

## V48A,F,J; V88A,J Diaphragm Gas Valves

### SPECIFICATION DATA



### APPLICATION

The V48 and V88 are solenoid-operated diaphragm valves suitable for LP (Liquefied Petroleum), natural, and manufactured gases. They are normally used on atmospheric boilers, commercial water heaters, and rooftop heaters.

### SPECIFICATIONS

#### Models:

V48A (120 Vac) or V88A (24 Vac) solenoid operated diaphragm valves for 1/2 or 1 psi (3.4 or 6.9 kPa) maximum operating pressure.

V48F (120 Vac) solenoid operated diaphragm valve for 5 psi (34.5 kPa) maximum operating pressure.

V48J (120 Vac) or V88J (24 Vac) solenoid operated diaphragm valves for 1 psi (6.9 kPa) operating pressure and 150°F (66°C) maximum ambient temperature.

**Type of Gas:** Suitable for liquefied petroleum (LP), natural, manufactured, and sulfur-bearing gases.

**Valve Capacity:** See table in Fig. 2.

### FEATURES

- Line voltage, 2-wire thermostat or controller used with a V48; V88 used with 24V thermostat.
- Valves provide slow opening and fast closing.
- Two second maximum closing time.
- V48J, V88J rated for 150°F (66°C) ambient temperature.
- V48F rated for 5 psi (lb. per sq. in.) (34.5 kPa). V48A and V88A rated for either 1/2 or 1 psi (3.4 or 6.9 kPa), depending on model. V48J and V88J rated for 1 psi (6.9 kPa).
- One model for natural and LP gases.
- Wide range of sizes and capacities.
- Firm closing; diaphragm is both weight and spring loaded.
- Valve closes on power failure; recommended for final shutoff service.
- Adjustable or fixed bleed orifices available for installation by OEM.
- Valve position indicator on 1-1/4 in. V48A2227 and 2 in. V48F1103 Valves.

**Valve Pattern:** Straight-through, non-offset.

**Valve Body Material:** Die-cast aluminum.

#### Pilot Tapping (see Table 1 for thread type):

3/4 through 1-1/2 inch valves: 1/8-27 NPT or 1/8-28 BSP.PI.  
2 through 3 inch valves: 1/4-18 NPT.

**Bleed Tapping (see Table 2 for thread type):** 1/8-27 NPT or 1/8-28 BSP.PI.

#### Valve Opening Time:

Five seconds maximum at 2 oz/in.<sup>2</sup> (0.86 kPa) pressure.  
Adjustable bleed valve assembly or fixed bleed orifices available for longer opening time (NPT threads only; see Accessories).



**Valve Closing Time (on power failure; measured at 2 oz/in.<sup>2</sup> (0.86 kPa) pressure):** 2 seconds maximum.

**Maximum Operating Pressure:** See Table 2.

**Power Consumption (maximum):** 9 watts or 15 VA.

**Ambient Temperature Rating:**

V48A,F and V88A: 32°F to 125°F (0°C to 52°C).

V48J and V88J: 32°F to 150°F (0°C to 66°C).

**Maximum Fluid Temperature:**

V48A,F; V88A: 125°F (52°C).

V48J; V88J: 150°F (66°C).

**Thermostat Heat Anticipator Setting:** For 60 Hz V88, set at 0.6A; for 50Hz set at 0.65A.

**Dimensions:** See Fig. 1.

**Weight:** See Table 1.

**Table 1. Valve Weight.**

Pipe Size (in.)	lb	kg
3/4	2-1/2	1.13
1	3	1.36
1-1/4	3-1/2	1.59

Pipe Size (in.)	lb	kg
1-1/2	4	1.81
2	9	4.08
2-1/2	8-1/2	3.86
3	9-1/2	4.31

**Approvals: (60 Hz models only):**

Underwriters Laboratories Inc. Listed: File No. MH1639; Guide No. YIOZ.

CSA 158158-2500005576 (Z21.21-CSA 6.5).

NOTE: All models rated at 50 Hz and all models with BSP.PI threads are not CSA Design Certified.

**Optional Feature:** Valve position indicator is available on 1-1/4 in. V48A2227 and 2 in. V48F1103.

**Replacement Coil Assemblies:<sup>a</sup>**

116930: 24V, 60 Hz V88A

116931: 120V, 60 Hz V48A.

