

THE XHS-410 /411 & XHM-410 SERIES

Operating and Service Manual

Series include all variants of XHS-410/411 and XHM-410

Issue A
June 2023



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1. Description

The Pressure Tech single heated regulator is offered under three main categories:

- 📖 XHS-410 – Single heated, diaphragm sensed pressure regulator.
- 📖 XHS-411 – Single heated, piston sensed regulator.
- 📖 XHM-410 – Single heated manifold unit.

XHS-410 single heated pressure regulators are rated to a maximum 300 bar inlet pressure (210 bar when fitted with the standard PCTFE seat). The maximum inlet pressure increases to 414 bar on the XHS-411 option. The maximum control range of the XHS-410 and XHS-411 is 0-35 bar and 0-150 bar respectively.

The XHM-410 is an electronically heated manifold intended for elevating the temperature of media flowing through it.

Regulator housings and manifold blocks are machined from 316 SS (stainless steel). This ensures maximum protection against the media on which they will be used and the environment in which they will be placed.

The electronics controlling the heat input to the regulator/manifold are installed within a EXDIRECT flameproof enclosure (EX200). The electrical housing is available either of Aluminium Alloy or Stainless-Steel construction, with mounting holes to provide a secure connection to the panel. The user must ensure that media in contact with the regulator is compatible with these materials.

The enclosure has three ½” NPT (or M20) entries through which the electrical supply can be made (ref. ‘Wiring Instructions’).

All unused entries must be sealed with ATEX approved ½” NPT (or M20) Blanking Plugs.

The XHS-410 models are fitted with a single heater sheath enclosing a 100W cartridge heater within. A thermal fuse with a 70°C limit is placed near the base of the cartridge to protect the regulators from exceeding their T3 temperature rating. This fuse automatically resets when the sheath temperature falls by about 30% (50°C. approx.)

The XHM-410 uses a 150W cartridge which is housed into the manifold block. The manifold incorporates a resettable thermal fuse with a limit of 150°C limit to protect the manifold from exceeding its T3 temperature rating. This fuse automatically resets when the manifold temperature falls by about 30% (105°C. approx.)

The XHS and XHM should not be exposed to any vibrations or impacts and should be securely fastened in accordance with the Installation Instructions below, and should be limited to the vibration limits stated in the Technical Section.

Any pressure gauges used on the regulator must be designed as ‘Full Safety Pattern’ to BS1780, ANSI B40-1 and EN837-1.

2. Installation and Wiring



Before installation, check the nameplate (where applicable) and model number reference and ensure that the voltage and pressure range comply with the installation requirements.

*Note: The installation of the XHS-410, XHS-411 and XHM-410 should be in accordance with EN 60079-14

2.1 Enclosure (Junction Box)

The whole assembly should be securely fastened to a back plate or panel using the corner holes in the junction box. For added support, the top of the regulator can be panel mounted around the bonnet, using the optional panel nut (PT C 024).

*Note: The panel nut alone should not support the regulator, i.e. with the box left freestanding.

2.2 Regulator

The pressure regulator is supplied with 1/4" NPT connections for both the inlet and outlet ports. Some units are supplied with connections for gauges, and these are also 1/4" NPT connections. The maximum supply pressure to the regulator should not exceed the maximum pressure indicated on the regulator label. The pipe work and gauges should be sealed with the regulator using PTFE tape.

*Note: Pressure Tech do not recommend sealant compound for pipe work connections.

2.3 Manifold

The heated manifold is supplied with 1/4" NPT connections for both the inlet and outlet ports. The maximum supply pressure to the manifold should not exceed 300bar pressure. The pipe work should be sealed with the regulator using PTFE tape.

*Note: Pressure Tech do not recommend sealant compound for pipe work connections.

2.4 Wiring Instructions

Ensure that no electrical power is supplied during maintenance, installation or servicing this product. The power supply to the junction box will require a certified cable gland to be used. The connection for the cable gland on the box is 1/2" NPT.

*Note: Wiring should be made in accordance with BS7671:2018 'Requirements for Electrical Installations'.

2.4.1 Electronic control Module Terminal Identification

The terminals of the electronic control module are identified as shown below:

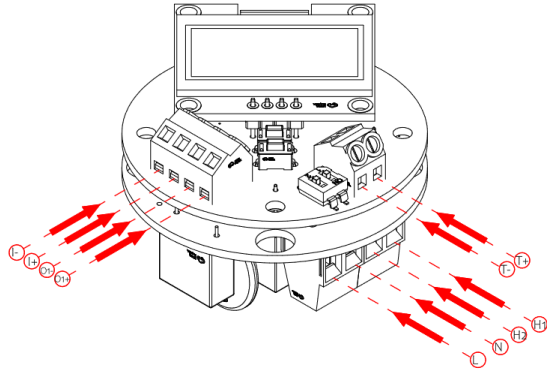


Figure 1

L	Live Mains voltage (110-240 VAC)
N	Neutral Mains voltage (110-240 VAC)
H1	Heater supply (No polarity)
H2	Heater Supply (No polarity)
T+	Built-in thermocouple positive terminal
T-	Built-in thermocouple positive terminal
I+	Positive terminal for 4-20mA Analog input
I-	Negative terminal for 4-20mA Analog input
O+	Positive terminal for 4-20mA Analog output
O-	Negative terminal for 4-20mA Analog output

To access the electronic control module where the cables would terminate, proceed as shown in Figure 2 below.

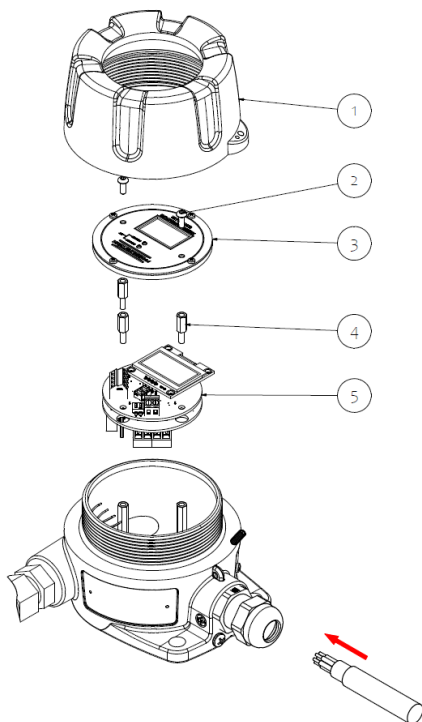


Figure 2

Unscrew the cover (Item 1), then remove the two button head screws (Item 2). This will release the display plate assembly (Item 3). Once the display plate assembly is removed, unscrew the three standoffs (Item 4) to free the electronic control module (Item 5).

The electronic control module has 4 free screw terminals in front and 2 free screw terminals at the rear. **The terminals free to use are highlighted in blue on the table above.** Carefully pull the electronic control module out of the enclosure to reveal the rear screw terminals.

