

Centra DRU

3-way Mixing Valve, PN10

Application

The Centra DRU rotary valves provide 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.

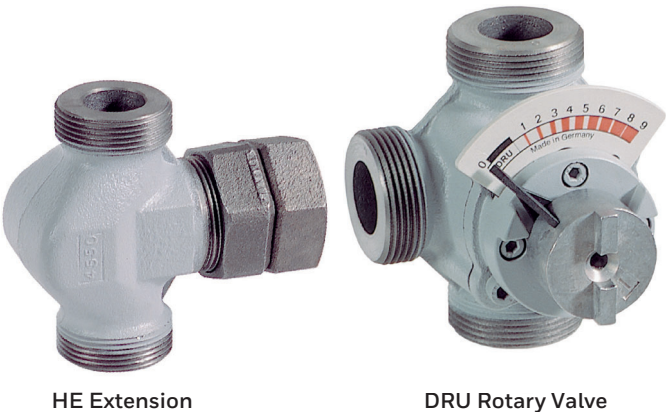
The sturdy construction and red brass material ensure long operating life and high reliability when used in combination with VMM and VRM-N actuators.

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 HE-Extension, use in a wide range of pre-piped systems is possible.

Special Features

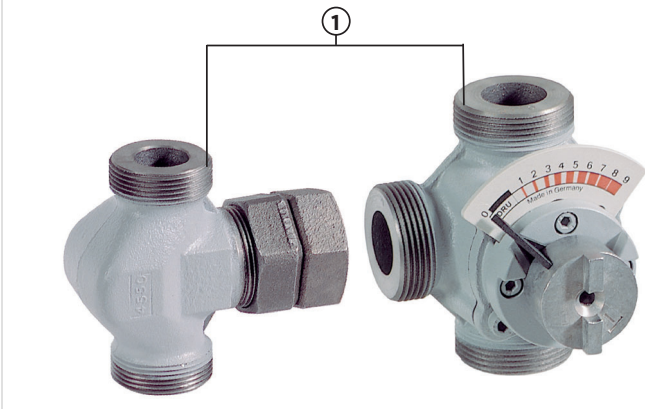
- All around changeable rotary plug
- Housing made of casted iron
- Chrome-plated plug for long life
- Optimized characteristic for supply water temperature control
- Reliable and easy mounting of electrical actuators
- Wide range of flow rates in two housing sizes
- Compact design
- Use for manifolds 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:	10 bar, 1000 kPa
Operating temperatures	
Water temperatures in the valve:	2 to 130 °C, non-condensing
Specifications	
Leakage rate:	< 1% of Kvs
Connections:	External threads
Angle of rotation:	90 °
Packaging:	Double O-ring lined
Flow characteristic:	equal percentage

