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Centra Rotary Valves DRU

3-way Rotary Valve PN10 and HE25 Extension

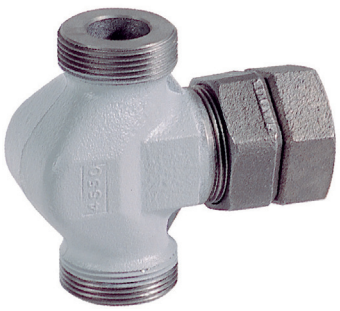
APPLICATION

The DRU Three-Way Rotary Valve provides water temperature control in heating and air-conditioning applications. These valves are designed for accurate mixing control of supply water temperature and return-flow temperature.

The sturdy construction and red brass material ensure long operating life and high reliability when used in combination with M6061/VMM and M7061/VRM actuators.

The special inner form of the housing and the all-around changeable rotary plug allow the valve to be adapted to each possible application without having to drain the system.

In combination with the distance-adjustable H-Extension, use in a wide range of pre-piped systems is possible.



HE Extension

DRU Rotary Valve

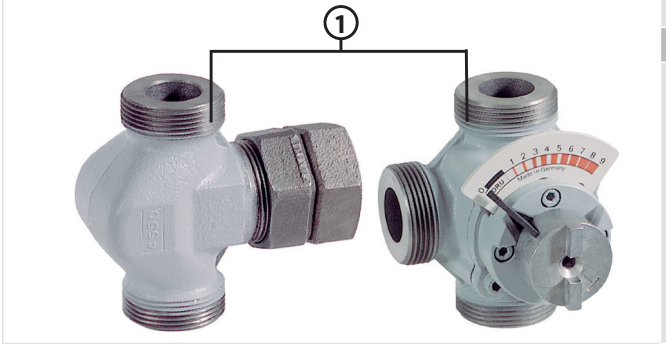
SPECIAL FEATURES

- Housing made of casted iron
- Chrome-plated plug for long life
- Optimized characteristic for supply water temperature control
- All around changeable rotary plug
- Reliable and easy mounting of electrical actuators
- Wide range of flow rates in two housing sizes
- Compact design
- Use for manifolds by accessory H-Extension
- Thermal insulation package included

TECHNICAL DATA

Media	
Medium:	Heating water according to VDI 2035 Oxygen concentration: < 0.2 g/m^3, pH 8...9.5
Pressure values	
Nominal static pressure:	1000 kPa (10 bar)
Max. pressure drop:	dependent on type
Operating temperatures	
Water temperature:	2 to 130 °C, non-condensing
Specifications	
Leakage rate:	< 1% of Kvs
Ports:	External threads with cap nuts
Angle of rotation:	90°
Packaging:	Double O-ring lined
Flow characteristic:	equal percentage
Weight:	dependent on type

CONSTRUCTION

Overview		Components	Materials
	**1**	Housing DRU and HE	Cast iron (GG20)
		Not depicted components:	
		Inner parts	Chrome-plated cast iron

METHOD OF OPERATION

The valve controls a mixing water temperature with a rotating plug. The plug adjusts with two control curves the water flow of two inputs. The required flow water temperature is reached by adding a proportion of return water to the boiler hot water. For optimum control performance, the DRU has special control characteristics.

