



Engineering Specifications

S-CR-LR-K-1000-C

S-CR-LR-K-2000-D

Stationary Dry Chemical Systems (India)

1. DRY CHEMICAL CONTAINER

- 1.1. The dry chemical tank shall be of welded steel construction, with two elliptical dished heads (either of one piece or segmented construction) with a welded circumferential seam.
- 1.2. The dry chemical tank shall be designed and constructed according to the latest ASME unfired pressure vessel code for a design pressure of 230 psi (15.85 bar). It shall be stamped with the appropriate ASME code symbol. For added protection, the storage vessel shall include 0.12 in. (3 mm) corrosion allowance.
- 1.3. The dry chemical tank shall be fitted with a gas tube arrangement to adequately fluidize the dry chemical, pressurize the dry chemical tank, and maintain a nominally constant pressure in the tank during discharge. The gas tube shall be provided with a check valve to prevent any possibility of dry chemical backup.
- 1.4. The dry chemical tank shall be fitted with one 4 in. (102 mm) ID (inside diameter) fill opening in the top head, and shall be provided with a discharge outlet suitable for the dry chemical hand hose line.

2. FILL CAP

- 2.1. The dry chemical tank shall be provided with one fill cap. The cap shall consist of a cast, anodized aluminum body equipped with two handles extending from opposite sides of the cap to permit hand tightening so that it is free from leakage under normal operating pressure without the use of tools. The cap shall be equipped with a 5/32 in. (4 mm) thick rubber gasket inserted in a machined recess.
- 2.2. A safety vent hole shall be located in the fill cap so that the cap is capable of pressure venting while at least 3 1/2 threads are still engaged.

3. PRESSURE RELIEF VALVE

- 3.1. An approved ASME pressure relief valve shall be furnished to prevent the pressure in the tank from exceeding 10% of the maximum working pressure of the tank.

4. DRY CHEMICAL

- 4.1. The dry chemical for this system shall be formulated and produced by the system manufacturer and meet the requirements for the system manufacturer and Underwriters Laboratories (UL). The dry chemical shall be furnished in plastic pails with water-tight replaceable covers.

5. NITROGEN CYLINDER

- 5.1. The nitrogen cylinders provided for the system shall meet IS7285 part 2 latest edition and shall be approved by BIS and PESO.

6. NITROGEN CYLINDER VALVE

- 6.1. The nitrogen cylinder shall be provided with a UL Listed and PESO Approved Quick Opening valve, having the following capabilities:

6.1.1. To be opened manually from a remote location by means of a pneumatic actuator.

6.1.2. To be opened manually at the valve by:

A. Quick-Opening lever action

B. Conventional hand wheel action

6.1.3. All three opening methods shall be independent and shall not interfere with each other.

6.1.4. The valve shall be provided with an integral pressure gauge reading from 0 to 3000 psi (206.8 bar), marked to show the operable range of pressure.

6.1.5. The valve shall be constructed of highly corrosion resistant materials throughout.

- 6.2. All moving parts subject to wear shall be of hardened stainless steel and/or beryllium copper alloy.

7. NITROGEN CYLINDER STORAGE

- 7.1. The nitrogen cylinders shall be mounted horizontally in the rack which is assembled to the skid. The method of mounting shall be designed to permit easy access of operation and replacement of the cylinder.

8. NITROGEN PRESSURE REGULATOR

- 8.1. The nitrogen supply shall be directed through regulators connected to each cylinder. The regulator shall be designed for an inlet pressure of 3000 psi (206.8 bar) and shall be set to deliver nitrogen at a reduced pressure of 195 to 215 psi (13.4 to 14.8 bar). The regulator shall have a spring loaded pressure relief valve. It shall be connected to the nitrogen cylinder by 3/8 in. (10 mm) inside diameter (ID) wire or polyester braid hose.

9. VALVING AND PIPING

- 9.1. The valving and piping shall be installed so that for normal operation, the nitrogen from the cylinder passes through the regulator and piping into the agent tank to adequately fluidize and pressurize the tank. The flow of agent from the tank to the distribution system shall be controlled by a normally-open-ball-type manual valve.
- 9.2. Valving and piping shall be furnished so that after the extinguisher is used, the hose line may be cleared of agent by venting the pressure from the top of the tank through the hose line.
- 9.3. Piping and valving shall also be arranged so that pressure direct from the nitrogen cylinder may be directed through the hose lines, if desired, for maintenance operations.

