



V43/V243 Series Pressure-Actuated Water-Regulating Valves

Description

The V43/V243 Pressure Actuated Water Regulating Valves are designed to regulate water flow through the condenser of large refrigerated cooling systems. These pilot-operated valves open on an increase in refrigerant head pressure and provide modulating operation.

The V43/V243 water regulating valves are available for commercial and maritime applications.

V43 valves are available for non-corrosive low- and medium-pressure refrigerants such as R-134A, R-404A, R-502, and R-507. Specially designed V43 valves are also available for ammonia service (R-717).

V243 valves are available for non-corrosive high-pressure refrigerants such as R410A.

Commercial V43/V243 valves are constructed with a cast iron body, brass internal parts, and bronze seat material.

To resist the corrosive action of sea water, the V43/V243 maritime and navy models are constructed with a red brass body, bronze and monel interior parts, and monel seat material.

Refer to the *V43/V243 Pressure Actuated Water Regulating Valves Product/Technical Bulletin (LIT-125683)* for important product information.

Features

- built-in pilot valve allows more precise throttling
- easy adjustment allows service and adjustment without breaking line connections
- drain plug allows water to be drained during shutdown to reduce the possibility of freeze-up
- mesh monel screen protects pilot valve from items such as dirt and scale and is easily removed for cleaning and servicing without breaking any line connections



V43 Pressure Actuated Valve

Selection Charts

When ordering V43 valves, specify the complete product code number including an optional companion flange and gasket kit. A companion flange and gasket kit is required to mount the water lines to commercial type V43/V243 water-regulating valves.

Valve Construction and Pressure Type

| Designator | Construction and Pressure Type |
|------------|--------------------------------------------------------------------|
| A | Commercial Service with Iron Body, Open on Pressure Increase, V43 |
| B | Maritime Service with Brass Body, Open on Pressure Increase, V43 |
| C | Navy Service with Brass Body, Open on Pressure Increase, V43 |
| G | Commercial Service with Iron Body, Open on Pressure Increase, V243 |
| H | Maritime Service with Brass Body, Open on Pressure Increase, V243 |

Flange Size

| Designator | Flange Size |
|------------|-------------|
| S | 2 in. |
| T | 2-1/2 in. |
| V | 3 in. |
| W | 4 in. |

V43 Series Pressure Actuated Water Valves (except NAVSEA valves)

| Product Code Number | Pipe Size (in.) | Inlet and Outlet | Opening Point Adjustment Range psig (kPa) | Shipping Wt. lb (kg) |
|---------------------------------------------------------|-----------------|-------------------------|-------------------------------------------|----------------------|
| Commercial Type – Non-Corrosive Refrigerants (R) | | | | |
| V43AS-1C | 2 | Four Hole ASME Flanged | 70 to 150 (483 to 1,034) | 59 (26.76) |
| V43AS-2C | | | 160 to 260 (1,103 to 1,793) | |
| V43AT-1C | 2-1/2 | Four Hole ASME Flanged | 70 to 150 (483 to 1,034) | 65 (29.48) |
| V43AT-2C | | | 140 to 260 (1,103 to 1,793) | |
| V43AV-1C | 3 | Four Hole ASME Flanged | 70 to 150 (483 to 1,034) | 90 (40.82) |
| V43AV-2C | | | 160 to 260 (1,103 to 1,793) | |
| V43AW-2C | 4 | Eight Hole ASME Flanged | | 142 (64.41) |
| Commercial Type - Ammonia (R) | | | | |
| V43AV-5C | 3 | | 160 to 260 (1,103 to 1,793) | 90 (40.82) |
| Maritime Type – Non-Corrosive Refrigerants (R) | | | | |
| V43BS-6C | 2 | Four Hole ASME Flanged | 70 to 150 (483 to 1,034) | 59 (26.76) |
| V43BS-7C | | | 160 to 260 (1,103 to 1,793) | |
| V43BT-6C | 2-1/2 | Four Hole ASME Flanged | 70 to 150 (483 to 1,034) | 65 (29.48) |
| V43BT-7C | | | 140 to 260 (1,103 to 1,793) | |
| V43BV-10C | 3 | Four Hole ASME Flanged | 70 to 150 (483 to 1,034) | 90 (40.82) |
| V43BV-7C | | | 140 to 260 (1,103 to 1,793) | |

