

Electromechanical and Pneumatic Fuel Gas Shut-Off Valves Installation and Operation Instructions

M2582, M5081, and M5180 Series

Please read the following instructions before installing. A visual inspection of this product for damage during shipping is recommended before mounting. It is your responsibility to have a qualified person install the unit and make sure installation conforms with NEC and local codes.



Before Beginning Installation of this Product:

- 1.) Disconnect all electrical power to the machine.
- 2.) Make sure the machine cannot operate during installation.
- 3.) Follow all safety warnings of the machine manufacturer.
- 4.) Read and follow all installation instructions.

M2582 and M5081 Series

Tripping Power From Engine Ignition System or Battery (for magneto, CD ignition or 24 V battery)

These fuel shut-off valves are semiautomatic device for shutdown of natural gas fueled engines. The standard valve opens by manual operation of the reset handle. A latch in the upper body of the valve will set and hold the valve open. At this point no electric power is used. The electromagnetic coil is de-energized; the snap-switch(es) is SET.

If a magnetic switch, annunciator or controller operates its fuel valve output as energize to trip, a circuit is completed from power through the snap-switch and coil. Now energized, the electromagnet trips the latch (latch can be tripped manually), the valve closes and the snap-switch resets. Power switches from the coil circuit to your choice of an open line, an electrical ground or an alarm. After tripping, the vent seal opens, and on the M50 models, the open/close indicator (green button) retracts to indicate that the valve is closed. Valve body is sandcast aluminum or optional cast steel for some models.

M2582-P and M5180-P

Pneumatic Version for Pressure or Vacuum

The M2582-P and M5180-P pneumatically controlled valve can operate from pressure or vacuum and are designed to open and close automatically or semi-automatically (the supply can be air, oil or gas).

NOTE: If using oil as a pressure source, use a lightweight oil.

The valve will open on rising control pressure and close on decreasing control pressure. M2582-P and M5180-P automatically open at 5 psi (35kPa) [0.34 bar] and fully opens the seat at 15 psi (103 kPa) [1.02 bar]. All models include a built-in lever to aid in opening the valve manually. The M2582-P can be manually opened against inlet pressure of 80 psi (552 kPa) [5.52 bar]. The M5180-P valve can be manually opened against inlet pressure of 100 psi (689 kPa) [6.89 bar].

Standard models include a vent for gas trapped forward in the line after shutoff. Vacuum can be used to hold the valve open, once manually opened.



M5081FS

Normally Energized Circuit

The M5081FS is manually opened, electrically latched open and tripped by interrupting the coil power circuit.

Magnetic Switch Adapter

As ignition systems wear from age, their power output becomes less and less. Ignitions may not have the capacity to reliably trip the Fuel Valve. Therefore, the use of a Magnetic Switch Adapter for CD ignition systems is recommended. The Magnetic Switch Adapter is a device that stores energy from the CD ignition to trip the Fuel Valve.

Two models are available:

65700053 (was 65020126): For use with negative ground ignitions up to 240 VDC.

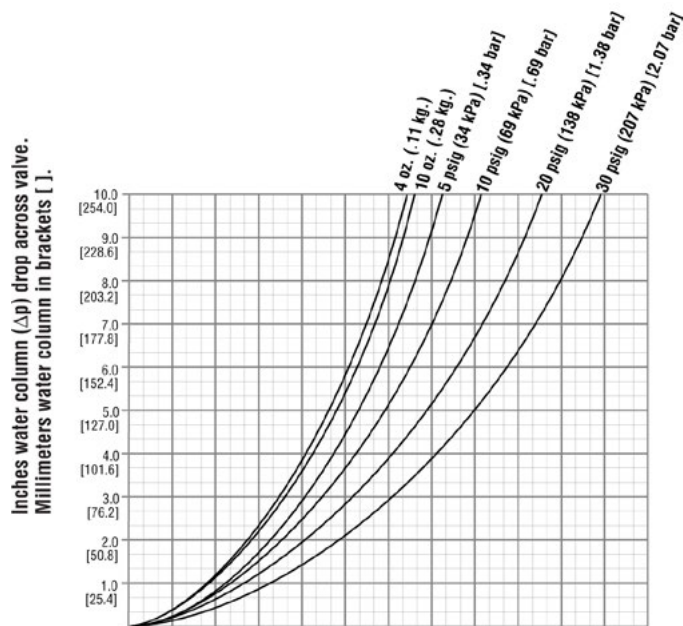
65700055 (was 65020155): For use with negative ground ignitions up to 450 VDC.

100 ohm, 2 watt Resistor

For Capacitor Discharge Ignitions that are specified to be grounded when the valve closes and a Magnetic Switch Adapter is in use. The resistor must be connected in the system to prevent damage to the snap-switches in the fuel shut-off valve (see typical wiring diagrams).

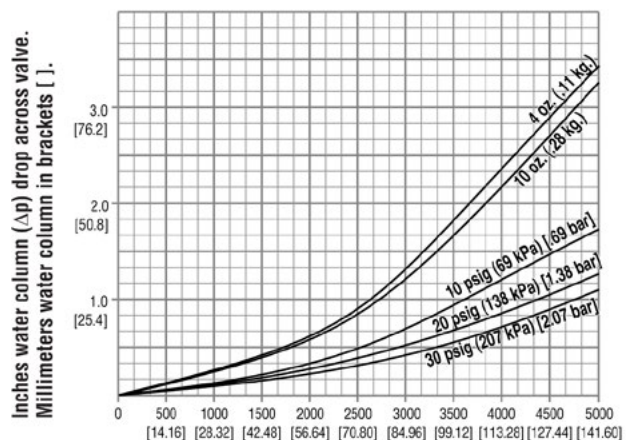
Flow Rates

M2582



Standard cubic feet per hour. Cubic meters per hour in brackets [].

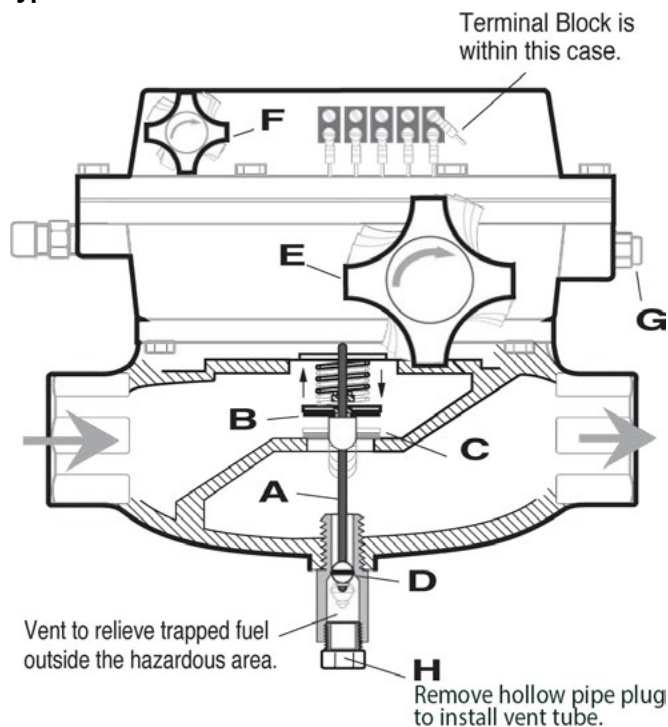
M5081 & M5081FS



Standard cubic feet per hour. Cubic meters per hour in brackets [].

Understanding the Basic Operation of the Fuel Shut-off Valve

Typical Model M5081



The valve below is shown in the run (open) position. Pressure is equalized and seat (B) is open allowing the fuel to flow. When valve is in the tripped position (closed), seat closes (C). The vent (D) opens to relieve trapped downstream fuel to vent to a non-hazardous area.

- A. Main Stem
- B. Pressure Disc/seal (in run/open)
- C. Pressure Disc/seal (in trip/closed)
- D. Vent Seal Gland
- E. Reset Knob (latches valve open)
- F. Manual Trip Knob (not available for M5081FS)
- G. Indicator Button (out with valve open)
- H. Hollow Pipe Plug

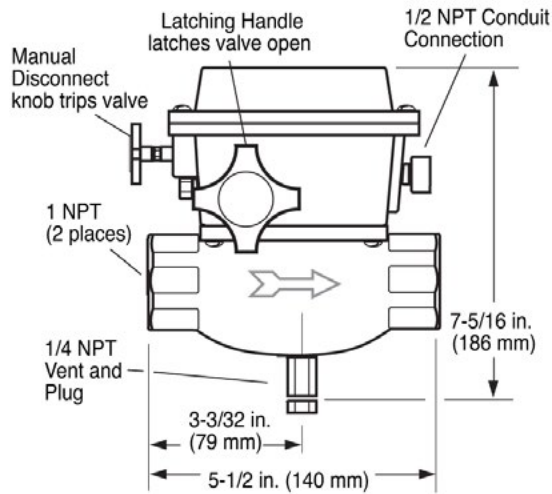
NOTE: If the vent-after-tripping feature is not used, remove O-ring (D) to avoid condensation accumulation that can hamper trip action.

Be sure to replace Pipe Plug (H) and to clean vent periodically.

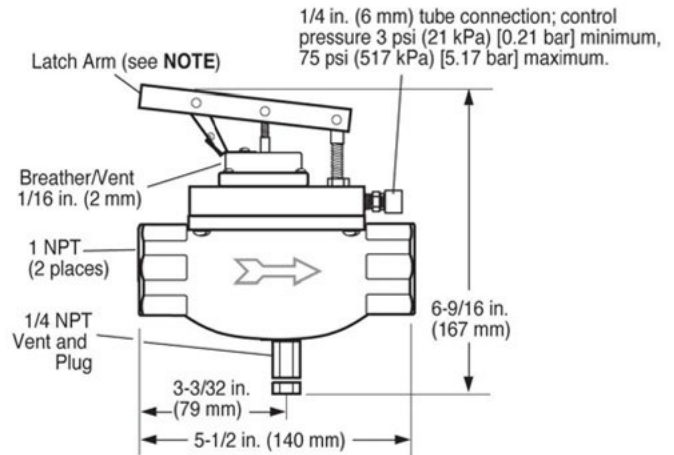
DIMENSIONS

Caution: The arrow on the side of the fuel valve MUST point to the correct direction of the flow, from fuel source to the engine. Apply pipe dope ONLY to fuel pipe, NOT to the fuel valve.

M2582

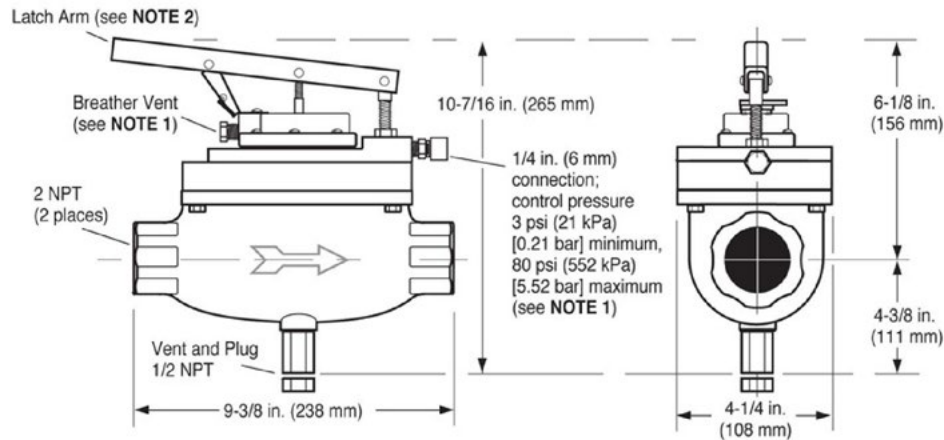


M2582-P



NOTE: Thumb operated opening latch (2.5 psi [17 kPa] [0.17 bar] required to release cocking latch)

M5180-P

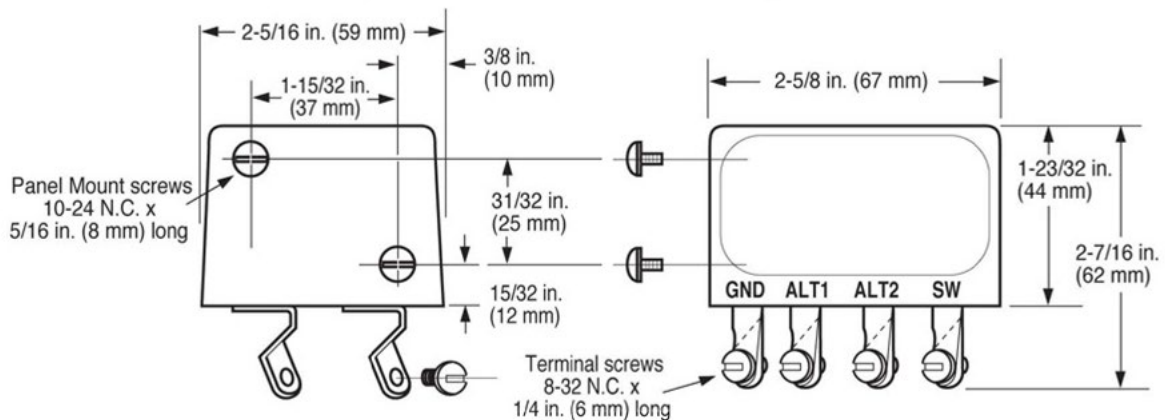


NOTE 1: Control pressure connection fitting and breather vent fitting can be swapped to convert to vacuum control.

