SIEMENS

7663

VGU2... VGU5...

Combination Gas Valves VGU2... VGU5...

The combination gas valves type VGU… have been developed for use in gas-fired domestic central heating boilers and water heating appliances with automatic ignition systems. The controls are also suited for use on a wide variety of gas-fired appliances such as catering equipment, warm air furnaces and back boilers.

The VGU... and this Data Sheet are intended for use by OEMs which integrate the combination gas valves in their products!

Use

- Compact design suitable for installation in small modern boilers and heaters
- Specially designed for gas appliances with DBI system to light the main burner
- Servo pressure regulator ensures stable outlet pressure
- Pressure feedback ensures constant burner pressure

Functional options

VGU2...
- Fast and slow opening versions for on / off control
- Adjustable slow opening to ensure smooth light-up of burner

VGU5...
- Modulating control for more comfort and energy savings

Mechanical options

- 2 shutoff valves
- Servo pressure regulator
- Inlet / outlet pressure test points
- All adjustments are accessible from the top of valve
- A fine-mesh screen is integrated at the inlet side

Warning notes

To avoid injury to persons, damage to property or the environment, the following warning notes should be observed!

Do not open, interfere with or modify the valve!

- All activities (mounting, installation and service work, etc.) must be performed by qualified staff
- Before performing any wiring changes in the connection area of the VGU…, completely isolate the unit from the mains supply (all-polar disconnection)
- Ensure protection against electric shock hazard by providing adequate protection for the connection terminals
- Check to ensure that wiring is in an orderly state
- Fall or shock can adversely affect the safety functions. Such valves must not be put into operation even if the unit does not exhibit any damage

Mounting notes

- Ensure that the relevant national safety regulations are complied with

Outlet pressure of servo pressure regulator – on / off control of VGU2...

- Check the inlet and outlet pressure using the pressure test points provided
- Remove the protective cap,
  - turn the screw (clear color) clockwise to increase the outlet pressure
  - turn the screw (clear color) counterclockwise to decrease the outlet pressure
- Ensure that the outlet pressure is correctly adjusted before replacing the protective cap

Outlet pressure of servo pressure regulator – modulating control of VGU5...

- Check the inlet and outlet pressure using the pressure test points provided.
  Remove the protective cap (yellow).
  If the inlet pressure is the normal pressure, then add the maximum current to the modulating coil.
  To set the maximum outlet pressure:
  - turn the screw (brass) clockwise to increase the outlet pressure
  - turn the screw (brass) counterclockwise to decrease the outlet pressure
- Ensure that the maximum outlet pressure is correctly adjusted with change of current to the modulating coil.
  To set the minimum outlet pressure:
  If the inlet pressure is the normal pressure, disconnect the terminals of the modulating coil (modulating current = 0 mA)
  - turn the red screw clockwise to increase the outlet pressure
  - turn the red screw counterclockwise to decrease the outlet pressure
- Ensure that the outlet pressure is correctly adjusted, check minimum and maximum setting several times, then tighten the protective cap for protection

Installation notes

Main gas connection

- To prevent distortion and / or damage of the external thread, take care not to tighten the pipe fitting too far
- Ensure the gasket is properly placed in the right position
- Ensure that the gas flow is in the same direction as the arrow on the valve body

Pressure test points

- The valve is provided with an inlet and outlet pressure test point
- When checking the pressure, undo the screw one half turn and slip the tube over the nipple

Note

Make sure the screw is retightened after making the test.

Electrical connections

Warning

Switch off power supply before making the electrical connections. Wiring must be in accordance with local regulations. Follow the instructions supplied by the manufacturer.

- Install power in accordance with the required pin connections (refer to «Function»)
- When making connections to the terminals of the valve, use wires and connectors which are suited for temperatures up to 105 °C

Checkout and installation

- After each adjustment, put the control into operation, run it through several complete cycles and check to ensure that all burner components function correctly

Commissioning notes

- Prior to commissioning the plant, check to ensure that wiring is in an orderly state

Standards and certificates

CE

Conformity according to EEC directives

- Electromagnetic compatibility EMC (immunity)	89 / 336 EEC
- Directive for gas appliances	90 / 396 EEC
- Directive for pressure devices	97 / 23 EEC

ISO 9001: 2000
Cert. 00739

ISO 14001: 1996
Cert. 38233

ADVANTICA

Service notes

- Each time a unit has been replaced, check to ensure that wiring is in an orderly state
- Check wiring and all safety functions each time a unit has been replaced

Important

Follow the appliance manufacturer's service and maintenance instructions.

Gas leakage test

- The gas valves are factory-tested for gas leakage. Only the main burner connection needs to be checked for gas leakage

Disposal

The unit contains electrical and electronic components and must not be disposed of together with household waste.
Local and currently valid legislation must be observed.

