

This note is intended to clarify the requirements prior to the use of the SFM, so this product can meet the quality level that our customers expect from an Enerpac product.

1.0 USER PROFILE

The use of this product requires the end user to have a good level of hydraulic knowledge.

To achieve a good synchronization between cylinders, the user must be aware of the pump flow, pump maximum pressure, flow control valves regulation range and flow given by each position of the valve knob.

2.0 TECHNICAL CONSIDERATIONS TO SELECT THE CORRECT HYDRAULIC PUMP TO BE USED WITH THE SFM

- Hydraulic pumps need to be electric pump. SFM is not operating with manual pumps.
- Hydraulic pumps must have mounted an adjustable manual relief valve, to be used by the operator during the operation.
- The flow given by the hydraulic pump must be:
 - a. at a minimum of 1.4 l/min [85.43 in³/min], to control 4 cylinders at 0.15-025 l/min [9.15 - 15.25 in³/min] for each of them.
 - b. and at least 25% bigger than the flow required for the cylinders, as a contingency to operate properly the internal compensator of the flow control valves.
- Be sure that the oil is clean. SFM is very sensitive to impurities.

3.0 TECHNICAL CONSIDERATIONS TO SELECT THE CORRECT CYLINDERS TO BE USED WITH THE SFM

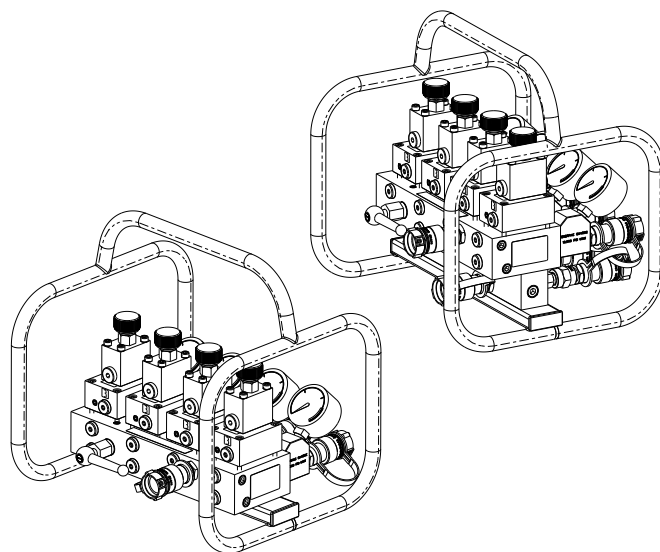
- The working pressure of the cylinders will not exceed 8,700 psi [600 bar], to follow the 80% rule.
- The difference between the working pressure of the cylinders must be less than 2,900 [200 bar].

4.0 TECHNICAL CONSIDERATIONS TO KEEP IN MIND DURING THE OPERATION

- Synchronization tolerance: The accuracy this product can achieve is 10 – 15 mm [0.39 - 0.59 in] among cylinders.
- The SFM allows movements of the connected cylinders together, but not individually.
 - a. If during operation the operator needs to make adjustment movements of each cylinder individually, a sealing valve must be installed on each cylinder. In a standard Split Flow Manifold, the sealing valves withstand the working pressure of the cylinder being moved. However, the added seal valves will withstand the maximum pump pressure, even if the cylinder being moved is operating at low pressure.
 - b. When working with single acting cylinders without stop ring, if the operator performs a synchronized lifting of the load with final positioning, it will not be possible to prevent the cylinders from moving by closing the flow control valves because they are not hermetic. An inadvertent movement of the cylinders can have serious consequences.

Table of content

1.0 IMPORTANT RECEIVING INSTRUCTIONS.....	2
2.0 SAFETY.....	2
3.0 EU DECLARATION OF INCORPORATION	3
4.0 DESCRIPTION	4
5.0 INSTALLATION	4
6.0 REGULATION OF THE SPLIT FLOW MANIFOLD WITH PRESSURE COMPENSATED VALVES	4
7.0 SELECTION OF THE CORRECT HYDRAULIC PUMP AND CYLINDERS.....	5
8.0 OPERATION.....	6
9.0 MAINTENANCE	7
10.0 TROUBLESHOOTING	8
11.0 SPARE PARTS	9



1.0 IMPORTANT RECEIVING INSTRUCTIONS

Visually inspect all components for shipping damage. Shipping damage is not covered by warranty. If shipping damage is found, notify carrier at once. The carrier is responsible for all repair and replacement costs resulting from damage in shipment.

2.0 SAFETY

2.1 Introduction

Read all instructions carefully. Follow all recommended safety precautions to avoid personal injury as well as damage to the product and/or damage to other property. Enerpac cannot be responsible for any damage or injury from unsafe use, lack of maintenance or incorrect operation. Do not remove warning labels, tags, or decals. In the event any questions or concerns arise, contact Enerpac or your local Enerpac distributor for clarification.

If you have never been trained on high-pressure hydraulic safety, consult your distributor or service center for information about an Enerpac Hydraulic Safety Course.

This manual follows a system of safety alert symbols, signal words and safety messages to warn the user of specific hazards. Failure to comply with these warnings could result in death or serious personal injury, as well as damage to the equipment or other property.



The Safety Alert Symbol appears throughout this manual. It is used to alert you to potential physical injury hazards. Pay close attention to Safety Alert Symbols and obey all safety messages that follow this symbol to avoid the possibility of death or serious personal injury.

Safety Alert Symbols are used in conjunction with certain Signal Words that call attention to safety messages or property damage messages and designate a degree or level of hazard seriousness. The Signal Words used in this manual are WARNING, CAUTION and NOTICE.

WARNING

Indicates a hazardous situation that, if not avoided, could result in death or serious personal injury.

CAUTION

Indicates a hazardous situation that, if not avoided, could result in minor or moderate personal injury.

NOTICE

Indicates information considered important, but not hazard related (e.g. messages relating to property damage). Please note that the Safety Alert Symbol will not be used with this signal word.

2.2 Safety Precautions

WARNING

Failure to observe and comply with the following precautions could result in death or serious personal injury. Property damage could also occur.

- Read and completely understand the safety precautions and instructions in this manual before operating the system or preparing it for use.
- Wear appropriate personal protective equipment (PPE) such as safety glasses and face shield. The operator must take precautions against injury due to flying debris caused by possible failure of the tool or workpiece.
- Do not exceed equipment ratings. Overloading causes equipment failure and possible personal injury. The manifolds are designed for a maximum pressure of 10,150 psi [700 bar]. Do not connect a higher pressure pump to the manifold and make sure that all components and cylinders are rated for this pressure.
- During operation, keep hands and fingers away from the work area to avoid personal injury.
- Use hydraulic pressure gauges to verify proper operating pressure in the hydraulic system. Do NOT exceed maximum pressure limits of the lowest rated component in your system.