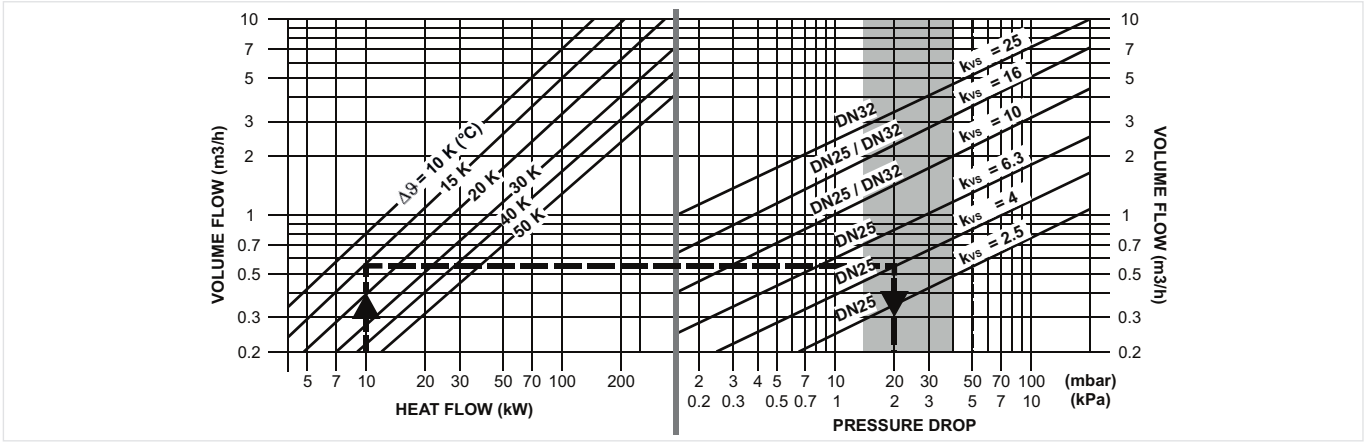
Suitable Actuators

Torque (Nm)	Order number 24 Vac floating	Order number 230 Vac floating	Order number 0/2...10 V
20	M6061A1021	M6061L1027	M7061E1020
	VMM20-24	VMM20	VRM20

Valve dimensioning

Rotary Valves are employed mainly in hydraulic systems corresponding to the examples. The rotary valve can be set quite easily. In order to obtain good control characteristics, the pressure drop in the rotary valve should be about the same as the pressure drop in the "volume-variable" part of the pipe system, i.e. about 1.5...4.0 kPA or 15...40 mbar. The following dimensioning diagram is based on this interrelationship. The setting is obtained as follows:

1) Find heat flow Q in the diagram.
2) Move vertically upwards to the intersection with the corresponding $\Delta\vartheta$ line. On the vertical axis, the volume flow V can be read off on the left in liters per hour.
3) Move horizontally to the right from the intersection with the $\Delta\vartheta$ line into the shaded section (1.5-4.0 kPa). Here you will find the nominal rotary valve size to be selected.
4) From this intersection, go vertically downwards. Read off the pressure drop in the rotary valve in kPa (mbar).



Example

Given: Heat flow Q = 10 kW, $\Delta\vartheta$= 15 K (z.B. 70/55 °C)
Required: Nominal rotary valve size and pressure drop

Volume flow: $\dot{V} = \frac{\dot{Q}}{1.163 * \Delta\vartheta} = \frac{10}{1.163 * 15} = 0.57\,m^3/h$

Result: According to the diagram, the correct valve size is DN25, kvs 4.0
The pressure drop is 2 kPa or 20 mbar or 200 mm water column

(The factor 1.163 contains the water density of 1000 kg/m³ and the specific heat capacity of 4.19 kJ/kgK. $\Delta\vartheta$ is the temperature difference, in Kelvin, between the supply and the return flow.)

Unit Conversion

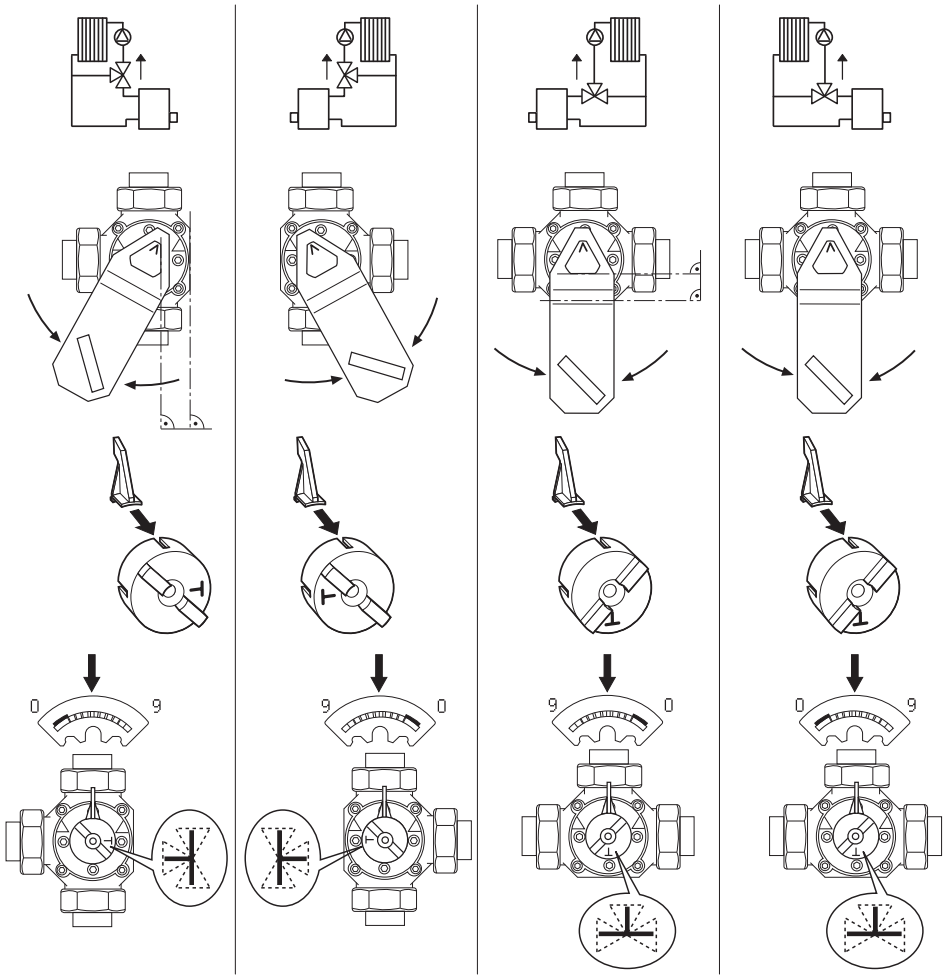
1 kW = 3600 kJ/h
= 860 kcal/h
1.000 kcal/h = 1.163 kW

