

TECHNICAL MANUAL
OPERATOR, ORGANIZATIONAL, DIRECT AND GENERAL
SUPPORT MAINTENANCE MANUAL

**COMPRESSOR, AIR,
RECIPROCATING, ELECTRIC MOTOR DRIVEN,
RECEIVER MOUNTED, 2HP, 5CFM, 175 PSI,
(INGERSOLL-RAND MODEL 234C2)
(FSN 4310-155-7101)**

**This copy is a reprint which includes current
pages from Changes 1 through 4.**

HEADQUARTERS, DEPARTMENT OF THE ARMY
JUNE 1973

WARNING
COMPRESSED AIR AND ELECTRICITY
ARE DANGEROUS

Before Performing any maintenance, or adjustment, be sure the electrical supply has been shut-off, and locked out. Also, be certain that the internal system of the compressor has been vented of all air pressure.

WARNING
Tag, then disconnect the
manual switch. Never rely on the
motor starter for complete
removal of a power
source.

Changes in force: C1, C2, C3 and C4

TM 5-4310-348-14

C 4

CHANGE

HEADQUARTERS

NO. 4

DEPARTMENT OF THE ARMY

WASHINGTON, D.C., 28 January 1987

**Operator, Organizational, Direct and General
Support Maintenance Manual
COMPRESSOR, AIR,
RECIPROCATING, ELECTRIC MOTOR DRIVEN,
RECEIVER MOUNTED, 2 PH, 5CFM, 175 PSI
(INGERSOLL-RAND MODEL 234C2)
NSN 4310-01-027-2146
(INGERSOLL-RAND MODEL 234C2A)
NSN 4310-01-027-2146**

TM 5-4310-348-14, 4 June 1973, is changed as follows:

Page 3-1 and 3-2, Section II. Table 3-1, Preventive Maintenance Checks and Services is superseded as follows.

Page 4-2, Section IV, Table 4-1, Preventive Maintenance Checks and Services is superseded as follows.

By Order of the Secretary of the Army:

JOHN A. WICKHAM, JR.
General, United State Army
Chief of Staff

Official:

R. L. DILWORTH
Brigadier General, United States Army
The Adjutant General

DISTRIBUTION:

To be distributed in accordance with DA Form 12-25A, Operator, Organizational, Direct and General Support Maintenance requirements for Compressor, Reciprocating, Air, Electric, Receiver Mounted, 2HP, 5CFM, 175 PSI (234C2)

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services

NOTE

Within designated interval, these checks are to be performed in the order listed.

Item No.	INTERVAL		Item To Be Inspected	Procedures Check For And Have Repaired Or Adjusted As Necessary	Equipment Is Not Ready/ Available If:
	B	A			
1	•		Compressor	<p>WARNING Death or serious injury may result if personnel fail to observe safety precautions. Compressed air and electricity are dangerous. Before performing any maintenance or adjustments, be sure electrical power has been shut off and locked out. Relieve air pressure at drain valve.</p> <p>NOTE Perform lubrication prior to or in conjunction with PMCS. Refer to LO 5-4310348-12.</p> <p>Make the following walk around checks: a. Check for signs of oil leakage</p>	Class III oil leak is found.

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services (cont)

B - Before

A - After

Item No.	INTERVAL		Item To Be Inspected	Procedures Check For And Have Repaired Or Adjusted As Necessary	Equipment Is Not Ready/ Available If:
	B	A			
2		•	Receiver Tank	<p>WARNING</p> <p>COMPRESSED AIR</p> <p>Compressed air used for cleaning purposes will not exceed 30 psi (308 kPa). Use only with effective chip-guarding and personal-protective equipment (goggles, shields, gloves, etc.).</p> <p>b. Use compressed air to remove dust from cylinder cooling fins and tubes.</p> <p>WARNING</p> <p>Death or serious injury could result by repeated and/or prolonged breathing and/or liquid skin contact of drycleaning solvent P-D-680. Use in a well-ventilated area. Do not use near open flame or in excessive heat. The flash point of this solvent is 100°F to 1380 (38°C to 59°C).</p> <p>c. Wipe dirt and oil from belt guard, motor, V-belts, compressor, and receiver, using a cloth with cleaning solvent P-D-680, type II.</p> <p>Open draincock at bottom of air receiver tank long enough to drain condensate, then close draincock.</p>	

Table-3-1. Operator/Crew Preventive Maintenance Checks and Services (cont)

Item No.	INTERVAL		Item To Be Inspected	Procedures Check For And Have Repaired Or Adjusted As Necessary	Equipment Is Not Ready/ Available If:
	B	A			
				<p>NOTE</p> <p>During starting and operation, check for oil and air leaks, and loose or cracked parts. Check for unusual noise, rough running, excessive vibration, or any indication of a failing or defective component. If suspected, notify organizational maintenance.</p>	

Table 4-1. Organizational Preventive Maintenance Checks and Services

W-Weekly M-Monthly	S-Semiannually Q-Quarterly	B-Biennially A-Annually	H-Hours MI-Miles
Item No.	Interval	Item to be Inspected	Procedures
	Q		
1	•	Compressor Assembly	<p>Check electrical wiring and components for evidence of overheating, loose connections, and other damage. Check that all hardware is tight and components are secure. Check hoses and fittings for leaks or loose connections. Check drive belts for wear and proper tension.</p> <p>NOTE</p> <p>Make a quick check for proper belt adjustment and observe belts while compressor is in operation. If bottom of belt seems to droop slightly below line from pulley to pulley, the belts should be in adjustment.</p>
2	•	Safety Relief Valve	Check for proper operation by lifting lever until air escapes

5/(6 Blank)

CHANGE

No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 20 September 197

**Operator, Organizational, Direct and General
Support Maintenance Manual**

**COMPRESSOR, RECIPROCATING, AIR; ELECTRIC MOTOR
DRIVEN; RECEIVER MOUNTED; 5 CFM, 175 PSI
(INGERSOL-RAND MODEL 234C2) FSN 4310-155-1701**

TM 5.4310-348-14, 4 June 1973 is changed as follows:
Reverse of Cover Page. Add to Safety Precautions:

Page 2-1, paragraph 2-2, add:

WARNING

**This compressor is NOT SUITABLE
for the supply of air for charging
cylinders with BREATHABLE AIR.**

WARNING

**This compressor is NOT SUITABLE
for the supply of air for charging
cylinders with BREATHABLE AIR.**

Page 3-1, paragraph 3-2b, add:

WARNING

**Cleaning solvent, PD-680, is POTEN
TIALY DANGEROUS CHEMICAL.
Do not use near open flame.**

WARNING

**Cleaning solvent, PD-680, used for
cleaning is POTENTIALLY
DANGEROUS CHOMICAL. Do not
use near open flame. Flash point of
solvent is 100-138F (38-59C).**

By Order of the Secretary of the Army:

Official:

VERNE L. BOWERS
*Major General, United States Army
The Adjutant General*

FRED C. WEYAND
*General, United States Army
Vice Chief of Staff*

Distribution:

To be distributed in accordance with DA Form 12-25A (qty rqr block No 6) Organizational maintenance requirement for Air Compressors, 5 CFM

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from the UNITED STATES ARMY
PUBLICATIONS CENTER, ST. LOUIS, MISSOURI,
to meet your needs while we are replenish-
ing our regular stock.

CHANGE

NO. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D C, 19 May 1977

**Operator, Organizational, Direct and General
Support Maintenance Manual
COMPRESSOR, AIR,
RECIPROCATING, ELECTRIC MOTOR DRIVEN,
RECEIVER MOUNTED, 2 HP, 5CFM, 175 PSI
(INGERSOLL-RAND MODEL 234C2)
NSN 4310-01-027-2146
(INGERSOLL-RAND MODEL 234C2A)
NSN 4310-01-027-2146**

TM 5-4310-348-14, 4 June 1973, is changed as follows.

The title is changed as shown above.

Page ii. Add "(Model 234C2)" to the title of figure 3-3

Page iii. Add "(Model 234C2)" to the title of figure 4-3

Page iii. Add "(Model 234C2)" to the title of

figure 6-1.

Page iii. Add "(Model 234C2)" to the title of figure 6-3.

Page iii. LIST OF ILLUSTRATIONS, add the following in the appropriate place for Model 234C2A.

Number	Title	Page
1-4.1	Wiring Diagram for 230 V ac Operation (Model 234C2A).....	1-5
3-3.1	Adjusting the Unloader Pilot Valve (Model 234C2A)	3-6
4-3.1	Pilot Valve Assembly, Removal and Installation (Model 234C2A)	4-5
6-1.1	Electric Motor, Exploded View (Model 234C2A).....	6-2
6-3.1	Motor Starter (Model 234C2A).....	6-4

Page 1-1. Paragraph 1-1. Scope. Line 5. After "Model 234C2", add "Model 1234C2".

Page 1-2. Paragraph 1-3 is superseded as follows:

1-3. Reporting of Errors

You can help to improve this manual by calling attention to errors and by recommending improvements. Your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), and/or DA Form 2028-2 (Recommended Changes to Equipment Technical Manuals), may be used. Copies of DA Form 2028-2 are attached in the back of the manual for your use. Please mail your recommended changes directly to Commander, US Army Troop Support Command, ATTN: DRSTS-MPP, 4300 Goodfellow Blvd., St. Louis, MO. 63120. A reply will be furnished directly to you.

Page 1-3. Paragraph 1-7, is superseded as follows:

1-7. Description.

The 2HP electric motor driven air compressor, Model 234C2 and Model 234C2A, is a two stage, single action, air cooled compressor. It is automatically regulated with the pressure switch turning it ON at 175 psi, and turning it OFF at 200 psi (plus or minus 5 psi). It is equipped with an air cooled aftercooler, which consists of tubing between the second stage cylinder and the receiver. The compressed air passage through this tube on its way to the receiver, is cooled with air drawn in by the fan-type flywheel. This also condenses moisture in the receiver which must be drained manually from draincock daily (figure 1-1.). The intercooler tube cools first stage compressed air on its way to the second stage cylinder intake.

Page 1-3. Paragraph 1-8, is superseded as follows:

1-8.. Difference in Models

The difference between the two models are the electric drive motor and the pilot valve. The Model 234C2 has a 115 V ac, single phase, 60 hertz electric motor. The Model 234C2A has a 230 V ac, three phase, 60 hertz electric motor.

Page 1-3. Paragraph 1-9 b(l) is superseded as follows:

b. Air Compressor, Reciprocating, Electric Motor Driven

(1) Manufacture	Ingersoll-Rand Compressor Division, .Campbellsville, Ky
Type	2 Stage, single-acting
Model	234C2 and 234C2A
Revolutions per minute	610 rpm
Bore:	
First	
Stage	3 in (inch)
Second	
Stroke	1 3/4 in. 3 in.
Intercooler	Tube, air cooled
Aftercooler	Tube, air cooled
Receiver Size	60 gal. (gallon)

Motor	Model 234C2
Manufacture	Marathon Electric, Wausau, Wisconsin.
Model	182TCDR7072, Frame 182T
Type	Constant speed, ball bearing, Horizontal, drip proof
Voltage	115/230 V ac (volts alternating current) (115 V ac initial setting)
Rating/Speed	2HP/1750 rpm
Phase/Hertz	Single/60
Motor Manufacture	Model 234C2A
Model	Baldor Electric, Ft. Smith, Arkansas
Type	35E668-754, Frame 145T
Voltage	Constant speed, ball bearing Horizontal, drip proof
	230 V ac (volts alternating current) (230 V ac initial setting)
Rating/Speed	2HP/1750 rpm
Phase/Hertz	Three/60

Page 1-5. Figure 1-4. In the caption after "operation" and "(Model -234C2."

Page 1-5. Figure 1-4-1 is added: Wiring diagram for 230 V ac operation (Model 234C2A).

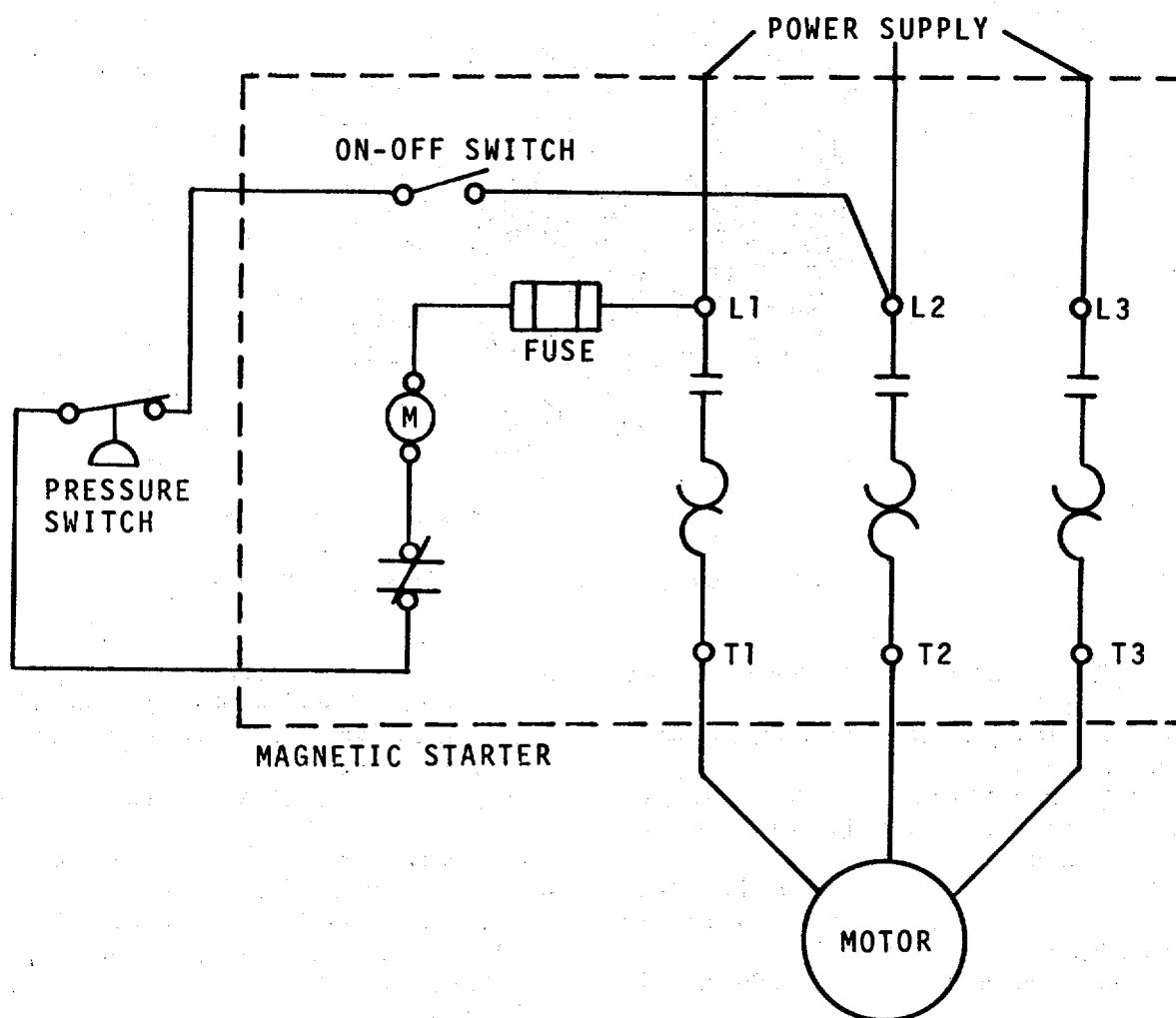


Figure 1-4.1. Wiring diagram for 230 V ac Operation (Model 234C2A).

