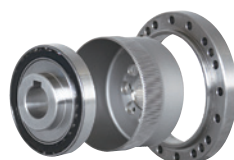
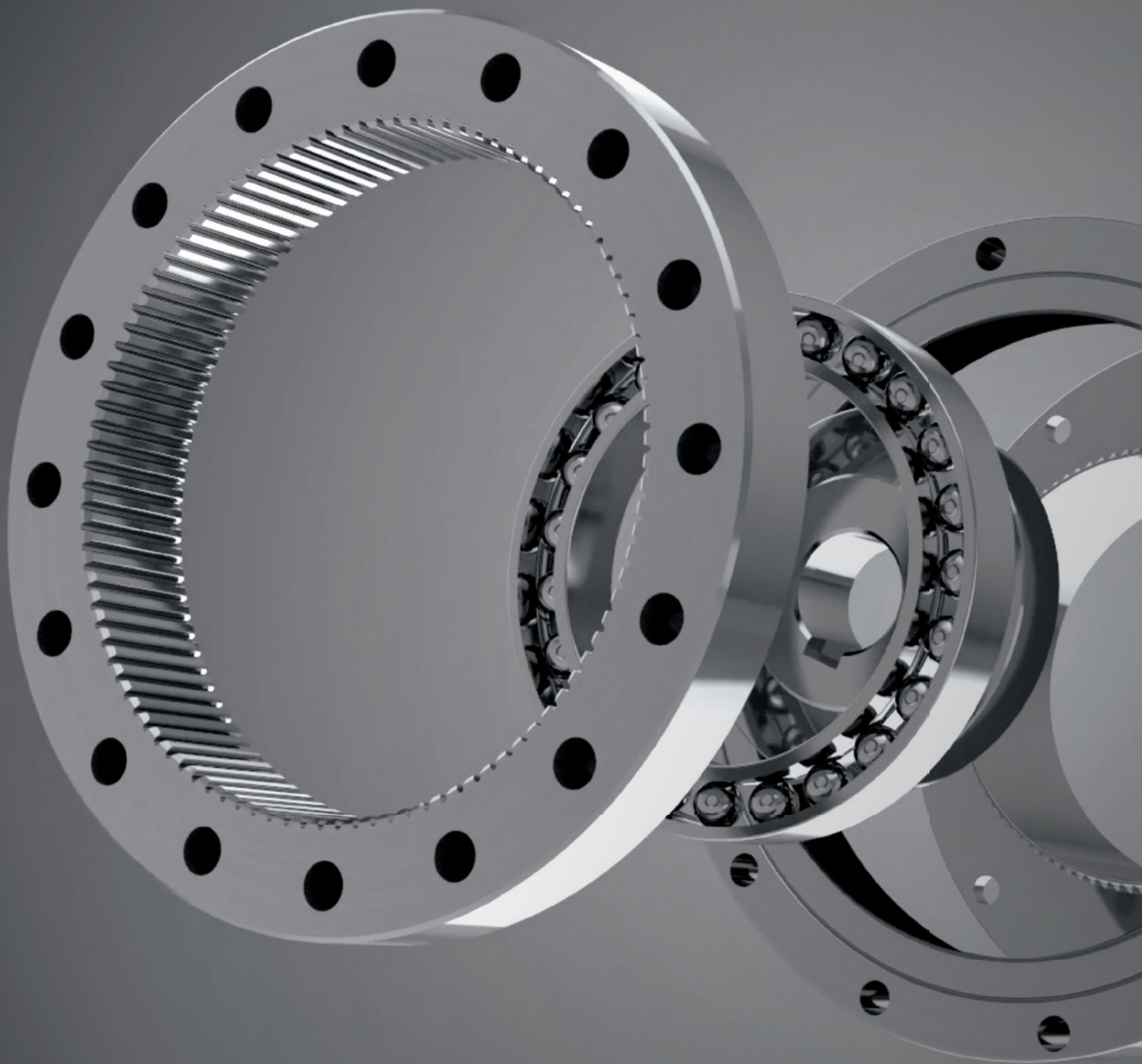


FLEXWAVE

WP series



精密控制用减速机
A High precision reducer



“技术磨练”正是我们坚持的信念。
"Relentless Refinement of Technology",

FLEXWAVE

FLEX WAVE

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我们汇集迄今培养的技术力量，

完成了可以满足顾客要求的轻量紧凑、大速比、低背隙的减速机。

“FLEXWAVE”。抓住机遇，融入梦想。

活跃在机器人及机床等各种领域。

Nidec-Shimpo Corporation is a global leader in various high precision gear technologies. Based on increased demand for higher accuracy from machine tool and robot manufacturers, we've utilized our expertise to develop a new gear reduction mechanism.

This mechanism, called Flexwave, addresses the need for high torque density in a lightweight, compact package, combined with zero backlash and high reduction ratios. As a result, manufacturers of high performance robots, machine tools and other automation equipment will see increased performance and competitiveness in their respective markets.

进步成就世界。

Tractioning Your Future

INDEX

| | |
|------------------------------|---|
| 零部件构成 | 3 |
| Parts Configuration | |
| 减速机机构 | 4 |
| Reduction Mechanism | |
| 零部件名称/减速比 | 4 |
| Parts Name / Reduction Ratio | |
| 型号选定 | 5 |
| Model selection | |

标准型A

Standard type A

| | |
|--|----|
| 减速机型号 / 规格 | 6 |
| Reducer Model / Specifications | |
| 尺寸表 | 7 |
| Dimensions Table | |
| 寿命计算 (薄壁轴承) | 12 |
| Life estimation (Elastic bearing) | |
| 寿命计算 (主轴承) | 13 |
| Life estimation (Main bearing) | |
| 输入轴容许负荷 | 15 |
| Maximum load at input shaft | |
| 润滑剂 | 16 |
| Lubricant information | |
| 安装精度 | 17 |
| Attachment fixture requirement | |
| 传导力矩 | 18 |
| Transmitting Torque | |
| 输入部位构造 | 21 |
| Input section structure | |
| 注意事项 | 22 |
| Installation and assembly instructions | |
| 电机安装方法 | 23 |
| Motor installation procedure | |
| 特性数据 | 24 |
| Characteristics Data | |

高力矩型B

High torque type B

| | |
|--|----|
| 减速机型号 / 规格 | 32 |
| Reducer Model / Specifications | |
| 尺寸表 | 33 |
| Dimensions Table | |
| 寿命计算 (薄壁轴承) | 38 |
| Life estimation (Elastic bearing) | |
| 寿命计算 (主轴承) | 39 |
| Life estimation (Main bearing) | |
| 输入轴容许负荷 | 41 |
| Maximum load at input shaft | |
| 润滑剂 | 42 |
| Lubricant information | |
| 安装精度 | 43 |
| Attachment fixture requirement | |
| 传导力矩 | 44 |
| Transmitting Torque | |
| 输入部位构造 | 47 |
| Input section structure | |
| 注意事项 | 48 |
| Installation and assembly instructions | |

偏平型D

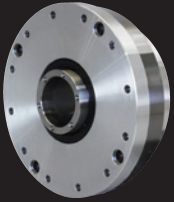
Flat type D

| | |
|--|----|
| 减速机型号 / 规格 | 49 |
| Reducer Model / Specifications | |
| 尺寸表 | 50 |
| Dimensions Table | |
| 寿命计算 (薄壁轴承) | 55 |
| Life estimation (Elastic bearing) | |
| 寿命计算 (主轴承) | 56 |
| Life estimation (Main bearing) | |
| 输入轴容许负荷 | 57 |
| Maximum load at input shaft | |
| 润滑剂 | 58 |
| Lubricant information | |
| 安装精度 | 59 |
| Attachment fixture requirement | |
| 传导力矩 | 60 |
| Transmitting Torque | |
| 注意事项 | 62 |
| Installation and assembly instructions | |
| 特性数据 | 63 |
| Characteristics Data | |

FLEXWAVE Line up



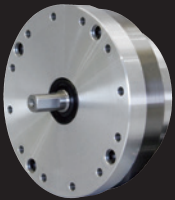
■ 开放型 Open type



WPU-□-□-SNH **WPU-□-□-SDH**
WPU-□-□-SGH

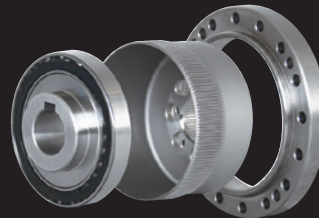
组合型 (中空轴) Hollow unit

■ 封闭型 Closed type



WPU-□-□-SNJ
WPU-□-□-SGJ

组合型 (输入轴) Input shaft unit



WPC-□-□-CF **WPC-□-□-CG**
WPC-□-□-CN **WPC-□-□-CD**

部件型 Component



WPS-□-□-SN **WPS-□-□-SD**
WPS-□-□-SG

简易组合型 Simple unit

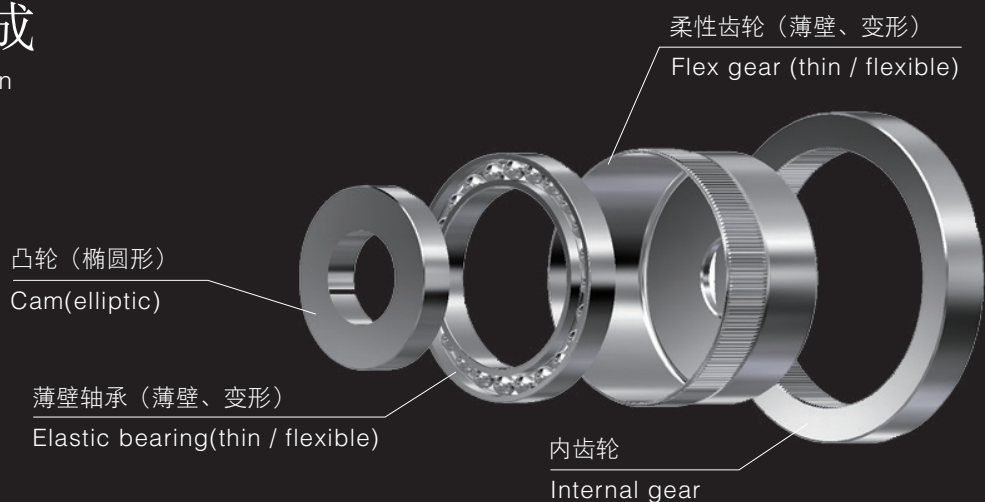


WPU-□-□-CF **WPU-□-□-CD**
WPU-□-□-CN **WPU-□-□-CDH**
WPU-□-□-CG

组合型 Unit

零部件构成

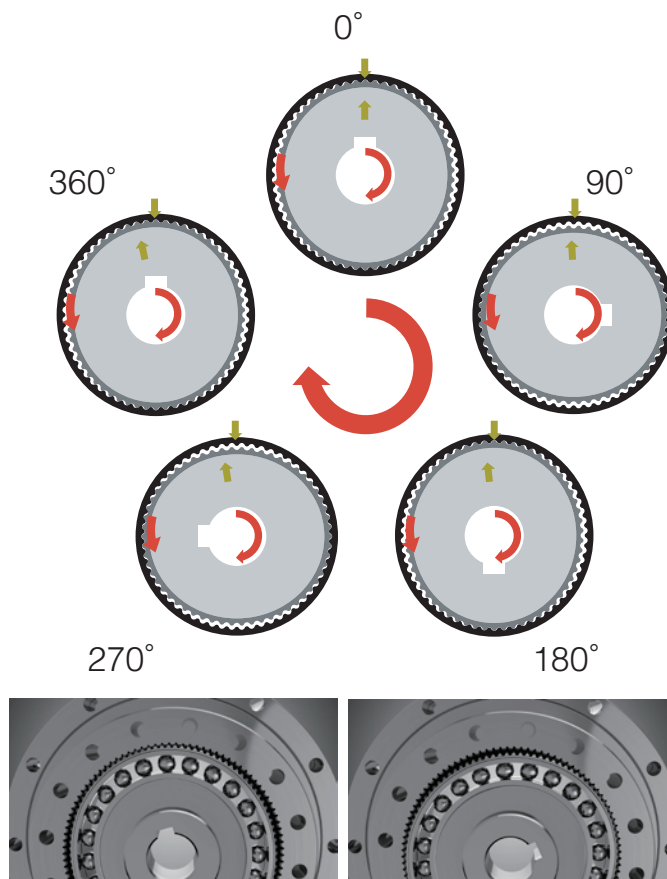
Parts Configuration



减速机构

Reduction Mechanism

- 通过凸轮使薄壁轴承、柔性齿轮呈椭圆状形变。
- 柔性齿轮与内齿轮在椭圆形长轴部分发生啮合。
- 固定内齿轮，使凸轮沿顺时针方向旋转360°时，柔性齿轮会沿逆时针方向移动内齿轮与柔性齿轮的齿数差部分。
- Flex gear and elastic bearing take elliptical shape with the cam inserted.
- Flex gear and internal gear are engaged at both ends of the long axis of the ellipse in a stable manner.
- With the internal gear fixed, when the cam (input) is rotated clockwise, the flex gear (output) rotates counterclockwise. And its rotational speed is determined by the tooth count differential between two gears.

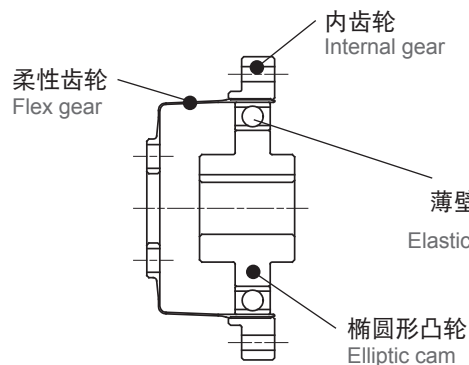


零部件名称

Parts Name

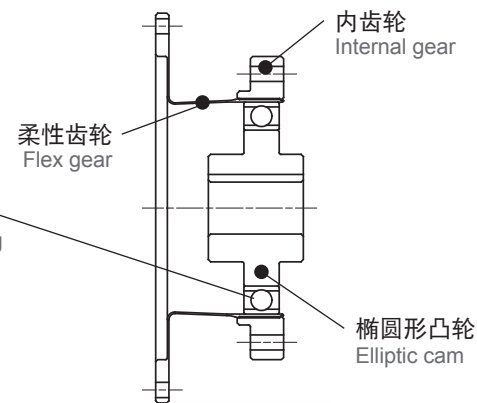
封闭型

Closed type



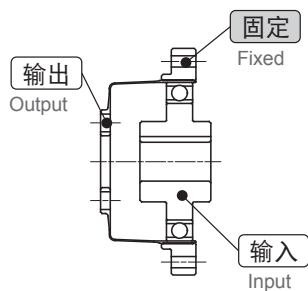
开放型

Open type



减速比

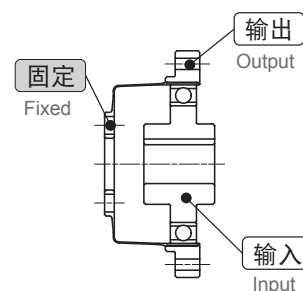
Reduction Ratio



$$\text{减速比} = \frac{-1}{R}$$

※ 输入旋转方向与输出旋转方向相反

*The input and output rotation directions are opposite.



$$\text{减速比} = \frac{1}{R+1}$$

※ 输入旋转方向与输出旋转方向相同

*The input and output rotation directions are same.

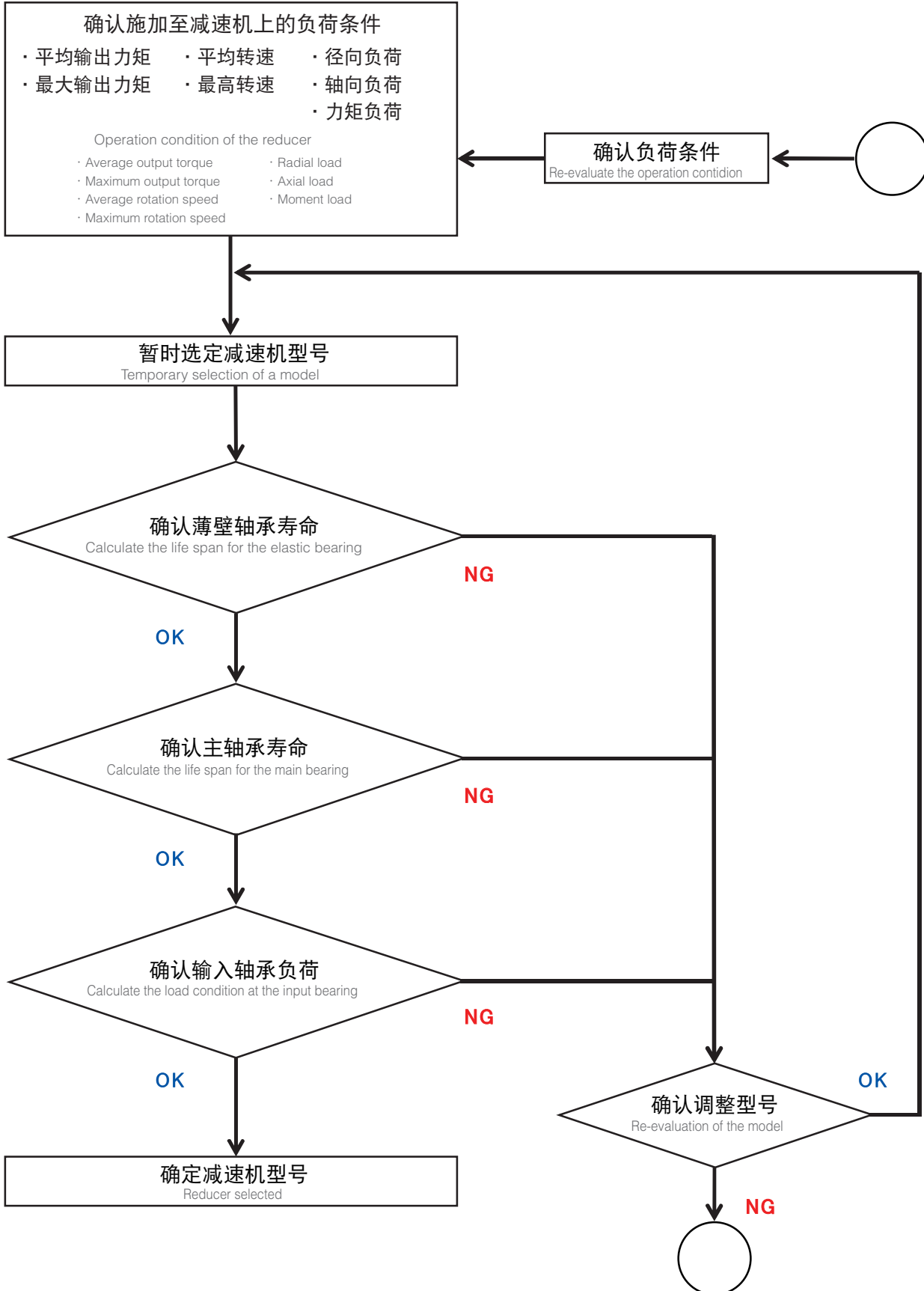
● R 为减速机规格表中的减速比

R represents the 'Ratio' figure in the specifications table on the next page.

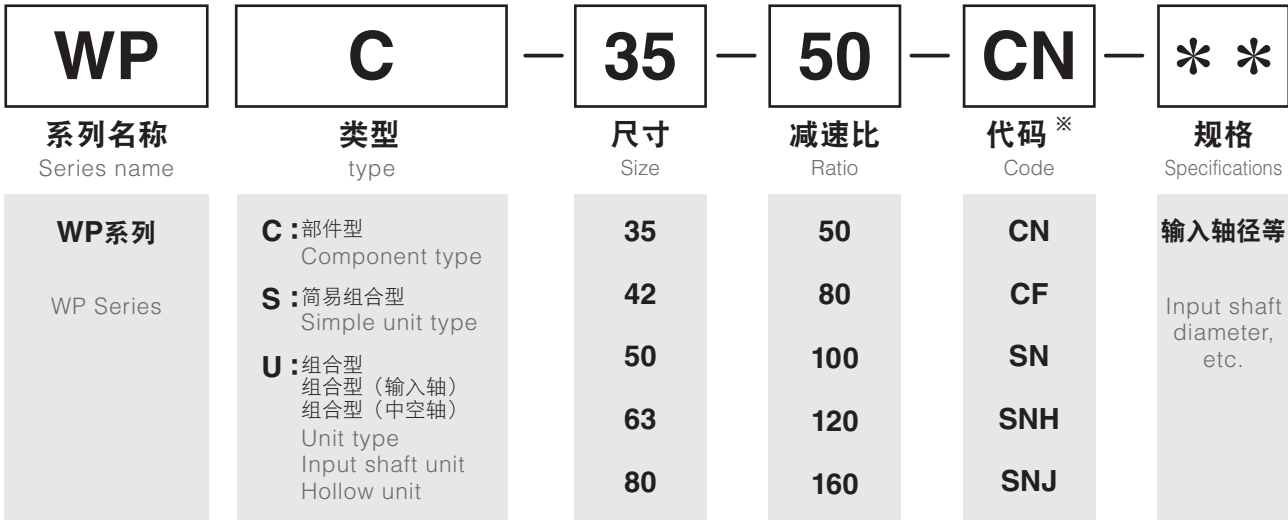
型号选定 *Model selection*

型号选定流程

Model selection flow



减速机型号 Reducer Model Nomenclature



● 段位表 Availability

Ratio matrix

| | | | | | | |
|------------|----------|----|----|-----|-----|-----|
| Frame size | 尺寸 \ 减速比 | 50 | 80 | 100 | 120 | 160 |
| | 35 | | | | | |
| | 42 | | | | | |
| | 50 | | | | | |
| | 63 | | | | | |
| | 80 | | | | | |

※代码详情请参照尺寸表。
For the code details, please check the Dimensions Table.

减速机规格 Reducer Specifications

| 尺寸 Size | 减速比 Ratio R ^{*1} | ※2 | ※3 | ※4 | ※5 | ※6 | ※7 |
|------------|---------------------------------|---|---|---|--|--|-------------------------|
| | | 容许平均力矩 Nominal output torque [Nm] | 容许最大力矩 Maximum output torque [Nm] | 紧急最大力矩 Emergency stop torque [Nm] | 容许平均输入转速 Nominal input speed [r/min] | 容许最高输入转速 Maximum input speed [r/min] | 寿命时间 Life [hours] |
| 35 | 50 | 7 | 23 | 46 | 3000 | 8500 | 7000 |
| | 80 | 9 | 27 | 55 | | | |
| | 100 | 9 | 32 | 63 | | | |
| 42 | 50 | 21 | 44 | 91 | 3000 | 7300 | |
| | 80 | 26 | 50 | 102 | | | |
| | 100 | 28 | 63 | 129 | | | |
| | 120 | 28 | 63 | 129 | | | |
| 50 | 50 | 33 | 73 | 127 | 3000 | 6500 | |
| | 80 | 40 | 86 | 149 | | | |
| | 100 | 47 | 96 | 172 | | | |
| | 120 | 47 | 96 | 172 | | | |
| 63 | 50 | 51 | 127 | 242 | 3000 | 5600 | |
| | 80 | 66 | 142 | 266 | | | |
| | 100 | 70 | 163 | 295 | | | |
| | 120 | 70 | 163 | 295 | | | |
| 80 | 50 | 89 | 253 | 447 | 3000 | 4800 | |
| | 80 | 122 | 316 | 590 | | | |
| | 100 | 142 | 346 | 673 | | | |
| | 120 | 142 | 346 | 673 | | | |
| | 160 | 142 | 346 | 673 | | | |

※1 请将R值代入前页所述公式内，求得减速比
 ※2 输入转速为2000r/min时的容许最大值
 ※3 启动、停止时的容许最大值
 ※4 发生撞击时的容许最大值
 ※5 运转过程中，平均输入转速的容许最大值
 ※6 运转过程中，输入转速的容许最大值
 ※7 输入转速2000r/min，容许额定力矩负荷时的寿命时间

*1 Reduction ratio is to be calculated by the formula in the previous page, using R value in this table.
 *2 The maximum allowable value at the input rotation speed of 2000r/min
 *3 The maximum torque when starting and stopping.
 *4 The maximum torque when it receives shock.
 *5 The maximum average input speed.
 *6 The maximum input speed.
 *7 The life time at the input rotation speed of 2000 r/min and nominal output torque.

| | | | | | | | | | |
|--|-------------------------|--|--|--|---|-----------------------------|---|---|------------------------------|
| 减速机型号 / 规格 Reducer Model / Specifications | 尺寸表 Dimensions Table | 寿命计算 (薄壁轴承) Life estimation (Elastic bearing) | 寿命计算 (主轴承) Life estimation (Main bearing) | 输入轴容许负荷 / 润滑油 Maximum load at input shaft/ lubricant information | 安装精度 Attachment fixture requirement | 传导力矩 Transmitting Torque | 输入部位构造 / 注意事项 Input section structure/ Installation and assembly instructions | 电机安装方法 Motor installation procedure | 特性数据 Characteristics Data |
|--|-------------------------|--|--|--|---|-----------------------------|---|---|------------------------------|

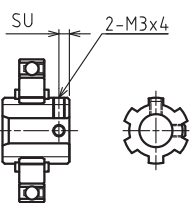
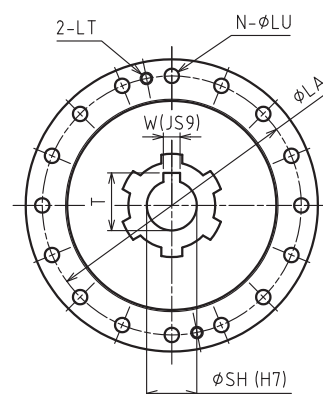
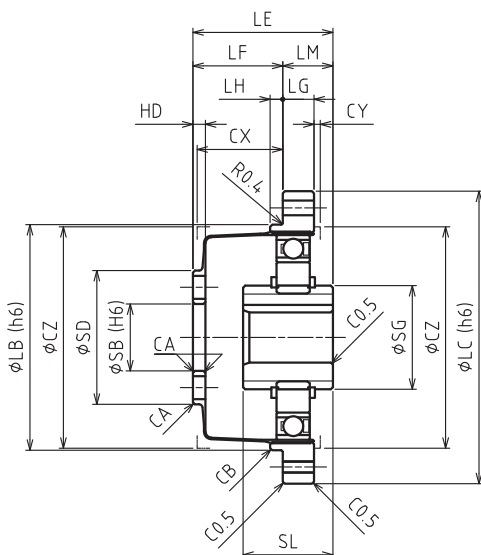
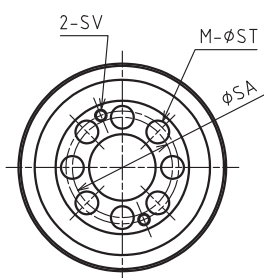
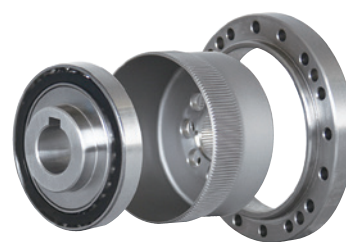
尺寸表 *Dimensions Table*

封闭型 部件型

Closed Type, Component

WPC-□ - □ -CN

WPC-□ - □ -CF



INPUT SHAFT FOR 35&42

| 尺寸 Size | 重量 Weight | 惯性力矩 Moment of inertia |
|------------|--------------|-------------------------------|
| | kg | $\times 10^{-4} \text{kgm}^2$ |
| 35 | 0.10 | 0.0383 |
| 42 | 0.17 | 0.0855 |
| 50 | 0.26 | 0.207 |
| 63 | 0.43 | 0.544 |
| 80 | 0.91 | 1.63 |

[mm]

| 尺寸 Size | LA | LB | LC | N*1 | LU | LT | LE | LF | LG | LH | LM | SG | SH | SL | W |
|------------|-----|----|-----|--------|-----|----|------|------|-----|-----|------|------|----|------|---|
| 35 | 44 | 38 | 50 | 8 (6) | 3.5 | M3 | 28.5 | 17.5 | 6 | 2 | 11 | 15.8 | 6 | 18.5 | - |
| 42 | 54 | 48 | 60 | 16(12) | 3.5 | M3 | 32.5 | 20 | 6.5 | 2.5 | 12.5 | 15.8 | 8 | 20.7 | - |
| 50 | 62 | 54 | 70 | 16(12) | 3.5 | M3 | 33.5 | 21.5 | 7.5 | 3 | 12 | 24.8 | 12 | 21.5 | 4 |
| 63 | 75 | 67 | 85 | 16(12) | 4.5 | M4 | 37 | 24 | 10 | 3 | 13 | 27.8 | 14 | 21.6 | 5 |
| 80 | 100 | 90 | 110 | 16(12) | 5.5 | M5 | 44 | 28 | 14 | 3 | 16 | 27.8 | 14 | 23.6 | 5 |

| 尺寸 Size | T | SU | SA | SB | SD | M | ST | SV | HD | CA | CB | CX | CY | CZ |
|------------|------|-----|----|----|------|---|-----|----|-----|------|------|------|-----|----|
| 35 | - | 2.5 | 17 | 11 | 23.5 | 6 | 4.5 | M3 | 2.4 | C0.5 | C0.3 | 17 | 1 | 38 |
| 42 | - | 3 | 19 | 10 | 27 | 6 | 5.5 | M3 | 3 | C0.5 | C0.3 | 19 | 1 | 45 |
| 50 | 13.8 | - | 24 | 16 | 32 | 8 | 5.5 | M3 | 3 | C0.5 | C0.5 | 20.5 | 1.5 | 53 |
| 63 | 16.3 | - | 30 | 20 | 40 | 8 | 6.5 | M4 | 3 | C0.5 | C0.5 | 23 | 1.5 | 66 |
| 80 | 16.3 | - | 40 | 26 | 52 | 8 | 8.8 | M5 | 3.2 | C0.5 | C0.5 | 26.8 | 1.5 | 86 |

※1 -CN 及 -CF 中尺寸不同。() 内为 -CF 的数值。

※2 关于输入部位详情，请参照单独尺寸图。

※3 CX、CY、CZ 为护罩内壁建议尺寸。

*1 -CN and -CF are different in dimensions. The -CF value is shown in ().

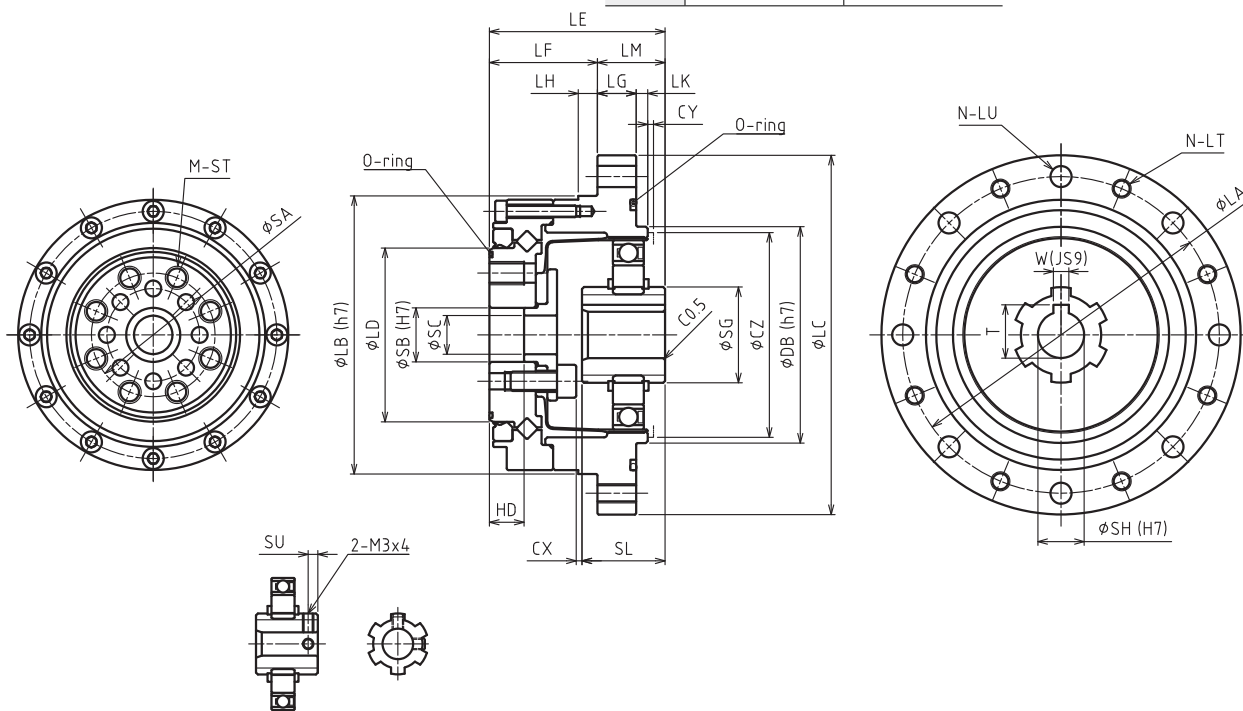
*2 For details in the input section, please check the drawings.

*3 Inner dimensions of CX, CY, CZ are recommended dimensions.

封闭型 组合型
Closed Type, Unit

WPU-□-□-CN
WPU-□-□-CF

| 尺寸 Size | 重量 Weight | 惯性力矩 Moment of inertia |
|------------|--------------|------------------------------------|
| | kg | ×10 ⁻⁴ kgm ² |
| 35 | 0.50 | 0.0377 |
| 42 | 0.68 | 0.0856 |
| 50 | 0.95 | 0.207 |
| 63 | 1.5 | 0.544 |
| 80 | 3.3 | 1.63 |



INPUT SHAFT FOR 35&42

[mm]

| 尺寸 Size | LA | LB | LC | LD | N ^{*1} | LT | LU | LE | LF | LG | LH | LK | LM | DB | SG |
|------------|-----|-----|-----|----|-----------------|----|-----|------|----|----|-----|----|------|----|------|
| 35 | 65 | 56 | 73 | 31 | 8 (6) | M4 | 4.5 | 41 | 27 | 7 | 3.5 | 2 | 14 | 38 | 15.8 |
| 42 | 71 | 63 | 79 | 38 | 8 (6) | M4 | 4.5 | 45 | 29 | 8 | 4 | 2 | 16 | 48 | 15.8 |
| 50 | 82 | 72 | 93 | 45 | 8 (6) | M5 | 5.5 | 45.5 | 28 | 10 | 5 | 3 | 17.5 | 56 | 24.8 |
| 63 | 96 | 86 | 107 | 58 | 10 (8) | M5 | 5.5 | 52 | 36 | 10 | 5 | 3 | 16 | 67 | 27.8 |
| 80 | 125 | 113 | 138 | 78 | 12 | M6 | 6.5 | 62 | 45 | 12 | 5 | 3 | 17 | 90 | 27.8 |

| 尺寸 Size | SH | SL | W | T | SU | SA | SB | SC | M | ST | HD | CX | CY | CZ |
|------------|----|------|---|------|-----|----|----|----|---|----------|-----|-----|-----|----|
| 35 | 6 | 18.5 | - | - | 2.5 | 23 | 11 | 8 | 6 | M4 × 8 | 9.5 | 1.6 | 1 | 38 |
| 42 | 8 | 20.7 | - | - | 3 | 27 | 10 | 7 | 6 | M5 × 8 | 9.5 | 1.3 | 1 | 45 |
| 50 | 12 | 21.5 | 4 | 13.8 | - | 32 | 14 | 10 | 8 | M6 × 9 | 9 | 1.5 | 1.5 | 53 |
| 63 | 14 | 21.6 | 5 | 16.3 | - | 42 | 20 | 15 | 8 | M8 × 10 | 12 | 3.4 | 1.5 | 66 |
| 80 | 14 | 23.6 | 5 | 16.3 | - | 55 | 26 | 20 | 8 | M10 × 12 | 15 | 5.2 | 1.5 | 86 |

※1 -CN 及 -CF 中尺寸不同。() 内为 -CF 的数值。

※2 关于输入部位详情，请参照单独尺寸图。

※3 CY、CZ 为护罩内壁建议尺寸。

*1 -CN and -CF are different in dimensions. The -CF value is shown in ().

*2 For details in the input section, please check the drawings.

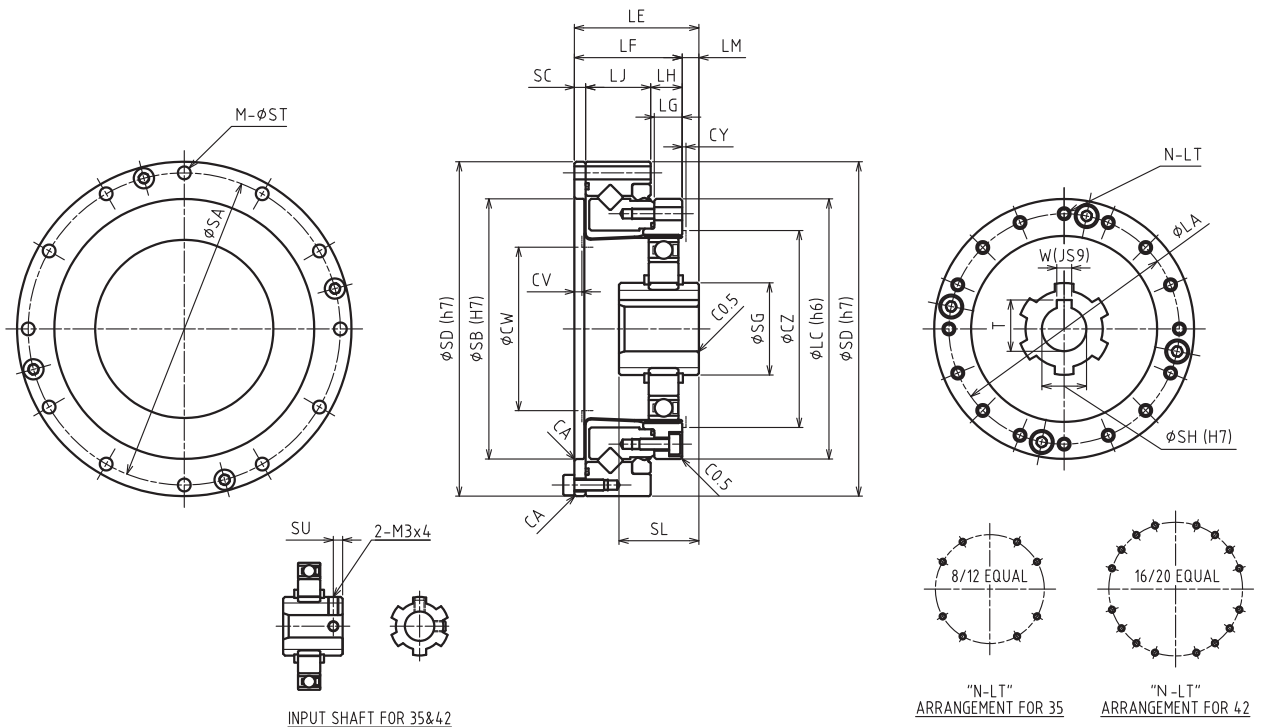
*3 Inner dimensions of CY, CZ are recommended dimensions.

