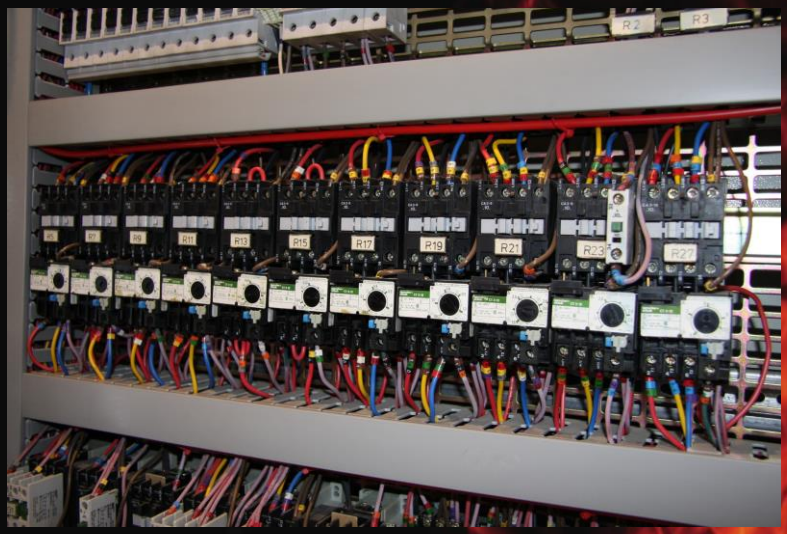
FIRETRACE® LTD

AUTOMATIC FIRE SUPPRESSION SYSTEMS

Issue 9 Nov 2017

Firetrace® "**Direct Novec 1230**" Automatic Fixed Fire Suppression Systems For **Electrical Applications**



Please read instructions carefully prior to starting installation

www.firetrace.co.uk
Tel: 01473 744090
info@firetrace.co.uk

Stops fires where they start

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System Overview

The Fixed Firetrace® system is a simple self-actuating device that is designed to suppress fires within an identified risk area. **The cylinder is not intended for portable use.**

The system works by using pressurised Firetrace® linear detection tubing that is installed throughout the risk area. This Firetrace® tubing is heat sensitive and when subjected to a temperature above 120 Degrees centigrade, or when touched by flame, the Firetrace® tubing will rupture and form a diffuser.

The Novec 1230 extinguishant is then deployed via this diffuser directly into the heart of the fire.

The Firetrace® system requires no external power source or separate detectors and owing to its simple design ensures that all of the extinguishant is always deployed in the Fire area.

The system can be fitted with a volt free single pressure switch (FT0124) or volt free twin pressure switch (FT0124/T75) which when connected to the cylinder not only provides constant monitoring of the system but can also send a signal to indicate a discharge via a Self-contained Alarm Sounder (FT0178) or building alarm system.

It is important that both the cylinder & Firetrace® tubing are correctly installed and that the system is subjected to a regular maintenance regime in line with BS5306-3 by a competent engineer.

FT0178 Self-Contained Alarm Sounder

FT0178/SS Self-Contained Alarm Strobe Sounder

Firetrace Installation Instructions

Cylinder

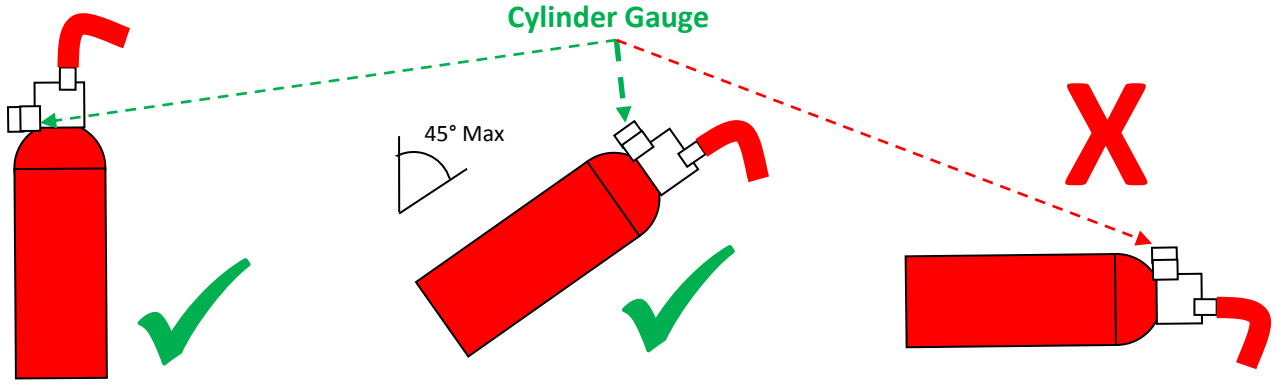
When installing the Firetrace® system it is important that a suitable cylinder location is selected and that the cylinder is orientated correctly.