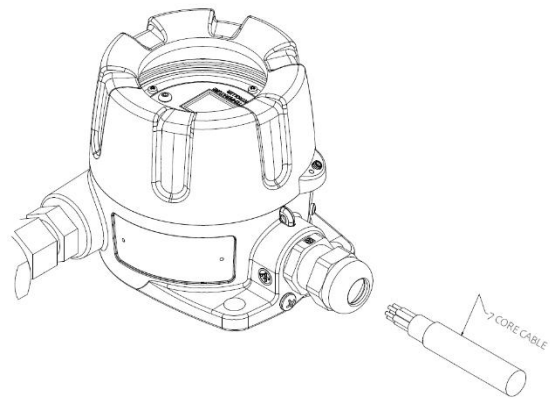


Figure 3

If both analogue input and output are to be used, a 7-core cable is recommended. As shown in Figure 3, Feed the supply cable through the cable gland (not supplied) and secure the wires to the rear terminal block marked as “mains” ensuring the Live and Neutral are correctly connected.

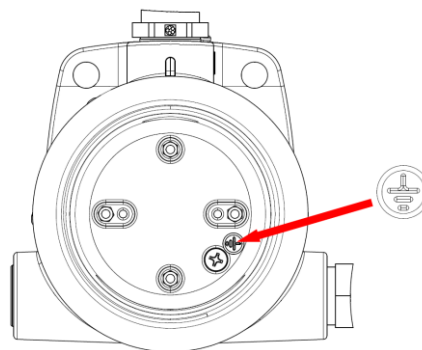


Figure 4

This unit can be grounded by using the internal grounding screw shown in Figure 4. The Analogue input and output can be connected to the terminals described in Figure 1.


MAX. CABLE SIZES		
	mm ²	AWG
L	3.31	12
N	3.31	12
≡	3.31	12
I+	0.823	18
I-	0.823	18
O+	0.823	18
O-	0.823	18

Once all cables have been terminated, the unit can be reassembled by following the steps in Figure 2 in reverse order.

2.5 Temperature Adjustment

This unit is equipped with both local and remote temperature adjustment feature.

2.5.1 Local Temperature Adjustment

 Before adjusting the temperature locally, ensure that there are no explosive gases present in the atmosphere. Remove the cover to gain access to the local temperature control buttons shown in Figure 5.

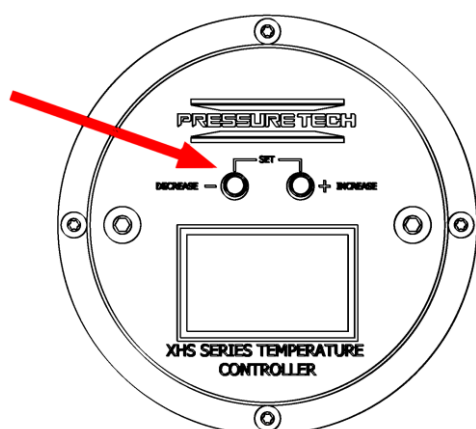


Figure 5

By pressing either the “increase” or “decrease” button once, the Setpoint is displayed. Subsequently pressing either the “increase” or “decrease” button will

increase or decrease the temperature in steps of 5°C [41°F].

2.5.1.1 Setting the Temperature Unit

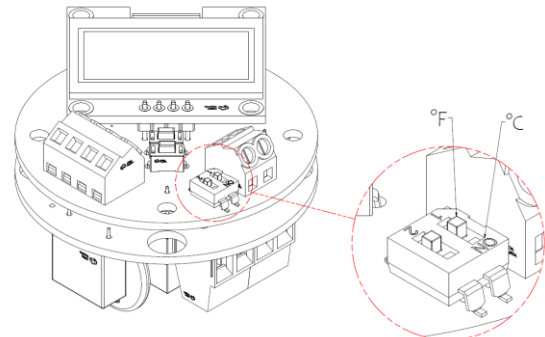
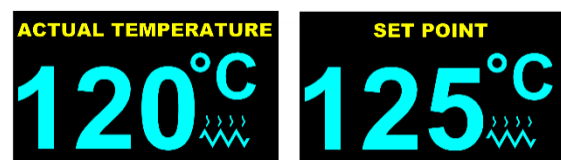


Figure 6

The unit of temperature displayed on the XHS-410 can be changed from °C to °F as shown in Figure 6. When switch 1 is in the (up) position, the unit of temperature displayed will °C and when in the (down) position, the unit of temperature displayed will °F.

2.5.2 Local Temperature display

This unit is equipped with a 2-colour OLED display. The display shows either the setpoint or actual temperature.



The temperature setpoint can be displayed locally anytime by pressing either the “increase” or “decrease” button once. Whenever heat is being supplied to the heater especially in the event of increasing the setpoint, the heat icon is displayed on the screen momentarily.



2.5.3 Remote Temperature Control

The temperature of this unit can be controlled remotely using an analog 4-20mA signal. The signal is calibrated such that:

$$4\text{mA} = 30^{\circ}\text{C} [86^{\circ}\text{F}]$$

$$20\text{mA} = 180^{\circ}\text{C} [356^{\circ}\text{F}]$$

2.5.3.1 Switching from Local to Remote Temperature Control.

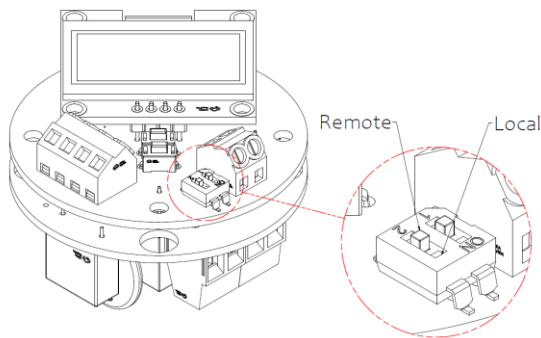


Figure 7

To switch from local temperature adjustment to remote temperature control, move switch 2 from the (up) position to the (down) position as shown in Figure 7. This should be done while the unit is powered off.

2.5.3.2 Analog Signal Output.

This unit includes provision of an analog signal output for remote temperature display or data logging. The panel meter used for remote display should be calibrated such that:

$$4\text{mA} = 30^{\circ}\text{C} [68^{\circ}\text{F}]$$

$$20\text{mA} = 180^{\circ}\text{C} [320^{\circ}\text{F}]$$

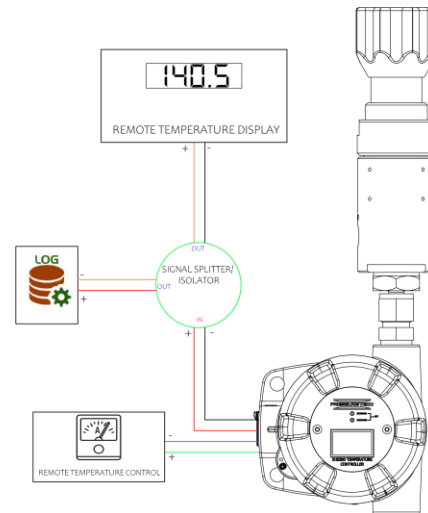


Figure 8

2.6 Recommendations for safe system use.

2.6.1 Care when replacing heater cartridges

For regions operating at mains voltage of 240V, care should be taken if replacing heater cartridge, to ensure that the correct cartridge is fitted.



Figure 9

A 110V heater cannot be used on this device in regions operating at 240V mains supply. Failure to install the right heater could result in permanent damage to the device.

