

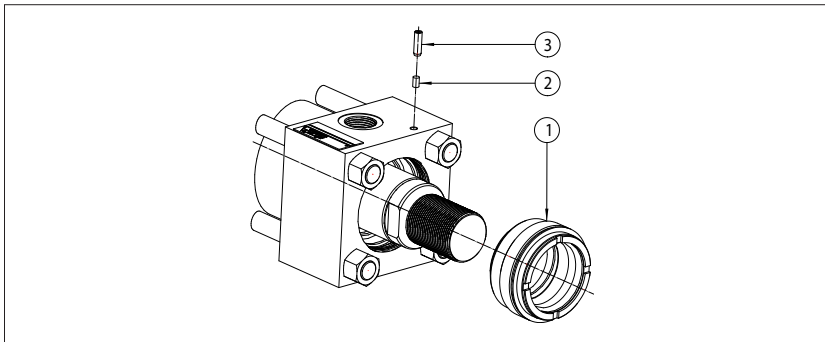
Tools for maintenance of cylinders and servocylinders

The following guidelines provide useful information in regards to maintenance tools and operating instructions needed to replace the main cylinder's components. It is recommended to get all the required tools before starting any maintenance activities to make the operations safe and without damaging cylinder's parts. The reported instructions are intended to be valid only for Atos hydraulic cylinders. The spare parts have to be ordered according to the codes shown in the SP-B tables, contact our technical office.

1 TOOLS FOR ROD GUIDE BUSHES REPLACEMENT

1.1 Cylinders type CK, CH

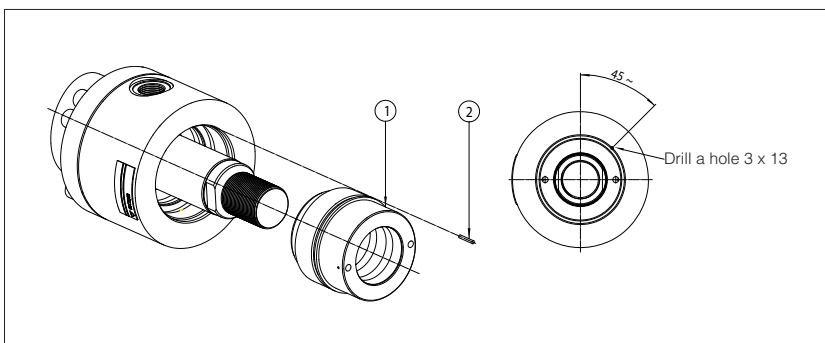
1. Select the mounting tool KB-CK-* according to the rod size, see the table at side.
2. Unscrew the grub screw ③ and remove the Teflon pad ② (only for bores from 80 to 200).
3. Unscrew the rod guide bush ① with the selected mounting tool.
The rod guide bush is locked to the cylinder's head with Loctite, before disassembling it is recommended to heat locally the thread (only for bores from 25 to 63).
4. Clean the thread of the front head. Be carefull to remove all the Loctite residuals.
5. Install the seals in the rod guide bush; it is always recommended to replace the whole sealing system.
6. Apply Loctite 222 on three point at 120° of distance in the bush thread (only for bores from 25 to 63). For cylinders with rod side draining (option **L**), do not apply Loctite on the thread to avoid the lock of the draining hole.
7. Insert the rod guide bush as indicated in section 2 and screw it to the front head with proper tool. Tighten the guide bush with the torque value reported at side.
8. Insert the teflon pad ② in the proper hole, as shown below, and tighten the grub screw ③.



KB-CK-*		
Rod	Tool	Torque [Nm]
12	KB-CK-12	40
14	KB-CK-14	50
18	KB-CK-18	70
22	KB-CK-22	80
28	KB-CK-28	50
36	KB-CK-36	100
45	KB-CK-45	180
56	KB-CK-56	225
70	KB-CK-70	230
90	KB-CK-90	240
110	KB-CK-110	260
140	KB-CK-140	280

1.2 Cylinders type CC

1. Select the mounting tool KB-CC-* according to the bore / rod size, see the table at side.
2. Remove the locking pin ② between the rod guide bush and the front head by drilling it for a maximum depth of 13 mm. Clean carefully the hole before unscrewing the rod guide bush (only for bores from 140 to 200).
3. Heat locally the thread to remove the loctite film on the thread (only for bores from 50 to 125).
4. Unscrew the rod guide bush ① with the selected mounting tool.
5. Clean the thread of the front head. Be carefull to remove all the Loctite residuals.
6. Install the seals in the rod guide bush; it is always recommended to replace the whole sealing system.
7. Apply Loctite 222 on three point at 120° of distance in the rod guide bush thread (only for bores from 50 to 125). For cylinders provided with rod side draining (option **L**), do not apply Loctite on the thread to avoid the locking of the draining hole.
8. Insert the rod guide bush as indicated in section 2 and screw it to the front head with proper tool. Tighten the guide bush with the torque value reported at side.
9. Drill the thread between the rod guide bush and the head with a bit of diameter 3 mm and insert a new pin 3x12 ② as shown below. Punch the hole to avoid the pin exit.



