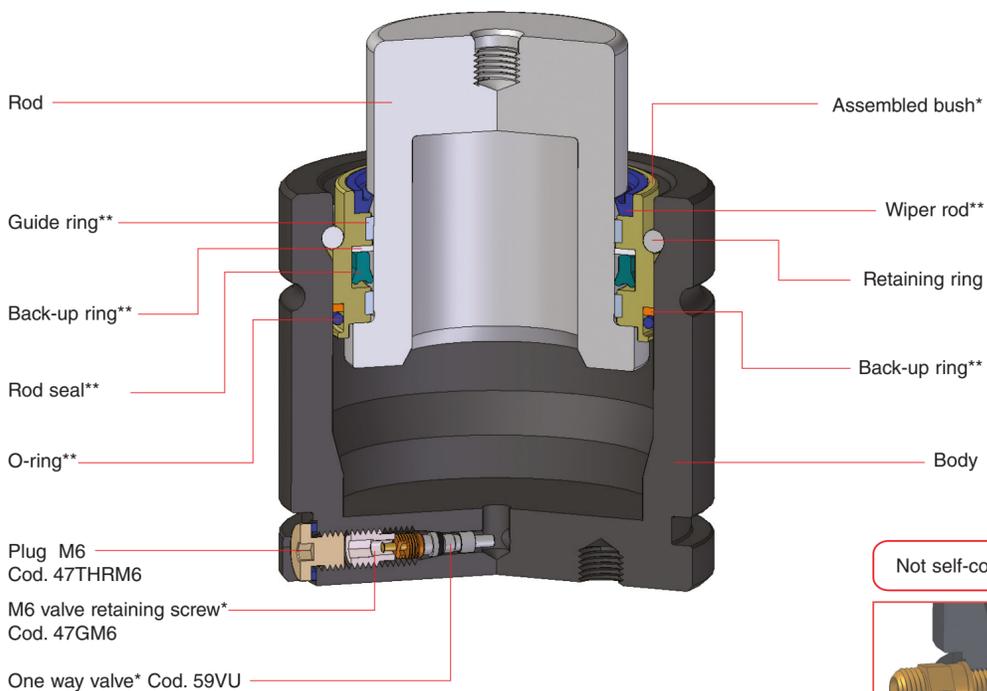


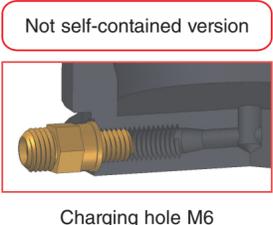
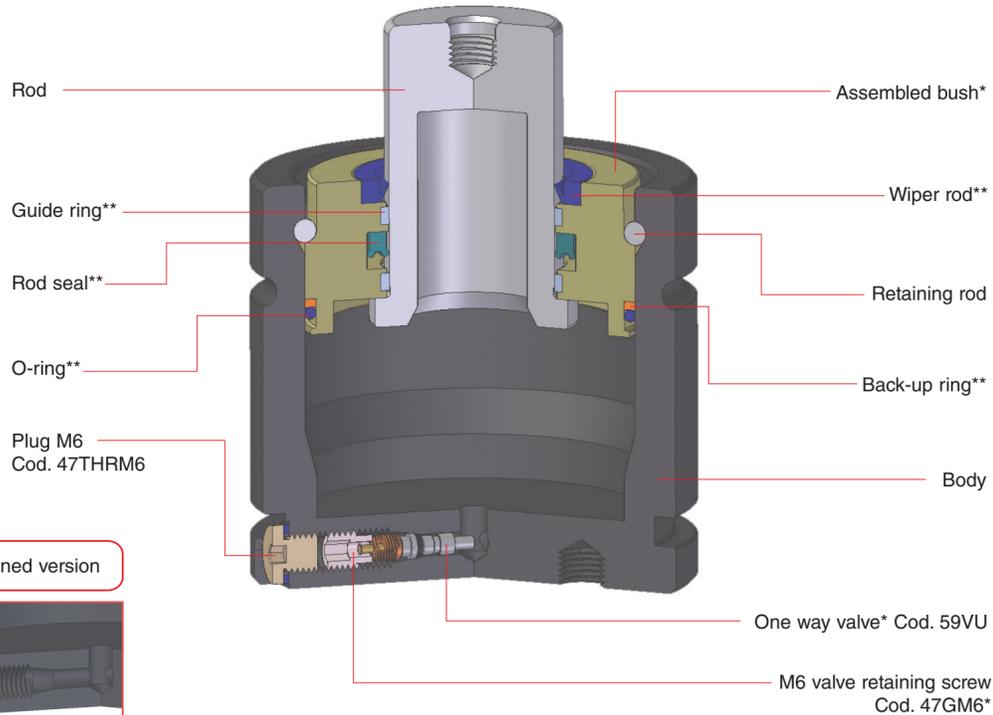
HR/HRF 1000 A HR 1500 A ÷ HR 4200 A

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



LI 900 A ÷ LI 2000 A

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



Cod. 39DMA
The DMA multi device is designed and built to facilitate checking, 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. DDS-M6/2
Discharging device.