尺寸表 *Dimensions Table*

开放型 简易组合型
Open type, Simple unit

WPS- □ - □ -SN

| 尺寸 Size | 重量 Weight | 惯性力矩 Moment of inertia |
|------------|--------------|-------------------------------|
| | kg | $\times 10^{-4} \text{kgm}^2$ |
| 35 | 0.39 | 0.0391 |
| 42 | 0.55 | 0.0870 |
| 50 | 0.79 | 0.209 |
| 63 | 1.3 | 0.549 |
| 80 | 2.7 | 1.65 |



INPUT SHAFT FOR 35&42

"N-LT" ARRANGEMENT FOR 35

"N-LT" ARRANGEMENT FOR 42

[mm]

| 尺寸 Size | LA | LC | LE | LF | LG | LH | LJ | LM | SG | SH | SL | W | T | SU | SA | SB |
|------------|-----|-----|------|------|-----|-----|------|-----|------|----|------|---|------|-----|-----|-----|
| 35 | 44 | 50 | 28.5 | 23.5 | 6 | 7 | 14.1 | 5 | 15.8 | 6 | 18.5 | - | - | 2.5 | 64 | 48 |
| 42 | 54 | 60 | 32.5 | 26.5 | 6.5 | 7.5 | 16 | 6 | 15.8 | 8 | 20.7 | - | - | 3 | 74 | 60 |
| 50 | 62 | 70 | 33.5 | 29 | 7.5 | 8.5 | 17.5 | 4.5 | 24.8 | 12 | 21.5 | 4 | 13.8 | - | 84 | 70 |
| 63 | 77 | 85 | 37 | 34 | 10 | 12 | 18.7 | 3 | 27.8 | 14 | 21.6 | 5 | 16.3 | - | 102 | 88 |
| 80 | 100 | 110 | 44 | 42 | 14 | 15 | 23.4 | 2 | 27.8 | 14 | 23.6 | 5 | 16.3 | - | 132 | 114 |

| 尺寸 Size | SC | SD | M | ST | CA | CY | CZ | CV | CW | N | LT |
|------------|-----|-----|----|-----|------|-----|----|-----|----|----|---------------------|
| 35 | 2.4 | 70 | 8 | 3.5 | C0.3 | 1 | 38 | 1.6 | 31 | 8 | M3 × 5, φ 3.5 × 6 |
| 42 | 3 | 80 | 12 | 3.5 | C0.3 | 1 | 45 | 2 | 37 | 16 | M3 × 6, φ 3.5 × 6.5 |
| 50 | 3 | 90 | 12 | 3.5 | C0.3 | 1.5 | 53 | 2 | 44 | 16 | M3 × 6, φ 3.5 × 7.5 |
| 63 | 3.3 | 110 | 12 | 4.5 | C0.3 | 1.5 | 66 | 2 | 56 | 16 | M4 × 7, φ 4.5 × 10 |
| 80 | 3.6 | 142 | 12 | 5.5 | C0.5 | 1.5 | 86 | 2 | 72 | 16 | M5 × 8, φ 5.5 × 14 |

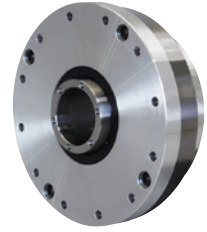
※1 关于输入部位详情，请参照单独尺寸图。
※2 CV、CW、CY、CZ为护罩内壁建议尺寸。

*1 For details in the input section, please check the drawings.
*2 Inner dimensions of CV, CW, CY, CZ are recommended dimensions.

开放型 组合型 (中空轴)
Open type, Unit (hollow shaft)

WPU- □ - □ -SNH

| 尺寸 Size | 重量 Weight | 惯性力矩 Moment of inertia |
|------------|--------------|-------------------------------|
| | kg | $\times 10^{-4} \text{kgm}^2$ |
| 35 | 0.57 | 0.103 |
| 42 | 0.79 | 0.230 |
| 50 | 1.1 | 0.460 |
| 63 | 1.7 | 1.24 |
| 80 | 3.4 | 3.18 |



尺寸表
Dimensions Table

寿命计算 (薄壁轴承)
Life estimation (Elastic bearing)

寿命计算 (主轴承)
Life estimation (Main bearing)

输入轴容许负荷 /
润滑油
Maximum load at
input shaft/
lubricant information

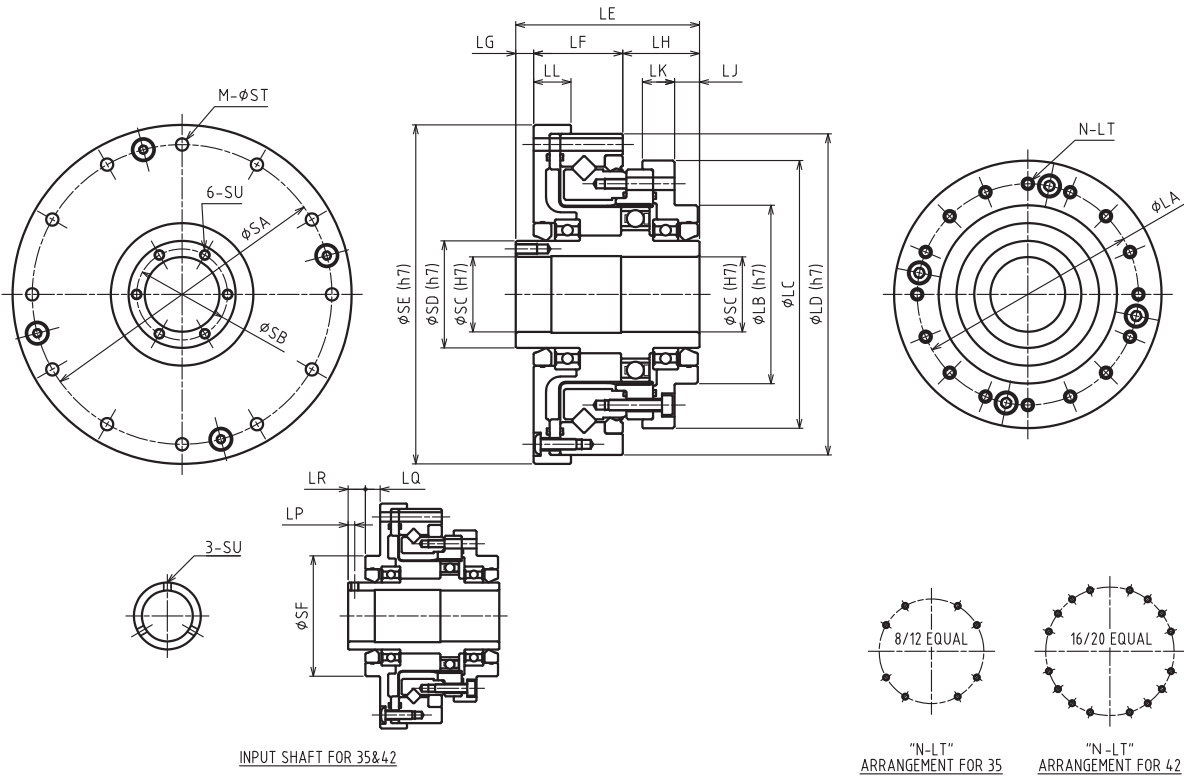
安装精度
Attachment fixture
requirement

传递力矩
Transmitting Torque

输入部位构造 /
注意事项
Input section structure/
Installation and
assembly instructions

电机安装方法
Motor installation
procedure

特性数据
Characteristics Data



[mm]

| 尺寸 Size | LA | LB | LC | LD | LE | LF | LG | LH | LJ | LK | LL | LP | LQ | LR |
|------------|-----|----|-----|-----|------|------|----|------|-----|-----|------|-----|-----|-----|
| 35 | 44 | 36 | 54 | 70 | 52.5 | 20.5 | 12 | 20 | 7.5 | 8 | 9 | 2.5 | 5.5 | 6.5 |
| 42 | 54 | 45 | 64 | 80 | 56.5 | 23 | 12 | 21.5 | 8.5 | 8.5 | 10 | 2.5 | 5.5 | 6.5 |
| 50 | 62 | 50 | 75 | 90 | 51.5 | 25 | 5 | 21.5 | 7 | 9 | 10.5 | - | - | - |
| 63 | 77 | 60 | 90 | 110 | 55.5 | 26 | 6 | 23.5 | 6 | 8.5 | 10.5 | - | - | - |
| 80 | 100 | 85 | 115 | 142 | 65.5 | 32 | 7 | 26.5 | 5 | 9.5 | 12 | - | - | - |

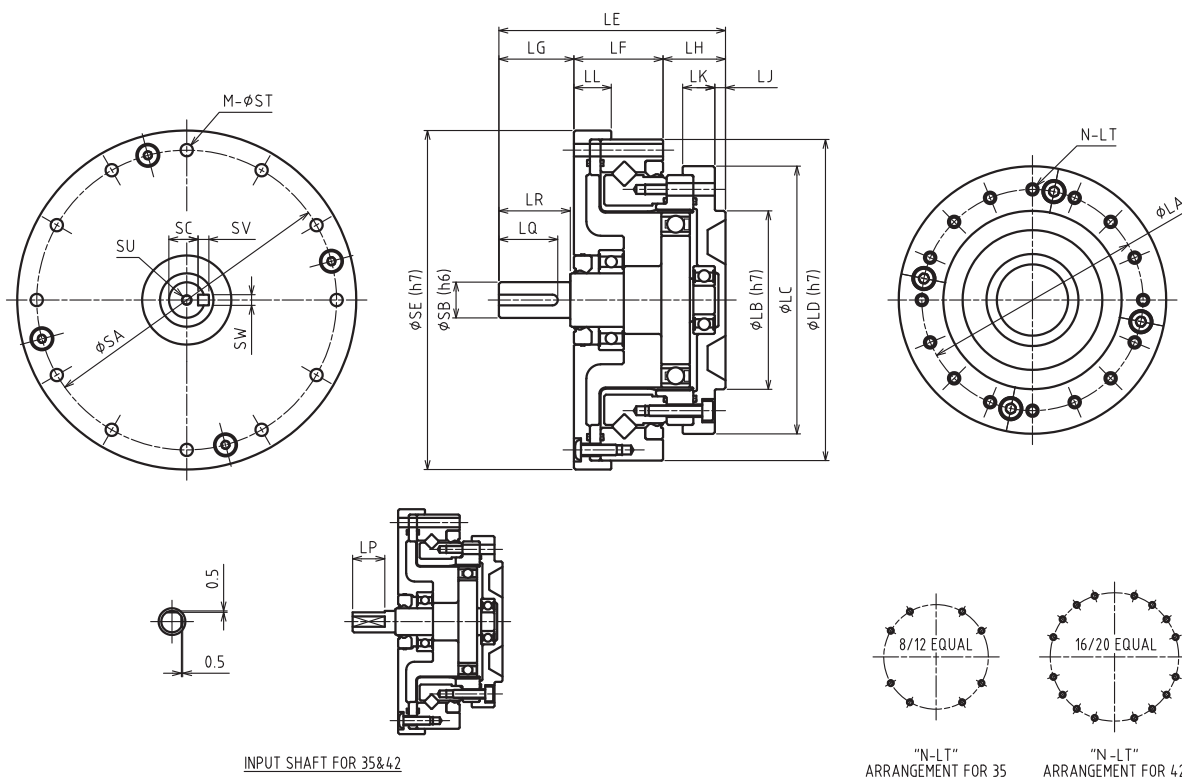
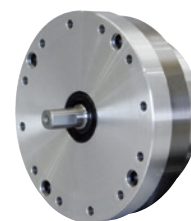
| 尺寸 Size | SA | SB | SC | SD | SE | SF | M | ST | SU | N | LT |
|------------|-----|------|----|----|-----|----|----|-----|--------|----|----------------------|
| 35 | 64 | - | 14 | 20 | 74 | 36 | 8 | 3.5 | M3 | 8 | M3 × 5, φ 3.5 × 11.5 |
| 42 | 74 | - | 19 | 25 | 84 | 45 | 12 | 3.5 | M3 | 16 | M3 × 6, φ 3.5 × 12 |
| 50 | 84 | 25.5 | 21 | 30 | 95 | - | 12 | 3.5 | M3 × 6 | 16 | M3 × 6, φ 3.5 × 13.5 |
| 63 | 102 | 33.5 | 29 | 38 | 115 | - | 12 | 4.5 | M3 × 6 | 16 | M4 × 7, φ 4.5 × 15.5 |
| 80 | 132 | 40.5 | 36 | 45 | 147 | - | 12 | 5.5 | M3 × 6 | 16 | M5 × 8, φ 5.5 × 20.5 |

尺寸表 *Dimensions Table*

开放型 组合型 (输入轴)
Open type, Unit (input shaft)

WPU- □ - □ -SNJ

| 尺寸 Size | 重量 Weight | 惯性力矩 Moment of inertia |
|------------|--------------|-------------------------------|
| | kg | $\times 10^{-4} \text{kgm}^2$ |
| 35 | 0.48 | 0.0376 |
| 42 | 0.69 | 0.0897 |
| 50 | 1.0 | 0.208 |
| 63 | 1.6 | 0.554 |
| 80 | 3.2 | 1.74 |



"N-LT"
ARRANGEMENT FOR 35

"N-LT"
ARRANGEMENT FOR 42

[mm]

| 尺寸 Size | LA | LB | LC | LD | LE | LF | LG | LH | LJ | LK | LL | LP | LQ | LR |
|------------|-----|----|-----|-----|------|------|----|------|-----|-----|------|----|------|----|
| 35 | 44 | 36 | 54 | 70 | 50.5 | 20.5 | 15 | 15 | 2.5 | 8 | 9 | 11 | - | - |
| 42 | 54 | 45 | 64 | 80 | 56 | 23 | 17 | 16 | 3 | 8.5 | 10 | 12 | - | - |
| 50 | 62 | 50 | 75 | 90 | 63.5 | 25 | 21 | 17.5 | 3 | 9 | 10.5 | - | 16.5 | 20 |
| 63 | 77 | 60 | 90 | 110 | 72.5 | 26 | 26 | 20.5 | 3 | 8.5 | 10.5 | - | 22.5 | 25 |
| 80 | 100 | 85 | 115 | 142 | 84.5 | 32 | 26 | 26.5 | 5 | 9.5 | 12 | - | 22.5 | 25 |

| 尺寸 Size | SA | SB | SC | SE | SV | SW | M | ST | SU | N | LT |
|------------|-----|----|-----|-----|----|----|----|-----|--------|----|----------------------|
| 35 | 64 | 6 | - | 74 | - | - | 8 | 3.5 | - | 8 | M3 × 5, φ 3.5 × 11.5 |
| 42 | 74 | 8 | - | 84 | - | - | 12 | 3.5 | - | 16 | M3 × 6, φ 3.5 × 12 |
| 50 | 84 | 10 | 8.2 | 95 | 3 | 3 | 12 | 3.5 | M3 × 6 | 16 | M3 × 6, φ 3.5 × 13.5 |
| 63 | 102 | 14 | 11 | 115 | 5 | 5 | 12 | 4.5 | M3 × 6 | 16 | M4 × 7, φ 4.5 × 15.5 |
| 80 | 132 | 14 | 11 | 147 | 5 | 5 | 12 | 5.5 | M3 × 6 | 16 | M5 × 8, φ 5.5 × 20.5 |

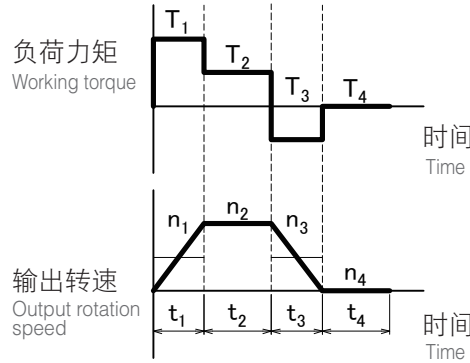
寿命计算（薄壁轴承） *Life estimation (Elastic bearing)*

薄壁轴承寿命计算

Life span for the elastic bearing

■ 运转类型

Operation cycle example



① 平均输出力矩 / 最大输出力矩的计算

Calculation formula for output torque

| | | | |
|------------------------------------|-----|----|---|
| 平均输出力矩 Average output torque | Tao | Nm | $Tao = \sqrt[3]{\frac{n_1 \cdot t_1 \cdot T_1 ^3 + n_2 \cdot t_2 \cdot T_2 ^3 + \dots + n_n \cdot t_n \cdot T_n ^3}{n_1 \cdot t_1 + n_2 \cdot t_2 + \dots + n_n \cdot t_n}}$ |
| 最大输出力矩 Peak output torque value | Tmo | Nm | $Tmo = T_1, T_2, \dots, T_n$ 的最大值 Tmo = Largest among T_1, T_2, \dots, T_n |

请确认最大输出力矩为容许最大输出值以下

Please make sure the peak output torque is below the maximum output torque in the specification table

② 平均输入转速 / 最高输入转速的计算

Calculation formula for input speed

| | | | |
|---|-----|-------|---|
| 平均输出转速 Average output rotation speed | nao | r/min | $nao = \frac{n_1 \cdot t_1 + n_2 \cdot t_2 + \dots + n_n \cdot t_n}{t_1 + t_2 + \dots + t_n}$ |
| 最高输出转速 Peak output rotation speed | nmo | r/min | $nmo = n_1, n_2, \dots, n_n$ 的最大值 nmo = Largest among n_1, n_2, \dots, n_n |
| 平均输入转速 Average input speed | nai | r/min | $nai = nao \times R$ (R = 减速比) (R = ratio) |
| 最高输入转速 Peak input speed value | nmi | r/min | $nmi = nmo \times R$ (R = 减速比) (R = ratio) |

请确认最高输入转速为容许最高输入转速值以下

Please make sure the peak input speed value is below the maximum input speed in the specification table

③ 寿命时间的计算

Calculation formula for life span

| | | | |
|--|-----|-------|--|
| 薄壁轴承寿命时间 Part life span for the elastic bearing | Lhe | h | $Lhe = 7000 \times \left(\frac{Tar}{Tao}\right)^3 \times \left(\frac{nar}{nai}\right)$ |
| 额定力矩 Rating torque | Tar | Nm | 性能表中所记容许平均力矩 Nominal output torque in the specification table |
| 额定输入转速 Rating input rotation speed | nar | r/min | 2000 r/min |

规格
Reducer Model / Specifications

尺寸表
Dimensions Table

寿命计算 (薄壁轴承)
Life estimation (Elastic bearing)

寿命计算 (主轴承)
Life estimation (Main bearing)

输入轴容许负荷 / 润滑油
Maximum load at input shaft / lubricant information

安装精度
Attachment fixture requirement

传导力矩
Transmitting Torque

输入部位构造 / 注意事项
Input section structure / Installation and assembly instructions

电机安装方法
Motor installation procedure

特性数据
Characteristics Data

寿命计算 (主轴承) *Life estimation(Main bearing)*

主轴承规格 (交叉滚子轴承) Main bearing specification(Cross roller bearing)

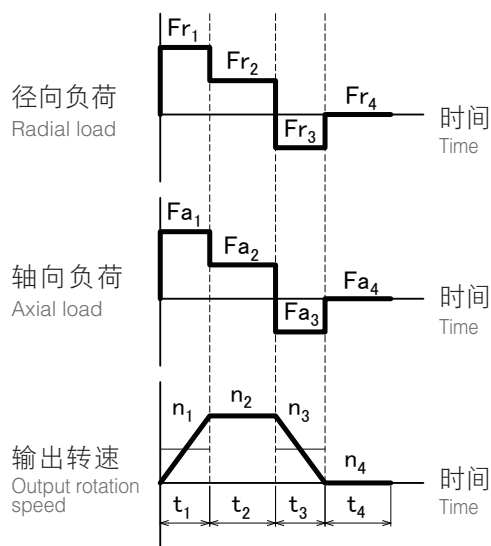
| 系列 Series | 尺寸 Size | 滚轴节圆直径 Pitch circle diameter of the bearing rollers | 偏移量 Offset | 基本动态额定负荷 Basic dynamic load rating | 基本静态额定负荷 Basic static load rating | 容许力矩 Allowable moment | 力矩刚性 Moment rigidity |
|--|------------|---|---------------|---------------------------------------|--------------------------------------|--------------------------|------------------------------|
| | | Dm | L | C | Co | Mal | Km |
| | | m | m | N | N | Nm | $\times 10^4 \text{ Nm/rad}$ |
| WPU-□-□-CF WPU-□-□-CN | 35 | 0.0335 | 0.0088 | 5620 | 6540 | 36.5 | 7.35 |
| | 42 | 0.0410 | 0.0098 | 6340 | 8170 | 55.8 | 8.02 |
| | 50 | 0.0485 | 0.0098 | 10400 | 13300 | 91.0 | 13.5 |
| | 63 | 0.0620 | 0.0108 | 15800 | 21100 | 156 | 27.7 |
| | 80 | 0.0815 | 0.0128 | 24400 | 35600 | 313 | 66.0 |
| WPS-□-□-SN | 35 | 0.0505 | 0.0162 | 7110 | 10200 | 74.0 | 14.4 |
| | 42 | 0.0598 | 0.0180 | 10900 | 15200 | 124 | 19.7 |
| | 50 | 0.0708 | 0.0194 | 17200 | 24700 | 187 | 40.1 |
| | 63 | 0.0856 | 0.0234 | 25100 | 37400 | 258 | 71.5 |
| | 80 | 0.114 | 0.0292 | 43300 | 67600 | 580 | 188 |
| WPU-□-□-SNH WPU-□-□-SNJ | 35 | 0.0505 | 0.0217 | 7110 | 10200 | 74.0 | 14.4 |
| | 42 | 0.0598 | 0.0235 | 10900 | 15200 | 124 | 19.7 |
| | 50 | 0.0708 | 0.0254 | 17200 | 24700 | 187 | 40.1 |
| | 63 | 0.0856 | 0.0289 | 25100 | 37400 | 258 | 71.5 |
| | 80 | 0.114 | 0.0357 | 43300 | 67600 | 580 | 188 |

主轴承寿命计算

Life span for the main bearing

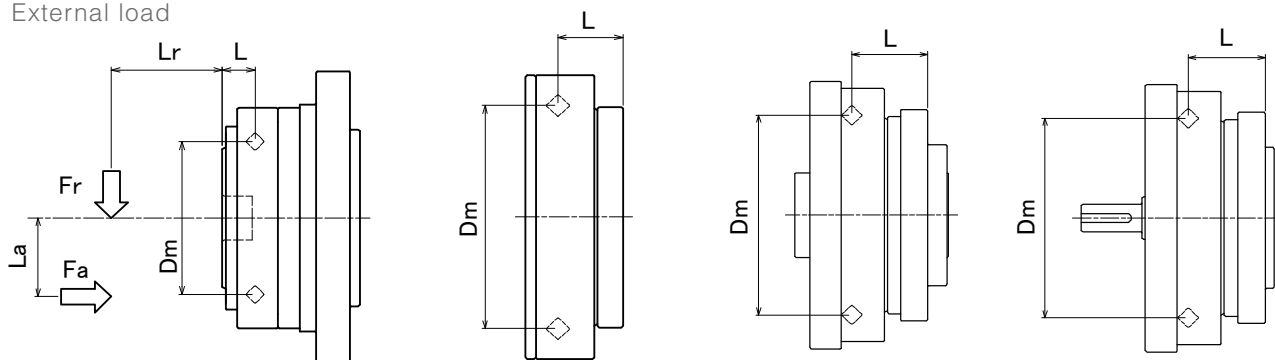
运转类型

Operation cycle example



外部负荷

External load



①最大负荷惯量的计算

Calculation formula for the largest working moment

| | | | |
|-------------------------------|-----|----|---|
| 最大负荷惯量 Peak working moment | Mm | Nm | $Mm = Frm \cdot (Lr + L) + Fam \cdot La$ |
| 最大径向负荷 Peak radial load | Frm | N | $Frm = Fr_1, Fr_2 \dots Fr_n$ 的最大值 Frm = Largest among $Fr_1, Fr_2, \dots Fr_n$ |
| 最大轴向负荷 Peak axial load | Fam | N | $Fam = Fa_1, Fa_2, \dots Fa_n$ 的最大值 Fam = Largest among $Fa_1, Fa_2, \dots Fa_n$ |

请确认最大负荷惯量为容许惯量值以下

Please make sure the peak working moment is below the maximum allowable moment

②平均径向负荷/ 轴向负荷/ 平均输出转速/ 平均负荷惯量的计算

Calculation formula for the Average radial load, Axial load, Average output rotation speed, Average working moment

| | | | |
|---|-----|-------|--|
| 平均径向负荷 Average radial load | Fra | N | $Fra = \sqrt[10]{\frac{n_1 \cdot t_1 \cdot Fr_1 ^{10/3} + n_2 \cdot t_2 \cdot Fr_2 ^{10/3} + \dots + n_n \cdot t_n \cdot Fr_n ^{10/3}}{n_1 \cdot t_1 + n_2 \cdot t_2 + \dots + n_n \cdot t_n}}$ |
| 平均轴向负荷 Axial load | Faa | N | $Faa = \sqrt[10]{\frac{n_1 \cdot t_1 \cdot Fa_1 ^{10/3} + n_2 \cdot t_2 \cdot Fa_2 ^{10/3} + \dots + n_n \cdot t_n \cdot Fa_n ^{10/3}}{n_1 \cdot t_1 + n_2 \cdot t_2 + \dots + n_n \cdot t_n}}$ |
| 平均输出转速 Average output rotation speed | nao | r/min | $nao = \frac{n_1 \cdot t_1 + n_2 \cdot t_2 \dots n_n \cdot t_n}{t_1 + t_2 + \dots + t_n}$ |
| 平均负荷惯量 Average working moment | Ma | Nm | $Ma = Fra \cdot (Lr + L) + Faa \cdot La$ |

③负荷系数/ 动态等价径向负荷的计算

Calculation formula for the Loading factor, Equivalent radial load

| | | | |
|------------------------------------|--------|---|--|
| 负荷系数 Loading factor | Xc, Yc | - | $\frac{Faa}{Fra + 2Ma / Dm} \leq 1.5$ 时, $Xc = 1.0, Yc = 0.45$ |
| | | | $\frac{Faa}{Fra + 2Ma / Dm} > 1.5$ 时, $Xc = 0.67, Yc = 0.67$ |
| 动态等价径向负荷 Equivalent radial load | Pc | N | $Pc = Xc \cdot (Fra + 2Ma/Dm) + Yc \cdot Faa$ |

④主轴承寿命时间的计算

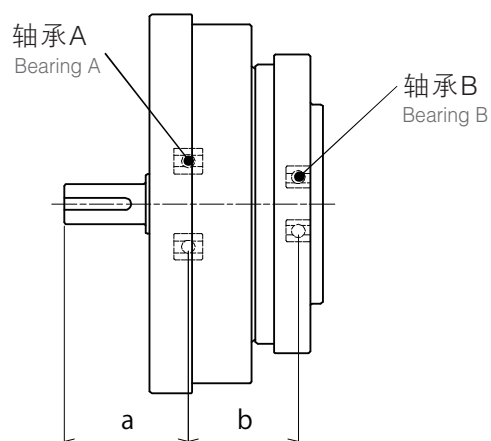
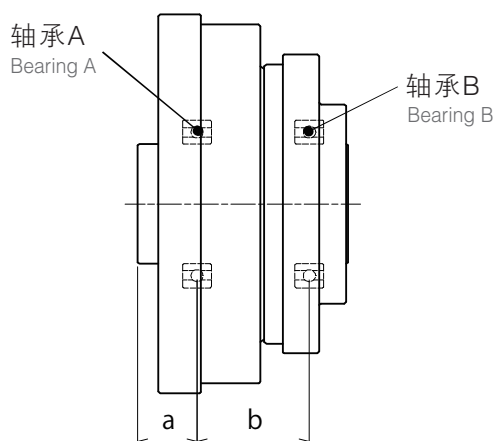
Life span for the main bearing

| | | | |
|---|-----|---|---|
| 主轴承寿命时间 Life span for the main bearing | Lhc | h | $Lhc = \frac{10^6}{60 \cdot nao} \cdot \left(\frac{C}{fw \cdot Pc} \right)^{\frac{10}{3}}$ |
| 冲击系数 Impact factor | f w | - | 1.0 : 未伴随冲击时 no shock |
| | | | 1.2 : 伴随些许冲击时 with some shock |
| | | | 1.5 : 伴随振动冲击时 with shock and vibration |

输入轴容许负荷 *Maximum load at input shaft*

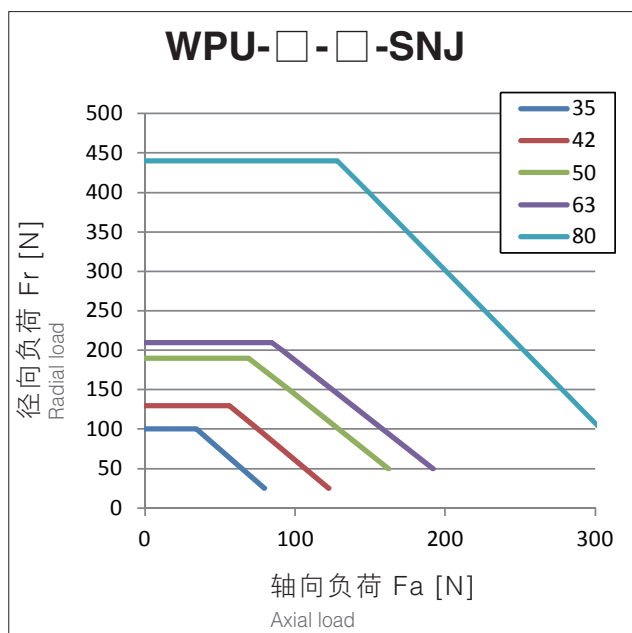
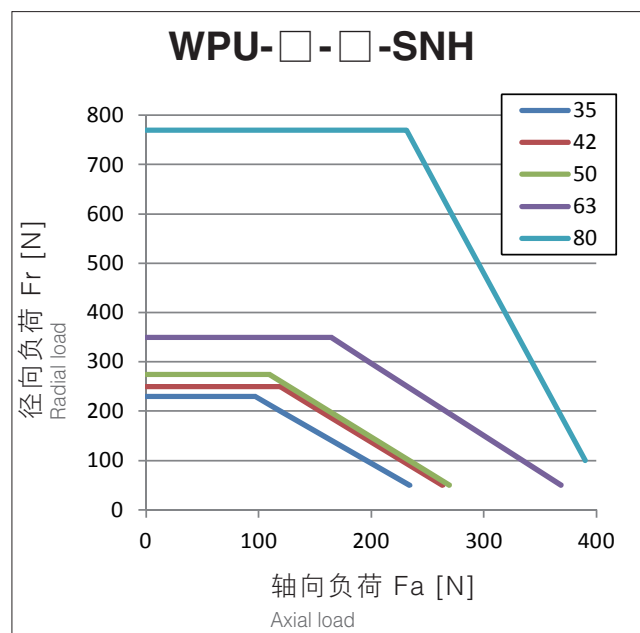
■ 轴承规格（开放型，组合型） Bearing specification (Open type, Unit)

| 系列 Series | 尺寸 Size | 轴承 A Bearing A | | 轴承 B Bearing B | | a | b |
|-----------------------------------|------------|---------------------------------------|--------------------------------------|---------------------------------------|--------------------------------------|------|------|
| | | 基本动态额定负荷 Basic dynamic load rating | 基本静态额定负荷 Basic static load rating | 基本动态额定负荷 Basic dynamic load rating | 基本静态额定负荷 Basic static load rating | | |
| | | C | Co | C | Co | | |
| | | N | N | N | N | | |
| | | mm | mm | | | | |
| WPU-□-□-<small>SNH</small> | 35 | 4000 | 2470 | 4000 | 2470 | 16 | 27 |
| | 42 | 4300 | 2950 | 4300 | 2950 | 16 | 31 |
| | 50 | 4500 | 3450 | 4500 | 3450 | 14.5 | 27.5 |
| | 63 | 4900 | 4350 | 4900 | 4350 | 15.5 | 30.8 |
| | 80 | 14100 | 10900 | 5350 | 5250 | 19 | 37.0 |
| WPU-□-□-<small>SNJ</small> | 35 | 2240 | 910 | 1080 | 430 | 24 | 21.5 |
| | 42 | 2700 | 1270 | 1610 | 710 | 27 | 23.5 |
| | 50 | 4350 | 2260 | 2240 | 910 | 31.5 | 26 |
| | 63 | 5600 | 2830 | 2700 | 1270 | 37.5 | 29 |
| | 80 | 9400 | 5000 | 4350 | 2260 | 39 | 38.5 |



■ 容许负荷（平均输入转速：2000r/min、寿命时间：7000h）

Maximum load (Average input rotation speed : 2000r/min, Life span : 7000h)



润滑剂 *lubricant information*

润滑剂的使用

Grease

Sumiplex MP No.2 (日本住矿润滑剂株式会社) Sumiplex MP No.2 (SUMICO LUBRICANT CO., LTD.)

使用温度范围: 0 ~ 40°C (环境温度) Operating temperature range: 0-40°C (ambient temperature)

润滑剂的涂抹

Grease application

按照以下要求在减速机各部位涂抹润滑剂。 Please apply grease according to the table below.

■ 润滑剂涂抹量 Grease application

·根据减速机的安装方向（输出侧为横向、向上、向下）不同，变更涂抹部位C的涂抹量。
（已封入润滑油的组合类型，填充了C（横向）的润滑油量。）

·减速机为向上、向下时，请填写输入ASSY~护罩内壁空间的50%的润滑剂。

·由于护罩设计造成润滑剂不足时，请咨询本公司。

[g]

·The quantity of grease applied to C should be adjusted depending on the mounting direction. C of the unit type product is already filled with the same quantity of grease as horizontal mounting.

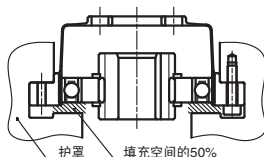
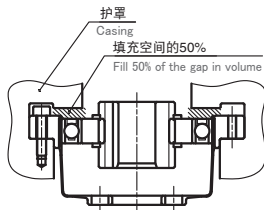
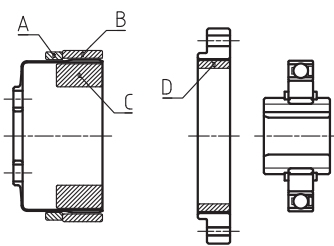
·For vertical up/down, 50% of the space between input assy and casing inner wall should be filled with grease.

·If the amount of grease is not sufficient due to case design, please contact us.

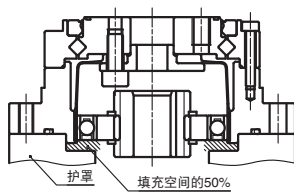
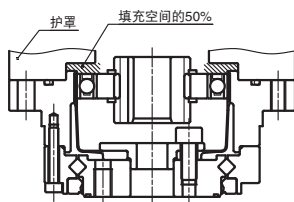
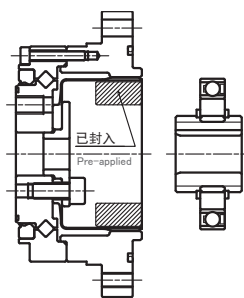
| 尺寸 Size | 涂抹部位 Applied part | | | | | |
|------------|-------------------|-----|-------------------------|--------------------------|----------------------------|-----|
| | A | B | C (横向) Horizontal | C (向上) Vertical up | C (向下) Vertical down | D |
| 35 | 0.3 | 0.3 | 6 | 8 | 9 | 0.3 |
| 42 | 0.5 | 0.5 | 10 | 12 | 14 | 0.5 |
| 50 | 0.8 | 0.8 | 16 | 18 | 21 | 0.8 |
| 63 | 1.5 | 1.5 | 30 | 35 | 40 | 1.5 |
| 80 | 3.0 | 3.0 | 60 | 70 | 80 | 3.0 |

■ 润滑剂涂抹部位 Grease application location

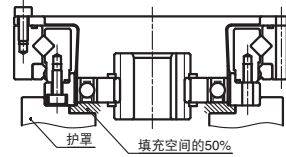
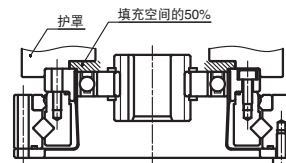
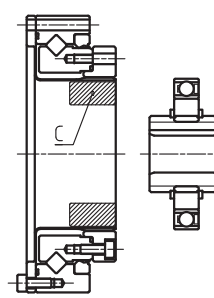
WPC-□-□-CF(CN)



WPU-□-□-CF(CN)



WPS-□-□-SN



规格
Reducer Model / Specifications

尺寸表
Dimensions Table

寿命计算
(薄壁轴承)
Life estimation (Elastic bearing)

寿命计算
(主轴承)
Life estimation (Main bearing)

输入轴容许负荷 / 润滑剂
Maximum load at Input shaft / Lubricant information

安装精度
Attachment feature requirement

传导力矩
Transmitting Torque

输入部位构造 / 注意事项
Input section structure / Installation and assembly instructions

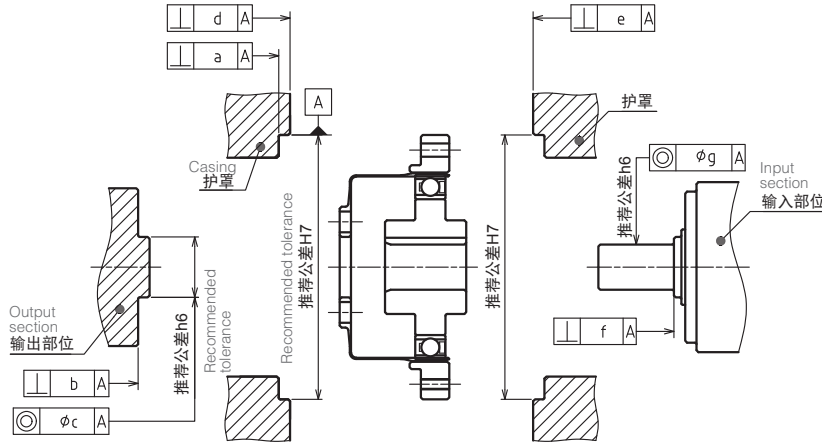
电机安装方法
Motor installation procedure

特性数据
Characteristics Data

安装精度 Attachment fixture requirement

■ 安装精度 Attachment fixture requirement

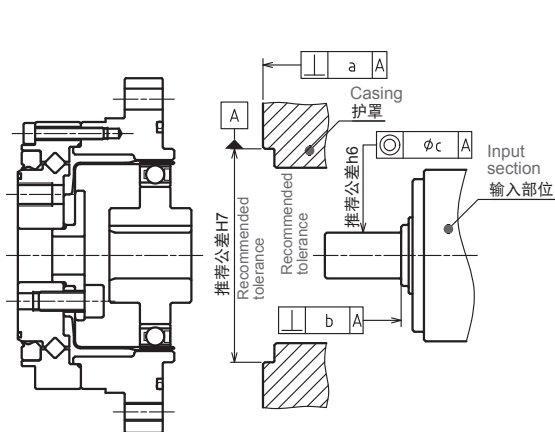
WPC-□-□-CF(CN)



安装精度 [mm]

| 尺寸 Size | 35 | 42 | 50 | 63 | 80 |
|---------|-------|-------|-------|-------|-------|
| a | 0.015 | 0.015 | 0.018 | 0.018 | 0.023 |
| b | 0.010 | 0.012 | 0.014 | 0.016 | 0.020 |
| c | 0.013 | 0.013 | 0.015 | 0.018 | 0.020 |
| d | 0.015 | 0.015 | 0.018 | 0.018 | 0.023 |
| e | 0.015 | 0.015 | 0.018 | 0.018 | 0.023 |
| f | 0.012 | 0.012 | 0.014 | 0.016 | 0.016 |
| g | 0.016 | 0.020 | 0.024 | 0.024 | 0.024 |

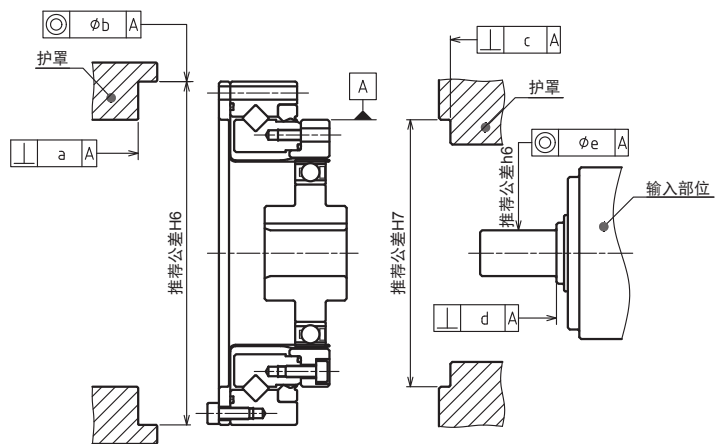
WPU-□-□-CF(CN)



安装精度 [mm]

| 尺寸 Size | 35 | 42 | 50 | 63 | 80 |
|---------|-------|-------|-------|-------|-------|
| a | 0.020 | 0.020 | 0.020 | 0.025 | 0.025 |
| b | 0.012 | 0.012 | 0.014 | 0.016 | 0.016 |
| c | 0.016 | 0.020 | 0.024 | 0.024 | 0.024 |

WPS-□-□-SN



安装精度 [mm]

| 尺寸 Size | 35 | 42 | 50 | 63 | 80 |
|---------|-------|-------|-------|-------|-------|
| a | 0.025 | 0.025 | 0.025 | 0.030 | 0.030 |
| b | 0.020 | 0.020 | 0.020 | 0.025 | 0.025 |
| c | 0.020 | 0.020 | 0.020 | 0.025 | 0.025 |
| d | 0.012 | 0.012 | 0.014 | 0.016 | 0.016 |
| e | 0.016 | 0.020 | 0.024 | 0.024 | 0.024 |

传导力矩 *Transmitting Torque*

安装螺丝

Bolting

螺丝紧固力矩如下表所示。

通过螺丝个数（因-CF、-CN而不同）及紧固力矩调整，可传导力矩存在差异，所以请注意确认。

Please refer to the table below for the bolt tightening torque.

