



V450, V460, V470, V475, V480 and V485

Installation and Maintenance

CAM 03-07-22
ECN 5296

MASTER PNEUMATIC - DETROIT, INC. 6701 -18 Mile Rd. | Sterling Heights, MI 48314 | Phone: (586) 254-1000 | Email: mp@masterpneumatic.com

SAMPLE PRODUCT NUMBERS:

V450-16N20
V460-12N12
V470-6N8
V475-3N4
V480-8N8
V485-D-2N4

You have purchased a quality inline, 3/2 poppet Valve from Master Pneumatic.

With care in it's installation and maintenance, you can expect it to have a long and economical service life. Be sure to read, understand and follow all procedures, recommendations, cautions and warnings. Save for future reference and the useful information it contains.



Installation & Maintenance Procedures

INSTALLATION:

Pneumatic equipment should be installed by persons trained and experienced in the installation of such equipment. Before installing or servicing a valve or other pneumatic components, be sure that the electrical supply is turned off, the entire pneumatic system is shut off and exhausted, and all power sources are locked out.

Air Lines: Before installing a valve in a new or existing system, the air lines must be blown clean of all contaminants which may be in the system. It is recommended that a 5-micron air filter be installed in the inlet line close to the valve.

Valve Inlet: DO NOT RESTRICT AIR SUPPLY. Any restriction of the air supply lines (for example, sharp bends or clogged filter element) will reduce the speed with which the outlet volume is pressurized, and can also cause the valve to malfunction.

Valve Outlet(s): For faster pressurizing and exhausting of the outlet volume, locate the valve as close as possible to the mechanism being operated. Also, any restriction in the outlet lines (for example, sharp bends or undersize lines) will reduce both pressurizing and exhausting speeds.

Valve Exhaust(s): DO NOT RESTRICT EXHAUST OF POPPET VALVES as this can cause the valve to malfunction. To reduce exhaust noise, use a silencer.

Electrical Conduit Port (for solenoid controlled valves) : It is important that the electrical supply be of the correct Voltage and Hertz. The solenoids are rated for continuous duty at 85% to 110% of the voltage shown on the solenoid coil. Multi-rated solenoids (e.g., 110-120 volts) are rated for continuous duty at 85% to 110% of the *maximum* voltage shown. A supply voltage that does not fall within this range can lead to faulty valve action or solenoid burnout. If electrical power is supplied by a separate transformer, it must be capable of handling the inrush current of the solenoids without significant voltage drop.

Operating Pressures and Temperatures: Maximum and minimum operating pressures and temperatures are listed under Valve Specification on next page. Staying within these limits contributes to longer valve life and proper operation.

Pilot Pressure: For proper operation, pilot pressure must not fall below the minimum specified for the valve. For poppet valves, pilot pressure must be at least equal to the main supply pressure.

If a solenoid piloted valve must operate at a pressure lower than the minimum specified pilot pressure, an external pilot supply of adequate pressure must be used.

Pipe Installation: To install pipe in valve ports engage pipe one turn. Apply pipe thread sealant (tape not recommended), and tighten pipe. This procedure will prevent sealant from entering and contaminating the valve.

MAINTENANCE:

Pneumatic equipment should be maintained only by persons trained and experienced in the maintenance of such equipment.

Supply Clean Air: Foreign material lodging in valves is a major cause of improper operation. The use of a 5-micron-rated air filter located close to the valve is strongly recommended. The filter bowl should be drained regularly, and if its location makes draining difficult, the filter should be equipped with an automatic drain.

Compatible Lubricants: Although most valves do not require air line lubrication, they may be used with lubricated air being supplied to other mechanisms. Some oils contain additives that can harm seals or other valve components and so cause the valve to malfunction. The best oils to use are those specifically compounded for air line service. These are generally petroleum base oils with oxidation inhibitors, an aniline point between 180°F (82°C) and 220°F (104°C), and an ISO 32 or lighter viscosity.



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Installation & Maintenance Procedures continued

Check Lubricator Supply Rate: A lubricator should put a fine oil mist into the air line in direct proportion to the rate of air flow. Excessive lubrication can cause puddling in the valve and lead to malfunctions. For most applications an oil flow rate in the lubricator of one drop per minute is adequate.

Cleaning the Valve: If the air supplied to the valve has not been well filtered, the interior of the valve may accumulate dirt and varnish which can affect the valve's performance. Although poppet valves are very tolerant of dirty air, the valve may sometimes need cleaning. To clean the valve use any good commercial solvent or kerosene. Do not use a chlorinated solvent, abrasive materials, or scrape. The former damages seals, abrasives and scraping can do permanent damage to metal parts. Reassemble the valve with a gasket and seal kit. Lubricate all sliding surfaces with the grease provided in the gasket and seal kit.

