

StackFlowMaster FPD585

Stack gas metering systems

Spares replacement procedures

1 Introduction

This publication details spares replacement procedures for the StackFlowMaster FPD585 interface units B, C and D.

The procedures must be carried out by a trained technician.

2 Safety

Warning.



- Remove all power from supply, relay and any powered control circuits and high common mode voltages before accessing or making any connections.
- Observe all health and safety procedures for working on electrical equipment.
- Ensure appropriate personal protective equipment (PPE) such as **gloves** and **eye protection** are worn during any maintenance and that the work area is kept clean and tidy.
- Clean the outside of the interface unit using a damp cloth only. A mild detergent may be used as a cleaning aid. **Do not** use Acetone or any organic solvents.

3 Tools / Items required

- No. 2 crosshead screwdriver
- Flat-bladed screwdriver (5 to 8 mm wide tip)
- Flat-bladed terminal screwdriver (3 mm wide tip)
- DC voltmeter (range 0 to 24 V, accuracy $\pm 0.2V$)
- Calibrated pressure indicator (0 to 60 mbarg)
- $9/16$ in. open-ended spanner
- 11 mm open-ended spanner
- 20 in. (500 mm) 0.25 in. (6 mm) ID nylon tubing
- PTFE tape

4 Disposal

Warning. Dispose of the old components in accordance with local regulations and RoHS procedures.