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V43/V243 Series Pressure-Actuated Water-Regulating Valves (Continued)

Selection Charts (Continued)

V43 Series Pressure Actuated Water valves, Navy NAVSEA Certified

| Product Code Number | Pipe Size (in.) | Inlet and Outlet | Pressure Connector | Opening Point Adjustment Range – psig (kPa) | Shipping Wt, lb (kg) |
|---------------------------------------------------------------|-----------------|------------------------|-----------------------------------|---------------------------------------------|----------------------|
| Navy NAVSEA Certified – Non-Corrosive Refrigerants (R) | | | | | |
| V43BS-3C | 2 | Four Hole ASME Flange | 1/4 in. External Flared Connector | 70 to 150 (483 to 1,034) | 59 (26.76) |
| V43CS-1C | | Six Hole Navy Flange | Internal Sweat Connector | | |
| V43CS-2C | | | | | |
| V43BT-3C | 2-1/2 | Four Hole ASME Flange | 1/4 in. External Flared Connector | | 65 (29.48) |
| V43CT-2C | | Six Hole Navy Flange | | | |
| V43BV-4C | 3 | Four Hole ASME Flange | Internal Sweat Connector | | 90 (40.82) |
| V43CV-1C | | Eight Hole Navy Flange | 1/4 in. External Flared Connector | | |
| V43CV-2C | | | Internal Sweat Connector | | |
| V43BW-7C | 4 | Eight Hole ASME Flange | 1/4 in. External Flared Connector | 140 to 260 (1,103 to 1,793) | 142 (64.41) |
| V43BW-2C | | | | | |

V243 Series Pressurized Actuated Water Valves

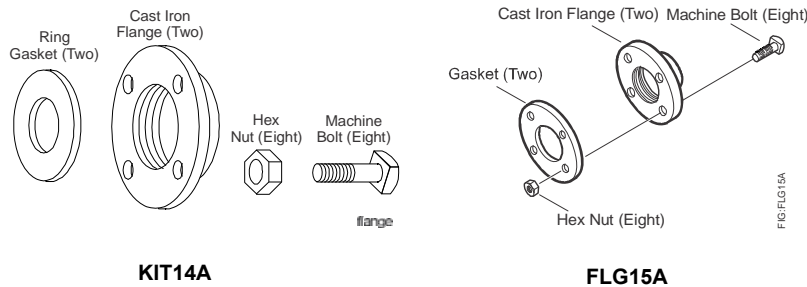
| Product Code Number | Pipe Size (in.) | Inlet and Outlet | Opening Point Adjustment Range – psig (kPa) | Shipping Weight, lb (kg) |
|-----------------------------------------------------|-----------------|-----------------------|---------------------------------------------|--------------------------|
| Commercial Type – High Pressure Refrigerants | | | | |
| V243GS-1C | 2 | Four Hole ASME Flange | 200 to 400 (1,379 to 2,758) | 59 (26.76) |
| V243GT-1C | 2-1/2 | | | 65 (29.48) |
| V243GV-1C | 3 | | | 90 (40.82) |
| V243GW-1C | 4 | | | 142 (64.41) |
| Maritime Type – High Pressure Refrigerants | | | | |
| V243HS-1C | 2 | Four Hole ASME Flange | 200 to 400 (1,379 to 2,758) | 59 (26.76) |
| V243HT-1C | 2-1/2 | | | 65 (29.48) |
| V243HV-1C | 3 | | | 90 (40.82) |
| V243HW-1C | 4 | | | 142 (64.41) |