- Use only certified high pressure hoses and fittings rated at a working pressure of 10,150 psi [700 bar].
- The system operating pressure must not exceed the pressure rating of the lowest rated component in the system. Check the pressure in the gauges in the system to monitor operating pressure. It is your window to what is happening in the system.
- Always read, understand and follow all safety precautions and instructions, including those that are contained within the procedures of this manual.
- On double-acting cylinders, be certain that hoses are connected at BOTH couplers. Never attempt to pressurize a double-acting cylinder if only one hose is connected.
- Fully hand-tighten all couplers. Loose coupler connections will block the flow of oil between the hydraulic pump and the cylinder.
- Hand-tighten adapters and attachments until full thread engagement occurs and the item can no longer be turned by hand. Do not use tools.
- Always be sure that hydraulic pressure is fully relieved before disconnecting hydraulic hoses, loosening hydraulic couplers, or performing any cylinder disassembly or repair procedures.
- Always read, understand and follow all safety precautions and instructions, including those that are contained within the procedures of this manual.
- Shut Off valves should always be closed when no hydraulic hoses are being used on those valves.



Failure to observe and comply with the following precautions could result in minor or moderate personal injury. Property damage could also occur.

- Do not lift hydraulic equipment by the hoses or swivel couplers. Use the carrying handle or strap.
- Keep hydraulic equipment away from flames and heat. Excessive heat will soften packings and seals, resulting in fluid leaks. Heat also weakens hose materials and packings. For optimum performance, do not expose equipment to temperatures of 150°F [65°C] or higher. Protect all hydraulic equipment from weld spatter.
- Immediately replace worn or damaged parts with genuine Enerpac parts. Enerpac parts are designed to fit properly and to withstand high loads. Non-Enerpac parts may break or cause the product to malfunction.



- Hydraulic equipment must only be serviced by a qualified hydraulic technician. For repair service, contact the Enerpac Authorized Service Center in your area.
- To help ensure proper operation and best performance, use of Enerpac oil is strongly recommended.
- Use dust cap(s) when manifold is disconnected from the hose(s). Keep the entire manifolds clean to prolong its life.

3.0 EU DECLARATION OF INCORPORATION



Enerpac declares that this product has been tested and conforms to applicable standards and is compatible to all EU and UK Requirements.

Copies of the EU Declaration as well as the UK Self-Declaration are enclosed with each shipment.

2.3 Additional Hydraulic Safety Precautions



Failure to observe and comply with the following precautions could result in death or serious personal injury. Property damage could also occur.

- Do not remove or disable the hydraulic pump relief valve. Never set the relief valve to a higher pressure than the maximum rated pressure of the hydraulic pump.
- To avoid personal injury and equipment damage, make sure all hydraulic components are rated for at least 10,150 psi [700 bar] working pressure.
- Make sure that all system components are protected from external sources of damage, such as excessive heat, flame, moving machine parts, sharp edges and corrosive chemicals.
- Do not handle pressurized hoses. Escaping oil under pressure can penetrate the skin. If oil is injected under the skin, see a doctor immediately.
- Always do a visual inspection of the system before placing it into operation. If any problems are found, do not use the manifolds. Have the equipment repaired and tested before it is returned to service.
- Never use a manifold that is leaking oil. Do not use a manifold that is damaged, altered or in need of repair.
- Do not loosen plugs, relief valves or any other hydraulic components unless hydraulic pressure is completely relieved.

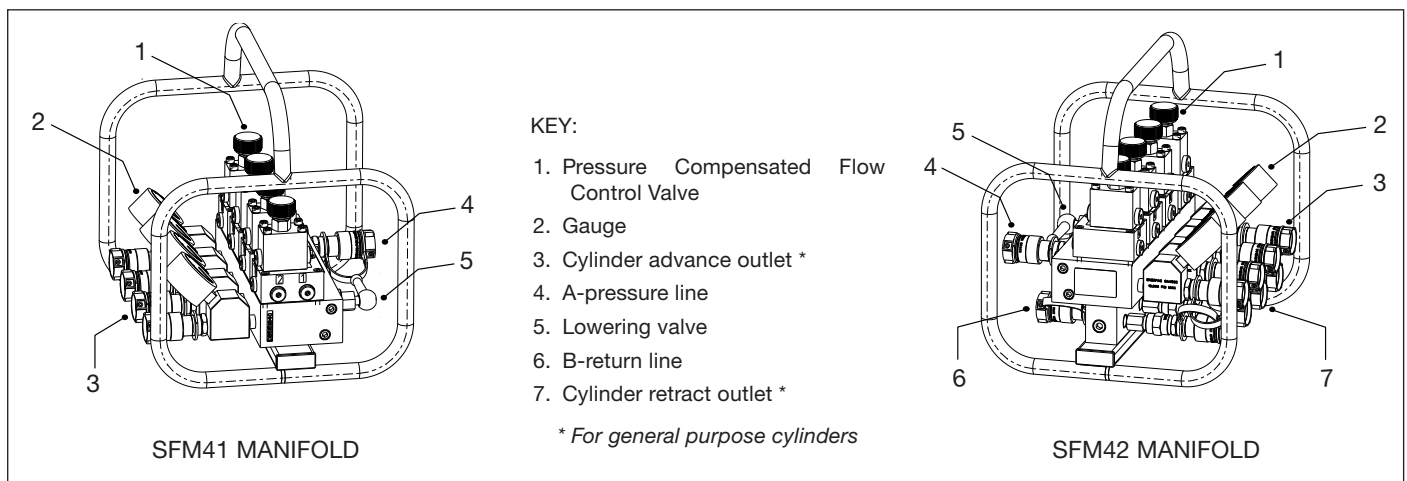


Figure 1, Manifolds Main Components

4.0 DESCRIPTION

The Split Flow Manifold (SFM) offers an economical solution for basic controlled lifting applications. The system enables a single operator to control a maximum of 4 lifting points from a single device.

There are two different manifolds for single acting or double acting cylinders applications (see Figure 1), with a maximum working pressure of 10,150 psi [700 bar].

The speed of the cylinder can be controlled during the lifting and lowering procedure with the pressure compensated flow control valve. The pressure is displayed in the gauge.

The Split Flow Manifold has the following main elements (refer to Figure 1, 2 & 3 for references):

1. Pressure Compensated Flow Control Valve: This valve is designed to provide a constant volume flow rate independent of the pressure required upstream of the valve in the outlet.
2. Gauge: Every output is supplied with a gauge up to 10,000 psi [690 bar] of pressure. The operator can check the pressure in the outlet line.
3. Cylinder advance outlet: Oil flow outlet that must be connected to the cylinder's advance oil flow.
4. A-pressure line: Oil flow inlet. The hydraulic pump outlet must be connected to this point.
5. Lowering valve. This valve needs to be closed during lifting process (clockwise) in both single and double acting cylinders applications. It only needs to be opened during lowering process.
6. B-return line: For double acting hydraulic pumps, the return line must be connected to this outlet.
7. Cylinder retract outlet: For double acting cylinders, this outlet must be connected to the cylinder's retract oil flow (i.e. the small chamber for general purpose cylinders).