Code 39EVU
One way valve E59VU removal tool.



Cod. 58EM06
T-handle to remove piston-rod + bushing.



Code 58EAR
Retaining C-ring removal tool.



Cod. 47ASVU
One way valve positioning driver.



Cod. 49TB030 (HR/HRF1000A)
Cod. 49TB036 (LI900A;HR1500A)
Cod. 49TB045 (LI1400A;HR2400A)
Cod. 49TB060 (LI2000A;HR4200A)

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



Cod. 49TN036 (HR/HRF1000A)
Cod. 49TN045 (LI900A;HR1500)
Cod. 49TN055 (LI1400;HR2400A)
Cod. 49TN070 (LI2000;HR4200A)

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



Cod. 39PM02A
Table manual press for an easy assembly of piston-rod, assembled bushing and retaining C-ring.



Cod. UT002A (HR2400A; LI 1400A)
Cod. UT003A (HR4200A; LI 2000A)

Screw extracting device for rod and bushing.



Cod. 39RFG
Special Springs gas detector special made to check possible gas leakage.



Cod. 58KNIPEX
Multipurpose clamp with spouts.



NITROGEN CYLINDERS MAINTENANCE KIT

HR/HRF1000A
HR1500A
HR2400A
HR4200A
LI900A
LI1400A
LI2000A

Cod. 39BMHR01000A
Cod. 39BMHR01500A
Cod. 39BMHR02400A
Cod. 39BMHR04200A
Cod. 39BMLI00900A
Cod. 39BMLI01400A
Cod. 39BMLI02000A



⚠ 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



9801C00302010 © All right reserved.

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. DISCHARGING.



1. Remove the protective screw cap from the charging hole M6 by using the hex key (58CE03). Preserve the screw cap from reassembly.



2. Thread the discharging device (DDS-M6/2) on the charging hole then exhaust completely the gas. For safety point the gas flow away from the operator.



3. 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.



4. Unthread the valve retaining screw by using the hex key (58CE03). Preserve the valve retaining screw for reassembly.

NON SELF-CONTAINED VERSION.



A. To exhaust pressure of hoses 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.

II. ONE WAY VALVE REMOVAL.

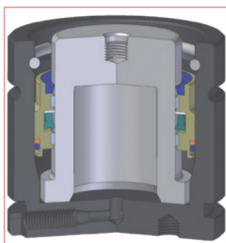


5. Hang and remove the one way valve from the conical lodging site by using the proper tool.

III. RETAINING C-RING REMOVAL.



6. Position the anti scratch nylon removal tube on the cartridge then by the manual press (39PM02A) press all down into the body for about 20-25 mm. The retaining ring is now free for an easy removal.



6.1. Cut off of the cylinder to see the right position of the cartridge and C-ring after operation #6.



7. Clamp the cylinder into a self-centring chuck or a vise.



8. By using the removal C-ring (58EC) and the Multipurpose clamp (58KNIPEX) hook up the retaining C-ring. Preserve the retaining C-ring for reassembly.

IV. PISTON ROD AND BUSHING REMOVAL.



9. By using the T-handle M8 extract the piston-rod and the bushing from the body (only model HHRF1000A;HR1500A; LI900A). By using the proper Screw extracting device extract the piston-rod and the bushing for other models.



10. Then slide off the bushing from the rod and discard the bushing.



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

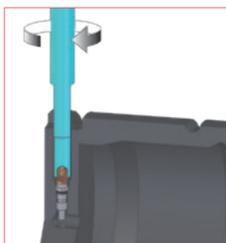


12. Carefully check and clean the piston-rod. If the piston-rod shows any damage, wear or scratch do not use it again and replace it with a new one.

VI. ONE WAY VALVE REASSEMBLY.



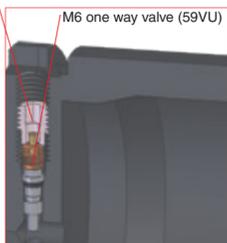
13. Carefully clean through the charging hole with an air gun, then drop the new one way valve into the conical hole.



13.1 Cut off of piston-rod with the one way valve correctly positioned. Make easier the positioning by a light turning made by using the proper tool (47ASVU).



14. By using the hex key (58CE03) thread the one way valve retaining screw M6 (47GM6). Pay attention to not tight excessively the retaining screw to avoid damage on the one way valve.
Torque force required max N 0,6.



14.1 Cut off of the conical hole with the one way valve and the M6 one way valve retaining screw correctly positioned.

VII. PISTON-ROD AND BUSHING REASSEMBLY.



15. Take the new assembled bushing and grease inside all over by using the specific Special Springs grease compound supplied with the repair kit.



16. Manually or by using the manual press (39PM02A) insert the assembled bushing into the rod. Be care to position it on the right side, follow the laser print arrows on the bushing.



17. Slide down the assembled bushing to the piston shoulder.



18. Grease the O-ring on the assembled bushing with the specific Special Springs grease compound supplied with the repair kit.