Accessories

| Kit Code Number | Water Valve Size (in.) | Shipping Weight, lb (kg) |
|----------------------------|------------------------|--------------------------|
| KIT14A-613 ^{1, 2} | 2 | 11.8 (5.4) |
| KIT14A-614 ^{1, 2} | 2-1/2 | 16.5 (7.5) |
| FLG15A-600 ^{1, 3} | 3 | 20 (9.1) |
| FLG15A-601 ^{1, 3} | 4 | 34 (15.4) |

- Commercial valves only.
- These are the parts included in the flange and gasket kit for the 2-inch and 2-1/2 inch valves.
- These are the parts included in the flange and gasket kit for the 3-inch and 4-inch valves.

A companion flange and gasket kit is required to mount the water lines to commercial type V43/V243 water-regulating valves.



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V43/V243 Series Pressure-Actuated Water-Regulating Valves (Continued)

Repair and Replacement Information

If a V43/V243 Pressure-Actuated Water-Regulating Valve fails to operate within its specifications, replacement sensing elements, internal parts, and diaphragms are available for valve repair.

To obtain replacement parts, kits, instructions, and details, contact your nearest Johnson Controls® distributor at http://cgproducts.johnsoncontrols.com/dist_locate/locateDIST.asp.

For replacement parts, see Repair Parts and Parts Kits.

Repair Parts (Part 1 of 2)