Construction

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

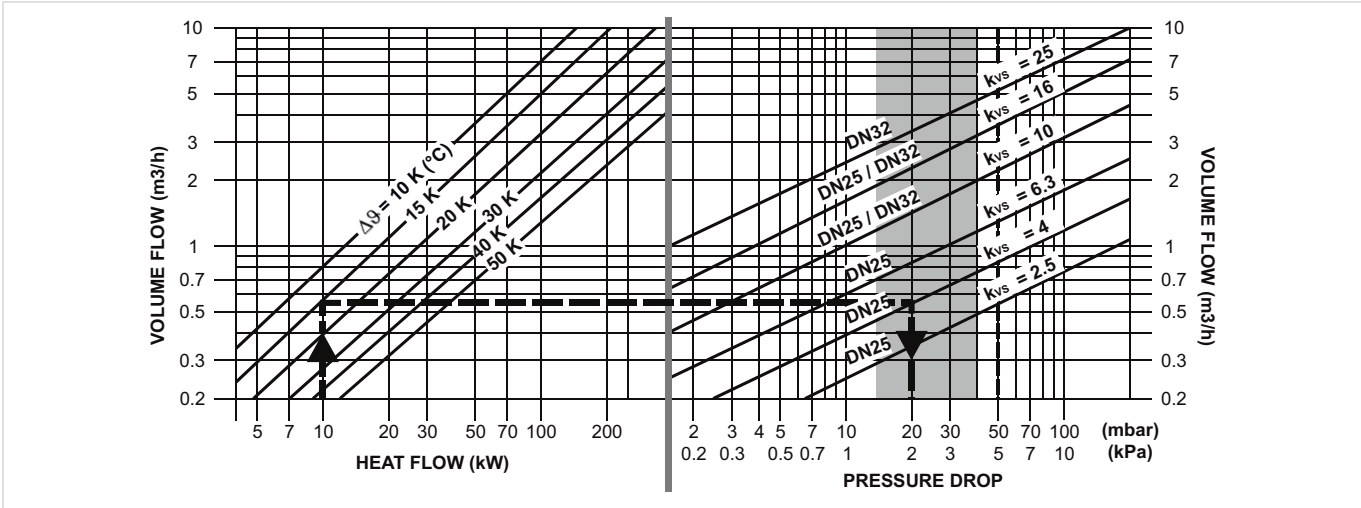
Method of Operation

The valve controls a mixing water temperature with a rotating plug. The plug adjusts the water flow of two inputs with two control curves. 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.

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 Δθ 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 Δθ 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, Δθ= 15 K (z.B. 70/55 °C)
Required: Nominal rotary valve size and pressure drop

Volume flow: $\dot{V} = \frac{\dot{Q}}{1.163 \cdot \Delta\theta} = \frac{10}{1.163 \cdot 15} = 0.57 \text{ m}^3/\text{h}$

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

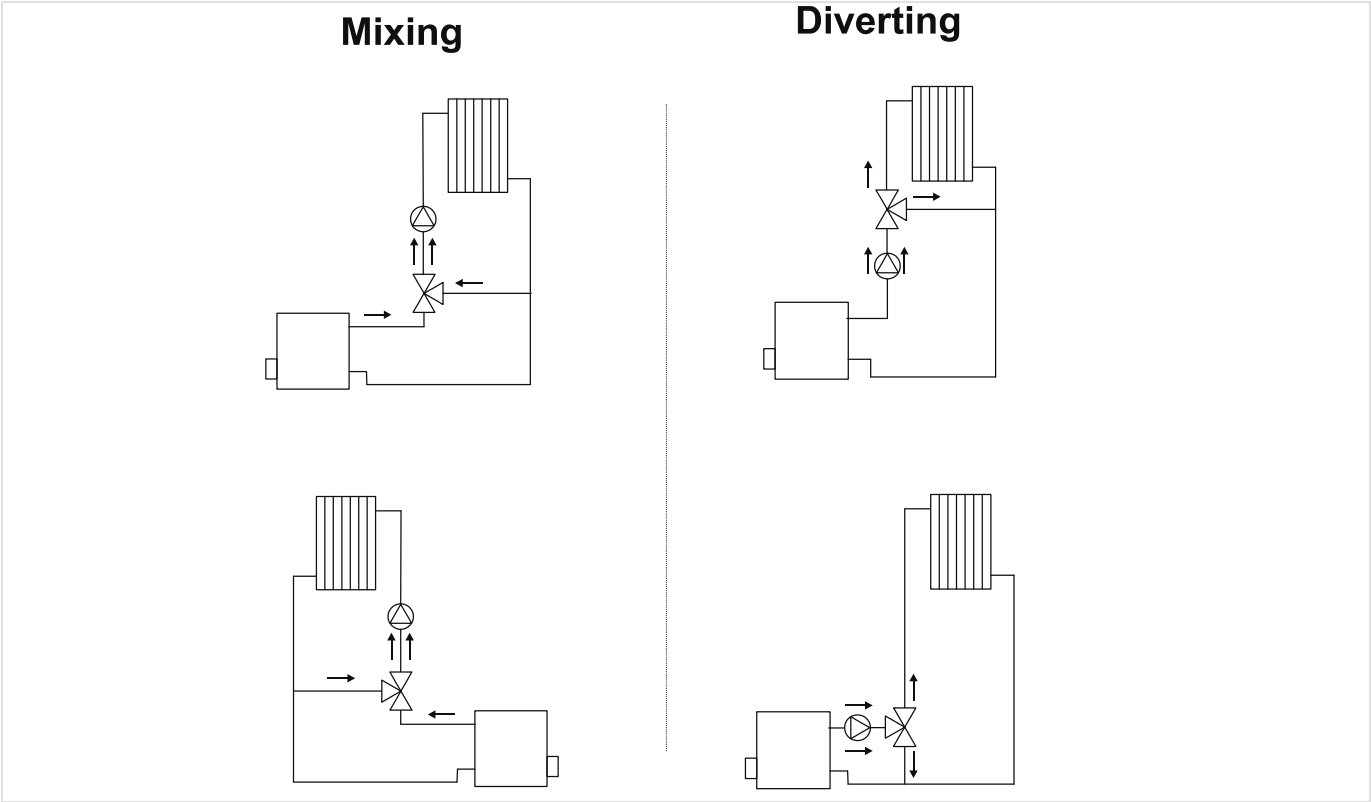
(The factor 1.163 contains the water density of 1000 kg/m³ and the specific heat capacity of 4.19 kJ/kgK. Δθ is the temperature difference, in Kelvin, between the supply and the return flow.)