Page 2-1. Paragraph 2-id, is superseded as follows:

d. Motor Starter. The motor starter (figure 21) must be connected to a controlled power source of 115 volts alternating current for Model 234C2 and 230 volts alternating current for Model 234C2A. When that power reaches the motor starter, and the ON-OFF switch is

moved to ON, the motor will drive the compressor until the pressure switch is actuated (c. above).

Page 3-6. Figure 3-3. In the caption after "Operation" add "(Model 234C2)."

Page 3-6. Figure 3-3.1 is added: Adjusting the unloader pilot valve (Model 234C2A).

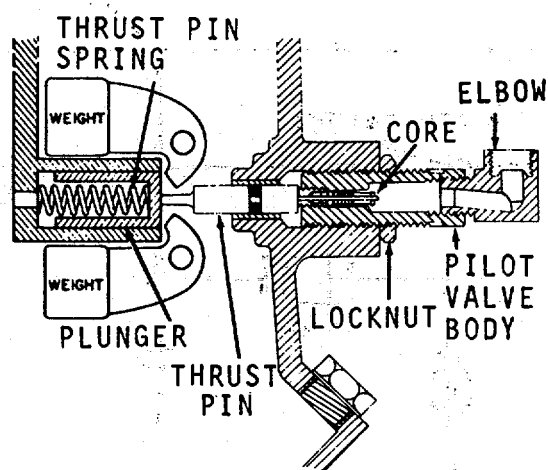


Figure 3-3.1. Adjusting the Unloader Pilot Valve (Model 234C2A).

Page 3-7. Para. 3-9b, after "Adjustment," add "(Model 234C2)."

Page 3-7. After paragraph 3-9 b(3), add paragraph b.1 as follows:

b.1. Adjustment (Model 234C2A). To adjust the unloader pilot valve, refer to figure 3-3.1 and proceed as follows:

(1) Stop the compressor, remove elbow from the pilot valve body. Loosen locknut and remove the pilot valve body.

(2) Screw the pilot valve assembly into the frame cover until the thrust pin is felt, then advance valve another 1/4. to 1/2 turn and tighten locknut.

(3) Install elbow into the valve body, then reconnect tubing.

(4) Start the compressor, then place hand over pilot valve tube to atmosphere.

(5) If there is no flow of air, pilot valve is properly adjusted. When air is evident, readjust valve starting with step (i).

Page 4-3. Paragraph 4-7a, is superseded as follows:

a. Motor. The motor (Model 234C2) is 115 V ac single phase, 60 hertz, induction motor, with initial connections for 115V ac. Motor (Model 234C2A) is a 230 ac, three phase, 60 hertz, induction motor, with initial connections for 230 V ac.

Page 4-4. Paragraph 4-11. Pilot Valve Replacement, add "Model (234C2)."

Page 4-5. Figure 4-3. In the caption after "installation" add "(Model 234C2)."

Page 4-5. Figure 4-3.1 is added: Pilot valve assembly, exploded view (Model 234C2A).

Page 4-5. Paragraph 4-11 c(4), add paragraph 4-11.1 as follows:

4-11.1. Pilot Valve Replacement (Model 234C2A).

a. Removal (Figure 4-3.1).

- (1) Disconnect tube.
- (2) Remove elbow (1), pilot valve body (3), locknut (4) and thrust pin (7).
- (3) Remove valve core (5) from valve body (3).
- (4) Remove the preformed packing (6) from thrust pin (7).

b. Cleaning and Inspection.

- (1) Clean all parts and wipe dry with a lint free cloth.
 - (2) Check valve core (5) for disfiguration and excessive wear. Replace defective valve core.
 - (3) Check valve body (3) for burred threads.
- Check thrust pin (7) for excessive wear or bend.
- (4) Replace a deteriorated preformed packing.

c. Installation.

- (1) Screw valve core (5) into the valve body
- (3). Screw locknut (4) on valve body.

- (2) Position preformed packing (6) on thrust pin, then place thrust pin (7) in the frame end plate.

- (3) Position pilot valve body against thrust pin.

- (4) Adjust the pilot valve (paragraph 3-9 b.1.).

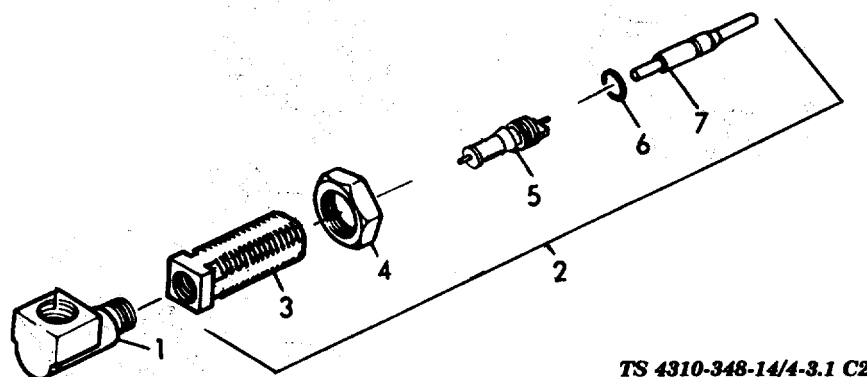
Page 6-1. Paragraph 6-1, is superseded as follows:

6-1. General

The Model 234C2 drive unit is a two horsepower, 1750 rpm, 115 volt ac, single phase, 60 hertz, induction motor for horizontal mounting, with a type 182T frame and a drip proof enclosure. The Model 234C2A drive unit is a two horsepower, 1750 rpm, 230 volt ac, three phase, 60 hertz, induction motor for horizontal mounting, with a type 145T frame and a drip proof enclosure. It is controlled by a motor starter with heater and overload relay, plus a pressure switch nominally set to turn motor ON at 175 psi, and OFF at 200 psi plus or minus 5 psi. The motor is equipped with a two-groove belt pulley. This pulley is matched to the fanwheel pulley of compressor, and turns the compressor at 610 rpm.

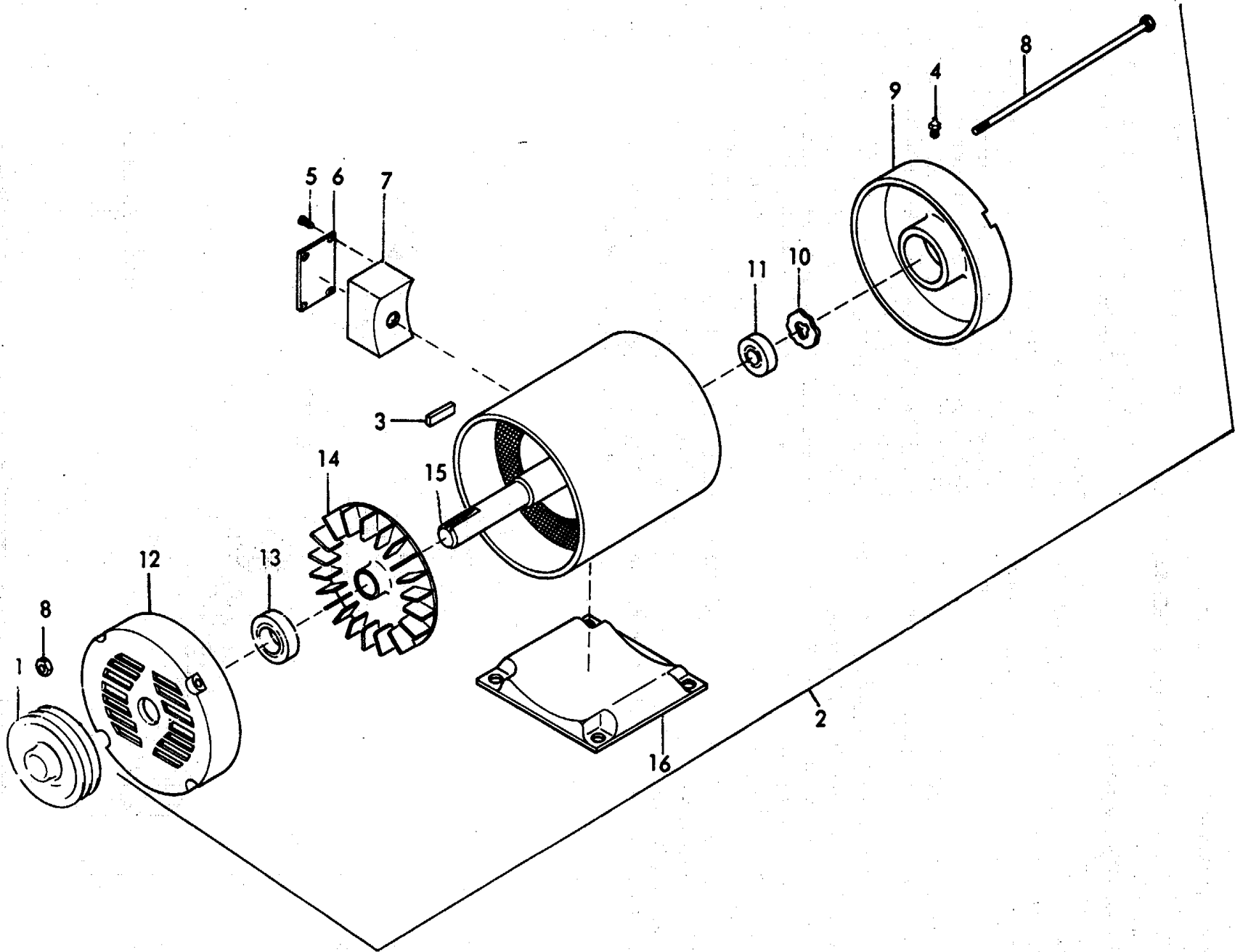
Page 6-2. Figure 6-1. In the caption after "view", add "(Model 234C2)".

Page 6-2. Figure 6-1.1 is added: Electric motor, exploded view (Model 234C2A).



TS 4310-348-14/4-3.1 C2

Figure 4-3.1. Pilot Valve Assembly, Removal and Installation (Model 234C2A).

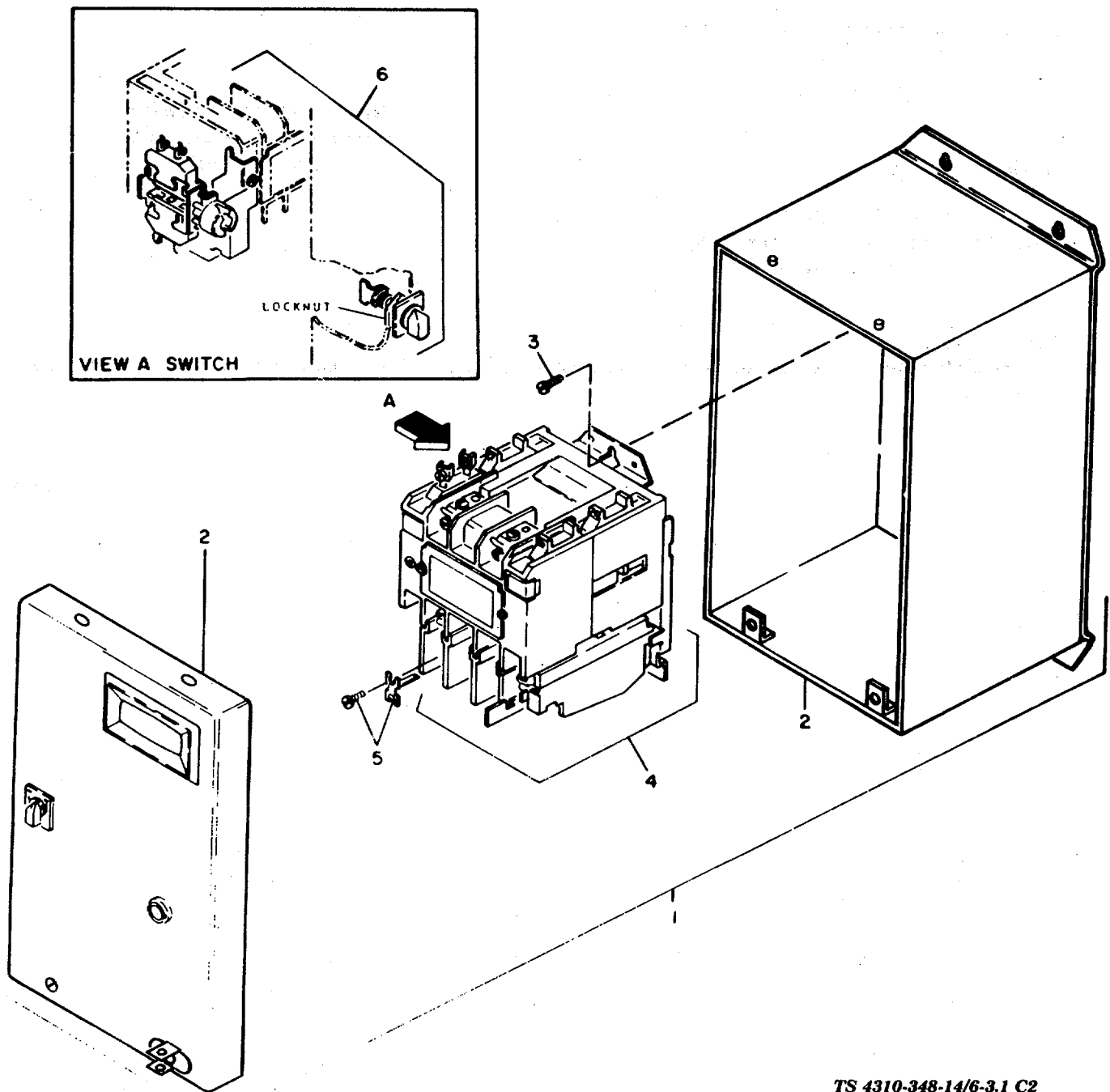


TS 4310-348-14/6-1.1 C2

Figure 6-1.1. Electric Motor, Exploded View (Model 234C2A)

Page 6-4. Figure 6-3. In the caption after "starter," add "(Model 234C2)."

