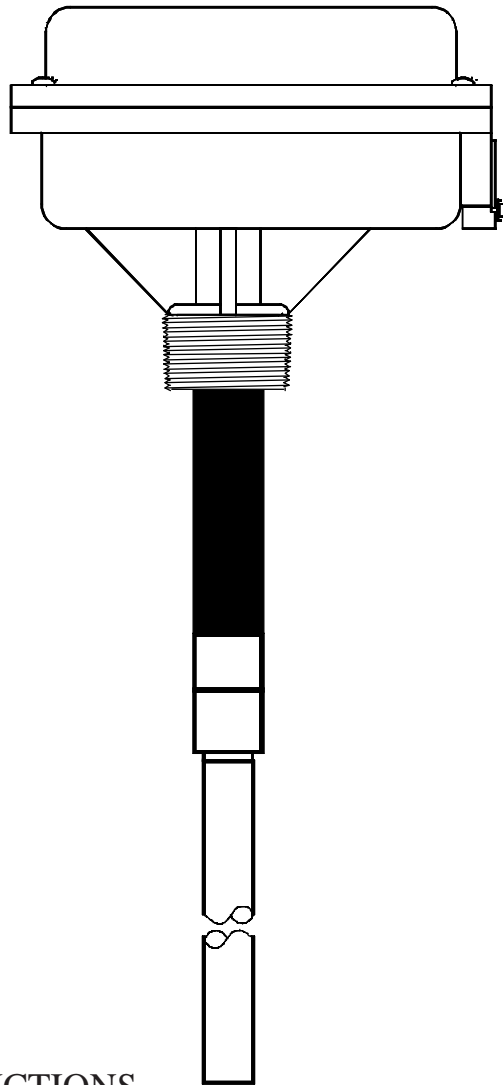


AUTOSET

Auto Calibrating Level Control
with full manual override



**Factory
Mutual
System**
Approved

INSTALLATION INSTRUCTIONS

TECHNICAL INFORMATION

Issue 1 04/11/97

Part No. ATS4VO Series

GENERAL

The AUTO-SET is a fixed point level controller incorporating a microprocessor which is used to automatically calibrate the probe to suit the material being detected. Full manual override facilities are included.

The AUTO-SET employs a power shield to minimise the effect of material adhering to the probe making it ideal for detecting most materials including sticky or viscous types. It is equally suited to both liquids and solids. The probe may be a solid rod, metal plate or wire rope. Stainless steel probe rods are available in standard lengths of 200 mm (8"), 1 metre (36") or 2 metre (72"). Also available, for special applications, are wire rope suspension probes up to 10 metre (33 ft) long (cut to customers requirements).

