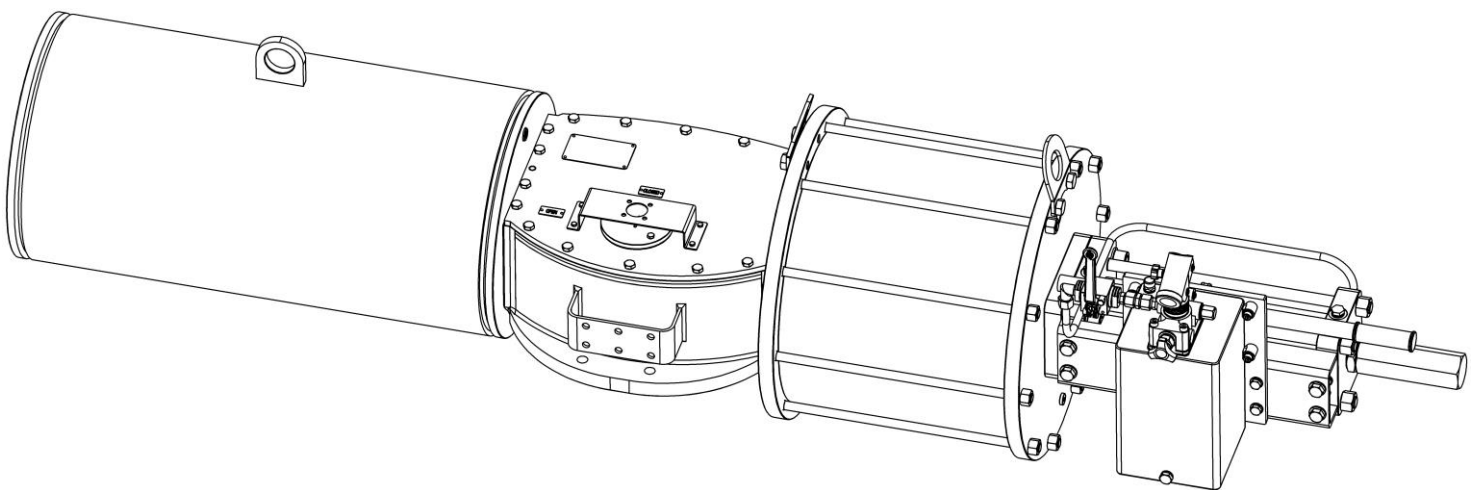
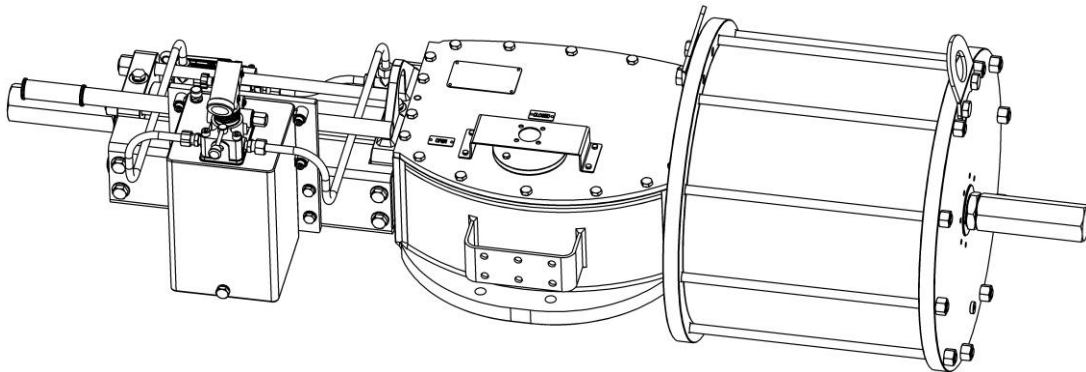


INSTALLATION, COMMISSIONING AND MAINTENANCE USER MANUAL

GHDP – SERIES

MANUAL HYDRAULIC OVERRIDE



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USE AND STORAGE OF THIS MANUAL

The user manual has to be considered as an integral part of the pressure equipment supplied and must be kept until final disposal of the equipment.

The manual must be always available for consulting near where the equipment is located and conserved in dry dust free environment.

In case of loss of this manual the customer can require a copy of this, specifying serial number, actuator type, date, version and year of supply as indicated on the actuators name plate.

INTRODUCTION

Read completely this manual before start any operation with or on the Actuatech GHDP Manual Hydraulic Override.

This manual is produced to enable a competent user to install, operate, adjust, inspect and maintain the manual hydraulic override of the Actuatech GHDP Series actuator. Users are responsible to follow the instructions in this manual as well as any additional documentation that has been supplied regarding the actuator or accessories supplied by Actuatech S.p.A. . Should further information or guidance relating to the safe use of GHDP manual hydraulic override be required, it will be provided on request. Users are also responsible to be familiar with and follow any relevant legislation or statutory provisions regarding health and safety.

It is the user's responsibility to ensure that the equipment is operated in a safe manner and that any personnel working with or on the equipment are properly trained for the work they are performing and are also aware of their responsibilities relating to health and safety in the workplace. It is extremely important that precautions are taken to avoid spark or static discharge in any areas of potentially explosive atmosphere.

All Actuatech actuators are tested prior to despatch.

PRESENTATION

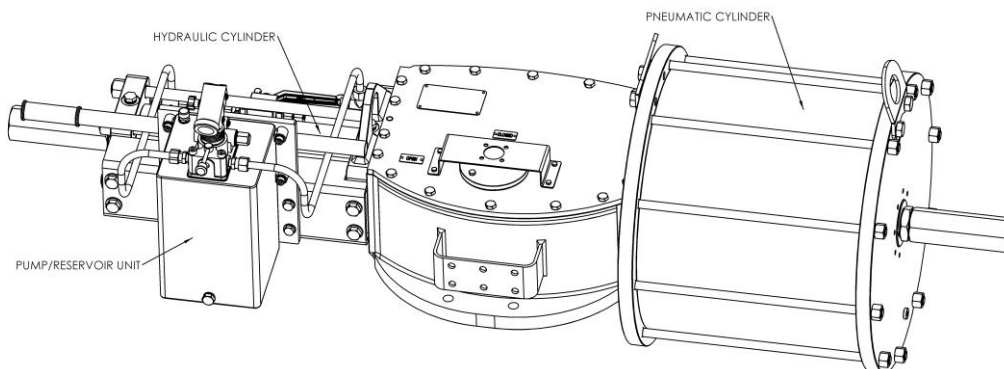
DESCRIPTION OF GHDP MANUAL HYDRAULIC OVERRIDE

The GHDP Manual Hydraulic Override is a self-contained system for manual operation of double acting and spring return pneumatic actuators.