5 Replacement procedures

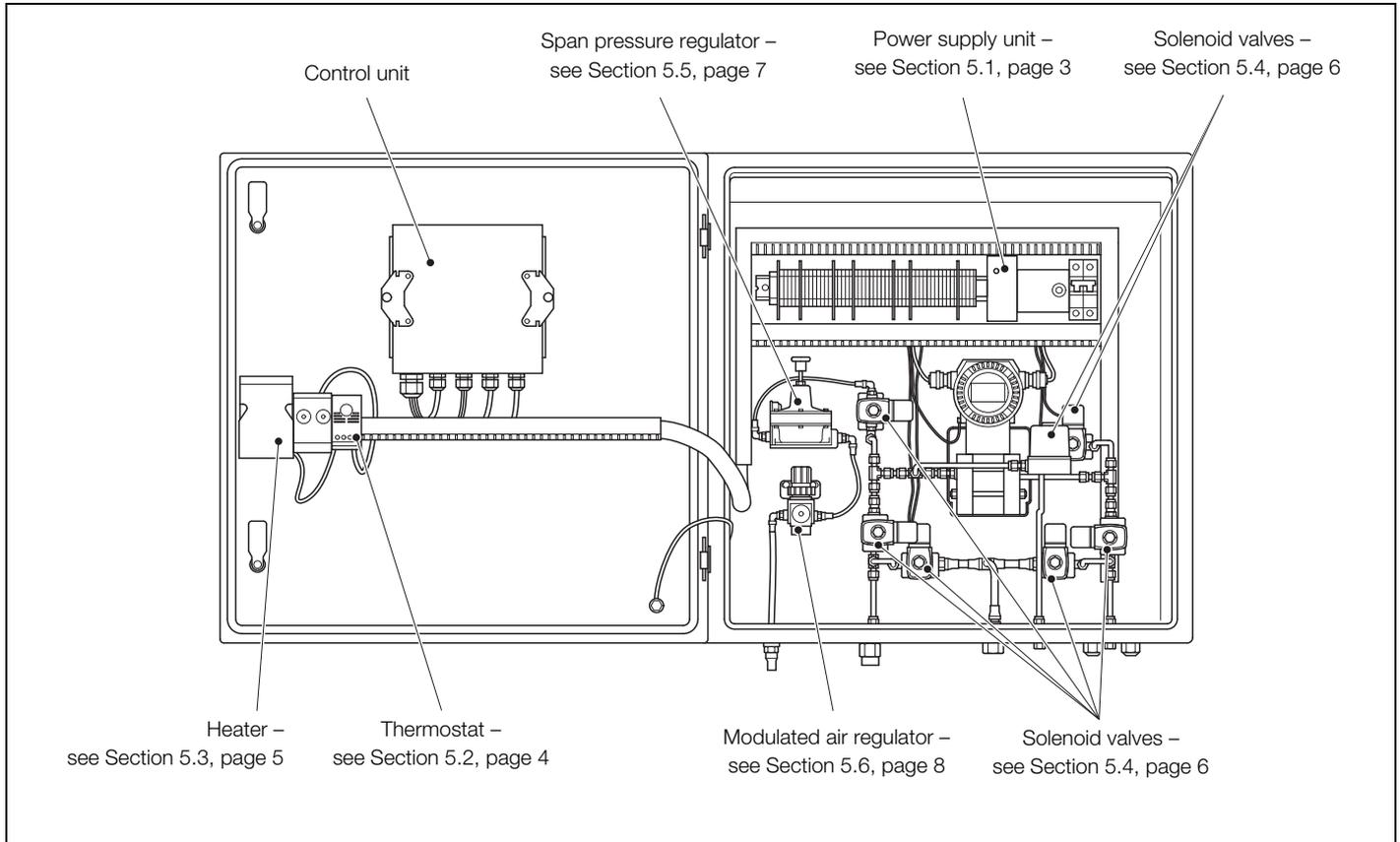


Fig. 5.1 StackFlowMaster FPD585 interface unit C – component location

5.1 Replacing the power supply unit (TBAX83024)

Warning.

- Remove all power from supply, relay and any powered control circuits and high common mode voltages before accessing or making any connections.
- **Do Not** touch the enclosure heater (if fitted) – it may be hot.

1. Isolate the interface unit from the power supply.
2. Unlock and open the interface unit door.
3. Referring to Fig. 5.2:
 - a. Record the position of power supply unit wiring (A) and disconnect it from the power supply unit terminals.
 - b. Using a flat-bladed screwdriver, lift bottom latch (B) and lever it down to release the latch from the DIN rail.
 - c. Lift the power supply unit upwards and remove it from the DIN rail.
 - d. Locate the new power supply unit on the top edge of the DIN rail and press down firmly to latch it in place.
 - e. Reconnect power supply unit wiring (A) to the terminals recorded in step 3.
 - f. Restore the interface unit's power supply and check that green 'DC on' LED (C) is lit.
 - g. Set the AC / DC multimeter to the DC voltage range. Check the voltage across terminals L+ and L- is 24.0 V \pm 0.2 V.
Adjust (if required) using 'Output Adjust' potentiometer (D).
4. Close and lock the interface unit door.

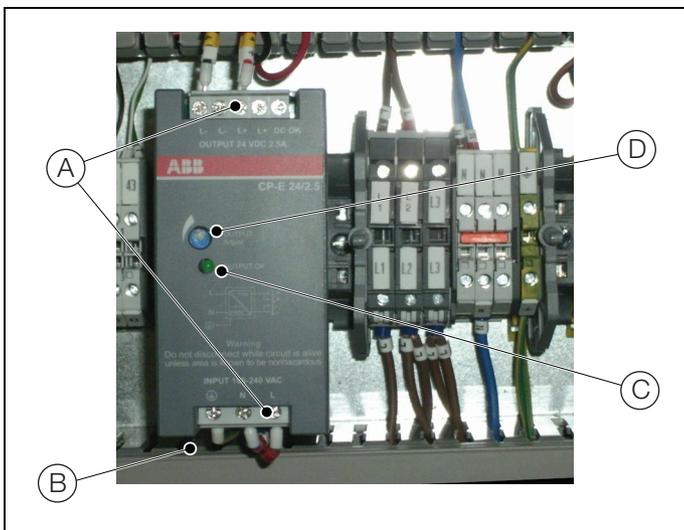


Fig. 5.2 Power supply unit replacement

5.2 Replacing the thermostat (TBAX83019)

Note. This procedure is applicable only if the optional enclosure heater assembly is fitted.

Warning.

- Remove all power from supply, relay and any powered control circuits and high common mode voltages before accessing or making any connections.
- **Do Not** touch the enclosure heater – it may be hot.

