

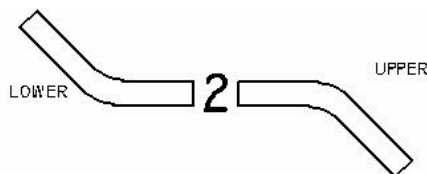
**SPECIFICATIONS**

Body Size:	2.00 Inch
Body Style:	Angle or Globe
Body End Connection:	Threaded, 2.00 NPT
Body Closure Type:	Bolted
Max. Working Pressure:	600 PSIG at 1000 F
Materials of Construction:	See Table 1
Temperature Limits:	-20 degrees F to 1800 F
Valve Weights:	See Table II
Seat Leakage Class:	Class VI, per ANSI B16.104
Orifice Diameter:	1.25 Inch
Stem Travel:	0.50 Inch
Actuator Type:	Pneumatic (Diaphragm/Spring Return) (Adjustable or Non – Adjustable Spring)
Actuator Size	No. 9 (35 Sq. In.) No. 12 (70 Sq. In.)
Actuator Supply Connection:	1/4 - 18 NPT
Actuator Action:	Reverse (Normally Closed) Direct (Normally Open)

\*Maximum Recommended Supply Pressure 35 PSI

**GENERAL DESCRIPTION**

The Norriseal Series 2075 is a single-seated, pneumatically operated control valve designed for low to moderate pressures in either liquid or gas applications. Valve trim is of the quick opening type, and the soft-seated valve plug provides leak-free shutoff. Fluid flow may be directed either over or under the valve seat. The Series 2075 may be furnished with either a 35 or 70 square inch actuator. Operating mode may be either reverse (normally closed) or direct (normally open). With optional materials of construction, the Series 2075 complies with NACE material specification MR-01-75.



**Table 1**

**Materials of Construction**

VALVE BODY COMPONENTS		
ITEM DESCRIPTION	STD MAT'L	NACE MAT'L
BODY	A395 D.I.	A395 D.I.
PACKING PLUG	1215 CSTL	1018 CSTL
PACKING PLUG CAP	1215 CSTL	1018 CSTL
VALVE SEAT	303 SST	316 SST
VALVE CAGE	304 SST	304 SST
VALVE STEM	303 SST	316 SST
PLUG DISC	303 SST	316 SST
PLUG RETAINER	303 SST	316 SST
COTTER PIN	18-8 SST	18-8 SST
CASTLE NUT	18-8 SST	18-8 SST
STEM GUIDE	KYNAR+	KYNAR+
PLUG INSERT	TEFLON	VITON*
O-RINGS	VITON	VITON*
BACK-UP RINGS	TFE	TFE
ACTUATOR COMPONENTS		
ITEM DESCRIPTION	MATERIAL	
DIAPHRAGM HOUSINGS	CSTL	
SPRINGS	CSTL	
DIAPHRAGM PLATE	CSTL	
SPRING RETAINER	CSTL	
DIAPHRAGM	BUNA-N	
CAP SCREWS AND NUTS	CSTL PLTD	
ADJUSTING SCREW	CSTL PLTD	
JAM NUT	CSTL PLTD	
BODY/ACTUATOR BOLTING	A193 GR. B8M (316 SST)	
LOCK WASHERS	CSTL PLTD	
ACTUATOR SEAL NUTS	CSTL/NYLON	
ACTUATOR GASKET	ASB/NBR	
POSITION INDICATOR	SST/DELTRIN	

\*Registered U.S. Patent Office F/Dupont's Fluorelastomers  
+Registered Trademark Pennwalt Corporation

**INSTALLATION & START-UP**

**CAUTION:**

Maximum working pressure for the Series 2075 is 600 PSIG. If system pressure is capable of exceeding 600 PSIG, a relief valve or other over-pressure protection should be installed.

1. Prior to installation, remove thread protectors from body end connections, and inspect valve for any shipping damage.
2. Flow through valve may be in either direction, as appropriate for the particular application. If valve has a globe style body, the upper and lower body ports may be identified from bridge symbol on body exterior.

