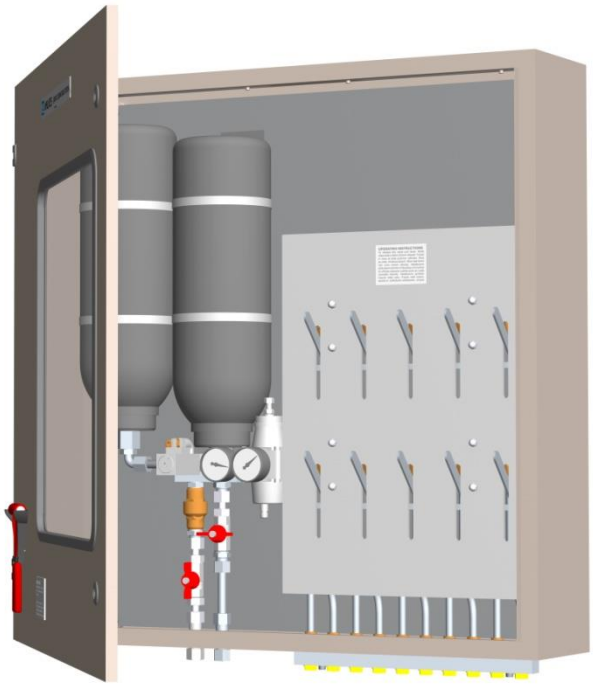
THE VALVE SPECIALISTS
OF SCANDINAVIA

MESON

Installation and operating manual

Pneumatic control station
Product no: PCS 1-10



Article no: 74503 Revision:10

Contents

1. General information

This manual gives instructions on installation of the Pneumatic Control Station together with maintenance recommendations and shall be read carefully before installation is started.

It is in the responsibility of the installer to ensure that the work is carried out in a satisfactorily manner, approved materials are used and that the installation meets applicable rules and regulations. Regional safety requirements must be applied and observed both at installation and maintenance as well as in repair work

It is the installer/owners responsibility to define responsibility and competence of personnel for the installation and maintenance of the valves. In case of problems which cannot be solved from information in this manual the supplier of the valves shall be contacted. The notes and warnings defined in following chapters must be followed as this information concerns your safety.

Note! Part numbering (..) in chapter 9.1-3 Part list are maintained and used as references through all chapters. Chapter 17.1 and 17.2 excluded

The manufacturer reserves the right to introduce technical modifications at any time.

2. Safety precautions

2.1 Significance of symbols

Attention!

Warning of general danger.

2.2 Explanatory notes on safety information

In these Operating and Installation Instructions dangers, risks and items of safety information is highlighted to attract special attention.

Information marked with the above symbol and *"ATTENTION!"* describes practices, a failure to comply with which can result in serious injury or danger of death for users or third parties or in material damage to the system or the environment. It is vital to comply with these practices and to monitor compliance.

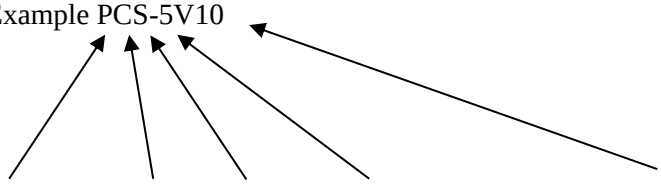
All other information not specifically emphasized such as transport, installation, operating and maintenance instructions as well as technical data (in the operating instructions, product documentation and on the device itself) must also be complied with to the fullest extent in order to avoid faults which in turn can cause serious injury to persons or damage to property.

3. Safety instruction

- Be aware of the fact that the stem with related components (hand wheel) will fall down very rapidly by spring force at closing of the valve.
- Avoid injury by always secure the release system when work is carried out on the valve. When testing the remote release system, stay away from moving parts on the valve. Weights of the cabinets to be taken from our PD sheet.
- When the glass window has been broken remove all sharp glass pieces before putting the hands inside the cabinet.
- Always vent the air pressure before overhaul or dismantling of any part.
- Loosening any part under system pressure can cause injury.

4. Type designation Pneumatic Control Cabinets

Example PCS-5V10



Pneumatic Control Station Qty of release handles Total air vessel volume

When the air vessel is located outside of the cabinet the type designation ends with E for external.

5. Technical data

5.1 Supply pressure

The design and lay-out of the system is to be taken from enclosed data sheet and symbolic diagram.
The symbolic diagram shows the stipulated air supply pressure.
Most cabinets have the air supply from the 30 bar engine starting air system.
Safety valve with standard set point 31 bar is mounted on the air vessel connection block

5.2 Working pressure

For systems with 30 bar air supply the cabinet includes a pressure reducing valve, reducing the supply pressure to 7 bar working pressure.
A safety valve with set point 9 bar is mounted on the working pressure side in the system.

