Instruction and Maintenance Manual
Series 55-C55 Air Cylinder

II 2GD c 85°C (T6) Ta -10°C to 40°C
105°C (T4) Ta 40°C to 60°C

Read this manual before using this product

- The information within this document is to be used by pneumatically trained personnel only.
- For future reference, please keep manual in a safe place.
- This manual should be read in conjunction with the current catalogue.

Marking description

II 2GD c 85°C (T6) Ta -10°C to 40°C
105°C (T4) Ta 40°C to 60°C

Group II
Category 2
Suitable for Gas and Dust environment
Type of protection "constructional safety"
Max surface temperature 85°C and temperature class T6 when ambient temperature is from -10°C to 40°C
Max surface temperature 105°C and temperature class T4 when ambient temperature is from 40°C to 60°C

1 SAFETY RECOMMENDATION

1.1 General recommendation

These safety instructions are intended to prevent a hazardous situation and/or equipment damage. These instructions indicate the level of potential hazard by label of "Caution", "Warning" or "Danger". To ensure safety, be sure to observe ISO4414 (Note1), JIS B 8370 (Note2) and other safety practices.

Note 1: ISO 4414:Pneumatic fluid power - General rules relating to systems.
Note 2: JIS B 8370:Pneumatic system axiom.

CAUTION: Operator error could result in injury or equipment damage.

WARNING: Operator error could result in serious injury or loss of life.

DANGER: In extreme conditions, there is a possible result of serious injury or loss of life.

WARNING:

- **The compatibility of pneumatic equipment is the responsibility of the person who designs the pneumatic system or decides its specifications.**
  - Since the products specified here are used in various operating conditions, their compatibility for the specific pneumatic system must be based on specifications or after analysis and/or tests to meet your specific requirements.
- **Only trained personnel should operate pneumatically operated machinery and equipment.**
  - Compressed air can be dangerous if an operator is unfamiliar with it Assembly, handling or repair of pneumatic systems should be performed by trained and experienced operators.
- **Do not service machinery/equipment or attempt to remove components until safety is confirmed.**
  - Inspection and maintenance of machinery/equipment should only be performed after confirmation of safe locked-out control positions.
  - When equipment is to be removed, confirm the safety process as mentioned above. Switch off air and electrical supplies and exhaust all residual compressed air in the system.
  - Before machinery/equipment is re-started, ensure all safety measures to prevent sudden movement of cylinders etc. (Bleed air into the system gradually to create backpressure, i.e. incorporate a soft-start valve).
- **Contact SMC if the product is to be used in any of the following conditions:**
  - Conditions and environments beyond the given specifications, or if product is used outdoors.
  - Installations on equipment in conjunction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverage, recreation equipment, emergency stop circuits, press applications, or safety equipment.
  - An application, which has the possibility of having negative effects on people, property, or animals, requiring special safety analysis.

CAUTION:

- Ensure that the air supply system is filtered to 5 micron.

1.2 Conformity to standard

This product if certified to and complies with the following standards:

- Directive 94/9/EC
- EN 13463-1:2001
  Non-electrical equipment for potentially explosive atmospheres
  Part 1: Basic method and requirements

2 INTENDED CONDITIONS OF USE

Fluid		Air
Max. operating pressure	⌀20~⌀63	1.0 MPa
Min. operating pressure	⌀20~⌀63	0.05 MPa
Ambient and fluid temperature		-10 to 60 °C
Lubrication		Not required
Operating piston speed	⌀20~⌀63	50 to 500 mm/s
Cushion	⌀20~⌀63	Rubber cushion
Allowable kinetic energy	⌀20	0.110 J
	⌀25	0.18 J
	⌀32	0.29 J
	⌀40	0.52 J
	⌀50	0.91 J
	⌀63	1.54 J
Explosive atmosphere	Gas and Dust	
Zone	1, 21, 2 and 22	

WARNING:

- In case the kinetic energy exceeds the value given in the table, please contact SMC.
- Do not use in case of heavy dusty environment where dust can penetrate into the cylinder and dry the grease.