NOTE 2: Thumb operated opening latch (2.5 psi [17 kPa] [0.17 bar] required to release cocking latch).

Magnetic Switch Adapters

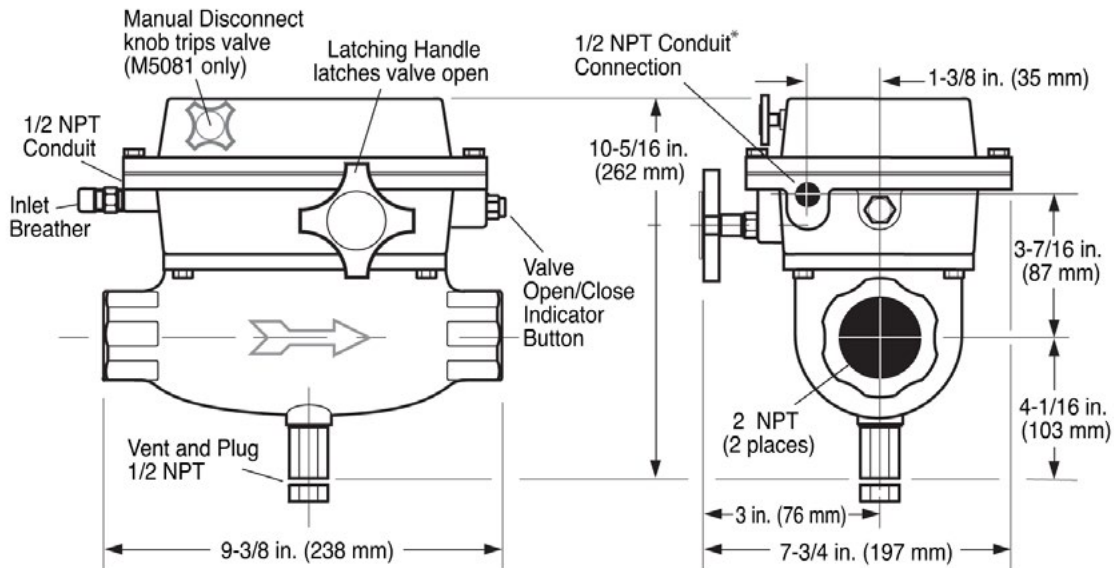
65700053 (was 65020126) and **6570055** (was 65020155)



DIMENSIONS

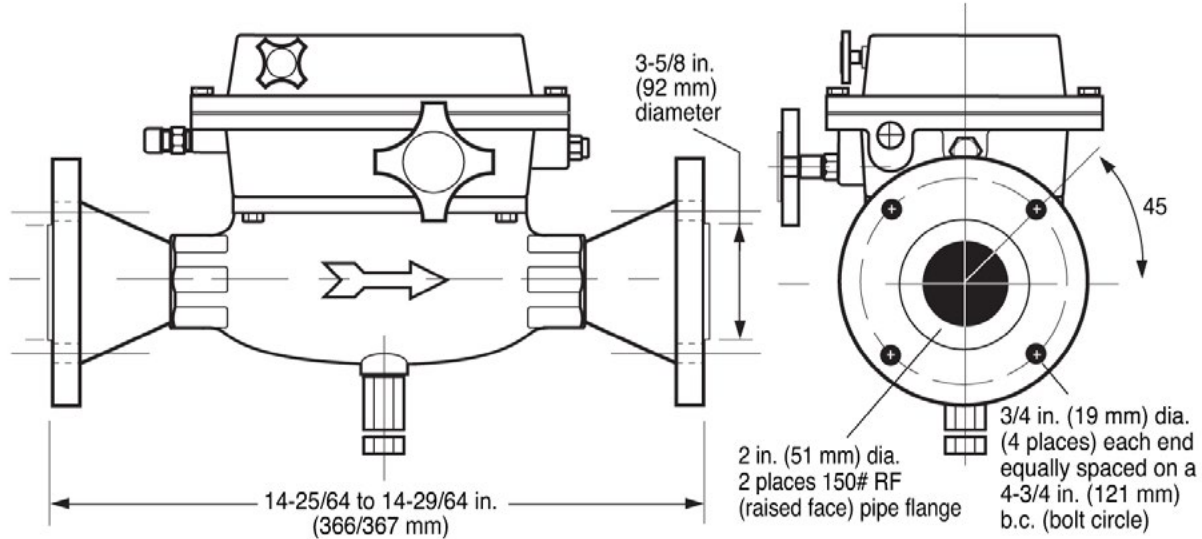
Caution: The arrow on the side of the fuel valve MUST point to the correct direction of the flow, from fuel source to the engine. Apply pipe dope ONLY to fuel pipe, NOT to the fuel valve.

M5081 & M5081FS



* Use explosion-proof conduit seal.

Steel Flange Option on Steel Body (M5081 and M5081FS models only)



Installation



Before Beginning Installation of this Product:

- 1.) Stop the Engine and disconnect all electrical power to the machine.
- 2.) Secure the area of any hazardous conditions.
- 3.) Shutoff the fuel gas supply.
- 4.) For hazardous applications refer to national electrical code specifications.

