

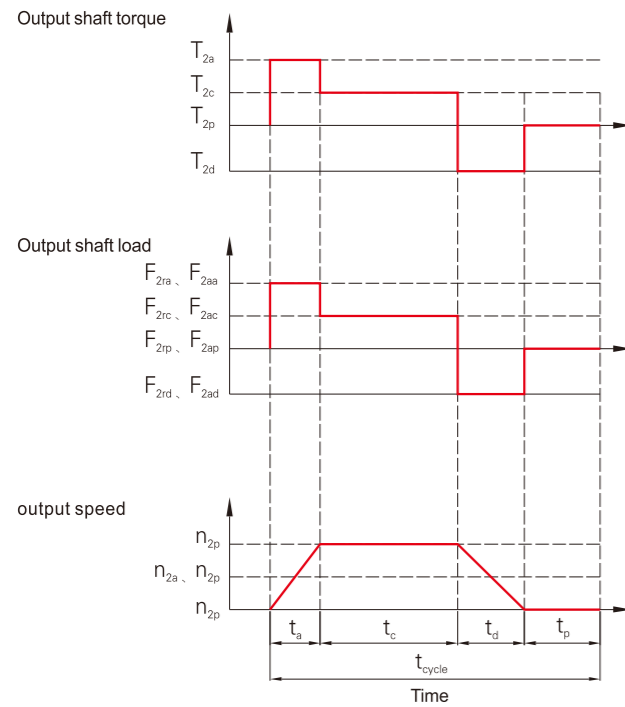
S5 suggestions for cycle operation  
General application inertia must conform to the following formula

$$\frac{J_L}{J_m} \leq 4 \times J_m$$

J<sub>L</sub>: Load inertia J<sub>m</sub>: Motor inertia

The most appropriate application inertia must conform to the following formula

$$\frac{J_L}{J_m} \approx J_m$$



**1**  $ED = \frac{t_a + t_c + t_d}{t_{cycle}} \times 100\%$ ,  $t_{work} = t_a + t_c + t_d$  (Eq.1)

Subscript description:  
a.accelerate, c.constant, d.decelerate, p.stop

**2**  $i \approx \frac{n_m}{n_{work}}$  (Eq.2)

n<sub>m</sub>: Motor output speed n<sub>work</sub>: Actual application speed

**3**  $T_{2m} = 3 \sqrt{\frac{n_{2a} \times t_a \times T_{2a}^3 + n_{2c} \times t_c \times T_{2c}^3 + n_{2d} \times t_d \times T_{2d}^3}{n_{2a} \times t_a + n_{2c} \times t_c + n_{2d} \times t_d}}$  (Eq.3)

**4**  $T_{2max} = T_{mB} \times i \times k_x \times \eta$

Ks	Ks	周期次数 / 小时
负	1.0	0~1000
载	1.1	1000~1500
系	1.3	1500~2000
数	1.6	2000~3000
	1.8	3000~5000

T<sub>mB</sub> Motor maximum output torque  
η Gearbox operating efficiency (Eq.4)

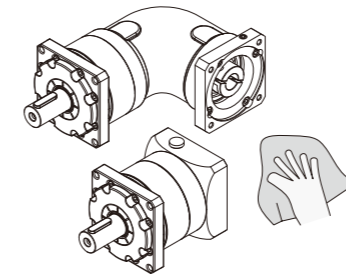
**5**  $n_{2a} = n_{2d} = \frac{1}{2} \times n_{2c}$   
 $n_{2m} = \frac{n_{2a} \times t_a + n_{2c} \times t_c + n_{2d} \times t_d}{t_a + t_c + t_d}$   
 $n_{2N} = \frac{n_{IN}}{i}$  (Eq.5)

**6**  $F_{2m} = 3 \sqrt{\frac{n_{2a} \times t_a \times F_{2a}^3 + n_{2c} \times t_c \times F_{2c}^3 + n_{2d} \times t_d \times F_{2d}^3}{n_{2a} \times t_a + n_{2c} \times t_c + n_{2d} \times t_d}}$   
 $F_{2am} = 3 \sqrt{\frac{n_{2a} \times t_a \times F_{2aa}^3 + n_{2c} \times t_c \times F_{2cc}^3 + n_{2d} \times t_d \times F_{2dd}^3}{n_{2a} \times t_a + n_{2c} \times t_c + n_{2d} \times t_d}}$  (Eq.6)

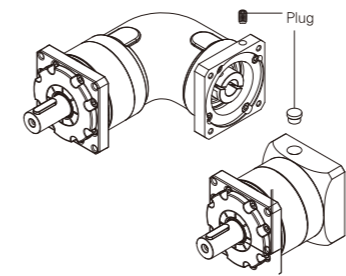
## INSTALLATION OF PLANETARY REDUCERS

If your company install the planetary reducers by yourself, please comply with the following requirements:  
The size of the motor mounting flange of the planetary reducer differs according to the servo motor, the designated servo motor maybe not able to be installed. (Please be sure to install the designated servo motor when purchased)  
There may be rust inhibitor on the output shaft of the servo motor.

