

## V4336/V8336A

### HIGH-LOW REGULATOR "2200 SERIES"

#### PRODUCT HANDBOOK



#### APPLICATION

The High-Low regulator V4336/V8336A, when installed on a combination gas control expands its application versatility by providing the following extra functions:

- **Servo pressure regulation**  
Outlet pressure is held at a constant value regardless of fluctuations of input pressure.
- **High-Low control**  
Within the ranges specified a high and a low outlet pressure can be mechanically adjusted and electrically selected.  
High outlet pressure to appliance will be established by switching control voltage to High-Low coil on.  
By switching voltage off, outlet pressure will drop to low pressure setting.

The High-Low pressure regulator is intended to be used for manufactured, natural and LP gas.

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## DESCRIPTION

The High-Low regulator is provided with an oil damped actuator for smooth silent operation at AC supply voltage.

The High-Low regulator is an add on sub assembly which can be installed on combination gas controls.

The High-Low regulator provides the regulation functions and will therefore replace the standard pressure regulator.

The High-Low regulator provides the possibility to obtain low or high gas outlet pressure by switching OFF/ON the voltage to the low noise actuator, if the servo operator is energized.

The High-Low regulator controls the pressure of the gas burner. All applications that require a control unit to operate the burner at two different gas pressures can use the High-Low regulator.

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## FEATURES

- Direct operation from an AC supply.
- Oil filled operator for silent operation.
- Din pattern electrical connection

# SPECIFICATIONS

## Model

V4336A .... line voltage  
 V8336A .... low voltage

## Pressure feedback connection

The High-Low regulator has an M5 thread connection for pressure feedback.

## Minimum regulation capacity

0.31 m<sup>3</sup>/h

## Maximum operating pressure

The P<sub>max</sub> indication on the housing of the combination gas control is the maximum pressure at which it functions safely. However, the maximum operating pressure is limited by the pressure range of the High-Low pressure regulator concerned.

30 mbar for pressure range 3 ... 20

50 mbar for pressure range 4 ... 37

60 mbar for pressure range 8 ... 50

## Electrical connection

The High-Low coil is provided with an earth terminal.

The High-Low coil is provided with quick connect terminals suitable for 6.3 mm receptacles e.g. "Series 250" AMP fasteners.

The following "plug type" connectors can also be used (see Accessories):

- MPM type 122 connector  
 ..... order number: 45.900.416-002
- Molded plug with integral 500 mm lead at "6 o'clock"  
 ..... order number: 45.900.429-019
- Molded plug with integral 800 mm lead at "12 o'clock"  
 ..... order number: 45.900.429-020

## Regulator output pressure range

Pressure range (mbar)	Setting	
	Low	High
3 ... 20	3 ... max. setting	7 ... 20
4 ... 37	4 ... max. setting	12 ... 37
8 ... 50	8 ... max. setting	20 ... 50

The outlet pressure setting should never be above the range specified

## Electrical data

Supply voltage	Color of coil	Current (mA)	Power consumption
24 V~ 50 Hz	dark blue	190	3.2
24 V~ 60 Hz	blue	230	3.6
220/240 V~ 50 Hz	black	17.4/19	3/3.2
220 V~ 60 Hz	dark grey	23	3.6

# PERFORMANCE



## WARNING

Good and reliable performance of High-Low regulator is not only dependent on the High-Low regulator itself, but also upon the reliability of the other controls.

### Maximum allowable leakage

Each High-Low regulator has been factory tested to meet the following leakage requirements:

- outerwall: 24 cm<sup>3</sup>/h at test pressure of 150 mbar.
- seat leakage: 110 cm<sup>3</sup>/h at test pressure of 9 mbar.
- pressure feedback leakage: 650 cm<sup>3</sup>/h at test pressure of 8 mbar.

### Total setpoint shift

The total set point shift of the low and the high outlet pressure caused by repeatability, tapping (tapping impact 2 Ncm) and life cycle shall not exceed the values as mentioned in table 1.

