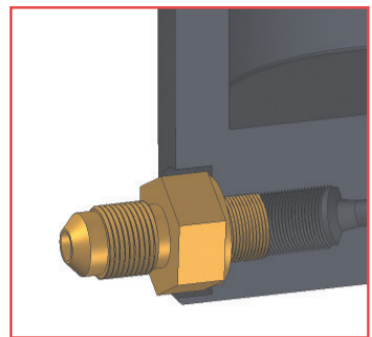
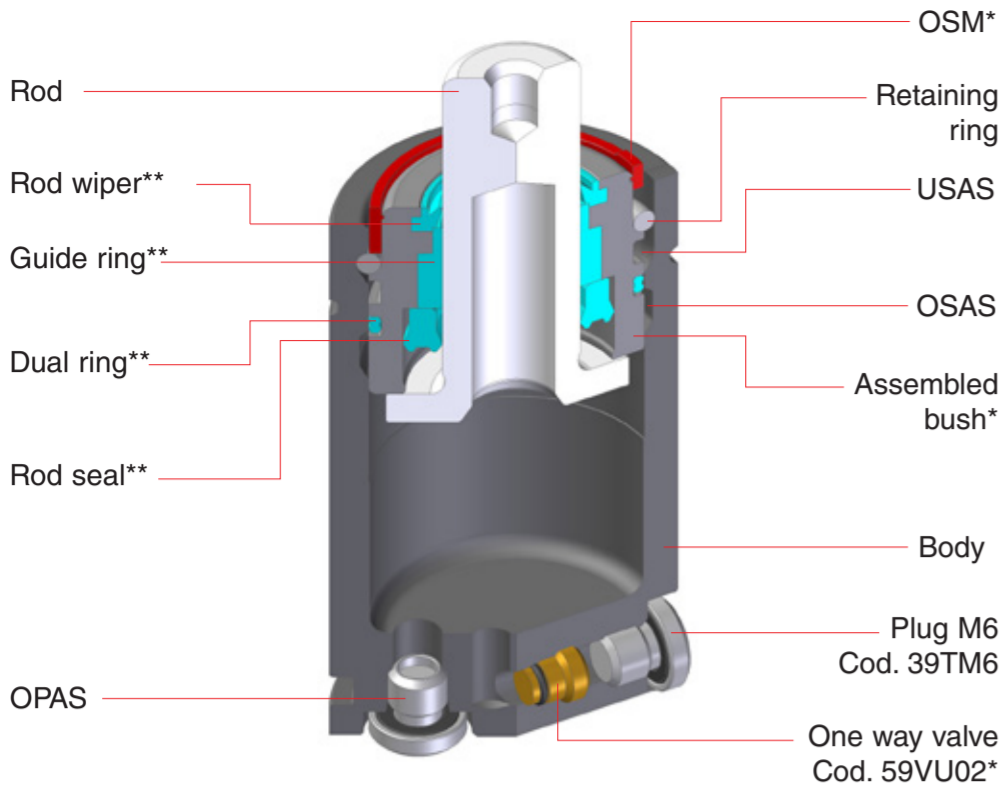


