

ENGINEERING  
TOMORROW



North America

# Thermostatic Radiator Valve, Electric Zone Valve & Pressure Bypass Valve Catalog

Automatic temperature control for free standing radiators, baseboards, convectors & more.



Thermostatic Operators



Electric Zone Valves



Thermostatic Radiator Valves





[www.na.heating.danfoss.com](http://www.na.heating.danfoss.com)

## MODEL SELECTION:

Typical Installation Configuration		=	Operator Type	
	<p><b>Free-Standing Radiators</b></p> <p>The freestanding <i>hot water or 2-pipe low pressure steam</i> radiator is located where air circulation is unobstructed and passes freely over the operator.</p>	=		<p><i>Valve -mounted dial and sensor, standard or tamper resistant models.</i></p> <p>Always install these operators in a horizontal position.</p>
	<p><b>Free-Standing Radiators</b></p> <p>Freestanding <i>hot water or 2-pipe low pressure steam</i> radiator. Air circulation does not pass freely over the operator due to furniture, drapes, coverings, etc.</p>	=		<p><i>Valve -mounted dial with remote sensor, standard or tamper-resistant models.</i></p> <p>The sensor can be mounted on a wall up to 6 feet away in a location free of drafts.</p>
	<p><b>Baseboard/Convectors</b></p> <p>The <i>hot water or 2-pipe low pressure steam</i> fin-tube baseboard or convector is located where air circulation is unobstructed and passes freely over the operator.</p>	=		<p><i>Valve -mounted dial and sensor, standard or tamper resistant models.</i></p> <p>Always install these operators in a horizontal position.</p>
	<p><b>Baseboard/Convectors</b></p> <p><i>Hot water or 2-pipe low pressure steam</i> fin-tube baseboard or convector. Air circulation does not pass freely over the operator due to furniture, drapes, coverings, etc.</p>	=		<p><i>Combined remote mounted dial and sensor.</i></p> <p>The dial operators are wall mounted and are available with 6', 16' or 26' long capillary tubes.</p>
	<p><b>Baseboard/Convectors</b></p> <p>The <i>hot water or 2-pipe low pressure steam</i> fin-tube baseboard or convector arrangement requires the dial and sensor to be mounted separately, away from the valve.</p>	=		<p><i>Separate remote mounted dial and sensor.</i></p> <p>The remote dial mounts on the wall or enclosure (max. 6' away). The sensor is mounted beneath the radiation or on a draft free wall 6' away from the dial.</p>
	<p><b>Free Standing Radiators</b></p> <p>The free-standing <i>one-pipe low pressure steam</i> radiator is positioned where air continually passes freely over the operator.</p>	=		<p><i>Valve -mounted dial and sensor, standard or tamper resistant models.</i></p> <p>Always install these operators in a horizontal position.</p>
	<p><b>Convectors</b></p> <p>The <i>1-pipe low pressure steam</i> convector is inaccessible; room air cannot continually pass freely over the valve.</p>	=		<p><i>Combined remote mounted dial and sensor.</i></p> <p>The dial operators are wall mounted and are available with 6', 16' or 26' long capillary tubes.</p>

## RA 2000

**RA 2000** thermostatic operators provide automatic temperature control for free standing radiators, baseboard or convectors in hot water and low pressure steam systems. Valve bodies sold separately.