INSTALLATION AND COMMISSIONING

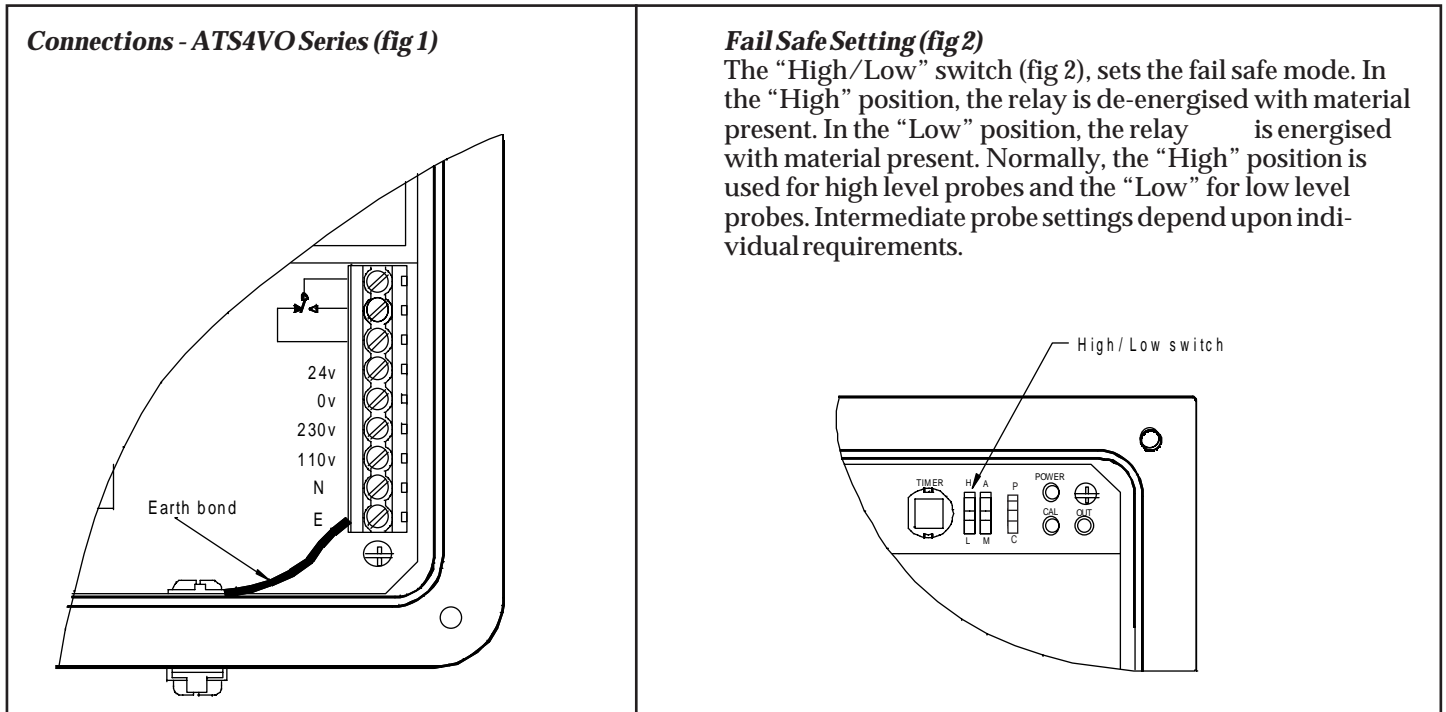
A thread locking compound is already applied to the probe fixing stud. This will prevent the probe rod from vibrating loose, once fitted. The compound is fully hardened 20 minutes after fitting probe.

The AUTO-SET will operate on 110/230 Volt ac 50/60 Hz or 24 Volts dc supplies. The unit may be wired in ordinary unscreened/unshielded cable of any length.

It is essential that the unit is adequately earthed/grounded

When mounting the AUTO-SET care must be taken to ensure that the exposed end of the power shield protrudes into the container. See fig. 5. Mount unit securely to minimise vibration.

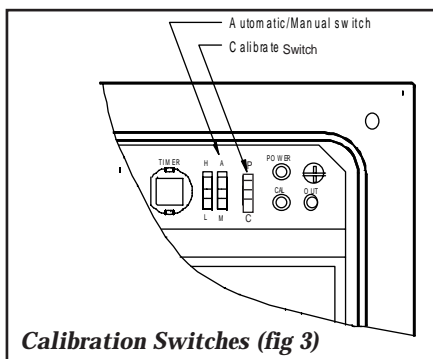
Connect in accordance with fig. 1 (see note regarding 'fail safe' setting, fig 2). Ensure that cable gland/wire entry and back cover are fully tightened when finished. AUTO-SET has two 3/4" NPT cable entries, one fitted with a 'shipping' dust seal the other a blanking plug in accordance with IP65/NEMA4. The unit should be wired and earthed/grounded in accordance with appropriate Electrical Regulations. On metal containers, unit earth/ground must be bonded to the container. If the container is non metallic, metal flanges or coupling used to mount the probe should be bonded to earth/ground. This also applies to probes mounted in wooden or plastic tops of metal bins.



Commissioning

The AUTO-SET can be calibrated automatically, manually or by a combination of both methods. After initial calibration, the unit can be recalibrated by any of the methods detailed, as and when required.

IMPORTANT - The calibrate switch (P/C) must be switched to the 'C' (calibrate) position, otherwise, all push buttons are disabled. Automatic calibration is generally the best method. If the unit is to be manually calibrated, it should be calibrated automatically or semi automatically first and then modified manually afterwards.



