SUPERSEDED

Issue 2
July 30, 1970
P.O. & A.E.C.

STANDARD SPECIFICATIONS

SECTION 15T

TRAILER AIR CONDITIONING, MECHANICAL

STANDARD SPECIFICATIONS

SECTION 15T

TRAILER AIR CONDITIONING, MECHANICAL

15T-01 SCOPE

This specification outlines the requirements for a self-contained year-around air conditioner suitable for use in portable trailers and trailer vans. The unit shall be designed for desert, winter and semi-tropic conditions, and for continuous operation without cycling the prime mover, which would result in voltage and frequency drops of the power supply. The unit shall provide ventilating, cooling, heating and dehumidification on its own automatic controls.

A. General: The equipment, installation and materials shall conform to the standards set forth in paragraph b, of this specification, "Applicable Documents and Standards." A complete list, in quintuplicate, of materials and equipment to be incorporated in the work of accomplishing this contract shall be submitted for approval. The list shall include catalog numbers, cuts, diagrams, drawings, manufacturer's published ratings, and any other descriptive data as may be required to determine acceptability of specified materials and equipment. Any materials, fixtures and equipment listed which are not in accordance with the specification requirements will be rejected. The mechanical drawings indicate the extent and general arrangement of the work. If any departures from the drawings are deemed necessary by the Contractor, details of such departures and the reasons therefore, shall be submitted as soon as practicable for approval. Equipment, fixtures and materials shall not be installed without prior written approval. In addition, when requested, manufacturer's drawings and/or shop drawings and installation instructions on equipment not specifically mentioned, shall be submitted for approval. Data given herein and on the drawings are exact insofar as possible, but extreme accuracy is not guaranteed. Data concerning structural, electrical and architectural conditions involving the mechanical modifications including clearances, elevations, etc., shall be obtained at the site.

B. Applicable Documents and Standards

1. Precedence of Specifications: In the event of conflicts between the requirements of different specifications, the precedence of specifications shall be as follows.

   a. This specification

   b. Drawings

   c. Other specifications

2. Applicable Documents: The following documents and specifications of the issue in effect on date of the bid form a part of the specifications.

   a. Specifications:

      Federal
      HH-1-564, Insulation Mineral Wool, Block and Board, Form 1, Class A.
      QQ-5-571, Solder, Soft
      QQ-5-561D, Solder, Silver
      QQ-1-716, Class D1, Iron and Steel Sheets (Galv.)

   b. Documents:

      SMACNA Duct Manual, A1A file No. 30-D-4
      ASHRAE (ASRE) Standards, 12-58, 12, 14-59, 15-58, 16-56, 23-59, 33-58, 34-57 and 35B-56
      Air Conditioning and Refrigeration Institute-Standard 210-58.

15T-02 AIR DISTRIBUTION SYSTEM

A. Ducts: Ducts and fittings as specified on the drawings or required for the air conditioning system shall be fabricated in a first class workmanship manner. Ductwork shall be fabricated of zinc-coated iron or steel sheets, and shall be straight and smooth on the inside with joints neatly finished. Ducts shall be securely anchored in an approved manner and shall be installed so as to be completely free from vibration causing movements greater than 1 mil (.001") deflection.

B. Flexible Connections: Unless otherwise indicated on the drawings or otherwise specified, flexible connections shall be provided between air conditioning units or fan housing and ducts to which they are connected. Material shall be a wire-reinforced glass or asbestos fabric of suitable weave and weight, and shall be rendered practically airtight. The flex connection to the air conditioning unit shall be accessible for disconnecting to facilitate removal of the unit.

C. Registers and Grilles: Registers, grilles, louvers and ceiling diffusers shall be installed as indicated on the drawings or as required for the proper distribution of air within the trailer. Where adjustable volume controls are used, adjustment handles or devices shall be accessible to maintenance personnel. Registers, grilles, diffusers, dampers, volume controls, and louvers shall be standard catalog products of the published specified ratings and shall be given a rust-inhibiting primer at the factory. Louvers shall be as specified or shall be fabricated from galvanized sheet metal in accordance with SMACNA Duct Manual, Plate 37.

D. Dampers: Multilouvered, butterfly, quadrant and splitter dampers shall be constructed of zinc-coated iron or steel sheets of not less than 20 gauge weight. Each damper shall be close fitting and unless automatic in operation, shall be provided with an adjustment quadrant and locking device, or as specified on the drawings.