5.3 Pressure gauge readings

Pressure gauge showing supply pressure is located on the connection block for the air vessel.
Pressure gauge showing reduced air pressure is fitted directly to the pressure regulator.

5.4 Air vessel volume

Necessary air vessel volume is achieved by a single air vessel or a combination of a number of vessels.

Calculation of air vessel volume is based on number of installed valves, total volume inside the pipes between cabinet and valve actuators and stroke volume of the actuators. The air supply pressure is the main factor at calculation of necessary volume.

As a safety factor most classification society's claims two times closing of all valves shall be possible at one air vessel charging.

6. Markings

Each cabinet has a serial number located on a sign inside the cabinet.

Air vessel identifications are to be found on the shell of the vessels.

Classification marks are located in the same area.

6.1 Cabinet identification and testing label

MESON

Order no	123456
Customer order no	123456
Serial no	ABAB99
Item no	12345
Manufacturing date	17-dec-2019
Classification society	-
Air vessel serial no	11/11/111
-	-
-	-

Visual Inspection ☐
Functional Test ☐
Pressure Tested 16 hours ☐
Signs ☐
Manufacture Certificate Issued ☐

Assembly sign.: _____

QA signature: _____

Manufacturer	Meson AB
Telephone	+46 (0)430 295 00
Fax	+46 (0)430 171 91
E-mail	sales@mesongroup.com

www.mesongroup.com

7. Description of function

7.1 System design

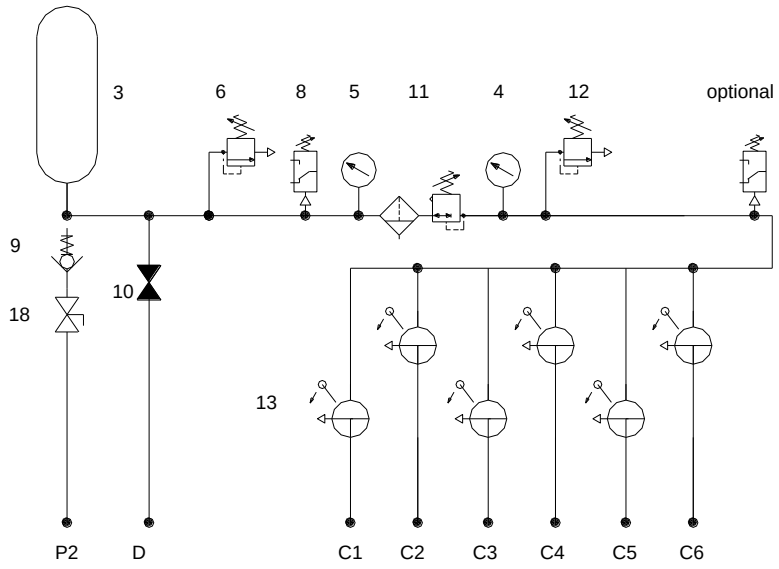
The control cabinet contains necessary armature for storing, reducing and directing the air signal to the actuators on the quick closing valves.

The pressure signal from the control cabinet will retract the piston inside the actuator on the valve, allowing the disc of the valve to move down and close the valve by spring force.

Each release handle can control a single valve or a group of valves.

The design of the control system and dividing of the control handle groups are in the responsibility of the ship yard.

7.2 Symbolic component diagram



Symbolic diagram showing PCS-6V5

7.3 Components in symbolic diagram

Pos.	Description
3	Air vessel 5 L
4	Pressure gauge 0-10 bar
5	Pressure gauge 0-40 bar
6	High pressure Safety valve
8	Pressure Switch 1-30 bar
9	Check valve
10	Drain valve
11	Pressure Regulator with filter
12	Low pressure Safety valve
13	Control valve
18	Shut Off Valve

P Inlet pressure for pipe O.D. 12mm

D Drain for pipe O.D. 12mm

C1-C10 Connections to release cylinders on the valves, ISO G1/4".

8. Options available

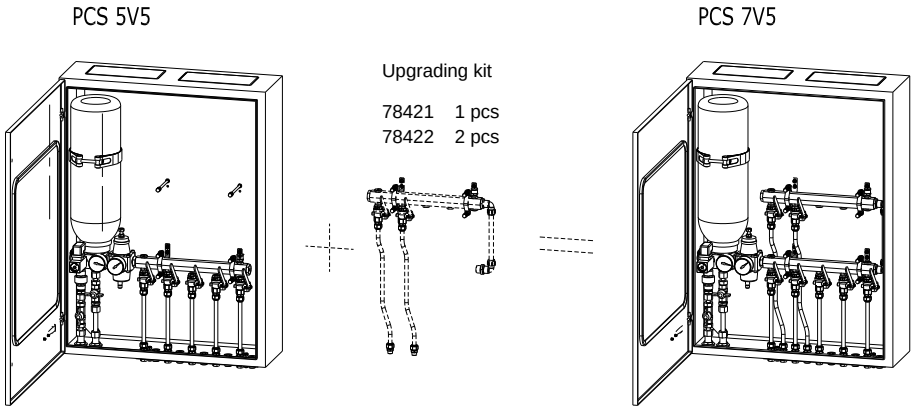
The standard PCS are available with the following option:

- Pipe couplings on outlet manifold
- Pressure switch on low pressure side
- Special custom made signboards

All other requirements are defined as special custom designed PCS, for further information and prices please contact Meson.

