KNOWLEDGE BASE

Article Type: **Instructions**

Troubleshooting the Pneumatic Air Control, Instructions for; Block Machine Models, 22, 16, 1600, 30, 40, 50, & 60.

Description:

Instructions on "How to" properly service and troubleshoot the Pneumatic Air Control system used on Block models; 22, 16, 1600, and 30, 40, 50 and 60 machines.

WARNING

Never work on, clean or service this unit, control panel or any machine or open or remove any protective cover, guard, grate, door, or maintenance panel until the power or energy sources has been turned off, locked out / tagged out, and all moving parts have come to a complete stop and or blocked to prevent movement. Machinery is dangerous – avoid personal injury and or death by following manufacture, Local, and OHSA safety procedures. Contact Columbia Machine for safety decals, guards, horns and beacons.

THE TOTAL SOLUTION Columbia

Block Machine Model 22, 16, 1600 & 30, 40, 50, & 60, Troubleshooting the Pneumatic Air Control

At times the air can leak or bypass either between the valve banks or through one of the quick exhaust valves. Usually the problem is a bad diaphragm in one of the exhaust valves. To help troubleshoot the situation first begin by turning off the air to each one of the valves and listen when the air stops exhausting out the bottom of the exhaust muffler shown below and notice where this air control goes to. Let's say it goes up to the compression head air. Turn off the main air supply and discharge any additional air from the machine and lock out the air supply system. Next locate the quick exhaust valve and remove the outer assembly as show below depending on which style of quick exhaust valve to see if the diaphragm is bad. In the event it is bad either replace with a new diaphragm or replace with a complete exhaust valve.

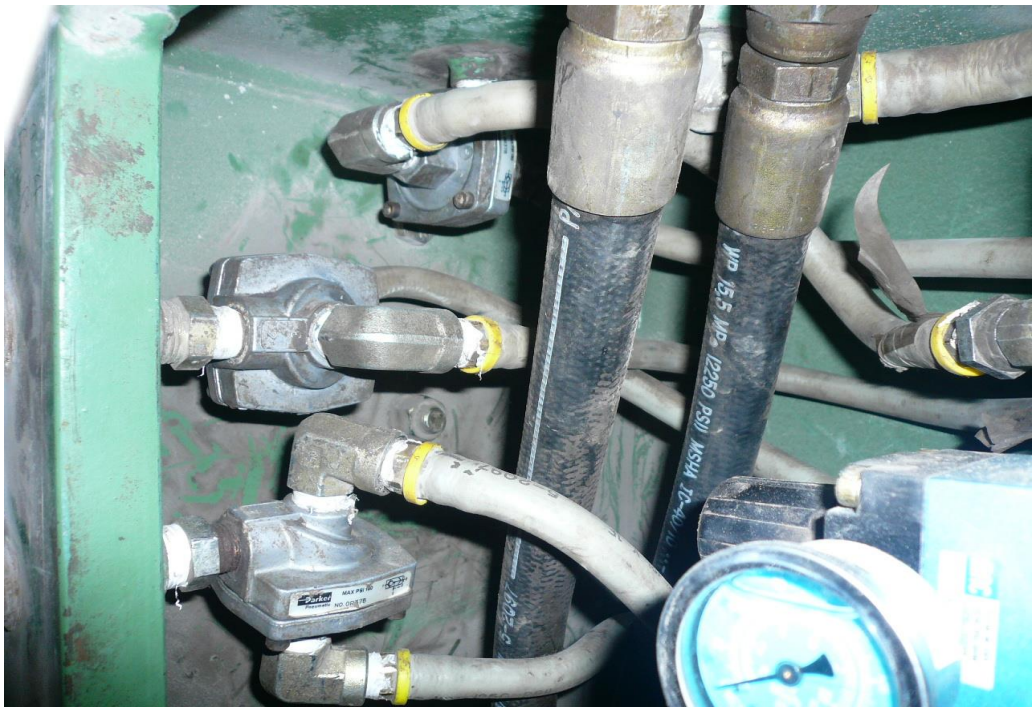
If the air continues to exit the muffler once all valve have been turned off then begin testing the main valve bank first by mixing up a small amount of dish soap and water solution in a spray bottle and spray around the valve bank to determine where the air leak is coming from this will help to identify where and which gasket may be damaged or pinched.

The valve bank is located inside the block machine either on the left or right side. Newer machines have the air supply located on the guard set next to the machine.