The unit consists of two main components, the hydraulic cylinder and the pump/reservoir assembly.

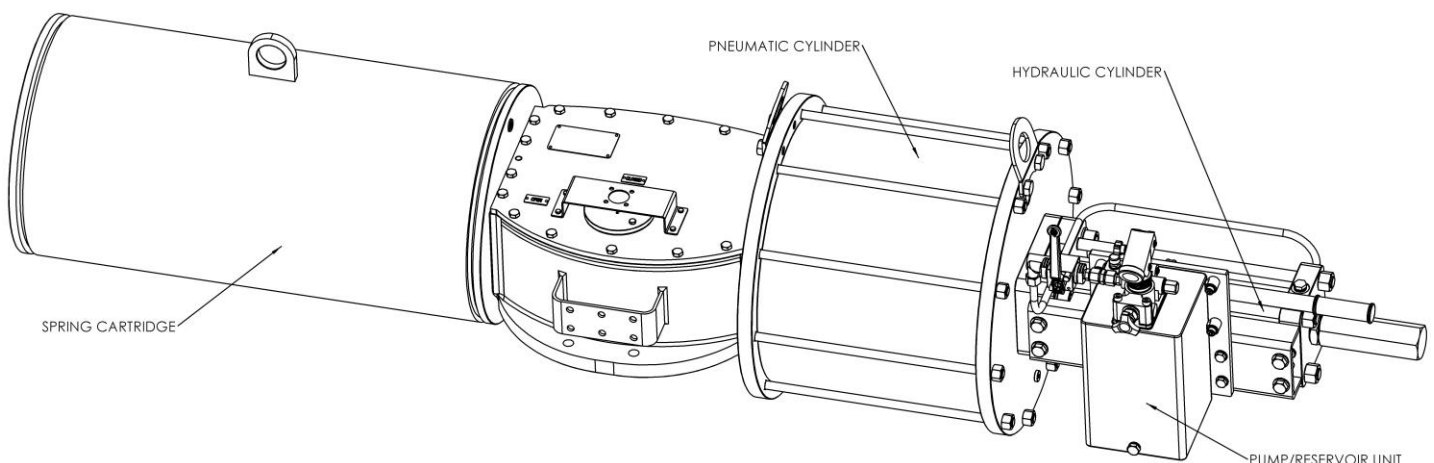
A - DOUBLE-ACTING PNEUMATIC ACTUATOR WITH MANUAL HYDRAULIC OVERRIDE

The GHDP push/pull pump supplies high-pressure fluid to either side of the hydraulic cylinder depending on the position of the pump Open/Close Selector Valve. The valve actuation lever is moved from a disengaged centre position towards either the inboard or outboard end of the cylinder. This will pressurize the selected side to allow manual stroking of the actuator.



B - SPRING-RETURN PNEUMATIC ACTUATOR WITH MANUAL HYDRAULIC OVERRIDE

The GHDP push/pull pump supplies high-pressure fluid to the outboard side of the cylinder, moving the piston towards the actuator body and compressing the spring. This is accomplished through operation of the pump handle with the manual valve on the face of the pump closed.



INSTALLATION

1. The standard position for operation of the hydraulic override is with the unit horizontal. In this position the pump/reservoir will be mounted toward the upper side of the hydraulic cylinder. In case of necessity to mount the unit in the vertical axis consult the Actuatech technical department.
2. The proper oil level is approximately 2.5 cm (1") below the fill port/vent. The oil level should be checked with the unit in the horizontal position, with the piston at the farthest position in relation to the centre body. Our standard oil specification is listed in section 2 of the 'Specification' unit. Many applications require alternative oils. If in doubt, consult Actuatech technical department.
3. A vent is required on top of the reservoir for proper operation. This vent is generally installed at the factory but in certain cases a plug is installed instead to prevent leakage during transport. If a plug is installed at the factory, a vent with installation instructions is attached to the reservoir. The vent must be installed prior to hand pump operation.

MAINTENANCE

A - DOUBLE-ACTING HYDRAULIC OVERRIDE FILLING PROCEDURE

1. The Hydraulic Bypass Valve must be in the Open position.
2. Pressurize the outboard side of the pneumatic cylinder until the piston is contacting the end stop in the hydraulic override cylinder, then remove the supply pressure.
3. Move the Hydraulic Bypass Valve to the Closed position.
4. Remove the breather located in the left rear corner of the top of the hydraulic reservoir.
5. Remove the plug located in the top of the hydraulic override cylinder bottom flange.
6. Move the Open/Close Selector Valve towards the outboard side of the cylinder.
7. Operate the pump handle slowly until oil exits the port in the top of the hydraulic override cylinder bottom flange. Be sure to maintain the oil level in reservoir so as not to drain the reservoir below intake tube.
8. Reinstall the plug into bottom flange.
9. Operate the pump until the hydraulic piston reaches its closest position to the centre body.
10. Remove the plug located in the top of the hydraulic override cylinder adapter flange.
11. Move the Open/Close Selector Valve to the inboard side of the cylinder.
12. Operate the pump handle slowly until oil exits the port in the top of the hydraulic override cylinder adapter flange.
13. Reinstall the plug into adapter flange.
14. Move the Open/Close Selector Valve towards the Middle position.
15. Run the actuator in both directions for two complete cycles.
16. Move the Hydraulic Bypass Valve to the Open position.
17. Run the actuator in both directions for two complete cycles to completely purge the system of air.
18. Verify oil level is correct and reinstall reservoir breather.

