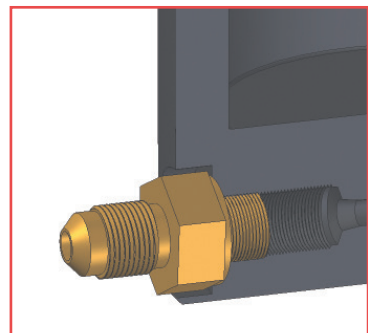
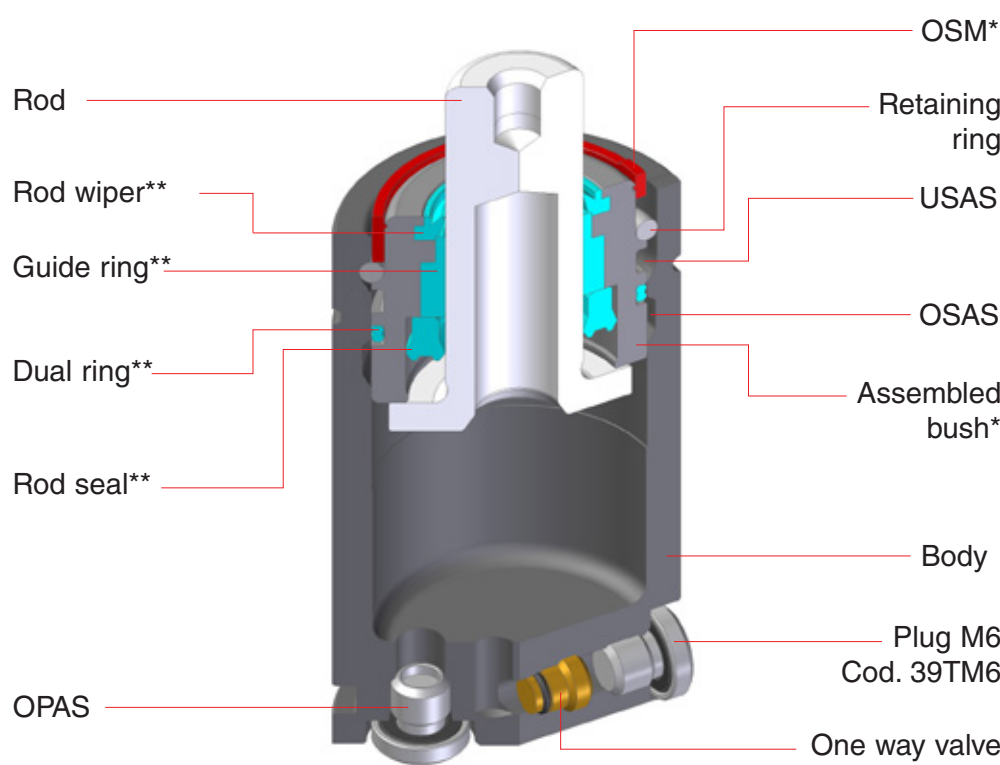


