

A GUIDE TO THE INSTALLATION, OPERATION AND MAINTENANCE OF FIRESURE FLOWMETERS IN AUTOMATIC SPRINKLER INSTALLATIONS



FIRESURE FLOWMETER TYPES – APPROVED BY LPCB



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1 Specification and Principle of Operation

Firegroove and Fireflange Type

1.1 Introduction

The Firesure flowmeter is a direct reading flowmeter, approved for use under the LPCB rules for automatic sprinkler installations.

These meters have been approved for installation with the gauge glass in the vertical position. There should be at least five diameters of straight pipe upstream and downstream of the orifice plate. When the meter is not being used any test pipe isolation valves and the indicator pressure tapping valves should be kept closed. To avoid risk of glass breaking in freezing conditions, unscrew filter and drain assembly 1 turn.

1.2 Construction and Specification

Main Orifice Carrier: 316 Stainless Steel flow orifice mounted in a polyester coated Mild Steel carrier

Bypass Flow Indicator: Nickel-plated Copper tubing and Brass connections
Stainless Steel filter element, restrictor rodding and float indicator
Borosilicate Glass indicator tube
Viton and Polyurethane seals

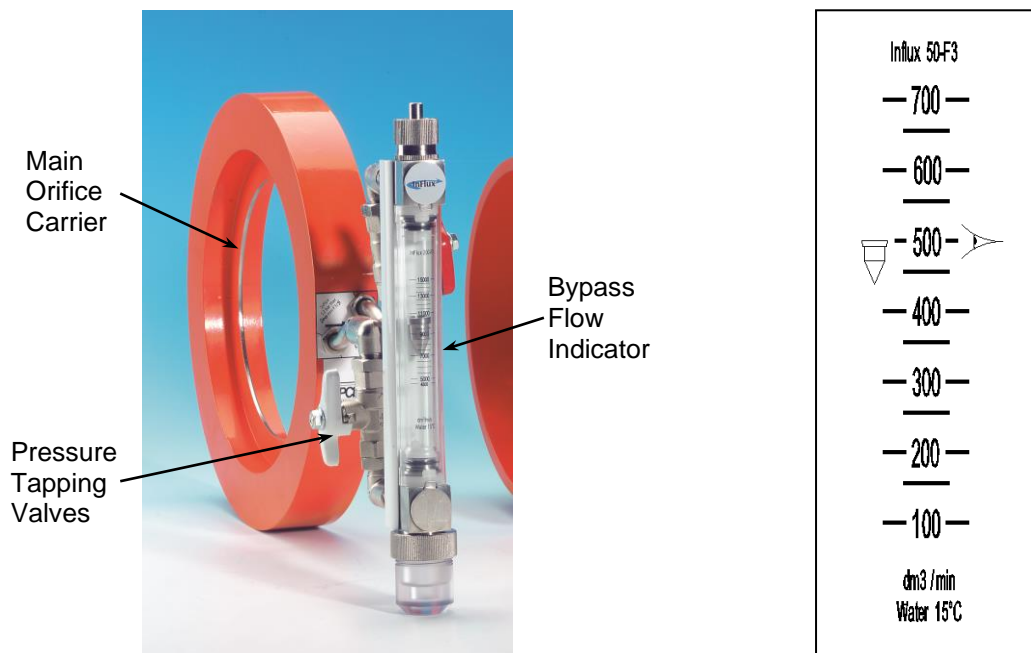
Max Operating Pressure: 16 bar

Max Operating Temperature: 90°C maximum

Connection: Fireflange – Wafer style bolted between flanges
Firegroove – Cut groove pipe ends using approved pipe couplings

