

VGD Series

VGDxx.xxxU Gas Valves

for use with SKPxx.xxxU electro-hydraulic actuators



VGD20.xxxU



VGD40.xxxU

ISO 9001 and 14000
REGISTERED FIRM



Only with series SKPxx.xxxUx actuators

Description

The normally closed VGDxx.xxxU series of modular double-body gas valves combine with SKPxx.xxxU series electro-hydraulic actuators to provide safety shut-off, gas pressure regulation and/or air-gas ratio control for commercial or industrial gas burners.

Table 1. VGDxx.xxxU model numbers

| Model Numbers | Body size and style | Connection |
|---------------|---------------------|-------------|
| VGD20.253U | 1" double | NPT thread |
| VGD20.323U | 1 ¼" double | NPT thread |
| VGD20.403U | 1 ½" double | NPT thread |
| VGD20.503U | 2" double | NPT thread |
| VGD40.065U | 2 ½" double | NPT thread |
| VGD40.080U | 3" double | NPT thread |
| VGD40.100U | 4" double | ANSI flange |
| VGD40.150U | 6" double | ANSI flange |

Features
All Models

- UL listed, FM approved, CSA certified, IRI approvable, ISO 9001 and 14000 certified. CE, Australian approved versions available
- ¼"-inch NPT pressure taps on the inlet and outlet and between main valves (see *Table 2* for details)
- Stainless steel mesh inlet filter protects the valve seat(s) as well as downstream components
- Dual stem guides ensure precise disc alignment and tight shut-off
- Valves in connection with SKPxx.xxxU actuators open slowly and close rapidly

VGD20.xxxU models

- Compact VGD20.xxxU double-valve bodies consist of 2 safety shut-off valves in series. The first (inlet) valve has a flat valve disc applicable for safety shut-off function only. The second (outlet) valve has a contoured valve disc for use with pressure regulating actuators (SKP2x.xxxU, SKP5x.xxxU, SKP7x.xxxU)
- A 1-inch NPT vent connection between the valves
- Each VGD20.xxxU double-valve requires 2 threaded mounting flanges (AGFxx.xxU). Each flange includes the necessary installation hardware (bolts, nuts and O-ring). Each mounting flange has a ¼-inch NPT pressure tap. The flanges can be pre-mounted onto the pipe, and then bolted onto the VGD20.xxxU gas valve body. This feature eliminates the use of pipe unions and permits the gas valve assembly to be easily removed from a gas train
- Connecting pattern of the 1...2 inch AGFxx.xxU flanges are identical. This space permits any AGFxx.xxU flange to be mounted to any VGD20.xxxU valve body



NOTE:

VGD20.xxxU valves and AGFxx.xxU flanges must be ordered as separate items (see *Tables 2 and 3*).

VGD40.xxxU models

- Compact VGD40.xxxU double-valve bodies consist of 2 safety shut-off valves in series
- Each individual safety shut-off valve has double seats to achieve high flow
- Patented seat construction with individual closing spring for each seat to assure reliable shut-off and high close-off pressure rating
- Full port vent line connection plates are available



NOTE:

VGD40.xxxU valves and AGA40.xxxxU vent connection plates must be ordered as separate items (see *Tables 2 and 3*).

Application

All VGDxx.xxxU valves can be combined with any SKPxx.xxxU series actuator. The actuator can be mounted while the valve is installed and under pressure.

SKPxx.xxxU regulating actuators are applicable for both low and high supply gas pressure applications, eliminating excessive regulator inventories. Maximum pressure ratings vary with valve size (see *Table 2*).

All VGDxx.xxxU valves perform these functions in combination with each of the following actuators:

| | |
|------------|--|
| SKP15.xxxU | Safety shut-off |
| SKP25.xxxU | Safety shut-off and constant pressure regulation or zero governor |
| SKP55.xxxU | Safety shut-off, pressure regulation and differential pressure air-gas ratio control |
| SKP75.xxxU | Safety shut-off, pressure regulation and adjustable air/gas ratio control |

Since more than one function can be performed by a single valve, fewer components and fittings are required—significantly reducing both the size and weight of the gas train. In addition, smaller diameter gas valves can be used. For details on valve sizing see the flow chart (figure 3).

**CAUTION:**

Do not oversize valves equipped with a regulating SKP2x.xxxU / SKP5x.xxxU / SKP7x.xxxU actuator. Oversizing may limit turndown and could cause oscillations.

Ordering information

Gas valves and actuators are ordered separately. For additional SKPxx.xxxU actuator information, see the following technical instructions:

| | |
|------------|------------|
| SKP15.xxxU | 155-751P25 |
| SKP25.xxxU | 155-752P25 |
| SKP55.xxxU | 155-753P25 |
| SKP75.xxxU | 155-754P25 |



NOTE:

The SKPxx.xxxU actuators have an operating temperature range of 14 °F to 140 °F (-10 °C to 60 °C)!

