



THK Electrical Actuator Press Series

PCT/PC

INSTRUCTION MANUAL

No.369M Ver 3.00E

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1. Introduction

- Thank you for purchasing the press series PCT/PC.
- This product (PC) is the actuator that has achieved both small size and high thrust force through the mechanism of integrating the ball screw nut and ball spline shaft.
- This product (PCT) is a cylinder type electrical actuator using ball screws.
- This manual describes the structure of the press series PCT/PC (main unit), and the correct method for handling, installing and maintaining the product.
- Carefully read and understand this manual before using the product, and then correctly handle the product.
- Store this manual after reading it so that it can be referred to at any time.
- Reproduction or duplication of the whole or part of this manual without permission is strictly prohibited.
- Content of this manual is subject to change without notice.
This manual is available to download from our website. For the latest version, see electrical actuator site (URL: <https://tech.thk.com/>).
- We have made all possible efforts to make the content of this manual accurate. However, if you find any mistake or uncertainty in this manual, please contact our Customer Support.
- Drawings in this manual show representative examples, and may differ from your product.
- This manual can be applied to special types. However, the descriptions defined in the delivery specification documents or the delivery specification drawings of those special types should take precedence over this manual.

2. Safety Precautions

2-1

Warning indications on safety

This manual uses the following warning indications according to safety matters. The descriptions next to warning indications on safety are important messages. Be sure to observe those descriptions.



WARNING

It indicates that erroneous handling may cause death or serious injury to a person.



CAUTION

It indicates that erroneous handling may cause injury to a person or property damage only.



It indicates prohibitions ("don't").



It indicates obligations ("do").

When you use this product in conjunction with Servo driver controller TLC or THC, read also the instruction manual of TLC or THC.

2-2

Safety Precautions

This section describes important precautions that you must observe.



WARNING



■ General

- **While this product is operating or operable, for example, when the motor is energized, do not enter the working area of any moving part.**

Doing so may cause you to touch the moving part and injure you.

- **While the motor is energized, do not move or install this product.**

Doing so may cause electric shocks, or cause malfunction that could lead to injury.



- **If two or more people are involved in the installation or maintenance work, confirm the procedure, signs and actions to cope with anomalies or the like in advance, and separately appoint a person for monitoring the work.**

Failure to do so may cause an unexpected accident.

2. Safety Precautions

WARNING



■ Transportation

- **To transport this product, hang the product at the specified position using a hanger (PC only).**

Note: This hanging work must be carried out only by the qualified personnel wearing the protective equipment such as helmets and safety shoes.

Doing so may cause the product to fall, leading to injury, or cause fault or fracture of the product.

* The hanger that comes with the product does not support the weight of any other products. When you attach your devices or parts to this product, install a separate hanger.

* When hoisting the product, the body can incline due to the eccentricity of the center of gravity. Pay full attention to this.



■ Installation and operation

- **Wire and connect the electric components correctly and securely.**

Failure to do so may cause fire and electric shocks, or may cause abnormal operation that could lead to injury, fault or fracture.

- **Be sure to mount this product on a sufficiently strong base.**

Fracture of a base may cause injury or damage to the machine.

- **Firmly secure this product before operating it.**

Failure to do so may cause abnormal operation that could cause injury, fault or fracture.

- **If any moving part may fall by its own weight in such events as breakage of a timing belt, provide a safeguard for preventing the part from falling.**

If any moving part falls, it may cause injury, fault or damage.



- **While this product is operating, do not touch any moving part or rotating part.**

Doing so may cause your hand to be caught and injured.



- **Do not let the product operate with the cover, plug or grease lid removed.**

Doing so may cause your body to be caught and injured.



■ Maintenance

- **Turn off the machine (turning off power) before performing maintenance.**

Failure to do so may cause electric shocks, or cause malfunction that could lead to injury.

CAUTION



■ General

- **Do not stand on this product or the packaging box.**

Doing so may cause fault or damage. Or cause falling that could lead to injury.

- **Do not impact this product.**

Doing so may cause fault or damage. Or injure you.



- **Do not disassemble or alter this product.**

Doing so may cause fault due to entering of foreign material or adversely affect the performance or service life. Or may cause abnormal operation that could lead to injury.

* If you wish to disassemble or alter the product, contact THK.

2. Safety Precautions

CAUTION



■ Unpacking

- **Be careful not to hit your hands or body against protruded parts.**
Doing so may injure you, or cause fault or fracture of the product.
- **Check whether the delivered product is the product you ordered.**
Using a wrong product may cause malfunction that could lead to injury or fault.
* In the packaging box, an accuracy inspection report is attached.
- **Check whether the product has any fractured parts.**
Using a fractured product may cause injury or fault.
* If you find any defect, contact our Sales Division.



■ Transportation

- **Do not drop or hit this product.**
Doing so may cause injury or fracture, or a functional loss.
- **When transporting this product, do not hoist or hold any moving part or the cover.**
Doing so may cause the product to fall, leading to injury, or cause fault or fracture of the product.
- **When transporting this product, do not hoist or hold the motor, sensor or cable.**
Doing so may cause the product to fall, leading to injury, or cause fault or fracture of the product.



- **When hoisting this product, hold the external cylinder/housing/plate/flange part (for PC) or base/motor bracket/flange part (for PCT). The models whose number is larger than PC40-06B-0250 are heavy articles (20 kg or more). Two or more people should hold the product as necessary.**
Failure to do so may cause the product to fall, leading to injury, or cause fault or fracture of the product.
* For the weight of the product, see the catalog of press series PCT/PC.



■ Installation and operation

- **Firmly secure this product before operating it.**
Failure to do so may cause abnormal operation that could cause injury, fault or fracture.
- **Remove the hanger and fixtures for moving part used for transportation before operating this product.**
Failure to do so may cause abnormal operation that could cause injury, fault or fracture.
- **Pay attention to avoid applying the tension or bending to cables.**
Failure to do so may cause abnormal operation that could cause injury, fault or fracture.
- **If anomaly occurs, immediately stop the machine.**
Failure to do so may cause abnormal operation that could cause injury, fault or fracture.



- **Do not exceed the maximum speed when using the product.**
Doing so may cause fault or damage. Or may cause abnormal operation that could lead to injury.
- **Do not exceed the torque limit when using the product.**
Doing so may cause fault or damage. Or may cause abnormal operation that could lead to injury.
* See "7. Appendix (p.7-16)."
- **Do not apply a load that exceeds the permissible level.**
Doing so may cause fault or damage. Or may cause abnormal operation that could lead to injury.
* See "7. Appendix (p.7-16)."
- **Do not use the failed and broken product.**
Doing so may cause injury or machine failure.

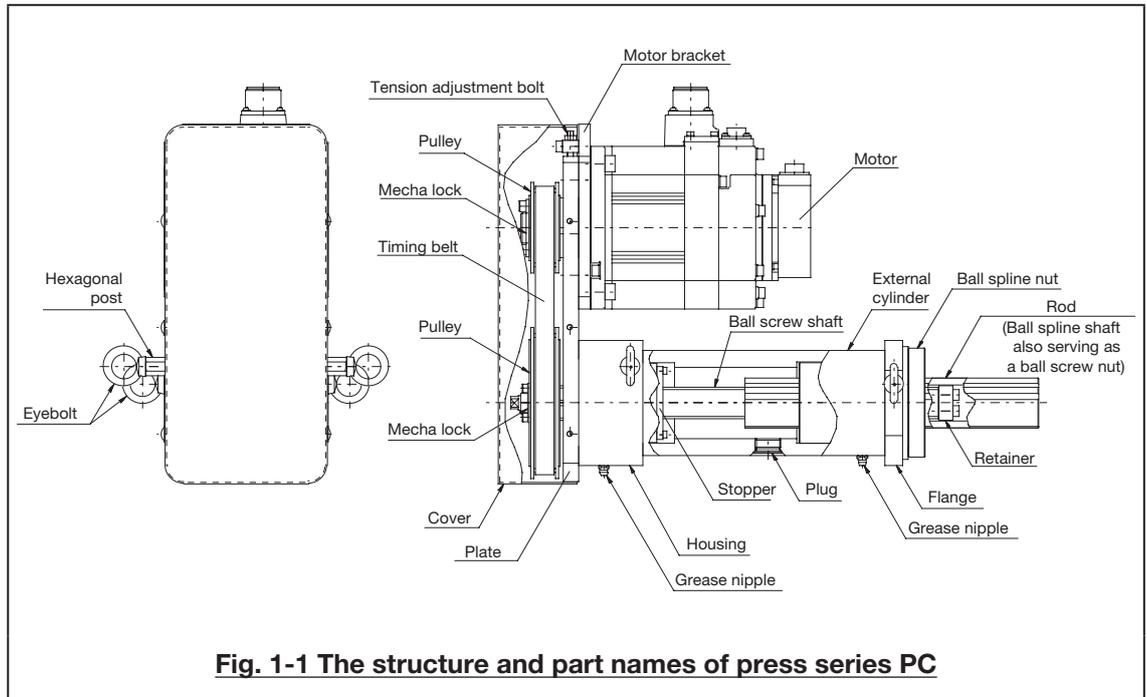


- **After trial run, supply the specified grease to ball spline (only for PC) and ball screw before using the product.**
PC Design Symbol A (standard model) contains THK L500 grease.
PCT (standard product) contains THK AFB-LF grease.

3. Structure and Mode

3-1 Structure and part names

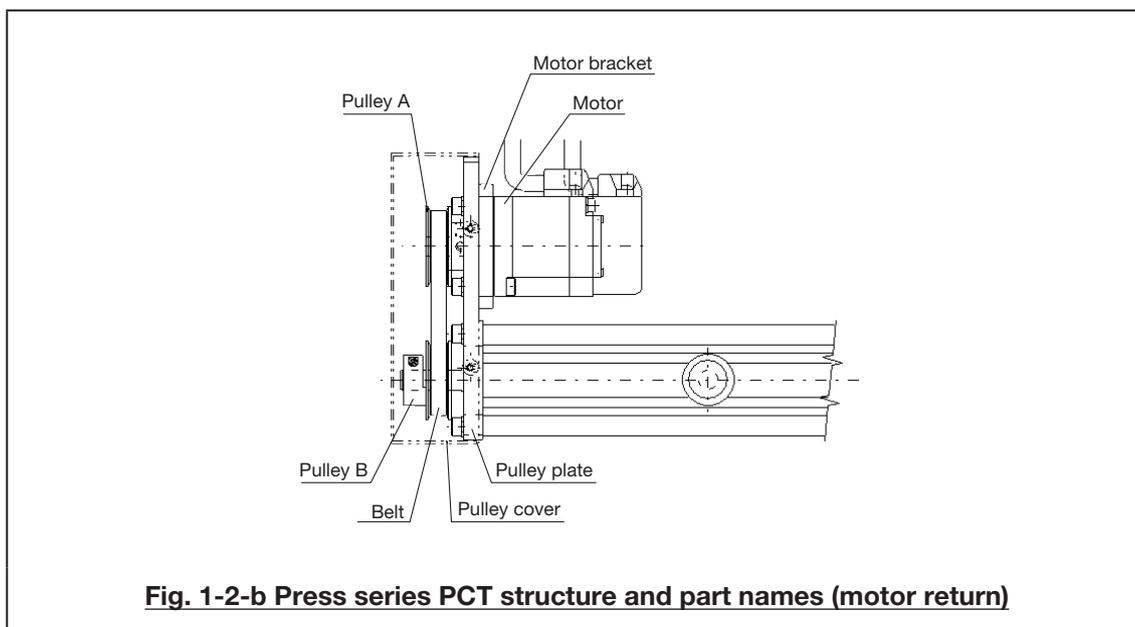
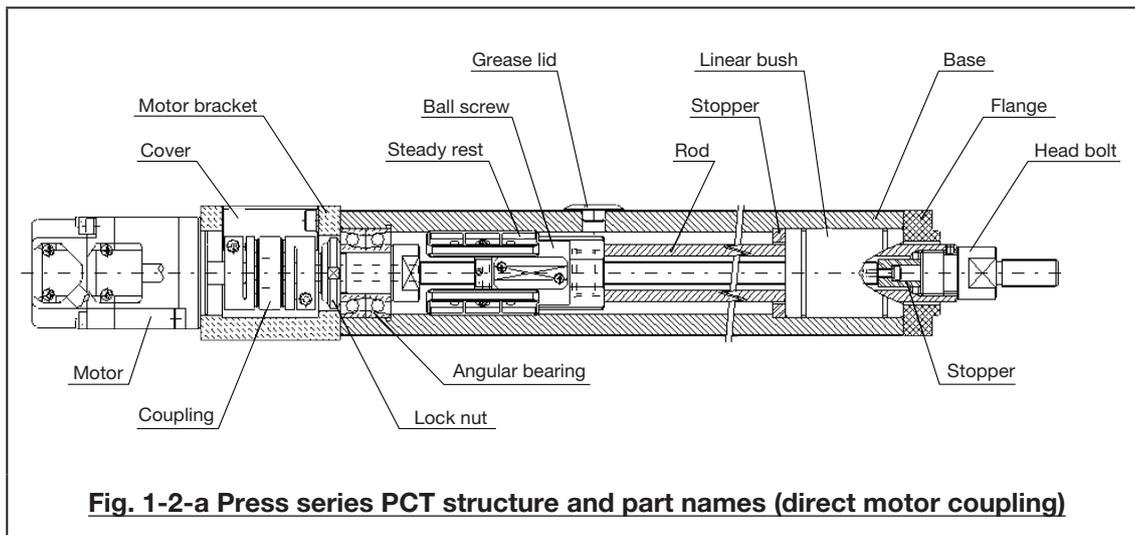
Fig. 1-1 shows the structure and part names of PC.



