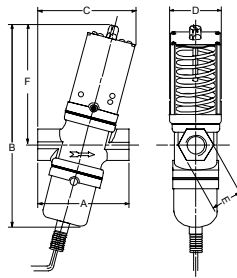


## V46 Two-way Pressure Actuated Water Valves, Angled

### Modulating Water Valves



V46 Angled



Dimensions

Valve size	Dimensions in mm					
	A	B	C	D	E	F
3/8"	69	153	66	43	18	89
1/2"	80	170	86	51	27	100
3/4"	91	183	95	55	36	110

#### Description

These pressure actuated modulating valves control the quantity of water to a condenser by directly sensing pressure changes in a refrigerant circuit. The valves can be used in non-corrosive refrigerant systems. Ammonia power elements and valves designed for salt-water applications are available. The valves have a quick opening characteristic and open on pressure increase (direct acting). Reverse acting (close on pressure increase) is possible

#### Features

- Pressure balanced valve design
- High refrigerant pressure resistant bellows
- Pressure actuated
- 3/8, 1/2, 3/4" are angled body type valves with high Kv value
- 3/8" up to 2" pressure valves "all range" types
- Quick opening valve characteristics
- No close fitting or sliding parts in water passages
- Easy to disassemble. All parts can be replaced
- Special bronze bodies and monel parts
- Power elements with stainless steel bellows available
- Wide range of pressure connection styles
- Nickel plated seats available for 3/8, 1/2, and 3/4" valves
- Direct/reverse action

V64 Pressure Actuated Water Valve Selection Table (For replacement parts, see Section Replacement Parts)

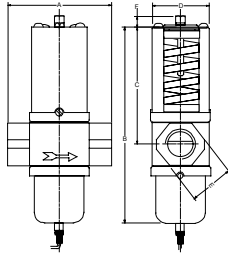
Range (bar)	Body Style	Size thread according to ISO 228	Style	Capillary Length	Additional Features It is possible to change Style13 into Style 45A by ordering KIT031N600	Ordering Number			
5...18	Angled	3/8	13	75		V46AA -9600			
					With special washer to prevent waterhammer at low flow capacity	V46AA -9608*			
					With special washer to prevent waterhammer at low flow capacity/nickel plated seat	V46AA -9610			
			bulkpack version V46AA-9600	V46AA -9620*					
			Nickel plated seat/longer capillary	V46AA -9602*					
			Nickel plated seat/ solder connection	V46AA -9950					
		1/2	13	75	34	75	.040" i.d.cap./solder connection	V46AA -9951*	
							solder connection/ "062" id.cap	V46AB -9600	
								V46AB -9950	
		3/4	13	75	34	75		V46AC -9600	
							longer capillary	V46AC -9606	
							solder connection	V46AC -9951	
5...23	Angled	3/8	5	-		V46AA -9300			
					Nickel plated seat, high range. With washer to prevent waterhammer at low flow capacity	V46AA -9301*			
					Nickel plated seat, high range	V46AA -9606			
			13	75	50	75	Nickel plated seat, high range. With washer to prevent waterhammer at low flow capacity	V46AA -9609*	
							High range	V46AA -9510	
								V46AB -9300	
		1/2	13	75	34	75	nickel plated seat, high range	V46AB -9605	
							solder connection,high range	V46AB -9951	
							High range	V46AB -9510	
		3/4	5	-	5	-		V46AC -9300	
								V46AC -9605	
								V46AC -9502	
			13	75	50	75	75	longer cap.	V46AC -9510
								High range	V46AC -9510
								High range	V46AC -9510

V46 Two-way Pressure Actuated Water Valves

**Modulating Water Valves**



V46 Straight



Dimensions

Valve size	Dimensions in mm					
	A	B	C	D	E	F
1"	124	233	139	72	50	13
1 1/4"	125	243	145	72	58	13

V46 Pressure Actuated Water Valve Selection Table

Range (bar)	Body Style	Size Thread acc. to ISO 7-Rc on in- and outlet	Style	Capillary Length	Additional Features It is possible to change Style13 into Style 45A by ordering KIT031N600	Ordering Number
5...18	Straight	1"	5	-		V46AD -9300
			50	75		V46AD -9510
			13			V46AD -9600
		1 1/4"	5	-		V46AE -9300
			50	75		V46AE -9510
			13	75		V46AE -9600
10...23	Straight	1	50	75	High range	V46AD -9511
		1 1/4"				V46AE -9512