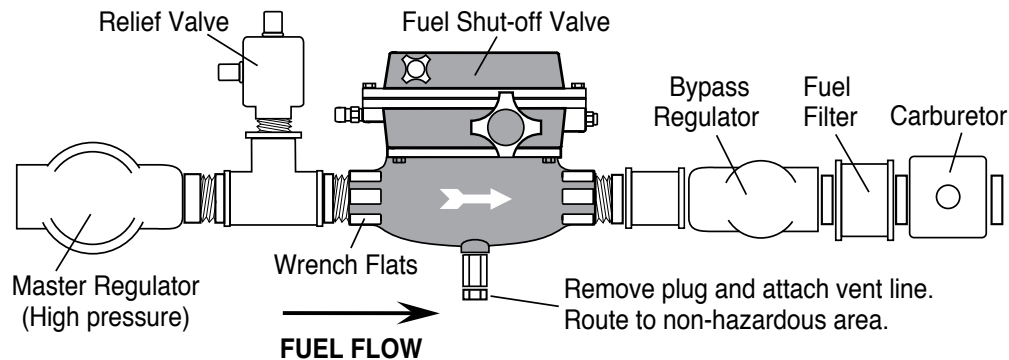
Connecting the Fuel Shut-off Valve

1. Before connecting the unit, apply pipe dope to plumbing male thread that will be inserted into the valve. Do not apply pipe dope to the valve.
2. Make sure that the arrow on the side of the valve indicates the correct direction of the flow.
3. Fuel shut-off valves can be installed in all three planes. However, mounting the valve horizontally (with vent pointing down) is recommended. Do not install valve with top down. (Refer to Figure 1.)
4. Hold valve in position (use a tool on valve wrench flats) and tighten plumbing into inlet and outlet ends. (See Dimensions.)

CAUTION: Do Not Twist the Valve Body Housing.

5. To mount flanged models, follow the appropriate installation codes and ordinances for the application. (See Dimensions.)
6. A vent line (to allow gas trapped forward between fuel valve and the carburetor to escape) should be attached to the vent connection at the bottom of the valve housing. Remove the plug and install the line. (See Figure 1.)

Figure 1: Physical Location and Plumbing (typical)



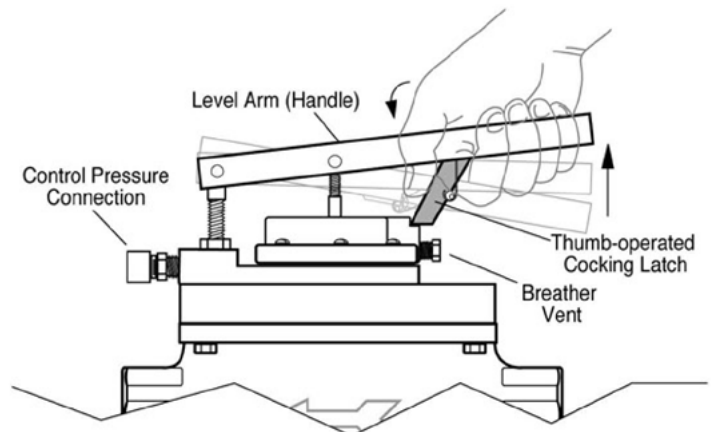
Connecting Pneumatic Models M2582-P and M5180-P

1. Repeat the steps above (Connecting Fuel Shut-off Valve steps 1 thru 5) and observe the necessary cautions.
2. A lever/arm (handle) and a cocking latch are provided to allow manual opening of the valve. The thumb-operated latch can be locked in place to hold the lever/arm latched. The cocking latch will be released when pilot pressure reaches 2.5 psi (17 kPa) (0.17 bar)]. M2582-P and M5180-P automatically open at 5 psi (35kPa) [0.34 bar] and fully opens the seat at 15 psi (103 kPa) [1.02 bar]. See Specifications, for maximum control pressure.

CAUTION: Be Sure Pneumatic Source Releases The Mechanical Latch When Running.

3. If vacuum control is desired, swap the Control Pressure connection fitting and the Breather Vent fitting on your M50180-P model. (See Fig. 2.)

Figure 2: Pull the lever up and press the latch down into ridge with thumb.



Wiring Information



Before Beginning Wiring of this Product:

- 1.) Perform the wiring operation with the power source OFF.
- 2.) Secure the area to be non-hazardous.
- 3.) Make sure the voltage and current requirements are within the Fuel Shut-off Valve ratings.
- 4.) Use hard conduit with approved seals as required by the NEC for hazardous installations.

Refer to Typical Wiring Diagrams in this document for specific wiring connections.

M2582 Internal Wiring

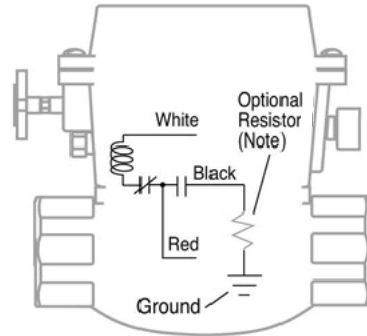
Wiring shown in normal mode of operation (seat open). The 20 AWG (0.75 mm²) wire is color coded to the coil:

- For CD ignitions: White and Orange
- For Magneto ignitions: White and Green
- For Battery: White and Blue

Conduit Installation

Install a 1/2 NPT conduit from the M2582 conduit connection to the power source. See Dimensions for location.

NOTE: For grounding the ignition (CD models only) through the fuel valve snap-switch, use a Magnetic Switch Adapter and install a 100 ohm, 2 watt resistor. See Typical Wiring Diagrams.



M5081 Internal Wiring

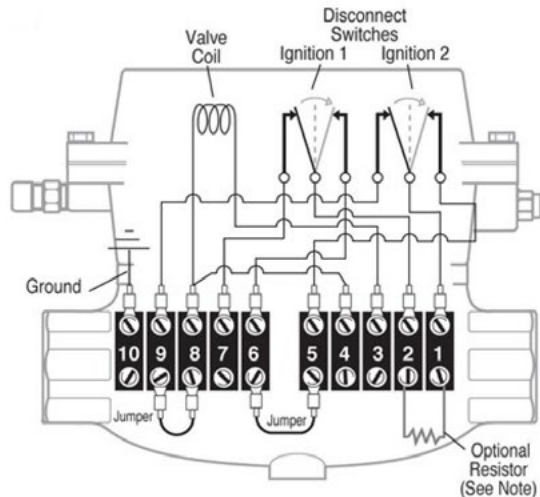
Wiring shown in normal mode of operation (seat open). The 18 AWG (1.0 mm²) wire is color coded to the coil:

- For CD ignitions: White and Orange
- For Magneto ignitions: White and Green
- For Battery: White and Blue

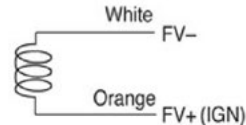
Conduit Installation

Install a 1/2 NPT conduit from the M5081 conduit connection to the power source. See Dimensions for location.

