文書 No. MWP*-OM0020Q

Operation Manual

PRODUCT NAME

Air Press Cylinder

MODEL/ Series/ Product Number

MWP Series

SMC Corporation

Contents

Air press cylinder / Series MWP Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage.
These instructions indicate the level of potential hazard with the labels of “Caution,” “Warning” or “Danger.”
They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC), Japan Industrial Standards (JIS)*1) and other safety regulations*2).

*1) ISO 4414: Pneumatic fluid power -- General rules relating to systems
ISO 4413: Hydraulic fluid power -- General rules relating to systems
IEC 60204-1: Safety of machinery -- Electrical equipment of machines (Part 1: General requirements)
ISO 10218-1992: Manipulating industrial robots -- Safety
JIS B 8370: General rules for pneumatic equipment.
JIS B 8361: General rules for hydraulic equipment.
JIS B 9960-1: Safety of machinery – Electrical equipment for machines. (Part 1: General requirements)
JIS B 8433-1993: Manipulating industrial robots - Safety. etc.

*2) Labor Safety and Sanitation Law, etc.

Caution Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

Warning Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

Danger Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

⚠ Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

1) Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2) Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.
3) An application which could have negative effects on people, property, or animals requiring special safety analysis.
4) Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

Air press cylinder / Series MWP
Safety Instructions

⚠ Caution

The product is provided for use in manufacturing industries.

The product herein described is basically provided for peaceful use in manufacturing industries.

If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.

If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.

Read and accept them before using the product.

Limited warranty and Disclaimer

The warranty period of the product is 1 year in service or 1.5 years after the product is delivered.*3) Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.

For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.

Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

***3) Vacuum pads are excluded from this 1 year warranty.**
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.
Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

When the product is exported, strictly follow the laws required by the Ministry of Economy, Trade and Industry (Foreign Exchange and Foreign Trade Control Law).

Actuators／Precautions

Be sure to read this before handling.

Design / Selection

Warning

(1) Confirm the specifications.

The products presented in this catalog are designed only for use in compressed air systems .

Do not operate at pressures or temperatures, etc., beyond the range of specifications, as this can cause damage or malfunction. (Refer to the specifications.)

Please contact SMC if using fluids other than compressed air generated by air compressor.

SMC does not guarantee against any damage if the product is used outside of the specification range.

(2)There is a possibility of dangerous sudden action by cylinders if sliding parts of machinery are twisted due to external forces, etc.

In such cases, human injury may occur; e.g., by catching hands or feet in the machinery, or damage to the machinery itself may occur. Therefore, the machine should be designed to operate smoothly and avoid such dangers.

(3)A protective cover is recommended to minimize the risk of personal injury.

If the driven object or moving parts of the product will pose a hazard to humans, a construction that prevents direct contact with the exposed area must be provided.

(4)Securely tighten all stationary parts and connected parts so that they will not become loose.

When the product operates with high frequency or is installed where there is a lot of vibration, ensure that all parts remain secure.

(5)Consider the possibility of power source related malfunctions.

Measures should be taken to prevent injury and equipment damage in the event that there is a loss of power to equipment controlled by air pressure, electricity or hydraulics, etc.

(6)Design a circuit to prevent sudden action of a driven object.

When the product is actuated by an exhaust center type directional control valve or when one side of the piston is pressurized with air exhaust, such as when the product is started after the exhaust of the residual pressure from the circuit, driven objects may act suddenly at high speed.

In such cases, injury may occur, such as hands or feet getting caught in the machinery, or damage to the machinery itself may occur. Design the machinery using equipment to prevent sudden action.

(7)Consider the behavior of an emergency stop.

Design the system to prevent injury and damage to machinery and equipment when it is stopped by a safety device for a power outage or manual emergency stop.

(8)Never operate more than one cylinders by themselves simultaneously.

Even if multiple pneumatic cylinders are initially set to the same speed, their speeds may vary due to changes in operating conditions.

Therefore, do not design a circuit which is to transfer one load by simultaneous operation of more than one cylinder.

(9)Consider the action when operation is restarted after an emergency stop or abnormal stop.

Design the machinery so that personal injury or damage to equipment will not occur upon restart of operation.

When the cylinder has to be reset at the starting position, install safety manual control equipment.

(10)Intermediate stop

In the case of 3-position closed center type or double check valve type directional control valve, it is difficult to make a piston stop at intermediate position accurately and precisely due to compressibility of the air.

Furthermore, since valves and cylinders are not guaranteed for zero air leakage, it may not be possible to hold a stopped position for extended periods of time.

Contact SMC if it is necessary to hold the stopped position for an extended period of time.

(11)Disassembly and modification prohibited

Do not disassemble any parts other than replaceable parts, otherwise it may reduce the output and accuracy.

To avoid injury, do not retrofit the product.

Actuators／Precautions

Be sure to read this before handling.

Design / Selection

Precaution

(1)Piston speed should be controlled gradually from low speed to the specified speed with a speed controller.

(2)When external of the cylinder is applied with pressure, air can enter inside the cylinder from the rod seal.

Mounting

Warning

(1)Operation Manual

Install and operate only after reading the operation manual carefully and understanding the contents.

Also, keep the manual where it can be referred to as necessary.

(2)Ensure sufficient space for maintenance activities.

When installing the products, allow access for maintenance.

(3)Tighten threads with the proper tightening torque.

When installing the products, follow the listed torque specifications.

(4)Do not make any alterations to this product.

By modifying the product, its strength could be affected, which could cause the product to break. As a result, it could pose a hazard to humans and damage the machinery and equipment.

(5)Do not enlarge the fixed orifice at the piping port by additional machining.

If the fixed orifice is enlarged, the rotating speed of the product increases as the impact force increases. This may lead to damage to the product, which can lead to human injury and damage to other equipment and machinery.

Mounting

Precaution

(1)Do not scratch or dent the cylinder tube with objects.

Cylinder bores are manufactured to precise tolerances, so that even a slight deformation may cause malfunction and air leakage.

(2)Do not use the product until you have verified that the equipment can operate properly.

After installation or repair, apply compressed air and power supplies to the equipment and perform appropriate functional and leakage inspections to make sure the equipment is mounted properly.

(3)Use enough handling caution.

The product may have sharp corners which may cause injuries if not handled carefully.

Actuators／Precautions

Be sure to read this before handling.

Piping

Precaution

(1) For the handling of one-touch fittings, refer to the Precautions for fittings and tubing (P38 to 41).

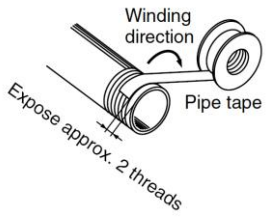
(2) Preparation before piping

Before piping is connected, it should be thoroughly blown out with air (flushing) or washed to remove chips, cutting oil and other debris from inside the pipe.

(3) Wrapping of sealant tape

When screwing piping or fittings into ports, ensure that chips from the pipe threads or sealing material do not enter the piping.

When a sealant tape is used, leave 1.5 to 2 thread ridges exposed at the end of the pipe.



Lubrication

Warning

(1) Cylinder lubrication

The product has been lubricated during manufacturing, so it does not require lubrication in service.

If a lubricant is used in the system, use turbine oil Class 1 (with no additive) ISO VG32. Do not use machine oil or spindle oil.

Stopping lubrication may lead to a malfunction as the new lubricant will have displaced the original lubricant. Therefore, lubrication must be continued once it has been started.

If turbine oil is used, refer to the Material Safety Data sheet (MSDS) of the turbine oil.

Air Supply

Warning

(1)Type of fluids

Please contact SMC when using the product in applications other than with compressed air.

(2)When there is a large amount of condensate

Compressed air containing a large amount of condensate can cause the malfunction of pneumatic equipment. An air dryer or water droplet separator should be installed upstream from the filters.

(3)Drain flushing

If condensate in the drain bowl is not emptied on a regular basis, the bowl will overflow and this may cause the malfunction of pneumatic equipment.

If the drain bowl is difficult to check and remove, installation of a drain bowl with an auto drain option is recommended.

For detailed information regarding the quality of the compressed air described above, refer to SMC's "Air Cleaning Systems".

(4)Use clean air.

Do not use compressed air which contains chemicals, synthetic oils containing organic solvents, salts or corrosive gases, etc., as this can

Caution Design/Selection

(1)When extremely dry air is used as the fluid, degradation of the lubrication properties inside the equipment may occur, resulting in reduced reliability (or reduced service life) of the equipment. Please consult with SMC.

(2)Install air filters.

Install an air filter upstream, near the valve. A filtration degree of 5 micrometer or less should be selected.

(3)Take appropriate measures to ensure air quality, such as by providing an after cooler, air dryer, or water separator.

Compressed air that contains excessive foreign material may cause malfunction of valves and other pneumatic equipment. Install an aftercooler, air dryer or drain catch before the filter and take appropriate measures.

(4)Use the product within the specified fluid and ambient temperature range.

When operating at temperatures below 5°C, water in the circuit may freeze and cause breakage of seals or malfunction. Corrective measures should be taken to prevent freezing.