Electrical Contacts: In the electrical circuits associated with the valve solenoids, keep all switches or relay contacts in good condition to avoid solenoid malfunctions.

Replace Worn Components: In most cases it is not necessary to remove the valve from its installation for servicing however, turn off the electrical power to the valve, shut off the air supply, and exhaust the air in the system before beginning any disassembly operation. Follow appropriate lock-out/tag-out procedures. Service kits are listed on page 4.

Valve Specifications

Remote Air Pilot Controlled

Flow Media: Compressed air.

Inlet Pressure:

1/2 to 1-1/2 Exhaust Ports: 15 to 150 psig (1 to 10 bar).
2-1/2 Exhaust Port: 30 to 150 psig (2 to 10 bar).

Pilot Pressure:

Must be equal to or greater than inlet pressure.

Temperature Range:

Ambient: 40° to 120°F (4° to 50°C).
Media: 40° to 175°F (4° to 80°C).

Solenoid Pilot Controlled

Flow Media: Compressed air.

Inlet Pressure:

1/2 to 1-1/2 Exhaust Ports: 15 to 150 psig (1 to 10 bar).
2-1/2 Exhaust Port: 30 to 150 psig (2 to 10 bar).

Solenoid:

Rated for continuous duty. Voltage and Hertz ratings shown on pilot housing.

Power Consumption:

87 VA inrush, 30 VA holding on AC; 14 watts on DC

Temperature Range:

Ambient: 40° to 120°F (4° to 50°C).
Media: 40° to 175°F (4° to 80°C).



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Cautions & Warnings

**Master Pneumatic inline 3/2 poppet valves are defined as
Energy Isolation Devices,
NOT as emergency stop devices.**

PRE-INSTALLATION and SERVICE

1. Before servicing a valve or other pneumatic component, be sure that the electrical supply is turned off, the entire pneumatic system is shut off and exhausted, and all power sources are locked out.
2. All Master Pneumatic products, including service kits and parts, should be installed and/or serviced only by persons having training and experience with pneumatic equipment. Because any installation can be tampered with or need servicing after installation, persons responsible for the safety of others or the care of equipment must check every installation on a regular basis and perform all necessary maintenance.
3. All applicable instructions should be read and complied with before using any fluid power system in order to prevent harm to persons or equipment. In addition, overhauled or serviced valves must be functionally tested prior to installation and use.
4. Each Master Pneumatic product should be used within its specification limits. In addition, use only Master Pneumatic parts to repair Master Pneumatic products. ***Failure to follow these directions can adversely affect the performance of the product or result in the potential for human injury.***

FILTRATION and LUBRICATION

5. Dirt, scale, moisture, etc. are present in virtually every air system. Although some valves are more tolerant of these contaminants than others, best performance will be realized if a Filter is installed to clean the air supply, thus preventing contaminants from interfering with the proper performance of the equipment. Master Pneumatic recommends a Filter with a 5-micron rating for normal applications.
6. All standard Master Pneumatic Filters and Lubricators with polycarbonate plastic bowls are designed for compressed air applications only. Do **NOT** fail to use the metal bowl guard, where provided, to minimize danger from high pressure fragmentation in the event of bowl failure. Do **NOT** expose these products to certain fluids, such as alcohol or liquefied petroleum gas, as they can cause bowls to rupture, creating a combustible condition, hazardous leakage, and the potential for human injury. When bowl gets dirty, replace it or wipe it with a clean dry cloth. A crazed, cracked, or deteriorated bowl has been chemically contaminated, and should be replaced with a metal bowl because the contamination will almost certainly recur.
7. Only use lubricants which are compatible with materials used in the valves and other components in the system. Normally, compatible lubricants are petroleum base oils with oxidation inhibitors, an aniline point between 180°F (82°C) and 220°F (104°C), and an ISO 32, or lighter, viscosity. Avoid oils with phosphate type additives which can harm polyurethane components, potentially leading to valve failure and/or human injury.

AVOID INTAKE/EXHAUST RESTRICTION

8. Do not restrict the air flow in the supply line. To do so could reduce the pressure of the supply air below the minimum requirements for the valve and thereby cause erratic action.
9. Do not restrict a poppet valve's exhaust port as this can adversely affect its operation. Exhaust silencers must be resistant to clogging and have flow capacities at least as great as the exhaust capacities of the valves. Contamination of the silencer can result in reduced flow and increased back pressure.

Master Pneumatic expressly disclaims all warranties and responsibility for unsatisfactory performance or injuries caused by the use of the wrong type, wrong size, or inadequately maintained silencer installed with its products.