## SC 150 D ÷ SC 250 D - SCF 250 D

\* included in the mainenance kit  
\*\* included in the assembled bush

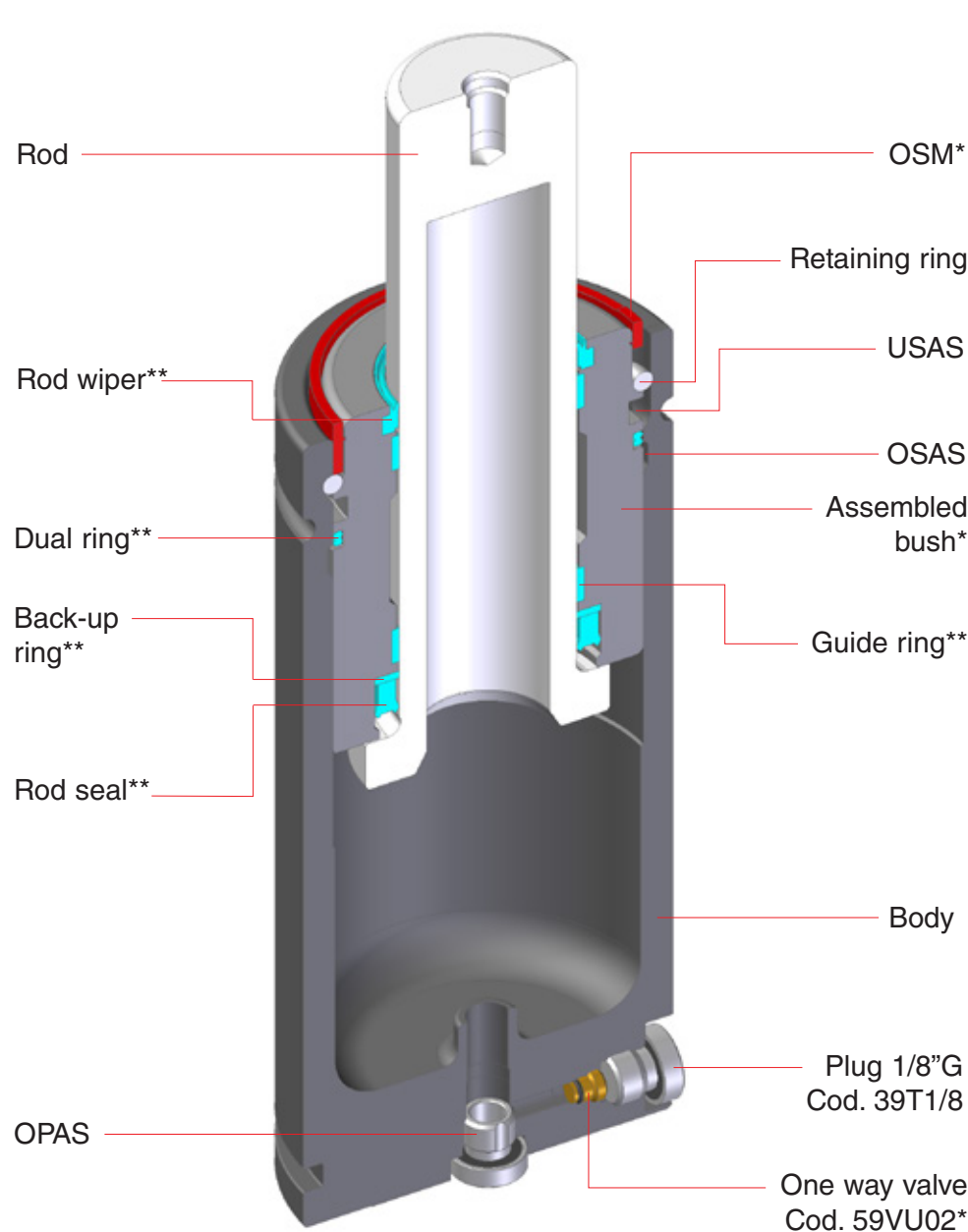


Not self-contained version connecting port

Charging hole suitable for  
M6 (SC150 ÷ SC/SCF250)  
1/8"G (SC500 ÷ SC10000; H700 ÷ H18500)