| Model | Diaphragm Kit | Seat Disc and Diaphragm Kit | Seat Repair Kit | Screen Repair Kit | Push Rod Kit ¹ | Sensing Element Kit | Disc Body Kit |
|-----------------------|---------------|-----------------------------|-----------------|-------------------|---------------------------|---------------------|---------------|
| V43AS-1C | DPM18A-600R | DSC16A-600R | STT19A-602R | SCN10A-600R | ROD18A-600R | SEP88A-600R | DBK11A-600R |
| V43AS-2C | DPM18A-600R | DSC16A-600R | STT19A-602R | SCN10A-600R | ROD18A-600R | SEP88A-601R | DBK11A-600R |
| V43AS-5C | DPM18A-600R | DSC16A-600R | STT19A-602R | SCN10A-600R | ROD18A-600R | SEP87A-600R | DBK11A-600R |
| V43AT-1C | DPM18A-601R | DSC16A-601R | STT19A-603R | SCN10A-600R | ROD18A-601R | SEP88A-600R | DBK11A-601R |
| V43AT-2C | DPM18A-601R | DSC16A-601R | STT19A-603R | SCN10A-600R | ROD18A-601R | SEP88A-601R | DBK11A-601R |
| V43AT-5C | DPM18A-601R | DSC16A-601R | STT19A-603R | SCN10A-600R | ROD18A-601R | SEP87A-600R | DBK11A-601R |
| V43AV-1C | DPM18A-602R | DSC16A-602R | STT19A-606R | SCN10A-600R | ROD18A-601R | SEP88A-600R | DBK11A-602R |
| V43AV-2C | DPM18A-602R | DSC16A-602R | STT19A-606R | SCN10A-600R | ROD18A-601R | SEP88A-601R | DBK11A-602R |
| V43AV-5C | DPM18A-602R | DSC16A-602R | STT19A-606R | SCN10A-600R | ROD18A-601R | SEP87A-600R | DBK11A-602R |
| V43AW-1C | DPM18A-603R | DSC16A-603R | STT19A-608R | SCN10A-600R | ROD18A-602R | SEP88A-600R | DBK11A-603R |
| V43AW-2C | DPM18A-603R | DSC16A-603R | STT19A-608R | SCN10A-600R | ROD18A-602R | SEP88A-601R | DBK11A-603R |
| V43AW-5C | DPM18A-603R | DSC16A-603R | STT19A-608R | SCN10A-600R | ROD18A-602R | SEP87A-600R | DBK11A-603R |
| V43BS-1C ¹ | DPM18A-600R | DSC16A-600R | STT19A-602R | SCN10A-601R | ROD18A-602R | SEP88A-600R | DBK11A-600R |
| V43BS-2C ¹ | DPM18A-600R | DSC16A-600R | STT19A-602R | SCN10A-601R | ROD18A-602R | SEP88A-601R | DBK11A-600R |
| V43BS-3C | DPM18A-600R | DSC16A-600R | STT19A-600R | SCN10A-601R | ROD18A-602R | SEP88A-600R | DBK10A-600R |
| V43BS-6C | DPM18A-600R | DSC16A-600R | STT19A-600R | SCN10A-601R | ROD18A-602R | SEP88A-600R | DBK10A-600R |
| V43BS-7C | DPM18A-600R | DSC16A-600R | STT19A-600R | SCN10A-601R | ROD18A-602R | SEP88A-601R | DBK10A-600R |
| V43BT-1C ¹ | DPM18A-601R | DSC16A-601R | STT19A-603R | SCN10A-601R | ROD18A-603R | SEP88A-600R | DBK11A-601R |
| V43BT-2C ¹ | DPM18A-601R | DSC16A-601R | STT19A-603R | SCN10A-601R | ROD18A-603R | SEP88A-601R | DBK11A-601R |
| V43BT-3C | DPM18A-601R | DSC16A-601R | STT19A-605R | SCN10A-601R | ROD18A-603R | SEP88A-600R | DBK10A-602R |
| V43BT-6C | DPM18A-601R | DSC16A-601R | STT19A-605R | SCN10A-601R | ROD18A-603R | SEP88A-600R | DBK10A-602R |
| V43BT-7C | DPM18A-601R | DSC16A-601R | STT19A-605R | SCN10A-601R | ROD18A-603R | SEP88A-601R | DBK10A-602R |
| V43BV-1C ¹ | DPM18A-602R | DSC16A-602R | STT19A-606R | SCN10A-601R | ROD18A-603R | SEP88A-600R | DBK11A-602R |
| V43BV-2C ¹ | DPM18A-602R | DSC16A-602R | STT19A-606R | SCN10A-601R | ROD18A-603R | SEP88A-601R | DBK11A-602R |
| V43BV-4C | DPM18A-602R | DSC16A-602R | STT19A-607R | SCN10A-601R | ROD18A-603R | SEP88A-600R | DBK10A-601R |
| V43BV-5C ¹ | DPM18A-602R | DSC16A-602R | STT19A-606R | SCN10A-601R | ROD18A-603R | SEP88A-600R | DBK11A-602R |
| V43BV-6C ¹ | DPM18A-602R | DSC16A-602R | STT19A-606R | SCN10A-601R | ROD18A-603R | SEP88A-601R | DBK11A-602R |
| V43BV-7C | DPM18A-602R | DSC16A-602R | STT19A-607R | SCN10A-601R | ROD18A-603R | SEP88A-601R | DBK10A-601R |
| V43BV-8C | DPM18A-602R | DSC16A-602R | STT19A-607R | SCN10A-601R | ROD18A-603R | SEP88A-600R | DBK10A-601R |
| V43BV-9C | DPM18A-602R | DSC16A-602R | STT19A-607R | SCN10A-601R | ROD18A-603R | SEP88A-601R | DBK10A-601R |
| V43BV-10C | DPM18A-602R | DSC16A-602R | STT19A-607R | SCN10A-601R | ROD18A-603R | SEP88A-600R | DBK10A-601R |
| V43BW-1C | DPM18A-603R | DSC16A-603R | STT19A-609R | SCN10A-601R | ROD18A-602R | SEP88A-600R | DBK10A-603R |
| V43BW-2C | DPM18A-603R | DSC16A-603R | STT19A-609R | SCN10A-601R | ROD18A-602R | SEP88A-601R | DBK10A-603R |
| V43BW-5C | DPM18A-603R | DSC16A-603R | STT19A-609R | SCN10A-601R | ROD18A-602R | SEP88A-600R | DBK10A-603R |
| V43BW-6C | DPM18A-603R | DSC16A-603R | STT19A-609R | SCN10A-601R | ROD18A-602R | SEP88A-601R | DBK10A-603R |
| V43BW-7C | DPM18A-603R | DSC16A-603R | STT19A-609R | SCN10A-601R | ROD18A-602R | SEP88A-600R | DBK10A-603R |
| V43CS-1C | DPM18A-600R | DSC16A-600R | STT19A-600R | SCN10A-601R | ROD18A-602R | SEP88A-600R | DBK10A-600R |
| V43CS-2C | DPM18A-600R | DSC16A-600R | STT19A-600R | SCN10A-601R | ROD18A-602R | SEP88A-600R | DBK10A-600R |
| V43CS-3C | DPM18A-600R | DSC16A-600R | STT19A-600R | SCN10A-601R | ROD18A-604R | SEP88A-600R | DBK10A-600R |
| V43CT-1C | DPM18A-601R | DSC16A-601R | STT19A-605R | SCN10A-601R | ROD18A-603R | SEP88A-600R | DBK10A-602R |
| V43CT-2C | DPM18A-601R | DSC16A-601R | STT19A-605R | SCN10A-601R | ROD18A-603R | SEP86A-600R | DBK10A-602R |
| V43CV-1C | DPM18A-602R | DSC16A-602R | STT19A-607R | SCN10A-601R | ROD18A-603R | SEP86A-600R | DBK10A-601R |
| V43CV-2C | DPM18A-602R | DSC16A-602R | STT19A-607R | SCN10A-601R | ROD18A-603R | SEP88A-600R | DBK10A-601R |