1. Isolate the interface unit from the power supply.
2. Unlock and open the interface unit door.
3. Referring to Fig. 5.3:
 - a. Record the position of thermostat wiring (A) and disconnect it from the thermostat terminals.
 - b. Press down firmly on the top of the thermostat (C) and simultaneously pull the bottom of the thermostat away from the DIN rail (D) to remove the thermostat from the DIN rail.
 - c. Locate the new thermostat's top lugs over the top edge of the DIN rail and firmly push the bottom of the thermostat toward the DIN rail until it clicks into place.
 - d. Reconnect thermostat wiring (A) to the thermostat terminals recorded in step a.
 - e. Restore the interface unit power supply.
 - f. Rotate thermostat temperature selector (B) clockwise to maximum.

Caution. During step g, take care not to test the temperature of the air coming from the heater for any longer than it takes to confirm it is getting warm.

- g. Check that the heater fan is operating and the air from the heater is getting warm.
- h. Slowly rotate thermostat temperature selector (B) counter-clockwise until a click is heard and the heater fan stops. Check this occurs at or near ambient temperature $\pm 5\text{ }^{\circ}\text{C}$ ($\pm 9\text{ }^{\circ}\text{F}$).
- i. Adjust thermostat temperature selector (B) to the minimum temperature required in the enclosure $+ 5\text{ }^{\circ}\text{C}$ ($+ 9\text{ }^{\circ}\text{F}$).

For example, if the minimum required temperature is $5\text{ }^{\circ}\text{C}$ ($41\text{ }^{\circ}\text{F}$), set the thermostat to $10\text{ }^{\circ}\text{C}$ ($50\text{ }^{\circ}\text{F}$). This ensures that the enclosure heater is switched on before the temperature in the enclosure reaches the required minimum.

4. Close and lock the interface unit door.

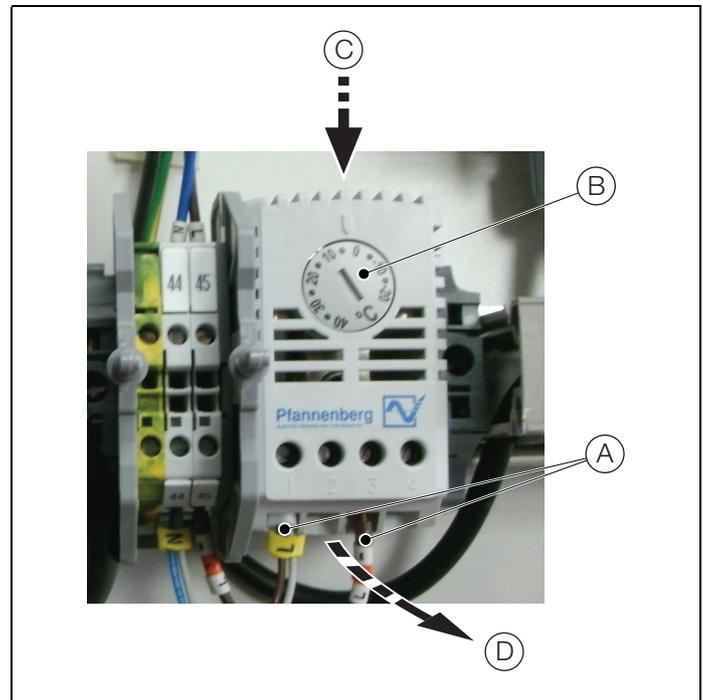


Fig. 5.3 Thermostat replacement

5.3 Replacing the heater (TBBX81012 / TBBX81013)

Note. This procedure is applicable only if the optional enclosure heater assembly is fitted.

Warning.

- Remove all power from supply, relay and any powered control circuits and high common mode voltages before accessing or making any connections.
- The heater assembly may be hot. Ensure it is cool to touch before replacing the heater assembly.

1. Isolate the interface unit from the power supply.
2. Unlock and open the interface unit door.
3. Referring to Fig. 5.4:
 - a. Remove the door terminal rail protective cover (A).
 - b. Disconnect blue/grey heater wire 'N' (B) from terminal rail terminal 44.
 - c. Disconnect brown/grey heater wire 'L' (C) from thermostat terminal 1.
 - d. Press down firmly on the top of the heater (D) and simultaneously pull the bottom of the heater away from the DIN rail (E) and remove the heater from the DIN rail.
 - e. Locate the new heater's top lugs over the top edge of the DIN rail and firmly push the bottom of the heater toward the DIN rail until it clicks into place.
 - f. Reconnect brown/grey heater wire 'L' (C) to thermostat terminal 1.
 - g. Reconnect blue/grey heater wire 'N' (B) to terminal rail terminal 44.
 - h. Refit the door terminal rail protective cover (A).
 - i. Restore the interface unit's power supply.
 - j. Rotate thermostat temperature selector (F) clockwise to maximum.

