

# FireBeta A-XT

## UL Approved Extinguishant Control Panel

### KEY FEATURES

- UL864 Listed
- Three initiation circuits as standard
- Any single zones or combination of zones can be configured for release
- Configurable delays for NAC and detection circuits
- Zero time delay upon manual release option
- Non-latching zone input option
- Configurable releasing delays and releasing duration
- Countdown timer shows time remaining until release
- Supports up to seven, four wire status indicators
- Built in extract fan control



### DESCRIPTION

The FireBeta A-XT UL listed extinguishing control panel has been designed and manufactured to the highest standards in a quality controlled environment. It offers outstanding value and performance for all small to medium fixed firefighting installations.

With three initiation circuits as standard, extinguishant release can be configured to activate from any combination of detection zone inputs. This allows (among other combinations) two from three type activations such as would be required for detection in ceiling void, room void and floor void applications.

Extensive configuration options on the FireBeta A-XT allow the functionality of the system to be extensively modified.

A large LED display is provided on the panel fascia to enable easy configuration and control, this also displays the time remaining until extinguishant release for added user safety.

Status LED's and the countdown timer for extinguishing release can be displayed on up to several remote status indicators installed in strategic locations around the risk area.

Communications between the FireBeta A-XT and the Status indicators uses RS485 protocol and is fully monitored.

The electronics within the control panel are mounted on a single, easily removable steel plate. This enables the installer to remove the electronics and carry out a first fix installation of the enclosure and cabling without damaging the electronic components.

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### PROGRAMMABLE FUNCTIONS

#### Access Level 2

- Test zones 1 to 3
- Disable zones 1 to 3
- Disable 1st stage alarms
- Disable Pre-activated 1st stage relay
- Disable Pre-activated 2nd stage relay
- Disable extract fan output
- Disable manual release input
- Disable releasing sub system
- Activate extract fan output
- Activate alarm delays

#### Access Level 3

- Sounder delay
- Coincidence detection
- Disable panel features
- Zone alarm delays (Detectors)
- Zone alarm delays (Call stations)
- Configure zone for I.S. barrier use
- Zone short circuit alarm
- Zone Non-latching
- Zone inputs delay
- Extinguishant release time delay
- Extinguishant release duration timer
- Extinguishant reset delay timer

### SPECIFICATION

Construction	1.2mm mild sheet steel
IP Rating	IP30
Finish	Epoxy powder coated
Colour - lid & box	Red RAL 3002 (optional grey BS 00 A 05 semi-matt)
Mains supply	230V AC
Mains supply fuse	1.6 Amp (F1.6A L250V)
Power supply rating	3 Amps total including battery charge 28V +/- 2V
Maximum ripple current	200 millivolts
Battery type (Yuasa NP)	Two 12 Volt 7Ah sealed lead acid in series
Battery charge voltage	27.6VDC nominal (temperature compensated)
Battery charge current	0.7A maximum
Battery fuse	20mm, 3.15A glass
Maximum current draw from batteries	3 Amps
Quiescent current of panel in mains fail	0.095A
R0V output	Fused at 500mA with electronic fuse
Sounder outputs	24V Fused at 500mA with electronic fuse
Fault relay contact rating	30VDC 1A Amp maximum
Fire relay contact rating	30VDC 1A Amp maximum
Local fire relay contact rating	30VDC 1A Amp maximum
First stage contact rating	30VDC 1A Amp maximum
Second stage contact rating	30VDC 1A Amp maximum
Extract contact rating	30VDC 1A Amp maximum
Zone quiescent current	2mA maximum
Terminal capacity	12 AWG
Number of detectors per zone	Dependent on type (maximum 32)
NAC rating	0.5A per circuit
Detection circuit end of line	6K8 5% ½ Watt resistor
Monitored input end of line	6K8 5% ½ Watt resistor
Sounder circuit end of line	10K 5% ¼ Watt resistor
Extinguishant output EOL	1N4004 Diode
No. of initiating circuits	3
No. of NAC circuits	2 x 1st Stage, 1 x 2nd Stage
Extinguishant release output	Fused at 1 Amp
Extinguishant release delay	Adjustable 0 to 60 seconds (in 5 second steps)
Extinguishant release duration	Adjustable 60 to 300 seconds (in 5 second steps)
SIL, AL, FLT, RST inputs	Switched -ve, max resistance 100 Ohms
Zone normal threshold	8K ohms to 1K ohm
Detector alarm threshold	999 ohms to 400 ohms
Call point alarm threshold	399 ohms to 100 ohms
Short circuit threshold	99 ohms to 0 ohms
Monitored inputs normal threshold	8K ohms to 1K ohm
Monitored inputs alarm threshold	999 ohms to 100 ohms
Monitored inputs Short circuit threshold	99 ohms to 0 ohms
Status unit/Ancillary board connection	Two wire RS485 connection
Status unit power output	Fused at 500mA with electronic fuse