9. Upgrading

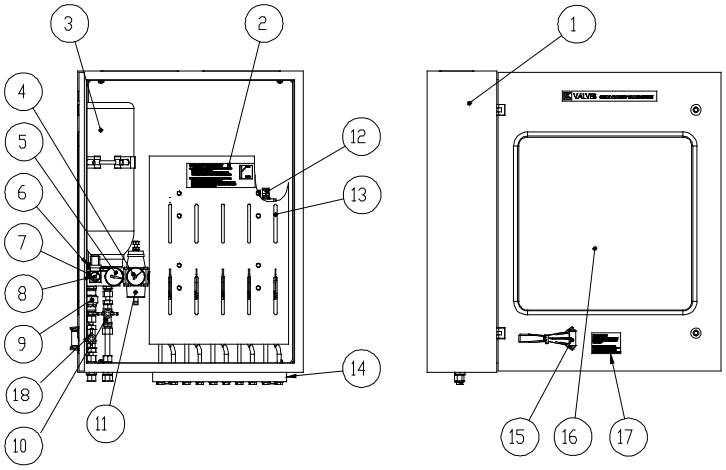
The internals of the cabinet are designed with possibilities to order and install a further number of release handles if necessary after that the cabinet has been installed.



Upgrading kits	
Art. No.	**Description**
78421	Upgrading kit PCS 5-6 (manifold)
78422	Upgrading kit PCS (contains one handle)

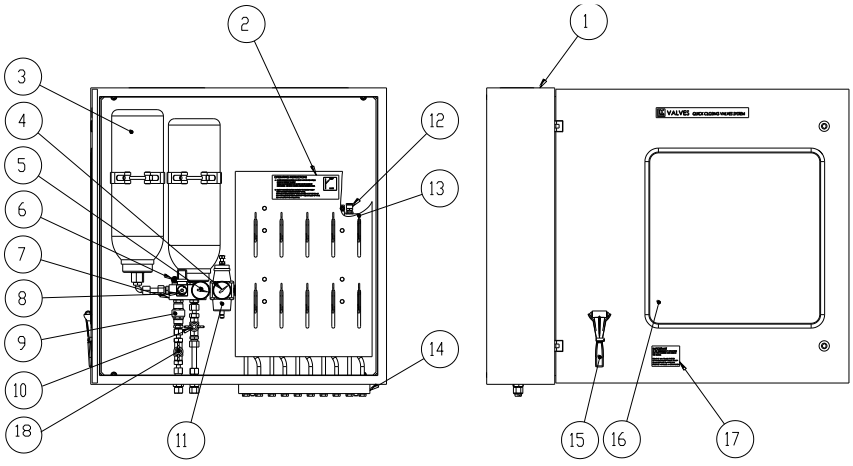
10. Main assemblies

10.1 PCS-5V5

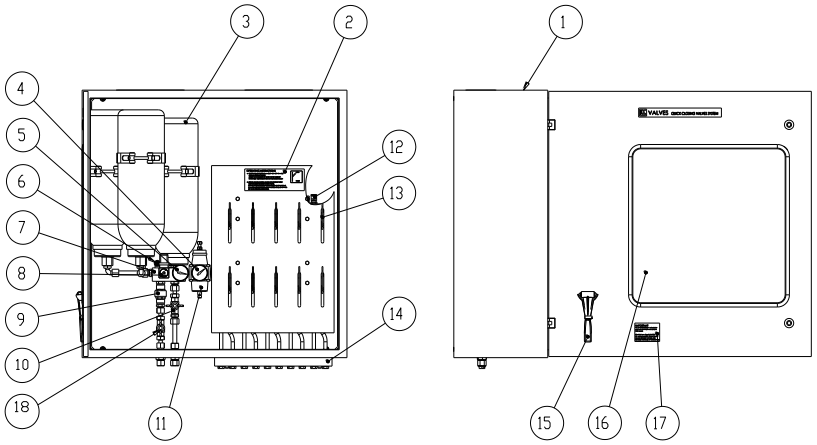


Pos.	Description
1	Cabinet
2	Instruction sign
3	Air vessel 5 L
4	Pressure gauge 0-10 bar
5	Pressure gauge 0-40 bar
6	High pressure Safety valve
7	Connection block
8	Pressure Switch 1-30 bar
9	Check valve
10	Shut off valve
11	Pressure Regulator with filter
12	Low pressure Safety valve
13	Control Handle
14	Outlet manifold, ISO G1/4”
15	Emergency Hammer
16	Breakable Window
17	Instruction sign, Emergancy Hammer
18	Shut off valve