- * Such parts as motor, driver, power cable between motor and driver, encoder cable and brake cable (each cable is 5 m) come with the product. For the cable model (manufacturer), see the catalog of press series PCT/PC. For the details of cables, contact the manufacturers.
 - * When you use PC30 or PC40 in combination with Servo driver controller THC, you can select the cable length between motor and THC from 3 m, 5 m and 10 m.
 - * Eyebolt and hexagonal post are accessories. Remove them before use.
 - * For details such as the dimensions and accuracy, see the delivery specification drawings or catalog of press series PCT/PC.
 - * For the details of Servo driver controller THC, see the instruction manual.
- If you have any question, contact THK.

3. Structure and Mode

Fig. 1-2 shows the structure and part names of PCT.



- * When you use the product in combination with Servo driver controller TLC or THC, you can select the cable length between the motor and TLC/THC from 3 m, 5 m and 10 m.
 - * For details such as the dimensions and accuracy, see the delivery specification drawings or catalog of press series PCT/PC.
 - * For the details of Servo driver controller TLC and THC, see the instruction manual.
- If you have any question, contact THK.

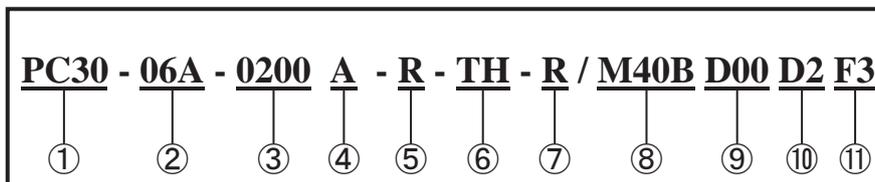
3. Structure and Mode

3-2

Model configuration

■ PCT/PC model configuration (Combination of Servo Driver Controller TLC/THC)

The following is an example of model configuration.

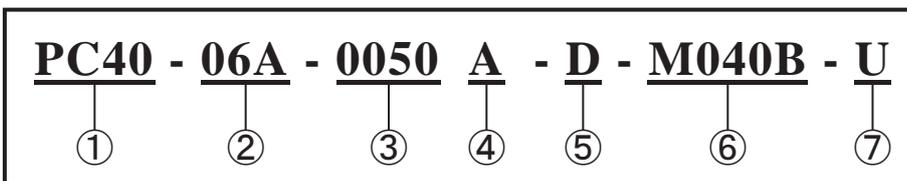


- | | |
|-------------------------|---------------------------|
| ① Model number | ⑦ Motor cable orientation |
| ② Lead, reduction ratio | ⑧ Motor rated output |
| ③ Stroke (0100: 100 mm) | ⑨ Zero point method |
| ④ Design symbol | ⑩ Power supply voltage |
| ⑤ Option | ⑪ Cable type and length |
| ⑥ Control device | |

* For details, see the catalog of press series PCT/PC.

■ PC model configuration (Combination of motor and driver)

The following is an example of model configuration.

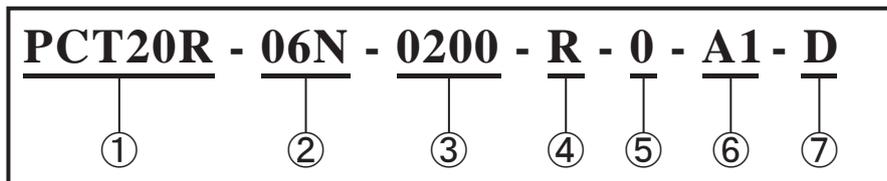


- | | |
|-------------------------|-------------------------------------|
| ① Model number | ⑤ Greasing position |
| ② Lead, reduction ratio | ⑥ Applicable motor (control device) |
| ③ Stroke (0100: 100 mm) | ⑦ Motor cable orientation |
| ④ Design symbol | |

* For details, see the catalog of press series PCT/PC.

■ PCT model configuration (without motor type)

The following is an example of model configuration.



- | | |
|-------------------------|--------------------------------|
| ① Model number | ④ Option |
| ② Lead, reduction ratio | ⑤ With/without motor |
| ③ Stroke (0100: 100 mm) | ⑥ Motor bracket |
| | ⑦ Method of fixing motor shaft |

* For details, see the catalog of press series PCT/PC.

4. Storage and Transportation

4-1

Precautions to be observed for safe use

WARNING



- **To transport this product, hang the product at the specified position using a hanger.**

Note: This hanging work must be carried out only by the qualified personnel wearing the protective equipment such as helmets and safety shoes.

Doing so may cause the product to fall, leading to injury, or cause fault or fracture of the product.

* The hanger that comes with the product does not support the weight of any other products. When you attach your devices or parts to this product, install a separate hanger.

* When hoisting the product, the body can incline due to the eccentricity of the center of gravity. Pay full attention to this.

CAUTION



- **Do not drop or hit this product.**

Doing so may cause injury or fracture, or a functional loss.

- **When transporting this product, do not hoist or hold any moving part.**

Doing so may cause the product to fall, leading to injury, or cause fault or fracture of the product.

- **When transporting this product, do not hoist or hold the motor, sensor or cable.**

Doing so may cause the product to fall, leading to injury, or cause fault or fracture of the product.



- **When hoisting this product, hold the external cylinder/housing/plate/flange part (for PC) or base/motor bracket/flange part (for PCT). The models whose number is larger than PC40-06B-0250 are heavy articles (20 kg or more). Two or more people should hold the product as necessary.**

Failure to do so may cause the product to fall, leading to injury, or cause fault or fracture of the product.

* For the weight of the product, see the catalog of press series PCT/PC.

4. Storage and Transportation

4-2

Precautions to be observed for prevention of fault, fracture, or low performance of this product



- **Since using in an adverse storage environment may cause fault or degradation, store the product in the environment described below:**
 - Place at ambient temperature and humidity within the following storage temperature and humidity ranges
 - Storage temperature: 0°C to 60°C (no freezing)
 - Storage humidity: 20% RH to 80% RH (no condensation)
 - * With the product unpacked
 - Place with no sudden temperature change
 - Place with non-corrosive gas nor flammable gas
 - Place with little dust, salt or metallic powder
 - Place where water, oil or chemical can not contact the product
 - Place where no direct sunlight nor radiation heat reaches
 - Place where no strong electric field nor strong magnetic field develops
 - Place where a vibration or shock does not transmit to the main unit
- **When storing this product, enclose it in a package designated by THK and store it in a horizontal orientation while avoiding high temperature, low temperature and high humidity.**



- **Do not apply an excessive load on the package, since doing so may cause fault or fracture.**

5. Installation and Operation

5-1

Precautions to be observed for safe use

WARNING



- **Wire and connect the electric components correctly and securely.**
Failure to do so may cause fire and electric shocks, or may cause malfunction that could lead to injury, fault or fracture.
- **Be sure to mount this product on a sufficiently strong base.**
Fracture of a base may cause injury or damage to the machine.
- **Firmly secure this product before operating it.**
Failure to do so may cause abnormal operation that could cause injury, fault or fracture.
- **If any moving part may fall by its own weight in such events as breakage of a timing belt, provide a safeguard for preventing the part from falling.**
If any moving part falls, it may cause injury, fault or damage.



- **While this product is operating, do not touch any moving part or rotating part.**
Doing so may cause your hand to be caught and injured.



- **Do not let the product operate with the cover, plug or grease lid removed.**
Doing so may cause your body to be caught and injured.

CAUTION



- **Pay attention to avoid applying the tension or bending to cables.**
Failure to do so may cause abnormal operation that could cause injury, fault or fracture.
- **If anomaly occurs, immediately stop the machine.**
Failure to do so may cause abnormal operation that could cause injury, fault or fracture.



- **Do not exceed the maximum speed when using the product.**
Doing so may cause fault or damage. Or may cause abnormal operation that could lead to injury.



- **Do not exceed the torque limit when using the product.**
Doing so may cause fault or damage. Or may cause abnormal operation that could lead to injury.
* See "7. Appendix (p.7-16)."
- **Do not apply a load that exceeds the permissible level.**
Doing so may cause fault or damage. Or may cause abnormal operation that could lead to injury.
* See "7. Appendix (p.7-16)."
- **Do not use the failed and broken product.**
Doing so may cause injury or machine failure.
- **Do not use the product with applying radial load and moment load to the rod part.**
Doing so may cause fault or damage. Or may cause abnormal operation that could lead to injury.

5. Installation and Operation

5-2

Precautions to be observed for prevention of fault, fracture, or low performance of this product



- **Since using in an adverse service environment may cause fault, use the product in the environment described below.**
 - Place at the following operating temperature (humidity) range
Operating temperature: 0°C to 40°C
(Ambient humidity: 20% RH to 80% RH, no freezing or condensation)
* If you desire to use the product in a special environment or outside of the operating temperature range, contact THK.
 - Place with no sudden temperature change
 - Place with non-corrosive gas nor flammable gas
 - Place with no floating of dust, salt or metallic powder
 - Place where water, oil or chemical can not contact the product
 - Place where no direct sunlight, ultraviolet rays, nor radiation heat reaches
 - Place where no strong electric field nor strong magnetic field develops
 - Place where a vibration or shock does not transmit to the main unit
- **Prevent foreign material such as dust or metallic powder from entering the product since it may cause abnormal wear or shorten the service life.**
If foreign material may enter the product, take a dustproof measure that matches the service atmosphere.
- **Use the product within the effective stroke range.**
- **Be sure to mount this product on a sufficiently rigid base. In addition, the mounting surface must be a machined plane or have accuracy equivalent to the machined plane.**
- **Check that there is no tool or bolt in the product before operating it.**



- **After trial run, supply the specified grease to ball spline (only PC) and ball screw before using the product.**
 - PC Design Symbol A (standard model) contains THK L500 grease.
 - PCT (standard product) contains THK AFB-LF grease.
- **While PC is provided with a rod retainer inside the product, provide a separate stopper outside of the device to prevent the rod from colliding with the retainer. Or you may provide a separate sensor outside of the device as necessary to prevent the collision.**
- **When performing the pressing origin return with the load side detecting system, please limit the speed and torque before operation.**

5. Installation and Operation

5-3

Other precautions

- **Adjust the parameter and gain of the driver according to the usage conditions.**

* For Servo driver controller TLC and THC, parameters are configured for each actuator. Depending upon the usage conditions, it may be necessary to adjust the parameters such as gain.

- **For handling of a motor and a driver, see the respective catalog and instruction manual issued by the motor and driver manufacturers.**

* For the details of Servo driver TLC and THC, see the instruction manual.

- **For handling and mounting of a timing belt, see the respective catalog issued by the timing belt manufacturer.**

* For models of standard timing belts, see Table 1-1, 1-2 and 1-3.

Model number	Timing belt model
PC30-06A	340-EV5GT-9
PC40-06B	400-EV5GT-9
PC40H-08C	560-EV8YU-15
PC50-06D	560-EV8YU-15
PC60-10E	704-EV8YU-20
PC60H-10F	720-EV8YU-25
PC80L-12G	984-EV8YU-40
PC80-12G	984-EV8YU-40
PC80H-12G	984-EV8YU-40

Table 1-1 Models of Standard Timing Belts Design Symbol A (Gates Unitta Asia Company)

Model number	Motor capacity	Timing belt model
PCT20R	50 W	196-2GT-6
PCT25R	100 W	273-3GT-6
	200 W	273-3GT-9

Table 1-2 Models of Standard Timing Belts (Gates Unitta Asia Company)

5. Installation and Operation

5-4 Mounting method (PC)

Fix this product to the mounting surface using hexagonal-socket-head type bolt (tensile strength rank 10.9 or higher) through the mounting hole of flange. See Fig. 2-1. Also see Table 2-1, which shows the size and the recommended length of bolts for securing to flange.

