

Pneumatic single acting (SA) cylinder

Installation, maintenance and
operating instructions

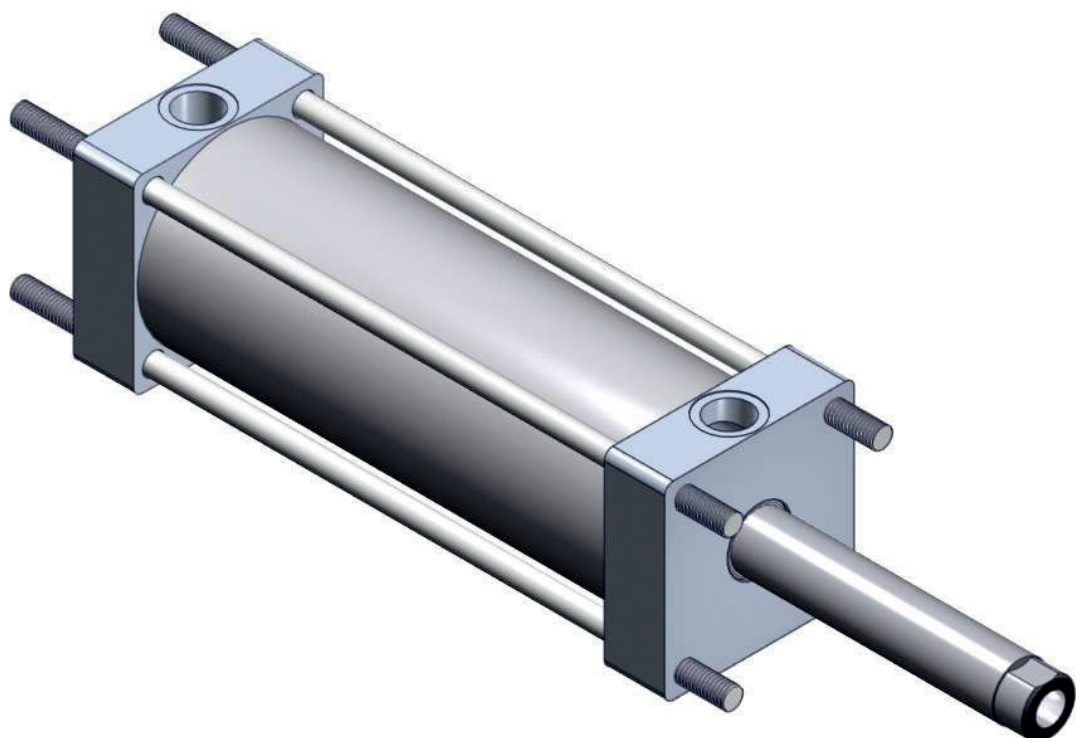


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READ THESE INSTRUCTIONS FIRST!

These instructions provide information about safe handling and operation of the valve.

If you require additional assistance, please contact the manufacturer or manufacturer's representative.

SAVE THESE INSTRUCTIONS!

Addresses and phone numbers are printed on the back cover.

1. INTRODUCTION

Thank you for choosing Valmet product. Each product is fully inspected after the production to offer you the highest quality. In order to fully utilize the product, we strongly recommend users to read this manual carefully and understood.

- This manual provides information on installation, operation and maintenance procedures and related instructions for the Valmet make pneumatic cylinder (e.g., SC series).
- The aim of this literature is to support the use of products in correct manner, and all the technical information provided in the catalogue.
- The manual should be given to the end user.
- The manual can be changed or revised without any prior notice. Any changes in product's specification, structure, and/or any components may not result immediate revised version of the manual.
- The manual should not be duplicated or reproduced for any purpose without any consent of Valmet Flow control, INDIA.