The table below shows the spare part numbers for the heater cartridges available for this heater controller.

VOLTAGE	WATTAGE	PART NUMBER
110V	100 W	PT-EHR-300-016-120
	150W	PT-XHM-300-005-120
240V	100 W	PT-EHR-300-016-230
	150W	PT-XHM-300-005-230

2.6.2 System design considerations

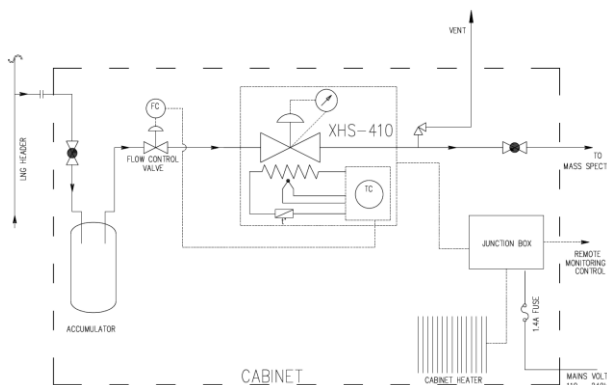


Figure 10

Sometimes, it may be desirable to make the control of the heat generated from the XHS-410 dependent on the flow through the regulator. This will in particular, be a good way to prolong the life of the regulator seat in cases where the regulator is idle for a long period of time. In some other instances, it may be found that the phase change of the flowing gas is better controlled by some dynamic relationship between its flow and the amount of heat supplied to it at certain pressures. By using the analog 4-20mA output of a mass flow controller such as shown in Figure 10, such control is possible with the XHS-410.

2.6.3 Resettable Thermal Fuse

The XHS-410 is fitted with a 70°C snap-action resettable thermal fuse which is designed to be activated once the maximum thermal operating conditions of 60 ambient temperature **and** 180°C heater temperature are met. Once activated, power to the heater is cut off and automatically resets when the temperature falls by 30% (~ 50°C).

3. Operation

3.1 Adjusting the Regulator

For the XHS-410 & XHS-411 series of regulators, turning the hand wheel clockwise compresses the spring, which in turn opens the main valve and allows the inlet pressure to pass through the orifice until the outlet pressure is equivalent to the loading forces set by the compressed spring.

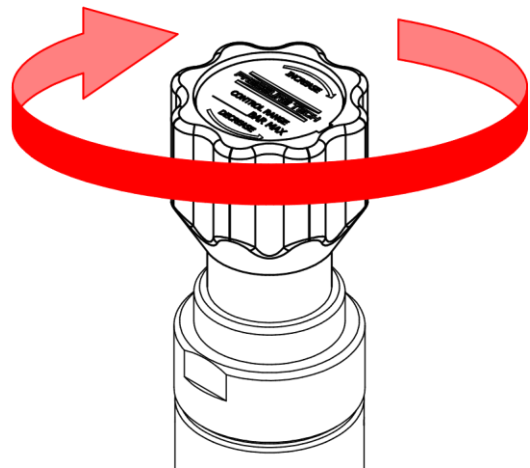


Figure 11

4. Mounting Options

Options for mounting the XHS-410 include:

Pipe Mounting:

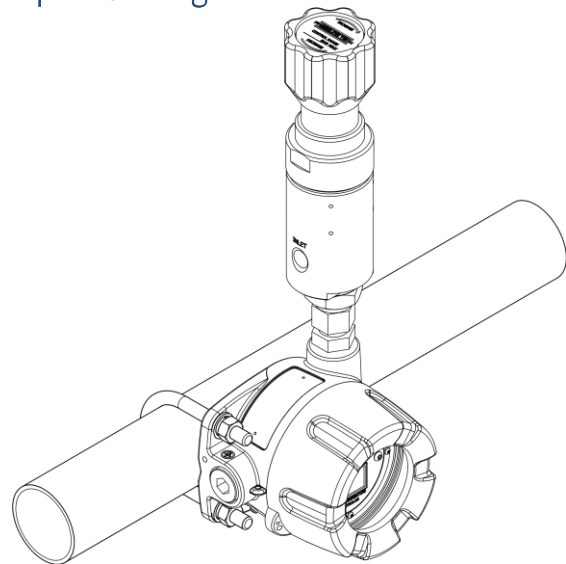


Figure 12

The XHS-410 / XHS-411 includes options for pipe mounting as standard. Recommended pipe diameters are from 25mm – 50mm. Recommended U-Bolts

are M8 (5/16" UNC) with centre distance of 59mm (2 5/16").

Direct Mounting:

The XHS-410 can be mounted directly onto a panel using two M8 (5/16" UNC) screws on the mounting holes provided as shown in Figure. 13 below.

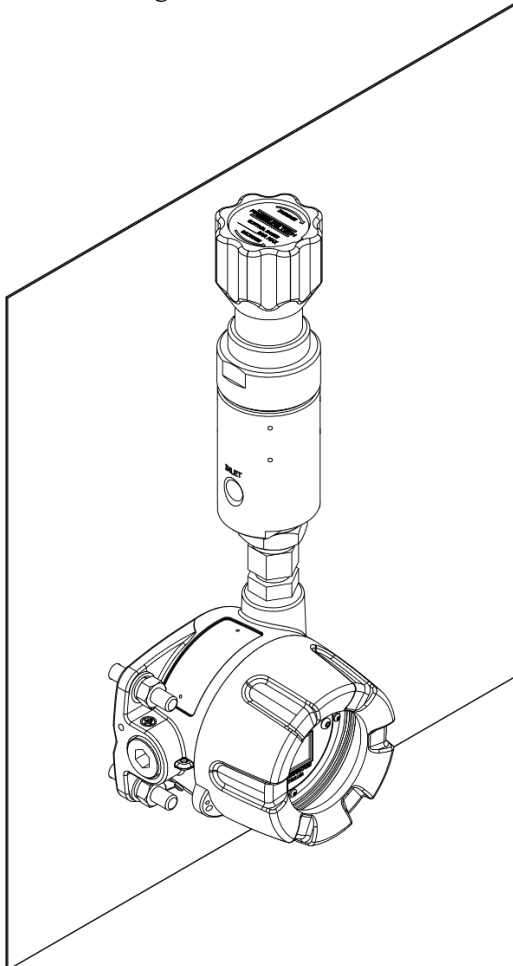


Figure 13

As seen in Figure. 14, a minimum clearance of 10mm between the panel and handwheel will be required to allow the handwheel to be turned freely.

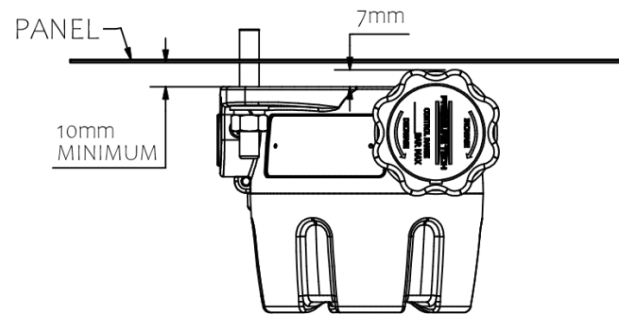


Figure 14

Using Panel Mount Ring (PT-C-024):

An option panel mount ring PT-C-024 shown in figure 15 can be used to mount the XHS-410. This requires a hole cutout diameter of 35mm on the panel and the handwheel will have to be removed prior to installation.