Unit Conversion

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

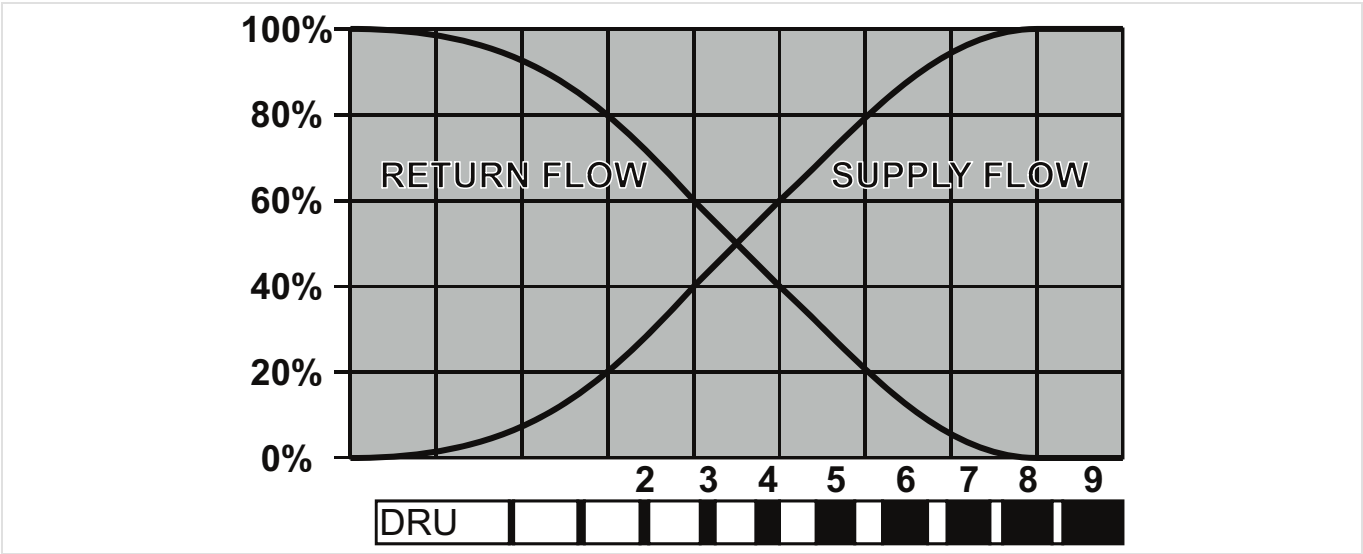
1 bar = 100 kPa
= 10 m water column
1 mbar = 10 mm water column