For detailed information regarding the quality of the compressed air described above, refer to SMC's "Air Cleaning Systems".

(5)Precautionary measures against condensation

Moisture condensation can occur inside pneumatic systems due to a drop in temperature caused by the piping or operating conditions. This can degrade or wash away grease, resulting in shortened service life or malfunctions.

For details, refer to the catalog “Precautionary measures against condensation in a pneumatic system” CAT.P-E01-11).

Actuators／Precautions

Be sure to read this before handling.

Operating Environment

⚠ Warning

(1)Do not use in an atmosphere containing corrosive gases, chemicals, sea water, water, steam, or where there is direct contact with any of these.
The piston rod is made of plated carbon steel.
The parts such as piston rod end thread and the width across flats are made of non-plated carbon steel.
Consider to use made-to-order products (-XC6, -XC7) for use in environments where corrosion hazards exist.
Refer to the construction diagram for details on the materials used in the rotary actuator.

(2)If using in a location directly exposed to sunlight, shade the product from the sunlight.

(3)Do not use in locations subject to vibration or impact.

(4)Do not use in areas where product is exposed to heat sources or in areas where the product is exposed to radiant heat.

(5)Grease oil can decreased depending on the properties of the compressed air used with the pneumatic equipment, external environment and operating conditions. This may reduce the lubrication performance and shorten the life of the product.

⚠ Caution

(1)Lubricant and grease oil may seep out of the product in some operating conditions. Contact SMC especially if a clean environment is required.

Maintenance

⚠ Warning

(1)Perform maintenance inspection according to the procedure indicated in the Operation Manual.
If handled improperly, malfunction and damage of machinery of equipment may occur.

(2)Maintenance work
If handled improperly, compressed air can be dangerous. Assembly, handling, repair and element replacement of pneumatic systems should be performed by a knowledgeable and experienced person.

(3)Draining
Remove drainage moisture from air filters regularly.

(4)Removal of equipment, and supply/exhaust of compressed air.
When components are removed, first confirm that measures are in place to prevent workpiece from dropping and/or equipment running away, etc. Cut the supply pressure and electric power and exhaust all compressed air from the system.
Turn off the power supply, stop the air supply and exhaust all compressed air from the system.

MWP Series/ Specific Product Precautions

Be sure to read this before handling.

Notes

Warning

(1) This cylinder operates with a high force.
Keep away from the cylinder during operation to avoid injury.
Install an interlocking mechanism or emergency circuit for safety.

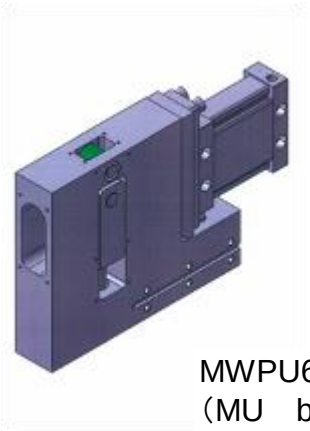
Caution

(1)Do not apply rotation torque or lateral load to the rod.
(2)The rod does not move by hand when it is retracted. Operate the product with air supplied.
(3)As the product produces a large output force, there is a key groove machined in the body. Use a parallel key. If the product is only fixed/supported by the bolts, they may deflect or break.
(4)Consult with SMC if the rod end deflection or non-rotation accuracy need to be guaranteed.
(5)This product is not designed to be used in a clean room. If you are considering using it in a clean room, please contact SMC.
(6)Keep the force for the operation (reaction force) to the nominal output or less.
(7)Do not apply reaction force to the retracted side.

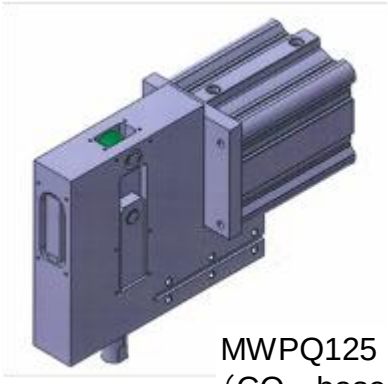
1 Air Press Cylinder Specifications

1-1. Specifications

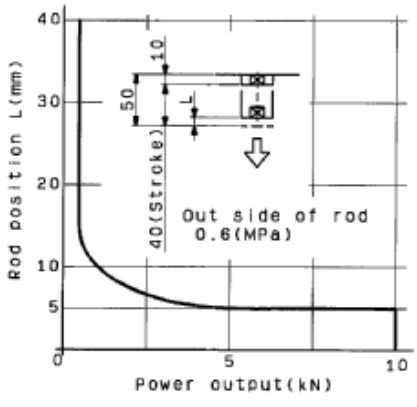
Product No.	MWPU63	MWPQ125
Cylinder	MUφ63	CQ2φ125
Product Weight	16kg	20kg
Fluid	Air	
Min. operating pressure	0.05MPa	
Max. operating pressure	0.7MPa	0.5MPa
Ambient and fluid temperature	-10～60℃ (No freezing)	
Lubrication	Not required（Non-lube）	
Stroke (Boosting stroke)	40mm (5mm)	40mm (5mm)
Power output	10kN (at 0.6MPa)	30kN (at 0.5MPa)
Piston speed	Quick feed stroke (35st): Speed of the installed cylinder Boosting stroke (5st): Speed of the installed cylinder x 0.15 Speed of installed cylinder: 50 to 500mm/sec.	
Rod end deflection accuracy	+/-0.1mm or less	
Non-rotating accuracy of the rod	+/-0.3° or less	
Auto switch mounting	Can be mounted to the installed cylinder (In accordance with the applicable switch for the retrospective cylinder)	



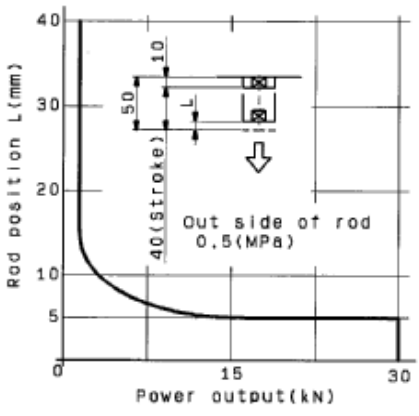
MWPU63
（MU　base）



MWPQ125
（CQ　base）

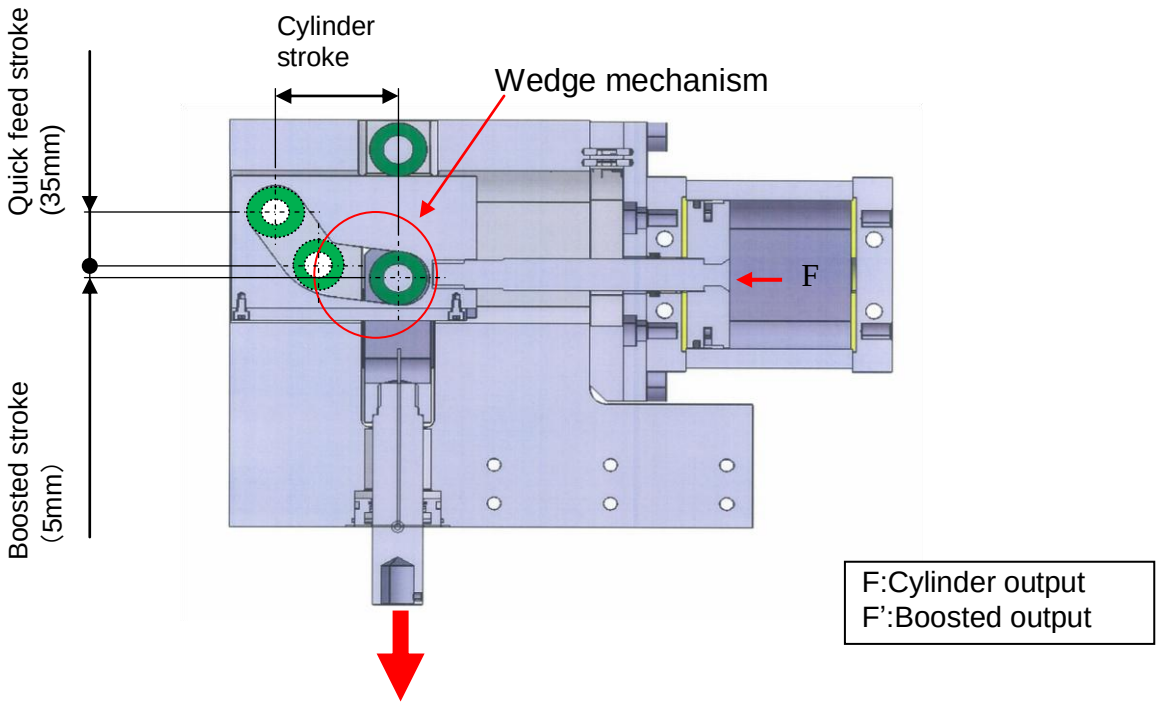


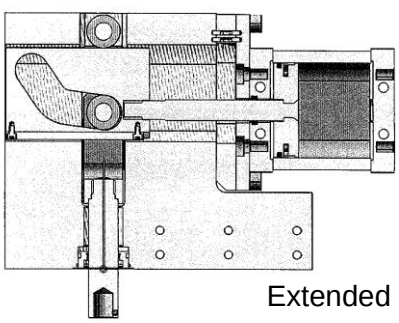
Power output chart

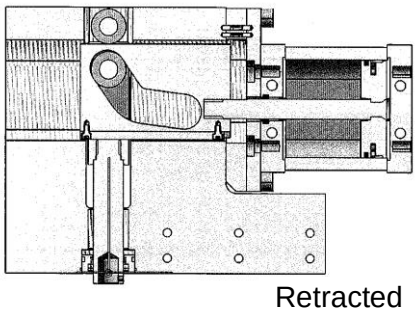


Power output chart

1-2. Operation Principle




Extended


Retracted

1-3. Relation between the output and stroke

The boosted output and time for return depend on the specification of the cylinder.