**Table 1. Total setpoint shift**

Pressure range (mbar)	Minimum low setting (mbar)	Maximum high setting (mbar)
3 ... 20	-2.0/+2.0	-2.5/+2.5
4 ... 37	-2.5/+2.5	-4.0/+3.0
8 ... 50	-3.5/+3.5	-5.0/+3.5

### Repeatability

Repeatability should be checked after five power interruptions, maximum deviation in outlet pressure may not exceed the values as indicated in table 2.

**Table 2. Repeatability**

Pressure range (mbar)	At minimum setpoint (mbar)	At maximum setpoint (mbar)
3 ... 20	0.3	0.5
4 ... 37	0.5	1.0
8 ... 50	1.0	1.5

### Tap test

After tapping the control (tapping impact 2 Ncm max.) the deviation of the outlet pressure may be 1 mbar maximum

### Hysteresis

The deviation in the outlet pressure at minimum setting if High-Low regulator is switched ON and OFF may not exceed:

- 0.3 mbar for 3 ... 20 mbar range
- 0.5 mbar for 4 ... 37 mbar range
- 1 mbar for 8 ... 50 mbar range

### Shift on mechanical set point after live cycle

The set point shift after life cycle (with switching speed of maximum 40 cycles per minute at ambient temperature) without re-adjustment of the High or Low setting may not exceed the values as mentioned in table 3.

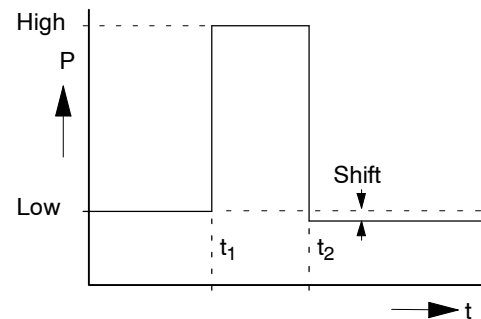
**Table 3.**

Pressure range (mbar)	At minimum setpoint (mbar)	At maximum setpoint (mbar)
3 ... 20	+0.8/-0.4	+0.5/-1.0
4 ... 37	+1.2/-0.8	+0.7/-1.8
8 ... 50	+1.5/-1.1	+1.0/-2.5

### Drift on mechanical set point during ambient temperature cycle

The variation in outlet pressure caused by temperature changes in the ambient temperature between 0 °C and 70 °C may be 1 mbar maximum.

### Outlet pressure characteristic



**Fig. 1.**

### Operable voltage range

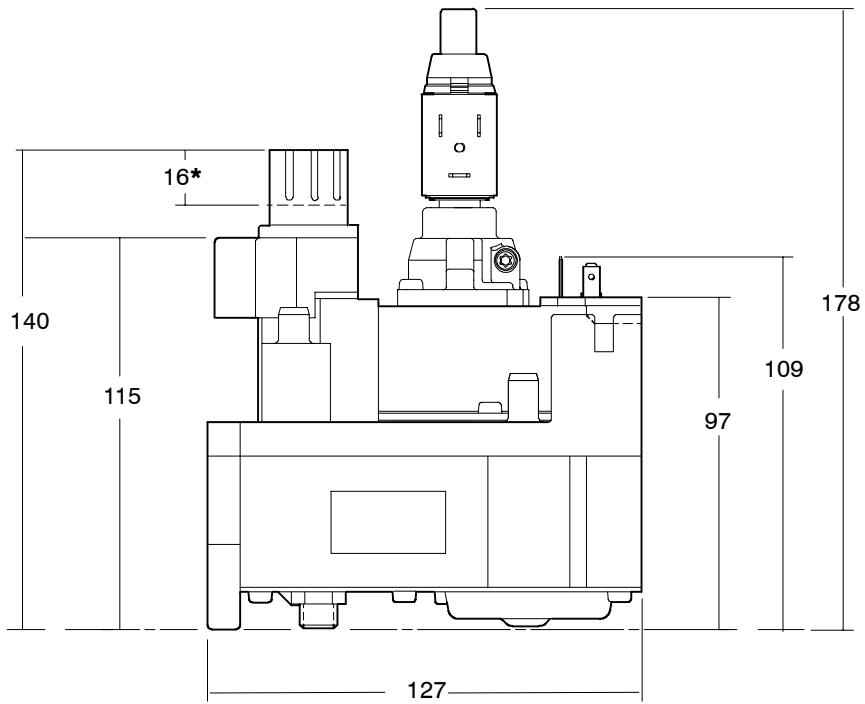
The High-Low regulator will function satisfactorily between 85% and 110% of the rated voltage.

