deluge

Fire Protection Preferred by Leading Brands

Deluge Fire Protection
Leader in Fire Protection Equipment

Fire Equipment Supply, System Integrators, Design & Engineering Specialist

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Fire Protection Preferred by Leading Brands

Some of our Product Partners:

BETE Fog Nozzle, Inc.

CHEMGUARD FIRE SUPPRESSION SOLUTIONS

SPP PUMPS

SIEMENS

FIRE·LITE

TEC

Dorot CONTROL VALVES

HOCHIKI

ANSUL Innovative Fire Solutions

JANUS FIRE SYSTEMS

NIBCO

Victaulic

AURORA Pentair Water

MATRE

VIKING

Pipeline The Preferred Fire Pipe Fabricator

EST EDWARDS SYSTEMS TECHNOLOGY

LPG

Protek Firefighting Equipment

albany pump company ltd.

tyco Integrated Fire & Security

DET-TRONICS

Elkhart Brass Fire Fighting Equipment

CHEMETRON Fire Systems™

BERMAD

Promat

Honeywell

FOGTEC FIRE PROTECTION

ABOUT US

DELUGE FIRE PROTECTION

Deluge Fire Protection (S.E.A.) Pte Ltd started in Singapore in 1983. The company has adopted and practices the prefabricated construction method of fire installations since 1996. Deluge has been a major player in fire protection, suppression and detection systems offering comprehensive fire protection solution to meet the safety needs of clients. Deluge has grown to be the preferred protection partner of industry leaders in the region.

Deluge aims to provide the highest quality service on time and at competitive prices. We are a market leader in Singapore, serving big names in the industrial, commercial, residential, government, hangar, biotech / pharmaceutical, PPOG and process industries. We offer quick responses and a customer friendly service department for sprinkler repairs and emergency services. We are responsive to our clients and take pride in combining a small company's abilities with a large company's advantage. Present in Malaysia, Thailand Vietnam and Myanmar, the aim is to grow further in the Asian region to provide a safe environment from fire.

Organizationally, Deluge is one of many companies in the Deluge group of companies ("Deluge group"). The Deluge group is organized into many affiliated companies which operate in different specialized areas of fire protection, suppression, detection and alarms.

Deluge Offshore which focuses on fire protection solutions for the oil & gas, marine & offshore industries. It fabricates and supplies customized skids for clients in the offshore sector. Some of the major projects Deluge Offshore is involved includes fixed production platforms with PTSC, PetrolVietnam, Petronas, TNS & Dalian Shopyard and the FPSO & FSO Projects with Modec, Bumi Armada & Keppel.

Deluge Special Hazard was established to service the special hazard needs of the fire protection industry. It designs and installs Inert Gas Clean Agent Fire Suppression Systems, FM-200, Novec1230 Clean Agent Suppression Systems, Carbon Dioxide Suppression Systems and fire detection, alarm, and control systems.

Deluge E&C will focus and serve all stakeholders in the mechanical and engineering construction market offering higher value-added engineering services.Deluge E&C offer total ACMV, P&S, Electrical & Fire Engineering Solutions for clients in Singapore, South East Asia, Indo-China, West Asia, and the Middle East.

Deluge has been recently ranked in the top 25 in Enterprise 50 awards in Singapore for its enterprising spirit and contribution to the economic development both local and regionally. To also achieve greater operational efficiency and quality service delivery, we are certified to the ISO 9001:2008 (Quality Management System), OHSAS18001:2007(Occupational Health and Safety Systems), ISO 14001:2004(Environmental Management Systems), BizSafe Star and have won the Gold Award under BCA Construction Productivity Award for the "Best Practices and Innovation" category for the year 2011.

1. Fire, Gas, Smoke Detection System
    1.1   Gent – Fire Alarm Panel (Addressable)
        • Compact-24-N
        • Vig1-24
        • Vig1-72

    1.2   S-QUAD Detectors

    1.3   S-CUBED (Notification Device)

    1.4   FIRERAY® – Optical Beam Smoke Detectors

2. Gas Based System
    2.1   FM-200 (HFC-227ea) Clean Agent Extinguishing Systems
    2.2   Novec 1230 (FK-5-1-12) Clean Agent Fire Extinguisher System
    2.3   Inert Gases Clean Agent Fire Extinguishing Systems
    2.4   Rotarex Fire Detection & Tube Extinguishing System
    2.5   High Pressure Carbon Dioxide Fire Extinguisher System
    2.6   Low Pressure Carbon Dioxide Fire Extinguisher System
    2.7   Self-Contained Compressed Air Breathing Apparatus (SCBA)
    2.8   Accessories:
        • Portalevel® MAX
        • Permalevel® Multiplex

3. Foam Fire Fighting Products
    3.1   Foam Proportioning Equipment
    3.2   Vertical and Horizontal Bladder Tank
    3.3   Manual Monitors
        • NOZZIE HIGH-FIOW SERIES – MODEL FJM-80
        • Model: MM-1000 SERIES
    3.4   JET-X® High Expansion Foam Generator
    3.5   Foam Equipment – Handline Nozzle & Eductor
    3.5   Proportioning Foam Trailer
    3.6   Foam Systems Mobilcart

4. Water Spray Systems
    4.1   Fogtec Water Mist System
    4.2   Automatic Scanning and Positioning Water-Spray Fire Extinguishing System

5.   Fire Fighting Equipment

    5.1   Hose Reel

    5.2   Fire Hydrant

- Mueller Fire Hydrants
- Pillar Hydrant

    5.3   Skids for Deluge System (Customized)

- Foam
- Dry Chemical
- Water Mist

6.   Flow Control Equipment

    6.1   Deluge Valve
- Bermad

    6.2   Post Indicator Valve
- Mueller

7.   Fire Extinguisher; BADGER (USA)

    7.1   ABC Multipurpose Dry Chemical Fire Extinguisher
    7.2   Universal Ultra AR-AFFF Foam Fire Extinguisher
    7.3   Carbon Dioxide (CO2) Fire Extinguisher

8.   Pump

9.   Mechanical Coupling

10. Mechanical-T®

11. Auto Sprinkler

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1.¨   Fire, Gas, Smoke Detection System

1.1 ¨; ent – Fire Alarm System (Addressable)

The Vigilon System

Gent by Honeywell's Vigilon system is the most comprehensive life safety system available in the market today. The combination of the powerful software in the control panel and the intelligent loop powered devices delivers a flexible, easy to use system for all types of buildings.

The Vigilon System is cost effective to install

The Vigilon loop manages the largest number and variety of devices, with up to 200 sensors, sounders and interfaces connected to the same 2 core loop circuit.

Vigilon sounders, strobes and interfaces are loop powered so there is no need for auxiliary power supplies.

Every loop device includes an integral short circuit isolator reducing installation costs at the same time increasing system integrity.

Multi-function devices combining sensor, sounder, speech and strobe reduce the number of individual devices that need to be installed.

Every S-Quad sensor has a configurable, monitored input. This can be used instead of an interface saving on installation and product costs.

Compact-24-N
1-2 loop Vigilon Compact Fire Alarm Control Panel

Key features:
1 loop Control Panel
Expandable to 2 loops
Fully Networkable (to any EN54 Vigilon copper network) up to 31
Remote Printer Option
Internal keypad for programming
Surface or flush options
Data in internal E2 memory

Vig1-24

(1- 4 loop Vigilon Control Panel c/w 1 loop card & printer)

Key Features:
- 1 loop Control Panel
- Expandable to 4 loops
- Fully Networkable (BS & EN Networks) up to 31 Panels per domain
- Onboard Printer
- Internal keypad for programming
- Surface or flush options

Vig1-72

(1 to 6 loop Vigilon Fire Alarm Control Panel)

Key features:

1 loop Control Panel
Expandable to 6 loops
Fully Networkable (BS & EN Networks) up to 31 Panels per domain
Onboard Printer
Internal keypad for programming
Surface or flush options
72 hour standby option

1.2 ····**G**-QUAD Detectors
(Heat / Smoke / CO Sensor c/w sounder, strobe & speech)

The S-Quad incorporates four separate sensing elements – heat, forward optical, backward optical and

carbon monoxide that combine to detect real fires quickly.