The cylinder location shall be in a clean area away from direct heat. The cylinder must not be placed in a location where the ambient temperature is above 80 Degrees centigrade.

The cylinder shall be readily accessible to allow future servicing / inspections and as close as practicable to the risk area.

The cylinder shall be adequately fixed to a suitable load bearing surface.

Wherever possible the cylinder shall be **mounted vertically** and in no circumstances must the cylinder be positioned at an angle of more than 45 Degrees from vertical.
The cylinder gauge shall face uppermost to aid inspection.



It is recommended wherever possible that Firetrace® cylinders be mounted vertically. Where vertical locating is not possible the systems can be mounted within 45° of vertical.

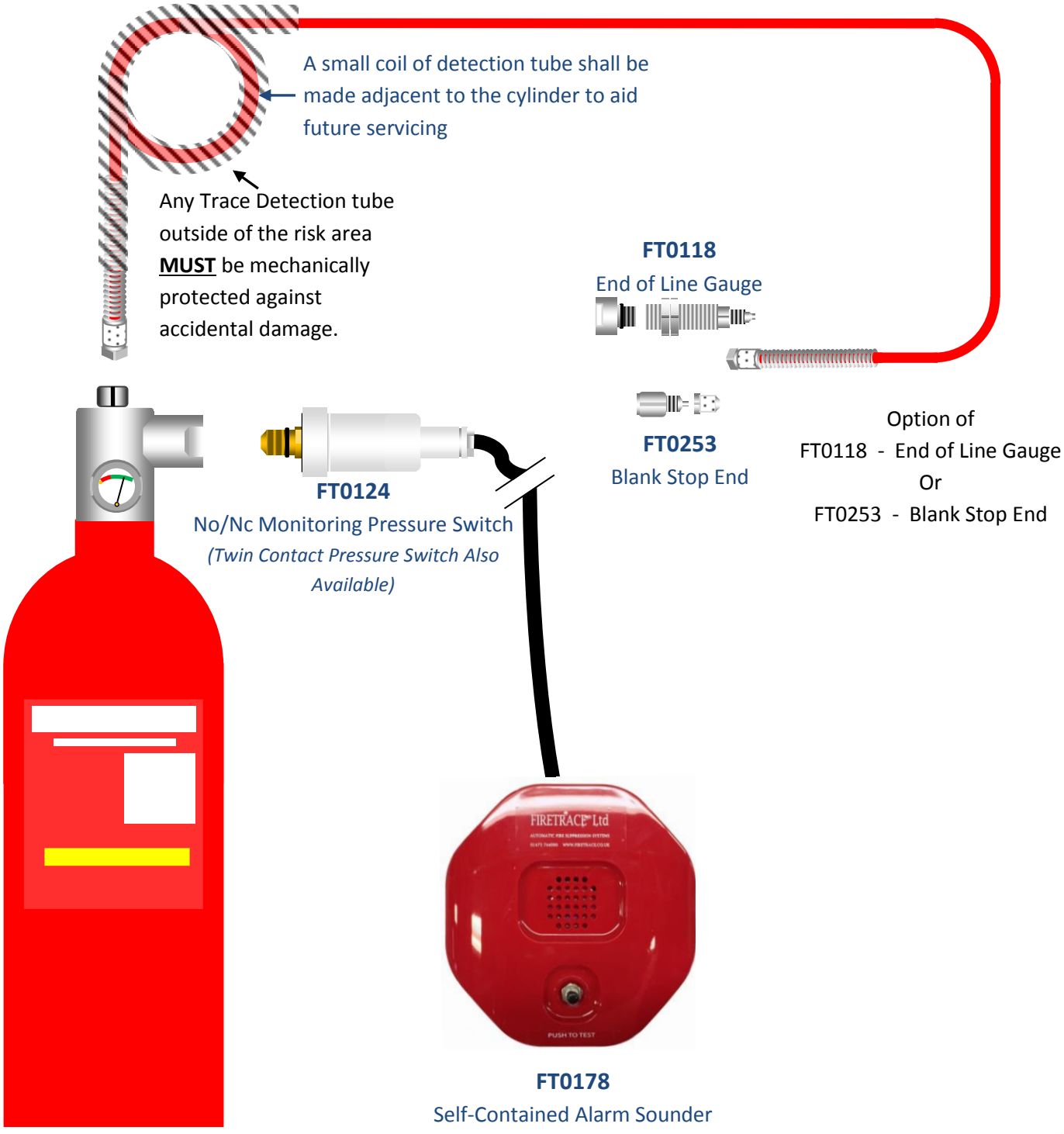
As indicated in the above drawing when cylinders are fitted at an angle the gauge must face uppermost.