Rated voltage	Operable voltage
24 V, 50 Hz	19.2 ... 26.4 V
24 V, 60 Hz	19.2 ... 26.4 V
220/240 V, 50 Hz	187 ... 264 V
220 V, 60 Hz	187 ... 242 V

### Pressure feedback

Within the limits of the capacity of the combination gas control, a pressure deviation on the pressure feedback connection must result in a outlet pressure deviation of the same value with an accuracy of ± 5% of the adjusted outlet pressure or 0.4 mbar, whichever is the greatest.

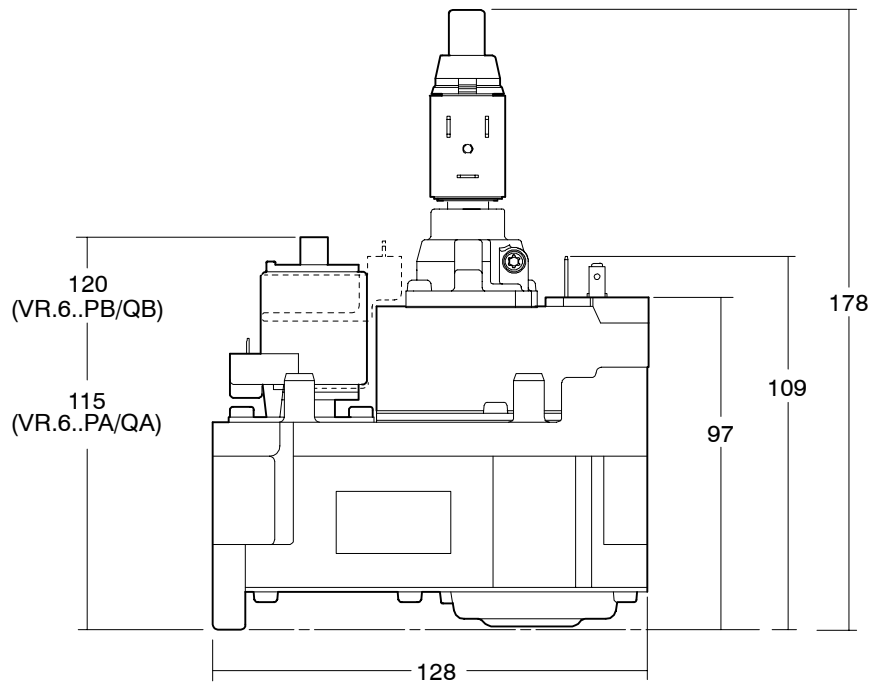
## DIMENSIONAL DRAWING



\* Knob depressed position

**Fig. 2. High-Low regulator fitted to a V4600/V8600 gas control**

## DIMENSIONAL DRAWING



**Fig. 3. High-Low regulator fitted to a VR46./VR86.. gas control**

## ADJUSTMENTS, CHECKOUT AND MAINTENANCE

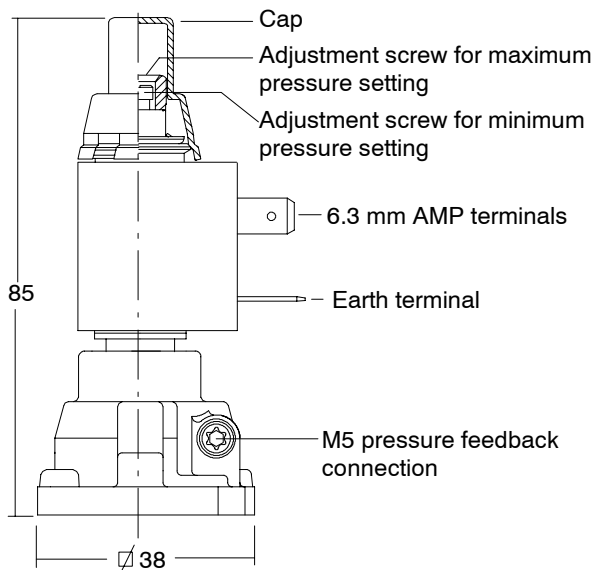


Fig. 4.

### IMPORTANT

*Adjustments must be made by qualified persons only.*

*If the appliance manufacturer supplies checkout and/or service and maintenance instructions carefully follow them. If these instructions are not provided then use the procedure outlined below.*

*Allow time for pressure to stabilize before making adjustments.*

*It is recommended that the High-Low regulator is operated a few time to ensure correct setting.*

*It should be prevented, that High-Low regulator is exposed to unnecessary forces because of wiring.*

*Before any adjustment can be made, cap has to be removed by putting a small screw driver in one of the slots and lifting the cap carefully while at the same time supporting it opposite to the screw driver (see fig. 5).*

**Maximum pressure setting must first be adjusted then minimum pressure setting can be adjusted.**

**Any adjustment of maximum pressure setting influences minimum pressure setting.**

**Never adjust the maximum setting above the range specified**

### Adjustment of maximum pressure setting

- Disconnect pressure feedback connection (if applicable)