NOTE: For grounding the ignition (CD models only) through the fuel valve snap-switch, use a Magnetic Switch Adapter and install a 100 ohm, 2 watt resistor. See Typical Wiring Diagrams.



M2582-C-LS Wiring

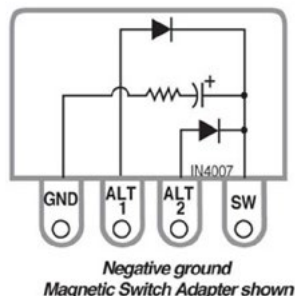


Magnetic Switch Adapters for Use with CD (Capacitor Discharge) Ignitions

Connect the Magnetic Switch Adapter between the fuel Valve terminal 1 and the CD Ignition.

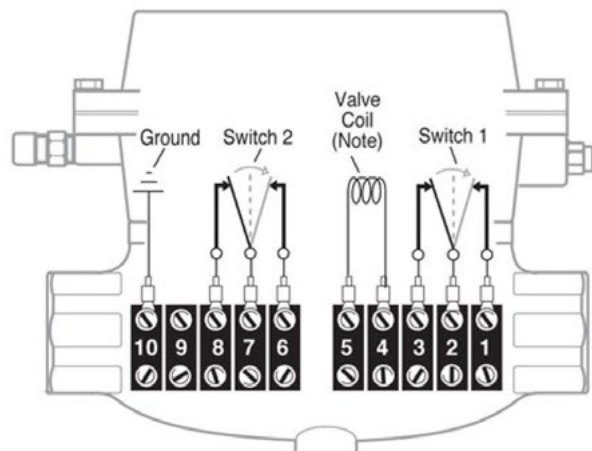
65700053 (was 65020126):
For use with negative ground ignitions up to 240 VDC.

65700055 (was 65020155):
For use with negative ground ignitions up to 450 VDC.



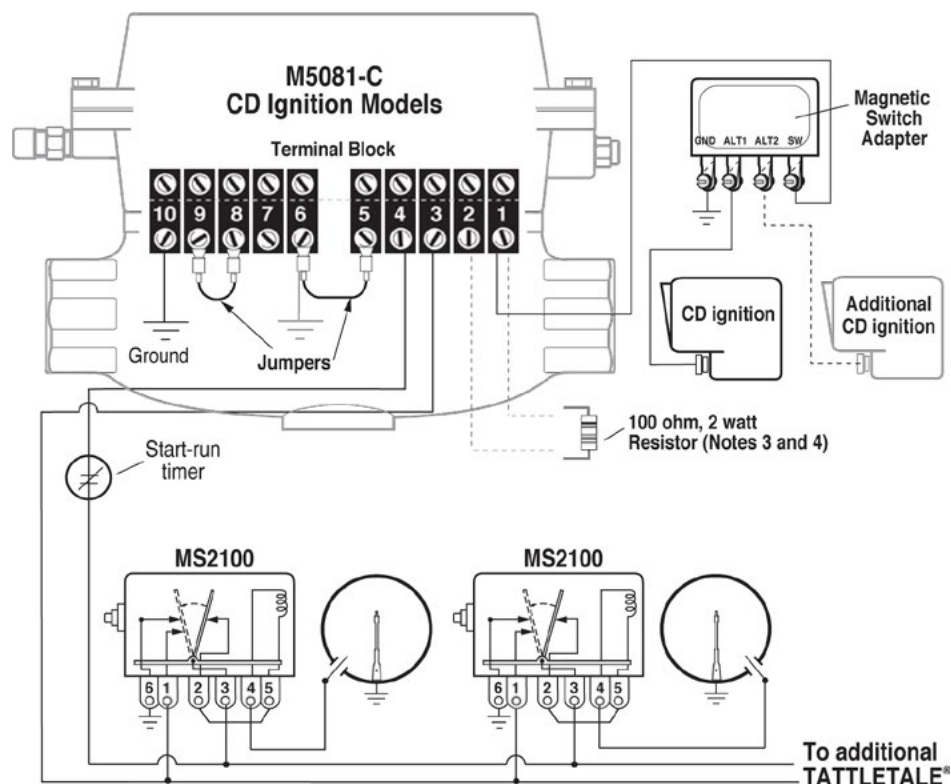
M5081FS Internal Wiring

Wiring shown in normal mode of operation (seat open). The 18 AWG (1.0 mm) wire is red color.



Typical Wiring Diagrams

M5081-C (CD Ignition Models)



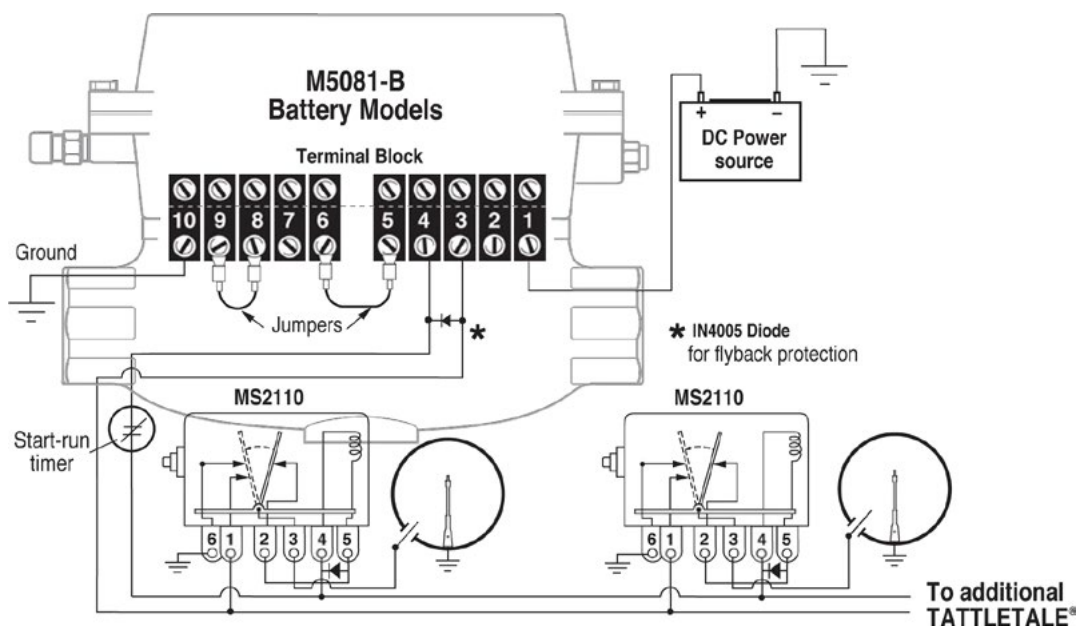
NOTE 1: To CLOSE FUEL VALVE-NOT GROUNDING THE IGNITION (Single CD Ignition Systems) Remove the factory-installed jumper on terminals 6-5. Do NOT ground terminal 6.