## SC 500 D ÷ SC 10000 D

\* included in the mainenance kit  
\*\* included in the assembled bush

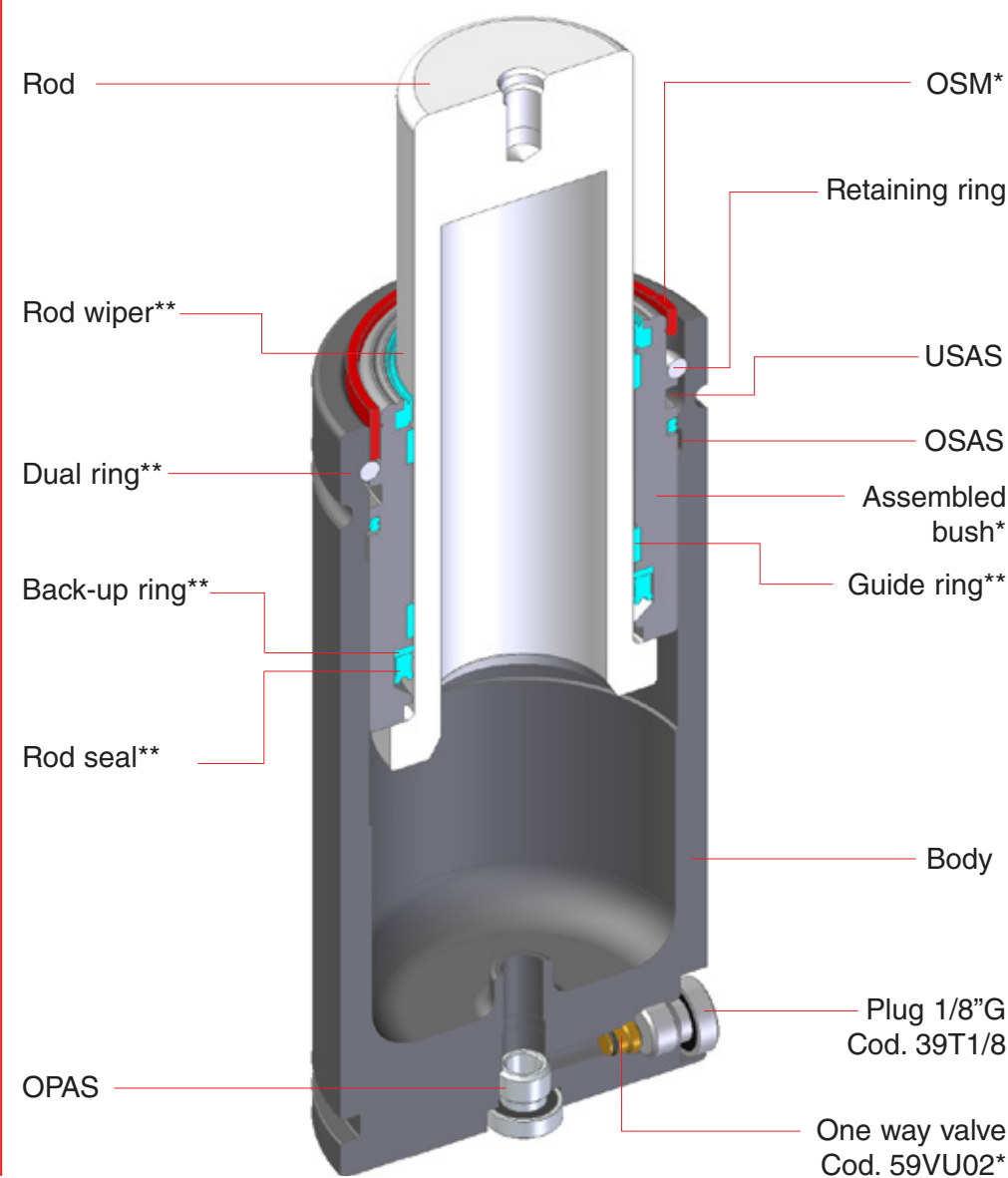


## H 700 C ÷ H 6600 C (for Cu ≥ 100)

### H 700 D ÷ H 6600 D

## H 1500 C - H 9500 C - H 18500C

\* included in the mainenance kit  
\*\* included in the assembled bush



### Cod. 39DMA

The DMA multi device is designed and built to facilitate cheking, decreasing/increasing pressure or pressurising self-contained cylinders or hoses systems. It consists of two units: Main (39DMCILA) and secondary (39DMCPVA).



### Cod. 39DMCILA

Multi device for charging, discharging and adjust gas pressure.



### Cod. 39DMCPVA

3 meters of high pressure hose, 1 female Cejin quick fit, 1 ON/OFF valve, 1 shut off valve and 1/2-20 UNF male coupling to connect to the nitrogen bottle.



Cod. QDFV01 for 1/8"G hole  
Cod. QDFV02 for M6 hole  
Cejin male quick fit adapter for direct charging.



Cod. 58CE03 for M6 thread  
Cod. 58CE05 for 1/8"G thread

Hex T-key to remove charging hole plug and valve retaining screw.



### Cod. 39DDS01A

Discharging device.  
BLUE side for M6 hole  
GOLD side for 1/8"G hole



### Cod. 39RFG

Special Springs gas detector for easy gas leakage.



### Cod. 58KNIPEX

Multipurpose pliers with spouts.