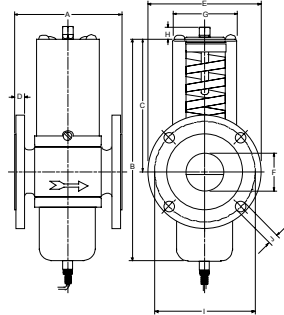
For replacement parts, see Section Replacement Parts  
\* Quantity orders only

V46 Two-way Pressure Actuated Water Valves, Flanged

## Modulating Water Valves



V46 Flanged



Dimensions

Valve size	Dimensions in mm									
	A	B	C	D	E	F	G	H	I	J
1 1/2"	137	244	144	18	150	47	67	13	110	18
2"	168	304	164	20	165	57	90	18	125	18
2 1/2"	172	304	164	20	185	70	90	18	145	18

V46 Pressure Actuated Water Valve Selection Table

Range (bar)	Body Style	Size DIN 2533 flange connections	Style	Capillary Length	Additional Features It is possible to change Style13 into Style 45A by ordering KIT031N600	Ordering Number
5...18	Straight	1 1/2	5	-		V46AR -9300
			13	75		V46AR -9600
7...14			15	-	For ammonia applications	V46AR -9700
5...11.5		2	5	-		V46AS -9300
11...18			-	-		V46AS -9301
5...11.5			5	-		V46AT -9300
11...18	2 1/2	5	-		V46AT -9301	

For replacement parts, see Section Replacement Parts

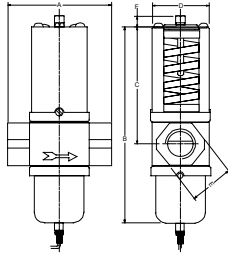
\* Quantity orders only

## V46 Two-way Pressure Actuated Water Valves, Maritime

### Modulating Water Valves



V46 Straight



Dimensions

Valve size	Dimensions in mm					
	A	B	C	D	E	F
3/8"	68	161	80	42	32	10
1/2"	79	165	86	52	29	10
3/4"	86	175	96	55	35	10
1"	124	246	139	71	39	13
1 1/4"	124	254	144	71	48	13

V46 Pressure Actuated Water Valve Selection Table

Range (bar)	Body Style	Size acc. to ISO 228-G	Style	Capillary Length	Additional Features It is possible to change Style13 into Style 45A by ordering KIT031N600	Ordering Number	
5...18	Straight	13	13	75		V46BA -9600	
						V46BB -9600	
						V46BC -9600	
						V46BD -9600	
				50	120	Longer capillary	V46BD -9601
						75	V46BE -9510
							V46BE -9600
13	120	Longer capillary	V46BE -9601				
		50	50	75		V46BA -9510	
	V46BB -9510						
	V46BC -9510						
	V46BC -9511						
140	75			Longer capillary	V46BD -9510		
				150	Longer capillary	V46BE -9511	
10...23	1				1 1/4		

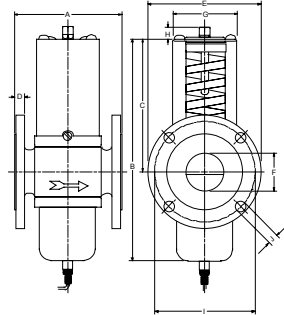
For replacement parts, see Section Replacement Parts  
\* Quantity orders only

V46 Two-way Pressure Actuated Water Valves, Flanged Maritime

## Modulating Water Valves



V46 Flanged



Dimensions

Valve size	Dimensions in mm									
	A	B	C	D	E	F	G	H	I	J
1 1/2"	135	244	144	14	150	47	67	13	110	18
2"	162	304	164	16	165	57	90	18	125	18
2 1/2"	172	304	164	16	185	70	90	18	145	18

V46 Pressure Actuated Water Valve Selection Table

Range (bar)	Body Style	Size DIN 86021 flange connections	Style	Capillary Length	Additional Features It is possible to change Style13 into Style 45A by ordering KIT031N600	Ordering Number
5...18	Straight	1 1/2	50	75		V46BR -9510
			13			V46BR -9600
5...11.5		2	5	-		V46BS -9300
11...18						V46BS -9301
5...11.5		2 1/2				V46BT -9300
11...18						V46BT -9301

