VGS800W1N Series PN 16, Rp ½ to Rp 2
Male Threaded Bronze Valves

Introduction

The VGS800W1N Series electrically operated Bronze valves are primarily designed to regulate the flow of water in response to the demand of a controller, in heating, ventilating, and air conditioning systems. This three-way mixing valve is also easily converted into a two-way valve using the available modkit.

Two models of electric actuator are available as standard: The VA-7150 and VA-7200 actuators can be ordered either for 3-point or for 0…10 V DC proportional control.

VGS800W1N Valve

Features and Benefits	
❑ **Male threaded fittings.**	Much easier fitting and replacement.
❑ **PN 16.**	Covers the common HVAC applications.
❑ **Both inlet 1 and inlet 2 are tight in accordance with DIN EN1349 IV L1**	Higher efficiency
❑ **Mixing valve easily converted to two-way valve on-site.**	Low storage, reduction of valve types, faster availability.
❑ **Full DIN / IEC flow capacity for all valves Rp ½ …Rp 2.**	Cost-efficient, offers maximum flow capacity (k_{vs}) per Rp size.
❑ **Uses PTFE guided stainless steel stem with dual O-ring seal packing.**	Long lasting, proven reliability. No adjustment required. Low friction, maintenance free.
❑ **Brass plug with soft seal for tight (no leakage) shut-off on both control and bypass ports.**	Provides maximum energy efficiency.
❑ **Electric actuators available either factory mounted, or separately for in-situ installation.**	Provides the optimal selection either for direct installations or for distribution centres.
❑ **Slotted stem for quick-fit coupler system.**	Quick and easy mounting of actuator to valve reduces installation costs.

Application Overview

Valve bodies are made of Bronze and are available in sizes from Rp ½ to Rp 2. Male threaded fittings comply with ISO 228. (Blind plug for 2-way model is included in mod kit) The valve features a brass plug with soft seal and a stainless steel stem guided by two PTFE bushes and dual seal-ring packing.

The VGS800W1N valve is available in three-way mixing configuration and can be easily converted to a two-way valve for Push-Down-To-Open operation (closing off inlet 2).

Three-way valves have a combination of equal percentage and linear characteristic. Two-way valves have equal percentage relationship between valve travel and flow at a constant pressure drop. An arrow is embossed on one side of the valve body indicating the direction of flow for correct installation.

Two models of electric actuator are available as standard and can be ordered either as factory fitted actuator / valve combinations or separately for in-situ installation.

Refer to this and the following pages for ordering data and additional details.

Refer to this and following pages for ordering

Ordering codes for Valve Bodies

VGS800W1N

Three-way mixing configurations

VGS8 □□ W1N

A1	= 15/4	**B1**	= 20/6.3
A2	= 15/2.5	**C1**	= 25/10
A3	= 15/1.6	**D1**	= 32/16
A4	= 15/1	**E1**	= 40/25
A5	= 15/0.63	**F1**	= 50/40

Pipe muffles

Order code	Muffles
121 4935 151	DN15 / Rp ½
121 4935 201	DN20 / Rp ¾
121 4935 251	DN25 / Rp 1
121 4935 321	DN32 / Rp 1 ¼
121 4935 401	DN40 / Rp 1 ½
121 4935 501	DN50 / Rp 2

Modkit 3-way in 2-way

Order code	Mod kit for:
121 4930 151	DN15 / Rp ½
121 4930 201	DN20 / Rp ¾
121 4930 251	DN25 / Rp 1
121 4930 321	DN32 / Rp 1 ¼
121 4930 401	DN40 / Rp 1 ½
121 4930 501	DN50 / Rp 2

3 muffles are needed for the mixing valve, 2 muffles and 1 modkit are needed for the 2-way valve.