### Cod. 58CD01

Torque wrench for one way valve 59VU02.



### Cod. 58EM06

Cod. 58EM08  
T-handle to remove piston-rod + bushing.



### Cod. 39PM02A

Table manual press for easy and safe positioning of components.



Cod. 49TB016 (SC150)  
Cod. 49TB020 (SC/SCF250)  
Cod. 49TB024 (SC500;H700)  
Cod. 49TB030 (SC750;H1000)  
Cod. 49TB036.5 (H1500)

Cod. 49TB046 (SC1500;H2400)  
Cod. 49TB061.5 (SC3000;H4200)  
Cod. 49TB081.5 (SC5000;H6600)  
Cod. 49TB106.5 (SC7500;H9500)  
Cod. 49TB095 (SC10000;H18500)

Reassembly guiding tube for the bushing + reassembly positioning tube for the retaining C-ring.



Cod. 49TN023 (SC150)  
Cod. 49TN027 (SC250;SCF250)  
Cod. 49TN032 (SC500;H700)  
Cod. 49TN036 (SC750;H1000)  
Cod. 49TN045 (H1500)

Cod. 49TN055 (SC1500;H2400)  
Cod. 49TN070 (SC3000;H4200)  
Cod. 49TN088 (SC5000;H6600)  
Cod. 49TN117 (SC7500;H9500)  
Cod. 49TN148 (SC10000;H18500)

Anti scratch nylon tube to set the bushing into the cylinder body to release the retaining C-ring.



Cod. 58UT002A (SC1500;H2400)  
Cod. 58UT003A (SC3000;H4200)  
Cod. 58UT004A (SC5000;H6600)  
Cod. 58UT005A (SC7500;H9500)  
Cod. 58UT006A (SC10000;H18500)

Screw extracting device for rod and bushing.



**UK Sole Distributer**  
**BERGER TOOLS LTD**

Unit B1 & B2  
Chaucer Business Park  
Watery Lane, Kemsing  
Kent, TN15 6QY  
T: +44 (0) 1732 763377  
E: sales@berger-tools.co.uk  
W: www.berger-tools.co.uk



## NITROGEN CYLINDERS MAINTENANCE KIT

SC150D	Cod. 39BMSC00150E
SC250D ÷ SCF250D	Cod. 39BMSC00250E
SC500D	Cod. 39BMSC00500D
SC750D	Cod. 39BMSC00750D
SC1500D Cu 13 ÷ 80	Cod. 39BMSC01500D
SC1500D Cu 100 ÷ 300	Cod. 39BMSC01500DH
SC3000D Cu 13 ÷ 80	Cod. 39BMSC03000D
SC3000D Cu 100 ÷ 300	Cod. 39BMSC03000DH
SC5000D Cu 25 ÷ 80	Cod. 39BMSC05000D
SC5000D Cu 100 ÷ 300	Cod. 39BMSC05000DH
SC7500D Cu 25 ÷ 80	Cod. 39BMSC07500D
SC7500D Cu 100 ÷ 300	Cod. 39BMSC07500DH
SC10000D	Cod. 39BMSC10000D
H700C Cu 100 ÷ 160	Cod. 39BMH00700C
H1000C Cu 100 ÷ 300	Cod. 39BMH01000D
H2400C Cu 100 ÷ 300	Cod. 39BMH02400C
H4200C Cu 100 ÷ 300	Cod. 39BMH04200C
H6600C Cu 100 ÷ 300	Cod. 39BMH06600C
H9500C	Cod. 39BMH09500C
H18500C	Cod. 39BMH18500C
H700D Cu 10 ÷ 160	Cod. 39BMH00700D
H1000D Cu 13 ÷ 300	Cod. 39BMH01000D
H1500C Cu 13 ÷ 80	Cod. 39BMH01500C
H1500C Cu 100 ÷ 300	Cod. 39BMH01500DH
H2400D Cu 25 ÷ 80	Cod. 39BMH02400D
H2400D Cu 100 ÷ 300	Cod. 39BMH02400DH
H4200D Cu 25 ÷ 80	Cod. 39BMH04200D
H4200D Cu 100 ÷ 300	Cod. 39BMH04200DH
H6600D Cu 25 ÷ 80	Cod. 39BMH06600D
H6600D Cu 100 ÷ 300	Cod. 39BMH06600DH

**⚠** The complete assembled kit along with this step-by-step service manual is result of Special Springs research for the most useful maintenance operation for Special Springs nitrogen gas cylinders. Few minutes and the Special Springs nitrogen gas cylinders are regenerated as new one.