116932: 220V, 50 Hz V48A

116932: 240V, 60 Hz V48A

118888: 24V, 60 Hz V88J

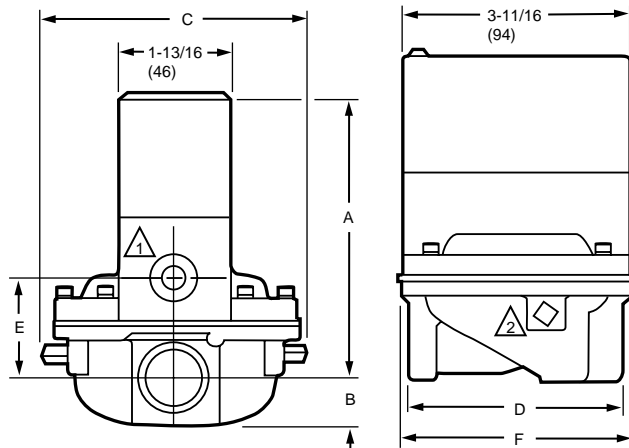
139937: 120V, 60 Hz V48J

<sup>a</sup> These V48/V88 bonnet assemblies and solenoid operators are not compatible with old style valve bodies.

**Table 2. Models Available.**

Model	Voltage and Frequency	Maximum Operating Pressure		Pipe Size (in.)	Thread Type <sup>a</sup>
		psi	kPa		
V48A	100V, 50 Hz	1/2	3.4	1, 1-1/4, 1-1/2	BSP.PI
		1	6.9	2	
	120V, 60 Hz	1/2	3.4	3/4, 1, 1-1/4, 1-1/2	NPT
		1	6.9	1, 1-1/4, 1-1/2, 2, 2-1/2, 3	
V48F	220V, 50 Hz			1, 1-1/4, 1-1/2, 2, 3	BSP.PI
	240V, 50 Hz			2	NPT
V48J	120V, 60 Hz	5	34.5	2	NPT
V48J	110V, 50 Hz	1	6.9	3/4, 1, 1-1/4, 1-1/2, 2	
	V88A	24V, 60 Hz	1/2	3.4	
V88A	24V, 60 Hz	1	6.9	3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3	
		V88J	24V, 60 Hz	6.9	1, 1-1/4

<sup>a</sup> A valve position indicator is on 1-1/4 in. V48A2227 and 2 in. V48F1103 Valves. BSP.PI—British Standard Parallel Internal Threads; NPT—American Standard Taper Pipe Threads.



VALVE SIZE (IN.)	APPROXIMATE DIMENSIONS											
	A		B		C		D		E		F	
	IN.	MM	IN.	MM	IN.	MM	IN.	MM	IN.	MM	IN.	MM
3/4	4-11/16	119.1	3/4	19.1	4-5/8	117.5	3-1/2	88.9	1-5/8	41.3	3-13/16	96.8
1	5-1/16	128.6	1	25.4	5	127.0	3-11/16	93.7	2-1/16	52.4	4-5/16	109.5
1-1/4	5-9/16	141.3	1-1/4	31.8	5-7/8	149.2	5-5/16	134.9	2-3/8	60.3	5-5/16	134.9
1-1/2	5-9/16	141.3	1-1/4	31.8	5-7/8	149.2	5-5/16	134.9	2-3/8	60.3	5-5/16	134.9
2	6-15/16	176.2	2-1/4	57.2	9-1/2	241.3	8-3/8	212.7	3-9/16	90.5	5-5/16	236.5
2-1/2	6-15/16	176.2	2-1/4	57.2	9-1/2	241.3	8-3/8	212.7	3-9/16	90.5	9-5/16	236.5
3	6-15/16	176.2	2-1/4	57.2	9-1/2	241.3	8-3/8	212.7	3-9/16	90.5	9-5/16	236.5

1 BLEED TAPPING: 1/8-27 NPT, OR 1/8-28 BSP. PL.

2 PILOT TAPING (2): 1/8-27 NPT FOR 3/4 THROUGH 1-1/2 IN. SIZES, 1/4-18 NPT FOR 2 THROUGH 3 IN. SIZES; OR 1/8-28 BSP. PL FOR 1 THROUGH 1-1/2 IN. SIZES, 1/4-19 BSP.PL FOR 2 THROUGH 3 IN SIZES.

