ANSUL®

Twin-Agent Fire Fighting/Securing Systems Specifications

Models 450/50-B, 450/100-B, 900/100-B

INDEX

SPECIFICATIONS

A Twin-Agent Fire Extinguishing/Securing Unit (TAU) shall be furnished. The TAU shall be a combination potassium bicarbonate based dry chemical fire extinguishing/aqueous film-forming foam securing unit.

Ansul twin-agent units shall be sold and serviced through an international network of independent distributors.

1.0 GENERAL

1.1 References

1.1.1 American Society of Mechanical Engineers, (ASME).

1.1.1.1 Section 8, Division 1: (The Rules For Construction Of Pressure Vessels).

1.1.2 U.S. Department Of Transportation, Code of Federal Regulations, (CFR).

1.1.2.1 CFR - 49, Part 173.34: (Qualification, Maintenance, And Use Of Cylinders).

1.1.3 Underwriters Laboratories, Inc., (UL).

1.1.3.1 UL Standard 92: (Fire Extinguisher And Booster Hose).

1.1.3.2 UL Standard 162: (Foam Equipment And Liquid Concentrates).

1.1.3.3 UL Standard 299: (Dry Chemical Fire Extinguishers).

1.2 Submittals

1.2.1 Submit two sets of Manufacturer's Data Sheet.

1.2.2 Submit two sets of Manufacturer's Dimensional Drawings.

1.3 System Capabilities

1.3.1 Twin-agent concept: The combined benefits of 'Purple-K' dry chemical agent with those of AFFF agent. 'Purple-K' provides rapid flame knockdown. It is particularly effective on pressure, running and spill fires, making it a primary suppressing agent for flammable liquid fires. 'Purple-K' is compatible with AFFF and can be used without regard to order of application. AFFF, a synthetic aqueous film-forming foam (AFFF), is used to blanket the fuel with a thin film thus preventing the escape of flammable vapors. It also provides some degree of cooling.

1.3.2 Performance – (See options 1,2,3 below)

1.3.2.1 450/50-B Model shall be capable of suppressing 1,500 sq. ft. (139 sq. m) of flammable liquid fire within 60 seconds using one operator.

1.3.2.2 450/100-B Model shall be capable of suppressing 3,000 sq. ft. (279 sq. m) of flammable liquid fire within 90 seconds using one operator.

SPECIFICATIONS (Continued)

1.0 GENERAL (Continued)

1.3 System Capabilities (Continued)

1.3.2 Performance (Continued)

1.3.2.3 900/100-B Model shall be capable of suppressing 3,000 sq. ft. (279 sq. m) of flammable liquid fire within 60 seconds using two operators.

1.3.2.4 Dry chemical nozzle shall discharge at a nominal flow rate of 5.0 lb./sec. (11 kg/sec.), with an effective range of not less than 27 ft. (8.2 m). The AFFF nozzle shall discharge at a flow rate of 60 gpm. (227 Lpm), with a range of not less that 18 ft. (5.5 m).

1.4 Quality Control

1.4.1 Manufacturer: The twin-agent unit shall be manufactured by a company with at least ten years experience in the design and manufacture of large capacity twin-agent fire suppressing/securing units.

1.4.2 Certificates:

1.4.2.1 Dry Chemical: Dry chemical shall be 'Purple-K' manufactured by Ansul or approved equal, potassium bicarbonate base type and shall meet the requirements of Underwriters Laboratories, Inc., under UL Standard 299: (Dry Chemical Fire Extinguishers). Dry chemical shall be certified by the extinguisher manufacturer for use in the equipment furnished.

1.4.2.2 Aqueous Film-Forming Foam (AFFF) Concentrate: AFFF concentrate shall be ANSULITE 6% or approved equal. AFFF concentrate shall be listed by Underwriters Laboratories, Inc., under UL Standard 162: (Foam Equipment And Liquid Concentrates). AFFF concentrate shall be certified by the extinguisher manufacturer for use in the equipment furnished.

1.4.2.3 Dry Chemical and AFFF Pre-Mix tanks shall be certified by the extinguisher manufacturer under ASME Section VIII, Div. 1 of the Unfired Pressure Vessel Code.

1.4.3 Testing:

1.4.3.1 Complete unit shall be 100% air pressure tested on assembly.

1.4.3.1.1 Unit shall be air tested at 210 - 230 psi (1448 - 1586 kPa).

1.4.3.1.2 Leaks forming slow bubbles shall be permitted in brass castings, threaded joints, gasketed joints, and packing.

1.5 Warranty, Disclaimer, and Limitations

1.5.1 The twin-agent unit shall be warranted for one year from date of delivery against defects in workmanship and material.