For replacement parts, see Section Replacement Parts

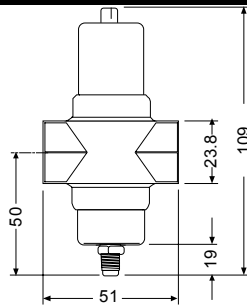
\* Quantity orders only

V46SA Two-way Pressure Actuated Water Valves, Low Flow

## Modulating Water Valves



V46SA Low Flow



Dimensions

**Description**

The V46SA is a direct acting, "all range", pressure actuated modulating valve, used to control the waterflow to a condenser by directly sensing pressure changes in a non-corrosive refrigerant circuit. The V46SA is specially designed for use on equipment requiring a low condenser waterflow such as icemakers, small heatpumps and watercoolers.

The springhousing and power element are rolled to the valve body.

Rubber diaphragms seal the water away from the range spring and bellows part so these are not submerged in water where they would be subject to sedimentation and corrosion.

The valve can be ordered style 5 (without capillary), style 13, style 34 and style 50 (incl. 75 cm capillary).

The capillary part will be delivered separated from the valve.

**Features**

- Valve designed for low flow.
- "All range" power element and spring housing.
- Small dimensions.
- Pressure actuated
- Various pressure connection style
- High refrigerant pressure resistant bellows.

V46SA Pressure Actuated Water Valve Selection Table

Range (bar)	Body Style	Size Thread acc. to ISO 228-G on in- and outlet	Style	Capillary Length	Additional Features It is possible to change Style13 into Style 45A by ordering KIT031N600	Ordering Number
5...23	Straight	3/8	45A	75	Capillary soldered to power element	V46SA -9101
			50		Capillary separate	V46SA -9110
			5	-		V46SA -9300
			13		Capillary separate	V46SA -9600
			34	75	Capillary soldered to power element	V46SA -9950
					V46SA -9951	

For replacement parts, see Section Replacement Parts

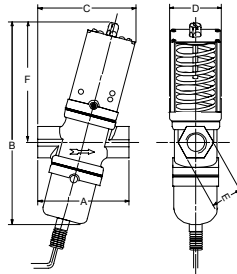
\* Quantity orders only

## V47 Two-way Temperature Actuated Water Valves, Angled

### Modulating Water Valves



V47 Angled



Dimensions

Valve size	Dimensions in mm					
	A	B	C	D	E	F
3/8"	69	153	66	43	18	89
1/2"	80	170	86	51	27	100
3/4"	91	183	95	55	36	110

#### Description

These modulating water valves can be used for heating applications. It does have an heating element which means that the bulb temperature always must be higher than the valve body (power element). The valve opens at increasing bulb temperature. The bulb must be mounted pointing downwards up to horizontal.

#### Features

- Pressure balanced valve design
- 3/8, 1/2, 3/4" are angled body type valves with high Kv value
- Quick opening valve characteristics
- No close fitting or sliding parts in water passages
- Easy to disassemble. All parts can be replaced
- Special bronze bodies

#### V47 Temperature Actuated Water Valve Selection Table

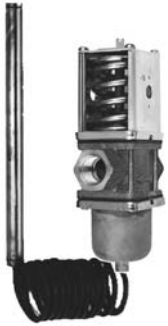
Range °C	Body Style	Size according to ISO 228-G	Capillary Length	Bulb Style 4 Length mm	Additional Features	Ordering Number
46...82	angled	3/8"	1.8 m plain	82		V47AA -9161
24...57		1/2"				V47AB -9160
		3/4"				V47AC -9160

For replacement parts, see Section Replacement Parts

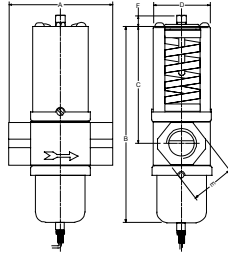
\* Quantity orders only

V47 Two-way Temperature Actuated Water Valves

**Modulating Water Valves**



V47 Straight



Dimensions

Valve size	Dimensions in mm					
	A	B	C	D	E	F
1"	124	233	139	72	50	13
1 1/4"	125	243	145	72	58	13