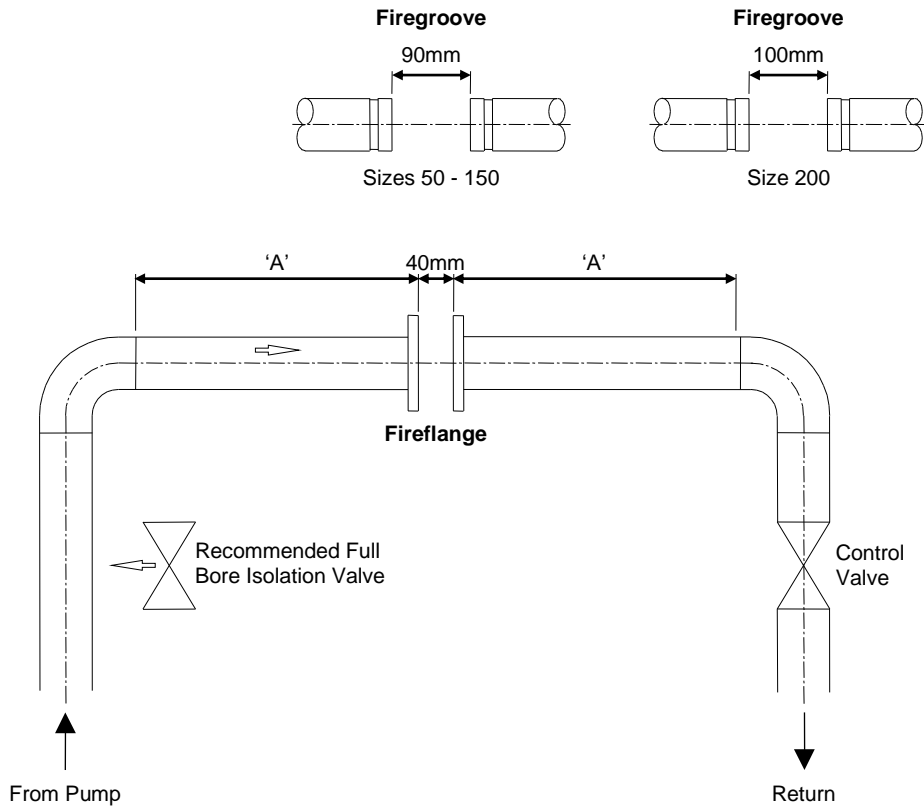
1.3 Principle of Operation

Water flow through the main orifice, creates a pressure difference between the two pressure tapping ports. These pressure ports are connected across the bypass flow indicator, causing a small bypass flow through the indicator, directly related to the flow through the main orifice. An indicating float positioned within the glass tube can be read against scale markings, which show the flow rate delivery of the installation.



2 Installation

2.1 Pipe Line Configuration

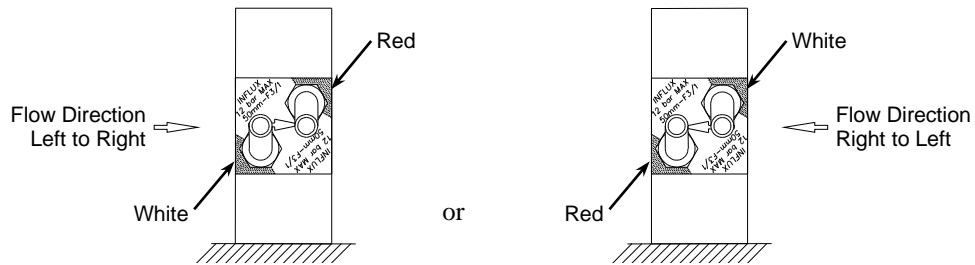


464a/01, 464a/06	F3/1, F3/6	50	250	BS1387
464a/02, 464a/07	F3/2, F3/7	80	400	BS1387
464a/03, 464a/08	F3/3, F3/8	100	500	BS1387
464a/04, 464a/09	F3/4, F3/9	150	750	BS1387
464a/05, 464a/10	F3/5, F3/10	200	1000	BS3600
LPCB Ref. No.	Type	Nom. Size mm	'A' mm	Pipe Spec.

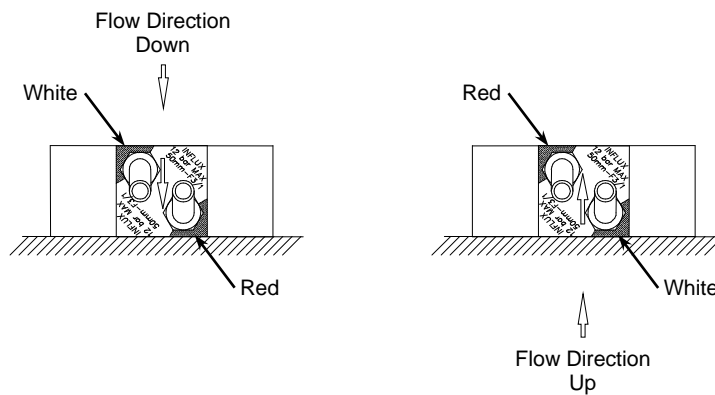
Firesure Flowmeter recommended pipeline configuration for automatic sprinkler installation.