Table 2. Product numbers

| Product number | Size | Maximum operating pressure psi | Close-off pressure psi | Capacity CFH Natural gas at $\Delta P = 1''$ W.C. | Number of test points, 1/4" NPT | | Valve body material |
|----------------|------------|--------------------------------|------------------------|---|---|--------|---------------------|
| | | | | | Inlet | Outlet | |
| VGD20.253U *) | 1" | 20 | 30 | 600 | Two ¼-inch and one 1-inch port between valves | | Aluminum |
| VGD20.323U *) | 1¼" | 20 | 30 | 1200 | | | Aluminum |
| VGD20.403U *) | 1½" | 20 | 30 | 1,850 | | | Aluminum |
| VGD20.503U *) | 2" | 20 | 30 | 2,300 | | | Aluminum |
| VGD40.065U | 2½" NPT | 10 | 75 | 3,880 | 1 | 1 | Aluminum |
| VGD40.080U | 3" NPT | 10 | 75 | 5,370 | 1 | 1 | Aluminum |
| VGD40.100U ** | 4" flanged | 10 | 30 | 9,680 | 1 | 1 | Aluminum |
| VGD40.150U ** | 6" flanged | 10 | 30 | 17,490 | 1 | 1 | Aluminum |

*) VGD20.xxxU double valves require 2 AGFxx.xxU threaded flanges for installation

***) VGD40.1x0U flanged valves must be installed using non-metallic flange gaskets. Gasket material must be chemically compatible with the fuel gas being used in the application and must be softer than the aluminum flange sealing surface. Acceptable gasket materials include but are not limited to: rubber, paper, and plastic. Observe flange bolt torque specifications as stated in the VGD40 installation instructions. Also refer to ANSI / ASME B16.24.

Accessories

Table 3. Accessories

| Part Number | Description | Notes |
|-------------|--|--|
| AGF10.15U | Single ½" connecting flange with ¼" port for VGD20.xxxU | 2 required per valve. Order separately |
| AGF10.20U | Single ¾" connecting flange with ¼" port for VGD20.xxxU | |
| AGF10.25U | Single 1" connecting flange with ¼" port for VGD20.xxxU | |
| AGF10.32U | Single 1¼" connecting flange with ¼" port for VGD20.xxxU | |
| AGF10.40U | Single 1½" connecting flange with ¼" port for VGD20.xxxU | |
| AGF10.50U | Single 2" connecting flange with ¼" port for VGD20.xxxU | |
| AGA40.4050U | 1" NPT vent connection plate for VGD40.xxxU | Each vent connection includes ¼" NPT test port, see Mounting instruction M7631.3 (74 319 0278 0) |
| AGA40.6580U | 1 ¼" NPT vent connection plate for VGD40.xxxU | |
| AGA40.0100U | 2" NPT vent connection plate for VGD40.xxxU | |
| AGA40.0150U | 2 ½" NPT vent connection plate for VGD40.xxxU | |

AGA61



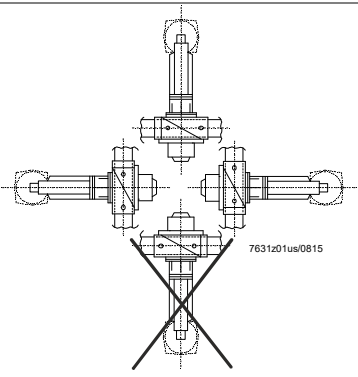
Manual adjusting throttle attachment AGA61 permits VGDxx.xxxU series valves to be used as adjustable limiting orifice valves. Once adjusted, the AGA61 has a provision to be sealed from tampering.

AGA66



Sealing gasket to provide NEMA 3, NEMA 3R, and NEMA 4 protection.
 Gasket kit to mount SKPxx.xxxU

- Place between actuator SKPxx.xxxU and valve VGDxx.xxxU
- Increases degree of protection from IP54 to IP65
- Refer to Mounting Instruction M7643.2 (74 319 0421 0)

| | | |
|--------------------------------|--|--|
| Specifications | Agency approvals/standards | UL/429, FM/7400, CSA/ANSI Z21.21/CSA 6.5 C / I |
| Approvals | | IRI approvable Agency marks apply only for VGDxx.xxxU series gas valve bodies assembled with SKPxx.xxxU actuators. |
| Operating environment | Maximum operating pressure Maximum back pressure (differential) Close-off pressure Permissible gas temperature Permissible operating temperature | See <i>Table 2</i> VGD20.xxxU: 2 psi (150 mbar) VGD40.xxxU: 4 psi (300 mbar) See <i>Table 2</i> 14 °F to 140 °F (-10 °C to 60 °C) 14 °F to 140 °F (-10 °C to 60 °C) |
| Use | Siemens gas valves are in accordance with UL429. The valve is used as: <ul style="list-style-type: none"> - Safety shutoff valve (in connection with SKP15.xxxU) - Control valve with safety shutoff function (in connection with SKP25.xxxU, SKP5x.xxxU or SKP7x.xxxU) | |
| Perm. mounting position |  | |
| Operating pressure | See <i>Type summary</i> | |
| Types of gases | Suitable natural gases, propane, butane and air For more information see <i>Use</i> . | |
| Strainer | Built-in, mesh size 0.9 mm | |