**NOTE:** If flow is directed in lower body port, shutoff differential pressure will be under valve plug, and tending to open.

See Table III for Maximum Differentials

TABLE II

Valve Weights (approximate)  
(Weights are in lbs.)

BODY STYLE	ACTUATOR SIZE AND TYPE			
	NO. 9 (35 SQ. IN.)		NO. 12 (70 SQ. IN.)	
	REVERSE	DIRECT	REVERSE	DIRECT
GLOBE	24	25	32	34
ANGLE	23	24	31	33

TABLE III

Maximum Differential Pressures  
NO. 9 & NO.12 Adjustable Actuator

NO. 9 AND NO. 12 ADJUSTABLE ACTUATOR							
DIAPHRAGM SUPPLY PRESSURES	FLOW UNDER SEAT				FLOW OVER SEAT		
	NO. 9		NO. 12		NO. 9		NO. 12
	REV	DIR	REV	DIR	REV	DIR	REV
18	270	170	430	275	300	300	600
24	300	300	600	600	300	300	600
NO. 9 NON-ADJUSTABLE ACTUATOR							
DIAPHRAGM SUPPLY PRESSURES	ACTUATOR TYPE	FLOW OVER SEAT		FLOW OVER SEAT			
		REV	DIR	REV	DIR		
12	9BA2	60	300	300	300		
15	9BA2	75	300	300	300		
24	9BA4	140	---	300	---		
32	9BA4	180	---	300	---		

- Before installing valve, examine male (pipe) threads to be sure they are clean and free of damage. To reduce thread friction and assure a tight joint, apply TFE tape or other lubricant to the male threads. Before final tightening, be sure that body and pipe threads are properly engaged.
- Remove plastic thread protector plug from actuator supply connection. Connect actuator supply line to 1/4 - 18 NPT connection in diaphragm housing.
- Check for proper valve operation by cycling actuator several times and observing position indicator. Indicator movement corresponds to valve stem travel and should be 0.50inch.

VALVE MAINTENANCE

1. **Disassembly** -Before disassembling valve, complete the following steps:

- Isolate valve from the process.
- Release process pressure captured in pipeline.
- Vent actuator supply pressure.
- If reverse actuator, relieve actuator spring compression.

Remove (2) 3/8-16 UNC heavy hex nuts securing actuator to valve body. Lift actuator straight up and out of body. Valve stem and plug, and packing plug assembly, will also come out of body and remain attached to actuator. Seat and cage will remain in body.

2. **Inspection** Remove seat, cage, and seat o-ring from body and inspect for damage and wear. Inspect body interior for evidence of corrosion, erosion, or other damage. O-ring seal surfaces at bottom of seat recess and inside top bore should be smooth and free of damage for proper sealing.

Inspect exposed portion of plug insert for damage that could impair tight shutoff. Inspect o-ring in packing plug groove for damage. Replace if necessary.

**NOTE:** The packing plug o-ring is the primary seal which prevents external leakage of process fluid from valve body.

To inspect valve stem and stem seal o-rings, first remove cotter pin at bottom of stem. Next, remove 5/16-24 hex castle nut securing plug to stem. Slide plug retainer, insert and disc from end of stem. Remove packing plug and stem guide by sliding off end of stem. Packing plug cap may now be removed in a similar manner. Valve stem should now be carefully inspected for any wear or damage that would prevent effective sealing against stem o-ring seals. If stem is judged to be in serviceable condition and not in need of replacement, proceed to "Reassembly".

Replacement of valve stem requires disassembly of actuator. First, remove(12) 3/8 -16 UNC hex cap screws securing upper and lower diaphragm housings. Remove (2) 5/16-`24UNF hex jam nuts securing diaphragm plate and diaphragm to upper end of stem. If actuator is the direct-acting (normally open) type, these parts are secured by upper actuator stem, instead of jam nuts.

