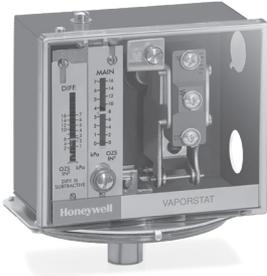


L408J VaporStat® Controllers

OPERATING INSTRUCTIONS

EN

· Edition 05.23 · 65-0287-03 · EN



CONTENTS

1 Safety	1
2 Application	2
3 Checking the usage	2
4 Features	2
5 Technical data	2
6 Accessories	3
7 Installation	3
8 Wiring	4
9 Adjustment	5
10 Test boiler installation	5
11 Controller seems to operate improperly	6
12 Checkout	6
13 Certification	6
14 Disposal	6

1 SAFETY

1.1 Please read and keep in a safe place



Please read through these instructions carefully before installing or operating. Following the installation, pass the instructions on to the operator. This unit must be installed and commissioned in accordance with the regulations and standards in force. These instructions can also be found at www.docuthek.com.

1.2 Explanation of symbols

1, 2, 3, a, b, c = Action

→ = Instruction

1.3 Liability

We will not be held liable for damage resulting from non-observance of the instructions and non-compliant use.

1.4 Safety instructions

Information that is relevant for safety is indicated in the instructions as follows:

⚠ DANGER

Indicates potentially fatal situations.

⚠ WARNING

Indicates possible danger to life and limb.

⚠ CAUTION

Indicates possible material damage.

All interventions may only be carried out by qualified gas technicians. Electrical interventions may only be carried out by qualified electricians.

1.5 Conversion, spare parts

All technical changes are prohibited. Only use OEM spare parts.

2 APPLICATION

The L408J VaporStat Controllers are line voltage pressure controllers that provide operating control or automatic limit protection for pressure systems of up to 4 psi (27.6 kPa).

All models have Microswitch™ snap switches to open or close a circuit on a pressure rise. Primarily for use in vapor heating systems, but also may be used with liquids, air, and other noncombustible gases.

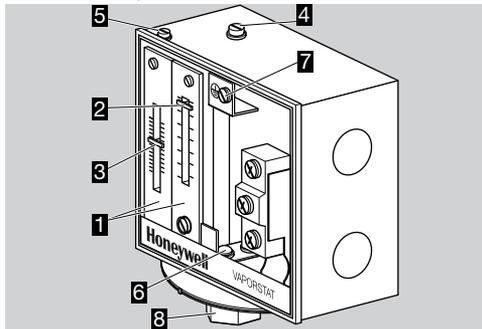
Stainless steel diaphragm also allows use with ammonia, oxygen, distilled water, and similar media.

3 CHECKING THE USAGE

Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.

This function is only guaranteed when used within the specified limits – see page 2 (5 Technical data). Any other use is considered as non-compliant.

3.1 Part designations



- 1 Scaleplates
- 2 Main scale setting indicator
- 3 Differential setting indicator
- 4 Main scale adjusting screw
- 5 Differential adjusting screw
- 6 Operating lever
- 7 Ground screw
- 8 Diaphragm assembly

4 FEATURES

- Maximum surge pressure of 15 psi (103.4 kPa).
- All models have an adjustable subtractive differential.
- Adjustments are made by screws on top of case.
- Scaleplates are marked in English (psi) and metric (kPa) units.
- Case has clear plastic cover so that pressure settings can be observed.
- Hexagonal fitting with 1/4-18 NPT internal threads for direct mounting to the 50024585-001 Brass or 14206 Steel Steam Trap (siphon loop).
- Can also be surface mounted
- Ground screw terminal.

5 TECHNICAL DATA

⚠ CAUTION

The specifications given in this publication do not include normal manufacturing tolerances. Therefore, this unit may not match the listed specifications exactly. Also, this product is tested and calibrated under closely controlled conditions, and some minor differences in performance can be expected if those conditions are changed.

