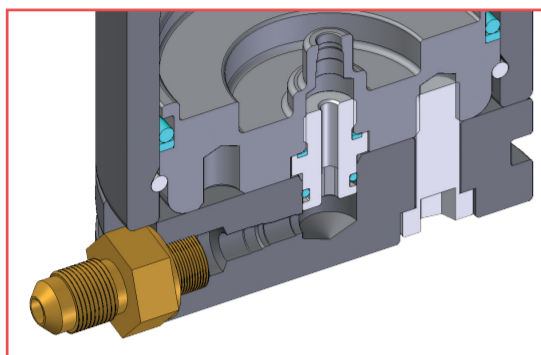
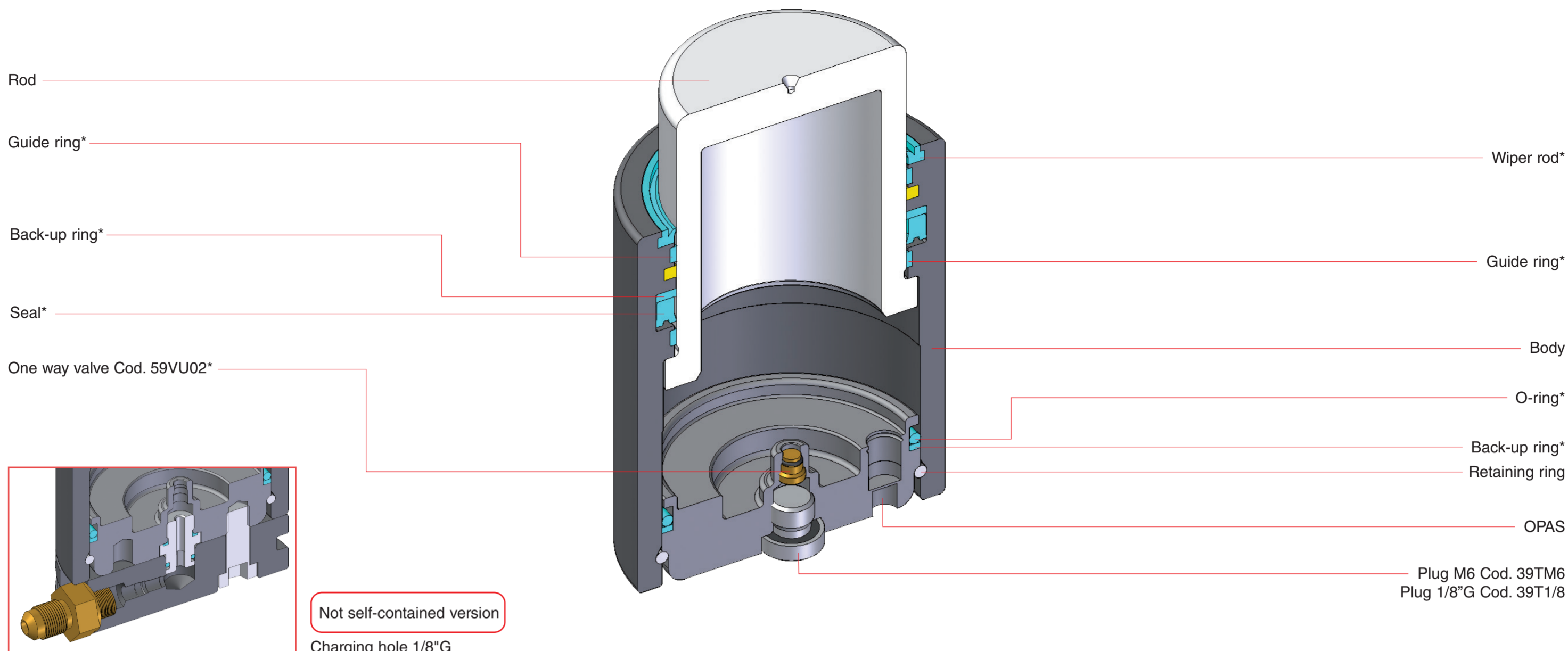