S-Quad incorporates sensor, sounder, speech and strobe functionalities all in one single loop powered device.

S-Quad is powered by the Vigilon loop so it requires just one pair of cables to provide its multi-sensor, sounder, speech and strobe functionalities.

The S-Quad offers market leading loop capacity with 200 sensors, 125 sensor sounders or 100 sensor strobes

1.3 ····**G**-CUBED (Notification Device)

(Strobe / Sounder / Speech)

The S-Cubed range of alarm sounders incorporates sound speech and strobe effects all in one range of alarm devices.

The range offers all variants in the choice of 2 colours, red or white, in housings providing protection up to IP55.

The built in strobe makes S-Cubed ideal to meet all requirements of the Equality Discrimination Act legislation which requires all persons regardless of any disability to be made aware of a fire or an emergency in any public building.

1.4 ⋯: IRERAY® – Optical Smoke Detector

FIRERAY® Optical Beam Smoke Detector are an efficient and economic way of protecting lives, equipment and properties where:

•Ceilings are high
•Areas are wide
•Architecture aesthetics are important
•Ceiling are ornate

Advantages: Cost savings by minimizing on the use of normal smoke detector across the ceiling.

Optical Beam Smoke Detectors has over 700,000 beam detectors installed at some of the World's most prestigious buildings:

•Dubai Airport
•Neuschwanstein Palace
•Blenheim Palace
•Gateshead Metro Centre
•British Museum
•LongTan Hydropower station
•MGM Grand Hotel
•Sofia National Theatre

Some examples of common applications:
- Warehouses
- Atriums
- Conference / Exhibition Centres
- Shopping Malls
- Historic Buildings
- Churches / Mosques
- Museums
- Manufacturing Plants
- Airports
- Hangars
- Stables
- Sport / Leisure Centres

Approval: World-wide approvals include ENS4:12 and UL268

1.4 ⠄⠄: IRERAY®

What is an Optical Beam Smoke Detector?

An Optical Beam Smoke Detector (OBSD) comprises a Transmitter (Tx), a Receiver (Rx) and a Control Unit:

The Transmitter is an infrared light source that generates and projects a modulated infrared (invisible) light beam over an area to the Receiver. The Receiver is a photosensitive sensor that forwards the signal to a Control Unit;

Operation Principles:
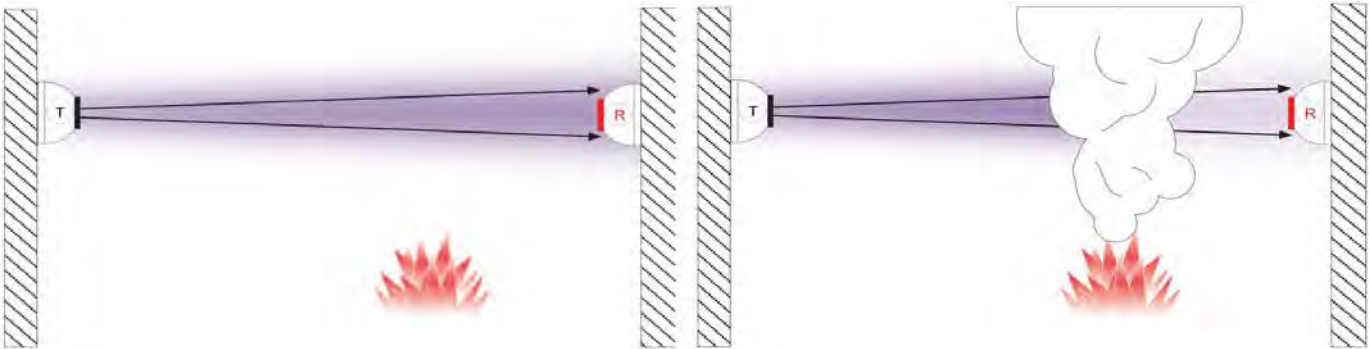
The Optical Beam Smoke Detector (OBSD) works on the principle of light obscuration. The photosensitive element of the OBSD detects IR light produced by the Transmitter in a normal condition. The Receiver is calibrated to a preset sensitivity level based on a percentage of total obscuration.

Unlike point-type optical smoke detectors, OBSDs are generally less sensitive to the colour of smoke. Therefore, an Optical Beam Smoke Detector may be well suited to applications that are unsuitable for point-type optical detectors, such as applications where the anticipated fire would produce black smoke. OBSDs do require visible smoke and therefore may not be as sensitive as ionisation detectors in some applications.

2.   Gas Based Systems

2.1   FM-200 (HFC227ea) – Clean Agent Extinguishing System

FM-200 Clean Agent Waterless Extinguishant is the product of DuPont™. FM-200 is a clean, colorless and environmentally friendly fire extinguishing agent that is electrically non-conductive and safe for human at design concentration. It extinguishes flames primarily through heat absorption, leaving no residue, thus minimizing downtime after a fire and making FM-200 extinguishing systems accepted worldwide with over one hundred thousand installations in more than seventy countries.

Typical areas of fire protection using FM-200 extinguishing systems are telecommunication facilities, computer rooms, museums, historical archive storage; art galleries, pharmaceutical facilities; record storage facilities, shipboard equipment, etc.

Systems models available with UL (Underwriters Laboratories) listing: FM (Factory Mutual) approved, Bomba (Malaysia), SGP TNB (Malaysia), major marine classification type approval.

2.2   NOVEC 1230 (FK-5-1-12) – Clean Agent Extinguishing System

3M™ Novec™ 1230 fire extinguishing systems combines outstanding extinguishing performance with an excellent environmental profile. It has zero ozone depletion potential. global warming potential of one, a five day atmospheric lifetime and a large margin of safety for occupied spaces. The Novec 1230 fire protection fluid extinguishes fire primarily by removing heat from the fire. It is also electrically non-conductive.

Typical areas of fire protection using Novec 1230 extinguishing systems. include computer rooms, data storage facilities. telecommunication. oil & gas petrochemical facilities, museums, libraries and archives, medical facilities, manufacturing facilities, storage areas etc.

Systems models available with UL (Underwriters Laboratories) listing: FM (Factory Mutual) approved: Bomba (Malaysia): major marine classification type approval.

2.3   Inert Gas Clean Agent Fire Extinguishing System

Inert Gases Clean Agent Fire Extinguishing Systems
- IG-OI – 100%Argon
- IG-55 – 50% Argon + 50% Nitrogen
- IG-I OO – 100% Nitrogen
- IG-541 – 52% Nitrogen + 40%Argon + 8%Carbon Dioxide

Natural gases present in the atmosphere. suitable for occupied areas at design concentration. Electrically non-conductive, no residue to clean up after discharge and environmental friendly. As a general rule, extinguishing concentration is achieved when oxygen concentration in protected space is reduced from its usual level of 20.5% to value lower than 15% depending on the combustible products. Suitable for the protection of computer rooms, archives and electrical equipment, etc.

Systems models available with LPCB (Loss Prevention Certification Board); Vds (Vertrauen Durch Sicherheit, Germany); Bomba (Malaysia) approval.

