

HCV...X21 CONTROL VALVES

MANUAL



In this supporting document, general information about the HCV...X21 control valve was shown.

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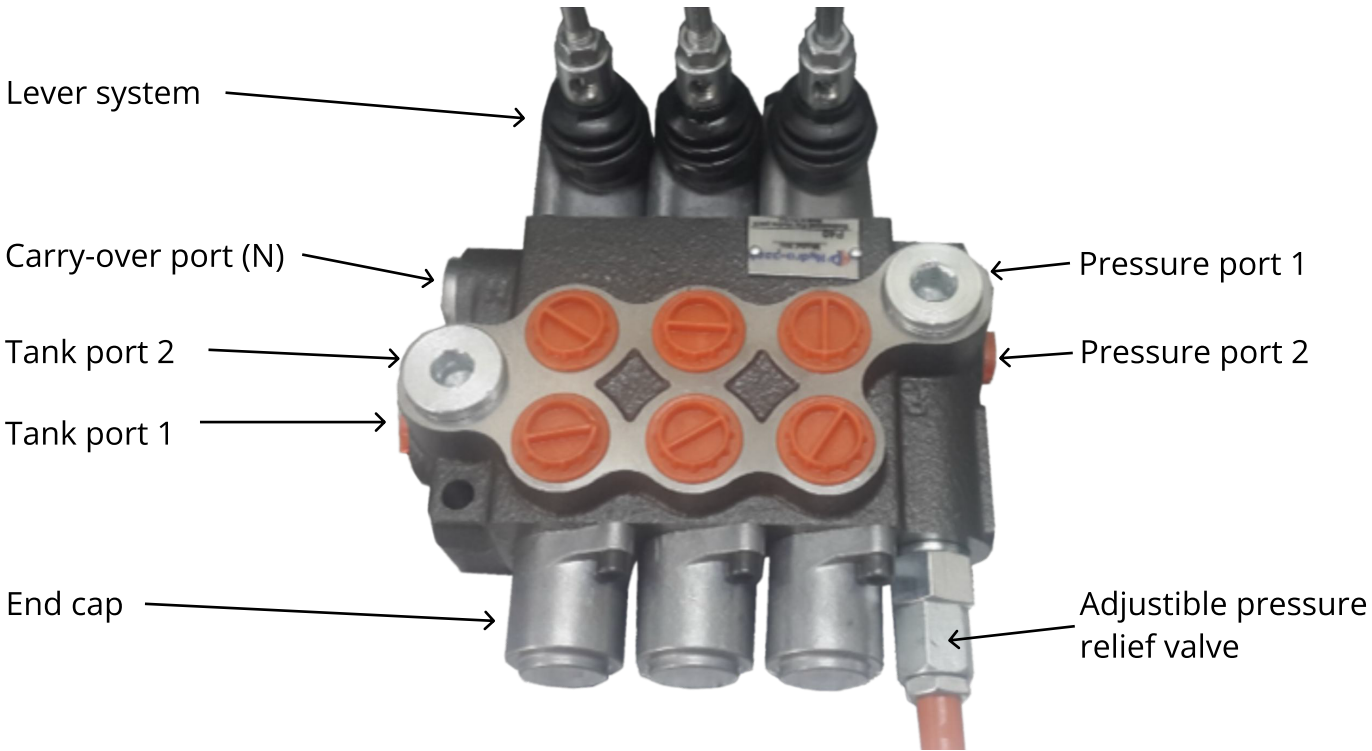
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A1 TECHNICAL SPECIFICATIONS

Nominal flow	80 liter/min	21 gpm
Max. operating pressure	315 bar	4568 psi
Max. back pressure	35 bar	507 psi
Viscosity range	10 -300 cSt	
Max. Level of Contamination	10 (NAS 1638)-/19/16 (ISO 4406-1999)	
Internal Leakage	6 ccm/min at 100 bar, 40 °C & 46 cSt	0.37 ci/min at 1450 psi, 104° F
Fluid Temperature	-20 °C to 80 °C	-4° F to 176° F
Ambient Temperature	-40 °C to 60 °C	-40° F to 140° F
Seal Material	NBR	
Fluid	Mineral based hydraulic oil	

Technical parameters

A2 OVERVIEW



Main components of the control valve

*Manual override function can be used when there is an electrical failure in the system. Spool can be activated by applying force with a screwdriver from the manual override side.