In the previous paragraphs, the points 6 & 7 refer only to the manifold SFM42. This manifold is installed for double acting cylinders applications.

5.0 INSTALLATION

5.1 SFM41

1. Connect the hydraulic pump pressure line to the inlet A-hydraulic pump.
2. Connect each outlet A-cylinder to the corresponding single acting cylinder coupler.
3. Fully hand-tighten all couplers. Loose coupler connections will block the flow of oil between the hydraulic pump and the cylinder.

Refer to Figure 2 for references.

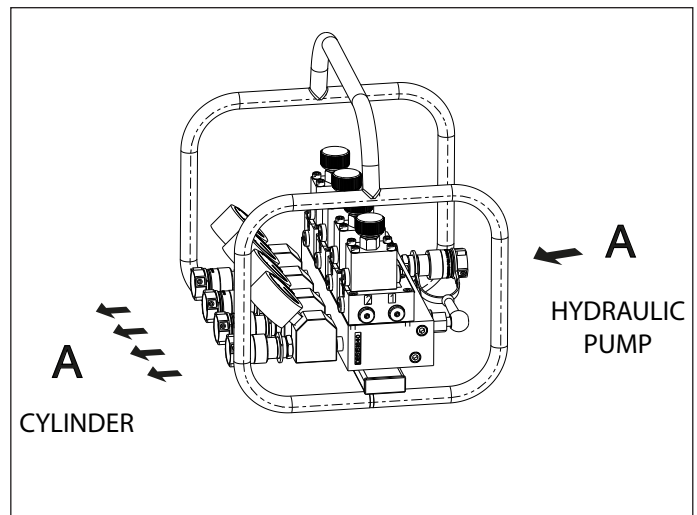


Figure 2, Connections Scheme for SFM41 Manifold

5.2 SFM42

1. Connect the hydraulic pump pressure line to the inlet A-hydraulic pump.
2. Connect each outlet A-cylinder to the corresponding double acting cylinder advance port coupler (general purpose cylinder case).
3. Connect each outlet B-cylinder to the double acting cylinder on the retract port coupler (general purpose cylinder case).
4. Connect the hydraulic pump return line to the inlet B-hydraulic pump.

Refer to Figure 3 for references.

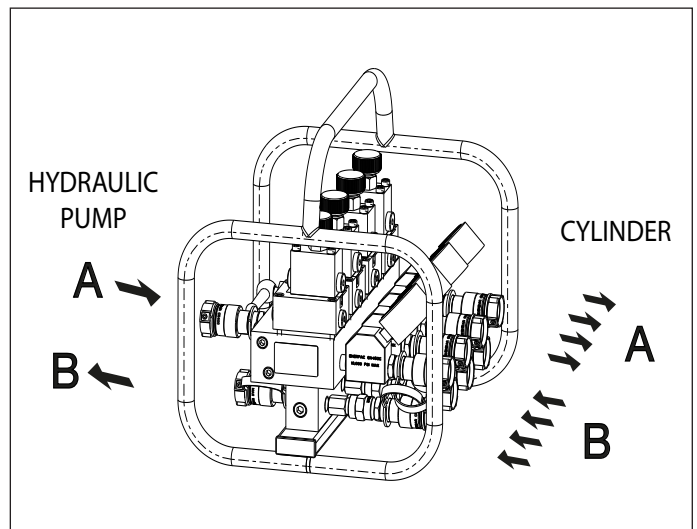


Figure 3, Connections Scheme for SFM42 Manifold

6.0 REGULATION OF THE SPLIT FLOW MANIFOLD WITH PRESSURE COMPENSATED FLOW CONTROL VALVE

The Split Flow Manifold has four pressure compensated flow control valves installed on top of the check valve assembly plates. These valves are mounted in a rectifier bridge check valve and control the flow delivered. They always operate in the same flow direction allowing to set up the flow required upstream in the outlets in lifting and lowering applications with the same knob (refer to Figure 4). There is a gauge installed in every outlet to read the pressure in the line.

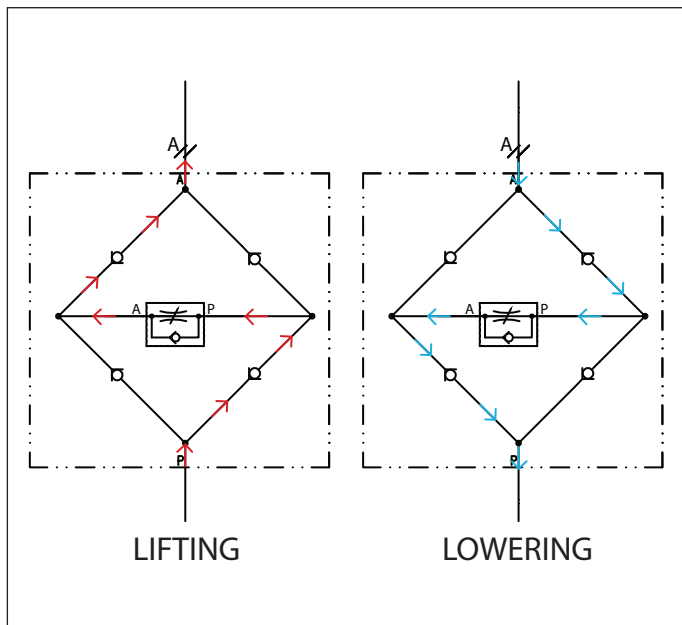


Figure 4, Flow control valve flow chart

6.1 Basis

The Split Flow Manifold is composed of one inlet from an oil source normally a hydraulic pump, and four outlets. Every outlet can control the oil flow of the cylinders in each of two possible operations, lifting and lowering the load.

This is possible because each outlet has on board a check valve rectifier bridge with a flow compensated valve that allows to keep the direction of the flow through the flow control valve in both operations, lifting and lowering the load.

See hydraulic pump specifications when connecting it to this manifold (refer to section 4). All hydraulic pumps must have a manual relief valve mounted (cartridges relief valve or rupture disk valve type are not valid). The pressure range of the relief valve should be able to reach in its maximum flow available a working pressure not higher than 10,730 [740 bar], depending on the relief valve internal pressure drop.