V47 Temperature Actuated Water Valve Selection Table

Range °C	Body Style	Size acc. to ISO 7-Rc	Capillary Length	Bulb Style 4 Length mm	Additional Features	Ordering Number
24...57	straight	1	1.8 m arm.	152		V47AD -9160
46...82						V47AD -9161
24...57		1 1/4				V47AE -9160
46...82						V47AE -9161

For replacement parts, see Section Replacement Parts

\* Quantity orders only

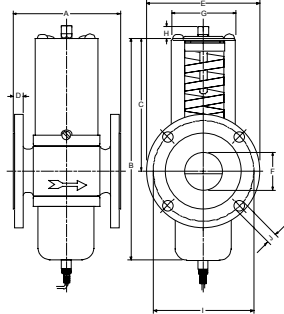


V47 Two-way Temperature Actuated Water Valves, Flanged

## Modulating Water Valves



V47 Flanged



Dimensions

Valve size	Dimensions in mm									
	A	B	C	D	E	F	G	H	I	J
1 1/2"	137	244	144	18	150	47	67	13	110	18
2"	168	304	164	20	165	57	90	18	125	18
2 1/2"	172	304	164	20	185	70	90	18	145	18

V47 Temperature Actuated Water Valve Selection Table

Range °C	Body Style	Size DIN 2533 flange connections	Capillary Length	Bulb Style 4 Length mm	Additional Features	Ordering Number
24...57	straight	1 1/2	1.8 m arm.	152		V47AR -9160
46...82						V47AR -9161

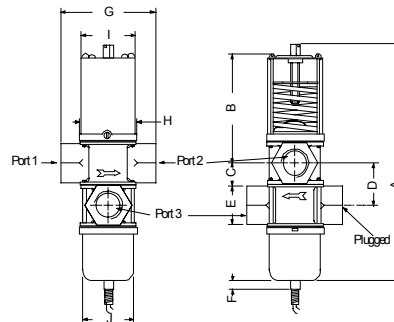
For replacement parts, see Section Replacement Parts  
\* Quantity orders only

## V48 Three-way Pressure Actuated Water Valves

### Modulating Water Valves



V48



Dimensions

#### Description

These water valves are especially designed for condensing units cooled either by atmospheric or forced draft cooling towers. They may be used on single, or multiple condenser hook-ups to the tower. The type V48 valve senses the compressor head pressure and allows cooling water to flow to the condenser, to bypass the condenser, or to allow waterflow to both condenser and by-pass line in order to maintain correct refrigerant head pressure. A further advantage of this system is that the 3-way valve permits a continuous water flow to the tower so the tower can operate efficiently with a minimum of maintenance on nozzles and wetting surfaces. The valves can be used in non-corrosive refrigerant systems. Ammonia power elements and valves designed for salt-water applications are available. The valves have a quick opening characteristic.

#### Features

- Pressure balanced design
- Free movement of all parts
- Easy manual flushing
- High  $K_V$  values
- Pressure actuated
- Can be used as mixing or diverting valve

#### Commercial Type

##### Valve Dimensions in mm

size	A	B	C	D	E	F	G	H	I	J
1/2"	192	91	19	41	30	8	82	52	48	52
3/4"	208	100	23	45	36	8	88	56	52	56
1"	287	142	25	51	50	8	124	71	67	72
1 1/4"	296	141	31	61	58	8	127	71	67	71

#### Sea-water Type

3/4"	203	97	22	45	35	9	95	55	52	55
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#### V48 Pressure Actuated Water Valve Selection Table

Range (bar)	Body Style	Size acc. to ISO 228-G	Style	Capillary Length	Additional Features It is possible to change Style 13 into Style 45A by ordering KIT031N600	Ordering Number
4...20	straight	1/2	50	75		V48AB -9510
4...16			13			V48AB -9600
4...20		3/4	50			V48AC -9510
4...16			13			V48AC -9600
		acc. to ISO 7-Rc				
6...20	straight	1	50	75		V48AD -9510
4...16			13			V48AD -9600
4...16		1 1/4	50		bodies in line (port 3 below port 2)	V48AD -9602
6...20			13			V48AE -9510
4...16					V48AE -9600	
<b>Maritime types</b>		acc. to ISO 228-G				
4...16	straight	3/4	13	75	Seawater resistant	V48BC -9600