B - SPRING-RETURN HYDRAULIC OVERRIDE FILLING PROCEDURE

1. Remove all air supply to the actuator so that the spring decompresses and the piston is contacting the end stop in the hydraulic override cylinder.
2. Remove the breather located in the rear left corner of the top of the hydraulic reservoir.
3. Verify proper reservoir oil level.
4. Remove the plug located in the top of the hydraulic override cylinder bottom flange.
5. Close the pump On/Off Selector Valve and verify that the Manual Holding Valve is open.
6. Operate the pump handle slowly until oil exits the port in the top of the hydraulic override cylinder bottom flange. Be sure to maintain the oil level in reservoir so as not to drain the reservoir below intake tube.
7. Reinstall the plug into bottom flange.
8. Operate the pump to compress the spring to the point that the piston reaches its closest position to the centre body.
9. Allow the cylinder to hold pressure for three to five minutes, to allow for any air to settle out of the oil.
10. Slowly turn the On/Off Selector Valve counter-clockwise, allowing the spring to completely decompress.
11. Verify proper reservoir oil level.
12. Repeat steps 7 to 11.

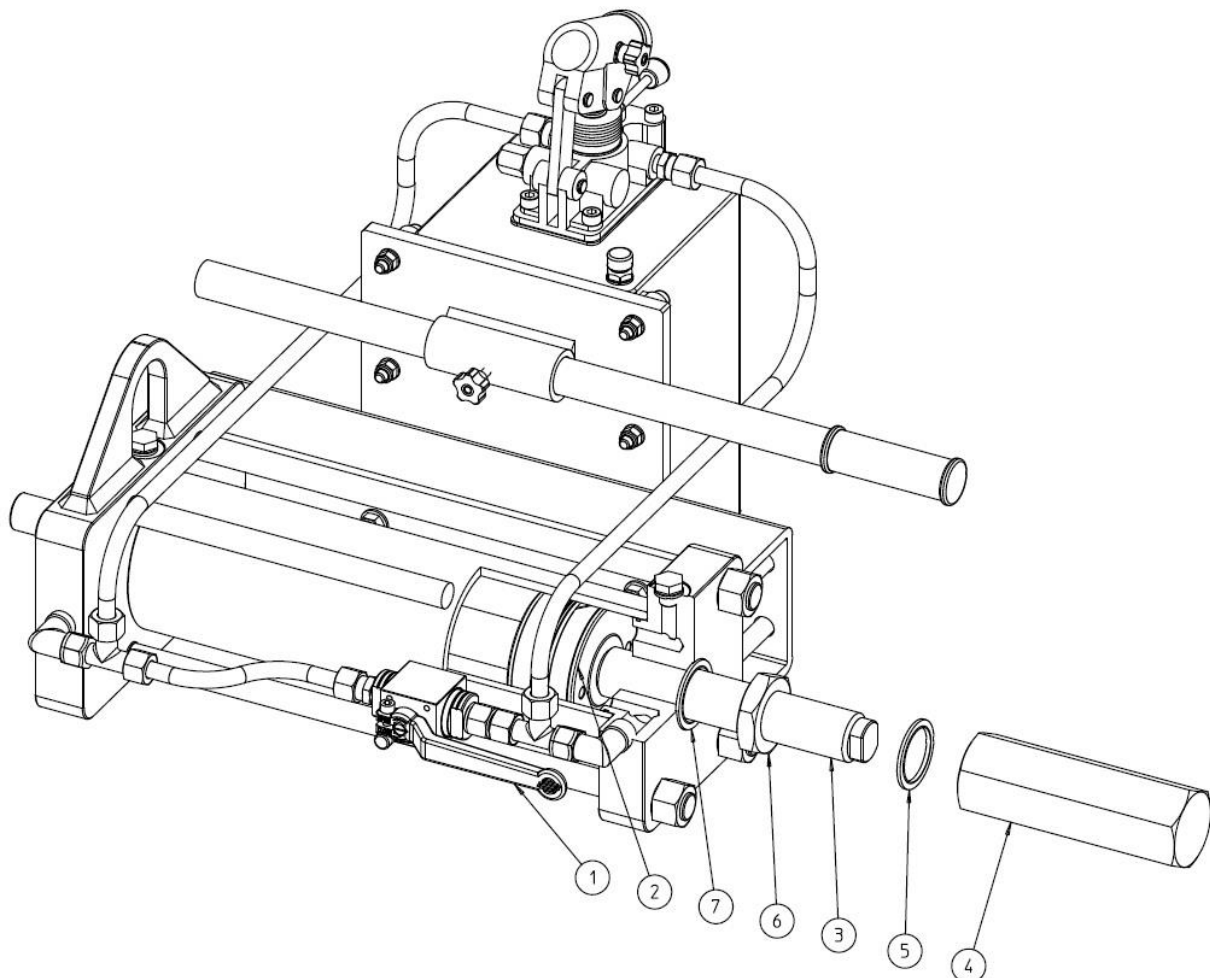
13. Reinstall reservoir breather.

SETTING OF HYDRAULIC OVERRIDE STOP POSITION

A - DOUBLE-ACTING PNEUMATIC ACTUATOR WITH MANUAL HYDRAULIC OVERRIDE

The setting of the hydraulic override stop position is performed by adjusting the screw which is inserted into the end flange of the hydraulic cylinder as follows:

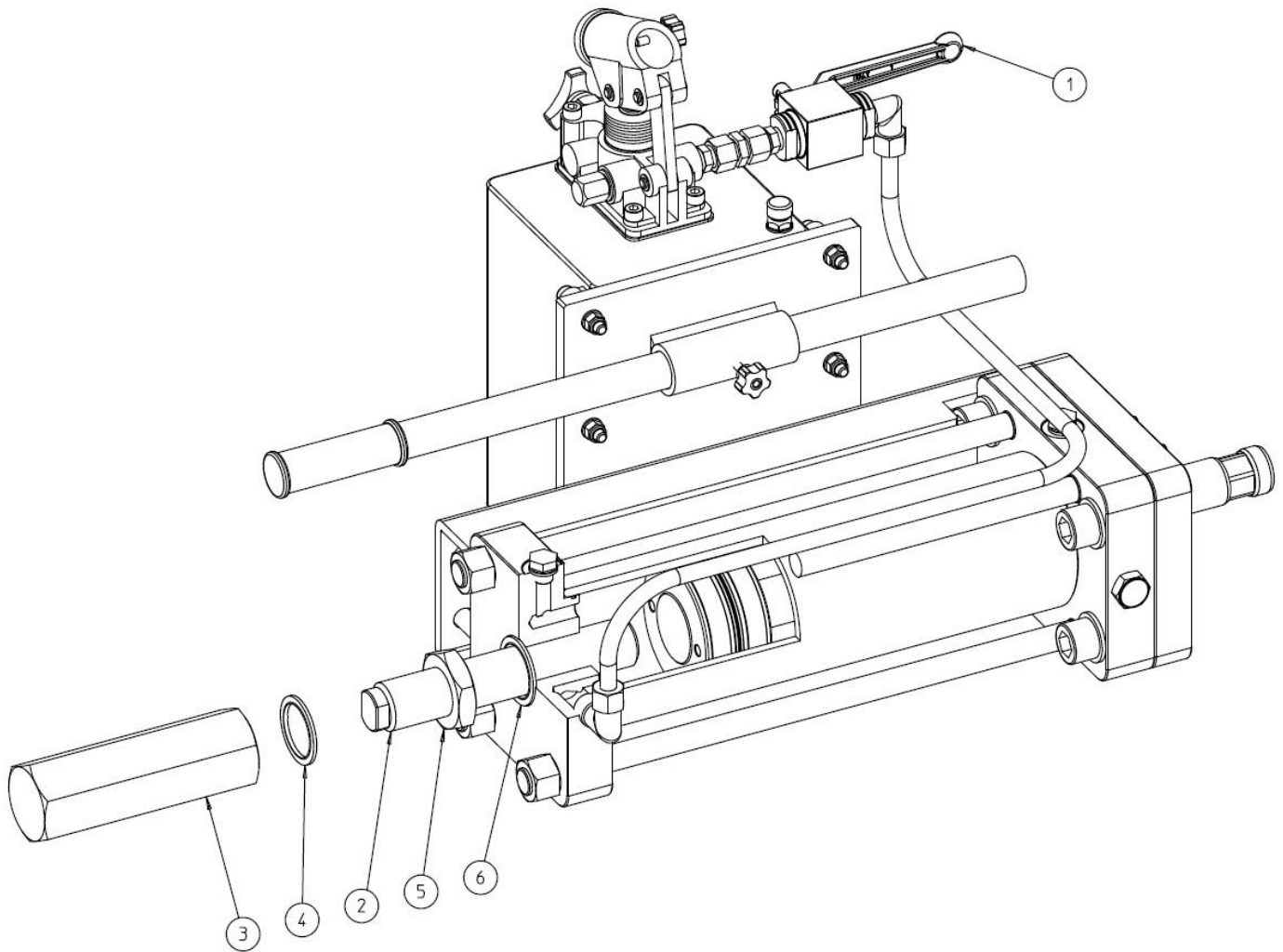
1. The Hydraulic Bypass Valve (1) must be in the Open position.
2. Apply pressure to outboard side of pneumatic cylinder to make the hydraulic piston (2) reaches the stop setting screw (3).
3. Remove the supply pressure.
4. Remove the stop bolt cover (4) the sealing washer (5) and loosen the stop nut (6) with sealing washer (7).
5. Screw the stop setting screw (3) to reduce the actuator angular stroke or unscrew the stop setting screw (3) to increase the actuator angular stroke.
6. Tighten the stop nut (6) ensuring sealing washer (7) is properly centred on the stop setting screw and fitted in the machined recess in the housing closure flange.
7. Operate a complete cycle of the actuator stroke.
8. Verify that the adjustment is correct; otherwise repeat from the step 1.
9. Reinstall the stop bolt cover (4) ensuring sealing washer (5) is properly centred on the stop setting screw (3) and fitted in the machined recess in the stop bolt cover (4).



B - SPRING-RETURN PNEUMATIC ACTUATOR WITH MANUAL HYDRAULIC OVERRIDE

The setting of the hydraulic override stop position is performed by adjusting the screw which is inserted into the end flange of the hydraulic cylinder as follows:

1. The Hydraulic Bypass Valve (1) must be in the Open position and no one has to operate manually the pump.
2. Apply (low) pressure to outboard side of pneumatic cylinder to remove load from stop bolt (2).
3. Remove the stop bolt cover (3) the sealing washer (4) and loosen the stop nut (5) with sealing washer (6).
4. Screw the stop setting screw (2) to reduce the actuator angular stroke or unscrew the stop setting screw (2) to increase the actuator angular stroke.
5. Tighten the stop nut (5) ensuring sealing washer (6) is properly centred on the stop setting screw (2) and fitted in the machined recess in the flange.
6. Operate a complete cycle of the actuator stroke.
7. Remove the supply pressure.
8. Verify that the adjustment is correct; otherwise repeat from the step 1.
9. Reinstall the stop bolt cover (3) ensuring sealing washer (4) is properly centred on the stop setting screw (2) and fitted in the machined recess in the stop bolt cover (3).

