



VS1200SX

Thermostatic Valve Insert for Standard Flows

Presettable thermostatic insert for valve bodies with standard flow range

APPLICATION

The VS1200SX is a thermostatic valve insert for valve bodies with the AT-Concept interface. It has a presetting device enabling the hydraulic balancing of circuits in which these valves are installed.

The AT-Concept is a valve/insert interface used by MNG, Honeywell and Honeywell Home thermostatic valves produced by Resideo and its predecessors since 1974. The VS1200SX mechanically fits in all of these legacy valve bodies.

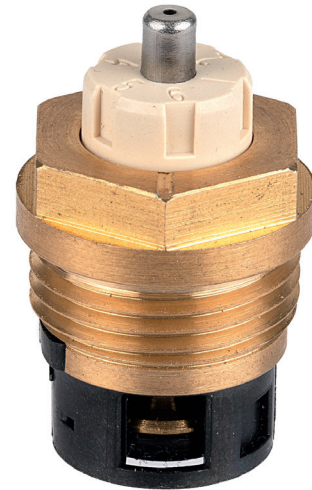
Resideo has developed the SX insert and amended the AT-Concept interface, to enable higher nominal flows with thermostatic controls as required by modern heating systems with low temperature setpoints.

A perfect mechanical cross-fit of legacy and new inserts and housings is guaranteed. However, only valve housings produced after September 2020 feature the augmented nominal flow.

The SX insert is designed and tested for operation in both flow directions. When used in the AT-Concept valves, it operates with low noise in both directions.

SPECIAL FEATURES

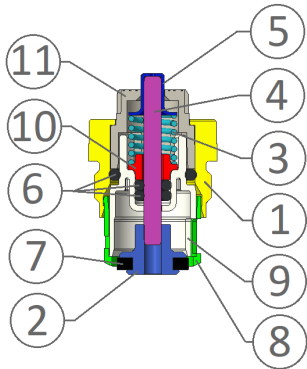
- Flow rates easily adjustable by a setting key (see 'Accessories')
- Proportional flow control characteristic with maximum flow limited to max. 130 % of nominal flow to prevent misbalance during heating of cooled down rooms
- Quiet operation, including in reversed flow direction
- Strong restoring spring, which is not immersed in water, ensuring durability of the valve
- Double O-Ring seal for maintenance-free operation
- Standard 19 mm hexagon interface
- Enables valve shut-off with the protection cap (see 'Accessories')
- Valve insert fitting the Honeywell Home AT- Concept design, ensuring housing and insert cross compatibility with MNG, Honeywell and Honeywell Home thermostatic valves produced by Resideo and its predecessors since 1974



TECHNICAL DATA

Media	
Medium:	Water or water-glycol mixture, quality to VDI 2035
pH-value:	8 - 9.5
Connections/Sizes	
Insert-head connection:	SW19
Operating temperatures	
Max. operating temperature:	130 °C
Min. operating temperature medium:	-10 °C non-freezing
Pressure values	
Max. operating pressure:	PN10, 10 bar (1000kPa)
Max. differential pressure:	1.0 bar (100 kPa)
Differential pressure recommended for quiet operation:	≤0.2 bar (20 kPa)
Flow rates	
Nominal flow range with amended AT-concept interface (since September 2020):	20 - 170 l/h
Nominal flow range with original AT-concept interface (1974 – August 2020):	20 - 130 l/h
Specifications	
Closing dimension:	11.5 mm
Factory setting:	position 6
Identification	
- Ivory colour plastic dial on the top of valve insert	

CONSTRUCTION

Overview	Components	Materials
	1 Insert cartridge	Brass
	2 Plunger	
	3 Return spring	Stainless steel
	4 Spindle	
	5 Spindle cap	
	6 O-Rings	EPDM 70
	7 Plunger seal	
	8 Orifice casing	PPS GF40
	9 Setting screen	
	10 Retaining bushing	PBT GF30
	11 Setting dial	

METHOD OF OPERATION

The VS1200SX insert is controlled by the radiator thermostat mounted on the valve.

The thermostat acts on the valve spindle. When the thermostat pushes the spindle, the valve is closing. When the thermostat retracts, the spring-loaded valve spindle is opened. The valve opens in proportion to the signal from the thermostat.

The VS1200SX inserts have the plunger surrounded by a casing with different orifices and a mating setting screen with one orifice. When the setting dial on top of the valve cartridge rotates, an orifice in the setting screen aligns with the respective orifice in the casing. Thus, the orifice limiting the maximum flow through the valve is selected.

