



Remote Control Series PCL4

Build Program Instruction

*Catalogue HY17-8821/US
August 2005*

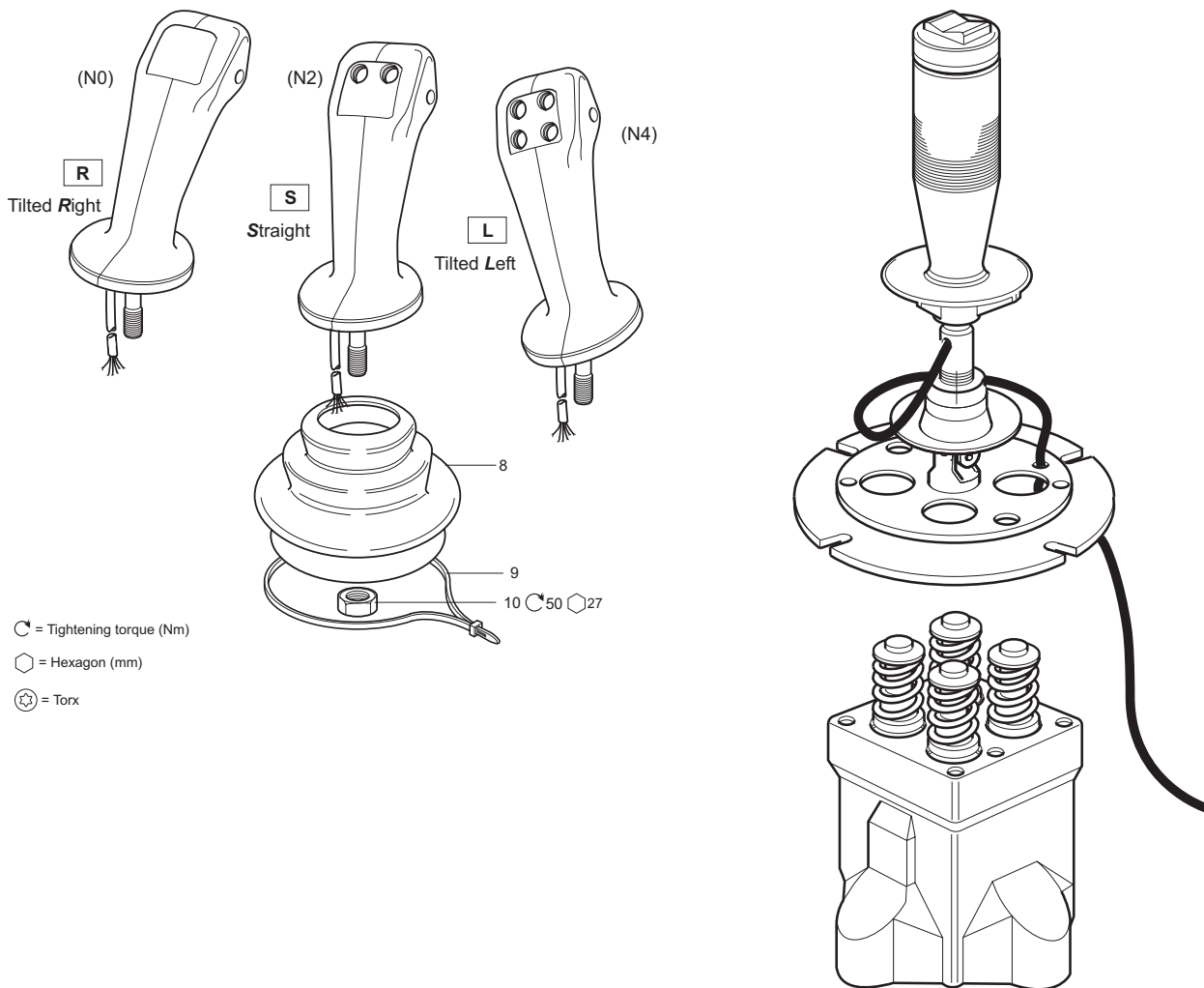


PCL401 with E- and N-levers.

If an E or N lever is chosen the bellows will be already mounted on the lever. Screw the lever on sufficiently in the pressure disc, screw down the nut and tighten it according to picture. When having the E0 or N0 lever fasten the boot on the valve with a locking strap.

When having E1, E2, E3, E4, N2T or N4T spin the wire around the lever clockwise, more than half a turn but not more than a whole turn. About 160 ± 10 mm from where the wire comes out of the lever, place a locking strap and place one other locking strap on the other side of the hole so the wire can not move back and forth. Check so the wire will not get stuck inside the valve when you move the lever, and so the wire will not touch on the pressure disc.