**⚠** Special Springs along with its own global network are pleased to help you anytime for the best result of your work.

**⚠** Before starting any maintenance work, carefully check if the rod or the body of the cylinder are damage or wear. If yes, it is recommended to replace the cylinder immediatley and do not procede with the maintenance operation.

**⚠** Before starting any maintenance work carefully check the maintenance kit to correspond to the model of cylinder for which is required.

**⚠** Before starting any maintenance work carefully check this step-by-step manual to correspond to the model of cylinder for which is required.

**⚠** Instructions and pictures of this step-by-step manual could slightly differ from practise.



All Special Springs step-by-step manuals are available for download from our web site: [www.specialsprings.com](http://www.specialsprings.com)



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## Special Springs S.r.l.

via Nardi, 124/A  
36060 Romano d'Ezzelino (VI) ITALY  
Tel +39 0424 539181  
Fax +39 0424 898230  
info@specialsprings.com  
www.specialsprings.com

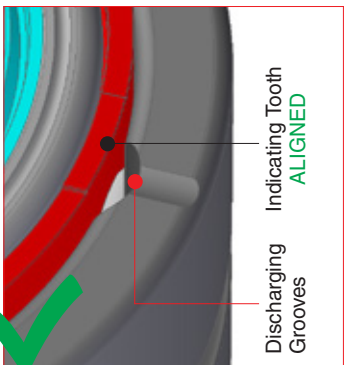




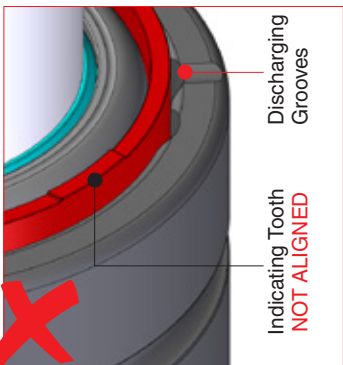
I. HOW TO REMOVE THE OVER STROKE MARKER.



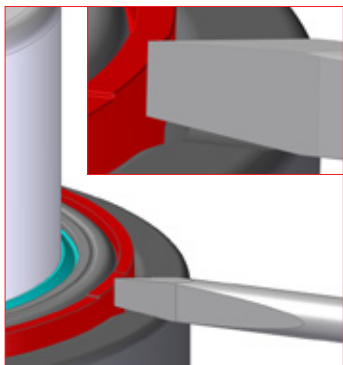
1. Position and clamp the cylinder into a self - centring chuck or a vice .



2. On the upper side of the cylinder's body, find the indicating tooth on the OSM ring and the discharging grooves.

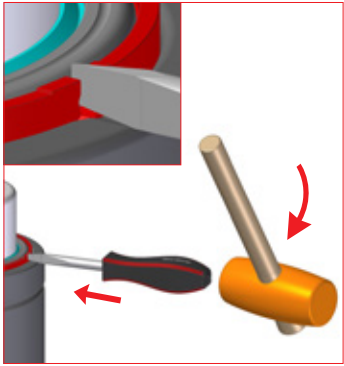


3. If the Indicating Tooth is not aligned with the discharging grooves, reposition it manually.

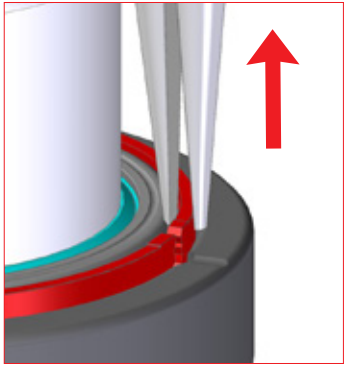


4. Position the flathead screwdriver at the center of the discharging grooves and keep it in contact with the Over Stroke Marker (OSM) ring

II. DISCHARGING + VALVE REMOVAL for self-contained cylinders.



5. By using a rubber mallet, hit the flathead screwdriver to break the OSM ring halfway.



6. Remove the broken Over Stroke Marker (OSM) ring from its location with a pliers. Clean any residual material.



7. Remove the charging plug from the charging hole by using the appropriate tool. Preserve the charging plug for further reassembly.  
**58CE05** for the 1/8" G port.  
**58CE03** M6/3 for the M6 port.

