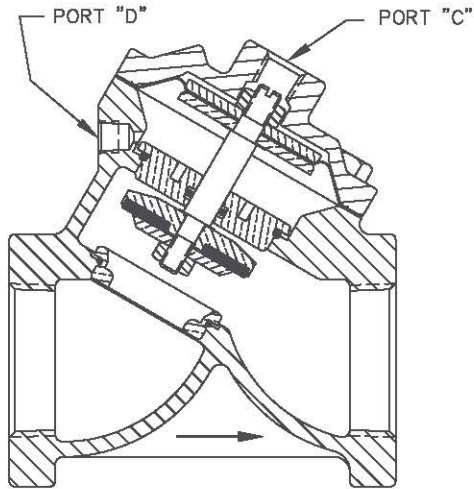
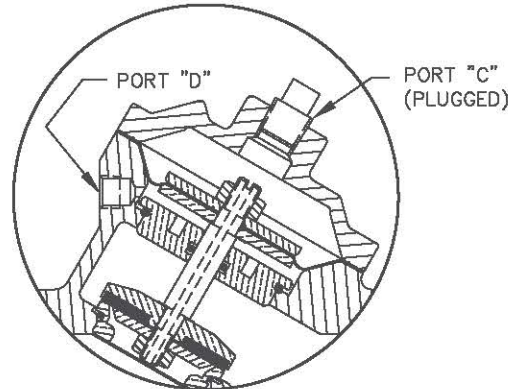


# DIAPHRAGM VALVE CONFIGURATIONS - STANDARD MODEL



## **NORMALLY OPEN**

LINE PRESSURE/FLOW AGAINST THE VALVE SEATING DISC WILL OPEN THE VALVE. CONTROL PRESSURE APPLIED TO THE TOP OF THE DIAPHRAGM (PORT "C") WILL CLOSE THE VALVE.

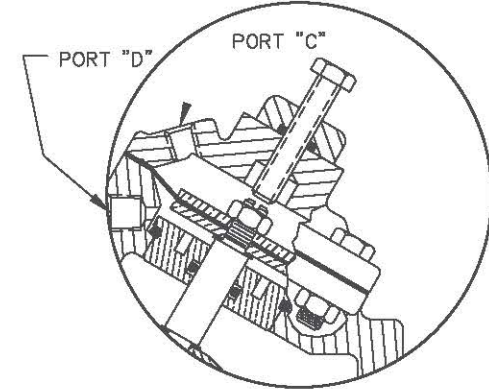


## **NORMALLY CLOSED**

LINE PRESSURE AGAINST THE DISC, TRANSFERRED THRU THE VALVE'S HOLLOW SHAFT TO THE TOP OF THE DIAPHRAGM, WILL CLOSE THE VALVE. CONTROL PRESSURE AT PORT "D" WILL OPEN THE VALVE. ADDITION OF "SPRING ASSIST CLOSED" FEATURE IS RECOMMENDED FOR THE FOLLOWING CONDITIONS:

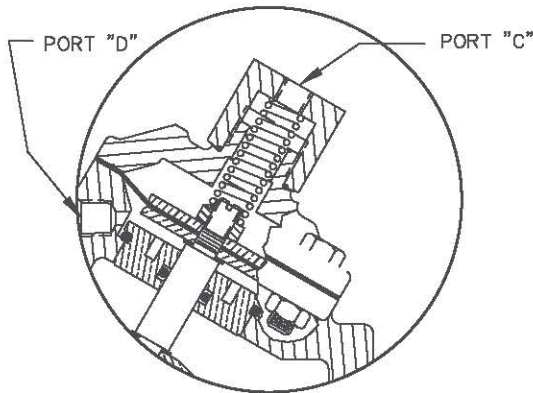
1. LOW PRESSURE AND/OR FLOW.
2. VALVE DISCHARGES TO ATMOSPHERE.

