

MAKING MODERN LIVING POSSIBLE



ESBE Thermostatic Mixing Valves For point of source applications

Keep Water Temperatures Safe

Danfoss ESBE VTA Series Thermostatic Mixing Valves for point of source applications are designed to protect against accidental scalding. They increase the amount of available hot water, are low maintenance and easy to install.



www.heating.danfoss.us

Data Sheet

ESBE VTA Series Lead Free Thermostatic Mixing Valves



Applications:

The compact ESBE VTA series are Lead Free (LF) thermostatic mixing valves designed for Point of Source in domestic hot water distribution systems and/or regulation of supply in hydronic heating systems. The series of LF valves meet the NSF/ANSI 372 standards for 'lead free' requirements, which took effect in January 2014.

The VTA series of valve replaces the Series 20 and 30MR styles of valves. The VTA series is available in four temperature ranges:

- 85-120°F (30 – 49°C) (Domestic/ Hydronic)
- 95-140°F (35 – 60°C) (Domestic/ Hydronic)
- 70-110°F (20 – 45°C) (Hydronic)
- 85-160°F (30 – 70°C) (Hydronic)

As a Point of Source for domestic hot water application, the thermostatic control within the VTA valve accommodates increased water

temperatures at the source while maintaining appropriate water temperatures out to the fixtures. With a higher temperature at the source, the installation benefits of the VTA series include:

- Additional volume of domestic hot water through the thermostatic control of temperature to the fixtures
- Preventative measures to reduce growth of Legionella by maintaining a high temperature within the source and safeguarding against scalding down stream

In the event there is a cold-water supply failure, the hot water supply closes automatically.

The angle flow pattern of the ESBE VTA series thermostatic mixing valves combine high quality performance with remarkable ease of installation and servicing.

Specifications:

- Conforms to ASSE-1017*
- Anti-scald function*.
- Designed for mixing purposes.
- Long life and easy maintenance.
- Quiet operation.
- Compact design and lightweight.
- Snap-on cover for dirt protection and to prevent unauthorized adjustment or tampering.
- Cover label for recording setting information including recorded outlet temperature and date installed.

*Only ranges 85°-120°F and 95°-140°F meet ASSE-1017 standard.

- Available connections:
Threaded body (FNPT)
Solder (Union connection)

Solder c/w 2 check valves (Union connection)
CPVC (Union connection)

- Maximum working pressure:
150 psi (10 bar) / CPVC: 80 psi (5.5 bar).
- Maximum differential pressure between hot and cold ports: 44 psi (3 bar).
- Maximum system differential pressure between outlet and inlet ports: 72 psi (5 bar).
- Maximum hot water inlet temperature: 194°F (90°C).
- Minimum required flow for proper temperature regulation:
 - All valves except 1" NPT, 0.9 GPM
 - 1" NPT valve size, 2.0 GPM
- Up to a 50% glycol mixture for closed loop hydronic system

Ordering Information:

Female NPT Connection

Code No.	Valve Size	Temperature Range	Cv
065B8868LF	¾"	70° to 110°F (20° to 45°C)	1.9
065B8869LF	¾"	85° to 120°F (30° to 49°C)	1.9
065B8870LF	¾"	95° to 140°F (35° to 60°C)	1.9
065B8871LF	¾"	85° to 160°F (30° to 70°C)	1.9
31622111LF	1"	85° to 120°F (30° to 49°C)	4.1
31622011LF	1"	95° to 140°F (35° to 60°C)	4.1

Solder & CPVC Connections

Valve Body			+	Required Tailpieces	
Code No.	Temperature Range	Cv		Code No.	Size/Description
065B8877LF	85° to 120°F (30° to 49°C)	1.9		065B8901	½" solder tailpcs
065B8878LF	95° to 140°F (35° to 60°C)	1.9		065B8892	¾" solder tailpcs
065B8872LF	85° to 160°F (30° to 70°C)	1.9		065B8895	¾" solder with two check valves
				065B8898	¾" CPVC
				065B8899	1" solder

Note: Union valve bodies and tailpiece kits for ESBE VTA series of valves with solder and CPVC connections are ordered separately. If the CPVC tailpieces are used with the union valve body, always follow the pipe manufacturer's instructions.

