



**Features:**



The TWA (thermal wax actuator) is a 24 volt ac thermo-hydraulic actuator used with on/off controls to activate several types of valves and floor heating manifolds. When the TWA is

energized, an internal wax element gradually heats up opening or closing the valve. TWA can be used with Danfoss RET-B, RET-24 or FH-WS low voltage thermostats.

**Typical applications:**

- Hot water radiator / baseboard / fin tube heating systems
- Hydronic floor heating systems (zone controls)
- Hot water service systems
- Hot/chilled water for air handlers
- Slow acting wax element eliminates water hammer associated with motorized valves.
- Silent operation
- Proven reliability
- Visual position indicator to show the open or closed position of the valve
- Low power consumption
- Compact size

**Ordering Information:**

Code No.	Type	suitable Valve	Actuator Position	Replaces
<b>088H3110</b>	TWA-A	RA 2000, RA-C	NC	082F1043 (ABNR)
<b>088H3111</b>			NO	082F1143 (ABNR)
<b>088H3114</b>			NC, w/ end switch	-
<b>088H3120</b>	TWA-V	RAV, VMT*	NC	082F1042 (ABNV)
<b>088H3121</b>			NO	082F1142 (ABNV)

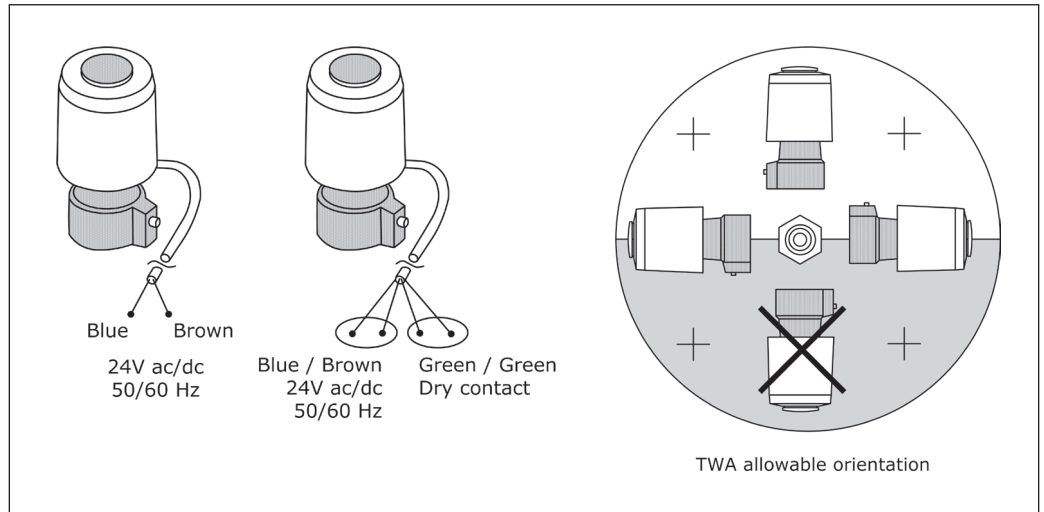
\* TWA-V is not to be used with VMT valves having Cv > 2.7 GMP

**Specifications:**

<b>Suitable systems</b>	Hot water applications*
<b>Supply voltage</b>	24V ac/dc (Class II, SELV)
<b>Frequency</b>	50 - 60 Hz
<b>Avg. power consumption</b>	2W
<b>Travel time of spindle</b>	~3 min
<b>Ambient temperature</b>	32 - 40°F (0 - 60°C)
<b>Wire lead length</b>	4ft (1200 mm)
<b>End switch, max. Output</b>	24VAC / 2 A
<b>Maximum Δp (TWA-A) (TWA-L)</b>	8.7 psi (0.6 bar)
<b>Maximum Δp (TWA-V)</b>	11.6 psi (0.8 bar)

\*TWA's are not recommended for steam valves or inside tight enclosures. Excessive ambient temperatures past 140°F (60°C) can place the wax in a semi-liquefied state causing the valve to falsely operate and the regulation to be lost.