The stroke/flow characteristic and the size of the orifices is designed to provide for a proportional increase of flow with the stroke, while limiting the maximum flow to not more than 130 % of the nominal flow of the valve. This prevents an oversupply of the controlled radiator and a loss of the system balancing in cases when the radiator setting has been turned high in a cooled down room.

The VS1200SX inserts are suitable for system design with 1K to 2K p-band control range. In combination with the T3019HF and T6001HF thermostatic heads with high specific stroke, the VS1200SX inserts are suitable for system designs with 0.5K to 2K p-band control range.

TRANSPORTATION AND STORAGE

Keep parts in their original packaging and unpack them shortly before use.

The following parameters apply during transportation and storage:

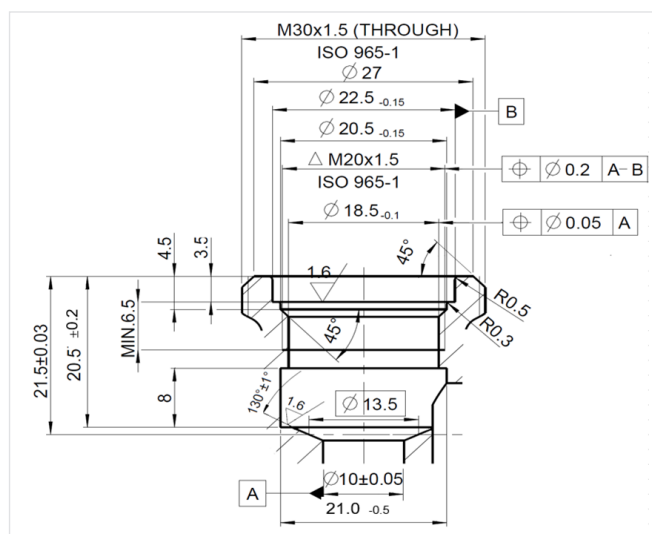
Parameter	Value
Environment:	clean, dry and dust free
Min. ambient temperature:	0 °C
Max. ambient temperature:	50 °C
Max. ambient relative humidity:	75 % *

*non condensing

INSTALLATION GUIDELINES

- The VS1200SX inserts fit the AT-Concept interface used by all MNG, Honeywell and Honeywell Home thermostatic valve bodies produced by Resideo and its predecessors since 1974
- Correct function of the VS1200SX inserts is ensured only if the interface specifications are fully observed
- Valve bodies since September 2020 use an updated AT-Concept with additional machining enabling higher flows. When the VS1200SX inserts are used in AT-Concept bodies manufactured before September 2020, flows at the two highest presettings will be reduced (see section Flow Rate)
- Valves with the VS1200SX inserts can be used with all Honeywell Home thermostatic heads with a M30 x 1.5 connection and with recommended Honeywell Home thermoelectric or motorized actuators (see section Recommended actuators). When using actuators from other manufacturers, select actuators with pressure force not exceeding 100 N
- Tightening torque to the valve body is 25 - 35 Nm

AT-Concept interface



Note: Updated AT-Concept interface since September 2020

The original AT-Concept interface used from 1974 to September 2020 was the same, except the $\varnothing 21$ mm machining below the M20 x 1.5 thread was reduced to $\varnothing 18.5$ mm.

Setup requirements

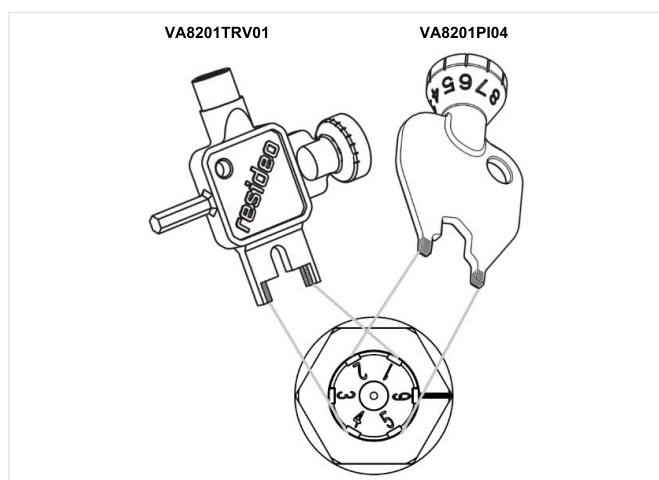
- To avoid stone deposit and corrosion, the composition of the medium should conform with VDI-Guideline 2035
- All additives and lubricants used for heating medium treatment have to be suitable for EPDM seals to avoid their disintegration. Use of mineral oils should be avoided
- Please refer to applicable codes VdTÜV and 1466/AGFW FW 510, for industrial and long-distance energy systems
- Heavy polluted existing heating systems must be flushed thoroughly before replacing thermostatic valves
- The heating system must be fully deaerated
- Any complaints or costs resulting from non-compliance with the above rules will not be accepted Resideo and its subsidiaries manufacturing Honeywell Home products