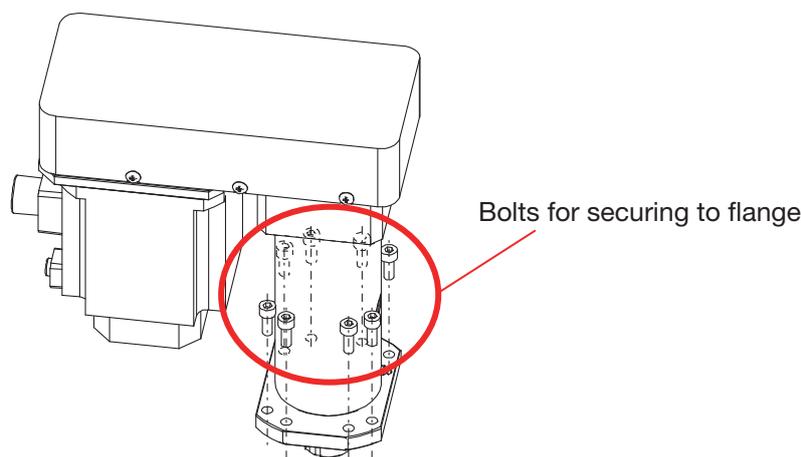


Fig. 2-1 Drawing for mounting to flange

Model number	Bolt Size	Recommended bolt length	Mounting surface Recommended female thread depth	Plate thickness dimension of flange
PC30-06A	M6	25 mm or larger	12 mm or larger	14 mm
PC40-06B PC40H-08C	M8	25 mm or larger	16 mm or larger	14 mm
PC50-06D	M10	35 mm or larger	20 mm or larger	18 mm
PC60-10E PC60H-10F	M12	40 mm or larger	24 mm or larger	20 mm
PC80L-12G PC80-12G PC80H-12G	M16	55 mm or more	32 mm or more	30mm

Table 2-1 Flange Securing Bolt Size and Recommended Length

■ Mounting procedure

Mount this product in the following procedure:

- ① Confirm that there is no burr, dent or dust on the surface you mounted.
If there is any burr or scratch, remove it with an oilstone or the like. Also, remove dust with a clean waste cloth or the like.
- ② Likewise, confirm that there is no burrs, scratches or dust on the flange of PC, and remove them as necessary.
- ③ Mount PC on the mounting surface. When mounting, use the dedicated hanger as necessary.
- ④ Adjust the position so that the center of the mounting hole of PC's flange and that of the screw hole of the mounting surface match.
- ⑤ Using the recommended bolt listed on Table 2, apply temporary fastening.
- ⑥ Using a torque wrench, fasten the bolts. The material of flange is SS400.

5. Installation and Operation

5-5 Mounting method (PCT)

Fix this product using hexagonal-socket-head type bolt (tensile strength rank 10.9 or higher) through the holes for securing flange or through T slots on the side surface of the unit base with square nuts (attached to the product). See Fig. 2-2-a and b. Also see Table 2-2, which shows the size and the recommended length of bolts for securing to flange.

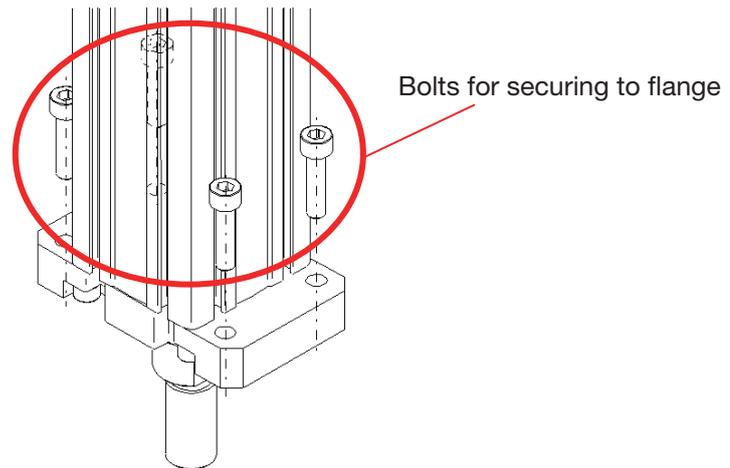


Fig. 2-2-a Drawing for mounting to flange

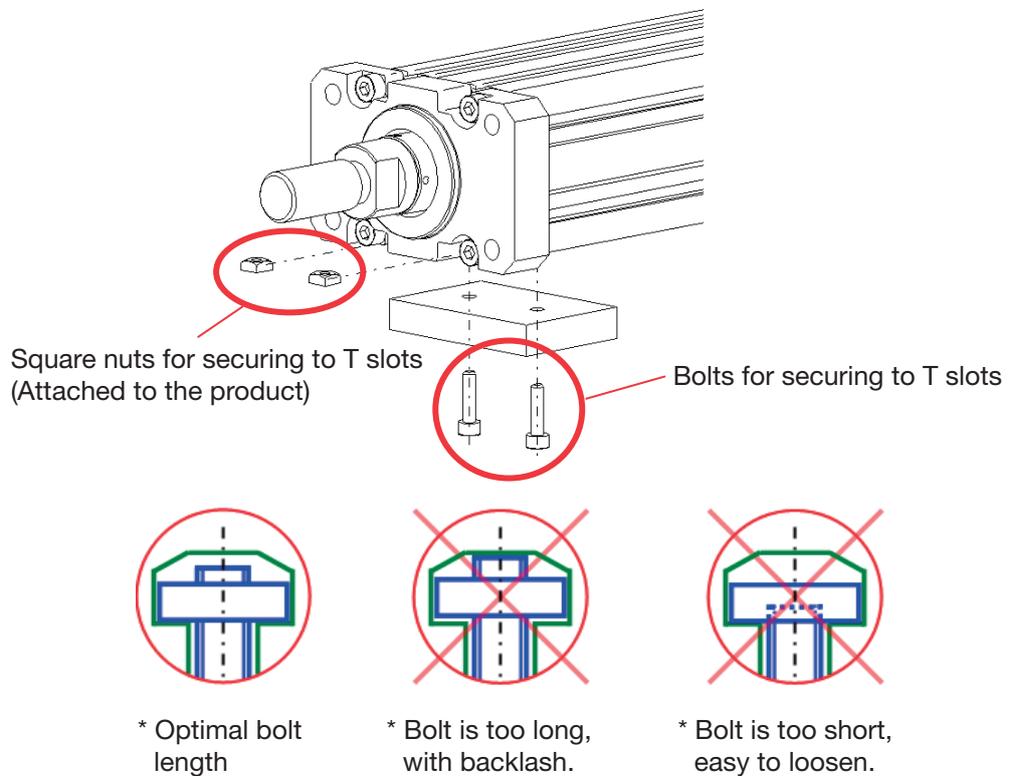


Fig. 2-2-b Drawing for mounting to T slots

5. Installation and Operation

Model number	Mounting method	Bolt Size	Bolt Quantity	Recommended bolt length	Mounting surface Recommended female thread depth	Plate thickness dimension of flange
PCT20	flange	M5	4	18 mm	10 mm or larger	10 mm
	T slot	M3	8	-	-	-
PCT25	flange	M6	4	25 mm	12 mm or larger	15 mm
	T slot	M4	8	-	-	-

Table 2-2 Securing Bolt Size and Recommended Length

■ Mounting procedure

Mount this product in the following procedure:

- ① Confirm that there is no burr, dent or dust on the surface you mounted.
If there is any burr or scratch, remove it with an oilstone or the like. Also, remove dust with a clean waste cloth or the like.
- ② Likewise, confirm that there is no burr, dent or dust on the mounting surface of PCT, and remove it as necessary.
- ③ Mount PCT on the mounting surface.
- ④ Adjust the PCT position.
- ⑤ Using the recommended bolt listed on Table 2, apply temporary fastening.
- ⑥ Using a torque wrench, fasten the bolts. The material of the flange is AC4A, and the material of the base is A6063S-T5.

6. Maintenance

6-1

Precautions to be observed for safe use

WARNING



- **Turn off the machine (turning off power) before performing maintenance.**
Failure to do so may cause electric shocks, or cause malfunction that could lead to injury.
- **If two or more people are involved in the maintenance work, confirm the procedure, signs and actions to cope with anomalies or the like in advance, and separately appoint a person for monitoring the work.**
Failure to do so may cause an unexpected accident.

CAUTION



- **When handling grease, wear protective glasses and protective gloves.**
If grease gets into eyes or touch the skin, it may affect your body such as causing inflammation.
* If grease gets into eyes, clean them with clean water for 15 minutes and visit the doctor.
* If grease touches skin, wash it sufficiently with water and soap.
- **After greasing, travel the block back and forth throughout, and wipe off the surplus grease.**
If you restart operation immediately after greasing, the surplus grease flies and may cause faults and affect your body.



- **Do not apply grease to a flame, a firework or a high-temperature object.**
Doing so may ignite the grease, which could cause fire.

* For other information on handling grease, see the precautions indicated on the grease package or catalog. We have "Safety Data Sheets" for THK original greases. Contact THK for details.

6-2

Precautions to be observed for prevention of fault, fracture, or low performance of this product



- **To have this product fully exerts its functions, it is essential to lubricate the product. Be sure to supply grease on a regular basis.**
Using the product with insufficient lubrication may shorten the service life.
- **Do not to let foreign material enter the ball spline, linear bush or ball screw.**
Doing so may cause fault, or could adversely affect the performance or service life.



- **Do not mix greases of different types.**
Doing so may affect the performance.

6. Maintenance

6-3 Daily inspection

- **Before operating the product, visually check any exterior damage or stain.**
- **Check the grease state on the rod (stain, etc.). If the grease is significantly stained, wipe off the grease, and then supply new grease.**
- **Check whether abnormal noise or vibration occurs during operation. If abnormal noise or vibration occurs, immediately stop the machine and inspect the state of the product.**
Insufficient lubrication or loosened mounting bolts may cause abnormal noise or vibration.

6-4 Periodical inspection

- **For the products including timing belts (wrap-around motor-type), we recommend adjusting the belt tension after about a month of operation.**
 - Initial elongation of the belt may lower the belt tension.
- **Perform more detailed inspection approximately once every 3 to 6 months.**
 - Check the lubrication state, and then clean the product and replenish the grease as necessary.
 - Inspect whether the mounting bolts are loosened, and retighten it as necessary.
 - Check the timing belt state (wear, scratch, crack, noise, etc.). When any anomaly (abnormal wear, scratch, crack, etc.) is found, replace the timing belt.
 - * See the appendix "Replacement of timing belt procedure."

6. Maintenance

6. Maintenance

6-5

Lubrication



- **After trial run, supply the specified grease to ball spline (only for PC) and ball screw before using the product.**

PC Design Symbol A (standard model) contains THK L500 grease.

PCT (standard product) contains THK AFB-LF.

- **For the greasing interval, if normal operation that pressure is applied at one end of stroke, replenish grease approximately every 500 km travel distance or 6 months, whichever is earlier.**

However, note that the greasing interval varies with the service conditions or service environment. We recommend determining the greasing interval through the initial inspection.

* See "Method for supplying grease" on next page.

Model	Amount of filled grease [cc]		
	Ball screw part	Ball spline part	Bearing part
PC30-06A	1.6	2.5	10
PC40-06B	3.3	6	1.45
PC40H-08C	6.2	6	2.17
PC50-06D	9.5	10	2.17
PC60-10E	17.1	20	4.4
PC60H-10F	24	20	6.6
PC80L-12G	40	35	18.9
PC80-12G	40	35	18.9
PC80H-12G	40	35	18.9

Table 3-1 Amount of greasing Design Symbol A (standard)

Model	Amount of filled grease [cc]	
	Ball screw lead [mm]	Ball screw part
PCT20	6	$0.1 + 0.1 \times (\text{Effective stroke}/50)$
PCT25	4	$0.6 + 0.4 \times (\text{Effective stroke}/50)$
	6	$0.5 + 0.3 \times (\text{Effective stroke}/50)$

Table 3-2 Amount of greasing (standard)

6. Maintenance

6. Maintenance

6-6

Method for supplying grease (PC)

The following shows a representative greasing method:

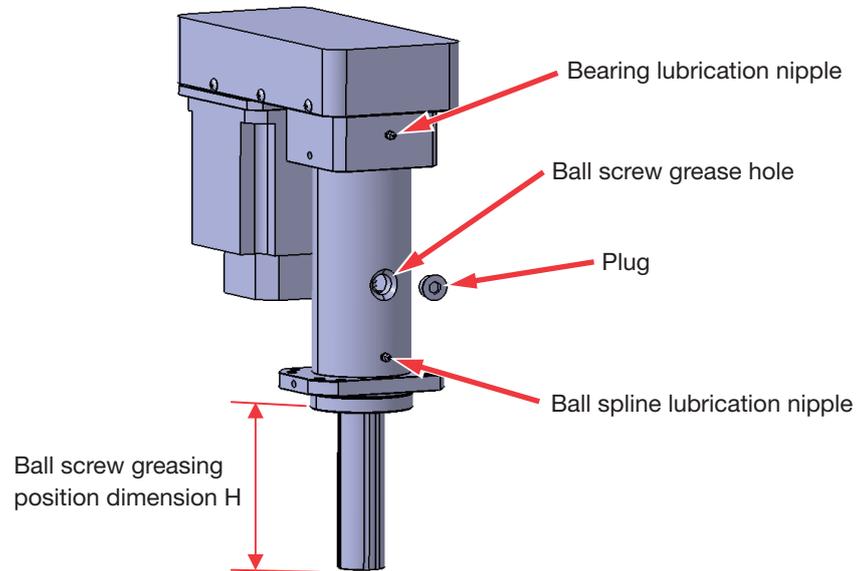


Fig. 3-1 Greasing parts

■ Bearing lubrication

Supply grease from the grease nipple attached to the housing using the grease gun.