1.6 Delivery

1.6.1 Packaging: Twin-agent unit shall be securely packaged to provide protection during shipment.

1.6.2 Shipping: Expellant gas cartridges and nitrogen cylinders shall be disconnected and shipped with proper shipping caps installed.

1.7 Environmental Conditions

1.7.1 Operating Temperature Range: 32 °F to 120 °F (0 °C to 49 °C).

1.7.2 Corrosion Resistant: As an option, twin-agent units shall be available for more adverse conditions. Additional information regarding corrosive environment shall be available if requested.

1.8 Extra Materials

1.8.1 One complete set of recharge materials shall be supplied with the unit. Materials include: nitrogen cylinders, nitrogen cartridges, visual inspection seals, dry chemical agent, and AFFF concentrate.

2.0 PRODUCT

2.1 Manufacturer

2.1.1 Ansul Incorporated, One Stanton Street, Marinette, Wisconsin 54143-2542, Telephone: (715) 735-7411

SPECIFICATIONS (Continued)

2.0 PRODUCT (Continued)

2.2 Unit Description

2.2.1 Twin-Agent Units:

2.2.1.1 Shall consist of separate dry-chemical agent and AFFF pre-mix tanks.

2.2.1.2 Nitrogen cylinders shall be used to pressurize the tanks and expel the agents.

2.2.1.3 Hose lines shall deliver the agents to the twin nozzle assembly.

2.2.1.4 Manual and/or pneumatic actuation devices shall be provided.

2.3 Components

The twin-agent components shall meet the following requirements:

2.3.1 Dry Chemical Tank:

2.3.1.1 Capacities: (See capacity options 1,2,3 below).

2.3.1.1.1 450/50-B Model: 450 lb. (205 kg.) capacity of potassium bicarbonate based dry chemical extinguishing agent.

2.3.1.1.2 450/100-B Model: 450 lb. (205 kg.) capacity of potassium bicarbonate based dry chemical extinguishing agent.

2.3.1.1.3 900/100-B Model: 900 lb. (408 kg.) capacity of potassium bicarbonate based dry chemical extinguishing agent.

2.3.1.2 Steel, designed and constructed in accordance to the latest ASME unfired pressure vessel code for a working pressure of 250 psi (1724 kPa).

2.3.1.3 ASME nameplate shall be permanently attached to the skirt.

2.3.1.4 Internal gas tube(s) to fluidize the dry chemical and maintain a nominally constant pressure in the tank during operation.

2.3.1.5 4 in. (10.2 cm) I.D. top fill opening shall be provided.

2.3.1.6 Fitted with a discharge outlet suitable for the dry chemical design flow rate.

2.3.2 AFFF Pre-Mix Tank:

2.3.2.1 Capacities: (See capacity options 1,2,3 below)

2.3.2.1.1 450/50-B Model: Nominal capacity of 50 gallons (189 L).

2.3.2.1.2 450/100-B Model: Nominal capacity of 100 U.S. gallons (379 L).

2.3.2.1.3 900/100-B Model: Nominal capacity of 100 U.S. gallons (379 L).

2.3.2.2 Steel, designed and constructed in accordance to the latest ASME unfired pressure vessel code for a working pressure of 250 psi (1724 kPa).

2.3.2.3 ASME nameplate shall be permanently attached to the skirt.

2.3.2.4 Interior surface of the tank shall be fully lined with an Epoxy Coal Tar coating system or equal.

2.3.2.5 Outlet fittings shall be of corrosion resistant material.

2.3.2.6 4 in. (10.2 cm) I.D. top fill opening.

2.3.2.7 Fitted with a discharge outlet suitable for the AFFF pre-mix design flow rate.

2.3.3 Fill Cap:

2.3.3.1 Dry chemical and AFFF tanks shall each be furnished with a cast aluminum or brass fill cap.

2.3.3.2 Two handles extending from opposite sides of the cap shall permit hand tightening (without the use of tools) so there is no leakage at normal operating pressure.

2.3.3.3 Safety vent hole shall be located in the fill cap so the cap is self-pressure venting while at least 3-1/2 threads are still engaged.

2.3.4 Pressure Relief Valve:

2.3.4.1 Each tank shall be equipped with an approved ASME pressure relief valve sized to prevent the pressure in the tank from exceeding 10 percent of the design working pressure.

SPECIFICATIONS (Continued)

2.0 PRODUCT (Continued)

2.3 Components (Continued)

2.3.5 Nitrogen Cylinders: (See options 1,2,3 below)

2.3.5.1 450/50-B Model: One - 220 cu. ft. (6.2 cu. m) and one - 110 cu. ft. (3.1 cu. m) DOT-3A-2100 nitrogen cylinder provided.