Example:

Requirement: ¾" Solder valve with Two Check Valves. 85° to 120°F (30° to 49°C) Temperature Range. Order one (1) 065B8877LF union valve body and one (1) 065B8895 Solder tailpiece kit complete with two check valves.

Temperature Setting

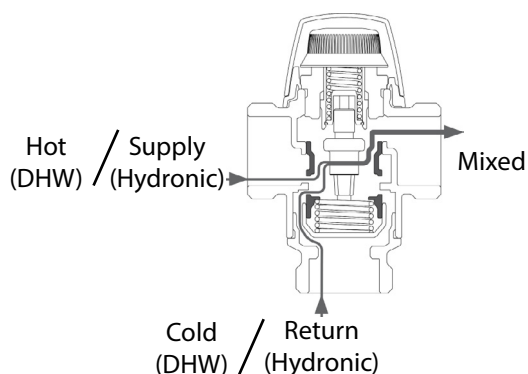
VTA series of thermostatic mixing valves will provide a mixed water temperature according to the following table. The outlet temperatures stated are approximate, based on the given hot water supply temperature and a cold water

supply of 50°F (10°C). For other cold water temperatures correct the outlet temperature by 1°F for every 10°F (or 1°C for every 10°C) deviation from 50°F (10°C), up or down.

Hot Water Temperature	70°F - 110°F						85°F - 120°F						95°F - 140°F					
	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
120°F	67	74	81	87	94	109	80	90	97	102	107	115	95	106	115	119	120	120
140°F	68	75	82	90	97	113	81	91	99	104	109	117	97	108	117	126	133	140
160°F	69	76	84	92	100	118	82	93	100	106	112	118	99	109	118	127	135	145
180°F	70	77	86	95	102	122	82	95	102	108	114	120	100	111	120	129	136	149

Hot Water Temperature	21°C - 43°C						30°C - 49°C						35°C - 60°C					
	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
49°C	19	23	27	31	34	43	27	32	36	39	42	46	35	41	46	48	49	49
60°C	20	24	28	32	36	45	27	33	37	40	43	47	36	42	47	52	56	60
71°C	21	24	29	33	38	48	28	34	38	41	44	48	37	43	48	53	57	63
82°C	21	25	30	35	39	50	28	35	39	42	46	49	38	44	49	54	58	65

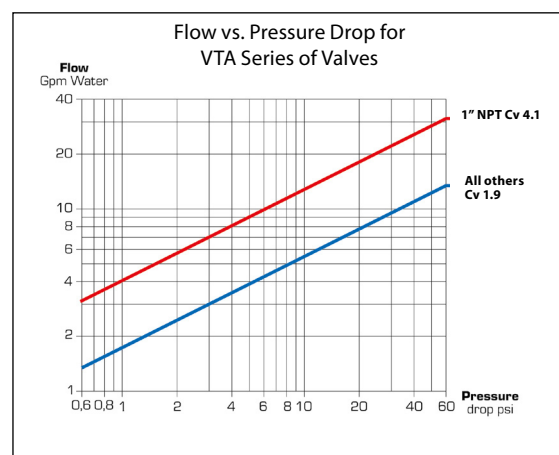
Flow Pattern:



The VTA series provides a mixing flow pattern for both a domestic hot water (DHW) application and for hydronic heating systems. If a diverting flow pattern is required refer to the VTA572 Data Sheet located on www.na.heating.danfoss.com (Code No.: 31700200).

Flow Capacity:

The flow rate through the VTA series valve at any given pressure drop can be determined from the capacity diagram.



Domestic Hot Water Sizing:

For domestic hot water systems the VTA series can be sized based on the number of fixture units the valve will supply.

The total fixture units is $(3 \times 1) + (2 \times 2) + (1 \times 2) + (1 \times 1) + (1 \times 2) = 12$ fixture units.

Note: certain fixtures such as hot tubs, roman tubs or spa showers may require a high volume of hot water. The VTA series may not be capable of providing sufficient hot water to these fixtures.

Process in selecting the appropriate valve:

1. Determine the type and number of fixtures to be supplied by the mixing valve.
2. Assign fixture units from Table 1 for each fixture type.
3. Add the total number of fixture units.
4. Confirm the mixing valve has sufficient capacity.