2.1 Production batch code

The production batch code printed on the label indicates the month and year of production as per the following table:

Production batch codes									
Year		2003	2004	2005	...	2021	2022	2023	...
Month		H	I	J	...	Z	A	B	...
Jan	O	HO	IO	JO	...	ZO	AO	BO	...
Feb	P	HP	IP	JP	...	ZP	AP	BP	...
Mar	Q	HQ	IQ	JQ	...	ZQ	AQ	BQ	...
Apr	R	HR	IR	JR	...	ZR	AR	BR	...
May	S	HS	IS	JS	...	ZS	AS	BS	...
Jun	T	HT	IT	JT	...	ZT	AT	BT	...
Jul	U	HU	IU	JU	...	ZU	AU	BU	...
Aug	V	HV	IV	JV	...	ZV	AV	BV	...
Sep	W	HW	IW	JW	...	ZW	AW	BW	...
Oct	X	HX	IX	JX	...	ZX	AX	BX	...
Nov	Y	HY	IY	JY	...	ZY	AY	BY	...
Dec	Z	HZ	IZ	JZ	...	ZZ	AZ	BZ	...

3 INSTALLATION

WARNING:

- Do not install unless the safety instructions have been read and understood.

3.1 Environment

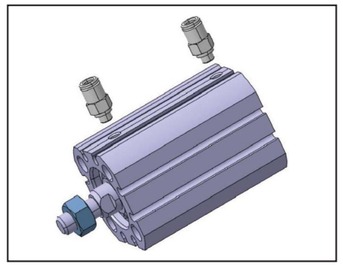
WARNING:

- Do not use in an environment where the product is directly exposed to corrosive gases, chemicals, salt water, water or steam.
- Do not use in an explosive atmosphere, except within the specified rating.
- The product should not be exposed to prolonged sunlight. Use a protective cover.
- Do not mount the product in a location where it is subject to strong vibrations and/or shock. Check the product specifications for above ratings.
- Do not mount the product in a location where it is exposed to radiant heat.

3.2 Piping

CAUTION:

- Before piping make sure to clean up chips, cutting oil, dust etc.
- When installing piping or fitting into a port, ensure that sealant material does not enter the port inside. When using seal tape, leave 1.5 to 2 threads exposed on the end of pipe/fitting.



Model	Port size
55-C55*20	M5 x 0.8
55-C55*25	
55-C55*32	G1/8
55-C55*40	
55-C55*50	
55-C55*63	

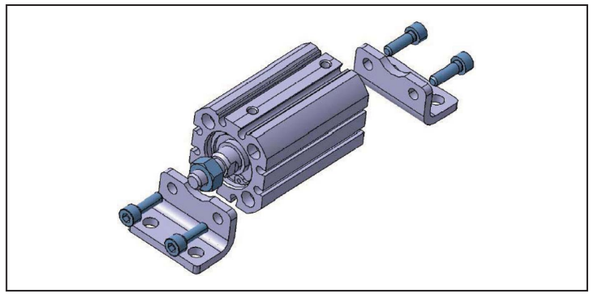
3.3 Electrical connection

CAUTION:

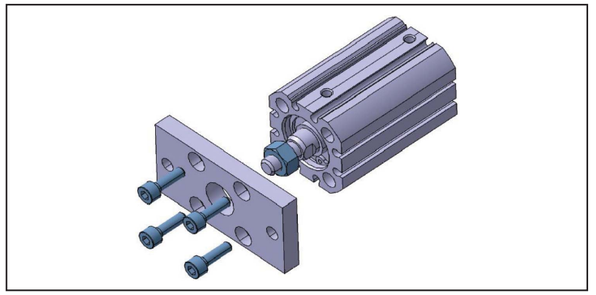
- Provide grounding connection to the actuator to avoid any spark arising from potential differences.