1 bar = 100 kPa
= 10 m water column
1 mbar = 10 mm water column

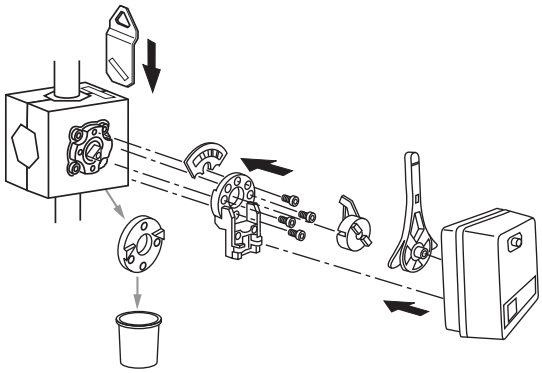
INSTALLATION GUIDELINES

Installation Example

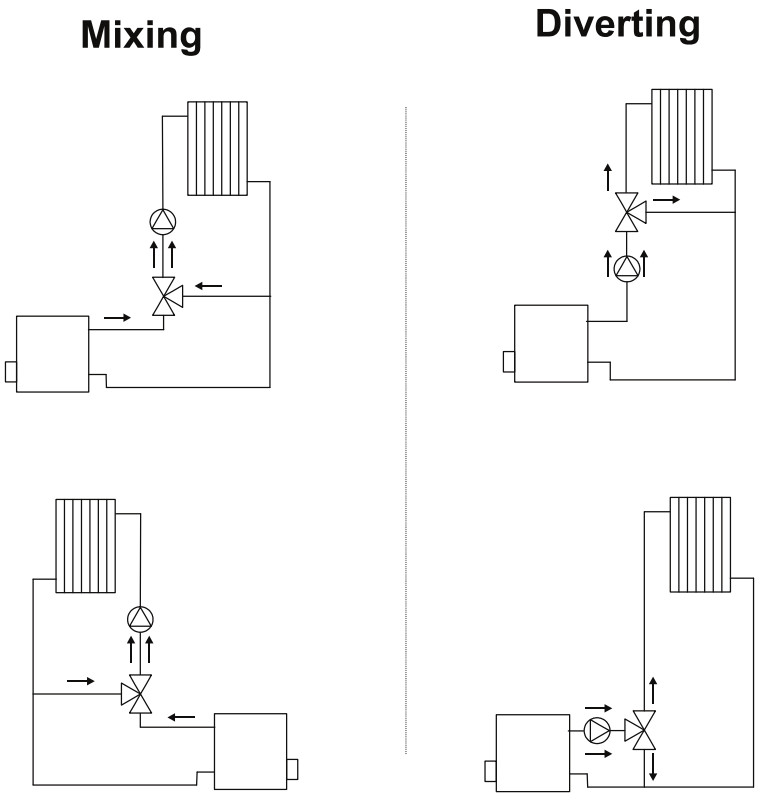
Adjustments for Mixing Applications



Mounting Actuator

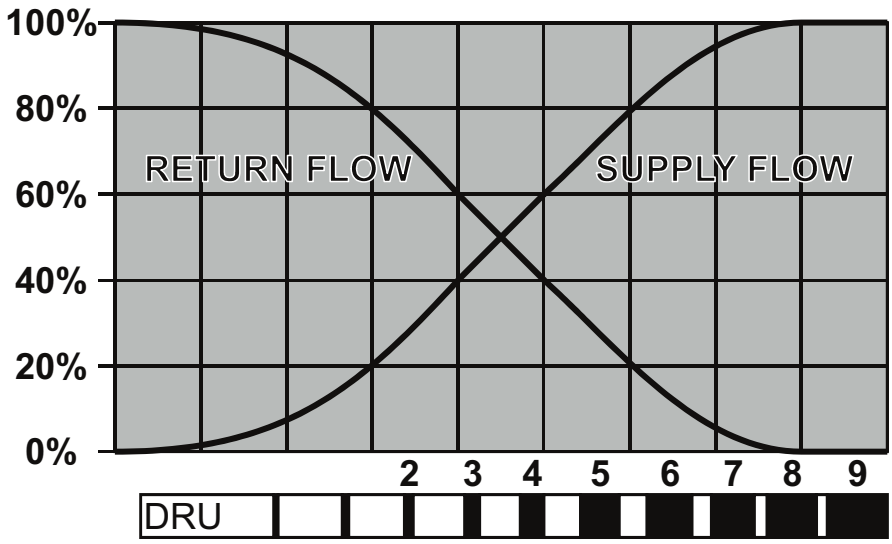


Hydraulic function



TECHNICAL CHARACTERISTICS

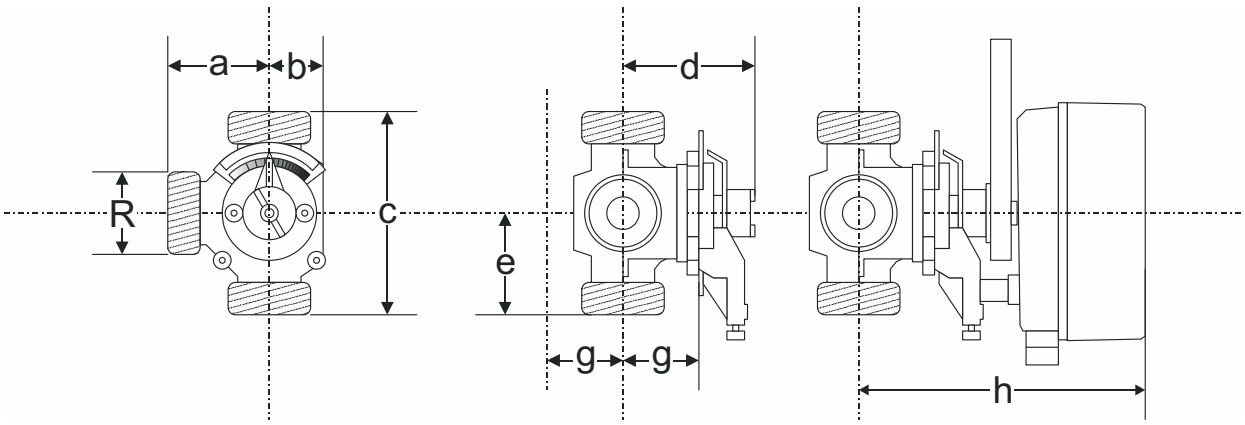
Pressure drop characteristics



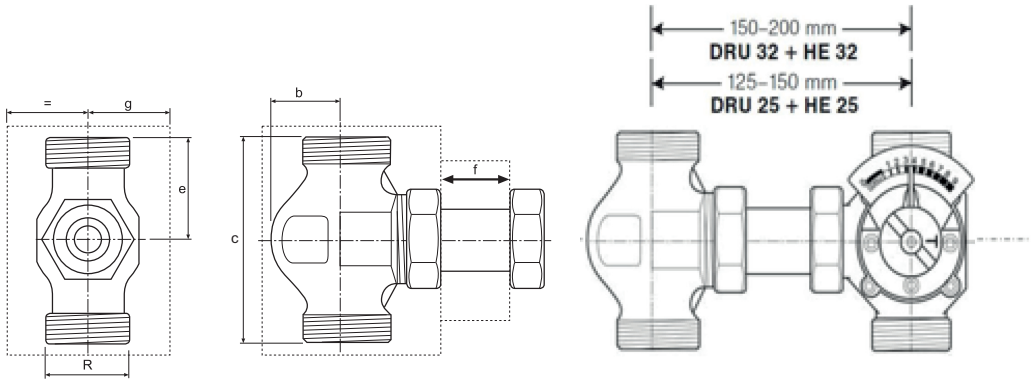
DIMENSIONS

Overview

DRU



HE



DN	a	b	c	d	e	f	g	h	R	Weight	Order number
25	55	32	110	89	55	-	51	182	$1^1/_2$	2.2 kg	DRU25-2.5
25	55	32	110	89	55	-	51	182	$1^1/_2$	2.2 kg	DRU25-4.0
25	55	32	110	89	55	-	51	182	$1^1/_2$	2.2 kg	DRU25-6.3
25	55	32	110	89	55	-	51	182	$1^1/_2$	2.2 kg	DRU25-10
25	55	32	110	89	55	-	51	182	$1^1/_2$	2.2 kg	DRU25-16
32	70	44	140	99	70	-	59	200	2	4.1 kg	DRU32-10
32	70	44	140	99	70	-	59	200	2	4.1 kg	DRU32-16
32	70	44	140	99	70	-	59	200	2	4.1 kg	DRU32-25
25	-	42	110	-	55	0-25	51	125...150	$1^1/_2$	1.7 kg	HE25