Example:

A residential home with 2-1/2 baths (3 bathroom sinks and 2 baths), kitchen (1 kitchen sink and a dish washer), and a clothes washer. Hot water supply from the water heater is 3/4".

Table 1. Fixture Units

Bathroom sink	1
Kitchen Sink	2
Bath	2
Shower	2
Clothes Washer	2
Dish Washer	1

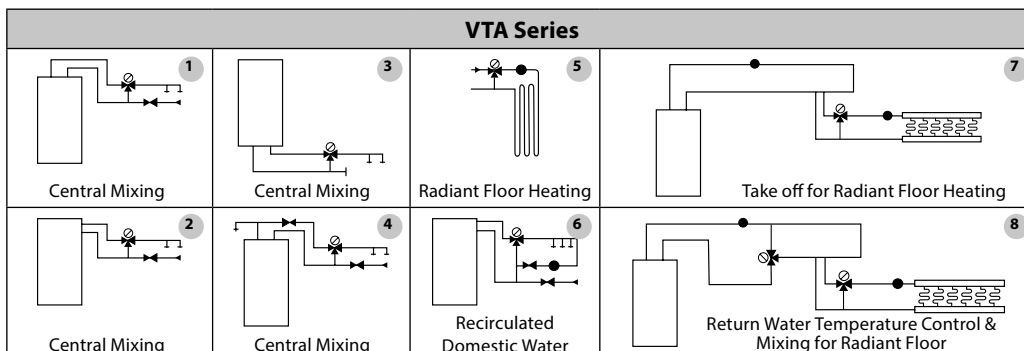
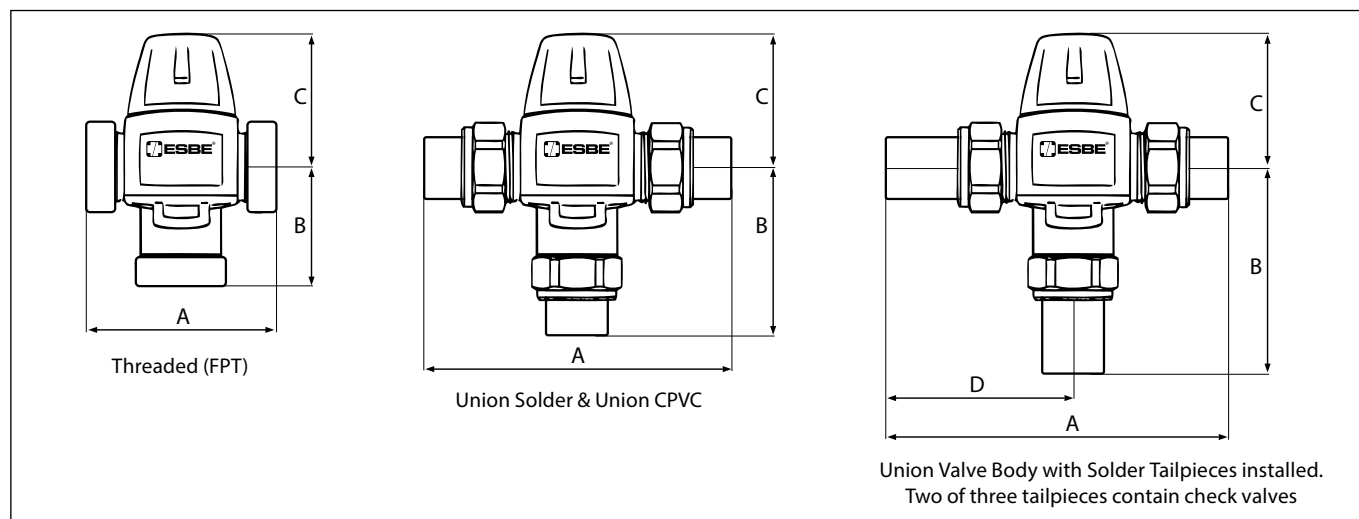
VTA Series Capacity