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V43/V243 Series Pressure-Actuated Water-Regulating Valves (Continued)

Repair Parts (Part 2 of 2)

| Model | Diaphragm Kit | Seat Disc and Diaphragm Kit | Seat Repair Kit | Screen Repair Kit | Push Rod Kit ¹ | Sensing Element Kit | Disc Body Kit |
|-----------|---------------|-----------------------------|-----------------|-------------------|---------------------------|---------------------|---------------|
| V243GS-1C | DPM18A-600R | DSC16A-600R | STT19A-602R | SCN10A-600R | ROD18A-600R | SEP90A-600R | DBK11A-600R |
| V243GT-1C | DPM18A-601R | DSC16A-601R | STT19A-603R | SCN10A-600R | ROD18A-601R | SEP90A-600R | DBK11A-601R |
| V243GV-1C | DPM18A-602R | DSC16A-602R | STT19A-606R | SCN10A-600R | ROD18A-601R | SEP90A-600R | DBK11A-602R |
| V243GW-1C | DPM18A-603R | DSC16A-603R | STT19A-608R | SCN10A-600R | ROD18A-600R | SEP90A-600R | DBK11A-603R |
| V243HS-1C | DPM18A-600R | DSC16A-600R | STT19A-600R | SCN10A-601R | ROD18A-602R | SEP90A-600R | DBK10A-600R |
| V243HT-1C | DPM18A-601R | DSC16A-601R | STT19A-605R | SCN10A-601R | ROD18A-603R | SEP90A-600R | DBK10A-601R |
| V243HV-1C | DPM18A-602R | DSC16A-602R | STT19A-607R | SCN10A-601R | ROD18A-603R | SEP90A-600R | DBK10A-602R |
| V243HW-1C | DPM18A-603R | DSC16A-603R | STT19A-609R | SCN10A-601R | ROD18A-602R | SEP90A-600R | DPK10A-603R |

1. Replacement push rod kit requires a seat repair kit and/or a diaphragm kit when replaced.

Parts Kits

The following valves, manufactured after date code 8702, contain monel interior trim. Order replacement kits as listed in Repair Parts or V43xx and V243xx Series Repair Parts Kits Technical Bulletin (LIT-121690).