NOTE 2: To CLOSE FUEL VALVE-NOT GROUNDING THE IGNITIONS (Dual CD Ignition Systems) Remove the jumper on terminals 6-5. Connect second ignition to Magnetic Switch Adapter terminal AL T2.

NOTE 3: To CLOSE FUEL VALVE and GROUND THE IGNITION (Single CD Ignition Systems) Remove the jumper on terminals 6-5. Connect a 100 ohm, 2 watt resistor between valve terminals 1-2. Ground terminal 6.

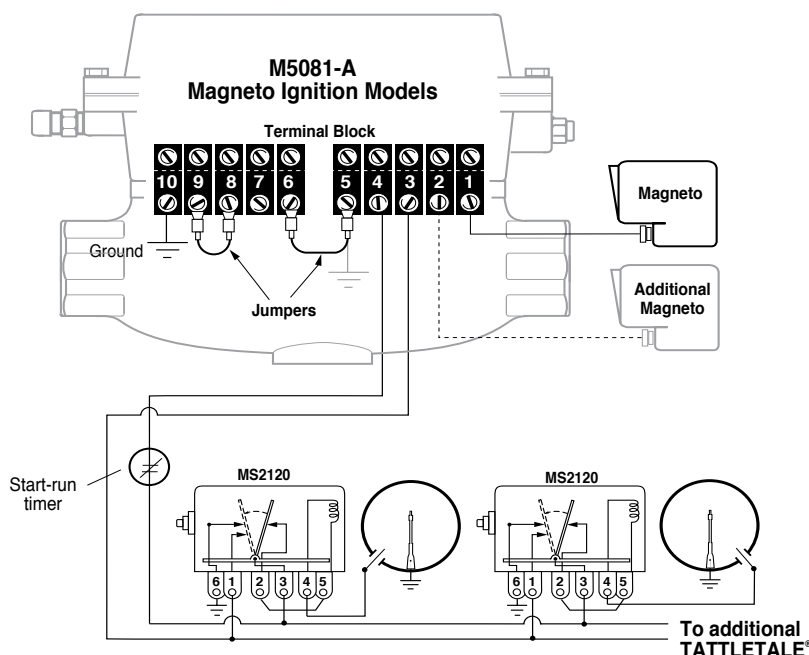
NOTE 4: To CLOSE FUEL VALVE and GROUND THE IGNITION (Dual CD Ignition Systems) Remove the jumper on terminals 6-5. Connect a 100 ohm, 2 watt resistor between valve terminals 1-2. Ground terminal 6. Connect second ignition to Magnetic Switch Adapter terminal AL T2.

M5081-B (Battery Ignition Models)



Typical Wiring Diagrams (continued)

M5081-A (Magneto Ignition Models)



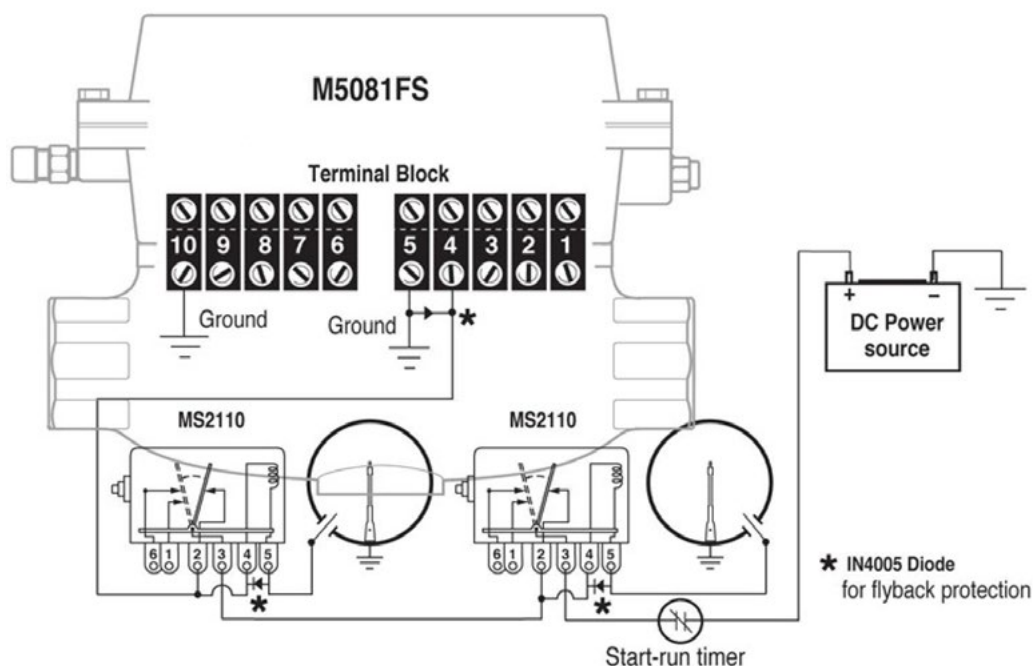
NOTE 1 : To CLOSE FUEL VALVE-NOT GROUNDING THE IGNITION (Single Magneto Systems) Remove the factory-installed jumper on terminals 6-5. Do NOT ground terminal 5.

NOTE 2: To CLOSE FUEL VALVE-NOT GROUNDING THE IGNITIONS (Dual Magneto Systems) Remove the factory-installed jumpers on terminals 6-5 and 9-8. Add 65010065 diode package as shown. Do NOT ground terminals.

NOTE 3: To CLOSE FUEL VALVE and GROUND THE IGNITION (Single Magneto Systems) The factory-installed jumpers {6-5 and 9-8} must be in place. Add ground wire to terminal 5.