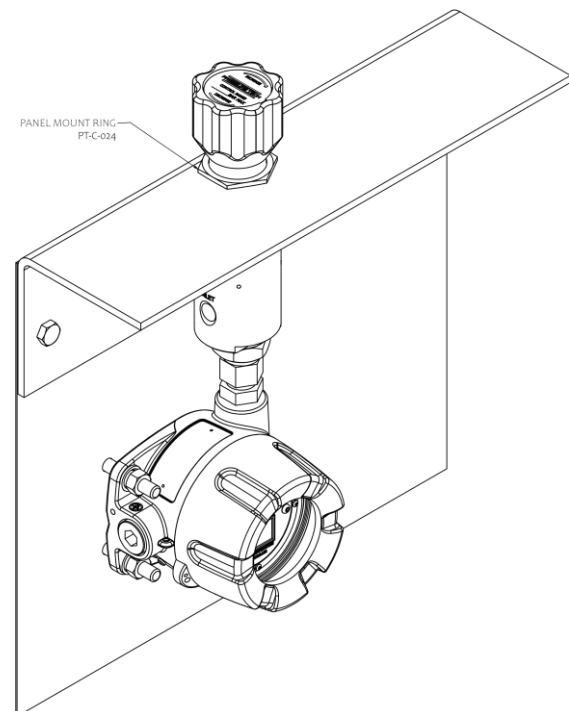


Figure 15

Conversion Mounting (XHS-300 Series to XHS-400 Series):

In situations where the XHS-300 series regulators are being replaced with the XHS-400 series regulators and the pre-drilled mounting holes need to be used, a conversion bracket shown on Figure. 16 can be used.

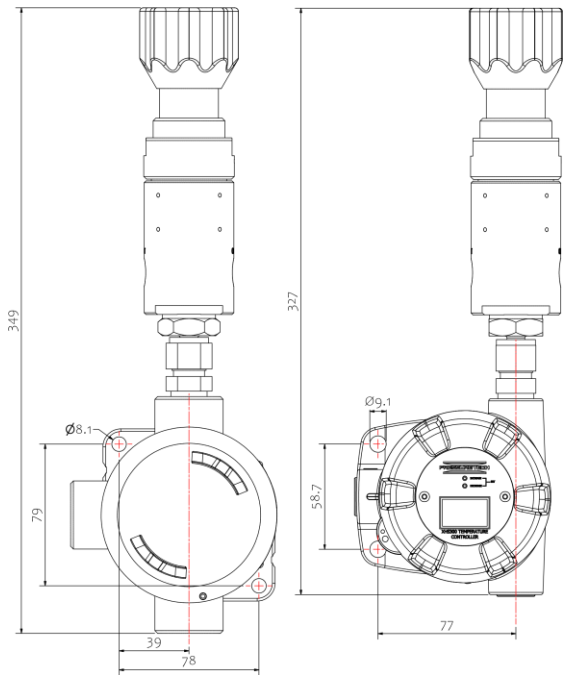


Figure 16

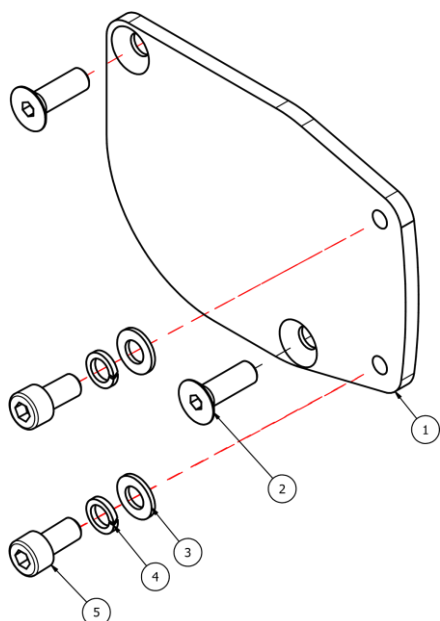


Figure 17

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	XHS CONVERSION BRACKET	XHS CONVERSION BRACKET
2	2	FIT-M8-25-A4-70.0-SKT-CSK	M8 COUNTERSUNK SKT HD SCREW
3	2	FIT-M8-A4-FLT-WASHER	M8 - WASHER
4	2	FIT-M8-A4-SPR-WASHER	M8 SPRING WASHER
5	2	FIT-M8X16-SS-A2-CAP-SCRW	M8 x 16 SKT. HD CAP SCREW

5. Specific Conditions of Use

The Equipment shall not be energised without a regulator or manifold attached. On non-venting regulators with pressure on the outlet, the hand wheel shall not be turned anti-clockwise, in this case, pressure shall be reduced by venting downstream of the regulator and turning the hand wheel simultaneously anti-clockwise.

An external earth or equipotential bond in accordance with the requirements of EN 60079-0 clause 15 shall be made via the mounting holes provided on the enclosure. The size of the bonding cable shall be a minimum of 4mm².