Specifications

| | | |
|---------------------------------|--|--|
| Physical characteristics | Body materials Weight | See Table 2 See Tables 4 |
| Connections | Pipe connections Pressure and vent taps | NPT threads or ANSI class 150 flanges (see Table 2) See Tables 2 and 3 |
| Operation | <p>All VGDxx.xxxU gas valves are normally closed, two-way valves. The valves have a standard, integral, stainless steel mesh filter (0.9 mm) in the inlet to protect the downstream components against contamination.</p> <p>All valves have ¼ NPT ports for pressure test connection. A full size vent connection plate is available as an accessory for VGD40.xxxU valves. See Table 2 and 3 for details on ports and vent connection plates.</p> | |

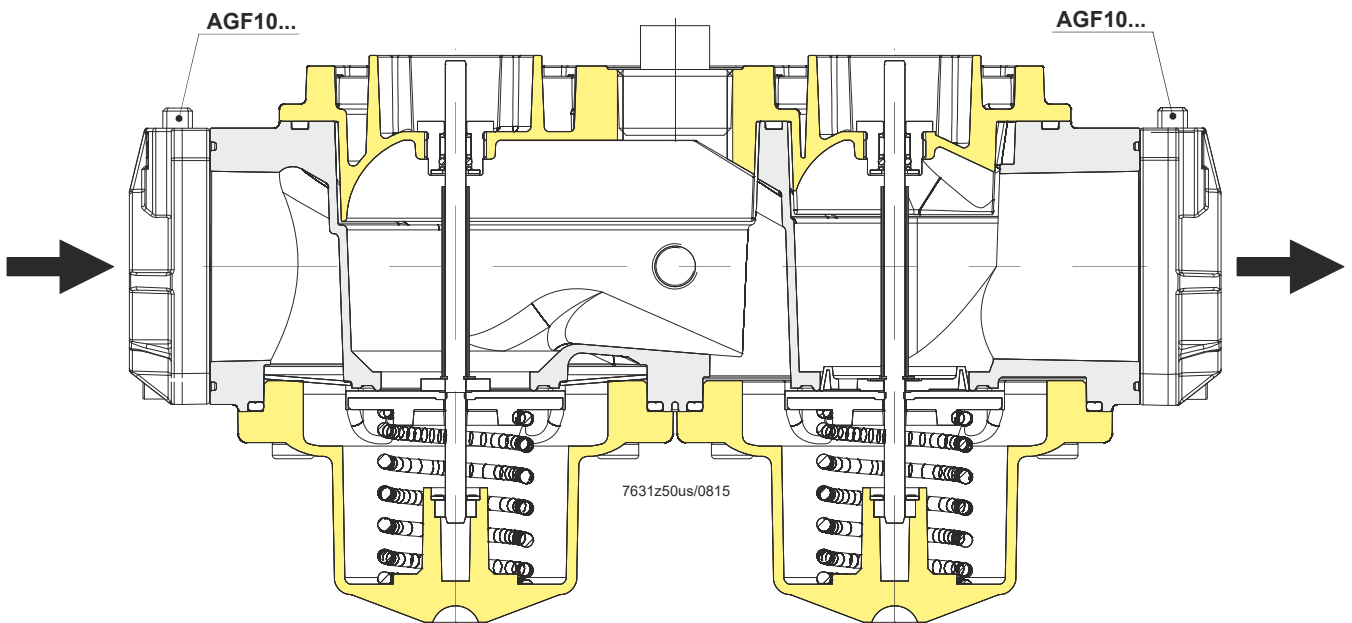


Figure 1. Sectional view of VGD20.xxxU

VGD20.xxxU double valves consist of two valves in series. The first (inlet) valve has a flat valve disc suitable for the safety shut-off function only. The second (outlet) valve has a contoured valve disc for stable regulating control and smooth release of gas.

Operation, continued

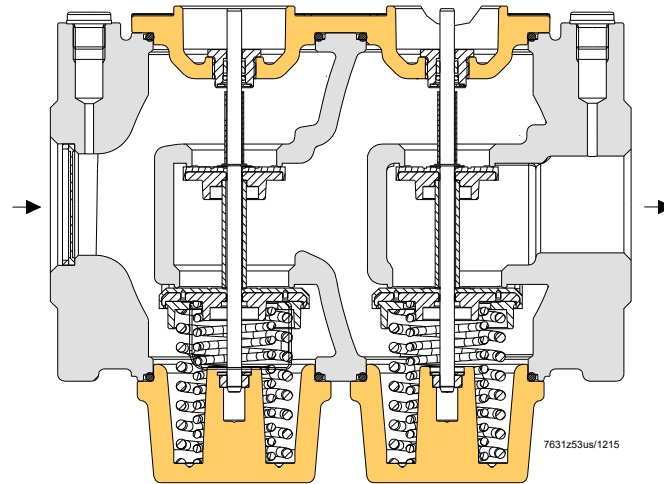


Figure 2. Second view of VGD40.xxxU flange models

VGD40.xxxU double valves consist of two valves in series.
Each valve has a double seat to achieve high flow (see *Figure 2*).