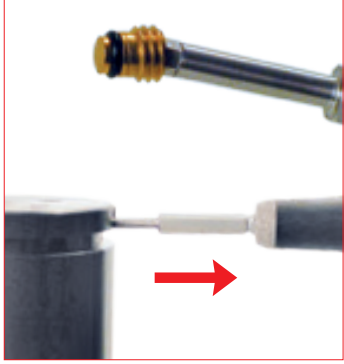


8. Thread DDS discharging device on the charging port then exhaust completely the pressure. Point away from the operator for maximum safety.  
**39DDS01A** BLUE side for M6 hole GOLD side for 1/8"G hole

III. DISCHARGING non self-contained cylinders.



9. Be sure the pressure is completely exhausted by pressing down the piston rod into the cylinder body. Then unthread the discharging device from the discharging hole.



10. Hang and release the one way valve from the hole by using the appropriate tool. Some oil leaks may occur when cylinder is upside down.  
**58CD01** one way valve removing-setting dynamometric wrench.



A. To exhaust pressure of hosed cylinders open the discharging valve on the control panel.

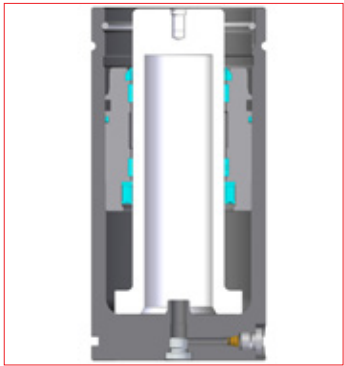


B. Be sure the pressure is completely exhausted by pressing down the piston rod into the cylinders body.

IV. RETAINING RING REMOVAL.



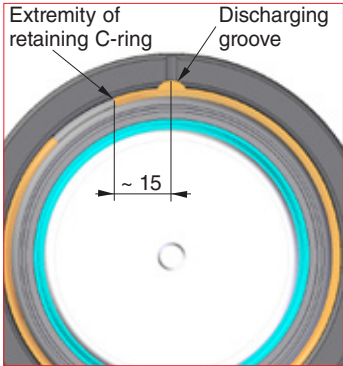
11. Position the anti scratch nylon removal tube (49TN...) on the bush then by the manual press (39PM02A) press all down into the body. The retaining ring is now free for an easy removal.



11.1. Cross section view of cylinder to see the right position of the bush and C-ring after operation.

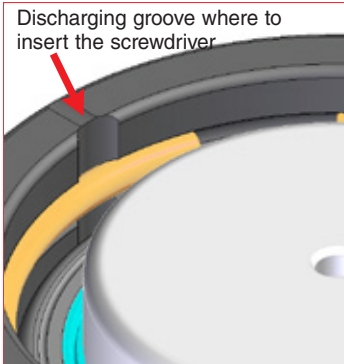


12. Position and clamp the cylinder into a self - centring chuck or a vice.



12.1. Position the extremity of the retaining ring at about 15 mm from the groove centre.

V. PISTON ROD + BUSH REMOVAL.



13. By inserting the screwdriver on the appropriate discharging groove, between the retaining ring and the body border, remove the ring as indicated. Use the pliers (58KNIPEX) to avoid that the ring comes out sharply. Use the flat screwdriver 2,5 x 75.



14. By using the T-handle M6/M8 (58EM...) extract the piston-rod and the bush from the body (only model SC150÷750; H700÷1000). By using the proper Screw extracting device (58UT...) extract the piston-rod and the bush for other models.



15. Slide off the bush from the rod. Discard the bush.



16. Position and thread the one way valve into the hole by using the appropriate special dynamometric tool already calibrated. Torque force required maximum 0,6 Nm. Do not exceed the maximum torque force indicated to not damage the one way valve. 58CD01 dynamometric wrench.