The flow control valve has a graduated adjustment knob, as follows:

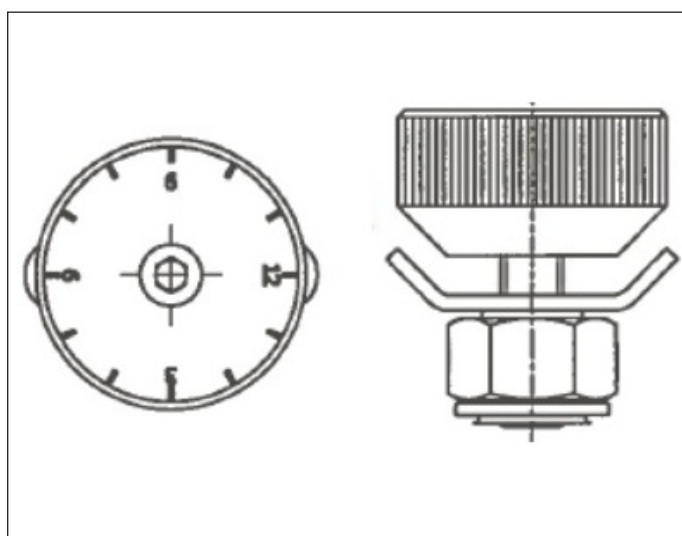


Figure 5, Flow control valve's adjustment handle

6.2 Table of regulation and flow adjustment on the rotary knob

REVOLUTIONS	Flow l/min	Flow in ³ /min
0,5	0,15	9.15
1	0,45	27.5
1,5	0,75	45.8
2	0,9	54.9
2,5	1,3	79.3
3	1,95	119
3,5	3,6	219.7
4	5,6	341.7
4,5	8,35	509.6
OPEN	10,3	628.5

NOTICE

These flow rate values are for reference only. Adjusting the knob of the 4 flow control valves to the same position does not guarantee the same flow to all cylinders. During movement, fine adjustments must be made independently around the selected position to ensure synchronization of the cylinders within the working tolerance.

CAUTION

Flow control valves must be regulated so that the oil flow required by the cylinders is less than the flow provided by the pump. Excessive opening of the flow control valve on one of the cylinders can cause the entire pump flow to go to this single cylinder, with the associated risks that this dangerous situation entails.

7.0 SELECTION OF THE CORRECT HYDRAULIC PUMP AND CYLINDERS

- Hydraulic pumps need to be electric pump, gasoline pump or pneumatic air driven rotational pump. System is not operating with manual or pneumatic piston alternative pumps.
- Hydraulic pumps must have mounted an adjustable manual relieve valve, to be used by the operator during the operation.
- Choose the hydraulic pump according to the flow required. The flow given by the hydraulic pump must be:
 - At a minimum of 1.4 l/min [85.43 in³/min], to control 4 cylinders at 0.15-0.25 l/min [9.15 - 15.25 in³/min] for each of them.
 - At least 25% higher than the flow required for the cylinders, as a contingency to operate properly the internal compensator of the flow control valve.
- Pressure per outlet should be identified prior to operation (lifting and/or lowering):
 - When selecting cylinders, make sure that working pressure does not exceed 8,700 psi [600 bar] to avoid working with the system at maximum capacity. The pump safety relief valve must be set above the working pressure of the cylinders. It is recommended that there is a difference of 1,500 psi [100 bar] between the working pressure of the cylinders and the pump safety

valve.

- b. The smaller the pressure difference among outlets, the better the precision.

5. The difference between the working pressure of the cylinders must be less than 2,900 psi [200 bar].
6. Be sure that oil is clean, SFM is very sensitive to impurities. Oil cleanliness should be maintained from ISO 20/17/14 to 18/15/12. If oil develops a milky, cloudy or dark appearance, it should be changed immediately.

8.0 OPERATION

NOTICE

It is mandatory that the operator has a full understanding of all instructions, safety precautions and applicable safety regulations before operating any high force hydraulic equipment. If questions or concerns, contact your local Enerpac Distributor or Authorized Service Center.

The use of this product requires the end user to have a good level of hydraulic knowledge. To achieve good synchronization between cylinders, the user must know the pump flow rate, the maximum pump pressure, the range of regulation of the flow control valves and the flow rate given by each valve knob position.

1. Operate cylinders without load, once the flow has been adjusted (refer to sections 6.1 and 6.2), and run a full stroke journey to exhaust all air and refill all circuit.
2. Cylinders must be preloaded to the same pressure before starting the lifting operation. The preload value should be big enough to assure the contact between the cylinders and the load with some force, but not big enough to move the load.
3. Start operating the cylinders with load. After the first millimeters of stroke are done, check if controlled movement is under tolerance (if not, proceed to adjust it with the pressure compensated flow control valves).
4. Tolerance between points must have a maximum of 2,900 psi [200 bar] difference of working pressure (the smaller the pressure difference among outlets, the better the precision).
 - a. Synchronization tolerance: The accuracy this product can achieve is 10 to 15 mm [0.4-0.6 in] among cylinders.
 - b. Operator must still monitor the lift in small increments, measuring the stroke and making adjustments to the flow control valves as necessary.

The SFM allows movements of the connected cylinders together, but not individually.

CAUTION

If during operation the operator needs to make adjustment movements of each cylinder individually, a sealing valve must be installed on each cylinder. In a standard Split Flow Manifold, the sealing valves withstand the working pressure of the cylinder being moved. However, the added seal valves will withstand the maximum pump pressure, even if the cylinder being moved is operating at low pressure.

When working with single acting cylinders without stop ring, if the operator performs a synchronized lifting of the load with final positioning, it will not be possible to prevent the cylinders from moving by closing the flow control valves

because they are not hermetic. An inadvertent movement of the cylinders can have serious consequences.

8.1 Lifting and lowering the cylinder

The Split Flow Manifold is designed to work with single or double acting cylinders depending on the SFM model chosen.

Basic operations have been designed for 4 cylinders. Nevertheless, 8 cylinders can be operated by installing two Split Flow Manifolds, operated with one single hydraulic pump.

NOTICE

Keep in mind that to control 8 cylinders with the SFM will require special attention.

Operate the hydraulic pump to advance and retract the cylinder. Shift the directional valve on the hydraulic pump to the advance position and run the hydraulic pump to advance the cylinder. To retract the cylinder, shift the directional valve to the retract position.

8.1.1 SFM41 Single acting cylinders:

Refer to Figure 7 for hydraulic scheme details.

- Advance the cylinder: Select in the rotary knob of each flow control valve the desirable flow per outlet. Set the relief valve on the main hydraulic pump 1,500 - 2,900 psi [100 - 200 bar] higher than the working pressure of the cylinders. Operate the hydraulic pump and directional valve so that oil flow is directed at a controlled rate from the hydraulic pump to the Split Flow Manifold inlet "P". Be sure the lowering valve is manually closed clockwise prior to operation. Oil flow will be directed from outlet "A" to the advance port of the cylinder to extend the plunger (see Figure 2).
- Retract the cylinder: Select in the rotary knob of each flow control valve the desirable flow per outlet. Shift the directional valve of the hydraulic pump to the retract position and run the hydraulic pump to send oil flow directly to the reservoir. Open the lowering valve anticlockwise once the movement has just started. If motion needs to be paused during the lowering process, close the lowering valve rotating the lever clockwise. This valve must be reopened to resume the lowering movement.

Motion can be continued until the desirable lowering motion is concluded. After finishing the lowering process, close the lowering valve and shift the main directional valve to neutral position in the hydraulic pump.

8.1.2 SFM42: double acting cylinders.

Refer to Figure 8 for hydraulic scheme details.