Page 6-4. Figure 6-3.1 is added: Motor starter (Model 234C2A).



TS 4310-348-14/6-3.1 C2

Figure 6-3.1 Motor Starter (Model 234C2A).

Page A-1. In paragraph A-4, Lines three and four are superseded as follows: Receiver Mounted, 2HP, 5CFM, 175PSI, (Ingersoll-Rand Model 234C2) NSN 4310'00-155-

7101 and (Ingersoll-Rand Model 234('2A) NSN 431()-01-0)27-2146.

By Order of the Secretary of the Army:

Official:

BERNARDO W. ROGERS
General, United States Army
Chief of Staff

PAUL T. SMITH
Major General, United States Army
The Adjutant General

Distribution:

To be distributed in accordance with DA Form 12-25A, Organizational maintenance requirements for Air Compressors: 5 CFM.

GPO 895-822

CHANGE

No. 3

**Operator, Organizational, Direct and General
Support Maintenance Manual**

**COMPRESSOR, AIR,
RECIPROCATING, ELECTRIC MOTOR DRIVEN,
RECEIVER MOUNTED, 2 HP, 5CFM, 175,PSI
(INGERSOLL-RAND MODEL 234C2)
NSN 4310-01-027-2146
(INGERSOLL-RAND MODEL 234C2A)
NSN 4310-01-027-2146**

TM 4-4310-348.14, 4 June 1973, is changed as follows:

Page ii. Appendix C is superseded as follows:

Appendix C.	COMPONENTS OF END ITEMS LIST:.....
Section I.	INTRODUCTION.
	Scope
	General
	Explanation of Columns in Section II, III
II.	INTEGRAL-COMPONENTS OF END ITEM
III.	BASIC ISSUE ITEMS.....

Page ii. Add Appendix D as follows:

Appendix D	ADDITIONAL AUTHORIZATION LIST
Section I.	INTRODUCTION
	Scope.
	General
	Explanation (of listing in Section II
II.	ADDITIONAL. AUTHORIZATION LIST

Page 1-2. Paragraph 1-2.1 is added as follows:

:

1-2.1. Hand Receipt.

Hand receipts covering the End Item/Components of End Item (COEI), Basic Issue Items (BID) and Additional Authorization List (ALL) items are published in a Hand Receipt Manual. The Hand Receipt Manual numerical designation is the same as the related Technical Manual with the letters HR added to the number. These manuals are published to aid in property accountability and are available through: Commander, U. S. Army Adjutant General Publication Center, ATTN: AGDL-OD, 1655 Woodson Road, St. Louis, MO 63114. be furnished directly to you.

Page 1-2. Paragraph 1-3 Reporting of Errors is changed as follows

1-3. Reporting of Errors

You can help to improve this manual by calling attention to errors and by recommending improvements. Your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) may be used. Copies of DA Form 2028 area located in the back of the manual for your use. Please mail your recommended change directly to Commander, U. S. Army Troop Support and Aviation Materiel Readiness Command, ATTN: DRSTS-MTPS, 4300 Goodfellow Blvd., St. Louis, MO 63120. A reply will

Appendix C is added as follows:

APPENDIX C

COMPONENTS OF END ITEMS LIST SECTION I. INTRODUCTION

1. SCOPE.

This appendix lists Integral Components of End Items and Basic Issue Items (BII) for the Air Compressor to help you inventory items required for safe and efficient operation.

2. GENERAL.

The components of end item list are divided into the following sections:

a. Section II. Integral Components of the End Item.

These items, when assembled, comprise the Air Compressor and must accompany it whenever it is transferred or turned in.

b. Section III. Basic Issue Items.

These are minimum essential items required to place - the Air Compressor in operation, to operate it and to perform emergency repairs. Although shipped separately-packed, they must; accompany the Air Compressor during operation and whenever it is transferred between accountable officers. The illustrations will assist you with hard-to-identify items. This manual is your authority to requisition replacement BII based on Table(s) of Organization; and Equipment (TOE)/Modification Table of Organization and Equipment (MTOE) authorization of the end item.

3. EXPLANATION OF COLUMNS.

a. **Illustration:** This column is divided as follows:

(1) **Figure Number.** Indicates the figure number of the, illustration on which the item is shown (if applicable).

(2) **Item Number.** The number used to identify-item called out in the illustration.

b. **National Stock Number (NSN):** Indicates the national stock number assigned to the end item which will be used for requisitioning.

c. **Part Number (P/N):** Indicates the primary number used by the manufacturer which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards and inspection requirements to identify an item -or range of items.

d. **Description:** Indicates the federal item name and, if required, a minimum description to identify the item.

e. **Location:** The physical location of each item listed. is given in this column. The lists are designed to inventory all items in one area of the major item before moving on to an adjacent area.

f. **Usable on Code:** "USABLE ON" codes are not applicable.

g. **Quantity Required** (Qty Read): This column lists the quantity of each item required for a complete major item.

h. **Quantity:** This column is left blank for use during inventory. Under the received column, list the quantity-you actually receive on your major item. The date columns are for use when you inventory the major item at a later date, such as for shipment to another site.

Section II.
INTEGRAL COMPONENTS OF END ITEM

(1) ILLUSTRATION (a) FIGURE NO.	(b) ITEM NO.	(2) NATIONAL STOCK NUMBER	(3) PART NO. & FSCM	(4) DESCRIPTION	(5) LOCATION	(6) USABLE ON CODE	(7) QTY REQD
		4910-00-030-2365 4720-00-879-3179		Inflator Assembly Hose Assembly			

Section III.
BASIC ISSUE ITEMS

(1) ILLUSTRATION (a) FIGURE NO.	(b) ITEM NO.	(2) NATIONAL STOCK NUMBER	(3) PART NO. & FSCM	(4) DESCRIPTION	(5) LOCATION	(6) USABLE ON CODE	(7) QTY REQD
				TM 5-4310-348-14 Operator, Organizational, Direct and General Support Maintenance Manual for Air Compressor, Models 234C2 and 234C2A			1

Appendix D is added as follows:

APPENDIX D.
ADDITIONAL AUTHORIZATION LIST
SECTION I. INTRODUCTION

1. SCOPE.

This appendix lists additional items you are authorized for the support of the Air Compressor.

with it. These items are authorized to you by CTA, MTOE, TDA or JTA.

2. GENERAL.

This list identifies items that do not have to accompany the Air Compressor and that do not have to be turned in

3. EXPLANATION OF LISTING.

National stock number, descriptions and quantities are provided to help you identify; and request the additional items you require to support this equipment. "USABLE ON" codes are not applicable.

Section II.
ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER	PART NO & FSCM	(2) DESCRIPTION	USABLE ON CODE	(3) U/M	(4) QTY AUTH
4210-00-555-8837	Extinguisher, Fire				1

By Order of the Secretary of the Army:

Official:

J. C. PENNINGTON
Major General, United States Army
The Adjutant General

BERNARD W. ROGERS
General, United States Army
Chief of Staff

Distribution:

To be distributed in accordance with DA Form 12-25A, Operator maintenance requirements for Air Compressors: 5 CFM.

OPERATOR, ORGANIZATIONAL, DIRECT AND GENERAL SUPPORT MAINTENANCE MANUAL

COMPRESSOR, AIR, RECIPROCATING, ELECTRIC MOTOR DRIVEN, RECEIVER MOUNTED, 2HP, 5CFM, 175 PSI, (INGERSOLL-RAND MODEL 234C2) (FSN 4310-155-7101)

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CHAPTER 1 INTRODUCTION

Section I. GENERAL

1-1. Scope.

This manual is published for use by the personnel responsible for the operation and maintenance of the Air Compressor, Reciprocating, Electric-Motor Driven, Receiver Mounted, 2 -H.P., 5 CFM, 175 PSI

(Ingersoll-Rand Model- 234C2) (fig. 1-1 and. 1-2). It provides all necessary information on operation and, maintenance of, the equipment, with: description and function of main units in relationship to other-components

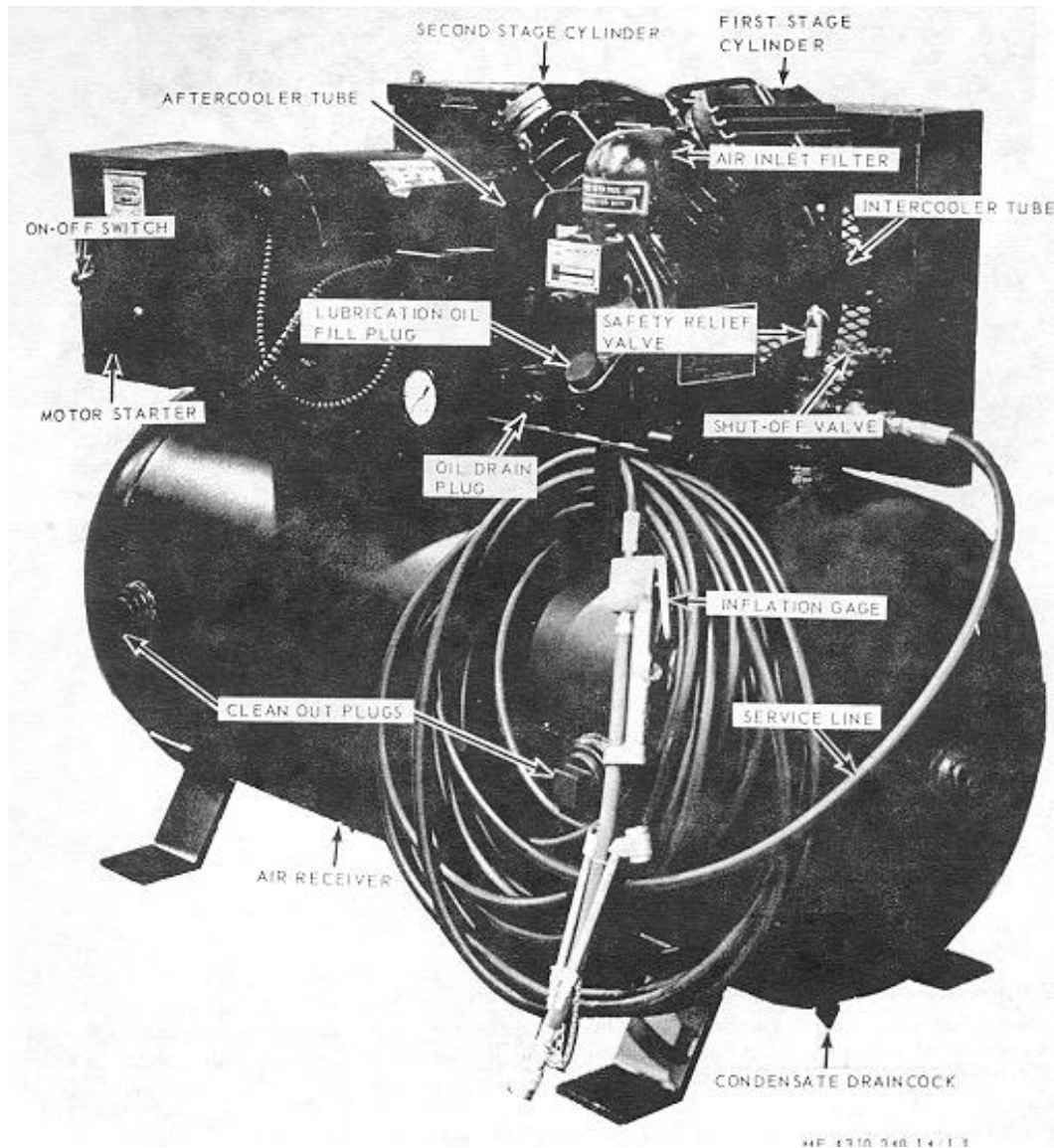


Figure 1-1. Air compressor three-quarter right front view.