NORMALLY CLOSED FEATURE NOT RECOMMENDED FOR LINE MEDIA CONTAINING SOLIDS, HIGH TEMPERATURES OR OTHER MEDIA CONDITIONS WHICH MAY DAMAGE THE DIAPHRAGM.



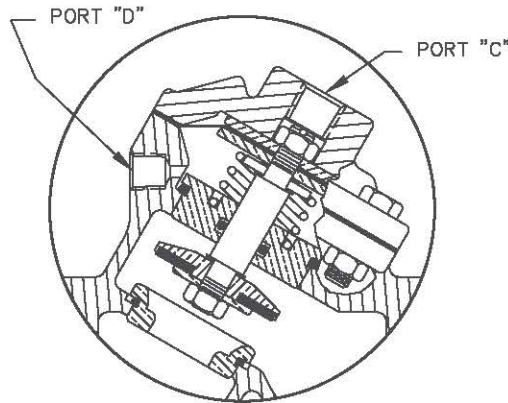
## **LIMIT STOP**

INCLUDES AN ADJUSTMENT SCREW WHICH LIMITS THE VALVE STROKE. MAY BE USED TO CONTROL FLOW RATE, HOWEVER, FLOW RATE WILL VARY WITH CHANGES IN PRESSURE.



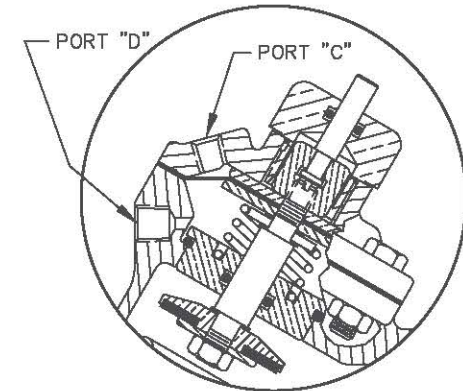
## **SPRING ASSIST CLOSED**

SPRING SERVES AS AN ASSIST TO ASSURE FULL VALVE CLOSURE IN THE ABSENCE OF LINE AND CONTROL PRESSURES.



## **SPRING ASSIST OPEN**

SPRING SERVES AS AN ASSIST TO ASSURE FULL VALVE OPENING IN THE ABSENCE OF LINE AND CONTROL PRESSURES.



## **POSITION INDICATOR**

INDICATOR ROD IS ATTACHED TO MAIN VALVE STEM TO SHOW POSITION OF VALVE. ONLY AVAILABLE WITH SPRING ASSIST OPEN OPTION.



**SERIES 420 DIAPHRAGM VALVES**

FORM NO. 1078116

B	INITIAL RELEASE	1429	JWB	21JUN01	VKP	SCALE	DRAWN	DATE	DWG. NO.
REV	DESCRIPTION	ECO	DWN	DATE	APVD	N/A	JWB	25APR01	1078117

