

# CARBON DIOXIDE FIRE EXTINGUISHING SYSTEM

Carbon dioxide (CO<sub>2</sub>) is a well-known extinguishing system for electrical equipment. The system consists of liquefied CO<sub>2</sub> stored in pressurised cylinder, discharge valves, piping and electrical devices that automatically detect smoke or heat and quickly discharge the CO<sub>2</sub> in the cylinders to extinguish the fire.



# CO<sub>2</sub> Fire Extinguishing System

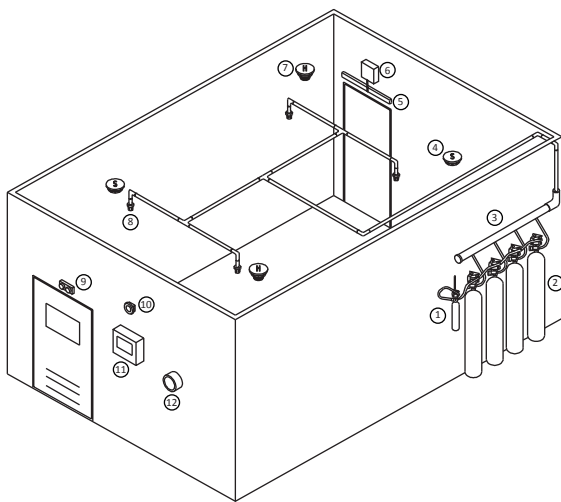
A carbon dioxide (CO<sub>2</sub>) fire extinguishing system works by displaces the oxygen that supports combustion. It is applied by the total flooding principle with CO<sub>2</sub> and hold until the combustion stops. A total flooding application can be defined as injecting CO<sub>2</sub> into an enclosure or volume having the structural integrity to retain the agent during and after discharge. This system operated automatically by or manually by the operation of a system actuator.

## CO<sub>2</sub> System Features

- Leaves no residue after discharge
- Eco-friendly agent
- Non-damaging to property
- Effective on a wide range of flammable and combustible materials.

## CO<sub>2</sub> System Applications

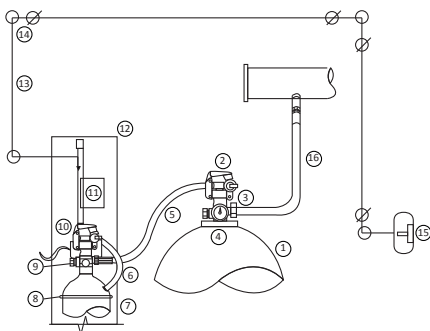
- Electrical Room
- Generator Room
- Switch Room



## CO<sub>2</sub> System Typical Arrangement

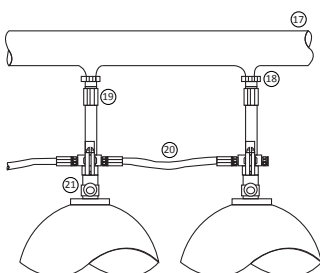
1. Electric Solenoid Pilot Cylinder (550 psi)
2. 68L Carbon Dioxide Cylinder
3. Manifold
4. Smoke Detector
5. Fire Curtain
6. 24V DC Tripping Device
7. Heat Detector
8. CO<sub>2</sub> Discharge Nozzle
9. Twin Flasing Light
10. Fire Alarm Bell
11. CO<sub>2</sub> Control Panel
12. Manual Pull Station