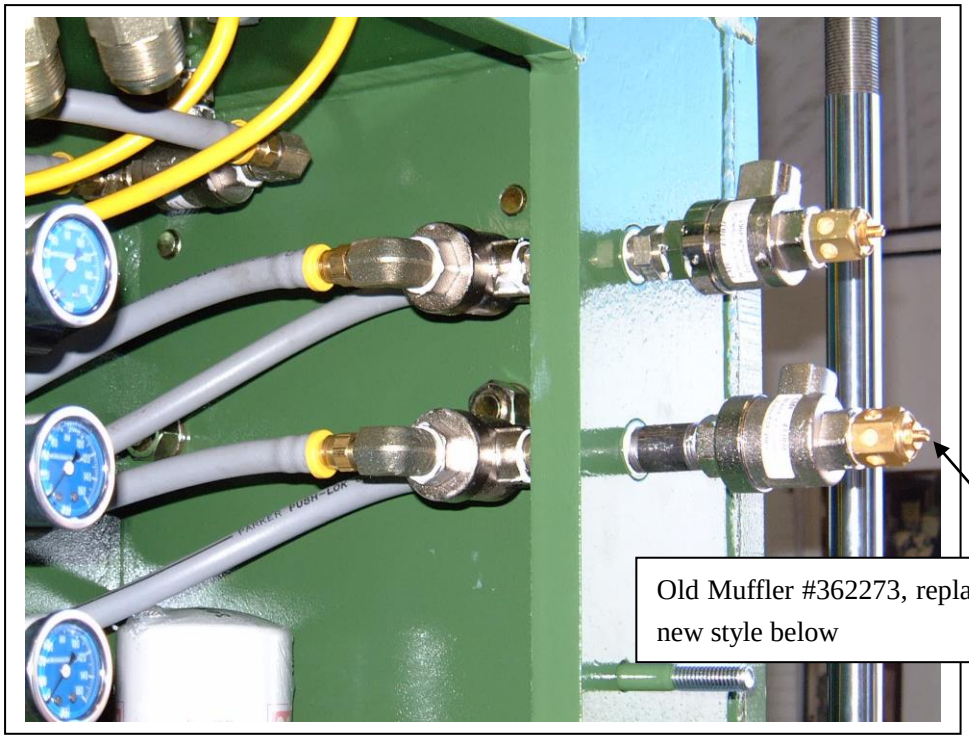
Note: When adding kits or newer designed parts, record new part information in your manual, this will help for future reference.

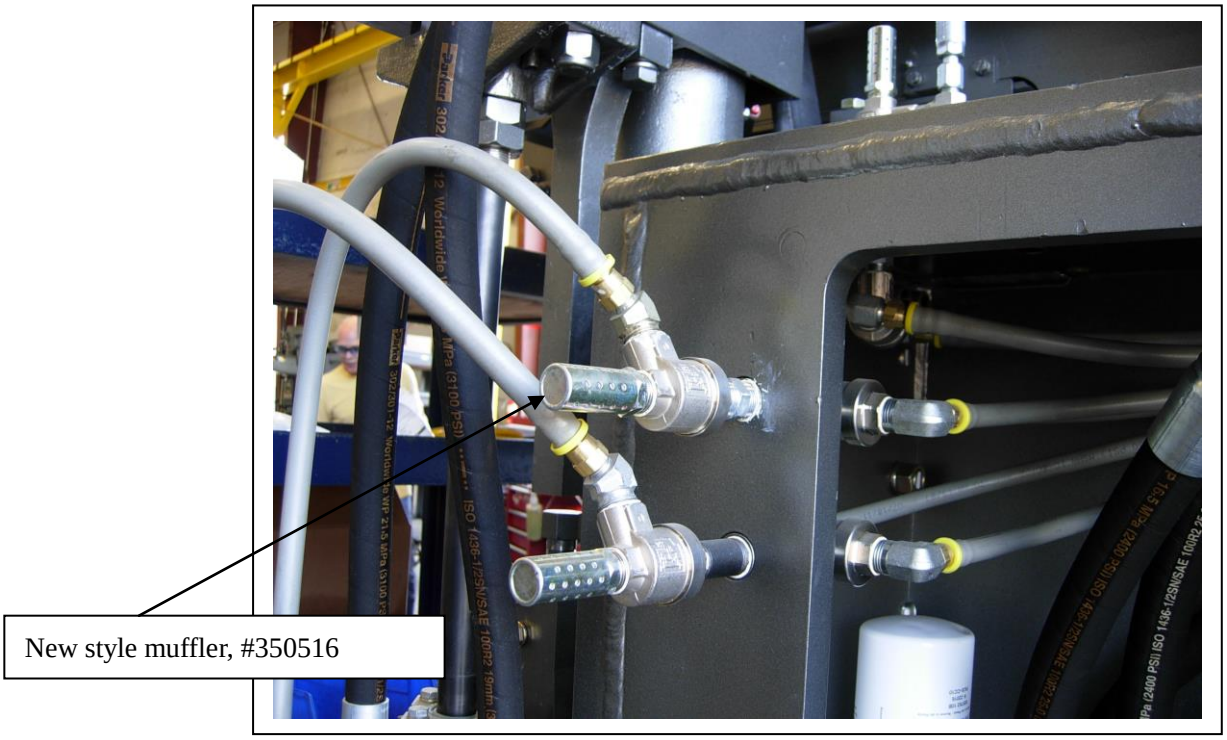
Please check your specific parts information located in your parts manual. You can also look for the model number on the valve itself shown below.