10.2 PCS-10V10



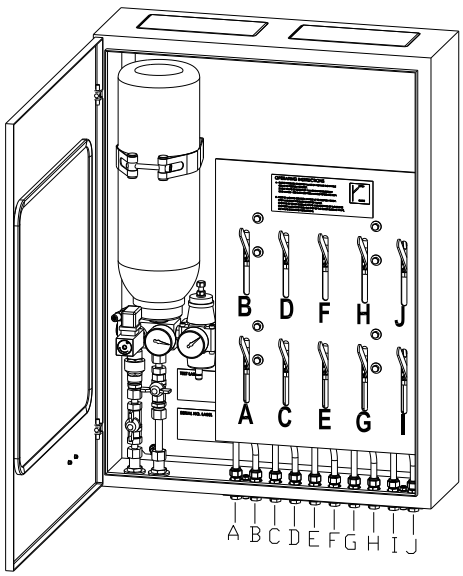
10.3 PCS-10V15



10.4 Outlets in operation

The control cabinet is using different outlets depending of the number of control valves. The following table shows witch outlet connections that are in use for standard configurations.

	A	B	C	D	E	F	G	H	I	J	
PCS-1Vxx	x										Single row
PCS-2Vxx	x		x								
PCS-3Vxx	x		x		x						
PCS-4Vxx	x		x		x		x				
PCS-5Vxx	x		x		x		x		x		
PCS-6Vxx	x	x	x	x	x	x					Double row
PCS-7Vxx	x	x	x	x	x	x	x				
PCS-8Vxx	x	x	x	x	x	x	x	x			
PCS-9Vxx	x	x	x	x	x	x	x	x	x		
PCS-10Vxx	x	x	x	x	x	x	x	x	x	x	



PCS-10V5. Double row with control valves.

11. Storing and transport

Attention!

Protect the cabinet against external forces. To avoid loading at the glass window the cabinet shall be transported in standing position. For lifting, use suitable soft handling equipment to avoid damage on painted surfaces.

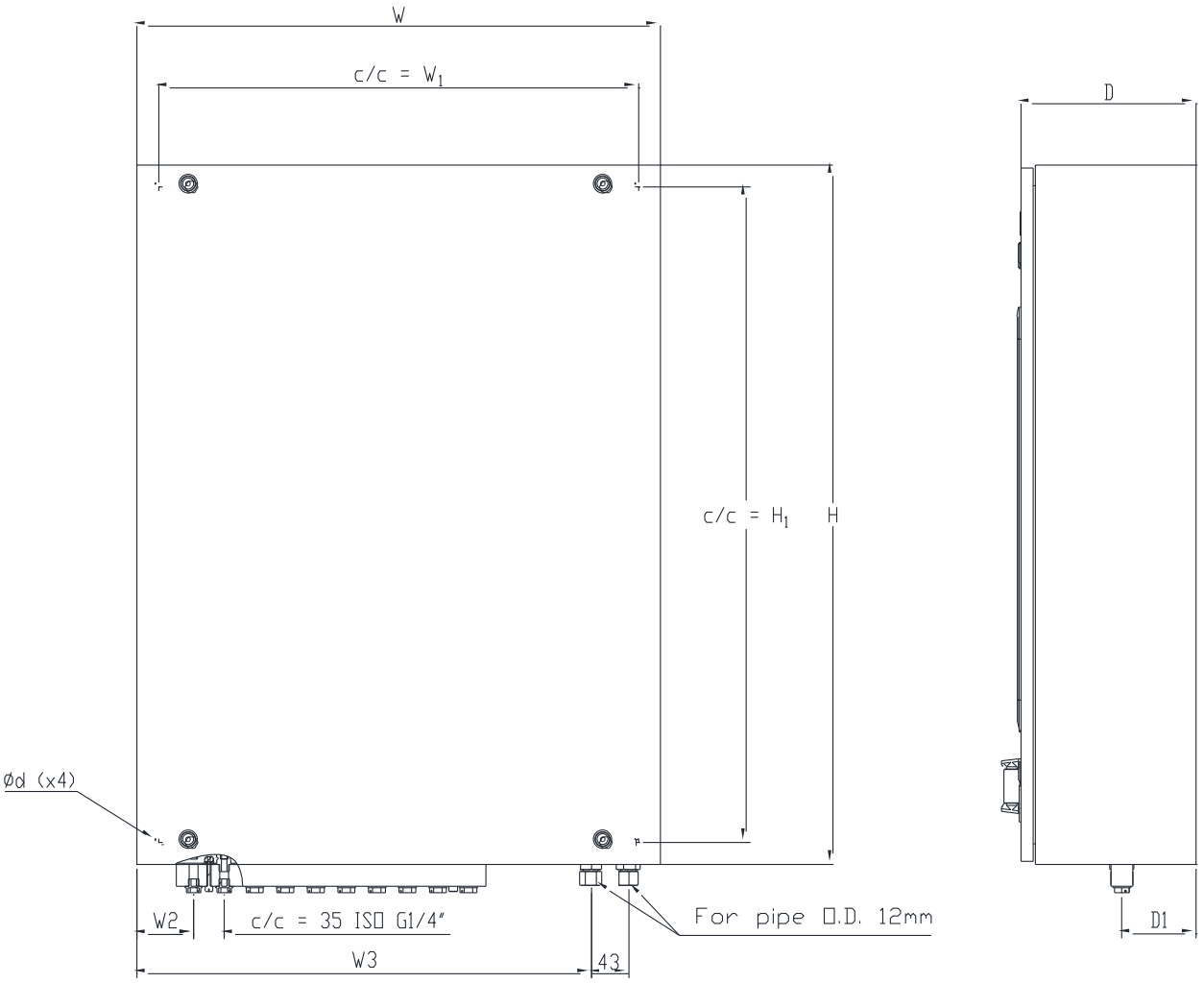
- The cabinet shall be stored indoors well protected from dust and moisture.
- Long time storing must be done in warm warehouses to avoid corrosion attack on unprotected surfaces.
- Plastic protection covers fitted to pipe connection threads are not to be removed until pipe assembly.