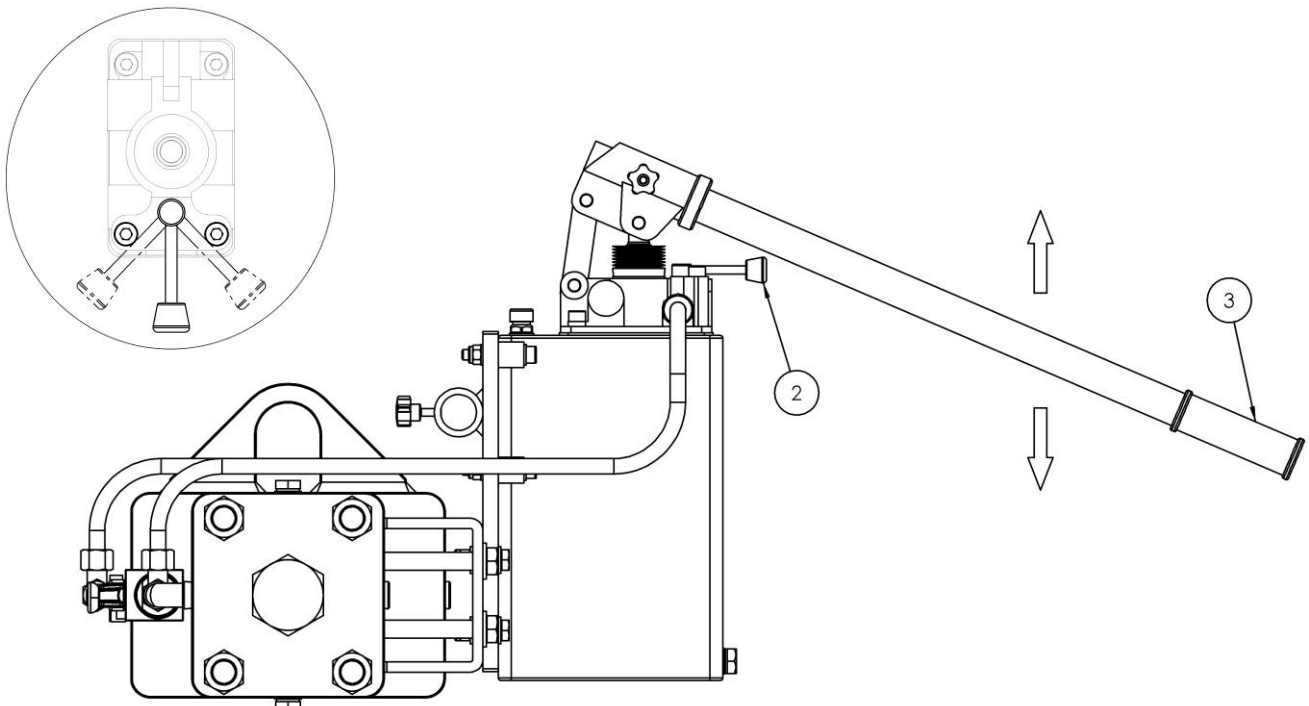


OPERATING INSTRUCTIONS

A - DOUBLE-ACTING MANUAL HYDRAULIC OVERRIDE

1. The Hydraulic Bypass Valve must be in the Closed position (1c).
2. Selection of operating direction is made by moving the Open/Close Selector Valve (2) toward the end of the cylinder to be pressurized.
3. Operating the Pump (3) will stroke the actuator.
4. When manual operation is complete, return the Open/Close Selector Valve to the Middle position (2) and the Hydraulic Bypass Valve to the Open position (1o).

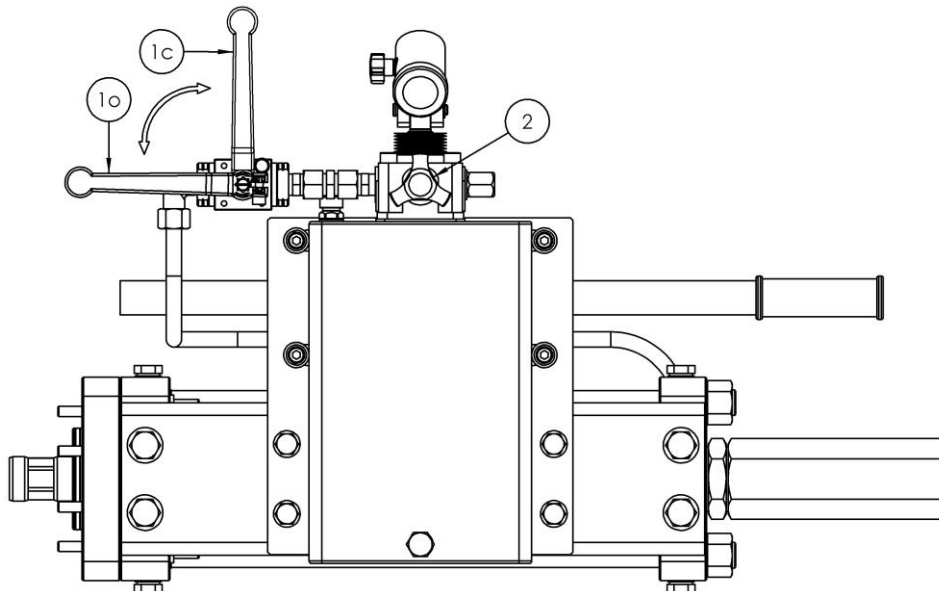
OPEN/CLOSE SELECTOR
VALVE DETAIL



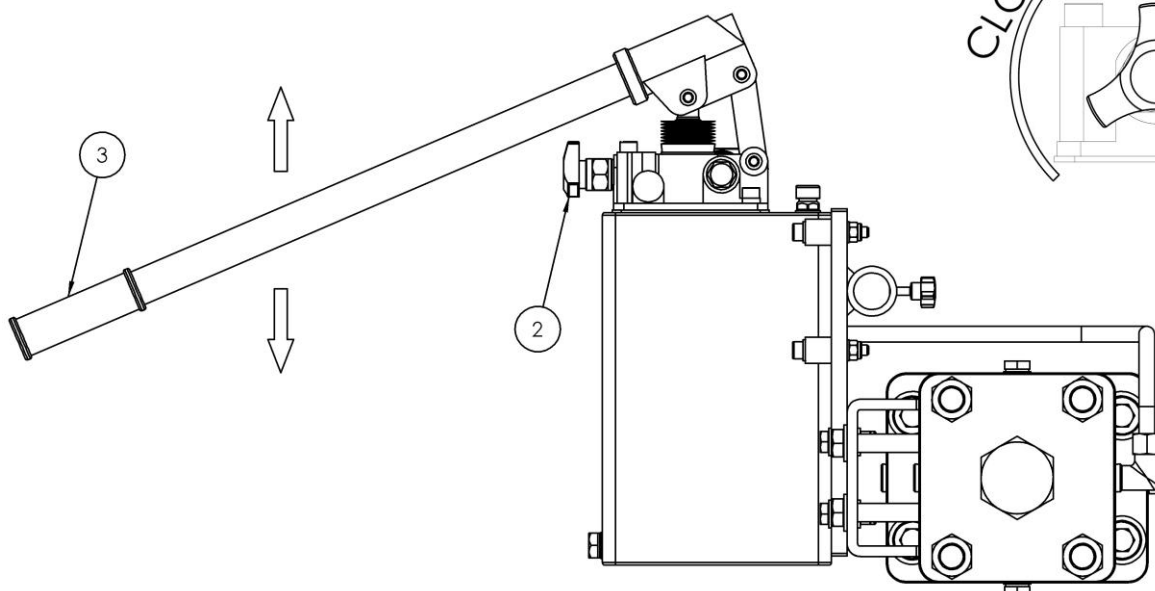
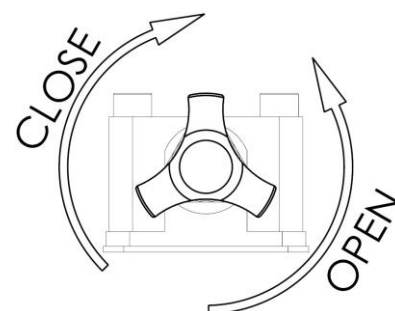
B - SPRING-RETURN MANUAL HYDRAULIC OVERRIDE