RA 2000 Operators	Code No.	Description		Required Valve Body	Master Carton Qty.
	<b>013G8250</b>	<b>RA 2000 Valve Mounted Dial and Sensor.</b> Snap action mechanism allows for easy installation and removal without the use of tools.		RA 2000	60 pcs.
	<b>013G8252</b>	<b>RA 2000 Valve Mounted Dial with Remote Sensor.</b> Snap action mechanism allows for easy installation and removal without the use of tools. 6' Capillary Tube.			45 pcs.
	<b>013G8240</b>	<b>RA 2000 Tamper Resistant Valve Mounted Dial and Sensor.</b> Set screw mount.			48 pcs.
	<b>013G2922</b>	<b>RA 2000 Tamper Resistant Valve Mounted Dial with Remote Sensor.</b> Set screw mount. 6' Capillary Tube.			45 pcs.
	<b>013G8562 *</b>	<b>RA 2000 Wall Mount Operator with combined Remote Mounted Sensor and Dial.</b>	6' (1.8 m) Capillary		24 pcs.
	<b>013G8565 *</b>		16' (4.9 m) Capillary		
	<b>013G8568 *</b>		26' (7.9 m) Capillary		
	<b>013G8564 *</b>	<b>RA 2000 Operator with Separate Remote Mounted Sensor and Dial.</b> 2 X 6' Capillary Tubes.			20 pcs.
	<b>013G5002</b>	<b>RA 2000 Manual Adjustment Handle.</b> Allows use as a manual hand valve. For Use on Hot Water Heating Systems Only.			150 pcs.
	<b>013G1350</b>	<b>Angle Adaptor</b> (Hot Water Use Only)			N/A
	<b>013G5120</b>	<b>RAS-D Valve Mounted Operator for High Altitude Applications</b> (Hot Water Use Only)		60 pcs.	
	<b>013G5022</b>	<b>RAS-D Valve Mounted Operator with Remote Sensor for High Altitude Applications</b> (Hot Water Use Only)		30 pcs.	
	<b>013X3180</b>	RAVB Replacement Kit	Replaces RAVB Operator with Valve Mounted Sensor and Dial		
	<b>013X3182</b>	RAVB Replacement Kit	Replaces RAVB Operator with Remote 6 ft. (1.8 m) Sensor		

For Spare Parts See Page 8-9. For Additional Technical Information See Page 10-11.

\* Includes socket for use on RAV, KOVM and VMT valve bodies.

**For more information on TRV's, visit our website: [www.radiatorcontrol.com](http://www.radiatorcontrol.com)**

## RA 2000, Valve Insert

RA 2000 valve bodies are designed to meet the demands of the residential, commercial and industrial sectors.

RA 2000	Code No.	Description					Master Carton Qty.
		Connection		Cv	Design	Application	
		Size	Type				
	013G8013	1/2"	FPT x MPT Union Tailpiece	1.6	Side Mount Angle	Water or 2 Pipe Low Pressure Steam	24 pcs.
	013G8018	3/4"		2.1			18 pcs.
	013G8023	1"		2.8			
	013G8030	1-1/4"		2.8			
	013G8015	1/2"	FPT x MPT Union Tailpiece	1.6	Straight	Water or 2 Pipe Low Pressure Steam	24 pcs.
	013G8020	3/4"		2.7			18 pcs.
	013G8025	1"		2.8			
	013G8032	1-1/4"		2.8			
	013G8014	1/2"	FPT x MPT Union Tailpiece	1.6	Angle	Water or 2 Pipe Low Pressure Steam	24 pcs.
	013G8019	3/4"		2.7			18 pcs.
	013G8024	1"		2.8			
	013G8031	1-1/4"		2.8			
	013G8042	1/2"	Solder Union	1.6	Straight	2 Pipe Hot Water	35 pcs.
	013G8044	3/4"		2.7			
	013G0140	1/8"	NPT	NA	1 Pipe Steam with Vacuum Breaker	1 Pipe Steam	30 pcs.
	013L8011	1/8"	NPT	NA	Air Vent for 013G0140	1 Pipe Steam	N/A
	013L8300	1/8" Brass Street Elbow for 1-PS (On Convector - order 2 per valve)					1 Pipe Steam RA 2000 Valves

For Spare Parts See Page 8-9. For Additional Technical Information See Page 10-11.

## Danfoss Radiator Valve Insert for Dunham-Bush SWRF-B 3/4" Valve

The **Danfoss Valve Insert Conversion Kit** is specifically designed for the modification of the Dunham-Bush SWRF-B 3/4" valve body. With this conversion kit, room temperature control through a thermostatic operator can be utilized to bring added comfort and reduced overheating within the room.

	Code No.	Description
	013G8074	Danfoss valve insert conversion specifically for Dunham-Bush SWRF-B, 3/4" valve body

## RA 2000, Conversion Valve, Tailpieces

**RA 2000 1-Pipe Steam Radiator to Hot Water Conversion Valve** is a special conversion valve that allows a single connection point to serve as both the supply and return for a hot water based system. One such application of the conversion valve is the transition of a cast iron 1-pipe steam radiator to hot water. With the conversion valve the system piping can be transformed to a conventional one pipe hot water (diverter) or two pipe hot water system. Tailpieces and unions or compression fittings are required when installing.