For replacement parts, see Section Replacement Parts

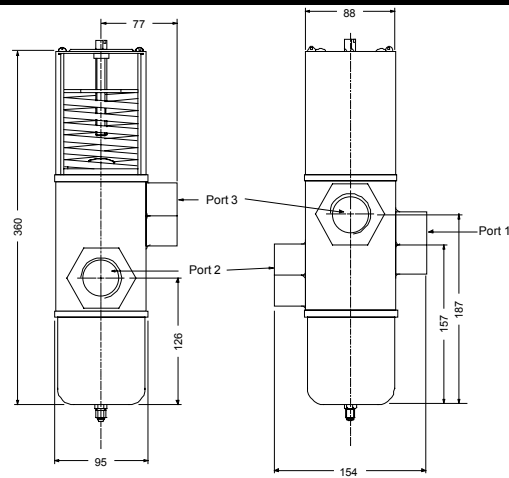
\* Quantity orders only

V48 Three-way Pressure Actuated Water Valves

**Modulating Water Valves**



V48



Dimensions

V48 Pressure Actuated Water Valve Selection Table

Range (bar)	Body Style	Size acc. to ISO 7-Rc	Style	Capillary Length	Additional Features It is possible to change Style13 into Style 45A by ordering KIT031N600	Ordering Number
6...14	straight	1 1/2	5	-		V48AF -9300

For replacement parts, see Section Replacement Parts

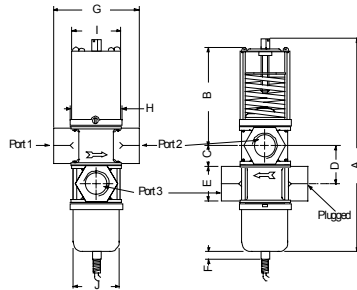
\* Quantity orders only

## V49 Three-way Temperature Actuated Water Valves

### Modulating Water Valves



V49



Dimensions

Valve size	Dimensions in mm									
	A	B	C	D	E	F	G	H	I	J
1/2"	192	91	19	41	30	8	82	52	48	52
3/4"	208	100	23	45	36	8	88	56	52	56
1 1/4"	296	141	31	61	58	8	121	71	67	71

#### Description

These modulating water valves can be used for heating applications. It does have an heating element which means that the bulb temperature always must be higher than the valve body (power element). The valve opens at increasing bulb temperature. The bulb must be mounted pointing downwards up to horizontal.

#### Features

- Pressure balanced design
- Free movement of all parts
- Easy manual flushing
- High  $K_v$  values
- Can be used as mixing or diverting valve

V49 Temperature Actuated Water Valve Selection Table

Range °C	Body Style	Size ISO 228-G Thread	Capillary Length	Bulb Style 4 Length mm	Additional Features	Ordering Number
24...57	straight	1/2	1.8 m plain	82		V49AB -9160
5...30						V49AB -9163
-6...+18		3/4				V49AC -9162
		ISO 7-Rc Thread				
24...57	straight	1 1/4	1.8 m arm.	152		V49AE -9160
5...30						V49AE -9163

For replacement parts, see Section Replacement Parts

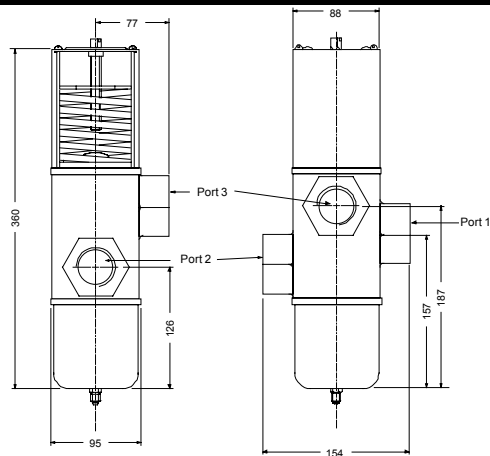
\* Quantity orders only

## V49 Three-way Temperature Actuated Water Valves

### Modulating Water Valves



V49



Dimensions

V49 Temperature Actuated Water Valve Selection Table

Range °C	Body Style	Size ISO 7-Rc Thread	Capillary Length	Bulb Style 4 Length mm	Additional Features	Ordering Number
24...46	straight	1 1/2	1.8 m arm.	254		V49AF -9160
5...30						V49AF -9163