Type code

V G U 2 0 . A 0 1 0 9

Variants
09: Standard

Type class of shutoff valve
1 Classes B and J
2 Classes B and C

Modulation coil
0 None
1 165 mA
2 310 mA
3 Stepper motor

Power supply and terminal arrangement
A AC 230 V for DBI, version 1
B AC 24 V for DBI, version 1
C AC 230 VR for DBI, version 0
D AC 24 VR for DBI, version 0
E AC 230 VR for IP, version 2
F AC 24 VR for IP, version 2
H DC 24 V for DBI, version 0
I DC 24 V for IP, version 2
J AC 120 V for DBI, version 1

Valve body
0 3/4" inlet / outlet valve thread, gas line straight, with bottom feet
1 3/4" inlet valve thread, outlet flange, gas line 90°, with bottom feet
2 Inlet / outlet flange, gas line straight
3 Inlet flange, outlet flange, gas line 90°
4 1/2" inlet / outlet valve thread, gas line straight, without bottom feet
5 1/2" inlet valve thread, outlet flange, gas line 90°, with bottom feet
6 3/4" inlet / outlet valve thread, gas line straight, without bottom feet
7 inlet flange, 3/4" outlet valve thread, gas line straight, without bottom feet
8 3/4" inlet valve thread, outlet flange, gas line straight, without bottom feet

Control
2 On / off, opening slowly
5 Electronicaly modulating
7 Gas / air ratio regulator
8 Gas / air ratio regulator with main gas flowthrottle

7663t02e/1205

Technical data

General unit data	Models	refer to «Type code»
	Mounting position	vertical or horizontal ±5°
	Types of gas	gas families II and III
	Gas inlet pressure	max. 60 mbar
	Operating voltage tolerance	gas valve operates correctly between 85 % and 110% of the rated voltage
	Degree of protection	IP44 with optional connector
	Dimensions	refer to «Dimensions»
	Inlet filter	no. 100 fine mesh
	Pipe connections inlet and outlet	refer to «Type code»
	Pressure feedback connection	6.5 mm outside dia. for tube connection
	Regulation capacity	min. 0.31 m³/h air
	Outlet pressure range for ON / OFF controller	2...37 mbar
	Outlet pressure range for modulating controller	2...37 mbar
	Valve class - 1st safety shutoff valve - 2nd safety shutoff valve	EN 126 class B class D, class J
	Class of regulator - VGU2... - VGU5...	EN 126 class C class B
	Closing time of safety shutoff valves	within 1 s
	Weight - VGU2… - VGU5…	 approx. 870 g approx. 1000 g
Electrical connections	Safety shutoff valves	interchangeable Molex contact 3003, suitable for Molex series 3001
	Electrical modulating coil	quick connectors suitable for Faston female 2,8 mm

Electrical data

Power consumption and current

Type	Pin connec-tion	1st shutoff valve			2nd shutoff valve			1st and 2nd shut off valve		
		Supply voltage	Power consumption	Current	Supply voltage	Power consumption	Current	Supply voltage	Power consumption	Current
VGUxx.A…	1	---	---	---	---	---	---	230 VAC	13 VA	60 mA
VGUxx.B…	1	---	---	---	---	---	---	24 VAC	13 VA	570 mA
VGUxx.C…	0	145 VRAC	8.2 VA	60 mA	85 VRAC	4.8 VA	60 mA	230 VRAC	13 VA	60 mA
VGUxx.D…	0	15.4 VRAC	8.2 VA	570 mA	8.6 VRAC	4.8 VA	570 mA	24 VRAC	13 VA	570 mA
VGUxx.E…	2	230 VRAC	8.2 VA	38 mA	230 VRAC	4.8 VA	22 mA	---	---	---
VGUxx.F…	2	24 VRAC	8.7 VA	380 mA	24 VRAC	4.3 VA	190 mA	---	---	---
VGUxx.H…	0	15.7 VDC	8.5 VA	540 mA	8.3 VDC	4.5 VA	540 mA	24 VDC	13 VA	540 mA
VGUxx.I...	2	24 VDC	8.7 VA	360 mA	24 VDC	4.3 VA	180 mA	---	---	---
VGUxx.J…	1	---	---	---	---	---	---	120 VAC	13 VA	120 mA

Only VGU5...

Electrical modulating pressure regulator

Operating voltage	Current	Resistance
Max. 13.2 V	Max. 165 mA	80 Ω
Max. 9.2 V	Max. 310 mA	30 Ω

Note

The coils for the safety shutoff function of the VGU... gas valve are DC type.

Environmental conditions	**Storage**	DIN EN 60721-3-1
	Climatic conditions	class 1K3
	Mechanical conditions	class 1M2
	Temperature range	-20...+60 °C
	Humidity	< 95 % r.h.
	Transport	DIN EN 60 721-3-2
	Climatic conditions	class 2K2
	Mechanical conditions	class 2M2
	Temperature range	-20...+60 °C
	Humidity	< 95 % r.h.
	Operation	DIN EN 60 721-3-3
	Climatic conditions	class 3K5
	Mechanical conditions	class 3M2
	Temperature range	0...+60 °C
	Humidity	< 95 % r.h.