MOST FIRETRACE® SYSTEMS ARE NOT SUITABLE FOR HORIZONTAL MOUNTING.

A free training course at our Ipswich facility is available to have a better understanding of Firetrace® installation and products. Please contact us for more details.

Direct Low Pressure Firetrace® System

With New Integrated Isolate Valve



Stops fires where they start

Firetrace® Automatic Detection Tubing

The Firetrace® Automatic Detection tubing is the key part of the system and acts not only as the detector but also as the delivery method for the Novec 1230.

The correct installation of the tubing is important to achieve optimum performance from the system.

The tubing must be mechanically protected outside the identified risk area and shall remain accessible to allow future servicing.

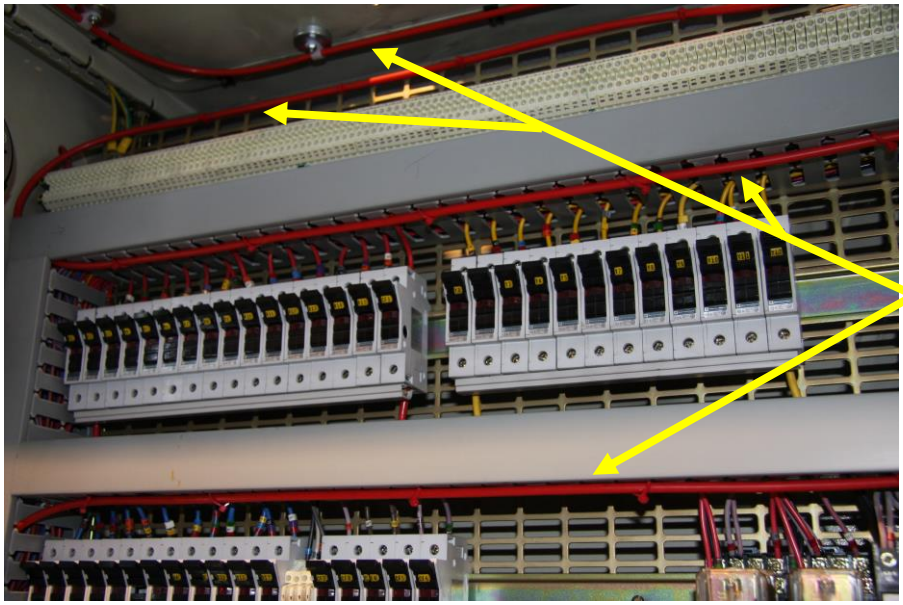
As heat rises, the Firetrace® tubing is most efficient when mounted directly above the risk.

The tubing will activate at approximately 120 Degrees Centigrade and care must be taken to avoid attaching the tubing where temperatures above this are achieved during normal operation.

It is recommended that the tube is a minimum of 150mm away from exceptionally hot.

Tube Routing

As the Firetrace® detection tube is flexible the exact tube route can vary from cabinet to cabinet. The basis of the system design is to circumnavigate the electrical cabinet so that any potential risks are covered. (Please see tube bending radius guide on page 11)