32	-	51	140	-	70	0-50	59	150...200	2	2.7 kg	HE32

Note: All dimensions in mm unless stated otherwise.

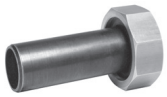
ORDERING INFORMATION

The following tables contain all the information you need to make an order of an item of your choice. When ordering, please always state the type, the ordering or the part number.

Options

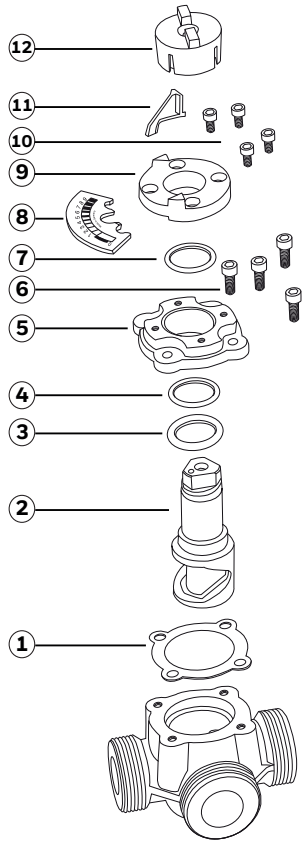
DN	k_{vs}-value (m^3/h)	Heat flow (kW)	Nominal torque (Nm)	Δp (kPa)	Order number
25	2.5	7-12	100	20	DRU25-2.5
25	4.0	12-17	100	20	DRU25-4.0
25	6.3	17-30	100	20	DRU25-6.3
25	10.0	30-50	100	20	DRU25-10
25	16.0	50-70	100	20	DRU25-16
32	10	30-50	100	20	DRU32-10
32	16	50-70	100	20	DRU32-16
32	25	70-100	100	20	DRU32-25
25	-	-	-	-	HE25
32	-	-	-	-	HE32

Accessories

	Description		Dimension	Part No.
	**WTU**	**Welding sockets with gasket and cap nut**		
			DN25 Pipe size 25 mm,	WTU25
			DN32 Pipe size 32 mm,	WTU32
	**LSU**	**Soldering sockets with gasket and cap nut**		
			DN25, Pipe size 18 mm,	LSU25-18