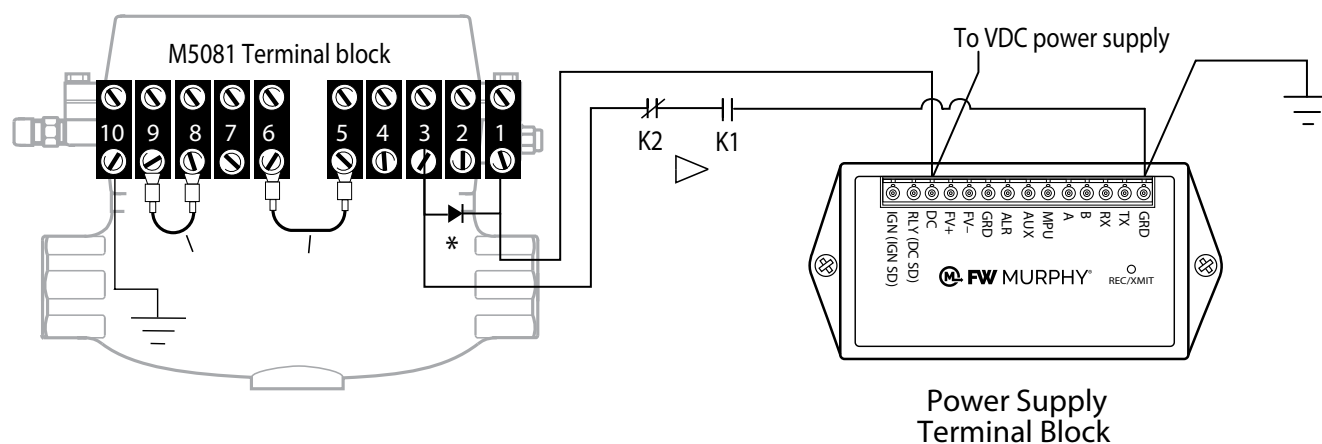
NOTE 4: To CLOSE FUEL VALVE and GROUND THE IGNITION (Dual Magneto Systems) Remove the jumper on terminals 9-8. Add 65010065 diode package as shown. Add ground wire to terminal 5.

M5081FS (Normally Energized Models)



Typical Wiring Diagrams (continued)

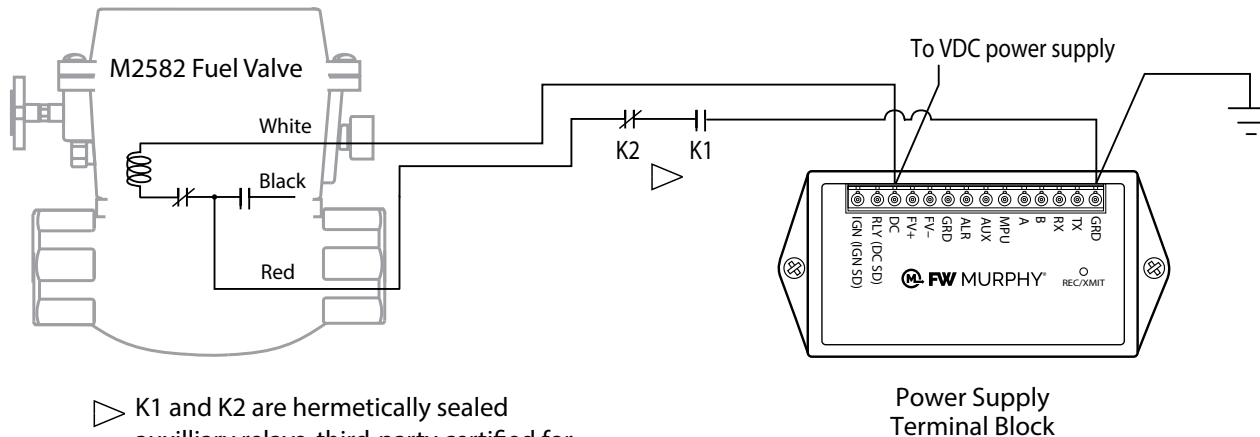
(A) M5081-B to TTD



▷ K1 and K2 are hermetically sealed auxiliary relays, third-party certified for use in Class I, Div. 2, Gps. C & D areas.

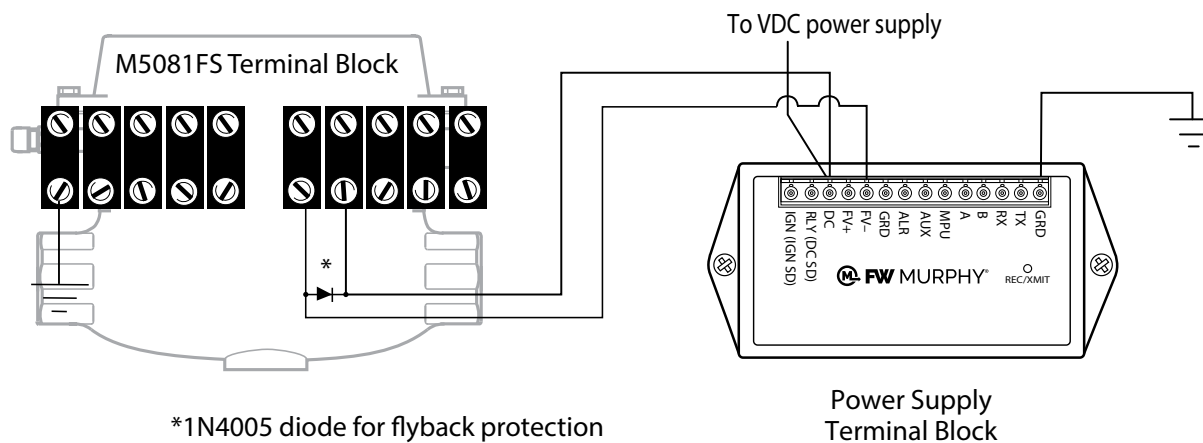
* 1N4005 diode for flyback protection

(B) M2582-B to TTD



▷ K1 and K2 are hermetically sealed auxiliary relays, third-party certified for use in Class I, Div. 2, Gps. C & D areas.