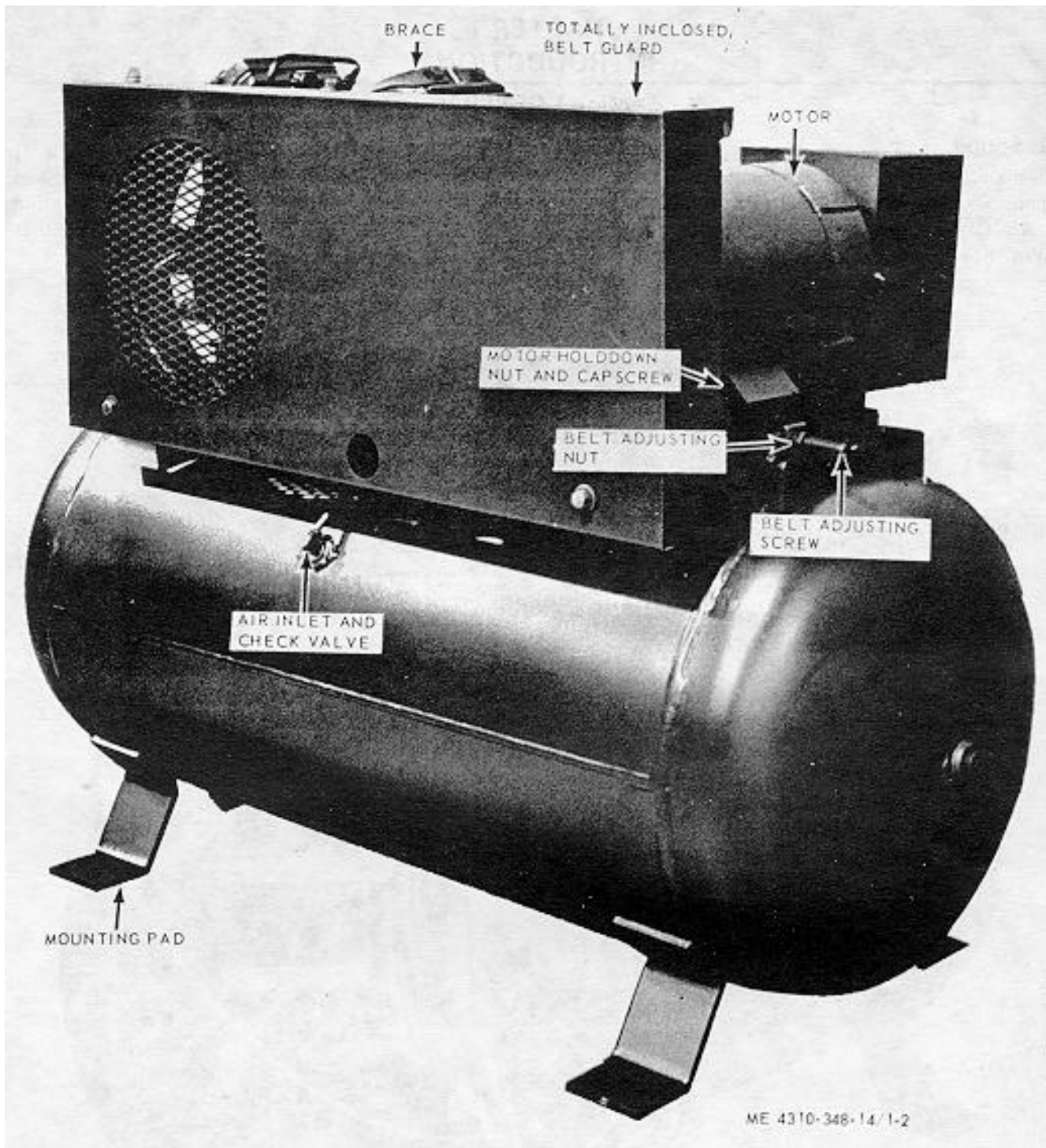


Figure 1-2. Air compressor three-quarter left rear view.

1-2. Maintenance Forms and Records

Maintenance forms and records that you are required to use are listed and described in TMA38-750, The Army Maintenance Management System (TAMMS).

1-3. Reporting of Errors

You can improve this manual by calling attention to errors and by recommending improvements, using DA Form 2028 (Recommended Changes to Publications), or by letter, and mail directly to Commanding General, U.S. Army Troop Support Command, ATTN: AMSTS-MPP, 4300 Goodfellow Blvd., St. Louis, Missouri 63120.

1-4. Equipment Serviceability Criteria (ESC)

"This equipment has no published ESC."

1-5. Destruction of Army Materiel to Prevent Enemy Use

Destroy Army materiel to prevent enemy use as

described in TM 750-244-3.

1-6. Administrative Storage

Refer to TM 740-90-1 for method of placing this equipment in administrative storage.

Section II. DESCRIPTION AND DATA

1-7. Description

The 2HP Electric Motor Driven Air Compressor, Model 234C2, is a two-stage, single acting, air-cooled compressor. It is automatically regulated with the pressure switch turning it ON at 175 psi, and turning it OFF at 200 psi (plus or minus 5 psi). It is equipped with an air-cooled; aftercooler, which consists of tubing between the second stage cylinder and the receiver. The compressed air passage through this tube on its way to the receiver, is cooled with air drawn in by the fan-type flywheel. This also condenses moisture in the receiver which must be drained manually from draincock daily (fig. 1-1). The intercooler tube cools first stage compressed air on its way to the second stage cylinder intake.

1-8. Difference in Models

There are no known differences between units, of this Model.

1-9. Tabulated Data

a. Identification and Instruction Plates. The location and informational content of the six major identification and instruction plates follow:

(1) The U.S. Army identification plate is located at the top center of rear panel of the totally inclosed belt guard, and contains the ownership designation, nomenclature, model number, contract number, serial number, capacity, gross weight, cube, FSN, manufacture date, shipping dimensions, motor serial number, and the manufacturer's name.

(2) Instruction plate for operating is located directly below the identification plate described in (1) above), and contains complete instructions for pre-starting maintenance and service.

(3) The manufacturer's identification plate is located on cover of the compressor frame and contains the manufacturer's name, model number, and serial number.

(4) An instruction plate is located on the inlet filter, and concerns cleanliness of the filter pads.

(5) An instruction plate is located at top left of rear panel of the totally inclosed belt guard, with a red arrow denoting direction of rotation of motor and compressor.

(6) The manufacturer's identification plate. 'for the motor is located on the stator body, and contains the manufacturer's name, model, type, voltage, serial number, and a wiring schematic for hookup of 115/230V ac.

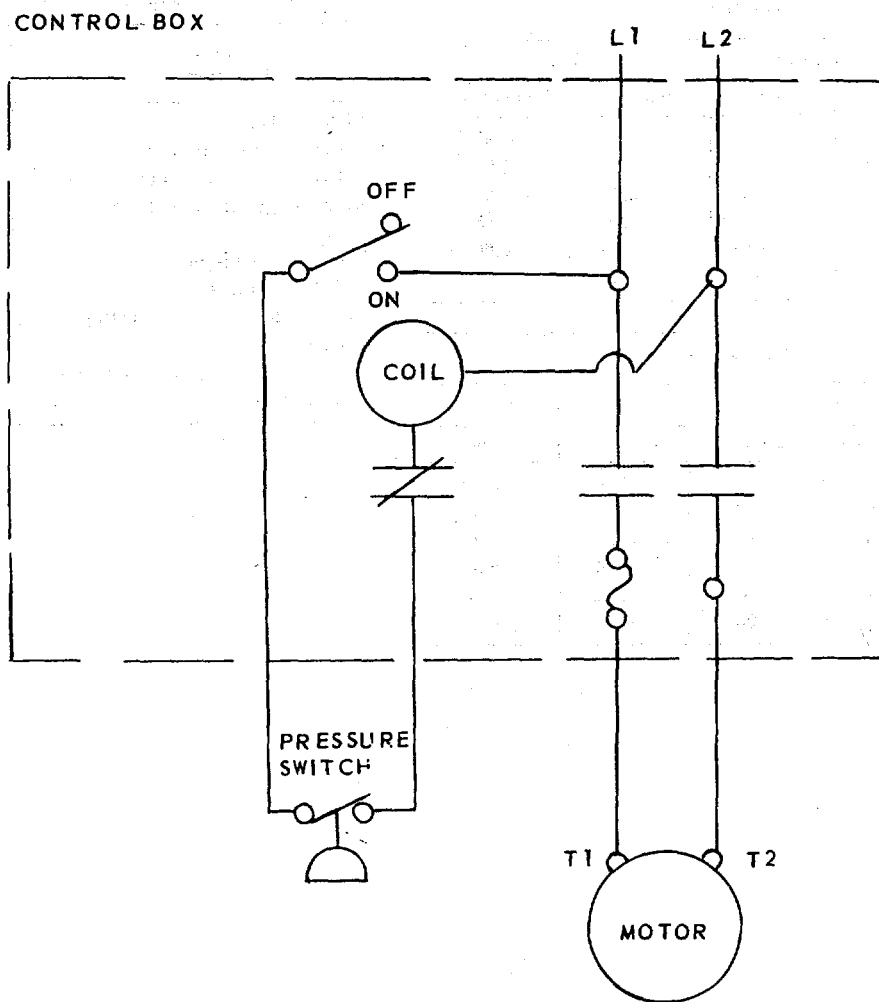
b. Air Compressor, Reciprocating, Electric Motor Driven.

(1) Manufacturer	Ingersoll-Rand Compressor Division, Campbellsville, Ky.
Type	2 Stage, single acting
Model	234C2
Revolutions per minute	610 rpm
Bore:	
First Stage	3 in. (inch)
Second Stage	1 3/4 in.
Stroke	3 in.
Intercooler	Tube, air cooled
Aftercooler	Tube, air cooled
Receiver Size	60 gal. (gallon)
Motor Manufacturer.....	Marathon Electric, Wausau, Wisconsin
Model	182TCDR7072, Frame 182T
Type	Constant speed, Ball bearing, horizontal, drip proof
Voltage	115/230V ac (volts alternating current) (115V ac initial setting)
Rating/speed.....	2hp/1750 rpm
Phase/hertz.....	Single/60

(2) Controls.

Motor Starter Mfg.	Clark Div. of A. O. Smith
Pressure Switch Mfg.	Allen-Bradley Company Milwaukee, Wisconsin
Size	Bulletin 30-C5
Style	900

c. Mounting Foundation. Refer to Figure 1-3 for mounting foundation dimensions.



NOTE
 115 VAC HOOK-UP ILLUSTRATED WHEN 230 VAC HOOK-UP REQUIRED USE DIAGRAM ON MANUFACTURER'S IDENTIFICATION PLATE.

Figure 1-4. Wiring diagram 115V ac operation.

e. *Torque Application.* Refer to Table 1-1 for the manufacturer's recommended torque values.

Table 1-1. Table of Manufacturer Torque Values.

National Coarse						
			Foot pounds		Meter Kilograms	
Dia. and pitch			Minimum	Maximum	Minimum	Maximum
¼	-	20	6	7	0.83	0.97
5/16	-	18	12	14	1.66	1.93
3/8	-	16	21	24	2.90	3.32
½	-	13	14	59	7.20	8.15
5/8	-	11	52	120	14.50	16.60
¾	-	10	105	190	23.50	26.50

National Fine						
			Foot pounds		Meter Kilograms	
Dia. and pitch			Minimum	Maximum	Minimum	Maximum
¼	-	28	5	6	0.69	0.83
5/16	-	24	9	10	1.24	1.38
3/8	-	24	14	16	1.93	2.21
½	-	20	40	42	5.52	5.80
5/8	-	18	60	70	8.30	9.55
¾	-	16	100	120	13.80	16.60

f. *Manufacture Tolerances.* Refer to Table 1-2 for the manufacturer recommended dimensional tolerances.

Table 1-2. Table of Manufacturer Dimensional Tolerances

Model 234C2 item nomenclature	Clearance		Dimension for disposal
	Minimum	Maximum	
Piston to bore:			
3 in. Cylinder diameter	0.003	0.004	0.005
1-3/4 in. Cylinder diameter	0.0025	0.0035	0.0045
Ring end gap (ring installed in bore):			
Both cylinders	0.005	0.015	0.020
Piston pin to piston:			
Both cylinders	0.0003	0.0009	0.0012
Piston pin to connecting rod:			
Both cylinders	0.0002	0.0007	0.00095
Crank pin bushing to connecting rod:			
Both rods	0.001	0.002	0.0025

CHAPTER 2 OPERATING INSTRUCTIONS

WARNING

If equipment fails to operate, refer to troubleshooting procedures in Chapter 3.

Section I. OPERATING PROCEDURES

2-1. Control and Instruments

a. *General.* This section will describe the various controls and instruments (fig. 2-1) and provide the operator sufficient information to insure proper operation of the air compressor.

b. *Pressure Switch.* The pressure switch (fig. 2-1) is the automatic start and stop control. It makes and breaks the electrical circuit starting and stopping the driving motor. The pressure switch is piped to the receiver, and is actuated by changes in air receiver pressure.

c. *Pressure Gage.* The pressure gage (fig. 2-1) dial is marked with a dotted line at 175 psi, and a solid line at 200 psi. When the gage indicator hand points at 175 (or below) the pressure switch will turn the drive motor ON. When the hand reaches 200, the pressure switch will turn the drive motor OFF.

d. *Motor Starter.* The motor, starter (fig. 2-1) must be connected to a controlled power source of 115 volts alternating current. When that power reaches the motor starter, and the ON-OFF switch is moved to ON, the motor will drive the compressor until the pressure switch is actuated (c. above).

e. *Safety Relief Valve.* The safety relief valve (fig. 2-1) is set by the factory to blow off at 210 psi. This prevents overpressure, should the pressure switch become inoperative.

f. *Inflation Gage.* The inflation gage (fig. 2-1) controls, and indicates, the amount of air being discharged into tires of various sizes.

g. *Check Valve.* There is a check valve screwed into the air receiver at the point where the compressor cylinder discharge line enters the receiver. This valve prevents air from the receiver returning to the compressor cylinder, after the compressor has stopped running and the unloader valve has released all pressure inside the compressor.

2-2. Operation under Usual Conditions

a. Preparation for Starting."

(1) Perform the before operation services (Table 3-1).

(2) Check that all tools, rags, or other foreign objects have been removed from the compressor (receiver) area.

(3) With ON-OFF switch on motor starter at OFF, turn on power from source.

NOTE

When moving ON-OFF switch to ON, be prepared to stop the compressor instantly, if rotation does not match the direction indicated by the red arrow at upper left of the belt guard assembly.

b. *Starting.* Start the air compressor unit by moving the ON-OFF switch to ON.

c. *Stopping.* Stop the air compressor unit by moving the ON-OFF switch to OFF.

d. *Placing Unit in Stand by Condition.* Place the unit in stand by condition as follows:

(1) Check the oil level

(2) Drain receiver of condensate (para 3-11c.).