■ Ball spline lubrication

1. Wipe off the old grease adhering to the rod.
2. Supply grease from the grease nipple attached to the external cylinder using the grease gun.

6. Maintenance

6. Maintenance

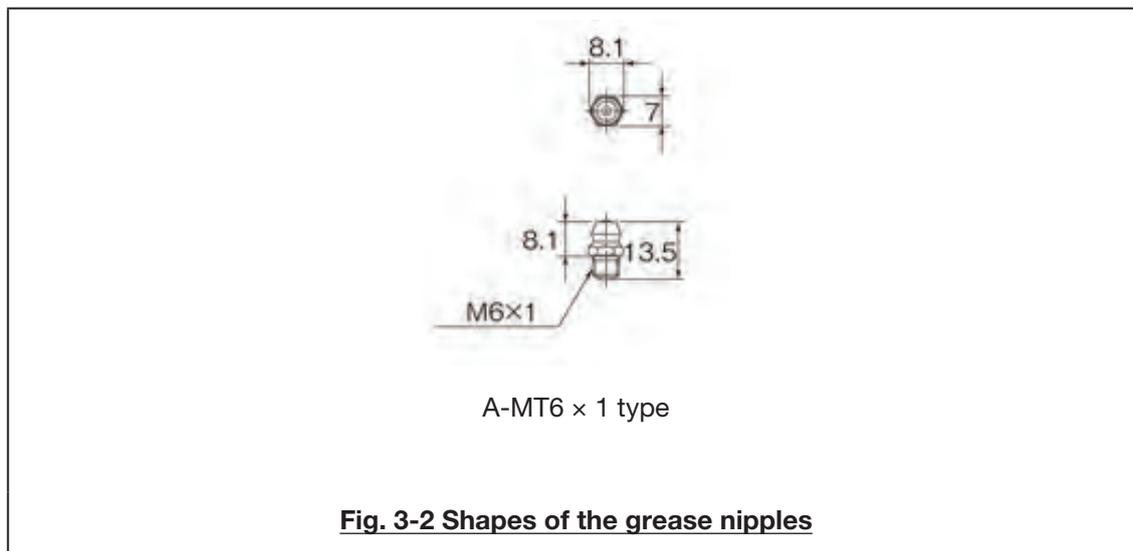
■ Ball screw lubrication

1. Move the rod to ball screw greasing position.

Model	Greasing position dimension H [mm]				
	Effective stroke [mm]				
	50	100	150	200	250
PC30-06A	65	102	102	102	103
PC40-06B	75	115	115	115	115
PC40H-08C	78	118	148	148	148
PC50-06D	83	133	173	173	173
PC60-10E	91	141	191	191	191
PC60H-10F	100	150	200	230	230
PC80L-12G	80	80	80	80	80
PC80-12G	80	80	80	80	80
PC80H-12G	80	80	80	80	80

Table 4-1 Ball screw greasing position dimension H

2. Remove the plug.
3. Confirm that the ball screw groove is visible in the ball screw grease hole. For PC80L - PC80H, confirm that the ball screw grease holes are visible.
4. Apply grease to the ball screw shaft directly from the lubrication hole using the grease gun. For PC80L - PC80H, supply grease through the 2 ball screw grease holes.
5. Move the rod over the entire stroke to apply the grease.
 - * Apply a small amount of grease several times.



- The appendix introduces the grease gun unit for lubrication for your reference.

6. Maintenance

6. Maintenance

6-7

Method for supplying grease (PCT)

The following shows a representative greasing method:

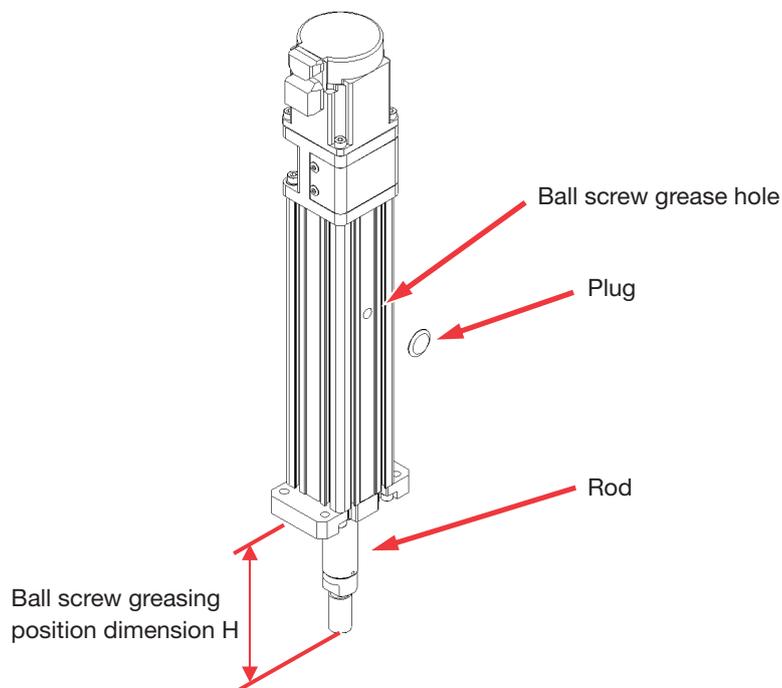


Fig3-3 Greasing parts

■ Ball screw lubrication

1. Move the rod to ball screw greasing position.

Table 4-2 Ball screw greasing position dimension H

Model	Ball screw greasing position dimension: H
PCT20	95 mm or larger
PCT25	110 mm or larger

2. Remove the plug.
3. Confirm that the ball screw groove is visible in the plug.
4. Apply grease to the ball screw shaft directly from the lubrication hole using the grease gun.
5. Move the ball screw nut over the entire stroke to apply the grease.
 - * Apply a small amount of grease several times.

■ Rod lubrication

1. Extend the rod to the stroke end on the extending side.
2. Apply grease directly and thinly to the entire rod.

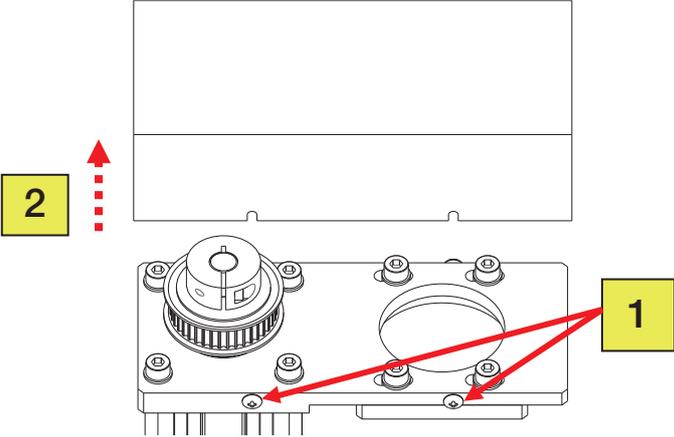
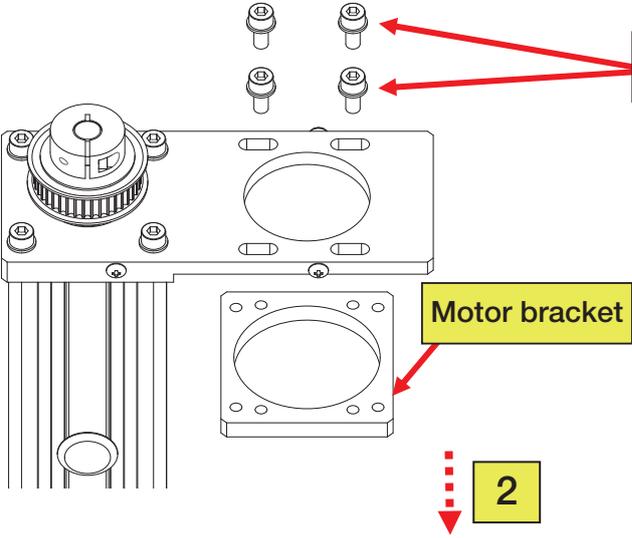
7. Appendix

7. Appendix

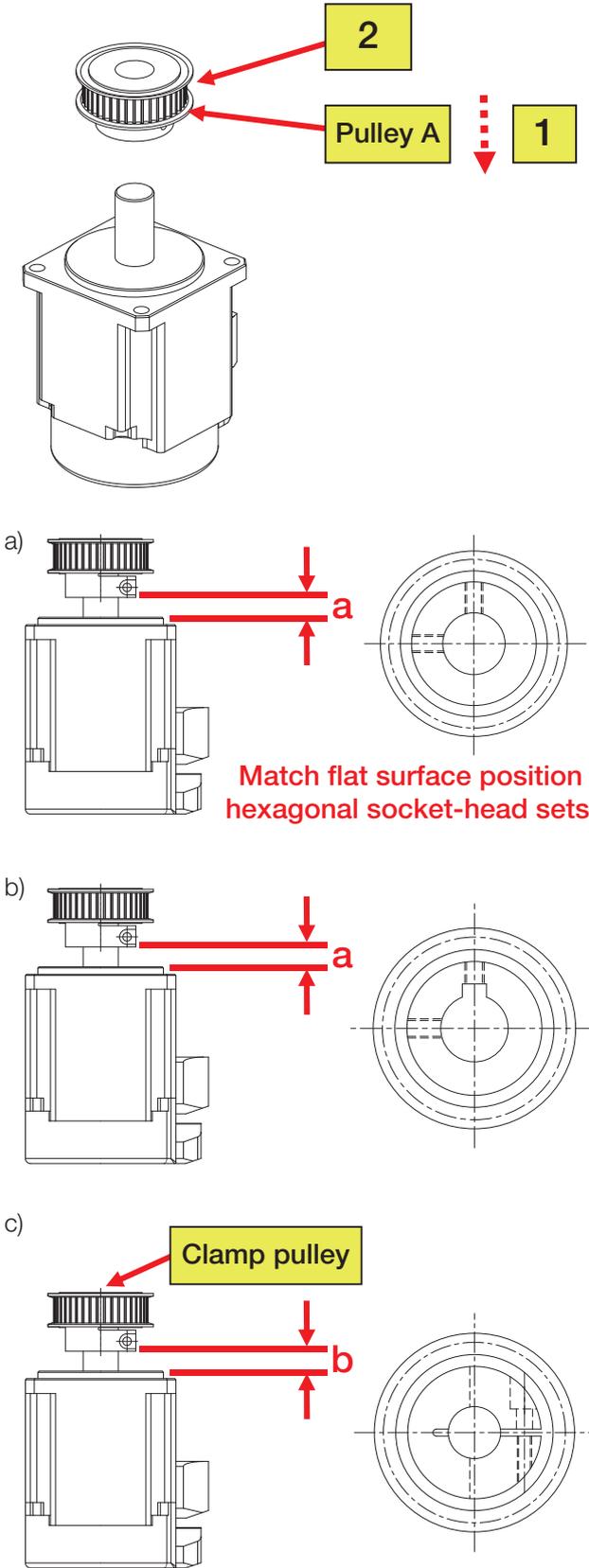
7-1

Motor mounting procedure (PCT)

The following shows how to mount the motor for your reference:

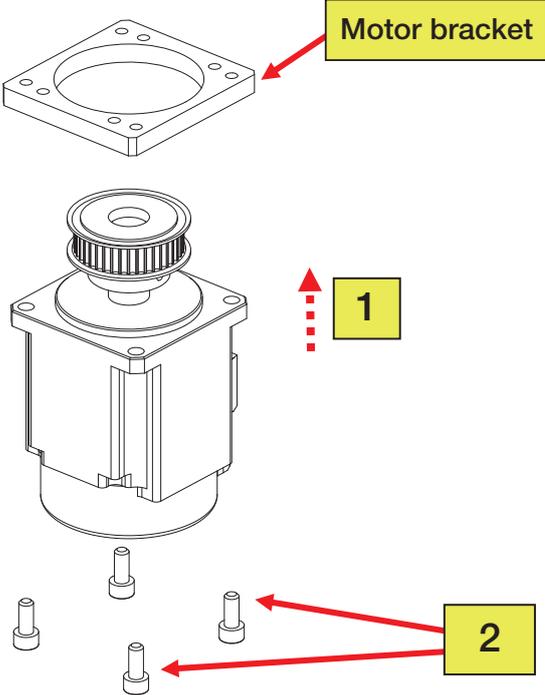
No.	Work procedure and precautions	
1	<p>Remove the pulley cover.</p> 	<ol style="list-style-type: none"> 1. Loosen the cross recessed button-head bolt. 2. Remove the pulley cover.
2	<p>Remove the motor bracket</p> 	<p>Caution) Make sure there is no risk of falling during removal.</p> <ol style="list-style-type: none"> 1. Remove the hexagonal socket-head bolt on the long hole part. 2. Remove the motor bracket.