Fasten the boot on to the mounting plate and look it with the locking strap.



PCL402 with H3-H7 levers.

Take the lever (4 or 5) and screw it in to the pressure disc, when it is screwed on sufficiently, screw down the nut (1) and tighten it according to picture. Push down the boot (2) over the lever and fasten it on the PCL.

If you have chosen a ball (6) for H3-H7 lever you can now screw it on.

If you have chosen a window for H3-H7, put on the ball for the window (7) on the lever and after that place the window (8) on it.

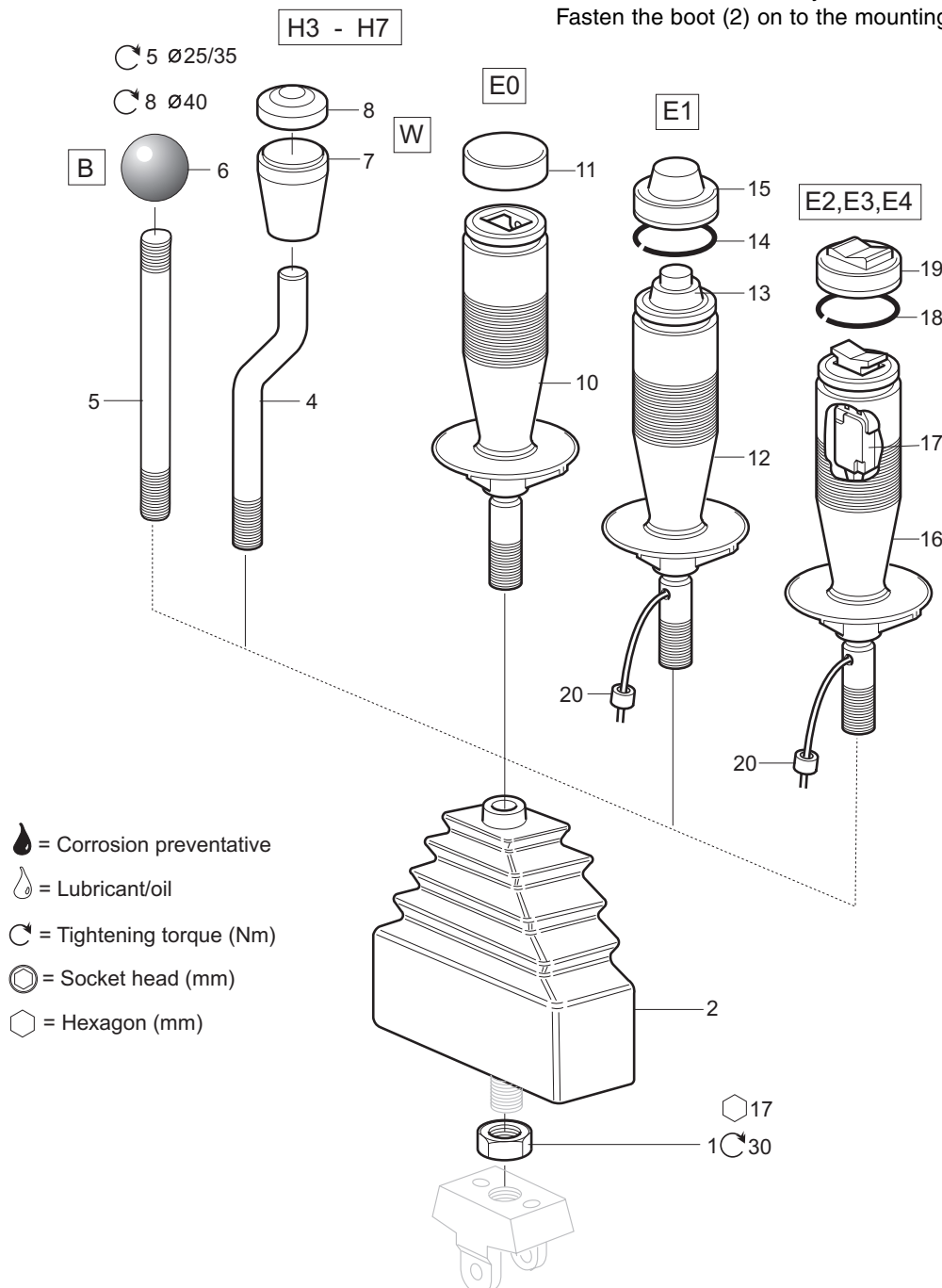
If you will have more than one section the work routine is the same as above, but be sure of that all levers have the same height when all levers are assembled.