A3 APPLICATION

Working ports A & B	3/4-16 UNF (SAE 8)
Pressure ports P1 & P2	7/8-14 UNF (SAE10)
Tank ports T1 & T2	7/8-14 UNF (SAE10)
Carry over port N	BSPP 1/2"

Port threads (ISO 11926-1)

Any of P or T ports can be used according to the assembly of the valve in the application. Pressure line is connected to P, tank line is connected to T, working ports (A & B) are connected to cylinder or hydraulic motor. N ports are plugged from the factory and remain plugged if there is no use of carry over function.

Adjustable pressure relief valve standard setting is 2600 psi @ 11 GPM. This setting can be adjusted. Please always use a manometer during this process. Turning the adjustment screw clockwise increases the setting value, turning it anti-clockwise decreases the setting value.

The control valve is fixed with bolts M8.

Valves can be mounted in any orientation. Valves must be mounted on a flat surface. Special attention should be paid to not bend or twist the casting when mounting. Doing so may cause the valve to fail.

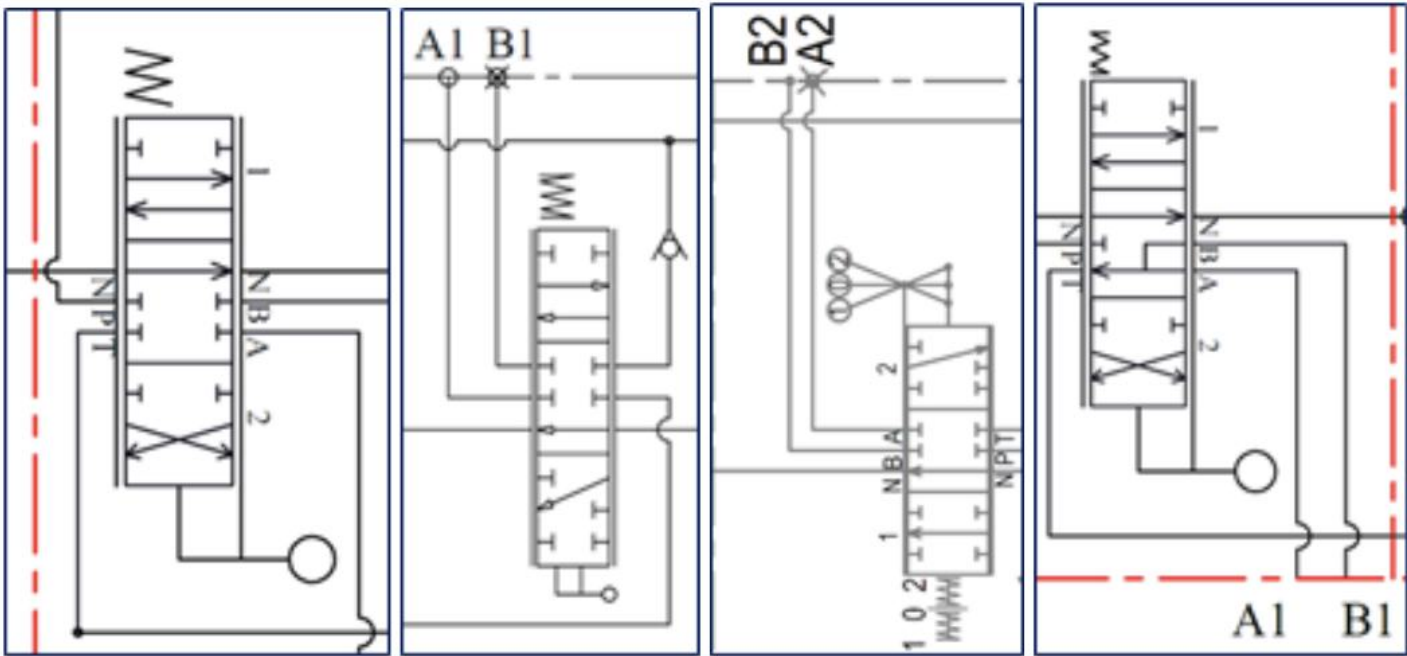
Special carry over plug can be used on carry over port (N) G 1/2" in order to connect two control valves together. From carry over, it is connected to the "P" port of the second valve. Tank ports of each valve must be connected to the tank.