Manufacturer Warranty

- For the safety, it is vital to follow instructions in the manual. It is not Valmet's liability for any damages which caused by users' negligence.
- It is not Valmet's liability for any damages or accidents which resulted by any alteration or modification of the product and parts. If alteration or modification is necessary, please contact the Valmetdirectly.
- Valmetwarrants the product from the date of original retail purchase of the product for one (1) year, except as otherwise stated.
- Valmet warranty will not cover the products that the product have been subjected to abuse, accident, alteration, modification, tampering, negligence, misuse, faulty installation, lack of reasonable care, repair or service in any way that is not contemplated in the documentation for the product, or if the model or serial number has been altered, tampered with, defaced or removed; damages that occurs in shipment, failure due to power surge, and cosmetic damage. Improper or incorrectly performed maintenance or report voids this Limited Warranty.
- For detailed warranty information, please contact :
- Valmet Flow Control, Manpada road, Dombivli (e), Maharashtra, India, Pin - 421204

1.1 Definitions

WARNING:

If not observed, user incurs a high risk of severe damage to product and/or fatal injury to personnel.

CAUTION:

If not observed, user may incur damage to product and/or injury to personnel.

NOTE:

Advisory and information comments provided to assist maintenance personnel to carry out maintenance procedures.

1.2 Label description

	
MO. NO: _____	DATE _____
MODEL: SC-SA-00-00-NB-100/125	
DOMBIVLI – 421204 INDIA	

Label of the cylinder defines the precise feature of that particular cylinder. This description is written below the Valmet logo and is as follow.

MO. NO.:	Manufacturing Order number
DATE:	Date of manufacturing
Model no.:	SC – Type
	SA – Single Acting cylinder
	00 – Standard MOC of piston rod
	00 – Standard model
	NB – NBR seals
	100 – Piston diameter 100 mm
	125 – Stroke length 125 mm
Dombivli – 421204 INDIA:	- Brief address

1.3 Operation principal

Pneumatic cylinder is a mechanical device which uses power of compressed air/gas to produce a force in a reciprocating linear motion.

The basic pneumatic cylinder consists of a cylindrical chamber with a movable piston and intake and exhaust channels.

Compressed air or other gas is supplied into the cylindrical chamber. This pressurized air/gas exerts force against the base of the piston, which causes piston to move, providing a way to move other mechanical elements.

It's a single acting cylinder of SA type, in which is at front cover side, so piston is always in retarded position.

When compressed air/gas is supplied from rear cover, piston extended.

1.4 Installation procedure

The equipment must be installed in the accordance with the laws, guide lines and rules applicable within the country.

WARNING:

Operating cylinders over temperature or pressure limits will result in damage to cylinders.

CAUTION:

Do not dismantle the cylinder while operation is in line.

Do not allow dirty air or fluids to get into the cylinder. Use filter unit (filter size 40µm, 3°C) for dust and moisture removal.

NOTE:

Ensure the installation meets the legal and regulatory requirements of the country and state of use.

The cylinder assembly should be left in the original packing until it is required for the use.

The metallic pipe connections should be rinsed with degreasing or by grease dissolving liquids or agents, before being connected to our cylinder. Flush all pipes with 4 kgf/cm² air for at least ½ hour.

Lubrication is not necessary. (Maintain once started oil mist lubrication. As per ISO 3448 recommended oils are NUTO H 32, VG 32. Oil viscosity 32 cSt at 40°C)

Operating pressure range 1-10 bar.

Operating temperature range -20°C to +70°C

1. Pneumatic system is suitable for operation with compressed air between 1-10 bar. Usually the sizing is done at the air pressure availability confirmed by the client. (Hydraulic pressure maximum of 10 bar on request)
2. Hemp filaments, jute or even Teflon ribbons are normally not required, As the part connections are accurately threaded. By chance, if any of these or any other tightening medium get into the operational area inside the cylinder, possible damage of the cylinder could not be ruled out.
3. The mounting holes size and bolt size circle are confirming to ISO 6431 / ISO 15552 norms. The threaded holes are ISO metric coarse and as ISO 6431 / ISO 15552. (Refer catalogue)
4. Clean all pipes and tube fittings thoroughly with suitable means. As even when brand new pipes are fitted, unclean interior are quite covered with dirt and dust.
5. Avoid impact on the cylinder. These may happen during transportation/ erection/ mishandling.
6. Align properly the rod axis with the load and direction of movement when connecting. If not properly aligned, the rod and tube may be twisted and damage may be caused due to wear on areas such as inner tube surface, bushing, rod surface and seals.