Conversion Valve	Code No.**	Size	Description			
			Connection		Cv	Design
			System	Radiator		
	013G3270	1/2"	Rp 1/2 int. thread	R 1/2	2.34*	RA15/6T with internal bypass
	013G3268		G 3/4 ext. thread			
	013G3215		Rp 1/2 int. thread		1.17	RA15/6TB without internal bypass

\*C<sub>v</sub> = C<sub>v</sub> bypass + C<sub>v</sub> radiator. Max flow through radiator, approx. 35%.

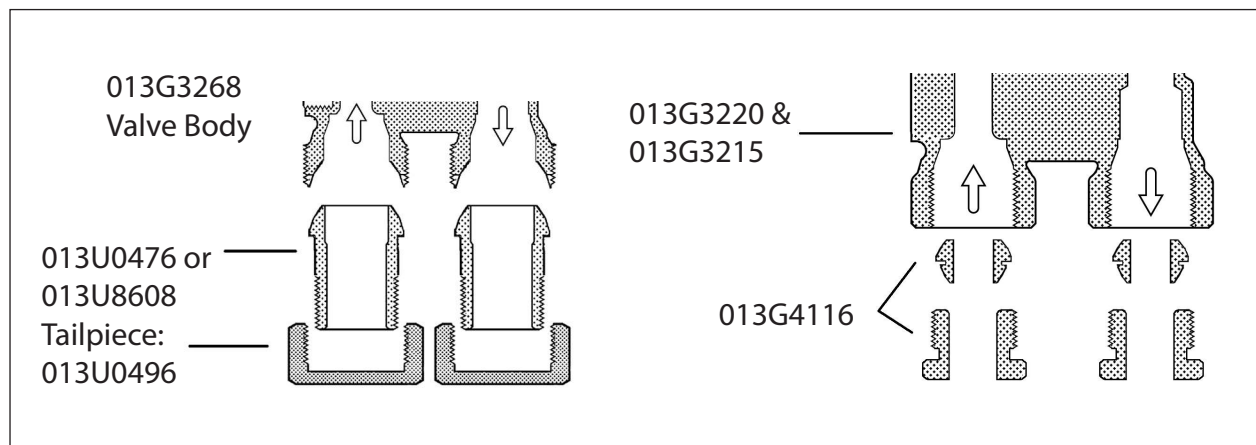
\*\* Required Tailpieces ordered Separately

### Required Tailpieces for Conversion Valve

Required Fitting	Code No.	Description
	013G4116	1/2" Copper compression fitting for RA15/6T & TB, 2 pcs required, use with 013G3215 & 013G3270 only
	013U0476	1/2" M. NPT tailpiece for RA15/6TB, 2 pcs required, use with 013G3268 only
	013U8608	1/2" F. solder tailpiece for RA15/6TB, 2 pcs required, use with 013G3268 only
	013U0496	1/2" Union nut for RA15/6TB, 2 pcs required, use with 013G3268 only

For appropriate tailpiece assemblies, reference the image below.


### Tailpiece Selections






## ELECTRIC ZONE VALVE ACTUATORS & PACKS (TWA-A, ABRA, ABNM)


**TWA** actuators are used to electrically activate valves on hot water heating systems, where slow opening and closing is desirable to eliminate water hammer associated with quick acting valves.

TWA-A	Code No.	Description			Master Carton Qty.
		Type	Model	Required Valve Body	
	<b>088H3110</b>	ON/OFF (NC)	<b>TWA-A</b> Actuator 24VAC, 2.0 VA c/w valve position indicator	RA 2000	60 pcs.
	<b>088H3111</b>	ON/OFF (NO)			
	<b>088H3114</b>	ON/OFF (NC)	<b>TWA-A</b> Actuator 24VAC, 2.0 VA c/w valve position indicator, 4 wire w/ end-switch		

**ABRA** actuators are used to electrically activate valves on hot water heating, where slow opening and closing is desirable to eliminate water hammer associated with quick acting valves.