For replacement parts, see Section Replacement Parts

\* Quantity orders only

#### Accessories

### Modulating Water Valves

#### Bulb Wells for water valves

Description	Primary usage	Inner diam Tube/Bulb well length (mm)	Inside & outside connector (NPT)	Material Connector Pocket	Finish	Ordering Number
Max. press. 17 bar, Temp. 120°C, USA item (element ø17,5x152 mm)	V47/V49	19.4 x 214	1/2 - 14	Steel/Copper	Tin	WEL17A-601
Max. press. 17 bar, Temp. 120°C, USA item (element ø17,5x254 mm)		19.4 x 265				WEL17A-600
Max. press. 69 bar, Temp. 370°C USA item (element ø17,5x254 mm)		19.1 x 255		Monel/Monel	WEL17A-603	
Max. press. 69 bar, Temp. 370°C USA item (element ø17,5x82 mm)		19.6 x 89		Steel/Brass	Tin	WEL18A-601
Max. press. 10 bar, Temp. 120°C USA item (element ø17,5x82 mm)		19.6 X 89				WEL18A-602

For replacement parts, see Section Replacement Parts

\* Quantity orders only

Accessories (continued)

## Modulating Water Valves

**Replacement parts - Watervalves/Renewal kits for watervalves**

Description	Ordering Number
For V46AA - V47AA	STT002N600R
For V46AB - V47AB	STT003N600R
For V46AC - V47AC	STT004N600R

**Replacement parts - Watervalves / Diaphragm kits for watervalves**

100 pcs for V46AB/V47AB/V48AB/V49AB and V46BB/V47BB	KIT016N601
25 pcs for V46AS/V47AS, V48AF/V49AF, V46AT/V47AT, V46BS/V47BS and V46BT/V47BT	KIT016N604

**Replacement - Powerelements watervalves V46/V48**

Description	Ordering Number
For V46AA-9300 Style 5	246-672R
For V46AB-9300 Style 5	246-673R
For V46AC-9300 Style 5	246-674R
For V46AD-9300 Style 5	246-675R
For V46AA-9600/9606 Style 13 - 0,75 m capillary	246-821R
For V46AB-9600/9605/9606 Style 13 - 0,75 m capillary	246-824R
V48AB-9600/9601 Style 13 - 0,75 m capillary	
For V46AC-9600/9605 Style 13 - 0,75 m capillary	246-825R
V48AC-9600/9601 Style 13 - 0,75 m capillary	
For V46AD-9600 Style 13 - 0,75 m capillary	246-925R
V46AE-9600 Style 13 - 0,75 m capillary	
V46AR-9600 Style 13 - 0,75 capillary	
V48AD-9600/9601 Style 13 - 0,75 m capillary	
V48AE-9600/9601 Style 13 - 0,75 m capillary	
For V46AS-9300 Style 5 - range 5/11,5 bar	246-671R
For V46AS-9301 Style 5 - range 11/18 bar	246-758R
V46AT-9301 Style 5 - range 11/18 bar	
For V46BA-9600 Style 13 - 0,75 m capillary	246-821R
For V46BB-9600 Style 13 - 0,75 m capillary	246-824R
For V46BC-9600 Style 13 - 0,75 m capillary	246-825R
V48BC-9600 Style 13 - 0,75 m capillary	
For V46BD-9600 Style 13 - 0,75 m capillary	246-925R
V46BE-9600 Style 13 - 0,75 m capillary	
V46BR-9600 Style 13 - 0,75 m capillary	
For V48AD-9101 Style 46A - special Liebert	SEP025N601R
V48AE-9101 Style 46A - special Liebert	
For V48AC-9101 Style 46A - special Liebert	SEP026N601R

**Replacement - Power elements watervalves V47/V49**

For V47BR-9150	SET29A605R
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**Replacement - Ammonia power elements V46/V48, style 15**

For V46AD/AE/AR/BD/BE/BR, V48AD/AE	246-667R
For V46AS/AT/BS/BT, V48AF	246-781R