Please be noted that the transmittable torque varies depending on the bolt count (different between CF and CN) and tightening torque.

螺丝紧固力矩

Tightening torque for bolts

| | | | | | | | |
|-----------|-------------------|-----|-----|-----|----|----|-----|
| 螺丝尺寸 | Bolt size | M3 | M4 | M5 | M6 | M8 | M10 |
| 紧固力矩 [Nm] | Tightening torque | 1.9 | 4.3 | 8.7 | 15 | 36 | 71 |

建议螺丝：强度区分12.9以上

Recommended bolt :
Strength rating above 12.9

传导力矩（封闭型、组合型）

Bolt specifications and Transmitting torque (Closed type, Unit)

安装输出法兰 Output flange attachment

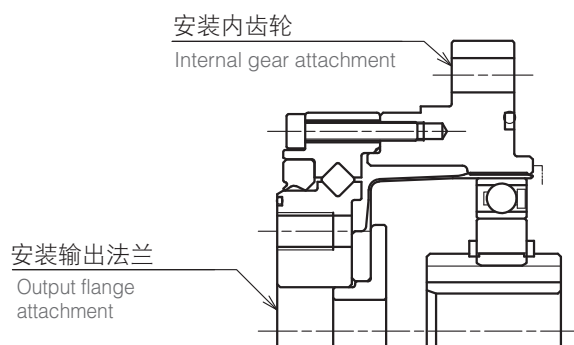
| | | | | | | |
|------------|---------------------|-----|-----|-----|-----|------|
| 尺寸 | Size | 35 | 42 | 50 | 63 | 80 |
| 螺丝尺寸 | Bolt size | M4 | M5 | M6 | M8 | M10 |
| 螺丝个数 | Bolt count | 6 | 6 | 8 | 8 | 8 |
| 安装PCD [mm] | Bolt PCD | 23 | 27 | 32 | 42 | 55 |
| 紧固力矩 [Nm] | Tightening torque | 4.3 | 8.7 | 15 | 36 | 71 |
| 传导力矩 [Nm] | Transmitting torque | 56 | 106 | 238 | 566 | 1177 |

安装内齿轮 (CN) Internal gear attachment

| | | | | | | |
|------------|---------------------|-----|-----|-----|-----|------|
| 尺寸 | Size | 35 | 42 | 50 | 63 | 80 |
| 螺丝尺寸 | Bolt size | M4 | M4 | M5 | M5 | M6 |
| 螺丝个数 | Bolt count | 8 | 8 | 8 | 10 | 12 |
| 安装PCD [mm] | Bolt PCD | 65 | 71 | 82 | 96 | 125 |
| 紧固力矩 [Nm] | Tightening torque | 4.3 | 4.3 | 8.7 | 8.7 | 15 |
| 传导力矩 [Nm] | Transmitting torque | 210 | 230 | 430 | 629 | 1392 |

安装内齿轮 (CF) Internal gear attachment

| | | | | | | |
|------------|---------------------|-----|-----|-----|-----|----|
| 尺寸 | Size | 35 | 42 | 50 | 63 | 80 |
| 螺丝尺寸 | Bolt size | M4 | M4 | M5 | M5 | - |
| 螺丝个数 | Bolt count | 6 | 6 | 6 | 8 | - |
| 安装PCD [mm] | Bolt PCD | 65 | 71 | 82 | 96 | - |
| 紧固力矩 [Nm] | Tightening torque | 4.3 | 4.3 | 8.7 | 8.7 | - |
| 传导力矩 [Nm] | Transmitting torque | 158 | 172 | 322 | 503 | - |



规格
Reducer Model / Specifications

尺寸表
Dimensions Table

寿命计算 (薄壁轴承)
Life estimation (Elastic bearing)

寿命计算 (主轴承)
Life estimation (Main bearing)

输入轴容许负荷 / 润滑油
Maximum load at input shaft / Lubricant information

安装精度
Attachment fixture requirement

传导力矩
Transmitting Torque

输入部位构造 / 注意事项
Input section structure / Installation and assembly instructions

电机安装方法
Motor installation procedure

特性数据
Characteristics Data

传导力矩 *Transmitting Torque*

传导力矩（封闭型、部件型）

Bolt specifications and Transmitting torque (Closed type, Component)

安装柔性齿轮 *Flex Gear Attachment*

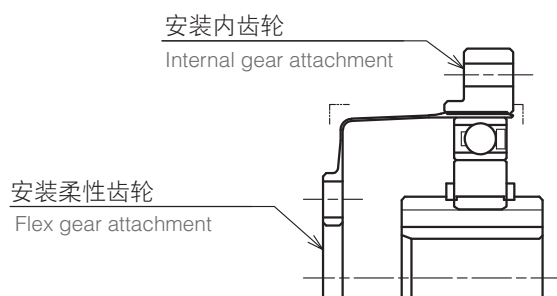
| 尺寸 | Size | 35 | 42 | 50 | 63 | 80 |
|------------|---------------------|-----|-----|-----|-----|-----|
| 螺丝尺寸 | Bolt size | M4 | M5 | M5 | M6 | M8 |
| 螺丝个数 | Bolt count | 6 | 6 | 8 | 8 | 8 |
| 安装PCD [mm] | Bolt PCD | 17 | 19 | 24 | 30 | 40 |
| 紧固力矩 [Nm] | Tightening torque | 4.3 | 8.7 | 8.7 | 15 | 36 |
| 传导力矩 [Nm] | Transmitting torque | 41 | 75 | 126 | 223 | 539 |

安装内齿轮（CN） *Internal Gear Attachment*

| 尺寸 | Size | 35 | 42 | 50 | 63 | 80 |
|------------|---------------------|-----|-----|-----|-----|------|
| 螺丝尺寸 | Bolt size | M3 | M3 | M3 | M4 | M5 |
| 螺丝个数 | Bolt count | 8 | 16 | 16 | 16 | 16 |
| 安装PCD [mm] | Bolt PCD | 44 | 54 | 62 | 75 | 100 |
| 紧固力矩 [Nm] | Tightening torque | 1.9 | 1.9 | 1.9 | 4.3 | 8.7 |
| 传导力矩 [Nm] | Transmitting torque | 82 | 200 | 230 | 485 | 1048 |

安装内齿轮（CF） *Internal Gear Attachment*

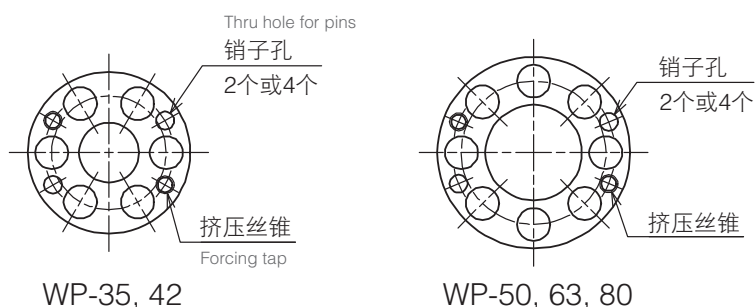
| 尺寸 | Size | 35 | 42 | 50 | 63 | 80 |
|------------|---------------------|-----|-----|-----|-----|-----|
| 螺丝尺寸 | Bolt size | M3 | M3 | M3 | M4 | M5 |
| 螺丝个数 | Bolt count | 6 | 12 | 12 | 12 | 12 |
| 安装PCD [mm] | Bolt PCD | 44 | 54 | 62 | 75 | 100 |
| 紧固力矩 [Nm] | Tightening torque | 1.9 | 1.9 | 1.9 | 4.3 | 8.7 |
| 传导力矩 [Nm] | Transmitting torque | 61 | 150 | 172 | 364 | 786 |



◆销子孔的追加 *Reinforcement*

柔性齿轮安装的传导力矩未满足要求时，请同时使用销子。
销子孔可根据需求追加。

Pins can be added if the transmittable torque at the flex gear interface is not sufficient.
As an option, holes can be added.



传导力矩（开放型）

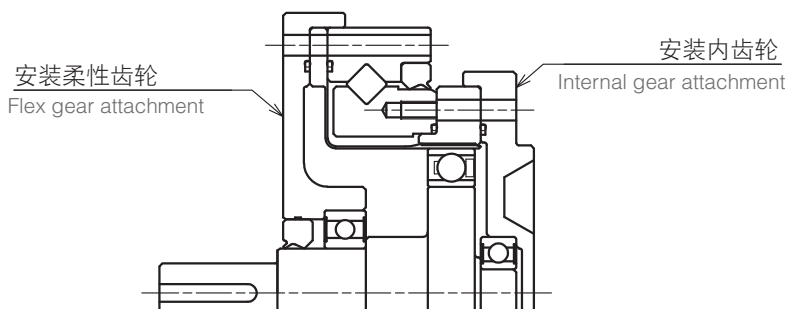
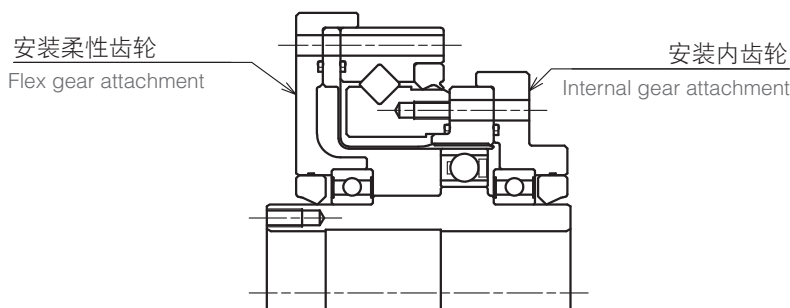
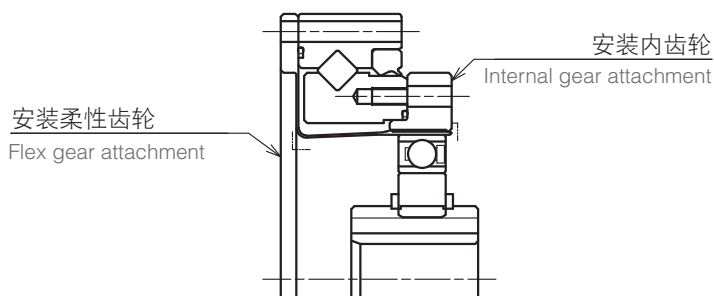
Bolt specifications and Transmitting torque (Open type)

安装柔性齿轮 Flex Gear Attachment

| 尺寸 | Size | 35 | 42 | 50 | 63 | 80 |
|------------|---------------------|-----|-----|-----|-----|------|
| 螺丝尺寸 | Bolt size | M3 | M3 | M3 | M4 | M5 |
| 螺丝个数 | Bolt count | 8 | 12 | 12 | 12 | 12 |
| 安装PCD [mm] | Bolt PCD | 64 | 74 | 84 | 102 | 132 |
| 紧固力矩 [Nm] | Tightening torque | 1.9 | 1.9 | 1.9 | 4.3 | 8.7 |
| 传导力矩 [Nm] | Transmitting torque | 119 | 206 | 234 | 495 | 1037 |

安装内齿轮 Internal Gear Attachment

| 尺寸 | Size | 35 | 42 | 50 | 63 | 80 |
|------------|---------------------|-----|-----|-----|-----|------|
| 螺丝尺寸 | Bolt size | M3 | M3 | M3 | M4 | M5 |
| 螺丝个数 | Bolt count | 8 | 16 | 16 | 16 | 16 |
| 安装PCD [mm] | Bolt PCD | 44 | 54 | 62 | 77 | 100 |
| 紧固力矩 [Nm] | Tightening torque | 1.9 | 1.9 | 1.9 | 4.3 | 8.7 |
| 传导力矩 [Nm] | Transmitting torque | 82 | 200 | 230 | 498 | 1048 |



规格
Reducer Model /
Specifications

尺寸表
Dimensions Table

寿命计算
(薄壁轴承)
Life estimation
(Elastic bearing)

寿命计算
(主轴承)
Life estimation
(Main bearing)

输入轴容许负荷 /
润滑油
Maximum load at
input shaft/
lubricant information

安装精度
Attachment fixture
requirement

传导力矩
Transmitting Torque

输入部位构造 /
注意事项
Input section structure/
Installation and
assembly instructions

电机安装方法
Motor installation
procedure

特性数据
Characteristics Data

输入部位构造 *Input section structure*

输入部位构造

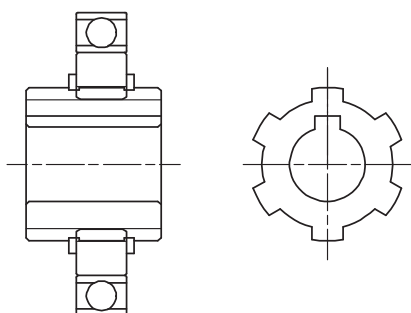
Input section structure

输入部位构造分为花键型（自动调心构造）与刚构型，因输入孔径等差异而不同。详细信息请确认尺寸图。

There are two types of input section structure, spline type (self-centering feature) and rigid type.

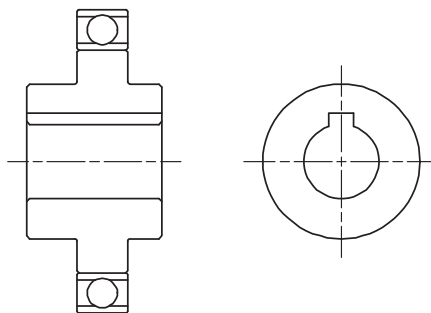
■ 花键型（自动调心构造）

Spline type (self-centering)



■ 刚构型

Rigid type

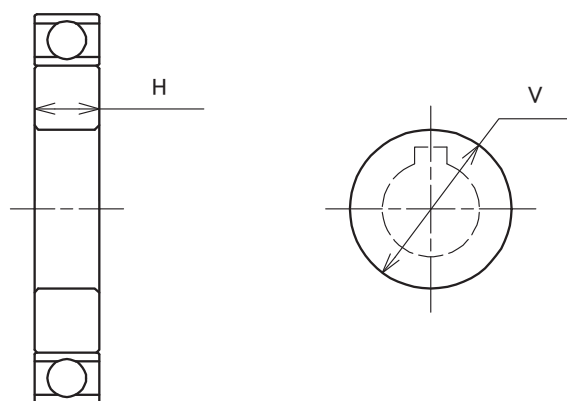


凸轮孔径尺寸

Cam hole diameter

凸轮孔径尺寸可变更。若在下表标准孔径尺寸以下时，则为花键型，在标准孔径～最大孔径范围，则为刚构型。若需下表范围以外尺寸，请另行咨询我公司。

The diameter of the cam opening is customizable. Holes smaller than the 'standard hole size' in the table will be built in the spline type. Holes equal to or larger than the 'standard hole size' and smaller than the 'maximum hole size' will be built in the rigid type. Please contact us if you need sizes outside the specification in the table.



凸轮尺寸 Cam dimension

[mm]

| 尺寸 Size | 35 | 42 | 50 | 63 | 80 |
|-----------------------------|----|----|----|----|----|
| 标准孔径 standard bore size | 6 | 8 | 12 | 14 | 14 |
| 最大孔径 V maximum bore size | 17 | 20 | 23 | 28 | 36 |
| 最小厚度 H minimum thickness | 6 | 7 | 8 | 9 | 11 |

注意事项 *Installation and assembly instructions*

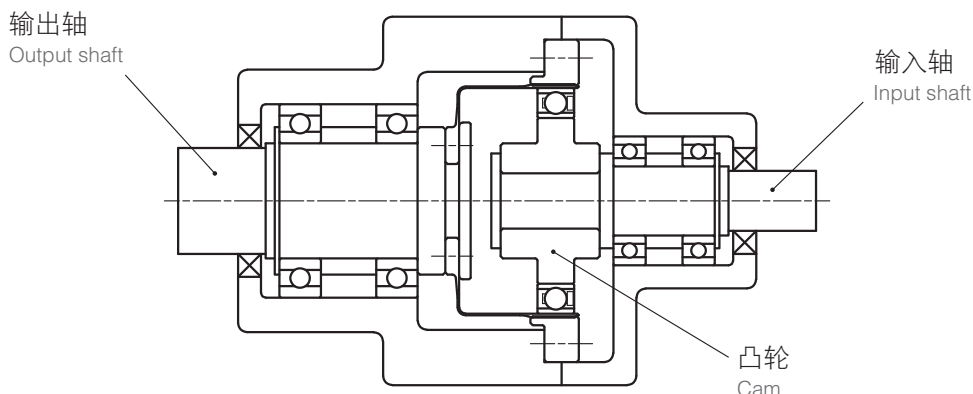
输入/输出轴的支撑 (WPC-□-□-□)

Shaft installation instruction

输入轴 / 输出轴请采用承受作用于轴部的径向负荷 / 轴向负荷的支撑构造。(下图为参考实例) 来自减速机内部的轴向负荷作用于凸轮。请进行固定，避免凸轮发生轴向移动。

Please design the support structure for input shaft and output shaft so that both radial and axial loads are supported. (Diagram below shows an example)

Inside thrust load has effect on the cam. Secure cam from the possible axial movement.



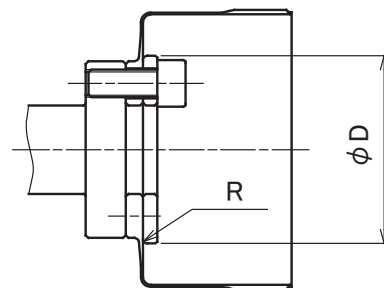
安装方法 (WPC-□-□-□)

Attachment flange requirement

安装与柔性齿轮相连接的法兰时，为了防止造成柔性齿轮破损，请保证下表所示尺寸。

For the attachment flange that comes in contact with flex gear, please build the corner radius according to the table below, in order to prevent damage.

| | [mm] | | | | |
|------------|------|-----|-----|-----|----|
| 符号 Item | 35 | 42 | 50 | 63 | 80 |
| D | 24.5 | 29 | 34 | 42 | 55 |
| R | 1.2 | 1.2 | 1.4 | 1.5 | 2 |



| | |
|--|------------------|
| 规格 Reducer Model / Specifications | 减速机型号 / 规格 |
| 尺寸表 Dimensions Table | 尺寸表 |
| 寿命计算 (薄壁轴承) Life estimation (Elastic bearing) | 寿命计算 (薄壁轴承) |
| 寿命计算 (主轴承) Life estimation (Main bearing) | 寿命计算 (主轴承) |
| 输入轴容许负荷 / 润滑剂 Maximum load at input shaft/ lubricant information | 输入轴容许负荷 / 润滑剂 |
| 安装精度 Attachment flange requirement | 安装精度 |
| 传递转矩 Transmitting Torque | 传递转矩 |
| 输入部位构造 / 注意事项 Input section structure/ Installation and assembly instruction | 输入部位构造 / 注意事项 |
| 电机安装方法 Motor installation procedure | 电机安装方法 |
| 特性数据 Characteristics Data | 特性数据 |

电机安装方法 *Motor installation procedure*

电机安装方法 (WPU-□-□-□)

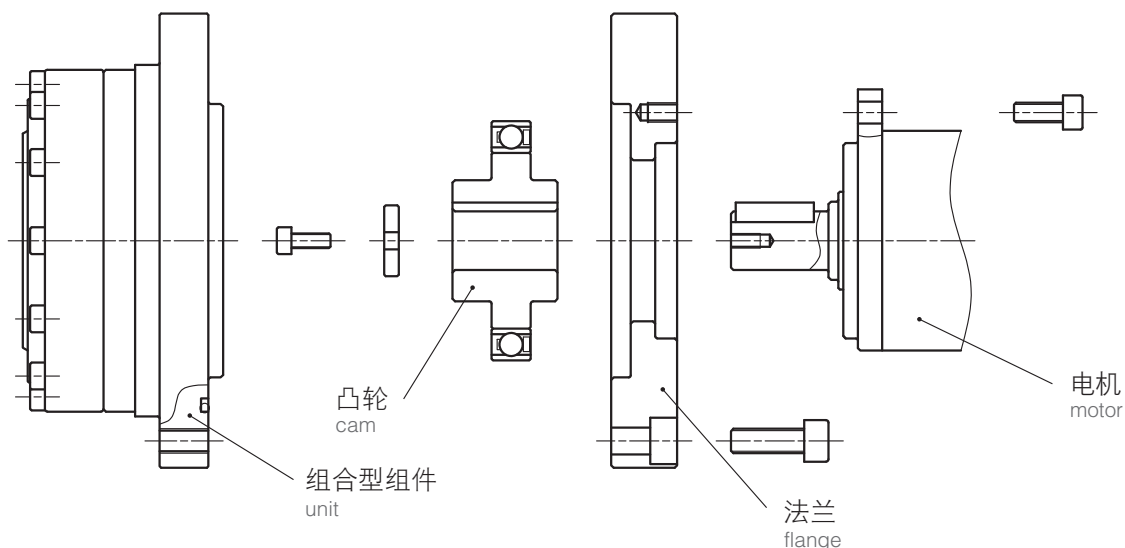
Motor installation procedure

■ 安装步骤1

- 将法兰安装至电机上
- 将凸轮（轴承）安装至电机轴上
- 安装至组合型产品组件

Procedure 1

- Attach the flange on to the motor
- Attach the cam with elastic bearings to the motor shaft
- Attach the unit

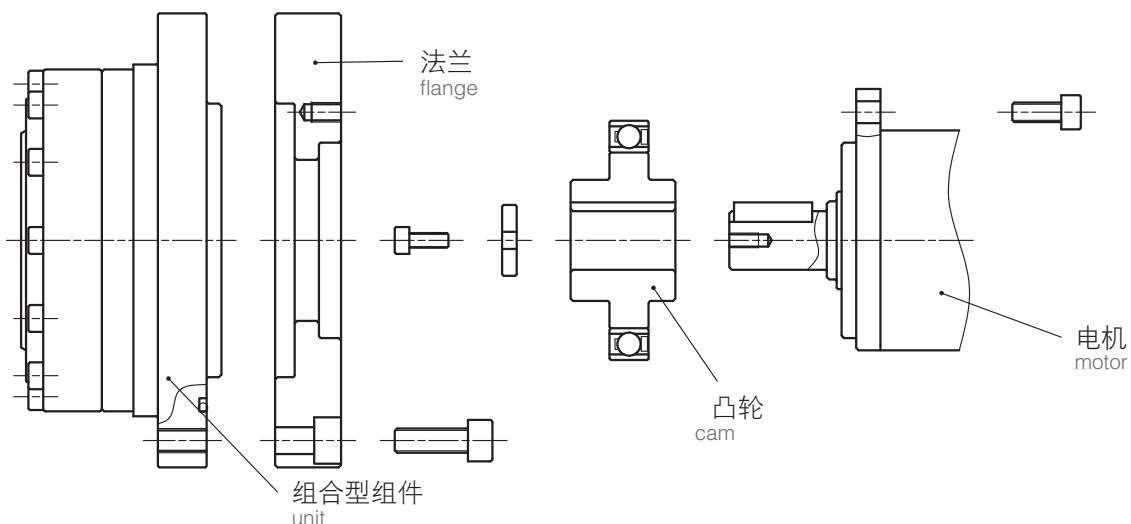


■ 安装步骤2

- 将凸轮（轴承）安装至电机轴上
- 将法兰安装至电机上
- 安装至组合型产品组件

Procedure 2

- Attach the cam with elastic bearings to the motor shaft
- Attach the flange on to the motor
- Attach the unit



安装操作时的注意事项 *Caution during installation*

- 组装各零部件时，不可过度用力顶压。
- 注意不可倾斜插入输入 ASSY（凸轮、电机）。
- Do not use excessive force while mating parts
- Please watch for tilting during input section assembly (motor insertion into cam)

特性数据 Characteristics Data

角度传导精度

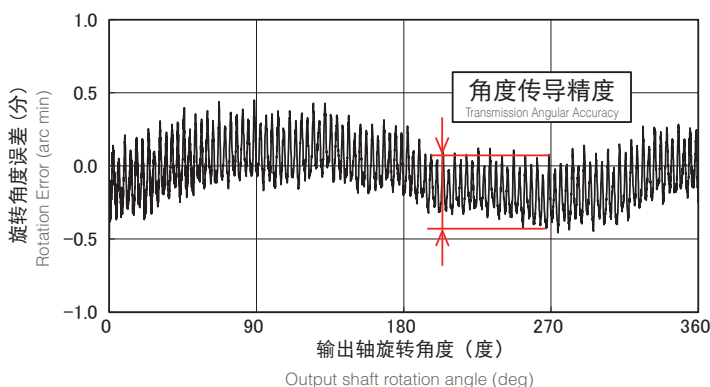
Transmission Angular Accuracy

角度传导精度定义

在无负荷条件下使输入轴旋转时，理论上输出旋转角度与实际输出旋转角度的差值。

What is Transmission Angular Accuracy?

It is the difference between the measured output rotation angle and the theoretical angle, while input shaft is rotated with no load.



[arc min]

| 减速比 Ratio | 尺寸 Size | | | | |
|--------------|------------|-----|-----|-----|-----|
| | 35 | 42 | 50 | 63 | 80 |
| 50 | 2.0 | 2.0 | 1.5 | 1.0 | 1.0 |
| 80 | 1.5 | 1.5 | 1.0 | 1.0 | 1.0 |
| 100 | 1.5 | 1.5 | 1.0 | 1.0 | 1.0 |
| 120 | - | 1.5 | 1.0 | 1.0 | 1.0 |

※表中数值为参考值。

Table values are reference values.

滞后损失

Hysteresis Loss

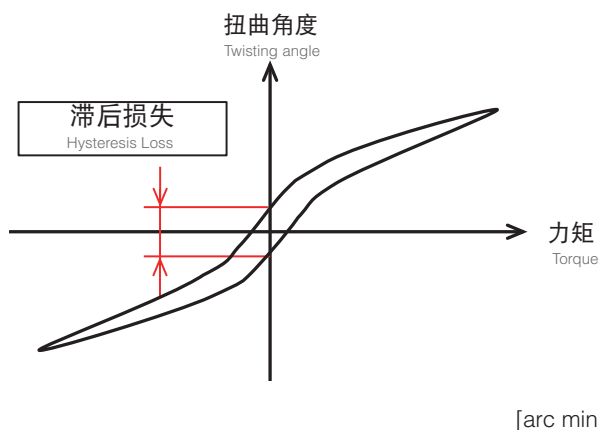
滞后损失定义

输入侧固定后，将力矩施加至输出侧且0力矩时的扭曲角度差。

What is Hysteresis Loss?

When torque load is applied at the output shaft in alternate direction repeatedly with input shaft fixed, there is residual twisting angle when torque is back to zero.

In this context, hysteresis loss is the difference in the forward and backward twisting angle.



[arc min]

| 减速比 Ratio | 尺寸 Size | | | | |
|--------------|------------|-----|-----|-----|-----|
| | 35 | 42 | 50 | 63 | 80 |
| 50 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| 80 | 1.5 | 1.5 | 1.0 | 1.0 | 1.0 |
| 100 | 1.5 | 1.5 | 1.0 | 1.0 | 1.0 |
| 120 | - | 1.5 | 1.0 | 1.0 | 1.0 |

规格
Reducer Model /
Specifications

尺寸表
Dimensions Table

寿命计算
(薄壁轴承)
Life estimation
(Elastic bearing)

寿命计算
(主轴承)
Life estimation
(Main bearing)

输入轴容许负荷 /
润滑油
Maximum load at
input shaft/
lubricant information

安装精度
Attachment fixture
requirement

传导力矩
Transmitting Torque

输入部位构造 /
注意事项
Input section structure/
Installation and
assembly instructions

电机安装方法
Motor Installation
procedure

特性数据
Characteristics Data

最大背隙

Maximum Backlash

[arc sec]

最大背隙定义

输入部采用花键型组件时的输出侧松动间隙
(齿轮相咬合部位背隙为0, 所以刚构型组件背隙为0)

What is Maximum Backlash?

In this context, maximum backlash is the output backlash for spline type input shaft. (Backlash is zero for rigid type input, because gear engagement backlash is zero.)

| 减速比 Ratio | 尺寸 Size | | | | |
|--------------|------------|----|----|----|----|
| | 35 | 42 | 50 | 63 | 80 |
| 50 | 27 | 27 | 18 | 16 | 16 |
| 80 | 17 | 17 | 11 | 10 | 10 |
| 100 | 13 | 13 | 9 | 8 | 8 |
| 120 | - | 11 | 7 | 7 | 7 |

刚性 (封闭型、组合型)

Stiffness (Closed type, Unit)

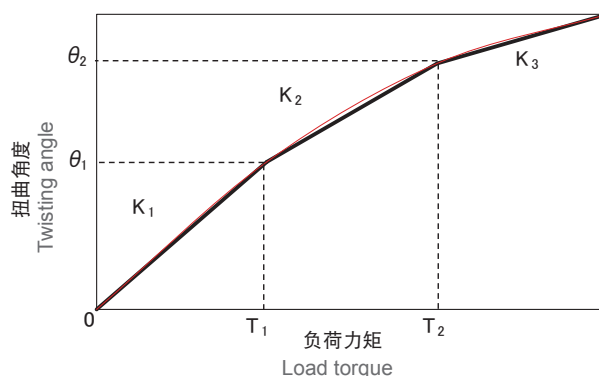
刚性定义

固定输入侧, 将力矩施加至输出侧时的弹簧常数与
扭曲角度

What is Stiffness?

In this context, stiffness is the output shaft twisting angle and the spring coefficient, while torque load is applied to the output shaft with input side fixed.

- K1...力矩 0 ~ T_1 的弹簧常数
Spring coefficient at 0 ~ T_1 torque
- K2...力矩 T_1 ~ T_2 的弹簧常数
Spring coefficient at T_1 ~ T_2 torque
- K3...力矩 T_2 ~ 的弹簧常数
Spring coefficient at T_2 ~ torque



| 减速比 Ratio | 符号 item | 单位 unit | 尺寸 Size | | | | |
|--------------|------------|-----------------------------|------------|------|-----|-----|-----|
| | | | 35 | 42 | 50 | 63 | 80 |
| - | T_1 | Nm | 2 | 3.9 | 7 | 14 | 29 |
| - | T_2 | Nm | 6.9 | 12 | 25 | 48 | 108 |
| 50 | K_1 | $\times 10^4 \text{Nm/rad}$ | 0.28 | 0.69 | 1.1 | 2.7 | 5.6 |
| | K_2 | $\times 10^4 \text{Nm/rad}$ | 0.45 | 0.85 | 1.7 | 3.3 | 7.1 |
| | K_3 | $\times 10^4 \text{Nm/rad}$ | 0.55 | 1.1 | 2.5 | 4.0 | 8.3 |
| | θ_1 | arcmin | 2.3 | 2.2 | 2.0 | 1.8 | 2.0 |
| | θ_2 | arcmin | 5.7 | 4.5 | 5.3 | 5.5 | 6.5 |
| 80 | K_1 | $\times 10^4 \text{Nm/rad}$ | 0.45 | 0.92 | 1.2 | 3.3 | 6.9 |
| | K_2 | $\times 10^4 \text{Nm/rad}$ | 0.63 | 1.1 | 1.8 | 3.7 | 8.1 |
| | K_3 | $\times 10^4 \text{Nm/rad}$ | 0.70 | 1.3 | 2.2 | 4.5 | 10 |
| | θ_1 | arcmin | 1.8 | 1.3 | 1.8 | 1.6 | 1.7 |
| | θ_2 | arcmin | 4.7 | 3.5 | 4.8 | 4.4 | 4.9 |

※表中数值为平均值。
Average value shown in the table

启动力矩

(封闭型, 组合型)

Starting Torque
(Closed type, Unit)

[cNm]

| 减速比 Ratio | 尺寸 Size | | | | |
|--------------|------------|-----|-----|-----|----|
| | 35 | 42 | 50 | 63 | 80 |
| 50 | 1.7 | 3.9 | 5.5 | 8.7 | 19 |
| 80 | 1.9 | 4.2 | 6.0 | 9.5 | 21 |
| 100 | 1.6 | 3.5 | 5.0 | 7.9 | 18 |
| 120 | - | 2.8 | 4.0 | 6.3 | 14 |

※1 根据使用条件不同, 数值存在差异, 所以上表作为参考值使用。

※2 不包括输入侧油封及球形轴承等的旋转阻力所带来的影响。

*1 For reference only. Torque value may vary depending on the condition.

*2 Charts does not show effects due to rotation resistance of bearings and oil seals on the input side.

启动力矩定义

由输入侧使其旋转时, 输入侧开始旋转的力矩。

(无负荷, 环境温度: 25°C)

What is Starting Torque?

Input torque needed for input side to start rotating (no load, ambient temperature : 25°C)

加速启动力矩

(封闭型, 组合型)

Output Starting Torque
(Closed type, Unit)

[Nm]

| 减速比 Ratio | 尺寸 Size | | | | |
|--------------|------------|-----|-----|-----|----|
| | 35 | 42 | 50 | 63 | 80 |
| 50 | 1.3 | 2.6 | 4.5 | 5.7 | 12 |
| 80 | 1.9 | 4.0 | 6.8 | 8.6 | 19 |
| 100 | 2.1 | 4.4 | 7.5 | 9.5 | 21 |
| 120 | - | 5.3 | 9.0 | 11 | 25 |

※1 根据使用条件不同, 数值存在差异, 所以上表作为参考值使用。

※2 不包括输入侧油封及球形轴承等的旋转阻力所带来的影响。

*1 For reference only. Torque value may vary depending on the condition.

*2 Charts does not show effects due to rotation resistance of bearings and oil seals on the input side.

加速启动力矩定义

由输出侧使其旋转时, 输出侧开始旋转的力矩。

(无负荷, 环境温度: 25°C)

What is Output Starting Torque?

Output torque needed for output side to start rotating (no load, ambient temperature : 25°C)

无负荷运转力矩

(封闭型, 组合型)

No-load Running Torque
(Closed type, Unit)

[cNm]

| 减速比 Ratio | 符号 | 尺寸 Size | | | | |
|--------------|-----------|------------|-----|------|------|------|
| | | 35 | 42 | 50 | 63 | 80 |
| 50 | 500r/min | 3.1 | 5.1 | 11.2 | 13.7 | 26.1 |
| | 1000r/min | 3.4 | 5.4 | 12.4 | 15.2 | 28.6 |
| | 2000r/min | 3.6 | 5.9 | 13.6 | 16.9 | 31.3 |
| | 3500r/min | 3.9 | 6.3 | 14.9 | 18.8 | 34.2 |
| 80 | 500r/min | 4.3 | 7.7 | 8.4 | 15.6 | 28.6 |
| | 1000r/min | 4.6 | 8.3 | 9.2 | 17.3 | 31.2 |
| | 2000r/min | 5.0 | 8.9 | 10.1 | 19.2 | 34.2 |
| 100 | 3500r/min | 5.4 | 9.6 | 11.1 | 21.4 | 37.4 |
| | 500r/min | 2.9 | 7.4 | 9.5 | 14.2 | 22.5 |
| | 1000r/min | 3.1 | 8.0 | 10.5 | 15.7 | 24.6 |
| | 2000r/min | 3.3 | 8.6 | 11.5 | 17.5 | 26.9 |
| 120 | 3500r/min | 3.6 | 9.2 | 12.6 | 19.4 | 29.4 |
| | 500r/min | - | 6.1 | 9.2 | 12.4 | 26.3 |
| | 1000r/min | - | 6.5 | 10.1 | 13.8 | 28.8 |
| | 2000r/min | - | 7.0 | 11.1 | 15.3 | 31.5 |
| 120 | 3500r/min | - | 7.5 | 12.2 | 17.0 | 34.5 |

※1 根据使用条件不同, 数值存在差异, 所以上表作为参考值使用。

※2 不包括输入侧油封及球形轴承等的旋转阻力所带来的影响。

*1 For reference only. Torque value may vary depending on the condition.

*2 Charts does not show effects due to rotation resistance of bearings and oil seals on the input side.