1. The Manual Holding Valve must be in the Open position (1a).
2. Close the On/Off Selector Valve by turning in fully clockwise (2).
3. Operating the Pump (3) will stroke the actuator and compress the spring.
4. When the actuator has reached the desired position of travel, it can be locked in position by closing the Manual Holding Valve (1c).

- To allow the spring to decompress, the Manual Holding Valve must be moved to the Open position (1o) and the On/Off Selector Valve backed out by turning anti-clockwise (2).



ON/OFF SELECTOR
VALVE DETAIL



SPECIFICATIONS

1 - LUBRICATION

Usually it is not necessary to lubricate the actuator, because its mechanism is lubricated for life.

The following greases are used by Actuatech S.p.A. to lubricate the mechanical components and are recommended for future lubrication (all the greases are silicon free):

PISTON - CYLINDER lubrication

MANUFACTURER: TECNOLUBE SEAL

TRADE NAME: SYNTHY POLYMER 402

COLOR: BLUE

OIL TYPE: SYNTHETIC

NOTE:

The above described grease type is for lubrication of scotch yoke standard actuators (-20°C +80°C).

2 - HYDRAULIC OIL specification

MANUFACTURER: MOBIL

TRADE NAME: EXXON MOBIL NUTO H32

COLOR: AMBER

VISCOSITY AT 40°C: 32

VISCOSITY AT 100°C: 5.4

BOILING POINT: > 316° - estimated

FLASH POINT (ASTM D-92): 212°C

SLIDING POINT (ASTM D-97): -24°C

DENSITY AT 15°C (Kg/dm³): 0.872

WORKING TEMPERATURE: -20°C/+150°C

NOTE:

This is the standard hydraulic oil specification for Actuatech actuators. If an alternative was specified and/or supplied, it is noted in job specific documentation, which is available upon request.

WARNINGS

See the 'GHDP ACTUATOR SERIES - ACTUATECH USER MANUAL' for general warnings.

It is the responsibility of the user to ensure that the following conditions are respected:

1. Don't use the hydraulic cylinder for any other uses other than which it has been designed.
2. Follow regular maintenance schedule (please consult "Maintenance" section).
3. Before doing any maintenance operation on the actuator it is imperative to ensure that no pressure remains inside the cylinder or other part of actuator.
4. Before doing any maintenance operation on the actuator it is imperative to verify that the consumer materials (oil and/or grease) respect the 'Specification' unit.
5. Actuatech S.p.A. cannot be responsible for any damage to people, animals or things due to an improper use of the product.
6. Actuatech S.p.A. declines any responsibility for the products repaired by companies not authorised by Actuatech S.p.A.

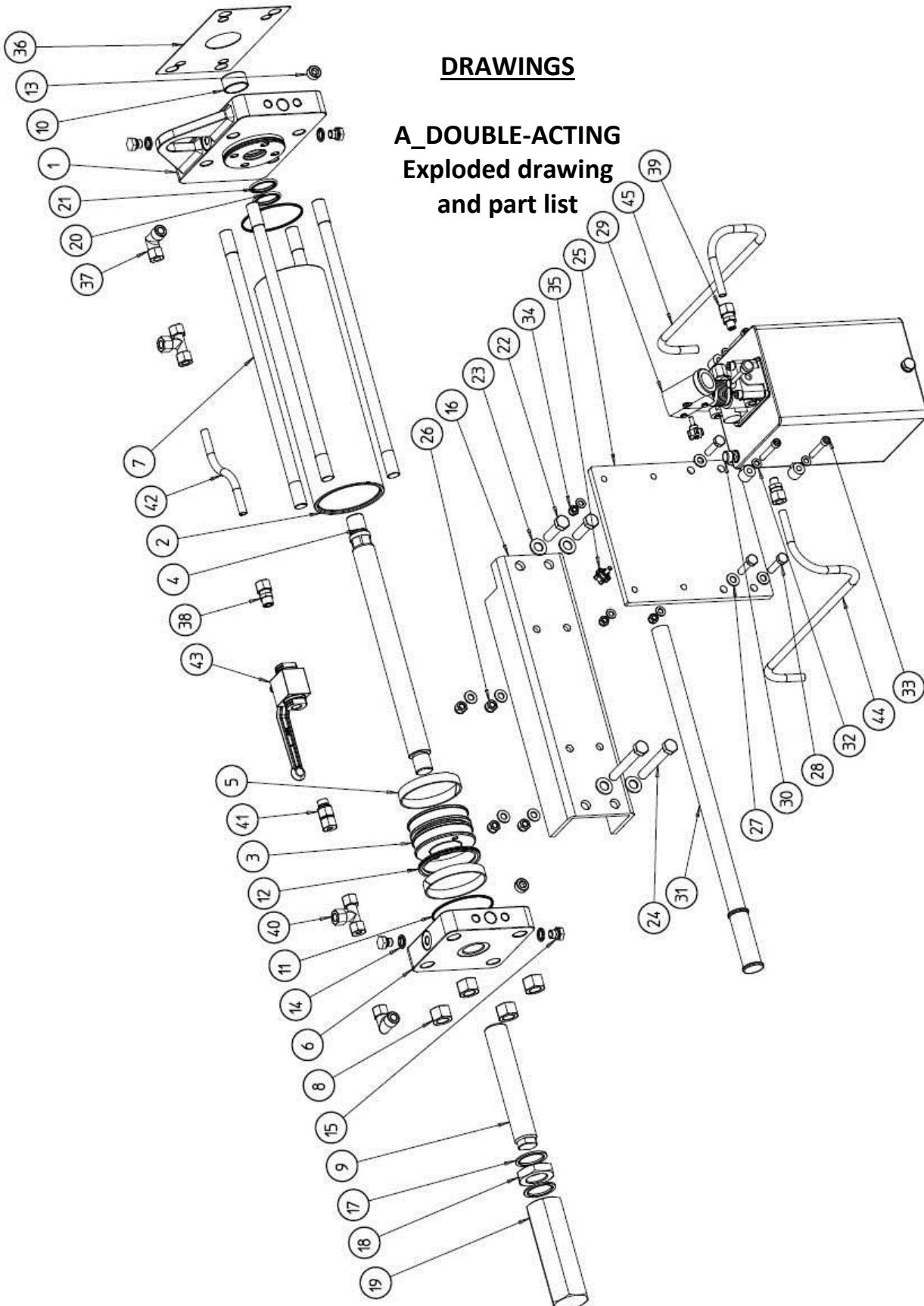
Other extra-warnings linked to the particular installation of the actuator must be taken into account by the installer.