PCL402 with E levers.

If an E lever is chosen the bellow will be already mounted on the lever. Screw the lever on sufficiently in the pressure disc, when having E2-E4 the wire must come out on the side of the valve, screw down the nut (1) and tighten it according to picture. When having the E0 lever just fasten the boot on the PCL.

When having E1, E2, E3 or E4 pull out the wire through the hole in the mounting plate on the A-side of the valve. About 120 ± 10 mm from where the wire comes out of the lever, place a locking strap (20) and place one other locking strap on the other side of the hole so the wire can not move back and forth. Check so the wire will not get stuck inside the valve when you move the lever.

Fasten the boot (2) on to the mounting plate.



PCL402 with F pedal and A36.

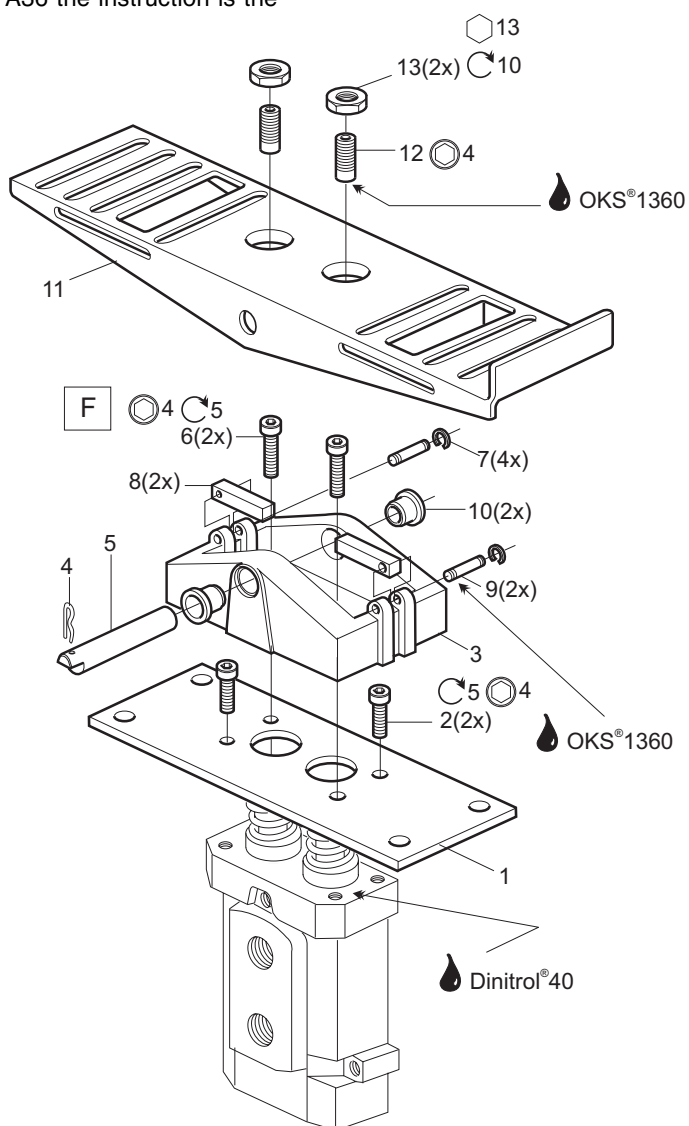
When using a foot pedal F or A36 on the valve the first step is to exchange the spring pushpin set from standard to a stronger one (PCL402-C6-PPS). Do this by removing the standard mounting plate, take out the spring pushpin set and exchange it with the stronger pushpin set.

Place the new mounting plate (1) on the valve and screw (2) it on according to the picture. Put on the mounting plate assembly (includes 3, 7, 8, 9, 10) and screw (6) it on according to the picture.

The foot pedal top centre position to be parallel with the valve housing top centre position in neutral. Maximum parallel deviation is 1 mm.

Push through the shaft pin (5) through the hole according to the picture and place the hair nail spring (4) to fasten it.

When mounting the pedal A36 the instruction is the same as above.



- 👉 = Corrosion preventative ⦿ = Socket head (mm)
- ⌚ = Tightening torque (Nm) ⬡ = Hexagon (mm)

PCL402 with MD2.