Guideline)

Boosting output : Theoretical pushing force of the installed cylinder x 6

Quick feed stroke time : Quick feed stroke (35st) / Speed of the installed cylinder

Boosted stroke speed (5st) : Speed of the installed cylinder x 0.15

Boosted stroke time (5st) : Boosted stroke (5st) / Boosted stroke speed (5st)

Time = Stroke / speed

Ex.) Cylinder speed 300mm/s

Quick feed stroke time = 0.12sec, Boosted stroke time = 0.11sec.

Therefore when no reaction force exists

The total stroke time(one direction) = 0.23 sec

2 Installation and Handling

2-1. Mounting Orientation / Installation

Install the rod vertically.
Consult SMC when the rod is installed horizontally. (Fig. 1)

Fig.1

There is a key groove on the side of the body. Mount the parallel key using the screws.

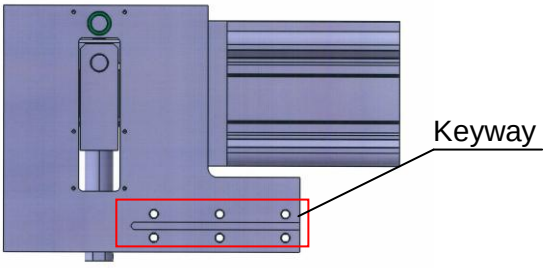
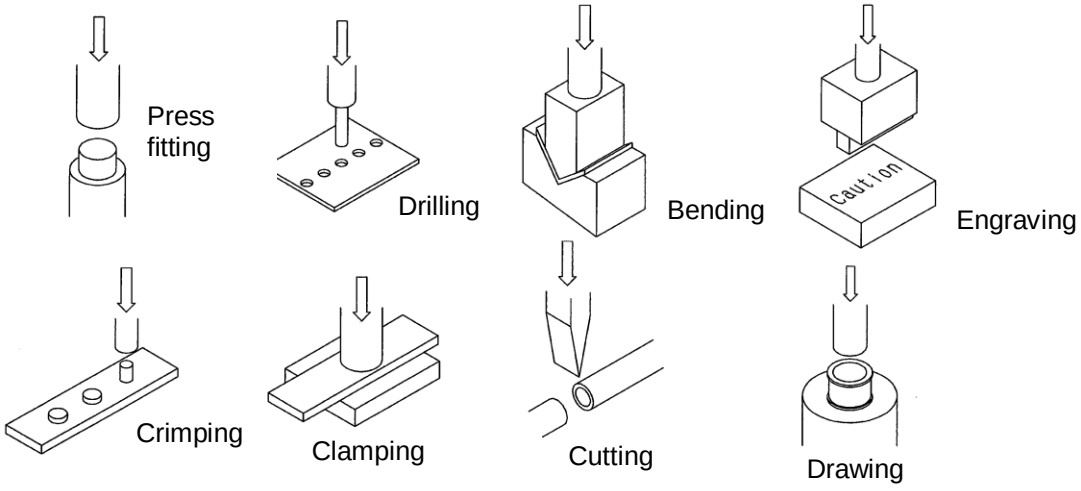


Fig.2

Rod end is shaped for slip fit. When mounting the unit to the rod end, fix using hexagon socket head set screws. If the rod end shape needs to be shaped other than for slip fit, please consult SMC.

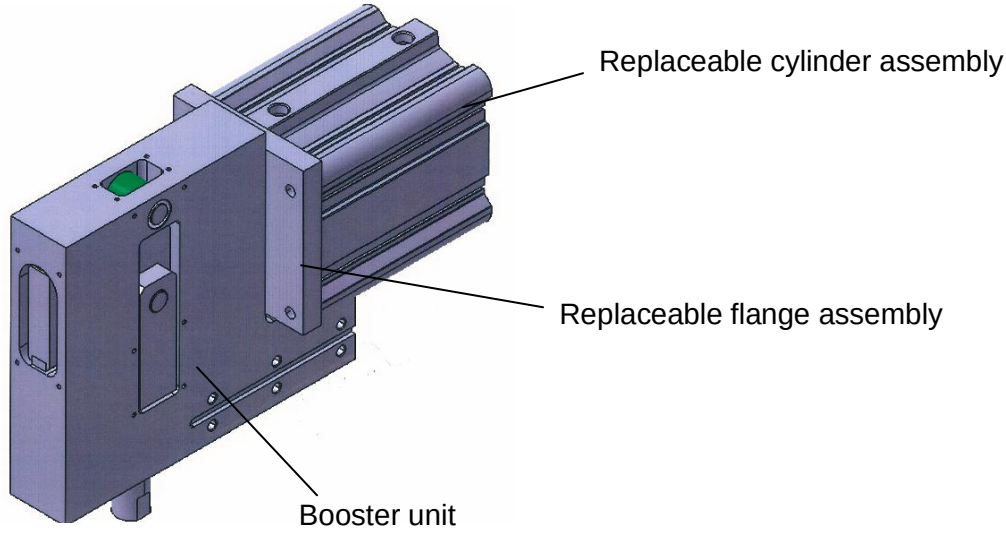
2-2. Application Examples



2-3. Cylinder Replacement

It is possible to replace the cylinder without removing the booster unit.

Output can be changed by replacing the cylinder (booster unit is the same).



Refer to the replacement procedure for the replacement of the cylinder.

⚠Warning

1) Removal of equipment, and supply/exhaust of compressed air

When the equipment is serviced, first confirm that measures are in place to prevent any dropping of driven objects and run-away of equipment, etc. Then turn off the supply pressure and power, exhaust all compressed air from the system using its residual pressure release function.

Before restarting the equipment, confirm that measures are taken to prevent sudden action.

2-4. References

Reference for drilling the holes

1)Calculation Parameters

Conditions for workload

- Thickness : t (mm)
- Shear stress of workload : τ (N/mm^2)
- Shearing length of workload : L (mm)
- Shear force of workload : F(N)
- Efficiency : α (0.7 for the calculation)

※If the shear stress is unknown, the guideline is 80% of the tensile force for the workload material.

2)Calculation

$F=L\times t\times \tau /0.7$

3)Calculation example

Make a hole with a diameter of 12mm on a steel board which is 0.8mm thick (Assuming the shear stress is 450N/mm^2)

$L=12\times \pi =37.68$(mm)

$F=37.68\times 0.8\times 450/0.7=19.4$ (kN)

4)Parameters for calculation of output

Cylinder Conditions

- Bore size: D(mm)
- Operating pressure:P (MPa)
- Boosting coefficient : β (Guideline : 6)
- Output : F' (N)

5)Calculation of output

$F'=\pi /4\times D^2\times P\times \beta$

6)Calculation of output

Bore size 125mm, operating pressure 0.4MPa,

F'=29.4(kN)

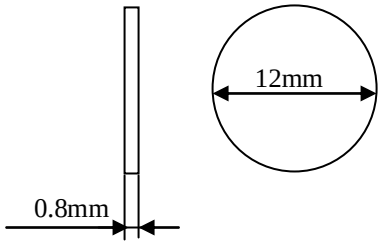


Fig. 3

Selection result

F/F'=0.66 → OK

3 Maintenance and Inspection

3-1. Checks

3-1-1. Daily check

1) Smoothness of the operation
2) Changes in piston speed and cycle time.
3) Proper stroking

3-1-2 Regular check

1) Looseness of mounting bolts and rod end nuts
2) Tightness of mounting frame and any excessive deflection
3) Smoothness of the operation
4) Changes in piston speed and cycle time.
5) External leakage
6) Proper stroking
7) Scratches on piston rod
8) Gouges on the outside of the cylinder
9) Whether drainage in the air filter is regularly discharged or not.

Check the points above at least, and retighten or contact the sales representative if any failure is found.

⚠ Warning

1) Maintenance should be performed according to the items above.

Improper handling can cause damage or malfunction of equipment and machinery.

2) Removal of equipment, and supply/exhaust of compressed air

When the equipment is serviced, first confirm that measures are in place to prevent any dropping of driven objects and run-away of equipment, etc. Then turn off the supply pressure and power, exhaust all compressed air from the system using its residual pressure release function.
Before restarting the equipment, confirm that measures are taken to prevent sudden action.