Automatic Calibration - Material Available

- 1) Move the calibrate switch to the 'C' position and set the auto/manual switch to the 'A' position (fig 3).
- 2) With the probe uncovered, press and release the "uncovered" button. The 'Cal' light will flash slowly for about 2 seconds and then rapidly for about 8 seconds. "Uncovered" calibration is now complete.
- 3) Fill the container to cover the probe to the required trip level and completely cover the probe for horizontally mounted ones.
- 4) Press the calibrate covered button. The 'Cal' light will flash for about 2 seconds.
- 5) Calibration is now complete. Set any time delay required and then move programming switch to the 'P' (park) position. The CAL light will now illuminate when the probe is covered.

Semi Automatic Calibration - Material Not Available

Method 1

Note: Read these instructions carefully before calibrating. This method uses a time out feature and calibration will be incorrect if the time out occurs before completion.

- 6) Proceed as per step 1 above.
- 7) Press and release the uncovered button. The 'Cal' light will flash slowly for about 2 seconds, and will then flash rapidly for about 8 seconds.
- 8) Whilst the 'Cal' light is flashing at high speed, press the uncovered button up to 99 times to set the desired calibration. The time out feature is reset back to 8 seconds each time the button is pressed. Typical settings are given in the chart shown (fig 4).
- 9) 8 seconds after the last press, the unit will time out and then the 'Cal' light will flash for the number of presses to confirm the setting.

(fig 4)

| Material | No of Presses |
|-------------------------------|---------------|
| Light. (grass grain etc.) | 5 |
| Medium. (flour oil etc.) | 10 |
| Heavy. (sand aggregates etc.) | 15 |

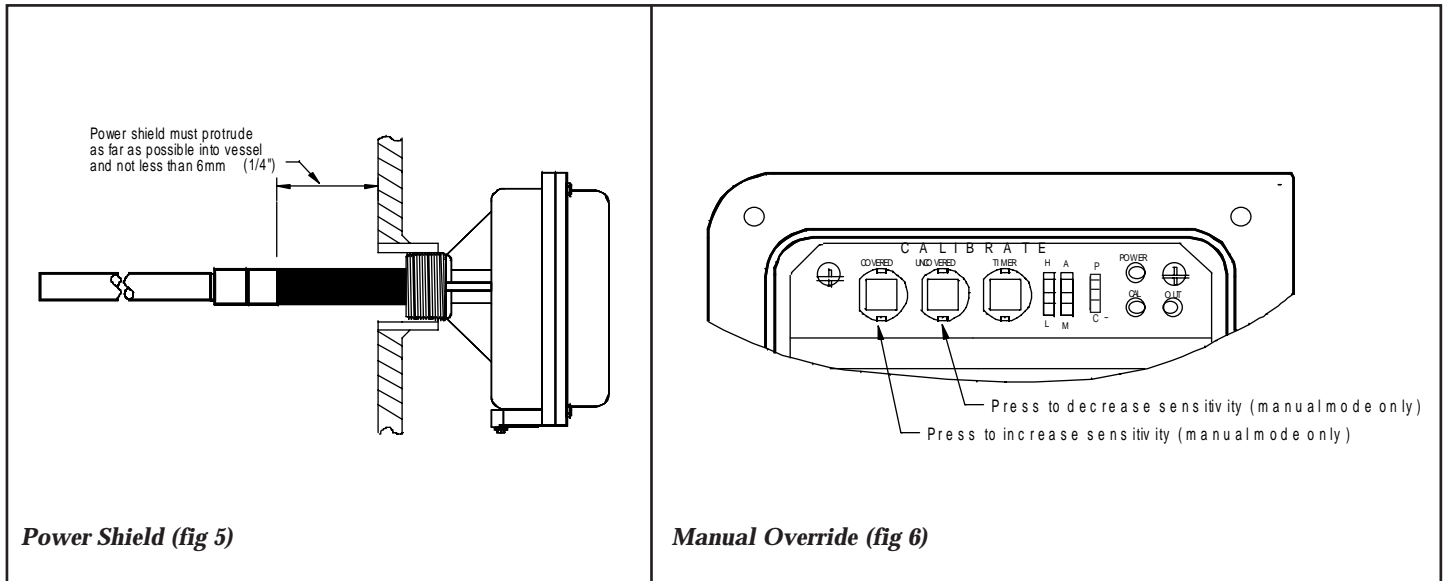
Semi Automatic Calibration - Material Not Available

Method 2

- 10) Carry out steps 1 and 2.
- 11) Set the auto/manual switch to M.
- 12) Press uncovered button & count 'Cal' light flashes, to set required setting. Typical settings are given above. (fig 4).
- 13) See step 5. Unit can be left in manual mode or returned to auto mode for auto calibration when material is available.