ABRA	Code No.	Description			Master Carton Qty.
		Type	Model	Required Valve Body	
	<b>082F1110</b>	ON/OFF (NC)	<b>ABRA</b> Actuator 24VAC, 2.0 VA 4 wire w/ end-switch	RA 2000	10 pcs.

**ABNM** modulating valve actuators are used in direct digital controlled (DDC) systems with 0-10 V DC control voltage. The ABNM design offers precision regulation, long life, silent operation and full valve modulation. Utilized on hot water systems.

ABNM	Code No.	Description			Master Carton Qty.
		Type	Model	Required Valve Body	
	<b>082F1111</b>	Proportional (Modulating, NC)	<b>ABNM</b> Actuator (requires 0 -10 VDC signal) 24VAC, 1.5 VA 3-wire	RA 2000	60 pcs.

## ADAPTOR RINGS


### ABRA/ABNM ADAPTOR RINGS


These assemblies can be used as replacements to older Danfoss OEM ABNA thermo actuators or as a replacement to other manufacturers' manifold or valves.


Code No.	Description
<b>VA33</b>	Uponor manifold
<b>VA50H</b>	Honeywell Braukmann (except V110)
<b>VA54H</b>	MMA, Macon
<b>VA64</b>	RTI (Pettinaroli) manifold
<b>VA78</b>	Danfoss RA2000
<b>VA80H</b>	Heimeier, Overtrop (since 1997), TACO (Alpha actuator, since 2005), Embassy manifold


## ZONE VALVE PACKS

**Zone Valve Packs** are a cost effective and convenient way to meet your zone valve requirements. Basic and Deluxe Packs include both actuator and valve body in one package. Deluxe Packs also include RET2000B thermostat.

TWA Basic	Code No.	Connection			Description
		Size	Type	Cv	
	<b>TWA4200</b>	1/2"	Solder	1.6	088H3114 24V actuator with end switch. 013G8042 -1/2" solder union valve.
	<b>TWA4400</b>	3/4"		2.7	088H3114 24V actuator with end switch. 013G8044 -3/4" solder union valve.

TWA Deluxe	Code No.	Connection			Description
		Size	Type	Cv	
	<b>TWA42RET2</b>	1/2"	Solder	1.6	088H3114 24V actuator with end switch. 013G8042 -1/2" solder union valve. 087N6441NA RET2000B thermostat.
	<b>TWA44RET2</b>	3/4"		2.7	088H3114 24V actuator with end switch. 013G8044 -3/4" solder union valve. 087N6441NA RET2000B thermostat.

ABRA Basic	Code No.	Connection			Description
		Size	Type	Cv	
	<b>ABRA54200</b>	1/2"	Solder	1.6	082F1110 24V actuator with end switch. 013G8042 -1/2" solder union valve.
	<b>ABRA54400</b>	3/4"		2.7	082F1110 24V actuator with end switch. 013G8044 -3/4" solder union valve.

ABRA Deluxe	Code No.	Connection			Description
		Size	Type	Cv	
	<b>ABRA542RET2</b>	1/2"	Solder	1.6	082F1110 24V actuator with end switch. 013G8042 -1/2" solder union valve. 087N6441NA RET2000B thermostat.
	<b>ABRA544RET2</b>	3/4"		2.7	082F1110 24V actuator with end switch. 013G8044 -3/4" solder union valve. 087N6441NA RET2000B thermostat.

## AVDO PRESSURE BYPASS VALVES

AVDO is a self-acting automatic by-pass control primarily used either to maintain minimum flow rates or to control the differential pressure in a heating system. AVDO opens on rising differential pressure.