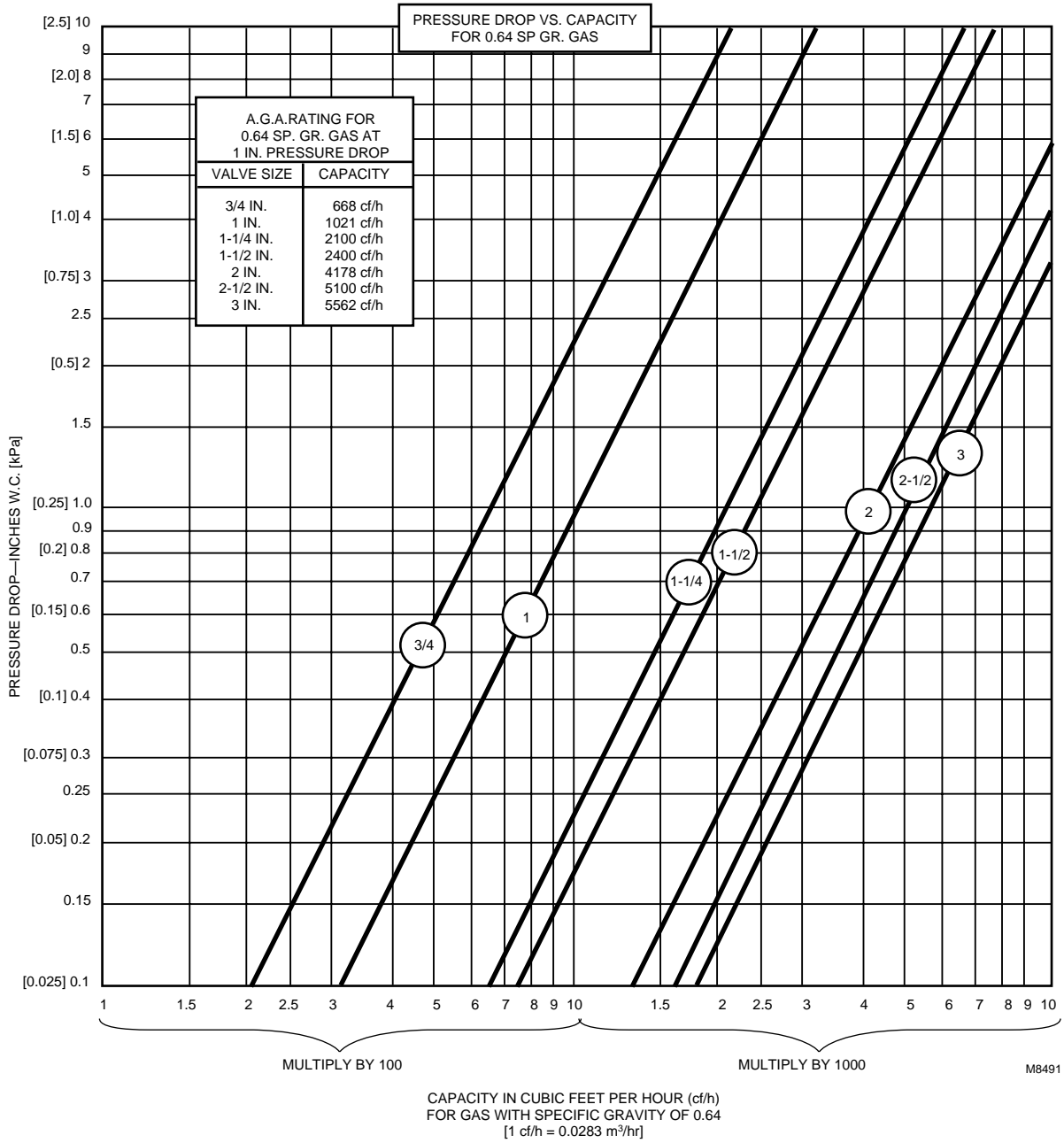
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Fig. 1. Mounting dimensions of V48A,F,J and V88A,J Diaphragm Gas Valves in in. (mm).

Table 3. Extending Valve Opening Time<sup>a</sup> By Adding a Bleed Orifice.

Valve Size (in.)	Valve Opening Time (seconds)		
	No Orifice	Orifice No. 122160, 0.018 in. (0.46 mm)	Orifice No. 124674, 0.011 in. (0.28 mm)
1	1	2	3
1-1/4	1	5	6
1-1/2	1	5	6
2	4	15	32
2-1/2	4	23	37
3	5	24	37

<sup>a</sup> Time to reach 80% gas flow at fully open position. Inlet pressure; 4.2 in. wc (1.05 kPa) for 1 to 2 in. valves; 5 in. wc (1.25 kPa) for 2-1/2 and 3 in. valves. Pressure drop across valves at fully open position. 0.2 in. wc (0.05 kPa) for 1 to 2 in. valves; 1 in. wc (0.25 kPa) for 2-1/2 and 3 in. valves.



**Fig. 2. Pressure drop vs. capacity chart for sizing gas valves.**

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