- Advance the cylinder: Select in the rotary knob of each flow control valve the desired flow per outlet. Set the relief valve on the main hydraulic pump 1,500 - 2,900 psi [100 - 200 bar] higher than the working pressure of the cylinders. Operate the hydraulic pump and directional valve so that oil flow is directed at a controlled rate from the hydraulic pump to the Split Flow Manifold inlet "P". Be sure the lowering valve is manually closed clockwise prior to operation. Oil flow will be directed from outlet "A" to the advance port of the cylinder to extend the plunger (see Figure 3). Oil flow will return to tank through port "B".
- Retract the cylinder: Select in the rotary knob of each flow control valve the desired flow per outlet. Set the relief valve of the hydraulic pump to a low-pressure value from 725 - 1,500 psi [50 - 100 bar]. Shift the directional valve of the hydraulic pump to the retract position and run the hydraulic pump to send oil flow directly to the manifold port "B". Open the lowering valve anticlockwise at the same time. If motion

needs to be paused during the lowering process, close the lowering valve rotating the lever clockwise and shift the directional valve of the hydraulic pump to the neutral position.

Motion can be continued until the desirable lowering motion is concluded. After finishing the lowering process, close the lowering valve and shift the main directional valve to neutral position in the hydraulic pump.

NOTICE

In case the lowering valve is opened before running the hydraulic

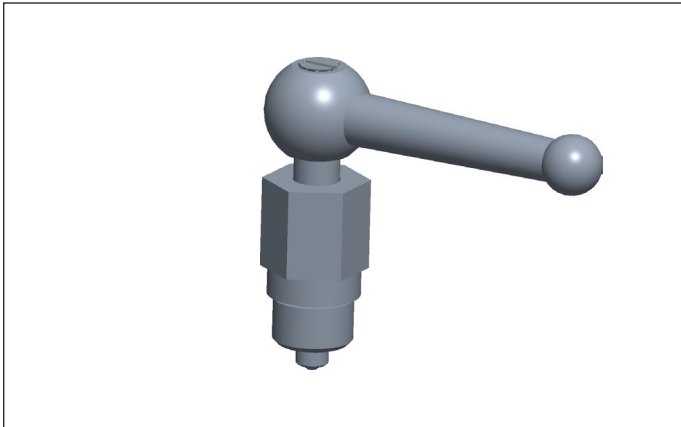


Figure 6, Lowering valve

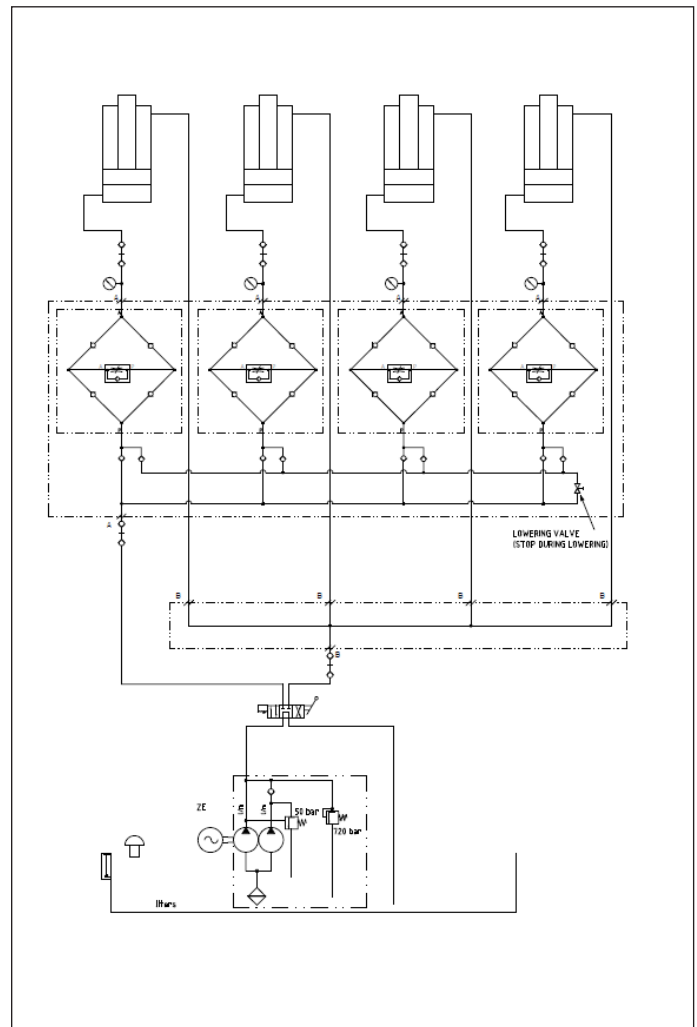


Figure 8, SFM42 Hydraulic Scheme

pump, pressures of the load-bearing cylinders will equalize to the same pressure. This can result in small adjustment movements of the cylinders.

9.0 MAINTENANCE

Follow these maintenance instructions for long-term storage:

1. Use only Enerpac oil with the manifolds. The use of any other oil may invalidate your warranty.
2. Use dust cap(s) when manifold is disconnected from the hose(s). Keep the entire manifold clean to prolong its life.
3. Store manifold in a clean and dry place.
4. Wipe all metal parts with oil to protect from corrosion. This will help protect the manifold from corrosion.

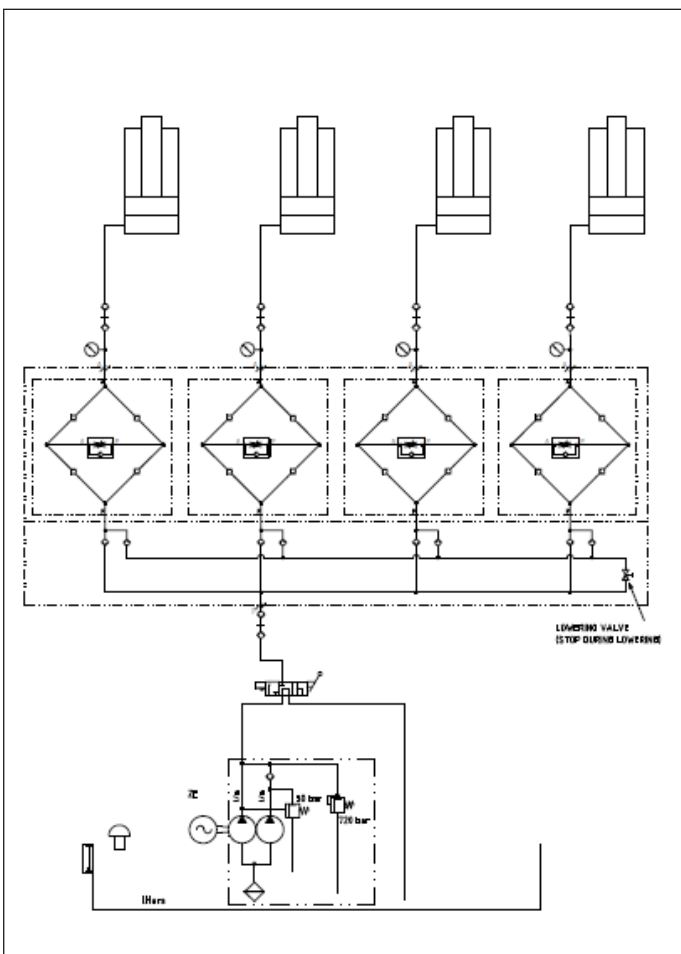


Figure 7, SFM41 Hydraulic Scheme

10.0 TROUBLESHOOTING

Refer to the troubleshooting chart for a list of typical problems and possible causes during operation. The troubleshooting chart is not all-inclusive, and should be considered only as an aid to help diagnose the most common problems. For repair service, contact your local Authorized Enerpac Service Center.