(3) Move ON-OFF switch to OFF.

e. Placing Unit in Shutdown Condition.

(1) Perform steps (1), (2), and (3) of d. above.

(2) Turn power off at source, and lock it out.

Section II. OPERATION OF AUXILIARY EQUIPMENT

There is no auxiliary equipment with this end item.

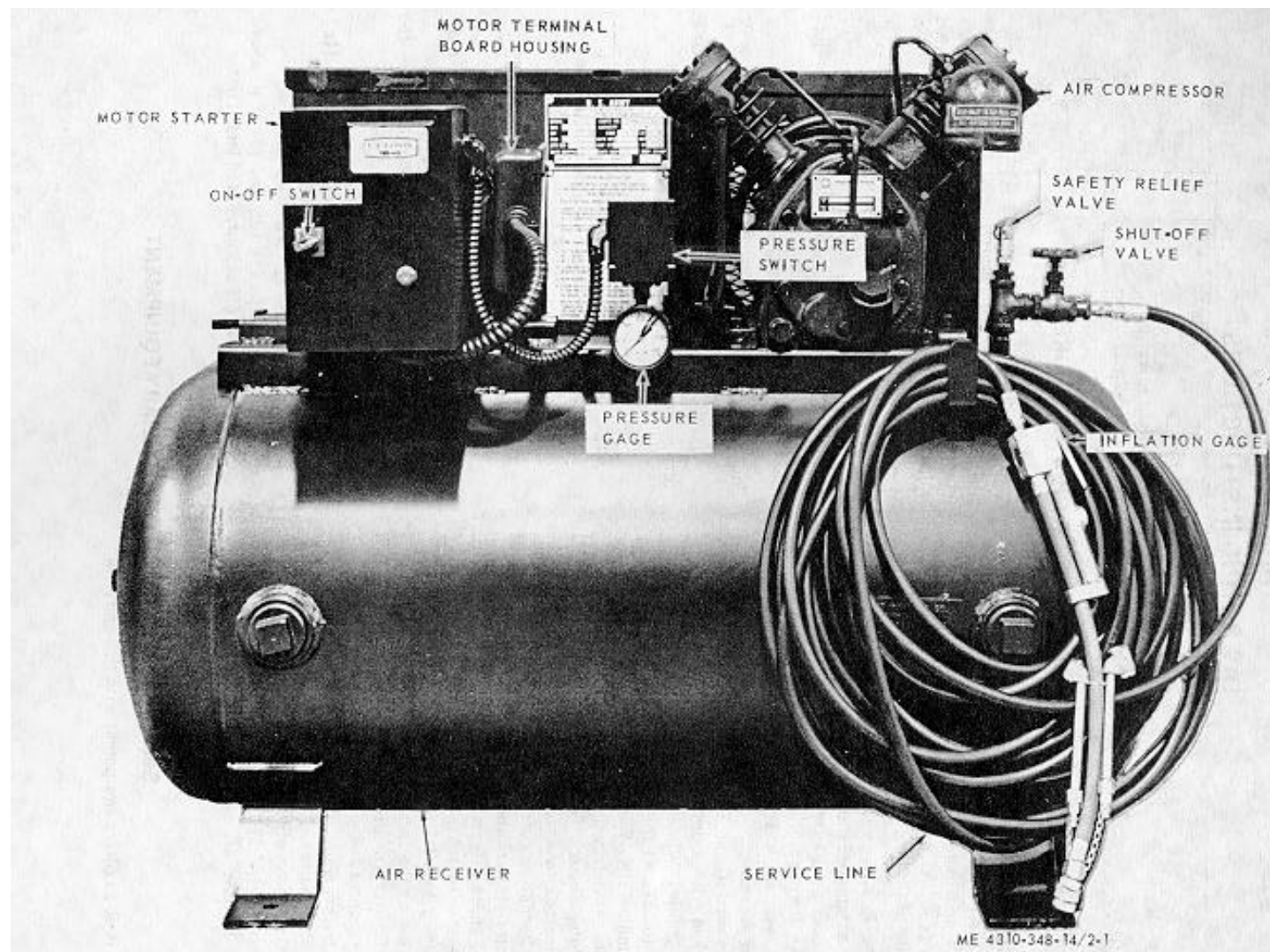


Figure 2-1. Air compressor controls and instruments

Section III. OPERATION UNDER UNUSUAL CONDITIONS

2-3. Operation In Extreme Cold

a. *General.* When this compressor is to be used in extremely cold weather, it should be installed in a heated building. When this is impossible (installed in a truck), provisions should be taken to warm the equipment before starting.

b. *Lubrication.* Lubricate the compressor in accordance with LO 5-4310-348-12.

c. *Condensate.*

(1) Drain condensate frequently.

(2) When the air compressor is to be shutdown for several hours, drain the receiver of air and condensate and leave draincock open. Tag starter switch with notification to close draincock before starting.

2-4. Operation under Humid Conditions

a. *General.* In areas of high humidity water will form in the frame. If the operation is very intermittent duty, lack of proper ventilation will cause rusting, oil sudging, and rapid wear of moving parts.

b. *Ventilation.* Assure that the unit is adequately ventilated so that plenty of air circulates around the compressor unit.

c. *Operation.* Assure that the compressor unit cycles on and off frequently. If necessary because of irregular or insufficient use, drain the air receiver of air and condensate (para 3-IIc.) frequently.

d. *Lubrication.* Check the oil in frame daily to ascertain when water is forming. Change oil when water is noticed in the frame.

CHAPTER 3 OPERATOR/CREW MAINTENANCE INSTRUCTIONS

Section I. LUBRICATION INSTRUCTIONS

3-1. General Instructions

- a. The motor issued with this air compressor has been factory lubricated for its lifetime.
- b. Check compressor frame oil level frequently, since excessive oil consumption is the principal method of determine compressors need for repairs.

Allow no dust, dirt, or other foreign material to mix with the lubricants. Keep all lubrication equipment clean.

b. Cleaning. Wipe lubricating points free-of dirt. Clean lubrication paints after lubricating to prevent accumulation of foreign matter.

c. Service. Service lubrication points at proper intervals as shown in LO 5-4310-348-12.

3-2. Lubrication Instructions

- a. General. Keep all lubricants in closed containers and store in a clean dry place away from external heat.

Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

Because all required inspections must be made daily, or more frequently, operator/crew personnel will refer to

tables 3-1 and 3-2, for procedures to be followed during their periodic inspection.

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services

B - Before Operation
Time required: 0.1.

D - During Operation
0.1

A - After Operation
Time required:

Interval and sequence No.			Item to be inspected procedure	Work time (M/H)
B	D	A		
1	1		<p style="text-align: center;">NOTE</p> <p>Visually inspect for evidence of lubricant leak concurrently with daily service checks.</p> <p>INSPECT OIL LEVEL IN COMPRESSOR FRAME</p> <p>Remove fill plug in frame (fig. 1-1), below pilot relief valve (LO 5-4310-348-12).</p> <p>OBSERVE PRESSURE GAGE OPERATION</p> <p>Watch pressure gage reading when the motor starts, and stops. Motor should start when gage reads 175 psi.</p> <p>Motor should stop when gage reads 200 psi. When gage operation is improper, notify organizational maintenance.</p>	0.1 0.1

Table 3-2. Operator/Crew Preventive Maintenance Checks and Services

D-Daily
Time required: 0.2

W-Weekly
Time required: 0.4

Interval and sequence No.		Item to be inspected procedure	Work time (M/H)
D	W		
	1	<p>CLEANLINESS OF EQUIPMENT</p> <p>Inspect the exterior of the air compressor. The belt guard, motor, V-belts, compressor, and the receiver should be clean and free of dust, dirt, or oil.</p> <p style="text-align: center;">WARNING</p> <p>Compressed air and electricity are dangerous. Before performing any maintenance, 6r adjustment, be sure electrical power has been-shut of and lock out. Never depend on the ON-OFF switch on the motor starter. Turn power off at the source, and avoid injury should the unit start running.</p>	0.1

D-Daily
Time required: 0.2

W-Weekly
Time required: 0.4

Interval and sequence No.		Item to be inspected procedure	Work time (M/H)
D	W		
		<p>CAUTION</p> <p>Always use cleaning solvent Fed Spec P-D-680 to wipe away oil or grease from the -compressor frame, intercooler, or aftercooler. tubes.</p> <p>NOTE</p> <p>Always wipe away oil-and-grease first, in order that power may be turned on and compressor air used to remove dust from cylinder cooling fins, and cooling tubes.</p> <p>Use cleaning solvent Fed. Spec. P-D-680 to remove excess oil or grease from the compressor, receiver, or belt guard assembly. Then use blasts of air to remove dust and dirt from the assembly.</p> <p>CHECK THE FRAME OIL LEVEL AND DRAIN CONDENSATE FROM AIR RECEIVER</p> <p>Inspect oil level. Fill to the overflow point if necessary. Open draincock at bottom of air receiver (fig. 1-1) long enough to drain condensate, then close the draincock.</p>	
1		INSPECT HOSES AND FITTINGS	0.1
	2	INSPECT HOSES AND FITTINGS	0.1
2		SWITCHES AND CONTROLS	0.1
	3	DRIVE BELTS	0.1
	4	SAFETY RELIEF VALVE	0.1

Section III. TROUBLESHOOTING

3-3. General

a. This section contains troubleshooting information, for locating and correcting most of the trouble that may develop in the air compressor. Each malfunction for an individual component is followed by a list of test or inspections which will help you to determine probable causes and corrective actions to take. You should perform the test/inspections and corrective actions in the order listed.

b. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not-listed or is not corrected by listed corrective action, notify your Supervisor.

3-4. Troubleshooting

Refer to Table 3-3 below for malfunctions, test or inspection and corrective actions.

Table 3-3. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
<p>NOTE</p> <p>Before you use this Table, be sure you have performed all applicable operating checks.</p>		
1. COMPRESSOR PUMPING OIL.		
	Step 1. Check for a clogged intake filter. Service the intake filter (para 3-10).	
	Step 2. (Check for low oil level (LO 5-4310-348-12). Fill with proper oil.	

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

- Step 3. Check for leaking or maladjusted pilot valve. Adjust pilot valve (para 3-9).
2. KNOCKS OR RATTLES.
 - Step 1. Check for loose belt pulley, or motor with excessive end play in shaft. Notify organizational maintenance.
 - Step 2. Check for leaking valves, or restricted air passage. Notify organizational maintenance.
3. AIR DELIVERY DROPPING.
 - Step 1. Check for clogged inlet filter. Service the intake filter (para 3-10).
 - Step 2. Check for air leaks in piping. Make a solution of soapy water and apply at fittings. If leak is found, notify organizational maintenance.
 - Step 3. Check for leaking or maladjusted pilot valve. Adjust the pilot valve (para 3-9). If leaking, notify organizational maintenance.
4. MOTOR OVERLOAD RELAY TRIPS.
 - Step 1. Check compressor. frame for proper weight oil. Service with proper oil (para 3-2).
 - Step 2. Check V-belts for too tight adjustment. Adjust V-belts (para 3-7).
 - Step 3. Check for leaking or maladjusted pilot valve. Adjust the pilot valve (para 3-9). If leaking notify organizational maintenance.
5. EXCESSIVE STARTING AND STOPPING.
 - Step 1. Check the receiver drain. Drain the receiver (para 3-11)
 - Step 2. Check for air leaks in piping. Repeat Step 2 of Paragraph 3 above.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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6. COMPRESSOR RUNNING HOT

- Step 1. Check for blockage of air to fan wheel
Move any foreign object that is blocking air passage. Use compressed air to remove any accumulation of dust or dirt.
- Step 2. Check for low oil level:
Fill to proper level (LO 5-4310-348-12).
- Step 3. Check for clogged inlet filter.
Service the inlet filter (para 3-10).

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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7. COMPRESSOR RUNNING SLOW.

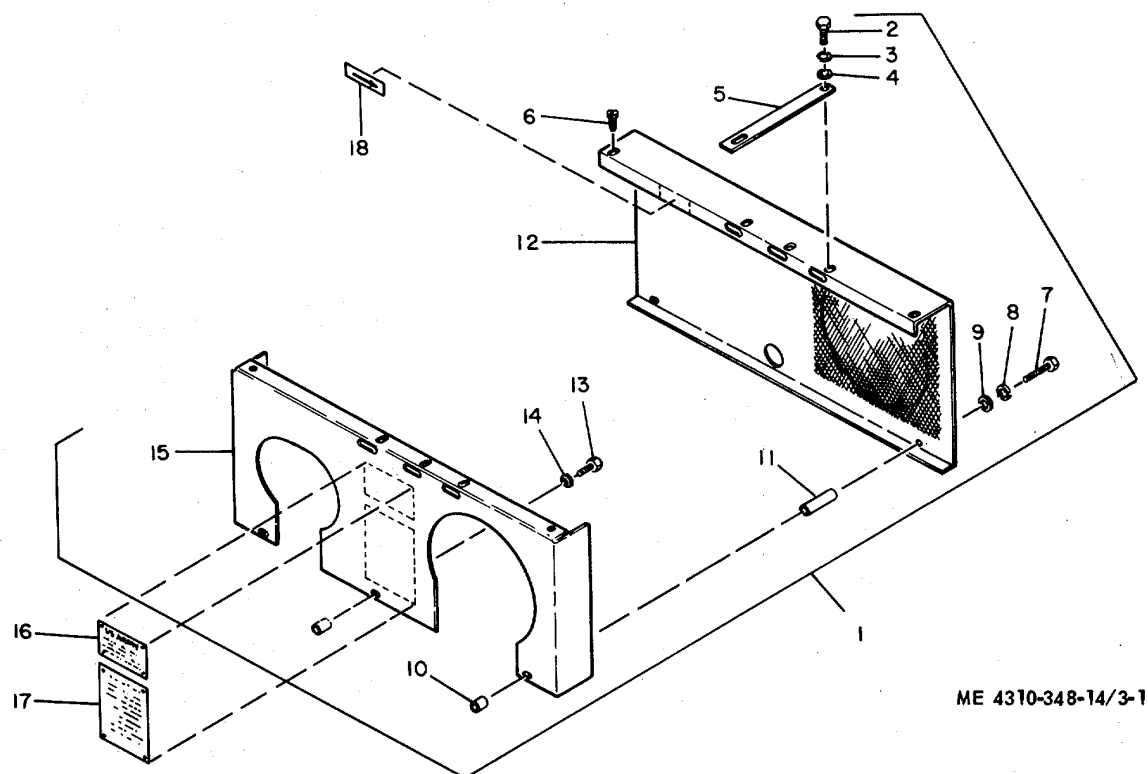
- Step 1. Check motor terminal board for loose connection.
Tighten loose terminals. Clean the terminal board with blast of air
- Step 2. Check for leaking or maladjusted pilot valve.
Adjust the pilot valve (para 3-9). If leaking, notify organizational maintenance.