AVDO	Code No.	Model	Connection		Description
			Size	Type	
	003L602001	AVDO 15	1/2"	Union Solder	Straight Valve Body
	003L602002			Union Male, NPT	
	003L602501	AVDO 20	3/4"	Union Solder	
	003L602502			Union Male, NPT	
	003L603002	AVDO 25	1"	Union Male, NPT	

## THERMOSTATIC RADIATOR VALVE & OPERATOR SPARE PARTS

Thermostatic Radiator Valves	Code No.	Description	For Use With
	013G8591	Item # 1 Replacement Socket Body	RA 2000 Wall Mount Operators + RA 2000 Valve Bodies
	013G5503	Item # 2 Bellows Holder (set of 2 pcs)	RA 2000 Wall Mount Operators + RA 2000 Valve Bodies
	013G8593	Item # 1 Replacement Socket Body	RA 2000 Wall Mount Operators + RAV, VMT, and KOVM Valve Bodies
	013G5503	Item # 2 Bellows Holder (set of 2 pcs)	RA 2000 Wall Mount Operators + RAV, VMT, and KOVM Valve Bodies
	013U7175	Spare Vacuum Breaker	RA 2000 1-pipe steam valve, 013G0140
	013G0290	Packing Gland	All RA 2000 Valves
	013U0070	Packing Gland	VMT, KOVM, RAV, FHV-R and RAVL Valves
	013-7045	Gasket	RA Valves
	013G8070	RA to RA 2000 Adapter	Allows RA 2000 Operators to fit RA Valves
	013G8072	RAV to RA 2000 Adapter	Allows RA 2000 Operators to fit RAV Valves
	013G8037	RA 2000 Valve Insert (Suitable for valves mfg. after 1990).	1/2" Angle & Straight (NPT)
	013G8038		1/2" Side mount Angle (NPT)
	013G8039		1/2" (solder), 3/4", 1", 1-1/4" All RA 2000 Valve Bodies
	003L0213	Assembly Tool for Valve Insert RA 2000, RA-C	

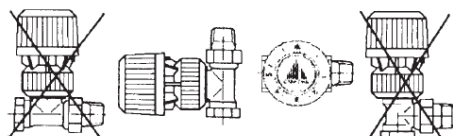


## THERMOSTATIC RADIATOR VALVE & OPERATOR SPARE PARTS

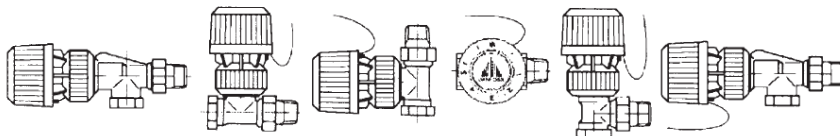
Thermostatic Radiator Valves	Code No.	Description	For Use With	
	<b>013G1236</b>	Tool Set - 2mm Allen Key and Locking Pin Tool	All RA 2000 Operators	
	<b>013G1237</b>	Limitation Pins (30 pcs.)	013G8240 & 013G2922 Operators	
	<b>013G1232</b>	Cover Plugs for locking screws (Priced individually, sold in lots of 50 pcs.)	013G8240 & 013G2922 Operators	
	<b>013G1672</b>	Cover Plate for scale (Price Individually, sold in lots of 20 pcs.)	013G8240 & 013G2922 Operators	
	<b>013G1246</b>	Limitation Pins (10 pcs.)	013G8250 & 013G8252 Operators	
	<b>013G5245</b>	Anti-theft protection clips (Sold in 20 pcs. bag - must order in multiples of 20 pieces)	013G8250 & 013G8252 Operators	
	<b>013U0476</b>	Tailpiece For use only on Hot Water Systems	1/2"	NPT
	<b>013U0479</b>		3/4"	
	<b>013U0489</b>		1"	
	<b>013U0504</b>		1-1/4"	Solder
	<b>013U8608</b>		1/2"	
	<b>013U8609</b>		3/4"	
	<b>013U0496</b>	Union Nut	1/2"	NPT / Solder
	<b>013U0499</b>		3/4"	
	<b>013U0501</b>		1"	
	<b>013U0507</b>		1-1/4"	
	<b>013G6232</b>	Replacement Remote Socket Assembly Kit For use with "discontinued" RA 2000 Remote Mounted Dial Operators (013G8262 & 013G8222).	All RA 2000 Valves	

## OPERATOR REQUIRED ORIENTATION

### Mounting Operator with Built-in Sensor



### Mounting Operator with Remote Sensor



The sensing element must not be in a drafty location or covered. **Do not install the sensing element above a heat source.**

## RA2000 TECHNICAL INFORMATION

### Comfort Control:

Control of the space temperature at a comfortable level is easily accomplished by adjusting the dial clockwise or counter-clockwise. The dial has a numbered scale of 1 to 5 corresponding to temperatures of approximately 57°F to 79°F (14°C to 26°C).