Only qualified hydraulic technicians should service the Split Flow Manifold or system components.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Not able to lift or lower load in a controlled manner.	A. Trapped air in manifold and valves prior to operation. B. Flow at the different outlets is not equalized. C. Wrong set and adjustment of the flow on the different outlets before operating on the manual actuator of each outlet. D. High deviation of flows in controlled process. E. The flow given by the hydraulic pump is not 25% higher than the flow required for the cylinders. F. The difference between the working pressure of the cylinders is higher than 2,900 psi [200 bar]. G. Cylinders are not preloaded to the same pressure before starting operation.	A. Bleed air from hydraulic pump to all oil inlet, fully opening compensated flow control valves to exhaust all air from valves. Repeat the same procedure when retracting the cylinders, exhausting air to tank. B. Check the correct flow required in the check valve (10-15 mm / 0.39 - 0.59 in of synchronization tolerance among cylinders). C. Set the correct flow required in each outlet according to the adjustment in the rotational manual actuator. Refer to paragraph 6.2. D. Make the correct flow adjustment before starting the motion. E. Make the correct selection of hydraulic pump before starting the motion. F. Make the correct selection of cylinders before starting the motion. G. Perform the preloading step before starting a lifting motion.
Not able to lift load.	A. High pressure differences between hydraulic pump and inlets/ outlets.	A. Make the correct selection of cylinders before starting the motion.
Unable to lift loads in a controlled manner. Pressure compensated flow control valves work out of specifications.	A. System is not able to control the working pressure in each outlet.	A. Make the correct selection of cylinders before starting the motion.
Load is lowering when the system is in "hold load".	A. Pressure compensated flow control valves are not synchronizing.	A. Filter oil according to cleanliness level NAS class 6 (ISO 20/17/14 to 18/15/12). Change the oil regularly by taking an oil sample and sending it to a certificated laboratory for cleanliness test.
Load is lowering or lifting when the system is in "hold load" due to an internal hydraulic connection among the outlets. This connection is caused by leaking of the check valves located in the rectifier bridge because of contamination on these.	A. The bridge rectifier of the check valves does not maintain an independent oil channel between them. B. Use of oil without control in the degree of contamination and its specifications.	A. Filter oil according to cleanliness level NAS class 6. Change the oil regularly by taking an oil sample and sending it to a certificated laboratory for cleanliness test. B. Only use hydraulic pumps with clean oil, according to cleanliness level NAS class 6. Change the oil regularly by taking an oil sample and sending it to a certificated laboratory for cleanliness test.
When the process stops during a lifting/lowering operation, the pressure is equalizing in between cylinders or lifting points.	A. Lowering valve was not closed. B. Internal drain in check valves	A. Close the lowering valve clockwise. B. Stop motion and service parts.
System is not lifting the load.	A. Hydraulic pump does not give enough pressure to the cylinders of lifting points.	A. Set the safety valve of the hydraulic pump 1,500 - 2,900 psi [100 - 200 bar] greater than the working pressure of the cylinders.
System is not lowering the load.	A. Lowering valve closed.	A. Open the lowering valve anticlockwise