2.3.5.2 450/100-B Model: Two - 220 cu. ft. (6.2 cu. m) DOT-3A-2100 nitrogen cylinders provided.

2.3.5.3 900/100-B Model: Two - 400 cu. ft. (11.3 cu. m) DOT-3AA-2400 nitrogen cylinders provided.

2.3.6 Nitrogen Cylinder Valves:

2.3.6.1 Shall meet the requirements of the Compressed Gas Association for water pumped nitrogen service.

2.3.6.2 Valve outlet thread shall be .965-14-NGO-RH-INT.

2.3.6.3 Nitrogen cylinder valve shall be of the "Quick-Opening" type and shall include the following features:

2.3.6.3.1 Capable of being opened manually at the valve by means of hand-wheel operation, or by "Quick-Opening" lever action.

2.3.6.3.2 Integral Pressure Gauge Reading:

2.3.6.3.2.1 450/50-B Model: 0 to 3,000 psi (0 to 20,685 kPa).

2.3.6.3.2.2 450/100-B Model: 0 to 3,000 psi (0 to 20,685 kPa).

2.3.6.3.2.3 900/100-B Model: 0 to 4,000 psi (0 to 27,580 kPa).

2.3.6.3.3 Integral Safety Relief:

2.3.6.3.3.1 450/50-B Model: Set at 3,360 psi maximum (23,167 kPa).

2.3.6.3.3.2 450/100-B Model: Set at 3,360 psi maximum (23,167 kPa).

2.3.6.3.3.3 900/100-B Model: Set at 3,600 psi maximum (24,822 kPa).

2.3.6.3.3.4 Constructed of corrosion-resistant materials throughout. All moving parts subject to wear shall be of hardened stainless steel.

2.3.7 Nitrogen Cylinder Storage Racks:

2.3.7.1 Nitrogen cylinders shall be secured in the horizontal position.

2.3.7.2 Rack designed to permit easy access for operation and replacement of the cylinders.

2.3.8 Nitrogen Pressure Regulator:

2.3.8.1 Nitrogen supply for the dry chemical and AFFF systems shall be manifolded and regulated through a minimum of one regulator for each cylinder.

2.3.8.2 Each regulator shall be equipped with a spring loaded pressure relief valve and shall be connected to the nitrogen cylinders using a 3/8 in. wire braid hose suitable for high pressure nitrogen service.

2.3.9 Dual Hose Assembly:

2.3.9.1 The dual hose assembly shall consist of a 1 in. (2.5 cm) I.D. AFFF hose line and a 3/4 in. (1.9 cm) I.D. dry chemical hose line.

2.3.9.2 Both hose lines shall be 100 ft. long (30.5 m).

2.3.9.3 The hoses shall be held together with plastic or polypropylene straps. The straps shall be spaced at 3 ft. (.9 m) maximum intervals along the length of the dual hose assembly.

2.3.9.4 The dual hose assembly shall be listed by Underwriters Laboratories, Inc. and marked to show UL listing.

2.3.9.5 The hose shall be non-collapsible with a neoprene jacket.

2.3.9.6 The jacket shall be pinpricked to permit diffusion of gases with four rows of holes for the entire length, 25 holes per ft. (.91 m).

SPECIFICATIONS (Continued)

2.0 PRODUCT (Continued)

2.3 Components (Continued)

2.3.9 Dual Hose Assembly (Continued)

2.3.9.7 The hose shall be operated with a working pressure of 250 psi (1724 kPa) with a minimum burst pressure of 1000 psi (6895 kPa).

2.3.10 Hose Reel:

2.3.10.1 Shall be provided with a manual rewind twin hose reel.

2.3.10.2 Shall be supplied with a manual rewind crank.

2.3.10.3 Option: (Electric rewind shall be furnished if so specified).

2.3.10.4 Shall be of metal construction.

2.3.10.5 Shall be equipped with straight-through internal fittings designed for a minimum pressure drop when used with dual dry chemical/AFFF agent hose. Fitting shall be constructed with corrosion resistant materials.

2.3.10.6 Shall be capable of holding 100 ft. (30.5 m) of dual hose.

2.3.10.7 900/100-B Model shall be supplied with two hose reels.

2.3.10.8 450/50-B Model shall be supplied with one hose reel.

2.3.11 Twin Nozzle:

2.3.11.1 Two physically linked nozzles shall be arranged so that either or both agents can be discharged independently or simultaneously by a single operator.