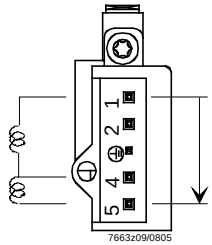
⚠ **Condensation, formation of ice and ingress of water are not permitted!**

Function

Pin connections

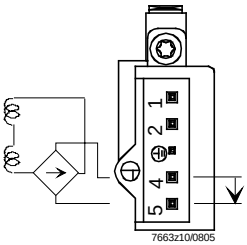
3 types of terminal arrangements are available for using different types of cable connectors.

Variant 0



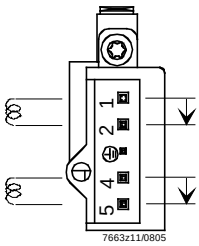
VRAC or VDC

Variant 1



VAC
(Full wave rectifier is integrated in the terminal for electrical connection)

Variant 2



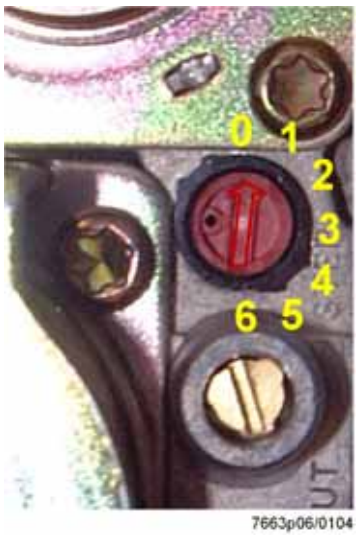
VRAC or VDC (2nd shutoff valve)

VRAC or VDC (1st shutoff valve)

Note:
The coils for safety shutoff function of VGU... gas valve are DC type

Performance characteristics

Only VGU2...:



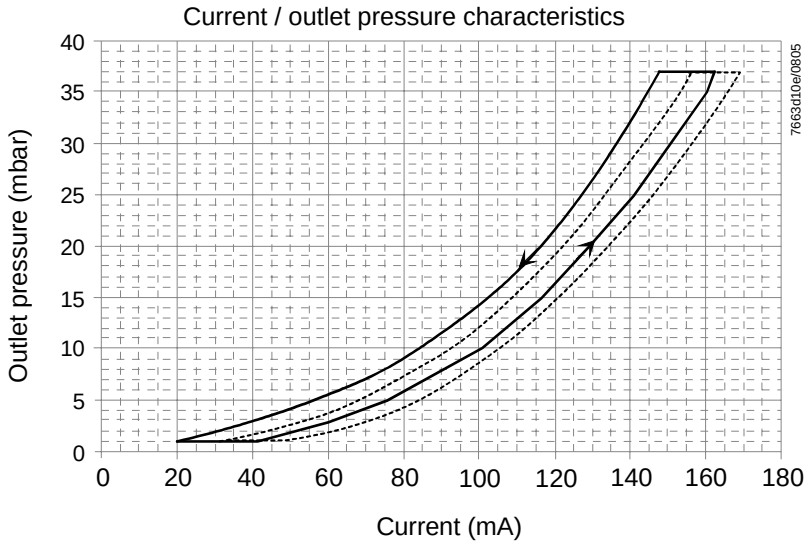
Slow opening (ON / OFF control).

Adjusting slow opening:
Turn red knob in clockwise direction (0...6).

No.	Inlet pressure	Gas	Dead time vertical piping	Dead time horizontal piping	Outlet pressure after 1.5 s	Outlet pressure after 1.5 s
0	20 mbar	NG	1.2 s	1 s	Min. 4...5 mbar	Max. 12 mbar
1.5	20 mbar	NG	1.2 s	1 s	Min. 6...7 mbar	Max. 12 mbar
3	20 mbar	NG	1.2 s	1 s	Min. 7...8 mbar	Max. 12 mbar
0	37 mbar	LPG	1.5 s	1.2 s	Min. 4...6 mbar	> 18 mbar
1.5	37 mbar	LPG	1.5 s	1.2 s	Min. 4.5...8 mbar	> 18 mbar
3	37 mbar	LPG	1.5 s	1.2 s	Min. 7.5...14.5 mbar	> 18 mbar

Modulating control characteristics of VGU5...

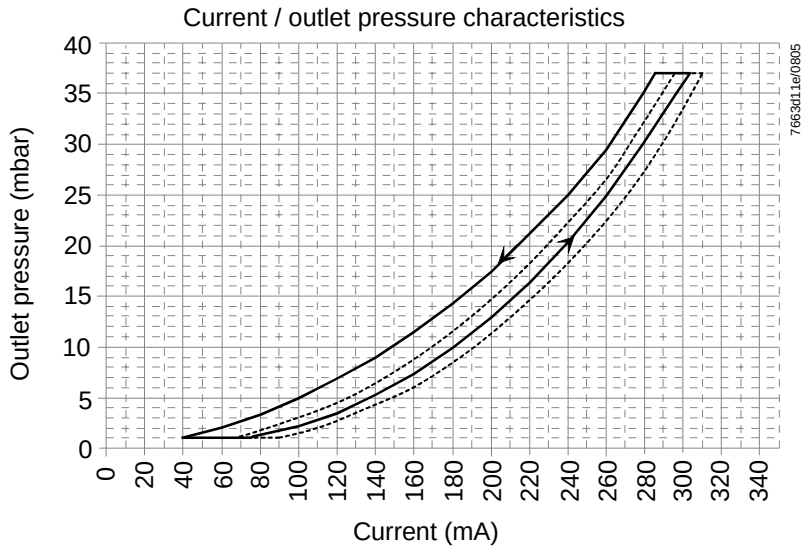
Modulating coil: 13.2 V / 165 mA



——— Increasing and decreasing arrow line indicates the max. hysteresis of I-P2 curve