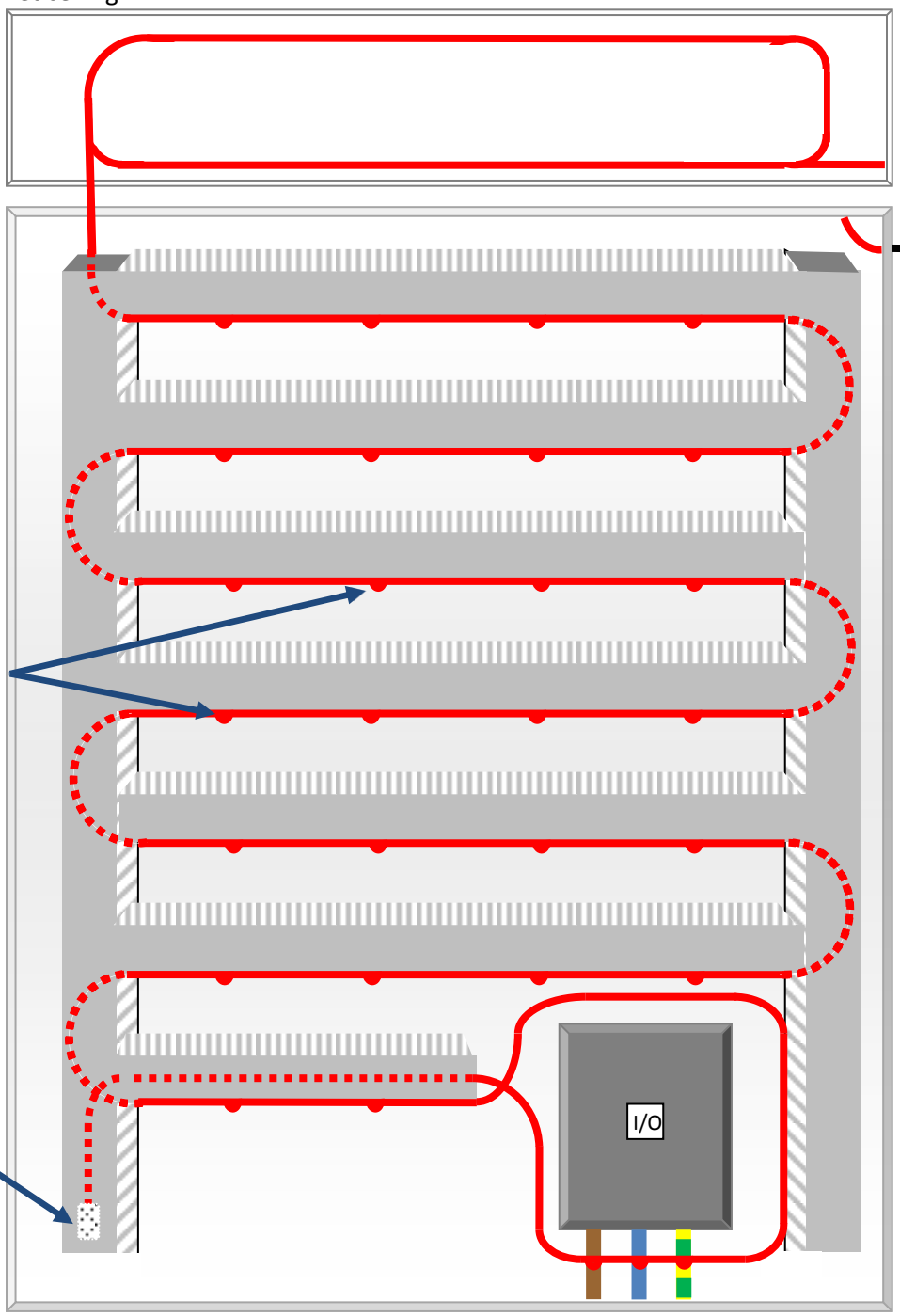


Single Cabinet Installations

The extinguishant must have no further than 20m to travel from the cylinder to the furthest burst

Trace detection tube outside of the risk area must be protected by flexible conduit