Should the space be unoccupied for an extended period, the dial can be set to the "\*" symbol for freeze protection (50°F or 9°C) to save energy.

Temperature locking or limiting features are included.



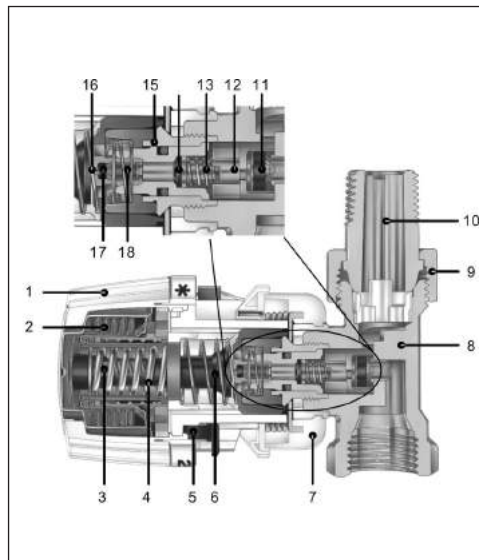
	*	1	2	3	4	5	
45	50	57	63	68	73	79	86°F
7	9	14	17	20	23	26	30°C

Indicated temperatures are approximate.  
Adjust the dial to the desired setting.

### Design and Function:

The RA 2000 thermostatic operator consists of a saturated vapor charged bellows and a setting dial. The dial is set to the position equal to the desired temperature. When the ambient temperature lowers, the pressure from the bellows will reduce, allowing the valve to open. A rise of temperature increases the pressure in the

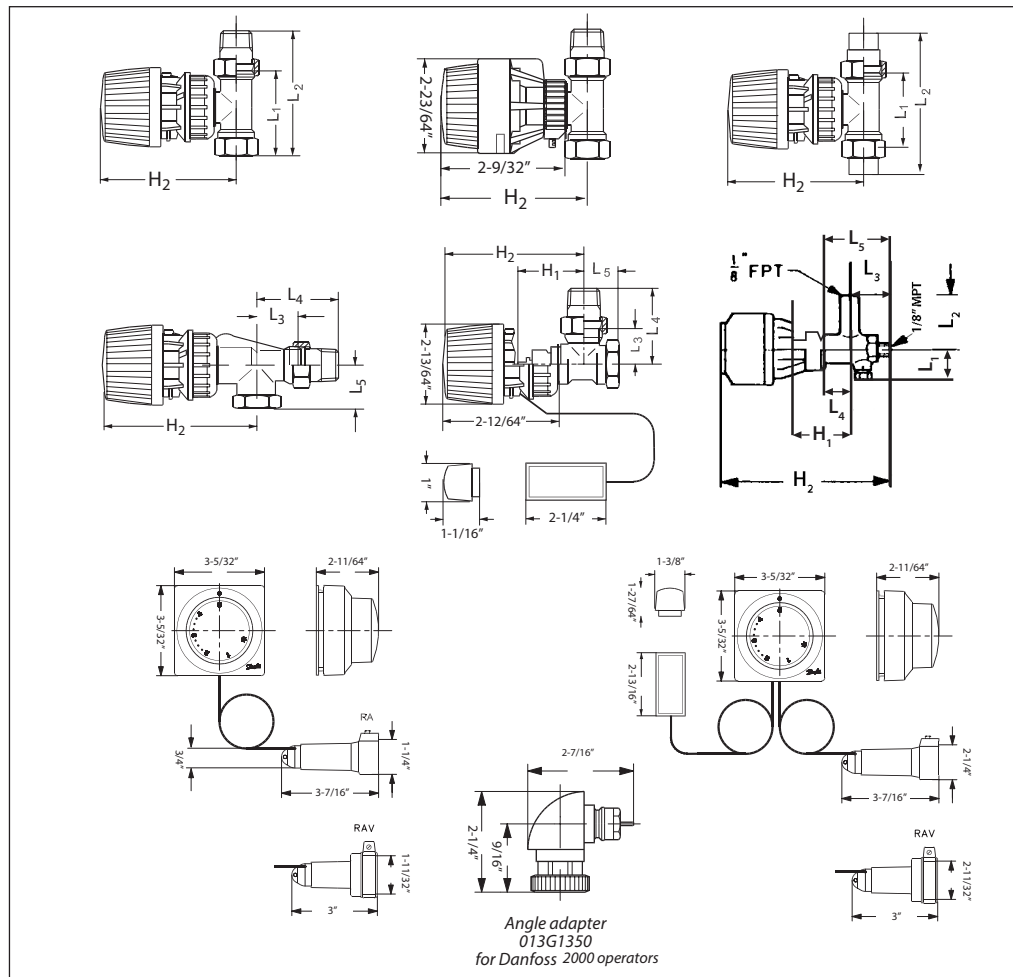
bellows closing the valve. The balanced pressures between the adjustment spring and the bellows ensure a smooth and modulating operation of the valve. Danfoss RA 2000 are manufactured to the highest quality standards in an ISO 9001 factory.