10. DISTRIBUTION OUTLET PIPING

- 10.1. The dry chemical distribution outlet to the hose lines shall be assembled with brass pipes and fittings. The assembly shall be painted with one coat of primer and a minimum of one coat of red epoxy finish coating.

11. BURST DISC

- 11.1. A burst disc assembly consisting of a burst disc union designed to rigidly hold the disc in place, and the disc itself shall be located at the tank outlet in the discharge pipe to help ensure proper fluidization of the dry chemical prior to discharge. The disc shall be constructed of nickel and shall be pre-scored to help ensure a positive full burst at rated pressure.
- 11.2. The pre-discharge delay as the dry chemical tank pressurizes shall be sufficient to help ensure that the dry chemical will be properly fluidized through the action of the nitrogen being fed through the gas tube. The burst disc shall also function as a vapor barrier to help prevent the migration of moisture into the dry chemical storage tank from the distribution piping.
- 11.3. There are two burst discs provided, one burst disc connected to the outlet pipe of two hose reels mounted on the skid and another burst disc mounted on an alternate outlet pipe which can be used to connect remote hose reels.
- 11.4. Both burst discs shall be replaced after each use.

12. DRY CHEMICAL HOSE

12.1. The hose shall be horizontally braided with the maximum inside diameter expansion of 0.010 in. (0.25 mm) under a pressure of 200 psi (13.8 bar). The twist shall not exceed 10 1/2 degrees in either direction under the applicable UL test. The outside cover stock shall be pin pricked to permit diffusion of gases with four rows of holes for the entire length equally spaced on the circumference and 1 in. (25 mm) apart parallel to the axis. Holes shall be 1/32 in. (0.8 mm) deeper than the cover. A minimum of 25 effective holes per foot (305 mm) is required. The dry chemical hose shall be connected between the distribution piping from the dry chemical tank and the nozzle for control and direction of the dry chemical stream.

13. HAND HOSE LINE NOZZLE

13.1. The nozzle shall consist of a two-position ball valve and barrel. The nozzle barrel shall be the converging-diverging anodized aluminum type. The nozzle ball valve assembly shall be chrome-plated brass.

13.2. The dry chemical nozzle valve supplied for the hose line shall consist of a cast brass body and handle, with integral components of suitable nonferrous metal or stainless steel. A nozzle holder is available to prevent damage to the nozzle and hose during transport and is held in place by a sturdy rod welded onto the hose reel.

13.3. The operating handle shall move in two positions, opened and closed. The handle shall control the movement of a spherically shaped plug mounted to revolve about an axis perpendicular to the longitudinal axis of the nozzle so that the dry chemical stream may be selectively shut off or permitted to discharge in a straight line through the plug and nozzle. The bore of the plug and nozzle shall be of the same diameter.

14. HOSE REELS

14.1. The Carbon Steel hose reels and manual rewind shall be specifically designed for use with the dry chemical hose. The hose reels shall be capable of containing all the hose specified. The hose reels sit on a high metal stand for easy access. The hose reels and stand are painted red to match the system. A hose reel locking device shall be incorporated into the reel to prevent reel movement during skid transportation.

15. ACTUATION

15.1. A pneumatic actuation system utilizing a nitrogen filled cartridge shall be provided to open the nitrogen cylinder and energize the suppression system to the nozzle. The cartridge triggering device shall include a pull pin release and a strike button, providing a two-step release.

16. SELECTOR VALVE FOR REMOTE HOSE REELS

16.1. An optional UL listed selector ball valve shall be incorporated into the skid alternate outlet piping when using the remote hose reels and shall be triggered pneumatically by the nitrogen cartridge.

17. SKID

17.1. The skid shall be steel, welded construction, sized and reinforced to provide the required strength of the intended application, protected from corrosion by special surface treatments, including sandblasting, primer, and epoxy coating. The skid is provided with fork lift pockets for handling purpose.

18. LIFTING BAR

18.1. An optional rugged steel lifting bar shall be provided with the skid unit and be bolted to the structural base for easy removal at the site. The lifting bar shall be suitable for single-point lifting, eliminating the need for any lifting slings and spreader bars. The lifting point shall be above the skid assembly in line with the unit's center of gravity.

19. PAINT FINISH

19.1. The final assembled unit shall be protected from corrosion by special surface treatments, including shot blasting, primer, and red epoxy coating.

20. RELIABILITY

20.1. The dry chemical suppression system shall be designed and manufactured by a company having at least 25 years' experience in the design and manufacture of large capacity dry chemical hand hose line fire suppression equipment.

END OF SECTION

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