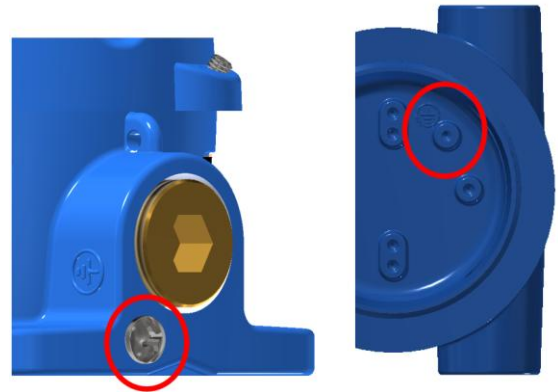


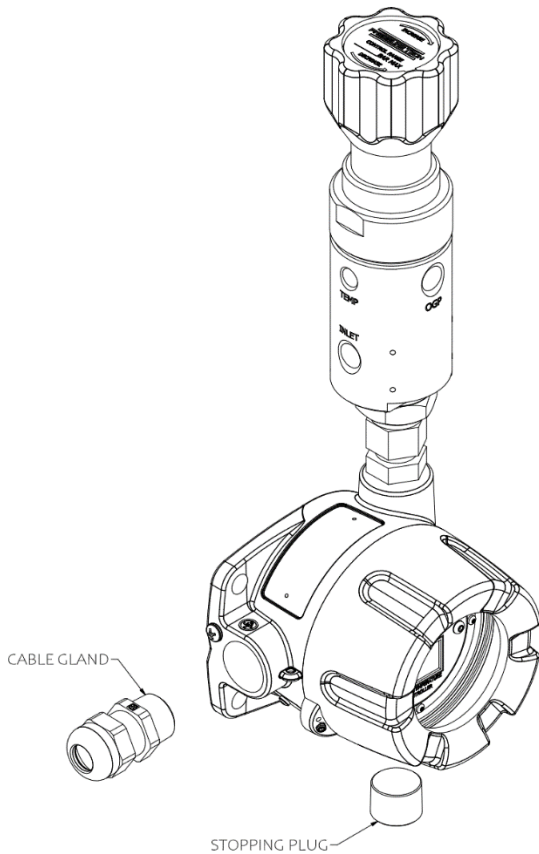



Figure 18

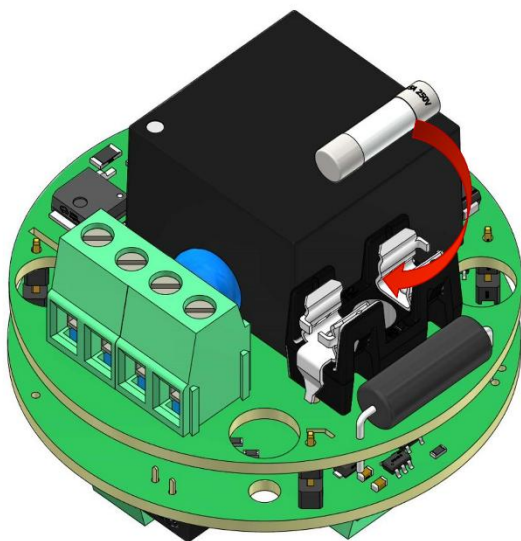
 The junction box should never be opened whilst there is a flammable gas atmosphere present, or when there is a risk of explosion from the outside environment.


 This equipment is fitted with a thermal fuse. Neither the position nor the wiring of the fuse shall be altered.





This product is supplied with an open cable entry the electrical enclosure that **must** be fitted with a UL Listed  cable gland during installation. A minimum of 5 threads is required to properly secure the cable gland to the enclosure. The unused cable entry should remain fitted with the supplied stopping plug.



 This equipment is fitted with a slow blow fuse rated to the mains voltage. Only the correct fuse which complies to short circuit requirements of UL 60950-1/ UL 62368-1 should be fitted during replacement.

MAINS VOLTAGE		
	110V 60Hz	230V 50Hz
PART NUMBER	PT-XHS-410-014	PT-XHS-410-013

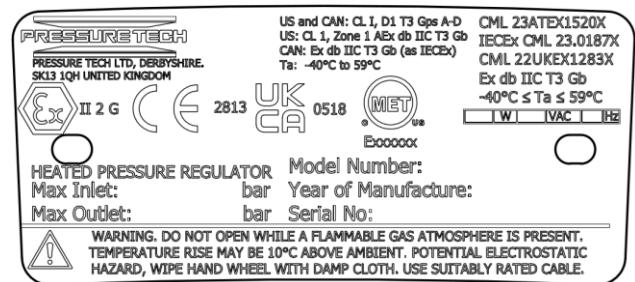
6. Hazardous Location Usage

The XHS-410, XHS-411 and XHM-410 have been certified to ATEX Directive 94/9/EC, Group II, Category 2 for use in Gas environments, where the maximum surface temperature of the regulator does not exceed 200°C (based on ambient temperature conditions of -40°C to +59°C) and is flameproof to EN 60079-0 and EN 60079-1.

6.1 Marking

The marking of the equipment shall include the following:

Ex II 2 G
Ex d IIC Gb T3 Ta = -40°C to +59°C



7. Servicing and Maintenance

If the flow path of the gas through the heater especially over the heater sheath gets fouled after a period of time while in service, it may be necessary to perform some maintenance on the heated regulator.

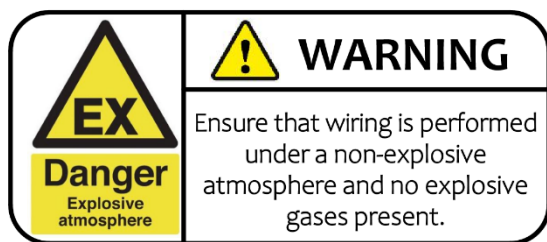
The XHS can be divided into two types, ‘In-line’ denoted by an ‘IL’ and ‘Side Entry’ denoted by an ‘SE’.

Servicing and maintenance work on the XHS-410, XHS-411, XHS-411 and XHM-410 series should only be performed after fully reading and understanding the Operating and Servicing Manual. Due to the typical nature of the gases the regulator will be used on, the operator should not endanger himself/herself or others by working on this regulator without prior knowledge on the Health and Safety concerns relating to handling of technical gases. Any uncertainty should be clarified with Pressure Tech before working on the regulator.

Repairs to the regulator should be performed in accordance with BS EN 60079-17 and BS EN 60079-19 as applicable.

Pressure Tech Ltd recommends the use of Krytox GPL 205 during servicing.

*Note: Any failure within the electronics must result in the unit being returned to Pressure Tech for evaluation and repair.



Prior to commencing service, please ensure that:

- The equipment has been depressurised
- The load spring has been decompressed by turning the hand wheel / adjusting screw fully anti-clockwise

- Applications involving toxic, flammable, or corrosive media have been fully purged.

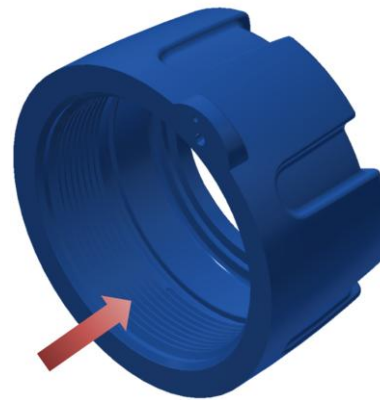


Figure 19

It is recommended that a suitable lubricant is applied sparsely to the thread on the cover of the enclosure as shown in Figure. 19 above. This is especially true for Aluminium enclosures where galling is most likely.