**INSTALLATION OF VALVE STEM:**

**CAUTION:**

Before reassembling valve stem with diaphragm plate, carefully observe the length of threaded portion at each end of stem. The end having the longer threaded portion (0.88 inch, vs. 0.50 inch) is the upper end, and must be secured to the actuator components. The shorter (0.50 inch) threaded length is the bottom end, and must be assembled with the valve plug.

After selecting a new valve stem, reinstall bearing washers, diaphragm, and diaphragm plate in their respective positions on upper end of stem. Replace jam nuts or upper actuator stem, then reassemble remaining actuator components. Inspect flat gasket surrounding center hole at bottom of lower diaphragm housing. Replace gasket if necessary.

- Reassembly** - Reinstall packing plug cap so that center hub engages hole in lower diaphragm housing (o-ring recess will be facing bottom of stem). Install TFE backup ring, o-ring and stem guide. Stem guide will push backup ring and o-ring into their proper positions in cap. Install remaining TFE backup ring and o-ring in packing plug recess. Carefully slide packing plug over end of stem, and slide into position until packing plug touches packing plug cap.

Install plug disc on stem, with o-ring groove facing bottom of stem. Install disc o-ring, plug insert and retainer.

**NOTE:** Plug insert is designed for a snug fit on stem.

Install hex castle nut to secure plug components. Install cotter pin through hole near bottom of stem. Install seat o-ring and valve seat in body seat recess.

**NOTE:** Observe correct orientation of valve seat. 45 degree chamber must be facing downward to properly engage seat o-ring.

Install valve cage on top of seat. Cage is reversible and may be installed in either direction.

To complete the re-assembly, position actuator directly above body. Lower into position, carefully inserting packing plug into body bore, while actuator studs engage holes in body lugs. Install hex nuts on actuator studs, and run nuts up finger-tight against body lugs.

**CAUTION:**

It is important to tighten each nut on each stud in small increments, while alternating from one stud to the other. This will assure proper alignment and prevent actuator from becoming tilted. Final torque value on each stud should be 18-20 ft-lbs.

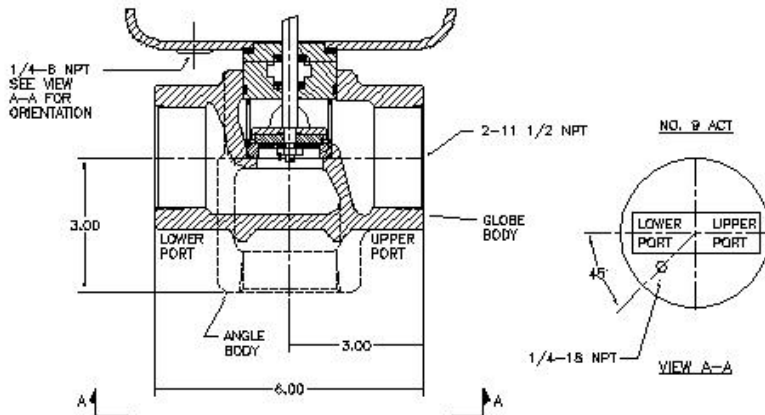
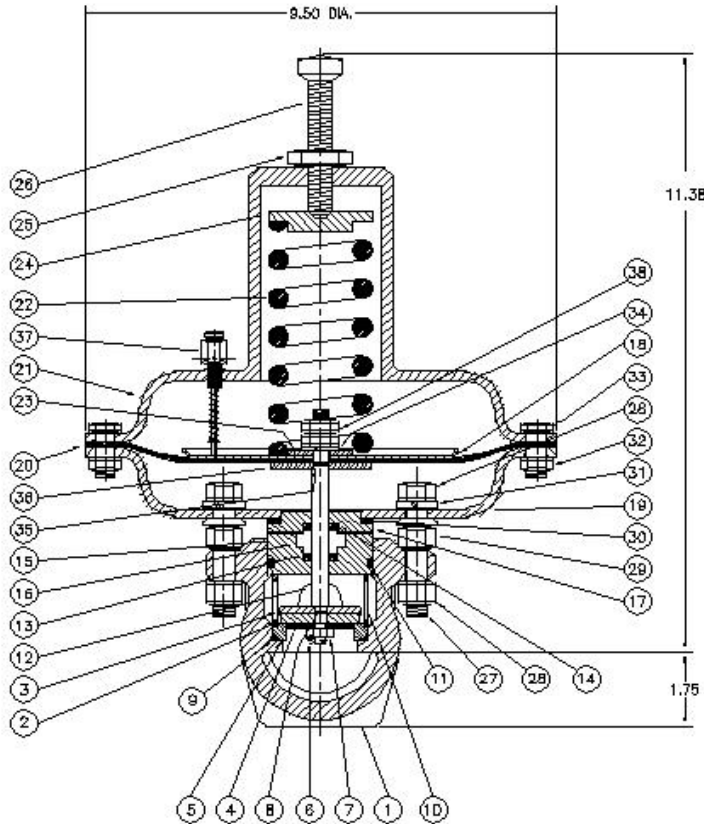
Valve re-assembly is not complete. Check for proper operation by applying instrument air to actuator and observing position indicator movement.