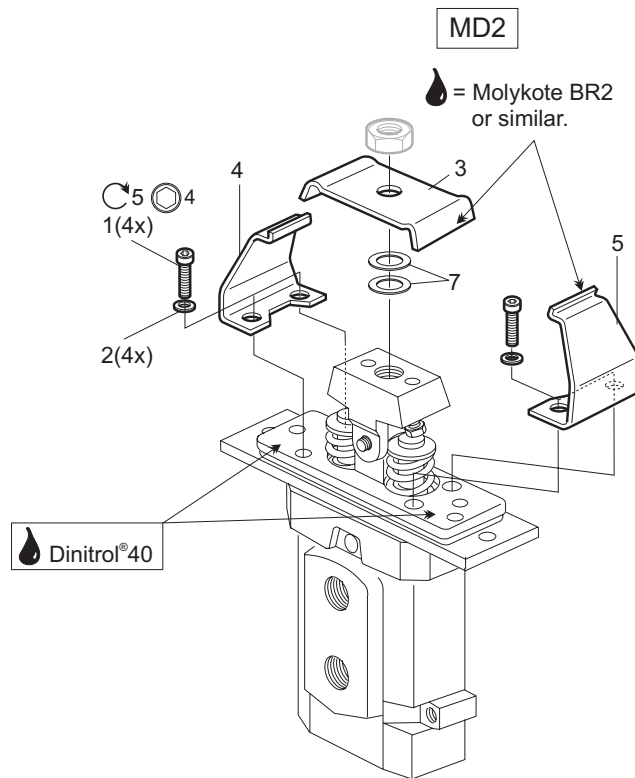
Mount the detent body (3) on to the pressure disc. Be sure of that the long side of the detent body is parallel with the long side of the pressure disc within 1 mm.

When mounting the detents (4 and 5) be sure of that they are at the right angels against the lever movement within 1 mm.

Grease the detents wear surface with Molykote BR2 or corresponding grease.

The force to pull lever out of detent should be 13-25 N. This measurement must be done 89 ±2 mm above the detent body and has to be at the right angels against the lever's movement. Use shims between the detent body and the pressure disc to obtain the right force.

Check that the final pressure is obtained when the lever is in detent. The final pressure can at the maximum drop 10% against the stated pressure. If the valve has a force opening should the pressure in detent be at least 80% of the pump pressure.



- ☹ = Corrosion preventative ○ = Socket head (mm)
- ☹ = Lubricant/oil ⬡ = Hexagon (mm)
- ↻ = Tightening torque (Nm) □ = Square (mm)

PCL402 with S2.

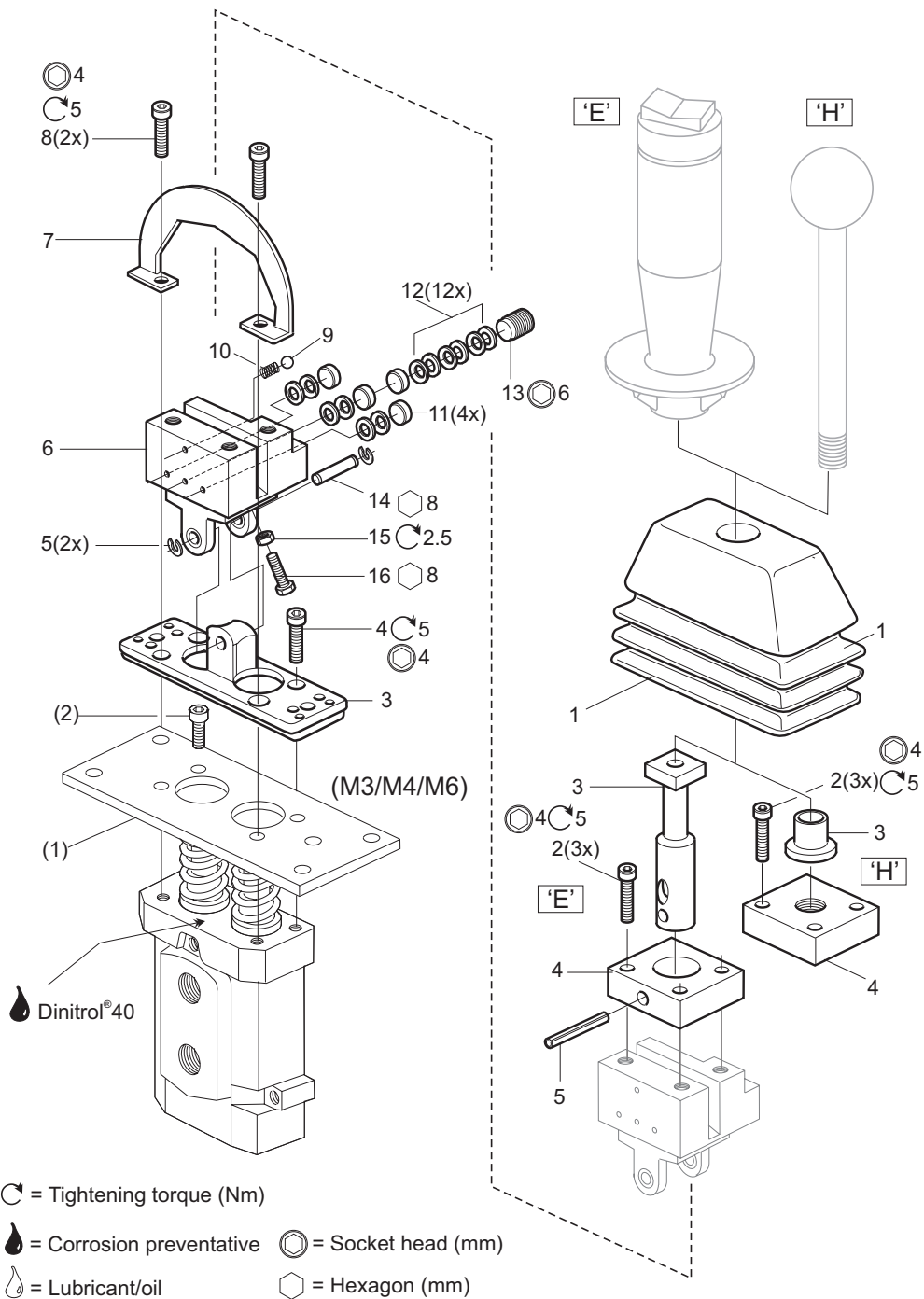
Exchange the lever link with the friction ratchet assembly and screw it on the mounting plate and tighten it according to picture.