2.2 Main Orifice Carrier Preparation

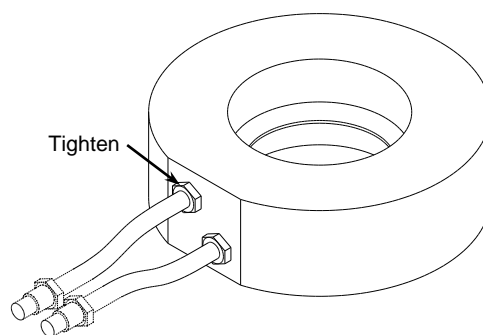
- a) For Horizontal Pipe Work Mounting – Connect joggled connection pipes as shown



- b) For Vertical Pipe Work Mounting – Connect joggled connection pipes as shown

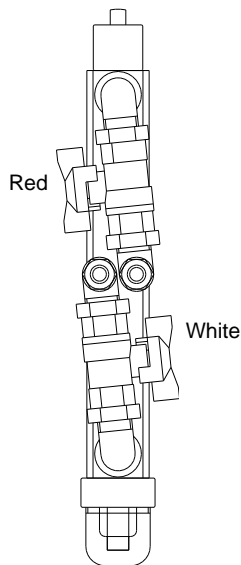
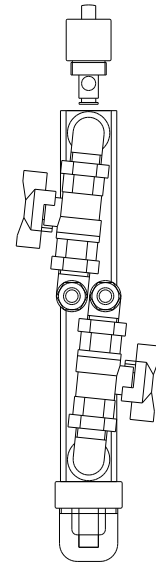


- c) Rotate Pipes to Position Shown in a) or b)
Check pipes for horizontal alignment.
Ensure that the pipes spacing matches the rear bypass indicator connections.
Tighten pressure tapping nuts.



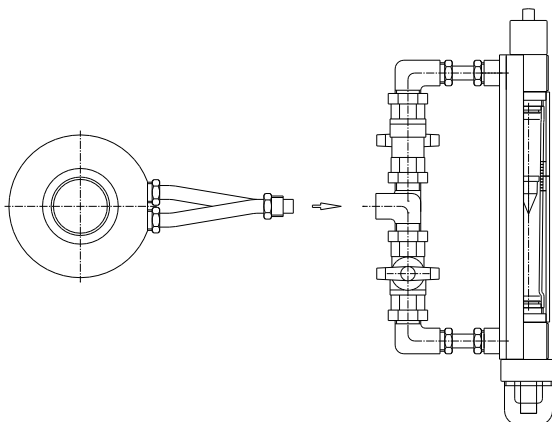
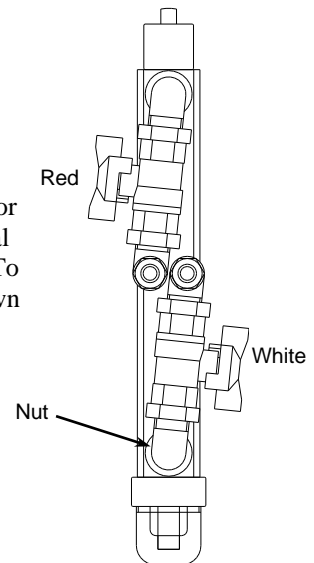
2.3 Connecting the Bypass Indicator

Remove red plastic stop and retaining rod from top block. Remove retaining screw and assemble restrictor and bleed assembly to indicator top block with retaining screw in place.



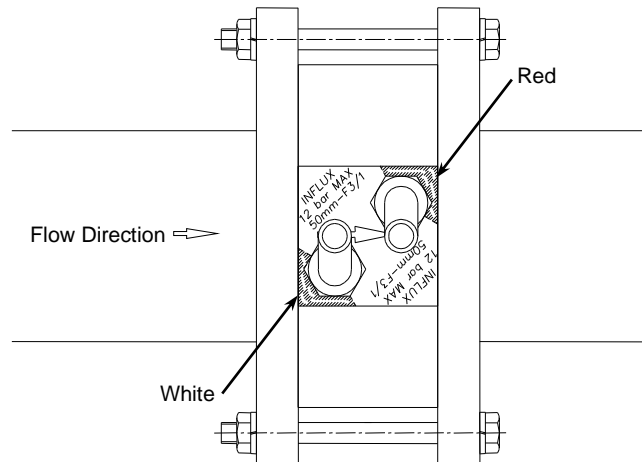
Rear view of indicator **as supplied** suitable for connection to main orifice carrier for horizontal flow right to left or vertical flow upward.

