



428 Jones Boulevard Phone: (610)495-5131  
Limerick Airport Business Center Fax: (610)495-5134  
Pottstown, PA 19464 www.watsonmcdaniel.com

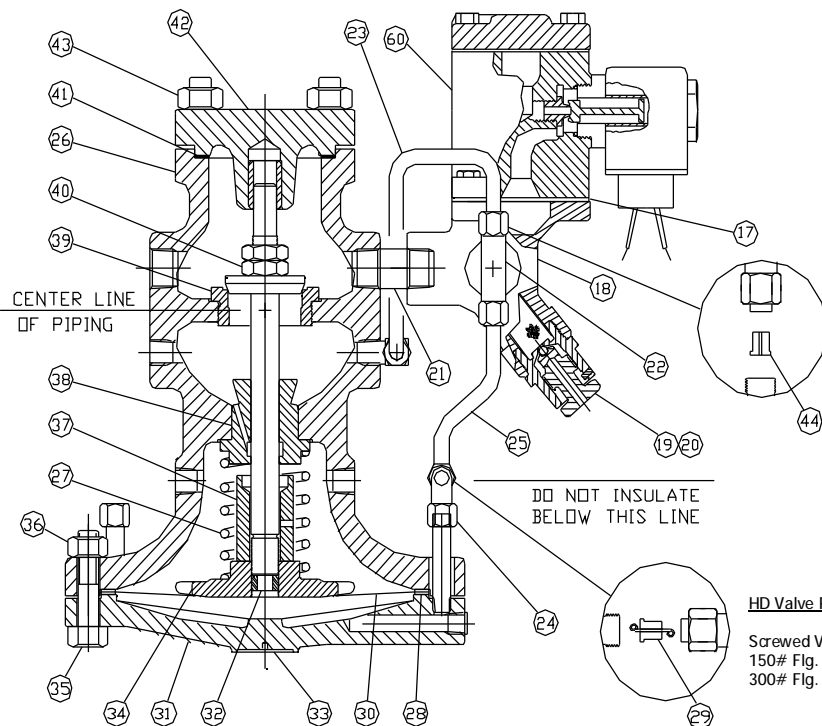
# SERIES HDS & DS

## SOLENOID PILOT REGULATING VALVE

### INSTALLATION INSTRUCTIONS

INSTRUCTION PART NO. 2225700

REVISION 3



MAIN VALVE:		
ITEM	PART NAME	MATERIAL
18	Pilot Adaptor	Ductile Iron
*19	Blowdown Valve	Stn. Stl.
*20	Screen, 40 Mesh	Stn. Stl.
21	Nipple	Black Pipe, Sch.80
22	Male Branch Tee	Brass
23	Tubing, Pilot to Body	Copper Tubing
24	Elbow, Tube to Pipe	Brass
25	Tubing, Pilot to Diaph.	Copper Tubing
26	Main Valve Body	Ductile Iron
27	Spring	302 Stn. Stl.
*28	Gasket, Diaph. Cover	Grafoil
29	Orifice Ass'y, Diaphragm	Brass (Stn. Stl. Wire)
*30	Diaphragm, Main Valve	Phos. Bronze
31	Diaphragm Cover	Ductile Iron
32	Set Screw	Stn. Stl.
33	Name Plate	Stn. Stl.
34	Diaphragm Plate	C. I. A126 Cl. B
35	Cap Screws	Steel
36	Nuts	Steel
37	Plug Stop	Steel Tubing
38	Stem Guide Ass'y	Brass
*39	Seat Ring	402 Stn. Stl.
*40	Disc & Stem Ass'y	Stn. Stl.
*41	Gasket, Cover	Grafoil
42	Cover Assembly	Ductile Iron
43	Nuts	Steel
44	Bleed Orifice, Male Branch Tee	Brass
60	Combination Pilot Adaptor	

Note: The 'D' valve is cast iron instead of ductile iron.

#### HD Valve Pressure-Temperature Ratings

Screwed Valves	450 PSI @ 650°F
150# Flg. Valves	150 PSI @ 566°F
300# Flg. Valves	450 PSI @ 650°F

#### D Valve Pressure-Temperature Ratings

Screwed Valves	250 PSI @ 450°F
125# Flg. Valves	125 PSI @ 353°F
250# Flg. Valves	250 PSI @ 450°F

## INSTALLATION

- Unpack valve carefully and inspect to insure it was not damaged in shipping. Valve is completely assembled except for pilot which is packed separately.
- Valve should be installed in horizontal position with flow in direction as indicated by arrow on body. Main valve diaphragm to be in down position. Caution: When installing flanged valves, make sure flange bolts are tightened evenly so as not to over stress and crack flanges.
- Piping on down stream side of valve is generally larger than valve to eliminate restriction in flow.
- Line should be blown down thoroughly.
- Bypass connections of same size as pressure reducing valve is recommended. Use gate valves before and after pressure reducing valve and globe valve as by-pass valve.
- Steam trap installed in a drip leg ahead of pressure reducing valve will remove condensate, insure proper operation and increase valve life.
- A 'Y' strainer should be installed between inlet side of pressure reducing valve and inlet gate valve. Make sure sufficient clearance is allowed so strainer screen can be removed.