3.4 Mounting accessories

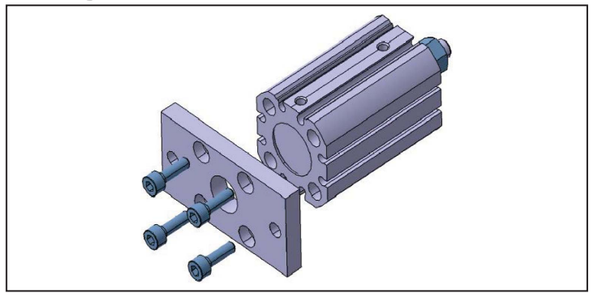
Foot brackets



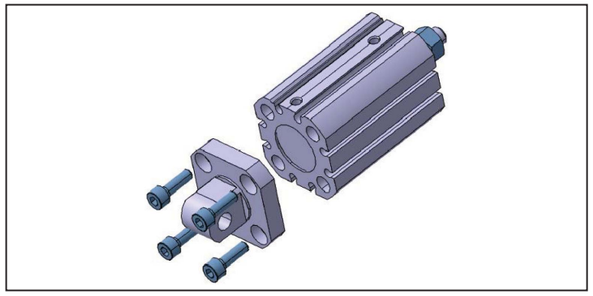
Front flange



Rear flange



Rear double clevis



When replacing brackets, use the hexagon wrenches shown below.

Bore size (mm)	Width across flats (mm)	Tightening torque (Nm)
20	4	8.98 to 12.0
25	4	8.98 to 12.0
32	4	8.98 to 12.0
40	4	8.98 to 12.0
50	5	11.4 to 22.4
63	6	25.0 to 44.9

3.5 Lubrication

CAUTION:

- SMC products have been lubricated for life at manufacturer, and do not require lubrication in service.
- If a lubricant is used in the system, use turbine oil Class 1(no additive), ISO VG32. Once lubricant is used in the system, lubrication must be continued because the original lubricant applied during manufacturing will be washed away.

4 MAINTENANCE

WARNING:

- Not following proper procedures could cause the product to malfunction and could lead to damage to the equipment or machine.
- If handled improperly, compressed air can be dangerous. Assembly, handling and repair of pneumatic system should be performed by qualified personnel only.
- Drain: remove condensate from the filter bowl on a regular basis.
- Shut-down before maintenance: before attempting any kind of maintenance make sure the supply pressure is shut off and all residual air pressure is released from the system to be worked on.
- Start-up after maintenance: apply operating pressure and power to the equipment and check for proper operation and possible air leaks. If operation is abnormal, please verify product set-up parameters.
- Do not make any modification to the product
- Do not disassemble the product, unless required by installation or maintenance instructions.
- Periodically check the rod surface, the rod seal and the cylinder tube external surface. Any damage in these components could increase friction and lead to dangerous conditions. Replace the whole actuator if any of these conditions should appear.
- Replace the seals, when air leakage is above allowable value given in the table below.

Internal leakage	10 cm3/min (ANR)
External leakage	5 cm3/min (ANR)

Seals replacement

WARNING:

Use only original SMC seal kits, given in the table below.

Bore size (mm)	Kit no.
20	CQ2B20-PS
25	CQ2B25-PS
32	CQ2B32-PS
40	CQ2B40-PS
50	CQ2B50-PS
63	CQ2B63-PS

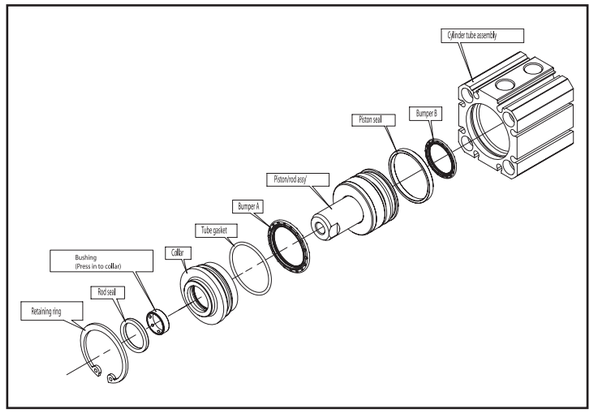
Procedure

Disassemble the cylinder, remove the old grease and place all the parts on a clean cloth in a clean environment.