2.3.11.2 Pistol-grip nozzles shall be equipped with a spring loaded, trigger operated shut-off valve to provide on-off control of each respective agent with only one-hand.

2.3.12 Control Piping:

2.3.12.1 For normal operation, the nitrogen from the cylinder shall pass through the regulator and manifold piping into the dry chemical and AFFF pre-mix tanks to adequately fluidize the dry chemical and pressurize the tanks.

2.3.12.2 Valves and piping shall be arranged so that after use, the hose lines may be cleared by venting the pressure from the top of the tanks through the hose lines. The regulated pressure from the nitrogen cylinder(s) may also be directed through the hose lines for clean out of any residual agent in the hoses.

2.3.12.3 Quarter turn type ball valves shall be used for all control and maintenance functions.

2.3.12.4 Valves shall include Teflon seats or equal.

2.3.12.5 Each valve shall be permanently labeled with its purpose, and equipped with ring pins and seals in the valves normal, stand-by, position.

2.3.13 Skid:

2.3.13.1 Components shall be mounted on a welded steel skid.

2.3.13.2 Skid shall be of rugged construction so it may be lifted as a single unit and set in its final location.

2.3.14 Trailer: (Optional)

2.3.14.1 Components shall be mounted on a welded, structural steel, single-axle trailer. (900/100-B Model shall be dual axle.)

2.3.14.2 Trailer shall be equipped with fenders, rear mounted running and brake lights, and a 2 in. (5.1 cm) ball type hitch (Optional: Lunnette ring type) and stand.

2.3.14.3 Optional: (Electric trailer brakes shall be furnished if so specified).

2.3.15 Paint:

2.3.15.1 Red Enamel Finish (Standard).

2.3.15.2 Red Corrosion Resistant Epoxy (Optional).

2.3.16 Agents:

2.3.16.1 450/50-B Model shall be furnished complete with initial charge of 450 lb. (204 kg) of dry chemical and 3 U.S. gal. (11.4 L) of AFFF concentrate.

SPECIFICATIONS (Continued)

2.0 PRODUCT (Continued)

2.3 Components (Continued)

2.3.16 Agent (Continued)

2.3.16.2 450/100-B Model shall be furnished complete with initial charge of 450 lb. (204 kg) of dry chemical and 6 U.S. gal. (22.7 L) of AFFF concentrate.

2.3.16.3 900/100-B Model shall be furnished complete with initial charge of 900 lb. (408 kg) of dry chemical and 6 U.S. gal. (22.7 L) of AFFF concentrate.

3.0 IMPLEMENTATION

3.1 Installation

3.1.1 Upon delivery, the supplier shall set up the twin-agent unit in such a fashion as to render it immediately available to perform as designed. The unit shall be uncrated, charged, and prepared for service according to the manufacturer's instructions.

3.2 Training

3.2.1 Training (Optional):

3.2.1.1 Training in operation, fire fighting procedures, recharge, inspection, and maintenance, of the twin-agent unit shall be provided according to procedures recommended by the manufacturer. Instruction shall include live fire training.

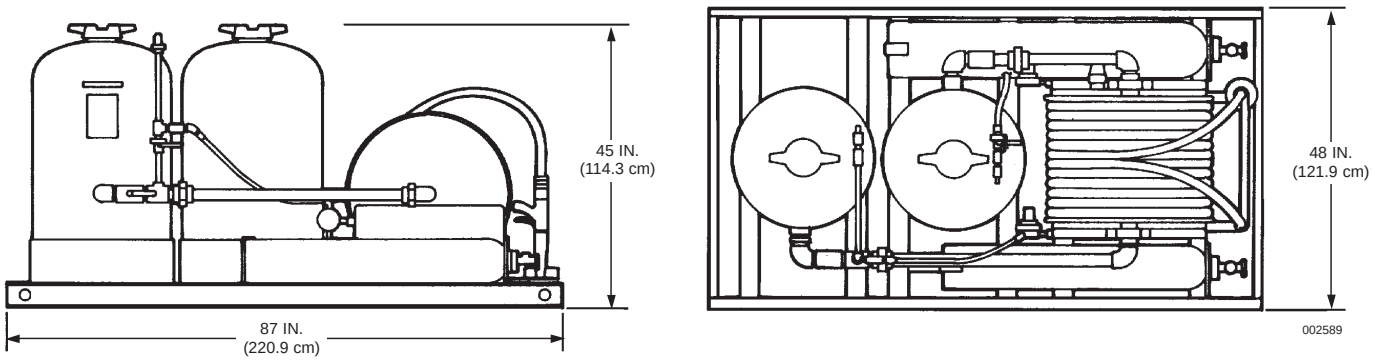
3.2.1.2 The supplier shall provide information concerning the type of training, number of people to be trained, location of the training, and additional costs with the bid.