Section IV. MAINTENANCE PROCEDURES

3-5. Belt Guard Assembly

a. General. The belt guard assembly (1, fig. 3-1) is a two piece guard that totally encloses the drive

belts and pulleys. The front (12) has a mesh screen covering the wheel fan opening, allowing fan to pull air in for cooling the aftercooler tube.



ME 4310-348-14/3-1

- | | | |
|-----------------------------|------------------------|--------------------------|
| 1. Belt guard assy. | 7. Capscrew (2) | 13. Capscrew |
| 2. Capscrew | 8. LOCKWASHER (2) | 14. Lockwasher |
| 3. Lockwasher | 9. Flat washer (2) | 15. Belt guard (back) |
| 4. Flat washer | 10. Spacer (2) | 16. Instruction plate |
| 5. Brace | 11. Spacer (3) | 17. Identification plate |
| 6. Thread forming screw (2) | 12. Belt guard (front) | 18. Direction arrow |

Figure 3-1. Belt guard assembly, removal and installation.

b. *Inspection.* Inspect for damage to screen, bends, dents, or other damage to belt guard panels. Check for accumulation of grease soaked dust, dirt, or other foreign matter. Remove dirty guard for cleaning. Remove a damaged guard for straightening, or replacement.

c. *Removal* Turn off power at source and lock it out.

(1) Remove capscrew (2), lockwasher (3), and flat washer (4) from brace (5).

(2) Remove two capscrews (7), lockwashers (8), and flatwashers (9). Remove the two spacers (11 and 10) from each capscrew (7).

(3) Remove two thread forming screws (6), and lift front belt guard (12) off the belts.

(4) Remove capscrew (13), lockwasher (14), then lift rear belt guard (15) off the receiver. Do not remove brace (5) from cylinder head unless damaged.

d. *Cleaning and Repair.*

(1) Clean belt guard with a rag dipped in cleaning solvent Fed. Spec P-D-680, then wipe dry.

(2) Smooth out any dents or bends. Replace the damaged part that is beyond repair.

e. *Installation.* Install the belt guard by reversing the removal procedure in c. above.

3-6. Motor

a. *Cleaning.*

(1) Remove dust and dirt from motor with compressed air. Use a cloth dampened in cleaning solvent, Fed Spec P-D-680 to wipe off the stator frame.

(2) Use the same method of cleaning on end covers and the motor starter. Refer to figure 3-2 for locations.

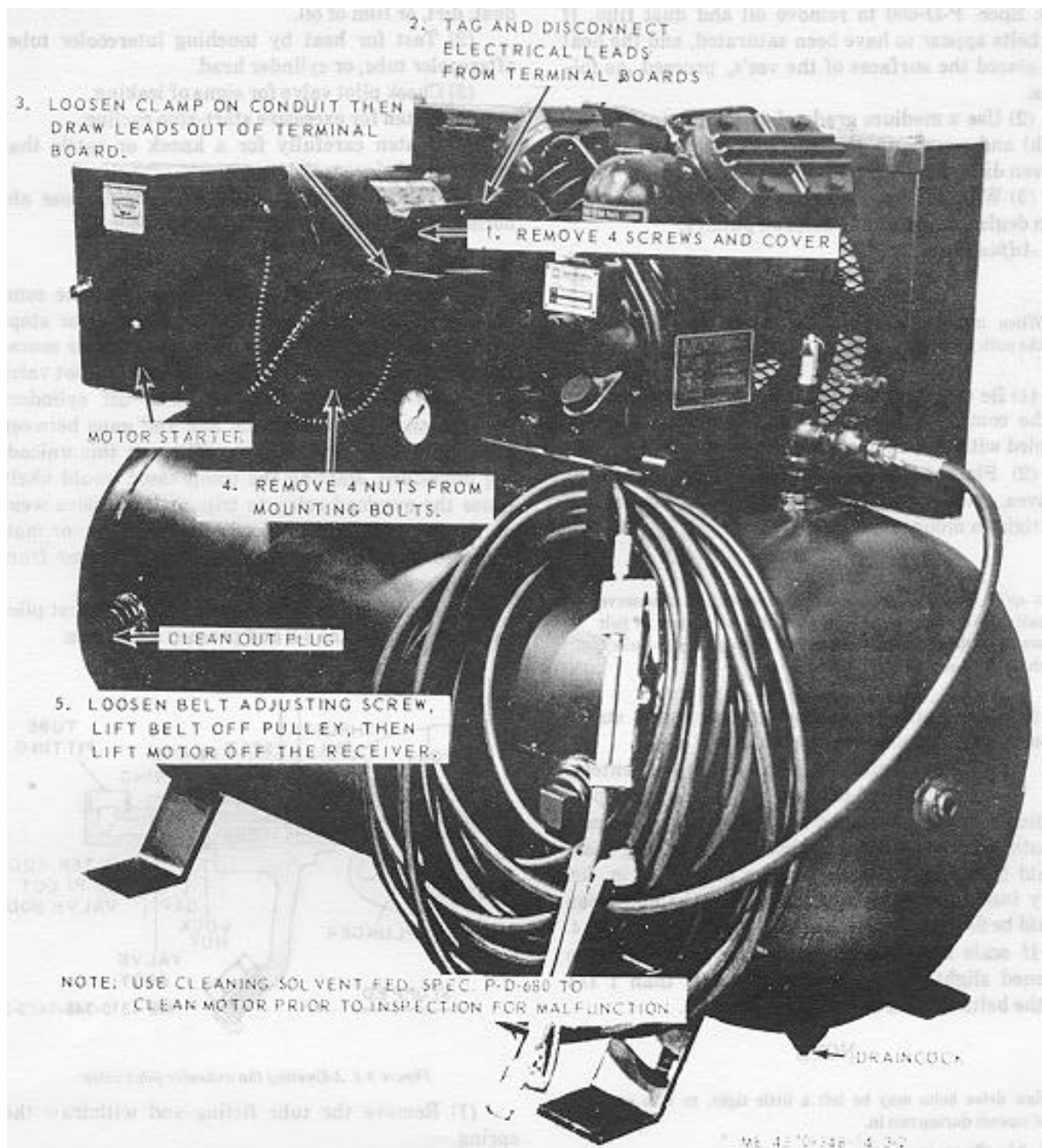


Figure 3-2. Motor, cleaning, removal and installation

b. Inspection

- (1) Inspect the shaft for movement (end play).
- (2) Notify organizational maintenance of a defective motor.

3-7. V-Belts (Matched Pair)

a. Inspection

- (1) Make a visual inspection of belts condition to determine if the belts. require removal for cleaning and

deglaing. If deglaing appears necessary, remove the back beltguard (para 3-5).

- (2) Loosen belt adjustment screw (fig. 1-2) and nuts securing. motor to receiver. Move motor toward compressor, then lift belts off of the pulleys..

b. Cleaning.

- (1) Use a cloth dampened in cleaning solvent

Fed. Spec. P-D-680 to remove oil and dust film. If the belts appear to have been saturated, and the heat has glazed the surfaces of the vee's, proceed as follows:

(2) Use a medium grade of grit paper (not emery cloth) and rough up the surfaces with strokes of ' : uneven direction.

(3) wipe off all grit particles. When surface has been deglazed, install the belts on pulleys.

c. Adjustment.

NOTE

When installing new belts, never pry the belts over the pulley grooves.

(1) Be sure that the motor has been moved' closer to the compressor, by loosening of mounting nuts,; coupled with loosening of adjusting nut.

(2) Place belts :(the matched pair) in: proper grooves, then move motor away from compressor and tighten mounting nuts.,

NOTE

A quick check for proper belt adjustment, is to observe belts while compressor is-in operation. If bottom of belt seems to droop slightly below line from pulley to pulley, the belts should be in adjustment.

(3) A measured adjustment, assuring no strain on bearings, is accomplished as -follows:

(a) Measure distance; between -pulley centers.

(b) At center -of belt span, .apply a force perpendicular to the .span, by attaching a spring scale to both belts. The force applied to the spring scale should be sufficient to deflect the belts 1/64 in. for every inch of span. If span is 36 in., the deflection should be 9/16 in, and the scale should register 11/4 lbs. If scale registers less than 1 7/8 lbs, the belt should be loosened slightly. If scale registers less than 1 1/4 lbs, the belts would be tightened slightly.

NOTE

New drive belts may be left a little tight, to take care of stretch during run in.

3-8. Air Compressor

a. *General.* The compressor unit part of the assembly, kept clean and lubricated, should be relatively free of maintenance. However, if the on-off cycles are too frequent because of heavy use, and accumulations of dust and dirt cover the frame, intercooler, or aftercooler, the compressor will run hot. Excessive heat consumes compressor oil. Low oil causes ring wear, or cylinder scoring. Therefore, frequent inspections are necessary.

b. *Inspection.*

(1) Visually inspect for excess accumulations of dust; dirt, or film of oil.

(2) Test for heat by touching intercooler tube, aftercooler tube, or cylinder head.

(3) Check pilot valve for signs of leaking.

(4) Listen for excessive start-stop cycling.

(5) Listen carefully for a knock or rattle that, might signify internal damage.

(6) When any of these inspections disclose abnormal conditions, refer to Table 3-3 above.

3-9. Pilot Valve

a. *General.* The pilot,-valve is a part of the compressor -unloading system. As the compressor stops, and the unloader weights retract, the plunger moves the thrust pin outward which unseats the pilot valve plate and allows pressure to bleed off cylinders through the pilot valve tube line and gaps between pilot valve body and its boss. With out this unload in procedure, starting the compressor would likely cause the overload relay to trip, and excessive wear on the belts and motor bearings. A leaking, or maladjusted pilot valve will keep the compressor from unloading when stopped

b. *Adjustment.* To adjust. the outside exhaust pilot valve, refer to figure 3-3 and proceed as follows:

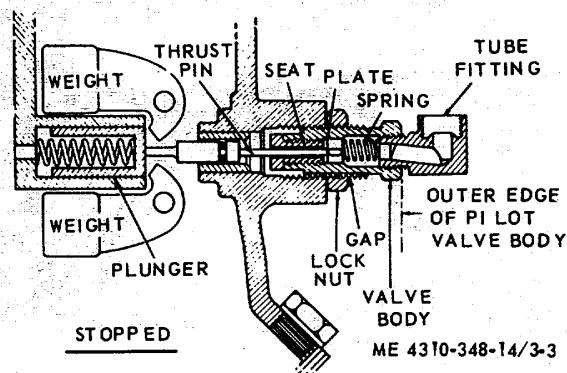


Figure 3-3. Adjusting the unloader pilot valve.

(1) Remove the tube fitting and withdraw the spring.

(2) With a small rod, push the plate in against the resistance of the thrust pin until the plate is firmly seated. Make a mark on the small rod, on a line with the outer edge of pilot valve body. Now, permit the thrust pin to push the plate away from the seat as far as it will, and mark this position, on the small rod.

(3) The correct stroke, or measurement between the two marks on the small rod, is between 0.0625 in. and 0.125 in. Should the measurement be under 0.0625 in., back off the locknut and turn -pilot valve body clockwise until measurement is at least 0.0625

in. If the distance exceeds 0.125 in., turn body counterclockwise until proper length of stroke is reached, then tighten locknut.

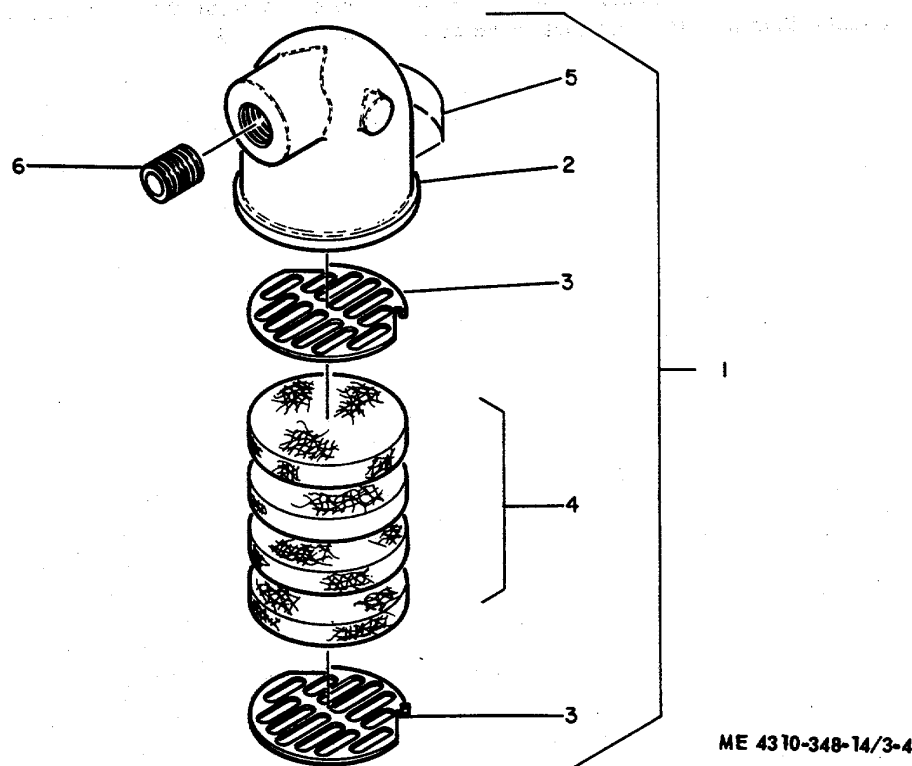
3-10. Inlet Filter

a. *General.* The inlet filter is designed to clean the air entering the first stage cylinder. Should the operating area be exceptionally dusty, it must be

served more frequently in order that the pads will collect more of the dust and minimize cylinder wear. A clogged intake filter reduces the efficiency of the compressor.

b. *Cleaning and Inspection.*

(1) Wipe off the outside and mouth of the body (2, fig. 3-4) then remove one disc (3) and four pads (4).