### ORDERING INFORMATION

Part Number	Description	Size (mm)
23911-K116	Surface mounting panel - Red 230V	368 x 310 x 90



# CARBON DIOXIDE CO<sub>2</sub>

## Industrial fire suppression systems



Kidde engineers developed carbon dioxide fire extinguishing over 80 years ago and Kidde have been responsible for every major improvement that has been made in this branch of fire protection. Kidde Fire Protection benefits from the accumulated experience of thousands of installations in power plants, industrial plants, oil refineries, electronic processes, on ships and in a wide variety of hazardous areas.



### **CO<sub>2</sub> is versatile**

The CO<sub>2</sub> is stored as liquid, under pressure. When a system is activated, the liquid CO<sub>2</sub> flows through discharge pipework to specially designed nozzles. The agent's low boiling point means that the liquid vaporises rapidly during the discharge, providing a penetrative three-dimensional action. The rapid expansion of the gaseous agent allows fires to be targeted even in the most inaccessible areas of the risk.

Fire is extinguished by reducing the oxygen level in the risk area to the point where combustion cannot be sustained. Cooling is a secondary action of the agent; this feature is used in local applications where the liquid phase of the discharge is applied directly to the fire and risk materials.

### **CO<sub>2</sub> is fast and efficient**

The Kidde Fire Protection High Pressure CO<sub>2</sub> system uses large bore cylinder valves, enabling high mass flow rates to be achieved. The fast action of the control system and valve enables the system to react within the

first few seconds of a fire that can make the difference between a nuisance and a disaster.

### **CO<sub>2</sub> is clean**

CO<sub>2</sub> is a colourless, odourless, dry, inert gas and is one of the most familiar of all gases. After extinguishing a fire it vapourises fully leaving no residue. There is no mess, nothing to clear up, no water damage. It is non-corrosive and will not contaminate foodstuffs. It is non-conductive and so can be used on energised electrical equipment. It can be safely used to protect delicate electronic equipment, antiques or archive materials.

### **CO<sub>2</sub> is low cost**

Carbon dioxide is a standard commercial product with many other uses and it is readily available throughout the world. Because of its universal use it can be obtained inexpensively and this is an important consideration when frequent recharging of storage containers is necessary as in local application systems, where fires may be more frequent.



Control head with pilot cylinder



Solenoid for control head



Klem valve with metron actuator



Klem valve with solenoid actuation



Discharge nozzles



Manual pull box



Pressure Switch



Pressure Trip



Cylinder contents monitoring option

### Benefits

- High flow 'Klem' cylinder valve
- Manual or Automatic operation
- Pilot cylinder or Direct Acting Solenoid operating system
- Continuous weight monitoring option
- Design compliance with BS5306-4
- Fully compatible with Kidde Fire Protection control panels

### Typical applications

- Flammable liquid storage areas
- Printing presses, flow solder machines
- Quench tanks/exhaust fume ducts
- Paint spray booths
- Fryers/ovens
- EDP/computer rooms and floor voids\*
- Commercial kitchens
- Transformers
- Generators

\* CO<sub>2</sub> is not the agent of choice for manned areas. Please contact Kidde Fire Protection Applications Department for more information.

### System design

Details of both total flooding and local application systems are contained in the Kidde Fire Protection CO<sub>2</sub> Design Manual.

### Flexible design

The wide range of components manufactured by Kidde Fire Protection enables systems to be engineered to suit individual customer requirements. Systems can be either automatically or manually operated and arranged to protect single or multi-zone hazards and with any number of reserve discharges. Automatic control can be achieved mechanically, pneumatically or electrically or by any combination of these to suit site conditions.