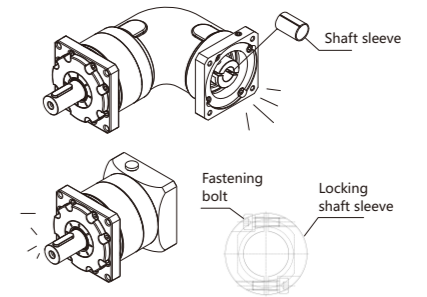
**1** Clean up the rust inhibitor and grease on the installing side of the motor shaft



**2** Take off the plug



**3** Rotate the input shaft, and align the top of the fastening bolt at the plug hole. Make sure that the fastening bolt is loose at the time. Lay the reducer vertically on he flat place, and face up the installing side of the motor.(If there is a shaft sleeve, please install it as the picture shows below)



**4** Please insert the motor shaft into the input shaft slowly to avoid impact, and make sure the surfaces of the motor flange and the reducer flange are stick together. Fasten the motor mounting bolt according to the specified fastening torque. (Refer to the Table 3)

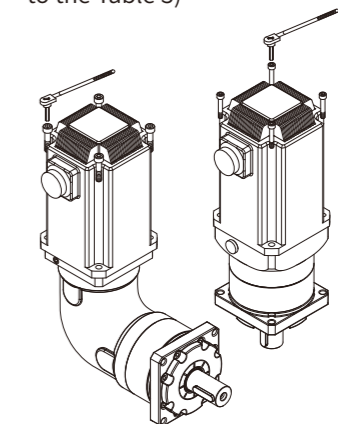
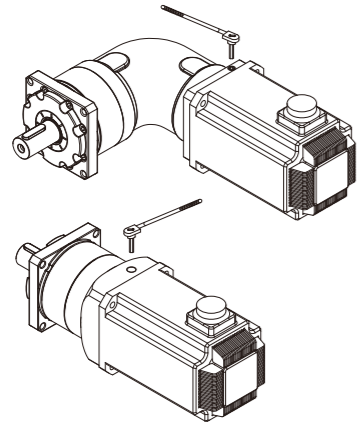


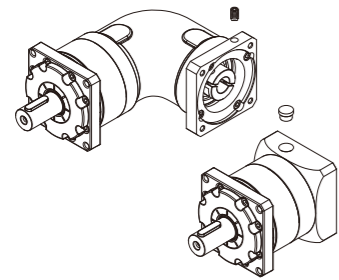
Diagram 3 Bolt fastening torque

Bolt size	M3	M4	M5	M6	M8	M10	M12	M16
Motor mounting bolt	N · m	1.0	2.5	5.1	8.7	21	42	134
	kgf · m	0.11	0.26	0.52	0.89	2.1	4.3	14
Fastening bolt	N · m	1.9	4.3	8.7	15	36	71	-
	kgf · m	0.18	0.44	0.89	1.5	3.7	7.2	-

- 5** Follow the specified fastening torque, and fasten the fastening bolt of the input shaft with the tools such as torque spanner.(Refer to the table 3)



- 6** Install the plug, and the installinn complete.



### Installation and setting up

- Please avoid using in places that are exposed to rain directly.(Please consult to WANSHSIN or our distributors first when using it outside or in places exposed to dust and water.)
  - Please fit it in the temperature under 0-40°C.
  - Please install it on the stable and firm surface, and fasten it tightly with bolt.
- During installation, it is necessary to ensure easy maintenance and inspection.

### Output shaft connecting

- When installing gear wheels, belt pulley and chain wheels on the output flange model, please use the installing design with bulged edges, and implant them into it. Avoid applying too much strength when installing.
- When installing coupling, chain wheels on the output shaft, please do not apply too much strength onto it. Do not knock too hard on the output shaft when implanting, or it may cause damages to the axletree and the interior part of the reducer.
- Too much gap between shaft and key in the coupling may cause firing so please be careful when installing.
- Please accurate centering when connect.

### Install it to the output flange(limited to the flange model)

- When installing the device component to the output flange, please follow the specified fastening torque and use the tools such as torque wrench.

Bolt size		M3	M4	M5	M6	M8	M10	M12	M16	M20
Fastening bolt	N · m	1.9	4.3	8.7	15	36	71	125	310	603
	kgf · m	0.18	0.44	0.89	1.5	3.7	7.2	13	32	62

\* Recommended strength level of the bolt is above 12.9

### Notes before starting

- The specified amount of lubricant has been added before delivery, so the reducers can be used directly when arrived.
- Please confirm the rolling direction of the output shaft and increase the load gradually at the first time operating.

### Notes need attention during operating

- Do not overloaded.  
The rolling speed of the output shaft should not be faster than the specified one.
- Please shut the machine down when following situation shows.
  - 1.The temperature rise suddenly.
  - 2.Strange noise are emerged.
  - 3.The rolling speed becomes unstable.
- The possible reasons are as follows, please make sure to deal with it in time.
  - 1.Whether it is overloaded or not?
  - 2.Are the axletrees, gear wheels and the rolling side damaged?
  - 3.Is the connecting condition abnormal?

### The lubricant managing

- The grease can not be replace.

### Daily check

- Whether the temperature of the reducer shell rise abnormally?(Maximum 90 °C)
- Are there any abnormal noise on axletrees or chain wheels.
- Is the reducer vibrating abnormally?(If it happens, please shut down the machine and contact WANSHSIN or our distributors)
- Is the lubricant leaking?(If it happens, please contact WANSHSIN or our distributors.)

### Regular check

- Whether it is overloaded or rolling abnormally?
- Is the belt pulley, chain wheel, the installation bolt of the reducer loose?
- The check and maintenance of main components. (When there is an abnormal phenomenon, please shut down the machine and contact WANSHSIN or our distributors.)