Rear view of indicator **adjusted** and suitable for connection to main orifice carrier for horizontal flow left to right or vertical flow downwards. To adjust loosen nuts, rotate arms to position shown and retighten nuts.



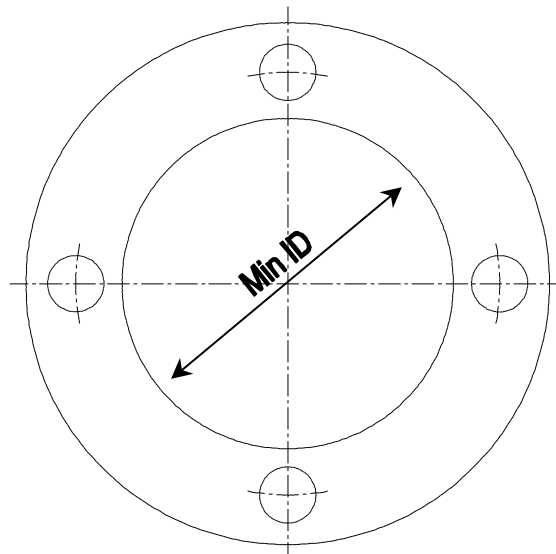
Connect Bypass unit to main orifice carrier ensuring that 'white' marked pressure point connects with 'white' handled tap and 'red' pressure point connects with 'red' handled tap. Tighten connecting nuts, keeping indicator vertical.

2.4 Installation In-Line



- Ensure direction arrow is consistent with viewed direction of flow and position **Fireflange** between pipeline flanges concentrically. Concentricity can be achieved by ensuring the carrier outside diameter is central to the fixing bolts.
- Firegroove** type should be fitted with approved couplings suitable for groove cut joints.
- When fitting Fireflange type, ensure that any sealing gaskets do not obstruct the pipe line or carrier bore.

Size / Model	Min ID Gasket Permissible
50	53mm
80	79mm
100	103mm
150	155mm
200	204mm



3 Operation

3.1 Flow Test Ranges

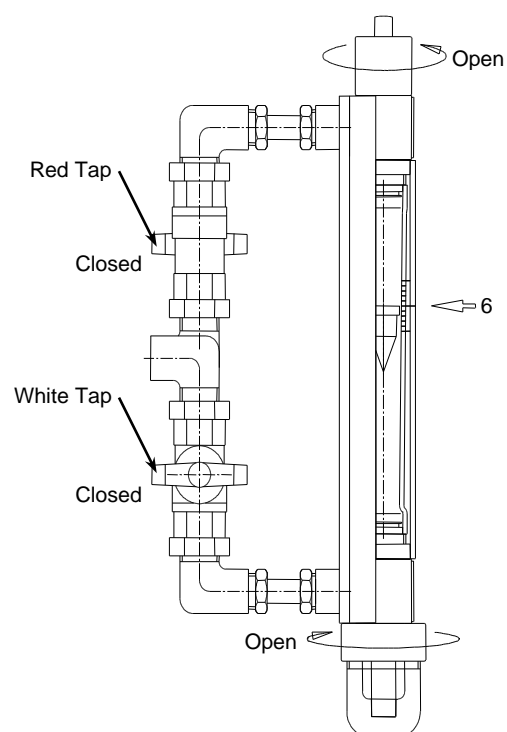
The Firesure flowmeter is designed to test that the automatic sprinkler installation meets the required flow rate needs. Each size of flowmeter meets a particular duty as shown below.

Size / Model	Flow Range (dm ³ /min)
50	150 - 700
80	300 - 1600
100	500 - 3500
150	900 - 7900
200	2000 - 15000

Note: To ensure that the correct flow scale is fitted, the Firesure has a BLACK scale and must only be connected via the short, joggled connection pipes to its' appropriate carrier. A scale identification code is also printed on the glass indicator which, matches with the BLACK printed orifice carrier LPCB identification label.