11.0 SPARE PARTS

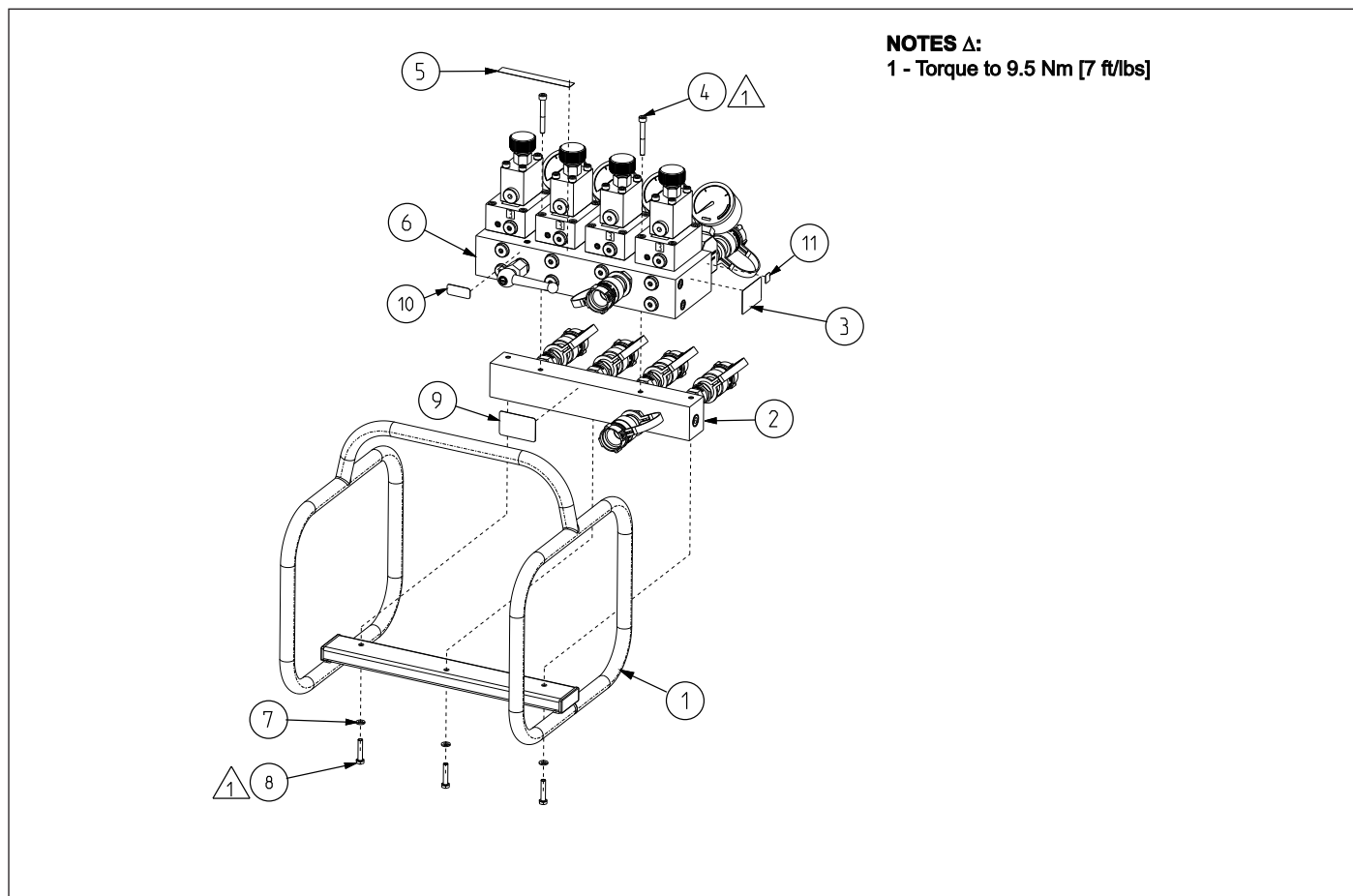


Figure 9, Split Flow Manifold assembly

ITEM	DESCRIPTION	QTY.	SFM41	QTY.	SFM42
1	Frame	1	DB0110201	1	DB0110201
2	Assembly manifold - Retract (see Figure 9)	-	-	1	DB9317900
3	Decal to Split Flow Manifold	1	DB9419026	1	DB9420026
4	Shocked head cap screw	-	-	2	CBE633028-1A
5	Enerpac primary logo	1	DB9437026	1	DB9437026
6	Assembly manifold Split Flow Manifold (see Figure 9)	1	DB9448900	1	DB9448900
7	Lock washer	2	CCE1060108-5A	2	CCE1060108-5A
8	Shocked head cap screw	2	CBE625046-1B	2	CBE625046-1B
9	Decal to Split Flow Manifold - Warning	-	-	1	DB9461026
10	Decal to Split Flow Manifold - Lowering valve	1	DB9462026	1	DB9462026
11	Decal-UKCA	1	DM1970026	1	DM1970026

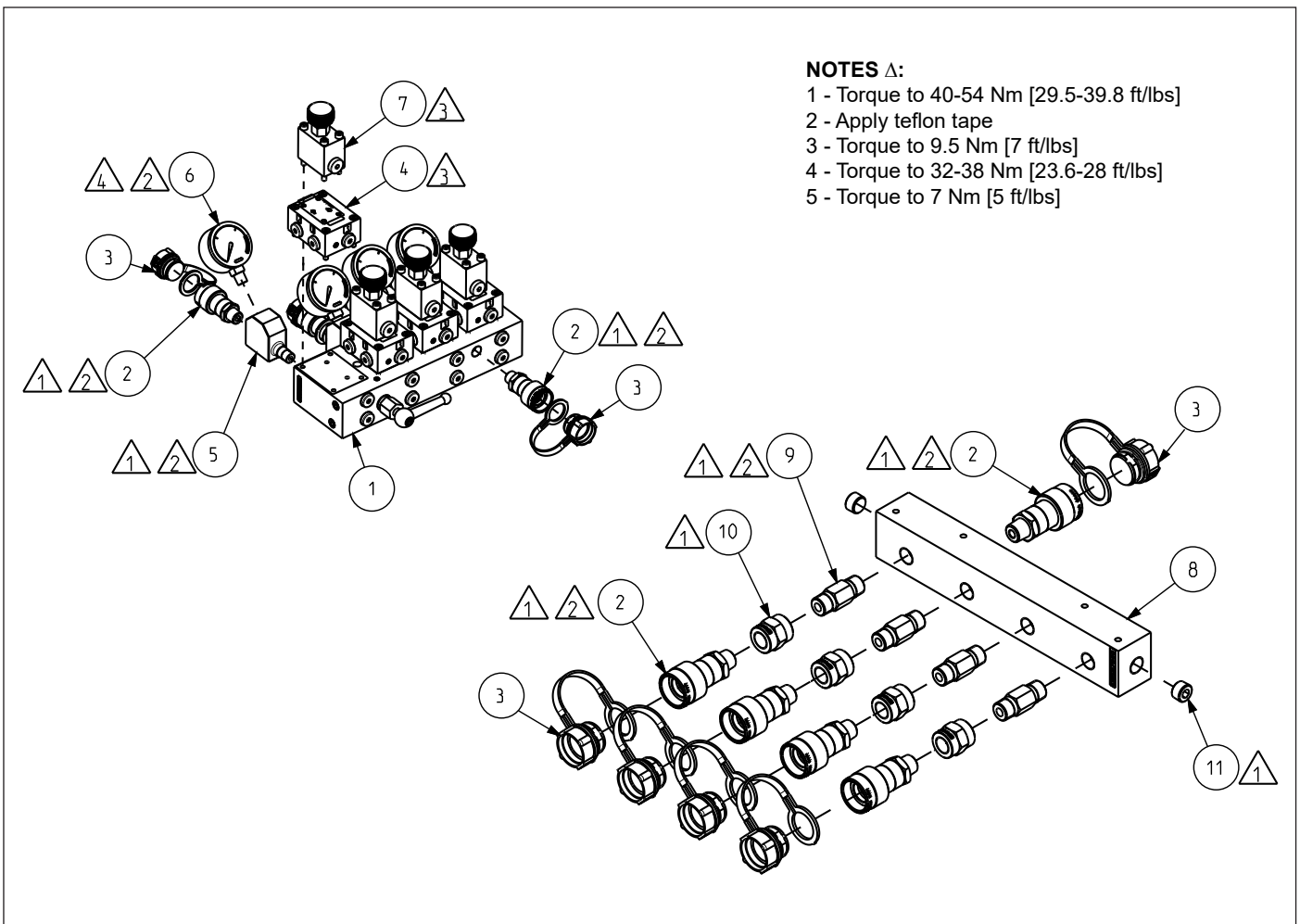


Figure 10, SFM41 and SFM42 assembly

ITEM	DESCRIPTION	QTY.	SFM41	QTY.	SFM42
1	Assembly base plate (see Figure 10)	1	DB9447900	1	DB9447900
2	Female coupler	5	DC1389900	10	DC1389900
3	Dust cup	5	M229900	10	M229900
4	Assembly check valves manifold (see Figure 11)	4	DB9408900-1	4	DB9408900-1
5	Gauge adaptor	4	GA45	4	GA45
6	Gauge	4	G2535L	4	G2535L
7	Pressure Compensated flow control valve	4	DB1272662	4	DB1272662
8	Retract manifold	-	-	1	DB5117840
9	NPTF fitting	-	-	4	DA10974096
10	High pressure fitting	-	-	4	CJ649096
11	Plug-flush	-	-	2	A1009245
N/A	O-Ring 6,86 X 1,78 NBR-90 SH P990 (included in item 7)	4	DB3050903	4	DB3050903

