

## Data Sheet

# TWA Thermal Wax Actuator

## Application



The TWA is a small actuator for electrical on/off controls to activate several types of valves and floor heating manifolds.

The TWA range covers actuators for 24 V (SELV) or 230 V supply in both normally closed (NC) or normally open (NO) versions (valve positions with no supply voltage to the actuator).

NC/S versions with end switch are also available for some actuator types.

The actuator is equipped with a visual position indicator to show the open or closed position of the valve.

The TWA can be connected to the RA, RTD, RAVL and RAV-valves from Danfoss. Furthermore versions for valves with Heimeier/MNG/Oventrop M30x1,5 connection are available.

Other valves must be verified individually to ensure correct valve closing measurement and valve top geometry.

## Ordering

| Actuator | Connection type | Supply Voltage | Function | Code no.        |
|----------|-----------------|----------------|----------|-----------------|
| TWA-A    | RA              | 230 V AC       | NC/S*    | <b>088H3106</b> |
| TWA-A    | RA              | 24 V AC/DC     | NC       | <b>088H3110</b> |
| TWA-A    | RA              | 24 V AC/DC     | NO       | <b>088H3111</b> |
| TWA-A    | RA              | 230 V AC       | NC       | <b>088H3112</b> |
| TWA-A    | RA              | 230 V AC       | NO       | <b>088H3113</b> |
| TWA-A    | RA              | 24 V AC/DC     | NC/S*    | <b>088H3114</b> |
| TWA-V    | RAV/VMT         | 24 V AC/DC     | NC       | <b>088H3120</b> |
| TWA-V    | RAV/VMT         | 24 V AC/DC     | NO       | <b>088H3121</b> |
| TWA-V    | RAV/VMT         | 230 V AC       | NC       | <b>088H3122</b> |
| TWA-V    | RAV/VMT         | 230 V AC       | NO       | <b>088H3123</b> |
| TWA-L    | RAVL            | 24 V AC/DC     | NC       | <b>088H3130</b> |
| TWA-L    | RAVL            | 24 V AC/DC     | NO       | <b>088H3131</b> |
| TWA-L    | RAVL            | 230 V AC       | NC       | <b>088H3132</b> |
| TWA-L    | RAVL            | 230 V AC       | NO       | <b>088H3133</b> |
| TWA-K    | M30x1,5**       | 230 V AC       | NC/S*    | <b>088H3105</b> |
| TWA-K    | M30x1,5**       | 24 V AC/DC     | NC       | <b>088H3140</b> |
| TWA-K    | M30x1,5**       | 24 V AC/DC     | NO       | <b>088H3141</b> |
| TWA-K    | M30x1,5**       | 230 V AC       | NC       | <b>088H3142</b> |
| TWA-K    | M30x1,5**       | 230 V AC       | NO       | <b>088H3143</b> |
| TWA-D    | RTD             | 24 V AC/DC     | NC       | <b>088H3150</b> |
| TWA-D    | RTD             | 24 V AC/DC     | NO       | <b>088H3151</b> |
| TWA-D    | RTD             | 230 V AC       | NC       | <b>088H3152</b> |
| TWA-D    | RTD             | 230 V AC       | NO       | <b>088H3153</b> |

\* With end-switch (end-switch only 24 V~)

\*\* Connection to Heimeier, MNG and Oventrop valves with M30x1,5 connection. Other valves must be verified individually to ensure correct valve closing measurement and valve top geometry (see page 3).