7. Appendix

No.	Work procedure and precautions																
3	<p data-bbox="204 331 376 360">Mount pulley A</p>  <p data-bbox="480 1193 935 1261">Match flat surface position and hexagonal socket-head setscrew</p>	<p data-bbox="959 331 1378 360">1. Attach pulley A to the motor shaft.</p> <ul style="list-style-type: none"> * For pulley A displacement in the axial direction, a and b dimensions below are guidelines. <table border="1" data-bbox="959 472 1465 613"> <thead> <tr> <th>Model</th> <th>Motor capacity [W]</th> <th>a [mm]</th> <th>b [mm]</th> </tr> </thead> <tbody> <tr> <td>PCT20R</td> <td>50</td> <td>9.15</td> <td>5.4</td> </tr> <tr> <td rowspan="2">PCT25R</td> <td>100</td> <td>10.5</td> <td>6.5</td> </tr> <tr> <td>200</td> <td>11.5</td> <td>8</td> </tr> </tbody> </table> <p data-bbox="959 913 1461 1010">a) For method D of fixing motor shaft Fasten pulley A hexagonal socket-head setscrew.</p> <ul style="list-style-type: none"> * Adjust until the hexagonal socket-head setscrew and motor shaft flat surface match perfectly and are as perpendicular as possible. (See figure at left) * When fastening to the width across flat of the shaft flat surface, fasten the hexagonal socket-head setscrews alternately a little at a time. * Use M4 x 4L for hexagonal socket-head setscrews, with steel (45H) cup point. Tightening torque should be 133N·cm. <p data-bbox="959 1395 1461 1458">b) For method K of fixing motor shaft Fasten pulley A hexagonal socket-head setscrew.</p> <ul style="list-style-type: none"> * Use M4 x 4L for hexagonal socket-head setscrews, with steel (45H) cup point. Tightening torque should be 133N·cm. <p data-bbox="959 1585 1461 1682">c) For method S of fixing motor shaft Fasten the clamp pulley hexagonal-socket-head type bolt. (See Table 5)</p> <ul style="list-style-type: none"> * Adjust with the straight shaft. 	Model	Motor capacity [W]	a [mm]	b [mm]	PCT20R	50	9.15	5.4	PCT25R	100	10.5	6.5	200	11.5	8
Model	Motor capacity [W]	a [mm]	b [mm]														
PCT20R	50	9.15	5.4														
PCT25R	100	10.5	6.5														
	200	11.5	8														

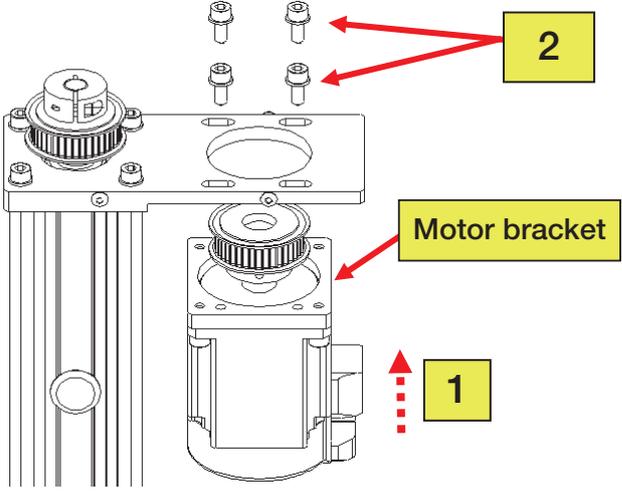
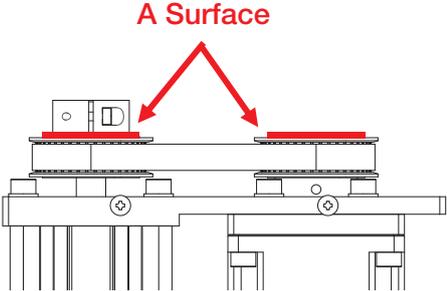
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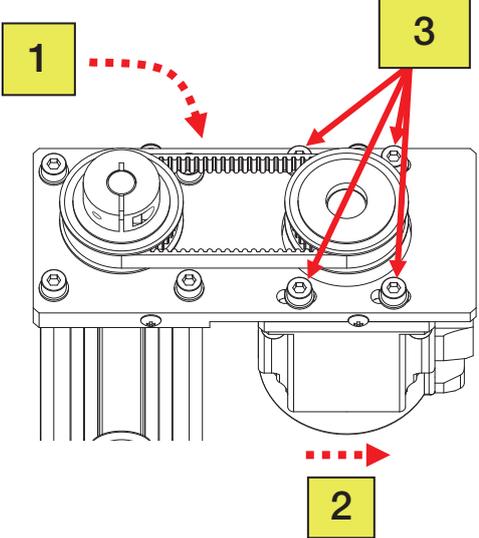
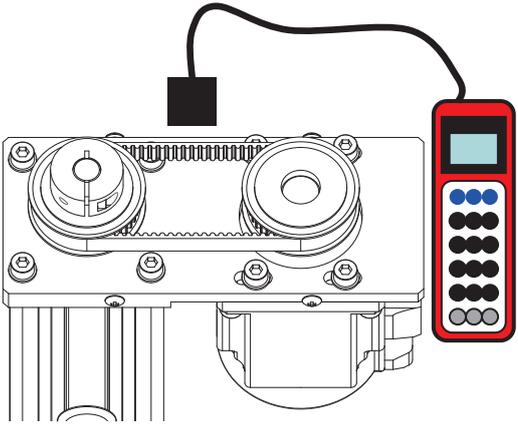
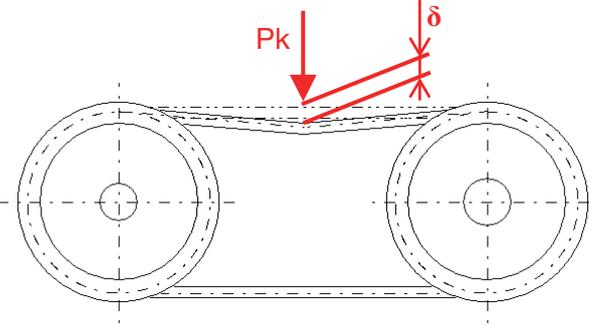
No.	Work procedure and precautions																								
3	<table border="1"> <thead> <tr> <th>Model</th> <th>Motor capacity [W]</th> <th>Bolt size</th> <th>The number of bolts</th> <th>Tightening torque [N·cm]</th> </tr> </thead> <tbody> <tr> <td>PCT20R</td> <td>50</td> <td>M2</td> <td>1</td> <td>40</td> </tr> <tr> <td rowspan="2">PCT25R</td> <td>100</td> <td>M3</td> <td>1</td> <td>150</td> </tr> <tr> <td>200</td> <td>M3</td> <td>1</td> <td>150</td> </tr> </tbody> </table> <p style="text-align: center;">Table 5 Tightening torque of fastening bolt on clamp pulley part</p>					Model	Motor capacity [W]	Bolt size	The number of bolts	Tightening torque [N·cm]	PCT20R	50	M2	1	40	PCT25R	100	M3	1	150	200	M3	1	150	
Model	Motor capacity [W]	Bolt size	The number of bolts	Tightening torque [N·cm]																					
PCT20R	50	M2	1	40																					
PCT25R	100	M3	1	150																					
	200	M3	1	150																					
4	Mount the motor				<ol style="list-style-type: none"> 1. Attach the motor to the motor bracket. 2. Fasten the hexagonal-socket-head type bolt. <p>* Tightening torque is as below.</p> <p>Caution) Pay attention to which way the motor connector faces. Make sure that the bolts used are not so long as to protrude from the motor bracket end.</p>																				
		<table border="1"> <thead> <tr> <th>Model</th> <th>Motor capacity [W]</th> <th>Motor bracket thickness [mm]</th> <th>The number of bolts</th> <th>Tightening torque [N·cm]</th> </tr> </thead> <tbody> <tr> <td>PCT20R</td> <td>50</td> <td>6</td> <td>1</td> <td>40</td> </tr> <tr> <td rowspan="2">PCT25R</td> <td>100</td> <td>6</td> <td>1</td> <td>150</td> </tr> <tr> <td>200</td> <td>7</td> <td>1</td> <td>150</td> </tr> </tbody> </table>					Model	Motor capacity [W]	Motor bracket thickness [mm]	The number of bolts	Tightening torque [N·cm]	PCT20R	50	6	1	40	PCT25R	100	6	1	150	200	7	1	150
Model	Motor capacity [W]	Motor bracket thickness [mm]	The number of bolts	Tightening torque [N·cm]																					
PCT20R	50	6	1	40																					
PCT25R	100	6	1	150																					
	200	7	1	150																					

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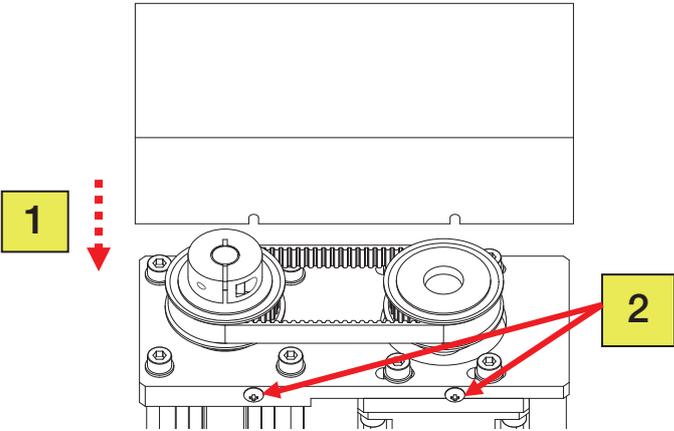
No.	Work procedure and precautions	
5	<p data-bbox="204 331 494 360">Mount the motor bracket</p> 	<ol data-bbox="957 331 1460 465" style="list-style-type: none">1. Mount the motor bracket.2. Temporarily fasten the hexagonal socket-head bolt on the long hole part.
6	<p data-bbox="204 996 510 1025">Confirm the pulley position</p> 	<ol data-bbox="957 996 1460 1093" style="list-style-type: none">1. Place a straight-edge etc. along the A surface to confirm that the surface matches.

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No.	Work procedure and precautions	
7	<p data-bbox="204 331 408 365">Mounting the belt</p>  <p data-bbox="252 1003 274 1037">a)</p>  <p data-bbox="252 1458 274 1491">b)</p> 	<ol style="list-style-type: none"> <li data-bbox="959 331 1437 365">1. Mount the timing belt to the pulley A/B. <li data-bbox="959 398 1461 465">2. Keep the motor away from the main unit, and apply tension to the belt. <li data-bbox="959 499 1461 566">3. Temporarily fasten the hexagonal socket-head bolt on the long hole part. <li data-bbox="959 969 1265 1003">4. Belt tension adjustment. <ol style="list-style-type: none"> <li data-bbox="959 1003 1461 1160">a) In case of using a sonic belt tensimeter Adjust the belt tension to meet the specified initial tension, and fully fasten the hexagonal socket-head bolt on the long hole part. (See Table 6 and Table 8) <li data-bbox="959 1435 1461 1653">b) In case of using push gauge Adjust the belt so that the strength (deflection load) when the center of span is pushed by deflection play (δ) becomes between $T \delta_{min}$ and $T \delta_{max}$, and then fully fasten the hexagonal socket-head bolt on the long hole part. (See Table 7 and Table 8) <li data-bbox="959 1686 1461 1843">5. After rotating the pulley and fitting the belt, check that the belt tension is within the specified value. If not within the specified value, loosen the hexagonal socket-head bolt to adjust the tension.