- Connect a suitable pressure gauge to the pipe line or to the outlet pressure tap of the combination gas control concerned to measure burner pressure (measuring point must be as near to burner as possible).
- Energize High-Low regulator, set combination gas control in operation and wait until an outlet pressure is recorded on the pressure gauge.
- Use a 8 mm wrench to turn adjustment screw for maximum pressure setting clockwise to increase or counter-clockwise to decrease pressure, until desired maximum burner pressure is obtained.
- Check maximum pressure setting after several times.
- Replace cap and connect pressure feedback connection (if applicable).

### Adjustment of minimum pressure setting

- Disconnect pressure feedback connection (if applicable)
- Connect a suitable pressure gauge to the pipe line or to the outlet pressure tap of the combination gas control concerned to measure burner pressure (measuring point must be as near to burner as possible).
- Disconnect electrical connection of High-Low regulator coil.
- Set combination gas control in operation and wait until an outlet pressure is recorded on the pressure gauge.
- When minimum pressure setting needs adjustment, then use a 3.5 mm screw driver to turn adjustment screw for minimum pressure setting clockwise to increase or counter-clockwise to decrease pressure, until desired minimum burner pressure is obtained.
- Wire High-Low regulator coil in circuit.
- Check maximum pressure setting and re-adjust if necessary. Check minimum pressure setting again.

When high and low pressure setting are correct, replace cap and connect pressure feedback connection (if applicable).

### Checkout of the installation

After any adjustment, set appliance in operation and observe several complete cycles to ensure that all burner components function correctly.

### Maintenance

It is recommended to check the minimum and maximum setting annually and readjust them if necessary.

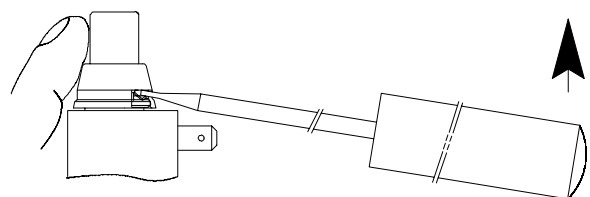


Fig. 5.