**SERIES 2075 TROUBLE DIAGNOSIS**

TROUBLE SYMPTOMS	PROBABLE CAUSE	CORRECTIVE ACTION
Trim leakage with the plug in the closed position.	(a) Flow under seat: Insufficient shutoff force from actuator. (b) Flow over seat: Foreign object may be interfering with plug-to-seat contact or plug insert may be worn or damaged.	Increase spring compression on reverse actuator, or supply pressure to direct actuator. Remove actuator and plug from the body. Inspect for presence of foreign objects. Replace damaged components as necessary.
Valve will not open, with flow over seat.	Actuator force may be insufficient to unseat plug against differential pressure tending to hold plug against seat.	If reverse actuator, increase the supply pressure. If a direct actuator, turn adjusting nut at top of spring to increase spring pre-load.
External leakage from top of body.	Packing plug o-ring damaged or missing.	Remove actuator from body. Inspect for cause of leakage. Replace the packing plug o-ring if necessary.
Instrument air leaks from the position indicator.	Diaphragm may be torn or ruptured, or diaphragm plate connection at top of valve stem may be loose.	Relieve actuator spring compression. Remove (12) cap screws that secure upper or lower diaphragm housings; remove upper housing. Inspect diaphragm and replace if damaged. Tighten plate connection at top of stem.
Instrument air leaks from gasket at bottom of lower diaphragm housing.	Gasket may be damaged or missing. Studs that hold actuator to body may be loose, which would result in the loose gasket.	Tighten studs if they are loose. If studs are tight, remove the actuator from body and inspect gasket. Replace the gasket if necessary.
Valve with reverse actuator will not close, after being opened.	Actuator spring may be broken, or valve stem may be bent thus causing it to bind in packing plug.	Remove upper diaphragm housing. Replace spring if broken. If the spring is not broken, check for bent stem by pushing down on the diaphragm plate. If plate cannot be easily pushed down, stem is probably bent. This will require complete disassembly to replace the stem.

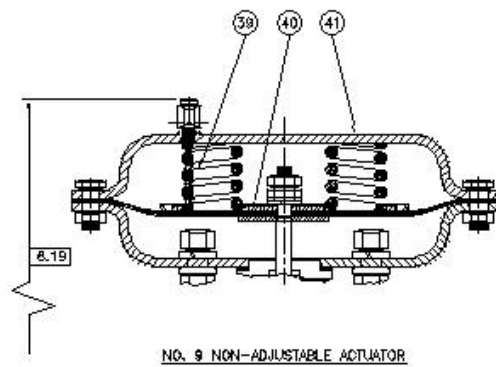
EFFECTIVE 11 Jun 2003  
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### No.9 Reverse Actuator