Hydraulic function



Technical Characteristics

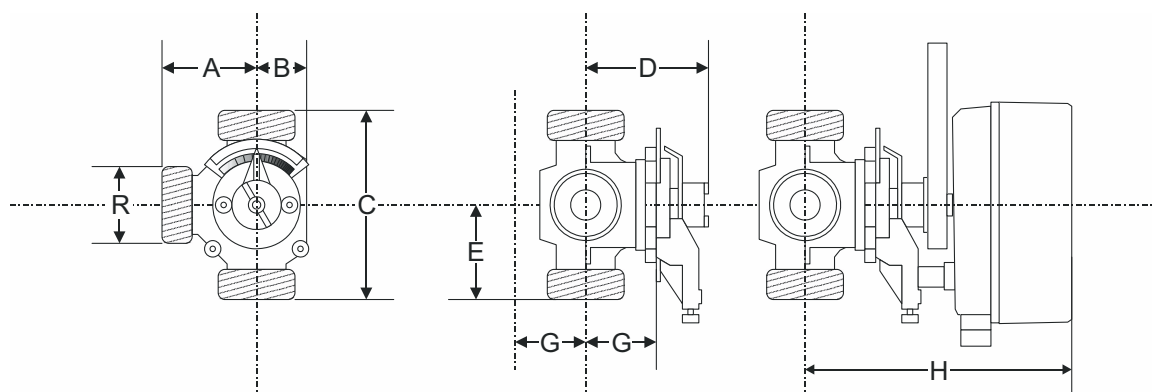
Pressure drop characteristics



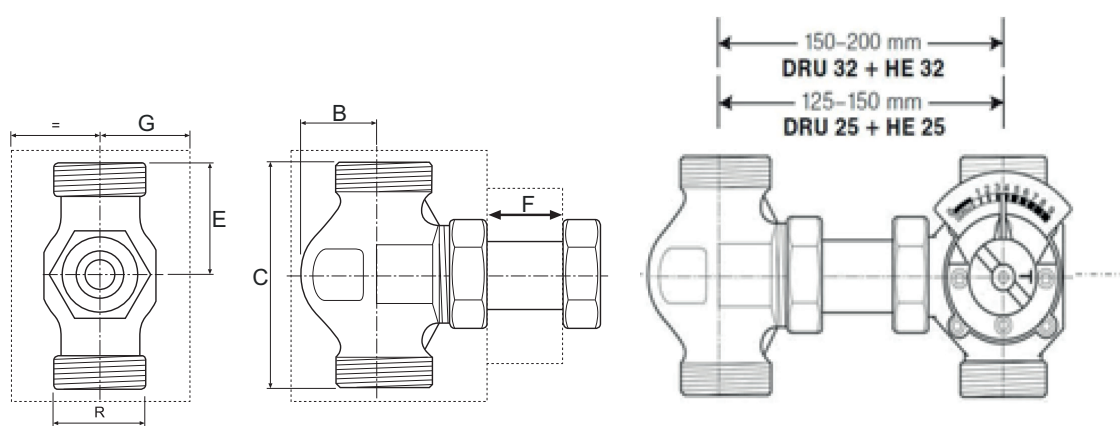
Dimensions

Overview

DRU



HE



DN	A	B	C	D	E	F	G	H	R	Weight	Item number
25	55	32	110	89	55	-	51	182	G 1½	2.2 kg	DRU25-2.5
25	55	32	110	89	55	-	51	182	G 1½	2.2 kg	DRU25-4.0
25	55	32	110	89	55	-	51	182	G 1½	2.2 kg	DRU25-6.3
25	55	32	110	89	55	-	51	182	G 1½	2.2 kg	DRU25-10
25	55	32	110	89	55	-	51	182	G 1½	2.2 kg	DRU25-16
32	70	44	140	99	70	-	59	200	G 2	4.1 kg	DRU32-10
32	70	44	140	99	70	-	59	200	G 2	4.1 kg	DRU32-16
32	70	44	140	99	70	-	59	200	G 2	4.1 kg	DRU32-25
25	-	42	110	-	55	0-25	51	125...150	G 1½	1.7 kg	HE25
32	-	51	140	-	70	0-50	59	150...200	G 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.