2.4   Rotarex Fire Detection & Tube Extinguisher System

System utilizes an unique flexible tubing that is attached to the cylinder valve assembly. The tube attached is installed within the protected equipment. Upon flame impingement, the tube will melt.
releasing the extinguishing agent with the direct system. As for the in-direct system, the tube acts as fire detection device. when it melts and loss pressure, the cylinder valve open and release the extinguishing agent into the protected space via a separate set of pipe network and nozzle. System commonly uses carbon dioxide as extinguishing agent. however, clean agent models are also available.

This system is commonly used for the protection of electrical cabinet and machinery with casing.

System models available with FM (Factory Mutual) approval.

2.5   High Pressure Carbon Dioxide Fire Extinguisher System

Carbon dioxide is a colorless, odorless and chemically inert gas that is both readily available and electrically non-conductive. It extinguishes fire primarily by lowering the level of oxygen that supports combustion in a protected area . The mechanism of fire suppression makes carbon dioxide extinguishing systems highly effective, require minimal clean up, but shall be used only in normally unoccupied areas. Carbon dioxide fire extinguishing systems can be designed with total flooding or local application approaches.

Systems are generally used to protect normally unoccupied generator rooms, shipboard machineries rooms, flammable stores, transformers etc. Systems models available with UL (Underwriters Laboratories) listing, FM (Factory Mutual) approved, major marine classification type approval.

2.6   Low Pressure Carbon Dioxide Extinguisher System
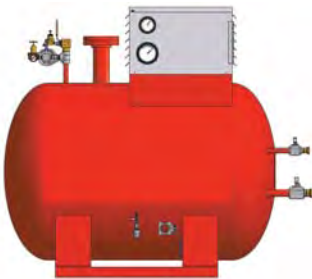
Low pressure carbon dioxide storage unit consists of an insulated pressure vessel to ASME code, outer shell, integrated refrigeration unit that utilizes CFC-free R-404A refrigerant, ASME safety relief and bleeder valve(s), and liquid level and pressure gauges. Each unit has appropriately sized piping outlets for filling, discharge and connection of the extinguishing system vapor supply.

Suitable for both total flooding, local application as well as inerting purposes. Systems are generally used to protect multiple hazards, coal silos, aluminum factory. etc. Storage units models available from 1.2S ton to 38 ton in horizontal and vertical orientations.

2.7   Self-Contained Compressed Air Breathing Apparatus (SCBA)

The self-contained compressed air breathing apparatus is used by trained personnel in case of oxygen deficiency or in highly contaminated environment. The SCBA usually forms part of the
basic equipment for fire-fighters and rescue team.

SCBA available with 6 ltr, 300 bar steel or composite carbon fiber cylinder and major marine
classification type approval.

## 2.8 Accessories

Portalevel® MAX

The Portalevel® MAX is the latest generational of the Portalevel® line and is designed to provide enhanced Speed, Operation and Performance, especially for high intensity testing requirements. The unit is also the first UL Approved Ultrasonic Level Indicator we have ever produced and builds further on our history of over 27 years manufacturing this equipment.

The primary application for the Portalevel® MAX is for testing the content of fixed fire suppression cylinders. This is achieved using ultrasonic technology to send signals into the cylinders. Testing can be achieved without removing the cylinders from their manifold , saving considerable time in testing and reducing risk to the operators. The equipment can work on a wide variety of cylinder types and typical agents include CO_2, FM200™, NOVEC 1230™, old Halon Agents, FE-13™, FE-25™, NAF S III™ and all core Clean Agent Systems. This equipment will not operate on Inert Gas systems.

2.8 Accessories

Permalevel® Multiplex
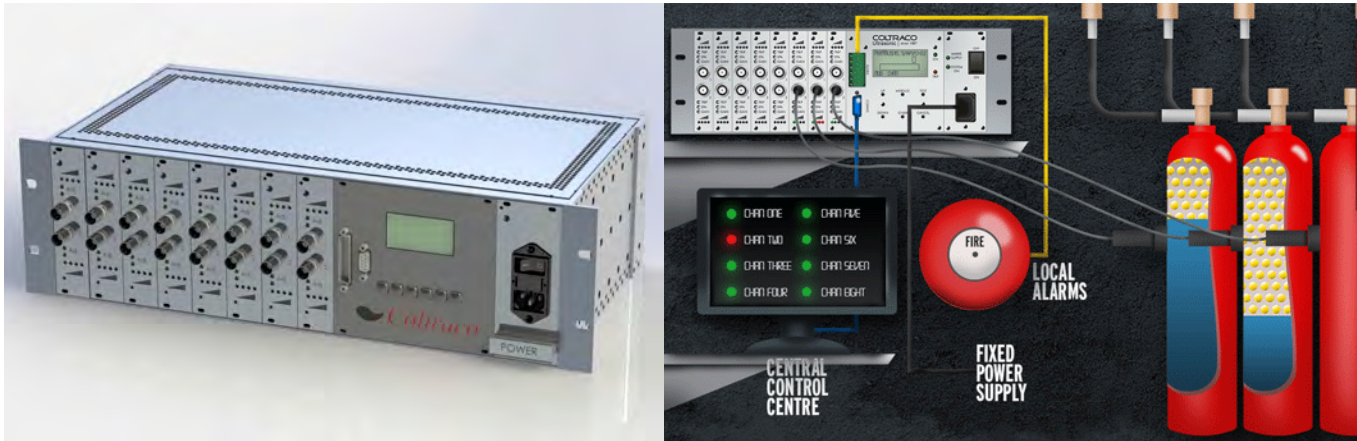
Permalevel Multiplex is a fire suppression cylinder monitoring system and has been designed to monitor the contents of gaseous fire suppression systems on a continuous basis without the need for physical presence.

Permalevel Multiplex, however, is designed as a fixed 24/7 system to monitor anything from 5 to 700 cylinder level points. It is a modular system and each module will cater for up to 16 level points.

Fixed Contents Monitoring for CO_2, FM-200™, NOVEC™1230, NAF S 225 & 227, recycled Halon 1301, FE-13™ and FE-25™ and FE-36™.

Its attraction will lie principally with customers who desire and recognise the added safety value of 24/7 contents monitoring of their fire suppression system in high asset value/special hazard environments.

The Permalevel Multiplex is the first system worldwide that is capable of monitoring the liquid level of critical fire suppression cylinder systems on a constant basis. The unit can be easily installed on new systems or retrofitted to existing systems, and can monitor up to 16 level points simultaneously. The system has a remote display showing the status of each cylinder, as well as the ability to link to remote local alarm or indication method. It can also remote link the status back to any Central Monitoring Station.

The Permalevel Multiplex is designed to ensure that fire suppression systems are always fully operational and that no accidental discharge has occurred, which could affect the effectiveness of the overall fire protection system in the event that it is required for use. This allows a facility to have complete confidence that they are fully protected.

3. Foam Fire Fighting Products

3.1 Foam Proportioning Equipment

Proper foam proportioning ensures optimum performance from foam liquid concentrate by introducing the foam concentrate into a flowing stream of water to produce a foam solution.

Applications for Proportioning Equipment
• Aircraft Hangars
• Chemical Processing Plants
• Dip tanks
• Flammable Liquid Storage Tanks
• Helipads
• Marine Dock & Vessels
• Offshore Platforms
• Pump Rooms
• Refineries
• Truck Loading Racks

3.2 Vertical and Horizontal Bladder Tank

ANSUL bladder tanks are available in both vertical and horizontal tank models and a variety of nominal capacities as listed in the tank information tables. Both tank models feature perforated center tubes which allow improved agent discharge.