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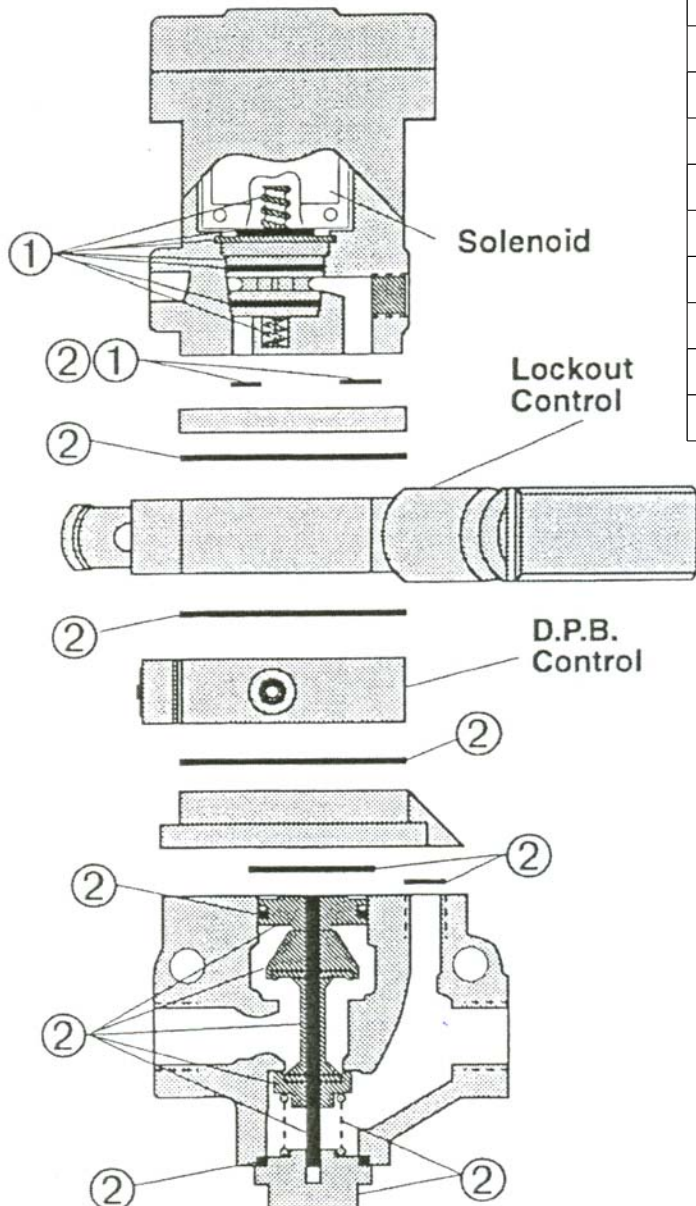
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Parts Listing

Pilot Kit includes all components labeled as ①

Body Kit includes all components labeled as ②

Sketch is representative of valves.
Disregard those features which are not an option on your model
such as Solenoid, D.P.B. or Lockout.



MODEL and PORT SIZES	PILOT KIT ①	BODY KIT ②	SOLENOID KIT See below
V450-8N12 to V450-12N12	N/A	MP497K87	N/A
V450-12N20 to V450-20N20	N/A	MP814K77	N/A
V460-2N4 to V460-4N4	W74-102	MP495K87	YES *
V460-4N8 to V460-8N8	W74-102	MP496K87	YES *
V460-8N12 to V460-12N12	W74-102	MP497K87	YES *
V460-12N20 to V460-12N20	W74-102	MP814K77	YES *
V470-2N4 to V470-4N4	N/A	MP1079K77	N/A
V470-4N8 to V470-8N8	N/A	MP1080K77	N/A
V475-2N4 to V475-4N4	W74-102	MP1079K77	YES *
V475-4N8 to V475-8N8	W74-102	MP1080K77	YES *
V480-2N4 to V480-4N4	N/A	MP1077K77	N/A
V480-4N8 to V480-8N8	N/A	MP1078K77	N/A
V485-2N4 to V485-4N4	W74-102	MP1077K77	YES *
V485-4N8 to V485-8N8	W74-102	MP1078K77	YES *

* Use Voltage Requirement and part #
callouts to determine appropriate Solenoid Kit.

VOLTAGE REQUIREMENT	#	SOLENOID KIT
110/50Hz, 110-120/60Hz (AC)		MP411B04
12/50-60Hz (AC)	-A-	MP411B04-A
24/50-60Hz (AC)	-B-	MP411B04-B
48/50-60Hz (AC)	-C-	MP411B04-C
220/50Hz, 220-240/60Hz (AC)	-D-	MP411B04-D
12v (DV)	-E-	MP411B04-E
24v (DV)	-F-	MP411B04-F
48v (DV)	-G-	MP411B04-G
120v (DV)	-H-	MP411B04-H