Caution. During step k, take care not to test the temperature of the air coming from the heater for any longer than it takes to confirm it is getting warm.

- k. Check that the heater fan is operating and the air from the heater is getting warm.
 - l. Adjust thermostat temperature selector (D) to the original setting or to the minimum temperature required in the enclosure + 5 °C (+ 9 °F).
For example, if the minimum required temperature is 5 °C (41 °F), set the thermostat to 10 °C (50 °F). This ensures that the enclosure heater is switched on before the temperature in the enclosure reaches the required minimum.
4. Close and lock the interface unit door.

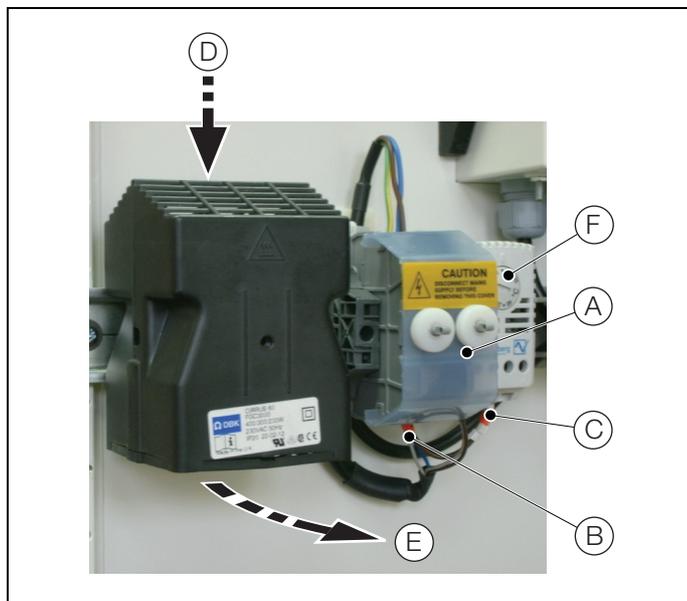


Fig. 5.4 Heater replacement

5.4 Replacing a solenoid valve (TBAX83033)

Warning.

- Remove all power from supply, relay and any powered control circuits and high common mode voltages before accessing or making any connections.
- **Do Not** touch the enclosure heater (if fitted) – it may be hot.
- Take care when handling a solenoid valve – it may be hot.

1. Isolate the interface unit from the power supply.
2. Turn off the enclosure's air supply (if fitted).
3. Referring to Fig. 5.5, identify the faulty solenoid valve.

Note. Step 4 is applicable only when replacing any of solenoid valves V2, V3, V4 or V5.

4. Close the 2 isolation valves mounted on the TORBAR to prevent stack gases from entering the enclosure.
5. Unlock and open the interface unit door.
6. Referring to Fig. 5.6:
 - a. Disconnect the faulty solenoid valve's power supply plug (A).

Note. During step b, and depending on which solenoid valve has failed, several valves and / or pieces of pipework may have to be removed to enable removal of the failed valve. It may also be necessary to remove a bulkhead fitting to remove certain valves.

Carefully note the fitted positions of all components that are to be removed.

- b. Remove the faulty solenoid valve.
- c. Carefully note the fitted position of pneumatic fittings (B) and remove them. Clean the PTFE tape from the fittings' threads.
- d. Apply PTFE tape to the threads and fit pneumatic fittings (B) to the new valve, ensuring they are positioned as noted in step c.

Caution. During step e, tighten all pneumatic fittings hand-tight initially then tighten fully using the $\frac{9}{16}$ in. open-ended spanner. **DO NOT** overtighten – very little extra pressure is required to seal the olives.

- e. Fit the new solenoid valve and refit any components that were removed to enable the valve's removal.
 - f. Connect the solenoid valve's power supply plug (A).
7. Turn on the enclosure air supply (if fitted).