7.1. Servicing the XHS-410/XHS-411 (SE option shown)

7.1.1. XHS-410 (SE option)

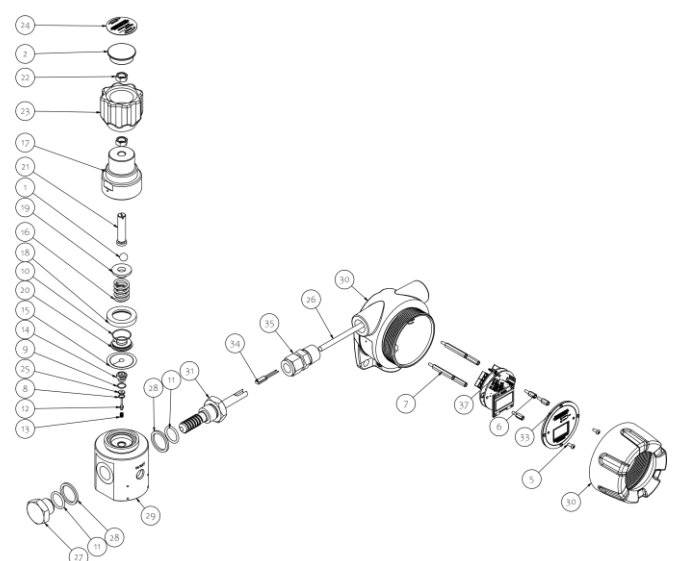


Figure 20

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	BALL-010-SS-316	BALL BEARING
2	1	FIT-CAP-4343092	NAMEPLATE CAP
3	2	FIT-CBA4200Y	COUNTERSUNK HEX-HEAD PLUG
4	2	FIT-M2.5-3-A2-TOR-BTN	M2.5 X 3MM T8 TORX BUTTON SCREWS (ISO 7380) - STAINLESS STEEL (A2)
5	2	FIT-M3-08-A4-70.0-SKT-BTN	SOCKET BUTTON SCREW
6	3	FIT-M3-10-6-POM-STANDOFF	M3 X 10 STANDOFF
7	4	FIT-M3-35-8-POM-STANDOFF	M3 X 35MM STANDOFF
8	1	OR-0060-10	O' RING STD
9	1	OR-0090-10	O' RING STD
10	1	OR-0210-10	O' RING STD
11	2	OR-BS116	O' RING STD
12	1	PT-C-001-023	MAIN VALVE - SOLID
13	1	PT-C-006-002	MAIN VALVE SPRING
14	1	PT-C-007-015	SEAT RETAINER
15	1	PT-C-010-002	DIAPHRAGM
16	1	PT-C-011-009	LOAD SPRING - 31 kg
17	1	PT-C-015	SPRING HOUSING - 300 SERIES
18	1	PT-C-016	DIAPHRAGM WASHER
19	1	PT-C-017	UPPER SPRING REST
20	1	PT-C-018-002	LOWER SPRING REST - DIAPHRAGM
21	1	PT-C-019-003	ADJUSTING SCREW - M10
22	2	PT-C-020	LOCKNUT - M10
23	1	PT-C-021	SMALL HANDWHEEL
24	1	PT-C-022	NAMEPLATE - 39mm - PRESSURE TECH
25	1	PT-C-205-003	PEEK SEAT
26	1	PT-EHR-300-016-230	CARTRIDGE HEATER 230V
27	1	PT-XHS-300-006	BLANKING PLUG
28	2	PT-XHS-300-009	1/2" BSP O-RING RETAINER
29	1	PT-XHS-310-Z-SE	XHS310-SE BODY - Z PORTING - 1/4" NPT - SOLID DISC
30	1	PT-XHS-410-001	ATEX ENCLOSURE
31	1	PT-XHS-410-003	XHS-410 IN-LINE HEATER SHEATH
32	1	PT-XHS-410-006	XHS-410 NAMEPLATE
33	1	PT-XHS-410-007	XHS ENCLOSURE DISPLAY PLATE ASSEMBLY
34	1	PT-XHS-410-008-002	RESETTABLE THERMAL FUSE FOR XHS-410 SERIES - SST3007005140XX 70°C
35	1	PT-XHS-410-009	HAMLET XHS410 COMPRESSION FITTING
36	1	PT-XHS-410-010	HEAT RESISTANT, NON-RELEASABLE CABLE TIE 100MM X 2.5 MM
37	1	PT-XHS-410-BOARD-001	XHS 400 CIRCUIT BOARD

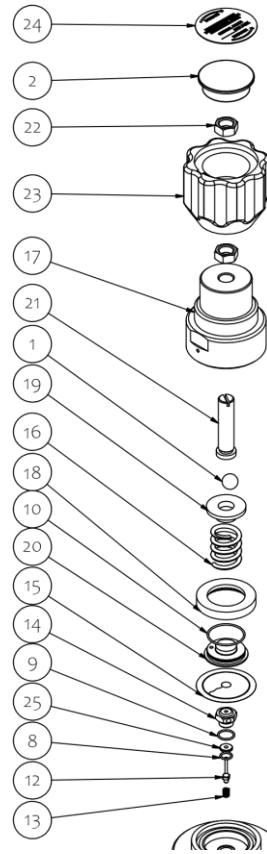


Figure 21

Disassembly and re-assembly (XHS-410 Series):

The following instructions relate to Figure 20 & 21 above.

- i. Remove the mechanical regulator unit from the electrical assembly by gripping the flats on the Heater Sheath (31) with an adjustable or 30mm open ended wrench while turning the Regulator Body (29) anti-clockwise using a similar adjustable spanner.
- ii. With the flats of the Regulator Body (29) secured in a vice, use a 47mm open ended wrench to loosen the Bonnet (17) from the body
- iii. Remove the Upper Spring Rest (19), 10mm Ball Bearing (1), Load Spring (16), Diaphragm Washer (18), Lower Spring

- Rest (20) and Diaphragm (15) from the assembly
- iv. The Seat Nut (14) can then be removed using a 12mm socket
- v. Remove the Main Valve (12) and Main Valve Spring (13) from the assembly
- vi. Visually inspect the seat nut and soft seat (17) for damage under a microscope
- vii. Replace the Main Valve Spring (13) and Main Valve (12) and place into the Regulator Body (29)
- viii. Replace Seat Nut (14) fitted with new o-ring (9) taking care not to damage its sealing face against the tip of the valve
- ix. To ensure positive sealing, it is recommended that a new Diaphragm (15) is placed centrally into Regulator Body (29) ensuring that the outermost convolutions are facing towards the Bonnet (17)
- x. Replace the o-ring (10) on the Lower Spring Rest (20), insert both into the Diaphragm Washer (18) and place on top of the Diaphragm (15)
- xi. Place the Load Spring (16), Upper Spring Rest (19) and 10mm Ball Bearing (1) to the assembly
- xii. Screw the Bonnet (17) onto the assembly and using a torque wrench with a 47mm open ended attachment, tighten to 160Nm

Pressure Tech Ltd recommends the use of Krytox GPL 205 on all o-rings.

It is recommended that all parts in the repair kits are used. Any defective parts removed during the service should be

disposed of. Parts should be kept clean in line with media requirements.

Following re-assembly of the regulator, pressure tests should be made to both the inlet and outlet side of the regulator, to ensure there is no internal or external leakage across the regulator.

To ensure that the main valve assembly has been correctly and effectively installed it may be required to perform the appropriate seat leak test as per ANSI/FCI 70-2.

Should any assistance be required during a service please do not hesitate to contact the office.