Each Watson McDaniel Company Product is warranted against defects in material and workmanship for one year from date of shipment. This warranty extends to the first retail purchaser only. All defective material must be returned to the person from whom you purchased the Product, transportation prepaid, free of any liens or encumbrances, and if found to be defective will be repaired free of charge or replaced, at the warrantor's or seller's option. If the material is replaced, any replacement will be invoiced in the usual manner and after inspection of alleged defective material an adjustment will be made for depreciation caused by purchaser's use. In no event will Watson McDaniel Company be liable to do more than refund the original contract price. Incidental and consequential damages are excluded, whether under this warranty or otherwise. All implied warranties, including warranties of merchantability and fitness for a particular purpose, are disclaimed and excluded.

### 8. Assembly of Pilot to Main Valve.

- Remove pilot adaptor protector from main valve.
- Place gasket on pilot adaptor making sure roll pin in pilot adaptor is thru small hole in gasket.
- Assemble pilot & combination adaptor to pilot adaptor.

## GENERAL MAINTENANCE

It is good practice to periodically inspect and clean the following parts:

- Blow down and clean all pipe line strainers.
- Inspect and clean pilot screen.
- Inspect and clean male branch tee and diaphragm orifice.
- Check all connections for leakage.

Note: These items should be checked a few days after valve is initially installed and shortly after start-up during each heating season.

## TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	CORRECTION
Valve will not open	a) Diaphragm orifice blocked	a) Inspect and clean (Do not remove wire)
	b) Bleed orifice missing or installed wrong\	b) Inspect and check against cutaway drawing
	c) Main valve diaphragms ruptured	c) Replace main valve diaphragms
	d) Pilot screen plugged	d) Remove and clean
	e) Pilot valve seat or guide bound with dirt	e) Inspect and clean
Valve will not close	f) Pipeline strainer clogged	f) Blowdown and clean
	g) Shut-off valves shut	g) Check and open valves
	a) Bypass valve open	a) Close bypass valve
	b) Main valve or pilot valve disc will not seat. Due to dirt or scale causing stem binding in guide disc to be held off seat	b) Inspect, clean and repair
	c) Male branch orifice blocked	c) Inspect and clean

## SERVICE INSTRUCTIONS

- 1) Servicing main valve diaphragms.
  - a) Shut off inlet gate valve and make sure downstream pressure is zero. Downstream gate valve should also be shut when pressure is at zero to prevent any downstream condensate from entering valve.
  - b) Disconnect copper tubing to diaphragm chamber. Also check orifice at this time. CAUTION: Some hot condensate may come from line and diaphragm chamber.
  - c) Remove main valve diaphragm bolts. CAUTION: Chamber is filled with condensate which could be hot. First slightly loosen all bolts, then further loosen several bolts on opposite side from where you are standing. Pry cover from valve allowing condensate to drain from valve away from you. Make sure you gently pry diaphragm loose from body to drain condensate from body of valve.
  - d) Remove all bolts and diaphragm cover.
  - e) Inspect the two (2) metal diaphragms for small cracks and wrinkles. Replace if necessary.
  - f) Clean diaphragm and diaphragm plate and gasket surfaces before reassembly.
  - g) Make sure diaphragm plate is securely fastened to stem with locking set screw.
  - h) Valve stem can be checked for proper movement by pushing up on diaphragm plate. CAUTION: Condensate may be in upper portion of valve body.
  
- 2) Servicing main valve and seat.
  - a) Follow disassembly instructions as noted in diaphragm servicing instructions (1).
  - b) Loosen diaphragm plate set screw and remove diaphragm plate.
  - c) Remove bottom cover bolts and bottom cover.
  - d) Remove stem and disc assembly from valve and inspect disc and seat for wear. Minor wear can be corrected by lapping disc and seat together with 400 grit lapping compound. Inspect disc and seat for signs of scale or dirt which could have caused leakage.
  - e) Check for body erosion around seat ring. Check seat ring for possible damage or excessive wear and any sign of scale or dirt which could cause leakage. Replace if necessary. Replacement seats and discs should be lapped in.
  - f) Reassemble as required.
  
- 3) Servicing pilot.
  - a) Shut down system as required.
  - b) Remove and clean pilot screen.
  - c) Remove pilot assembly from pilot adaptor.
  - d) Inspect pilot assembly for wear or dirt. Replace if necessary. Check electrical connections.
  - e) Reassemble as required.