TROUBLESHOOTING

NOTICED FAULT	POSSIBLE CAUSE	SUGGESTED REMEDY
APPARENT TORQUE DECREASE.	Pipe work leakage.	Check the pipe work for leakage. If necessary tighten the nuts of the pipe fittings.
	Not adequate oil level.	Remove the breather, verify the proper reservoir oil level and, if necessary, fill with oil following the instructions of the 'Installation' unit.
	Wrong position of the Selector Valve on the Pump.	Verify and set the correct position of the valve before operate the Pump (see 'Operate Instructions' unit).
	Wrong position of the valve positioned on the hydraulic circuit (Bypass Valve/Manual Holding Valve).	Verify and set the correct position of the valve before operate the Pump (see 'Operate Instructions' unit).
	Increased valve torque.	Check the valve manufacturer's documentation.
	Wrong valve sizing.	Check the required valve torque (valve manufacturer's documentation) and the provided actuator torque (Actuatech documentation).
	External Pump Leakage.	Consult Actuatech technical department for instructions.
	External Cylinder Leakage (Damaged cylinder seals).	Consult Actuatech technical department for instructions.
	Internal Pump Leakage.	Consult Actuatech technical department for instructions.
STROKE NOT COMPLETED.	Internal Cylinder Leakage (Damaged piston seals).	Consult Actuatech technical department for instructions.
	Setting of mechanical stops and/or limit switches not correct.	See the "Setting of angular stroke" unit.
IRREGULAR STROKE MOVEMENT.	Defective valve.	Check the valve manufacturer's documentation.
	Worn components.	Consult Actuatech technical department for instructions.
	Worn or stucked valve.	Check the valve manufacturer's documentation.

DRAWINGS

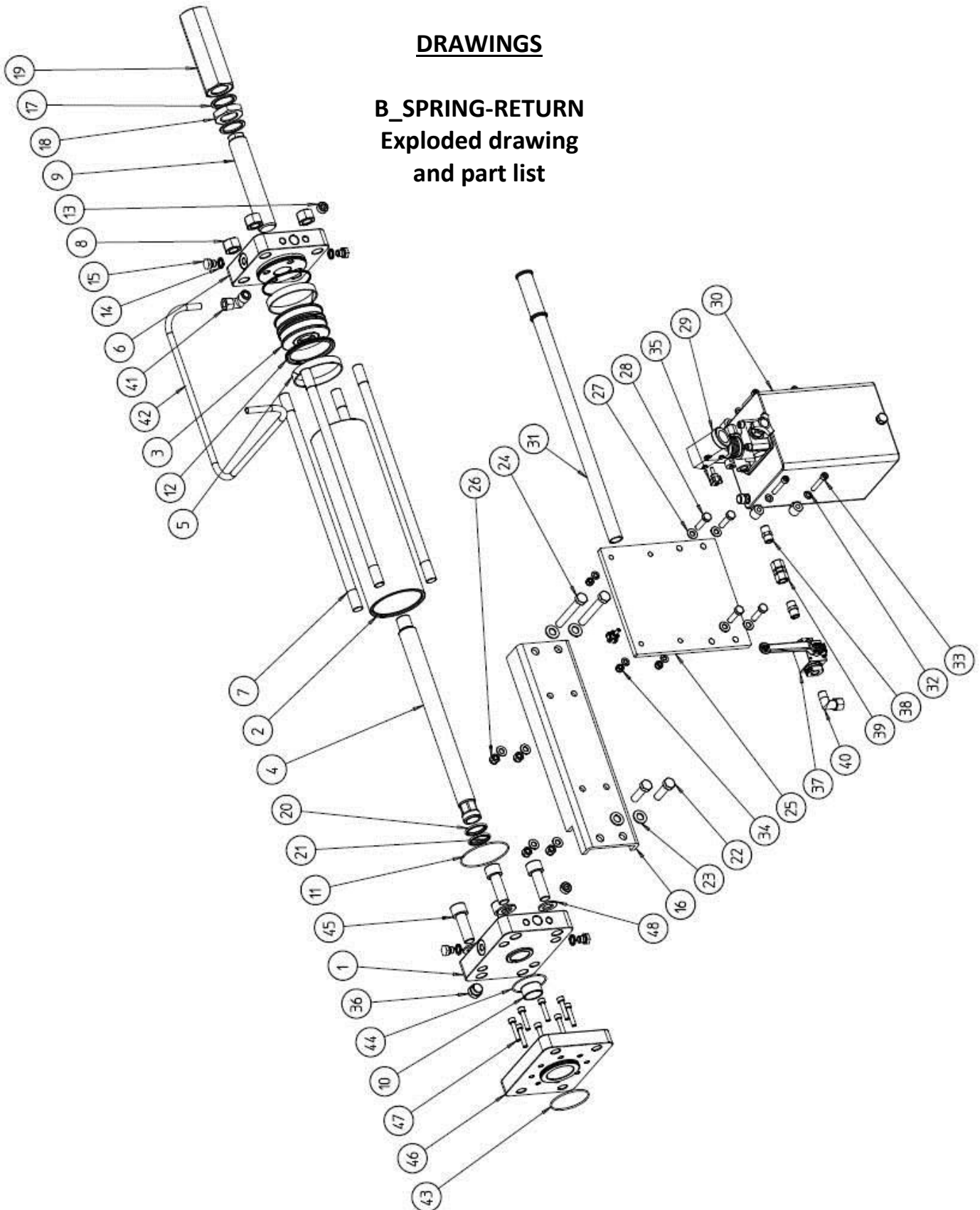
A_DOUBLE-ACTING
Exploded drawing
and part list