KB-CC-*		
Bore / rod	Tool	Torque [Nm]
50 / 36	KB-CC-36	40
63 / 45	KB-CC-45	50
80 / 56	KB-CC-56	70
100 / 70	KB-CC-70	80
125 / 90	KB-CC-90	50
140 / 90	KB-CC-90-A	100
160 / 110	KB-CC-110	180
180 / 110	KB-CC-110-A	225
200 / 140	KB-CC-140	230

1.3 Cylinders type CN

Cylinders type CN have the rod guide bush integrated in the front head, therefore the replacement of the rod seals is easily made by removing the screws from the front head. Insert the front head in the rod with proper seals calibration tool as shown in section 2 and tighten the screws with proper torque value reported in the technical table **B180**.

2 TOOLS FOR SEALS CALIBRATION

KR-*		Rod	Tool
		12	KR-12
		14	KR-14
		18	KR-18
		22	KR-22
		28	KR-28
		36	KR-36
		45	KR-45
		56	KR-56
		70	KR-70
		90	KR-90
		110	KR-110
		140	KR-140
	180	KR-180	
	220	KR-220	

KP-*		Bore	Tool
		25	KP-25
		32	KP-32
		40	KP-40
		50	KP-50
		63	KP-63
		80	KP-80
		100	KP-100
		125	KP-125
		140	KP-140
		160	KP-160
		180	KP-180
		200	KP-200
		250	KP-250
		320	KP-320

2.1 Calibration of rod seals

The sizing sleeve allows the calibration of rod seal on the rod diameter without damaging seals during the rod guide bush assembling.

See the following instructions to perform the best assembling.

1. Select the sizing sleeve KR-* according to the rod size, see the table at side.
2. Grease the outside diameter of the sizing sleeve ②.
3. Fit the sizing sleeve on the rod end ③ until the rod thread is completely covered.
4. Insert the rod guide bush ① or the front head in the rod until the seals are completely on the chrome-plated layer.
5. Remove the sizing sleeve.

2.2 Calibration of piston seals

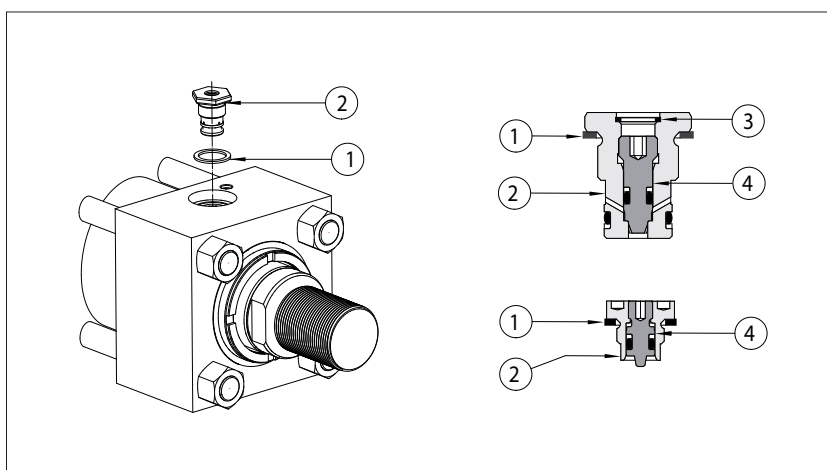
The sizing sleeve allows the calibration of the piston seals on the bore diameter without damaging seals during the piston rod assembling.

See the following instructions to perform the best assembling.

1. Select the sizing sleeve KP-* according to the bore size, see the table at side.
2. Grease the internal diameter of the sizing sleeve ②.
3. Fit the sizing sleeve on the body ③.
4. Insert the piston rod ① in the sizing sleeve until the piston seals are completely inside the body.
5. Remove the sizing sleeve.

3 TOOLS FOR CUSHIONING ADJUSTMENT CARTRIDGE REPLACEMENT

Cylinder	Ø Bore	Tool	Key	Torque [Nm]	wrench
CK, CH	from 25 to 63	KC-CK-25	-	6,9	3/8
CK, CH	from 80 to 200	Hexagonal socket	22	19,6	3/8
CN	All				
CC	All				



3.1 Replacement of adjustment cartridge

The following guidelines clear up the procedure to replace the adjustment cartridge. The cartridges are always supplied with all seals assembled.

1. Select the socket KC-* or the hexagonal socket according to the bore dimension, see the table at side.
2. Unscrew the cushioning adjustment cartridge ② with the selected socket and the proper wrench. The cartridge is locked to the cylinder's head with Loctite, therefore it is recommended to heat locally the head before disassembling.
3. Clean the thread to remove all loctite residuals.
4. Insert a proper bonded seal ①.
5. Take the new cushioning adjustment cartridge and repeat the previous instructions in reverse order.

3.2 Replacement of adjustment pin

1. Remove the seeger ③ before removing the cartridge (not for bores from 25 to 63).
2. Unscrew the adjustment pin ④ until its complete removal.
3. Install the O-ring and antiextrusion ring in the new adjustment pin.
4. Repeat the previous instructions in reverse order. If the replacement of adjustment pin is made by disassembling the adjustment cartridge, before the cartridge assembling it is recommended to check that the adjustment pin did not come out of the cartridge to avoid any dangerous shock (only for bores from 25 to 63).