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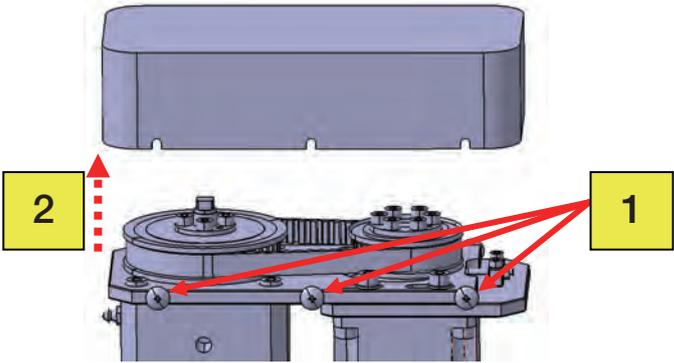
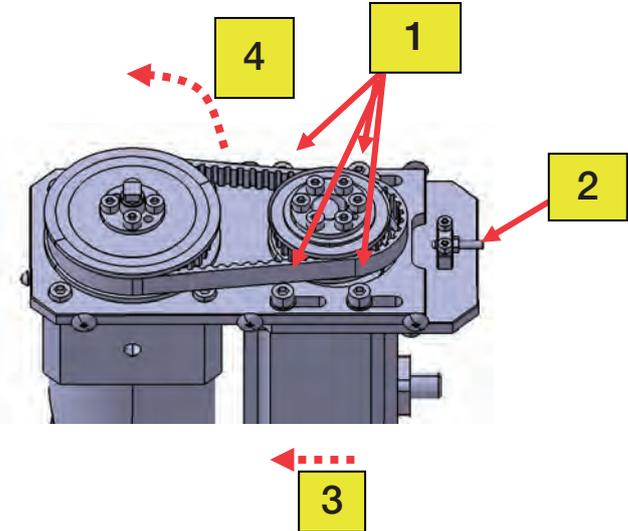
No.	Work procedure and precautions																																																																	
7	<table border="1" data-bbox="252 342 1414 499"> <thead> <tr> <th>Model</th> <th>Motor capacity [W]</th> <th>Initial tension [N]</th> <th>Unit mass [g/(mm(width)×m(length))]</th> <th>Belt span [mm]</th> <th>Belt width [mm]</th> </tr> </thead> <tbody> <tr> <td>PCT20</td> <td>50</td> <td>15.8 to 19.8</td> <td>1.6</td> <td>54</td> <td>6</td> </tr> <tr> <td rowspan="2">PCT25</td> <td>100</td> <td>29 to 36</td> <td>2.5</td> <td>76.5</td> <td>6</td> </tr> <tr> <td>200</td> <td>44 to 55</td> <td>2.5</td> <td>76.5</td> <td>9</td> </tr> </tbody> </table> <p data-bbox="507 506 1158 533">Table 6 Parameters to use the sonic belt tensimeter</p> <table border="1" data-bbox="341 562 1321 719"> <thead> <tr> <th>Model</th> <th>Motor capacity [W]</th> <th>Belt model (Made by Gates Unitta Asia Company)</th> <th>Deflection δ [mm]</th> <th>Deflection load Pk [N]</th> </tr> </thead> <tbody> <tr> <td>PCT20</td> <td>50</td> <td>196-2GT-6</td> <td>0.84</td> <td>0.99</td> </tr> <tr> <td rowspan="2">PCT25</td> <td>100</td> <td>273-3GT-6</td> <td>1.2</td> <td>1.9</td> </tr> <tr> <td>200</td> <td>273-3GT-9</td> <td>1.2</td> <td>2.9</td> </tr> </tbody> </table> <p data-bbox="564 725 1101 752">Table 7 Parameters to use the push gauge</p> <table border="1" data-bbox="375 781 1287 938"> <thead> <tr> <th>Model</th> <th>Motor capacity [W]</th> <th>Bolt size</th> <th>The number of bolts</th> <th>Tightening torque [N·cm]</th> </tr> </thead> <tbody> <tr> <td>PCT20</td> <td>50</td> <td>M4 x 12L</td> <td>2</td> <td>230</td> </tr> <tr> <td rowspan="2">PCT25</td> <td>100</td> <td>M5 x 12L</td> <td>4</td> <td>450</td> </tr> <tr> <td>200</td> <td>M5 x 12L</td> <td>4</td> <td>450</td> </tr> </tbody> </table> <p data-bbox="453 945 1212 972">Table 8 Tightening torque of fastening bolt on long hole part</p>					Model	Motor capacity [W]	Initial tension [N]	Unit mass [g/(mm(width)×m(length))]	Belt span [mm]	Belt width [mm]	PCT20	50	15.8 to 19.8	1.6	54	6	PCT25	100	29 to 36	2.5	76.5	6	200	44 to 55	2.5	76.5	9	Model	Motor capacity [W]	Belt model (Made by Gates Unitta Asia Company)	Deflection δ [mm]	Deflection load Pk [N]	PCT20	50	196-2GT-6	0.84	0.99	PCT25	100	273-3GT-6	1.2	1.9	200	273-3GT-9	1.2	2.9	Model	Motor capacity [W]	Bolt size	The number of bolts	Tightening torque [N·cm]	PCT20	50	M4 x 12L	2	230	PCT25	100	M5 x 12L	4	450	200	M5 x 12L	4	450
Model	Motor capacity [W]	Initial tension [N]	Unit mass [g/(mm(width)×m(length))]	Belt span [mm]	Belt width [mm]																																																													
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PCT25	100	M5 x 12L	4	450																																																														
	200	M5 x 12L	4	450																																																														
8	<p data-bbox="204 1032 466 1059">Mount the pulley cover</p> 	<ol data-bbox="957 1032 1458 1155" style="list-style-type: none"> 1. Mount the cover. 2. Fix the cover with cross recessed button-head bolt. 																																																																
9	<p data-bbox="204 1541 485 1568">Check the mounted belt</p>	<ol data-bbox="957 1541 1458 1733" style="list-style-type: none"> 1. Run for a few minutes and check the following items: <ul data-bbox="957 1603 1458 1733" style="list-style-type: none"> · The belt does not get on the flange. · The belt is not resonating. · There is no jumping in the belt. · The tension does not decrease abnormally. 																																																																

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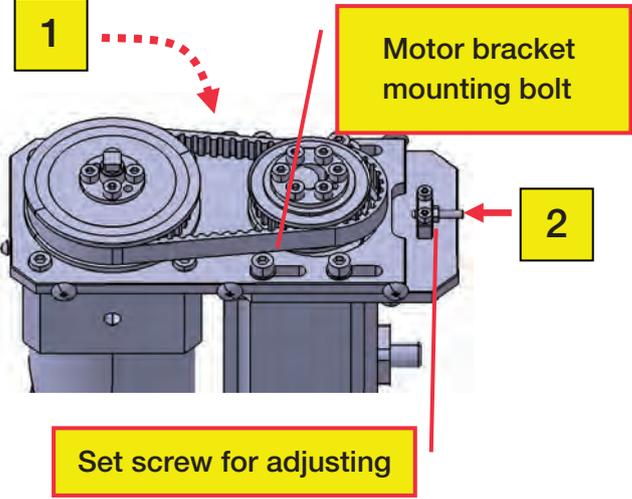
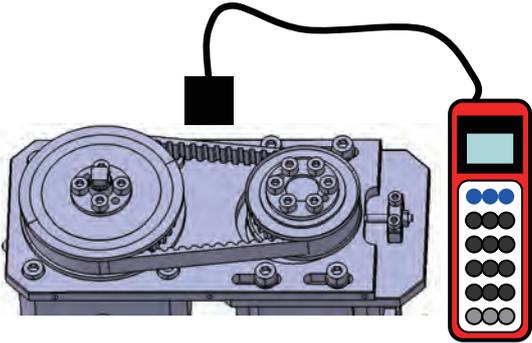
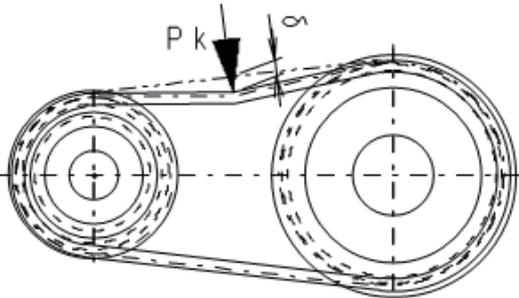
7. Appendix

7-2 Replacement of timing belt procedure (PC)

The following shows how to replace the timing belt for your reference:

No.	Work procedure and precautions	
<p>1</p> <p>Remove the pulley cover.</p> 		<ol style="list-style-type: none"> 1. Loosen the button-head bolt. 2. Remove the cover.
<p>2</p> <p>Loosen the tension and remove the belt.</p> 		<ol style="list-style-type: none"> 1. Loosen the bolt on the long hole part. 2. Loosen the hexagonal nut and loosen the set screw for adjusting the tension. 3. Bring the motor close to the main unit side. 4. Remove the belt.

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No.	Work procedure and precautions	
3	<p data-bbox="204 331 408 360">Mounting the belt</p>  <p data-bbox="252 965 272 994">a)</p>  <p data-bbox="252 1368 272 1397">b)</p> 	<ol style="list-style-type: none"> <li data-bbox="959 331 1437 360">1. Mount the timing belt to the pulley A/B. <li data-bbox="959 398 1422 456">2. Apply tension to the belt using the set screw for adjusting. <p data-bbox="959 936 1262 965">3. Belt tension adjustment.</p> <ol style="list-style-type: none"> <li data-bbox="959 972 1437 1189">a) In case of using a sonic belt tensimeter Adjust the belt tension to meet the specified initial tension, and fully fasten the hexagonal nut of the adjustment screw part and hexagonal socket-head bolt on the long hole part. (See Table 9 and Table 10) <li data-bbox="959 1368 1453 1653">b) In case of using push gauge Adjust the belt so that the strength (deflection load) when the center of span is pushed by deflection play (δ) becomes between $T \delta_{\min}$ and $T \delta_{\max}$, and then fully fasten the hexagonal nut of the adjustment part and hexagonal socket-head bolt on the long hole part. (See Table 11 and Table 12) <ol style="list-style-type: none"> <li data-bbox="959 1688 1437 1906">4. After rotating the pulley and fitting the belt, check that the belt tension is within the specified value. If not within the specified value, loosen the setscrew for adjusting the tension and hexagonal socket-head bolt to adjust the tension (procedure 2, 3.)

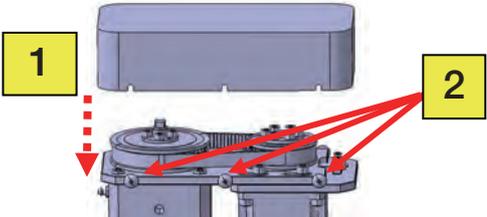
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7. Appendix

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Table 11 Tightening torque of fastening bolt on long hole part																																											
4	Mount the pulley cover. 	1. Mount the cover. 2. Fix the cover with button-head bolt.																																									
5	Check the mounted belt	1. Run for a few minutes and check the following items: <ul style="list-style-type: none"> · The belt does not get on the flange. · The belt is not resonating. · There is no jumping in the belt. · The tension does not decrease abnormally. 																																									