12. Location of cabinet

The cabinet shall be located in a space which has a good protection in event of fire and in easy reach for emergency closing of the valves.

13. Cabinet installation

The cabinet is fixed to the bulkhead or wall by screws in the holes in the back of the cabinet.



	Cabinet size (W*H*D)	W_1*H_1*d	W2	W3	D1
New version	600*760*210	560*720*9,25	49,5	501,5	97
	760*760*210	720*720*9,25			
	760*760*300	720*720*9,25			
Old version	600*800*200	550*750*9	58	510	88
	800*800*200	750*750*9			
	800*800*300	750*750*9			

Note! The cabinet is seen from backside.

The pipes are connected to each group or single valve according to piping diagram made by the ship yard. Always follow the rules regarding piping material or other recommendations from classification societies.

Use clean and well deburred pipes. The pipes shall be drawn in such a way that condensation can be avoided.

Attention!

The supply air shall be as dry and clean as possible. Air contaminated with water and dirt will shorten the life time of the system. Draw the pipes in such a way that passes between warm alternating with cold areas are avoided.

13.1 Electrical installations

The pressure switch or pressure switches are electrically connected directly to the DIN connection on the switches. For connection figures see the label on the pressure switch or following product description included.

Cable installations for valve position indicating systems shall follow enclosed separate drawings.

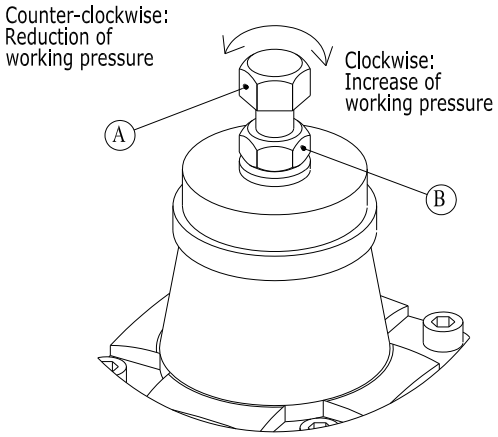
14. Putting into operation

Attention!

Be sure that the related quick closing valves are mounted according to our instructions.
Regional safety instructions must be adhered to.
Before putting the plant into operation, or restarting after repair or modification, always check that the work has been completed.

14.1 Setting of pressure regulator see fig.

- Before applying inlet pressure to filter/regulator turn adjustment screw (A) counter-clockwise to remove all force on regulator spring.
- Apply inlet pressure.
- Turn adjustment screw (A) clockwise to increase and counter-clockwise to decrease the outlet working pressure setting.
- Always approach the desired pressure from a lower pressure. When reducing from a higher to a lower setting, first reduce to some pressure less than that desired, then bring up to desired position.
- Once required pressure is achieved tighten locknut (B) to lock the setting.



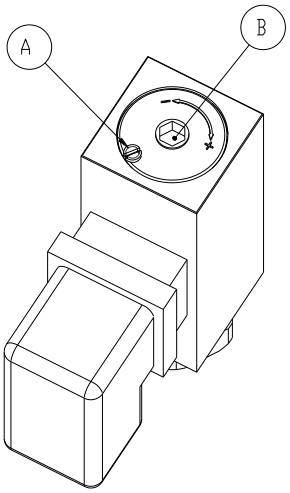
Attention!