3-2. Consumable parts

3-2-1 Replacement parts

The replacement parts can be ordered as shown below.

Product number of cylinder
MU:MDUB63-72.5-DCS6554S
CQ:CDQ2B125-72.5Z-DCR5624R

Table 1 Seal kit

Part No.	Including and quantity			
	Rod seal	Piston seal	Tube gasket	Bumper
MUB63-PS	1	1		2
CQ2B125-PS	1	1	2	

The seal is not delivered in sealed packaging for storage independently, so it must be used within 1 year.
When storage for a longer period is expected, enclose it by packaging (by putting into a polyethylene bag and containing in a box), and store in the following manner.

3-2-2. Storage of seals

1) Enclose seals by packaging and store.
2) Avoid locations exposed to direct sunlight and high temperature and humidity.
   In particular, isolate from equipment that can generate heat, radiation and ozone.
3) Do not stack a lot of seals, and deform or damage it by putting a heavy object on it.
4) White particles can emerge from the surface of seals during storage, but they do not affect its performance.

3-2-3. Grease pack

When adding grease during the replacement of the seals or maintenance of the cylinder, use a grease package.

Table 2 Grease package

Part No.	Grease weight
GR-S-010	10g
GR-S-020	20g

4 Basic Circuit for Cylinder Operation

The basic circuit for operating the product with air filter, regulator, solenoid valve and speed controller (meter-out) is shown in the following figure.

It is possible to use a quick exhaust.

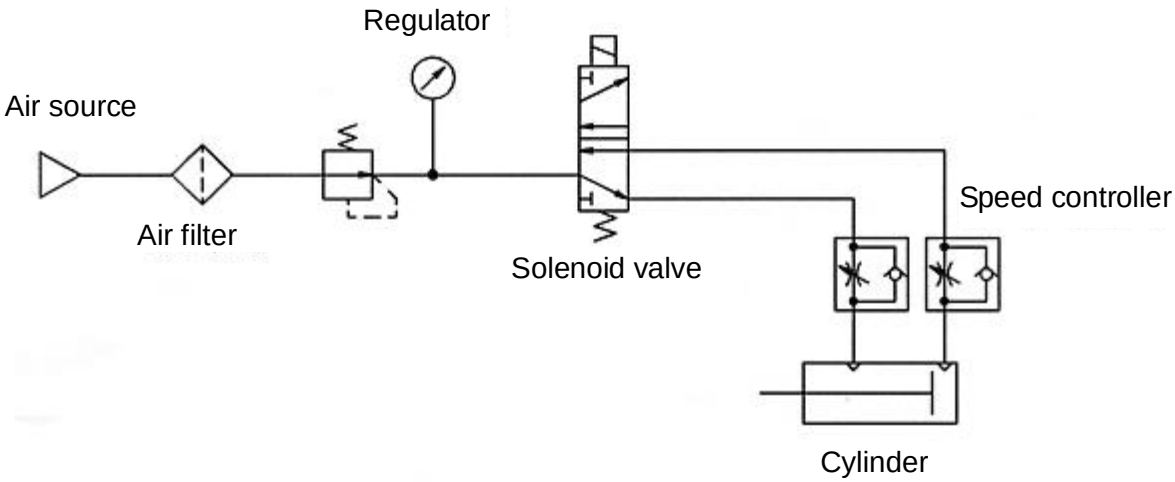


Fig.4

5 Troubleshooting

Problems	Major causes	Countermeasures
Operation has lost smoothness.	1. Insufficient pressure	Supply appropriate pressure.
Force has decreased.	1. Insufficient air pressure	Supply appropriate pressure.
	2. Insufficient flow rate	The resistance in the fluid path may have increased due to deformation or foreign matter entering the product. Perform repair or cleaning.
Operation speed of the cylinder is too fast.	1. Speed controller is not used.	Use a speed controller suitable for the size of the product. Refer to the catalog and operation manual of the speed controller for details.
	2. Insufficient fine adjustment of speed controller	Select a speed controller, which can be adjusted to the required speed. Refer to the catalog and operation manual of the speed controller for details.
Operation speed of the cylinder is too slow.	1. Directional control valve is too small.	Select directional control valves with suitable size. Refer to the catalog and operation manual of the directional control valve for details.
	2. Resistance of equipment in the piping route is too large	Use components and equipment of an appropriate size. It affects the piping diameter and length. Equipment at the exhaust side should also be of an appropriate size. Refer to the catalog and operation manual of the components and equipment for details.
	3. Excessive rod end load weight	Maintain the load weight within allowable weight range.
The product sometimes does not operate.	1. Problem of equipment other than this product	Check all items in the system one by one to find the cause. Refer to the catalog and operation manual of the components and equipment for details.
The product has become unable to operate.	1. Problem of equipment other than this product	Check all items in the system one by one to find the cause. Refer to the catalog and operation manual of the components and equipment for details.
	2. Insufficient pressure	Supply appropriate pressure.

Problem	Major causes	Countermeasures
Piston speed cannot be adjusted with the speed controller.	1. Incorrect speed controller selection	Use a speed controller suitable for the size of the product. Refer to the catalog and operation manual of the speed controller for details.
	2. Problem of the speed controller	Replace the speed controller with a new one. Refer to the catalog and operation manual of the speed controller for details.
The product has stick-slip movement.	1. Insufficient margin of output	Supply appropriate pressure.
	2. Use of a meter-in circuit	The operation may become unstable if the product is used with meter-in. Use of a meter-out circuit
The product shows sudden and fast movement after being stopped for extended periods of time.	1. Fluctuation of residual pressure in the product between continuous operation and operation after stoppage for extended periods of time	Consider the use of a suitable pneumatic circuit to prevent sudden action of the product.
Switch does not turn on (Switch sometimes does not turn on)	1. Power supply failure or connection failure	Check the power supply. Connect the product properly.
	2. Displacement of auto switch position	Check the position of the auto switch with the light. Ensuring light is on at the end of stroke.
	3. Lowered sensitivity of auto switch	Eliminate the problem of ambient temperature, vibration, or impact. Replace the switch with a new one if the problem is not solved.

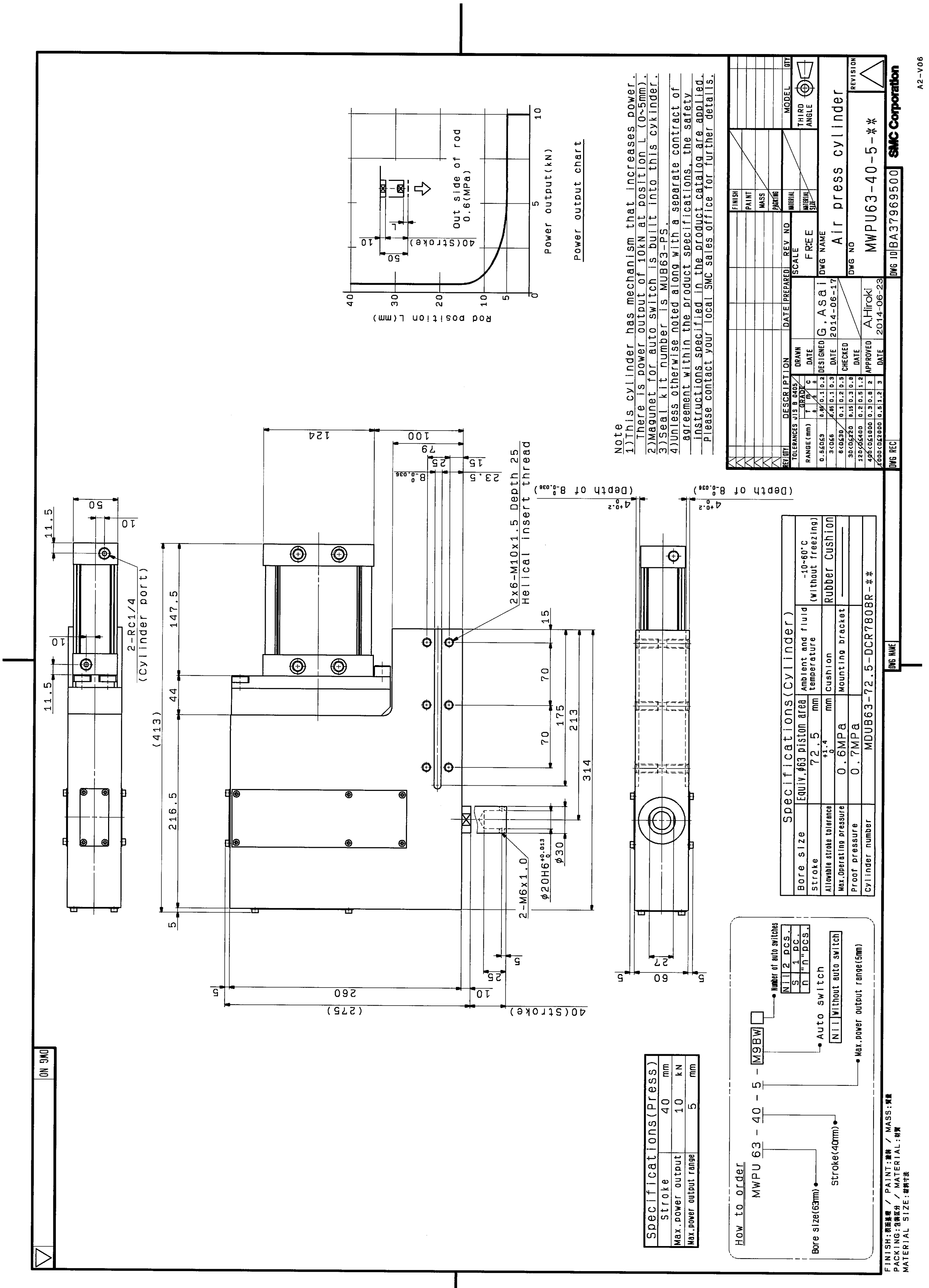
6 Basic Construction

Fig.5 MWPU63-40-5-** Assembly drawing

Fig.6 MWPU63-40-5-** Assembly drawing

Fig.7 MWPQ125-40-5-** Assembly drawing

Fig.8 MWPQ125-40-5-** Assembly drawing



Note
1)This cylinder has mechanism that increases power. There is power output of 10kN at position L (0~5mm).
2)Magunet for auto switch is built into this cykinder.
3)Seal kit number is MUB63-PS.
4)Unless otherwise noted along with a separate contract of agreement within the product specifications, the safety instructions specified in the product catalog are applied. Please contact your local SMC sales office for further details.
Power output chart
Power output(kN)
Rod position L(mm)
Out side of rod 0.6(MPa)
Specifications(Cylinder)
Bore size
Equiv. φ63 piston area
Stroke
72.5 mm
Ambient and fluid temperature
-10~60°C (without freezing)
Cushion
Rubber Cushion
Mounting bracket
Max.Operating pressure
0.6MPa
Proof pressure
0.7MPa
Cylinder number
MDUB63-72.5-DCR7808R-※※
Specifications(Press)
Stroke
40 mm
Max.power output
10 kN
Max.power output range
5 mm
How to order
MWPU 63 - 40 - 5 - M9BW
Bore size(63mm)
Stroke(40mm)
Max.power output range(5mm)
Auto switch
Nil Without auto switch
Number of auto switches
Nil 2 pcs.
S 1 pc.
n "n" pcs.
2-Rc1/4 (Cylinder port)
2x6-M10x1.5 Depth 25 Helical insert thread
2-M6x1.0
40(Stroke)
(Depth of 8)
Air press cylinder
MWPU63-40-5-※※
BA37969500
G.Asai 2014-06-17
A.Hiroki 2014-06-23
SCALE FREE
THIRD ANGLE
SMC Corporation
A2-V06

Fig.5

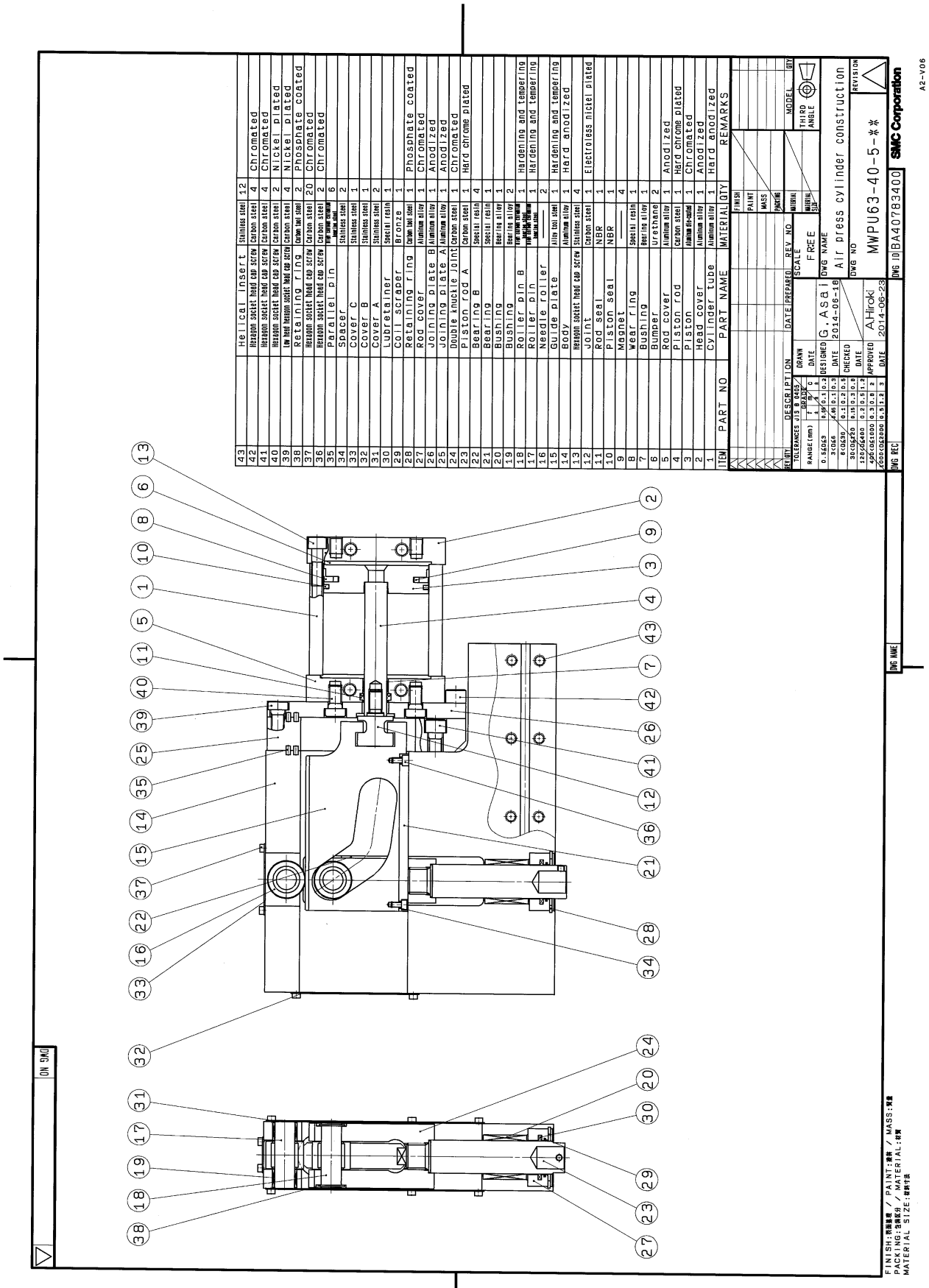

ITEM PART NO PART NAME MATERIAL QTY REMARKS
1 Cylinder tube Aluminum alloy 1 Hard anodized
2 Head cover Aluminum alloy 1 Anodized
3 Piston Aluminum die-casting 1 Chromated
4 Piston rod Carbon steel 1 Hard chrome plated
5 Rod cover Aluminum alloy 1 Anodized
6 Bumper Urethane 2
7 Bushing Bearing alloy 1
8 Wear ring Special resin 1
9 Magnet 4
10 Piston seal NBR 1
11 Rod seal NBR 1
12 Joint Carbon steel 1 Electroless nickel plated
13 Hexagon socket head cap screw Stainless steel 4 Hard anodized
14 Body Aluminum alloy 1
15 Guide plate Alloy tool steel 1 Hardening and tempering
16 Needle roller 2
17 Retaining ring Alloy tool steel 1 Hardening and tempering
18 Roller pin B Carbon steel 1
19 Roller pin Carbon steel 1
20 Bushing Bearing alloy 1
21 Bushing Bearing alloy 1
22 Bearing B Special resin 4
23 Bearing Special resin 1
24 Piston rod A Carbon steel 1 Hard chrome plated
25 Double knuckle joint Carbon steel 1 Chromated
26 Joining plate A Aluminum alloy 1 Anodized
27 Joining plate B Aluminum alloy 1 Anodized
28 Rod cover Aluminum alloy 1 Chromated
29 Retaining ring Carbon tool steel 1 Phosphate coated
30 Coil scraper Bronze 1
31 Lubretainer Special resin 1
32 Cover A Stainless steel 2
33 Cover B Stainless steel 1
34 Cover C Stainless steel 1
35 Spacer Stainless steel 2
36 Parallel pin Carbon steel 6
37 Hexagon socket head cap screw Carbon steel 2 Chromated
38 Hexagon socket head cap screw Carbon steel 20 Chromated
39 Retaining ring Carbon tool steel 2 Phosphate coated
40 Hexagon socket head cap screw Carbon steel 4 Nickel plated
41 Hexagon socket head cap screw Carbon steel 2 Nickel plated
42 Hexagon socket head cap screw Carbon steel 4 Chromated
43 Helical insert Stainless steel 12
DESCRIPTION DATE PREPARED REV NO MATERIAL MODEL QTY
TOLERANCES JIS B 0405
RANGE(mm) GRADE f m c v
0.5≤3 0.05 0.1 0.2
3≤6 0.05 0.1 0.2 0.5
6≤30 0.1 0.2 0.5
30≤120 0.15 0.3 0.8
120≤400 0.2 0.5 1.2
400≤1000 0.3 0.8 2
1000≤2000 0.5 1.2 3
DRAWN DATE
DESIGNED G.Asai DATE 2014-06-18
CHECKED DATE
APPROVED A.Hiroki DATE 2014-06-23
SCALE FREE
MATERIAL SIZE
FINISH
PAINT
MASS
PACKING
THIRD ANGLE
DWG NAME
Air press cylinder construction
DWG NO MWPU63-40-5-**
REVISION
DWG ID BA40783400
SMC Corporation
DWG NAME
DWG REC
ON SALE
FINISH:表面処理 / PAINT:塗装 / MASS:質量
PACKING:包装仕様 / MATERIAL:材質
MATERIAL SIZE:材料寸法
A2-V06