Notice Quick exhaust valves located below which either can be located inside the main frame on the right or left hand side of the machine. Shown below are the three different styles. The photos below show the three styles dump valves.



Old three valve systems need updating to six dump valves, this is to prevent the air from trapping. See page 4 for 6 dump valve configuration.





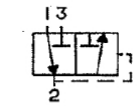
If you have the dump valves part # 350283 3/8” ports or part # 350283 ½” ports these can be changed out to the latest dump valve / quick exhaust valve part # 433036

Old Style

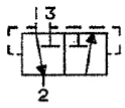
Parker Pneumatic

Pneumatic Division North America
8676 East M-89
Richland, MI 49083

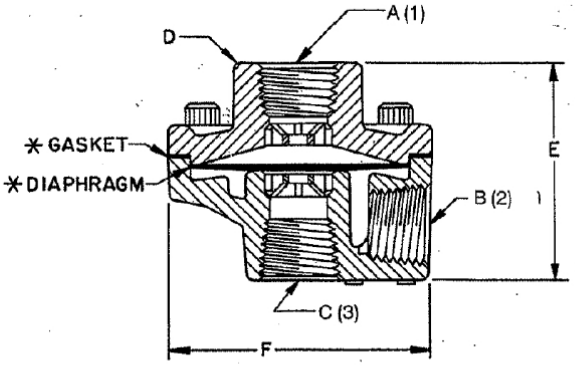
Maintenance Bulletin
V235
Quick Exhaust and Shuttle Valve
Issued: June, 1998
Supercedes: February, 1993



QUICK EXHAUST



SHUTTLE VALVE



MODEL 22 & OLDER 16,1600

#2 PORT GOES TO PALLET TABLE OR HEAD AIR.

#3 PORT GOES TO PORT "A" ON MAC VALVES.

#1 PORT GOES TO PORT "B" ON MAC VALVES.

*Included In Service Kit.

PIPE PORT SIZE			Flow Capacity SCFM	Dimensions			Service Kits		
A (1)	B (2)	C (3)		D	E	F	Urethane	Viton	Teflon
1/8	1/8	1/8	70	7/8 Sq.	1-3/4	1 7/8	3640-8000	3650-8000	—
1/8	1/8	1/4	70	7/8 Sq.	1-3/4	1 7/8	3640-8000	3650-8000	—
1/4	1/4	1/4	90	7/8 Sq.	1-3/4	1 7/8	3640-8000	3650-8000	—
1/4	1/4	3/8	150	1 Hex	2 1/16	2 7/16	3340-0105	3340-0319	3340-0504
1/4	3/8	3/8	240	1 Hex	2 1/16	2 7/16	3340-0105	3340-0319	3340-0504
3/8	3/8	3/8	240	1 Hex	2 1/16	2 7/16	3340-0105	3340-0319	3340-0504
1/2	1/2	1/2	450	1 1/2 Hex	2 7/8	3 3/8	3475-0109	3475-0120	—
3/4	3/4	3/4	550	1 1/2 Hex	2 7/8	3 3/8	3475-0109	3475-0120	—

Operating Temperatures:
Urethane diaphragm units: -40°F to +180°F
Viton diaphragm units: -40°F to +400°F
Teflon diaphragm units: -110°F to +500°F

Operating Pressures:
Maximum: 150 psig air only
(200 psig for Teflon diaphragm units)
Minimum: 3 psig
(Suggested: 50 psig for Teflon diaphragm units)

CAUTION:
If it is possible that the ambient temperature may fall below freezing, the medium must be moisture free to prevent internal damage or unpredictable behavior.

