

# X-tra Valve Kit

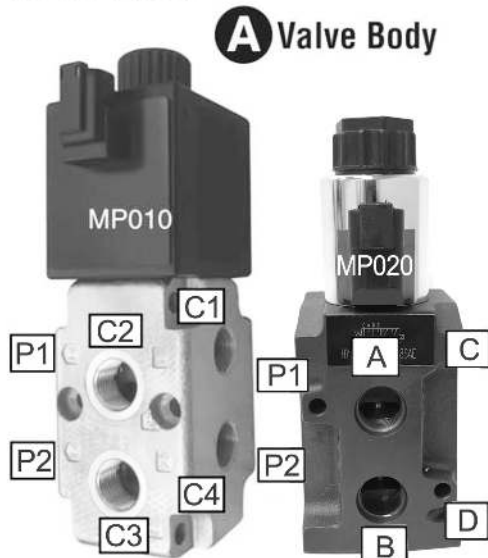
Part # **MP010 & MP020**

Precision Manufacturing, Inc.

11/16/17

## Installation Guide

### Parts List



(Valve models may vary)

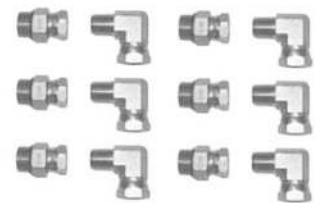
- B** **Wiring Harness MP105**  
(15' used for MP010 & MP020)
- Wiring Harness MP106**  
(22' used for MP010 only)



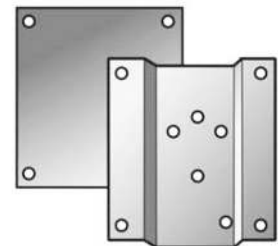
- C** **Momentary Pushbutton Switch MP107**



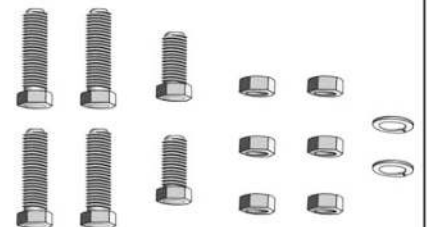
- D** **Hose Connectors MP128**  
used for MP010  
(6 Elbows & 6 Connectors)
- Hose Connectors MP129**  
used for MP020  
(6 Elbows & 6 Connectors)



- E** **Universal Mounting System MP158**



- F** **Hardware Kit MP206**
  - 4 – 1/4" X 4" Bolts
  - 2 – 1/4" X 3-1/4" Bolts
  - 6 – 1/4" Locking Nuts
  - 2 – 1/4" Flat Washers



### **Warning**

TO AVOID DEATH OR SERIOUS INJURY:

- Park the tractor on level ground, apply parking brake, disengage PTO, lower all implements to the ground, shut off engine and remove the key.
- Read and thoroughly understand tractor and implement or attachment owner's manual before installing or operating this valve.
- Escaping hydraulic fluid under pressure can have sufficient force to penetrate skin, be sure to relieve all pressure before disconnecting lines. Before applying pressure, be sure all connections are tight and lines not damaged. Fluid escaping from a very small hole can be almost impossible to see. Use a piece of cardboard or wood, rather than your hands, to search for suspected leaks. If injured by escaping fluid, see a doctor at once. Serious infection or allergic reaction will develop if proper medical treatment is not administered immediately.

# STEP ONE – Valve Mounting

Note: All ports in the valve are either 10 SAE O-ring (MP010) or 8 SAE O-ring (MP020). Do not use Teflon tape, pipe dope and etc. on threads in this body. Lubricate threads and O-rings on fittings with hydraulic oil before installing into valve body. Valve mounting is unrestricted. It can be mounted vertical or horizontal. Make sure that top of solenoid does not contact metal.

**NOTE:** Disconnect negative (-) cable at battery before installing.

Attach the solenoid valve to the front valve mounting bracket as shown in **Figure 1** by using two 3 ½” hex bolts, flat washers and lock nuts. Make sure to insert the flat washer between the hex bolt head and the valve and secure the valve to the bracket by using the lock nuts. Use the universal mounting brackets to attach the valve to existing tractor framework or loader arm as shown in **Figure 2**. You can also use the two mounting holes in the valve body without the universal mounting brackets to attach to existing framework if desired for your application.

**Figure 1**



Assembled valve body attached to front bracket  
(Valve models may vary)

**Figure 2**



Bracket with valve mounted to tractor  
(Valve models may vary)

# STEP TWO – Electrical Installation

The pushbutton switch is designed to be mounted to an existing control handle such as the SCV (joystick) lever. Mount the switch to the control handle that activates the hydraulic flow to solenoid valve. Try to mount in a position so both the handle and switch can be activated with the same hand. Cable ties are included to assist in mounting switch. Other methods, not included, may be used to mount switch.