SC 150 D ÷ SC 250 D - SCF 250 D

* included in the maintenance kit
** included in the assembled bush

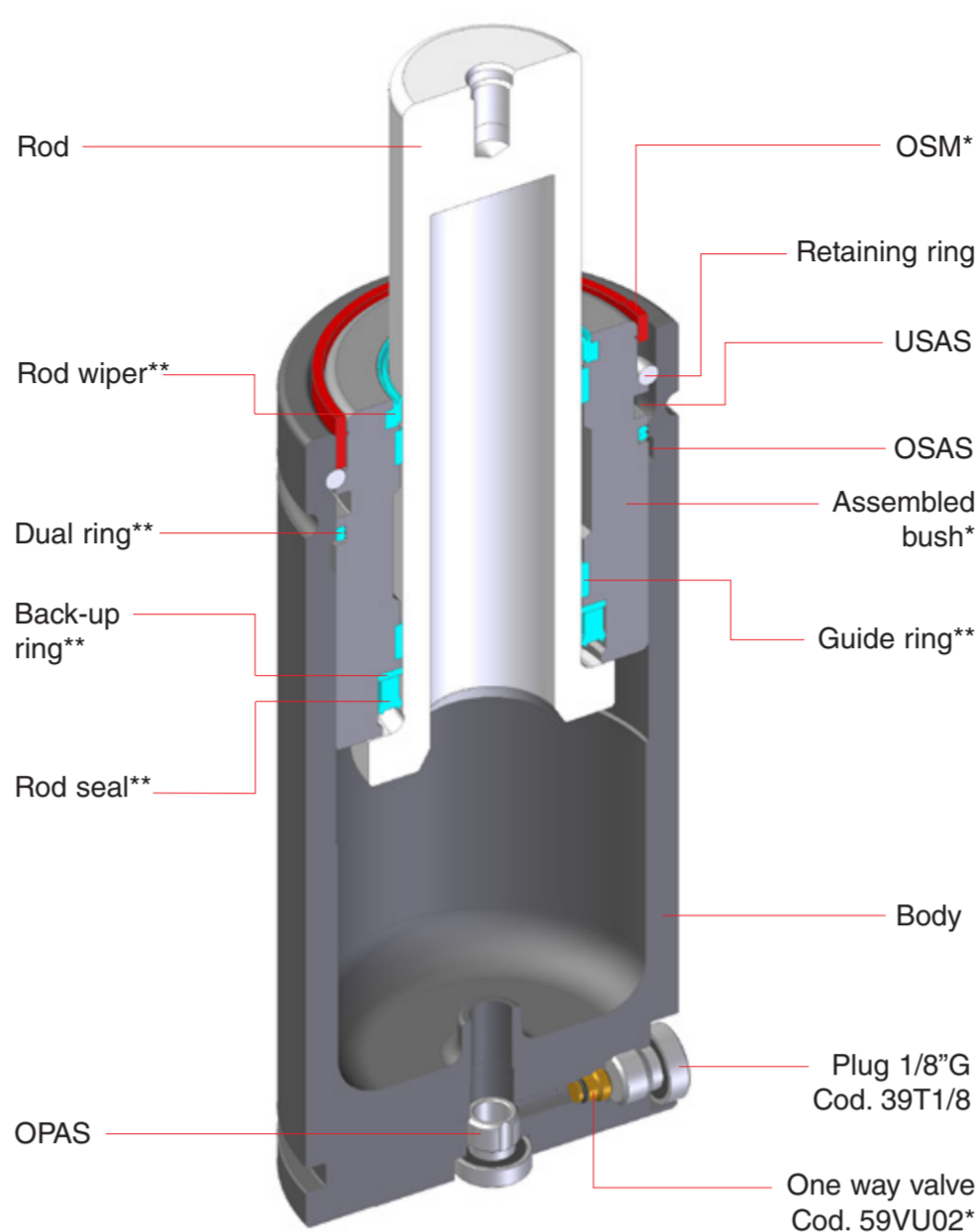


Not self-contained version connecting port

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

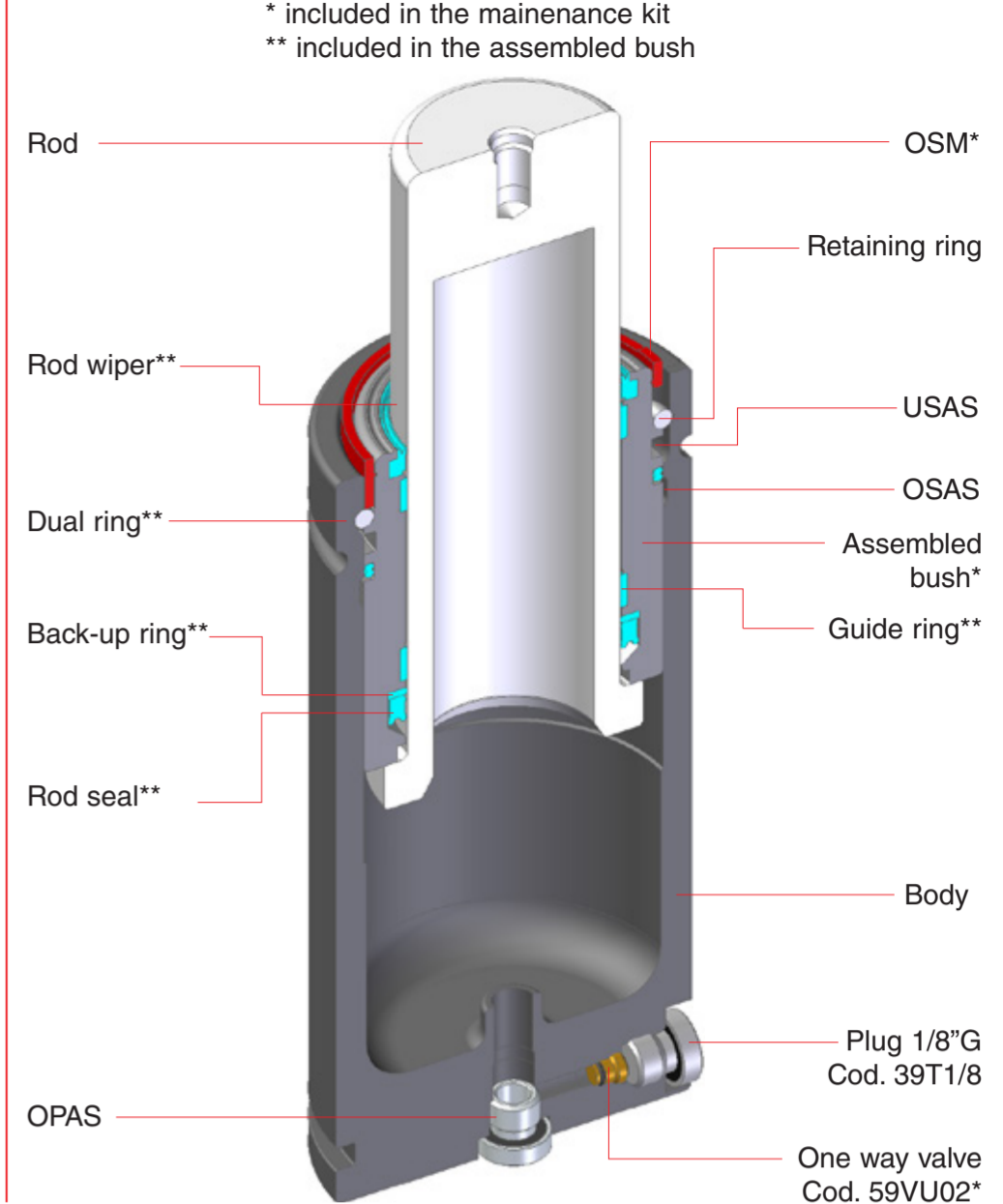
SC 500 D ÷ SC 10000 D

* included in the maintenance kit
** included in the assembled bush



H 700 C ÷ H 6600 C (for Cu ≥ 100)

* included in the maintenance 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.



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 immediately and do not proceed 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