8. Restore the interface unit's power supply.

Note. Step 9 is applicable only if any of solenoid valves V2, V3, V4 or V5 (see Fig. 5.5) have been replaced.

9. Open the 2 isolation valves mounted on the TORBAR.
10. Check all disturbed components and pipelines for leaks.
11. Referring to the Operating Instructions (OI/FPD580-EN), perform a manual purge, followed by zero and span checks.
12. Close and lock the interface unit door.



Fig. 5.5 Solenoid valve identification

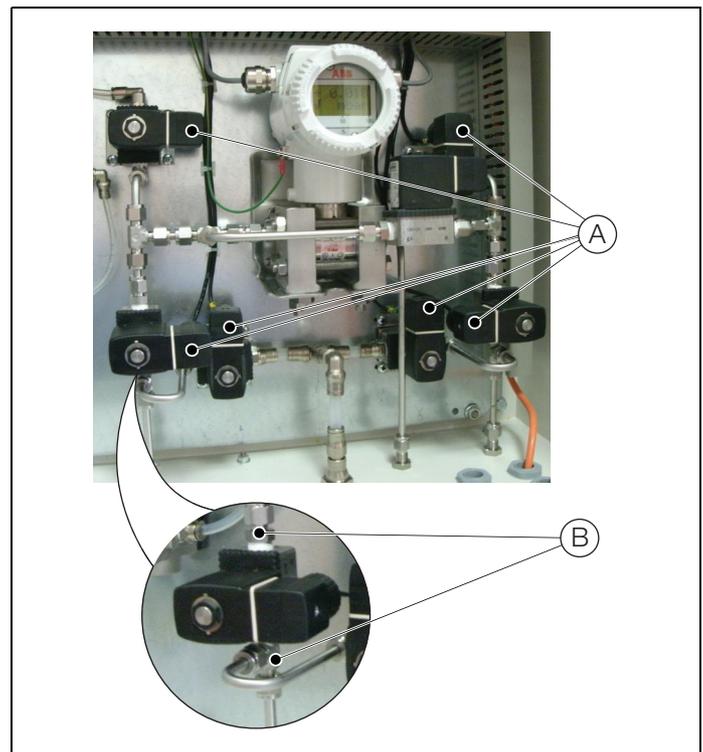


Fig. 5.6 Solenoid valve replacement

5.5 Replacing the span pressure regulator (TBAX83040)

Warning.

- Remove all power from supply, relay and any powered control circuits and high common mode voltages before accessing or making any connections.
- **Do Not** touch the enclosure heater – it may be hot.

Caution. The span pressure regulator is a high precision component that may be damaged if supplied with air at a pressure greater than 2.0 barg (29 psi).

1. Isolate the interface unit from the power supply.
2. Turn off the enclosure's air supply.
3. Unlock and open the interface unit door.
4. Referring to Fig. 5.7:
 - a. Pull the inlet pipe from inlet fitting (A).
 - b. Pull the outlet pipe from outlet fitting (B).
 - c. Remove 2 x M5 screws (C) securing the span pressure regulator to the enclosure the back plate and remove the span pressure regulator.
 - d. Remove inlet and outlet fittings (A) and (B). Clean the PTFE tape from the fittings' threads.
 - e. Apply PTFE tape to the fittings' threads and fit inlet and outlet fittings (A) and (B) to the new span pressure regulator.

Note. Air flow through the regulator is from right to left. During step f, ensure that protrusion (D) is positioned as shown. It may be necessary to reposition the regulator on its supplied mounting bracket to achieve this.

- f. Position the new span pressure regulator on the enclosure back plate and secure with 2 x M5 screws (C).
- g. Push the inlet pipe onto inlet fitting (A).
- h. Connect one end of the 20 in. (500 mm) length of 0.25 in. (6 mm) ID nylon tubing to outlet fitting (B) and the other end to the 0 to 60 mbarg calibrated pressure indicator.
- i. Turn on the enclosure air supply.
- j. Check that the span pressure regulator's indicated outlet pressure corresponds to the pre-programmed span check pressure (10.0 or 60.0 mbar).

Note.

- The span check pressure is part of the reference data information supplied by the customer when specifying the system required. It is normally pre-programmed into the control unit by the factory to suit the process. To check the pre-programmed span check pressure, refer to Section 9.11.2 of the Operating Instructions (OI/FPD580-EN).
- Steps k to n are applicable only if the outlet pressure from the span pressure regulator is incorrect.