## SIDE ELEVATION TYPICAL CO<sub>2</sub> PILOT CYLINDER ARRANGEMENT



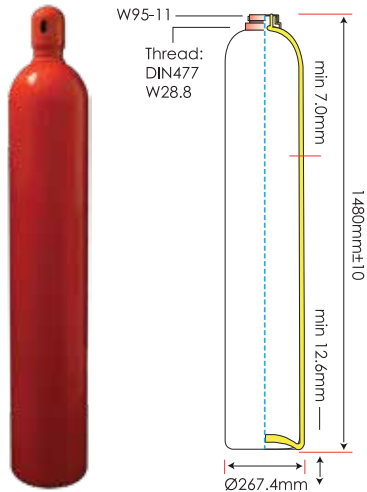
1. 68L CO<sub>2</sub> Cylinder c/w 45kg CO<sub>2</sub> gas
2. Ø20mm Pneumatic Operated Cylinder Valve
3. Ø20mm Outlet Valve
4. Pressure Gauge
5. Ø6mm x 600mm(L) Flexible Hose
6. Ø6mm x 300mm(L) Flexible Hose
7. Pilot Cylinder
8. Ø6mm Galvanised U-Bolt
9. Ø6mm Plug
10. Solenoid Valve
11. Limit Switch Indication to CO<sub>2</sub> Panel
12. Pilot Cylinder Mounting Bracket
13. Ø1.5mm Stainless Steel Cable in G.I Conduit
14. Corner Pulley
15. Manual Pull Handle
16. Ø15mm x 430mm(L) Discharge Hose
17. Cylinder Manifold
18. Ø20mm NPT Manifold Socket
19. Ø20mm Non Return Valve
20. Ø6mm x 345mm(L) Connecting Hose
21. Ø11mm x 7mm x 0.5mm Copper Washer

## FRONT ELEVATION TYPICAL CO<sub>2</sub> PILOT CYLINDER ARRANGEMENT



# CO<sub>2</sub> Fire Extinguishing System

## 45kg CO<sub>2</sub> Seamless Cylinder with Gas



| TECHNICAL DATA           |                |
|--------------------------|----------------|
| Code No.                 | CYL-N          |
| Nett Volume              | 68L            |
| CO <sub>2</sub> Capacity | 45kg           |
| Working Pressure         | 150 bar        |
| Test Pressure            | 225 bar        |
| Empty Weight             | 75kg           |
| Material                 | Mn Steel       |
| Manufactured             | DOT-3AA        |
|                          | BS 5045 Part 1 |

## Solenoid 24V DC Pilot Cylinder



| TECHNICAL DATA  |                  |
|-----------------|------------------|
| Code No.        | PC-S, PC-T       |
| Gas             | Nitrogen         |
| Stored Pressure | 38 bar (550 psi) |
| Power           | 24 V DC          |

## Cylinder Valve



| TECHNICAL DATA   |                           |
|------------------|---------------------------|
| Code No.         | 45KG-NV                   |
| Size             | Forged Brass CuZn 3963    |
| Type Mode        | UP-05                     |
| Working Pressure | 150bar                    |
| Type             | Manual/Pneumatic/Electric |
| Weight of Valve  | 700g                      |
| Standard         | DIN 477                   |

# CO<sub>2</sub> Fire Extinguishing System

## Connecting Hose



| TECHNICAL DATA |                           |
|----------------|---------------------------|
| Code No.       | HH-CH-13                  |
| Size           | 6mm (1/4")                |
| Lenght         | 330mm (13")               |
| Type           | High Pressure Hose        |
| Material       | Steel Braided Rubber Hose |
| Test Pressure  | 150 bar                   |

## Discharge Hose



| TECHNICAL DATA |                           |
|----------------|---------------------------|
| Code No.       | HH-DH-17                  |
| Size           | 13mm(1/2")                |
| Lenght         | 432mm(17")                |
| Type           | High Pressure Hose        |
| Material       | Steel Braided Rubber Hose |
| Test Pressure  | 150 bar                   |

## CO<sub>2</sub> Discharge Nozzle



| TECHNICAL DATA    |               |         |         |
|-------------------|---------------|---------|---------|
| Code No.          | DN-UH15       | DN-UH20 | DN-UH25 |
| Size              | 15mm          | 20mm    | 25mm    |
| Material          | Brass         |         |         |
| Finishing         | Chrome        |         |         |
| Discharge Pattern | Uni-bilateral |         |         |
| Discharge         | With Orifice  |         |         |
| Type              | Pendent       |         |         |

## Pyrocharge with Fitting



| TECHNICAL DATA |            |
|----------------|------------|
| Code No.       | 45KG-PC    |
| Material       | Steel      |
| Finishing      | Galvanised |

# CO<sub>2</sub> Fire Extinguishing System

Airvent 10mm



| TECHNICAL DATA   |            |
|------------------|------------|
| <b>Code No.</b>  | HHF-VP-3/8 |
| <b>Size</b>      | 10mm(3/8") |
| <b>Material</b>  | Steel      |
| <b>Finishing</b> | Galvanised |