1.5 Service support items

Valmet service kit

SR NO.	TOOL	SIZE
1	Spanner for cover nut	18mm
2	Spanner for piston rod	28mm
3	Spanner for lock nut	30mm

Commercial leak testing solution

Non hardening thread sealant

1.6 Lubrication requirement

NOTE:

Lubricants, other than listed should not be used without prior written approval of Valmet Product Engineering.

Sr. no	Operating temperature	Lubricant
1	-20 0C to +80 0C	5140120005
2	-30 0C to +110 0C	5140120007
3	-60 0C to +110 0C	5140120008

2. INSTALLATION AND OPERATIONS

1. Pneumatic system is suitable for operation with compressed air between 4 to 10, bar. Usually the sizing done at the air pressure availability confirmed by the client. (for hydraulic pressure maximum of 10 bar on special request)

WARNING:

Operating cylinders over temperature or pressure limits will result in damage to cylinders.

CAUTION:

Do not dismantle the cylinder while operation is in line.

Do not allow dirty air or fluids to get into the cylinder. Use filter unit (filter size 40µm, 3°C) for dust and moisture removal

NOTE:

Ensure the installation meets the legal and regulatory requirements of the country and state of use.

The cylinder assembly should be left in the original packing until it is required for the use.

The metallic pipe connections should be rinsed with degreasing or by grease dissolving liquids or agents, before being connected to our cylinder. Flush all pipes with 4 kgf/cm² air for at least ½ hour.

Lubrication is not necessary. (Maintain once started oil mist lubrication. As per ISO 3448 recommended oils are NUTO H 32, VG 32. Oil viscosity 32 cSt at 40°C)

Operating pressure range 1-10 bar.

Operating temperature range -20°C to +70°C

2. Hemp – filaments, jute or even Teflon ribbons are normally not required, as the part connections of Valmet cylinders are accurately machined. If used, they may enter into the operational area inside the cylinder and may result in damage to the cylinder.
3. Use filter and regulator unit for removing the dust and moisture from the air or fluid entering the cylinder.
4. Clean all pipes and tube fitting thoroughly with suitable means, as even the interiors of the new pipes also contain dust and dirt. It is strongly recommended that the connections/ pipes should be rinsed with degreasing agents or dissolved in dissolving agents, before being connected to the cylinder. Flush the pipeline with 4 bar pressure for at least half an hour.
5. Avoid impact on the cylinder; it may happen during transportation, erection or mishandling.
6. Do not open the cylinder while under in operation.
7. While installing the cylinder, make sure the piston rod is not experiencing side thrust. Align the cylinder while mounting, Align the cylinder keeping mounting hole free and loose, and tighten the bolts slowly while operating the cylinder.
8. All accessories of cylinder are well lubricated before dispatch. After removing pin & Circlips, store them in clean box. Install pin and Circlips without damaging the bore.
9. This cylinder has only port on front cover only.
10. First of all loose the tie rod nuts, so that tension on spring will release.

3. GENERAL DISASSEMBLY

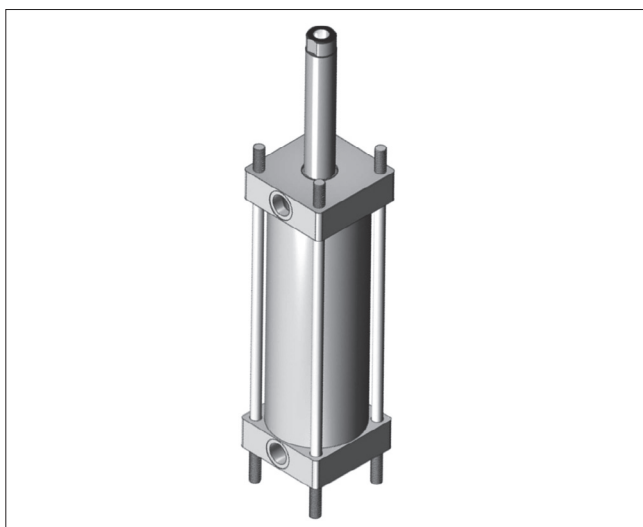
WARNING:

Do not remove spring module while spring is compressed.