Fig.6

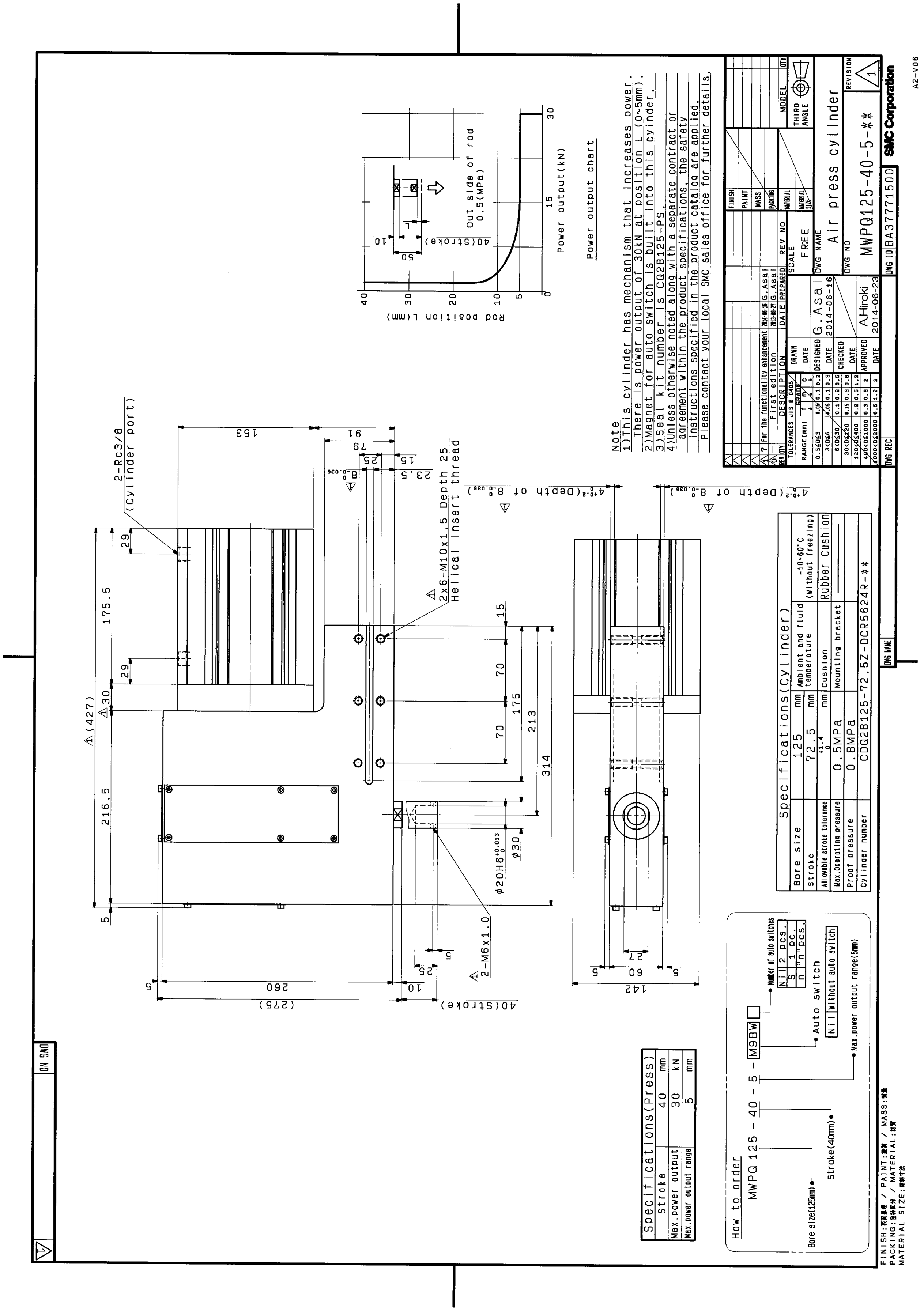
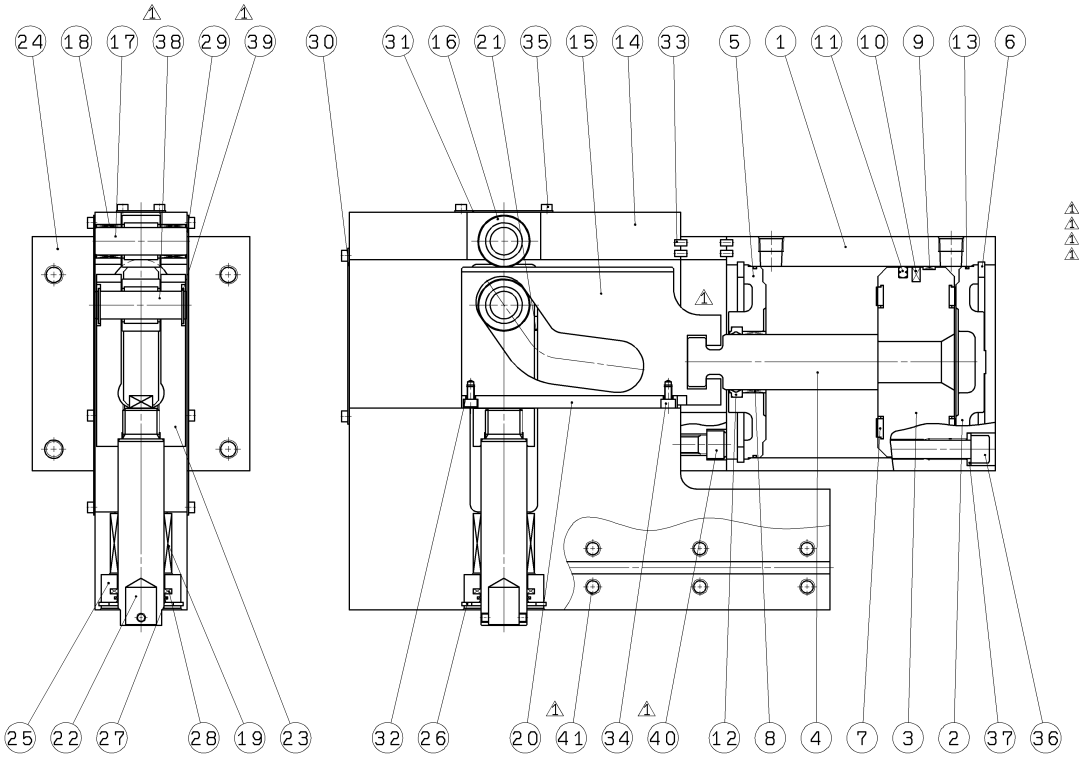

Note
1)This cylinder has mechanism that increases power.
There is power output of 30kN at position L (0~5mm).
2)Magnet for auto switch is built into this cylinder.
3)Seal kit number is CQ2B125-PS.
4)Unless otherwise noted along with a separate contract or agreement within the product specifications, the safety instructions specified in the product catalog are applied.
Please contact your local SMC sales office for further details.
Power output chart
Power output(kN)
Rod position L(mm)
Out side of rod
0.5(MPa)
Specifications(Cylinder)
Bore size 125 mm
Stroke 72.5 mm
Max.Operating pressure 0.5MPa
Proof pressure 0.8MPa
Ambient and fluid temperature -10~60°C (without freezing)
Cushion Rubber Cushion
Cylinder number CDQ2B125-72.5Z-DCR5624R-※※
Specifications(Press)
Stroke 40 mm
Max.power output 30 kN
Max.power output range 5 mm
How to order
MWPQ 125 - 40 - 5 - M9BW
Bore size(125mm)
Stroke(40mm)
Max.power output range(5mm)
Auto switch
Nil Without auto switch
Number of auto switches
Nil 2 pcs.
S 1 pc.
n "n" pcs.
2-Rc3/8
(Cylinder port)
2x6-M10x1.5 Depth 25
Helical insert thread
2-M6x1.0
Air press cylinder
MWPQ125-40-5-※※
BA37771500
SMC Corporation
A2-V06