19. Lubricate inside the cylinder body with the specific Special Springs oil supplied with the repair kit. Be care to the quantity as indicated for each cylinder model.

Model	OIL
LI900A	4 ml
LI1400A	5 ml
LI2000A	10 ml
HHRF1000A	3 ml
HR1500A	4 ml
HR2400A	5 ml
HR4200A	10 ml

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

VIII. RETAINING C-RING REASSEMBLY.



20. Position the assembly guiding tube on the top side of the cylinder body then insert the piston-rod and the assembled bushing into the assembly tube.



21. Then position the retaining C-ring into the assembly guiding tube.



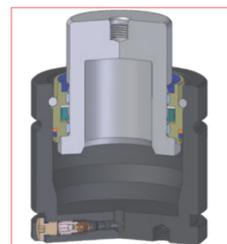
22. Insert the positioning tube (49TB...) over the rod. Carefully verify the tube is correctly rest against the top side of the assembled bushing.



23. By using the manual press (39PM02A) act on the positioning tube to push down the retaining C-ring into its groove. When the C-ring enter into the groove you will hear a "click". Be sure the retaining C-ring is the right position into its own groove.



24. After threading the T-handle M8 into the rod head threaded hole, pull completely the unit piston-rod and bushing.



24.1 Cut off of the piston-rod, bushing and retaining C-ring correctly positioned.

IX. CHARGING AND FORCE CHECK.



25. Open the nitrogen bottle main tap. 39R... pressure regulation valve.



26. Adjust the required charging pressure through the regulation valve. Usually the gauge on the right display the set charging pressure. 39R... pressure regulation valve.



27. Select and assemble the desired charging adapter on the charging unit device (DMA), thread it on the charging hole and proceed to fill the gas on the desired pressure (Max. 150 if not different specified). Do not exceed the maximum indicated charging pressure.



28. Wait a while for pressure stabilization, close the shut-off hose and bottle valves. Then unthread adapter from cylinder. More detail included with the DMA instruction manual.

V. CLEANING AND INSPECTION.



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



12. 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.



13. Carefully clean through the charging hole with an air gun, then drop the new one way valve into the conical hole.



14. By using the hex key (58CE03) thread the one way valve retaining screw M6 (47GM6). Pay attention to not tight excessively the retaining screw to avoid damage on the one way valve.
Torque force required max N 0,6.



29. When charging directly through the adapter and the desired pressure is reached, shut-off hose and bottle valves and disconnect the quick fit coupling.



30. Unthread the adapter from the charging hole.



31. More precise force control can be carried out by using the digital Special Springs force test rig FT... Digital force tester IPCDIG Digital force tester

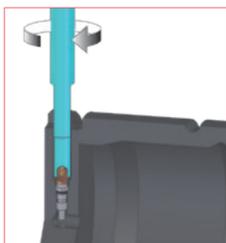


32. Use Special Springs gas detector to check leaks on valve port.

NOT SELF CONTAINED VERSION



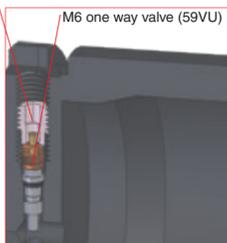
13. Carefully clean through the charging hole with an air gun, then drop the new one way valve into the conical hole.



13.1 Cut off of piston-rod with the one way valve correctly positioned. Make easier the positioning by a light turning made by using the proper tool (47ASVU).



14. By using the hex key (58CE03) thread the one way valve retaining screw M6 (47GM6). Pay attention to not tight excessively the retaining screw to avoid damage on the one way valve.
Torque force required max N 0,6.



14.1 Cut off of the conical hole with the one way valve and the M6 one way valve retaining screw correctly positioned.



33. Use Special Springs gas detector to check leaks on the top of the body.



34. Thread the protective screw cap into the charging hole M6 by using the hex key (58CE03).



A. For charging hoses system use the proper device (DMPCVA) to connect the control panel.



B. Adjust the required charging pressure through the regulation valve. Usually the gauge on the right display the set charging pressure.

VIII. RETAINING C-RING REASSEMBLY.



20. Position the assembly guiding tube on the top side of the cylinder body then insert the piston-rod and the assembled bushing into the assembly tube.



21. Then position the retaining C-ring into the assembly guiding tube.



22. Insert the positioning tube (49TB...) over the rod. Carefully verify the tube is correctly rest against the top side of the assembled bushing.



23. By using the manual press (39PM02A) act on the positioning tube to push down the retaining C-ring into its groove. When the C-ring enter into the groove you will hear a "click". Be sure the retaining C-ring is the right position into its own groove.

X. PRESSURE ADJUSTING.



35. When required the adjusting pressure can be easily adjusted by using the main unit (DMCLA) of the Special Springs charging device. More details included with DMA instruction manual.

NOT SELF-CONTAINED VERSION.



A. When required the adjusting of pressure can be easily adjusting acting/opening the discharging valve on the control panel.