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DEPARTMENT OF THE ARMY TECHNICAL MANUAL

ORGANIZATIONAL, DS, GS, AND DEPOT
MAINTENANCE MANUAL

COMPRESSOR, ROTARY: AIR

DIESEL ENGINE DRIVEN; 250 CFM
100 PSI; SKID MOUNTED

(DAVEY MODEL M250 RPV)

FSN 4310-075-7064

This copy is a reprint which includes current
pages from Changes 1 through 6.

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CHAPTER 1

INTRODUCTION

Section I. GENERAL

1. Scope

a. This manual is published for the use of the personnel to whom the Rotary Air Compressor is issued. Chapters 1 through 4 provide information on the operation, preventive maintenance service, and organizational maintenance of the equipment, accessories, components, and attachments. Chapter 5 provides information for direct and general support and depot maintenance. Also included are descriptions of main units and their functions in relationship to other components.

b. Appendix I contains a list of publications applicable to this manual. Appendix II contains the list of Basic Issue Items authorized the operator of this equipment. Appendix III contains the Maintenance Allocation Chart.

c. Numbers in parentheses on illustrations indicate quantity. Numbers preceding nomenclature callouts on illustrations indicate preferred maintenance sequence.

d. The direct reporting by the individual user

of errors, omissions, and recommendations for improving this manual is authorized and encouraged. DA Form 2028 (Recommended Changes to DA Publications) will be used for reporting these improvement recommendations. This form will be completed using pencil, pen, or typewriter and forwarded direct to: Commanding General, U.S. Army Mobility Equipment Center, ATTN: SMOME-MPD, 4300 Goodfellow Blvd., St. Louis, Mo., 63120.

e. Report all equipment improvement recommendations as prescribed by TM 38-750.

2. Record and Report Forms

a. DA Form 2258 (Depreservation Guide of Engineer Equipment).

b. For other record and report forms applicable to the operator, crew, and organizational maintenance, refer to TM 38-750.

Note. Applicable forms, excluding standard Form 46 which is carried by the operator, shall be kept in a canvas bag mounted on the equipment.

Section II. DESCRIPTION AND DATA

3. DESCRIPTION

a. General. The compressor unit is a skid mounted, diesel engine driven, sliding vane type rotary air compressor. It furnishes 250 cubic feet of free air per minute at a discharge pressure of 100 pounds per square inch. This equipment is manufactured by Davey Compressor Company, Kent, Ohio as their Model M250 RPV, Part Number 45741. (See figures 1 and 2.)

b. COMPRESSOR ASSEMBLY. The air compressor assembly is a single stage, sliding vane, rotary type. It is oil cooled and incorporates the necessary operating accessories and gages to ensure proper operation. The air compressor delivers 250 cubic feet of free air per minute at a discharge pressure of 100 pounds per square inch.

c. ENGINE ASSEMBLY. The engine is a four cylinder, four cycle, liquid-cooled, diesel engine whose primary function is to drive the compressor assembly

through a flexible coupling. It operates from a fuel injection pump and has a 24-volt electrical starting system. It is equipped with standard accessories and is governed at 1800 revolutions per minute.

d. THERMAL BYPASS VALVE. The thermal bypass valve, located beneath the compressor oil filter, serves two purposes.

(1) Rapid warming of compressor oil at initial start is provided by the normally open thermal bypass valve. The valve bypasses oil from the oil separator assembly around the oil cooler directly through the oil filter into the compressor. When oil temperature reaches approximately 150 degrees Fahrenheit, the bypass valve starts to close and part or all of the oil is circulated through the oil cooler before entering the filter and compressor. Unless the compressor is operating in extremely high ambient temperatures, the thermal bypass valve will mix the hot oil from the oil separator assembly and cool oil from the cooler to maintain a constant oil temperature.