Fig.7

Fig.8



ITEM	PART NO	PART NAME	MATERIAL	QTY	REMARKS
41		Helical insert	Stainless steel	12	
40		Hexagon socket head cap screw	Carbon steel	4	Chromated
39		Retaining ring	Carbon tool steel	2	Phosphate coated
38		Roller pin B	High carbon chromium bearing steel	1	Hardening and tempering
37		Plain washer	Carbon steel	4	Chromated
36		Hexagon socket head cap screw	Carbon steel	4	Chromated
35		Hexagon socket head cap screw	Carbon steel	20	Chromated
34		Hexagon socket head cap screw	Carbon steel	2	Chromated
33		Parallel pin	High carbon chromium bearing steel	4	
32		Spacer	Stainless steel	2	
31		Cover C	Stainless steel	1	
30		Cover B	Stainless steel	1	
29		Cover A	Stainless steel	2	
28		Lubretainer	Special resin	1	
27		Coil scraper	Bronze	1	
26		Retaining ring	Carbon tool steel	1	Phosphate coated
25		Rod cover	Aluminum alloy	1	Chromated
24		Joining plate	Aluminum alloy	1	Anodized
23		Double knuckle joint	Carbon steel	1	Chromated
22		Piston rod A	Carbon steel	1	Hard chrome plated
21		Bearing B	Special resin	4	
20		Bearing	Special resin	1	
19		Bushing	Bearing alloy	1	
18		Bushing	Bearing alloy	2	
17		Roller pin	High carbon chromium bearing steel	1	Hardening and tempering
16		Needle roller	——	2	
15		Guide plate	Alloy tool steel	1	Hardening and tempering
14		Body	Aluminum alloy	1	Hard anodized
13		Tube gasket	NBR	2	
12		Rod seal	NBR	1	
11		Piston seal	NBR	1	
10		Magnet	——	1	
9		Wear ring	Special resin	1	
8		Bushing	Bearing alloy	1	
7		Bumper	Urethane	2	
6		Retaining ring	Carbon tool steel	2	Phosphate coated
5		Rod cover	Carbon steel	1	Nickel plated
4		Piston rod B	Carbon steel	1	Hard chrome plated
3		Piston	Aluminum alloy	1	Chromated
2		Head cover	Carbon steel	1	Nickel plated
1		Cylinder tube	Aluminum alloy	1	Hard anodized

REV	QTY	DESCRIPTION	DATE PREPARED	REV NO
3		Shape changing of Piston rod B and Guide plate	2014-06-17	G.Asai
		No.38~41 addition.		
0	—	First edition	2013-08-27	G.Asai

FINISH
PAINT
MASS
PACKING
MATERIAL
MATERIAL SIZE

MODEL QTY

THIRD ANGLE

TOLERANCES JIS B 0405	GRADE f	m	c
RANGE(mm)	±	±	±
0.5≦D≦3	0.05	0.1	0.2
3<D≦6	0.05	0.1	0.3
6<D≦30	0.1	0.2	0.5
30<D≦120	0.15	0.3	0.8
120≦D≦400	0.2	0.5	1.2
400<D≦1000	0.3	0.8	2
1000<D≦2000	0.5	1.2	3

DRAWN DATE
DESIGNED G.Asai DATE 2014-06-17
CHECKED DATE
APPROVED A.Hiroki DATE 2014-06-23

SCALE FREE

DWG NAME Air press cylinder construction

DWG NO MWPQ125-40-5-**

REVISION 1

DWG NAME
DWG REC
DWG ID BA37771700

SMC Corporation

FINISH:表面処理 / PAINT:塗装 / MASS:質量
PACKING:包装区分 / MATERIAL:材質
MATERIAL SIZE:材料寸法

A2-V06

Revision history	
Initial Release	SZ
Edition A *Document report P.13	TP

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Tel: + 81 3 5207 8249 Fax: +81 3 5298 5362
URL http://www.smcworld.com

MWPQ125 Cylinder Replacement Procedure

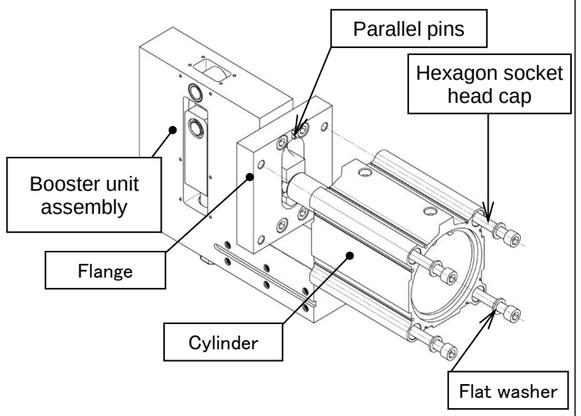
No.	MWP*-MM0015Q

Removal of the cylinder

(1) Booster unit assembly starts with the rod fully retracted

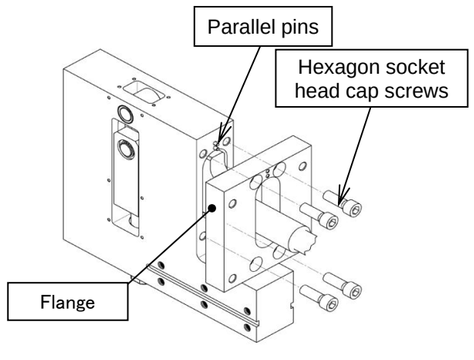
(2) Remove the 4 hexagon socket head cap screws fixing the cylinder to remove the cylinder from the flange.

・Do not lose the bolt, washer and parallel pin.
・Size of hexagon socket head cap screw: M12×1.75×190L
・Size of parallel pin :4×10L

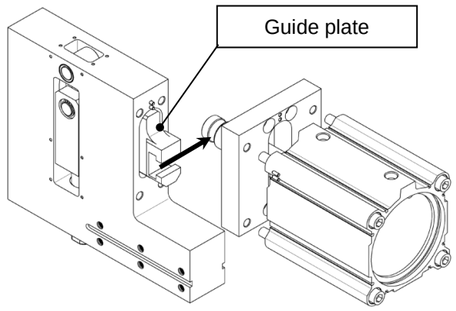


(3) Remove the 4 hexagon socket head cap screws fixing the flange with the cylinder rod retracted to the stroke end. Then, pull out the flange from the booster unit assembly.

・Do not lose the bolt and parallel pin.
・Size of hexagon socket head cap screw: M12×1.75×35L



(4) Move the floating part of the cylinder rod end horizontally to remove it from the guide plate.



(5) Pull out the cylinder rod from the flange.

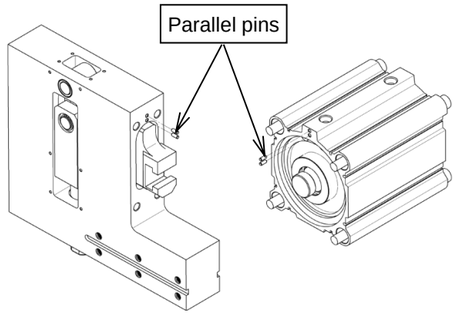
Replacement part number

Product name	Product No.	Components
Booster unit assembly	MWPQ125-40-5-R	Booster unit body
Cylinder assembly	CDQ2B125-72.5Z-DCR5624R-**	Cylinder body, washer (4pcs.)
Flange assembly	MWPQ125-20-R	Flange, Parallel pin (4 pcs.) Hexagon socket head cap screw (4pcs. : For fixing the cylinder) Hexagon socket head cap screw (4 pcs. : For fixing the flange)

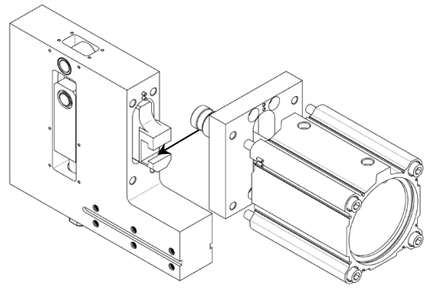
Cylinder assembly

(1) Booster unit assembly starts with the rod fully retracted

(2) Insert the parallel pins into the booster unit assembly and cylinder.

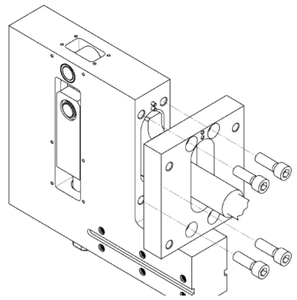


(3) With the cylinder rod extended to the stroke end, slide the flange over the piston rod.
Connect the cylinder rod floating part to the guide plate.



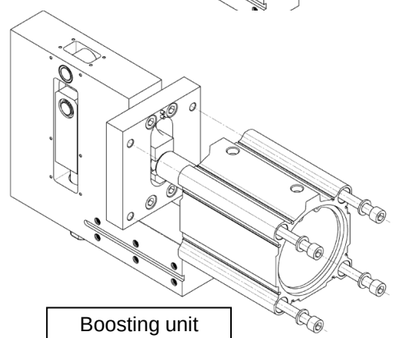
(4) Mount the flange to the booster unit assembly using 4 hexagon socket head cap screws.