Switch action

Model	Switch type	Switch action on pressure rise
L408J1009 L408J1017	Spdt	Breaks RB makes RW
L408J1025 L408J1033	Spdt ¹⁾	Makes RW ¹⁾

¹⁾ Spdt switch with terminal B omitted for miswiring compliance. See the L408J terminal blocks and internal schematic in page 4 (8 Wiring).

Switch contact ratings

Amperes at 50/60 Hz

Load	120 V AC	240 V AC
Full load	8.0 A	5.1 A
Locked rotor	48.0 A	30.6 A
Noninductive	10.0 A	5.0 A

Operating ranges

Pressure ranges		Midscale subtractive differential (adjustable)	
0 to 16 oz/ in. ²	0 to 6.9 kPa	4 to 16 oz/ in. ²	1.7 to 6.9 kPa
0 to 4 psi	0 to 27.6 kPa	4 to 16 oz/ in. ²	1.7 to 6.9 kPa

Maximum surge pressure:

15 psi (103.4 kPa).

Switch

Snap Microswitch™ in all models.

Maximum ambient temperature

150°F (66°C).

Minimum ambient temperature

-35°F (-37°C). Also refer to instructions under page 3 (7 Installation).

Adjustment means

Screws on top of controller case. Scales are marked in psi and kPa.

Electrical connections

Internal screw terminals; holes in side of case for 1/2 inch conduit.

Mounting means

Hexagonal fitting on diaphragm has 1/4-18 NPT internal threads for mounting on a pipe or steam trap (siphon loop). Also can be surface mounted by

screws through two holes (knockouts) in back of case.

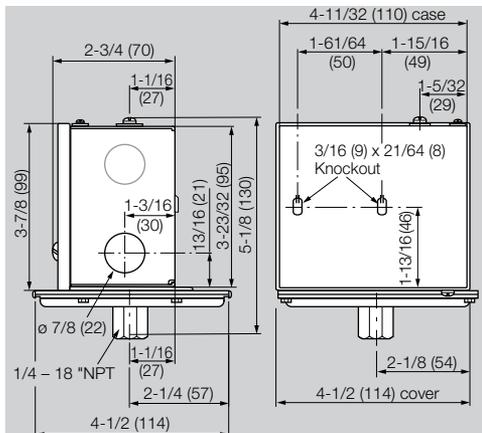
Weight

2 lb, 4 oz. (1.02 kg).

Finish

Gray.

5.1 Dimensions



6 ACCESSORIES

50024585-001 Brass steam trap

14026 Steel steam trap

7 INSTALLATION

⚠ WARNING

Electrical shock hazard!

Can cause severe injury, death or property damage.

- Disconnect the power supply before beginning installation to prevent electrical shock or possible equipment damage.

⚠ CAUTION

Equipment damage hazard!

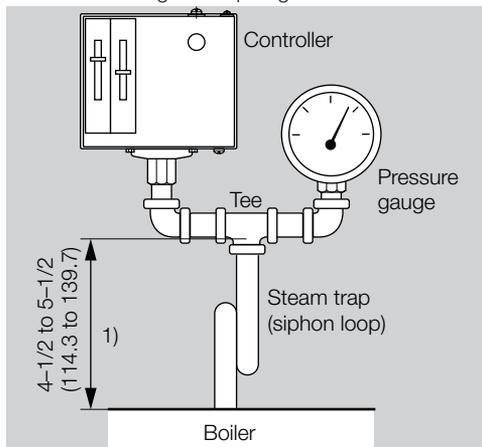
Improper use with a compressor can damage the controller.

- When using the controller with a compressor, install a dampening device (such as a needle valve, header, or surge tank) to dampen pulsations that can damage the controller or reduce its life.
- Locate the controller where the ambient temperature will not exceed 150°F (66°C).
- Use pipe compound sparingly to avoid clogging the hole in the pipe or diaphragm fitting.
- Do not tighten the controller by hand by holding the case.

- After installation is complete, check out the product operation as provided in these instructions.