- k. Loosen adjustment screw locknut (E).
 - l. Turn adjustment screw (F) until the calibrated pressure indicator reads 10.0 or 60.0 mbar (as required).
 - m. Tighten adjustment screw locknut (E) hand tight and check the calibrated pressure indicator reads 10.0 or 60.0 mbar (as required). Without loosening locknut (E), turn adjustment screw (F) to make any final adjustments as required.
 - n. When the output pressure is correct, fully tighten adjustment screw locknut (E) using the 11 mm open-ended spanner.
 - o. Remove the 20 in. (500 mm) length of 0.25 in. (6 mm) ID nylon tubing from outlet fitting (B) and the calibrated pressure indicator.
 - p. Push the outlet pipe onto outlet fitting (B).
5. Close and lock the interface unit door.
 6. Restore the interface unit's power supply.

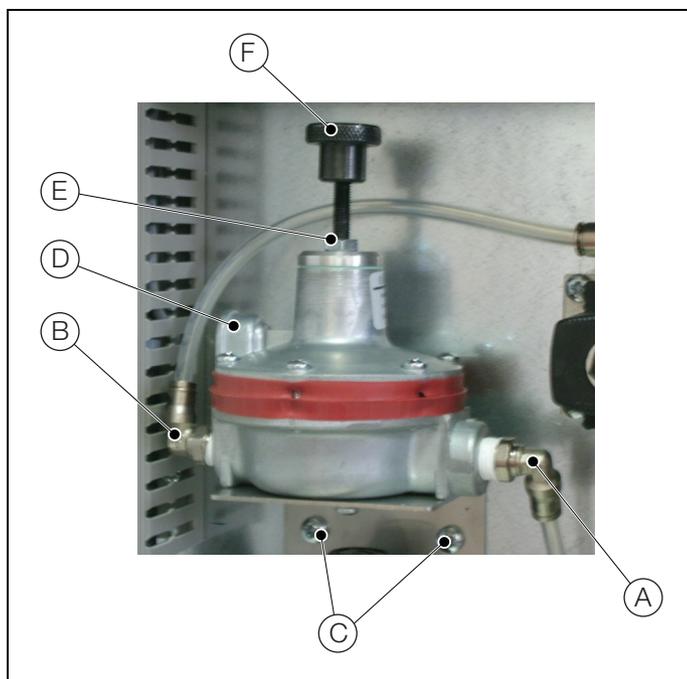


Fig. 5.7 Span pressure regulator replacement

5.6 Replacing the modulated air regulator (TBAX83041)

Warning.

- Remove all power from supply, relay and any powered control circuits and high common mode voltages before accessing or making any connections.
- **Do Not** touch the enclosure heater – it may be hot.

Caution. The span pressure regulator is a high precision component that may be damaged if supplied with air at a pressure greater than 2.0 barg (29 psi).

1. Isolate the interface unit from the power supply.
2. Turn off the enclosure's air supply.
3. Unlock and open the interface unit door.
4. Referring to Fig. 5.8:
 - a. Pull the inlet pipe from inlet fitting (A).
 - b. Pull the outlet pipe from outlet fitting (B).
 - c. Remove 2 x M5 screws (C) securing the modulated air regulator to the enclosure the back plate and remove the modulated air regulator.
 - d. Remove inlet and outlet fittings (A) and (B). Clean the PTFE tape from the fittings' threads.
 - e. Apply PTFE tape to the fittings' threads and fit inlet and outlet fittings (A) and (B) to the new modulated air regulator.
 - f. Position the new modulated air regulator on the enclosure back plate and secure with 2 x M5 screws (C).
 - g. Push the outlet pipe onto outlet fitting (B).
 - h. Push the inlet pipe onto inlet fitting (A).
 - i. Pull adjuster (D) up to unlock it (red band (E) exposed) and turn fully counter-clockwise.
 - j. Turn on the enclosure air supply.
 - k. Turn adjuster (D) clockwise until pressure gauge (F) indicates 2.0 barg (29 psi).
 - l. Push adjuster (D) down to lock it (ensure red band (E) is not visible and the adjuster is locked).
 - m. Pull outlet pipe from outlet fitting (G).
 - n. Connect one end of the 20 in. (500 mm) length of 0.25 in. (6 mm) ID nylon tubing to outlet fitting (G) and the other end to a 0 to 60 mbar calibrated pressure indicator.