VI. CLEANING AND INSPECTION.



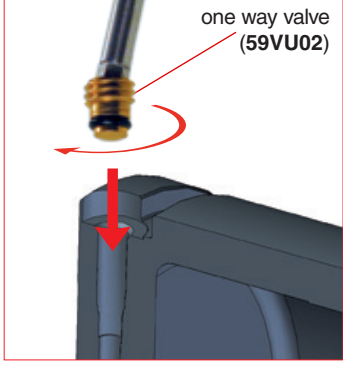
17. Carefully check and clean the cylinder body. If the body show any wear or damage do not use it again and replace it with a new one.



18. Carefully check and clean the piston-rod. If the piston rod shows any damage, wear or scratch do not use it again and replace it with a new one.



19. Position and thread the one way valve into the hole by using the appropriate special dynamometric tool already calibrated. Torque force required maximum 0,6 Nm. Do not exceed the maximum torque force indicated to not damage the one way valve. 58CD01 dynamometric wrench.



20. Position and thread the one way valve into the hole by using the appropriate special dynamometric tool already calibrated. Torque force required maximum 0,6 Nm. Do not exceed the maximum torque force indicated to not damage the one way valve. 58CD01 dynamometric wrench.

VIII. REASSEMBLY OF PISTON-ROD AND BUSH.



21. With the manual press (39PM02A) insert the assembled bush into the rod. Pay attention to position it on the right side, follow the laser print arrows on the bush. (↑TOP)



22. Slide down the assembled bush to the piston shoulder.



23. Grease the external seal on the assembled bush with the specific Special Springs grease.



24. Connect the female quick fit on the male quick fit on the panel and open the gas tap. For an easy and safety work carefully follow the instructions supplied with the charging unit. 39DMCPVA control panel charging unit.



25. Lubricate inside the cylinder body with the specific Special Springs oil supplied with the repair kit. Pay attention to the quantity as indicated for each cylinder model.

Model	OIL
SC150D	1,5 ml
SCF/SC250D	2,5 ml
SC500D	H700C 5 ml
SC750D	H1000C H1500C 6 ml
SC1500D	H2400C 10 ml
SC3000D	H4200C 20 ml
SC5000D	H6600C 35 ml
SC7500D	H9500C 60 ml
SC10000D	H18500C 110 ml

NOTE: Each oil dispenser contains a volume of 5 ml.



26. Set the positioning tube on the upper part of the cylinder body, then manually insert the piston-rod and the assembled bushing into the positioning tube. 49TB... positioning tube.

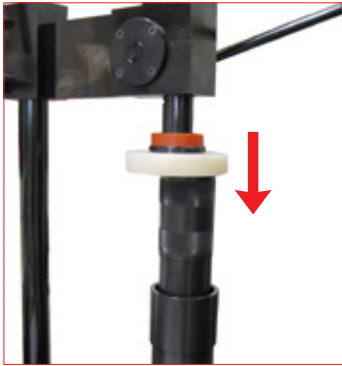


27. Insert the positioning tube over the rod in contact with the upper side of the assembled bushing, then by the manual press, press down into the cylinder body, the piston rod and the assembled bushing. 49TB... conical centring guide tube. 39PM02A manual press.

IX. REASSEMBLY OF THE RETAINING C-RING.



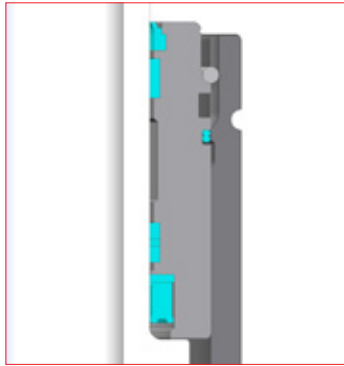
28. Position the retaining C-ring into the conical centring guide tube.



29. Insert the positioning tube in contact with the retaining C-ring, then by the manual press, press down the retaining C-ring into the groove. When the C-ring enters correctly into the groove you will hear a loud like "CLICK" 49TB... conical centring guide tube. 39PM02A manual press.



30. Manually extract the assembly piston-rod/bush until it rests against the C-ring. 58EM06 T-handle M6. 58EM08 T-handle M8.