In each hole on the pressure disc place two cup springs (12) and one brake lining (14). Place the spring (10) and the ball (9) in the upper hole, and push down the brake clamp (7) into place and tighten the screw (8) according to picture.

Check that the lever is 90 ± 2 degrees against the mounting plate when the ball is in the brake clamps rail.

The brake lining (11) that will adjust the force, mounts with four cup springs (12) and locks with the screw (13).

Depending on what lever will be used mount the correct lever bracket kits.



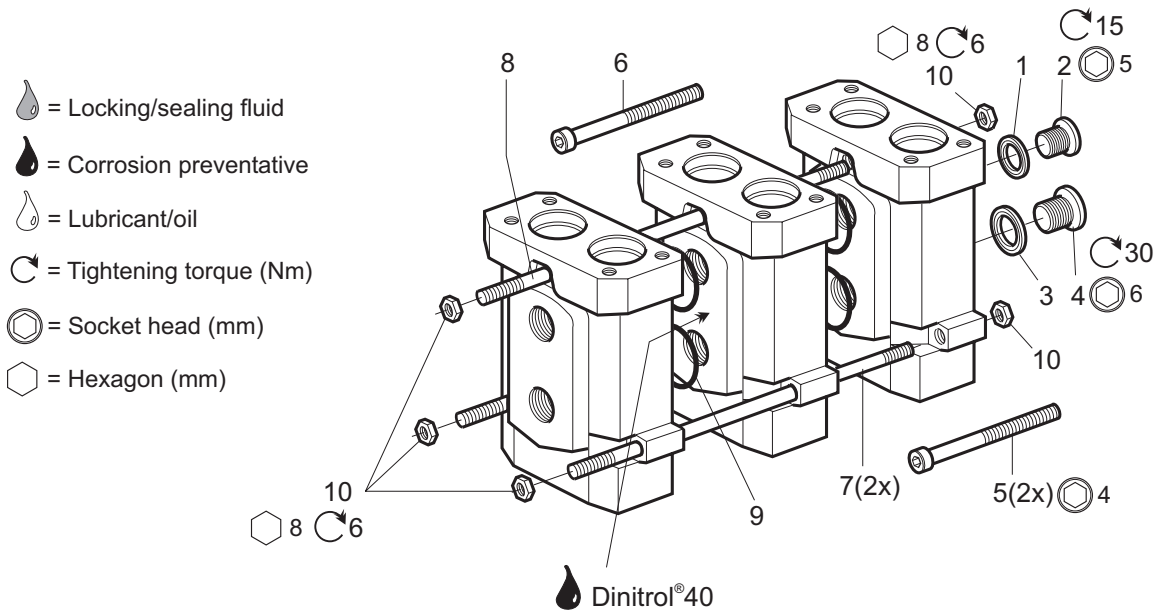
Stacking procedure.

When stacking only 2 sections place the two shorter screws (5) on the sides and the longer screw (6) on top hole on the sections. Put corrosion preventative grease Dinitrol 40 or equivalent between the sections and the two o-rings (9). Install nuts and torque to specification (6 Nm or 53 lbf-in).