- o. Check that the span pressure regulator's indicated outlet pressure corresponds to the pre-programmed span check pressure (10.0 or 60.0 mbar).

Note.

- The span check pressure is part of the reference data information supplied by the customer when specifying the system required. It is normally pre-programmed into the control unit by the factory to suit the process. To check the pre-programmed span check pressure, refer to Section 9.11.2 of the Operating Instructions (OI/FPD580-EN).
- Steps p to s are applicable only if the outlet pressure from the span pressure regulator is incorrect.

- p. Loosen adjustment screw locknut (H).
 - q. Turn adjustment screw (J) until the calibrated pressure indicator reads 10.0 or 60.0 mbar (as required).
 - r. Tighten adjustment screw locknut (H) hand tight and check the calibrated pressure indicator reads 10.0 or 60.0 mbar (as required). Without loosening locknut (H), turn adjustment screw (J) to make any final adjustments as required.
 - s. Fully tighten adjustment screw locknut (H) when the output pressure is correct.
 - t. Remove the 20 in. (500 mm) length of 0.25 in. (6 mm) ID nylon tubing from outlet fitting (G) and the calibrated pressure indicator.
 - u. Push the outlet pipe onto outlet fitting (G).
5. Close and lock the interface unit door.
 6. Restore the interface unit's power supply.

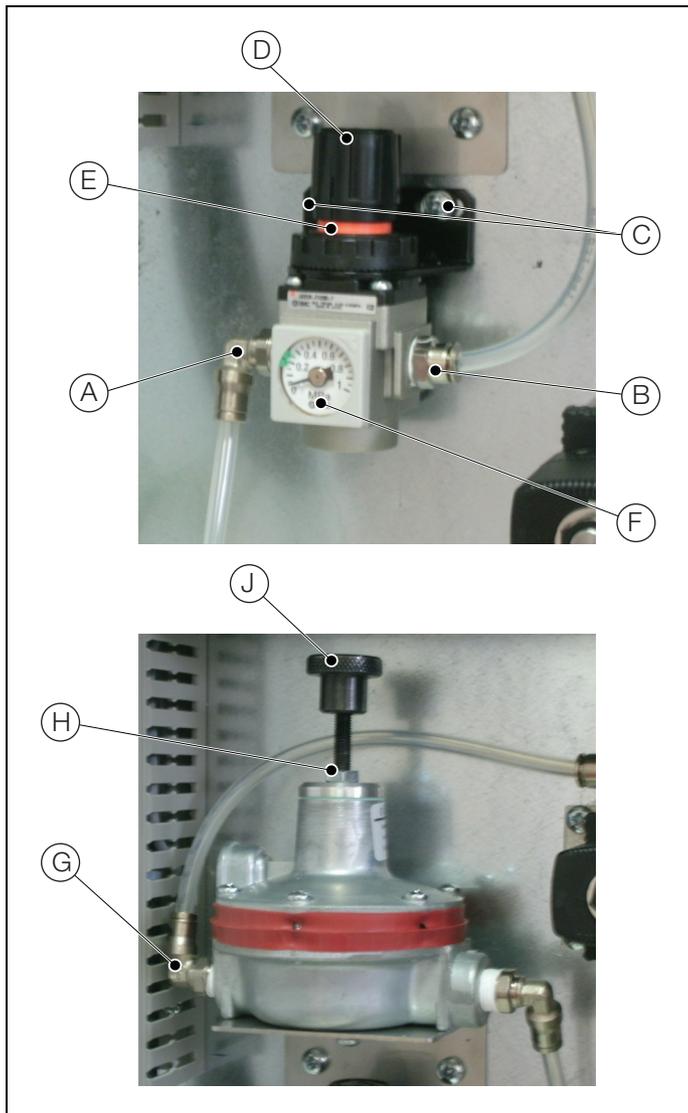


Fig. 5.8 Modulated air regulator replacement

Notes

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