------ Max. tolerance of increasing I-P2 curve

Modulating coil: 9 V / 310 mA



——— Increasing and decreasing arrow line indicates the max. hysteresis of I-P2 curve

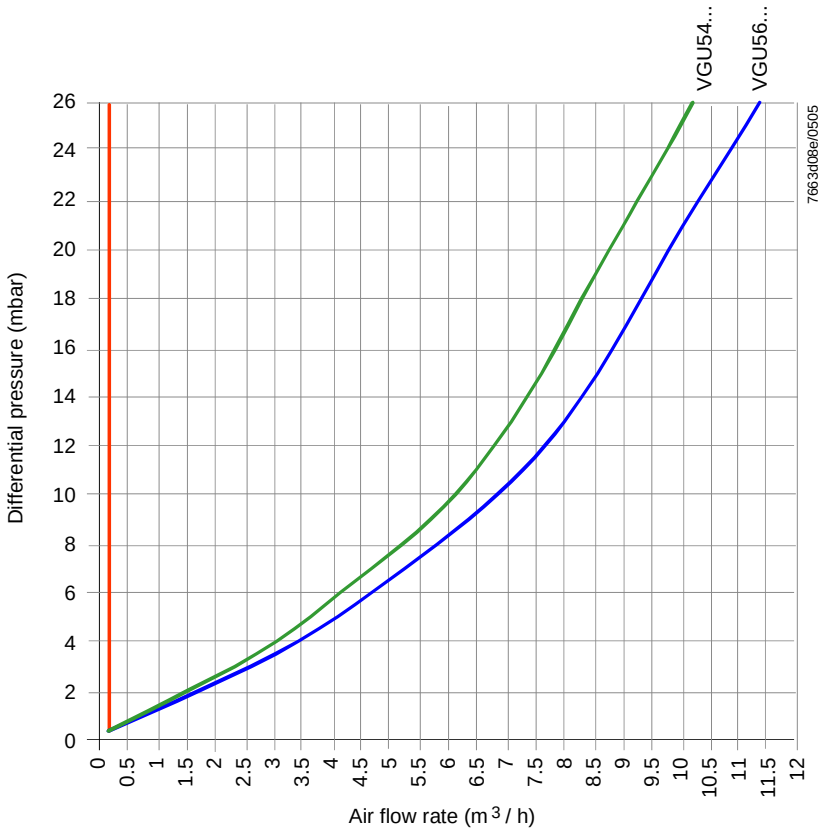
------ Max. tolerance of increasing I-P2 curve

Function (cont´d)

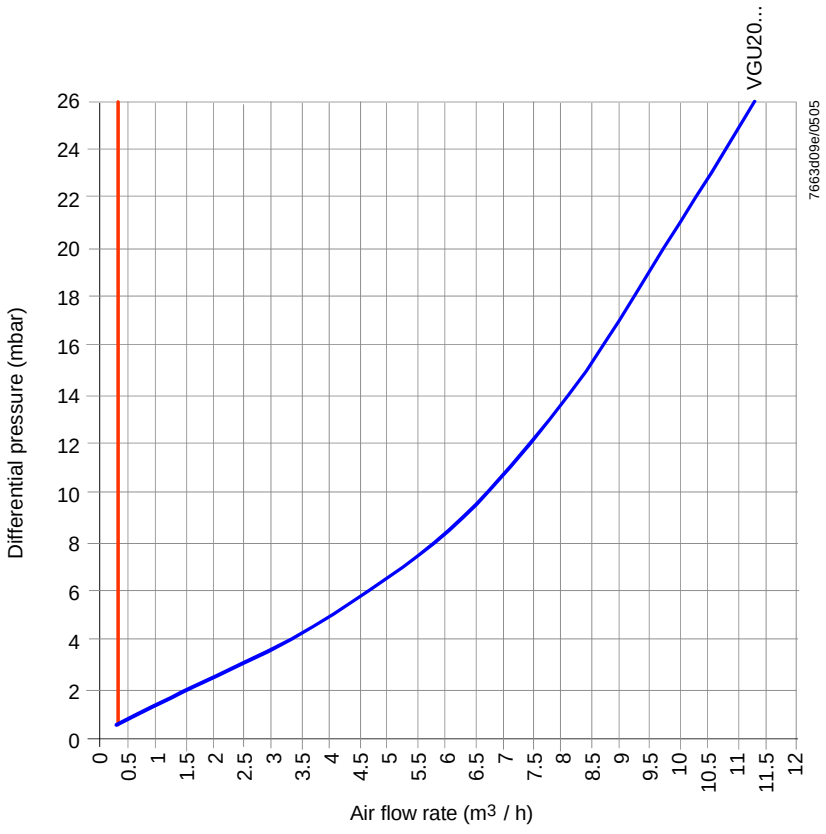
Capacity in m³/h air at pressure differential	Solenoid valve class	B + D (J)
	Flow rate at a pressure drop of 5 mbar	4.3 m³/h air