The snap ring pliers shall be used to remove snap ring.

Remove the old tube gaskets, rod seal, cushion seals, piston seal, wear ring, cushion screw seal (for bore sizes above or equal to 40 mm), using a fine screw driver where necessary. If the magnet is present on the piston, do not remove it. This part is not to be replaced.

Model: C(D)55(B)20~63-*(M)



Lubricate the parts using "Mitsubishi Multi Purpose Grease 2" or "Lithium Type Grease JIS 2".

Apply lubricant to:

- rod seal
- rod seal groove on the rod cover
- piston outer surface
- piston seal groove
- piston seal inner and outer surface
- tube gaskets
- piston rod surface
- tube inner surface

The amount of lubricant, to be applied, is given in the following table:

Bore size (mm)	Required amount of grease for the minimum stroke (g)		Additional amount of grease required for each 5mm of stroke (g)
20	5 mm stroke	0.12	0.015
25		0.18	0.02
32		0.25	0.035
40		0.36	0.045
50	10 mm stroke	0.665	0.055
63		0.77	0.07

Assembling the cylinder.

1. Inserting the rod cover assembly into the piston rod assembly.

Apply grease to the end of the piston rod, especially on the 30 chamfer and on the flats. Insert with care the piston rod into the rod cover to prevent any damage to the rod seal.

2. Inserting piston and rod cover assembly.

Insert slowly with care the piston assembly and the rod cover assembly into the cylinder tube to prevent any damage of the piston seal and tube gasket.

3. Installing retaining ring.

Use appropriate pliers (tool for C shape snap ring) for installation.

⚠ CAUTION:

When installing the snap ring, be aware that the snap ring may come off the pliers and could result in operator injury or equipment damage. Also make sure ring is firmly seated in ring groove.

4. Checking assembly.

Make sure that no air is leaking from packing seals and that the cylinder operates smoothly at minimum operating pressure. Check for cylinder smooth movement and for air leakage.

5 LIMITATIONS OF USE

⚠ WARNING:

- Do not exceed any of the specifications laid out in section 2 of this document or the specific product catalogue.

⚠ DANGER:

- Air equipment has standard air leakage within certain limits.
- Do not use this equipment when the air itself can lead to explosion danger.

⚠ CAUTION:

- Do not install and use this equipment in case of vibration such to lead to equipment failure. Contact SMC for this specific situation.

⚠ WARNING:

- External impact on the cylinder body could result in spark and/or cylinder damage. Avoid any application where foreign objects can hit the cylinder. In such situations install suitable guard to prevent such impacts.
- Use only ATEX certified auto-switch. Order them separately.
- Do not use in presence of strong magnetic fields, which could generate surface temperature higher than the value given for the temperature class.

6 EUROPEAN CONTACT LIST

6.1 SMC Corporation

Country	Telephone	Country	Telephone
Austria	(43) 2262-62 280	Italy	(39) 02-92711
Belgium	(32) 3-355 1464	Netherlands	(31) 20-531 8888
Czech Republic	(420) 5-414 24611	Norway	(47) 67 12 90 20
Denmark	(45) 70 25 29 00	Poland	(48) 22-548 50 85
Finland	(358) 9-859 580	Portugal	(351) 22 610 89 22
France	(33) 1-64 76 1000	Spain	(34) 945-18 4100
Germany	(49) 6103 4020	Sweden	(46) 8 603 12 00
Greece	(30) 1- 342 6076	Switzerland	(41) 52-396 3131
Hungary	(36) 23 511 390	Turkey	(90) 212 221 1512
Ireland	(353) 1-403 9000	United Kingdom	(44) 1908-56 3888

6.2 Websites

SMC Corporation	www.smcworld.com
SMC Europe	www.smceu.com