规格
Reducer Model /
Specifications

尺寸表
Dimensions Table

寿命计算
(薄壁轴承)
Life estimation
(Elastic bearing)

寿命计算
(主轴承)
Life estimation
(Main bearing)

输入轴容许负荷 /
润滑油
Maximum load at
input shaft/
lubricant information

安装精度
Attachment fixture
requirement

传动力矩
Transmitting Torque

输入部位构造 /
注意事项
Input section structure/
Installation and
assembly instructions

电机安装方法
Motor installation
procedure

特性数据
Characteristics Data

特性数据 *Characteristics Data*

效率 (封闭型, 组合型)

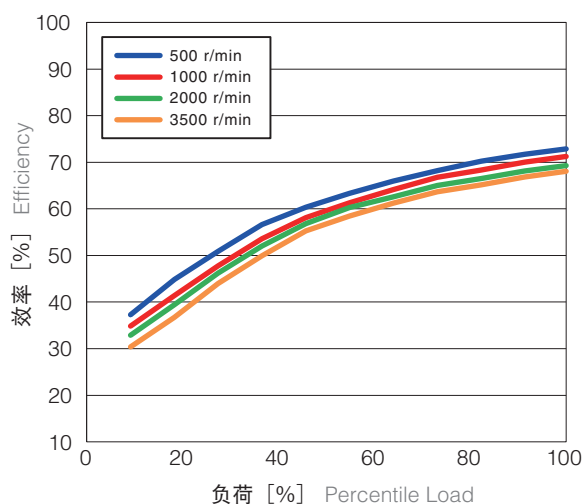
Efficiency (Closed type, Unit)

负荷[%] : 负荷力矩/容许平均力矩
 环境温度: 25°C

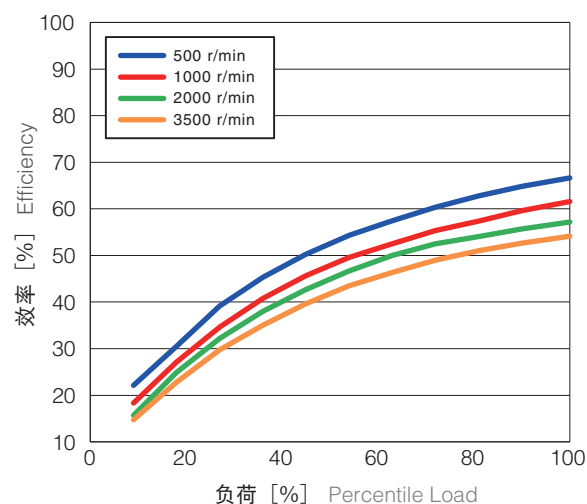
- ※1 图表为实测数据的平均值。
- ※2 不包括输入侧油封及球形轴承等的旋转阻力所带来的影响。

- Percentile Load (%) is equal to load torque divided by allowable average torque.
- Ambient temperature : 25°C
- *1 These diagrams represent the average value of the actual measurement.
- *2 Charts does not show effects due to rotation resistance of bearings and oil seals on the input side.

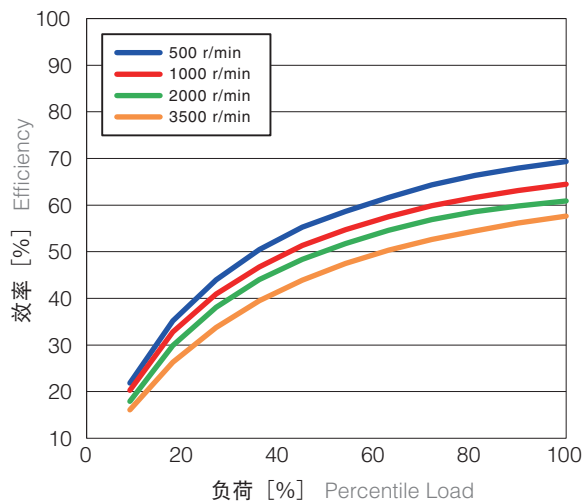
WPU-35-50



WPU-35-80



WPU-35-100



效率 (封闭型, 组合型)

Efficiency (Closed type, Unit)

负荷[%] : 负荷力矩/容许平均力矩
环境温度 : 25°C

※1 图表为实测数据的平均值。

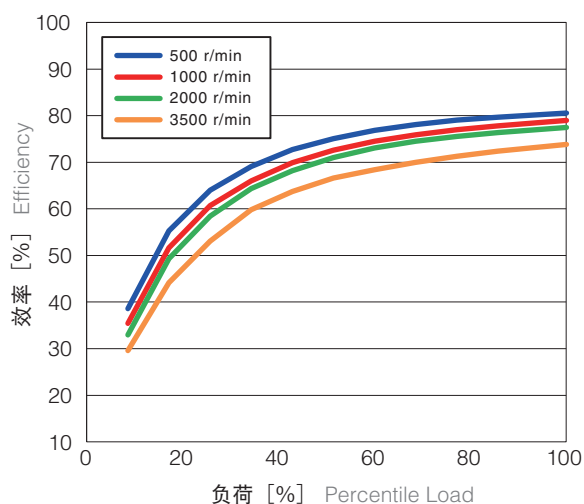
※2 不包括输入侧油封及球形轴承等的旋转阻力所带来的影响。

·Percentile Load (%) is equal to load torque divided by allowable average torque.
·Ambient temperature : 25°C

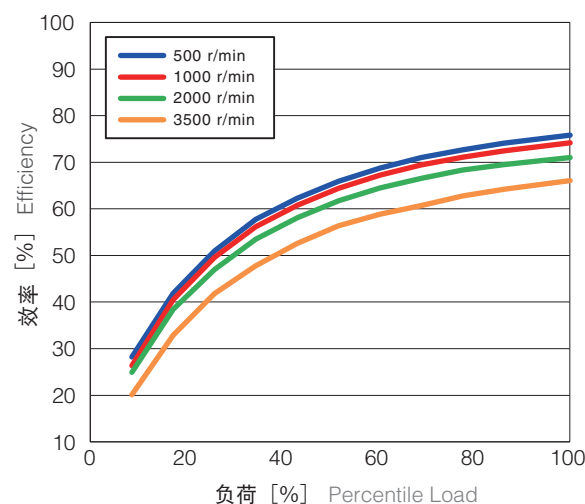
*1 These diagrams represent the average value of the actual measurement.

*2 Charts does not show effects due to rotation resistance of bearings and oil seals on the input side.

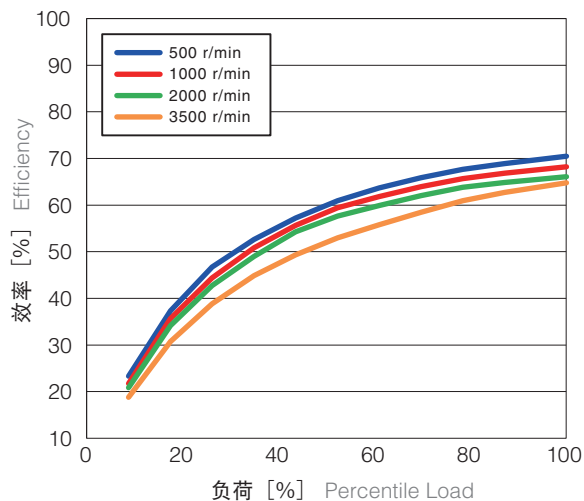
WPU-42-50



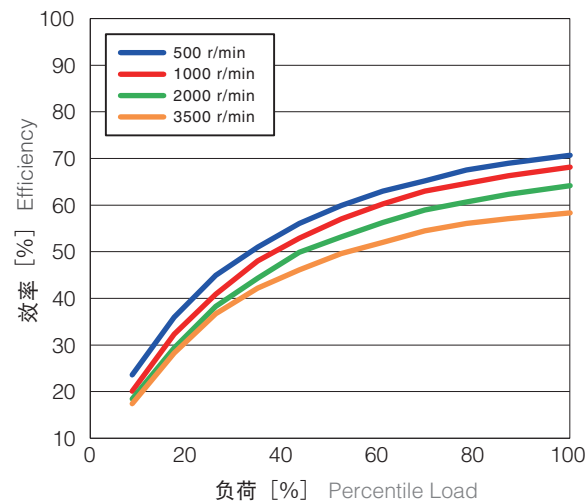
WPU-42-80



WPU-42-100



WPU-42-120



规格
Reducer Model / Specifications

尺寸表
Dimensions Table

寿命计算 (薄壁轴承)
Life estimation (Elastic bearing)

寿命计算 (主轴承)
Life estimation (Main bearing)

输入轴容许负荷 / 润滑油
Maximum load at input shaft / lubricant information

安装精度
Attachment fixture requirement

传力力矩
Transmitting Torque

输入部位构造 / 注意事项
Input section structure / Installation and assembly instructions

电机安装方法
Motor installation procedure

特性数据
Characteristics Data

特性数据 Characteristics Data

效率 (封闭型, 组合型)

Efficiency (Closed type, Unit)

负荷[%] : 负荷力矩/容许平均力矩

环境温度: 25°C

※1 图表为实测数据的平均值。

※2 不包括输入侧油封及球形轴承等的旋转阻力所带来的影响。

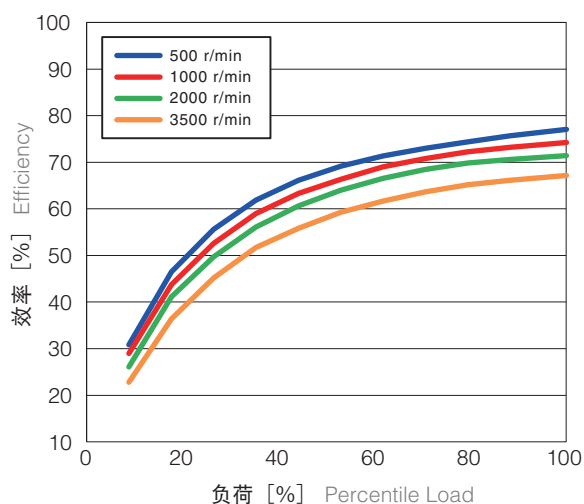
·Percentile Load (%) is equal to load torque divided by allowable average torque.

·Ambient temperature : 25°C

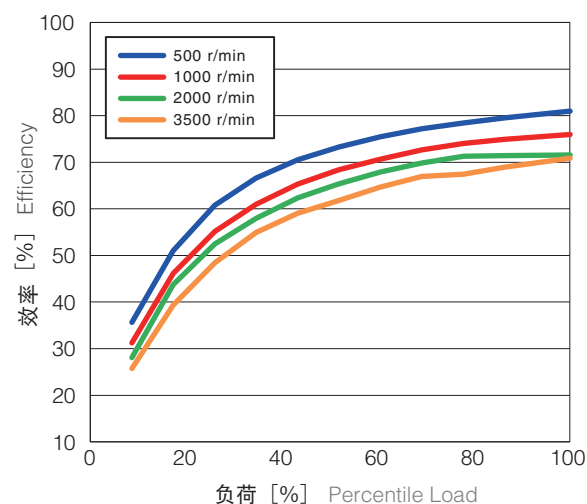
*1 These diagrams represent the average value of the actual measurement.

*2 Charts does not show effects due to rotation resistance of bearings and oil seals on the input side.

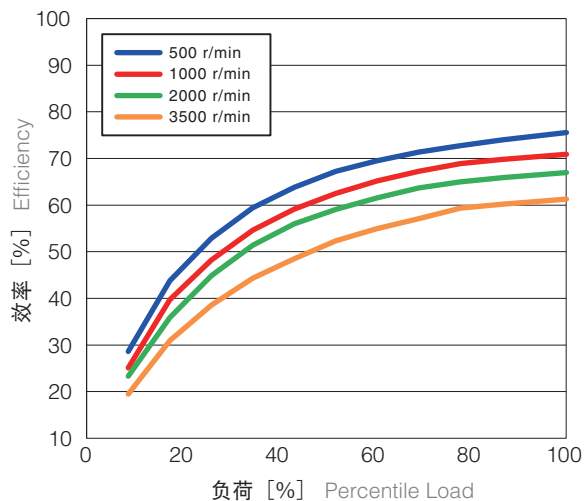
WPU-50-50



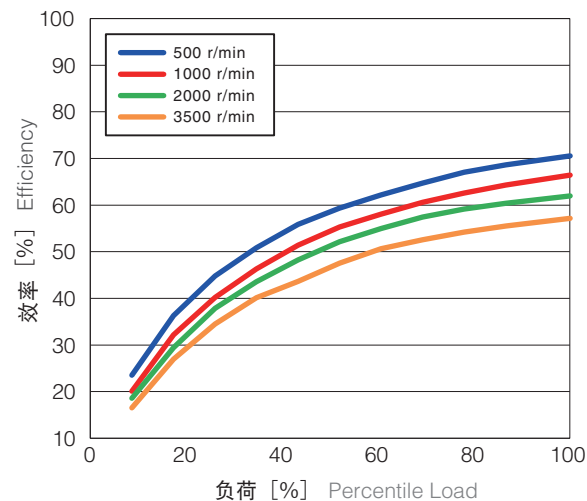
WPU-50-80



WPU-50-100



WPU-50-120



效率 (封闭型, 组合型)

Efficiency (Closed type, Unit)

负荷[%] : 负荷力矩/容许平均力矩
环境温度: 25°C

※1 图表为实测数据的平均值。

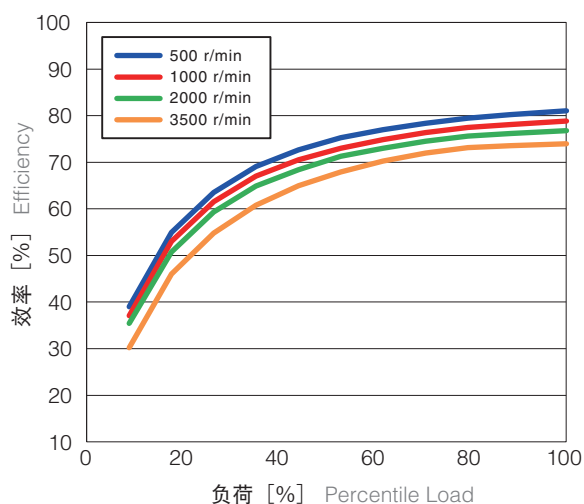
※2 不包括输入侧油封及球形轴承等的旋转阻力所带来的影响。

·Percentile Load (%) is equal to load torque divided by allowable average torque.
·Ambient temperature : 25°C

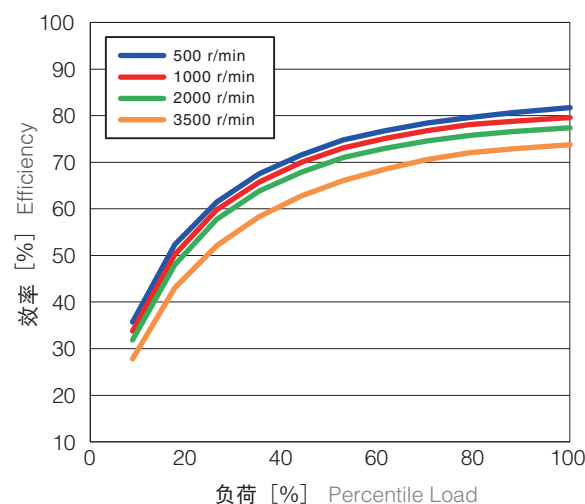
*1 These diagrams represent the average value of the actual measurement.

*2 Charts does not show effects due to rotation resistance of bearings and oil seals on the input side.

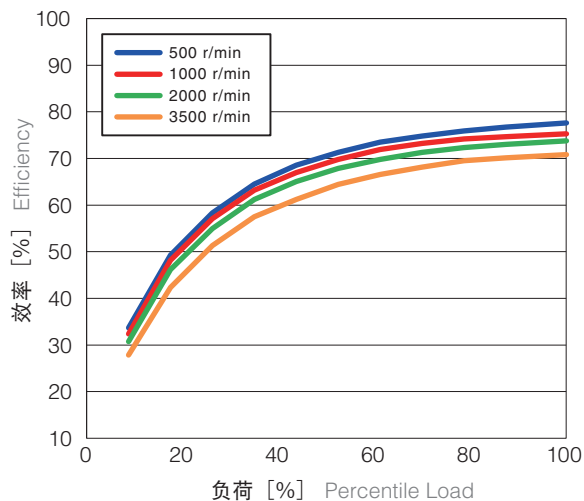
WPU-63-50



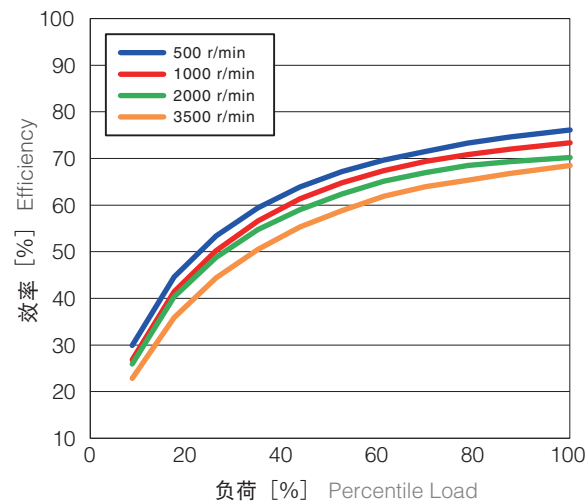
WPU-63-80



WPU-63-100



WPU-63-120



规格
Reducer Model / Specifications

尺寸表
Dimensions Table

寿命计算 (薄壁轴承)
Life estimation (Elastic bearing)

寿命计算 (主轴承)
Life estimation (Main bearing)

输入轴容许负荷 / 润滑油
Maximum load at input shaft / lubricant information

安装精度
Attachment fixture requirement

传力力矩
Transmitting Torque

输入部位构造 / 注意事项
Input section structure / assembly instructions

电机安装方法
Motor installation procedure

特性数据
Characteristics Data

特性数据 *Characteristics Data*

效率 (封闭型, 组合型)

Efficiency (Closed type, Unit)

负荷[%] : 负荷力矩/容许平均力矩

环境温度: 25°C

※1 图表为实测数据的平均值。

※2 不包括输入侧油封及球形轴承等的旋转阻力所带来的影响。

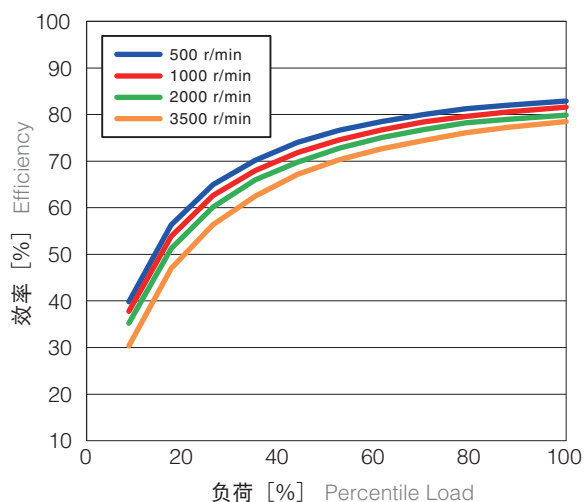
·Percentile Load (%) is equal to load torque divided by allowable average torque.

·Ambient temperature : 25°C

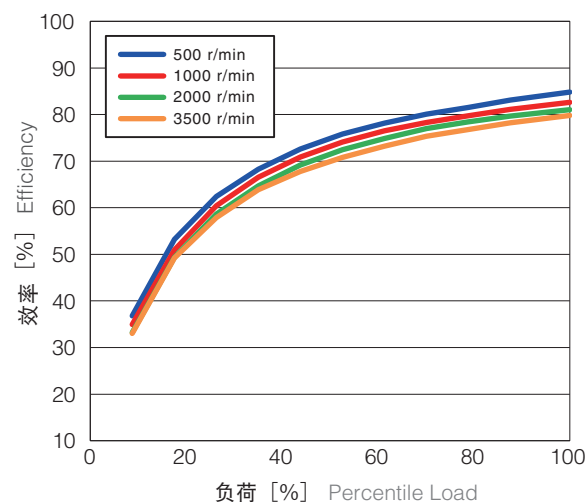
*1 These diagrams represent the average value of the actual measurement.

*2 Charts does not show effects due to rotation resistance of bearings and oil seals on the input side.

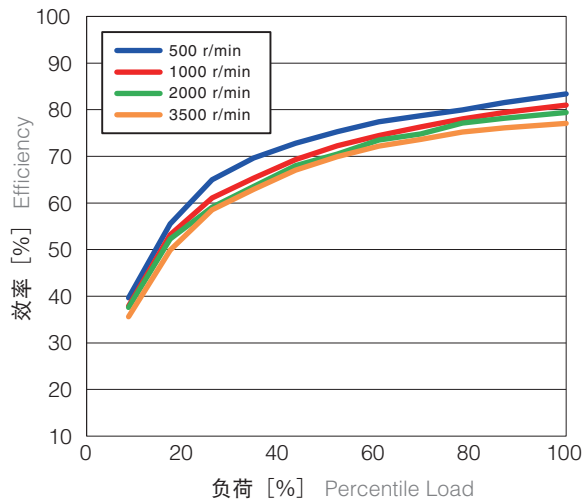
WPU-80-50



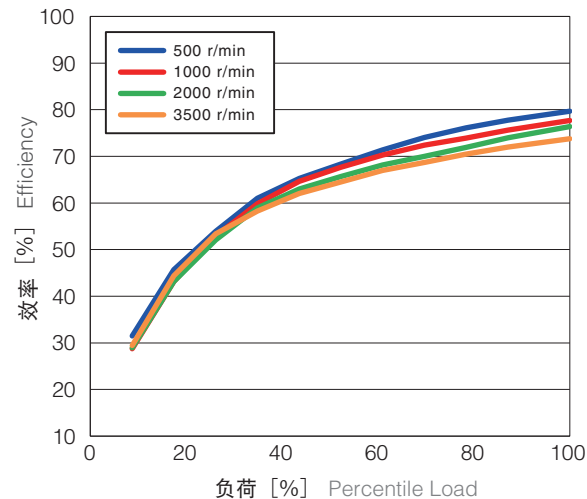
WPU-80-80



WPU-80-100

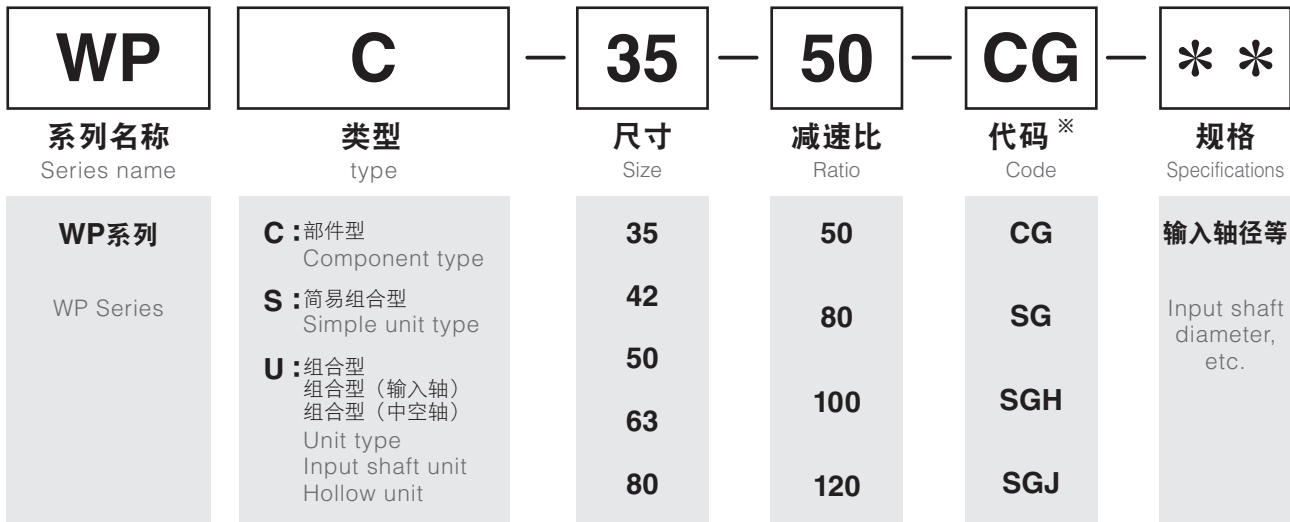


WPU-80-120



High torque type B 高力矩型B

减速机型号 Reducer Model Nomenclature



● 段位表 Availability

Ratio matrix

| | | | | | | |
|------------|----|-----|----|----|-----|-----|
| | | 减速比 | 50 | 80 | 100 | 120 |
| Frame size | 尺寸 | | | | | |
| | 35 | | | | | |
| | 42 | | | | | |
| | 50 | | | | | |
| | 63 | | | | | |
| 80 | | | | | | |

※代码详情请参照尺寸表。
For the code details, please check the Dimensions Table.

减速机规格 Reducer Specifications

| 尺寸 Size | 减速比 Ratio R ^{*1} | ※2 | ※3 | ※4 | ※5 | ※6 | ※7 |
|------------|---------------------------------|---|---|---|--|--|-------------------------|
| | | 容许平均力矩 Nominal output torque [Nm] | 容许最大力矩 Maximum output torque [Nm] | 紧急最大力矩 Emergency stop torque [Nm] | 容许平均输入转速 Nominal input speed [r/min] | 容许最高输入转速 Maximum input speed [r/min] | 寿命时间 Life [hours] |
| 35 | 50 | 7 | 23 | 46 | 3000 | 8500 | 10000 |
| | 80 | 10 | 30 | 61 | | | |
| | 100 | 10 | 36 | 70 | | | |
| 42 | 50 | 21 | 44 | 91 | 3000 | 7300 | |
| | 80 | 29 | 56 | 113 | | | |
| | 100 | 31 | 70 | 143 | | | |
| 50 | 120 | 31 | 70 | 112 | 3000 | 6500 | |
| | 50 | 33 | 73 | 127 | | | |
| | 80 | 44 | 96 | 165 | | | |
| | 100 | 52 | 107 | 191 | | | |
| 63 | 120 | 52 | 113 | 191 | 3000 | 5600 | |
| | 50 | 51 | 127 | 242 | | | |
| | 80 | 82 | 178 | 332 | | | |
| | 100 | 87 | 204 | 369 | | | |
| 80 | 120 | 87 | 217 | 395 | 3000 | 4800 | |
| | 50 | 99 | 281 | 497 | | | |
| | 80 | 153 | 395 | 738 | | | |
| | 100 | 178 | 433 | 841 | | | |
| | | 178 | 459 | 892 | | | |

※1 请将R值代入前页所述公式内，求得减速比
 ※2 输入转速为2000r/min时的容许最大值
 ※3 启动、停止时的容许最大值
 ※4 发生撞击时的容许最大值
 ※5 运转过程中，平均输入转速的容许最大值
 ※6 运转过程中，输入转速的容许最大值
 ※7 输入转速2000r/min，容许额定力矩负荷时的寿命时间

*1 Reduction ratio is to be calculated by the formula in the previous page, using R value in this table.
 *2 The maximum allowable value at the input rotation speed of 2000r/min
 *3 The maximum torque when starting and stopping.
 *4 The maximum torque when it receives shock.
 *5 The maximum average input speed.
 *6 The maximum input speed.
 *7 The life time at the input rotation speed of 2000 r/min and nominal output torque.

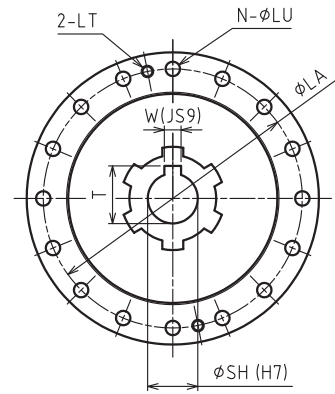
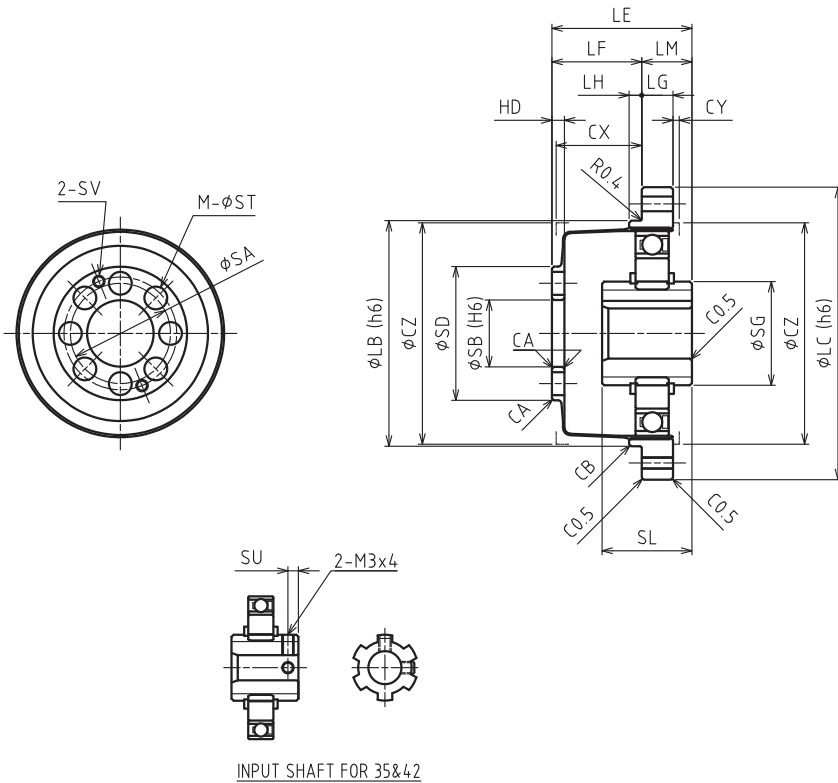
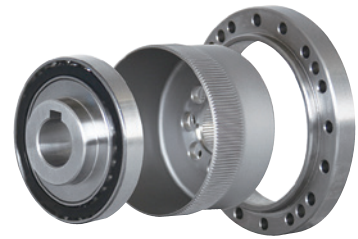
| | |
|--|--|
| 减速机型号 / Reducer Model / Specifications | 尺寸表 Dimensions Table |
| 寿命计算 (薄壁轴承) Life estimation (Elastic bearing) | 寿命计算 (主轴承) Life estimation (Main bearing) |
| 输入轴容许负荷 Maximum load at input shaft | 润滑油 Lubricant information |
| 安装精度 Attachment fixture requirement | 传导力矩 Transmitting Torque |
| 输入部位构造 Input section structure | 输入轴容许负荷 Maximum load at input shaft |
| 注意事项 Installation and assembly instructions | 寿命计算 (主轴承) Life estimation (Main bearing) |

尺寸表 Dimensions Table

封闭型 部件型

Closed Type, Component

WPC-□ - □ -CG



| 尺寸 Size | 重量 Weight | 惯性力矩 Moment of inertia |
|------------|--------------|-------------------------------|
| | kg | $\times 10^{-4} \text{kgm}^2$ |
| 35 | 0.10 | 0.0383 |
| 42 | 0.17 | 0.0855 |
| 50 | 0.26 | 0.207 |
| 63 | 0.43 | 0.544 |
| 80 | 0.91 | 1.63 |

INPUT SHAFT FOR 35&42

[mm]

| 尺寸 Size | LA | LB | LC | N | LU | LT | LE | LF | LG | LH | LM | SG | SH | SL | W |
|------------|-----|----|-----|----|-----|----|------|------|-----|-----|------|------|----|------|---|
| 35 | 44 | 38 | 50 | 8 | 3.5 | M3 | 28.5 | 17.5 | 6 | 2 | 11 | 15.8 | 6 | 18.5 | - |
| 42 | 54 | 48 | 60 | 16 | 3.5 | M3 | 32.5 | 20 | 6.5 | 2.5 | 12.5 | 15.8 | 8 | 20.7 | - |
| 50 | 62 | 54 | 70 | 16 | 3.5 | M3 | 33.5 | 21.5 | 7.5 | 3 | 12 | 24.8 | 12 | 21.5 | 4 |
| 63 | 75 | 67 | 85 | 16 | 4.5 | M4 | 37 | 24 | 10 | 3 | 13 | 27.8 | 14 | 21.6 | 5 |
| 80 | 100 | 90 | 110 | 16 | 5.5 | M5 | 44 | 28 | 14 | 3 | 16 | 27.8 | 14 | 23.6 | 5 |

| 尺寸 Size | T | SU | SA | SB | SD | M | ST | SV | HD | CA | CB | CX | CY | CZ |
|------------|------|-----|----|----|------|---|-----|----|-----|------|------|------|-----|----|
| 35 | - | 2.5 | 17 | 11 | 23.5 | 6 | 4.5 | M3 | 2.4 | C0.5 | C0.3 | 17 | 1 | 38 |
| 42 | - | 3 | 19 | 10 | 27 | 6 | 5.5 | M3 | 3 | C0.5 | C0.3 | 19 | 1 | 45 |
| 50 | 13.8 | - | 24 | 16 | 32 | 8 | 5.5 | M3 | 3 | C0.5 | C0.5 | 20.5 | 1.5 | 53 |
| 63 | 16.3 | - | 30 | 20 | 40 | 8 | 6.5 | M4 | 3 | C0.5 | C0.5 | 23 | 1.5 | 66 |
| 80 | 16.3 | - | 40 | 26 | 52 | 8 | 8.8 | M5 | 3.2 | C0.5 | C0.5 | 26.8 | 1.5 | 86 |

※1 关于输入部位详情，请参照单独尺寸图。

※2 CX、CY、CZ为护罩内壁建议尺寸。

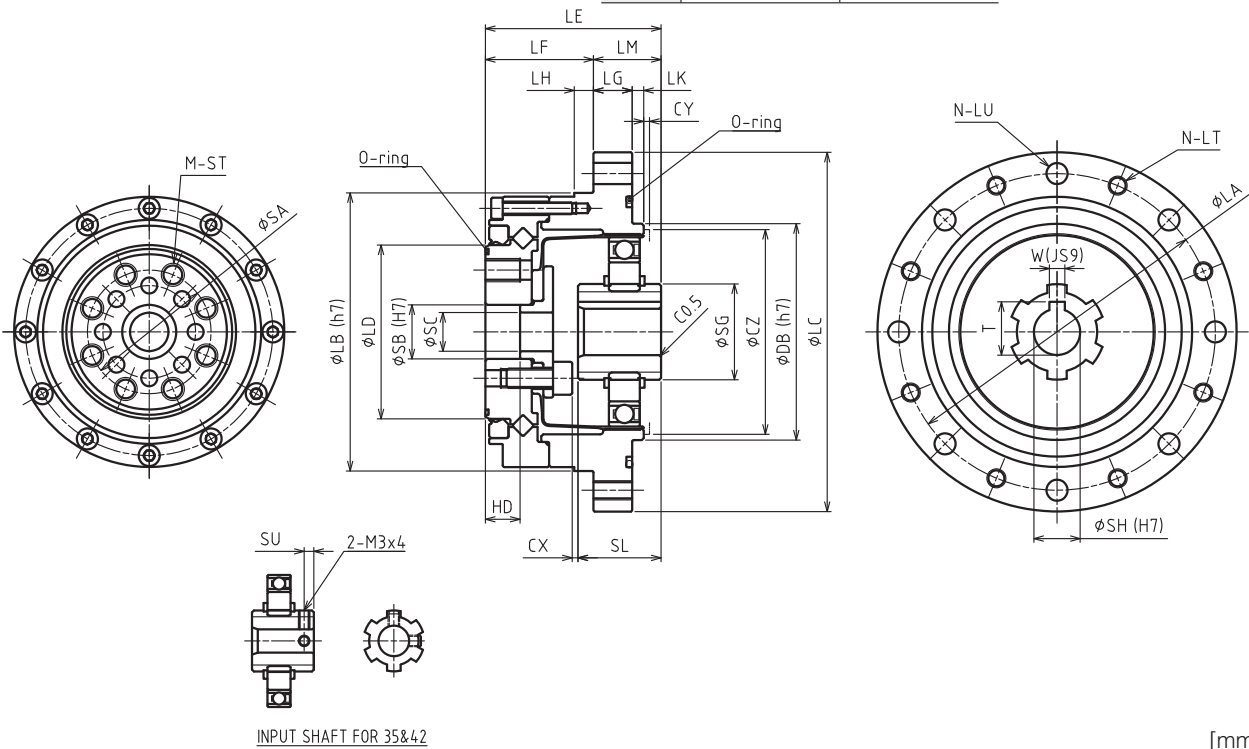
*1 For details in the input section, please check the drawings.

*2 Inner dimensions of CX, CY, CZ are recommended dimensions.

封闭型 组合型
Closed Type, Unit

WPU-□ - □ -CG

| 尺寸 Size | 重量 Weight | 惯性力矩 Moment of inertia |
|------------|--------------|------------------------------------|
| | kg | ×10 ⁻⁴ kgm ² |
| 35 | 0.50 | 0.0377 |
| 42 | 0.68 | 0.0856 |
| 50 | 0.95 | 0.207 |
| 63 | 1.5 | 0.544 |
| 80 | 3.3 | 1.63 |



INPUT SHAFT FOR 35&42

[mm]

| 尺寸 Size | LA | LB | LC | LD | N | LT | LU | LE | LF | LG | LH | LK | LM | DB | SG |
|------------|-----|-----|-----|----|----|----|-----|------|----|----|-----|----|------|----|------|
| 35 | 65 | 56 | 73 | 31 | 8 | M4 | 4.5 | 41 | 27 | 7 | 3.5 | 2 | 14 | 38 | 15.8 |
| 42 | 71 | 63 | 79 | 38 | 8 | M4 | 4.5 | 45 | 29 | 8 | 4 | 2 | 16 | 48 | 15.8 |
| 50 | 82 | 72 | 93 | 45 | 8 | M5 | 5.5 | 45.5 | 28 | 10 | 5 | 3 | 17.5 | 56 | 24.8 |
| 63 | 96 | 86 | 107 | 58 | 10 | M5 | 5.5 | 52 | 36 | 10 | 5 | 3 | 16 | 67 | 27.8 |
| 80 | 125 | 113 | 138 | 78 | 12 | M6 | 6.5 | 62 | 45 | 12 | 5 | 3 | 17 | 90 | 27.8 |

| 尺寸 Size | SH | SL | W | T | SU | SA | SB | SC | M | ST | HD | CX | CY | CZ |
|------------|----|------|---|------|-----|----|----|----|---|----------|-----|-----|-----|----|
| 35 | 6 | 18.5 | - | - | 2.5 | 23 | 11 | 8 | 6 | M4 × 8 | 9.5 | 1.6 | 1 | 38 |
| 42 | 8 | 20.7 | - | - | 3 | 27 | 10 | 7 | 6 | M5 × 8 | 9.5 | 1.3 | 1 | 45 |
| 50 | 12 | 21.5 | 4 | 13.8 | - | 32 | 14 | 10 | 8 | M6 × 9 | 9 | 1.5 | 1.5 | 53 |
| 63 | 14 | 21.6 | 5 | 16.3 | - | 42 | 20 | 15 | 8 | M8 × 10 | 12 | 3.4 | 1.5 | 66 |
| 80 | 14 | 23.6 | 5 | 16.3 | - | 55 | 26 | 20 | 8 | M10 × 12 | 15 | 5.2 | 1.5 | 86 |

※1 关于输入部位详情, 请参照单独尺寸图。
※2 CY、CZ为护罩内壁建议尺寸。

*1 For details in the input section, please check the drawings.
*2 Inner dimensions of CY, CZ are recommended dimensions.