Recommended actuators

- VS1200SX inserts are designed for control by thermostatic heads, which ensure proportional regulation within the 2K p-band stroke (0.45 mm). Therefore, the valves are best controlled by a mechanical or electronic thermostatic head
- Honeywell Home HR90, HR91 and HR92 electronic TRV heads are suitable for the VS1200SX inserts
- Honeywell Home MT4 thermoelectric actuators can be used for on/off control of the VS1200SX inserts
- Thermostatic radiator valves are intentionally designed such that they reach the design flow capacity at 2K p-band stroke (0.45 mm) and the max. flow rate exceeds the nominal flow rate by not more than 30 %. Thus, the modulating actuators used need to be able to provide for precise proportional flow control over a very small stroke range, because at higher strokes, the flow is limited by the presetting
- The M4410E/K and M7410E5001 modulating actuators are recommended

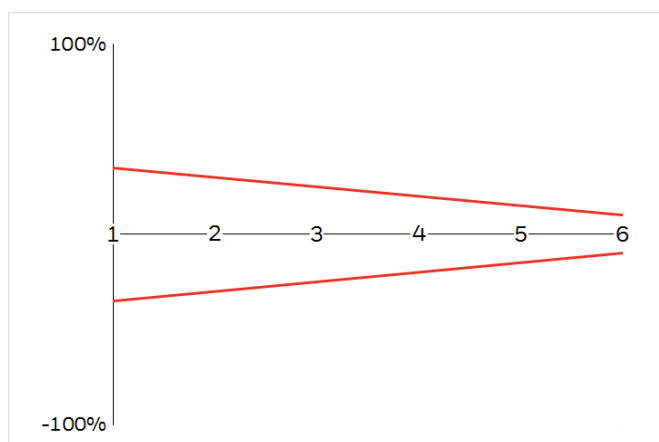
TECHNICAL CHARACTERISTICS

Presetting



- The flow rates can be adjusted to one of the 6 settings (20 to 170 l/h for standard heads and 20 to 210 l/h for heads with high specific stroke)
- If the required maximum flow does not match exactly the setting value, use the closest higher setting
- The setting is changed using a special setting key
 - Slide the forked part of the setting key into two opposite grooves in the setting dial of the valve
 - Turn the setting key until the desired setting value is against the reference mark on the brass cartridge of the insert
 - The setting dial can be rotated in any direction
 - Do not use intermediate settings
- The default factory setting is position 6

Flow tolerances



Design example

- Heat load: $Q=1000 \text{ W}$
- Supply vs. return temperature difference: $\Delta T=15\text{K}$
- Calculated mass flow: $\dot{m} = Q / (c \times \Delta T) = 1000 / (1.163 \times 15) = 57 \text{ l/h}$
- Control within: 2K p-band
- Available differential pressure: $\Delta p = 100 \text{ mbar (10 kPa)}$
- Valve setting from charts on following pages (use next higher setting): 4

Flow Rate**With updated AT-Concept interface**

Presetting	1	2	3	4	5	6
kv-value, 1K p-band	0.063	0.085	0.14	0.21	0.25	0.28
kv-value, 2K p-band	0.063	0.095	0.16	0.28	0.43	0.54
kvs	0.063	0.104	0.18	0.34	0.52	0.70

With original AT-Concept interface, Ø 18.5 mm diameter around the insert flow orifices

Presetting	1	2	3	4	5	6
kv-value, 1K p-band	0.063	0.085	0.14	0.21	0.25	0.28
kv-value, 2K p-band	0.063	0.095	0.16	0.28	0.38	0.41
kvs	0.063	0.104	0.18	0.34	0.39	0.43

ORDERING INFORMATION


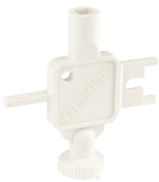
The following tables contain all the information you need to make an order of an item of your choice.

When ordering, please always state the type, the ordering or the part number.

Options

Type	Packaging	Dimensions	OS-No.
With original AT-concept interface	Single pack in polybag	-	VS1200SX01
	Cardboard box of 200 pcs	210 x 150 x 100 mm	VS1200SX01/B

Accessories

	Description	Dimension	Part No.
	VA8201 Metallic presetting key with chrome plating		
	for PI, SX, FX and LX type valves		VA8201PI04
	VA8201 Plastic presetting key		
	for PI, SX, FX and LX type valves and Verafix lockshields		VA8201TRV01

For more information

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