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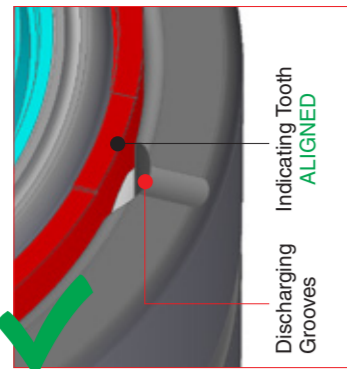
NITROGEN GAS CYLINDERS MAINTENANCE INSTRUCTIONS

SC 150 D
 SC 250 D - SCF 250 D
 SC 750 D
 SC 1500 D
 SC 3000 D
 SC 5000 D
 SC 7500 D
 SC 10000 D
 H 700 C Cu ≥ 100
 H 1000 C Cu ≥ 100
 H 1500 C
 H 2400 C Cu ≥ 100
 H 4200 C Cu ≥ 100
 H 6600 C Cu ≥ 100
 H 9500 C
 H 18500 C
 H 700 D
 H 1000 D
 H 2400 D
 H 4200 D
 H 6600 D

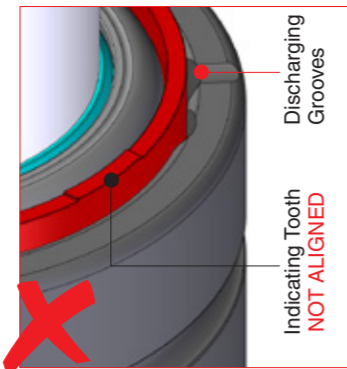
I. HOW TO REMOVE THE OVER STROKE MARKER.



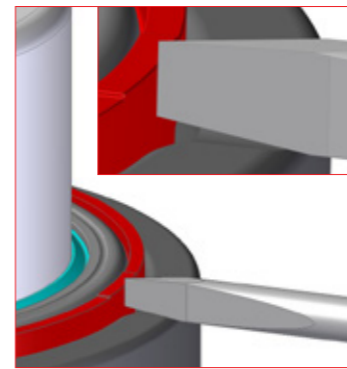
1. Position and clamp the cylinder into a self - centring chuck or a vice .