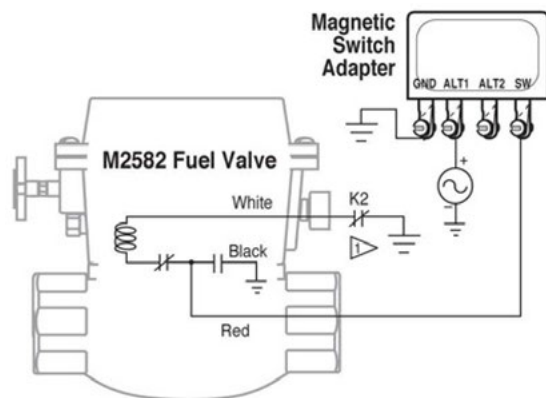
M5081FS to TTD



*1N4005 diode for flyback protection

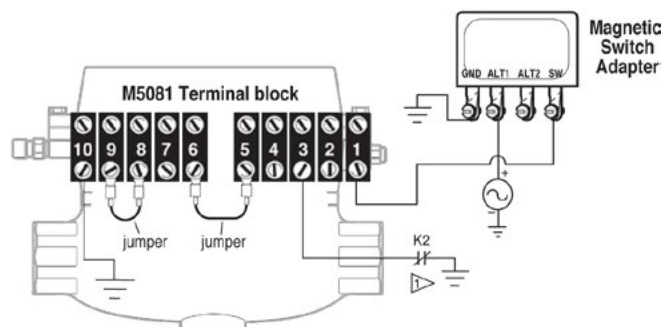
Typical Wiring Diagrams (continued)

(C) M2582-C With Magnetic Switch Adapter to CD Ignition



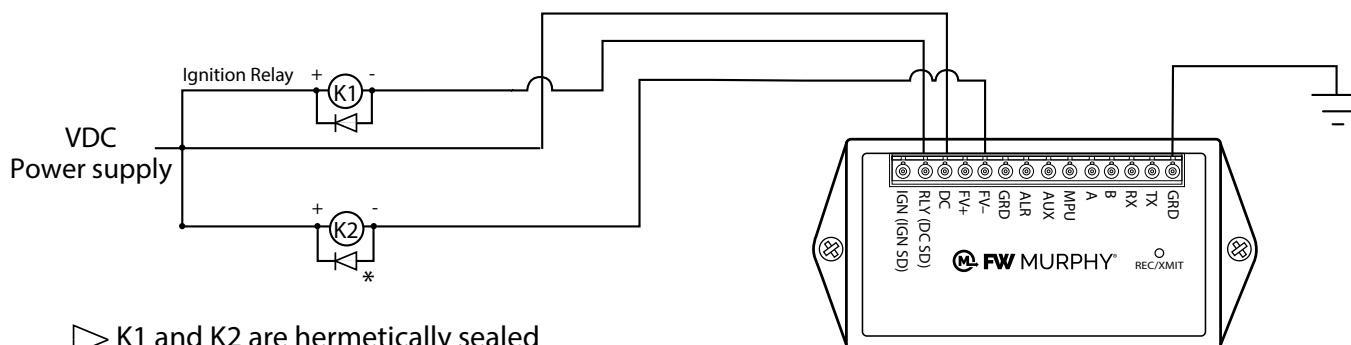
▷ K2 is hermetically sealed auxiliary relay, third-party certified for use in Class I, Div. 2, Gps. C & D areas.

(D) M5081-C With Magnetic Switch Adapter to CD Ignition



▷ K2 is hermetically sealed auxiliary relay, third-party certified for use in Class I, Div. 2, Gps. C & D areas.

TTD to Relays (Connections shown for use with diagrams A, B, C, D)



▷ K1 and K2 are hermetically sealed auxiliary relays, third-party certified for use in Class I, Div. 2, Gps. C & D areas.

*1N4005 diode for flyback protection

Power Supply
Terminal Block

Specifications

Valve Body: Sandcast aluminum, painted red, corrosion resistance;

Optional cast steel available for M5081 and M5081FS models only

Valve Seat: Buna-N

Maximum Valve Inlet Pressure:

M2582 / M2582-P: 80 psi (552 kPa) [5.52 bar]

M5081 / M5081FS / M5180-P: 100 psi (689 kPa) [6.89]

Maximum Control Pressure (Pneumatic Models):

M2582-P: 75 psi (517 kPa) [5.17 bar]

M5180-P: 80 psi (552 kPa) [5.52 bar]

Snap-switch: M2582: One SPDT, 5 A @ 480 VAC

M5081, and M5081FS: Two SPDT, 5 A @ 480 VAC

Wiring: M2582: Wire leads; M5081, and M5081FS: Terminal blocks

NOTE: All aluminum versions of the M5081 Series Fuel Valve carry Canadian Registration Number OC1476.2.

Coil Rating: Intermittent duty; coil type must match power source;

CD ignition coil resistance: 72 Ω

CD ignition primary voltage: 1.38 to 3.8 A

M5081FS: Coil resistance, energized to run (continuous-duty coil):
136 Ω

Magneto ignition coil resistance: 0.5 Ω

Magneto primary voltage: 1 to 5 A

Battery coil resistance: 7 Ω

Up to 2.4 A

Laboratory Approval: CSA Class I, Group C and D Hazardous Location.

5 amp maximum; intermittent duty; model M5081 and M5081-CD engine ignition powered, and model M5081-I-B, 24 VAC or VDC; switch contacts rated 5 A @ 480 VAC maximum. Maximum pressure 100 psi (689 kPa) [6.89 bar].

Part Number					Description	Notes
65700053					Magnetic Switch Adapter (for M2582 and M5081)	For Negative Ground CD Ignitions up to 240 VDC
65700055						For Negative Ground CD Ignitions 240 VDC to 450 VDC
M2582	M5081	M5081FS	M2582-P	M5180-P	Service Parts	Notes
55000128	55000126	-----			Battery	Coil Assembly
55000129	55000127	-----			CD Ignition	
55000094	55000080	-----			Magneto Ignition	
55000095	55000074	-----			Latch Block Assembly	Latch Block Assembly
-----	55000118	-----			Latch Block Switch and Mounting Bracket Assembly	
-----	55000102	55000102	55000148	55000154	Handle & Latch Kit	
55000096	-----	-----			Handle Kit	
55000097	55000137	-----			Manual Disconnect Assembly	
55000098	55000072	55000160			Snap-Switch Assembly	
-----	55000138	55000138			Close/Open Indicator Assembly	
55000093	55000075	55000075	55000147	55000135	Stem & Seat Kit	
55000146	55000131	55000194 (24V)	55000150	55000155	Top Works Complete Valve Less Body and Vent	
55000143	55000132	55000132	55000143	55000132	Vent Bushing Assembly	
			55000184	55000153	Diaphragm Assembly	

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北京朝阳区望京SOHO-T1-C座2115室 邮编：100102

手机：139 1096 2635 电子邮件：sales@cnmec.biz