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## CONSTRUCTION AND WORKING PRINCIPLES

Low and High pressure settings are made using the steel and brass set screws on top of the High-Low regulator. These settings can be re-adjusted in the field. In such case the cap should be removed by lifting it with a small screw driver.

The regulator function will only be active if the electric on/off servo operator of the combination gas control is energized. It depends on the energization of the High-Low coil on what level the outlet pressure will be established.

The Softlite feature of the combination gas control is unaffected by the operation of the High-Low regulator.

A moveable plunger inside the coil compresses the regulator spring if the High-Low coil is energized. The high pressure setting is established by means of the plunger stop. The load of the regulator spring will become lower as soon as the High-Low coil is de-energized. The pressure level is now defined by the stop of the low pressure adjustment screw.

The coil used on the High-Low regulator provides AMP type terminals in a "DIN" pattern. This requires the use of a connector that has the same pattern or single AMP receptacles can also be used.

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## QUALITY ASSURANCE STATEMENT

Products are manufactured under an ISO 9001 (1994) based and certified Quality System.

The quality system is described in the Honeywell Combustion Controls Center Quality Assurance Programme and its related operational procedures and instructions.

The quality system is approved by Gastec against certificate number 9.302/2.

The quality organisation is responsible for defining, maintaining, improving and verification of the quality systems in the field of design, production process and field quality service.

Assembly processes are guided by work instructions.

Patrol inspections form part of the assembly processes.

At the end of the assembly phase, **all** gas controls are leakage and performance tested/adjusted.

Assembly inspection is performed by employees of the quality control department, using their own equipment.

All inspections (incoming and assembly) are performed by trained personnel and according inspection procedures.

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## STANDARDS AND APPROVALS

### Standards

The High-Low regulator is certified in combination with the combination gas controls to european standards EN 88, 161 and EN 126.

This means that the combination gas control meets more stringent requirements than laid down in the essential requirements stated in the directives and therefore meet the requirements in all EC and EFTA countries.

### Approvals

Details per O.S. number can be found in the Approvals List. In addition our controls have been certified by DIN-DVGW in Germany.

The registration number specific for each O.S. number is mentioned on the label of the control.

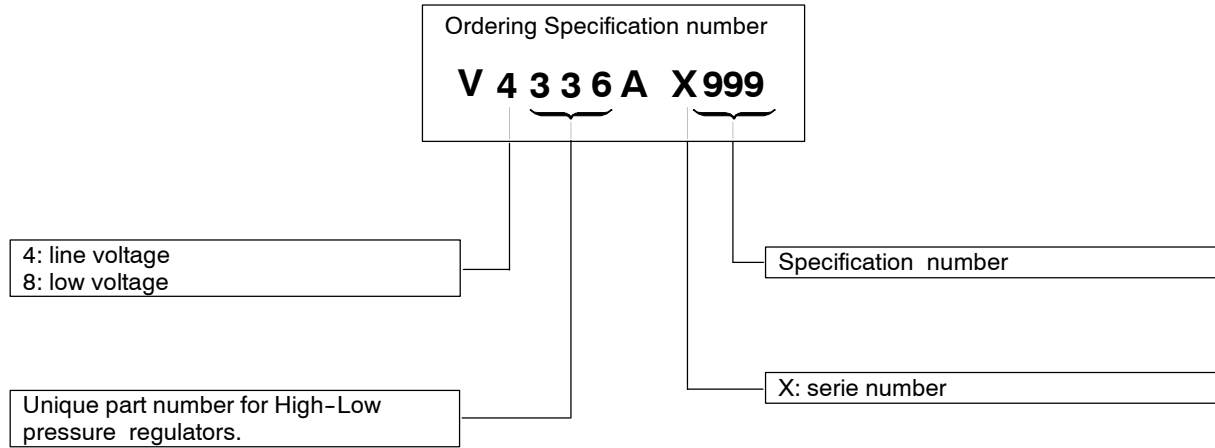
# ORDERING INFORMATION

**When ordering specify:**

- Model number of High-Low regulator required: see model number chart below.
- Order numbers of replacement parts and accessories required, i.e. flanges, compression fittings: see replacement parts/accessories.