15T-03 AIR CONDITIONING UNIT

Function: The air conditioner shall be a self-contained unit designed for ease of maintenance, installation, and removal. The unit shall be capable of so discharging air that ductwork may be connected to the unit and that it will supply conditioned air to distribution duct works or a perforated ceiling. The air conditioner shall consist of the necessary components to provide the following functions:

A. Ventilating

B. Cooling

C. Heating

D. Filtering

E. Dehumidifying

15T-04 ARRANGEMENT

The general arrangement of the air conditioner shall be such that each of the following processes or combinations of processes can be obtained.

A. Ventilating and filtering

B. Ventilating, heating and filtering

C. Ventilating, cooling, dehumidifying and filtering

D. Ventilating, dehumidifying and filtering

The unit shall be a compact, rigid self-contained unit that shall contain all the necessary required components and controls in a fixed casing. Normally the base shall serve as the only means to mount the unit and shall contain fork lift slots for installation and removal of the unit. When the unit is installed in a semi-trailer, access to every major unit and sub-assembly forming a part of the air conditioner shall be made through easily removed access panels or doors. The construction of the unit shall permit access to its interior parts, terminals, controls and for removal, servicing or replacement of component parts without removing other assemblies and sub-assemblies. Filters shall be so located that replacement or routine servicing can be accomplished readily. Coils shall be arranged so that all of the condensed moisture is carried through a trapped condensate drain to the outside of the trailer for disposal.

15T-05 CONTROLS

The air conditioning unit shall have a control panel that contains all the terminal strips, relays, heater controls, compressor starter (with thermal overload protection on all phases), fan starters (with thermal overload protection on all phases), high and low pressure cut-outs, transformer for low voltage control, phase rotation protection interlock and all or/and any other controls or devices necessary for the operation of the air conditioner. This panel shall be so located that removal of/or opening an access panel or

door to the control center for servicing or adjustment of the controls will not materially affect he operation of the air conditioner.

A remote operating control panel shall be incorporated to permit selection of the functions specified in the detailed specifications and requirements of the unit. This panel and the operating functions of its controls shall be permanently and legibly marked. The connecting wiring between the remote operating control panel and the control panel in the air conditioning unit shall be incased in a flexible conduit, type S rubber covered cable or vinyl encased ending with an AN connector at the air conditioning unit. The controls shall be clearly labeled for identification.

15T-06 INSTALLATION AND MAINTENANCE MANUALS

Installation and maintenance manuals shall be furnished with the air conditioning unit. The manual shall contain a description of the unit, functions, and method of control. Necessary drawings of the air conditioning unit, wiring diagrams, refrigerant flow-cycle diagrams, and bill of materials for the electrical controls shall be included in the manual. This manual shall have full instructions on pertinent components of the air-conditioning system.

15T-07 OPERATING INSTRUCTION AND DIAGRAMS

Operating instructions and necessary wiring and flow diagrams shall be mounted on the air-conditioning unit in a convenient location for use by service personnel. The instructions shall outline operating procedure and pertinent service information. The flow-cycle diagram shall show the refrigeration system and all essential component parts. The wiring diagram shall show a schematic of the operating controls and a pictorial diagram with all wire colors, numbers, and approximate physical location. The above instructions and diagrams shall be fade proof.

15T-08 OPERATIONAL TEST

The air conditioning system shall be given an operation test to determine that all mechanical equipment functions as intended and produces the capacities as specified. The test shall be accomplished during prevailing ambient conditions. The test shall be conducted after the unit has been in continuous operation for 48 hours. The test shall be conducted for a period of 4 hours and a log recorded showing evaporator air quantity in cfm, ambient DB and WB temperature, entering and leaving DB and WB temperature for the evaporator, leaving DB temperature from the condenser, suction and discharge pressures of the compressor, outside air quantity in cfm, return air or room DB and WB temperature, and amperage, voltage, and speed of fan and compressor motors. Calculations showing the capacities of the cooling and heating loads delivered, the heat rejection of the condenser and the electrical load on both heating and cooling as indicated by the test data shall be submitted with the test data taken. All controls shall be calibrated and each safety device thoroughly tested before the operational test is started. Volume dampers, splitters, outlets, and other devices shall be adjusted so that air volumes will be as shown on the drawings. These tests shall be made in the presence of the Inspector. On completion of the tests, a record of all test data and results shall be submitted in triplicate.

SUPERSEDED

END OF SECTION