Num. Item	Description	Material	Quantity
1	Hydraulic Cylinder Inner Flange	Carbon Steel	1
2	Hydraulic Cylinder	Carbon Steel	1
3	Hydraulic Piston	Carbon Steel	1
4	Hydraulic Rod	Alloy Steel	1
5	Sliding Ring	PTFE+Graphite	2
6	Hydraulic Cylinder Outer Flange	Carbon Steel	1
7	Tie Rod	Alloy Steel	4
8	Nut	Alloy Steel	4
9	Stop Setting Screw	Alloy Steel	1
10	Rod Bushing	Steel+Bronze+PTFE	1
11	O-Ring	NBR	2
12	Piston Seal	PTFE	1
13	Cap	Alloy Steel	2
14	Bonded	Alloy Steel+NBR	4
15	Cap	Alloy Steel	4
16	Hydraulic Pump Support	Carbon Steel	1
17	Sealing Washer	Alloy Steel+NBR	2
18	Stop Nut	Alloy Steel	1
19	Stop Bolt Cover	Alloy Steel	1
20	O-Ring	NBR	2
21	Seal	Polyurethane	2
22	Screw	Alloy Steel	2
23	Bonded	Alloy Steel	4
24	Screw	Alloy Steel	2
25	Hydraulic Pump Support	Carbon Steel	1
26	Nut	Alloy Steel	4
27	Bonded	Alloy Steel	8
28	Screw	Alloy Steel	4
29	Hydraulic Pump	Alloy Steel	1
30	Hydraulic Pump Tank	Carbon Steel	1
31	Hydraulic Pump Lever	Alloy Steel	1
32	Bonded	Alloy Steel	8
33	Screw	Alloy Steel	4
34	Nut	Alloy Steel	4
35	Steering Wheel	Acetal Resin+Alloy Steel	2
36	Paper Seal	Paper	1
37	Hydraulic Junction	Alloy Steel	2
38	Hydraulic Junction	Alloy Steel	1
39	Hydraulic Junction	Alloy Steel	2
40	Hydraulic Junction	Alloy Steel	2
41	Hydraulic Junction	Alloy Steel	1
42	Connection Tube	Alloy Steel	1
43	High Pressure Valve	Alloy Steel	1
44	Connection Tube	Alloy Steel	1
45	Connection Tube	Alloy Steel	1

DRAWINGS

B_SPRING-RETURN
Exploded drawing
and part list



Num. Item	Description	Material	Quantity
1	Hydraulic Cylinder Inner Flange	Carbon Steel	1
2	Hydraulic Cylinder	Carbon Steel	1
3	Hydraulic Piston	Carbon Steel	1
4	Hydraulic Rod	Alloy Steel	1
5	Sliding Ring	PTFE+Graphite	2
6	Hydraulic Cylinder Outer Flange	Carbon Steel	1
7	Tie Rod	Alloy Steel	4
8	Nut	Alloy Steel	4
9	Stop Setting Screw	Alloy Steel	1
10	Rod Bushing	Steel+Bronze+PTFE	1
11	O-Ring	NBR	2
12	Piston Seal	PTFE	1
13	Cap	Alloy Steel	2
14	Bonded	Alloy Steel+NBR	4
15	Cap	Alloy Steel	4
16	Hydraulic Pump Support	Carbon Steel	1
17	Sealing Washer	Alloy Steel+NBR	2
18	Stop Nut	Alloy Steel	1
19	Stop Bolt Cover	Alloy Steel	1
20	O-Ring	NBR	2
21	Seal	Polyurethane	2
22	Screw	Alloy Steel	2
23	Bonded	Alloy Steel	4
24	Screw	Alloy Steel	2
25	Hydraulic Pump Support	Carbon Steel	1
26	Nut	Alloy Steel	4
27	Bonded	Alloy Steel	8
28	Screw	Alloy Steel	4
29	Hydraulic Pump	Alloy Steel	1
30	Hydraulic Pump Tank	Carbon Steel	1
31	Hydraulic Pump Lever	Alloy Steel	1
32	Bonded	Alloy Steel	8
33	Screw	Alloy Steel	4
34	Nut	Alloy Steel	4
35	Steering Wheel	Acetal Resin+Alloy Steel	2
36	Cap	Alloy Steel	1
37	High Pressure Valve	Alloy Steel	1
38	Hydraulic Junction	Alloy Steel	2
39	Hydraulic Junction	Alloy Steel	1
40	Hydraulic Junction	Alloy Steel	1
41	Hydraulic Junction	Alloy Steel	1
42	Connection Tube	Alloy Steel	1
43	O-Ring	NBR	1
44	O-Ring	NBR	1
45	Screw	Alloy Steel	4
46	Hydraulic Cylinder Fixing Interface	Carbon Steel	1
47	Screw	Alloy Steel	8
48	Bonded	Alloy Steel	4