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



24. 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.

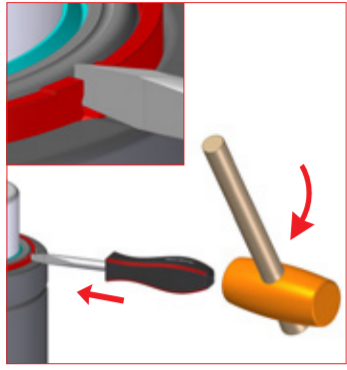


25. Set the positioning tube on the upper part of the cylinder body, then manually insert the piston-rod and the assembled bushing into the positioning tube.
49TB... positioning tube.

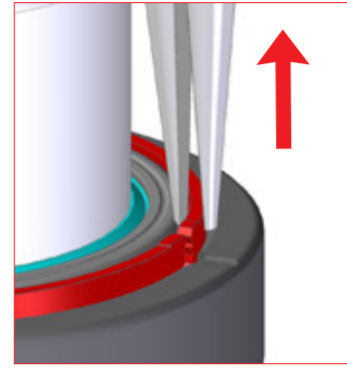


26. Insert the positioning tube over the rod in contact with the upper side of the cylinder body, then by the manual press, press down into the cylinder body, the piston rod and the assembled bushing.
49TB... conical centring guide tube.
39PM02A manual press.

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.



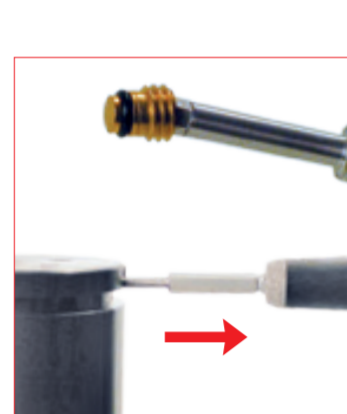
7. Remove the charging plug from the charging hole by using the appropriate tool. Preserve the charging plug for further assembly.
58CE05 for the 1/8" G port.
58CE03 M6/3 for the M6 port.



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



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.

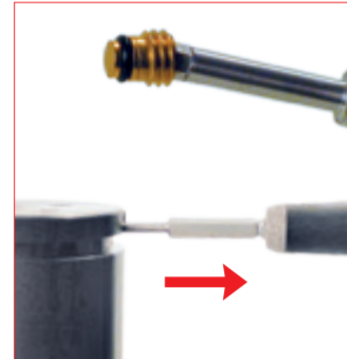


B. Be sure the pressure is completely exhausted by pressing down the piston rod into the cylinders body.

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.

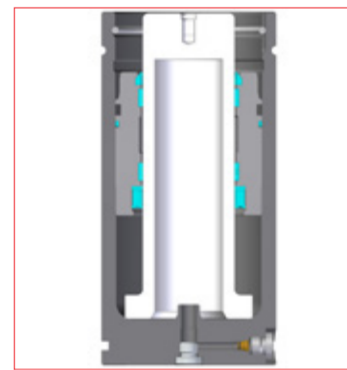


B. Be sure the pressure is completely exhausted by pressing down the piston rod into the cylinders body.

IV. RETAINING RING REMOVAL.



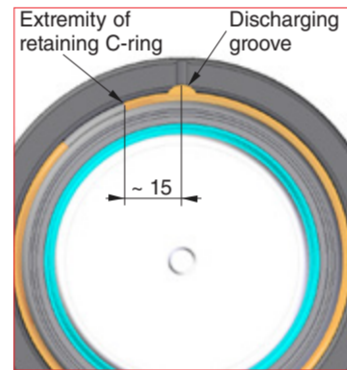
11. Position the anti scratch nylon removal tube (49TN...) on the bush then by the manual press (39PM02A) press all down into the body. The retaining ring is now free for an easy removal.



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.



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.



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.



VI. CLEANING AND INSPECTION.



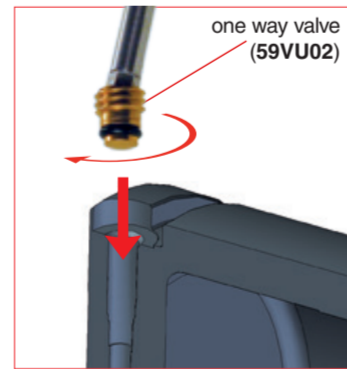
16. Carefully check and clean the cylinder body. If the body show any wear or damage do not use it again and replace it with a new one.



17. 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.