ITEM NO.	COMMODITY CODE	MATERIAL	VALVE PART DESCRIPTION	QTY
1	490207B111 490207B112	ASTM A385 ASTM A385	BODY VALVE 2.00 NPT GLOBE BODY VALVE 2.00 NPT ANGLE	1
* 2	490207B100 490207B099	VTION TEFLON	INSERT PLUG VALVE OPTIONAL INSERT PLUG VALVE	1
# 3	490207B108	303 SST	DISC PLUG VALVE	1
# 4	490207B107	303 SST	RETAINER PLUG VALVE Q.O.	1
# 5	490207B105	303 SST	SEAT VALVE 1.25 X 2.00	1
* 6	490207B103	18-8 SST	PIN COTTER 0.06 X 1.00	1
7	490207B113	18-8 SST	NUT HEX 5/16-24	1
* 8	490222A133	BUNA-N	O-RING DISC PLUG	1
* 9	490207B118	VTION	O-RING SEAT	1
10	490207B108	304 SST	CAGE VALVE 2.00	1
# 11	490207B118	VTION	O-RING PLUG PACKING FPM	1
12	490207B102	303 SST	STEM VALVE 0.375	1
* 13	490222A132	VTION	O-RING GUIDE STEM	2
# 14	490207B101	TEFLON	RING BACK-UP SPIRAL	2
# 15	490207B110	1215 CSTL	PLUG PACKING 2.00	1
* 16	490207B104	KYNAR	GUIDE STEM 2.00	1
# 17	490207B109	1215 CSTL	CAP PLUG PACKING 2.00	1
DOWN CODE	MATERIAL	ACTUATOR PARTS DESCRIPTION		
18	490222A116	CSTL	PLATE DIAPHRAGM	1
19	490207B117	CSTL	HOUSING DIAPHRAGM LOWER	1
* 20	490222A126	NEG/NYLON	DIAPHRAGM ACTUATOR (VTION OPT)	1
21	490222A163	CSTL	HOUSING DIAPHRAGM UPPER	1
22	490222A117	CSTL	SPRING ACTUATOR	1
23	490222A179	CSTL	RETAINER SPRING LOWER	1
24	490222A122	CSTL	RETAINER SPRING UPPER	1
25	490222A164	GR. 5	NUT HEX JAM 1/2 X 13	1
26	490222A185	GR. 5	SCREW ADJUSTING 1/2-13 X 3	1
27	490207B115	GR. 5	STUD 3/8-16 X 2.62	2
28	490207B116	GR. 5	NUT HEX HEAVY 3/8-16	4
29	490207B114	GR. 5	NUT LOCK SEALING 3/8-16	2
30	490227B108	O14T	GASKET 2.15 X 1.53 X .08	1
31	490222A119	CSTL	WASHER LOCK SPRING .38	2
32	490222A182	GR. 5	NUT HEX REG 3/8-16	12
33	490222A163	GR. 5	SCREW CAP HEX 3/8-16 X 1	12
34	490202A126	CSTL	WASHER LOCK SPRING .31	1
# 35	490222A133	BUNA-N	O-RING DIAPHRAGM	1
36	490202A121	CSTL	WASHER BEARING	1
37	490222A123	303 SST	INDICATOR/VENT	1
38	490202A124	GR. 5	NUT HEX JAM 5/16-24	2
ACTUATOR PARTS SPECIAL NON-ADJUSTABLE				
39	490222E219	CSTL	SPRING ACTUATOR LIGHT	4
40	490222E218	CSTL	SPRING ACTUATOR HEAVY	4
41	490222E225	CSTL	RETAINER SPRING LOWER	1
41	490222E224	CSTL	HOUSING DIAPHRAGM UPPER	1

\* Recommended Spare Parts  
# Optional Material Acceptable for H<sub>2</sub>S Service (Ref. NACE MR-01-75).  
+ Reg U.S. Pat Office for Dupont's Fluorelastomer



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