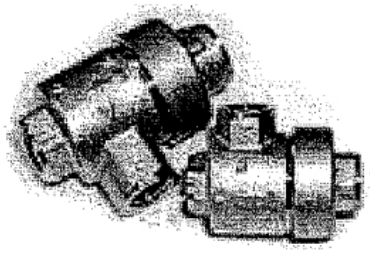
WHEN SERVICING UNIT TURN OFF AIR PRESSURE AND DEPRESSURIZE SYSTEM.

NEW STYLE VALVE 433036
KIT FOR VALVE 433037

KIT FOR VALVE 350592

OLD STYLE VALVE 350283

New Style



The body is manufactured from brass with nickel plating for corrosion resistance; other materials include nylon and NBR 70 (*Viton® on request*).

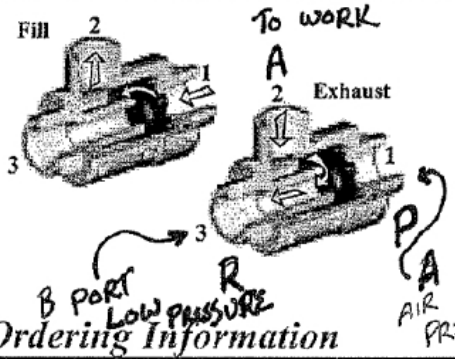
Specifications

Product	Working Pressure (psi)	Temp. Range	Media
Quick Exhaust	4 to 150	0° to +160°F	Air and liquids compatible with materials of construction

Part Number	OAL	Connector Thd.	Hex	Exhaust Cv	Cracking Pressure (psi)
PCQE- 02	1.693	1/8 NPTF	.591	1.50	2.4
04	2.283	1/4 NPTF	.748	1.80	2.4
06	2.441	3/8 NPTF	.866	3.05	2.0
08	2.894	1/2 NPTF	1.024	5.52	2.0

All measurements in inches

Flow Path

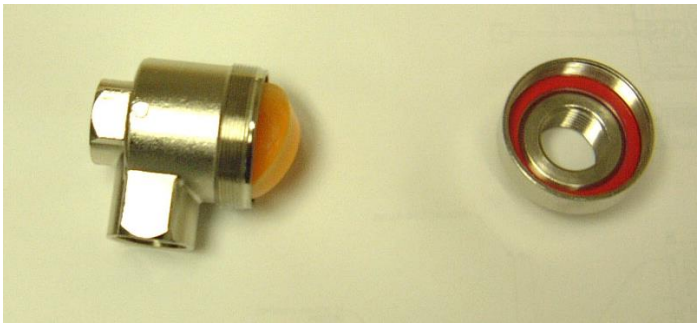


System pressure is applied to the inlet port (1), flow is directed to cylinder port (2).

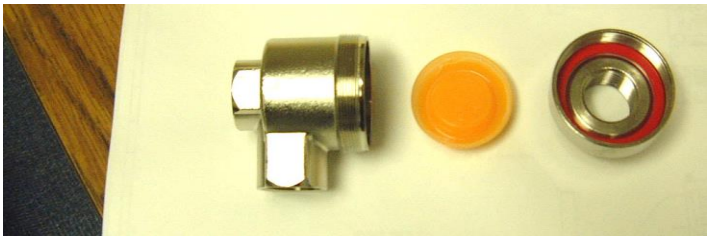
When system pressure (1) is dropped, exhaust air in the cylinder (2) is discharged directly from the exhaust port (3) of the quick exhaust valve.