#### No. Description:

- 1- Operator setting dial (ABS)
- 2- Vapor charged bellows
- 3- Safety spring (steel)
- 4- Adjustment spring (steel)
- 5- Locking/limiting pin (steel)
- 6- Pressure spindle (plastic)
- 7- Snap-on mounting ring (plastic)
- 8- Valve body (nickel plated brass)
- 9- Union nut (nickel plated brass)
- 10- Tailpiece (nickel plated brass)
- 11- Valve disc (EPDM)
- 12- Valve spindle (brass)
- 13- Valve spring (stainless steel)
- 14- Back seat washer (EPDM)
- 15- Valve bonnet (brass)
- 16- Pressure pin (stainless steel)
- 17- Packing o-ring (EPDM)
- 18- Packing gland (DRZ brass)

**RA2000 DIMENSIONS** For dimensions of other products please visit: [www.na.heating.danfoss.com](http://www.na.heating.danfoss.com)



Valve Type	Connection Type	L1	L2	L3	L4	L5	H1	H2
Straight	1/2" NPT	2-5/8"	3-3/4"				1-57/64"	3-3/4"
	3/4" NPT	2-29/32"	4-3/16"				2-1/16"	3-15/16"
	1" NPT	3-17/32"	4-31/32"				2-1/16"	3-15/16"
	1-1/4" NPT	4-1/4"	5-29/32"				2-9/64"	4-1/64"
Angle	1/2" NPT			1-3/16"	2-9/32"	1-1/64"	1-57/64"	3-3/4"
	3/4" NPT			1-11/32"	2-5/8"	1-9/64"	2-1/16"	3-15/16"
	1" NPT			1-9/16"	3"	1-11/32"	2-1/16"	3-15/16"
	1-1/4" NPT			1-3/4"	3-3/8"	1-9/16"	2-1/16"	3-15/16"
Side Mount	1/2" NPT			1-1/8"	2-1/4"	1-1/64"	2-3/8"	4-1/4"
	3/4" NPT			1-11/32"	2-5/8"	1-9/64"	2-7/16"	4-5/16"
	1" NPT			1-9/16"	3"	1-11/32"	2-3/8"	4-1/4"
	1-1/4" NPT			1-3/4"	3-3/8"	1-9/16"	2-3/8"	4-1/4"
Double Solder	1/2"	2-5/8"	3-15/16"				1-57/64"	3-3/4"
	3/4"	2-15/16"	4-5/8"				2-1/16"	3-15/16"
One Pipe Steam	1/8" MPT	15/16"	1-21/32"	1-1/4"	5/6"	1-9/16"	1-5/8"	5-3/16"