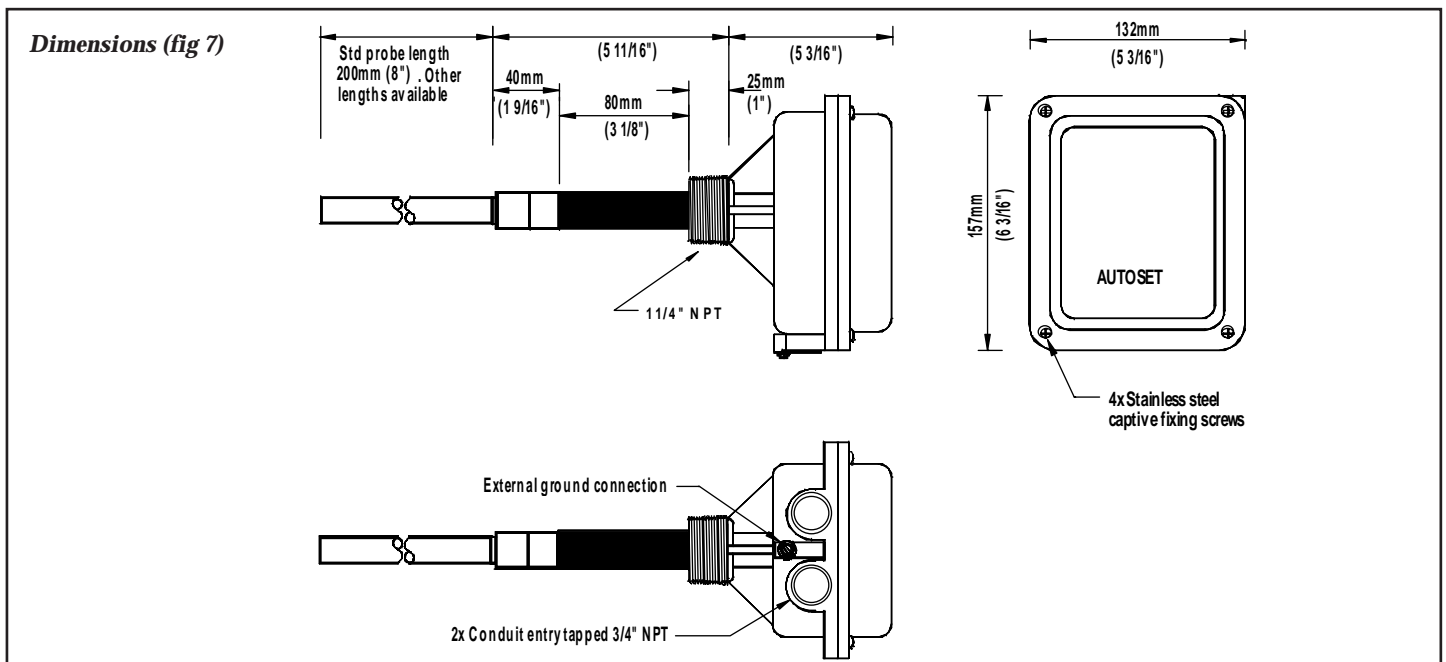
Manual Calibration (fig 4)

- 14) Set the unit up automatically using any of the methods detailed above.
- 15) Set the auto/manual switch to manual.
- 16) Each press of the covered button increases sensitivity and each press of the uncovered button decreases sensitivity (fig 6). If either button is held down, the 'Cal' light will flash, each flash indicating one press. As the unit approaches the relay switch point, the output relay may pulse. This is not a fault.
- 17) If the unit reaches maximum or minimum setting, it will be indicated by short 'Cal' light flashes
- 18) See step 5. Unit can be left in manual mode or returned to auto mode for auto calibration when material is available.