Size	Fixture Units
All except 1" NPT	16
1" NPT	30

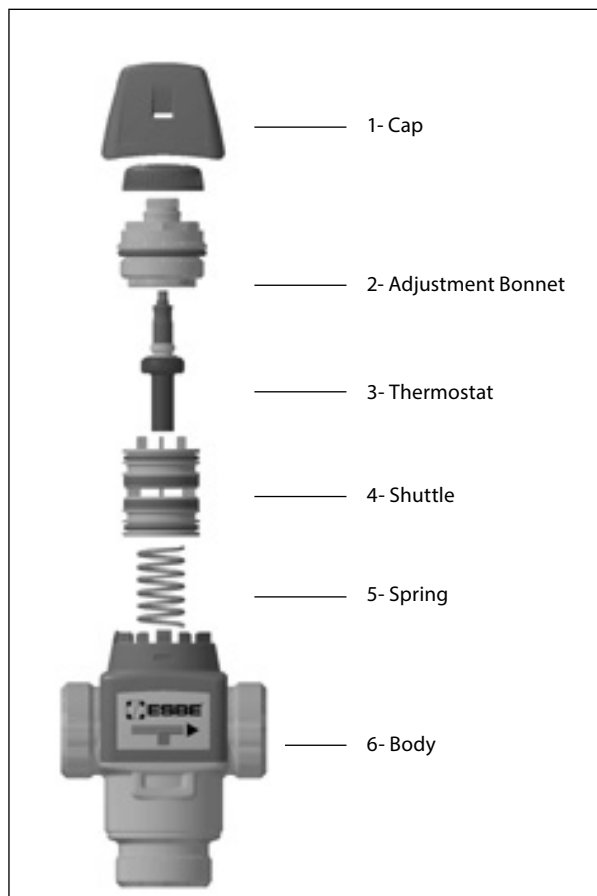
Typical Piping:

VTA series of thermostatic mixing valves can be used to safely supply domestic hot water in residential, commercial, institutional, and industrial installations.

The VTA series are also well suited for use in hydronic heating systems requiring a reduced hot water temperature such as in radiant heating systems, heat pumps, and solar heating systems.


Dimensions & Weights


Description	Dimensions, in (mm)				Weight lbs (kg)
	A	B	C	D	
union valve w/ 1/2" solder tailpcs	4.1" (104)	2.3" (59)	2.1" (53)	2.0" (52)	1.7 (0.8)
union valve w/ 3/4" solder tailpcs	4.8" (122)	2.7" (69)	2.1" (53)	2.4" (61)	1.7 (0.8)
union valve w/ 3/4" solder & 2 check valves	5.8" (147)	3.7" (94)	2.1" (53)	3.4" (86)	1.9 (0.9)
union valve w/ 3/4" CPVC	4.7" (119)	2.6" (66)	2.1" (53)	2.4" (83)	1.5 (0.7)
union valve w/ 1" solder tailpcs	6.2" (156)	3.4" (86)	2.1" (53)	3.1" (78)	2.0 (0.9)
3/4" valve female NPT connections	2.8" (71)	1.7" (43)	2.1" (53)	1.4" (36)	1.1 (0.5)
1" valve female NPT connections	3.75" (95)	2.5" (63)	2.4" (61)	1.9" (48)	2 (0.95)

Spare Parts:


Item No.	Description	Temperature Range	Code Number
1-5	Repair Kit for All Except 1" NPT	70° - 110°F (21° - 43°C)	065B8842
		85° - 120°F (30° - 49°C)	065B8843
		95° - 140°F (35° - 60°C)	065B8844
	Repair Kit for 1" NPT	85° - 120°F (30° - 49°C)	37101600
		95° - 140°F (35° - 60°C)	37101400
Item No.	Description	Code Number	
1	Cap for All Except 1" NPT	065B8846	

Typical specification:

A Thermostatic Mixing Valve shall be installed on the outlet of the water heater for the distribution of tempered water to the fixtures. The thermostatic mixing valve shall have an internal self regulating element housed within a brass lead free constructed valve body. The valve shall have a protective plastic body cover and snap-on cap to prevent unauthorized tampering. The valve shall be an ESBE VTA thermostatic mixing valve series.

A Thermostatic Mixing Valve for hydronic heating applications shall be installed prior to the circulator for the system or zone. The thermostatic mixing valve shall have an internal self regulating element housed within a brass lead free constructed valve body. The valve shall have a protective plastic body cover and snap-on cap to prevent unauthorized tampering. The valve shall be an ESBE VTA series thermostatic mixing valve series.

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