Facilities are available for providing a pre-alarm and delayed discharge as well as various methods of preventing automatic release while protected rooms are occupied by personnel.

Audible and visual indications of system control can be provided together with facilities to automatically shut fuel valves, fire doors, dampers and shutters by either mechanical or electrical devices.

CO<sub>2</sub> is stored in solid drawn steel cylinders manufactured to European Standards. The storage pressure varies with ambient temperature and is 58.6 bar at 21°C.

Any number of cylinders can be manifolded together and simultaneously released to provide the total design requirement of CO<sub>2</sub>.

### Approvals

Major approvals for the Kidde Fire Protection CO<sub>2</sub> system include:

- FM Global
- Lloyd's Register
- American Bureau of Shipping
- Det Norske Veritas
- UK Maritime and Coastguard Agency (MCA)
- Germanischer Lloyd

## 3 CARBON DIOXIDE CO<sub>2</sub>

### Total Flooding Systems

Total flooding systems extinguish fires by rapidly discharging CO<sub>2</sub> into an enclosed volume to create an atmosphere that is incapable of supporting combustion.

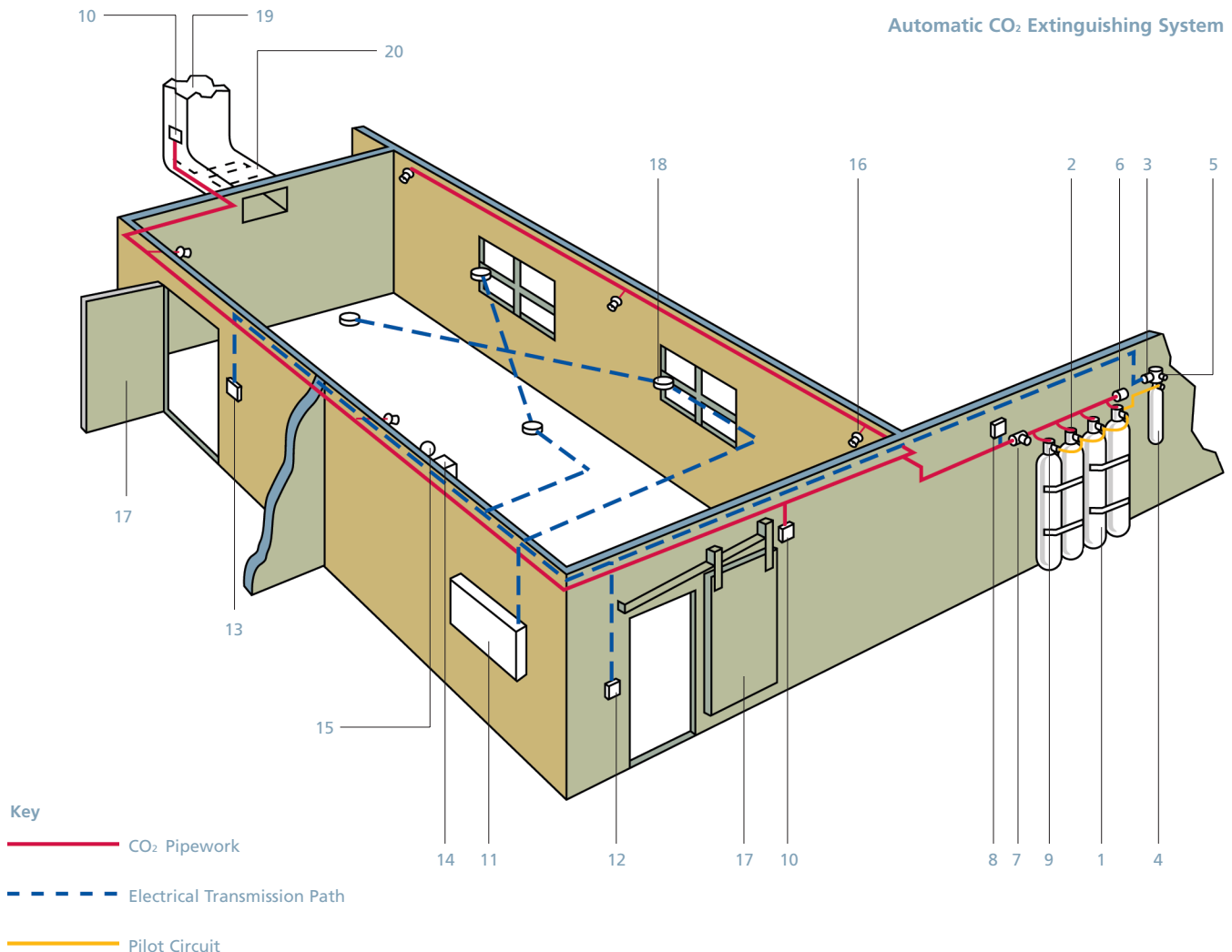
The agent mixes homogeneously in the risk area to generate a CO<sub>2</sub> concentration by volume of at least 34%. This concentration of CO<sub>2</sub> presents a serious hazard to personnel and under no circumstances should CO<sub>2</sub> be released into areas that may be manned at the time of discharge.