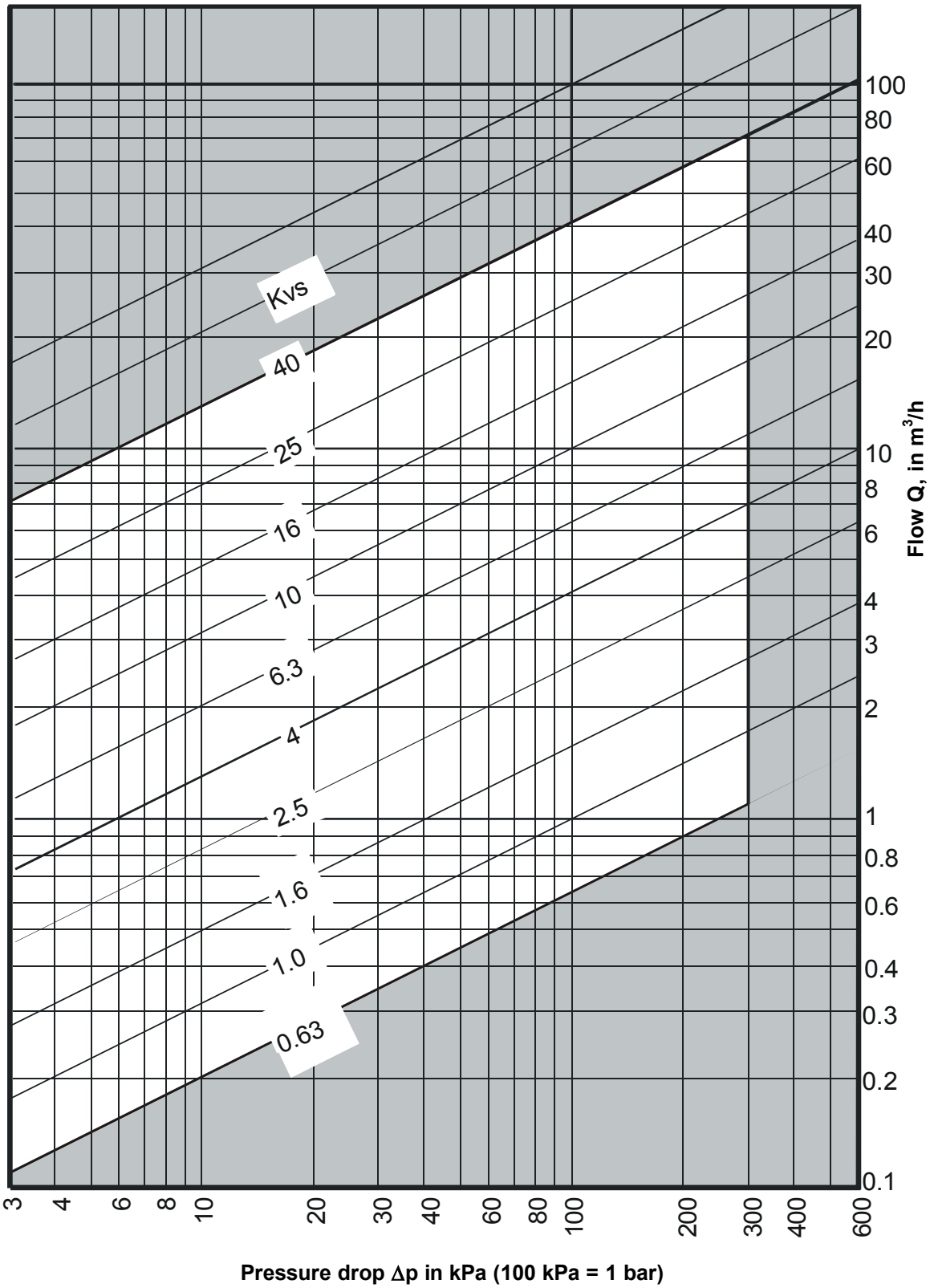
Ordering example:

For a mixing valve, Rp ½, PN 16, valve with $4k_{vs}$ the ordering code is: **VGS8A1W1N**