30.1. Cross section view with all components correctly assembled.

X. CHARGING AND FORCE TEST for self-contained cylinders.



31. Check the correct assembly of the pressure regulation valve on the gas bottle, then open the main tap. The gauge on the left will indicate the bottle pressure. 39R... pressure reducer.



32. Adjust the required maximum pressure through the regulation valve. The gauge on the right will indicate the maximum allowed pressure to charge the cylinder. 39R... pressure reducer.



33. Select and assemble the desired charging adapter and thread it on the charging port. For an easy and safe operation carefully follow the instructions supplied with the charging unit. DO NOT exceed the maximum pressure indicated for any specific model. 39DMA charging unit.



34. Once reached and stabilized the desired pressure, for an easy and safe operation carefully follow the instructions supplied with the charging unit. 39DMA charging unit.



35. When directly charging through the adapter, after the desired pressure is reached, shut off the hose and bottle valves and disconnect the quick fit coupling. For an easy and safe operation carefully follow the instructions supplied with the charging unit. 39DMCPVA charging unit. QDFV... adapter for direct charging.



36. Thread and release the adapter from the charging hole.



37. More precise force control can be carried out by using the digital force testing rigs. FT... Digital force tester IPCDIG Digital force tester

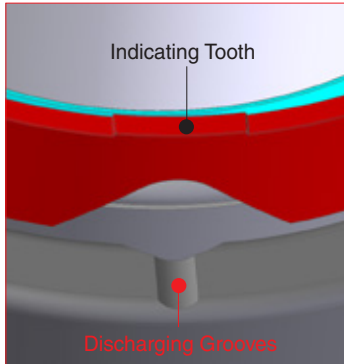


38. It is always recommended to check leaks on the charging port after the maintenance work and before re-using the cylinders by using the special gas detector. 39RFG Special Springs gas detector.

XI. HOW TO INSERT THE OVER STROKE MARKER



39. Direct the V-shaped discharging section, as shown in the image. Place the Over Stroke Marker by aligning the indicator tooth with the discharging grooves.



40. Direct the V-shaped discharging section, as shown in the image. Place the Over Stroke Marker by aligning the indicator tooth with the discharging grooves.

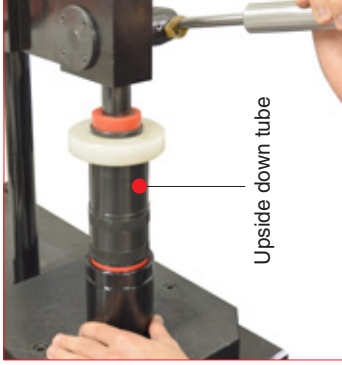
XII. CHARGING AND FORCE TEST for non self-contained cylinders.



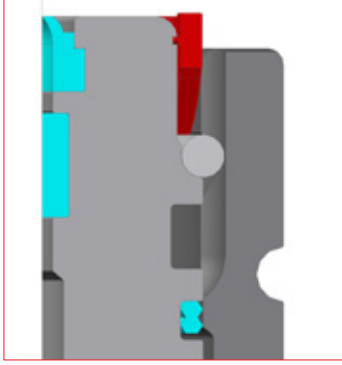
41. After positioning and hosing all the cylinders, proceed through the quick fit device through the control panel for charging all the cylinders. Make sure that the discharging valve is closed properly (15 Nm). 39DMCPVA control panel charging unit.



42. Adjust the required pressure on the regulation valve on the bottle. The gauge on the right will indicate the maximum allowed pressure to charge the cylinders. 39R... pressure reducer.



43. Place the positioning tube making sure that it is in perfect contact with the Over Stroke Marker. Then push with the press and place the Over Stroke Marker ring into its location. The correct positioning will produce a sound like a "CLICK" 49TB... Positioning tube 39PM02 Manual press



44. Example of a cross section view, in which the Over Stroke Marker ring can be seen assembled correctly.



45. Connect the female quick fit on the male quick fit on the panel and open the gas tap. For an easy and safety work carefully follow the instructions supplied with the charging unit. 39DMCPVA control panel charging unit.



46. It is always recommended to check leaks on the upper side of the cylinders after the maintenance work and before re-using the cylinders by using the special gas detector. 39RFG Special Springs gas detector.