Parts Kits

| Valve Model | Order Parts Kits for: |
|-------------|-----------------------|
| V43BS-1C | V43BS-6C |
| V43BS-2C | V43BS-7C |
| V43BT-1C | V43BT-6C |
| V43BT-2C | V43BT-7C |
| V43BV-1C | V43BV-10C |
| V43BV-2C | V43BV-7C |
| V43BV-5C | V43BV-10C |
| V43BV-6C | V43BV-9C |

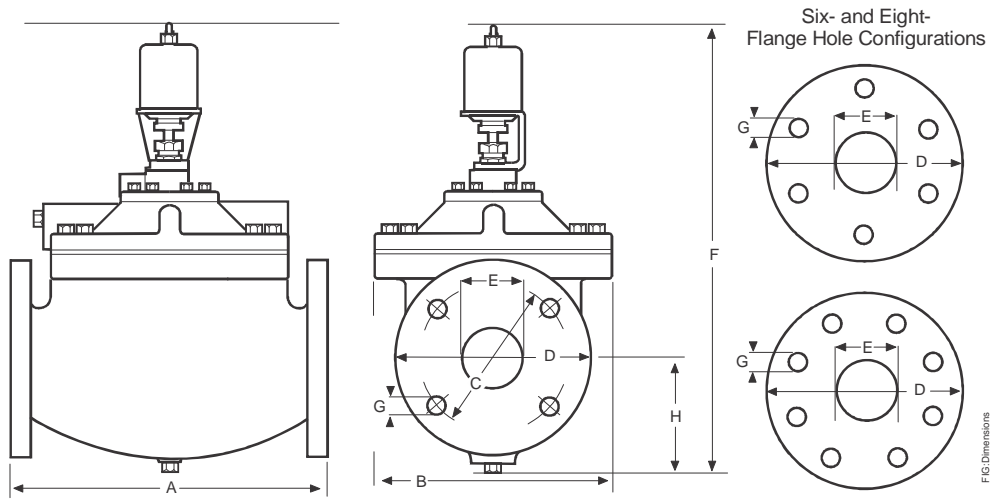
Dimensions

| Symbol | 2 Inch | 2-1/2 Inch | 3 Inch | 4 Inch |
|----------------|---------------------------------|---------------------------------|---------------------------------|----------------------------------|
| A ¹ | 9-1/2 in. (241 mm) | 10-3/4 in.(273 mm) | 11-3/4 in. (298 mm) | 14 in. (356 mm) |
| B | 7-1/2 in. (191 mm) | 8 in. (203 mm) | 9 in. (229 mm) | 10-3/4 in. (273 mm) |
| C | 4-3/4 in. (121 mm) | 5-1/2 in. (140 mm) | 6 in. (152 mm) | 7-1/2 in. (191 mm) |
| D | 6 in. (152 mm) | 7 in. (178 mm) | 7-1/2 in. (191 mm) | 9 in. (229 mm) |
| E | 2-1/8 in. (54 mm) | 2-5/8 in. (67 mm) | 3-1/8 in. (80 mm) | 4-1/8 in. (105 mm) |
| F ² | 15-1/4 in. (387 mm) | 15-9/16 in. (395 mm) | 16-9/16 in. (421 mm) | 18-7/32 in. (462 mm) |
| F ³ | 15-29/32 in. (404 mm) | 16-7/32 in. (412 mm) | 17-7/32 in. (437 mm) | 18-7/8 in. (479 mm) |
| G | 3/4 in. (19 mm) Diameter (Four) | 3/4 in. (19 mm) Diameter (Four) | 3/4 in. (19 mm) Diameter (Four) | 3/4 in. (19 mm) Diameter (Eight) |
| H | 3-5/8 in. (92 mm) | 3-15/16 in. (100 mm) | 4-1/4 in. (108 mm) | 5-1/16 in. (128 mm) |

1. Flange face to flange face.
2. These are the measurements for the V43 valves.
3. These are the measurements for the V243 valves.