NOTE:

Review section before proceeding with spring module disassembly.

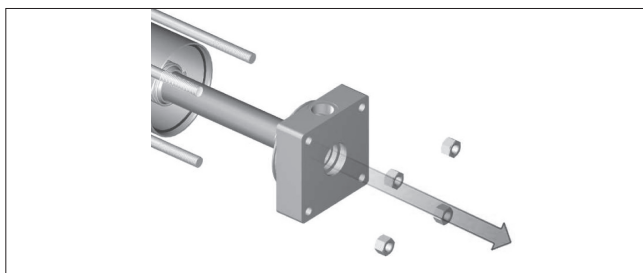
1. Dismantle the cylinder only to carry out maintenance and replacing of the O-rings and seals. Please note that Cylinder should be placed vertical (Piston rod facing upwards) while dismantling for the easy removal of parts.



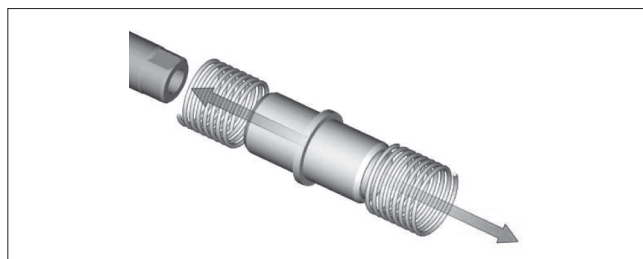
2. Loosen locking nuts (9) located on the tie rod (6).



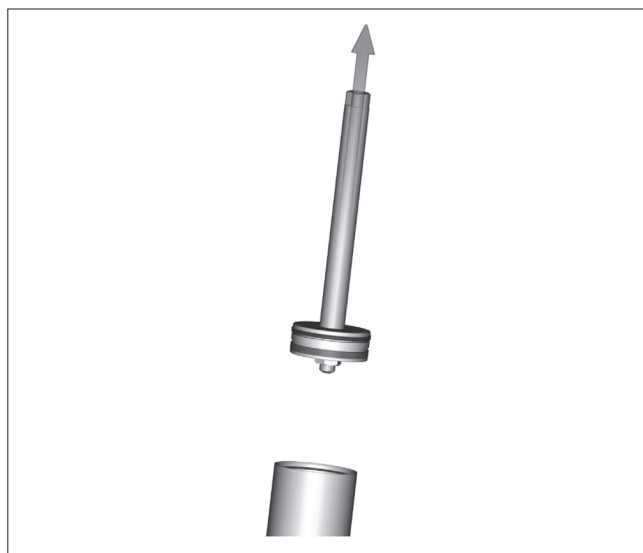
3. Carefully remove front cover (1) from the Cylinder assembly in order expose spring and sleeve assembly because 300N force is acting on front cover.



4. Remove the spring sleeve assembly carefully from cylinder tube as shown in figure.



5. Pull the piston rod (4) along with piston (5) out from the Cylinder tube, and remove nut (20) in order to separate out piston and piston rod