7.1 Installation position

- Controllers must be mounted above the water line in steam boilers.
- They can be mounted alongside the pressure gauge, at a remote location, in a fitting provided by the boiler manufacturer, or in special mountings on low-water cutoffs.
- For mounting dimensions, see Technical data, page 3 (5.1 Dimensions).
- A steam trap must always be connected between the controller and the boiler. The steam trap prevents boiler scale and corrosive vapors from attacking the diaphragm.



- 1) 1/4"-pipe with 1/4-18 NPT external threads on both ends and 2-1/4" (57 mm) diameter loop.

7.1.1 Pressure gauge mounting

- To mount the controller alongside a pressure gauge, remove the gauge.
- In its place, install a steam trap (siphon loop) with a tee on top.
- Using elbows and pipe nipples, mount the controller and pressure gauge on the ends of the tee

7.1.2 Remote mounting

⚠ CAUTION

Excessive vibration at the boiler may affect the operation of the controller. In these cases, the controller should be remotely located, subject to the following:

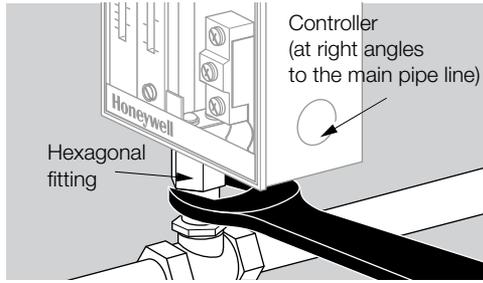
- All piping must be suitable and properly pitched to drain all condensation back to the boiler.
- The remote mounting must be solid.
- A steam trap must be used at one end of the piping.

7.1.3 Boiler mounting

- If it is not convenient to mount the controller adjacent to the pressure gauge, install a steam trap at the location recommended by the boiler manufacturer, then screw the device directly to the steam trap.

7.1.4 Mounting

- 1 Mount the controller directly on the main pipe.
- 2 Insert a tee in the pipe line, and connect a pipe nipple of appropriate size to the tee.



- 3 Screw the hexagonal fitting (1/4-18 NPT internal thread) of the controller to the pipe nipple.
- 4 To avoid leaks and damage to the case, use a parallel jaw wrench on the hexagonal fitting close to the pipe nipple.
- 5 Do not tighten the controller by hand by holding the case.
- 6 Make all pipe connections in accordance with approved standards.
- 7 After installation is complete, check out the product operation as provided in these instructions.

8 WIRING

⚠ WARNING

Electrical shock hazard.

Can cause serious injury, death or equipment.

- Disconnect power supply before beginning wiring. More than one power supply disconnect may be required.
- All wiring must comply with applicable local electrical codes, ordinances and regulations.

1 All wiring must comply with applicable electrical codes, ordinances and regulations. Use NEC Class 1 (line voltage) wiring.

2 For normal installations, use moisture-resistant NO. 14 wire suitable for at least 167°F (75°C) if you are using the controller with a flame safeguard primary control or at least 194°F (90°C) if you are using it with a programming control.

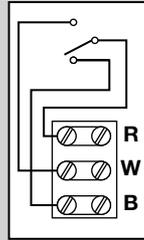
3 For high temperature installations, use moisture-resistant No. 14 wire, selected for a temperature rating above the maximum operating temperature.

4 All models have a terminal block inside the cover (see Fig. 3) and a 7/8 in. (22 mm) hole in one side for 1/2 in. (13 mm) conduit, cable or wires. Remove the front cover by loosening the screw at the bottom of the main scale.

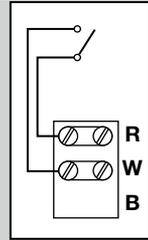
5 For wiring, see the diagrams and schematics below. Follow the burner or boiler manufacturer wiring diagram, if provided.

- 6 Make sure the loads do not exceed the Switch contact ratings, see page 2 (5 Technical data).
- 7 Replace the front cover when wiring is complete.