1. Filter complete
2. Body
3. Disc (2)
4. Pad (4)
5. Decal
6. Nipple

Figure 3-4. Inlet filter exploded view.

(2) Remove the remaining disc (3).

CAUTION

Use cleaning solvent Fed. Spec. P-D680 for cleaning. Never use gasoline or similar fluids to clean the air inlet filter.

(3) Wash inside of filter body (2) and wipe dry. Wash pads (4) and disc (3), and blow dry with low compressed air.

(4) Inspect pads for excessive wear or loss of capacity to retain dust and dirt. Replace defective pads.

(5) Position one disc (3) in body (2), then stack the four pads (4) in body. Secure pads in body with the remaining disc (3).

3-11. Air Receiver

a. *General.* The air receiver has a 60 gallon capacity and stores compressed air at a pressure between 175 and 200 psi. Compressed air, moving from first stage to second stage of the compressor through the intercooler tube, then through the aftercooler tube to the air receiver, carries moisture (condensate)

into the receiver. Frequent inspection and service is necessary.'

b. Inspection and Cleaning.

(1) Inspect the receiver for excessive accumulation of dust, and leaking or spilled compressor oil.

(2) Check air lines and the service line for leaking joints or damaged lines. Tighten loose fittings, replace a damaged line.

(3) Use compressed air to blow dust off the receiver and all components mounted thereon. Wipe off all oil spots, then dry, to avoid further accumulations.

c. Draining Condensate from Air Receiver.

(1) TURN ON-OFF switch to OFF.

(2) Open draincock at bottom of the air receiver (fig. 3-2), under the service line.

(3) When air has escaped, leave draincock open for a few minutes for more of the condensate to escape.

(4) Close draincock.

(5) Be sure that all cloths, tools, etc., have been removed from the air receiver, then move ON-OFF switch to ON.

CHAPTER 4 ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF MATERIEL

4-1. Inspecting and Servicing the Equipment

a. *General.* The compressor may have come from storage in a new or used condition. In either case, a pre-operative check must be made to assure that the equipment and its components are ready for operation without danger to equipment or personnel.

b. *Inspecting the Equipment.*

(1) Inspect the motor identification plate for current and voltage specifications, and compare with the electric service available. Check that the motor is correctly wired. Be particular about checking the wiring and voltage of a dual voltage motor.

(2) Inspect the assembly for any obviously missing parts, or damages that may have occurred during transit.

(3) Check for all parts that may have been removed and packaged separately for shipment.

(4) Inspect the drive V-belts (a matched pair). Check the adjustment (para 3-7), then turn the compressor drive wheel through several revolutions by hand. This will assure that everything is free and in working order.

c. *Servicing the Equipment.* Service the compressor frame with compressor oil.

NOTE

The motor driving this compressor has ball bearings lubricated for life. It has no grease fittings, or plugs near the bearings, and requires no lubrication.

4-2. Installation

a. *General.* The unit may be bolted to any relatively level floor or base. If such a surface is not available, an adequate base must be constructed. Should a concrete base be necessary, be certain that bolts are imbedded correctly to accept the feet of the receiver, and extend at least one inch above the base. Refer to figure 1-3 for mounting dimensions.

b. *Location.* Choose a clean, relatively cool location, if possible, and provide ample space for cooling

and general accessibility. Position belt wheel side towards a wall, leaving at least 15 inches for air circulation to the belt wheel fan.

c. *Installation.* To prevent vibration and insure proper operation, it is important that the unit be level and the receiver feet pulled down on shims in such a manner as to avoid pre-stressing the feet and receiver. Install on base as follows:

(1) Position feet over bolts, start nuts on bolts.

(2) Tighten evenly any three of the nuts, to a moderate torque, then check the unit for level. If not level, insert metal shims, or grout (fig. 4-1) under one or two of the feet to obtain level, and re-tighten the nuts.

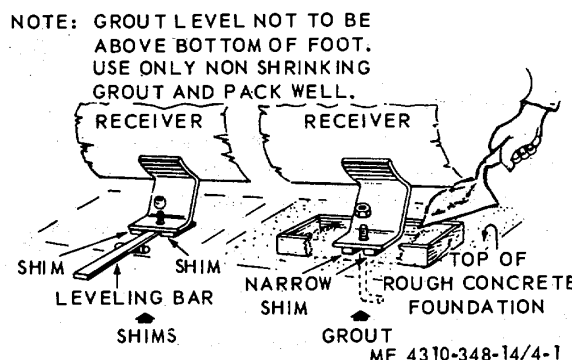


Figure 4-1. Leveling the air receiver.

(3) Check the distance the unanchored foot is elevated above the base, and insert metal shims under this foot, sufficient to provide firm support.

(4) After all shims are inserted and the unit is level, tighten nuts on all feet to a moderate (not excessively tight) torque (table 1-1).

d. *Power.* When the available power supply is equal to that required by motor (para 4-1b. above), and no other electrical equipment is on the circuit, number 8 AWG wire connected to a feeder not more than 100 feet away, will carry the load.

Section II. REPAIR PARTS, SPECIAL TOOLS, AND EQUIPMENT

4-3. Special Tools and Equipment

There are no special tools or equipment required to perform maintenance on the air compressor.

4-4. Maintenance Repair Parts

Repair parts and equipment are listed and illustrated in the "Repair Parts and Special Tools List" TM 54310-348-24P.

Section III. LUBRICATION INSTRUCTIONS

Refer to Paragraph 3-2 for lubrication instruction for this air compressor.

Section IV. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

Because all required inspections must be made daily, or more frequently, organizational maintenance

personnel will refer to table 4-1, for procedures to be followed during their periodic inspection.

Table 4-1. Organizational Preventive Maintenance Checks and Services

Q-Quarterly Total man-hours required: 0.7		
Sequence Number	Item to be inspected Procedure	Work time (M/H)
NOTE		
1	Use Tables 3-1 and 3-2 for preventive maintenance checks and services, then return to this Table for expansion of checks and services..	0.8
2	COMPRESSOR FRAME OIL Refer to LO-5-431-348-12 for type, then drain and change oil	0.2
	CAPSCREWS, SCREWS AND BOLTS Check that all capscrews, screws and bolts are tight. Use a torque wrench and tighten to the value shown in table 1-1.	0.3

Section V. TROUBLESHOOTING

4-5. General

a. This section contains troubleshooting information for locating and correcting most of the trouble that may develop in the air compressor. Each malfunction for an individual component is followed by a list of tests or inspections which will help you to determine probable causes and corrective actions to take. You should perform the tests/inspections and corrective actions in the order listed.

b. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective action, notify your supervisor.

4-6. Troubleshooting

Refer to Table 4-2 below for malfunctions, tests, or inspections, and corrective actions.

Table 4-2. Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
NOTE		
Before you use this Table be sure you have performed all operating checks.		
1. COMPRESSOR PUMPING OIL	Step 1. Check for a leaking pilot valve. Replace a leaking pilot valve-(para4-11).	Step 2. Check for a hot cylinder head. If one seems hotter than the other, there could be damaged rings on piston.. Notify direct support maintenance.
2. KNOCKS OR RATTLES		

Step 1. Check for loose belt wheel or motor pulley.
Replace motor if pulley is loose (para 3-8).

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION

Step 2. Check for leaking pilot valve, or restrictions in piping system. Rep leaking pilot valve. Replace restricted piping (para 4-11).

3. AIRDELIVERY DROPPING

Step 1. Check for air leaks in piping. Make a soapy solution with warm water. Paint on fittings and watch for signs of air leaks. Replace leaking fittings, if tightening does not stop the bubbles (para 4-13).

Step 2. Check for a leaking pilot valve. Replace a defective pilot valve (para 4-11).

Step 3. Check for restricted air passages, or leaking or broken valves.
Notify Direct Support Maintenance.

4. MOTOROVERLOAD RELAY TRIPS.

Step. 1. Check line voltage or motor terminals loose connections, or defective starter heaters. Notify Direct Support Maintenance.

5. EXCESSIVE STARTING OR STOPPING:

Step 1. Check receiver for condensate. Drain the condensate (para 3-11).

Step 2. Check for air leaks in piping, or receiver check valve leaking.
Repeat Step 1 in Paragraph 3 above.

Step 3. Check for leaking, broken, or worn pressure switch (fig. 2-1).
Notify Direct Support Maintenance.

6. COMPRESSOR RUNNING HOT.

Step 1. Check that air passage is not blocked at fan wheel.
Move any foreign object that may block ventilation.

Step 2. Test for a leaking check valve (para 4-13).
Replace a defective check valve.

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
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7. COMPRESSOR RUNNING SLOW

- Step 1. Check for low line voltage, or a defective motor starter heater.
Tighten loose terminals. If still running slow, notify Direct Support Maintenance.
- Step 2. Check for leaking or maladjusted pilot unloader valve. Tighten leaking fittings. Adjust pilot valve (para 3-9).

8. LIGHTS FLICKER WHEN COMPRESSOR RUNS.

- Check terminals of motor.
If bad connections cannot be rectified, notify Direct Support Maintenance.

Section VI. MAINTENANCE OF THE AIR COMPRESSOR

4-7. General

a. Motor. The motor is a 115/230 vac, single phase, 60 hertz, induction motor, with initial connections for 115 vac.

b. V-Belts. The V-belt drive of the air compressor consists of a matched pair of belts, and pulleys of a size designed for changing the motor speed of 1,750 rpm to a compressor speed of 610 rpm.

c. Air Compressor. The air compressor is a two stage, two cylinder compressor mounted on top of the air receiver. It is air cooled, by an intercooler between 1st and 2nd stage cylinders, and an aftercooler between 2nd stage and the receiver. It has an unloader and pilot valve to relieve internal pressure when the compressor is stopped. There is a breather tube between compressor frame and the inlet filter (inboard side). This connection permits pulsations, created by the reciprocating action of the pistons, to be vented to the atmosphere. This eliminates any pressure build up within the frame.

d. Pilot Valve. When the pilot valve plate is unseated by action of the centrifugal unloader, it permits pressure to bleed from the compressor and discharge line. The cylinders and the intercooler are also relieved of all pressure while the compressor is stopped.

e. Inlet Filter. The inlet filter cleans the air entering the first stage cylinder. Frequent cleaning, the time period depending on environment, is necessary to insure capacity output of the compressor.

4-8. Motor Removal and Installation

a. Removal. Refer to figure 3-2 and remove the motor. Replace nuts on capscrews lightly for safekeeping.

b. Installation. Remove nuts from capscrews that were put there for safekeeping, then refer to figure 3-2 and install motor by reversing the removal procedure.

4-9. V-Belt (Matched Pair) Replacement

a. Removal

(1) Turn off compressor power at source, and lock it out.

(2) Remove front belt guard (para 3-5).

(3) Loosen nuts on motor mounting capscrews (fig. 3-2). Loosen belt adjusting screw, then move the motor toward the compressor.

(4) Lift belts off the pulleys.

b. Cleaning and Inspection. Cleaned inspect the belts as described in paragraph 3-7. Replace defective belts.

c. Installation.

NOTE

Never pry new belts over edges of pulley grooves. Be sure motor has been moved toward compressor so that belts fit easily over the pulleys.

(1) Clean grooves in belt pulleys to be sure no oil or dust remains to damage new belts.

(2) Place belts in their proper grooves, then move motor away from compressor until belts are nominally tight. Tighten mounting nuts.

(3) Visually check bottom line of belts for a slight droop between pulley centers. If this droop is there, belts should be in adjustment.

(4) If no droop is seen, the belts may be too tight. Adjust by measurement and scale method described in paragraph 3-7 above.

(5) When belts are adjusted, reinstall the front belt guard (para 3-5).

(6) Unlock and turn on power at source.