Technical specifications

|                           |   |
|---------------------------|---|
| Supply voltage            | 24 V (Class II (SELV)) and 230 V (3 A pre-fuse) |
| Max. inrush current       | 24 V: 350 mA, 230 V: 250 mA                     |
| Frequency                 | 50-60 Hz  |
| Running power consumption | 2 W   |
| Spindle travel time       | ~3 min.   |
| Ambient temperature       | 0 °C to +60 °C                                  |
| Enclosure                 | IP 41   |
| Cable length              | 950 mm  |

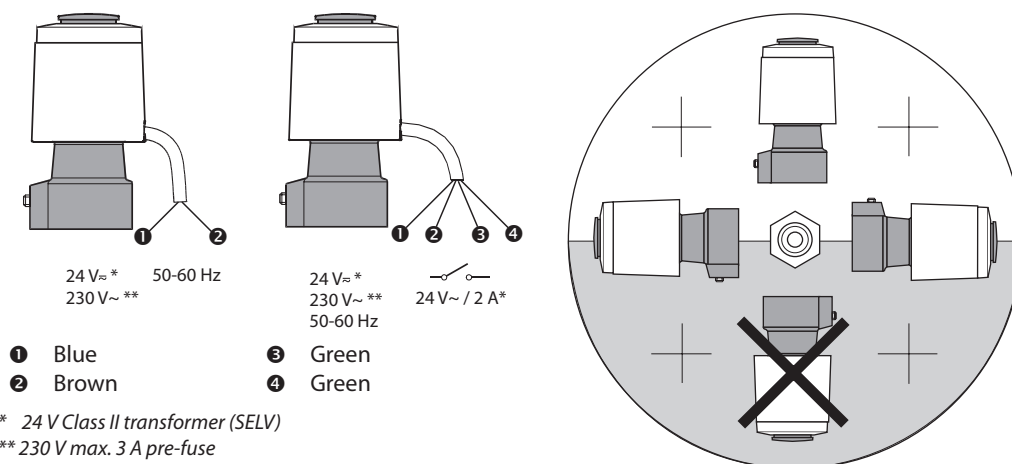
Combination overview for Danfoss thermal wax actuator and valves (V) or manifolds (M)

| Valve/<br>Manifold           | RA-N<br>(V)  | RTD-N<br>(V) | RA-C<br>(V)  | RA-FN<br>(V) | RA-G<br>(V)  | RTD-G<br>(V) | RAV-/8<br>(V) | VMT-8<br>(V) | RAVL-6<br>(V) | FHD<br>(M)   |
|------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|--------------|---------------|--------------|
| $k_{VS}$ (m <sup>3</sup> /H) | 0,65 to 1,40 | 0,65 to 1,40 | 1,20 to 3,30 | 0,65 to 1,40 | 2,06 to 4,75 | 2,00 to 4,40 | 1,20 to 3,10  | 1,50 to 3,10 | 0,20 to 1,50  | 0,10 to 1,10 |
| Max. $\Delta p$ (Bar)        | 0,6          | 0,6          | 0,6          | 0,6          | 0,2*         | 0,2*         | 0,8           | 0,8          | 0,6           | 0,6          |
| Actuator**                   | TWA-A        | TWA-D        | TWA-A        | TWA-A        | TWA-A        | TWA-D        | TWA-V         | TWA-V        | TWA-L         | TWA-A        |

\* The RA-G/ RTD-G 25 valve has a max.  $\Delta p = 0,16$  bar. Consult valve/manifold datasheets for further information.

\*\* If the actuator should be an 24 V or 230 V and normally open (NO) or normally closed (NC), depends mainly of the application, control strategy and the controller connected to the actuator.

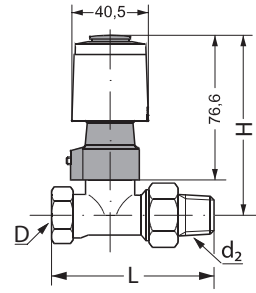
Electrical connections



**Note!** All NC-versions are equipped with a red mounting split on the position indicator to secure easy valve connection. When mounted this split must be removed for correct operation.