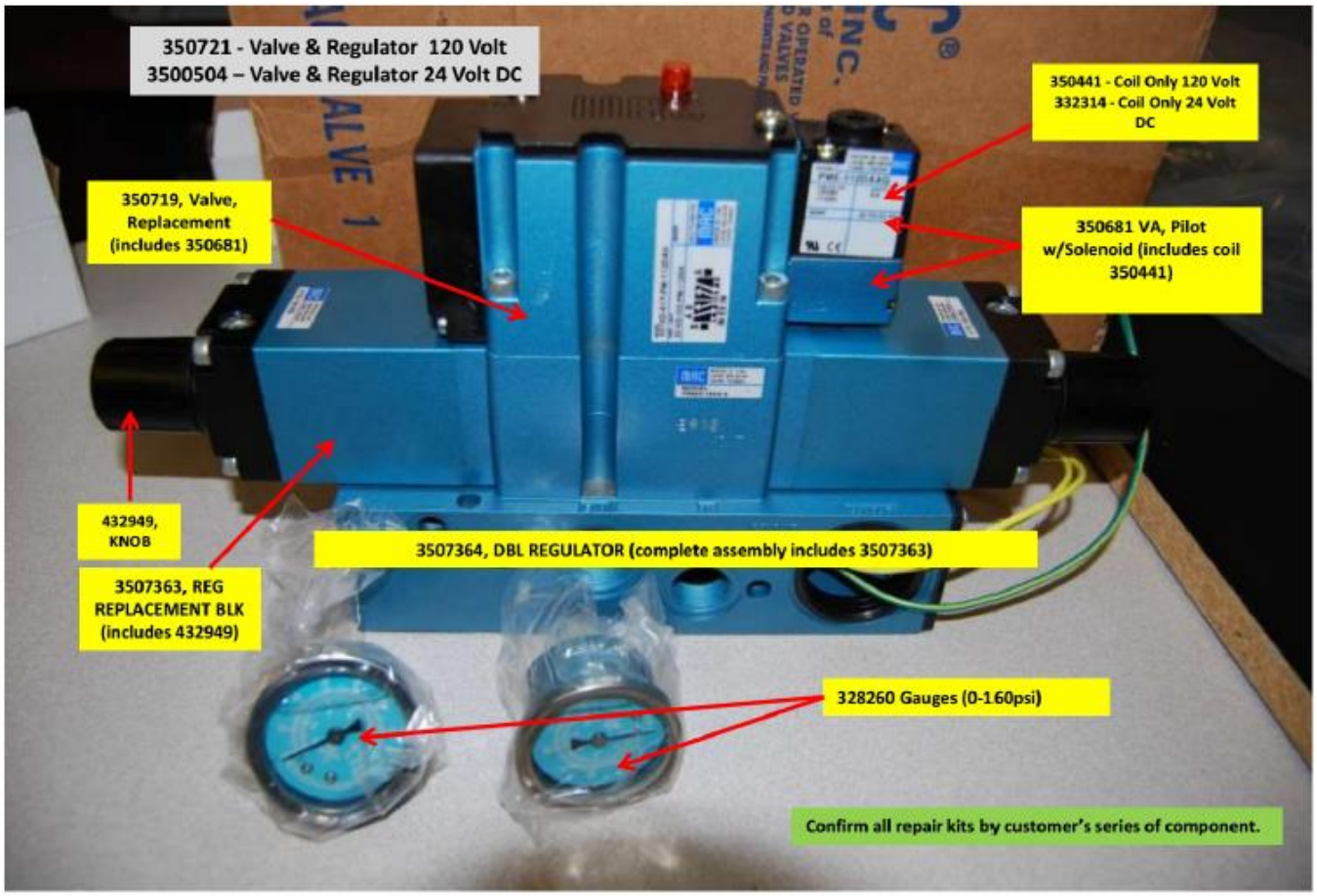
WARNING: This valve exhausts to atmosphere. **DO NOT** use toxic, corrosive or flammable media.