Flow chart of classes B and J

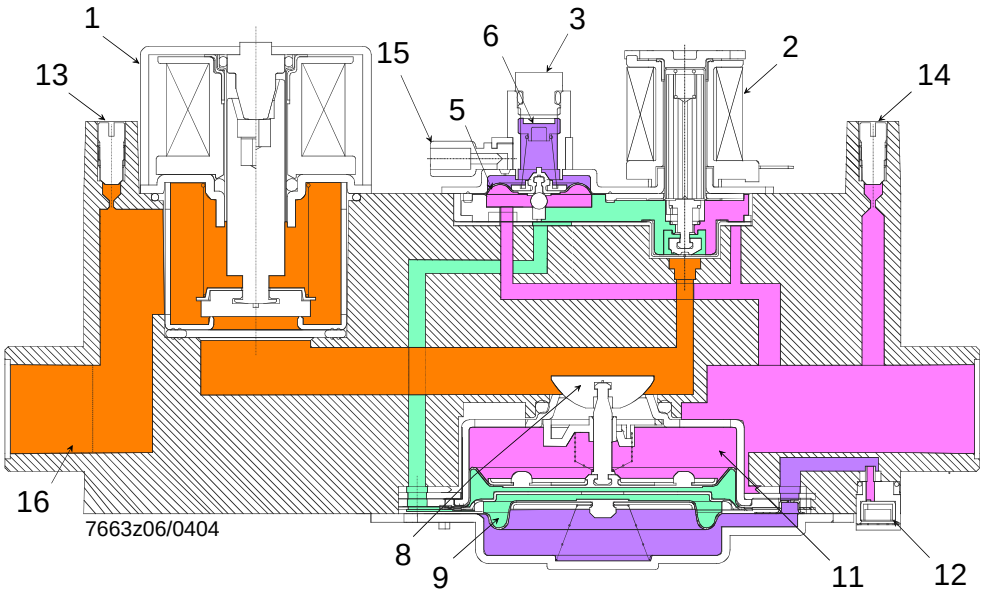
VGU54…
VGU56…



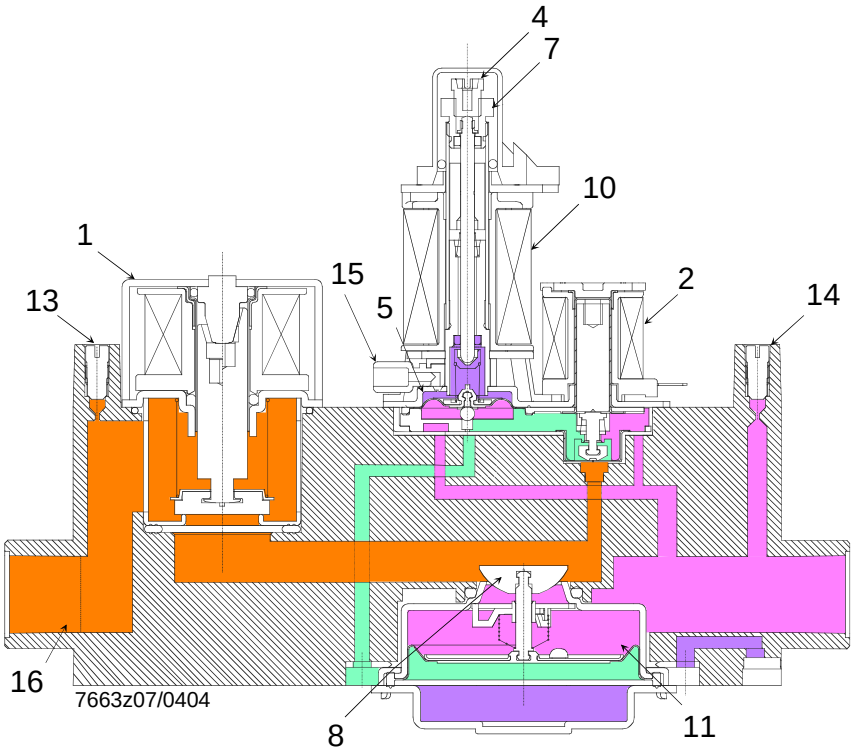
VGU20…



Sectional view of VGU2...



Sectional view of VGU5...