Interior view of cabinet ceiling



FT0159
Small Red Cable Ties

FT0253
Blank Stop end is typically used

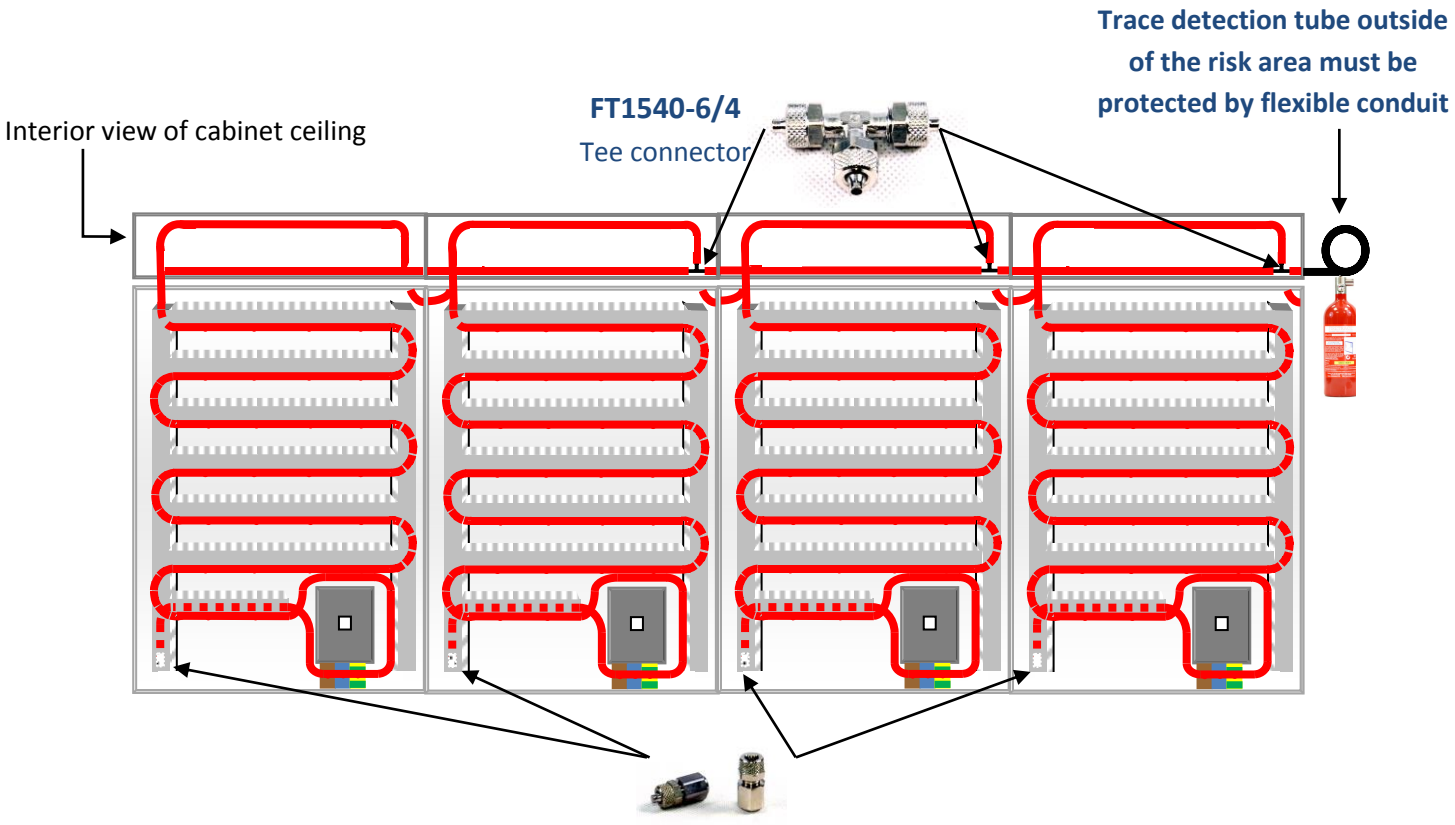
Stops fires where they start

Multiple Cabinet Installations

The extinguishant must have no further than 20m to run from the cylinder to the furthest burst

When installing a Firetrace® system to multiple adjacent cabinets, it is important to keep the distance from the cylinder to the furthest blank stop end to a minimum.