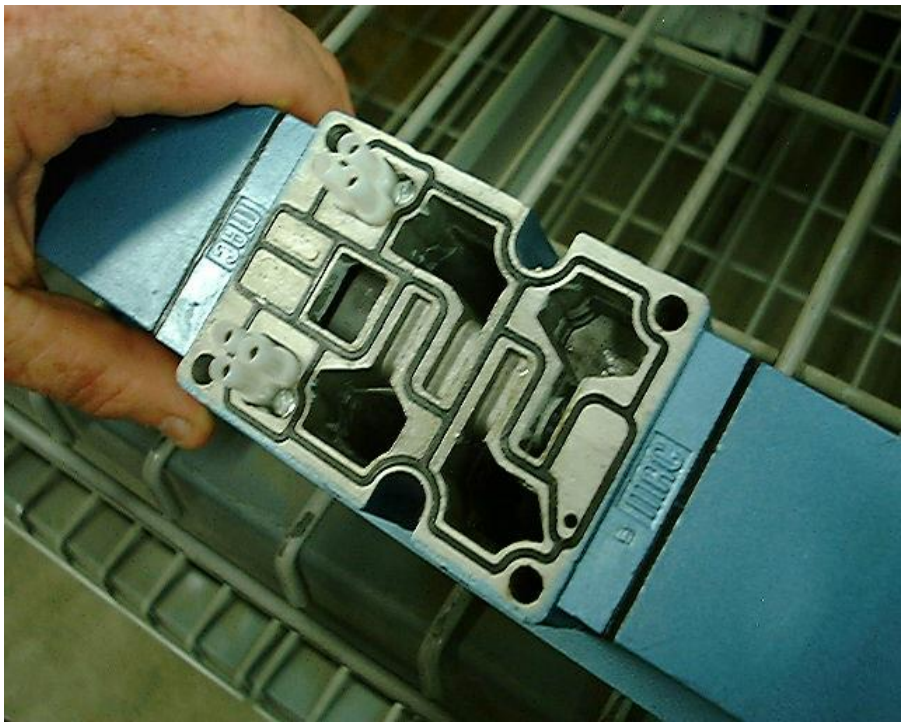
Ordering Information



If replacing the diaphragm make sure the lip is facing inwards towards the body as shown.



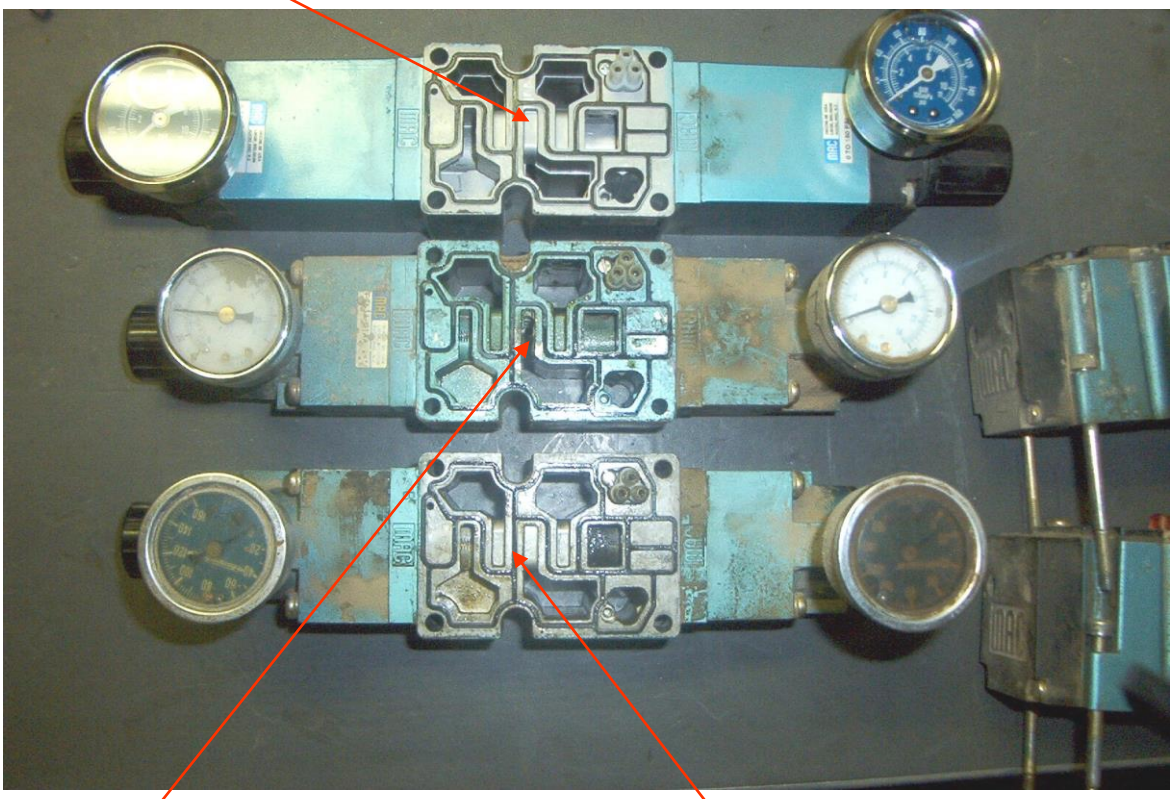




You can remove the valve from the manifold block and inspect the gasket to insure it has not been damaged. If replacement is necessary please refer to your specific parts manual or contact Columbia Machine Inc. C.P. Parts for assistance.

NEW REGULATOR TYPES WITHOUT MOD 570

This valve is current replacement over the two below. Notice: No modification and has longer regulators. All systems must have 6 dump valves to work correctly



OLD REGULATOR WITH MOD 570 DONE TO CENTER PORT

OLD REGULATOR WITHOUT MOD 570