L408J terminal blocks and internal schematic



**L408J1009,
L408J1017**
breaks R-B,
makes R-W on
pressure rise to
set point

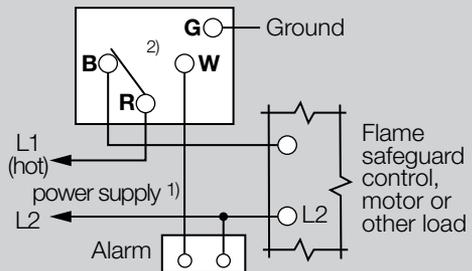


**L408J1025,
L408J1033**
makes on pressure
rise to set point

1) Terminal B omitted for miswiring compliance.

L408J1009 or L408J1017 used as a high limit, with an alarm circuit

SPDT controller (high limit)

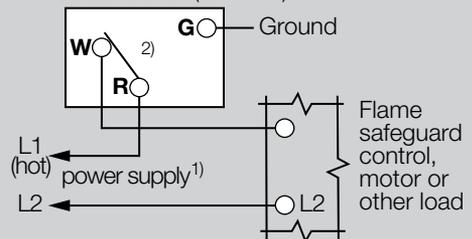


1) Provide disconnect means and overload protection as required.

2) Breaks R-B and makes R-W when pressure rises to setpoint.

L408J1025 or L408J1033 used as a low limit

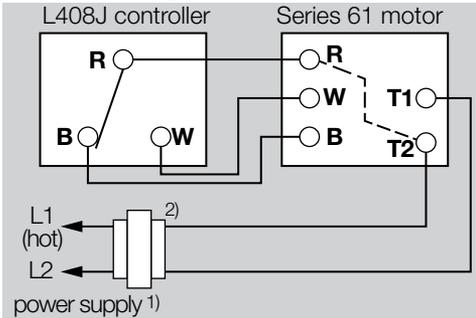
SPST controller (low limit)



1) Provide disconnect means and overload protection as required.

2) Breaks R-W when pressure falls to setpoint minus differential.

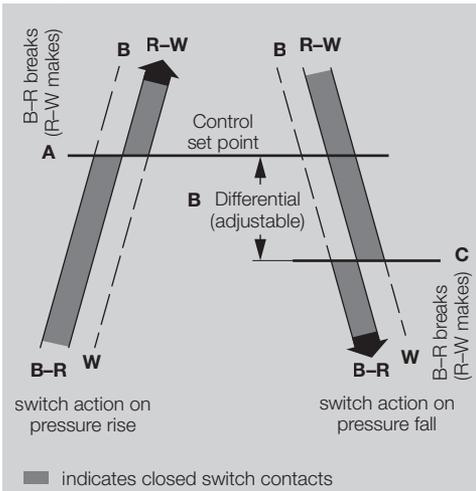
L408J controlling a Series 61 Motor (Modutrol).



- 1) Provide disconnect means and overload protection as required.
- 2) Transformer may be internal or external to motor.

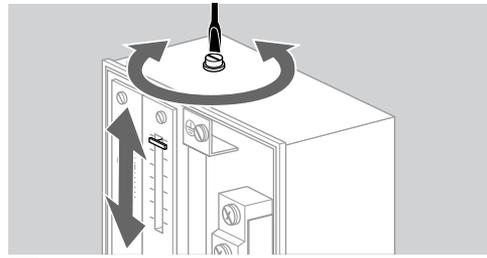
9 ADJUSTMENT

In all models, the differential is subtractive from the main scale setpoint. The upper operating point is determined by the main scale setpoint, while the lower operating point is determined by the main scale setting less the differential setting. Operating points, see below.

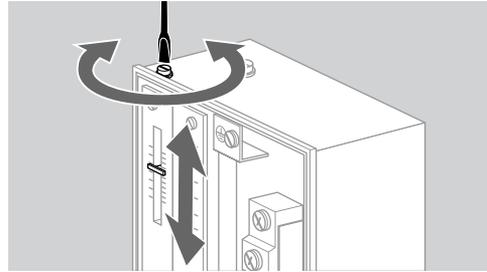


Operation of switch on pressure rise and fall

- 1 Adjust the main scale setpoint for the desired operating pressure by turning the main scale adjusting screw on the top of the case until the main scale setting indicator is at the desired value.