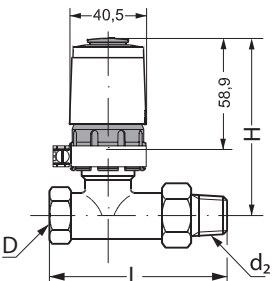
Dimensions

TWA-A / RA valves



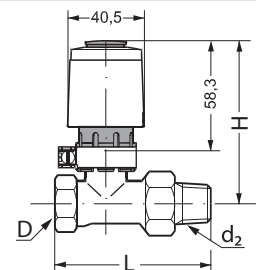
| DN | D<br>ISO 7/1 | d <sub>2</sub> | Valve type  | H<br>[mm] | L<br>[mm] |
|----|--------------|----------------|-------------|-----------|-----------|
| 10 | Rp 3/8       | R 3/8          | RA-N, RA-FN | 92        | 75        |
| 15 | Rp 1/2       | R 1/2          | RA-N, RA-FN | 92        | 82        |
| 20 | Rp 3/4       | R 3/4          | RA-N, RA-FN | 97        | 98        |
| 25 | Rp 1         | R 1            | RA-N, RA-FN | 97        | 125       |
| 15 | Rp 1/2       | R 1/2          | RA-G        | 95        | 96        |
| 20 | Rp 3/4       | R 3/4          | RA-G        | 95        | 107       |
| 25 | Rp 1         | R 1            | RA-G        | 99        | 125       |

TWA-V / RAV valves



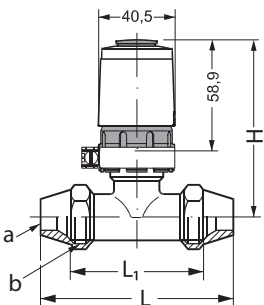
| DN | D<br>ISO 7/1 | d <sub>2</sub> | RAV  | H<br>[mm] | L<br>[mm] |
|----|--------------|----------------|------|-----------|-----------|
| 15 | Rp 1/2       | R 1/2          | 15/8 | 74        | 95        |
| 20 | Rp 3/4       | R 3/4          | 20/8 | 74        | 106       |
| 25 | Rp 1         | R 1            | 25/8 | 87        | 125       |

TWA-L / RAVL valves



| DN | D<br>ISO 7/1 | d <sub>2</sub> | RAVL | H<br>[mm] | L<br>[mm] |
|----|--------------|----------------|------|-----------|-----------|
| 10 | Rp 3/8       | R 3/8          | 10   | 75        | 85        |
| 15 | Rp 1/2       | R 1/2          | 15   | 75        | 95        |
| 20 | Rp 3/4       | R 3/4          | 20   | 75        | 106       |

TWA-V / VMT



| DN | a                   | b        | VMT  | H<br>[mm] | L<br>[mm] |
|----|---------------------|----------|------|-----------|-----------|
| 15 | Ø15,<br>Ø16,<br>Ø18 | G 3/4 A  | 15/8 | 74        | 90        |
| 20 | Ø18,<br>Ø22         | G1 A     | 20/8 | 74        | 101       |
| 25 | Ø28                 | G1 1/4 A | 25/8 | 87        | 120       |

**Dimensions**

**TWA-D / RTD valves**

| DN | ISO 7/1 |                | Valve type | H [mm] | L [mm] |
|----|---------|----------------|------------|--------|--------|
|    | D       | d <sub>2</sub> |            |        |        |
| 10 | Rp 3/8  | R 3/8          | RTD-N      | 83.2   | 75     |
| 15 | Rp 1/2  | R 1/2          | RTD-N      | 83.2   | 82     |
| 20 | Rp 3/4  | R 3/4          | RTD-N      | 88.2   | 98     |
| 25 | Rp 1    | R 1            | RTD-N      | 88.2   | 125    |
| 15 | Rp 1/2  | R 1/2          | RTD-G      | 86.2   | 96     |
| 20 | Rp 3/4  | R 3/4          | RTD-G      | 86.2   | 107    |
| 25 | Rp 1    | R 1            | RTD-G      | 90.2   | 125    |

**TWA-K**



**Danfoss A/S**

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