

DIVERSION SYSTEM

Fire Detection and Diversion System

Introduction :-

In Textile Plant, particularly Spinning Industry, normally Blow room is connected with Carding section and Filter section through material duct, dust duct and waste duct.

If Spark is created while processing the cotton in Blow Room, which travels through duct and spread to Carding and Filter area.

It is always the concept to detect the fire at early stage and confine the fire in one area/ zone and extinguishing the fire within the area / zone.

Fire Diversion System is basically designed on the above discussed principle.

System Operation :-

The following activities are the key function of the system.

- 1.) Fire Detection,
- 2.) Isolating the Fire by stopping the machineries and operating the Dampers,
- 3.) Diversion Dampers stop the material flow and divert the material into Diversion Duct,
- 4.) Diverted Materials sucked through Suction Fan to Quenching Tank or Fire Collection Bag,
- 5.) Extinguishing Burning Material.

System Consists of :-

- 1.) Fire Alarm Control Panel.
- 2.) Electrical Trip Panel.
- 3.) Pneumatic Control Panel.
- 4.) Spark Detector.
- 5.) Heat Detector.
- 6.) Electronic Hooter.
- 7.) Fire Stop Damper.
- 8.) Fire Diversion Damper.
- 9.) Pneumatic Actuator.
- 10.) Quenching Tank.
- 11.) Diversion Duct & Suction Fan.

Fire Detection :-

Fire can be detected either by Spark Detector or Heat Detectors. Fire can be detected by fixing the Heat Detectors of 60°C. Temp. range in the Machinery enclosure and duct. The spark detector is placed in the material duct and dust duct which passes through the carding & filter area.



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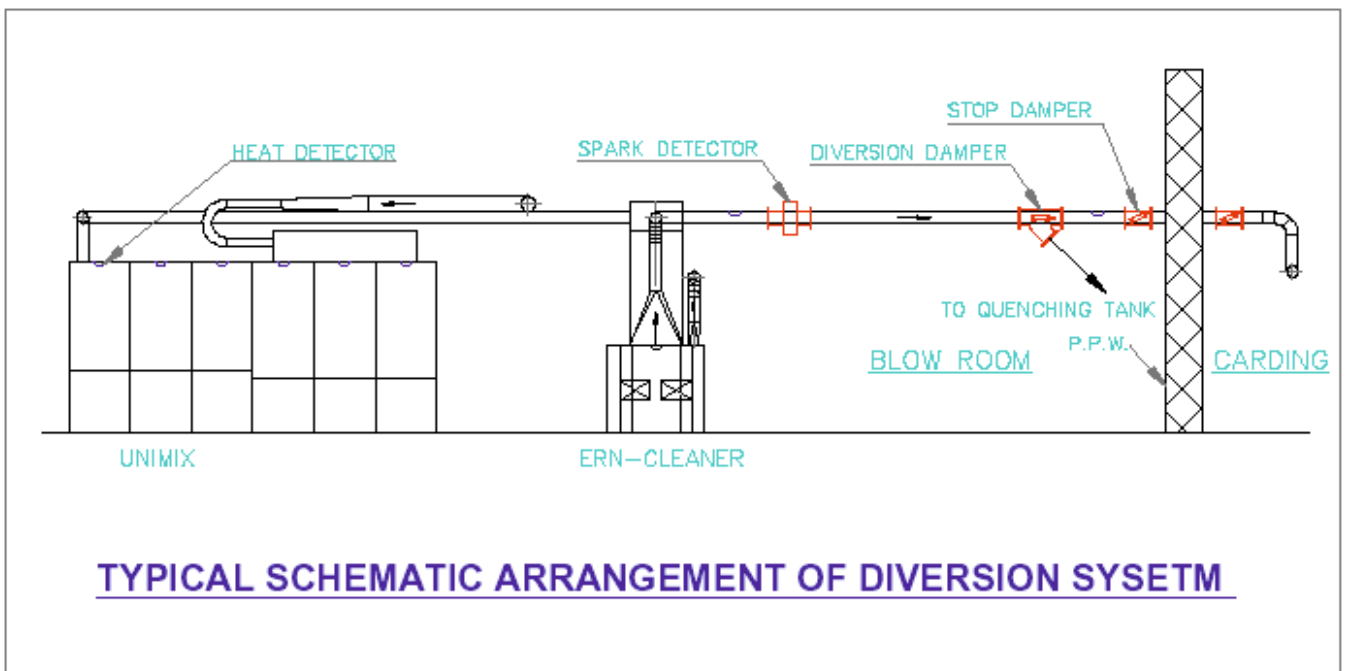
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Heat Detector is fixed temperature bi-metal type which operates effectively in any type of environmental condition. Spark Detectors are available with higher efficiency to detect the moving spark in the duct. However direct exposure of day light and sun light may create false alarm. Proper precaution has to be adopted while installing the spark detector in the duct. Our Spark Detector Assembly consists of 4 Nos./5 Nos. of Infra Red Spark Detectors fixed at 90°/72° angle to cover entire duct.