Tee



| TECHNICAL DATA   |                                      |
|------------------|--------------------------------------|
| <b>Code No.</b>  | HHF-TEE-1/2"                         |
| <b>Size</b>      | 13mm (1/2") x 13mm(1/2") x 6mm(1/4") |
| <b>Material</b>  | Steel                                |
| <b>Finishing</b> | Galvanised                           |

Plug



| TECHNICAL DATA   |            |
|------------------|------------|
| <b>Code No.</b>  | HHF-PG-3/8 |
| <b>Size</b>      | 10mm(3/8") |
| <b>Material</b>  | Steel      |
| <b>Finishing</b> | Galvanised |

Solenoid 24V DC Tripping Device



| TECHNICAL DATA         |                               |
|------------------------|-------------------------------|
| <b>Code No.</b>        | TD                            |
| <b>Size</b>            | 180mm(W) x 90mm(D) x 240mm(H) |
| <b>Working Current</b> | 0.4A                          |
| <b>Material</b>        | Aluminum Alloy                |
| <b>Finishing</b>       | Red Polyester                 |

# CO<sub>2</sub> Fire Extinguishing System

## Smoke Curtain



| TECHNICAL DATA        |                         |
|-----------------------|-------------------------|
| Code No.              | FC                      |
| Material              | Woven Fibreglass Fabric |
| Colour                | White                   |
| Coating Finish        | Loomstate               |
| Operating Temperature | Basic Fabric 600°C      |
| Standard              | BS 476: Part 7          |

## Manual Pull Box



| TECHNICAL DATA |                  |
|----------------|------------------|
| Code No.       | MPB              |
| Size           | Ø200mm x 65mm(H) |
| Material       | Aluminum Alloy   |
| Finishing      | Red Polyester    |

## PROGRAM Gas Fire Extinguishing Panel



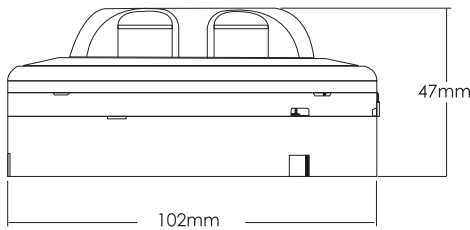
| SIZE                      |           |             |                        |                 |
|---------------------------|-----------|-------------|------------------------|-----------------|
| No. of Zones              | Model no. | Code no.    | Size (mm) (W x D x H)  |                 |
|                           |           |             | Normal                 | Weatherproof    |
| 2                         | PE-HP2000 | FAP-02ZCP-N | 430 x 195 x 370        | 435 x 195 x 410 |
| 4                         | PE-HP4000 | FAP-04ZCP-N | 525 x 178 x 380        | 540 x 178 x 420 |
| TECHNICAL DATA            |           |             |                        |                 |
| Power Supply Input        |           |             | 240V AC 50Hz           |                 |
| Operating System          |           |             | 24V DC                 |                 |
| Charger                   |           |             | Automatic/Trickle Type |                 |
| Charging Rate             |           |             | 300mA (Trickle)        |                 |
|                           |           |             | 2.5A (Boost)           |                 |
| STANDBY MODE              |           |             |                        |                 |
| Master                    |           |             | 75mA                   |                 |
| Per zone (with detectors) |           |             | 5mA                    |                 |
| Flashing Lights (Red LED) |           |             | 75mA                   |                 |
| ALARM MODE                |           |             |                        |                 |
| Master                    |           |             | 120mA                  |                 |
| Per Trigger Zone          |           |             | 70mA                   |                 |
| Output Devices            |           |             | 100mA                  |                 |
| Flashing Lights (Red LED) |           |             | 75mA                   |                 |
| Per Bell                  |           |             | 30mA                   |                 |