Release spring pressure by turning adjustment screw counter clockwise before the system is put under pressure at installation or after repair.

14.2 Setting of alarm points pressure switches

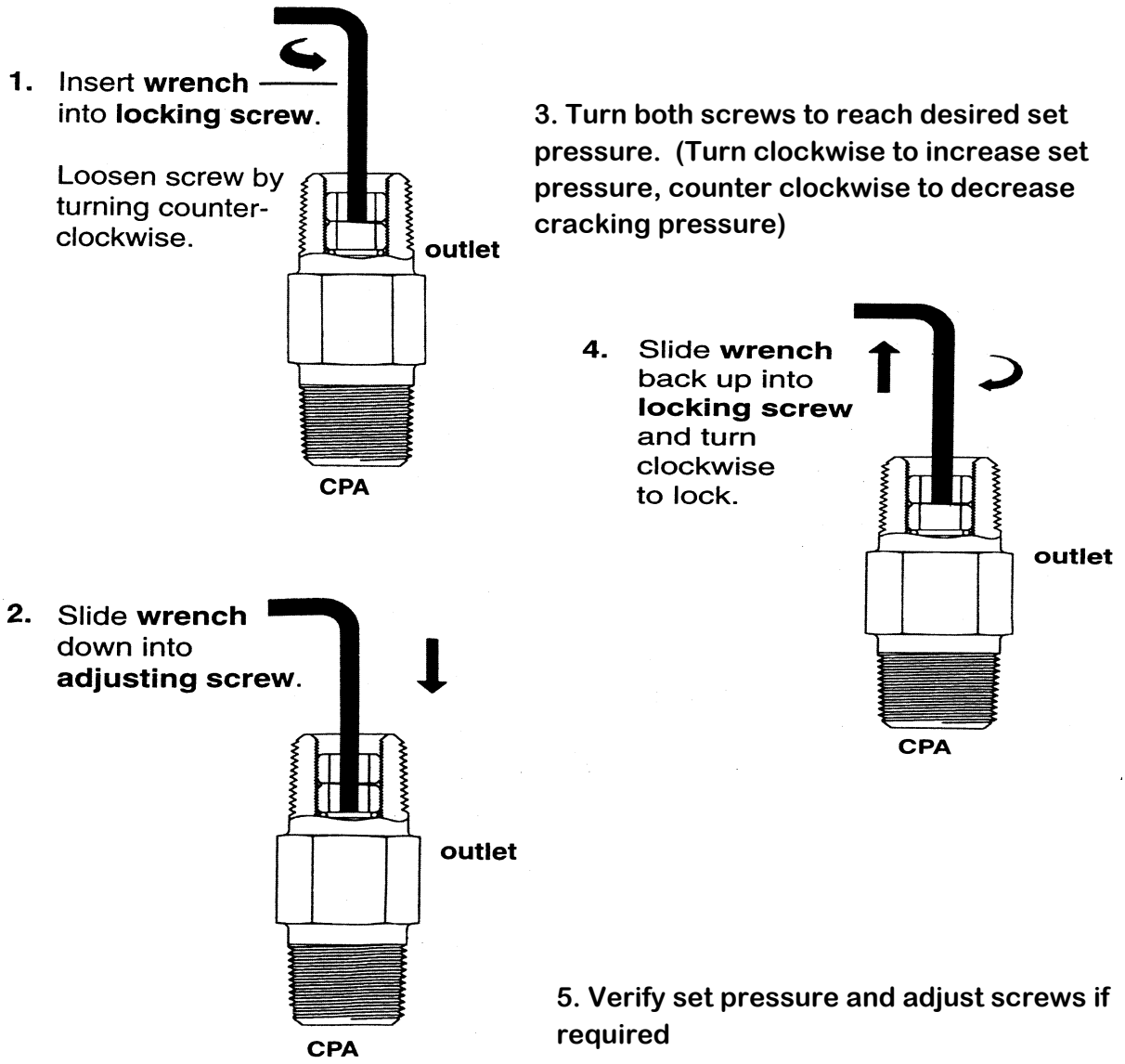
Adjust either lower or upper switching point. The opposite one is then determined by the fixed pressure difference. Use pressure gauge for adjustment.

- Loosen stop screw pos A
- Adjust switching point by means of a 5 mm hexagon spanner. Depending on the sense of rotation the switching points move upwards (clockwise rotation) and downwards (counter-clockwise rotation)
- Retighten the stop screw pos A


A
B

14.3 Adjusting of high pressure safety valve

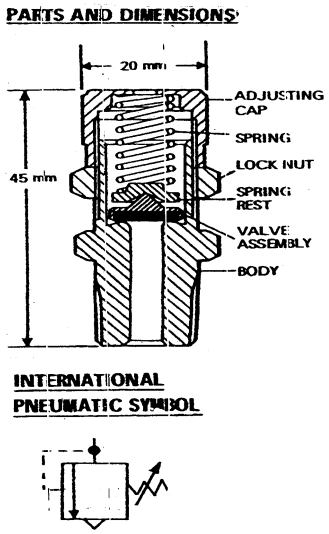
The high pressure safety valve is adjusted at delivery from the factory. If the valve of any reason needs to be readjusted follow the illustration below.



Attention!

The procedure might have to be repeated until the setting valve is satisfactory.

14.4 Adjusting of low pressure safety valve



The low pressure safety valve is adjusted from the factory. If the valve is bleeding at normal system pressure turn the adjusting cap until the valve stops bleeding. Lock the position by the locking ring.

Attention!

The valve is not serviceable, and has to be replaced as one unit, if bleeding not stops after readjusting.

15. Testing of function

- Charge the air vessel with air.
- Put all control handles in closed position (quick closing valves will then close).
- Close the air charging valve in air supply line.
- Check piping system for leakage.
- Put the control valves in position open.
- Reset the quick closing valves to open position. This is done by using the hand wheel on the top of the quick closing valve. See quick closing valve; Installation and Maintenance manual.
- Open the air supply valve and charge the air vessel full.
- Close the air supply valve.
- Operate each control handle and check that corresponding quick closing valve or valves will close.
- Repeat the operation without charging the air vessel. Check that all valves will close also after the second operation.

Attention!

Be aware of the fact that the hand wheel on the quick closing valve will fall down very rapidly when the actuator on the quick closing valve is pressurized.
Also avoid injury by always secure the release system when work is carried out on the quick closing valves or control equipment.
When testing, stay away from moving parts on the valve.

16. Operational position

- Put the control handles in open position
- Open and load the quick closing valves
- Secure the air supply valve in open position.
- Check pressure gauge readings.
- Close the door.

17. Operating instructions

In an emergency situation follow the instruction sign located on outside of the cabinet and break the window. For cabinets without emergency hammer use the key and open the door.

Pull the handle fully down to closed position.

18. Maintenance instructions

Attention!

When the glass window has been broken remove all sharp glass pieces before putting the hands inside the cabinet.

Attention!

The handle must be moved directly down to mechanical stop. If the handle is positioned in another position, the air vessel pressure can get lost through the valve exhaust.

The system requires no special maintenance, but the following recommends to be checked at regular intervals:

18.1 Servicing the filter

Attention!

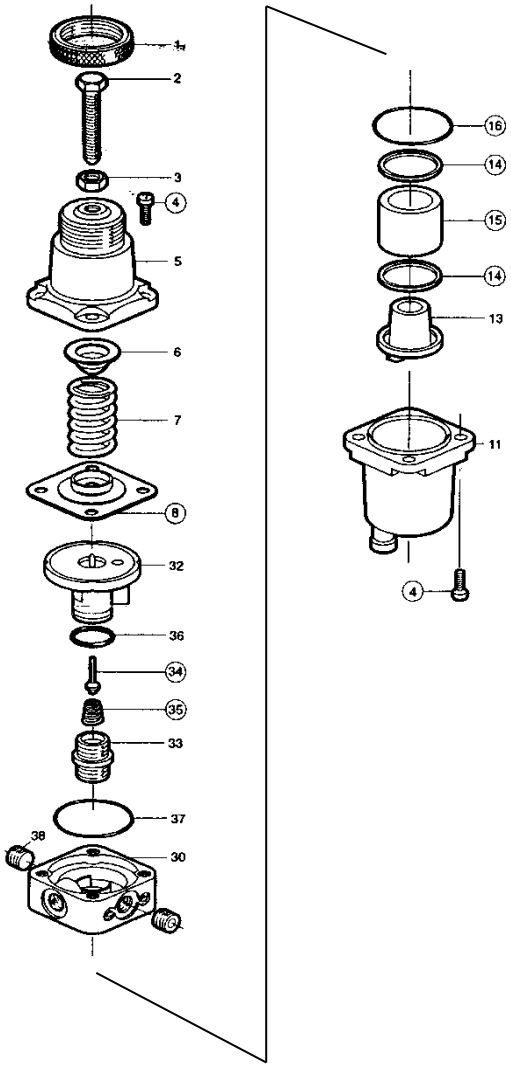
Always vent the air pressure before overhaul or dismantling of any part.
Loosening any part under system pressure can cause injury.

- For manual drain mode, regularly open drain to expel accumulated liquids. Keep liquids below element retainer (13)
- At approximately 6 month intervals it is advisable to remove the bowl assembly by removing the securing screws (4) and unscrew the element retainer (13) to remove the element (15) for inspection.
- Since the direction of air flow is from the inside of the element to the outside, a clean exterior is not an indication of freedom for contamination.
- If the element shows evidence of blockage, replace with new element.
- Clean the element retainer (13) and the upper and lower gaskets (14) before replacing the element –avoiding over tightening of the retainer.
- Inspect the bowl O-ring (16) for damage and renew if necessary.
- Clean and replace filter element when dirty.