There are various types of spools for single and double acting cylinders. Standard double acting spool is an **“A” spool (cylinder spool)**.

D spool is also a double acting spool where neutral A and B ports are open to the tank. This spool is also called a **“motor spool”**.

For single acting applications, a single acting spool is used (B & C) and one working port is plugged. If B spool is used B port is plugged, if C spool is used A port is plugged.

Spool control 1 (spring return to center) is standard for the valves.



Spool A

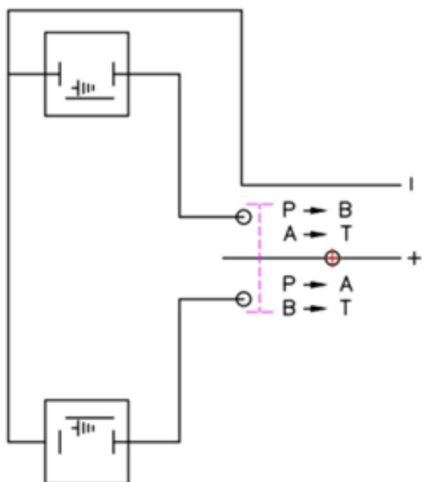
Spool B

Spool C

Spool D

Fittings tightening torque - Nm / lbft

THREADS TYPE	P and C ports	A and B ports	T port
BSP (ISO 228/1)	G 1/2	G 1/2	G 3/4
With O- Ring seal	50 / 37	50 / 37	70 / 51.6
With copper washer	60 / 44.3	60 / 44.3	70 / 51.6
With steel and rubber washer	60 / 44.3	60 / 44.3	70 / 51.6
UN-UNF (SO 11926-1)	7/8-14 UNF-2B (SAE 10)	3/4-16 UNF - 2B (SAE 8)	7/8-14 UNF-2B (SAE 10)
With O- Ring seal	60 / 44.3	50 / 37	60 / 44.3
METRICA (SO 262)	M18x1.5	M18x1.5	M22x1.5
With O- Ring seal	35 / 25.8	35 / 25.8	50 / 37
With copper washer	40 / 29.5	40 / 29.5	60 / 44.3
With steel and rubber washer	40 / 29.5	40 / 29.5	60 / 44.3



Please do not use Teflon tape to seal pipe threads. This is because Teflon tape is a friction reducing agent which allows customers to over-torque fittings.

Electric wiring scheme

SECTION B: TROUBLESHOOTING

There's no oil in the directional control valve.	• Check the connections of the hydraulic equipment connected to the P line of the directional control valve. • The amount of oil used in the system must be checked.
There is no oil transfer from line A or B.	• Check the connections of ports A and B. • Check that the appropriate spool is used. (If there are B and C spools, only one port will be output, the other port must be closed with a blind plug).
Spool doesn't move.	• If the directional control valve has been disassembled and assembled before, the connections should be checked. • Solenoid operation kit (coil + armature tube) should be removed, the spool should be lubricated again and after moving it a few times to manually replace it, it should be assembled and tried again. • Tolerance between spool and housing may be incorrect. Spool needs to be changed. • Incorrect electrical connection on the coils

Oil is not delivered to the directional control valve connected to the Carry-over line.	• Carry-over connection should be checked, it should be assembled with the steps recommended by the company.
The directional control valve is working well but is noisy.	• The oil used in the system must be checked, hydraulic oil must be clean under all conditions.
The directional control valve doesn't go up to the desired pressure.	• Check that oil is supplied to the control lever via P line. • Check the pressure relief valve setting on the directional control valve. Factory setting is 2600 PSI @ 11 GPM • Pressure relief valve may be defective.
Oil leakage between valve body and armature	• Armature should be disassembled and o-rings should be checked and replaced if needed.

If you have any questions or comments about this document, please send e-mail to **info@magisterhyd.com**

You can also contact us for all these problems and other problems you encounter.

Thank you.