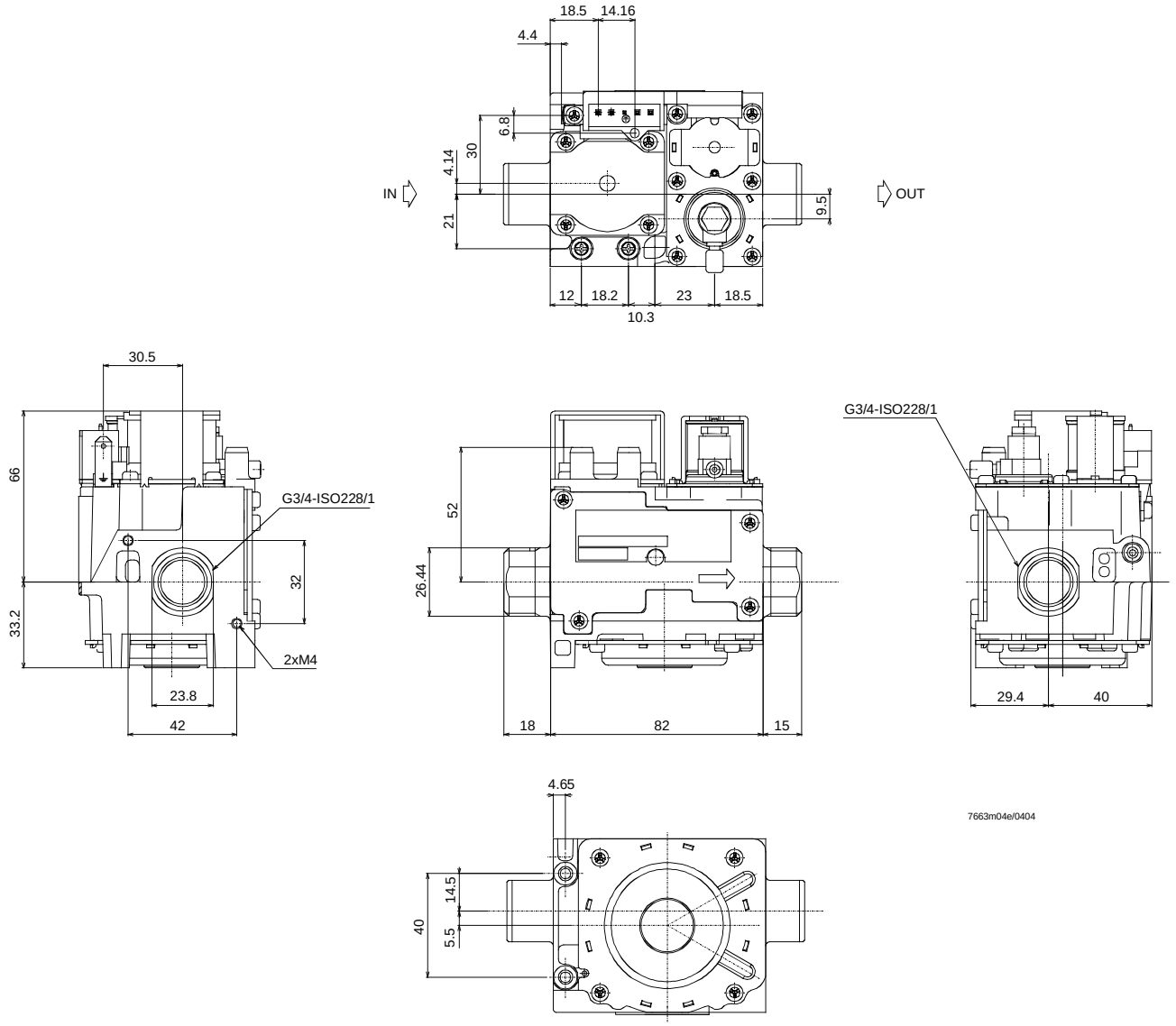
Legend

1	1st shutoff valve (class B)	8	2nd shutoff valve (regulator plug)
2	Operating valve	9	Diaphragm for slow opening
3	Cap	10	Modulating coil
4	Setting screw minimum outlet pressure	11	Main diaphragm
5	Servo diaphragm	12	Adjusting screw for slow opening
6	Setting screw for servo pressure regulator	13	Inlet pressure
7	Setting screw maximum outlet pressure	14	Outlet pressure
		15	Combustion chamber feedback pressure
		16	Filter