Note

Intervals for removing the filter bowl can vary depending on the quality of inlet air and consumption. This operation can be scheduled after experience when the filter element has been inspected for some time.

18.2 Pressure regulator and filter part list.



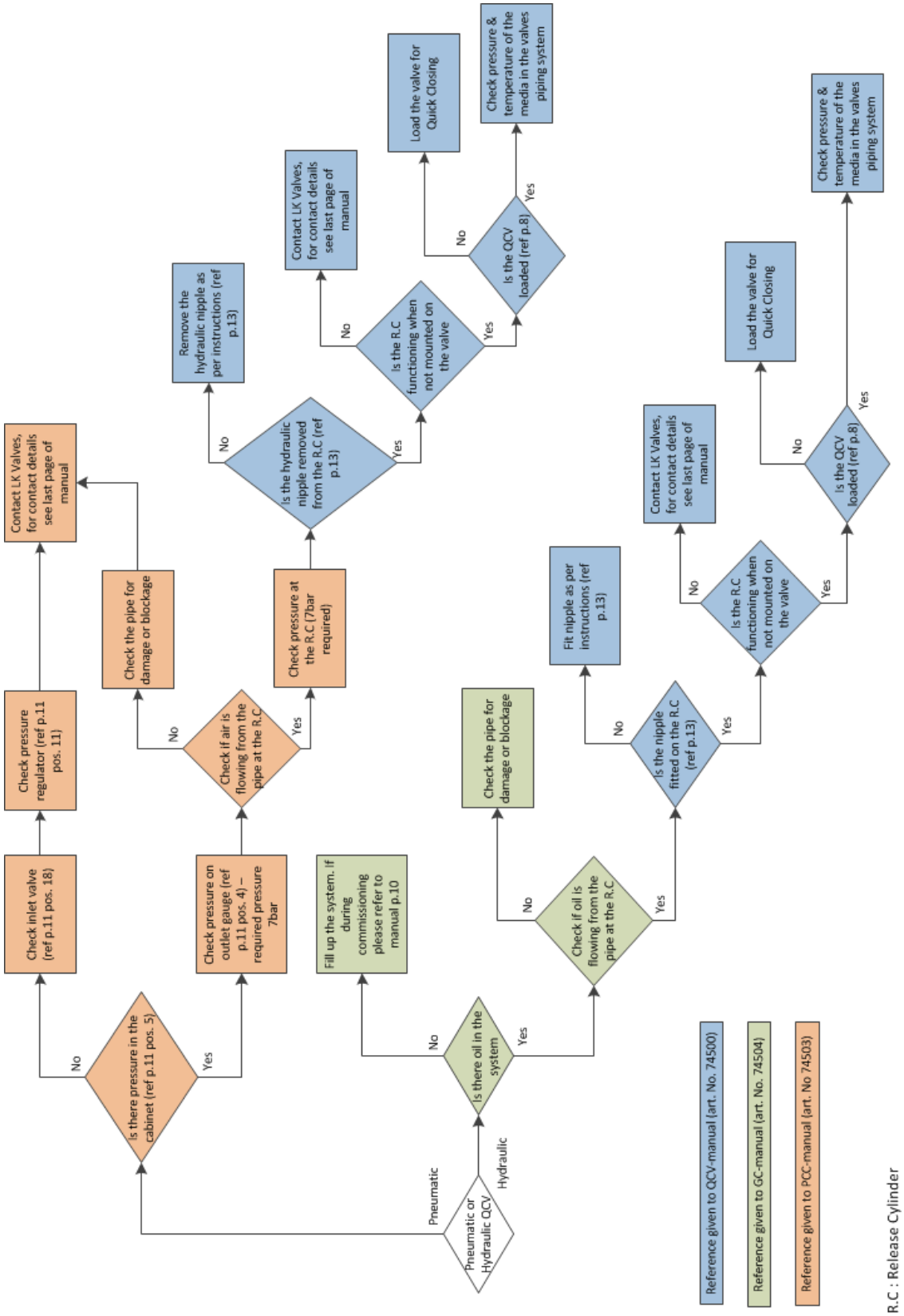
18.3 Function testing

At regular intervals or at a classification survey check the function of the system.

Attention!

When testing the system, be sure that the closing of valves will not have any disturbance for the function of the ship.

19. Troubleshooting scheme



19. Repair kit

Repair kits for the pressure regulator with filter are available.

Repair kit	
Art. No.	**Description**
M78045	Sealing kit
M78046	Filter element
M78050	Set including sealing kit and filter element

20. Contact info

Your Pneumatic Control Station is designed and manufactured by:

Meson AB
Kullsgårdsvägen 27
SE-312 34 Laholm
SWEDEN

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