# ML 1000 B ÷ ML 12000 B

\* included in the maintenance kit



Not self-contained version

Charging hole 1/8\"/>

**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\"/>



**Cod. 58CE03** for M6 thread  
**Cod. 58CE05** for 1/8\"/>



**Cod. 39DDS01A**  
Discharging device.  
BLUE side for M6 hole  
GOLD side for 1/8\"/>



**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. 58EAR**  
Retaining C-ring removal tool.



**Cod. 39PM02A**  
Table manual press for easy and safe positioning of components.



**Cod. 49TB0175** (ML1000B)  
**Cod. 49TB026.5** (ML1800B)  
**Cod. 49TB046** (ML4700B)  
**Cod. 49TB061.5** (ML7500B)  
**Cod. 49TB079** (ML12000B)

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



**Cod. 49TN023** (ML1000B)  
**Cod. 49TN032** (ML1800B)  
**Cod. 49TN045** (ML4700B)  
**Cod. 49TN055** (ML7500B)  
**Cod. 49TN070** (ML12000B)

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



## CYLINDERS MAINTENANCE KITS

ML1000B	Cod. 39BMML01000B
ML1800B	Cod. 39BMML01800B
ML4700B	Cod. 39BMML04700B
ML7500B	Cod. 39BMML07500B
ML12000B	Cod. 39BMML12000B



**⚠** 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](http://www.specialsprings.com)



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## NITROGEN GAS CYLINDERS MAINTENANCE INSTRUCTIONS

**ML 1000 B**  
**ML 1800 B**  
**ML 4700 B**  
**ML 7500 B**  
**ML 12000 B**

UK Sole Distributer



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



## I. DISCHARGING + VALVE REMOVAL for self-contained cylinders.



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



2. 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



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. Hang and release the one way valve from the hole by using the appropriate tool. It would be normal some oil leak from the hole when upside down the cylinder.  
58CD01 one way valve removing-setting dynamometric wrench.



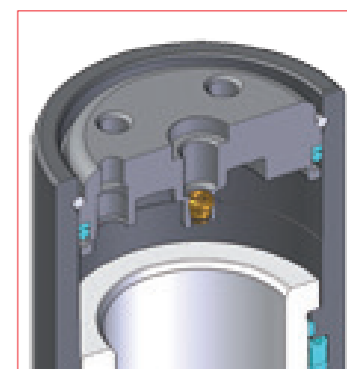
25. Lubricate inside the cylinder with the specific Special Springs oil supplied with the repair kit. Be care to the quantity as indicated for each cylinder model.

Model	OIL
ML 1000 B	3 ml
ML 1800 B	5 ml
ML 4700 B	7 ml
ML 7500 B	13 ml
ML 12000 B	18 ml

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



25.1. 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.



25.1. Cut off view of the cylinder to see the correct position of the one way valve.

## II. DISCHARGING non self-contained cylinders.



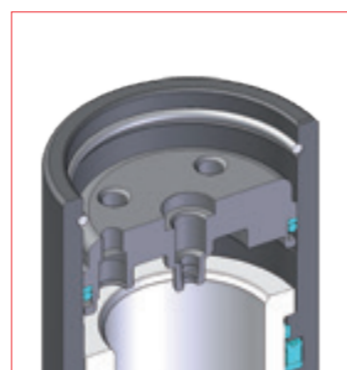
A. To exhaust pressure of hoses cylinders open the discharging valve on the control panel.



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



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



5.1. Cut off of cylinder to see the right position of the bottom plate and C-ring after operation.

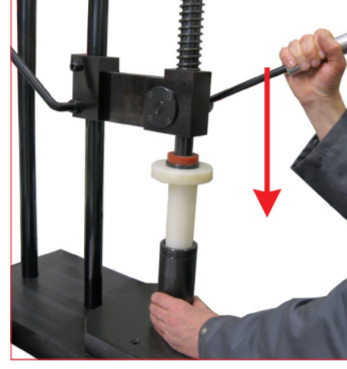
## IV. PISTON ROD+BOTTOM PLATE+SEALS REMOVAL.



6. Position and clamp the cylinder into a self-centring chuck or a vise.



7. Remove the retaining C-ring by using the appropriate removal tool and pincer. Preserve the retaining C-ring for further reassembly.  
58EAR C-ring removal tool.  
58KNIPEX pincer.



8. With the manual press (39PM02A) and with the anti scratch nylon tube (49TN...), press down the piston rod into the cylinder body in order to remove it completely.



9. Remove from the cylinder body all the seals and guiding elements without scratching the internal grooves.

## V. CLEANING AND INSPECTION.



10. Remove the bottom plate seal without scratching the internal groove.



11. 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.



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.