			DN25, Pipe size 22 mm,	LSU25-22
			DN25, Pipe size 28 mm,	LSU25-28
			DN32, Pipe size 22 mm,	LSU32-22
			DN32, Pipe size 28 mm,	LSU32-28
			DN32, Pipe size 35 mm,	LSU32-35
	**STU**	**Internal threaded sockets with gasket and cap nut**		
			DN25, Pipe size 25 mm	STU25
			DN32, Pipe size 32 mm	STU32

Spare Parts

3-way rotary valve DRU, from 1999 onwards

Overview		Description	Dimension	Part No.
	**2**	**Rotary plug**		
			DN 25 (k_{vs} 2.5)	030000434
			DN 25 (k_{vs} 4.0)	030000435
			DN25 (k_{vs} 6.3)	030000436
			DN 25 (k_{vs} 10)	030000437
			DN 32 (k_{vs} 10)	030000439
			DN 32 (k_{vs} 16)	030000440
			DN 32 (k_{vs} 25)	030000441
	1, 3, 4, 5, 6, 7, 9, 10	**Valve cover** with o-ring and screws		
			DN 25	030000105
			DN 32	030000106
	1, 3, 4, 7	**Seal kit** complete		
				019001030
	9, 10	**O-ring cover** with screws		
				030000114
	7	**O-ring**		
				071099535
	8, 11, 12	**By-pack kit**		
				030000522

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