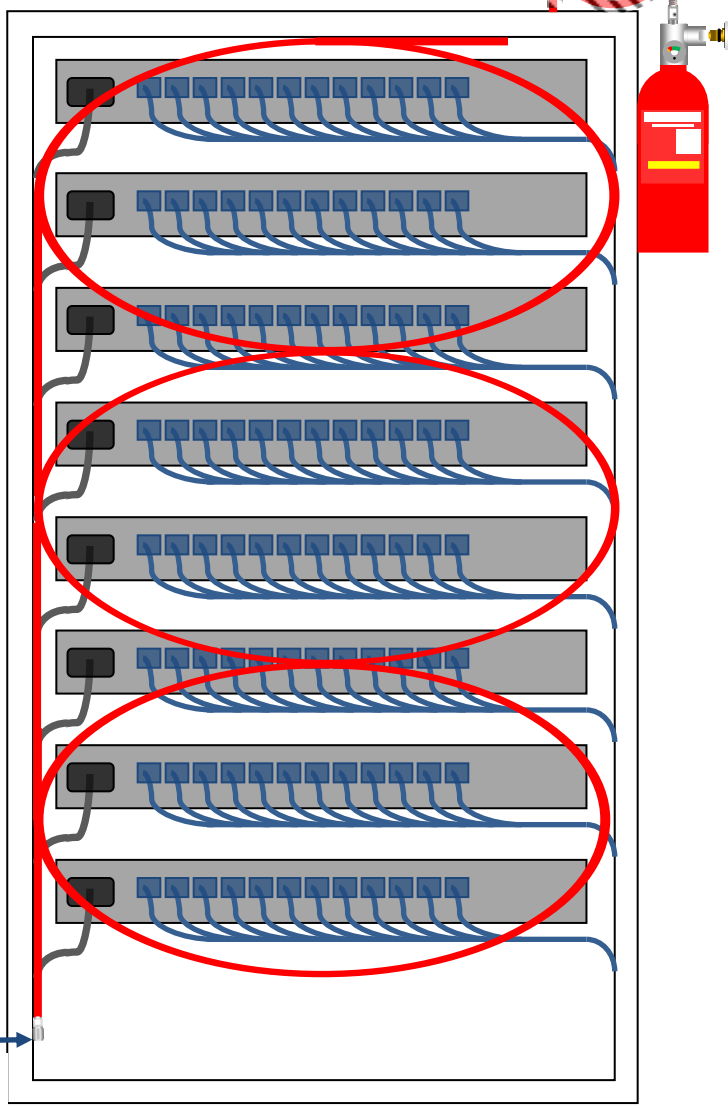
This can normally be easily achieved by using a tee connector between banks of cabinets as shown below.

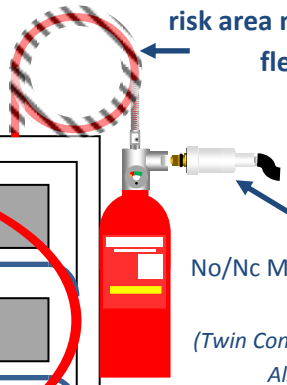


Data Rack Installation

A loop of trace detection tube shall be installed around the roof of the cabinet

Trace detection tube outside of the risk area must be protected by flexible conduit





FT0124
No/Nc Monitoring Pressure Switch
(Twin Contact Pressure Switch Also Available)

FT0253
Blank Stop End

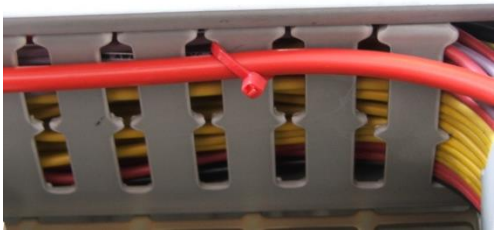
Multiple cabinets shall be installed using tee connectors and blank stop end in the same manner as electrical cabinets

Tube Fixings

The Firetrace® detection tubing needs to be adequately fixed to retain its position.

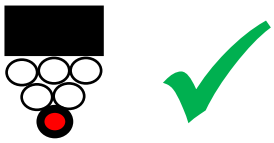
The tubing is a soft polymer and is susceptible to wear / chaffing when repeatedly rubbed against a hard or sharp surface. The tubing should be protected where it passes through holes.

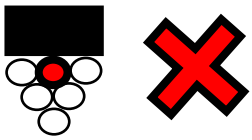
The following photograph shows “Tyrap” fixing to the underside of the cable ducting.



Always leave a small loop of tubing adjacent to the cylinder. Whilst this shall also be secured it must be releasable to allow future servicing of the cylinder.

Where the tubing is installed with a group of other cables it must be positioned on the underside of the loom and must never be located within the center of the loom.