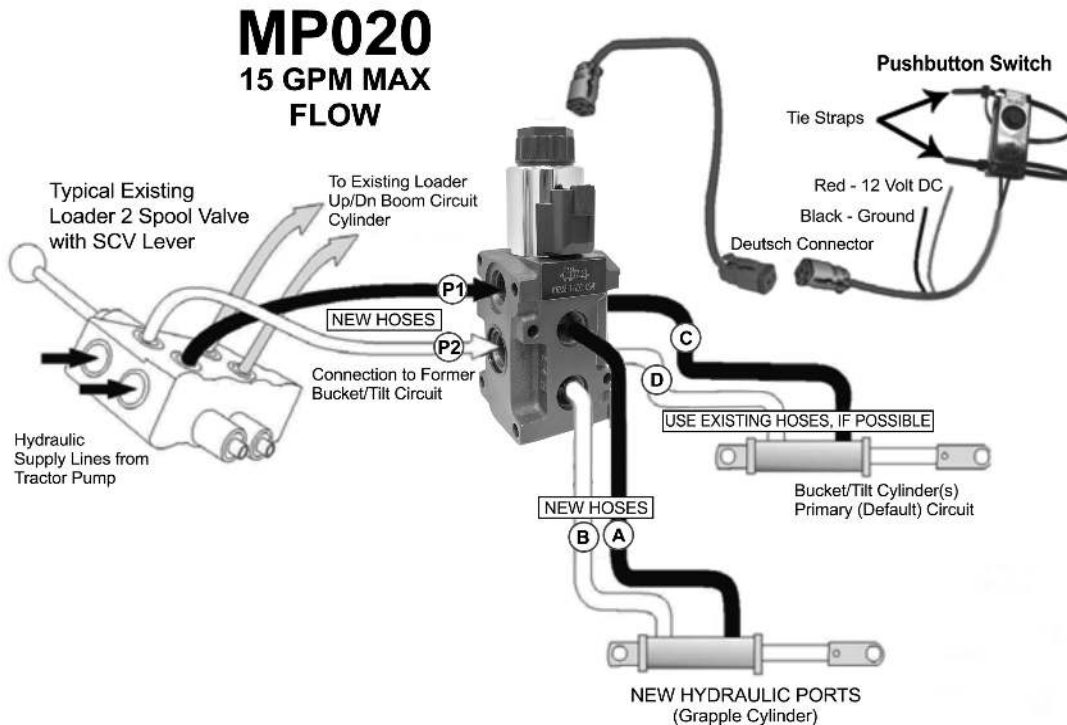
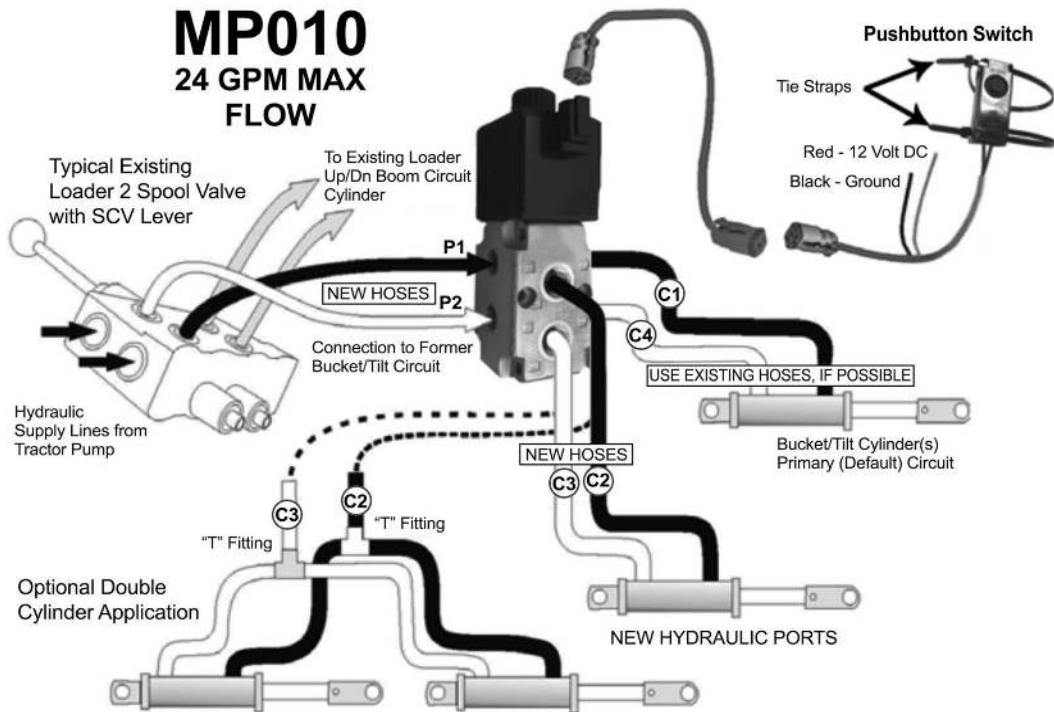
**CAUTION:** The valve should be mounted and connected to the wiring harness before the control switch is connected to a power source. This will prevent accidental shorting of the control wires to ground.