Dimensions

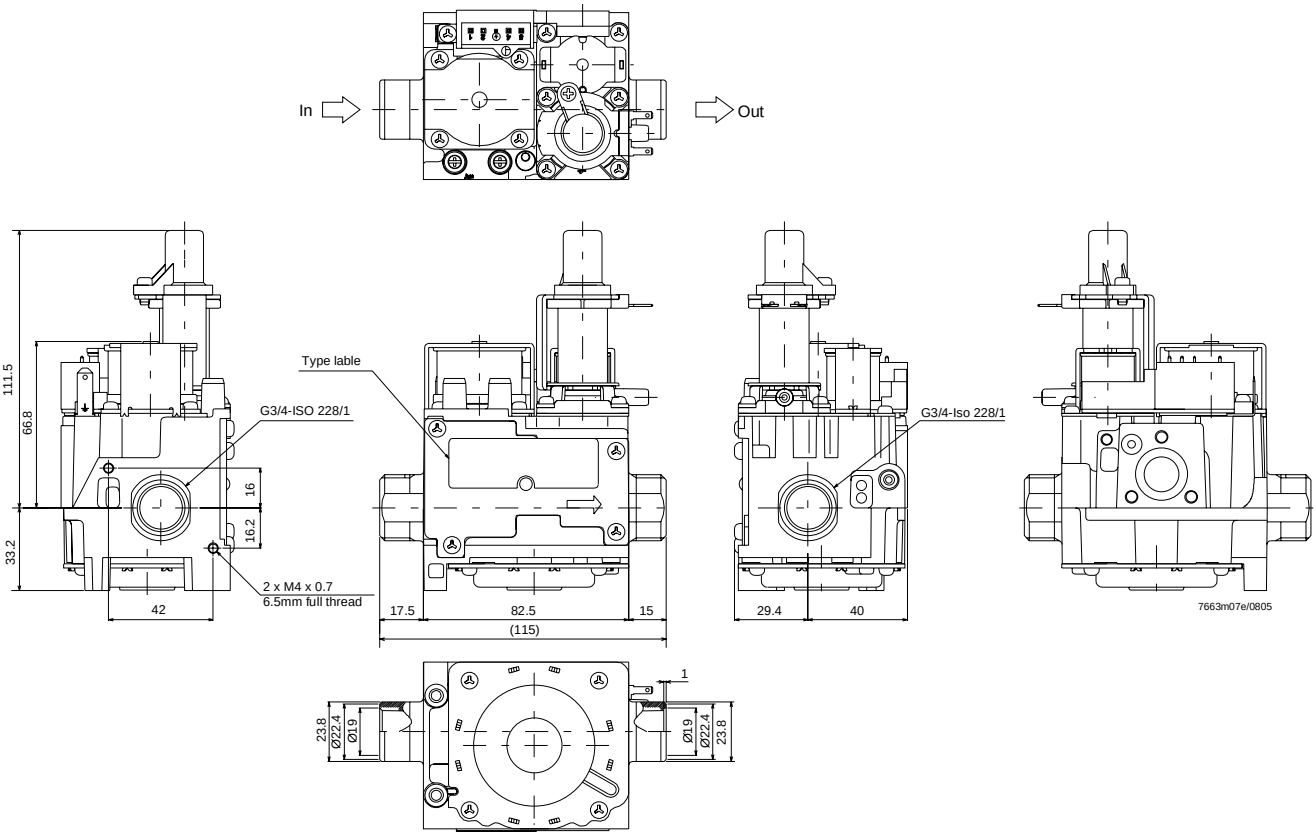
Dimensions in mm

VGU20...