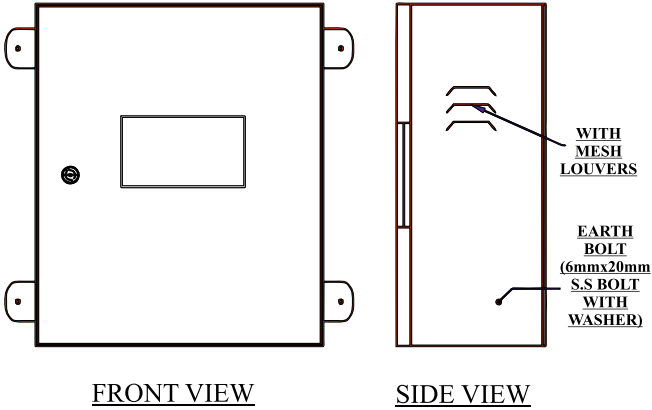
In our system we have adopted necessary precaution to avoid false fire alarm and to give the best efficient detection method.

Fire Alarm Control Panel

Fire Alarm Control Panel is the back bone of the entire system which gives input to the detector and receives the signal from the detectors. It gives audio visual fire indication and also trip machines as per the system requirement and actuates the solenoid to supply the compressed air to the pneumatic actuator to operate Diversion Dampers pneumatically. The Control Panel works with 230 V AC primary input supply and 24 V DC secondary battery back up. The entire system works with 24 V DC.



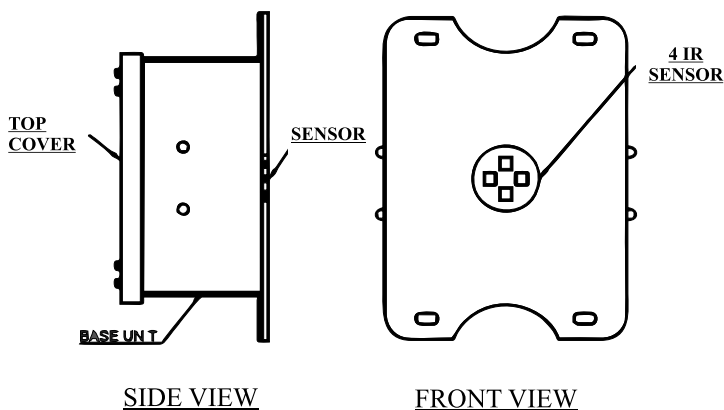
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FIRE ALARM CUM FIRE DIVERSION PANEL SPECIFICATION:-

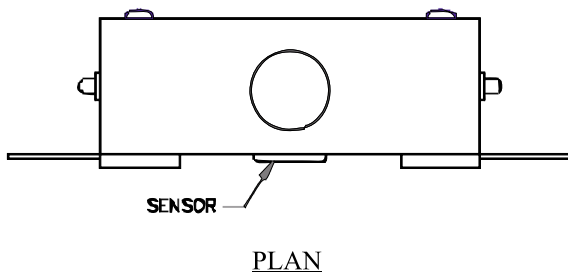
1. Part No - IH046/TXMA-CS
2. Location - Indoor
3. Colour - Fire Red
4. Description - Fire Alarm cum Fire Diversion Panel
5. Application - Fire Diversion System
6. Power Source - Input Supply Voltage 230V, 1PH, 50 Hz AC Working Voltage
Derived will be 24V DC, 10 Amps.
7. Operating Voltage - 24V DC

SPARK DETECTOR SPECIFICATION:-



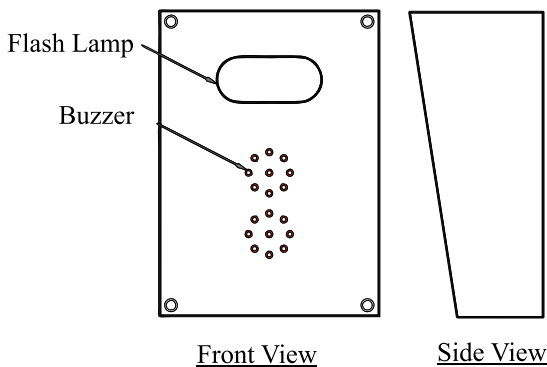
1. Part No - IH163/6
2. Application - It is designed to fix in the Duct to Detect Fire.
3. Operation - 4 wire system (2 wire for Input supply resettable 24V DC \pm 20% and 2 wire for output signal)
4. Quicent Current - <40mA
5. Alarm Current - <100mA
6. IP Protection - IP65
7. Operating Temp. Range - (-20°C to +60°C)
8. Principle of Detection - IR Detection Technology
9. Response Indication - Normal - Flickering Green LED
Fire - Red LED

