----------------------|----------------------------------|
| 三菱电机(株) Mitsubishi wlectric | HC-SFS※ | 500W, 1000W, 1500W, 2000W, 3500W |
| | HF-SP | |
| (株)安川电机 Yaskawa electric | SGMP | 100W, 200W, 400W, 750W, 1500W |
| | SGMPH | |
| | SGMPS | |
| 松下电器产业(株) Panasonic | MQMA | 100W, 200W, 400W |
| 欧姆龙(株) Omrom | R88M-WP | 100W, 200W, 400W, 750W, 1500W |
| | R7M-AP | 100W, 200W, 400W, 750W |
| 富士电机机器控制(株) Fuji electric systems | GYC | 100W, 200W, 400W |
| 发那科(株) Fanuc | BIS※ | 200W, 400W, 500W, 750W, 1200W |

注1)没有油封和尺寸不同时, 安装带油封的马达有时需特别订货。 注2)马达轴为D形轴、锥形时需要特别订货。 注3)因马达功率(适用表中带※的马达)与减速比的组合, 出现瞬间最大输出扭矩时, 产生的轴向力有时会超过伺服马达容许轴向力, 因此, 需要注意。 注4)标准外有时需要特别订货。欲知详情, 请另外与本公司联系。

Note 1) If an oil-seal is not present and the size is different, attachment of the oil-seal may correspond to specia order, in some cases. Note 2) If the motor shaft is of D-cut and taper type, it corresponds to a special order. Note 3) Note that thrust power arsing out of instantaneous max, output torque bu the combination of motor capacith (motor of the motor series table) and reduction ratio may exceed permissible thrust power of the servo motor. Note 4) Out-of-standard may correspond to a special order in some cases, For details, contact us.

除上述伺服马达厂家外, 本公司减速机还适配以下伺服马达厂家。安装方式请咨询本公司。

Our gearbox can match to servo motor of followings manufacturers,including aboves.Please ask us about the assembly.

| | | | | |
|---------|----------|------|--------|-------|
| 神钢电机(株) | 日本电产三协 | 中达电通 | 路斯特 | 博世力士乐 |
| FANUC | POCKWELL | 山洋 | 多摩川 | 基恩斯 |
| 东芝机械 | 日机电装 | 三明 | 日立产机系统 | 三木普利 |

其他 etc.

■ 安装马达的步骤 Assembly Procedure

客户自行安装伺服马达时，请按以下要领进行安装。伺服马达的尺寸多种多样，除指定的产品外，有些马达可能会无法连接法兰，因为，一定要使用您订货时指定的马达。

If a customer personally assembles the servo motor and reducer please use the following tip. The reducer flange to which the servo motor is attached has different dimensions based on the motor specified. Therefore, assembly may be impossible for some motor. Make sure the correct motor is specified before ordering the reducer.

1. 安装无键马达 Spec. In Case Of Assembling A Motor Without Key

- ① 拧去紧定螺钉，转动输入轴，使螺栓头和紧定螺钉的孔吻合。并确认固定螺栓已松开。
Take off the rubber cap, turn the input shaft, and match the head of the bolt to the hole of the rubber cap. Make sure that the set bolt is loosened.
- ② 将马达轴平稳地插入输入轴（请确保不受阻塞地顺畅的插入）。请充分注意不要让马达倾斜插入。
Gradually put the motor shaft into the input shaft (Ensure that it is smoothly put in without iam.) Be careful not to be inserted with the motor tilted.
- ③ 将马达固定在减速机上，并按指定的扭矩将螺栓拧紧。（参考表1）
Attach the motor to the reducer and fasten the bolt with designated fastening torque. (See table 1)
- ④ 使用扭矩扳手等工具，按指定的扭矩将输入轴的固定螺栓拧紧。（参考表2）
Fasten the set bolt of the input shaft with designated fastening torque wrench, etc. (See table 2)
- ⑤ 拧上紧定螺钉。安装到此结束。
Put on a rubber cap. It is the end of assembling.

