

# MARINE CO<sub>2</sub>

## Special Hazard Systems



The Kidde Marine CO<sub>2</sub> fire extinguishing system utilises the company's well-proven and reliable range of equipment with custom-designed controls for the marine environment. A bulk supply of CO<sub>2</sub>, stored in a number of 45kg cylinders manifolded together is located in a dedicated "CO<sub>2</sub> room" together with direction valves, controls and release control stations.



Areas which can be protected by Kidde CO<sub>2</sub> systems include:

- Engine rooms
- Machinery spaces
- Pump rooms
- Bow Thruster compartments
- Cargo holds
- Paint stores
- Lamp rooms
- Galleys and ducting
- Engine scavenge spaces

Smaller spaces may be protected by separate CO<sub>2</sub> systems remote from the main CO<sub>2</sub> storage bank.

#### Cylinder valve

The cylinder valve is a compact, horizontal, servo assisted valve which can be operated by applying gas pressure or manually, when the actuator is fitted to the basic cylinder valve. The basic valve fitted to a CO<sub>2</sub> cylinder enables the cylinder assembly to be handled safely during installation without fear of accidental operation because there are no external moving parts. A number of CO<sub>2</sub> cylinder valves can be opened simultaneously, using gas pressure, by fitting a pressure actuator to the valve.

#### Pressure actuator

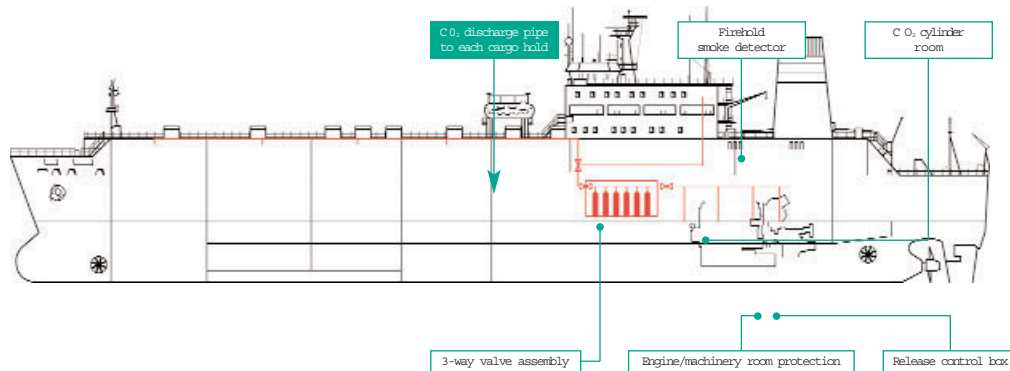
This is a piston device which is attached to the cylinder valve without the need for engaging screw threads or making gas tight seals. The pressure actuator is equipped with two inlet ports which provide the means for connecting a series of actuators together and supplying the operating (pilot) gas to each for simultaneous operation of the CO<sub>2</sub> cylinders.

#### Pilot gas

The pressure actuators fitted to the cylinder valves are connected together by small bore, high pressure, flexible loops. These loops are used to convey the pilot gas from the control box to all of the pressure actuators.

#### Main stop valve

The stop valve is a quick opening device which can be opened by applying gas pressure to the actuator. It can also be opened completely by operating a manual lever or hand wheel. The normal system arrangement ensures that the valve is opened automatically in advance of CO<sub>2</sub> release, but the valve can be opened by pressure operation or manually when it is subjected to full line pressure.



The stop valve pressure actuator is a piston device used to open the valve. The pressure actuator is provided with two pilot gas connections. When pilot gas is applied to the inlet port of the actuator the piston is depressed and this action opens the valve. When the piston has reached the bottom of its stroke the second port is uncovered allowing pilot gas to exhaust and be conveyed to the CO<sub>2</sub> cylinder bank to operate the cylinder valves.

### CO<sub>2</sub> release control box

The control box (usually supplied by the shipyard) houses the pilot gas supply. The pilot CO<sub>2</sub> is contained in two small high pressure cylinders. The CO<sub>2</sub> contained in one cylinder is ample for system operation, the second cylinder acting as reserve. A small bore, high pressure, metallic, flexible pipe is connected to the gas outlet of each pilot cylinder valve. The other end of each flexible pipe is fitted with one half of a quick action

coupling (probe). The mating half of the quick action coupling is attached to the end of the pilot CO<sub>2</sub> pipe to the stop valve and CO<sub>2</sub> cylinder bank.

The control box is designed so that the door cannot be closed when the probe is connected to the pilot line. A microswitch on the door operates an alarm in the protected space when the door is open. Once the probe is connected, the pilot CO<sub>2</sub> can be released by opening the manual actuator on the pilot cylinder.

For maximum safety the pilot CO<sub>2</sub> and fire-fighting CO<sub>2</sub> are kept completely separate. Each cylinder valve pressure actuator is fitted with a manual lever for the individual operation of cylinders in cargo space fire fighting, and for emergency use. Each lever is secured by a safety locking pin, preventing accidental operation of the cylinder.

If the manual lever on the cylinder valve pressure actuator is operated, releasing CO<sub>2</sub>, the flow of CO<sub>2</sub> can be stopped immediately by restoring the lever to its normal position. Operating a manual lever on the cylinder valve assembly discharges CO<sub>2</sub> from that cylinder only. The discharging CO<sub>2</sub> cannot operate any other cylinder.

### Approvals

Kidde Fire Protection Marine CO<sub>2</sub> Systems are approved, qualified under, listed or meet the requirements of various national and international specifications and standards:

- Lloyd's Register
- American Bureau of Shipping
- Det Norske Veritas
- Germanischer Lloyd

Kidde Fire Protection operates a continuous programme of product development. The right is therefore reserved to modify any specification without prior notice and Kidde Fire Protection should be contacted to ensure that the current issues of all technical data sheets are used.

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