# CO<sub>2</sub> Fire Extinguishing System

## UNIQUE Smoke Detector



AH 0711



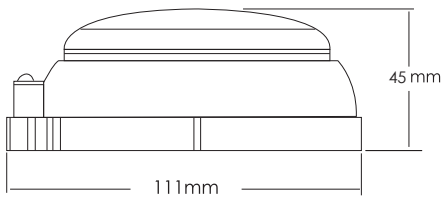
| TECHNICAL DATA                      |                              |                  |
|-------------------------------------|------------------------------|------------------|
| <b>Model No.</b>                    | AH0711                       |                  |
| <b>Code No.</b>                     | FAE-P0711                    |                  |
| <b>Description</b>                  | 2 Wire                       |                  |
| <b>Alarm Current @ 24V DC 470 Ω</b> | 40mA                         |                  |
| <b>Operating Temperature Range</b>  | -10°C to 55°C                |                  |
| <b>Operating Humidity Range</b>     | 10% to 93% Relative Humidity |                  |
| <b>Voltage Range</b>                | 12V-30V DC                   |                  |
| <b>Standby Current</b>              | 25 - 75 μA                   |                  |
| <b>Sensitivity Setting</b>          | Complies with UL 268         |                  |
| <b>Material</b>                     | Fire- proof plastic          |                  |
| <b>Size</b>                         | Ø102mm x 47mm (H)            |                  |
| <b>Weight</b>                       | 130g                         |                  |
| <b>Colour</b>                       | White                        |                  |
| EFFECTIVE ALERT AREA                |                              |                  |
| <b>Building Height</b>              | Under 4m                     | 4m to 20m        |
| <b>Area Covered</b>                 | 150m <sup>2</sup>            | 75m <sup>2</sup> |



## UNIQUE Heat Detector



AH 0333



| TECHNICAL DATA                      |                              |                   |
|-------------------------------------|------------------------------|-------------------|
| <b>Model No.</b>                    | AH0333                       |                   |
| <b>Code No.</b>                     | FAE-H0333                    |                   |
| <b>Description</b>                  | 2 Wire                       |                   |
| <b>Alarm Current @ 24V DC 470 Ω</b> | 40mA                         |                   |
| <b>Operating Temperature Range</b>  | 0°C to 55°C                  |                   |
| <b>Operating Humidity Range</b>     | 10% to 93% Relative Humidity |                   |
| <b>Voltage Range</b>                | 12V-30V DC                   |                   |
| <b>Standby Current</b>              | 25 - 75 μA                   |                   |
| <b>Sensitivity Setting</b>          | Complies with UL 268         |                   |
| <b>Material</b>                     | Fire- proof plastic          |                   |
| <b>Size</b>                         | Ø111mm x 45mm (H)            |                   |
| <b>Weight</b>                       | 137g                         |                   |
| <b>Colour</b>                       | White                        |                   |
| EFFECTIVE ALERT AREA                |                              |                   |
| <b>Building Height</b>              | Fire Proof Building          | Ordinary Building |
| <b>Under 4m</b>                     | 90m <sup>2</sup>             | 50m <sup>2</sup>  |
| <b>4m to 8m</b>                     | 45m <sup>2</sup>             | 30m <sup>2</sup>  |



# CO<sub>2</sub> Fire Extinguishing System

## UNIQUE Twin Flashing Lights



| TECHNICAL DATA                      |  |
|-------------------------------------|--|
| <b>Model No.</b>                    | KP305B (BULB), KP305L (LED)  |
| <b>Code No.</b>                     | FAE-FLO-BU, FAE-FLO-LED  |
| <b>Lens</b>                         | High efficient prismatic polycarbonate lens optimized for omnidirectional viewing. |
| <b>Luminary</b>                     | Filament Bulb/Ultra Bright LED   |
| <b>Size</b>                         | 210mm(W) x 77mm(D) x 108mm(H)  |
| <b>Material (Casing &amp; Hood)</b> | Mild Steel   |
| <b>Weight</b>                       | Epoxy Powder Red   |
| <b>Finishing</b>                    | Black casing with green and red lens   |

## UNIQUE Fire Alarm Bell



| TECHNICAL DATA             |                |
|----------------------------|----------------|
| <b>Model No.</b>           | D102           |
| <b>Code No.</b>            | FAE-6AB        |
| <b>Supply Voltage</b>      | 110/ 240V (AC) |
|                            | 12/24V (DC)    |
| <b>Sound Output</b>        | 92 - 105 dB    |
| <b>Current Consumption</b> | 0.05 A         |
| <b>Size</b>                | 150mm(6")      |
| <b>Finishing</b>           | Red            |