NOTE 1.: The High-Low regulators will normally be received as part of a complete valve, which will specify **all** components including the V4336/V8336.

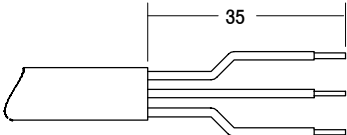
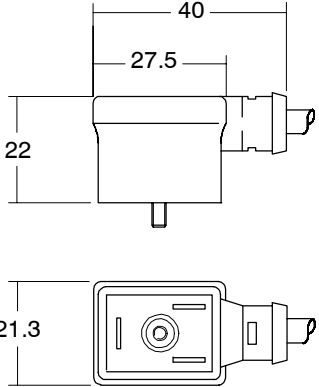
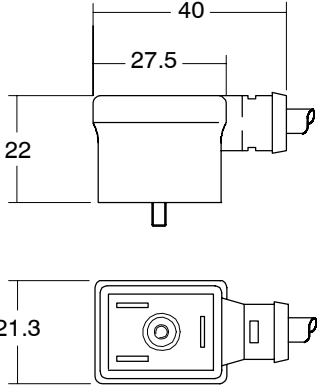
NOTE 2.: Most models of valves, replacement parts and accessories will be available under "TRADELINE" label. Ask your wholesaler for details.



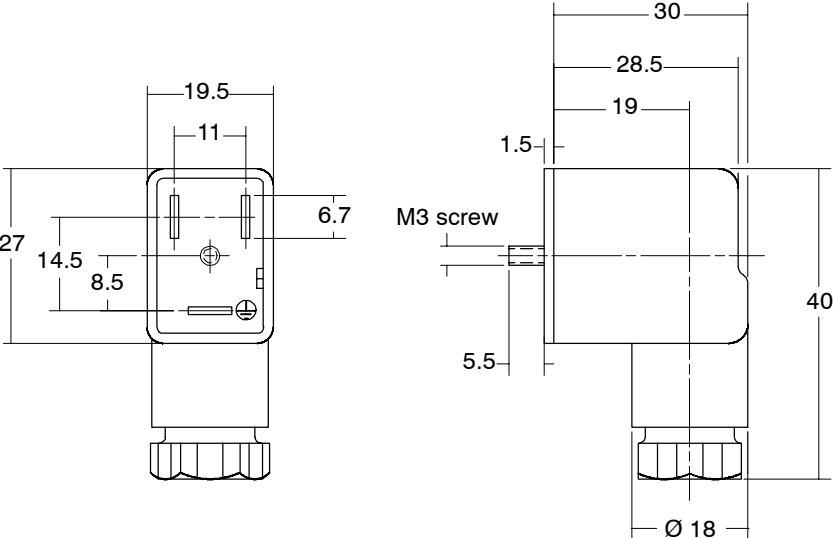
**Fig. 6. Model number chart**

# ACCESSORIES

## PLUGS WITH CABLE FOR HIGH-LOW REGULATOR

<p><b>Cable specification</b>          Wire: 0.75 mm<sup>2</sup>          External dia: 6.2 mm          Working voltage: 300/500 V          Strain relief: min pull out force 100 N          Min. ambient temperature range:          -15 ... 105 °C</p> <p><b>Mounting screw</b>          M3 x 23 mm</p> <p><b>Stripped end with splices</b></p> 	<p>Ordernumber: 45.900.429-019          Packing quantity: 100          Cable length: 500 mm</p>	
	<p>Ordernumber: 45.900.429-020          Packing quantity: 100          Cable length: 800 mm</p>	

## MPM TYPE 122 PLUG FOR HIGH-LOW REGULATOR

<p>Ordernumber: 45.900.416-002          Packing quantity: 100</p>	
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**Honeywell**

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