

Micro-set Flanged Sphere Detector




Setting, Installation and Maintenance Instructions

Standard Model

Micro-set Flanged Sphere Detector, Setting, Installation & Maintenance Instructions

A. Technical Details

- Pressure Rating - ANSI 600
Materials - 316 stainless steel construction.
Certification - **SIRA Certificate - SIRA03ATEX1127X Issue 1**
EEx d IIB T6  II 2 G, to ATEX Directive 94/9/EC.
- Switch Rating - 250V DC @ 2 amps or 250V AC maximum.
Enclosure - As supplied to meet hazardous area requirements.

B. Ordering Instructions

1. State diameter and wall thickness of pipe.
2. State operating temperature and pressure, and all product details, including chemical analysis if possible.
3. State whether compliance with NACE is required.

C. Fitting Instructions

Note:

If the detector is a replacement then set on site setting jig and go straight to point 4.

1. Drill 20mm (0.75") hole in pipe, unless pipe wall is greater than 9.55mm (0.375") in which case a 32mm (1.25") hole is required.
2. Ensure that no burrs protrude into the pipe.
3. Mount detector boss (1) (less the body) on the pipe and weld in position, preferably using a mandrel to ensure alignment with the drilled hole.

IMPORTANT

- a) The boss should be welded to the pipe in accordance with the appropriate boss detail drawing in order to maintain the overall boss height, **THIS IS CRITICAL TO OPERATION OF THE MICRO-SET DETECTOR.**
 - b) The Micro-set detector is an instrument and can be damaged by severe shock.
4. Fix body assembly to the boss using 4 screws (15). Ensure mating surfaces and internal bore of boss are clean and 'O' ring (2) is undamaged.
 5. Fit lock nut (14).
 6. Fit junction box, taking care not to damage the insulation on the switch wires.
 7. Position junction box in required orientation and tighten lock nut (14).
 8. Connect wires from switch into junction box terminal block.
 9. Connect external wiring into junction box terminal block.

10. Close and seal enclosure in accordance with the relevant standard and the manufacturer's instructions.

D. Switch Replacement or Resetting

For use in meter prover service the accurate setting of the reed switch assembly (3) is essential. To ensure this is achieved these instructions must be followed implicitly and the setting undertaken under clean conditions.

1. Remove signal power from the detector switch and isolate.
2. Obtain relevant site approvals to open the junction box.
3. Open the junction box, disconnect the external connections and with-draw cable. **Take care not to damage the insulation.**
4. Disconnect detector switch wires from the terminal block.
5. Loosen lock nut (14), unscrew junction box from the detector body. **Take care not to damage the insulation on the switch wires.**
6. Unscrew the 4 off screws (15) retaining the body (6) to the pipeline boss (1). This must only be done when prover is de-pressurised and drained.
7. Remove assembly to instrument workshop.
8. Loosen lock nut (4) and remove reed switch assembly (3), if new switch is required.
9. Install detector body onto setting fixture. Ensure that mating surfaces are clean. The plunger depth is automatically set when the metal surfaces mate.
10. Put lock nut (4) on the new reed switch assembly (3), if required and screw into detector top housing (5).
11. If a special purpose illuminated screwdriver assembly is available mount on the reed switch assembly (3) passing the wires through the centre. Secure the wires to the screwdriver terminals. (The integral lamp illuminates when the reed switch contacts are made).
12. Screw the reed switch assembly (3) down until the lamp illuminates. Mark the point of contact with a pencil against the detector body.
13. Unscrew 2 or 3 turns to check the hysteresis. The lamp will extinguish thus displaying hysteresis.
14. Steadily screw in the reed assembly to the point where the lamp illuminates. The pencil mark acts as a guide to position. **Do not contra-rotate the assembly until the lamp extinguishes and screw down again.**
15. Tighten lock nut (4) in position to prevent movement of the reed switch assembly (3). Lamp may extinguish.
16. The detector switch assembly may be reset using an ordinary screwdriver and continuity meter if required. In this event items 12 to 15 should be followed.
17. Check 'O' ring (2) is undamaged. Replace if necessary.
18. Fit to pipeline by following instruction C, points 4 to 10 inclusive.

E. Leaking Detector

If leakage is observed from the base of the detector between the body (6) and the pipeline boss (1), the detector must be removed from the pipeline in accordance with instruction D, points 1 to 6 inclusive and 'O' ring (2) replaced. Fitting is to instruction C, points 4 to 10 inclusive.

If leakage is observed between the top housing (5) and the body (6), the detector must be removed from the pipeline in accordance with instruction D, points 1 to 7 inclusive.

1. Unscrew remaining 2 off 25mm long socket head screws (7) and with-draw top housing (5).
2. Check 'O' ring (8) and replace if damaged.
3. Ensure surfaces are clean, lightly grease 'O' ring (8) and replace top housing (5).
4. Replace and screw up socket head screws (7).
5. Replace in pipeline in accordance with instruction D, points 17 and 18.

F. Hazardous Area Use


The Micro-set detector has been designed such that it will not give rise to physical injury when handled properly, nor does it produce excessive surface temperature or emit infra red, electromagnetic or ionising radiation.

Before starting installation work ensure that the power connections are isolated and precautions are taken to prevent power being restored whilst work is taking place. Hazardous area installations forbid the use of tools or equipment that could produce an explosion hazard by causing a spark or imposing excessive mechanical stress. In addition, the Micro-set must not be subjected to thermal or mechanical stresses in service or be placed where there is a risk of attack by aggressive substances.

No repair should be attempted to existing Micro-set components, faulty assemblies should be replaced by an equivalent unit.

Other conditions apply to Micro-sets installed in a hazardous area. Certification is held for Group II Category 2 gases, the protection concept is flameproof, temperature class T6 with a maximum ambient temperature of 60 Degrees C. Such equipment may only be installed in hazardous areas classified appropriate to the method of protection.

Micro-sets are marked for use in hazardous areas as required by the ATEX Directive, the equipment marking includes the following information:

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- Switch Rating - 250V DC @ 2 amps or 250V AC maximum.

G. Special Conditions For Safe Use

The product shall be terminated with a suitable enclosure that has been certified by a notified body and provides protection for the free end of the permanently connected, un-terminated cable.

The product shall be earthed in accordance with the latest edition of EN 50014.

Micro-set MK1 Flanged Sphere Detector Standard Model

Sphere Detector Parts List (Including all Wearing, None Wearing and Consumable Items).

Item	Component (No. per Detector)		Skeltonhall Ref. no.
1	Pipe Boss (1)	(CS/SS)	PL 1193/17
2	'O' Ring (1)	(Viton)	PL 1193/9
3	Reed Switch Assembly (1)	(Brass)	PL 1193/11, 12 & 18
4	Lock Nut (1)	(Brass)	PL 1193/10
5	Top Housing and Label (1)	(316SS)	PL 1193/41 & 3A
6	Bottom Housing and Label (1)	(316SS)	PL 1193/8 & 8A
7	M8 x 25mm Socket Screws (2)	(316SS)	PL 1193/5
8	'O' Ring (1)	(Viton)	PL 1193/13
9	Spring (1)	(302SS)	PL 1193/7
10	Thrust Washer (1)	(PEEK)	PL 1193/15
12	Plunger (1)	(316SS)	PL 1193/42
13	Junction Box (1)		JB1
14	Brass Lock Nut (2)	(Brass)	ISO 25mm
15	M8 x 65mm Socket Screws (4)	(316SS)	PL 1193/6A

The above parts list is to be read in conjunction with the Micro-set Detector Arrangement drawing below:

