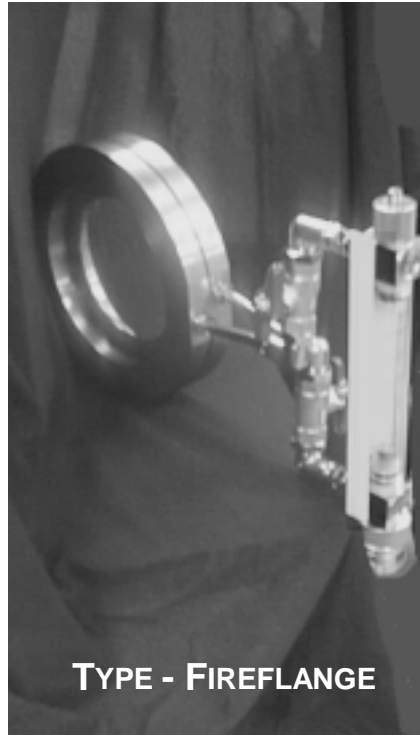


**A GUIDE TO THE INSTALLATION, OPERATION AND MAINTENANCE OF
FIRESURE**

FLOWMETERS IN AUTOMATIC SPRINKLER INSTALLATIONS



TYPE - FIREGROOVE



TYPE - FIREFLANGE

FIRESURE FLOWMETER TYPES – APPROVED BY LPCB

Contents:	Page
1 Specification and Principle of Operation	
1.1 INTRODUCTION	2
1.2 CONSTRUCTION AND SPECIFICATION.....	2
1.3 PRINCIPLE OF OPERATION	2
2 Installation	
2.1 PIPE LINE CONFIGURATION	3
2.2 MAIN ORIFICE CARRIER PREPARATION	4
2.3 CONNECTING THE BYPASS INDICATOR.....	5
2.4 INSTALLATION IN-LINE	6
3 Operation	
3.1 FLOW TEST RANGES	7
3.2 FLOW TESTING AND READING.....	7
3.3 FAULT CHECKING	7
4 Maintenance	
4.1 CHANGING GLASS INDICATOR.....	8
4.2 RECOMMENDED SPARES	8



LPS1045.1
464a/01-10

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.

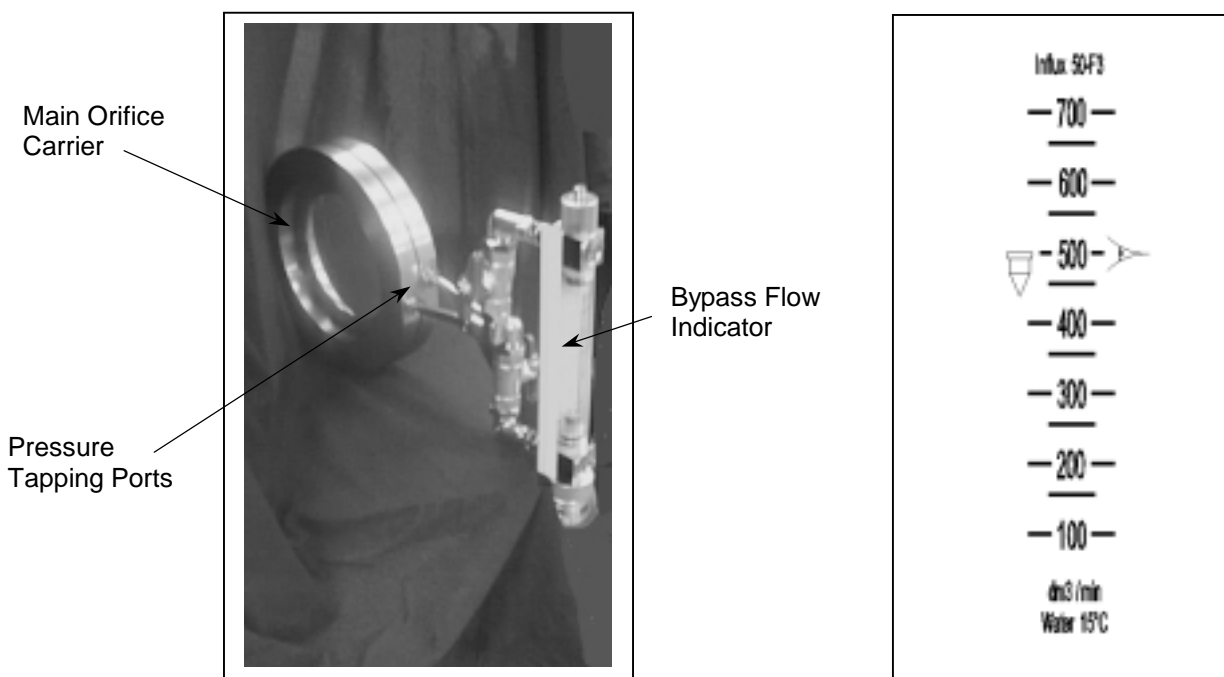
These meters have been approved for installation with gauge glass in the vertical position. There must be at least five diameters of straight pipe upstream and downstream of the orifice plate. The isolating valve on the pressure tapping ports must be kept closed when the meter is not being used. A spare gauge glass must be provided and located in the cabinet containing the stock of replacement sprinklers.

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 -	12 bar
Max Operating Temperature -	90°C maximum
Connection -	Fireflange - Wafer style bolted between flanges Firegroove – Cut groove pipe ends using approved pipe couplings

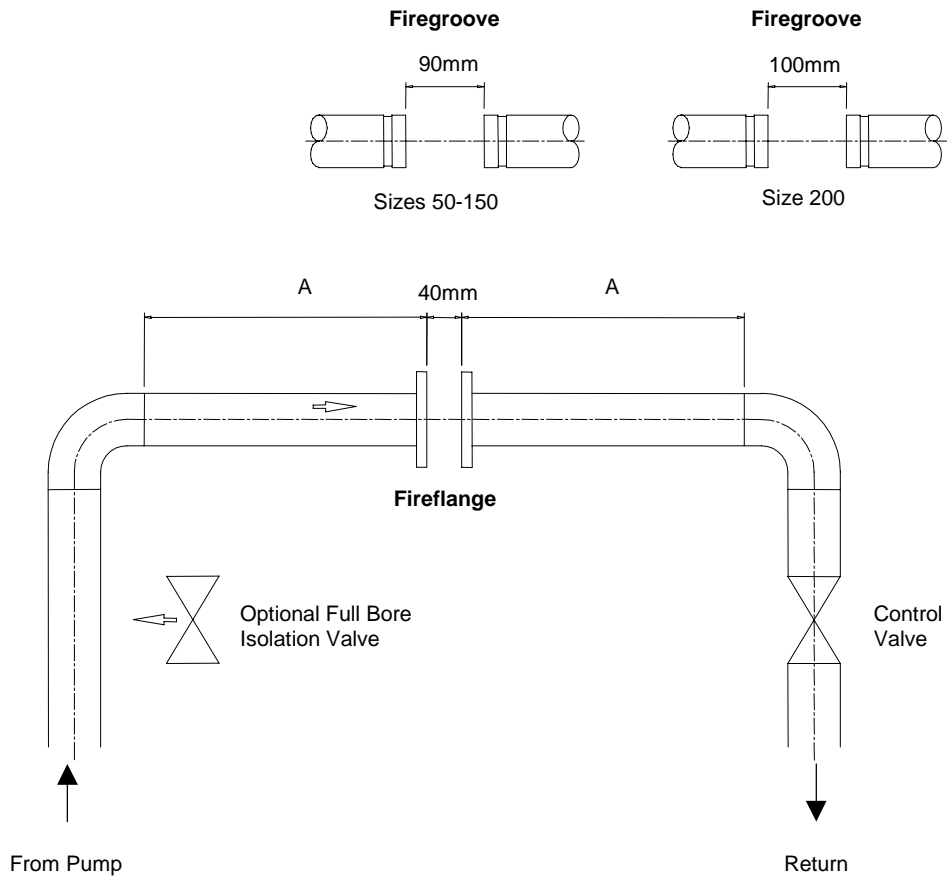
1.3 Principle of Operation

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

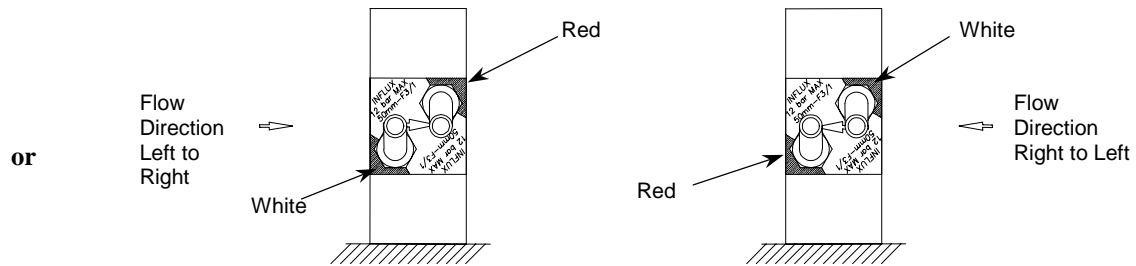


464a/01, 464a/06	F3/1, F3/6	50	250	BS1387
464/a02, 464/a07	F3/2, F3/7	80	400	BS1387
464/a03, 464/a08	F3/3, F3/8	100	500	BS1387
464/a04, 464/a09	F3/4, F3/9	150	750	BS1387
464/a05, 464/a10	F3/5, F3/10	200	1000	BS3600
LPCB Ref. No.	Type	Nom. Size mm	A mm	Pipe Spec.

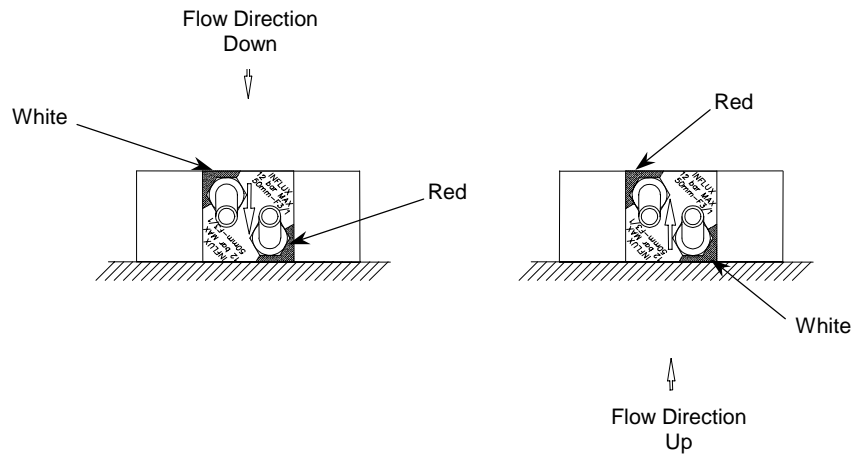
Recommended pipeline configuration for automatic sprinkler installation of Firesure Flowmeter.

2.2 Main Orifice Carrier Preparation

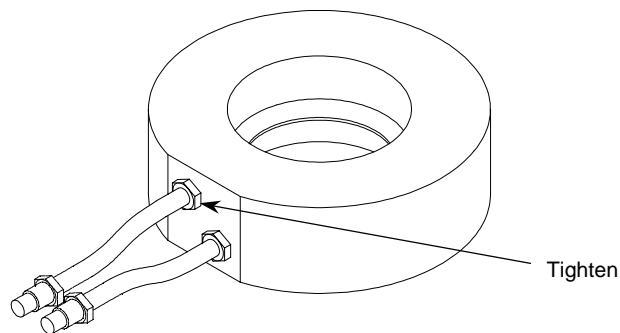
a) For Horizontal Pipe Work Mounting – Connect joggled connection pipes as shown



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

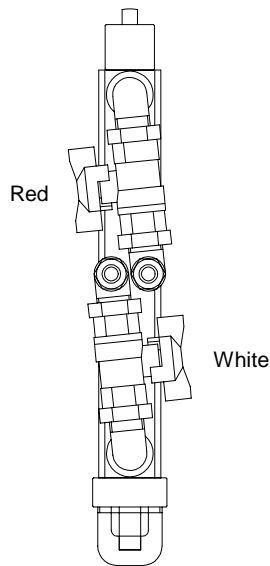
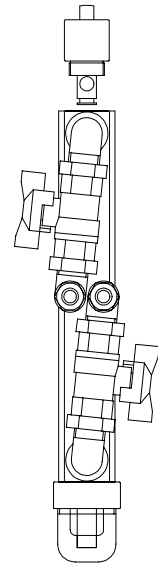


- c) Rotate Pipes to Position Shown in a) or b)
Check pipes for horizontal alignment.
Ensure that the pipes spacing matches the rear bypass indicator connections.
Tighten pressure tapping nuts.



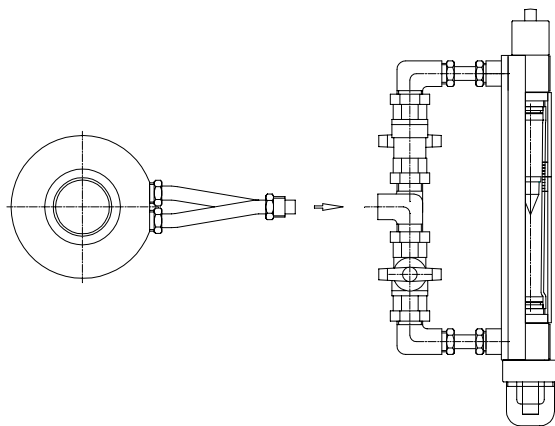
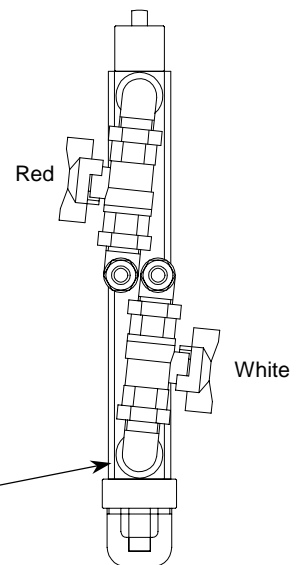
2.3 Connecting the Bypass Indicator

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.



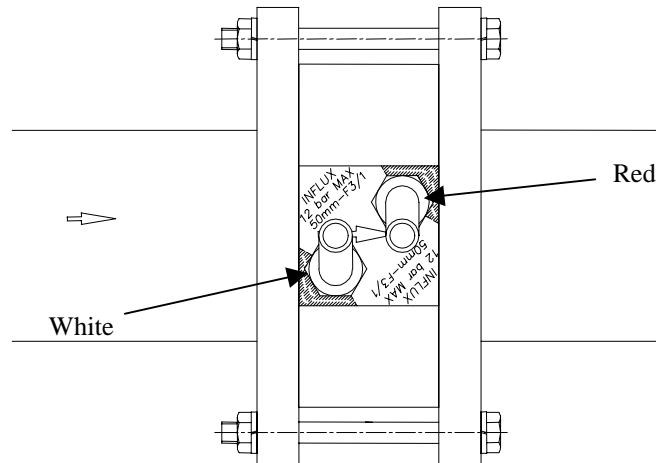
Rear view of indicator piping as **supplied** suitable for connection to main orifice carrier for horizontal flow right to left or vertical flow upward.

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.



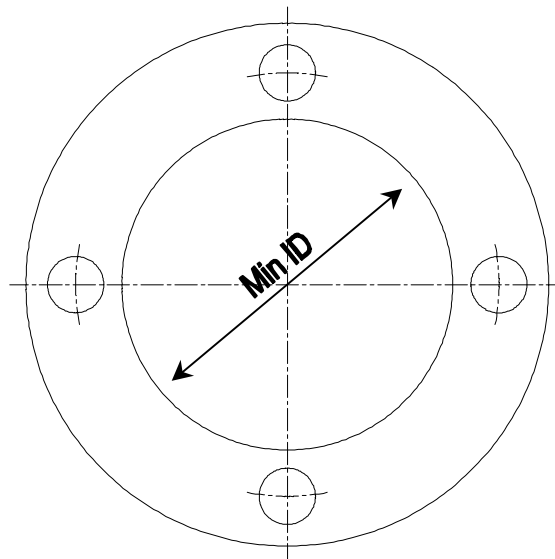
Connect By Pass unit to main orifice carrier ensuring that 'white' marked pressure point connects with 'white' handled tap and 'red' pressure point connects with 'red' handled tap. Tighten connecting nuts, keeping indicator vertical.

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

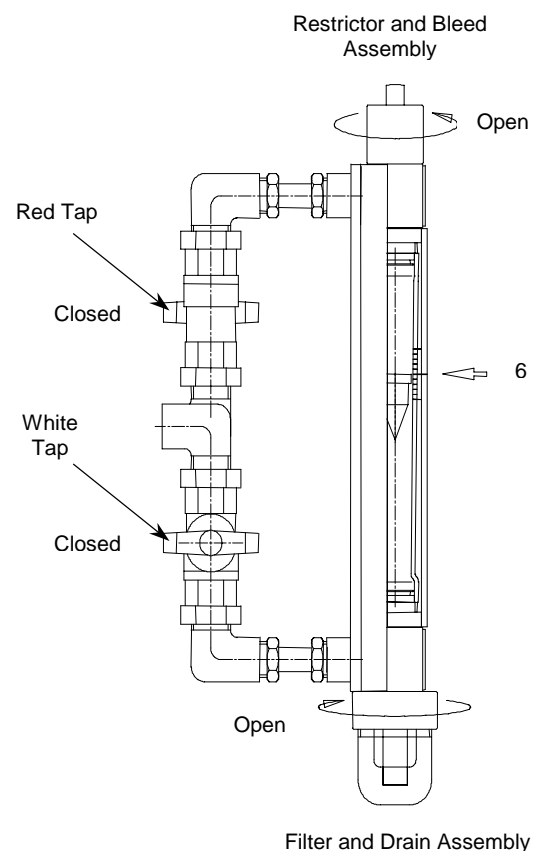
3.1 Flow Test Ranges

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	Flow Range	Test Flows dm ³ /min
50	150-700	500
80	300-1600	500, 800, 1300, 1500
100	500-3500	500, 800, 1300, 1500, 2200, 2500, 3500
150	900-7900	1300, 1500, 2200, 2500, 3500, 4500, 5000, 7000
200	2000-15000	4500, 5000, 7000, 9000

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.
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.



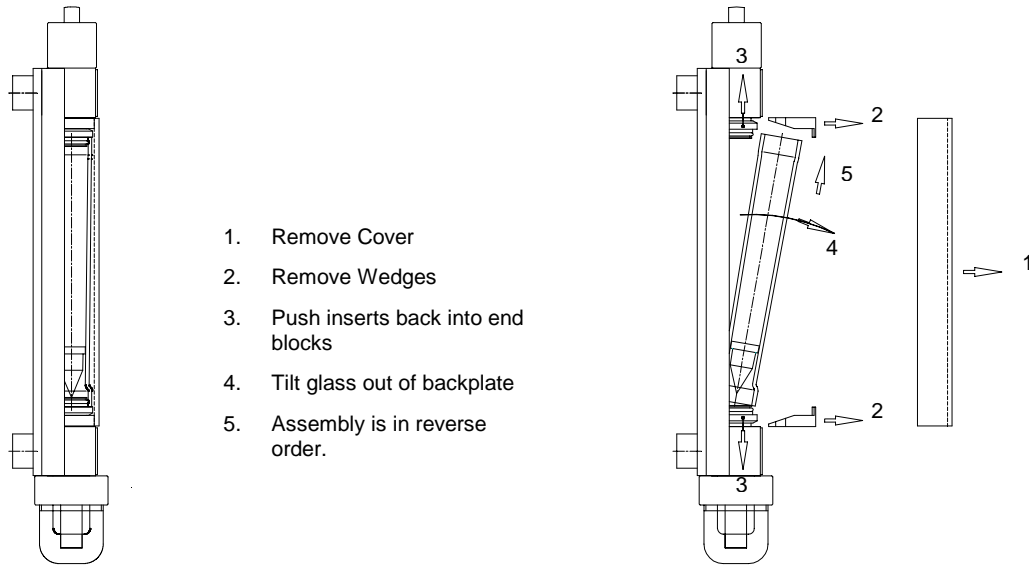
3.3 Fault Checking

Observation	Possible Causes	Remedy
No Flow Indication	Bypass taps closed Restrictor clogged Connections reversed to flow	Open Taps Press & release restrictor button Check procedure
Flow Indication Low	Restrictor clogged Filter heavily clogged Air trapped in bypass	Press & release restrictor button Remove and clean filter Bleed air from bypass

4 Maintenance

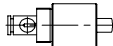
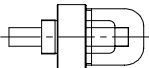


4.1 Changing Glass Indicator

In case of breakage a glass tube indicator would be required. Refer first to the Firesure model number F3/- on the carrier label or tube before ordering a replacement.



4.2 Recommended Spares

If the installation and operating procedures are followed there should be no need for maintenance. In the event of accidental damage or loss the following spare parts are available:

		<u>Part No.</u>
Restrictor and bleed assembly		S1000
Filter element and drain		S1001
Glass Tube Indicator		F3/-
Seals Kit		S1002