7.1.2. XHS-410 (SE option shown)

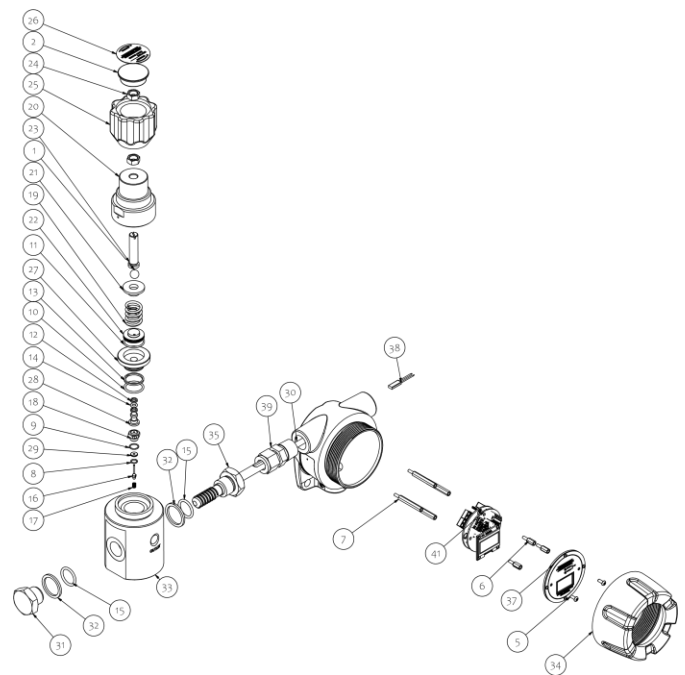


Figure 22

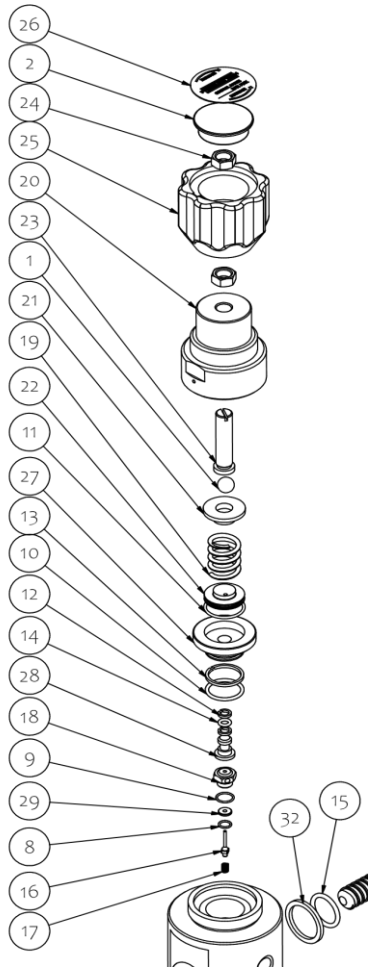


Figure 23

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	BALL-010-SS-316	BALL BEARING
2	1	FIT-CAP-4343092	NAMEPLATE CAP
3	2	FIT-CBA4200Y	COUNTERSUNK HEX-HEAD PLUG
4	2	FIT-M2.5-3-A2-TOR-BTN	M2.5 X 3MM T8 TORX BUTTON SCREWS (ISO 7380) - STAINLESS STEEL (A2)
5	2	FIT-M3-08-A4-70.0-SKT-BTN	SOCKET BUTTON SCREW
6	3	FIT-M3-10-6-POM-STANDOFF	M3 X 10 STANDOFF
7	4	FIT-M3-35-8-POM-STANDOFF	M3 X 35MM STANDOFF
8	1	OR-0060-10	O' RING STD
9	1	OR-0090-10	O' RING STD
10	1	OR-0190-20	O' RING STD
11	1	OR-1071-16	O' RING STD
12	2	ORB-PT-C-104	PTFE BACK UP RING
13	1	ORB-PT-C-176	PTFE BACK UP RING
14	1	OR-BS008	O' RING STD
15	2	OR-BS116	O' RING STD
16	1	PT-C-001-023	MAIN VALVE - SOLID
17	1	PT-C-006-002	MAIN VALVE SPRING
18	1	PT-C-007-015	SEAT RETAINER

19	1	PT-C-011-009	LOAD SPRING - 31 kg
20	1	PT-C-015	SPRING HOUSING - 300 SERIES
21	1	PT-C-017	UPPER SPRING REST
22	1	PT-C-018-006	LF301 LOWER SPRING REST
23	1	PT-C-019-003	ADJUSTING SCREW - M10
24	2	PT-C-020	LOCKNUT - M10
25	1	PT-C-021	SMALL HANDWHEEL
26	1	PT-C-022	NAMEPLATE - 39mm - PRESSURE TECH
27	1	PT-C-105-001	SENSOR HOLDER - 8mm
28	1	PT-C-106	SENSOR - 8mm
29	1	PT-C-205-003	PEEK SEAT
30	1	PT-EHR-300-016-230	CARTRIDGE HEATER 230V
31	1	PT-XHS-300-006	BLANKING PLUG
32	2	PT-XHS-300-009	1/2" BSP O-RING RETAINER
33	1	PT-XHS-311-N-SE	BODY 'N' (NO GAUGE PORTING)
34	1	PT-XHS-410-001	XHS-410 ATEX ENCLOSURE
35	1	PT-XHS-410-003	XHS-410 IN-LINE HEATER SHEATH
36	1	PT-XHS-410-006	XHS-410 NAMEPLATE
37	1	PT-XHS-410-007	XHS ENCLOSURE DISPLAY PLATE ASSEMBLY
38	1	PT-XHS-410-008-002	RESETTABLE THERMAL FUSE FOR XHS-410 SERIES - SST3007005140XX 70°C
39	1	PT-XHS-410-009	HAMLET XHS410 COMPRESSION FITTING
40	1	PT-XHS-410-010	HEAT RESISTANT, NON-RELEASABLE CABLE TIE 100MM X 2.5 MM, NATURAL PA 4.6
41	1	PT-XHS-410-BOARD	XHS 400 CIRCUIT BOARD

Disassembly and re-assembly (XHS-411 Series):

The following instructions relate to Figure 22 & 23 above.

- xiii. Remove the mechanical regulator unit from the electrical assembly by gripping the flats on the Heater Sheath (35) with an adjustable or 30mm open ended wrench while turning the Regulator Body (33) anti-clockwise using a similar adjustable spanner.
- xiv. With the flats of the Regulator Body (33) secured in a vice, use a 47mm open ended wrench to loosen the Bonnet (20) from the body

- xv. Remove the Upper Spring Rest (21), 10mm Ball Bearing (1), Load Spring (19), Lower Spring Rest (22), Sensor holder (27) and Sensor (28) from the assembly
- xvi. The Seat Nut (18) can then be removed using a 12mm socket
- xvii. Remove the Main Valve (16) and Main Valve Spring (17) from the assembly
- xviii. Visually inspect the seat nut (18) and soft seat (29) for damage under a microscope
- xix. Replace the Main Valve Spring (17) and Main Valve (16) and place into the Regulator Body (33)
- xx. Replace Seat Nut (18) fitted with new o-rings (8 & 9) taking care not to damage its sealing face against the tip of the valve
- xxi. Replace the o-ring (10) & backup ring (13) on sensor holder (27).
- xxii. Replace the o-ring (11) on the Lower Spring Rest (22), insert both into the sensor holder (27) and fit on top of the body (33)
- xxiii. Place the Load Spring (19), Upper Spring Rest (21) and 10mm Ball Bearing (1) to the assembly
- xxiv. Screw the Bonnet (20) onto the assembly and using a torque wrench with a 47mm open ended attachment, tighten to 160Nm

Pressure Tech Ltd recommends the use of Krytox GPL 205 on all o-rings.