Total flood CO<sub>2</sub> systems are ideal for unmanned applications such as transformer rooms, remote switch rooms, generators and archives. All systems should be installed with safety systems in place to prevent the inadvertent release of agent into occupied spaces. Kidde Fire Protection offers time delays, isolating valves including distribution valves and control head lockout pins to facilitate the safe use of CO<sub>2</sub>.

### Legend

- 1 CO<sub>2</sub> cylinder
- 2 Cylinder valve and actuator
- 3 Solenoid
- 4 Nitrogen pilot cylinder and control head
- 5 Manual push button
- 6 Pressure relief device
- 7 Isolating valve
- 8 Discharge pressure switch
- 9 Pilot bleed
- 10 Pressure trip
- 11 Extinguishing Control Panel
- 12 Status indicator unit
- 13 Status indicator with release control
- 14 1st stage alarm sounder
- 15 2nd stage alarm sounder
- 16 Discharge nozzle
- 17 Fire door
- 18 Smoke detector
- 19 Air exhaust duct
- 20 Self-closing weight operated damper

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





## 4 CARBON DIOXIDE CO<sub>2</sub>

### Local Application

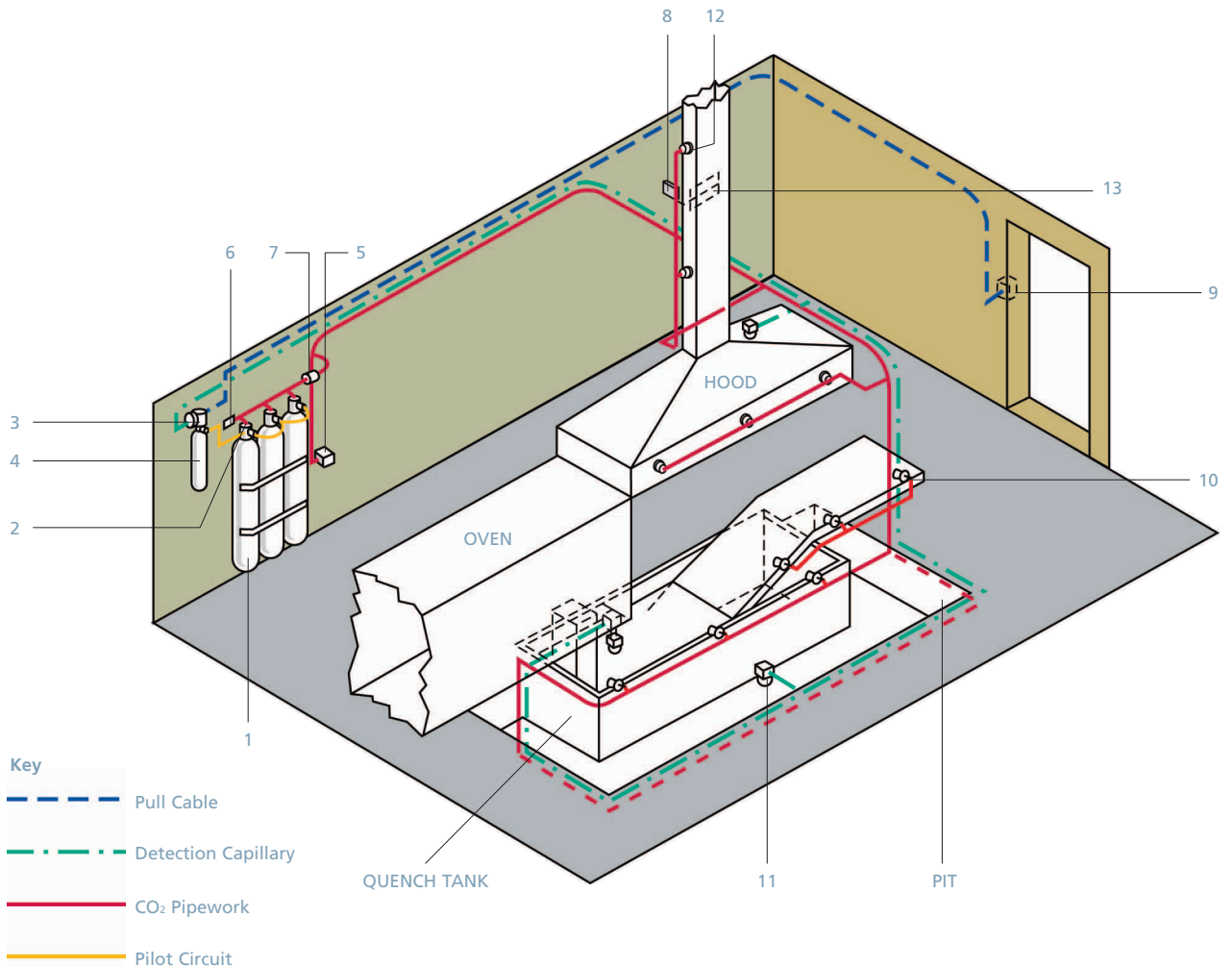
This method of system design is used to protect hazards that are open or have only partial enclosure, situated within a larger area that would be unsafe or uneconomic to protect using a total flood system. Discharge nozzles are placed so as to provide direct agent flow at the points and areas prone to fire. The direct contact of the rapidly expanding CO<sub>2</sub> provides efficient cooling and the gas dramatically reduces the oxygen concentration in the hazard zone.

Local application systems are designed to provide extremely fast discharges to 'knock down' the fire in a matter of seconds. These systems are very effective and are often installed with connected reserve banks so that the systems can be reinstated during the same shift as a fire event, while the empty cylinders are recharged.