3.3 Field Service

3.3.1 Inspection and Maintenance: The supplier shall include in the cost of the unit, performance of manufacturer's recommended inspection and maintenance for a period of one year from the date of delivery.

TYPICAL SYSTEM ILLUSTRATION WITH DIMENSIONS

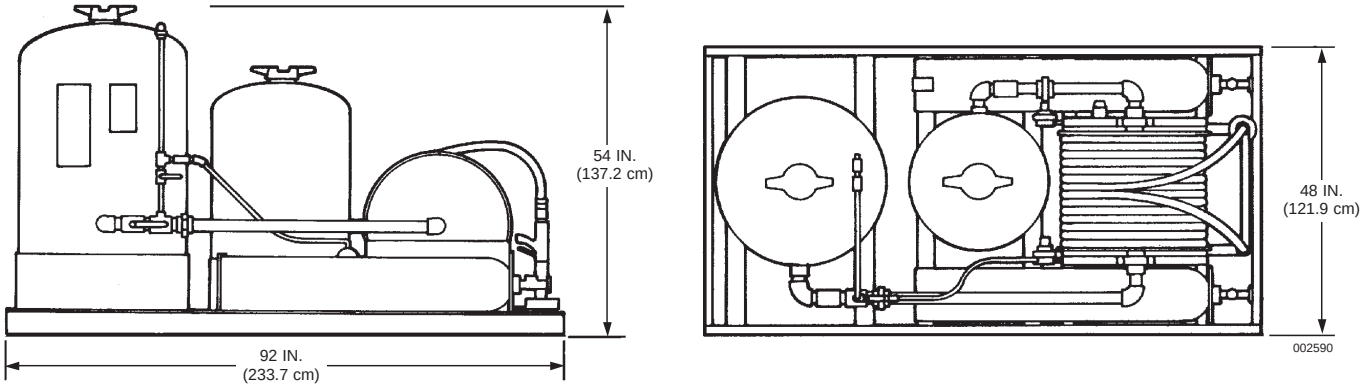
MODEL 450/50



Approximate Shipping Weight: 1450 lb. (658 kg)

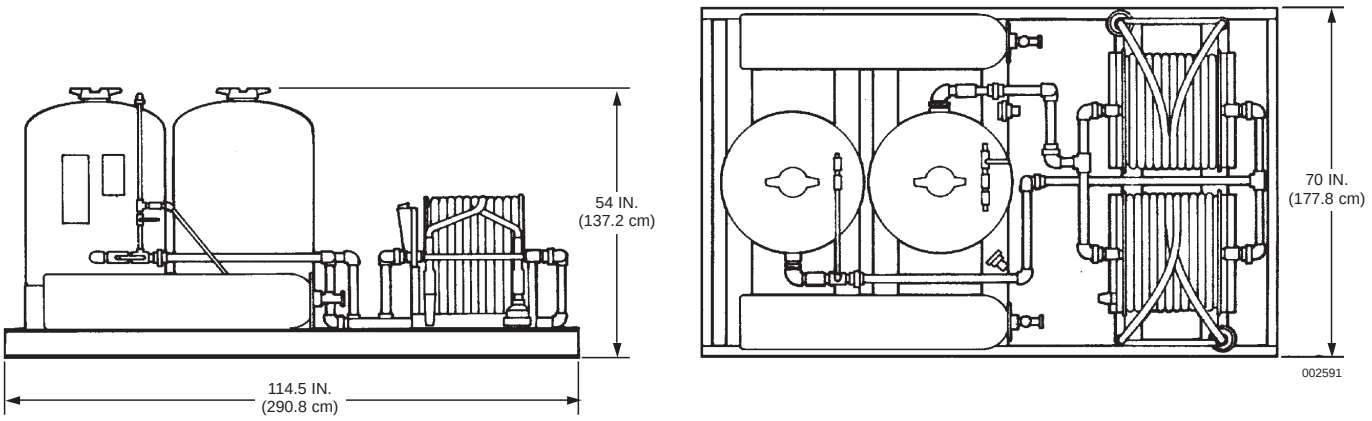
TYPICAL SYSTEM ILLUSTRATION WITH DIMENSIONS (Continued)

MODEL 450/100



Approximate Shipping Weight: 2090 lb. (948 kg)

MODEL 900/100



Approximate Shipping Weight: 3020 lb. (1370 kg)

ANSUL INCORPORATED
MARINETTE, WI 54143-2542
715-735-7411

Litho in U.S.A.

Form No. F-90127