Attach red power wire to a keyed power source that is “hot” only with ignition in the on position. This will prevent battery drain when equipment is not in use. The black ground wire may be connected to the vehicle frame or engine block. Metal to metal contact is required for secure ground so paint may need to be scraped away for a good contact.



# STEP THREE - PLUMBING SCHEMATIC

Follow the plumbing schematic as illustrated. Hoses are not provided as hose lengths vary per application. This schematic is using the bucket tilt function as the PRIMARY CIRCUIT.



### **ATTENTION**

IF YOUR LOADER HAS A SELF LEVELING FEATURE OR HYDRAULIC REGENERATIVE FEATURE (QUICK DUMP), IT IS RECOMMENDED YOU USE THE UP/DN BOOM CIRCUIT AS THE P1 AND P2 CONNECTION ON THE SELECTOR VALVE INSTEAD OF THE BUCKET TILT CIRCUIT.

PLEASE REFER TO YOUR LOADER OWNER'S MANUAL TO IDENTIFY YOUR LOADER FEATURES OR CONTACT YOUR LOADER DEALER.

## **OPERATION**

In the neutral state, the flow path to the primary circuit (C1, C4 on MP010 and C, D on MP020) is open. By pressing the pushbutton the operator de-energizes the primary circuit and energizes the auxiliary circuit (C2, C3 on MP010 and A, B on MP020) for as long as the pushbutton is depressed. By energizing either circuit the operator can direct hydraulic oil down that circuit with the existing control valve. The selector valve selects the circuit. The existing control

lever extends and retracts the cylinder. This valve uses a spool-type cartridge valve for controlling the flow of oil. These types of cartridges have a small amount of internal leakage. Loads held in place for extended periods of time may eventually settle.

**CAUTION:** Do not loosen or remove any fittings or the valve cartridge while there is pressure in the system or while a load is being held up by the valve.

## **MAINTENANCE**

As with any pieces of equipment, periodic maintenance will help provide longer life and trouble-free operation of your valve. Periodically inspect those electrical connections which are exposed to the elements for signs of corrosion or other damage. Replace any terminals that look as if they might fail in the field. Inspect the cable connecting the switch to the valve. Normal operation over time can cause a cable to move to a dangerous area. If the cable is in any danger of being crushed or cut, move it to a safer area and secure it. Check the hydraulic hoses connected to the valve. Wipe the body of the valve off and look for leaks. Tighten or replace any fittings you suspect of leaking. Inspect the hydraulic hoses for signs of leaking, cracking or bulging. Replace any hose that shows these signs of impending failure.

## **TROUBLESHOOTING**

If the valve was previously working, the trouble is most likely the result of a blown fuse, damaged wiring or a bad switch. If this is a new installation, carefully check the hydraulic connections to make sure that the valve has been installed as shown in the diagram. Also inspect tips and couplers for proper mating. Incompatible couplers will usually not allow the ball to seat properly and prevent a good hydraulic connection and flow.

## **ELECTRICAL TROUBLESHOOTING**

A simple way to determine if a solenoid is being energized is by touching the large mounting nut on the top of the coil with a screwdriver. The coil is an electromagnet and will attract the screwdriver when the power is on. If the screwdriver does not stick to the top of the coil, use a voltmeter to check for voltage between the coil terminal and the mounting nut. If the voltage is at least 11 volts, the valve should be functioning. When the coil is energized, a click should be heard from the valve. The sound may be muffled, however, if the valve is full of oil or under pressure. If the voltage is low, check the voltage at the source where the power wire for the control was connected. If no voltage is found, try measuring the voltage between the coil terminal and the tractor frame. If voltage is indicated, the valve is not being grounded, so check the black ground wire. If no voltage is indicated between the coil wire and the ground, first check the fuse and then the hot wire to the control.

## **HYDRAULIC TROUBLESHOOTING**

If none of the circuits work and the solenoid coils are being operated with at least 11 volts (measured at the coils), check that the supply connections from the tractor remote to the valve are correct. Check that the cylinders are connected to the valve as shown in the diagram. If necessary, remove the valve and connect the cylinder to the remote outlet to confirm that the supply hoses and tips are in working order.

### **Warning**

To avoid serious injury, use extreme care to make sure all individuals are safely clear from equipment and the nearby area whenever operating remote valve control switches. Operating electrical controls (even when the remote lever is in neutral or the engine is stopped) will result in the valves operating and may result in equipment moving suddenly without warning. Stay clear of all valves, lines and cylinders when operating controls.

**Precision Manufacturing, Inc.**

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