When stacking three or more sections place the 2 shorter tie rods (7) on the lower and the longer tie rod on the top hole on the sections. Put corrosion preventatives grease Dinitrol 40 or equivalent between all sections and the o-rings (9). Install nuts and torque to specification (6 Nm or 53 lbf-in).

Ports in last section need to be plugged tighten according to picture.

Sections	Stud Kits	Plug kit
2	PCL402-2-SK	9119089329
3	PCL402-3-SK	9119089329
4	PCL402-4-SK	9119089329
5	PCL402-5-SK	9119089329
6	PCL402-6-SK	9119089329



Adjustments by means of shims of the remote control valve PCL4.

This instruction intends to explain the placing of shims and their function in the remote control valve PCL4. Each spool function can get tuned in individually to require start and final pressure on condition that the spring with correct stiffness and correct (starting) starting pressure is available.

By using shims the following can be affected:

- start pressure
- break point (at broken curve)
- forced opening

Suitable working routine.

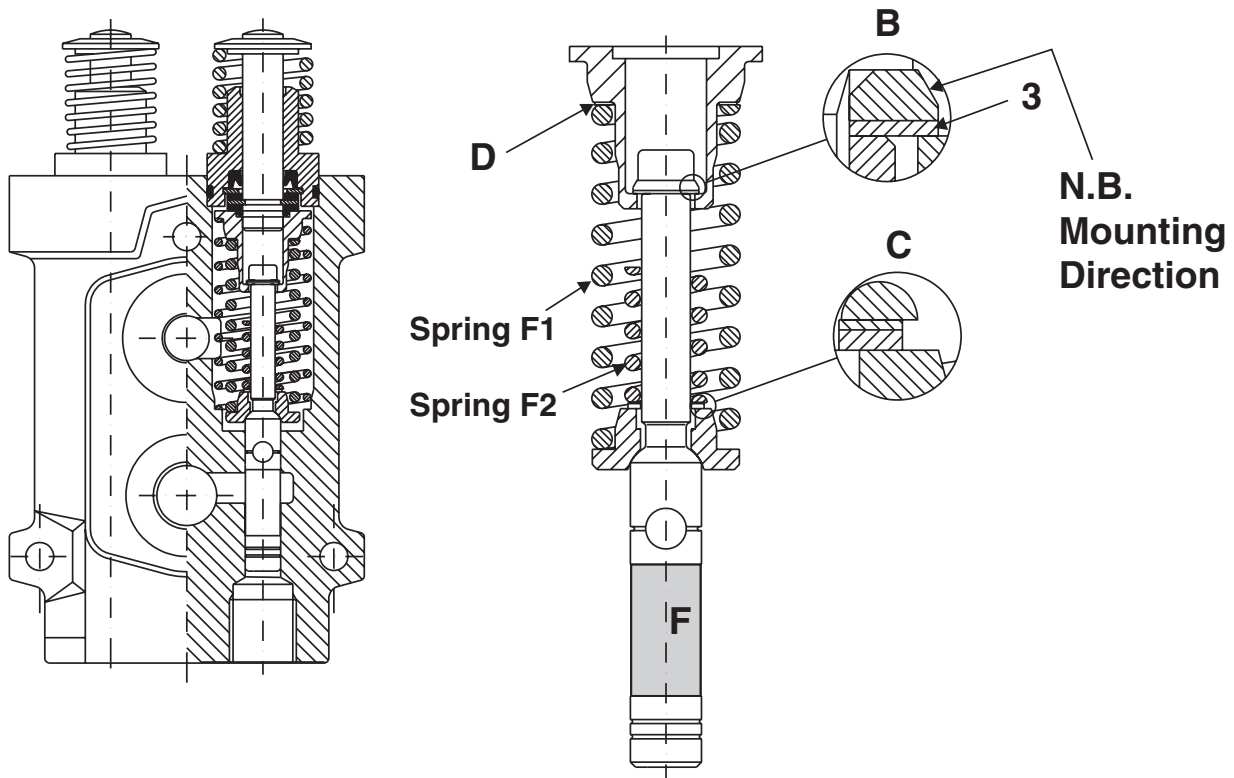
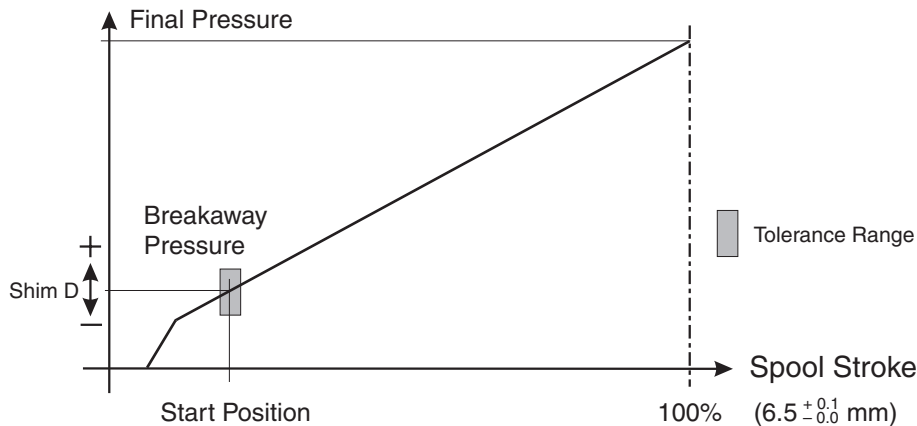