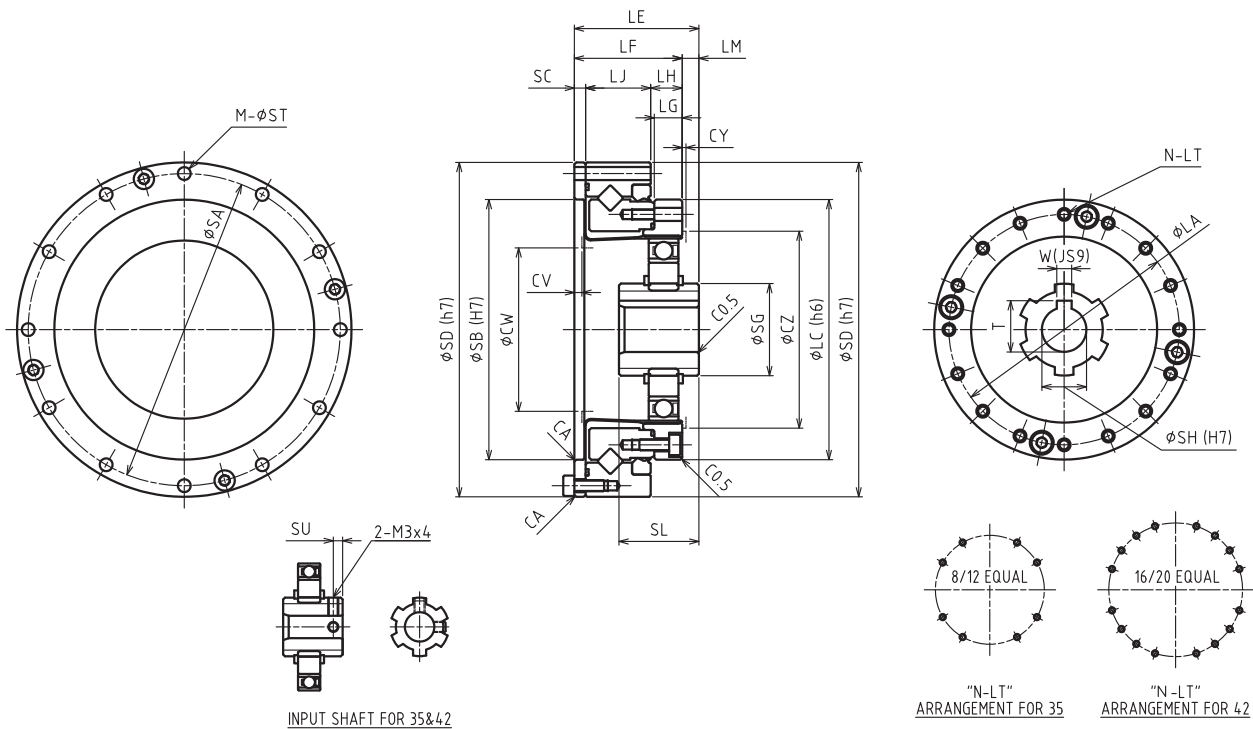
尺寸表 Dimensions Table

开放型 简易组合型

Open type, Simple unit

WPS-□-□-SG

| 尺寸 Size | 重量 Weight | 惯性力矩 Moment of inertia |
|------------|--------------|------------------------------------|
| | kg | ×10 ⁻⁴ kgm ² |
| 35 | 0.39 | 0.0391 |
| 42 | 0.55 | 0.0870 |
| 50 | 0.79 | 0.209 |
| 63 | 1.3 | 0.549 |
| 80 | 2.7 | 1.65 |



INPUT SHAFT FOR 35&42

"N-LT" ARRANGEMENT FOR 35 "N-LT" ARRANGEMENT FOR 42

[mm]

| 尺寸 Size | LA | LC | LE | LF | LG | LH | LJ | LM | SG | SH | SL | W | T | SU | SA | SB |
|------------|-----|-----|------|------|-----|-----|------|-----|------|----|------|---|------|-----|-----|-----|
| 35 | 44 | 50 | 28.5 | 23.5 | 6 | 7 | 14.1 | 5 | 15.8 | 6 | 18.5 | - | - | 2.5 | 64 | 48 |
| 42 | 54 | 60 | 32.5 | 26.5 | 6.5 | 7.5 | 16 | 6 | 15.8 | 8 | 20.7 | - | - | 3 | 74 | 60 |
| 50 | 62 | 70 | 33.5 | 29 | 7.5 | 8.5 | 17.5 | 4.5 | 24.8 | 12 | 21.5 | 4 | 13.8 | - | 84 | 70 |
| 63 | 77 | 85 | 37 | 34 | 10 | 12 | 18.7 | 3 | 27.8 | 14 | 21.6 | 5 | 16.3 | - | 102 | 88 |
| 80 | 100 | 110 | 44 | 42 | 14 | 15 | 23.4 | 2 | 27.8 | 14 | 23.6 | 5 | 16.3 | - | 132 | 114 |

| 尺寸 Size | SC | SD | M | ST | CA | CY | CZ | CV | CW | N | LT |
|------------|-----|-----|----|-----|------|-----|----|-----|----|----|---------------------|
| 35 | 2.4 | 70 | 8 | 3.5 | C0.3 | 1 | 38 | 1.6 | 31 | 8 | M3 × 5, φ 3.5 × 6 |
| 42 | 3 | 80 | 12 | 3.5 | C0.3 | 1 | 45 | 2 | 37 | 16 | M3 × 6, φ 3.5 × 6.5 |
| 50 | 3 | 90 | 12 | 3.5 | C0.3 | 1.5 | 53 | 2 | 44 | 16 | M3 × 6, φ 3.5 × 7.5 |
| 63 | 3.3 | 110 | 12 | 4.5 | C0.3 | 1.5 | 66 | 2 | 56 | 16 | M4 × 7, φ 4.5 × 10 |
| 80 | 3.6 | 142 | 12 | 5.5 | C0.5 | 1.5 | 86 | 2 | 72 | 16 | M5 × 8, φ 5.5 × 14 |

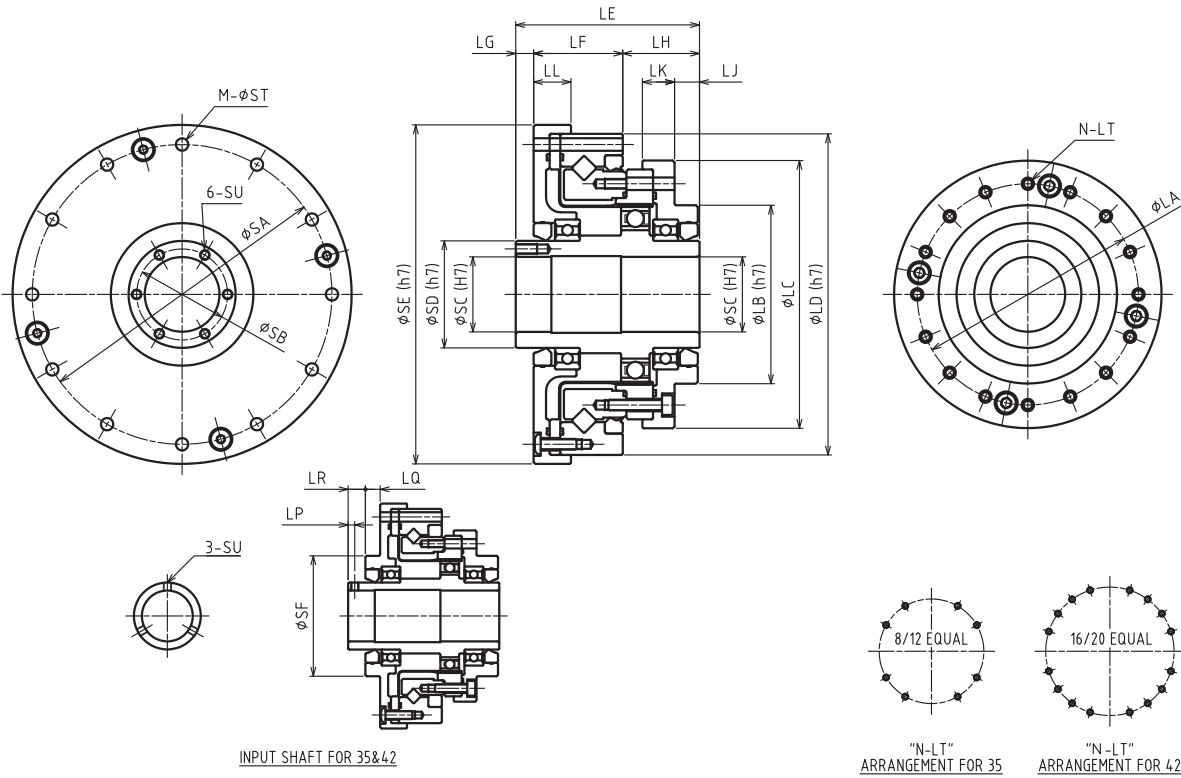
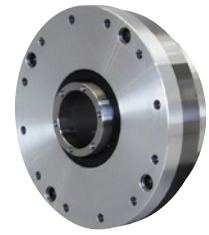
※1 关于输入部位详情，请参照单独尺寸图。
 ※2 CV、CW、CY、CZ为护罩内壁建议尺寸。

*1 For details in the input section, please check the drawings.
 *2 Inner dimensions of CV, CW, CY, CZ are recommended dimensions.

开放型 组合型 (中空轴)
Open type, Unit (hollow shaft)

WPU- □ - □ -SGH

| 尺寸 Size | 重量 Weight | 惯性力矩 Moment of inertia |
|------------|--------------|-------------------------------|
| | kg | $\times 10^{-4} \text{kgm}^2$ |
| 35 | 0.57 | 0.103 |
| 42 | 0.79 | 0.230 |
| 50 | 1.1 | 0.460 |
| 63 | 1.7 | 1.24 |
| 80 | 3.4 | 3.18 |



INPUT SHAFT FOR 35&42

"N-LT"
ARRANGEMENT FOR 35

"N-LT"
ARRANGEMENT FOR 42

[mm]

| 尺寸 Size | LA | LB | LC | LD | LE | LF | LG | LH | LJ | LK | LL | LP | LQ | LR |
|------------|-----|----|-----|-----|------|------|----|------|-----|-----|------|-----|-----|-----|
| 35 | 44 | 36 | 54 | 70 | 52.5 | 20.5 | 12 | 20 | 7.5 | 8 | 9 | 2.5 | 5.5 | 6.5 |
| 42 | 54 | 45 | 64 | 80 | 56.5 | 23 | 12 | 21.5 | 8.5 | 8.5 | 10 | 2.5 | 5.5 | 6.5 |
| 50 | 62 | 50 | 75 | 90 | 51.5 | 25 | 5 | 21.5 | 7 | 9 | 10.5 | - | - | - |
| 63 | 77 | 60 | 90 | 110 | 55.5 | 26 | 6 | 23.5 | 6 | 8.5 | 10.5 | - | - | - |
| 80 | 100 | 85 | 115 | 142 | 65.5 | 32 | 7 | 26.5 | 5 | 9.5 | 12 | - | - | - |

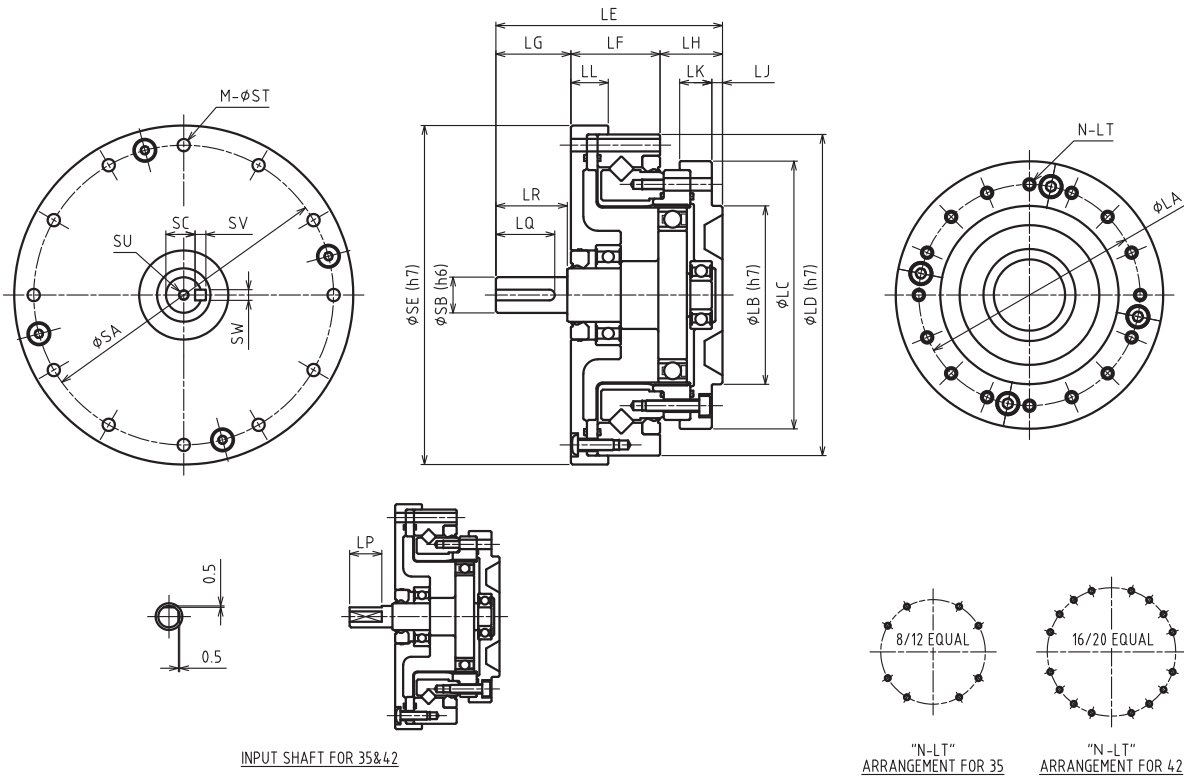
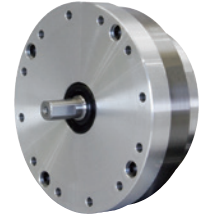
| 尺寸 Size | SA | SB | SC | SD | SE | SF | M | ST | SU | N | LT |
|------------|-----|------|----|----|-----|----|----|-----|--------|----|----------------------|
| 35 | 64 | - | 14 | 20 | 74 | 36 | 8 | 3.5 | M3 | 8 | M3 × 5, φ 3.5 × 11.5 |
| 42 | 74 | - | 19 | 25 | 84 | 45 | 12 | 3.5 | M3 | 16 | M3 × 6, φ 3.5 × 12 |
| 50 | 84 | 25.5 | 21 | 30 | 95 | - | 12 | 3.5 | M3 × 6 | 16 | M3 × 6, φ 3.5 × 13.5 |
| 63 | 102 | 33.5 | 29 | 38 | 115 | - | 12 | 4.5 | M3 × 6 | 16 | M4 × 7, φ 4.5 × 15.5 |
| 80 | 132 | 40.5 | 36 | 45 | 147 | - | 12 | 5.5 | M3 × 6 | 16 | M5 × 8, φ 5.5 × 20.5 |

尺寸表 *Dimensions Table*

开放型 组合型 (输入轴)
Open type, Unit (input shaft)

WPU- □ - □ -SGJ

| 尺寸 Size | 重量 Weight | 惯性力矩 Moment of inertia |
|------------|--------------|-------------------------------|
| | kg | $\times 10^{-4} \text{kgm}^2$ |
| 35 | 0.48 | 0.0376 |
| 42 | 0.69 | 0.0897 |
| 50 | 1.0 | 0.208 |
| 63 | 1.6 | 0.554 |
| 80 | 3.2 | 1.74 |



INPUT SHAFT FOR 35&42

"N-LT" ARRANGEMENT FOR 35

"N-LT" ARRANGEMENT FOR 42

[mm]

| 尺寸 Size | LA | LB | LC | LD | LE | LF | LG | LH | LJ | LK | LL | LP | LQ | LR |
|------------|-----|----|-----|-----|------|------|----|------|-----|-----|------|----|------|----|
| 35 | 44 | 36 | 54 | 70 | 50.5 | 20.5 | 15 | 15 | 2.5 | 8 | 9 | 11 | - | - |
| 42 | 54 | 45 | 64 | 80 | 56 | 23 | 17 | 16 | 3 | 8.5 | 10 | 12 | - | - |
| 50 | 62 | 50 | 75 | 90 | 63.5 | 25 | 21 | 17.5 | 3 | 9 | 10.5 | - | 16.5 | 20 |
| 63 | 77 | 60 | 90 | 110 | 72.5 | 26 | 26 | 20.5 | 3 | 8.5 | 10.5 | - | 22.5 | 25 |
| 80 | 100 | 85 | 115 | 142 | 84.5 | 32 | 26 | 26.5 | 5 | 9.5 | 12 | - | 22.5 | 25 |

| 尺寸 Size | SA | SB | SC | SE | SV | SW | M | ST | SU | N | LT |
|------------|-----|----|-----|-----|----|----|----|-----|--------|----|----------------------|
| 35 | 64 | 6 | - | 74 | - | - | 8 | 3.5 | - | 8 | M3 × 5, φ 3.5 × 11.5 |
| 42 | 74 | 8 | - | 84 | - | - | 12 | 3.5 | - | 16 | M3 × 6, φ 3.5 × 12 |
| 50 | 84 | 10 | 8.2 | 95 | 3 | 3 | 12 | 3.5 | M3 × 6 | 16 | M3 × 6, φ 3.5 × 13.5 |
| 63 | 102 | 14 | 11 | 115 | 5 | 5 | 12 | 4.5 | M3 × 6 | 16 | M4 × 7, φ 4.5 × 15.5 |
| 80 | 132 | 14 | 11 | 147 | 5 | 5 | 12 | 5.5 | M3 × 6 | 16 | M5 × 8, φ 5.5 × 20.5 |

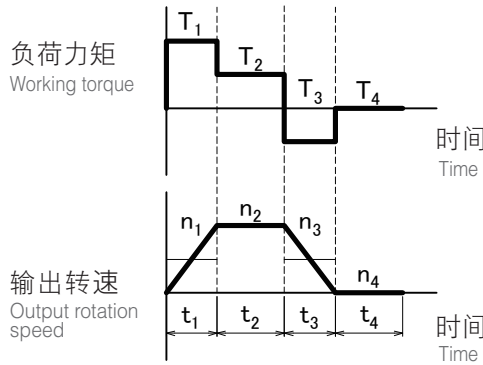
寿命计算（薄壁轴承） *Life estimation (Elastic bearing)*

薄壁轴承寿命计算

Life span for the elastic bearing

■ 运转类型

Operation cycle example



① 平均输出力矩 / 最大输出力矩的计算

Calculation formula for output torque

| | | | |
|------------------------------------|-----|----|---|
| 平均输出力矩 Average output torque | Tao | Nm | $Tao = \sqrt[3]{\frac{n_1 \cdot t_1 \cdot T_1 ^3 + n_2 \cdot t_2 \cdot T_2 ^3 + \dots + n_n \cdot t_n \cdot T_n ^3}{n_1 \cdot t_1 + n_2 \cdot t_2 + \dots + n_n \cdot t_n}}$ |
| 最大输出力矩 Peak output torque value | Tmo | Nm | Tmo = T ₁ , T ₂ , ... T _n 的最大值 Tmo = Largest among T ₁ , T ₂ , ... T _n |

请确认最大输出力矩为容许最大输出值以下

Please make sure the peak output torque is below the maximum output torque in the specification table

② 平均输入转速 / 最高输入转速的计算

Calculation formula for input speed

| | | | |
|---|-----|-------|---|
| 平均输出转速 Average output rotation speed | nao | r/min | $nao = \frac{n_1 \cdot t_1 + n_2 \cdot t_2 + \dots + n_n \cdot t_n}{t_1 + t_2 + \dots + t_n}$ |
| 最高输出转速 Peak output rotation speed | nmo | r/min | nmo = n ₁ , n ₂ , ... n _n 的最大值 nmo = Largest among n ₁ , n ₂ , ... n _n |
| 平均输入转速 Average input speed | nai | r/min | $nai = nao \times R$ (R = 减速比) (R = ratio) |
| 最高输入转速 Peak input speed value | nmi | r/min | $nmi = nmo \times R$ (R = 减速比) (R = ratio) |

请确认最高输入转速为容许最高输入转速值以下

Please make sure the peak input speed value is below the maximum input speed in the specification table

③ 寿命时间的计算

Calculation formula for life span

| | | | |
|--|-----|-------|---|
| 薄壁轴承寿命时间 Part life span for the elastic bearing | Lhe | h | $Lhe = 10000 \times \left(\frac{Tar}{Tao}\right)^3 \times \left(\frac{nar}{nai}\right)$ |
| 额定力矩 Rating torque | Tar | Nm | 性能表中所记容许平均力矩 Nominal output torque in the specification table |
| 额定输入转速 Rating input rotation speed | nar | r/min | 2000 r/min |

规格
Reducer Model /
Specifications

尺寸表
Dimensions Table

寿命计算
(薄壁轴承)
Life estimation
(Elastic bearing)

寿命计算
(主轴承)
Life estimation
(Main bearing)

输入轴容许负荷
Maximum load at
input shaft

润滑剂
Lubricant information

安装精度
Attachment fixture
requirement

传动力矩
Transmitting Torque

输入部位构造
Input section structure

注意事项
Installation and
assembly instructions

寿命计算 (主轴承) *Life estimation (Main bearing)*

主轴承规格 (交叉滚子轴承) Main bearing specification (Cross roller bearing)

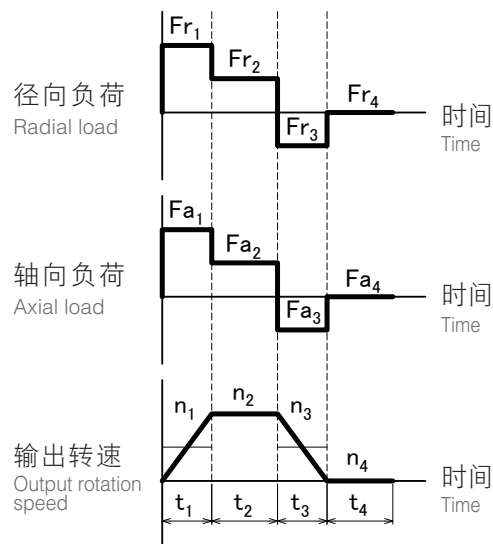
| 系列 Series | 尺寸 Size | 滚轴节圆直径 Pitch circle diameter of the bearing rollers | 偏移量 Offset | 基本动态额定负荷 Basic dynamic load rating | 基本静态额定负荷 Basic static load rating | 容许力矩 Allowable moment | 力矩刚性 Moment rigidity |
|--|------------|---|---------------|---------------------------------------|--------------------------------------|--------------------------|------------------------------|
| | | Dm | L | C | Co | Mal | Km |
| | | m | m | N | N | Nm | $\times 10^4 \text{ Nm/rad}$ |
| WPU-□-□-CG | 35 | 0.0335 | 0.0088 | 5620 | 6540 | 36.5 | 7.35 |
| | 42 | 0.0410 | 0.0098 | 6340 | 8170 | 55.8 | 8.02 |
| | 50 | 0.0485 | 0.0098 | 10400 | 13300 | 91.0 | 13.5 |
| | 63 | 0.0620 | 0.0108 | 15800 | 21100 | 156 | 27.7 |
| | 80 | 0.0815 | 0.0128 | 24400 | 35600 | 313 | 66.0 |
| WPS-□-□-SG | 35 | 0.0505 | 0.0162 | 7110 | 10200 | 74.0 | 14.4 |
| | 42 | 0.0598 | 0.0180 | 10900 | 15200 | 124 | 19.7 |
| | 50 | 0.0708 | 0.0194 | 17200 | 24700 | 187 | 40.1 |
| | 63 | 0.0856 | 0.0234 | 25100 | 37400 | 258 | 71.5 |
| | 80 | 0.114 | 0.0292 | 43300 | 67600 | 580 | 188 |
| WPU-□-□-SGH WPU-□-□-SGJ | 35 | 0.0505 | 0.0217 | 7110 | 10200 | 74.0 | 14.4 |
| | 42 | 0.0598 | 0.0235 | 10900 | 15200 | 124 | 19.7 |
| | 50 | 0.0708 | 0.0254 | 17200 | 24700 | 187 | 40.1 |
| | 63 | 0.0856 | 0.0289 | 25100 | 37400 | 258 | 71.5 |
| | 80 | 0.114 | 0.0357 | 43300 | 67600 | 580 | 188 |

主轴承寿命计算

Life span for the main bearing

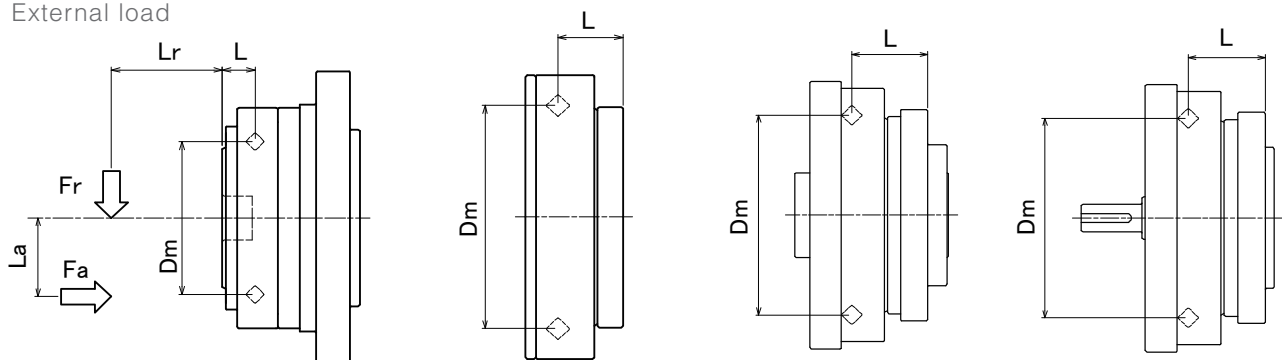
运转类型

Operation cycle example



外部负荷

External load



①最大负荷惯量的计算

Calculation formula for the largest working moment

| | | | |
|-------------------------------|-----|----|---|
| 最大负荷惯量 Peak working moment | Mm | Nm | $Mm = Frm \cdot (Lr + L) + Fam \cdot La$ |
| 最大径向负荷 Peak radial load | Frm | N | $Frm = Fr_1, Fr_2 \dots Fr_n$ 的最大值 Frm = Largest among $Fr_1, Fr_2, \dots Fr_n$ |
| 最大轴向负荷 Peak axial load | Fam | N | $Fam = Fa_1, Fa_2, \dots Fa_n$ 的最大值 Fam = Largest among $Fa_1, Fa_2, \dots Fa_n$ |

请确认最大负荷惯量为容许惯量值以下

Please make sure the peak working moment is below the maximum allowable moment

②平均径向负荷/ 轴向负荷/ 平均输出转速/ 平均负荷惯量的计算

Calculation formula for the Average radial load, Axial load, Average output rotation speed, Average working moment

| | | | |
|---|-----|-------|---|
| 平均径向负荷 Average radial load | Fra | N | $Fra = \frac{10}{3} \sqrt{\frac{n_1 \cdot t_1 \cdot Fr_1 ^{10/3} + n_2 \cdot t_2 \cdot Fr_2 ^{10/3} + \dots + n_n \cdot t_n \cdot Fr_n ^{10/3}}{n_1 \cdot t_1 + n_2 \cdot t_2 + \dots + n_n \cdot t_n}}$ |
| 平均轴向负荷 Axial load | Faa | N | $Faa = \frac{10}{3} \sqrt{\frac{n_1 \cdot t_1 \cdot Fa_1 ^{10/3} + n_2 \cdot t_2 \cdot Fa_2 ^{10/3} + \dots + n_n \cdot t_n \cdot Fa_n ^{10/3}}{n_1 \cdot t_1 + n_2 \cdot t_2 + \dots + n_n \cdot t_n}}$ |
| 平均输出转速 Average output rotation speed | nao | r/min | $nao = \frac{n_1 \cdot t_1 + n_2 \cdot t_2 \dots n_n \cdot t_n}{t_1 + t_2 + \dots + t_n}$ |
| 平均负荷惯量 Average working moment | Ma | Nm | $Ma = Fra \cdot (Lr + L) + Faa \cdot La$ |

③负荷系数/ 动态等价径向负荷的计算

Calculation formula for the Loading factor, Equivalent radial load

| | | | |
|------------------------------------|--------|---|--|
| 负荷系数 Loading factor | Xc, Yc | - | $\frac{Faa}{Fra + 2Ma / Dm} \leq 1.5$ 时, $Xc = 1.0, Yc = 0.45$ |
| | | | $\frac{Faa}{Fra + 2Ma / Dm} > 1.5$ 时, $Xc = 0.67, Yc = 0.67$ |
| 动态等价径向负荷 Equivalent radial load | Pc | N | $Pc = Xc \cdot (Fra + 2Ma/Dm) + Yc \cdot Faa$ |

④主轴承寿命时间的计算

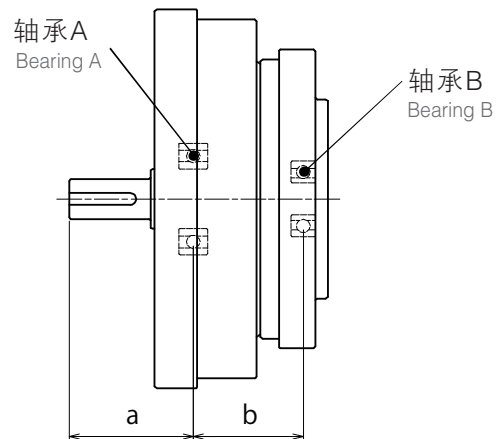
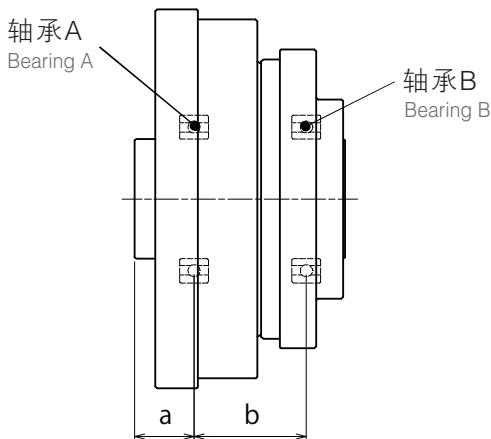
Life span for the main bearing

| | | | |
|---|-----|---|---|
| 主轴承寿命时间 Life span for the main bearing | Lhc | h | $Lhc = \frac{10^6}{60 \cdot nao} \cdot \left(\frac{C}{fw \cdot Pc} \right)^{\frac{10}{3}}$ |
| 冲击系数 Impact factor | f w | - | 1.0 : 未伴随冲击时 no shock |
| | | | 1.2 : 伴随些许冲击时 with some shock |
| | | | 1.5 : 伴随振动冲击时 with shock and vibration |

输入轴容许负荷 *Maximum load at input shaft*

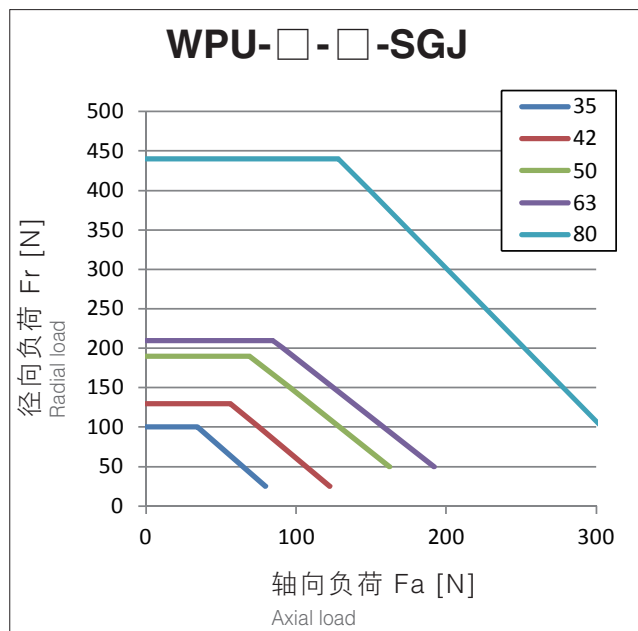
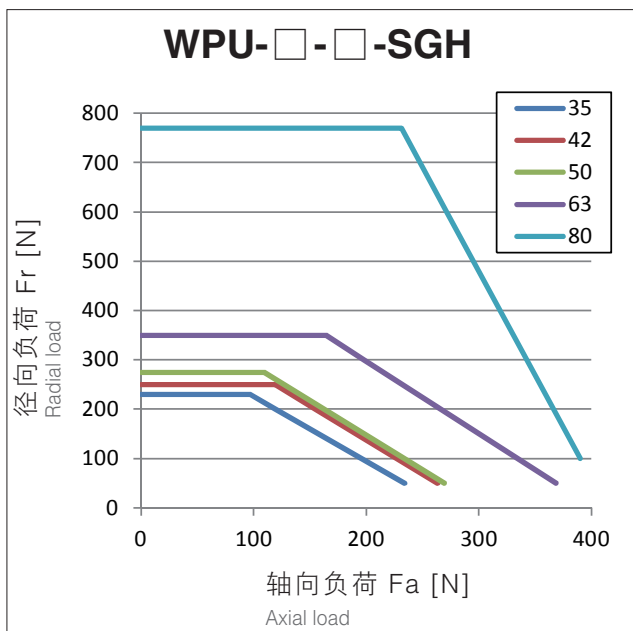
■ 轴承规格（开放型，组合型） Bearing specification (Open type, Unit)

| 系列 Series | 尺寸 Size | 轴承 A Bearing A | | 轴承 B Bearing B | | a | b |
|--------------------|------------|---------------------------------------|--------------------------------------|---------------------------------------|--------------------------------------|------|------|
| | | 基本动态额定负荷 Basic dynamic load rating | 基本静态额定负荷 Basic static load rating | 基本动态额定负荷 Basic dynamic load rating | 基本静态额定负荷 Basic static load rating | | |
| | | C | Co | C | Co | | |
| | | N | N | N | N | | |
| | | | | | | mm | mm |
| WPU-□-□-SGH | 35 | 4000 | 2470 | 4000 | 2470 | 16 | 27 |
| | 42 | 4300 | 2950 | 4300 | 2950 | 16 | 31 |
| | 50 | 4500 | 3450 | 4500 | 3450 | 14.5 | 27.5 |
| | 63 | 4900 | 4350 | 4900 | 4350 | 15.5 | 30.8 |
| | 80 | 14100 | 10900 | 5350 | 5250 | 19 | 37.0 |
| WPU-□-□-SGJ | 35 | 2240 | 910 | 1080 | 430 | 24 | 21.5 |
| | 42 | 2700 | 1270 | 1610 | 710 | 27 | 23.5 |
| | 50 | 4350 | 2260 | 2240 | 910 | 31.5 | 26 |
| | 63 | 5600 | 2830 | 2700 | 1270 | 37.5 | 29 |
| | 80 | 9400 | 5000 | 4350 | 2260 | 39 | 38.5 |



■ 容许负荷（平均输入转速：2000r/min、寿命时间：10000h）

Maximum load (Average input rotation speed : 2000r/min, Life span : 10000h)



润滑剂 *lubricant information*

润滑剂的使用

Grease

Sumiplex SFB No.1 (日本住矿润滑剂株式会社) Sumiplex SFB No.1 (SUMICO LUBRICANT CO., LTD.)

使用温度范围: 0 ~ 40°C (环境温度) Operating temperature range: 0-40°C (ambient temperature)

润滑剂的涂抹

Grease application

按照以下要求在减速机各部位涂抹润滑剂。 Please apply grease according to the table below.

■ 润滑剂涂抹量 Grease application

·根据减速机的安装方向(输出侧为横向、向上、向下)不同, 变更涂抹部位C的涂抹量。
(已封入润滑油的组合类型, 填充了C(横向)的润滑油量。)

·输入ASSY~护罩内壁空间的50%的润滑剂。

·由于护罩设计造成润滑剂不足时, 请咨询本公司。

[g]

·The quantity of grease applied to C should be adjusted depending on the mounting direction. C of the unit type product is already filled with the same quantity of grease as horizontal mounting.

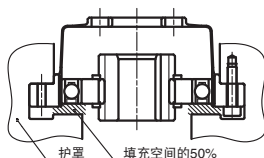
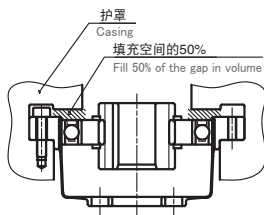
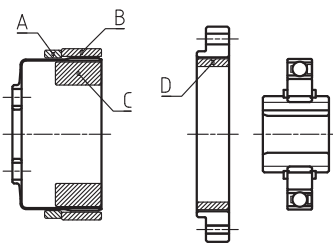
·50% of the space between input assy and casing should be filled with grease.

·If the amount of grease is not sufficient due to case design, please contact us.