### Legend

- 1 CO<sub>2</sub> cylinder
- 2 Cylinder valve and actuator
- 3 Pneumatic actuator
- 4 Nitrogen pilot cylinder and control head
- 5 Discharge pressure switch
- 6 Pressure relief device
- 7 Isolating valve
- 8 Pressure trip
- 9 Break glass pull box
- 10 Discharge nozzle, multi-jet horn
- 11 Pneumatic, rate of rise detector
- 12 Flanged, multi-jet nozzle
- 13 Self-closing weight operated damper

### Mechanical Automatic, Local Application CO<sub>2</sub> Extinguishing System





**System Information**  
**Total Flooding Systems**

**Surface Fires**

Fires involving flammable liquids, gases or solid materials not subject to smouldering are known as surface fires.

The design concentration of CO<sub>2</sub> provided must be maintained for 10 minutes.

Basic quantities of CO<sub>2</sub> for various space volumes may be calculated from Table 1.

The basic quantity of CO<sub>2</sub> is factored according to the risk material. Some typical values are shown in Table 2.

**Deep-Seated Fires**

A fire involving a solid material that is subject to smouldering is called a deep-seated fire.

Rooms containing these materials should have no openings that cannot be automatically closed, other than small openings or pressure vents near the top of the enclosure.

Additional quantities of CO<sub>2</sub> are needed and held within the space for not less than 20 minutes.

Recommended design concentrations for various hazards are shown in Table 3.

**Integrity and Venting Requirement**

Total flood suppression systems rely on the enclosure retaining the required gas concentration for a period of time known as the hold time. The ability of the hazard enclosure to retain the gas for the required hold is usually determined by door fan integrity

testing. If the test shows that the leakage would reduce the hold time below that specified for the fire type, additional CO<sub>2</sub> must be provided.