Fig.1

Pilot Pressure **Spring Pack with Straight Characteristic**



Adjusting the start pressure

The start pressure shall be adjusted by means of shims to required level with the tolerance +0 –0.5 bar. See diagram in spring pack straight characteristics. The shims are placed in D according to Fig.1 (see page 9).

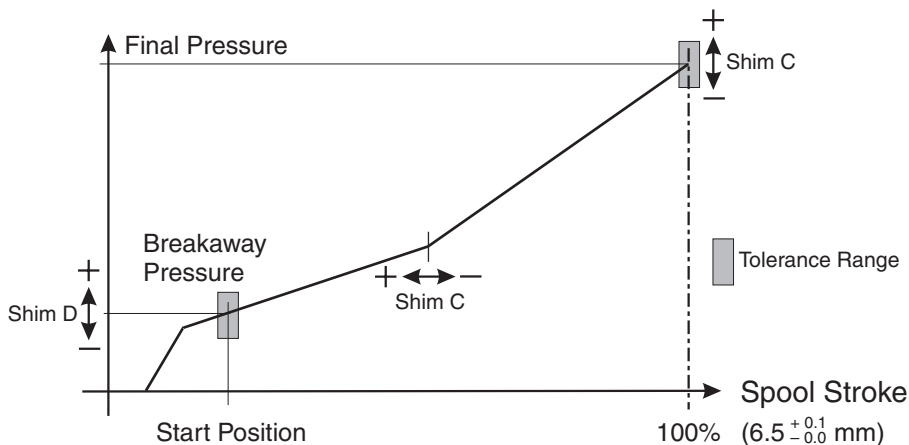
Carefully lift up the spring pack and spool from the valve housing. The spool may be fixed over the turned waist F in Fig. 1. Unscrew the screw and add or take away shims in D according to Fig. 1. By taking away shims in D the start pressure decreases and by adding shims it will increase. The adjustment by means of shims also affects the final pressure. The pressure change from 1-mm shims can be seen from stiffness of the spring in spring key table. Washer

is mounted with the internal groove upward against the screw top. The torque of the screw is 1.3 ± 0.1 Nm.

If the spring pack is adjusted by means of shims to a starting pressure which exceeds the mentioned in the spring key table for the present spring will be compressed before full stroke, and the pressure increase momentary to the supply pressure level. The spring F1 maximum and minimum start pressure can under no circumstances be exceeded or be below, check the spring key table.

Be careful when the spool enters the spool hole to prevent any damage of the housing.