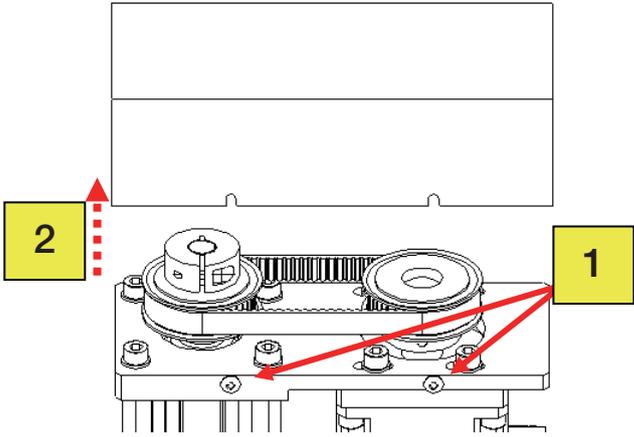
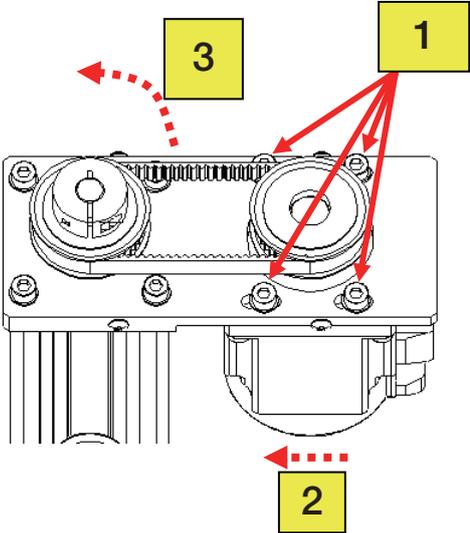
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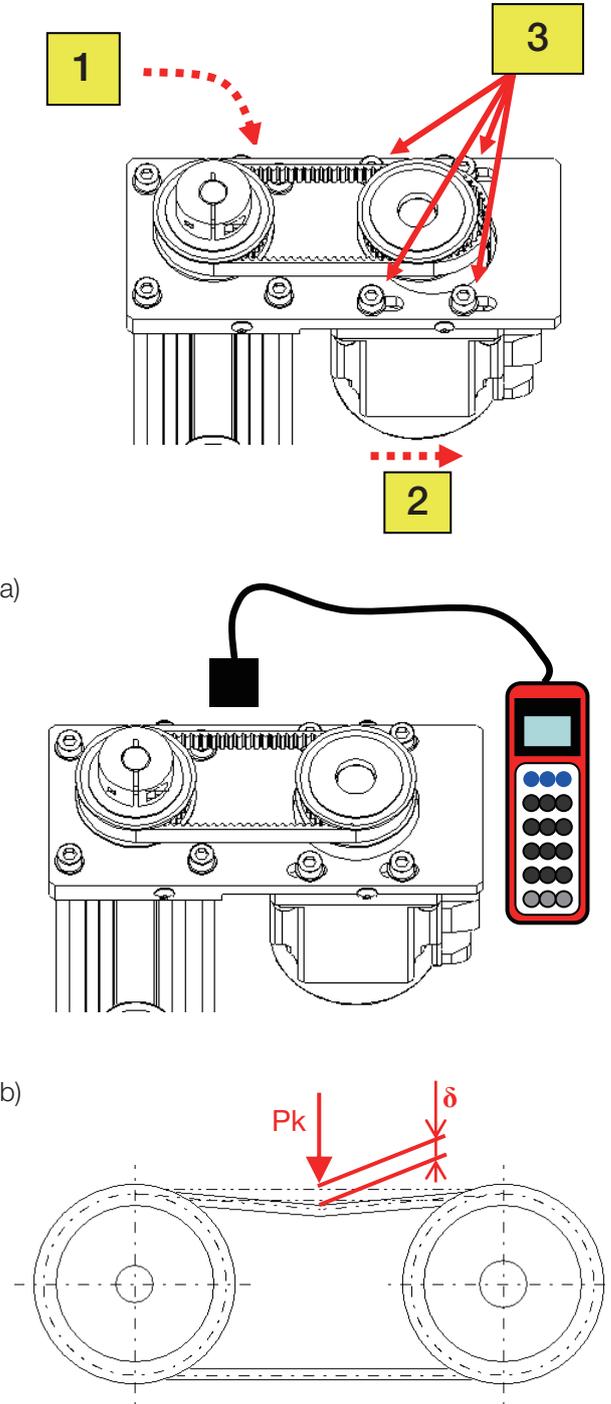
7-3

Replacement of timing belt procedure (PCT)

The following shows how to replace the timing belt for your reference:

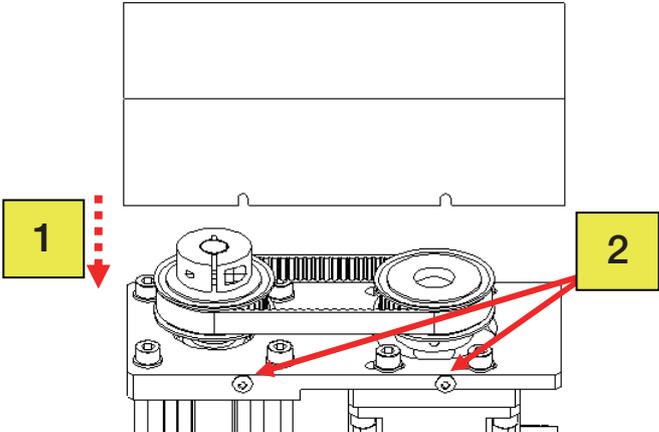
No.	Work procedure and precautions	
1	<p>Remove the pulley cover.</p> 	<ol style="list-style-type: none"> 1. Loosen the button-head bolt. 2. Remove the cover.
2	<p>Loosen the tension and remove the belt.</p> 	<ol style="list-style-type: none"> 1. Loosen the hexagonal socket-head bolt on the long hole part. 2. Bring the motor close to the main unit side. 3. Remove the belt.

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No.	Work procedure and precautions	
3	<p data-bbox="204 331 408 360">Mounting the belt</p>  <p data-bbox="252 952 272 981">a)</p> <p data-bbox="252 1456 272 1485">b)</p>	<ol style="list-style-type: none"> <li data-bbox="959 331 1437 360">1. Mount the timing belt to the pulley A/B. <li data-bbox="959 398 1453 456">2. Keep the motor away from the main unit, and apply tension to the belt. <li data-bbox="959 495 1437 553">3. Temporarily fasten the hexagonal socket-head bolt on the long hole part. <li data-bbox="959 920 1262 949">4. Belt tension adjustment. <ol style="list-style-type: none"> <li data-bbox="959 956 1437 1137">a) In case of using a sonic belt tensimeter Adjust the belt tension to meet the specified initial tension, and fully fasten the hexagonal socket-head bolt on the long hole part. (See Table 14 and Table 16) <li data-bbox="959 1456 1453 1704">b) In case of using push gauge Adjust the belt so that the strength (deflection load) when the center of span is pushed by deflection play (δ) becomes between $T \delta_{min}$ and $T \delta_{max}$, and then fully fasten the hexagonal socket-head bolt on the long hole part. (See Table 15 and Table 16.) <li data-bbox="959 1742 1437 1928">5. After rotating the pulley and fitting the belt, check that the belt tension is within the specified value. If not within the specified value, loosen the hexagonal socket-head bolt to adjust the tension (procedure 2, 3 and 4.)

7. Appendix

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3	<table border="1"> <thead> <tr> <th>Model</th> <th>Motor capacity [W]</th> <th>Initial tension [N]</th> <th>Unit mass [g/(mm(width)×m(length))]</th> <th>Belt span [mm]</th> <th>Belt width [mm]</th> </tr> </thead> <tbody> <tr> <td>PCT20</td> <td>50</td> <td>15.8 to 19.8</td> <td>1.6</td> <td>54</td> <td>6</td> </tr> <tr> <td rowspan="2">PCT25</td> <td>100</td> <td>29 to 36</td> <td>2.5</td> <td>76.5</td> <td>6</td> </tr> <tr> <td>200</td> <td>44 to 55</td> <td>2.5</td> <td>76.5</td> <td>9</td> </tr> </tbody> </table> <p style="text-align: center;">Table 12 Parameters to use the sonic belt tensimeter</p> <table border="1"> <thead> <tr> <th>Model</th> <th>Motor capacity [W]</th> <th>Belt model (Made by Gates Unitta Asia Company)</th> <th>Deflection δ [mm]</th> <th>Deflection load Pk [N]</th> </tr> </thead> <tbody> <tr> <td>PCT20</td> <td>50</td> <td>196-2GT-6</td> <td>0.84</td> <td>0.99</td> </tr> <tr> <td rowspan="2">PCT25</td> <td>100</td> <td>273-3GT-6</td> <td>1.2</td> <td>1.9</td> </tr> <tr> <td>200</td> <td>273-3GT-9</td> <td>1.2</td> <td>2.9</td> </tr> </tbody> </table> <p style="text-align: center;">Table 13 Parameters to use the push gauge</p> <table border="1"> <thead> <tr> <th>Model</th> <th>Motor capacity [W]</th> <th>Bolt size</th> <th>The number bolts</th> <th>Tightening torque [N·cm]</th> </tr> </thead> <tbody> <tr> <td>PCT20</td> <td>50</td> <td>M4×12L</td> <td>2</td> <td>230</td> </tr> <tr> <td rowspan="2">PCT25</td> <td>100</td> <td>M5×12L</td> <td>4</td> <td>450</td> </tr> <tr> <td>200</td> <td>M5×12L</td> <td>4</td> <td>450</td> </tr> </tbody> </table> <p style="text-align: center;">Table 14 Tightening torque of fastening bolt on long hole part</p>					Model	Motor capacity [W]	Initial tension [N]	Unit mass [g/(mm(width)×m(length))]	Belt span [mm]	Belt width [mm]	PCT20	50	15.8 to 19.8	1.6	54	6	PCT25	100	29 to 36	2.5	76.5	6	200	44 to 55	2.5	76.5	9	Model	Motor capacity [W]	Belt model (Made by Gates Unitta Asia Company)	Deflection δ [mm]	Deflection load Pk [N]	PCT20	50	196-2GT-6	0.84	0.99	PCT25	100	273-3GT-6	1.2	1.9	200	273-3GT-9	1.2	2.9	Model	Motor capacity [W]	Bolt size	The number bolts	Tightening torque [N·cm]	PCT20	50	M4×12L	2	230	PCT25	100	M5×12L	4	450	200	M5×12L	4	450
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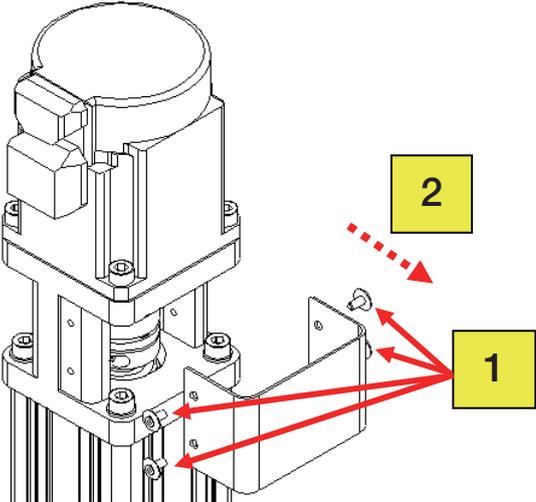
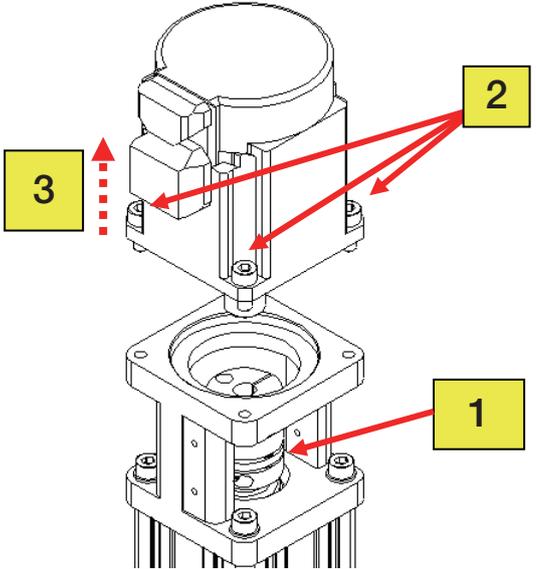
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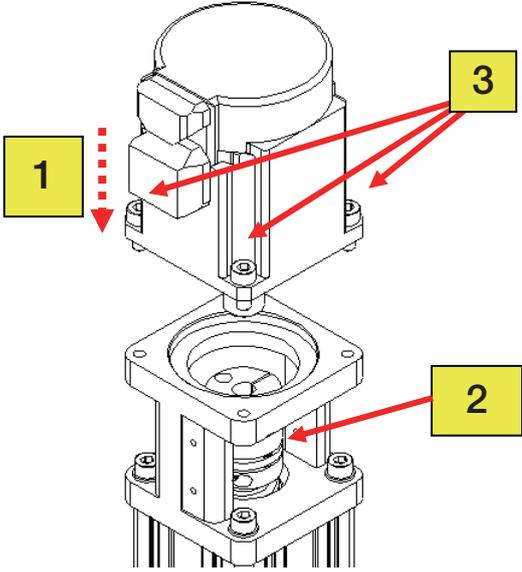
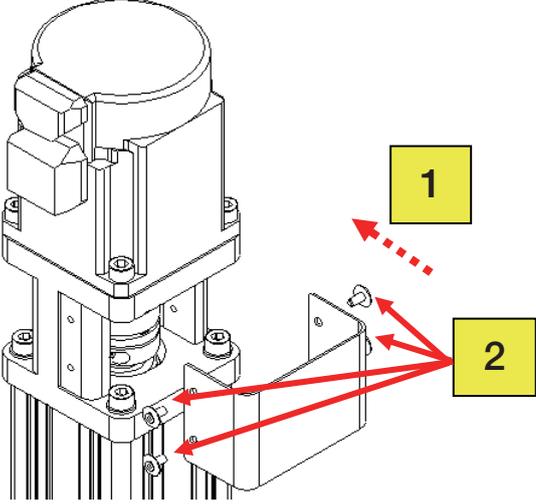
7-4

Replacement of motor procedure (PCT)

The following shows how to replace the motor for your reference:

No.	Work procedure and precautions	
1	Remove the cover. 	<ol style="list-style-type: none"> 1. Remove the thin head screws. 2. Remove the cover.
2	Remove the motor. 	<ol style="list-style-type: none"> 1. Loosen the clamping bolt of the coupling. 2. Remove the hexagonal socket-head bolt for mounting the motor. 3. Remove the motor.