Closing springs:

Each double seat uses one pair of springs. The spring forces act separately as closing forces on the individual valve seats.

Gas flow charts

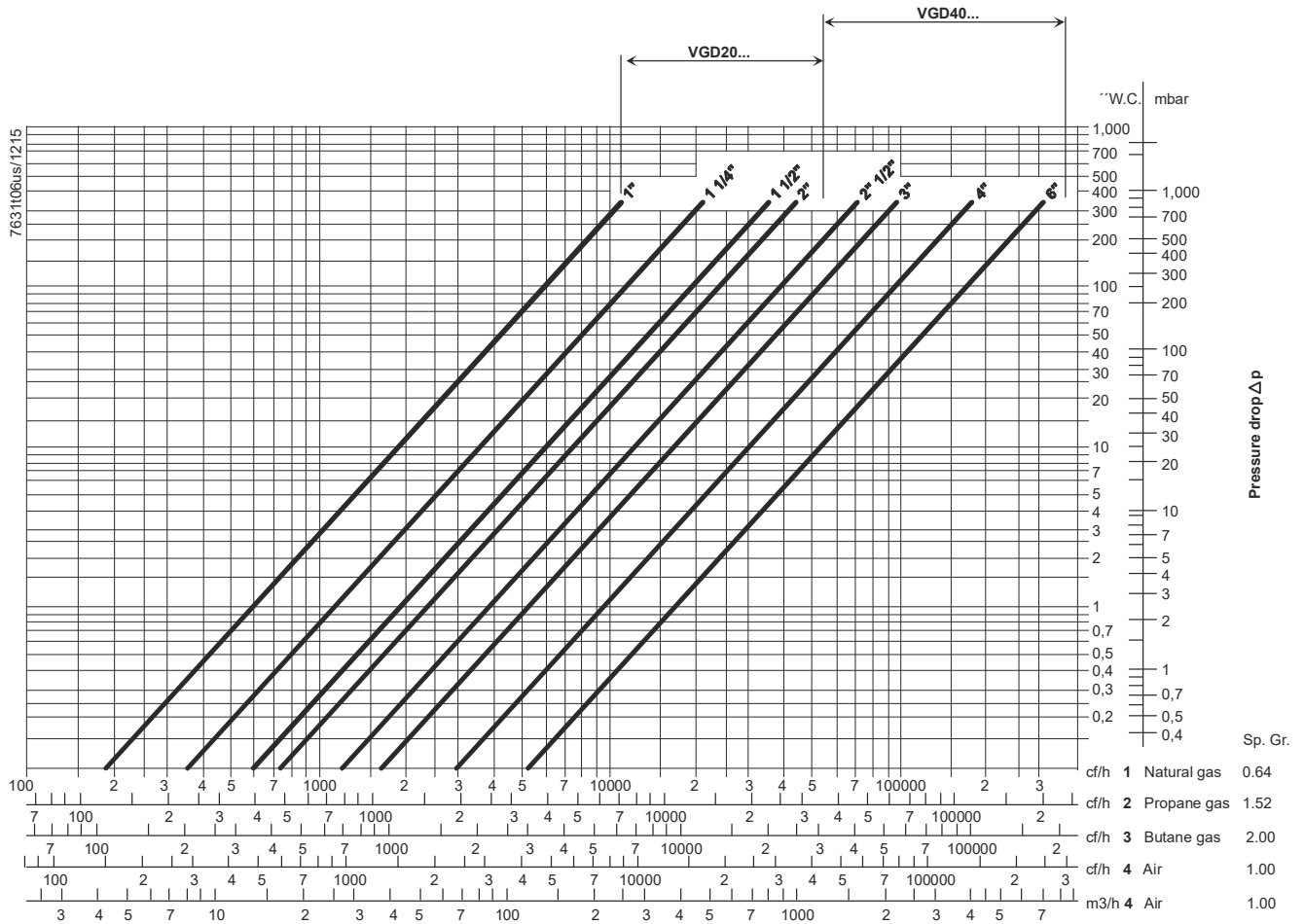


Figure 3. Sizing double valves

Assumptions:

- 1) Pressure downstream of valve is atmospheric
- 2) Maximum gas temperature of 140 °F
- 3) Valve in fully open position



NOTE:

Pressure drop is total drop across both valves when using a SKPx5.xxxU actuator, with or without an AGA66.



CAUTION:

Do not oversize valves equipped with regulating actuators SKP2x.xxxU, SKP5x.xxxU or SKP7x.xxxU. Oversizing may limit turndown and could cause oscillations.