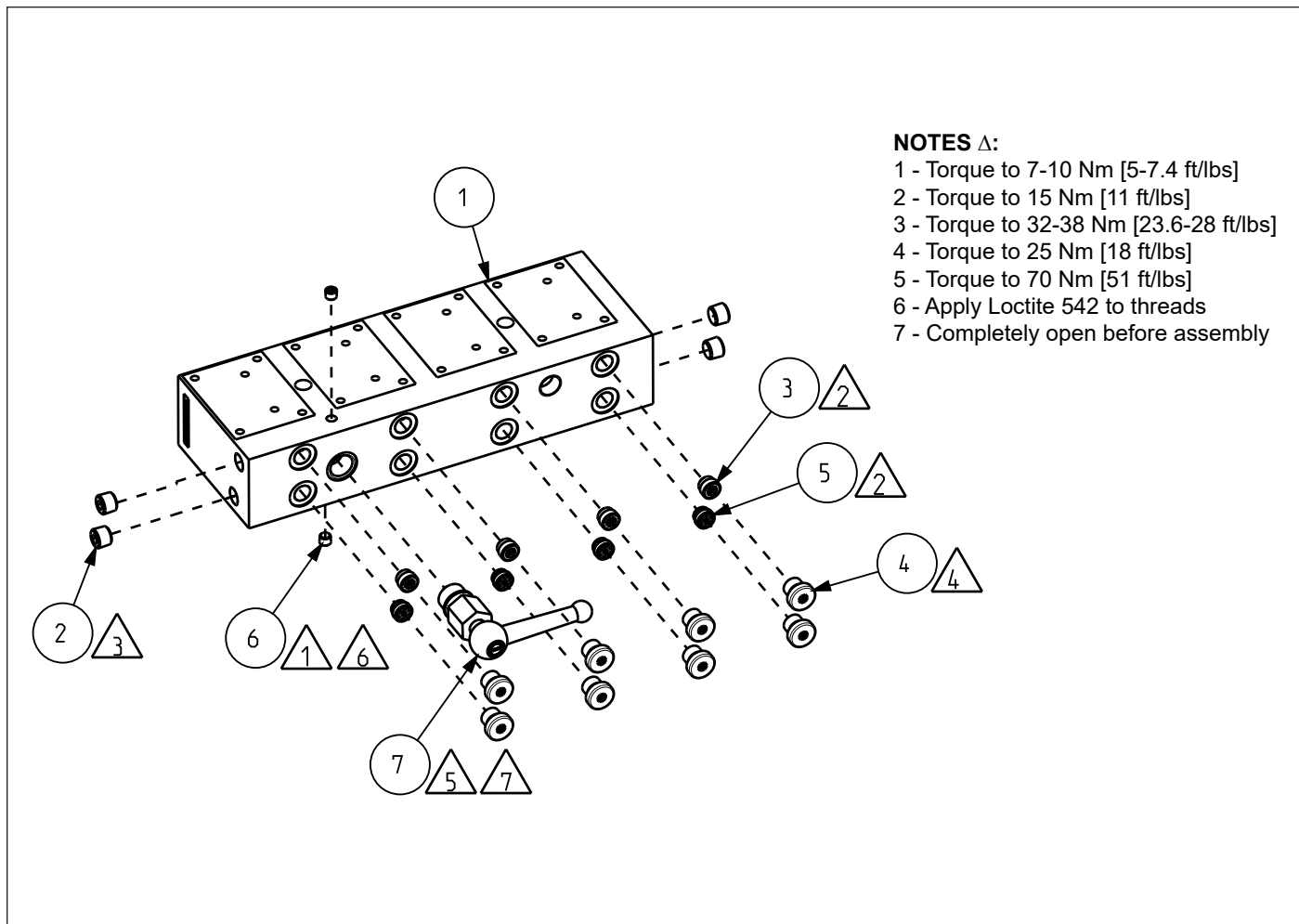


Figure 11, Assembly check valves manifold

ITEM	DESCRIPTION	QTY.	CHECK VALVE
1	Manifold 4 points cq22 with lowering valve	1	DB5151840
2	Plug-flush Hex 18.00	4	A1008245
3	Cartridge check valve	4	RB1 *
4	Plug perflex	8	DB2143006
5	Check valve	4	RK1 ♦
6	Plug-flush Hex 27.00	2	A1006245
7	Handle of AZ5200 Larzep	1	DB1277662
* 7 mm / 0.3 in hex head wrench required. ♦ W7-223/23 required to remove.			

NOTES Δ:

- 1 - Apply teflon tape
- 2 - Torque to 9.5 Nm [7 ft/lbs]
- 3 - Torque to 7-10 Nm [5-7.4 ft/lbs]
- 4 - Torque to 15 Nm [11 ft/lbs]
- 5 - Torque to 25 Nm [18 ft/lbs]

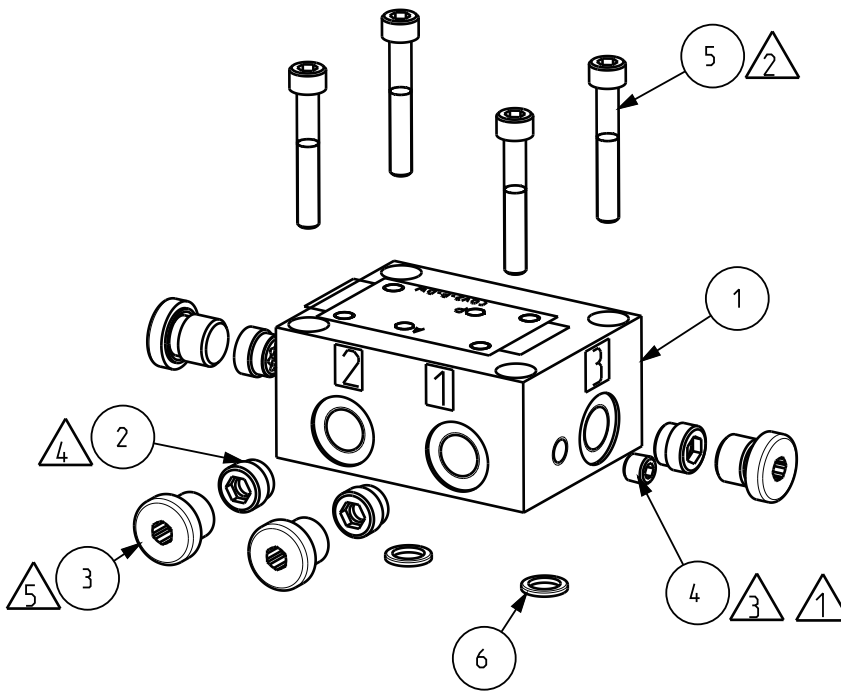


Figure 12, Assembly check valves manifold

ITEM	DESCRIPTION	QTY.	CHECK VALVE
1	Manifold for CQV2-P-DW and 4 check valves	1	DB5144840-1
2	Cartridge check valve	4	RB1 *
3	Plug perflex	4	DB2143006
4	Plug-flush	1	A1006245
5	Screw-SHCS	4	CBA629028-1A
6	Kant seal	2	025-DKAR00012-N9

* 7 mm / 0.3 in hex head wrench tooling required