Valve Selection

The valve size for water applications can be defined using the diagrams below, where the intersection of the pressure drop across the valve and the flow must be within the white area.

k_v selection diagram for Rp ½ …Rp 2 valves:



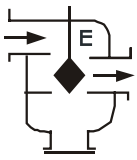
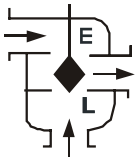
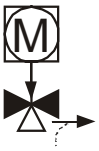
Valve - actuator combinations

The VGS800W1N series flanged cast iron valves can be combined with the following electric actuator series:

- VA-7150-8200 (not for Rp 2 mixing valves)
- VA-7200-8200

The flow through the valve is dependent on the position of the plug, as indicated in the tables below.

The function of the actuator / valve combination is dependent on the action of the actuator and the type of valve used.

Valve Type	Electric Actuator
	VA-715x-820x **VA-72xx-820x**
 **VGS800WN1** **2-way PDTO (NC)** (Converted)	***Actuator stem extends*** 
	Actuator stem retracts 
 **VGS800WN1** **3-way mixing**	***Actuator stem extends*** 
	Actuator stem retracts 

E = Equal percentage control characteristic L = Linear control characteristic	▲ = Flow △ = No flow

Actuator Selection

VA-7150 Electric Actuators

The VA-7150 series synchronous motor-driven actuator is available for 3-point (floating) control, with or without feedback and for proportional 0…10 VDC.

It provides 500 N nominal thrust and can be used in conjunction with VGS800W1N valves in accordance with the max. Close-off pressure ratings specified.

Ordering codes for VA-7150 Electric Actuators

VA - 7 1 5 ☐ - 8 2 0 ☐

Supply voltage

1	24 V, 50/60 Hz
3	230 V, 50/60 Hz*

Control type

0	Floating
2	Proportional 0…10 V

* 3-point floating models only

Note: 3-point floating models with 2kΩ feedback or auxiliary switch are available on request. Manual override is not available.

Attention: The VA-7150 and is not appropriate for **Rp 2 mixing** valves!

VA-7200 Electric Actuators

The VA-7200 series synchronous motor-driven actuator is available for 3-point (floating) control, with or without feedback and for proportional 0…10 VDC control with or without feedback. It provides 1000 N nominal stem force and can be used in conjunction with VGS800W1N DN 15...50 valves in accordance with the max. Close-off pressure ratings specified.

Ordering codes for VA-7200 Electric Actuators

VA-72□□-820□

Supply voltage

1	24 V 50/60 Hz
3	230 V 50/60 Hz*

Options

3-point models

	Feedback	Manual Override
00*	No	No
01	0…10 V (pot)	No
03	2 kΩ	No
20	(2) aux. switches	No
40*	No	Yes
41	0…10 V (pot)	Yes
43	2 kΩ	Yes
50	(2) aux. switches	Yes
70	(1) aux. switch	Yes
	(1) switch for manual override signal	

Proportional models (0…10V)

	Feedback	Manual Override
02	No	No
06	0…10 V (pot)	No
22	(2) aux. switches	No
42	No	Yes
46	0…10 V (pot)	Yes
52	(2) aux. switches	Yes
72	(1) aux. switch	Yes
	(1) switch for auto/manual indication	

(*) Only the VA-7200-8203 and VA-7240-8203 models are available with 230 VAC power supply.

Note: All models with manual override and 24 VAC power supply are equipped with a power cut-off switch.

Ordering procedure

The valves and actuators can be ordered separately or factory mounted. When factory mounted, please add **"+M"** to the order code for the actuator.

For example:

For a mixing valve, Rp 2, K_{vs} 40, plus actuator with electric positioner 0...10 V input, 24 VAC 50/60 Hz supply, order:

Item 1 **VGS8F1W1N** (valve body)
Item 2 **VA-7246-8201** (actuator)

Alternatively, to order a factory fitted combination:

Item 1 **VGS8F1W1N** (valve body)
Item 2 **VA-7246-8201 +M** (actuator)

Close-off pressures

Maximum Close-off Pressures for Pneumatic and Electric Valve-actuators (kPa)

Actuator	Stroke	Thrust	Body Size Rp											
	(mm)	(N)	½		¾		1		1 ¼		1 ½		2	
			PN 16											
			⋈	⋈	⋈	⋈	⋈	⋈	⋈	⋈	⋈	⋈	⋈	⋈
VA-7150-820x	13	500	1401	958	982	605	536	280	378	176-	174	54	86	-
VA-7200-820x		1000	1600		1600		1235	1046	908	744	477	369	281	208

Installation and Servicing

When mounting the VGS800W1N series valves please follow the instructions below:

- It is recommended that the valves be mounted at angles not greater than 90° from the upright position, in a conveniently accessible location.
- Do not cover the actuator with insulating material.
- Sufficient clearance must be allowed for actuator removal (refer to the dimension drawings on page 7)
- Install the valve as indicated by the arrow(s) on the valve body so that the plug seats against the flow.
- Johnson Controls must approve use of the VGS800W1N series valves with fluids other than specified.
- On electrically actuated valve assemblies, all wiring must be in accordance with applicable electrical codes and ordinances.
- Input lines to the actuator must be wired correctly to open or close the valve as is functionally required.

Ordering Code for Replacement packing kits:

Ordering Code	For valves
121 4571 011	Rp ½ …Rp 2

When servicing the VGS800W1N series valves, make sure that:

- The electrical power to the actuator is isolated.
- You do not touch or attempt to connect or disconnect wires when electrical power is on.

WARNING

Shock Hazard

Disconnect the power supply before wiring connections are made to prevent personal injury.

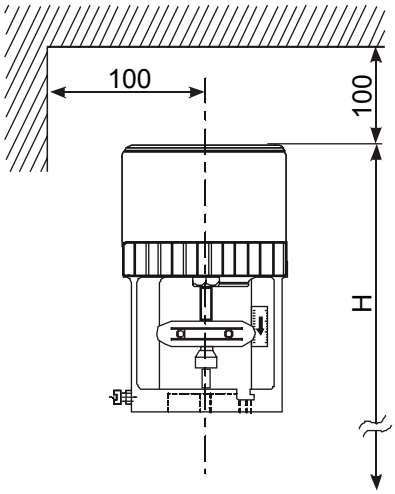
Equipment Damage Hazard

Make and check all wiring connections before applying power to the system. Short circuited or improperly connected wires may result in permanent damage to the unit.

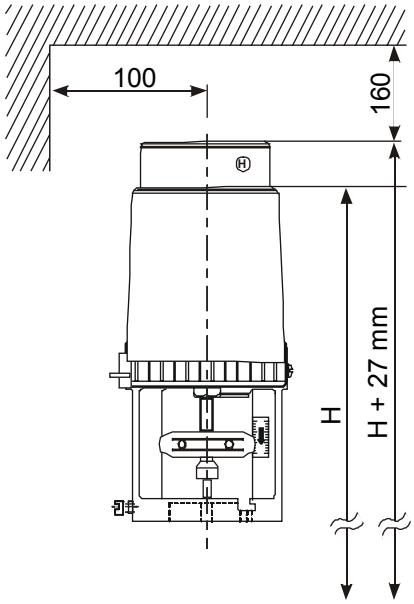
- No air pressure is applied to the piping system when servicing the valve.