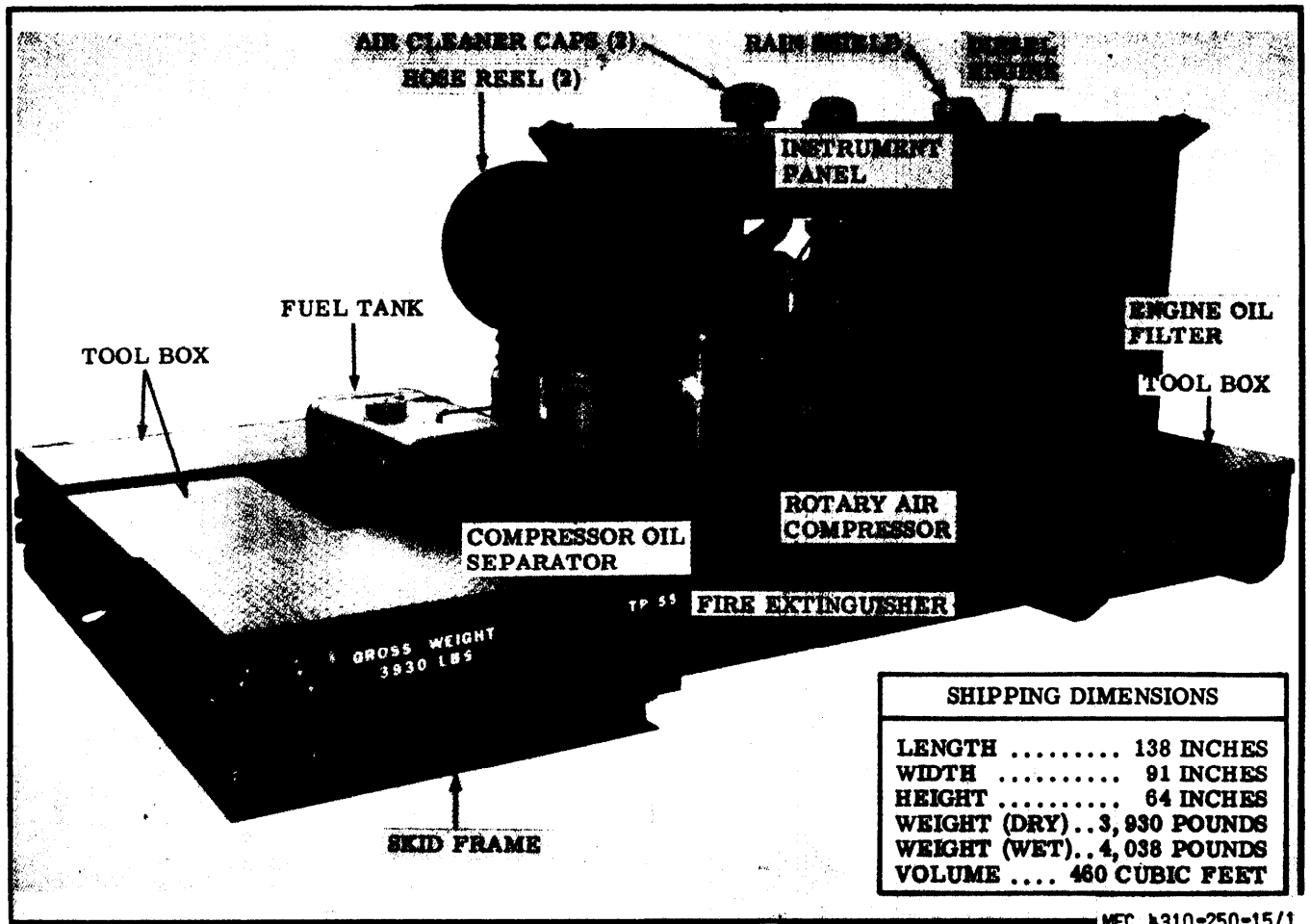


Figure 1. Rotary Air Compressor
Right-Rear, Three-Quarter View with Shipping Dimensions.

(2) The thermal bypass valve thus maintains a relatively constant minimum operating temperature. This helps control temperature and also minimizes the formation of moisture condensate in the system, as well as providing slightly more energy to the air compressed.

e. **THERMOSWITCH ASSEMBLY.** The thermoswitch assembly, located in the compressor discharge, is an automatic shutdown control. If the discharge of the compressor assembly exceeds 230 degrees Fahrenheit, the thermoswitch actuates a solenoid located on the engine fuel pump shutting off the fuel. No action is required by the operator to open the thermoswitch. However, no restart should be attempted until reason for high temperature of the oil in the compressor assembly is determined. Do not attempt to restart until the oil has cooled.

4. IDENTIFICATION AND TABULATED DATA

a. **IDENTIFICATION.** The M250 RPV Rotary Air Compressor has 6 major identification plates. The information contained on these plates is listed below.

(1) **Corps of Engineers plate.** Located on the right

front housing side panel. Specifies nomenclature, stock number, unit serial number, manufacturer, model, contract number, dimensions, capacity, weight, engine manufacturer, engine model, and engine serial number.

(2) **Engine plate.** Located on right-rear side of engine block above starter. Specifies model number, serial number, tappet clearance (intake and exhaust), recommended winter and summer grade oil to be used.

(3) **Rotary compressor plate.** Located on top of compressor end cover between stator and flywheel adapter. Specifies compressor model and serial numbers.

(4) **Engine control plate.** Located on engine control body. Specifies engine control model and serial number.

(5) **Lifting instruction plate.** Located on right side of the front housing side panel. Illustrates prescribed lifting method, location of lifting eyes, tie-downs, and center of gravity.

(6) **Operating instruction plate.** Located on right side of front housing side panel. Specifies unit nomen-