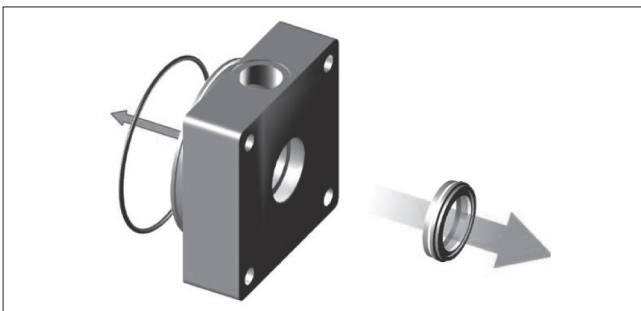


6. Now remove cylinder tube (11) from rear cover (2), so all assembly will dis-mental.

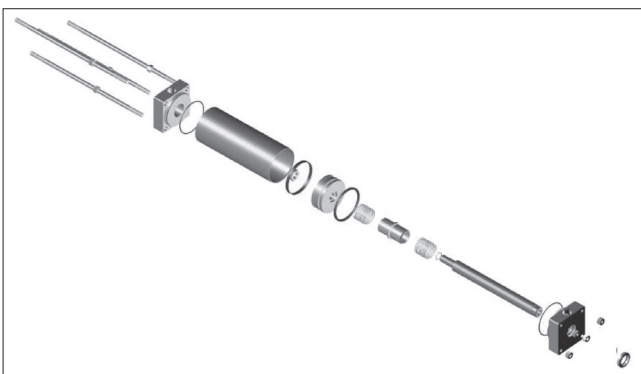
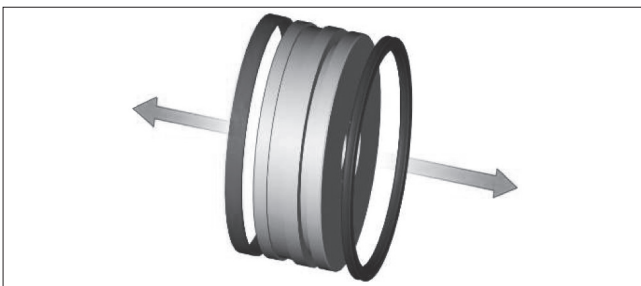
CAUTION:

Do not damage lip seal or seal groove while dismantling the assembly.

7. Use proper seal removal tools for removing the rod seal (12) from the front cover (1).



8. Use proper piston strip and quad seal removing tools to remove seal and strip.

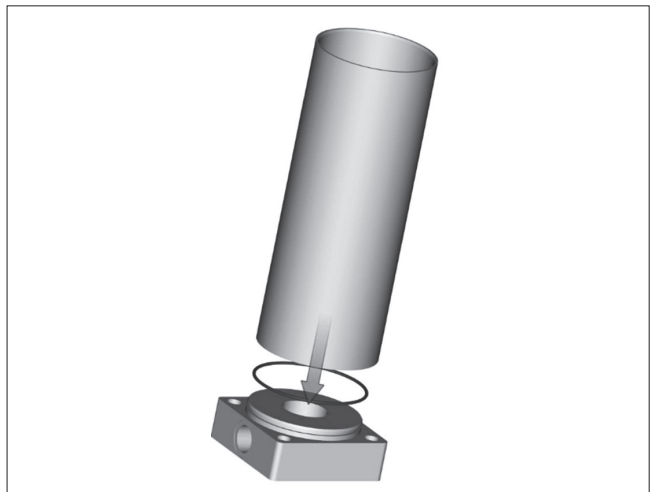


4. GENERAL ASSEMBLY

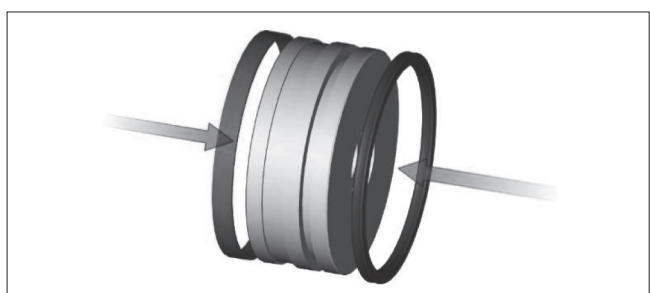
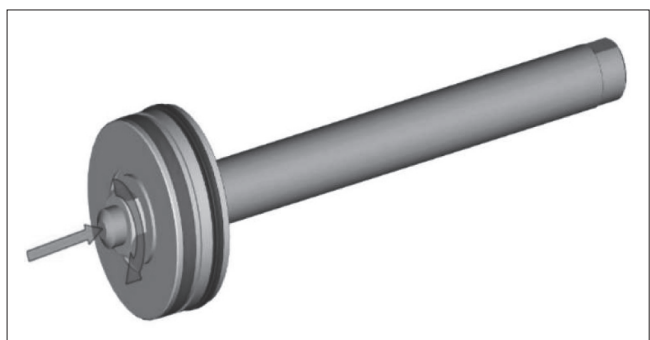
NOTE:

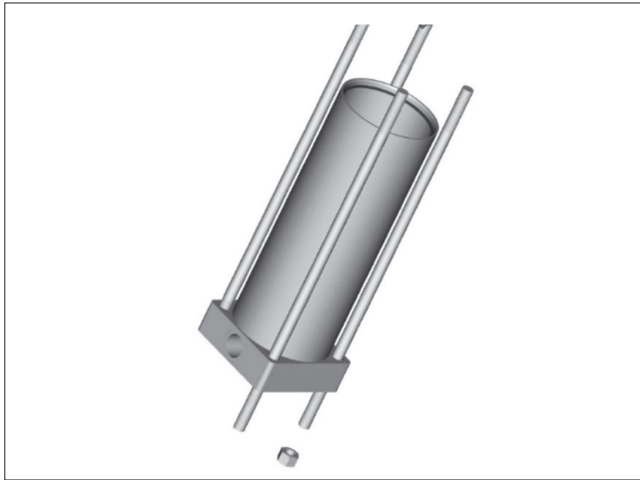
Review detailed drawing (pg-14) in order to proceed with general assembly of Cylinder

1. Clean all parts with soap water and dry with air blow. Apply a layer of grease in internal bore of tube & outside diameter of piston (recommended grease: mp2 or mp3).
2. Place the rear cover (2) as shown in the figure; Install O-ring (13) on the rear cover Apply grease on the O-ring before installing it on the rear cover.
3. Place the tube (11) on the rear cover (2), **NOTE:** that inner side of the tube should be properly greased before placing it on the rear cover.

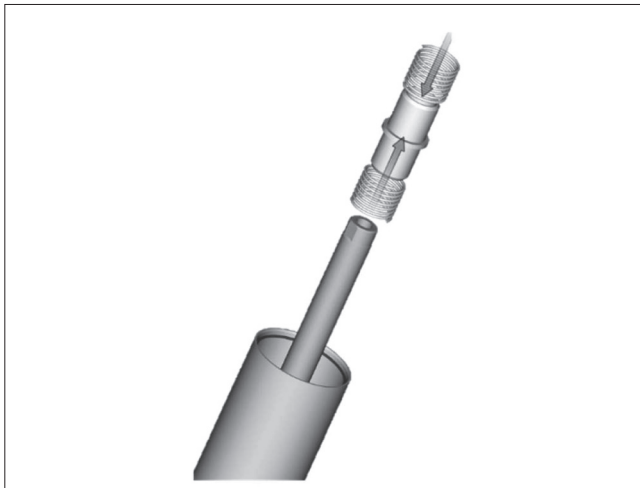


4. Mount the tie rods (6) through the rear cover (2) and secure those with spring washer and nut, **Note:** Tie rods will not be fixed completely as we'll have to mount front cover for that.
5. Put piston strip (16) and quad seal-1(17) on piston grooves.
6. After piston assembly assemble piston with piston-rod (3).