The release of CO<sub>2</sub> into a tightly sealed enclosure could result in damage caused by pressure variations during discharge. Normally the natural leakage of an enclosure is adequate to prevent damage but in some cases pressure relief venting may be required.

**System Information**  
**Local Application Systems**

**Volume Method**

The volume method of system design is used where the fire hazard consists of three dimensional irregular objects that cannot easily be reduced to equivalent surface area.

The total discharge rate of the system is based on the volume of an assumed enclosure surrounding the hazard. The basic design rate is 16 kg/min/m<sup>3</sup> but this can be reduced according to the degree of existing enclosure on site.

**Area Method**

The quantity of CO<sub>2</sub> required is based upon the total discharge rate from a carefully sited nozzle arrangement, a sufficient number of nozzles being used to adequately cover the entire area on the basis of the unit area protected by each nozzle.

For this method of design, where a horizontal or vertical flat surface is protected, nozzles are to be positioned in accordance with the guidance of the Kidde Fire Protection CO<sub>2</sub> Design Manual. The position and distance from the hazard has a critical effect on the quantity of CO<sub>2</sub> required.

This protection methodology is well suited to painting, dipping and drying type applications.

**Table 1**  
**Determination of basic CO<sub>2</sub> quantity**

Volume (m <sup>3</sup> )		Factor (kg m <sup>-3</sup> )
	>4	1.15
>4	>14	1.07
>14	>45	1.01
>45	>126	0.90
>126	>1400	0.80
>1400		0.74

**Table 2**  
**Determination of higher concentrations for specific hazards**

Capitalise factor	
Acetylene	2.5
Benzene	1.1
Butadiene	1.3
Ethyl Ether	1.5
Ethylene	1.6
Hexane	1.1
Hydrogen	3.2
Kerosene	1.0
Petrol	1.0

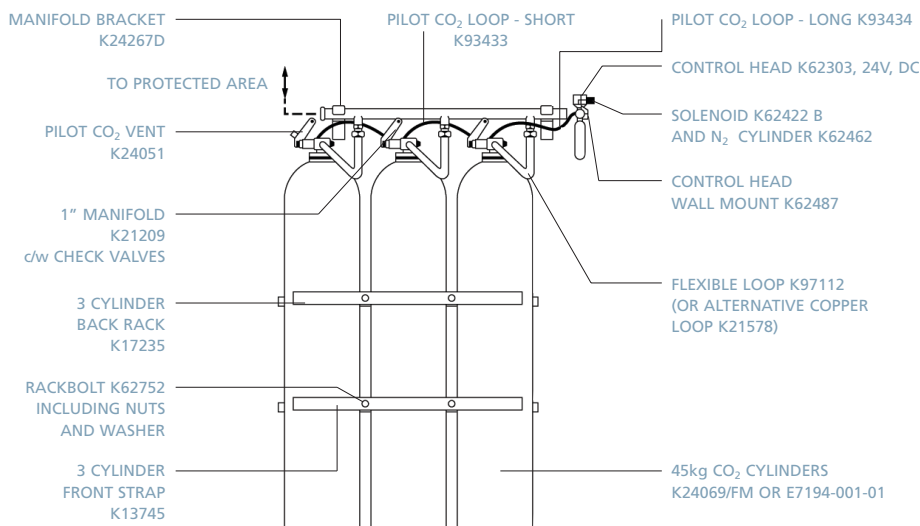
**Note:** MCF of 1.0 is equal to a concentration of 34%

**Table 3**  
**Concentrations for deep-seated hazards (BS5306-4)**

Hazard	Flooding Factor
Dry electrical wiring and insulation	1.35kg m <sup>-3</sup>
Computer equipment	1.50kg m <sup>-3</sup>
Data processing and tape storage	2.25kg m <sup>-3</sup>
Record stores/archives	2.00kg m <sup>-3</sup>
Dust collectors	2.70kg m <sup>-3</sup>