**Electric Connection & Mounting Orientation:**



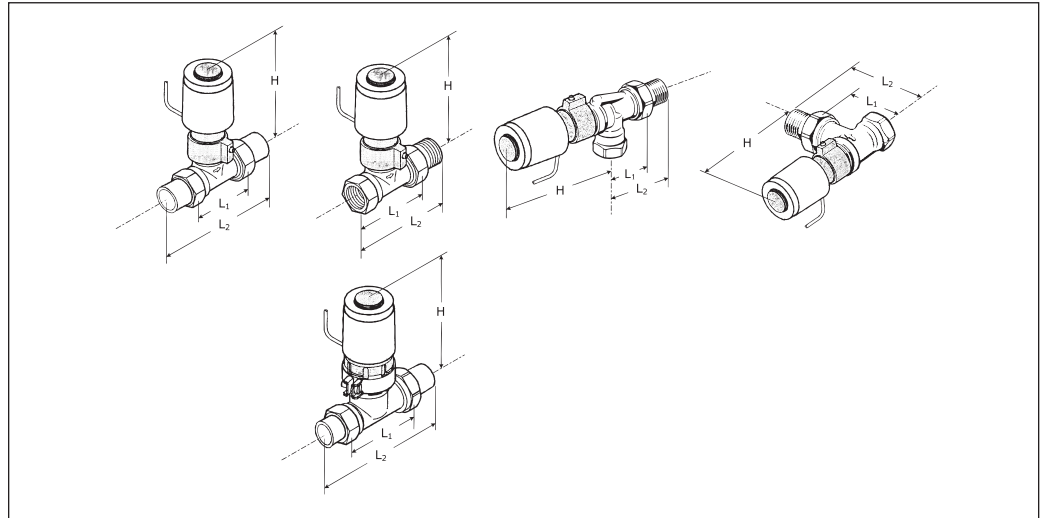
When 24 volts is applied to the actuator, the internal wax element heats up allowing the valve to actuate. Unlike valves that open and close quickly, the actuation of the TWA is slow, reducing water hammer and as a result performs similar to a modulating valve in certain situations.

When the TWA is used on systems with excessive temperatures, the orientation of the actuator should be in a horizontal position to ensure proper airflow across the actuator. If it is mounted within an enclosure, proper airflow through the enclosure is essential to offset the increased ambient temperature's influence on the actuator.

**Identifying Mounting Valve Type:**

Valve Style	Distinguishing Dimension
RA 2000	<p>7/8" (22.5 mm) outside diameter</p>
RAV / VMT	<p>1 - 5/16" (34 mm) outside diameter</p>

**Dimensions:**



<b>TWA-A, RA 2000</b>				
<i>Straight Valve, Double Solder Union</i>				
<b>Code No.</b>	<b>Size</b>	<b>L1</b>	<b>L2</b>	<b>H</b>
<b>013G8042</b>	1/2"	2-5/8"	3-15/16"	3-25/32"
<b>013G8044</b>	3/4"	2-15/16"	4-5/8"	3-29/32"
<i>Straight Valve, NPT</i>				
<b>Code No.</b>	<b>Size</b>	<b>L1</b>	<b>L2</b>	<b>H</b>
<b>013G8015</b>	1/2"	2-5/8"	3-1/4"	3-19/32"
<b>013G8020</b>	3/4"	2-29/32"	4-13/16"	3-13/16"
<b>013G8025</b>	1"	3-17/32"	5"	3-3/4"
<b>013G8032</b>	1-1/4"	4-1/4"	5-9/32"	3-7/8"
<i>Side Mounted Angle Valve</i>				
<b>Code No.</b>	<b>Size</b>	<b>L1</b>	<b>L2</b>	<b>H</b>
<b>013G8013</b>	1/2"	1-1/8"	2-1/4"	4-5/32"
<b>013G8018</b>	3/4"	1-11/32"	2-5/8"	4-7/32"
<b>013G8023</b>	1"	1-9/16"	3"	4-5/32"
<b>013G8030</b>	1-1/4"	1-3/4"	3-3/8"	4-1/16"
<i>Angle Valve</i>				
<b>Code No.</b>	<b>Size</b>	<b>L1</b>	<b>L2</b>	<b>H</b>
<b>013G8014</b>	1/2"	1-3/16"	2-9/32"	3-19/32"
<b>013G8019</b>	3/4"	1-11/32"	2-5/8"	3-25/32"
<b>013G8024</b>	1"	1-9/16"	3"	3-3/4"
<b>013G8031</b>	1-1/4"	1-3/4"	3-3/8"	4-1/8"
<b>TWA-V, VMT</b>				
<b>Code No.</b>	<b>Size</b>	<b>L1</b>	<b>L2</b>	<b>H</b>
<b>065F0102</b>	1/2"	<b>3"</b>	<b>4"</b>	<b>3.5"</b>
<b>065F0104</b>	3/4"	<b>3.4"</b>	<b>4.6"</b>	<b>3.5"</b>



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