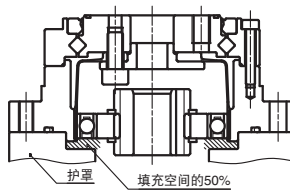
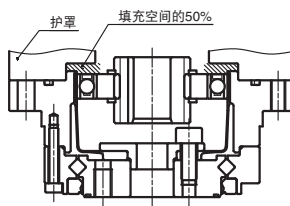
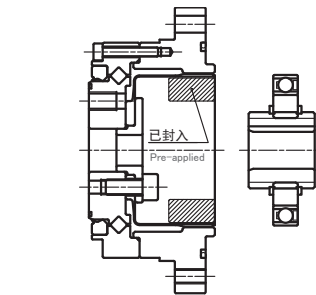
| 尺寸 Size | 涂抹部位 Applied part | | | | | |
|------------|-------------------|-----|-------------------------|--------------------------|----------------------------|-----|
| | A | B | C (横向) Horizontal | C (向上) Vertical up | C (向下) Vertical down | D |
| 35 | 0.3 | 0.3 | 6 | 8 | 9 | 0.3 |
| 42 | 0.5 | 0.5 | 10 | 12 | 14 | 0.5 |
| 50 | 0.8 | 0.8 | 16 | 18 | 21 | 0.8 |
| 63 | 1.5 | 1.5 | 30 | 35 | 40 | 1.5 |
| 80 | 3.0 | 3.0 | 60 | 70 | 80 | 3.0 |

■ 润滑剂涂抹部位 Grease application location

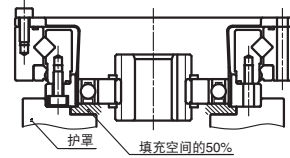
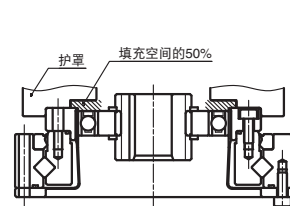
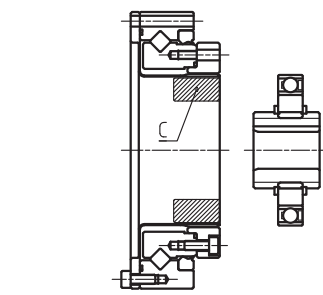
WPC-□-□-CG



WPU-□-□-CG



WPS-□-□-SG



规格
Reducer Model /
Specifications

尺寸表
Dimensions Table

寿命计算
(薄壁轴承)
Life estimation
(Elastic bearing)

寿命计算
(主轴承)
Life estimation
(Main bearing)

输入轴容许负荷
Maximum load at
input shaft

润滑剂
Lubricant information

安装精度
Attachment fixture
requirement

传导力矩
Transmitting Torque

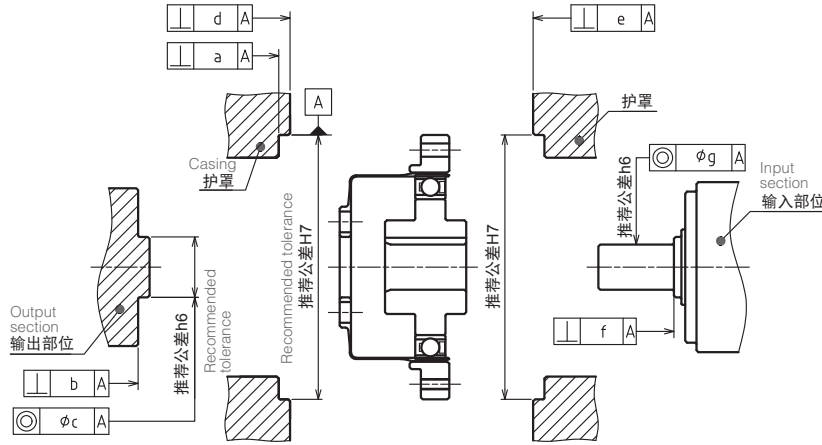
输入部位构造
Input section structure

注意事项
Installation and
assembly instructions

安装精度 Attachment fixture requirement

■ 安装精度 Attachment fixture requirement

WPC-□-□-CG

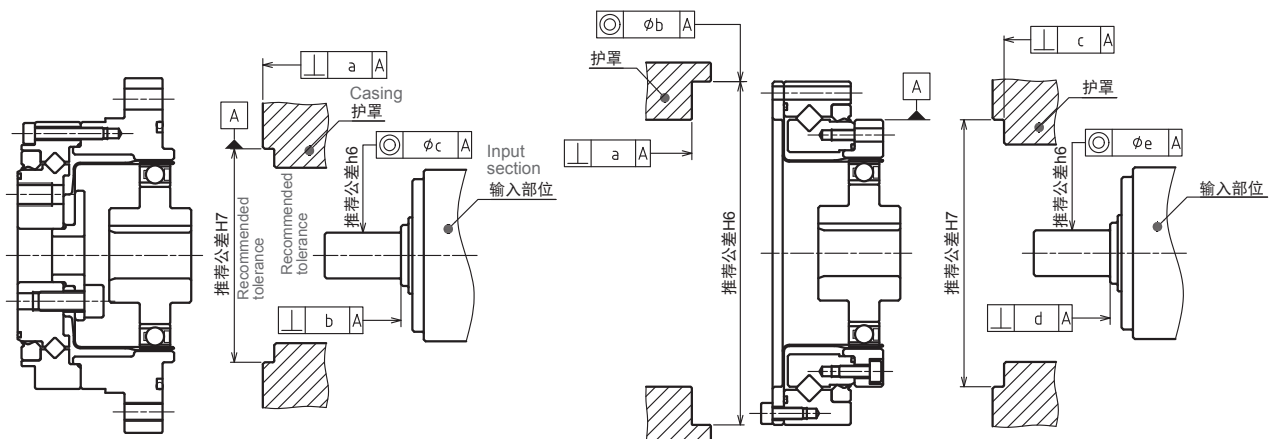


安装精度 [mm]

| 尺寸 Size | 35 | 42 | 50 | 63 | 80 |
|---------|-------|-------|-------|-------|-------|
| a | 0.015 | 0.015 | 0.018 | 0.018 | 0.023 |
| b | 0.010 | 0.012 | 0.014 | 0.016 | 0.020 |
| c | 0.013 | 0.013 | 0.015 | 0.018 | 0.020 |
| d | 0.015 | 0.015 | 0.018 | 0.018 | 0.023 |
| e | 0.015 | 0.015 | 0.018 | 0.018 | 0.023 |
| f | 0.012 | 0.012 | 0.014 | 0.016 | 0.016 |
| g | 0.016 | 0.020 | 0.024 | 0.024 | 0.024 |

WPU-□-□-CG

WPS-□-□-SG



安装精度 [mm]

| 尺寸 Size | 35 | 42 | 50 | 63 | 80 |
|---------|-------|-------|-------|-------|-------|
| a | 0.020 | 0.020 | 0.020 | 0.025 | 0.025 |
| b | 0.012 | 0.012 | 0.014 | 0.016 | 0.016 |
| c | 0.016 | 0.020 | 0.024 | 0.024 | 0.024 |

安装精度 [mm]

| 尺寸 Size | 35 | 42 | 50 | 63 | 80 |
|---------|-------|-------|-------|-------|-------|
| a | 0.025 | 0.025 | 0.025 | 0.030 | 0.030 |
| b | 0.020 | 0.020 | 0.020 | 0.025 | 0.025 |
| c | 0.020 | 0.020 | 0.020 | 0.025 | 0.025 |
| d | 0.012 | 0.012 | 0.014 | 0.016 | 0.016 |
| e | 0.016 | 0.020 | 0.024 | 0.024 | 0.024 |

传导力矩 *Transmitting Torque*

安装螺丝

Bolting

螺丝紧固力矩如下表所示。

通过螺丝个数及紧固力矩调整，可传导力矩存在差异，所以请注意确认。

Please refer to the table below for the bolt tightening torque.

Please be noted that the transmittable torque varies depending on the bolt count (different between CF and CN) and tightening torque.

螺丝紧固力矩

Tightening torque for bolts

| | | | | | | | |
|-----------|-------------------|-----|-----|-----|----|----|-----|
| 螺丝尺寸 | Bolt size | M3 | M4 | M5 | M6 | M8 | M10 |
| 紧固力矩 [Nm] | Tightening torque | 1.9 | 4.3 | 8.7 | 15 | 36 | 71 |

建议螺丝：强度区分12.9以上

Recommended bolt :
Strength rating above 12.9

传导力矩 (封闭型、组合型)

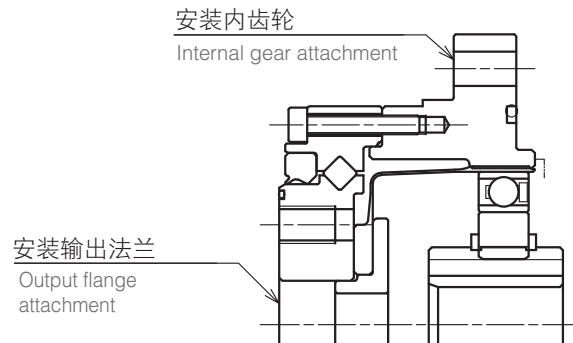
Bolt specifications and Transmitting torque (Closed type, Unit)

安装输出法兰 Output flange attachment

| | | | | | | |
|------------|---------------------|-----|-----|-----|-----|------|
| 尺寸 | Size | 35 | 42 | 50 | 63 | 80 |
| 螺丝尺寸 | Bolt size | M4 | M5 | M6 | M8 | M10 |
| 螺丝个数 | Bolt count | 6 | 6 | 8 | 8 | 8 |
| 安装PCD [mm] | Bolt PCD | 23 | 27 | 32 | 42 | 55 |
| 紧固力矩 [Nm] | Tightening torque | 4.3 | 8.7 | 15 | 36 | 71 |
| 传导力矩 [Nm] | Transmitting torque | 56 | 106 | 238 | 566 | 1177 |

安装内齿轮 (CG) Internal gear attachment

| | | | | | | |
|------------|---------------------|-----|-----|-----|-----|------|
| 尺寸 | Size | 35 | 42 | 50 | 63 | 80 |
| 螺丝尺寸 | Bolt size | M4 | M4 | M5 | M5 | M6 |
| 螺丝个数 | Bolt count | 8 | 8 | 8 | 10 | 12 |
| 安装PCD [mm] | Bolt PCD | 65 | 71 | 82 | 96 | 125 |
| 紧固力矩 [Nm] | Tightening torque | 4.3 | 4.3 | 8.7 | 8.7 | 15 |
| 传导力矩 [Nm] | Transmitting torque | 210 | 230 | 430 | 629 | 1392 |



规格
Reducer Model /
Specifications

尺寸表
Dimensions Table

寿命计算 (薄壁轴承)
Life estimation
(Elastic bearing)

寿命计算 (主轴承)
Life estimation
(Main bearing)

输入轴容许负荷
Maximum load at
input shaft

润滑剂
Lubricant information

安装精度
Attachment fixture
requirement

传导力矩
Transmitting Torque

输入部位构造
Input section structure

注意事项
Installation and
assembly instructions

传导力矩 *Transmitting Torque*

传导力矩 (封闭型、部件型)

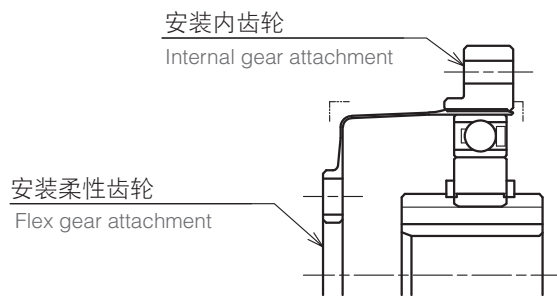
Bolt specifications and Transmitting torque (Closed type, Component)

安装柔性齿轮 Flex Gear Attachment

| 尺寸 | Size | 35 | 42 | 50 | 63 | 80 |
|------------|---------------------|-----|-----|-----|-----|-----|
| 螺丝尺寸 | Bolt size | M4 | M5 | M5 | M6 | M8 |
| 螺丝个数 | Bolt count | 6 | 6 | 8 | 8 | 8 |
| 安装PCD [mm] | Bolt PCD | 17 | 19 | 24 | 30 | 40 |
| 紧固力矩 [Nm] | Tightening torque | 4.3 | 8.7 | 8.7 | 15 | 36 |
| 传导力矩 [Nm] | Transmitting torque | 41 | 75 | 126 | 223 | 539 |

安装内齿轮 (CG) Internal Gear Attachment

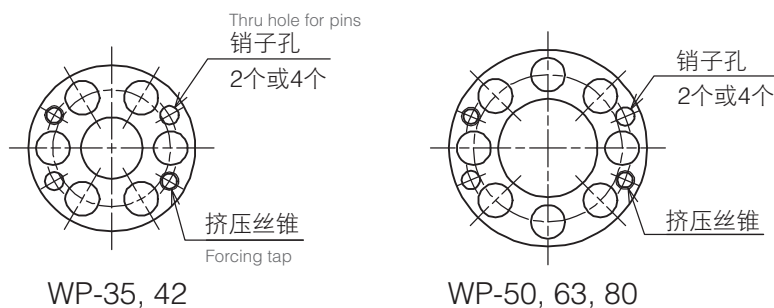
| 尺寸 | Size | 35 | 42 | 50 | 63 | 80 |
|------------|---------------------|-----|-----|-----|-----|------|
| 螺丝尺寸 | Bolt size | M3 | M3 | M3 | M4 | M5 |
| 螺丝个数 | Bolt count | 8 | 16 | 16 | 16 | 16 |
| 安装PCD [mm] | Bolt PCD | 44 | 54 | 62 | 75 | 100 |
| 紧固力矩 [Nm] | Tightening torque | 1.9 | 1.9 | 1.9 | 4.3 | 8.7 |
| 传导力矩 [Nm] | Transmitting torque | 82 | 200 | 230 | 485 | 1048 |



◆销子孔的追加 Reinforcement

柔性齿轮安装的传导力矩未满足要求时，请同时使用销子。
销子孔可根据需求追加。

Pins can be added if the transmittable torque at the flex gear interface is not sufficient.
As an option, holes can be added.



传力矩 (开放型)

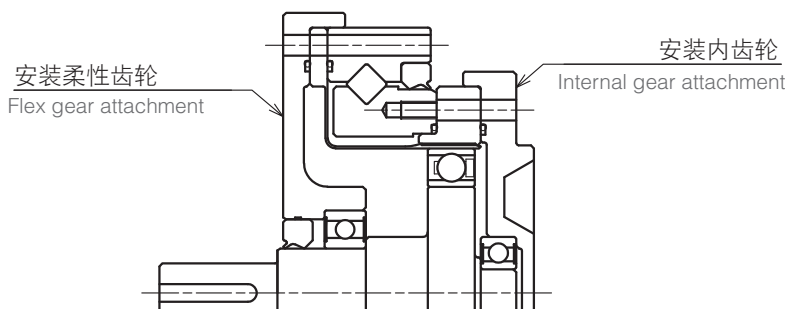
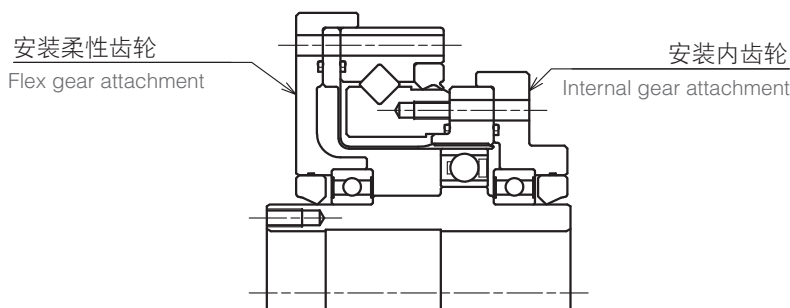
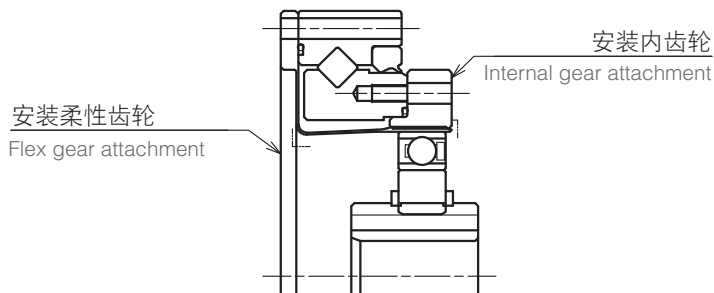
Bolt specifications and Transmitting torque (Open type)

安装柔性齿轮 Flex Gear Attachment

| 尺寸 | Size | 35 | 42 | 50 | 63 | 80 |
|------------|---------------------|-----|-----|-----|-----|------|
| 螺丝尺寸 | Bolt size | M3 | M3 | M3 | M4 | M5 |
| 螺丝个数 | Bolt count | 8 | 12 | 12 | 12 | 12 |
| 安装PCD [mm] | Bolt PCD | 64 | 74 | 84 | 102 | 132 |
| 紧固力矩 [Nm] | Tightening torque | 1.9 | 1.9 | 1.9 | 4.3 | 8.7 |
| 传力矩 [Nm] | Transmitting torque | 119 | 206 | 234 | 495 | 1037 |

安装内齿轮 Internal Gear Attachment

| 尺寸 | Size | 35 | 42 | 50 | 63 | 80 |
|------------|---------------------|-----|-----|-----|-----|------|
| 螺丝尺寸 | Bolt size | M3 | M3 | M3 | M4 | M5 |
| 螺丝个数 | Bolt count | 8 | 16 | 16 | 16 | 16 |
| 安装PCD [mm] | Bolt PCD | 44 | 54 | 62 | 77 | 100 |
| 紧固力矩 [Nm] | Tightening torque | 1.9 | 1.9 | 1.9 | 4.3 | 8.7 |
| 传力矩 [Nm] | Transmitting torque | 82 | 200 | 230 | 498 | 1048 |



输入部位构造 *Input section structure*

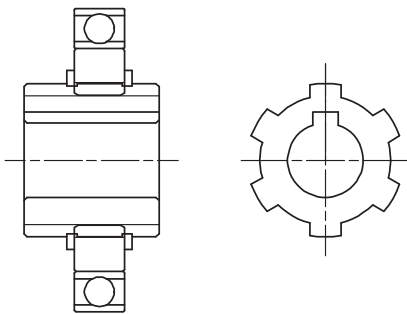
输入部位构造

Input section structure

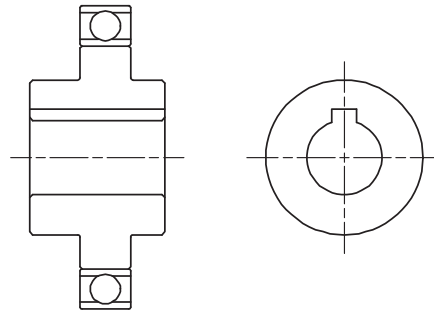
输入部位构造分为花键型（自动调心构造）与刚构型，因输入孔径等差异而不同。详细信息请确认尺寸图。

There are two types of input section structure, spline type (self-centering feature) and rigid type.

■ 花键型（自动调心构造）
Spline type (self-centering)



■ 刚构型
Rigid type

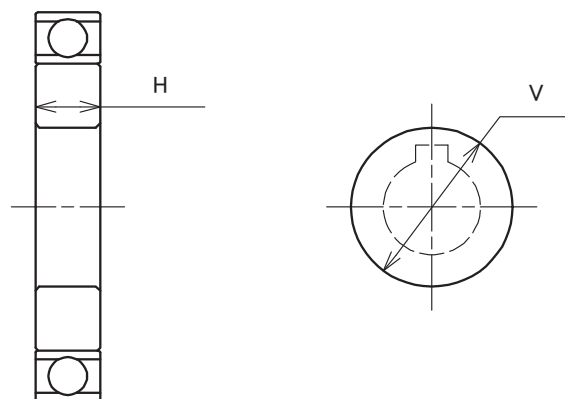


凸轮孔径尺寸

Cam hole diameter

凸轮孔径尺寸可变更。若在下表标准孔径尺寸以下时，则为花键型，在标准孔径~最大孔径范围，则为刚构型。若需下表范围以外尺寸，请另行咨询我公司。

The diameter of the cam opening is customizable. Holes smaller than the 'standard hole size' in the table will be built in the spline type. Holes equal to or larger than the 'standard hole size' and smaller than the 'maximum hole size' will be built in the rigid type. Please contact us if you need sizes outside the specification in the table.



凸轮尺寸 Cam dimension

[mm]

| 尺寸 Size | 35 | 42 | 50 | 63 | 80 |
|-----------------------------|----|----|----|----|----|
| 标准孔径 standard bore size | 6 | 8 | 12 | 14 | 14 |
| 最大孔径 V maximum bore size | 17 | 20 | 23 | 28 | 36 |
| 最小厚度 H minimum thickness | 6 | 7 | 8 | 9 | 11 |

注意事项 *Installation and assembly instructions*

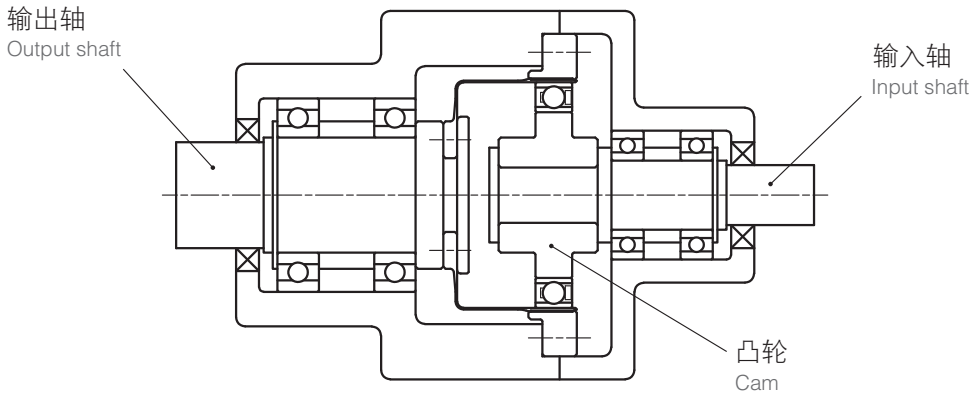
输入/输出轴的支撑 (WPC-□-□-CG)

Shaft installation instruction

输入轴 / 输出轴请采用承受作用于轴部的径向负荷 / 轴向负荷的支撑构造。(下图为参考实例)
来自减速机内部的轴向负荷作用于凸轮。请进行固定，避免凸轮发生轴向移动。

Please design the support structure for input shaft and output shaft so that both radial and axial loads are supported. (Diagram below shows an example)

Inside thrust load has effect on the cam. Secure cam from the possible axial movement.



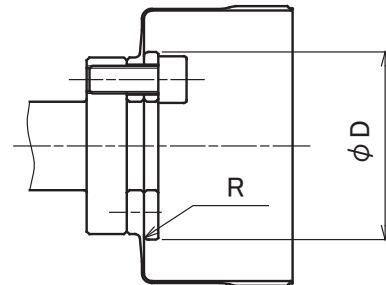
安装方法 (WPC-□-□-CG)

Attachment flange requirement

安装与柔性齿轮相连接的法兰时，为了防止造成柔性齿轮破损，请保证下表所示尺寸。

For the attachment flange that comes in contact with flex gear, please build the corner radius according to the table below, in order to prevent damage.

| | [mm] | | | | |
|------------|------|-----|-----|-----|----|
| 符号 Item | 35 | 42 | 50 | 63 | 80 |
| D | 24.5 | 29 | 34 | 42 | 55 |
| R | 1.2 | 1.2 | 1.4 | 1.5 | 2 |



规格
Reducer Model /
Specifications

尺寸表
Dimensions Table

寿命计算
(薄壁轴承)
Life estimation
(Elastic bearing)

寿命计算
(主轴承)
Life estimation
(Main bearing)

输入轴容许负荷
Maximum load at
input shaft

润滑剂
Lubricant information

安装精度
Attachment fixture
requirement

传导力矩
Transmitting Torque

输入部位构造
Input section structure

注意事项
Installation and
assembly instructions

减速机型号 Reducer Model Nomenclature

| | | | | |
|------------------------------|---|---|--|--|
| WP | U | 35 | 50 | CD |
| 系列名称 Series name | 类型 type | 尺寸 Size | 减速比 Ratio | 代码 [※] Code |
| WP系列 WP Series | C : 部件型 Component type S : 简易组合型 Simple unit type U : 组合型 组合型 (中空轴) Unit type Hollow unit | 35 42 50 63 80 | 50 80 100 120 | CD CDH SD SDH |

※代码详情请参照尺寸表。
For the code details, please check the Dimensions Table.

● 段位表 Availability

Ratio matrix

| | | | | | |
|------------|----------|----|----|-----|-----|
| Frame size | 尺寸 \ 减速比 | 50 | 80 | 100 | 120 |
| | 35 | | | | |
| | 42 | | | | |
| | 50 | | | | |
| | 63 | | | | |
| | 80 | | | | |



减速机规格 Reducer Specifications

| 尺寸 Size | 减速比 Ratio R ^{※1} | ※2 | ※3 | ※4 | ※5 | ※6 | ※7 |
|------------|---------------------------------|--|--|--|---|---|-------------------------|
| | | 容许平均 力矩 Nominal output torque [Nm] | 容许最大 力矩 Maximum output torque [Nm] | 紧急最大 力矩 Emergency stop torque [Nm] | 容许平均 输入转速 Nominal input speed [r/min] | 容许最高 输入转速 Maximum input speed [r/min] | 寿命时间 Life [hours] |
| 35 | 50 | 3.7 | 12 | 24 | 3000 | 8500 | 7000 |
| | 80 | 5.4 | 16 | 29 | | | |
| | 100 | 5.4 | 19 | 31 | | | |
| 42 | 50 | 11 | 23 | 48 | 3000 | 7300 | |
| | 80 | 15 | 29 | 52 | | | |
| | 100 | 16 | 37 | 55 | | | |
| | 120 | 16 | 37 | 55 | | | |
| 50 | 50 | 17 | 39 | 69 | 3000 | 6500 | |
| | 80 | 24 | 51 | 75 | | | |
| | 100 | 28 | 57 | 76 | | | |
| | 120 | 28 | 57 | 76 | | | |
| 63 | 50 | 27 | 69 | 127 | 3000 | 5600 | |
| | 80 | 44 | 96 | 147 | | | |
| | 100 | 47 | 110 | 152 | | | |
| | 120 | 47 | 110 | 152 | | | |
| 80 | 50 | 53 | 151 | 268 | 3000 | 4800 | |
| | 80 | 82 | 212 | 334 | | | |
| | 100 | 96 | 233 | 359 | | | |
| | 120 | 96 | 233 | 359 | | | |

※1 请将R值代入前页所述公式内, 求得减速比

※2 输入转速为2000r/min 时的容许最大值

※3 启动、停止时的容许最大值

※4 发生撞击时的容许最大值

※5 运转过程中, 平均输入转速的容许最大值

※6 运转过程中, 输入转速的容许最大值

※7 输入转速2000r/min, 容许额定力矩负荷时的寿命时间

*1 Reduction ratio is to be calculated by the formula in the previous page, using R value in this table.

*2 The maximum allowable value at the input rotation speed of 2000r/min

*3 The maximum torque when starting and stopping.

*4 The maximum torque when it receives shock.

*5 The maximum average input speed.

*6 The maximum input speed.

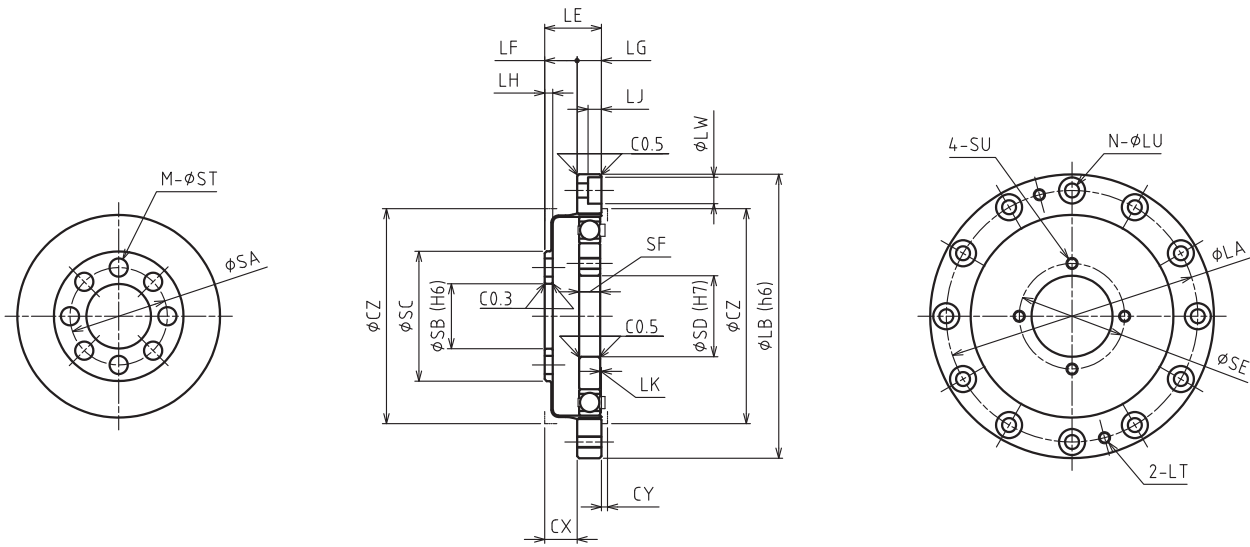
*7 The life time at the input rotation speed of 2000 r/min and nominal output torque.

尺寸表 *Dimensions Table*

封闭型 部件型
Closed Type, Component

WPC-□-□-CD

| 尺寸 Size | 重量 Weight | 惯性力矩 Moment of inertia |
|------------|--------------|-------------------------------|
| | kg | $\times 10^{-4} \text{kgm}^2$ |
| 35 | 0.062 | 0.0226 |
| 42 | 0.10 | 0.0565 |
| 50 | 0.16 | 0.113 |
| 63 | 0.26 | 0.342 |
| 80 | 0.57 | 1.18 |



[mm]

| 尺寸 Size | LA | LB | LE | LF | LG | LH | LJ | LK | N | LU | LW | LT |
|------------|-----|-----|------|-----|-----|-----|-----|-----|----|-----|-----|----|
| 35 | 44 | 50 | 11 | 6.5 | 4.5 | 1.4 | - | 0.3 | 6 | 3.5 | - | M3 |
| 42 | 54 | 60 | 12.5 | 7.5 | 5 | 1.7 | - | 0.3 | 8 | 3.5 | - | M3 |
| 50 | 62 | 70 | 14 | 8 | 6 | 2 | 3.3 | 0.3 | 12 | 3.5 | 6.5 | M3 |
| 63 | 75 | 85 | 17 | 10 | 7 | 2 | 3.3 | 0.4 | 12 | 3.5 | 6.5 | M3 |
| 80 | 100 | 110 | 22 | 13 | 9 | 2.5 | 4.4 | 0.5 | 12 | 4.5 | 8 | M4 |

| 尺寸 Size | SA | SB | SC | SD | SE | SF | CX | CY | CZ | M | ST | SU |
|------------|------|----|------|----|----|-----|-----|-----|----|----|-----|----|
| 35 | 17 | 11 | 23.5 | 11 | 17 | 4 | 6.5 | 1 | 38 | 8 | 3.5 | M3 |
| 42 | 19.5 | 11 | 27 | 15 | 21 | 5 | 7.5 | 1 | 45 | 8 | 4.5 | M3 |
| 50 | 24 | 16 | 32 | 20 | 26 | 5.2 | 8 | 1.5 | 53 | 8 | 4.5 | M3 |
| 63 | 30 | 20 | 40 | 24 | 30 | 6.3 | 10 | 1.5 | 66 | 8 | 5.5 | M3 |
| 80 | 41 | 30 | 52 | 32 | 40 | 8.6 | 13 | 2 | 86 | 10 | 6.5 | M4 |

※ CX、CY、CZ为护罩内壁建议尺寸。

*Inner dimensions of CX, CY, CZ are recommended dimensions.

减速机型号/
规格
Reducer Model/
Specifications

尺寸表
Dimensions Table

寿命计算(薄壁轴承)/
寿命计算(主轴承)
Life estimation
(Elastic bearing) /
Life estimation (Main bearing)

输入轴容许负荷/
润滑油
Maximum load at
input shaft /
lubricant information

安装精度
Attachment fixture
requirement

传导力矩
Transmitting Torque

注意事项
Installation and
assembly instructions

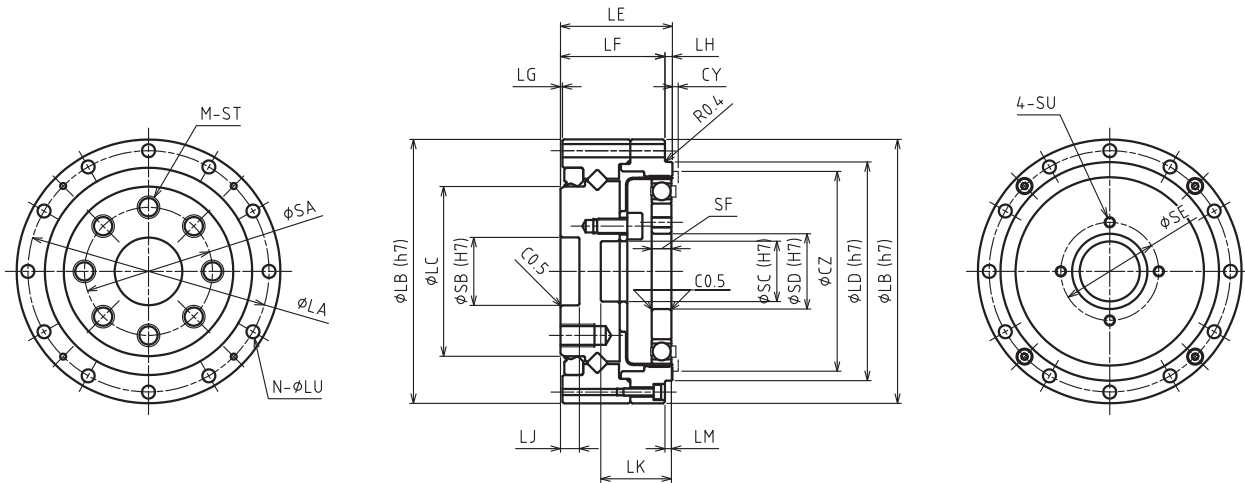
特性数据
Characteristics Data

尺寸表 *Dimensions Table*

封闭型 组合型
Closed Type, Unit

WPU-□ - □ -CD

| 尺寸 Size | 重量 Weight | 惯性力矩 Moment of inertia |
|------------|--------------|-------------------------------|
| | kg | $\times 10^{-4} \text{kgm}^2$ |
| 35 | 0.33 | 0.0227 |
| 42 | 0.43 | 0.0565 |
| 50 | 0.61 | 0.113 |
| 63 | 1.1 | 0.343 |
| 80 | 2.2 | 1.18 |



[mm]

| 尺寸 Size | LA | LB | LC | LD | LE | LF | LG | LH | LJ | LK | LM | N | LU |
|------------|-----|-----|----|------|------|------|-----|----|-----|------|-----|----|-----|
| 35 | 49 | 55 | 31 | 42.5 | 25 | 23 | 0.5 | 2 | 5 | 14.7 | 1.7 | 6 | 3.5 |
| 42 | 56 | 62 | 38 | 49.5 | 26.5 | 24.5 | 0.5 | 2 | 5 | 16.2 | 1.7 | 10 | 3.5 |
| 50 | 64 | 70 | 45 | 58 | 29.7 | 27.7 | 0.5 | 2 | 5 | 18.7 | 1.7 | 12 | 3.5 |
| 63 | 79 | 85 | 58 | 73 | 37.1 | 34.1 | 0.5 | 3 | 5.5 | 23.6 | 2.6 | 18 | 3.5 |
| 80 | 104 | 112 | 78 | 96 | 43 | 40 | 1 | 3 | 5.5 | 30.5 | 2.5 | 18 | 4.5 |

| 尺寸 Size | SA | SB | SC | SD | SE | SF | CY | CZ | M | ST | SU |
|------------|----|----|----|----|----|-----|-----|----|----|---------|----|
| 35 | 25 | 12 | 11 | 11 | 17 | 4 | 1 | 38 | 10 | M3 × 6 | M3 |
| 42 | 27 | 14 | 11 | 15 | 21 | 5 | 1 | 45 | 8 | M5 × 8 | M3 |
| 50 | 34 | 18 | 16 | 20 | 26 | 5.2 | 1.5 | 53 | 8 | M6 × 9 | M3 |
| 63 | 42 | 24 | 20 | 24 | 30 | 6.3 | 1.5 | 66 | 8 | M8 × 12 | M3 |
| 80 | 57 | 32 | 30 | 32 | 40 | 8.6 | 2 | 86 | 10 | M8 × 12 | M4 |

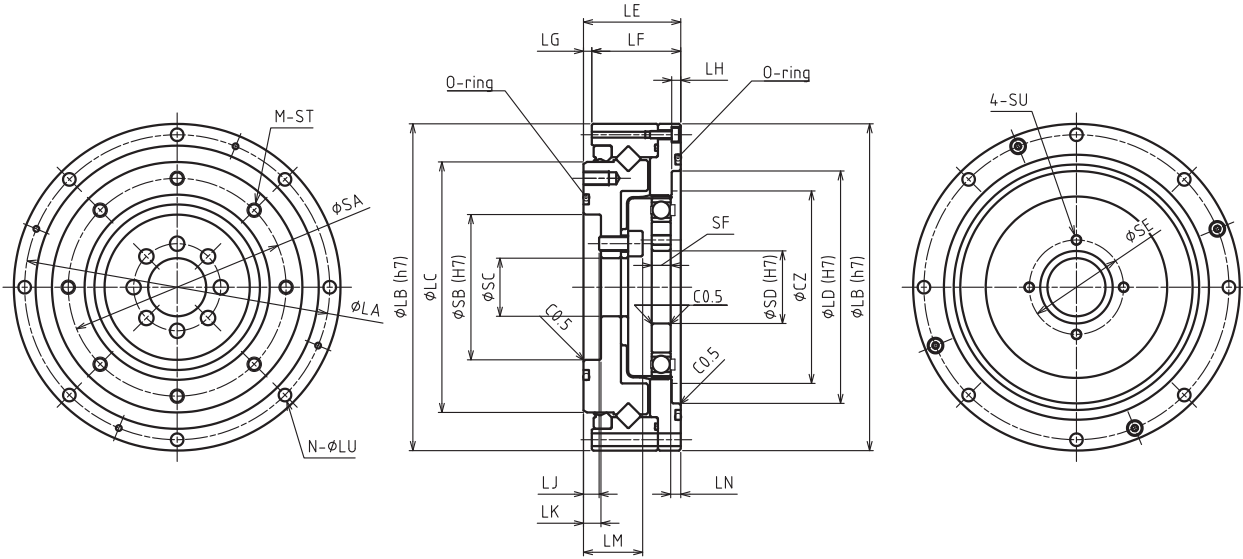
※ CY、CZ为护罩内壁建议尺寸。

*Inner dimensions of CY, CZ are recommended dimensions.

封闭型 组合型
Closed Type, Unit

WPU-□ - □ -CDH

| 尺寸 Size | 重量 Weight | 惯性力矩 Moment of inertia |
|------------|--------------|-------------------------------|
| | kg | $\times 10^{-4} \text{kgm}^2$ |
| 35 | 0.46 | 0.0228 |
| 42 | 0.63 | 0.0571 |
| 50 | 0.91 | 0.113 |
| 63 | 1.6 | 0.344 |
| 80 | 3.0 | 1.18 |



[mm]

| 尺寸 Size | LA | LB | LC | LD | LE | LF | LG | LH | LJ | LK | LM | LN | N | LU |
|------------|-----|-----|-----|-----|------|------|-----|-----|-----|-----|------|-----|----|-----|
| 35 | 64 | 70 | 49 | 48 | 22 | 21.5 | 0.5 | 2.5 | 3.9 | 4.9 | 12.9 | 2.8 | 6 | 3.5 |
| 42 | 74 | 80 | 59 | 56 | 22.7 | 22.2 | 0.5 | 2.5 | 1.4 | 3.7 | 13.4 | 2.8 | 8 | 3.5 |
| 50 | 84 | 90 | 69 | 64 | 26.8 | 24.5 | 2.3 | 2.5 | 4.3 | 4.8 | 16.3 | 2.8 | 8 | 3.5 |
| 63 | 102 | 110 | 84 | 80 | 31.5 | 29.4 | 2.1 | 3 | 3.5 | 5.5 | 18.5 | 3.4 | 10 | 4.5 |
| 80 | 132 | 142 | 110 | 106 | 37 | 34.2 | 2.8 | 3 | 2.5 | 6 | 20.5 | 3.5 | 10 | 5.5 |

| 尺寸 Size | SA | SB | SC | SD | SE | SF | CZ | M | ST | SU |
|------------|----|----|----|----|----|-----|----|----|---------|----|
| 35 | 42 | 30 | 11 | 11 | 17 | 4 | 38 | 8 | M3 × 5 | M3 |
| 42 | 50 | 34 | 11 | 15 | 21 | 5 | 45 | 10 | M3 × 6 | M3 |
| 50 | 60 | 40 | 16 | 20 | 26 | 5.2 | 53 | 8 | M4 × 7 | M3 |
| 63 | 73 | 52 | 20 | 24 | 30 | 6.3 | 66 | 8 | M5 × 8 | M3 |
| 80 | 96 | 70 | 30 | 32 | 40 | 8.6 | 86 | 8 | M6 × 10 | M4 |

※ CZ为护罩内壁建议尺寸。

*Inner dimensions of CZ are recommended dimensions.