# The **Simple Solution** to **Energy Savings**, Improved Comfort, & Less Complaints!

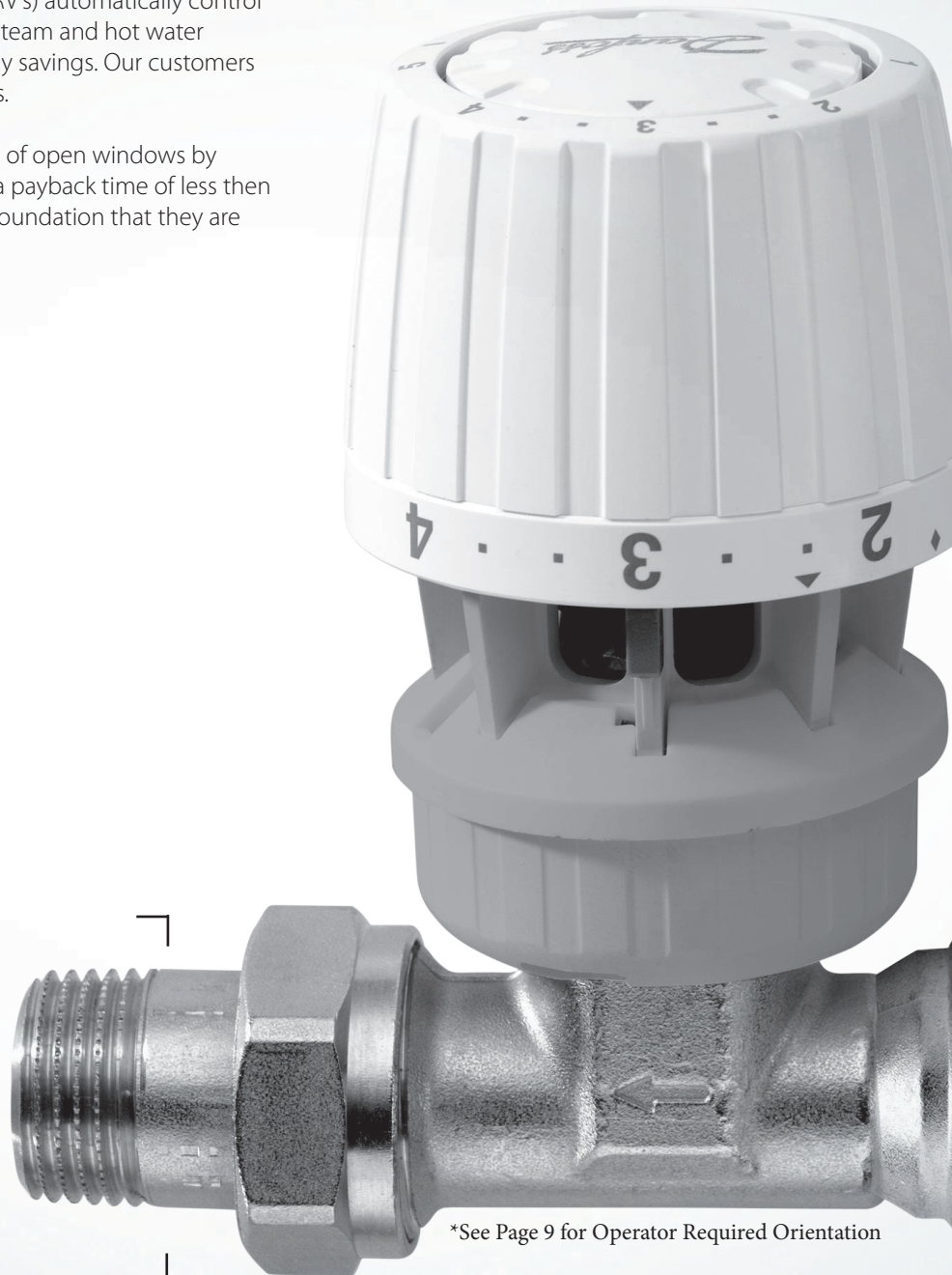
Danfoss brand Thermostatic Radiator Valves (TRV's) automatically control individual room temperatures in low pressure steam and hot water heating systems, and provide substantial energy savings. Our customers have seen over 20% savings in their energy bills.

Avoid overheated rooms and the energy waste of open windows by installing Danfoss Brand TRV's . Our TRV's have a payback time of less than three years and with the strength, quality and foundation that they are built upon they are sure to last far beyond.

**20 %**

Energy cost savings  
when installing  
Danfoss brand  
Thermostatic Radiator  
Valves.

To find out more about  
Danfoss TRV's please visit  
**[www.radiatorcontrol.com](http://www.radiatorcontrol.com)**  
or contact your local Danfoss  
representative today:



\*See Page 9 for Operator Required Orientation