18. Carefully clean the lodging hole of the valve with compressed air and then position the new one way valve supplied along with the maintenance kit. Pay attention to its right position.



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.

VIII. REASSEMBLY OF PISTON-ROD AND BUSH.



20. Lubricate all the installed components into the assembled bush with the Special Springs grease.



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.

IX. REASSEMBLY OF THE RETAINING C-RING.



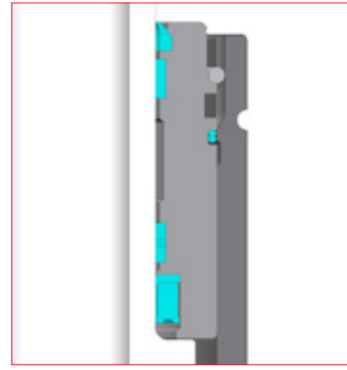
27. Position the retaining C-ring into the conical centring guide tube.



28. 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.



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



29.1. Cross section view with all components correctly assembled.

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



30. 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.



31. 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.



32. 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.



33. 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.



34. 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.



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

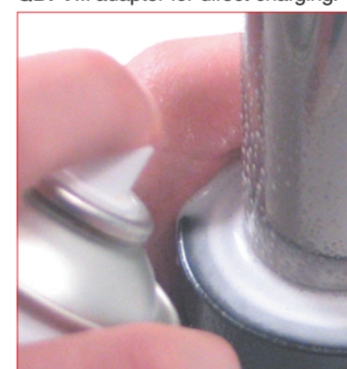


36. More precise force control can be carried out by using the digital force testing rigs.
FT... Digital force tester
IPCDIG Digital force tester



37. 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



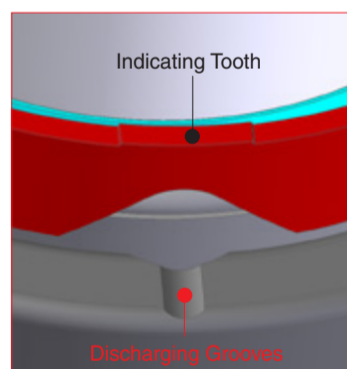
38. It is always recommended to check leaks on the upper side of the cylinders after the maintenance work and before re-using the cylinders by using the special gas detector.
39RFG Special Springs gas detector.



39. Thread the protective screw into the charging hole by using the appropriate tool.
58CE05 for 1/8G charging port.
58CE03 for M6 charging port.



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.



16. 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.

17. 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.

18. Carefully clean the lodging hole of the valve with compressed air and then position the new one way valve supplied along with the maintenance kit. Pay attention to its right position.

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. Lubricate all the installed components into the assembled bush with the Special Springs grease.

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.

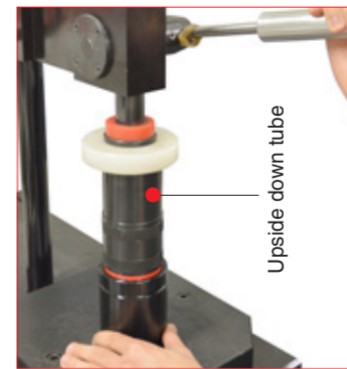
23. Grease the external seal on the assembled bush with the specific Special Springs grease.

38. 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.

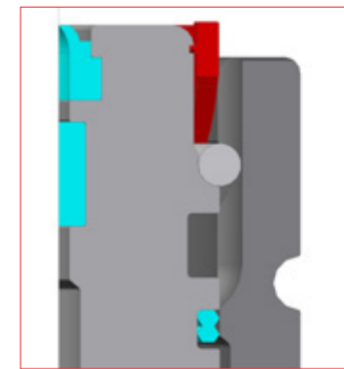
39. Thread the protective screw into the charging hole by using the appropriate tool.
58CE05 for 1/8G charging port.
58CE03 for M6 charging port.

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. 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



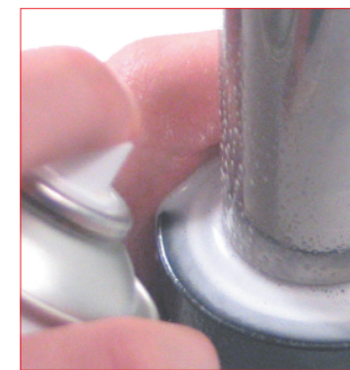
41.1. Example of a cross section view, in which the Over Stroke Marker ring can be seen assembled correctly.



A. 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.



B. 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.



A. 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.



B. 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.