It is recommended that all parts in the repair kits are used. Any defective parts removed during the service should be

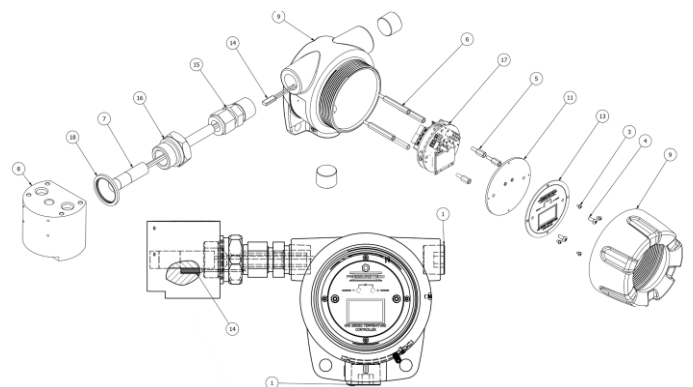
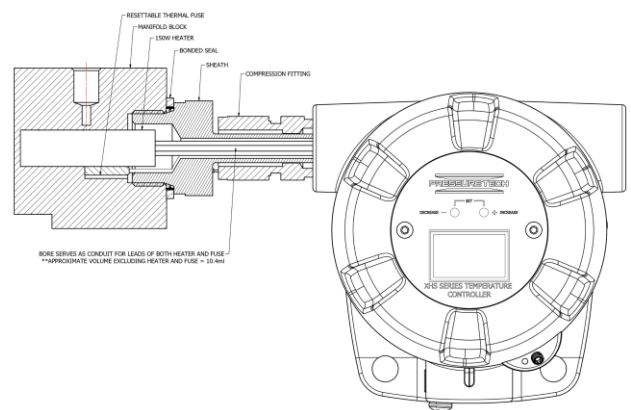
disposed of. Parts should be kept clean in line with media requirements.

Following re-assembly of the regulator, pressure tests should be made to both the inlet and outlet side of the regulator, to ensure there is no internal or external leakage across the regulator.

To ensure that the main valve assembly has been correctly and effectively installed it may be required to perform the appropriate seat leak test as per ANSI/FCI 70-2.

Should any assistance be required during a service please do not hesitate to contact the office.

7.1.3. XHM-410



ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	FIT-CBA4200Y-XXX	COUNTERSUNK HEX-HEAD PLUG
2	2	FIT-M2.5-3-A2-TOR-BTN	M2.5 X 3MM T8 TORX BUTTON SCREWS (ISO 7380) - STAINLESS STEEL (A2)
3	4	FIT-M2-03-A4-70.0-TRX-BTN	M2 X 3MM T6 TORX BUTTON SCREWS (ISO 14583) - STAINLESS STEEL (A2)
4	2	FIT-M3-08-A4-70.0-SKT-BTN	SOCKET BUTTON SCREW - M3 x 8mm
5	3	FIT-M3-10-6-XXX-STANDOFF	M3 X 10 STANDOFF
6	4	FIT-M3-35-8-XXX-STANDOFF	M3 X 35MM STANDOFF
7	1	PT-XHM-300-005-115-XXX	CARTRIDGE HEATER
8	1	PT-XHM-410-XXX	HEATER MANIFOLD
9	1	PT-XHS-410-XXX	ATEX ALUMINIUM ENCLOSURE FOR XHS-400 SERIES
11	1	PT-XHS-410-004-001	XHS OLED PROTECTIVE SCREEN
12	1	PT-XHS-410-006	XHS-410 NAMEPLATE
13	1	PT-XHS-410-007-001	XHS ENCLOSURE DISPLAY PLATE
14	1	PT-XHS-410-008-003	RESETTABLE THERMAL FUSE FOR XHS-410 SERIES - SST3015005140XX 150°C
15	1	PT-XHS-410-009-XXX	10MM OD COMPRESSION FITTING
16	1	PT-XHS-410-011-XXX	XHS410 HEATER RETAINER
17	1	PT-XHS-410-BOARD-XXX	XHS-400 CIRCUIT BOARD (110V - 240V AC)
18	1	SLOK-S-12-RS-2V-001	3/4" DOWTY SEAL - STAINLESS STEEL / VITON

To begin disassembly of the XHM-410 series, remove the electronic control module as described in 2.4.1.

Once the electronic control module has been removed and all four wires (heater and thermocouple) have been unscrewed from the PCB, proceed to disassemble the manifold as follows:

Clamp the manifold body (8) securely onto a vice and undo the compression fitting (15).

Unscrew the heater retainer (16) to release the cartridge heater (7), thermal fuse (14) and bonded seal (18)

8. Technical Data

8.1 Vibration Limits

This equipment can be used where vibration limits do not exceed 5m/s²

8.2 Electronics

Supply Voltage: 115 Vac (+/- 15% at 60Hz) or 230Vac (+/- 15% at 50Hz)

Maximum Amperage draw: (see Figure 24)

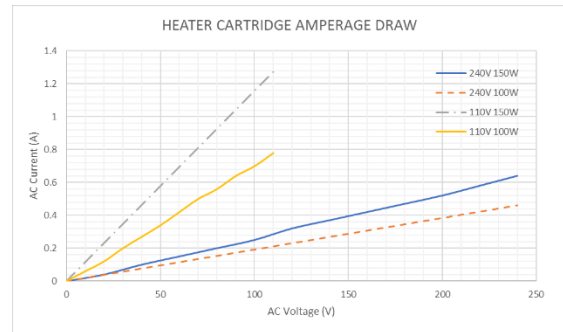


Figure 24

Power Load: 100W (XHS-410 & XHS-411), 150W (XHM-410)

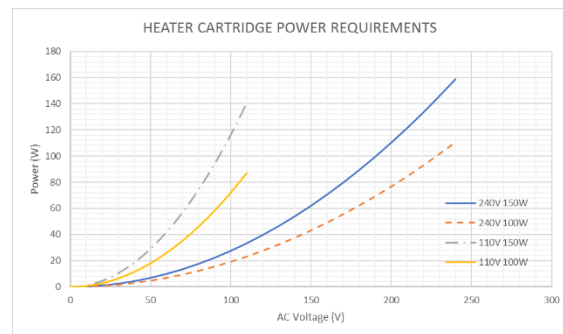


Figure 25

8.3 Heater

Thermocouple Type: J-Type thermocouple.

Temp Control Range: 30°C to 180°C

Minimum Ambient Temperature: -40°C

Maximum Enclosure Temperature: 65°C

Regulator Max. body Temperature: 150°C

8.4 Pressure Regulator

Maximum Inlet Pressure:

XHS-410: 300Bar (4351 psi) (30000 kPa)

XHS-411: 414Bar (6000 psi) (41400 kPa)

Maximum Outlet Pressure:

XHS-410: Up to 35Bar (508 psi) (3500 kPa)
XHS-411: Up to 150Bar (2176 psi) (15000 kPa)

Fluid Media:

All gases and liquids compatible with materials of construction.

Materials:

Body and Trim: 316 SS
Diaphragm: Inconel X750
Seat: PCTFE or PEEK®
Enclosure: Aluminium or Stainless Steel
Flow Capacity (Cv): 0.06

10. Sales & Technical Support

For sales or technical support, please see relevant information below:

Sales:

Telephone: +44 (0)1457 899 307

Facsimile: +44 (0)1457 899 308

E-mail: sales@pressure-tech.com

Technical:

Telephone: +44 (0)1457 381 567

Facsimile: +44 (0)1457 899 308

E-mail: Engineering@pressure-tech.com

9. Warranty Statement

Pressure Tech Ltd guarantee all products correspond with their specification at the time of delivery and, with exception to wear and tear, wilful damage, negligence, and abnormal working conditions, will be free from defects for a period of 12 months from date of delivery.



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