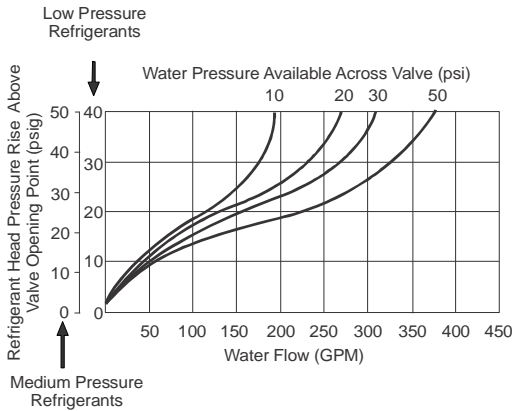
V43/V243 Series Pressure-Actuated Water-Regulating Valves (Continued)



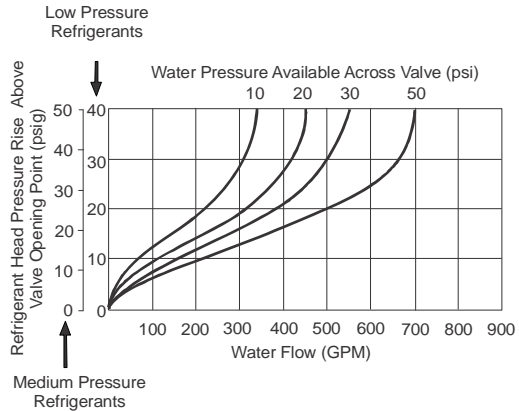
V43/V243 Pressure Actuated Water Regulating Valves Dimensions

V43 Capacity Flow Charts

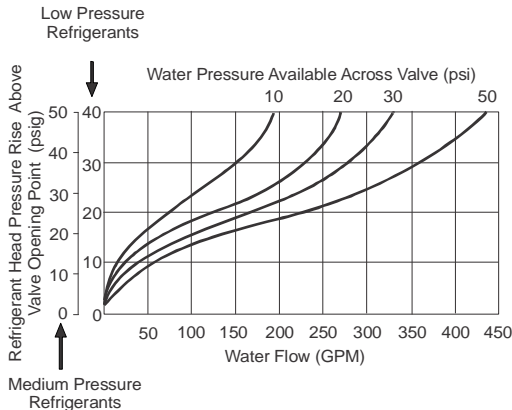
CAPACITY CHART FOR 2 in. VALVE



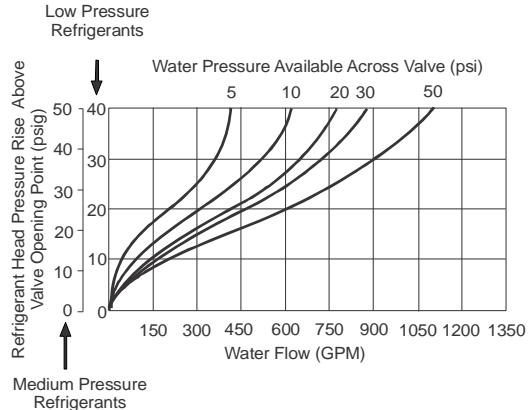
CAPACITY CHART FOR 3 in. VALVE



CAPACITY CHART FOR 2-1/2 in. VALVE



CAPACITY CHART FOR 4 in. VALVE



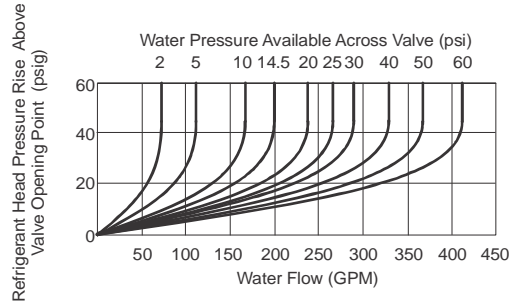
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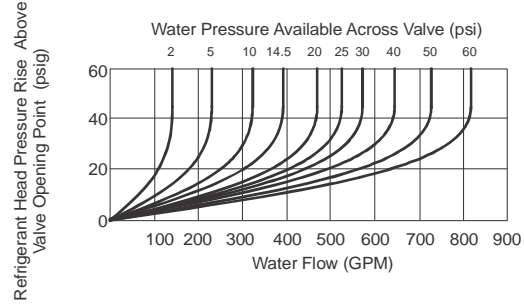
V43/V243 Series Pressure-Actuated Water-Regulating Valves (Continued)