Features incorporated into the ANSUL bladder tanks include the following:

• Water pressurized bladder construction, alleviating the requirement for foam pumps or other energy sources

• Valves that are pinned in the normal operative positions and are supplied with nameplates identifying their functions and operating instructions

• Bladder tanks are supplied with corrosion resistant piping

• Exterior tank surfaces finished in red standard system paint or coated with an epoxy "CR" red finish for use in marine or corrosive environments

• Tanks with a high build epoxy coated interior for use with both fresh and salt water

3.3 MANUAL MONITOR

NOZZLE HIGH-FIOW SERIES – MODEL FJM-80

FEATURES

Powerful unit with exceptional throw characteristics
Compact and lightweight
Welded stainless steel monitor construction which allows for use in corrosive environments and minimizes maintenance
Patented stainless steel slide-bearing system to prevent unwanted movement or swings
Versatile nozzle patterns in a solid jet or fog spray pattern with water or foam

Model: MM-1000 SERIES

FEATURES

Waterway: 3 in. nominal continuous tubing
Nozzle: Use of Spitfire, D5 or AFN-1 Series nozzle recommended
Sweep (rotation): Full 360°
Elevation: 140° total vertical movement. (+90° elevation, –50° depres- sion)
Nozzle Threads: Male 2 1/2 in. – 7 1/2 TPI NHT, stainless steel
Mounting: 3 in., 150 lb. ANSI flange standard. Optional 4 in., 150 lb. ANSI flange
Finish: Red polyurethane paint
Material: Durable carbon steel. Optional stainless steel model avail- able (unpainted)
Stability: Lock knobs for sweep (rotational) and elevation (vertical) movements
Weight: 38 lb. (17.2 kg) with 3 in. flange; 40 lb. (18.1 kg) with 4 in. flange, not including nozzle. Shipping weight: 45 lb. (20.4 kg)

3.4 JET-X® High Expansion Foam Generator
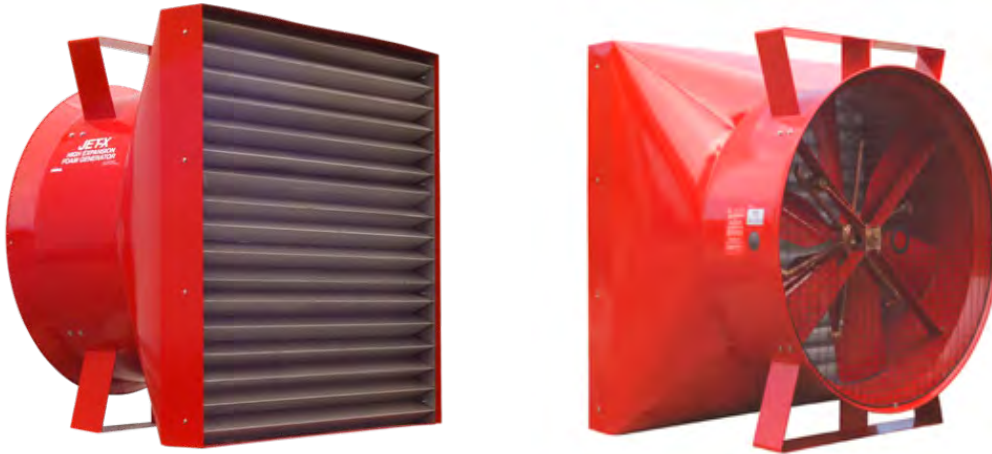
FEATURES
Reliable, Water Motor Powered
No Electrical Power Requirements
Foam Capacities to 28,800 cfm (816 cmm) n UL Listed Models
FM Approved Models
All Models Have CE Marking

3.5 Foam Equipment – Handline Nozzle & Eductor

FOAM EDUCTORS

FEATURES
Tough proven design
Metering valve adjustable up to 6% Efficient, low cost proportioning

3.5 Handline Nozzle & Eductor

LOW-EXPANSION FOAM HANDLINE NOZZLES

FEATURES
Noncorrosive materials
Easy-to-operate ball shut off valve
Light weight for ease of handling
Good foam quality with pressure of 45 psi (310 kPa) and greater

MEDIUM-EXPANSION FOAM HANDLINE NOZZLES

FEATURES
Compact and light weight
Stainless steel and hard polyurethane construction for optimum corrosion protection
Pressure gauge equipped
Easy-to-operate ball shut-off valve
Good foam quality with pressures of 45 psi (310 kPa) and greater

DUAL-EXPANSION FOAM HANDLINE NOZZLES

FEATURES
Two foam handline nozzles in one
Change over from medium to low expansion foam in seconds
Noncorrosive materials
Pressure gauge equipped
Easy-to-operate ball shut-off valve
Good foam quality with pressure of 45 psi (310 kPa) and greater

3.6 PROPORTIONING FOAM TRAILER

FEATURES

High capacity flow
Extremely mobile
Rugged construction
Wide proportioning range
Designed per NFPA 11C
Diesel driven balanced pressure proportioning system
Easy refill during operation
Multiple tank options
UL Listed and FM Approved proportioning system
Torflex axle assemblies
Tanks constructed by ASME qualified welders
Highway ready

3.7 FOAM SYSTEMS MOBILCART

The Foam Systems Mobilcart is designed to provide mobile firefighting foam capability for various hazardous areas where flammable liquids are present. Common applications include tank farms and refineries, loading areas, chemical processing plants, diked areas, warehouse facilities, paint storage areas, and other manufacturing areas where flammable liquids are a hazard. A broad range of foam concentrates can be used for Class B applications including ANSULITE AFFF, Alcohol Resistant AFFF, JET-X high-expansion type, and protein based foam concentrates. For Class A fire hazards with wood, paper, coal, and rubber, SILV-EX concentrate proportioned at 1% is recommended. The Mobilcart is a highly maneuverable wheeled cart consisting of a polyethylene tank with two built-in hose storage locations, an eductor with metering valve, and two lengths of fire hose with a choice of foam nozzles.

4. Water Spray System

4.1 Fogtec Water Mist System

FOGTEC offers water mist solutions for the different types of applications

Fixed Systems

• Archives and Libraries
• Cable Tunnels
• Clean Rooms
• CNC Machines
• Control Cabinets Conveyor Belts
• Engine Test Cells Flammable Liquid Stores Gasturbines
• IT Areas
• Kitchen Industrial Fryers Machinery Spaces
• Metro Stations
• Museums and Public Buildings Residential/ Hotels/ Hospitals Transformators
• Wall Cabinets
• Water Mist Curtains
• Wind Power Plants

Also available for
• Rail System

• Tunnel System

• Marine System

• Mobile System

General idea about High Pressure Water Mist system

Comparison Between Sprinkler's & Fogtec Water Mist Nozzle Discharge Pressure

- Sprinkler Nozzle Discharge pressure @ Nozzle = 1 bar to 3.5 bar

- Water Mist Nozzle Discharge pressure @ Nozzle 100 bar to 200 bar

Technology - Small Droplets - Big Effect

•Greater Surface Area

•Evaporate Quickly

•Remain Airborne Longer

Droplet Diameter		Reaction surface per litre of water
1mm	Þ	2m2 (convent. technologies)
0,1mm	Þ	20m2
0,01 mm	Þ	200m2 (FOGTEC Water Mist)

4.2   AUTOMATIC SCANNING & POSITIONING WATER-SPRAY FIRE EXTINGUISHING DEVICE (SPRAY TYPE)

The Central Suspension Type of Automatic Scanning and Positioning Water-Spray Fire Extinguishing Device detects fires automatically and has an automatic fire alarm system and gang control. It also has an automatic water-spray fire extinguishing mechanism.

The system comes complete with a range of other peripheral functions such as video and communications capabilities. Once a fire has been detected, its advanced microprocessors carry out a logical analysis that aims the nozzle towards the fire origin before spraying water.