**Ordering information for typical pilot cylinder actuated CO<sub>2</sub> system (up to 10 off 45kg cylinders)**

Description	Part No.	1 Cyl	2 Cyl	3 Cyl	4 Cyl	5 Cyl	6 Cyl	7 Cyl	8 Cyl	9 Cyl	10 Cyl
45 kg CO <sub>2</sub> Cylinder (full)	K24069/FM or E7194-001-01	1	2	3	4	5	6	7	8	9	10
2 Cylinder 1" Manifold	K21207		1								
3 Cylinder 1" Manifold	K21209			1							
4 Cylinder 1" Manifold	K21211				1						
5 Cylinder 1" Manifold	K21213					1					
Combination of 1" or 1 1/4" manifolds as required							•	•	•	•	•
Single Row M/Fold Bt. 1"	K24267D		2	2	2	3	•	•	•	•	•
Flexible Loop	K97112	1	2	3	4	5	6	7	8	9	10
Pressure/Lever Actuator	K62341	1	2	3	4	5	6	7	8	9	10
2 Cylinder Backrack	K17238		2		4	2		4	2		4
3 Cylinder Backrack	K17235			2		2	4	2	4	6	4
2 Cylinder Frontstrap	K13744		2		2	2		4	2		4
3 Cylinder Frontstrap	K13745			2		2	2	2	4	6	4
Single Row Rack Bolt inc nuts	K62752		2	4	4	6	8	8	10	12	12
Hose/Pipe Adapter	K62755	1									
System Control Head	K62303	1	1	1	1	1	1	1	1	1	1
Solenoid (std) 24V DC	K62422B	1	1	1	1	1	1	1	1	1	1
Pilot Cylinder	K62462	1	1	1	1	1	1	1	1	1	1
Wall Mount	K62487	1	1	1	1	1	1	1	1	1	1
Pilot Vent (Bleed)	K24051	1	1	1	1	1	1	1	1	1	1
Pilot Loop (Long)	K93434	1	1	1	1	1	1	1	1	1	1
Pilot Loop (Short)	K93433		1	2	3	4	5	6	7	8	9
Single Cylinder Strap	K62943	2									


**Other equipment to suit specific systems**

- Discharge nozzles
- Warning labels (metal or self-adhesive)
- Pressure switch
- Break glass pull box
- Pneumatic time delay unit
- Pressure relief devices
- Pressure Operated Direction valve
- Isolating valve
- Control and detection equipment
- Alarm devices
- Mechanical detection/actuation (As required)



## 7 ELECTRICALLY ACTUATED CO<sub>2</sub> SYSTEM



### **Direct-acting CO<sub>2</sub> solenoid**

Designed for use with standard Kidde Fire Protection 45kg CO<sub>2</sub> cylinders, the direct-acting solenoid allows CO<sub>2</sub> systems to be actuated electrically without the need for a separate pilot nitrogen supply.

The solenoid actuation system uses a modified version of the existing cylinder valve, replacing the nitrogen pilot cylinder with a solenoid directly coupled to the CO<sub>2</sub> cylinder valve. The system also retains the facility for local manual release or via a mechanical pull cable.

### **Operation**

The pressure/manual actuator (K62341) is fitted to the cylinder (Klem) valve, with the solenoid assembly (D8522-003) attached to the poppet orifice connection by means of a swivel nut and O-ring seal. The solenoid assembly has a flexible hose connection to the pressure/manual actuator.

In the unactivated state, the pneumatic actuator is subject only to atmospheric pressure and the Klem valve remains closed. On receipt of an electrical signal from an extinguishant release control panel, the solenoid coil is activated, releasing high pressure CO<sub>2</sub> from the cylinder. The CO<sub>2</sub> passes through a short flexible hose to the pressure/manual actuator, which then operates the Klem valve, allowing CO<sub>2</sub> to exit via the discharge port. Further CO<sub>2</sub> cylinders may be discharged by interconnecting the pressure/manual actuators using flexible pilot hoses (K93433).

Metron actuator with manual lever (D8521-002), ideal for single cylinder electrical operation, is also available.