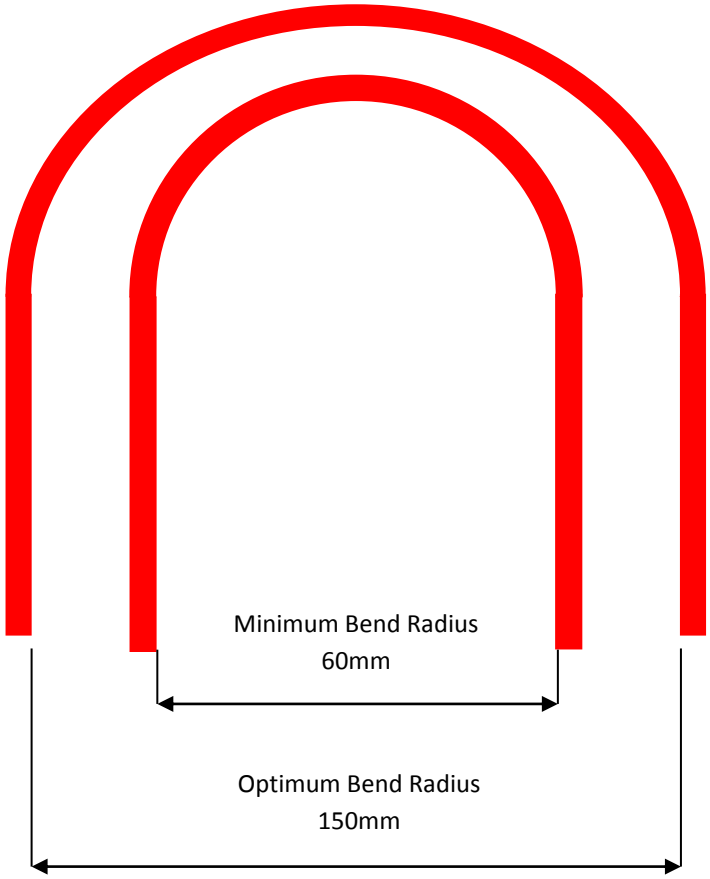


Tube bending radius

The Firetrace® tubing acts as the detector and provides the delivery of the extinguishant. It is imperative that the tubing is not kinked or crushed and the following minimum bending radius must be adhered to.

If the tubing be kinked or damaged in anyway then the Firetrace® tubing in that section must be replaced:

FT0115 Firetrace® tubing 6mm: **Minimum bending radius 60mm**



Connecting the Firetrace® Tubing onto the fitting

All compression fittings must be secured in the following manner:

a) Cut the tube end ensuring the cut is clean and free from burrs. Check that no debris/ swarf has been left in the tube.

b) Place the nut over the end of the tube with its threaded section towards the end of the tube.

c) Push the tube fully home into the body.

d) The nut shall be tightened finger tight and then using a 12mm Spanner pinched up to firm hand tightness

e) Slacken off the assembly and inspect end to ensure flange has formed correctly then reconnect and tighten down to ensure an effective seal.

Method of Assembly

1. Tubing must be cut off square.

2. Insert tubing into tubing nut.

3. Offer the tubing to the fitting so that the tubing bottoms on the tubing stop. (*this requires a firm push if cold*)

4. Hold the tubing in contact with the tubing stop and screw the tubing nut down to the recommended torque. *(torque = 5.7 Nm)*

The use of a tube cutter (FT0127) is recommended for an accurate cut of the Trace Detection Tube.

5. Slacken off the assembly and inspect end to ensure flange has formed correctly then reconnect to fitting and tighten down to ensure an effective seal.

Commissioning Instructions

Warning Firetrace® cylinders contain 12 bar pressure

This procedure shall be read in conjunction with system layout for Direct Low Pressure systems with Integrated Isolate Valve on page 5 of this booklet.

Do not turn integrated isolate valve until system is fully commissioned *(pressurised)*

Locate cylinder and firmly secure with bracket provided

Remove black cap from the top of the cylinder. Connect red Trace detection tube, tighten silver nuts and secure with appropriate clips

Remove blank plug from pressure switch port

Fit Schrader adapter FT0172 and pressurise to **12 Bar / 175 psi using a nitrogen bottle or air pump.**

Remove Schrader adapter FT0172, remove gauge from gauge port and fit into pressure switch port. *(Fit blanking plug into Gauge port to keep dust and debris out)*

Using tape, mark the location of the needle on the pressure gauge *(Mid Green)* and **leave system for a minimum of ten minutes per metre of Trace detection tube to check for any leaks on the detection tube.**

When satisfied pressure is good and no leaks have occurred, remove blank plug and open isolate valve slowly using the key provided. Remove gauge from pressure switch port and fit into gauge port.

System is now live

Optional FT0124 pressure switch can be fitted in gauge adapter on head assembly or if not pressure switch supplied, refit the blank plug

Closed

Please note system will not operate with isolate valve in closed position

Open

Stops fires where they start

6mm Trace Detection Tube Components

FT0269/1/M
Banjo Adapter

FT1540-6/4
Tee

FT1723-6/4
Anti Kink Spring Nut

FT1550-6/4
Elbow

FT0253
Stop End

FT1580-6/4
Straight Connector

FT0268
Single Banjo

FT1590-6/4
Bulkhead Fitting

FT0269
Double Banjo

FT0118
Optional End of Line Adapter

Firetrace Pressure switch (FT0124 & FT0124/T75) Optional

The optional Firetrace® pressure switch is used to monitor the system pressure and will activate in the event of a pressure drop.