- 2 Adjust the differential setting by turning the differential adjusting screw until the differential setting indicator is at the desired value.



→ The scales are marked in psi and kPa.

10 TEST BOILER INSTALLATION

If the controller is being used on a boiler installation, test it as follows.

- 1 Note the boiler pressure by checking the boiler pressure gauge.
 - To perform this test properly, the boiler should have a pressure reading near the middle of the controller main scale range.
- 2 Turn the main scale adjusting screw (see Fig. 8) until the main scale setting indicator on the controller corresponds to the boiler pressure gauge reading.
 - The L408J should make the R-W and break the R-B circuit automatically when the boiler pressure gauge reading equals or slightly exceeds the controller setting.
- 3 If the controller is operating properly, turn the main scale adjusting screw (see Fig. 8) until the main scale setting indicator is at the desired setpoint

11 CONTROLLER SEEMS TO OPERATE IMPROPERLY

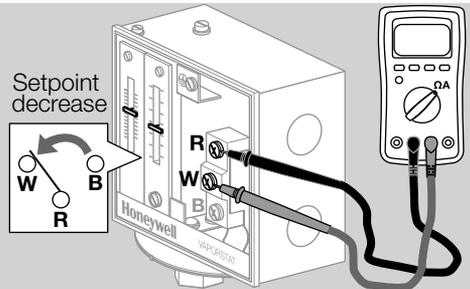
→ If the controller is suspected of operating improperly, it may be checked further as follows.

⚠ CAUTION

Please note the following to avoid damage:

- Disconnect all power to the controller!
- Fault-clearance must only be undertaken by authorized trained personnel.

- 1 Loosen the cover screw and remove the cover.
- 2 Connect an ohmmeter between the switch terminals.



- 3 Lower the setpoint of the controller (simulating a pressure increase) through a range greater than the differential. The switch should either make or break, depending on the model of the controller. See the switch action in page 2 (5 Technical data).

→ If it makes, the ohmmeter will read zero; if it breaks, the ohmmeter will read infinity.

- 4 Raise the setpoint of the controller (simulating a pressure decrease) through a range greater than the differential. The switch should break or make, just the opposite of the result before.

12 CHECKOUT

→ After the controller has been installed, wired and adjusted, it should be tested with the system in operation.

- 1 First, allow the system to stabilize.
- 2 Then, observe the operation of the controller while raising and lowering its setpoint.

FOR MORE INFORMATION

The Honeywell Thermal Solutions family of products includes Honeywell Combustion Safety, Eclipse, Exothermics, Hauck, Kromschroder and Maxon. To learn more about our products, visit ThermalSolutions.honeywell.com or contact your Honeywell Sales Engineer.

Honeywell Process Solutions
Honeywell Thermal Solutions (HTS)
2101 CityWest Blvd
Houston, TX 77042
United States
ThermalSolutions.honeywell.com

→ Pressure should increase when the setpoint is raised and decrease when the setpoint is lowered.

- 3 Also, check the make and break points of the controller.

→ If they do not agree with a separate, accurately calibrated pressure gauge, a slight adjustment of the scaleplate(s) may be necessary.

→ Use accurate pressure testing equipment when checking out the controller.

→ Use a separate, calibrated pressure gauge to verify that the final pressure setpoint is within 5% of the desired value.

13 CERTIFICATION

13.1 UL listed



Underwriters Laboratories Inc. listed: File No. MP466, vol. 10, Guide No. MBPR.

13.2 CSA approved



Canadian Standards Association (CSA): File No. LR1620, Guide No. 400E-0

14 DISPOSAL

Devices with electronic components:

WEEE Directive 2012/19/EU – Waste Electrical and Electronic Equipment Directive



At the end of the product life (number of operating cycles reached), dispose of the packaging and product in a corresponding recycling centre. Do not dispose of the unit with the usual domestic refuse. Do not burn the product.

On request, old units may be returned carriage paid to the manufacturer in accordance with the relevant waste legislation requirements.

Honeywell