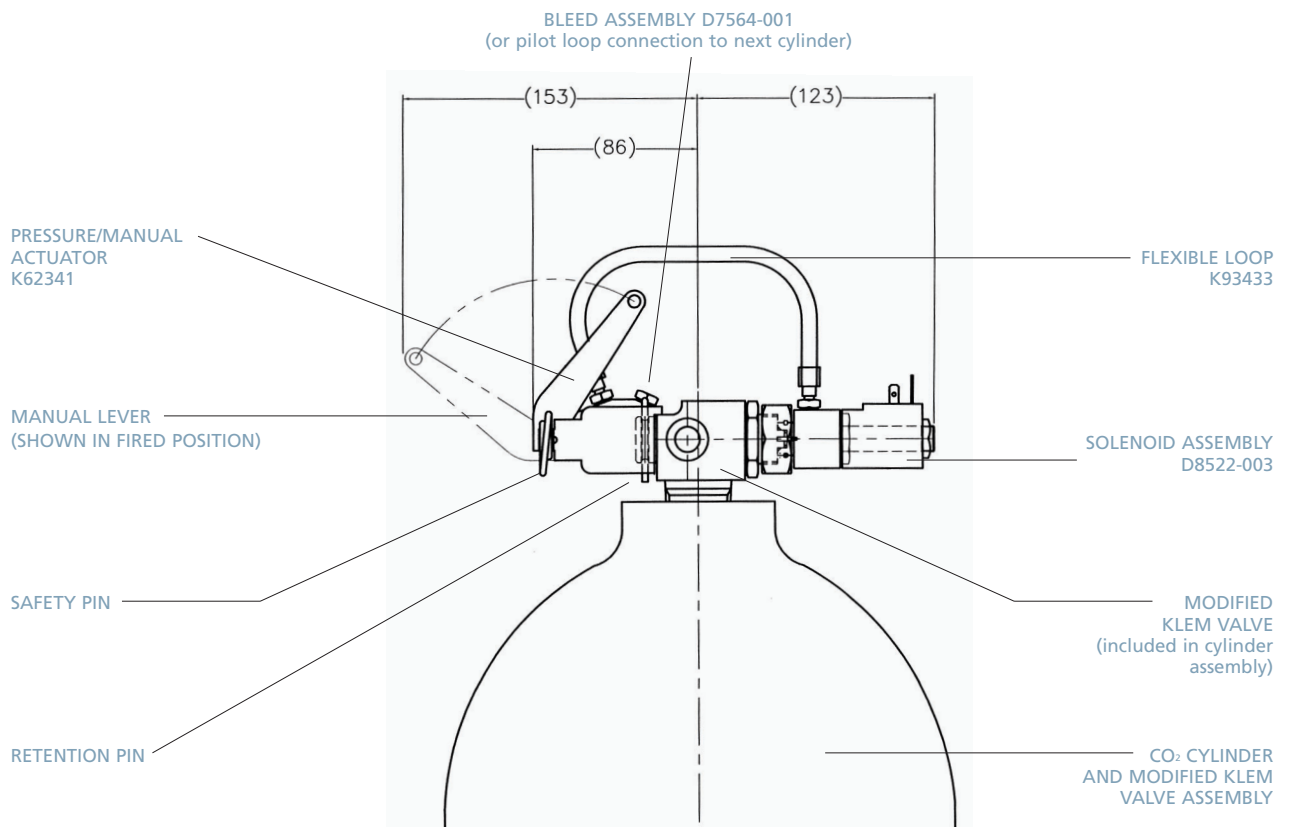


## 8 ELECTRICALLY ACTUATED CO<sub>2</sub> SYSTEM

### Specification

Voltage range	18V DC to 28V DC
Current at 28V DC	526 mA
Minimum firing pulse	60mS
Electrical connection	DIN plug type DIN 43650
Maximum working pressure	152.5 bar (g)
Current at 18V DC	338 mA
Nominal coil resistance	53.2 Ohm
Maximum firing pulse	Unlimited
Operating temperature range	-20°C to +55°C
Environmental protection	BS EN 60529 1991 IP65

Part No.	Description	Quantity
E7772-004	45kg CO <sub>2</sub> cylinder c/w direct-acting solenoid valve and full assembly, comprises:	1
D7226-007	45kg CO <sub>2</sub> cylinder assembly c/w Klem valve	1
D8522-003	Klem valve solenoid assembly	1
K93433	Bundy tube, flexible loop	1
K62341	Actuator, pressure/manual	1
D7564-001	Bleed assembly	1



BS EN ISO9001  
FM00215



INVESTOR IN PEOPLE

Kidde Fire Protection operates a continuous programme of product development. The right is therefore reserved to modify any specification without prior notice.

### Kidde Fire Protection

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