HEAT DETECTOR SPECIFICATION:-



1. Part No - IH148/1
2. Application - It is designed to fix the Duct to Detect Heat.
3. Supply Voltage - 12V DC to 24V DC
4. Quicent Current - NIL (Without End Line Resistor)
2mA-5mA (With End Line Resistor)
5. Alarm Current - 45mA
6. Detector Setting Temp. - 60°C
7. Principle of Detection - Bi - Metal Principle & AutoReset
8. Response Indication - Two Red LED

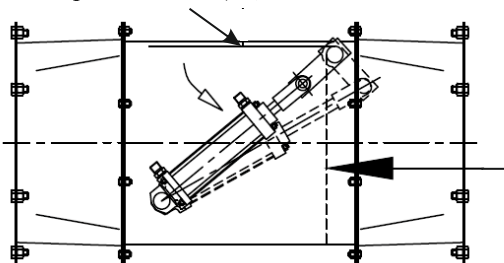
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ELECTRONIC HOOTER WITH FLASHING LAMP SPECIFICATION;-

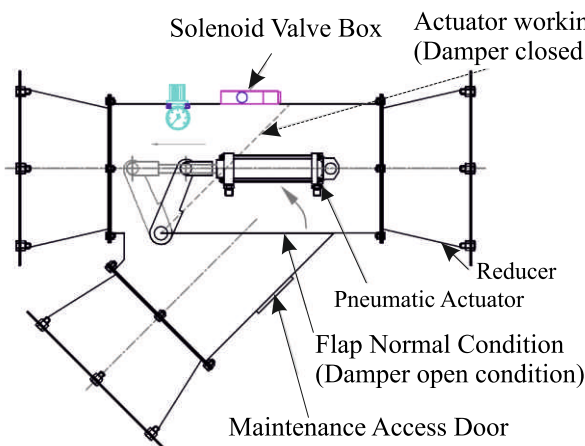
- | | |
|------------------------|-----------------------|
| 1. Part No | - IH147 |
| 2. Mounting Type | - Wall Mounting Type. |
| 3. Colour | - Fire Red |
| 4. Painting Process | - Powder Coating |
| 5. Cable Entry | - Bottom |
| 6. Working Voltage | - 24V DC |
| 7. Current Consumption | - 350mA Max. |
| 8. Type of Tone | - Dual Tone |

Flap Normal Condition (Duct Open Condition) Actuator Working Condition (Duct Closed Condition)



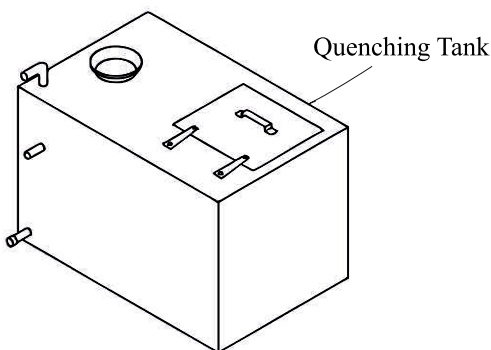
FIRE STOP DAMPER SPECIFICATION;-

- | | |
|---------------------|---|
| 1. Part No | - IH171* |
| 2. Damper Material | - M.S Sheet |
| 3. Colour | - Fire Red |
| 4. Painting Process | - Powder Coating |
| 5. Actuation | - Pneumatic Operation
- Reset from Control Panel |



FIRE DIVERSION DAMPER SPECIFICATION;-

- | | |
|---------------------|-----------------------|
| 1. Part No | - IH174 - Y* |
| 2. Damper Material | - M.S Sheet |
| 3. Colour | - Fire Red |
| 4. Painting Process | - Powder Coating |
| 5. Actuation | - Pneumatic Operation |
| 6. Solenoid Valve | - 24V DC |



QUENCHING TANK SPECIFICATION;-

- | | |
|--------------|-----------------------------|
| 1. Part No | - BIH235 |
| 1. Material | - M.S Plate |
| 2. Thickness | - 5mm Thickness |
| 3. Capacity | - 1000 Litres / 2000 Litres |