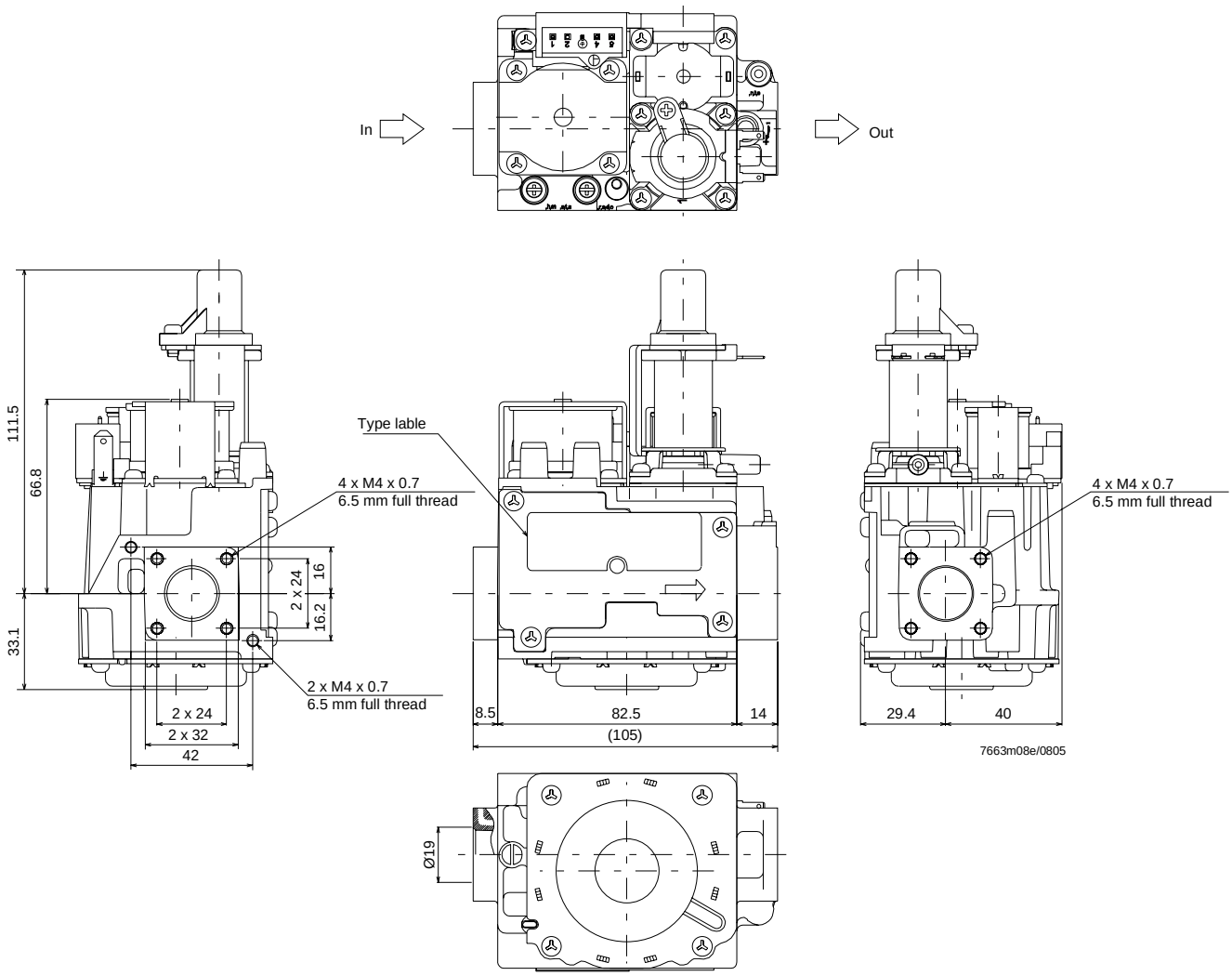
Dimensions in mm

VGU50...



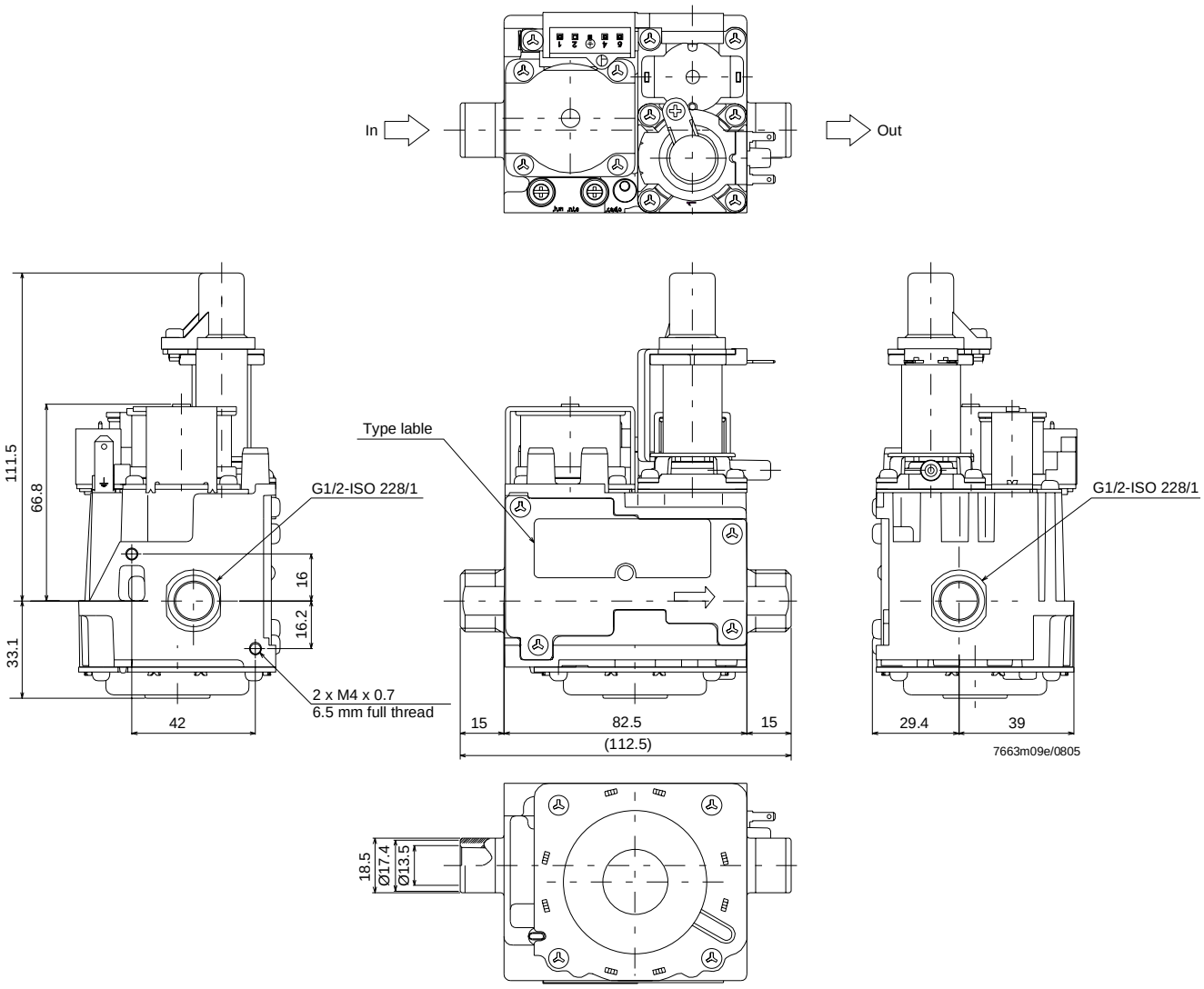
Dimensions in mm

VGU52...



Dimensions in mm

VGU54...



Dimensions in mm

VGU56...