● 表1 Table1

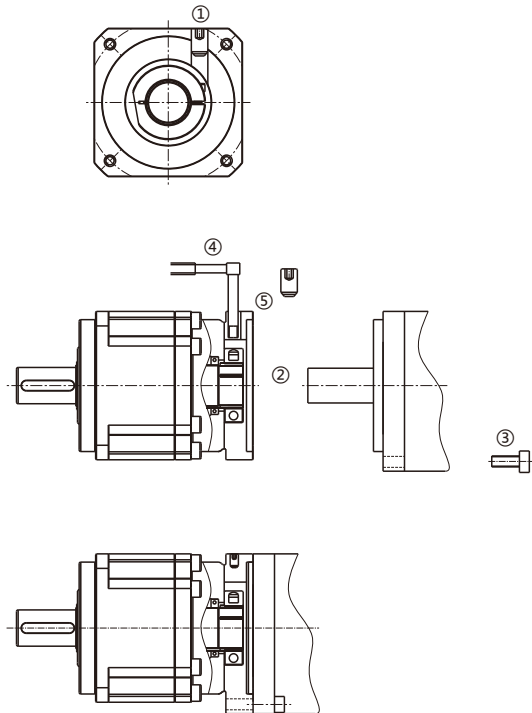
| 马达固定螺栓 Motor Combination Bolt | 拧紧扭矩 Fastening Torque | |
|-------------------------------|-----------------------|----------|
| | (N-m) | (kgf-cm) |
| M3 | 1.0 | 10 |
| M4 | 3.0 | 30 |
| M5 | 5.8 | 60 |
| M6 | 9.8 | 100 |
| M8 | 19.6 | 200 |
| M10 | 39.2 | 400 |
| M12 | 68.6 | 700 |
| M16 | 168 | 1650 |

● 表2 Table2

| 固定螺栓 Combination Bolt | 拧紧扭矩 Fastening Torque | |
|-----------------------|-----------------------|----------|
| | (N-m) | (kgf-cm) |
| M3 | 1.5 | 15 |
| M4 | 3.5 | 35 |
| M5 | 7.1 | 71 |
| M6 | 12 | 120 |
| M8 | 30 | 300 |
| M10 | 60 | 612 |

带键槽式马达的键取下后，可以像上述无键马达一样安装。无需担心会滑动。
You can assemble the motor with keyway like above when take off the key. There is no risk of dislocation.

● ZB/ZE系列示意图
ZB/ZE Series Schematic Diagram



■ 减速机的安装 Reducer Assembly

将减速机安装在设备上时，请在确认安装面平坦且无毛刺等后，使用扭矩扳手等工具按指定的扭矩用螺栓将其固定。(参考表3)

Jointing with reducer In case of jointing a reducer with the device, make sure that the combining side is plane without inconsistency, and when assemble reducer outo equipment, ensuring assembly surface smooth and without burr. (See table 3)

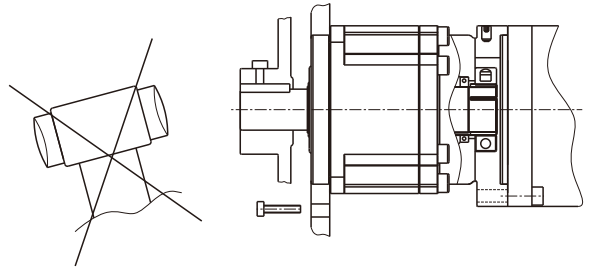
● 表3 Table 3

| 减速机固定螺栓 Reducer Combination Bolt | 拧紧扭矩 Fastening Torque | |
|----------------------------------|-----------------------|----------|
| | (N·m) | (kgf·cm) |
| M5 | 5.80 | 60 |
| M6 | 9.80 | 100 |
| M8 | 19.6 | 200 |
| M10 | 39.2 | 400 |
| M12 | 68.6 | 700 |
| M16 | 16.8 | 1650 |

■ 连接输出轴 Connection To The Output Shaft

注意事项 Cautions:

- 1、在输出轴上安装耦合器、滑轮等时，请勿在输出轴上施加过大的轴向负荷。
When assemble a coupling, pulley, etc. onto the output shaft, make sure that excessive axial load not be given to the output shaft.
- 2、请勿使用强力将轴敲入，以免使轴承或减速机内部受到损伤。
In case of strongly hitting the shaft with a hammer, the shaft inlet or the inside of the reducer may be damaged, therefore it shall be prohibited.
- 3、安装的耦合器等的轴和键槽如有较大松动，可能会导致设备烧毁，安装时请充分注意。
If the shaft or key of a coupling assembled is loosed, it may cause carbonization, so be careful when assembling.
- 4、安装耦合器等时，请使用固定螺栓来将键固定住。
For assembling of a coupling, fix the key with a set bolt.
- 5、连接时请充分调校轴心。
Please adjust shaft centre carefully in connecting.



**PLANETARY GEAR
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CATALOGUE**

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