V243 Capacity Flow Charts

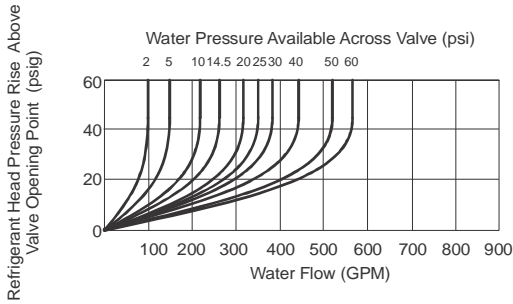
CAPACITY CHART FOR 2 in. VALVE



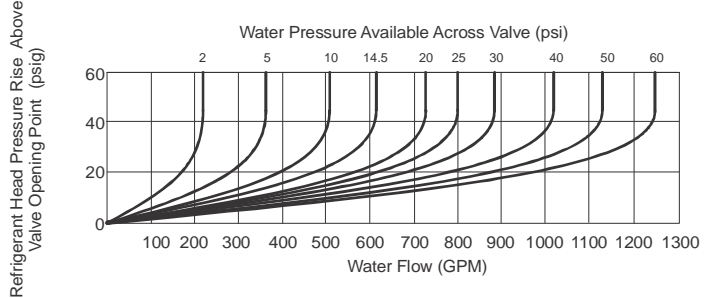
CAPACITY CHART FOR 3 in. VALVE



CAPACITY CHART FOR 2-1/2 in. VALVE



CAPACITY CHART FOR 4 in. VALVE



Technical Specifications

| V43/V243 Pressure-Actuated Water-Regulating Valves | | | |
|----------------------------------------------------|----------------------|-----------------------------------------------------------|-----------------------------------------------------------|
| Maximum Water Supply Pressure | | 150 psig (1,034 kPa) | |
| V43 Maximum Head Pressure | | 300 psig (2,068 kPa) | |
| V243 Maximum Head Pressure | | 630 psig (4,344 kPa) | |
| Head Pressure Range (Opening Points) | V43 | Low Pressure Refrigerants | R-134A – 70 to 150 psig (482 to 1,034 kPa) |
| | | Medium Pressure Refrigerants | R-22, R-502, R404A – 160 to 260 psig (1,103 to 1,793 kPa) |
| | | Ammonia | 160 to 260 psig (1,103 to 1,793 kPa) |
| | V243 | High Pressure | 200 to 400 psig (1,379 to 2,758 kPa) |
| Factory Settings¹ | V43 | Low Pressure Refrigerants | 90 psig (621 kPa) |
| | | Medium Pressure Refrigerants | 180 psig (1,241 kPa) |
| | | Ammonia | 180 psig (1,241 kPa) |
| | V243 | High Pressure | 200 psig (1,379 kPa) |
| Maximum Water Supply Temperature | | 160°F (71°C) | |
| Valve Body Material | Commercial | Cast iron | |
| | Maritime | Red brass | |
| Internal Parts Material | Commercial | Brass | |
| | Maritime | Bronze, Monel | |
| Seat Material | Pilot | Monel | |
| | Main Valve | Commercial – Bronze, Maritime – Monel | |
| Seat Disc Material | | Buna N™ | |
| Packing – Bellows Assembly | | Brass stem, stainless steel spring, synthetic rubber boot | |
| Pressure Connection Refrigerant Side | Non-Corrosive | 1/4 in. SAE External Flare | |
| | Ammonia | 1/4 in. FNPT | |

1. Factory opening setpoint for the valve is adjustable.

The performance specifications are nominal and conform to acceptable industry standards. For applications at conditions beyond these specifications, consult the Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products. © 2015 Johnson Controls, Inc.