7. Appendix

No.	Work procedure and precautions																																							
<p>3</p>	<p>Mounting the motor</p> 	<ol style="list-style-type: none"> 1. Mount the motor to motor bracket. Motor bracket and motor flange part, motor shaft and coupling inner diameter are in relation of tolerance fit. 2. Check that the core of coupling comes out. 3. Tighten the hexagonal socket-head bolt for mounting the motor. 4. Tighten the clamping bolt of the coupling. 																																						
<p>3</p>	<table border="1" data-bbox="347 976 1315 1149"> <thead> <tr> <th>Model</th> <th>Motor capacity [W]</th> <th>Bolt size</th> <th>The number bolts</th> <th>Tightening torque [N·cm]</th> </tr> </thead> <tbody> <tr> <td>PCT20</td> <td>50</td> <td>M4×12L</td> <td>2</td> <td>230</td> </tr> <tr> <td rowspan="2">PCT25</td> <td>100</td> <td>M5×12L</td> <td>2</td> <td>230</td> </tr> <tr> <td>200</td> <td>M5×12L</td> <td>4</td> <td>450</td> </tr> </tbody> </table> <p style="text-align: center;">Table 15 Tightening torque of fastening bolt on motor part</p> <table border="1" data-bbox="347 1234 1315 1406"> <thead> <tr> <th>Model</th> <th>Motor capacity [W]</th> <th>Coupling model (Miki Pulley Co., Ltd.)</th> <th>Bolt size</th> <th>Tightening torque [N·cm]</th> </tr> </thead> <tbody> <tr> <td>PCT20</td> <td>50</td> <td>SFC-010DA2-6B-8B</td> <td>M2.5</td> <td>100 to 110</td> </tr> <tr> <td rowspan="2">PCT25</td> <td>100</td> <td>SFC-020DA2-8B-8B</td> <td>M2.5</td> <td>100 to 110</td> </tr> <tr> <td>200</td> <td>SFC-025DA2-8B-14B</td> <td>M2.5</td> <td>100 to 110</td> </tr> </tbody> </table> <p style="text-align: center;">Table 16 Tightening torque of fastening bolt on coupling</p>		Model	Motor capacity [W]	Bolt size	The number bolts	Tightening torque [N·cm]	PCT20	50	M4×12L	2	230	PCT25	100	M5×12L	2	230	200	M5×12L	4	450	Model	Motor capacity [W]	Coupling model (Miki Pulley Co., Ltd.)	Bolt size	Tightening torque [N·cm]	PCT20	50	SFC-010DA2-6B-8B	M2.5	100 to 110	PCT25	100	SFC-020DA2-8B-8B	M2.5	100 to 110	200	SFC-025DA2-8B-14B	M2.5	100 to 110
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<p>4</p>	<p>Mount the pulley cover.</p> 	<ol style="list-style-type: none"> 1. Mount the cover. 2. Fix the cover with button-head bolt. 																																						

7. Appendix

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7-5

Permissible input torque

■ PC

Model number	PC30 -06A	PC40 -06B	PC40H -08C	PC50 -06D	PC60 -10E	PC60H -10F	PC80L -12G	PC80 -12G	PC80H -12G
Permissible input torque [N·m]	2.6	4.8	9.5	14.3	19.1	33.4	120	120	120

■ PCT

Model number	PCT20	PCT25 100 W	PCT25 200 W
Permissible input torque [N·m]	0.48	1.91(0.95)	1.91

*() denotes a wrap-around-type limit value.

7-6

Permissible axial load

■ PC

Model number		PC30 -06A	PC40 -06B	PC40H -08C	PC50 -06D	PC60 -10E	PC60H -10F	PC80L -12G	PC80 -12G	PC80H -12G
Permissible axial load [kN]	Pressing direction	3.3	6.4	11.2	16.8	21.8	35.6	120	120	120
	Pulling direction	1.6	3.2	5.6	8.4	10.9	17.8	48	48	48

*Load capacity when the actuator is static.

*If moment load is applied to the rod, contact THK.

■ PCT

Model number	PCT20	PCT25
Permissible axial load [N]	3240	5850

*For the PC motor mounting and replacement procedures, contact THK.

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7. Appendix

7-7

Introduction of the grease

AFB-LF Grease

It is universal grease using a lithium-based consistency enhancer with refined mineral oil as the base oil.

● Characteristics

- Excels in abrasion resistance and extreme pressure resistance in comparison to off-the-shelf universal lithium-based grease due to the action of a special additive.
- Does not easily soften and excels in mechanical stability even if used for a long period.
- Not susceptible to influences of water such as softening in case of water entrance and decrease in extreme pressure resistance.

● Representative properties

Item	Representative property values		Test method
Consistency enhancer	Lithium-based grease		
Base oil	Refined mineral oil		
Base oil kinetic viscosity: mm ² /s (40°C)	170		ISO 2137 ISO 2176 ISO 6743 ISO 11009 ISO 12924
Worked penetration (25°C, 60 W)	275		
Mixing stability (100,000 W)	345		
Dropping point: °C	193		
Evaporation: mass% (99°C, 22 h)	0.4		
Oil separation rate: mass% (100°C, 24 h)	0.6		
Copper plate corrosion (B method, 100°C, 24 h)	Accepted		
Low temperature torque: mN·m (-20°C)	Startup	130	
	Rotation	51	
4-ball test (fusion load): N	3089		
Operating temperature range: °C	-15 to 100		
Appearance color	Brownish yellow		



Fig. 4 Appearance of the grease tube and the product box

7. Appendix

7. Appendix

L500 Grease

A long-life grease with high extreme pressure resistance and pumpability, using a lithium complex-based thickener, refined mineral oil as base oil, and special additives.

● **Characteristics**

- Excellent extreme pressure resistance due to the action of special additives.
- Lubrication life is longer than general high-load greases. As a result, it lowers the maintenance workload.
- High pumpability allows use in automatic lubrication systems as well.

● **Representative properties**

Item	Representative property values	Test method
Consistency enhancer	Lithium complex-based	-
Base oil	Mineral oil	-
Base oil kinetic viscosity: mm ² /s (40°C)	120	JIS K2283
Worked penetration (25°C, 60 W)	327	JIS K2220.7
Dropping point: °C	250 <	JIS K2220.8
Copper plate corrosion (B method, 100°C, 24 h)	Accepted	JIS K2220.9
Evaporation: mass% (99°C, 22 h)	0.4	JIS K2220.10
Oil separation rate: mass% (100°C, 24 h)	2.5	JIS K2220.11
Low temperature torque: mN·m (-20°C)	110/50 (start/rotation)	JIS K2220.18
Operating temperature range: °C	-20 to +175°C	-
Appearance color	Yellow	-



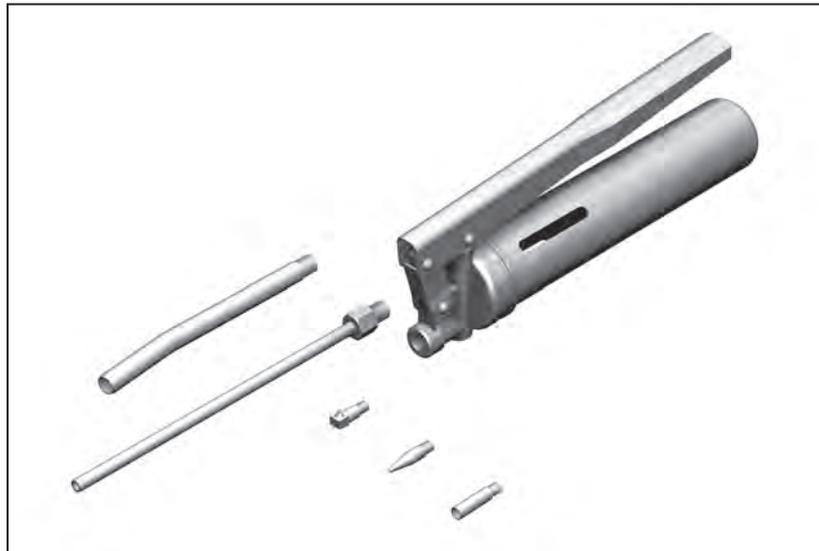
Fig. 5 Appearance of the grease tube and the product box

7. Appendix

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Introduction of the grease gun unit

Grease Gun Unit MG70



Using the grease gun unit MG70, you can lubricate this product. The grease gun has a slit window that allows you to visually check the remaining amount of grease. Since grease is contained in a 70 g bellows cartridge, you can replace the nozzle without soiling your hand.

Table 19 shows the specifications of the grease gun while Fig. 6 shows its appearance.

Discharge pressure	19.6 MPa max
Discharge rate	0.6 cc/stroke
Grease	70 g bellows cartridge
Overall length	235 mm (excluding nozzle)
Mass	480 g (with nozzle, excluding grease)

Table 19 Specifications of the grease gun

7. Appendix

7. Appendix

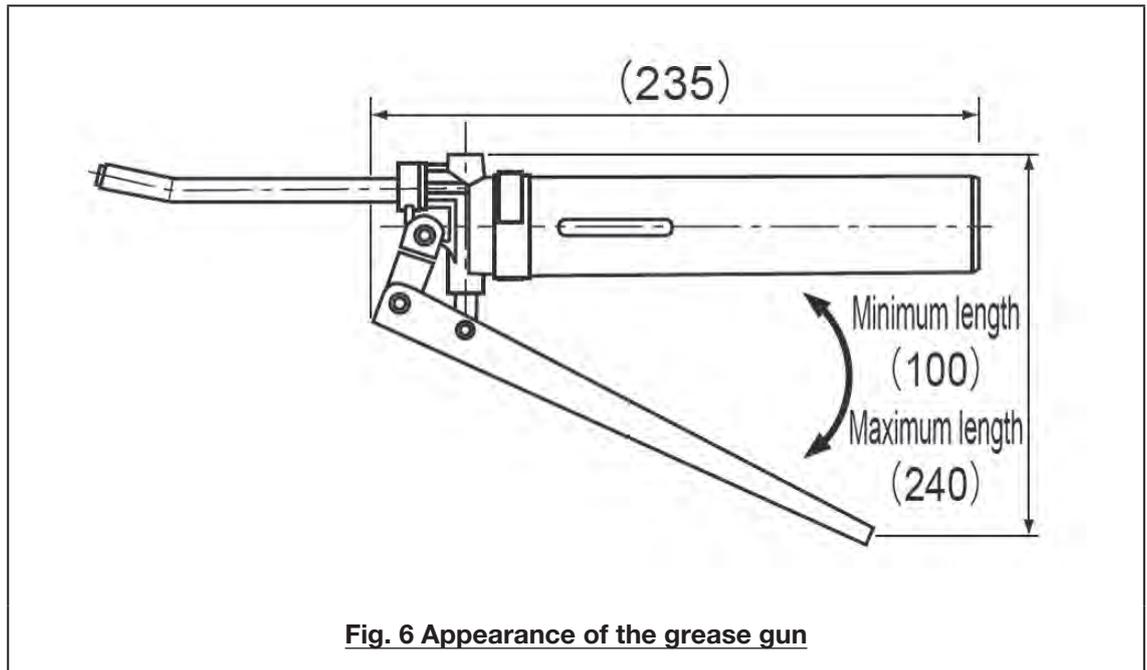
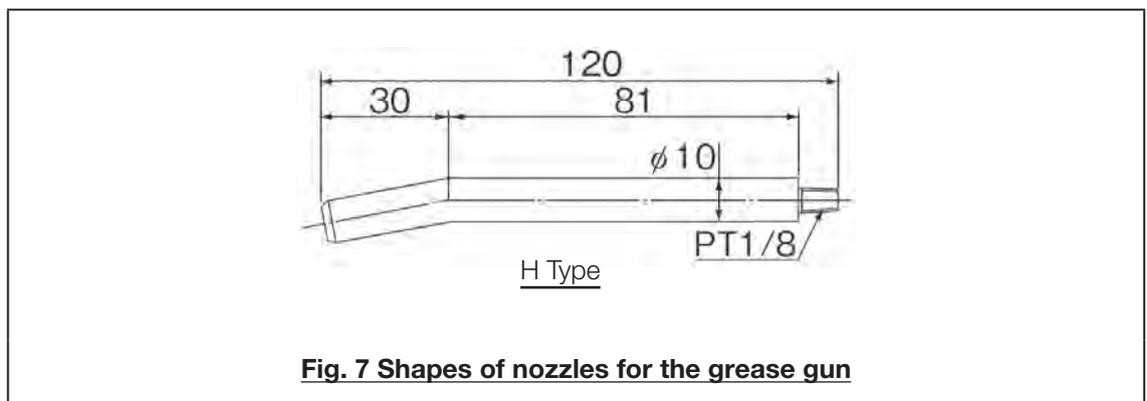


Fig. 7 shows the shapes of the nozzles and attachment for the grease gun used to lubricate this product.



Appendix

Revision history

The instruction manual No. is described on the back cover.

Date of issue	Instruction manual No.	Details
11/2015	No.369M V2.00E	Additional model numbers
9/2016	No.369M V2.01E	Errors corrected
3/2018	No.369M V3.00E	Errors corrected



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