The switch can be introduced and removed from the cylinder whilst it is under pressure. This allows its operation to be proven both during commissioning and future servicing.

The Pressure switch is fitted with a black rubber “o ring” which provides the air tight seal. This “o ring” must be lubricated with silicone grease and free of any dirt or debris. Failure to ensure the “o ring” is clean can lead to a leak which will require the system needing replacement.

The switch shall be screwed into the cylinder hand tight ONLY.

The switch contains both normally open & normally closed contacts.

When connecting the pressure switch to the (**FT0178**) Firetrace Self-Contained Alarm Sounder the **BROWN** **&** GREY wires are used. The unused wires must be sleeved / insulated.

Always leave a small loop of spare cable adjacent to the pressure switch to allow future removal.

FT0124 Monitoring Switch

Set at 5 bar falling.

Common	Brown
Normally open	Grey
Normally closed	Black
Earth	Green/yellow

FT0124/T75 Twin Monitoring Switch.

Switch 1 Set at 5 bar falling.

Switch 2 Set at 7 bar falling.

Common	Brown
Normally open	Grey
Normally closed	Black
Earth	Green/yellow

Service & Maintenance for NOVEC 1230 Systems

The Firetrace® systems can operate in a harsh environment and are occasionally subjected to high temperatures and extreme vibration. It is essential that the systems are regularly serviced to ensure their correct operation.

In order to comply with British Standard BS 5306 (section three) the following maintenance tasks shall be carried out periodically.

The British standard recommends that each system is visually inspected every 3 months and then fully serviced at maximum intervals of 12 Months by a competent engineer.

All Novec 1230 systems require discharge testing at maximum 10 Year intervals.

Firetrace® Limited recommends a visual inspection of a Firetrace® system at least every three months.

The following checks shall be carried out on this inspection.

- Check the pressure gauge is reading mid-green.
- Ensure physical changes of protected areas haven't affected cylinder suitability.
- Check external surface of the cylinder for evidence of rust or corrosion.
- Report any potential problems immediately.

Firetrace Limited recommend that all systems are fully serviced every 12 Months by a competent engineer

If there's no visible sign of pressure drop then;

- ✓ Check date of manufacture and record when discharge test is required (10 years from new date on cylinder).
- ✓ Check external condition of cylinder. Replace if there is any sign of damage or wear.
- ✓ Check gauge is facing upwards (if applicable) and that cylinder is installed as upright as possible. Where necessary reposition cylinder or highlight any required modifications for return visit.
- ✓ Remove cylinder gauge and ensure correct operation. Clean and lubricate O ring and refit the gauge.
- ✓ Remove pressure switch (if applicable) and ensure correct operation. Clean and lubricate pressure switch O ring and refit switch.
- ✓ Inspect electrical cabinet and ensure Firetrace® detection tubing is correctly installed and protecting entire risk area. Check for signs of wear/damage and tighten or replace fixings as necessary.
- ✓ Record details and date of service on cylinder label. Replace cylinder into bracket and ensure it is secured by clamp / Tyrap.

If there is visible sign of pressure drop then;

- ✓ Isolate the cylinder by means of the isolate valve. Drain the trace detection tube by way of depressing Schrader valve in the end of line adapter or pressure switch port.
- ✓ Remove the cylinder and check weigh. If cylinder weight loss in greater than 5% of cylinder weight, renew the cylinder.
- ✓ Remove gauge from pressure switch port, fit Schrader adapter and pressurise to **12 Bar / 175 psi using a nitrogen cylinder or air pump.**
- ✓ Remove Schrader adapter, refit pressure switch (if applicable), check gauge is reading mid-green, mark the gauge and **leave system for a minimum of 10 minutes per metre of trace detection tube.**
- ✓ When satisfied no leaks have occurred, open isolate valve slowly. **System is now live**.
- ✓ Record details and date of work carried out on the cylinder service label

Notes:

Address:

Unit 22, Knightsdale Road,
Ipswich,
Suffolk.
IP1 4JJ

Telephone:

01473 744090

Facsimile:

01473 744901

Email:

info@firetrace.co.uk

Website:

www.firetrace.co.uk

Twitter:

@firetrace_uk

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