

# High Pressure CO<sub>2</sub> Fire Protection Systems



## Proven reliability for mission-critical applications

Every enterprise has equipment and facilities that are vital to its operation. Business would be seriously affected if these were destroyed by fire. In many cases valuable assets should not be protected by water or other similar extinguishing agents, as these

### Featuring innovative high-performance cylinder valves

- *Patented cost-saving unibody design* – does not have separate valve and discharge heads.



types of agents often are unable to reach inaccessible parts of the hazard. They can also cause considerable damage — even in excess of that done by the fire itself.

Carbon dioxide is a reliable, versatile and efficient fire fighting agent. It has provided decades of successful operation. It is a dry, inert, non-corrosive gas that will not damage equipment or materials or contaminate liquids or food. It does not leave any residue to clean-up, and as a result, business down-time is held to a minimum. In addition, carbon dioxide is a non-conductor of electricity, and can even be used without danger in spaces housing high voltage electrical equipment.

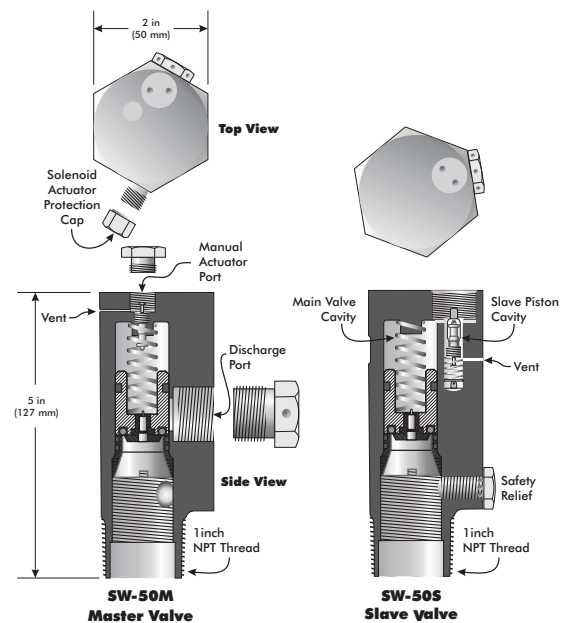
## Why CO<sub>2</sub>...

Carbon dioxide is a standard commercial product that is commonly used for carbonated beverages, for fast freezing food, for medical purposes, for purging pipes and tanks, as well as for extinguishing fires. It is readily available in most cities and seaports throughout the world. For more than 80 years carbon dioxide has been used for fire protection purposes. The NFPA standard for fire extinguishing systems was initiated in 1928, was first adopted in 1929. It has been revised approximately 26 times since, and represents the accumulated knowledge and experience of those who have designed and used CO<sub>2</sub> systems for fire extinguishing purposes.



## Advantages of CO<sub>2</sub> fire extinguishing systems

- A viable agent for the foreseeable future. No ban on its use.
- Is well established. Has been successfully used for 80 years.
- Is a standard commercial product with many other uses and as a result is readily available in most towns and cities around the world.
- Low agent cost. Beneficial when frequent recharging is a factor, such as with engine test cell protection.
- Installed system cost is lower when compared to clean agents.
- Is stable and inert. Does not decompose when subjected to fire. Does not cause corrosion or damage materials and equipment.
- Vaporizes completely on discharge. No clean-up of agent required.
- Protected facilities can be back in operation with a minimum of delay.
- Suitable for Class A, B and C fires.
- Four proven and standard methods of application:
  - Total flooding, surface burning.
  - Total flooding, deep seated burning.
  - Local application, area method.
  - Local application, volume method.
- Accommodates long pipe runs.
- Readily accommodates systems with selector valves (integrated systems that protect more than one hazard from a common carbon dioxide supply).
- Carbon dioxide discharges by the force of its own expansion. Does not require super-pressurizing agents, pumps, or other pressurizing mechanisms.
  - May be used simultaneously with other types of extinguishing agents with no effect on extinguishing efficiency.



## High Pressure CO<sub>2</sub> extinguishing systems explained

High pressure storage systems are comprised of CO<sub>2</sub> cylinders stored at ambient temperatures. At 70 °F (21 °C), the pressure in this type of storage container is 850 psi (5860 kPa).

Low pressure storage systems, on the other hand, are comprised of CO<sub>2</sub> cylinders stored at a controlled low temperature of 0 °F (-18 °C). At this temperature the pressure in this type of storage is 300 psi (2068 kPa).

### Advantages of high pressure systems

- High pressure cylinders are available in 50, 75 and 100 lb (20, 34 and 45 kg) capacities. Low pressure containers are typically available in one ton increments. This greater flexibility among high pressure systems allows the system designer to allocate storage with greater efficiency, thus saving storage space and money.
- Refrigeration of carbon dioxide is not required. Cylinders can be stored without any special treatment at temperatures between 0 °F and 130 °F (-18 °C and 54 °C) for total flooding systems, and 32 °F to 120 °F (0 °C to 49 °C) for local application.
- Cylinders can be easily adjusted for higher or lower temperatures by underfilling for higher temperatures, or adding nitrogen for lower temperatures.
- Flexible space requirements – if a single large space is not available, multiple cylinder banks can be divided and stored in a number of smaller locations.
- Flexible for weight requirements – if floor loading is a problem, multiple cylinder banks can be divided and stored in a number of locations to distribute the floor loading.
- Electric power is not required for high pressure carbon dioxide storage.