Dimensions

Dimensions in Inches (mm)

VGD20.xxxU

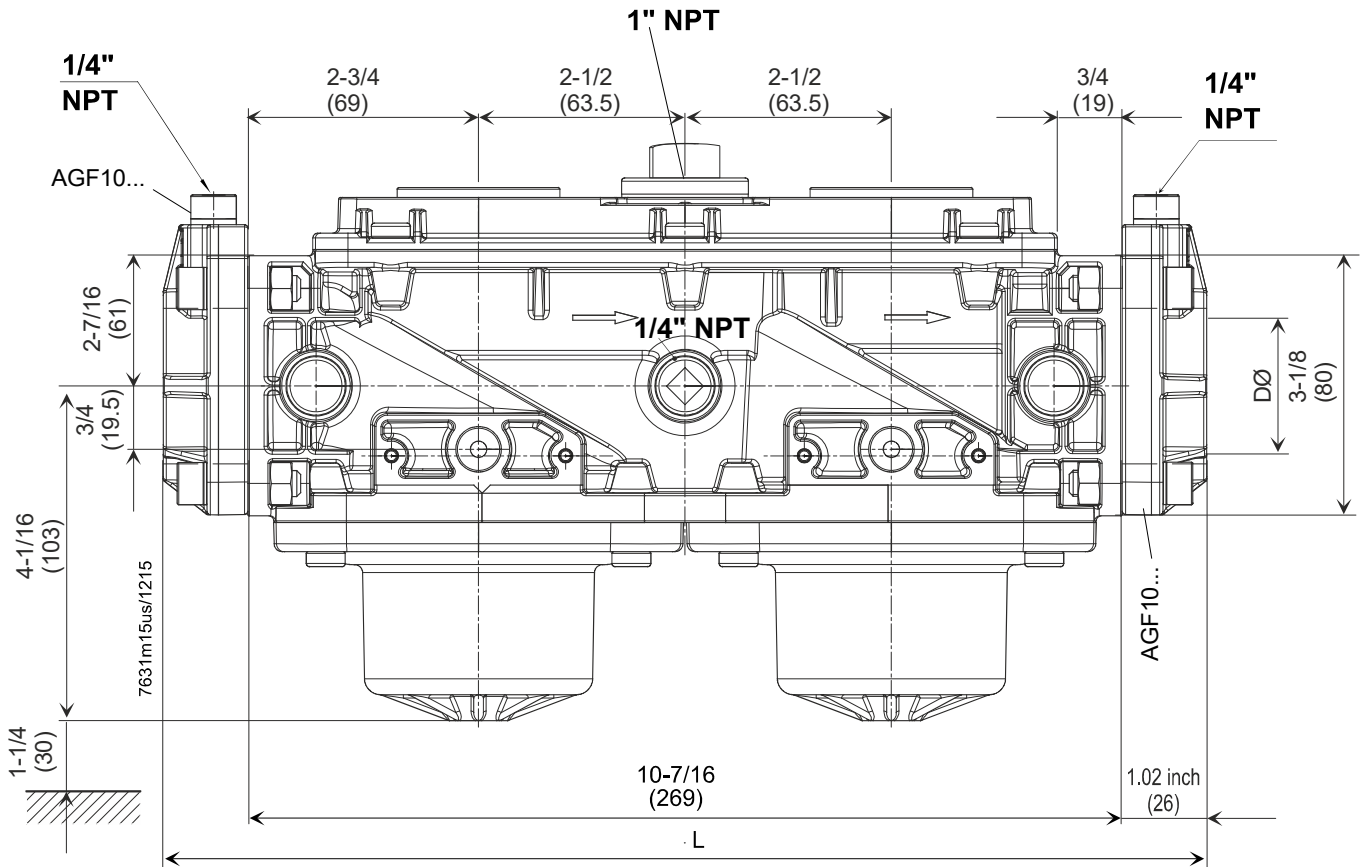


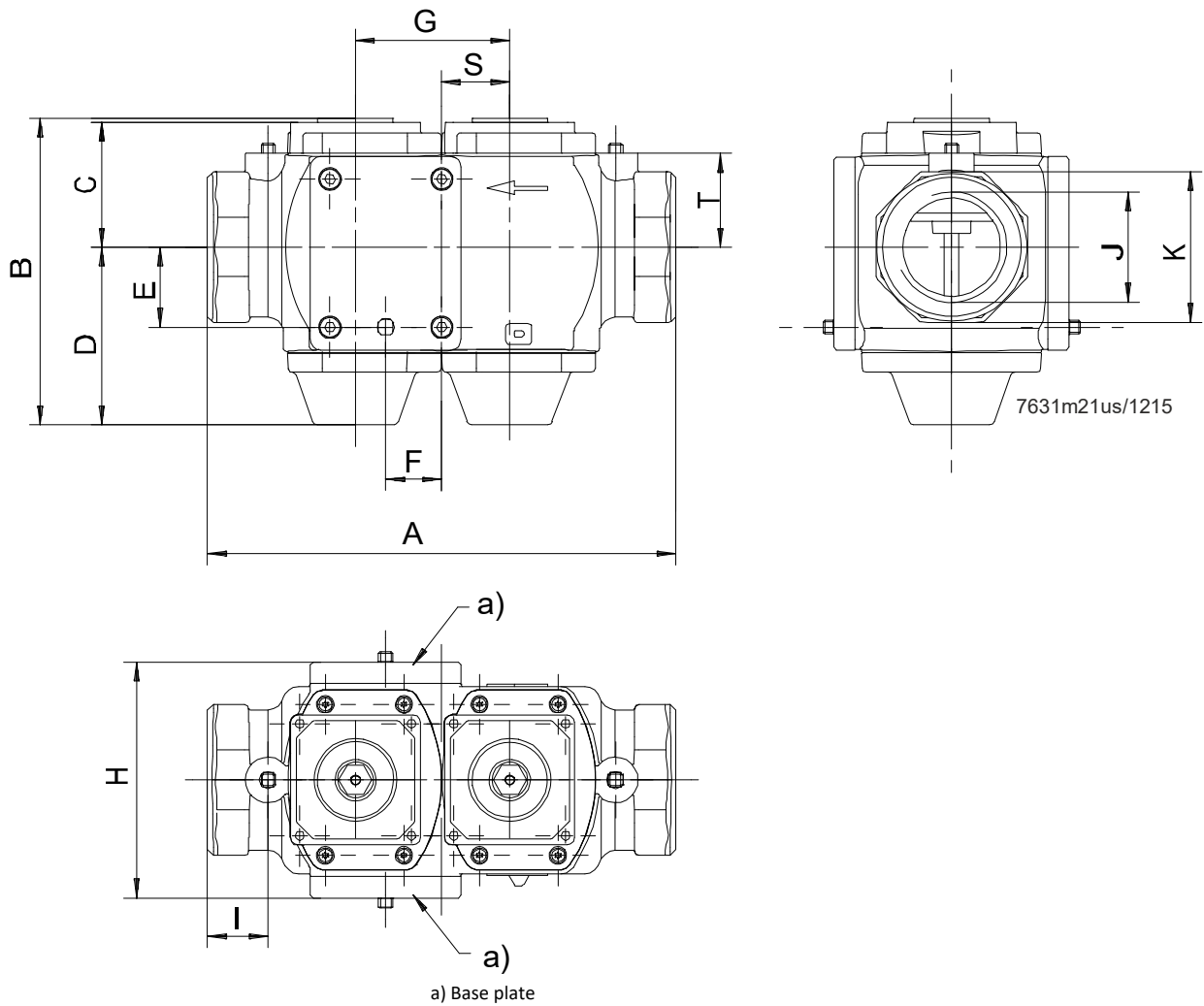
Table 4. VGD20.xxxU dimensions in inches (mm) with 2 flanges AGF10.xxU

| Valve model | Nominal size D inch | Length (L) inch (mm) | Weight pounds (Kg) |
|-------------|------------------------|------------------------------------|--------------------------|
| VGD20.xxxU | 1" | 10.59 + 2 x 1.02 (269 + 2 x 26) | 7 (3.2) |
| | 1 ¼" | 10.59 + 2 x 1.02 (269 + 2 x 26) | 7 (3.2) |
| | 1 ½" | 10.59 + 2 x 1.02 (269 + 2 x 26) | 7 (3.2) |
| | 2" | 10.59 + 2 x 1.18 (269 + 2 x 30) | 7 (3.15) |

Dimensions, continued

Dimensions in Inches (mm)

VGD40.065U / VGD40.080U



Dimensions, continued

Dimensions in Inches (mm)