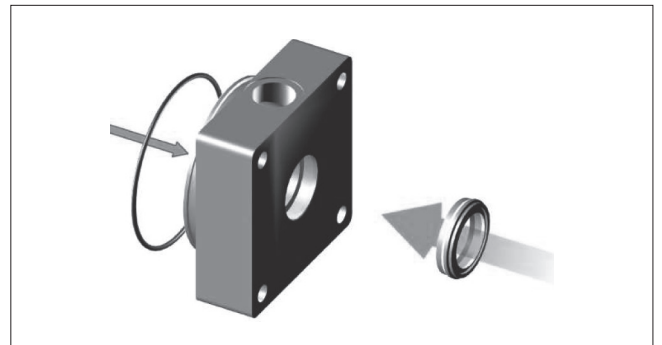




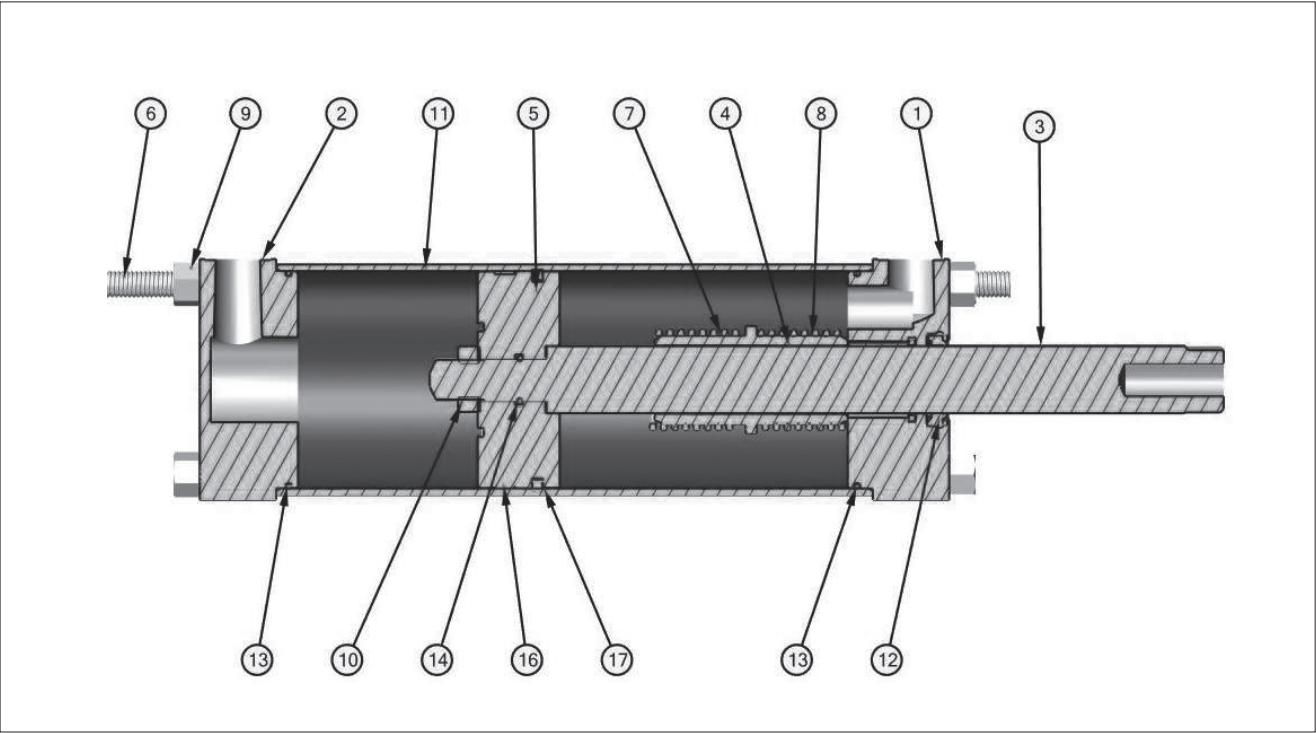
7. Place the piston assembly through the tube as shown, use proper tool to insert the seal of the piston into the tube.
8. Insert spring spring-1 which would rest on piston and then insert piston sleeve and spring-2 in cover on piston rod, then put front cover with o-ring (13).



9. Assembly front cover with rod seal (12) as shown in figure.
10. Now mount the locking nut (9) on tie rods (6) to ensure proper assembly of cylinder.



5. PART LIST



SR NO	ITEM DESCRIPTION	QUANTITY
1	FRONT COVER	1
2	REAR COVER	1
3	PISTON ROD	1
4	SPRING SLEEVE	1
5	PISTON	1
6	TIE ROD	4
7	SPRING-1	1
8	SPRING-2	1
9	M12 NUT	8
10	M20 NUT	1
11	ROUND TUBE	1
12	ROD SEAL	1
13	ORING 94 x 2 NBR	2
14	ORING 2	1
15	ORING 20.92 x 2.62 NBR	1
16	PISTON STRIP	1
17	QUAD SEAL-1	1

6. PACKAGING & STORE

1. When not in use, ALR ASSEMBLY should be kept in a sealed plastic bag in a cardboard box to prevent moisture or dust from contacting product.
2. ALR ASSEMBLY should be stored in a dry place free from water and dust.
3. Store at temperature between 40°F and 120°F (4°C and 49°C).
4. Locate in an area to avoid damage by impact.

7. ASSISTANCE

For technical questions or assistance, contact any authorized distributor of Valmet or:

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