减速机型号 /
规格
Reducer Model /
Specifications

尺寸表
Dimensions Table

寿命计算 (薄壁轴承) /
寿命计算 (主轴承)
Life estimation
(Elastic bearing) /
Life estimation (Main bearing)

输入轴容许负荷 /
润滑油
Maximum load at
input shaft /
Lubricant information

安装精度
Attachment fixture
requirement

传导力矩
Transmitting Torque

注意事项
Installation and
assembly instructions

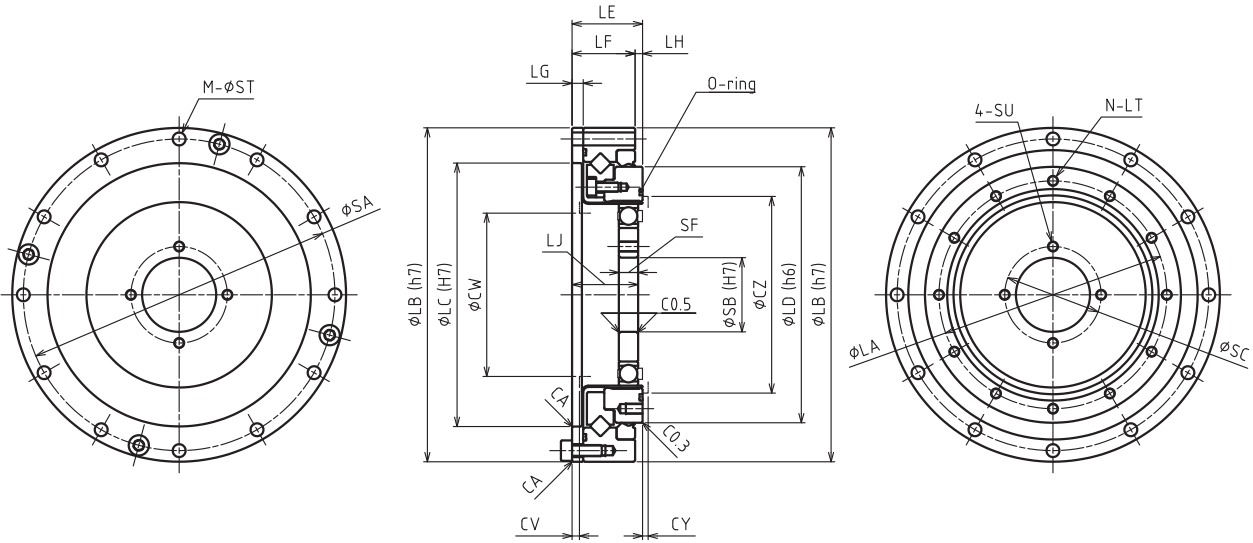
特性数据
Characteristics Data

尺寸表 Dimensions Table

开放型 简易组合型
Open type, Simple unit

WPS-□-□-SD

| 尺寸 Size | 重量 Weight | 惯性力矩 Moment of inertia |
|------------|--------------|-------------------------------|
| | kg | $\times 10^{-4} \text{kgm}^2$ |
| 35 | 0.31 | 0.0233 |
| 42 | 0.43 | 0.0578 |
| 50 | 0.54 | 0.114 |
| 63 | 0.93 | 0.347 |
| 80 | 2.0 | 1.20 |



[mm]

| 尺寸 Size | LA | LB | LC | LD | LE | LF | LG | LH | LJ | N | LT |
|------------|------|-----|-----|-----|------|------|-----|-----|------|----|----------|
| 35 | 43 | 70 | 50 | 49 | 17.5 | 15.5 | 2.4 | 2 | 15.7 | 8 | M3 × 4.5 |
| 42 | 52 | 80 | 61 | 59 | 18.5 | 16.5 | 3 | 2 | 16.9 | 12 | M3 × 4.5 |
| 50 | 61.4 | 90 | 71 | 69 | 19 | 17 | 3 | 2 | 17.8 | 12 | M3 × 4.5 |
| 63 | 76 | 110 | 88 | 84 | 22 | 20 | 3.3 | 2 | 21.6 | 12 | M4 × 6 |
| 80 | 99 | 142 | 114 | 110 | 27.9 | 23.6 | 3.6 | 4.3 | 27.3 | 12 | M5 × 8 |

| 尺寸 Size | SA | SB | SC | SF | CA | CY | CZ | CV | CW | M | ST | SU |
|------------|-----|----|----|-----|-----|-----|------|-----|----|----|-----|----|
| 35 | 64 | 11 | 17 | 4 | 0.3 | 1 | 36.5 | 1.6 | 31 | 8 | 3.5 | M3 |
| 42 | 74 | 15 | 21 | 5 | 0.3 | 1 | 43.5 | 2 | 37 | 12 | 3.5 | M3 |
| 50 | 84 | 20 | 26 | 5.2 | 0.3 | 1.5 | 53 | 2 | 44 | 12 | 3.5 | M3 |
| 63 | 102 | 24 | 30 | 6.3 | 0.3 | 1.5 | 66 | 2 | 56 | 12 | 4.5 | M3 |
| 80 | 132 | 32 | 40 | 8.6 | 0.5 | 2 | 84 | 2 | 72 | 12 | 5.5 | M4 |

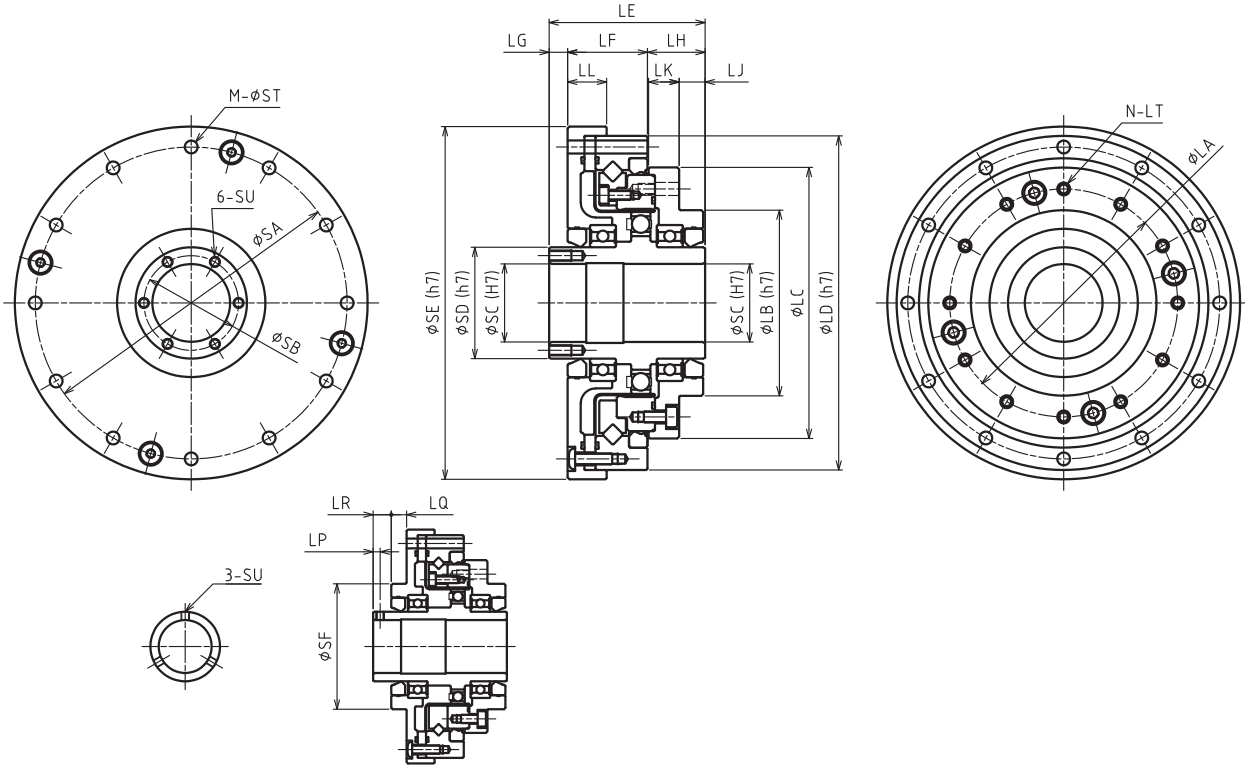
※ CV、CW、CY、CZ 为护罩内壁建议尺寸。

*Inner dimensions of CV, CW, CY, CZ are recommended dimensions.

开放型 组合型 (中空轴)
Open type, Unit (hollow shaft)

WPU-□-□-SDH

| 尺寸 Size | 重量 Weight | 惯性力矩 Moment of inertia |
|------------|--------------|-------------------------------|
| | kg | $\times 10^{-4} \text{kgm}^2$ |
| 35 | 0.49 | 0.0839 |
| 42 | 0.66 | 0.180 |
| 50 | 0.84 | 0.352 |
| 63 | 1.4 | 0.940 |
| 80 | 2.8 | 3.47 |



INPUT SHAFT FOR 35&42

[mm]

| 尺寸 Size | LA | LB | LC | LD | LE | LF | LG | LH | LJ | LK | LL | LP | LQ | LR |
|------------|------|----|-----|-----|------|------|----|------|-----|------|------|-----|-----|-----|
| 35 | 43 | 36 | 52 | 70 | 45.5 | 19.5 | 12 | 14 | 6.5 | 7.5 | 9 | 2.5 | 5.5 | 6.5 |
| 42 | 52 | 45 | 62 | 80 | 48 | 20.5 | 12 | 15.5 | 7 | 8.5 | 10 | 2.5 | 5.5 | 6.5 |
| 50 | 61.4 | 50 | 73 | 90 | 42 | 21.5 | 5 | 15.5 | 7 | 8.5 | 10.5 | - | - | - |
| 63 | 76 | 60 | 87 | 110 | 46.5 | 24 | 6 | 16.5 | 6 | 10.5 | 10.5 | - | - | - |
| 80 | 99 | 75 | 114 | 142 | 55 | 28.6 | 7 | 19.4 | 7.5 | 11.9 | 12 | - | - | - |

| 尺寸 Size | SA | SB | SC | SD | SE | SF | M | ST | SU | N | LT |
|------------|-----|------|----|----|-----|----|----|-----|--------|----|-----------------------|
| 35 | 64 | - | 14 | 20 | 74 | 36 | 8 | 3.5 | M3 | 8 | M3 × 4.5, φ 3.5 × 5.5 |
| 42 | 74 | - | 19 | 25 | 84 | 45 | 12 | 3.5 | M3 | 12 | M3 × 4.5, φ 3.5 × 6.5 |
| 50 | 84 | 25.5 | 21 | 30 | 95 | - | 12 | 3.5 | M3 × 6 | 12 | M3 × 4.5, φ 3.5 × 6.5 |
| 63 | 102 | 33.5 | 29 | 38 | 115 | - | 12 | 4.5 | M3 × 6 | 12 | M4 × 6, φ 4.5 × 8.5 |
| 80 | 132 | 48 | 41 | 54 | 147 | - | 12 | 5.5 | M3 × 6 | 12 | M5 × 8, φ 5.5 × 7.6 |

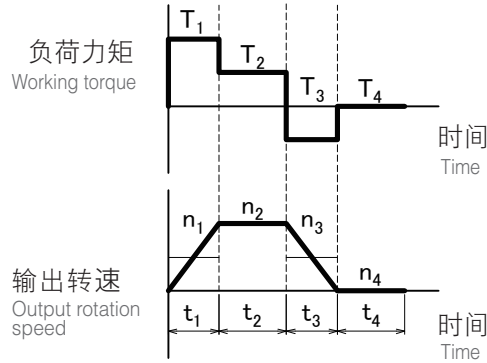
寿命计算（薄壁轴承） *Life estimation (Elastic bearing)*

薄壁轴承寿命计算

Life span for the elastic bearing

■ 运转类型

Operation cycle example



① 平均输出力矩 / 最大输出力矩的计算

Calculation formula for output torque

| | | | |
|------------------------------------|-----|----|---|
| 平均输出力矩 Average output torque | Tao | Nm | $Tao = \sqrt[3]{\frac{n_1 \cdot t_1 \cdot T_1 ^3 + n_2 \cdot t_2 \cdot T_2 ^3 + \dots + n_n \cdot t_n \cdot T_n ^3}{n_1 \cdot t_1 + n_2 \cdot t_2 + \dots + n_n \cdot t_n}}$ |
| 最大输出力矩 Peak output torque value | Tmo | Nm | $Tmo = T_1, T_2, \dots, T_n$ 的最大值 Tmo = Largest among T_1, T_2, \dots, T_n |

请确认最大输出力矩为容许最大输出值以下

Please make sure the peak output torque is below the maximum output torque in the specification table

② 平均输入转速 / 最高输入转速的计算

Calculation formula for input speed

| | | | |
|---|-----|-------|---|
| 平均输出转速 Average output rotation speed | nao | r/min | $nao = \frac{n_1 \cdot t_1 + n_2 \cdot t_2 + \dots + n_n \cdot t_n}{t_1 + t_2 + \dots + t_n}$ |
| 最高输出转速 Peak output rotation speed | nmo | r/min | $nmo = n_1, n_2, \dots, n_n$ 的最大值 nmo = Largest among n_1, n_2, \dots, n_n |
| 平均输入转速 Average input speed | nai | r/min | $nai = nao \times R$ (R = 减速比) (R = ratio) |
| 最高输入转速 Peak input speed value | nmi | r/min | $nmi = nmo \times R$ (R = 减速比) (R = ratio) |

请确认最高输入转速为容许最高输入转速值以下

Please make sure the peak input speed value is below the maximum input speed in the specification table

③ 寿命时间的计算

Calculation formula for life span

| | | | |
|--|-----|-------|--|
| 薄壁轴承寿命时间 Part life span for the elastic bearing | Lhe | h | $Lhe = 7000 \times \left(\frac{Tar}{Tao}\right)^3 \times \left(\frac{nar}{nai}\right)$ |
| 额定力矩 Rating torque | Tar | Nm | 性能表中所记容许平均力矩 Nominal output torque in the specification table |
| 额定输入转速 Rating input rotation speed | nar | r/min | 2000 r/min |

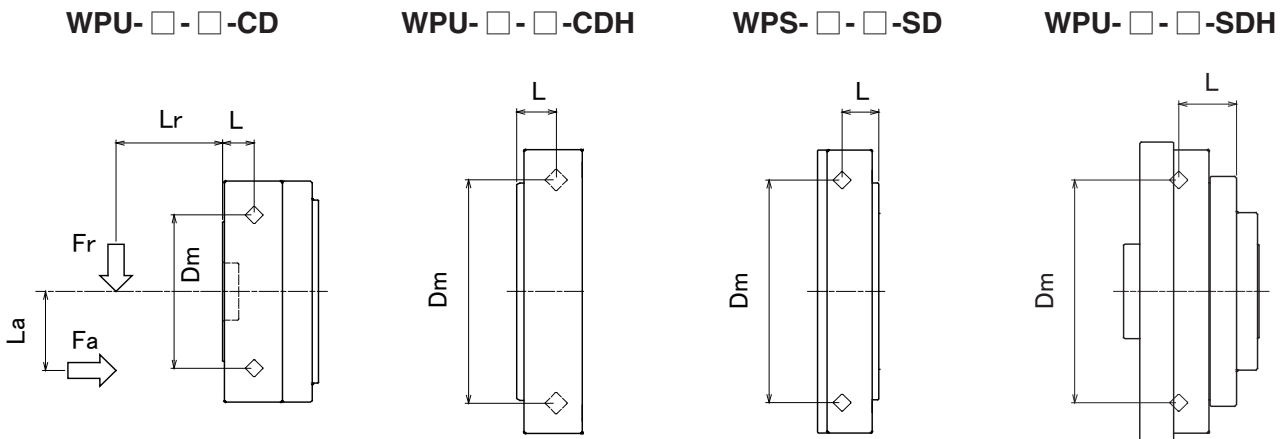
寿命计算 (主轴承) *Life estimation(Main bearing)*

型号选定/寿命计算 *Model selection / Life estimation*

主轴承规格 (交叉滚子轴承) *Main bearing specification(Cross roller bearing)*

| 系列 Series | 尺寸 Size | 滚轴节圆直径 Pitch circle diameter of the bearing rollers | 偏移量 Offset | 基本动态额定负荷 Basic dynamic load rating | 基本静态额定负荷 Basic static load rating | 容许力矩 Allowable moment | 力矩刚性 Moment rigidity |
|--------------|------------|---|---------------|--|---|-----------------------------|----------------------------|
| | | Dm | L | C | Co | Mal | Km |
| | | m | m | N | N | Nm | × 10 ⁴ Nm/rad |
| WPU-□-□-CD | 35 | 0.0335 | 0.0090 | 5620 | 6540 | 36.5 | 7.35 |
| | 42 | 0.0410 | 0.0095 | 6340 | 8170 | 55.8 | 8.02 |
| | 50 | 0.0493 | 0.0105 | 10400 | 13300 | 91.0 | 13.5 |
| | 63 | 0.0615 | 0.0128 | 15800 | 21100 | 156 | 27.7 |
| | 80 | 0.0815 | 0.0130 | 24400 | 35600 | 313 | 66.0 |
| WPU-□-□-CDH | 35 | 0.0505 | 0.0062 | 7110 | 10200 | 74.0 | 14.4 |
| | 42 | 0.0598 | 0.0066 | 10900 | 15200 | 124 | 19.7 |
| | 50 | 0.0708 | 0.0077 | 17200 | 24700 | 187 | 40.1 |
| | 63 | 0.0856 | 0.0092 | 25100 | 37400 | 258 | 71.5 |
| | 80 | 0.114 | 0.0106 | 43300 | 67600 | 580 | 188 |
| WPS-□-□-SD | 35 | 0.0512 | 0.0111 | 8010 | 11400 | 37.0 | 8.86 |
| | 42 | 0.0614 | 0.0112 | 7370 | 10900 | 62 | 20.8 |
| | 50 | 0.0715 | 0.0114 | 8030 | 12800 | 93 | 22.5 |
| | 63 | 0.0869 | 0.0128 | 14300 | 24500 | 129 | 33.3 |
| | 80 | 0.113 | 0.0181 | 23700 | 42500 | 290 | 84.5 |
| WPU-□-□-SDH | 35 | 0.0512 | 0.0166 | 8010 | 11400 | 37.0 | 8.86 |
| | 42 | 0.0614 | 0.0177 | 7370 | 10900 | 62 | 20.8 |
| | 50 | 0.0715 | 0.0179 | 8030 | 12800 | 93 | 22.5 |
| | 63 | 0.0869 | 0.0213 | 14300 | 24500 | 129 | 33.3 |
| | 80 | 0.113 | 0.0257 | 23700 | 42500 | 290 | 84.5 |

外部负荷 External load



减速机型号 / 规格
Reducer Model / Specifications

尺寸表
Dimensions Table

寿命计算 (薄壁轴承) / 寿命计算 (主轴承)
Life estimation (Elastic bearing) / Life estimation (Main bearing)

输入轴容许负荷 / 润滑油
Maximum load at input shaft / lubricant information

安装精度
Attachment fixture requirement

传导力矩
Transmitting Torque

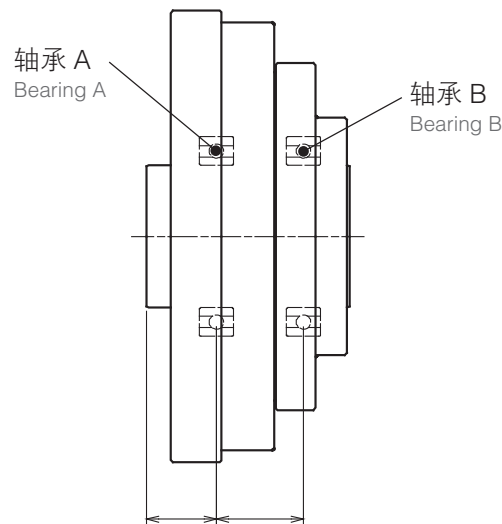
注意事项
Installation and assembly instructions

特性数据
Characteristics Data

输入轴容许负荷 *Maximum load at input shaft*

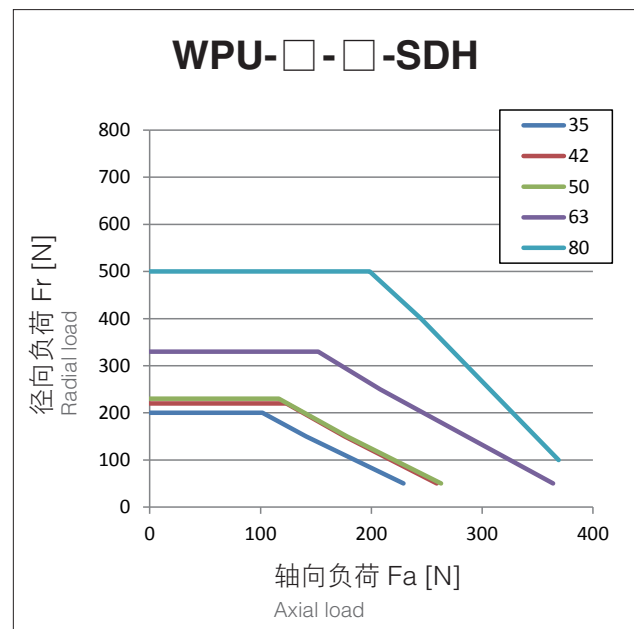
■ 轴承规格（开放型，组合型） Bearing specification (Open type, Unit)

| 系列 Series | 尺寸 Size | 轴承 A Bearing A | | 轴承 B Bearing B | | a | b |
|--------------|------------|---------------------------------------|--------------------------------------|---------------------------------------|--------------------------------------|------|------|
| | | 基本动态额定负荷 Basic dynamic load rating | 基本静态额定负荷 Basic static load rating | 基本动态额定负荷 Basic dynamic load rating | 基本静态额定负荷 Basic static load rating | | |
| | | C | Co | C | Co | | |
| | | N | N | N | N | mm | mm |
| WPU-□-□-SDH | 35 | 4000 | 2470 | 4000 | 2470 | 16.0 | 20.0 |
| | 42 | 4300 | 2950 | 4300 | 2950 | 16.0 | 22.5 |
| | 50 | 4500 | 3450 | 4500 | 3450 | 14.5 | 18.0 |
| | 63 | 4900 | 4350 | 4900 | 4350 | 15.5 | 21.8 |
| | 80 | 8800 | 8500 | 6400 | 6200 | 17.0 | 28.5 |



■ 容许负荷（平均输入转速：2000r/min、寿命时间：7000h）

Maximum load (Average input rotation speed : 2000r/min, Life span : 7000h)



润滑剂 *lubricant information*

润滑剂的使用

Grease

Sumiplex MP No.2 (日本住矿润滑剂株式会社) Sumiplex MP No.2 (SUMICO LUBRICANT CO., LTD.)

使用温度范围: 0 ~ 40°C (环境温度) Operating temperature range: 0-40°C (ambient temperature)

润滑剂的涂抹

Grease application

按照以下要求在减速机各部位涂抹润滑剂。 Please apply grease according to the table below.

■ 润滑剂涂抹量 Grease application

- 根据减速机的安装方向（输出侧为横向、向上、向下）不同，变更涂抹部位C的涂抹量。（已封入润滑油的组合类型，填充了C（横向）的润滑油量。）
- 减速机为向上、向下时，请填写输入ASSY~护罩内壁空间的50%的润滑剂。
- 由于护罩设计造成润滑剂不足时，请咨询本公司。

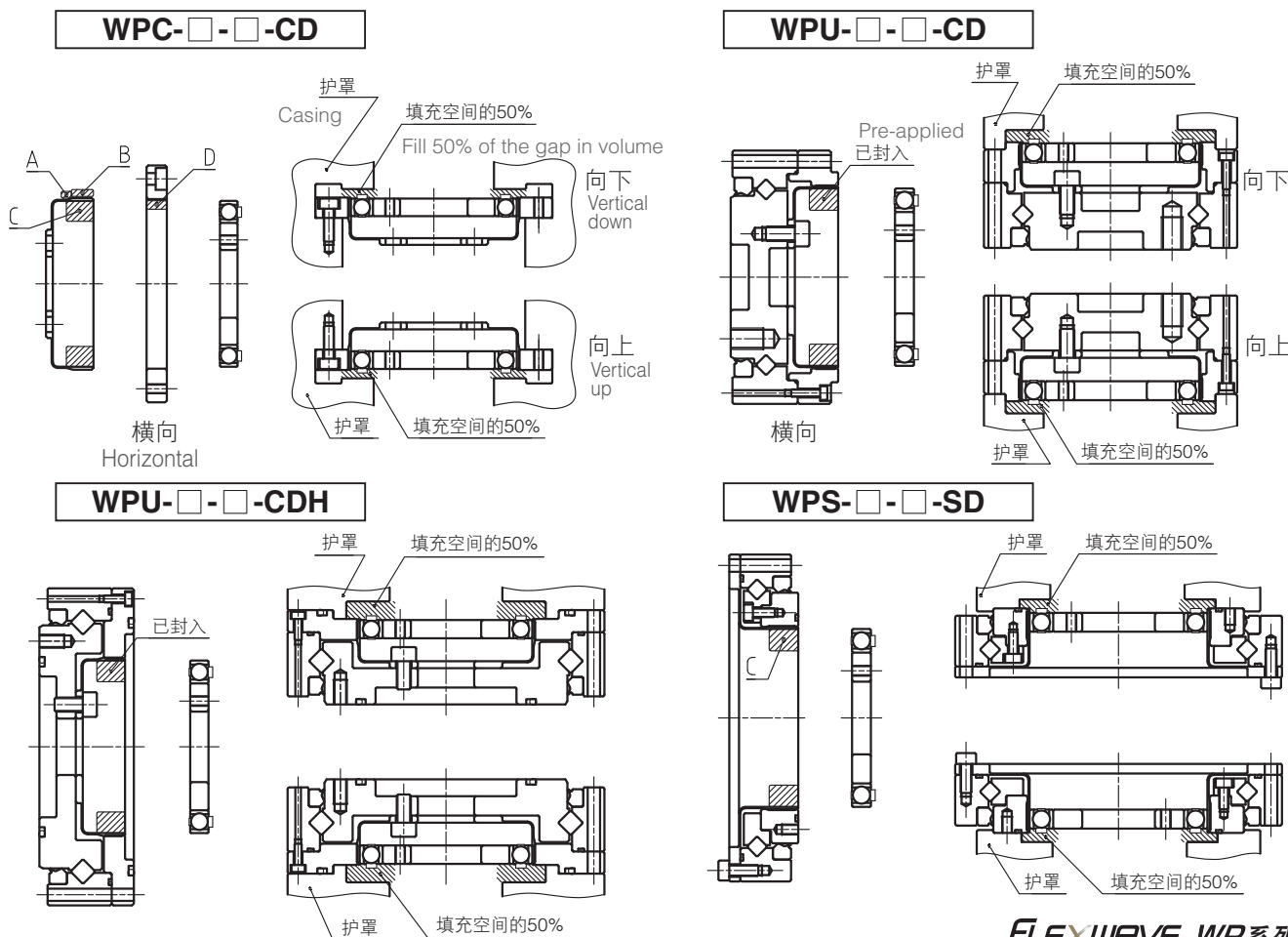
The quantity of grease applied to C should be adjusted depending on the mounting direction. C of the unit type product is already filled with the same quantity of grease as horizontal mounting.

For vertical up/down, 50% of the space between input assy and casing inner wall should be filled with grease.

If the amount of grease is not sufficient due to case design, please contact us.

| 尺寸 Size | 涂抹部位 Applied part | | | | | |
|------------|-------------------|-----|-------------------------|--------------------------|----------------------------|-----|
| | A | B | C (横向) Horizontal | C (向上) Vertical up | C (向下) Vertical down | D |
| 35 | 0.2 | 0.2 | 3 | 4 | 5 | 0.2 |
| 42 | 0.3 | 0.3 | 5 | 6 | 7 | 0.3 |
| 50 | 0.4 | 0.4 | 8 | 9 | 11 | 0.4 |
| 63 | 0.8 | 0.8 | 16 | 19 | 21 | 0.8 |
| 80 | 1.5 | 1.5 | 36 | 42 | 48 | 1.5 |

■ 润滑剂涂抹部位 Grease application location



减速机型号/
规格
Reducer Model/
Specifications

尺寸表
Dimensions Table

寿命计算(薄壁轴承)/
寿命计算(主轴承)
Life estimation
(Elastic bearing)/
Life estimation (Main bearing)

输入轴容许负荷/
润滑剂
Maximum load at
Input shaft/
Lubricant information

安装精度
Attachment fixture
requirement

传导力矩
Transmitting Torque

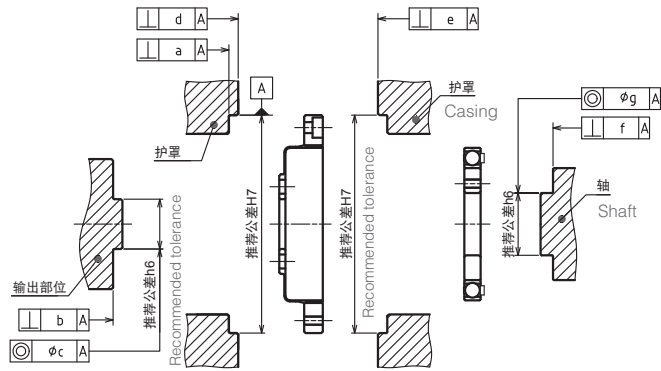
注意事项
Installation and
assembly instructions

特性数据
Characteristics Data

安装精度 Attachment fixture requirement

■ 安装精度 Attachment fixture requirement

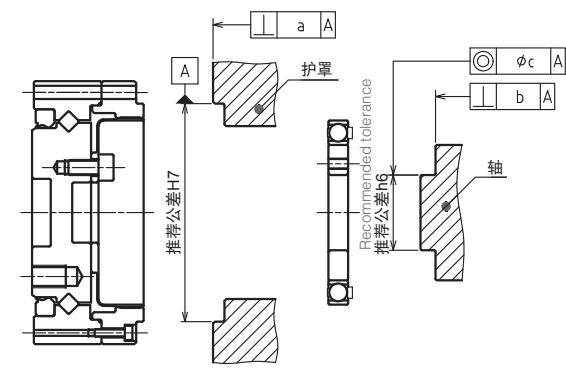
WPC-□-□-CD



安装精度 [mm]

| 尺寸 Size | 35 | 42 | 50 | 63 | 80 |
|------------|-------|-------|-------|-------|-------|
| a | 0.015 | 0.015 | 0.018 | 0.018 | 0.023 |
| b | 0.010 | 0.012 | 0.014 | 0.016 | 0.020 |
| c | 0.013 | 0.013 | 0.015 | 0.018 | 0.020 |
| d | 0.015 | 0.015 | 0.018 | 0.018 | 0.023 |
| e | 0.015 | 0.015 | 0.018 | 0.018 | 0.023 |
| f | 0.012 | 0.012 | 0.014 | 0.016 | 0.016 |
| g | 0.016 | 0.020 | 0.024 | 0.024 | 0.024 |

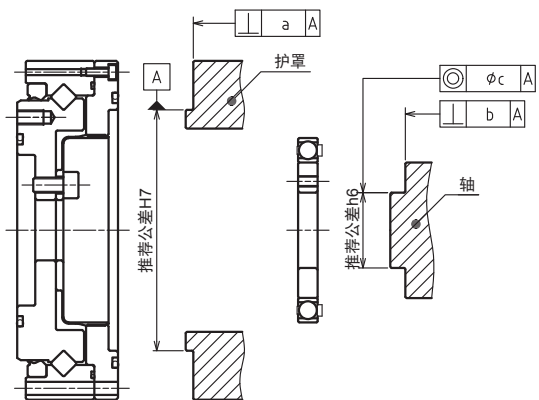
WPU-□-□-CD



安装精度 [mm]

| 尺寸 Size | 35 | 42 | 50 | 63 | 80 |
|------------|-------|-------|-------|-------|-------|
| a | 0.020 | 0.020 | 0.020 | 0.025 | 0.025 |
| b | 0.012 | 0.012 | 0.014 | 0.016 | 0.016 |
| c | 0.016 | 0.020 | 0.024 | 0.024 | 0.024 |

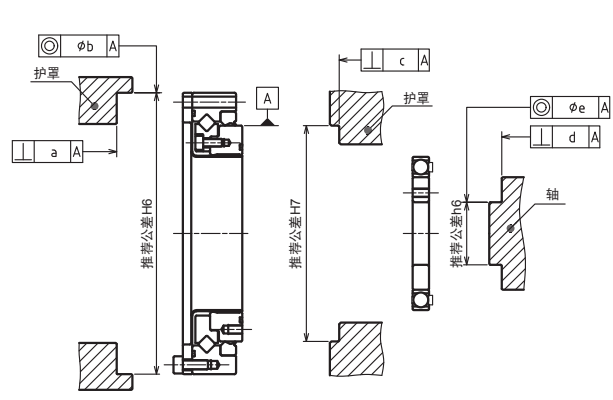
WPU-□-□-CDH



安装精度 [mm]

| 尺寸 Size | 35 | 42 | 50 | 63 | 80 |
|------------|-------|-------|-------|-------|-------|
| a | 0.020 | 0.020 | 0.020 | 0.025 | 0.025 |
| b | 0.012 | 0.012 | 0.014 | 0.016 | 0.016 |
| c | 0.016 | 0.020 | 0.024 | 0.024 | 0.024 |

WPS-□-□-SD



安装精度 [mm]

| 尺寸 Size | 35 | 42 | 50 | 63 | 80 |
|------------|-------|-------|-------|-------|-------|
| a | 0.020 | 0.020 | 0.020 | 0.025 | 0.025 |
| b | 0.020 | 0.020 | 0.020 | 0.025 | 0.025 |
| c | 0.020 | 0.020 | 0.020 | 0.025 | 0.025 |
| d | 0.012 | 0.012 | 0.014 | 0.016 | 0.016 |
| e | 0.016 | 0.020 | 0.024 | 0.024 | 0.024 |

传导力矩 *Transmitting Torque*

安装螺丝

螺丝紧固力矩如下表所示。

Bolting

Please refer to the table below for the bolt tightening torque.