・Apply locking adhesive on the hexagon socket head cap screws.
Ex) Loctite 243
・Tightening torque of the hexagon socket head cap screw: 42Nm
・After mounting, confirm that there is no gap or misalignment between the booster unit assembly and flange.

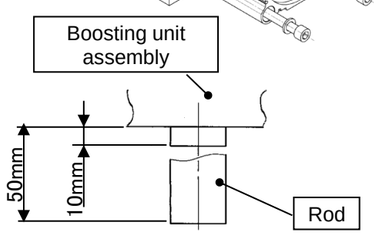


(5) Mount the cylinder to the flange using 4 hexagon socket head cap screws.

・Use flat washers on the hexagon socket head cap screws.
・Apply locking adhesive on the hexagon socket head cap screws.
Ex) Loctite 243
・Tightening torque of the hexagon socket head cap screw: 42Nm
・After mounting, confirm that there is no gap or misalignment between the flange and the cylinder.



(6) Operation check
・Supply air to the cylinder to confirm that the boosting unit assembly rod moves smoothly at the minimum operating pressure of 0.05MPa.
・Make sure that the piston rod is in the position of the drawing on the right when it is retracted and extended.
・Operate the unit several times with the operating pressure to confirm there is no noise or problems.



MWPU63 Cylinder Replacement Procedure

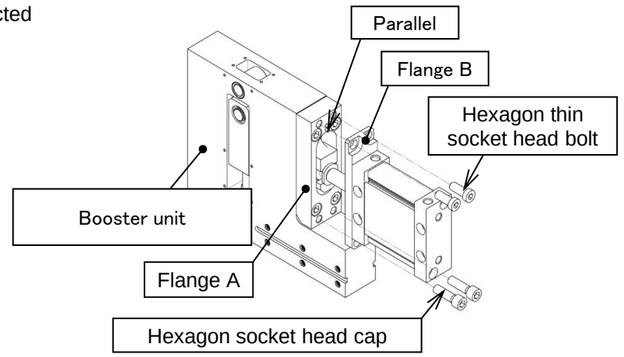
No.	MWP*-MM0016Q

Removal of the cylinder

(1) Booster unit assembly starts with the rod fully retracted

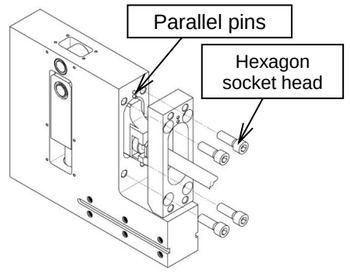
(2) Remove the 2 hexagon thin socket head bolts and 2 hexagon socket head cap screws to remove flange B from flange A.

・Do not lose the bolt and parallel pin.
・Size of hexagon thin socket head bolt: M12×1.75×20L
・Size of hexagon socket head cap screw: M12×1.75×35L
・Size of parallel pin: 4 x 10L

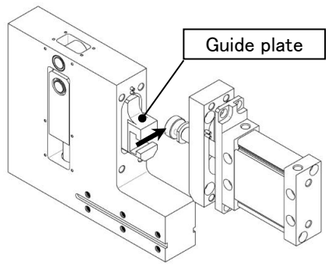


(3) Remove the 4 hexagon socket head cap screws fixing flange A with the cylinder rod retracted to the stroke end. Then, pull out flange A from the booster unit assembly.

・Do not lose the bolt and parallel pin.
・Size of hexagon socket head cap screw: M12×1.75×35L

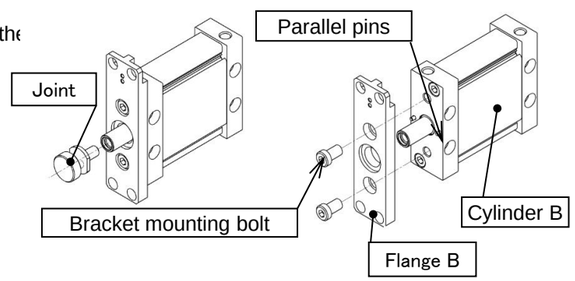


(4) Move the floating part of the cylinder rod end horizontally to remove it from the guide plate.



(5) After removing the joint from the cylinder rod, remove the bracket mounting bolts fixing flange B, then remove the flange from cylinder B.

・Do not lose the joint, bolt and parallel pin.
・Size of bracket mounting bolt: M12×1.75×20L
・Width across flats of the joint : 27mm



Replacement part number

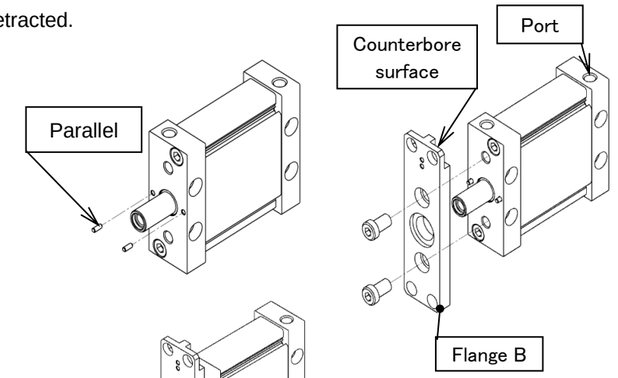
Product name	Product No.	Components
Booster unit assembly	MWPQ125-40-5-R	Booster unit body
Cylinder assembly	MDUB63-72.5-DCS6554S-**	Cylinder body and joint
Flange assembly	MWPU63-20-R	Flange A, B Parallel pin (6pcs.)
		Size of hexagon socket head cap screw (4pcs. : For fixing the flange A)
		Size of hexagon socket head cap screw (2 pcs. : For fixing the flange B)
		Size of hexagon socket head cap screw (2 pcs. : For fixing the flange B)
		Bracket mounting bolt (2pcs. : For fixing the cylinder)

Cylinder assembly

(1) Booster unit assembly starts with the rod fully retracted.

(2) Insert the parallel pins into the cylinder. Mount flange B using 2 bracket mounting bolts.

・Mount flange B so that the counterbore side faces the cylinder and port side.
・Apply locking adhesive on the metal mounting bolt.
Ex) Loctite 243
・Tightening torque of the bracket mounting bolt: 42Nm
・After mounting, confirm that there is no gap or misalignment between flange B and the cylinder.



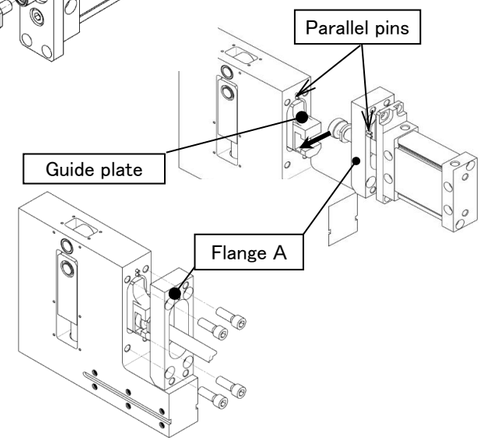
(3) Mount the cylinder rod joint.

・Apply locking adhesive on the joint.
Ex) Loctite 243
・Tightening torque of the joint: 76Nm

(4) Insert the parallel pins into the booster unit assembly and with the cylinder rod extended to the stroke end, slide flange A over the piston rod. Connect the cylinder rod joint to the guide plate.

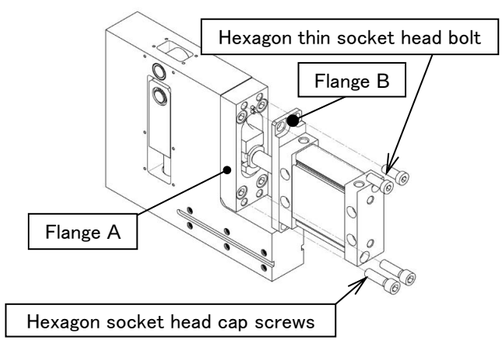
(5) Mount flange A to the boosting unit assembly using 4 hexagon socket head cap screws.

・Apply locking adhesive on the hexagon socket head cap screws.
Ex) Loctite 243
・Tightening torque of the hexagon socket head cap screw: 42Nm
・After mounting, confirm that there is no gap or misalignment between the boosting unit assembly and flange A.



(6) Mount flange B to flange A using 2 hexagon thin socket head bolts and 2 hexagon socket head cap bolts.

・Apply locking adhesive on the hexagon thin socket head cap screws.
Ex) Loctite 243
・Tightening torque of the hexagon thin socket head cap screw: 42Nm
・After mounting, confirm that there is no gap or misalignment between the flange A and the flange B.



(7) Operation check

・Supply air to the cylinder to confirm that the boosting unit assembly rod moves smoothly at the minimum operating pressure of 0.05MPa.
・Make sure that the rod is in the position of the drawing on the right when it is retracted and extracted.
・Operate the unit several times with the operating pressure to confirm there is no noise or problems.