Its other features include timely detection and precise positioning as well as a concentrated jet current with a large coverage range. Among a host of other capabilities, it also powers on and off automatically.
The device is suitable for large indoor spaces such as exhibition centres, gymnasiums, theatres, museums, bus depots, logistics warehouse and airports.
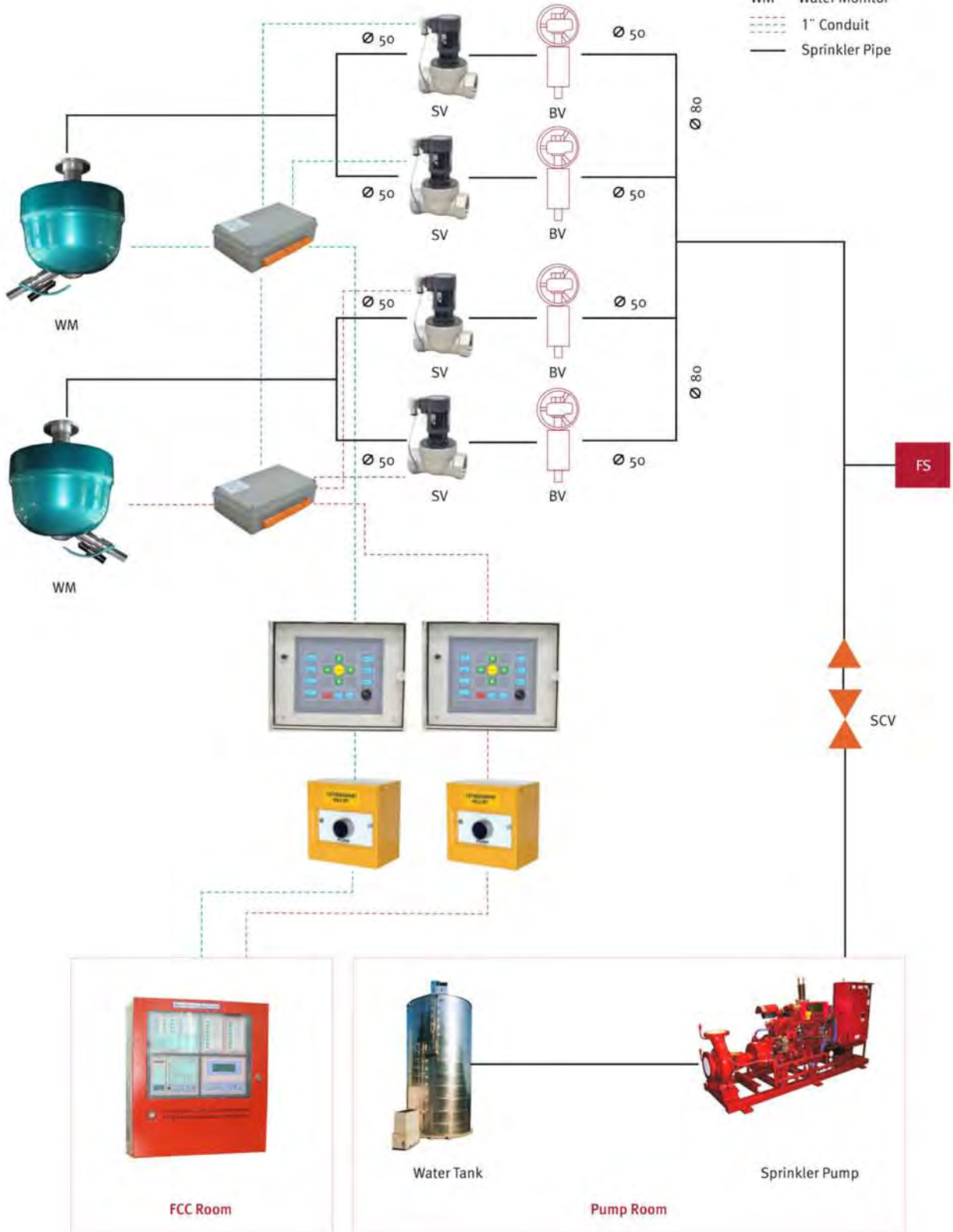
THXF SO3-IIIA

The THXF system combines sophisticated software with top of the line hardware to bring you a fire-detection and extinguishing system that you can trust to keep your lives, equipment, and property safe. The system employs an advanced fire detection method that utilises infrared and ultraviolet wavelengths to pinpoint the origin of any fire before it spreads and brings in its adjustable double-nozzle-spray to cover the fire's point of origin effectively. With its anti-corrosion properties and its low-voltage current power supply, the THXF system is the epitome of exceptional reliability.

Working Pressure (MPa)	0.6
Flow rate (L/s)	5
Protection Range (m)	32m
Installation Height (m)	3~35m
Connection Size (mm)	DN50
Ambient Temperature	-15°C ~ 55°C
Power Supply	DC12V
Power Consumption	Normal ≤ 1 W / Activation ≤ 15 W
Dimension (mm)	390x270x330

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Legends

SCV	Sprinkler Control Valve
FS	Flow Switch
BV	Butterfly Valve
SV	Solenoid Valve
WM	Water Monitor
┄┄┄┄	1" Conduit
────	Sprinkler Pipe

Ø 50   SV   BV   Ø 50

Ø 80

Ø 50   SV   BV   Ø 50

WM

Ø 50   SV   BV   Ø 50

Ø 80

Ø 50   SV   BV   Ø 50

WM

FS

SCV

Water Tank

Sprinkler Pump

FCC Room

Pump Room

5.   Fire Fighting Equipment

5.1   Hose Reel

GENERAL:

"AE" Model50-N (19mm dial and 55-N (25mm dial fixed type, manual operated fire hosereel are manufactured within a strict quality controlled environment to ISO 9001 : 2000 and conformed to BS EN 671-1 : 2001 specifications.

The elegant and compact design with minimum protrusion allow for easy installation and maintenance. The compact design greatly helps designers in deciding the appropriate size of the hosereel compartment, especially in areas where space constraints are critical.

FEATURES:
• Elegant and compact design.
• Robust construction.
• Easy and flexible installation .
• Reliable performance with minimum maintenance.
STANDARD ACCESSORIES:
• 20, 25 ,30 and 36 metre long, EN 694 : 2001 hose.*
• Open/shut, 6mm and Bmm dia orifice, rotary operated, jet or spray/jet nozzle.*
• Brass stop valve or lever ball valve*
• Zinc plated hose clamps.
• Galvanized swing roller hose guide.

We also cater for: Full Panel Hosereel Cabinets, Fire Hose Rack Assembiles, Swing Type Fire Hosereel

5. Fire Fighting Equipment

5.2 Mueller Fire Hydrants

- ### Mueller Super Centurion Hydrant 250

  - Dry Barrel Type Fire Hydrant for ULFM fire protection market
  - Superior, computer aided design that minimizes head loss through hose and pumper nozzles
  - 250psi working Pressure (16 Bar)
  - Several Bury Depths (0.5 meters to 2.1 meters)
  - Shoe options are 6″ or 150mm flanged in ANSI or PN 10/PN16 drilled
  - More options than any other manufacturer

- ### Mueller Wet Barrel Hydrant

  - Wet Barrel Type

  - UL & FM rated

  - 250 psi Working Pressure

  - Independent Valves for each hose and pumper Nozzles

  - 6″ diameter base flange, 6 or 8 holes

5. Fire Fighting Equipment

5.2 – Pillar Hydrant

•Model Fig.250 – 100mm x 2-Way with 65mm Male LVT Outlets.

•Model Fig.260 – 100mm x 2-Way with 65mm Oblique Landing Valves.

•Model Fig.270 – 150mm x 3-Way with 2 nos 65mm Male LVT and 1 no 125mm Male LVT outlets.