VGD40.100U / VGD40.150U

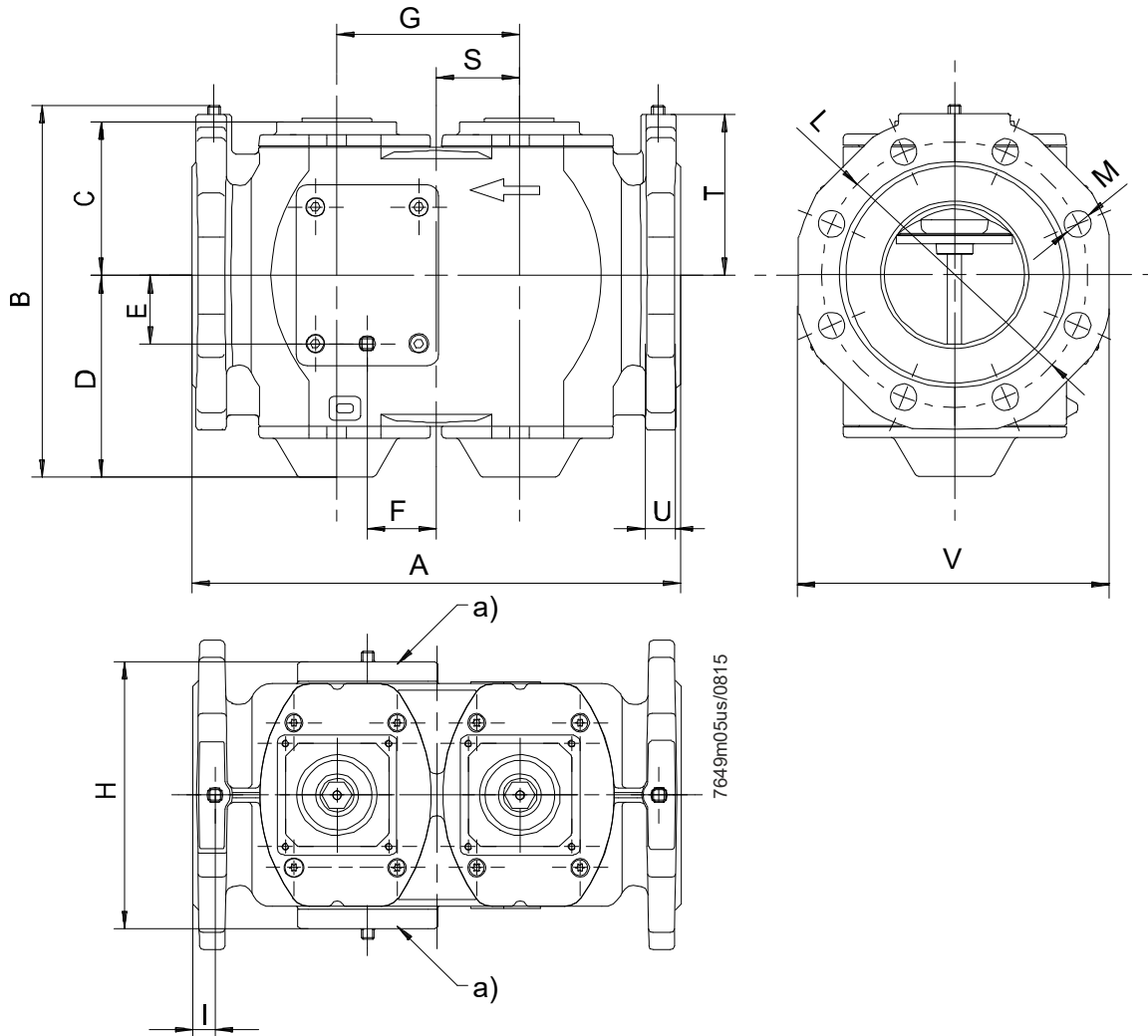


Table 5. VGD40.xxxU dimensions in inches (mm)

| Type | A | B | C | D | E | F | G | H | I | J | K (SW*) | L (d =) | M (d =) | S | T | U | V |
|------------|----------------|------------------|----------------|-----------------|----------------|----------------|---------------|----------------|--------------|--------------|--------------|----------------|--------------|----------------|-----------------|----------------|----------------|
| | inch (mm) | inch (mm) | inch (mm) | inch (mm) | inch (mm) | inch (mm) | inch (mm) | inch (mm) | inch (mm) | inch (mm) | inch NPT | inch (mm) | inch (mm) | inch (mm) | inch (mm) | inch (mm) | inch (mm) |
| VGD40.065U | 11.42 (290) | 8.54 (217) | 3.25 (82.5) | 4.63 (117.5) | 2.09 (53.1) | 1.46 (37) | 4.02 (102) | 6.14 (156) | 0.63 (16) | 2 ½" | 4 (100) | 5.5 (139.7) | 0.75 (19) | 1.77 (45) | 3.64 (92.5) | 0.80 (20.4) | 7.01 (178) |
| VGD40.080U | 12.20 (310) | 9.39 (238.5) | 3.64 (92.5) | 5.18 (131.5) | 2.09 (47) | 0.79 (20) | 4.21 (107) | 6.30 (160) | 0.63 (16) | 3" | 4.7 (120) | 6.0 (152.4) | 0.75 (19) | 1.2 (30.5) | 3.94 (100) | 0.88 (22.4) | 7.56 (192) |
| VGD40.100U | 13.78 (350) | 10.52 (267.3) | 4.33 (110) | 5.70 (144.8) | 1.93 (49) | 1.95 (49.5) | 5.16 (131) | 7.56 (192) | 0.63 (16) | --- | --- | 7.5 (190.5) | 0.75 (19) | 2.83 (72) | 4.55 (115.5) | 0.87 (22) | 8.74 (222) |
| VGD40.150U | 18.90 (480) | 13.29 (337.5) | 5.71 (145) | 7.40 (188) | 2.09 (53) | 2.30 (58.5) | 6.61 (168) | 10.31 (262) | 0.63 (16) | --- | --- | 9.5 (241) | 0.91 (23) | 3.92 (99.5) | 5.61 (142.5) | 0.90 (22.9) | 10.63 (270) |

*) SW = width across flats

Dimensions, continued

Dimensions in Inches (mm)

VGD40.xxxU valve with vent connection plate

- Option:
- a) Base plate
 - b) Vent connection plate AGA40.xxxxU (optional) to be ordered separately
- a) and b) are interchangeable