# DIAPHRAGM VALVE INFORMATION - STANDARD MODEL

## METAL DIAPHRAGM VALVES (421 THRU 429)

SERIES	PIPE SIZE	SEAT DIAMETER		SEAT AREA		DIAPHRAGM AREA		TOTAL STROKE		DIAPHRAGM CHAMBER (VOLUME)		* Cv	** Kv	FLOW RATE		PRESSURE DROP	
		IN.	SQ. IN.	SQ. IN.	SQ. IN.	IN.	CUBIC IN.	@ 10 FT./SEC. (3 M./SEC.) NOTE 1	@ 20 FT./SEC. (6 M./SEC.) NOTE 2	@ 10 FT./SEC. (3 M./SEC.) NOTE 1	@ 20 FT./SEC. (6 M./SEC.) NOTE 2						
		CM.	SQ. CM.	SQ. CM.	SQ. CM.	CM.	CUBIC CM.	GAL./MIN. CU.M/HR	GAL./MIN. CU.M/HR	P.S.I. bar	P.S.I. bar						
V42B	3/4"	0.97	0.74	2.10	0.47	2.06	11.4	9.8	23	46	4.1	16.3					
		2.5	4.8	13.0	1.2	33.8							5	10	0.3	1.12	
V42C	1"	0.97	0.74	2.10	0.47	2.06	12.8	11.0	23	46	3.2	13.0					
		2.5	4.8	13.0	1.2	33.8							5	10	0.22	0.9	
V42D	1 1/4"	1.34	1.41	6.49	0.61	5.20	26.5	23	44	88	2.8	11.0					
		3.4	9.1	41.9	1.5	85.2							10	20	0.2	0.7	
V42E	1 1/2"	1.34	1.41	6.49	0.61	5.20	32.5	28	44	88	1.8	7.3					
		3.4	9.1	41.9	1.5	85.2							10	20	0.12	0.5	
V42F	2" (425)	2.02	3.20	11.04	0.70	10.50	56	48	100	200	3.2	12.7					
		5.1	20.6	71.2	1.8	172.1							23	46	0.22	0.87	
V42G	2" (426)	2.31	4.19	15.03	0.99	16.34	68	59	130	260	3.7	14.7					
		5.9	27.0	97.0	2.5	267.8							29	58	0.25	1.01	
V42H	2 1/2"	2.31	4.19	15.03	0.99	16.34	84	72	130	260	2.4	9.7					
		5.9	27.0	97.0	2.5	267.8							29	58	0.16	0.67	
V42J	3"	2.96	6.88	22.69	1.05	32.80	134	116	214	428	2.6	10.2					
		7.5	44.4	146.4	2.7	537.6							49	98	0.18	0.7	
V42K	4"	3.84	11.58	33.82	1.92	78.83	275	238	360	720	1.7	6.9					
		9.7	74.7	218.2	4.9	1292.0							83	166	0.12	0.47	
V42L	6"	6.06	28.84	120.28	1.70	296.52	680	588	899	1798	1.8	7.0					
		15.4	186.1	776.0	4.3	4860.0							204	408	0.12	0.5	

**TO DETERMINE FLOWRATE AT ANY GIVEN PRESSURE DROP, THE FOLLOWING FORMULAS CAN BE USED.**

FOR WATER AND LIQUIDS:

$$Q = \frac{C_v \sqrt{\Delta P}}{\sqrt{e}}$$

Q - FLOWRATE IN GAL./MIN.  
 ΔP - PRESSURE DROP (LB./SQ. IN.)  
 e - SPECIFIC GRAVITY (WATER = 1.00)

FOR AIR AND GAS:

WHEN P2 < .5P1      WHEN P2 > .5P1

$$C_v = \frac{CFM \sqrt{e}}{.5P1} \quad C_v = \frac{CFM \sqrt{e}}{\sqrt{\Delta P P2}}$$

CFM - CU. FT./MIN. FLOW  
 e - SPECIFIC GRAVITY (AIR = 1.00)  
 P1 - INLET PRESSURE (LB./SQ. IN.)  
 P2 - OUTLET PRESSURE (LB./SQ. IN.)

\* Cv - FLOWRATE (GAL./MIN.) OF WATER AT 60° F. AT 1 P.S.I. PRESSURE DROP

\*\* Kv - FLOWRATE (CU. M./HR) OF WATER AT 15.5° C. AT 1 BAR PRESSURE DROP

NOTE 1: MAXIMUM CONTINUOUS VELOCITY THROUGH THE VALVE.

NOTE 2: MAXIMUM CONTINUOUS VELOCITY. EXTENDED SERVICE AT THIS VELOCITY MAY CAUSE CAVITATION.

THE DATA PRESENTED HERE IS BELIEVED TO BE RELIABLE AND OFFERED AS SUGGESTION ONLY. ACTUAL RESULTS MAY VARY DEPENDING UPON APPLICATION.



**SERIES 420 DIAPHRAGM VALVES**

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