Power Shield (fig 5)

Manual Override (fig 6)



Dimensions (fig 7)

Returning to Factory Set Sensitivity (Probe Uncovered Only)

- 19) Follow "Automatic Calibration - Material Available" but carry out the complete procedure without covering the probe. The unit will recognise that covered and uncovered settings are the same and will return to factory defaults.

TIMERS

To set timer the calibrate switch must be in the 'C' position. Press button for the time period required. 'Cal' light flashes to indicate the time in seconds being set.

To cancel timer, press button for less than 1 second.

NOTES:-

- a) The AUTOSET sensitivity is proportional to the surface area of the probe. The standard 200mm x 16mm dia. probe is ideal for the majority of materials and should be treated as the minimum if possible.

If the probe length needs to be reduced to less than 200mm, the surface area should be maintained. This can be achieved by increasing the diameter, by fitting a metal tube over the probe, or by bending the probe rod. In certain high density materials it may be possible to reduce the length without compensation.

GENERAL SPECIFICATION

AUTO-SET - RF Capacitance Indicator/Probe

Features: The Auto-Set measures the 'dielectric property' (capacitance) of the material in the bin and compares this to air. This enables the unit to sense the presence or absence of material touching the probe and to provide a switched output signal for control purposes.

SPECIFICATION

| | |
|-------------------|---|
| Supply: | 110/230 Volts ac 50/60 Hz or 24 Volts dc. |
| Supply Tolerance: | -15% to +10% |
| Temperature: | -30°C to +70°C |
| Load/Consumption: | 2.5 VA |
| Output: | Voltage free, single pole change over contacts rated at 3A 240 Volts ac non inductive maximum. |
| Cable Entry: | 2 conduit entries 3/4" NPT. (One with blanking plug). |
| Connections: | Internal terminal block. |
| Sensitivity: | 0.5 to 118 pf. in 0.5 pf. steps. |
| Build-up: | Power shield automatically compensates for material build-up on probe. |
| Calibration: | Push button automatic (with manual override). |
| Indicators: | Multi-function LED;s show material detected auto-calibration in progress and probe covered/uncovered. |
| Time Delay: | User selected 0-120 seconds. Delay occurs on material arriving and leaving the probe. |
| Fail-safe: | High or low level selected by a switch. |
| Enclosure: | Flame resistant, glass filled nylon. |
| Protection: | IP65/NEMA4 dust and waterproof. |
| Classification: | FM. Class II Division 1 Groups E,F&G |
| Mounting Thread: | 1.1/4" NPT (see options) |
| Option: | Unit with 1" BSP mounting thread and 20 mm conduit entry. (Non FM Approved) |
| Probe: | Solid stainless steel - standard probe -200 mm. (8") Solid probes available up to 2 mtrs. (72") Stainless steel wire probe available up to 10 mtrs. (33 ft.) |
| Weight: | Auto-Set without probe - 900 gms (2.0 lbs) Solid 200 mm (8") probe - 300 gms (0.66 lbs) Solid 1 metre (36") probe - 1.5 kgs (3.3 lbs) Solid 2 metre (72") probe - 3.0 kgs (6.6 lbs) Wire 10 metre (33 ft) probe - 1.3 kgs (2.9 lbs) |

Conditional Limited Warranty

4B Elevator Components Ltd (4B) will pay the purchase price or repair and replace any non-conforming goods or parts, provided the purchase returns the product within one year from the date of purchase, and upon 4B's inspection, and sole discretion, 4B determines the defect or non-conforming part was caused by faulty material or workmanship. This warranty is void if the product has been repaired or serviced by anyone unauthorised by 4B, and/or if the product was not installed as required by the installation instructions which accompany the product at the time of its sale. No other warranty, however expressed or implied, is extended to any other party, and there are no other warranties, or guaranties which extend beyond this Conditional Limited Warranty. Replacement or repayment of the purchase price is the exclusive remedy of this Conditional Limited Warranty.

CERTIFICATE OF CONFORMITY

The equipment covered by these instructions have been manufactured and tested in accordance with our quality assurance procedures and conforms fully with our published specifications.

HEALTH AND SAFETY

Provided that the equipment covered by these instructions are installed and operated as directed, it presents no hazard and conforms fully to health and safety regulations.



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