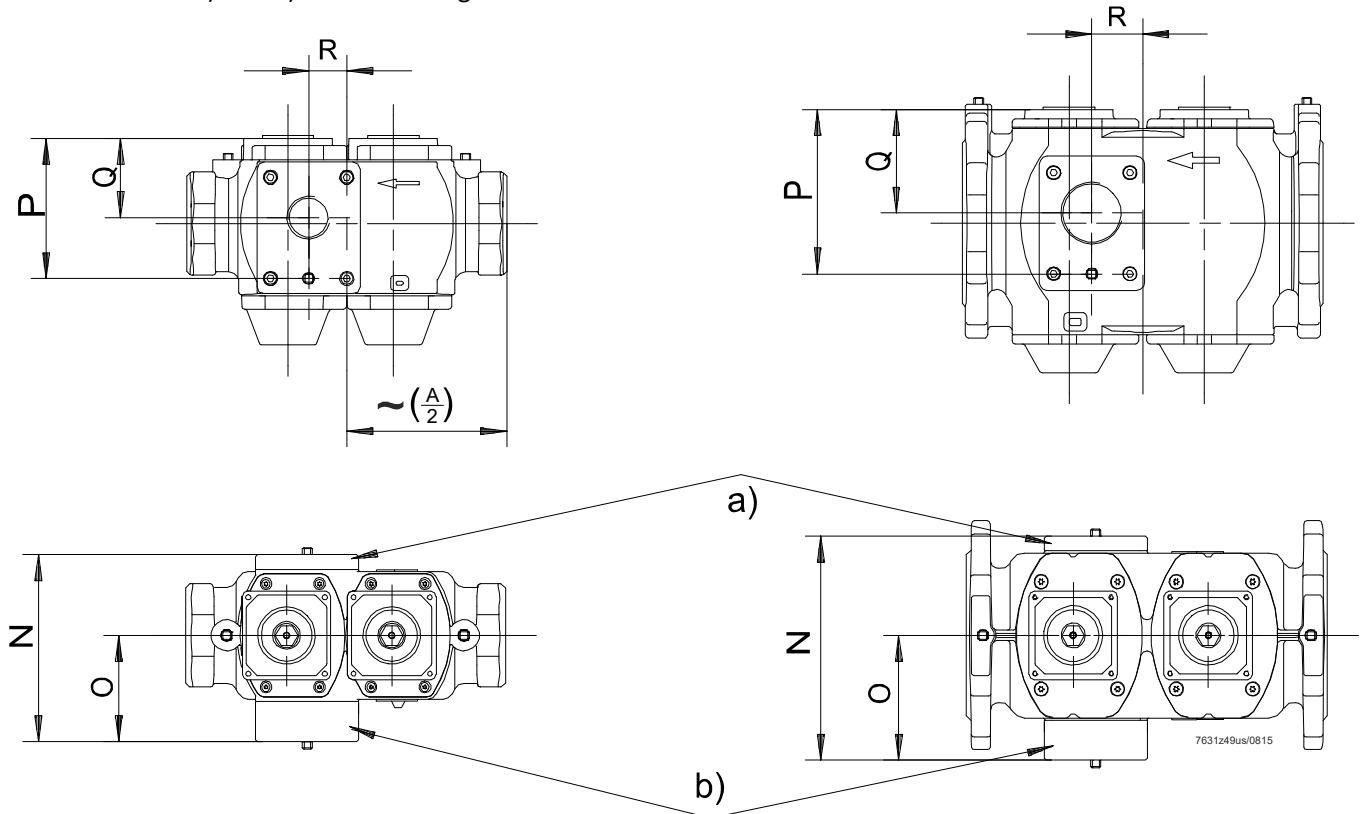


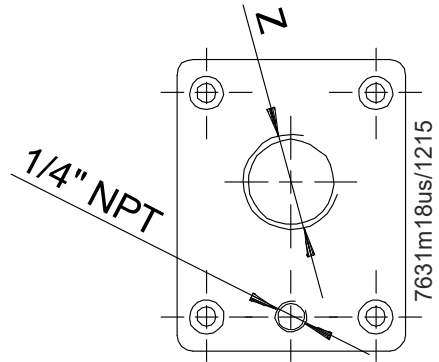
Table 6. VGD40.xxxU dimensions in inches (mm) with mounted vent connecting plate.

| Valve model | N inch (mm) | O inch (mm) | P inch (mm) | Q inch (mm) | R inch (mm) | Weight pounds (kg) |
|-------------|-------------------|-------------------|-------------------|-------------------|-------------------|--------------------------|
| VGD40.065U | 7.13 (181) | 4.06 (103) | 5.34 (135.6) | 3.02 (76.59) | 1.46 (37) | 1.6 (7) |
| VGD40.080U | 7.28 (185) | 4.13 (105) | 5.49 (139.5) | 3.17 (80.5) | 0.79 (20) | 19 (8) |
| VGD40.100U | 8.54 (210) | 4.76 (121) | 6.26 (159) | 3.94 (100) | 1.95 (49.5) | 29 (13) |
| VGD40.150U | 11.30 (287) | 6.14 (156) | 7.80 (198) | 5.47 (139) | 2.28 (58) | 53 (24) |

Dimensions, continued

Table 7. AGA40.xxxxU Models

| Vent connection plate (optional) | | | | | |
|---|------------|------------|------------|------------|----------------------------|
| | VGD40.065U | VGD40.080U | VGD40.100U | VGD40.150U | Vent connection thread "Z" |
| AGA40.6580U | ● | ● | | | 1¼" NPT |
| AGA40.0100U | | | ● | | 2" NPT |
| AGA40.0150U | | | | ● | 2½" NPT |



Information in this publication is based on current specifications. The company reserves the right to make changes in specifications and models as design improvements are introduced. Other product or company names mentioned herein may be the trademarks of their respective owners.

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