螺丝紧固力矩

Tightening torque for bolts

| 螺丝尺寸 | Bolt size | M3 | M4 | M5 | M6 | M8 | M10 |
|-----------|-------------------|-----|-----|-----|----|----|-----|
| 紧固力矩 [Nm] | Tightening torque | 1.9 | 4.3 | 8.7 | 15 | 36 | 71 |

建议螺丝：强度区分12.9以上

Recommended bolt : Strength rating above 12.9

传导力矩（封闭型、组合型）

Bolt specifications and Transmitting torque (Closed type, Unit)

安装输出法兰（WPU-□-□-CD） Output flange attachment

| 尺寸 | Size | 35 | 42 | 50 | 63 | 80 |
|------------|---------------------|-----|-----|-----|-----|-----|
| 螺丝尺寸 | Bolt size | M3 | M5 | M6 | M8 | M8 |
| 螺丝个数 | Bolt count | 10 | 8 | 8 | 8 | 10 |
| 安装PCD [mm] | Bolt PCD | 25 | 27 | 34 | 42 | 57 |
| 紧固力矩 [Nm] | Tightening torque | 1.9 | 8.7 | 15 | 36 | 36 |
| 传导力矩 [Nm] | Transmitting torque | 58 | 141 | 252 | 566 | 960 |

安装内齿轮（WPU-□-□-CD） Internal gear attachment

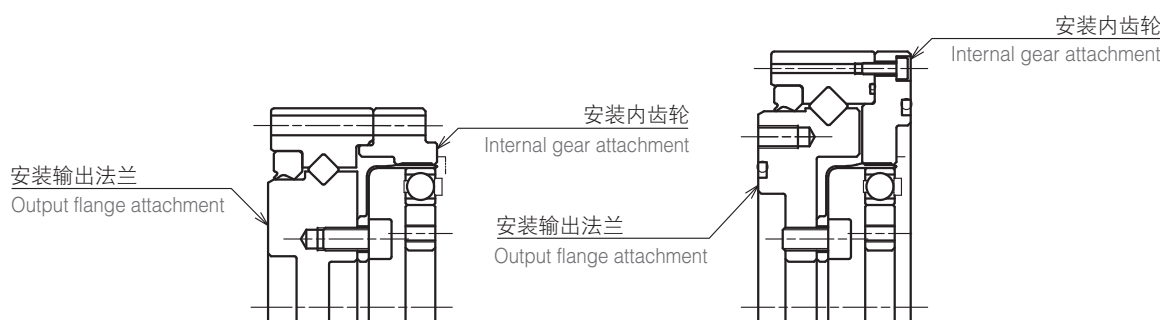
| 尺寸 | Size | 35 | 42 | 50 | 63 | 80 |
|------------|---------------------|-----|-----|-----|-----|-----|
| 螺丝尺寸 | Bolt size | M3 | M3 | M3 | M3 | M4 |
| 螺丝个数 | Bolt count | 6 | 10 | 12 | 18 | 18 |
| 安装PCD [mm] | Bolt PCD | 49 | 56 | 64 | 79 | 104 |
| 紧固力矩 [Nm] | Tightening torque | 1.9 | 1.9 | 1.9 | 1.9 | 4.3 |
| 传导力矩 [Nm] | Transmitting torque | 68 | 130 | 178 | 330 | 757 |

安装输出法兰（WPU-□-□-CDH） Output flange attachment

| 尺寸 | Size | 35 | 42 | 50 | 63 | 80 |
|------------|---------------------|-----|-----|-----|-----|-----|
| 螺丝尺寸 | Bolt size | M3 | M3 | M4 | M5 | M6 |
| 螺丝个数 | Bolt count | 8 | 10 | 8 | 8 | 8 |
| 安装PCD [mm] | Bolt PCD | 42 | 50 | 60 | 73 | 96 |
| 紧固力矩 [Nm] | Tightening torque | 1.9 | 1.9 | 4.3 | 8.7 | 15 |
| 传导力矩 [Nm] | Transmitting torque | 78 | 116 | 194 | 382 | 713 |

安装内齿轮（WPU-□-□-CDH） Internal gear attachment

| 尺寸 | Size | 35 | 42 | 50 | 63 | 80 |
|------------|---------------------|-----|-----|-----|-----|-----|
| 螺丝尺寸 | Bolt size | M3 | M3 | M3 | M4 | M5 |
| 螺丝个数 | Bolt count | 6 | 8 | 8 | 10 | 10 |
| 安装PCD [mm] | Bolt PCD | 64 | 74 | 84 | 102 | 132 |
| 紧固力矩 [Nm] | Tightening torque | 1.9 | 1.9 | 1.9 | 4.3 | 8.7 |
| 传导力矩 [Nm] | Transmitting torque | 89 | 137 | 156 | 412 | 864 |



减速机型号 /
规格
Reducer Model /
Specifications

尺寸表
Dimensions Table

寿命计算（薄壁轴承） /
寿命计算（主轴承）
Life estimation
(Elastic bearing) /
Life estimation (Main bearing)

输入轴容许负荷 /
润滑油
Maximum load at
input shaft /
Lubricant information

安装精度
Attachment fixture
requirement

传导力矩
Transmitting Torque

注意事项
Installation and
assembly instructions

特性数据
Characteristics Data

传导力矩 *Transmitting Torque*

传导力矩（封闭型、部件型）

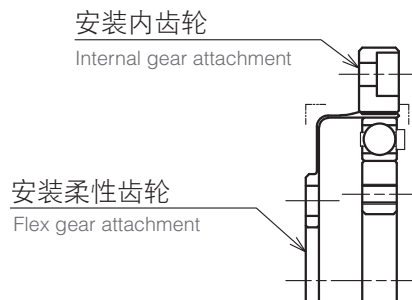
Bolt specifications and Transmitting torque (Closed type, Component)

安装柔性齿轮 *Flex gear attachment*

| | | | | | | |
|------------|---------------------|-----|------|-----|-----|-----|
| 尺寸 | Size | 35 | 42 | 50 | 63 | 80 |
| 螺丝尺寸 | Bolt size | M3 | M4 | M4 | M5 | M6 |
| 螺丝个数 | Bolt count | 8 | 8 | 8 | 8 | 10 |
| 安装PCD [mm] | Bolt PCD | 17 | 19.5 | 24 | 30 | 41 |
| 紧固力矩 [Nm] | Tightening torque | 1.9 | 4.3 | 4.3 | 8.7 | 15 |
| 传导力矩 [Nm] | Transmitting torque | 32 | 63 | 78 | 157 | 380 |

安装内齿轮 *Internal gear attachment*

| | | | | | | |
|------------|---------------------|-----|-----|-----|-----|-----|
| 尺寸 | Size | 35 | 42 | 50 | 63 | 80 |
| 螺丝尺寸 | Bolt size | M3 | M3 | M3 | M3 | M4 |
| 螺丝个数 | Bolt count | 6 | 8 | 12 | 12 | 12 |
| 安装PCD [mm] | Bolt PCD | 44 | 54 | 62 | 75 | 100 |
| 紧固力矩 [Nm] | Tightening torque | 1.9 | 1.9 | 1.9 | 1.9 | 4.3 |
| 传导力矩 [Nm] | Transmitting torque | 61 | 100 | 172 | 209 | 485 |



传导力矩（开放型）

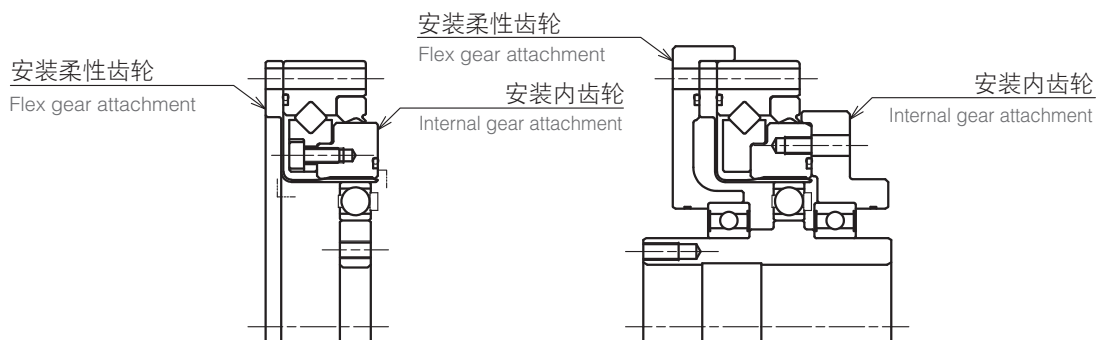
Bolt specifications and Transmitting torque (Open type)

安装柔性齿轮 *Flex gear attachment*

| | | | | | | |
|------------|---------------------|-----|-----|-----|-----|------|
| 尺寸 | Size | 35 | 42 | 50 | 63 | 80 |
| 螺丝尺寸 | Bolt size | M3 | M3 | M3 | M4 | M5 |
| 螺丝个数 | Bolt count | 8 | 12 | 12 | 12 | 12 |
| 安装PCD [mm] | Bolt PCD | 64 | 74 | 84 | 102 | 132 |
| 紧固力矩 [Nm] | Tightening torque | 1.9 | 1.9 | 1.9 | 4.3 | 8.7 |
| 传导力矩 [Nm] | Transmitting torque | 119 | 206 | 234 | 495 | 1037 |

安装内齿轮 *Internal gear attachment*

| | | | | | | |
|------------|---------------------|-----|-----|------|-----|-----|
| 尺寸 | Size | 35 | 42 | 50 | 63 | 80 |
| 螺丝尺寸 | Bolt size | M3 | M3 | M3 | M4 | M5 |
| 螺丝个数 | Bolt count | 8 | 12 | 12 | 12 | 12 |
| 安装PCD [mm] | Bolt PCD | 43 | 52 | 61.4 | 76 | 99 |
| 紧固力矩 [Nm] | Tightening torque | 1.9 | 1.9 | 1.9 | 4.3 | 8.7 |
| 传导力矩 [Nm] | Transmitting torque | 80 | 145 | 171 | 369 | 778 |



注意事项 *Installation and assembly instructions*

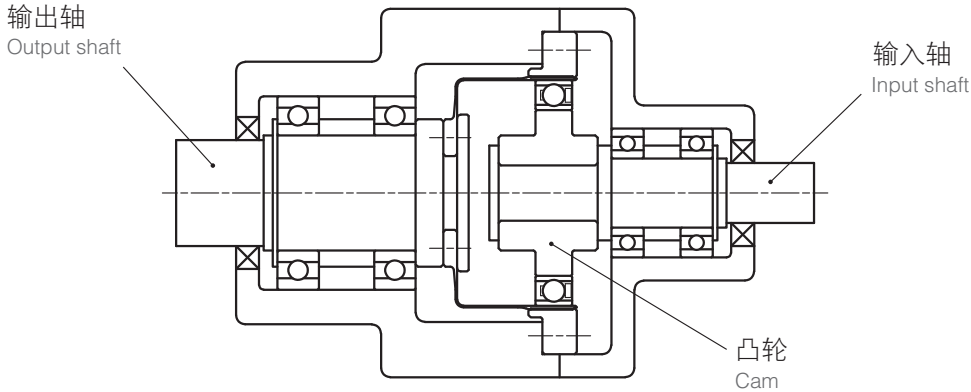
输入/ 输出轴的支撑 (WPC-□-□-□-□)

Shaft installation instruction

输入轴/ 输出轴请采用承受作用于轴部的径向负荷/ 轴向负荷的支撑构造。(下图为参考实例)
来自减速机内部的轴向负荷作用于凸轮。请进行固定，避免凸轮发生轴向移动。

Please design the support structure for input shaft and output shaft so that both radial and axial loads are supported. (Diagram below shows an example)

Inside thrust load has effect on the cam. Secure cam from the possible axial movement.



规格
Reducer Model / Specifications

尺寸表
Dimensions Table

寿命计算 (薄壁轴承) /
寿命计算 (主轴承)
Life estimation (Elastic bearing) /
Life estimation (Main bearing)

输入轴容许负荷 /
润滑油
Maximum load at
input shaft /
lubricant information

安装精度
Attachment fixture
requirement

传导力矩
Transmitting Torque

注意事项
Installation and
assembly instructions

特性数据
Characteristics Data

角度传导精度

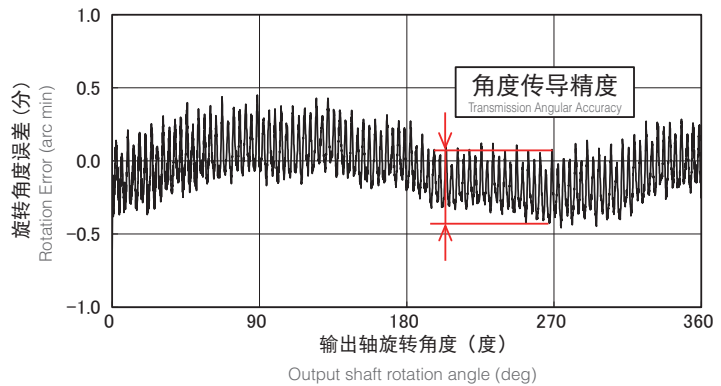
Transmission Angular Accuracy

角度传导精度定义

在无负荷条件下使输入轴旋转时，理论上输出旋转角度与实际输出旋转角度的差值。

What is Transmission Angular Accuracy?

It is the difference between the measured output rotation angle and the theoretical angle, while input shaft is rotated with no load.



[arc min]

| 减速比 Ratio | 尺寸 Size | | | | |
|--------------|------------|-----|-----|-----|-----|
| | 35 | 42 | 50 | 63 | 80 |
| 50 | 2.0 | 2.0 | 1.5 | 1.0 | 1.0 |
| 80 | 1.5 | 1.5 | 1.0 | 1.0 | 1.0 |
| 100 | 1.5 | 1.5 | 1.0 | 1.0 | 1.0 |
| 120 | - | 1.5 | 1.0 | 1.0 | 1.0 |

※表中数值为参考值。

Table values are reference values.

滞后损失

Hysteresis Loss

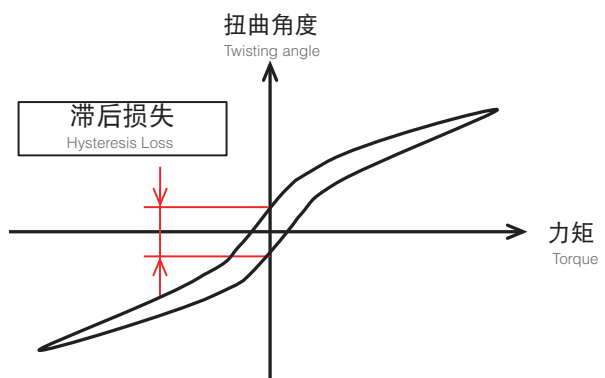
滞后损失定义

输入侧固定后，将力矩施加至输出侧且0力矩时的扭曲角度差。

What is Hysteresis Loss?

When torque load is applied at the output shaft in alternate direction repeatedly with input shaft fixed, there is residual twisting angle when torque is back to zero.

In this context, hysteresis loss is the difference in the forward and backward twisting angle.



[arc min]

| 减速比 Ratio | 尺寸 Size | | | | |
|--------------|------------|-----|-----|-----|-----|
| | 35 | 42 | 50 | 63 | 80 |
| 50 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| 80 | 1.5 | 1.5 | 1.0 | 1.0 | 1.0 |
| 100 | 1.5 | 1.5 | 1.0 | 1.0 | 1.0 |
| 120 | - | 1.5 | 1.0 | 1.0 | 1.0 |

最大背隙

Maximum Backlash

[arc sec]

最大背隙定义

输入部采用花键型组件时的输出侧松动间隙
(齿轮相咬合部位背隙为0, 所以刚构型组件背隙为0)

What is Maximum Backlash?

In this context, maximum backlash is the output backlash for spline type input shaft. (Backlash is zero for rigid type input, because gear engagement backlash is zero.)

| 减速比 Ratio | 尺寸 Size | | | | |
|--------------|------------|----|----|----|----|
| | 35 | 42 | 50 | 63 | 80 |
| 50 | 27 | 27 | 18 | 16 | 16 |
| 80 | 17 | 17 | 11 | 10 | 10 |
| 100 | 13 | 13 | 9 | 8 | 8 |
| 120 | - | 11 | 7 | 7 | 7 |

刚性 (封闭型、组合型)

Stiffness (Closed type, Unit)

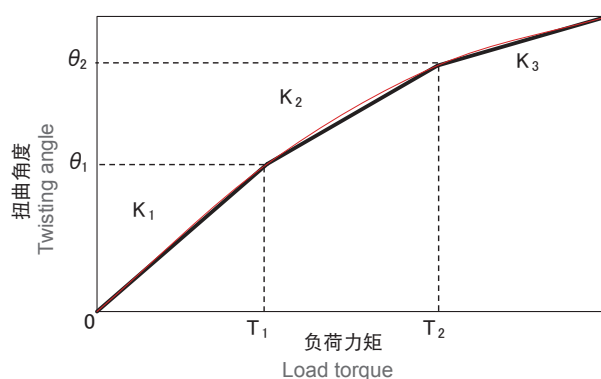
刚性定义

固定输入侧, 将力矩施加至输出侧时的弹簧常数
与扭曲角度

What is Stiffness?

In this context, stiffness is the output shaft twisting angle and the spring coefficient, while torque load is applied to the output shaft with input side fixed.

- K1...力矩 0 ~ T₁ 的弹簧常数
Spring coefficient at 0 ~ T₁ torque
- K2...力矩 T₁ ~ T₂ 的弹簧常数
Spring coefficient at T₁ ~ T₂ torque
- K3...力矩 T₂ ~ 的弹簧常数
Spring coefficient at T₂ ~ torque



| 减速比 Ratio | 符号 item | 单位 unit | 尺寸 Size | | | | |
|--------------|----------------|--------------------------|------------|------|-----|-----|-----|
| | | | 35 | 42 | 50 | 63 | 80 |
| - | T ₁ | Nm | 2 | 3.9 | 7 | 14 | 29 |
| - | T ₂ | Nm | 6.9 | 12 | 25 | 48 | 108 |
| 50 | K ₁ | × 10 ⁴ Nm/rad | 0.39 | 0.66 | 1.1 | 2.2 | 4.6 |
| | K ₂ | × 10 ⁴ Nm/rad | 0.47 | 0.75 | 1.4 | 2.6 | 5.1 |
| | K ₃ | × 10 ⁴ Nm/rad | 0.52 | 0.82 | 1.4 | 2.7 | 5.6 |
| | θ ₁ | arcmin | 1.7 | 2.0 | 2.2 | 2.2 | 2.2 |
| | θ ₂ | arcmin | 5.0 | 5.5 | 6.3 | 6.4 | 7.2 |
| 80 | K ₁ | × 10 ⁴ Nm/rad | 0.44 | 0.86 | 1.6 | 2.9 | 6.2 |
| | K ₂ | × 10 ⁴ Nm/rad | 0.60 | 1.0 | 1.9 | 3.2 | 6.5 |
| | K ₃ | × 10 ⁴ Nm/rad | 0.72 | 1.0 | 1.9 | 3.1 | 6.5 |
| | θ ₁ | arcmin | 1.6 | 1.6 | 1.5 | 1.7 | 1.6 |
| | θ ₂ | arcmin | 4.0 | 4.1 | 4.6 | 5.2 | 5.7 |

※表中数值为平均值。
Average value shown in the table

减速机型号 /
规格
Reducer Model /
Specifications

尺寸表
Dimensions Table

寿命计算 (薄壁轴承) /
寿命计算 (主轴承)
Life estimation
(Elastic bearing) /
Life estimation (Main bearing)

输入轴容许负荷 /
润滑油
Maximum load at
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lubricant information

安装精度
Attachment fixture
requirement

传导力矩
Transmitting Torque

注意事项
Installation and
assembly instructions

特性数据
Characteristics Data

特性数据 Characteristics Data

启动力矩 (封闭型、组合型)

[cNm]

Starting Torque (Closed type, Unit)

启动力矩定义

由输入侧使其旋转时，输入侧开始旋转的力矩。

(无负荷，环境温度：25℃)

What is Starting Torque?

Input torque needed for input side to start rotating (no load, ambient temperature : 25℃)

| 减速比 Ratio | 尺寸 Size | | | | |
|--------------|------------|-----|-----|----|----|
| | 35 | 42 | 50 | 63 | 80 |
| 50 | 7.0 | 11 | 14 | 17 | 26 |
| 80 | 6.8 | 9.5 | 13 | 24 | 26 |
| 100 | 6.4 | 9.4 | 11 | 14 | 20 |
| 120 | - | 8.1 | 9.3 | 14 | 20 |

※1 根据使用条件不同，数值存在差异，所以上表作为参考值使用。

※2 不包括输入侧油封及球形轴承等的旋转阻力所带来的影响。

*1 For reference only. Torque value may vary depending on the condition.

*2 Charts does not show effects due to rotation resistance of bearings and oil seals on the input side.

加速启动力矩

(封闭型、组合型)

Output Starting Torque(Closed type, Unit)

加速启动力矩定义

由输出侧使其旋转时，输出侧开始旋转的力矩。

(无负荷，环境温度：25℃)

What is Output Starting Torque?

Output torque needed for output side to start rotating (no load, ambient temperature : 25℃)

| 减速比 Ratio | 尺寸 Size | | | | |
|--------------|------------|-----|-----|-----|----|
| | 35 | 42 | 50 | 63 | 80 |
| 50 | 1.2 | 3.6 | 4.4 | 5.8 | 13 |
| 80 | 1.6 | 3.9 | 7.2 | 13 | 26 |
| 100 | 1.7 | 5.7 | 8.6 | 9.4 | 23 |
| 120 | - | 4.2 | 8.1 | 10 | 30 |

※1 根据使用条件不同，数值存在差异，所以上表作为参考值使用。

※2 不包括输入侧油封及球形轴承等的旋转阻力所带来的影响。

*1 For reference only. Torque value may vary depending on the condition.

*2 Charts does not show effects due to rotation resistance of bearings and oil seals on the input side.

无负荷运转力矩

(封闭型、组合型)

No-load Running Torque (Closed type, Unit)

无负荷运转力矩定义

在无负荷条件下，使其旋转所需必要的输入侧力矩。

(平均值，环境温度：25℃)

What is No-load Running Torque?

Input torque needed to keep it running with no load (average value, ambient temperature : 25℃)

| 减速比 Ratio | 符号 | 尺寸 Size | | | | |
|--------------|-----------|------------|-----|-----|----|----|
| | | 35 | 42 | 50 | 63 | 80 |
| 50 | 500r/min | 3.4 | 7.5 | 9.2 | 17 | 35 |
| | 1000r/min | 4.3 | 8.2 | 11 | 18 | 37 |
| | 2000r/min | 5.0 | 8.5 | 13 | 18 | 39 |
| | 3500r/min | 5.4 | 11 | 14 | 22 | 38 |
| 80 | 500r/min | 3.2 | 7.6 | 10 | 20 | 35 |
| | 1000r/min | 4.0 | 8.7 | 12 | 21 | 38 |
| | 2000r/min | 4.8 | 8.9 | 14 | 22 | 39 |
| | 3500r/min | 5.2 | 11 | 14 | 24 | 38 |
| 100 | 500r/min | 3.2 | 7.1 | 11 | 21 | 36 |
| | 1000r/min | 4.0 | 8.2 | 13 | 23 | 39 |
| | 2000r/min | 4.7 | 8.4 | 14 | 24 | 39 |
| | 3500r/min | 5.1 | 9.7 | 14 | 25 | 38 |
| 120 | 500r/min | - | 6.7 | 9.8 | 23 | 40 |
| | 1000r/min | - | 8.1 | 12 | 24 | 41 |
| | 2000r/min | - | 8.4 | 13 | 26 | 41 |
| | 3500r/min | - | 8.4 | 13 | 26 | 39 |

※1 根据使用条件不同，数值存在差异，所以上表作为参考值使用。

※2 不包括输入侧油封及球形轴承等的旋转阻力所带来的影响。

*1 For reference only. Torque value may vary depending on the condition.

*2 Charts does not show effects due to rotation resistance of bearings and oil seals on the input side.

效率 (封闭型、组合型)

Efficiency (Closed type, Unit)

负荷[%] : 负荷力矩/容许平均力矩
环境温度 : 25°C

※1 图表为实测数据的平均值。

※2 不包括输入侧油封及球形轴承等的旋转阻力所带来的影响。

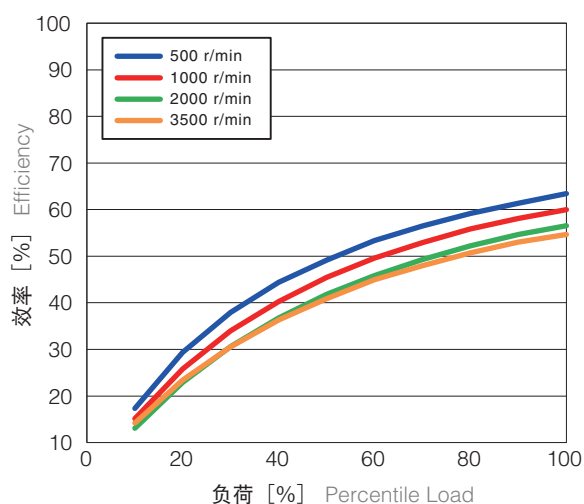
·Percentile Load (%) is equal to load torque divided by allowable average torque.

·Ambient temperature : 25°C

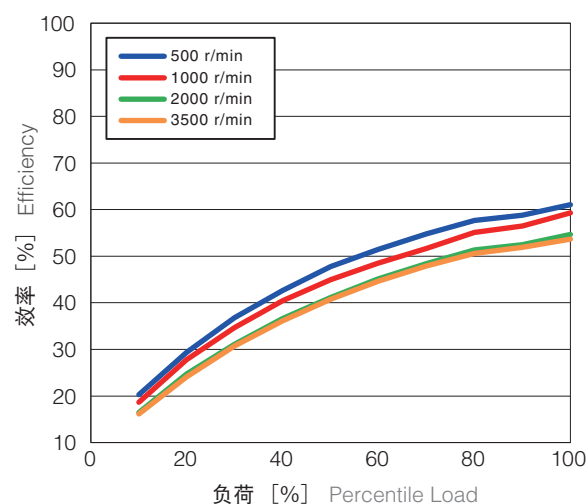
*1 These diagrams represent the average value of the actual measurement.

*2 Charts does not show effects due to rotation resistance of bearings and oil seals on the input side.

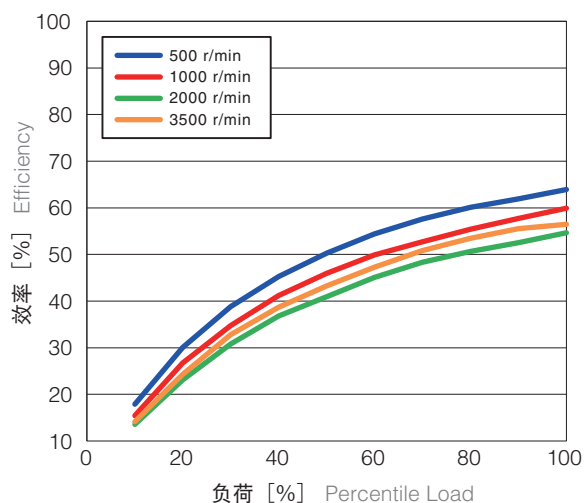
WPU-35-50



WPU-35-80



WPU-35-100



特性数据 Characteristics Data

效率 (封闭型、组合型)

Efficiency (Closed type, Unit)

负荷[%] : 负荷力矩/容许平均力矩

环境温度: 25°C

※1 图表为实测数据的平均值。

※2 不包括输入侧油封及球形轴承等的旋转阻力所带来的影响。

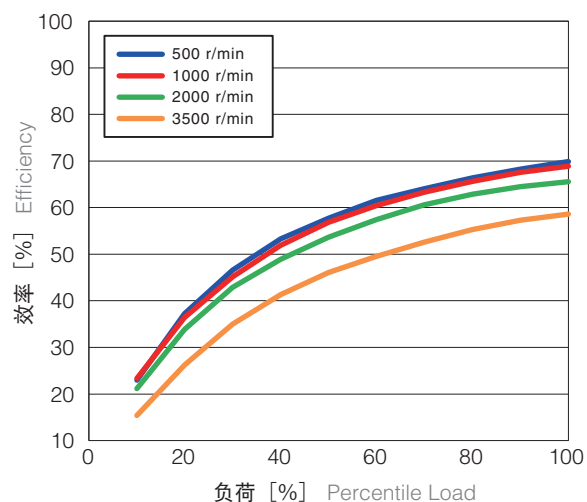
·Percentile Load (%) is equal to load torque divided by allowable average torque.

·Ambient temperature : 25°C

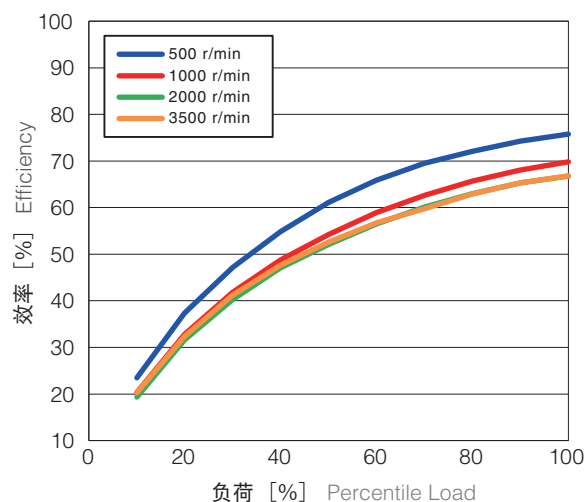
*1 These diagrams represent the average value of the actual measurement.

*2 Charts does not show effects due to rotation resistance of bearings and oil seals on the input side.

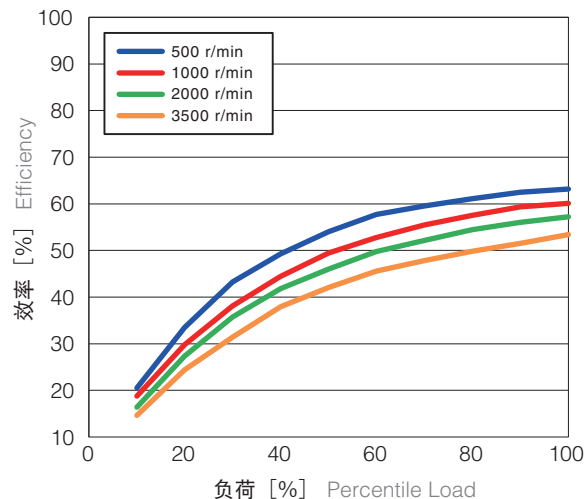
WPU-42-50



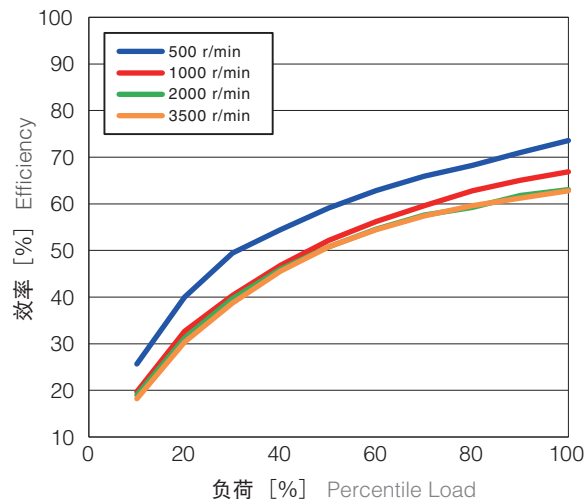
WPU-42-80



WPU-42-100



WPU-42-120



效率 (封闭型、组合型)

Efficiency (Closed type, Unit)

负荷[%] : 负荷力矩/容许平均力矩
环境温度 : 25°C

※1 图表为实测数据的平均值。

※2 不包括输入侧油封及球形轴承等的旋转阻力所带来的影响。

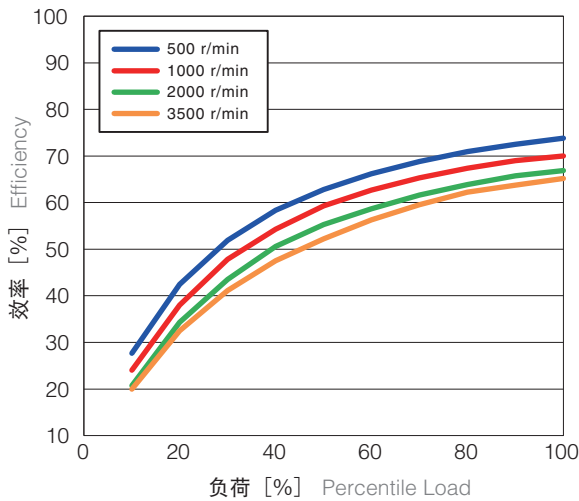
·Percentile Load (%) is equal to load torque divided by allowable average torque.

·Ambient temperature : 25°C

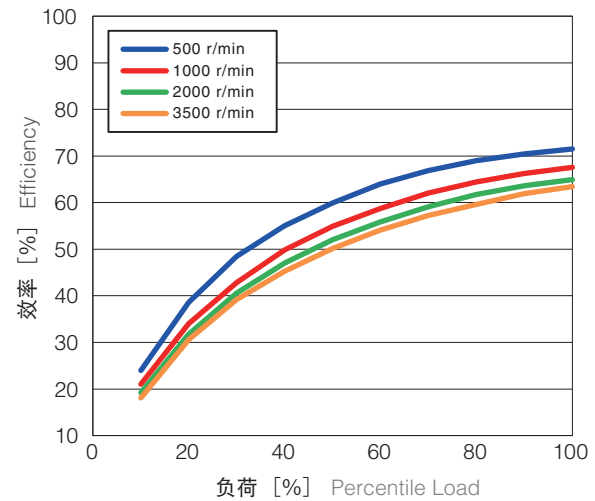
*1 These diagrams represent the average value of the actual measurement.

*2 Charts does not show effects due to rotation resistance of bearings and oil seals on the input side.

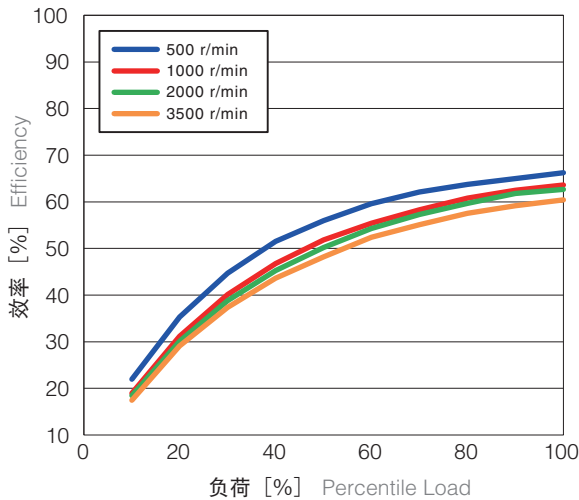
WPU-50-50



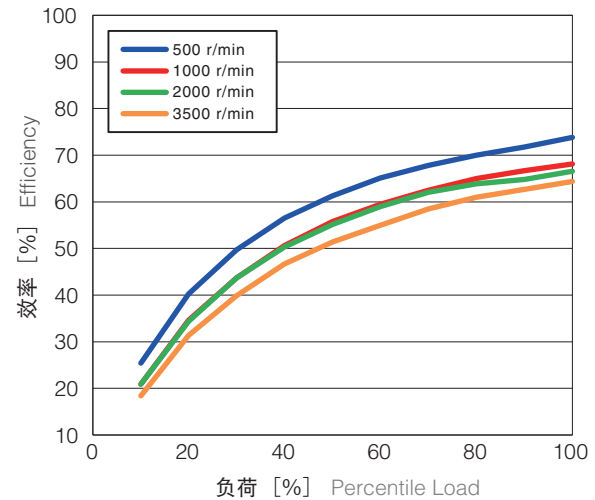
WPU-50-80



WPU-50-100



WPU-50-120



特性数据 Characteristics Data

效率 (封闭型、组合型)

Efficiency (Closed type, Unit)

负荷[%] : 负荷力矩/容许平均力矩

环境温度: 25°C

※1 图表为实测数据的平均值。

※2 不包括输入侧油封及球形轴承等的旋转阻力所带来的影响。

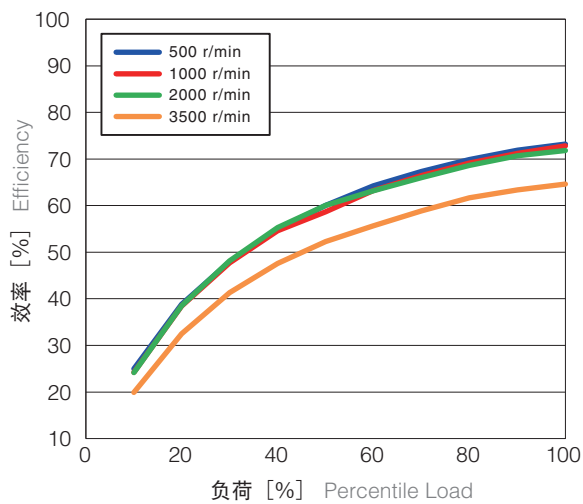
·Percentile Load (%) is equal to load torque divided by allowable average torque.

·Ambient temperature : 25°C

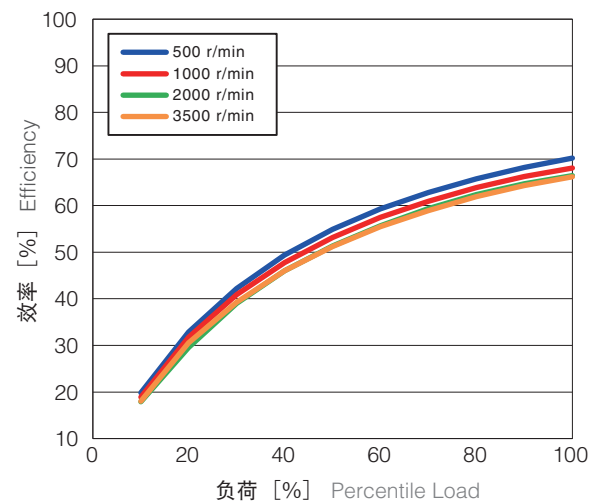
*1 These diagrams represent the average value of the actual measurement.

*2 Charts does not show effects due to rotation resistance of bearings and oil seals on the input side.

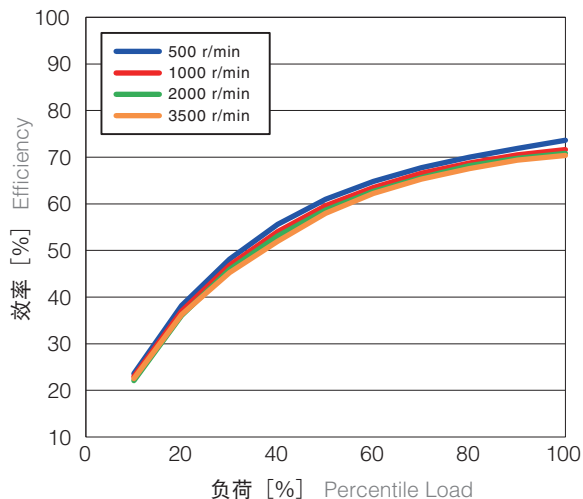
WPU-63-50



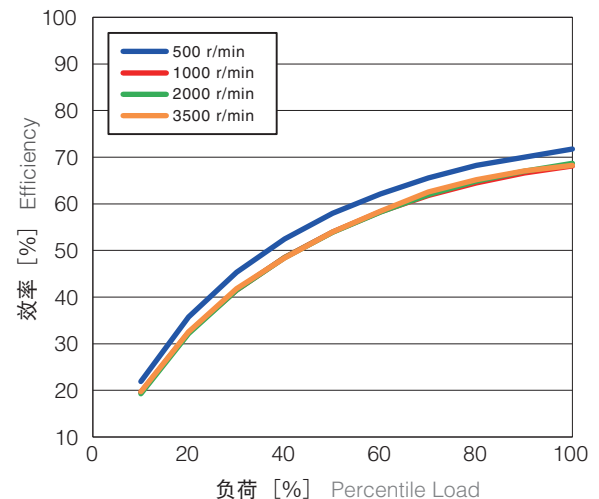
WPU-63-80



WPU-63-100



WPU-63-120



效率 (封闭型、组合型)

Efficiency (Closed type, Unit)

负荷[%] : 负荷力矩/容许平均力矩

环境温度 : 25°C

※1 图表为实测数据的平均值。

※2 不包括输入侧油封及球形轴承等的旋转阻力所带来的影响。

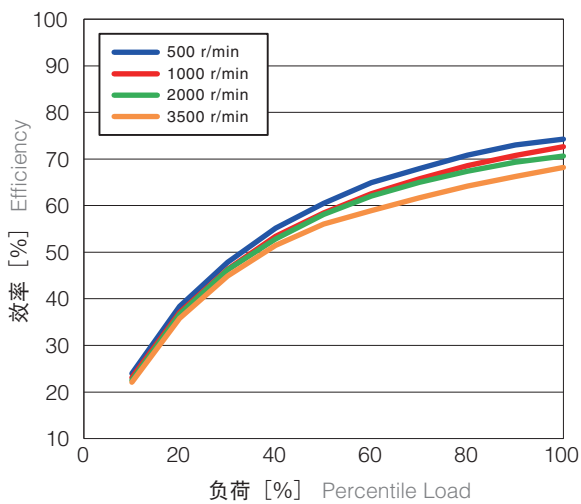
·Percentile Load (%) is equal to load torque divided by allowable average torque.

·Ambient temperature : 25°C

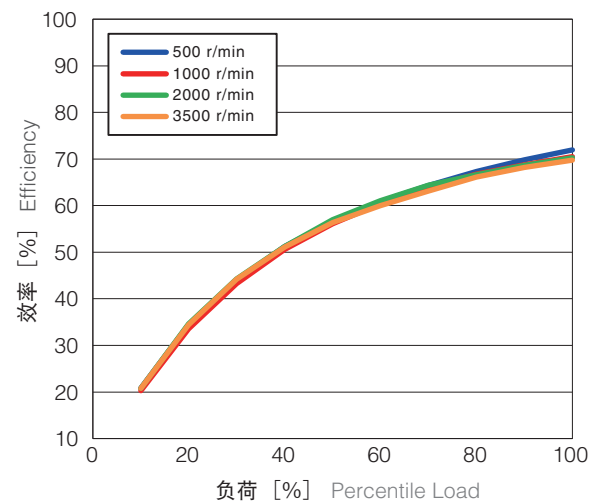
*1 These diagrams represent the average value of the actual measurement.

*2 Charts does not show effects due to rotation resistance of bearings and oil seals on the input side.

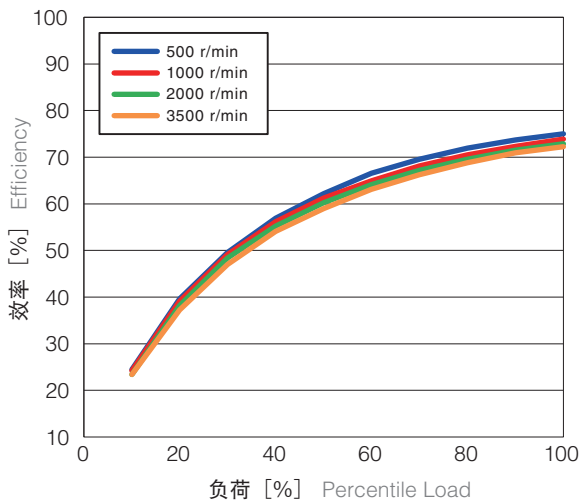
WPU-80-50



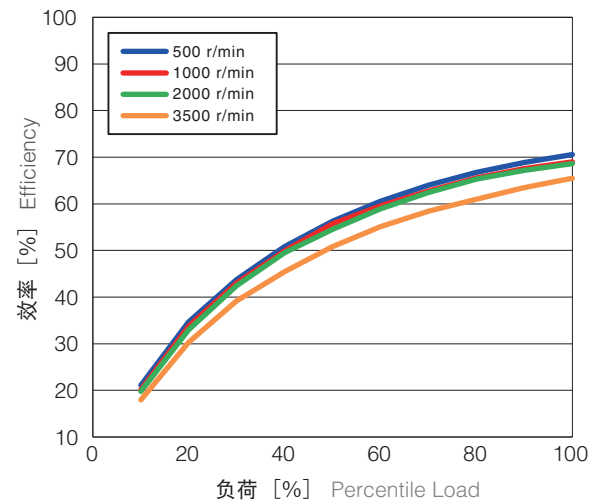
WPU-80-80



WPU-80-100



WPU-80-120



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