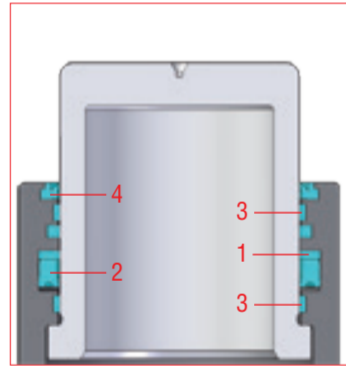


13. Carefully check and clean the bottom plate. If the bottom plate show any wear or damage do not use it again and replace it with a new one.

## VI. SEALS REASSEMBLY.



14. Assembly all the seals (as shown on the picture) with the follow order:  
1 Back-up rod seal  
2 Rod seal  
3 Rod guides  
4 Wiper rod. (see pic. 14.1)



14.1. Cut off view of the cylinder body to see the correct position of the seals and guiding elements.

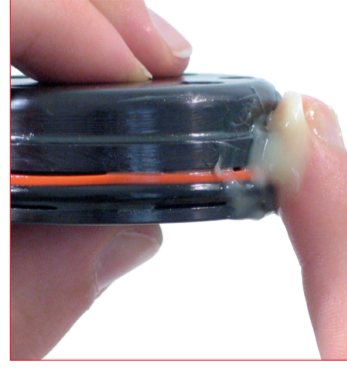


15. Assembly the back-up ring and the O-ring on the bottom plate as shown on the picture.



16. Lubricate all the installed components into the cylinder body with the Special Springs grease.

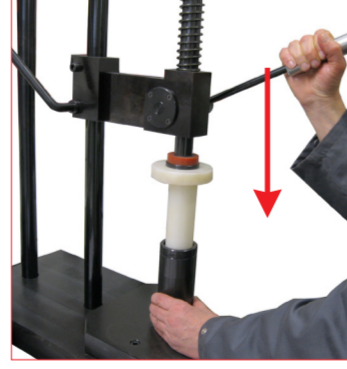
## VII. REASSEMBLY.



17. Lubricate all the installed components into the bottom plate with the Special Springs grease.



18. Manually insert the piston rod into the cylinder body. Be care to position it on the correct side.



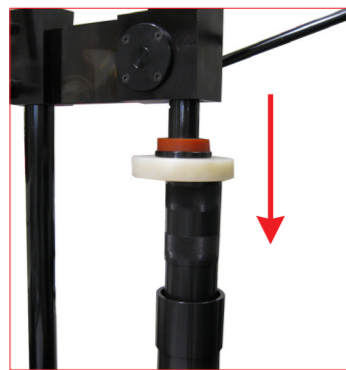
19. With the manual press (39PM02A) and with the anti scratch nylon tube (49TN...), press down the piston rod into the cylinder body in order to insert it completely.



20. Set the positioning tube on the upper part of the cylinder body, then manually insert the bottom plate into the positioning tube.  
49TB... positioning tube.



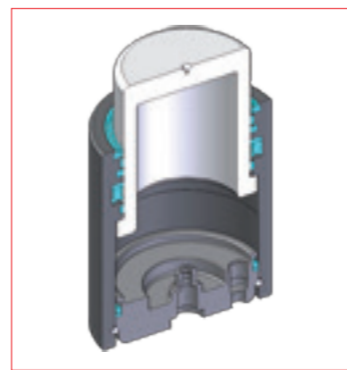
21. Position the retaining C-ring into the conical centring guide tube.



22. 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 enter correctly into the groove you will hear a loud like "CLICK".  
49TB... conical centring guide tube.  
39PM01 manual press.



23. Manually extract the bottom plate until it rests against the C-ring.  
58EM06 T handle M6  
58EM08+58EM1/8G T handle 1/8" G



23.1. Cut off view of the cylinder to see the correct position of the seals and guiding elements.

## VIII. CHARGING AND FORCE TEST for self-contained cylinders.



26. 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 regulation valve.



27. 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 regulation valve.



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



29. Ratched and stabilized the desired pressure, for an easy and safety work carefully follow the instructions supplied with the charging unit.  
39DMA charging unit.



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



31. Unthread and release the adapter from the charging hole.



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



33. 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.

## IX. CHARGING AND FORCE TEST for non self-contained cylinders.



A. After positioning and hosing all the cylinders, proceed through the quick fit device through the control panel for charging all the cylinders.  
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 regulation valve.



C. 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.



D. It is always recommended to check leaks on all connection to and from the cylinder by using the special gas detector.  
39RFG Special Springs gas detector.



E. 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.