•Model Fig.280 – 150mm x 3-Way with 2 nos 65mm Oblique Landing Valves and 1 no 125mm Male LVT outlets.

FIG 250
2-WAY PILLAR HYDRANT

FIG 260
2-WAY PILLAR HYDRANT WITH
LANDING VALVES

FIG 270
3-WAY PILLAR HYDRANT

FIG 280
3-WAY PILLAR HYDRANT
WITH LANDING VALVES

The outlets of the above models can be customised to suit other national standards and customer's requirement.

deluge

Fire Protection Preferred **by Leading Brands**

5.   Fire Fighting Equipment

5.3   Skids for Deluge System (Customized)
- Foam
- Dry Chemical
- Water Mist

6. Flow Control Equipment

6.1 Deluge Valve
   - Bermad - Series 400 Model

✓ Simple Design, reliable Fail Safe Open

✓ No Mechanical Moving Parts

✓ In-line serviceable

✓ One Piece Elastomeric Diaphragm Seal

✓ Self supporting Diaphragm

✓ Full Bore, Linear Flow

✓ Obstacle Free Flow Path

✓ Fire Test complies with latest international standards: ISO 6182-5 CEN

✓ Simple accessible Cover removal for minimal downtime

✓ No trim dismantling needed

✓ High Flow Capacity

✓ Lower Pressure loss

Pressure Ratings

Valve End Connections	Standard	Class	Max Working Pressure bar (psi)
Standard Pressure	Flanged ASME/ANSI B16.5 / 16.42 / PN16	#150	16 (235)
High Pressure	Flanged ASME/ANSI B16.5 / 16.42 / PN25	#300	25 (365)

Flow Properties

Size	2"	3"	4"	6"	8"	10"	12"
KV (CV)	80 (92)	190 (219)	345 (398)	790 (912)	1165 (1346)	1490 (1721)	1950 (2252)

6.2   Post Indicator

- **Mueller Post Indicator**

A20806 for valves (3″ – 14″)

A20807 for valves (16″ – 24″)

•Used for valves in buried applications

•PVC or Ductile Iron lower barrel

•Carbon Steel with Extension in Ductile iron

•Different Order lengths A-F 2′ 7″ to 13′ 3″ (0.8 meters to 4 meters)

- **Mueller Wall Post Indicator**

A20814 for valves 3 – 14″

•Used in commercial application for Wall Mounted Indicator Valves

7. Fire Extinguisher BADGER (USA)

7.1 ABC Multipurpose Dry Chemical Fire Extinguisher

Suitable for Class A, B and C fires

The Badger Standard multipurpose dry chemical line of fire extinguishers are economical and extremely versatile. They are ideal for tackling the majority of fire risks typically found in commercial and domestic applications.

Badger dry chemical extinguishing agent formulations contain the highest percentage of essential base ingredients found in the fire extinguisher industry. "Multipurpose" agent models are suitable for use on Class A, B and C fires.

Badger Standard models offer compliance and protection at a competitive price.

Features:

• *Multipurpose agent contains 90% M.A.P.*

• *Stainless steel hose band and nozzle retainer*

• *UL Listed and USCG Approved – Meets D.O.T. requirements*

• *12 year periodic hydrostatic test interval*

• *Six year warranty*

• *Machined aluminum valves*

• *Aluminum and plated steel handles*

• *2.5, 5, 10 and 20 pound models available*

7.   Fire Extinguisher; BADGER (USA)

7.2   Universal Ultra AR-AFFF Foam

Highest Class B Foam fire ratings in the industry

Badger's unique line of portable foam fire extinguishers contain an alcohol resistant (AR) type of aqueous film-forming foam (AFFF). They are specifically formulated for optimum performance in a hand portable fire extinguisher. This means when sufficiently applied, *Universal Ultra's* vapor sealing capability can actually prevent a fire from happening.

Badger foam units are effective on Class A common combustibles as well as hydrocarbon and polar solvent types of Class B flammable liquids, so they eliminate the application guesswork often associated with other foams. The unique synthetic base of *Universal Ultra* foam has no offensive odor, is non-toxic, environmentally-friendly, biodegradable and extremely simple to use and clean up.

Features:

•*Plated brass valves with stainless steel handle, lever and hose band*

•*Large, easy-to-pull ring pin*

•*Heavy-duty machined and anodized aluminum air aspirating nozzle*

•*Suppresses flammable liquid vapors to prevent re-ignition*

•*UL Listed*

•*Six year warranty*

•*AR-AFFF Foam works on both hydrocarbon and polar solvent types of liquid fuels*

•*Full stainless steel cylinder and base*

•*Hex valve collar tightening ring for easy recharge*

7. Fire Extinguisher; BADGER (USA)

7.3 Carbon Dioxide (CO2) Fire Extinguisher

Clean, effective extinguishing agent for Class B and C fires

These quality industrial fire extinguisher models are extremely versatile and ready to tackle flammable liquid and electrical fire hazards. They are ideally suited for indoor applications where delicate equipment or processes require a clean extinguishing agent.

Carbon Dioxide is an effective and clean gaseous extinguishing agent that does not leave any residue to clean up or damage equipment. These models are suitable for use on Class B and C fires.

Features:

Heavy-duty chrome plated brass valve

Stainless steel handle, lever and hose band

Aluminum internal siphon tube

Six year warranty

Five year periodic hydrostatic test interval

UL Listed and USCG Approved—Meets D.O.T. requirements

Easy-to-read two-piece nameplate

5, 10, 15 and 20 pound models available

Available types of Extinguishers in our range of product:
•Badger - BC Dry Chem Portable
•Badger - CLASS_K - Kitchen used protable
•Badger - Halotron Portable
•Badger - MRI Non Magnetic CO2 Portable Extinguisher
•Badger - WHEELED CO2Badger - WHEELED_REGULATED Dry Ch
•Badger BRIGADE - Cartridge Operated Dry Chem Portable
•Badger Extra - ABC Multi Purpose Dry Chem Hand Portable
•Badger Extra - Water Stored Press Hand Portable
•Badger Wheeled - Dry Chem Wheeled Portable

8.   Pump

Vertical Turbine

• UL Listed/FM Approved/NFPA-20 Design • Flows from 250 to 4500 GPM

• Pressures from 75 to 387 PSI

• For Commercial, Industrial and Marine Use

• Special Materials for Seawater Applications

• Diesel and Electric Driven

Horizontal Split Case

• UL Listed/FM Approved/NFPA-20 Design

• Flows from 250 to 5000 GPM

• Pressures from 40 to 490 PSI

• For Commercial and Industrial Use

• Diesel and Electric Driven

Fire Protection **Preferred** by Leading Brands

8. Pump

Other type of pumps available in our Range:

Corro Non Metallic Pump

Faggiolati Submersible Pump & Mixer

CNP Horizontal Split case and In line Pump

9.   Mechanical Coupling

Victaulic installation-readyTM couplings are the fastest and safest joining method available because they:

• install up to 10 times faster than welded joints

• install up to 6 times faster than flanged joints

• feature no loose parts during installation

COUPLINGS FEATURING PATENTED INSTALLATION-READY™ TECHNOLOGY

STYLE 009N	STYLE 607	STYLE 107	STYLE 177N
The Style 009N FireLock EZ® rigid coupling for fire protection systems.	The Style 607 QuickVic® rigid coupling for joining copper potable water systems.	The Style 107 QuickVic® rigid coupling for joining carbon steel and stainless steel▲ piping systems.	The Style 177N flexible QuickVic® coupling for joining carbon steel and stainless steel▲ piping systems.