3.2 Flow Testing and Reading

- 1) With bypass taps in closed position direct flow through meter pipe line.
- 2) Open bypass indicator taps.
- 3) Bleed air from bypass by opening bleed assembly one revolution.
- 4) Close bleed assembly when air is bled.
- 5) Press restrictor button full home and release.
- 6) Flow rate is shown by aligning the top of the float with scale markings. Test flows are highlighted on the scale. Refer to section 1.3.
- 7) When test is completed, close bypass taps and drain by opening drain assembly and bleed assembly one turn.
- 8) Visually check filter bowl. If dirty, remove by unscrewing fully and clean filter element.
- 9) After draining close filter and bleed assemblies.



Filter and Drain Assembly

3.3 Fault Checking

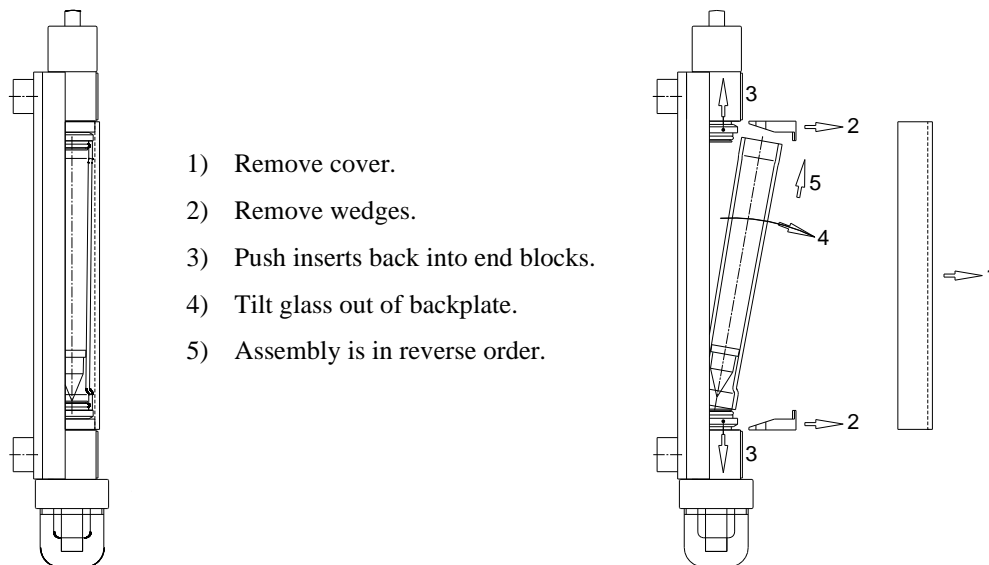
Observation	Possible Causes	Remedy
No Flow Indication.	Bypass taps closed. Restrictor clogged. Connections reversed to flow.	Open Taps. Press & release restrictor button or remove and visually check restrictor. Check procedure.
Flow Indication Low.	Restrictor clogged. Filter heavily clogged. Air trapped in bypass. Orifice carrier reverse installed	As above. Remove and clean filter. Bleed air from bypass. Check flow direction against carrier label arrow.

4 Maintenance

4.1 Changing Glass Indicator

It is recommended that a spare glass indicator is kept together with any other spares listed in 4.2 below. In the case of breakage a glass tube indicator is required. Refer to the meter size (shown on the carrier label or tube) and the spares codes in 4.2.

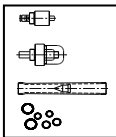
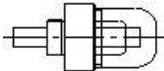
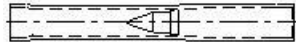

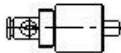
NOTE: This model uses BLACK scaled tubes. These should never be replaced with RED scaled tubes which are used for the extended indicator model (Firesure X) and have different ordering codes.



- 1) Remove cover.
- 2) Remove wedges.
- 3) Push inserts back into end blocks.
- 4) Tilt glass out of backplate.
- 5) Assembly is in reverse order.

4.2 Recommended Spares

In the event of damage or loss the following spare parts are available:

1) Spares Kit		Part No. S1052-SF3/--- (refer to Nom. Size mm)
2) Filter Element		S1001
3) Glass Tube Indicator		SF3/--- (refer to Nom. Size mm)
4) Seals Kit		S1002
5) Restrictor & Bleed Assembly		S1000