Dimensions (in mm): Electric Actuators and VGS800W1N valves, Rp ½ to Rp 2

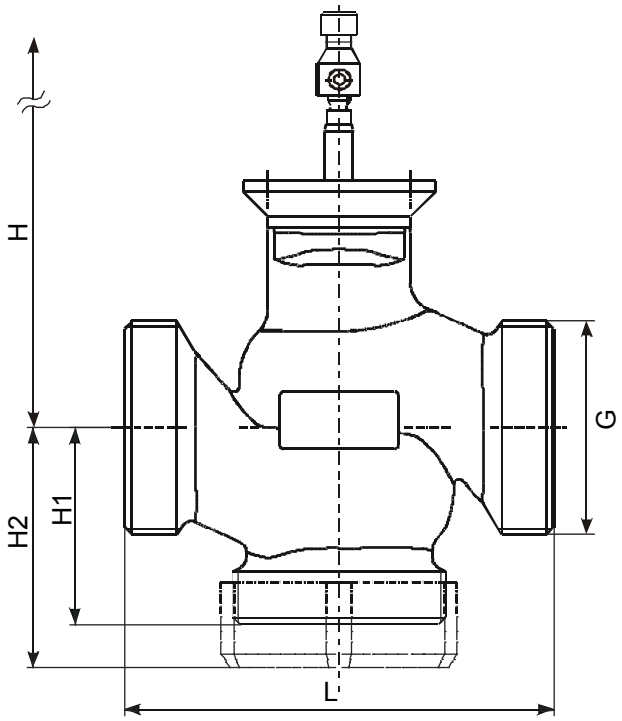
VA-7150-820x



VA-7200-820x



VGS800W1N PN 16 Valve



		Rp ½	Rp ¾	Rp 1	Rp 1 ¼	Rp 1 ½	Rp 2
L		80	90	110	120	130	150
H	VA-7150	212	212	218	222	231	231
	VA-7200	226	226	232	236	245	245
H1		55	55	55	55	60	65
H2		65	65	66	67	72	77
G		1 1/8	1 ¼	1 ½	2	2 ¼	2 ¾
Weight (kg)		1.1	1.2	1.4	2.0	2.5	3.5

Specifications

Product :	**VGS800W1N Series Male Threaded PN 16 valves**					
Models:	3-way mixing Rp ½ …Rp 2 (DN 15…DN 50) 2-way (PDTO) Rp ½ …Rp 2 (After conversion from 3-way)					
Service:	Water, glycol solutions (max 50%) for HVAC applications (proper water treatment is recommended, refer to VDI 2035)					
Valve body data: Rp:	½	¾	1	1 ¼	1 ½	2
k_{vs}:	(*)	6.3	10	16	25	40
3-Way valve weight (kg):	1.1	1.2	1.4	2.0	2.5	3.5
Nominal stroke:	13 mm					
Body pressure rating:	1600 kPa up to 120°C – 1560 kPa up to 130°C as per DIN 4747-1					
Male thread dimensions:	ISO 228-1					
Pipe fitting:	Rp ½ …Rp 2 ISO 7-1					
Fluid temperature limits:	2°C...130 °C					
Material						
Body:	Cast G Cu Sn 5Zn Pb, 2.1096.01, DIN EN 1982					
Stem:	Stainless steel, Material specification 1.4571					
Plug:	Brass, Material specification 2.0401 with soft seal - EPDM					
Seat:	Control port machined into body. Stainless steel, Material specification 1.4571 mixing valve for inlet 2					
Packing:	PTFE guided stainless steel stem with dual O-ring seal packing, no adjustment required					
Face to face dimensions:	In accordance with DIN EN558-1					
Flow characteristics	3-way control port - Equal percentage / Linear (inlet 2)					
Practical rangeability:	k_{vs} / k_{vr} > 30:1					
Leakage rate:	Tight as per DIN EN1349 IV L1 (inlet 1 and 2)					
Operating pressure drop:	Max. 300 kPa					

(*) k_{vs} values for Rp ½ (see also “Ordering codes for valve bodies”)

0.63	1.0	1.6	2.5	4

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. is not liable for damages resulting from misapplication or misuse of its products

JOHNSON CONTROLS

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Branch Offices Principal European Cities. : Printed in Germany