10. Mechanical-T®

Mechanical-T® Bolted Branch Outlets
STYLES 920 AND 920N

Victaulic Mechanical-T® Outlet provides a direct branch connection at any location a hole can be cut in pipe. The hole is cut oversize to receive a "holefinder" locating collar which secures the outlet in position permanently. A pressure responsive gasket seals on the pipe O.D.

Cross-type connections can be achieved by utilizing two upper housings of the same style and size, with the same or differing branch size connections. NOTE: Style 920 and Style 920N housings cannot be mated to each other to achieve a cross connection.

Style 920 and Style 920N Mechanical-T outlets are available with grooved or female threaded outlet. Specify choice on order. Units are supplied painted with plated bolts. Galvanized housings are available, supplied with plated bolts.

All sizes of Style 920 and 920N are rated at 500psi/3450kPa working pressure on Schedule 10 and 40 carbon steel pipe. They may also be used on high density polyethylene or polybutylene (HDPE) pipe. Pressure ratings on HDPE are dependent on the pipe rating. Contact Victaulic for ratings on other pipe. Style 920 and 920N are not recommended for use on PVC plastic pipe.

Standard piping practices dictate that the Mechanical-T Styles 920 and 920N must be installed so that the main and branch connections are a true 90° angle when permanently attached to the pipeline surface.

11.   Auto Sprinkler

V2703/V2704
Upright

V2707/V2708
Pendent

V2707/V2708
Recessed Pendent

Technical Specifications:

Models: V2703, V2704, V2707, V2708

Style: Pendent, Upright or Recessed Pendent

Nominal Orifice Size: 1/2"/13 mm

K Factor: 5.6 Imp./8.1 S.I.1

Nominal Thread Size: 1/2" NPT/15 mm

Max. Working Pressure:
• 175 psi/1200 kPa (FM)

• 250 psi/1725 kPa (UL)

Factory Hydrostatic Test: 100% @ 500 psi/3450 kPa

Min. Operating Pressure:
• 7 psi/48 kPa
• 0.35 bar/5 psi (VdS for upright only)

12. Pipeline Fabricated Pipe

Available in Class 'B' & 'C' & GI 'B' & 'C'

Pipeline Distribution (M) Sdn Bhd is a wholly owned subsidiary of Deluge Fire Protection (S.E.A) Pte Ltd Singapore. We have been producing prefabricated carbon steel pipes for fire protection since 1998 and are the preferred choice for many high profile and outstanding projects.

Pipeline® is the leading Fire Protection Pipe Fabricator in Singapore and Malaysia with a total annual capacity in excess of 8,000 tons. Strategically located in Jurong, Singapore and, Iskandar Johor, Malaysia, we are positioned to serve both markets.

Committed to the highest standards of quality, Pipeline® utilizes shop tested machine welds, gauge thread and grooves, and in-house crane trucks for delivery. All project orders are packed, tagged and bundled in our customized format to for easy guidance and clarity during installation.

With our integrated supply chain, Pipeline® can provide for your fire pipe needs in a single turnkey package. We are able to maintain consistent product quality and fast delivery to meet tight deadline because all pipe fabrication is done in our environmentally controlled factory using our own direct workers. We do it better by managing every step of the design, grooving, welding process and, delivery and installation for all our pipes. We can also customize our prefabricated pipes to any design configurations to meet site requirements.

Our exceptional value combined with our outstanding track record, performance quality, managerial and technical expertise are the reasons why Pipeline® is preferred by leading brands.
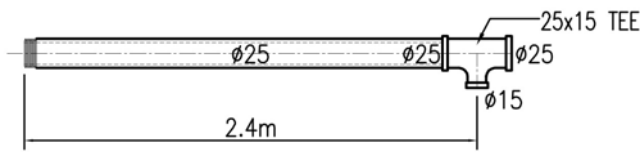
Pipeline® - the Specialist in painted pre-fabricated pipes for all your fire protection needs.

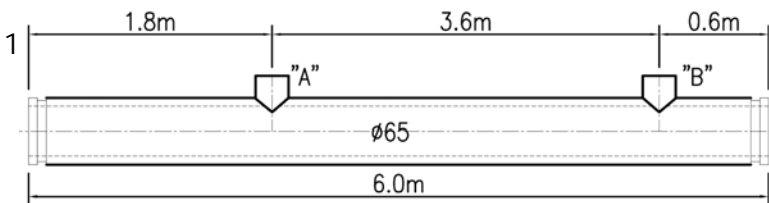Our Pipe are tested by PSB (Singapore), EN and comply to NFPA 13/ 15, CP 29/52, MS 1489/1910.
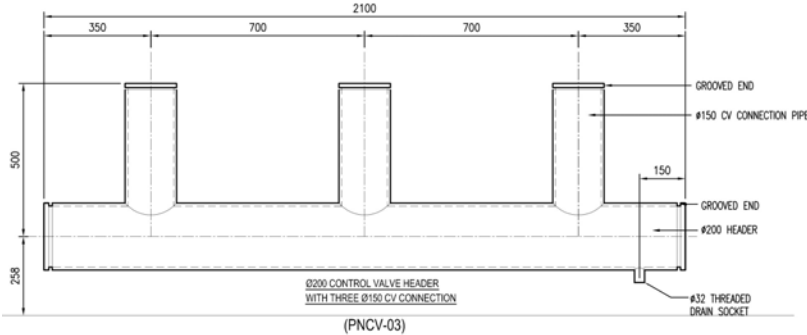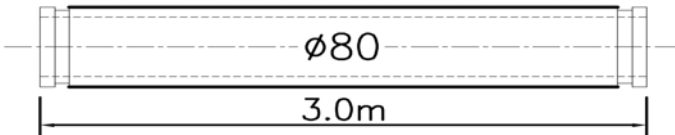
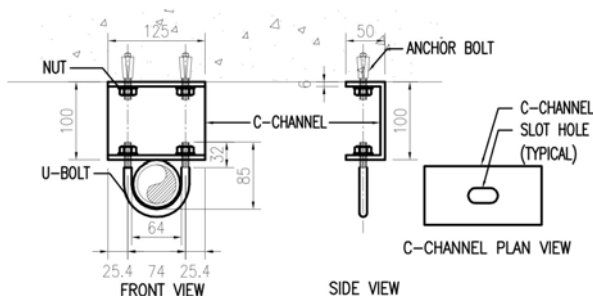## 12. Pipeline Fabricated Pipe

13.1   Range Pipe (Threaded with fittings)

E.G Ø25, 2.4m, 25x15 Tee
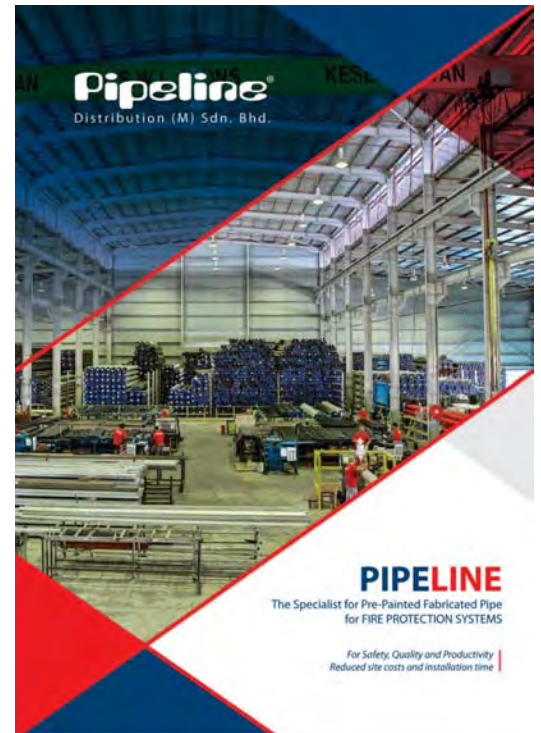
13.2   Main Pipe (Grooved)

(PNCV-03)

E.G. Ø65, 6.0m @ ODD LENGTH WITH 2 No. SOCKETS

Contact us for a free Pipeline Brochure today!