Pilot Pressure **Spring Pack with Broken Characteristic**



Adjusting the breaking point at broken curve

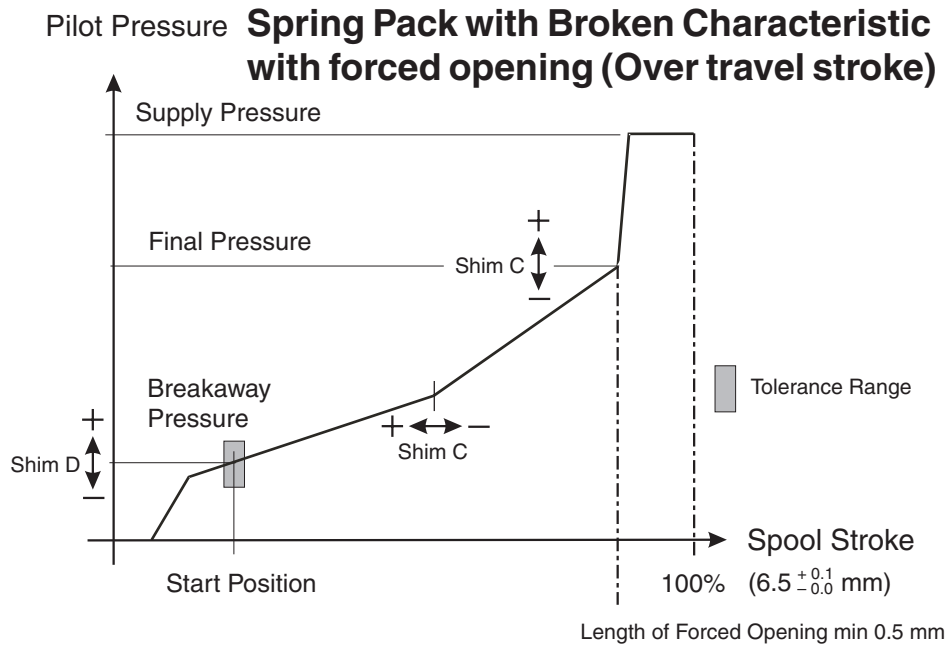
The breaking point shall be adjusted by means of shims so that the final pressure at full stroke will be as required. See diagram in spring pack with broken characteristics. The shims are placed in C according to Fig. 1 (see page 9).

The work routine is the same as when using shims for the starting pressure. By taking away shims in C the final pressure decreases and the breaking point is moved to the right in the See diagram in spring pack with broken

characteristics. By adding shims the final pressure increases and the breaking point is moved to the left.

If the spring is adjusted by means of shims more than is mentioned in the spring key table for the present spring, the spring will be fully compressed before full stroke with forced opening as a consequence, and risk for damage.

Be careful when the spool enters the spool hole to prevent any damage or the housing.



Forced opening

A forced opening shall be adjusted by means of shims so that the final pressure just before full stroke momentarily increases to the supply pressure level. See diagram in spring pack with broken characteristics with forced opening. The shims (3) are placed in B according to Fig. 1 (see page 9).

The work routine is the same as when using shims for the starting pressure. By adding shims between the screw top and the washer the pressure pin will, via the screw top, force open the spool when the spring is depressed in the end stroke.

PCL4 shims

Breakaway Pressure Shim (D)

Part number	Part description
91289119	Shim, 0.1 mm
91286613	Shim, 0.2 mm
91286612	Shim, 0.5 mm

Break Point Shim (C)

Part number	Part description
91282261	Shim, 0.1 mm
91282263	Shim, 0.5 mm

Forced Opening Shim (B)

Part number	Part description
9127181601	Shim, 0.1 mm
9127181603	Shim, 0.3 mm
9127181602	Shim, 0.5 mm

Shim kit

Shim kit covering all above shims.
 Part number 20016558 (4000 shims in total)

Spring key table.

Spring F1 (see page 9)

Spring No	Spring constant (bar/mm)	Breakaway pressure,p1 (bar)	Final pressure, p2 (bar)
9128 4408	0.65	2.0 - 5.2	p1 + 3.4
9128 4549	1.1	2.3 - 6.3	p1 + 5.8
9128 4553	1.3	3.2 - 8.5	p1 + 6.9
9128 4550	1.3	9.0 - 13.5	p1 + 6.9
9128 4554	1.6	2.0 - 6.0	p1 + 8.5
9127 2913	1.9	1.0 - 6.0	p1 + 10.1
9128 2719	1.9	5.0 - 10.5	p1 + 10.1
9128 2916	2.0	3.5 - 10.3	p1 + 10.6
9128 4555	2.4	3.0 - 8.5	p1 + 12.7
9120 1000 61	2.55	5.5 - 11.0	p1 + 13.5
9128 4556	2.75	3.0 - 8.5	p1 + 14.6
9128 2265	3.0	4.0 - 9.5	p1 + 15.9
9128 4557	3.55	3.0 - 9.0	p1 + 18.8
9127 1140	3.75	5.0 - 10.0	p1 + 19.9
9128 4572	4.0	3.5 - 9.0	p1 + 21.2
9128 4573	4.0	9.3 - 15.0	p1 + 21.2
9128 4574	4.6	5.0 - 11.0	p1 + 24.4
9127 2229	4.8	3.0 - 7.0	p1 + 25.4
9127 2063	10.4	3.0 - 13.0	p1 + 55.1

Spring F2 (see page 9)

Spring No	Spring constant (bar/mm)	Breakaway pressure,p1 (bar)
9128 4575	2.3	4.0 - 6.0
9128 4407	4.0	4.5 - 6.0
9128 4576	10.5	4.5 - 6.0
9128 2631	25	5.5 - 6.3