Options

DN	k _{vs} -value (m³/h)	Heat flow (kW)	Δp (kPa)	Nominal torque (Nm)	Item 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

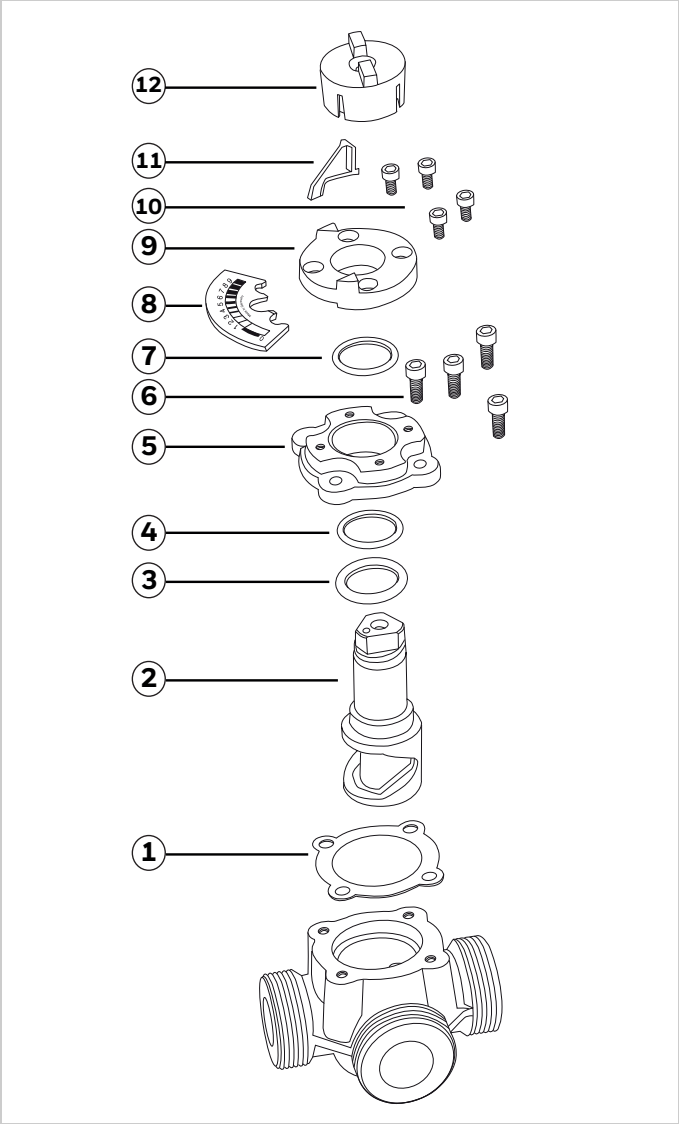
Accessories

	Description		Torque (Nm)	Voltage	Item No.
	VMM	Actuator: 3-point / floating			
		rotating, 90°	20	230 V AC	VMM20
			20	24 V AC	VMM20-24
	VRM-N	Actuator: 0/2 - 10 V / modulating, 3-Point (floating), 2-Point			
		rotating, 90°	20	24 V AC/DC	VRM20N
	Description		Dimension		Item 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 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

Rotary valve DRU, from 1999 onwards

Overview



	Description	Dimension	Item No.
2	Rotary plug		
		DN 25 (k _{VS} 2.5)	030000434
		DN 25 (k _{VS} 4.0)	030000435
		DN 25 (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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Manufactured for and on behalf of
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Subject to change. EN0H-1707GE23 R0525
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