PIPELINE
The Specialist for Pre-Painted Fabricated Pipe
for FIRE PROTECTION SYSTEMS

For Safety, Quality and Productivity |
Reduced site costs and installation time |

13. Flexible Dropper

Pipeline® Flexible Braided Sprinkler Hoses and Fittings for use in Commercial Suspended Ceilings

Designed in accordance with NFPA 13, 13D, and 13R for limited flexible application, Pipeline® flexible braided sprinkler hoses are made of premium corrosion resistant stainless steel and come with FM approved certification which certify that our items have been tested to strict conformity with construction standards.

Compared to conventional rigid piping, our flexible braided sprinkler hose enhances work efficiency by 50-70% as they are installed to the ceiling grids and therefore move with the ceiling as they settle, maintaining the ceiling plane.

Pipeline® flexible braided sprinkler hoses with fittings offer you:

Fast and dependable installation, outstanding performance and are much more cost effective during maintenance and retrofit applications.

Minimum on-site modifications required. The Dropper bracket reduces jobsite coordination as most ceiling boards can be installed with the bracket already in place. Reduce material handling, up to a third less weight than rigid pipe systems.

Easy to install, wide range of sizes to suit your every need. Pipeline® flexible braided sprinkler hoses comes in lengths from 700mm to 1,800mm and with a wide range of mounting brackets. Our specially designed brackets allow for an easy and fast installation even when an unskilled installer performs the task.
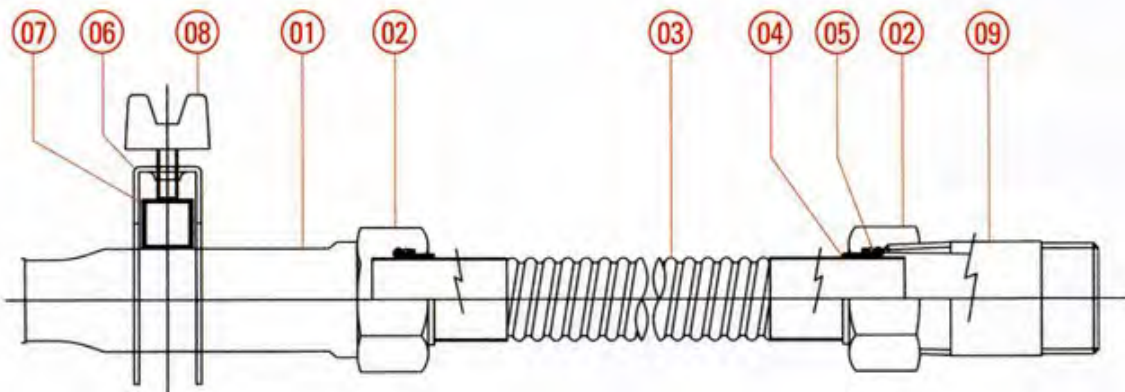
13. Flexible Dropper

13.1 Flexible Sprinkler Hose

- ### Model: DJ25UB (Unbraided Type)

This type of hose is widely used in any type of application. Its cost effectiveness makes it possible to use your company resources economically without compromising safety.

Intended use for direct connection to fire sprinklers
Intended for use with drop ceilings, flexible sprinkler hose can be installed on intermediate and heavy duty ceilings.

NO	Parts	Material	Quantity
01	Reducer	SUS304	1 PCS
02	nut	SS41	2 PCS
03	Flexible tube	SUS304	1 PC
04	0-ring	EPDM NBR	2 PCS
05	Isolation	NYLON 66	2 PCS
06	Bar	SS 41	1 PC
07	Bracket	SS 41	1 PC
08	Bracket nut	SS 41	1 PC
09	Nipple	SS 41, AL	1 PC

13. Flexible Dropper

13.1   Flexible Sprinkler Hose

- ### Model: DJ25B (Braided Type)

This type of hose has a stainless steel braided covering around the hose for its protection and for buildings that require the highest safety standards. This tube has great flexibility and is easily install under any circumstances.

Intended use for direct connection to fire sprinklers
Intended for use with drop ceilings, flexible sprinkler hose can be installed on intermediate and heavy duty ceilings.

NO	Parts	Material	Quantity
01	Reducer	SUS304 AL	1 PC
02	nut	SS41 AL	2 PCS
03	Flexible tube	SS304	1 PC
04	0-ring	NBR	2 PCS
05	Isolation	NYLON 66	2 PCS
06	Bar	SS 41	1 PC
07	Bracket	SS 41	1 PC
08	Bracket nut	SS 41	1 PC
09	Nipple	SS 41 AL	1 PC
10	Braid	"	1 PC

14. Design / Engineering Services

A LEADER IN THE FIELD OF DESIGN

Deluge has been at the forefront of fire protection design, pre-fabrication, and installation of fixed fire protection systems for over 30 years. Employing only the best engineering practices, Deluge uses brands that enable the delivery of quality projects on time while adhering to stringent standards to ensure all operations are done in an environmentally responsible manner.

Strength & Capabilities: Knowledge and Design

•Top design engineers have more than 20 years experience.

•All engineering team are CAD literate with latest AutoCAD and Microstation versions.

•BIM-ready with skilled Revit operators.

•Technical support team in Singapore, Thailand and Philippines.

•Value Engineering

•Working knowledge of Various international codes e.q. NFPA, CP, MS, AS, etc.

•Perform full hydraulic calculations by use of software.

•Extensive experiences from projects across the region.

14. Design / Engineering Services

Strength & Capabilities: Knowledge and Design

We are able to provide design and value engineering for

- Sprinkler Systems
- Pre-action Systems
- Hydrant Systems
- Dry/Wet Riser Systems
- Hosereel Systems
- Foam Systems
- Fire Extinguishers
- Water Spray Systems
- Water Mist Systems
- Fire Alarm Systems
- Pump Systems
- MVAC Systems
- Plumbing & Sanitary
- FM-200
- CO2 Systems
- Inergen
- Novec 1230
- Argonite
- IG-100
- NAF
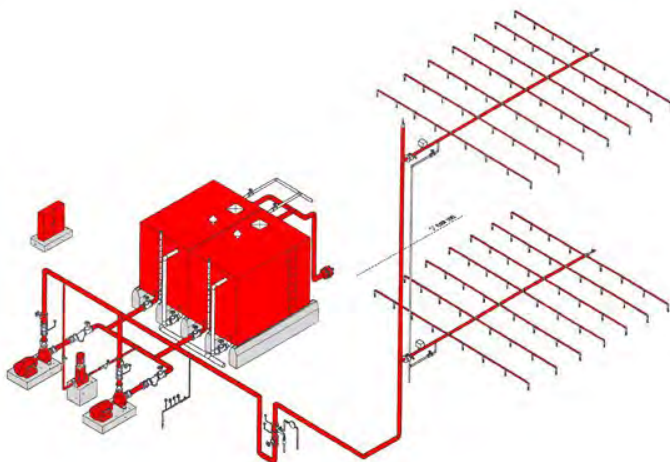
Company and Warehouse

SINGAPORE

22 Chin Bee Drive Singapore 619870

Tel: (65) 6862 3688
Fax: (65) 6862 3600

MALAYSIA
(OFFICE, WAREHOUSE & FACTORY)

No. 11 Jalan Bioteknologi 3,
Kawasan Perindustrian SiLC, 79200
Nusajaya, Johor Darul Takzim
Tel: (607) 509 9933
Fax: 607 509 9966