4-10. Air Compressor Replacement

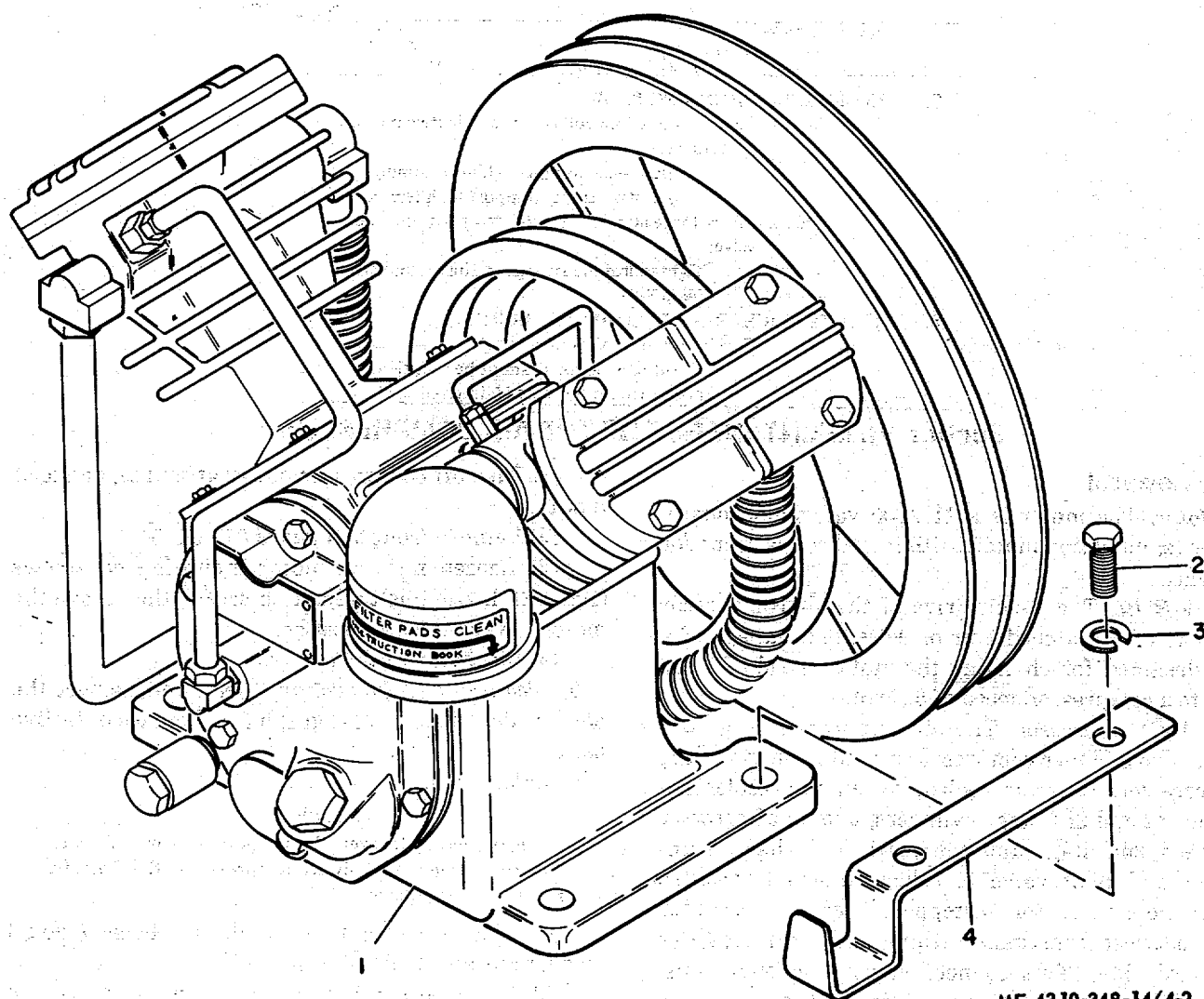
a. Inspection. Inspect the air compressor as described in paragraph 3-8.

b. Removal

(1) Turn power off at source and lock it out.

(2) Remove belt guard (para 3-5), belts (para 4-9), then close air line shutoff valve (fig. 1-1) and remove the service line. Disconnect aftercooler from check valve in the air receiver.

(3) Remove 4 capscrews (2, fig. 4-2), lockwashers (3) and air line hose support (4).



1. Air compressor,
2. Capscrew (4)
3. Lockwasher.(4)
4. Hose support

Figure 4-2. Air compressor, removal and installation

(4) Lift the air compressor (1) off the air receiver.

c. Installation.

(1) Check that the air compressor is completely assembled and that fan wheel is properly installed.

(2) Position compressor on the air receiver.

(3) Position hose support (4, fig. 4-2) on base of frame and secure with two lockwashers (3) and capscrews (2).

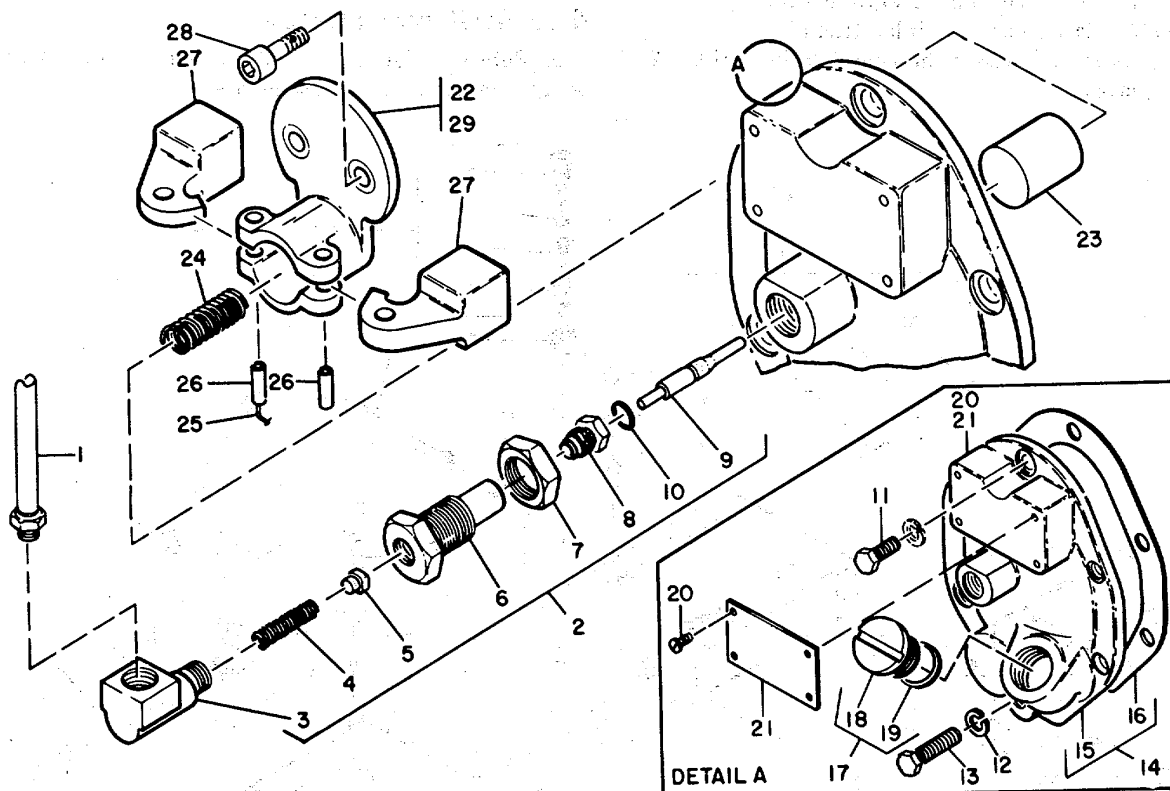
(4) Install the two remaining lockwashers (3) and capscrew (2) in base of compressor. Tighten the four mounting capscrews to the torque value given in table 1-1. Connect aftercooler to check valve in air receiver (fig. 4-41).

(5) Install V-belts:(para 4-9 above).

4-11. Pilot Valve Replacement

a. Removal.

(1) Disconnect tube (1. fin. 4-3).



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- | | | |
|----------------|----------------------|-----------------------------|
| 1. Tube | 11. Capscrew (5) | 21. Identification plate |
| 2. Pilot valve | 12. Washer, steel(6) | 22. Crank pin cap, complete |
| 3. Elbow | 13. Capscrew | 23. Plunger |
| 4. Spring | 14. Cover, frame end | 24. Spring |
| 5. Plate | 15. Cover- | 25. Lockwire |
| 6. Body, | 16. Gasket | 26. Pin (2) |
| 7. Locknut | 17. Plug, oil filler | 27. Weight (2) |
| 8. Seat | 18. Plug | 28. Screw, hex, socket(2) |
| 9. Thrust pin | 19. Packing | 29. Cap, crank pin |
| 10. Packing | 20. Stud, drive (4) | |

Figure 4-3. Pilot valve, removal and installation

(2) Remove elbow (3), spring (4), plate (5), and body (6).

(3) Remove locknut (7), seat (8), and the thrust pin (9).

(4) Remove the preformed packing (10) from the thrust pin (9).

b Cleaning and Inspection.

(1) Clean all parts and Ripe dry with a lint free cloth.

(2) Check the spring (4) for disfiguration, or loss of tension. Replace a defective spring.

(3) Check that the plate (5) is not worn, or bent out of shape. Replace a defective plate.

(4) Check body (6) and seat (8) for burred threads. Check the thrust pin (9) for excessive wear, or bend that will keep plate unseated.

(5) Replace a deteriorated preformed packing

c Installation

(1) Position Preformed packing (10) on thrust pin, then place thrust pin (9) through seat (8).

(2) Screw the locknut on body (6), place seat (8) in body, then position pin, seat, and body in the frame end plate.

(3) Position plate (5) against thrust pin (9).

(4) Adjust the pilot valve (pare 3-9).

4-12. Inlet Filter Replacement

a Removal. Unscrew the complete inlet filter (2), fig. 3-4) from nipple (6).

b Disassembly, Cleaning, Repair, and Reassembly

(1) Disassemble, clean, repair, and reassemble

the

inlet filter as described in paragraph 3-10.

(2) Replace a defective inlet filter (2).

c *Installation.* Screw the complete inlet filter (2) on nipple (6).

4-13. Air Receiver Repair

a. Refer to figure 4-4 and remove the defective components in numerical sequence.

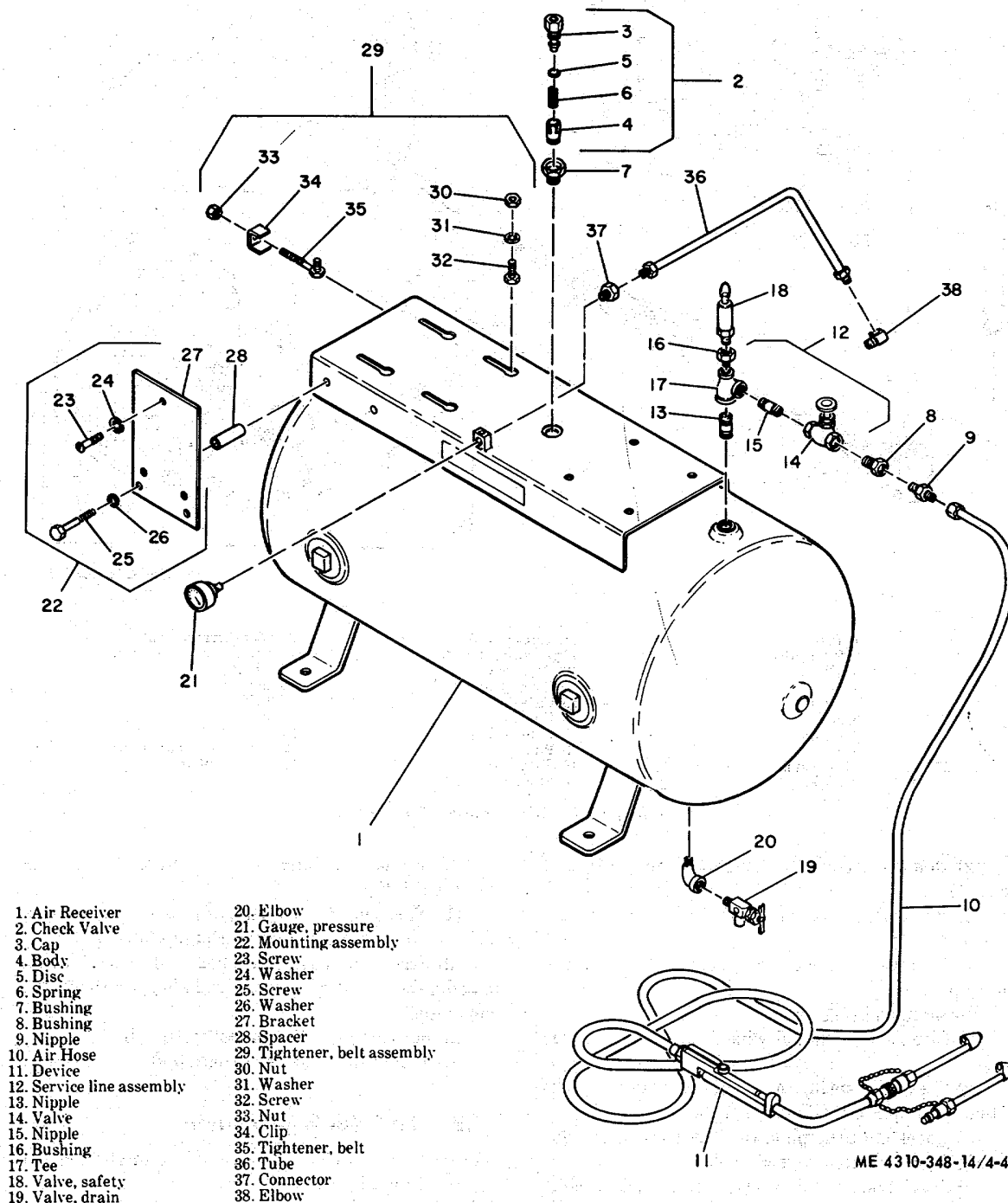


Figure 4-4. Air receiver repair.

b. If the check valve (2) has a steel cap, it can be disassembled for cleaning as follows:

(1) Force the point of a screwdriver between the steel cap and threaded body, loosen, then remove cap, spring and disc.

(2) Clean interior of body, inspect disc for corrosion, or dirt particles. Remove dirt particles, and check that the lapped surface of disc seats perfectly against bottom of valve body.

(3) Inspect spring for break or weakness.

(4) When components are defective, replace the check valve.

(5) Reassemble check valve by placing lapped surface of disc toward bottom of valve body, inserting spring in the cap, then snap the cap into position on valve body.

c. Replace defective components in reverse order of their removal.

CHAPTER 5

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

Section I. REPAIR PARTS SPECIAL TOOLS AND EQUIPMENT

5-1. Special Tools and Equipment

There are no special tools, or equipment, required for maintenance of the air compressor assembly.

5-2. Maintenance Repair Parts

Repair parts and equipment covering direct and general support maintenance of the air compressor assembly are listed and illustrated in TM 5-4310-348-24P

Section II. TROUBLESHOOTING

5-3. General

a. This section contains troubleshooting information for locating and correcting most of the trouble that may develop in the air compressor. Each malfunction for an individual component is followed by a list of tests or inspections which will help you determine probable causes and corrective actions to take. You should perform the tests/inspections and corrective actions in the order listed.

b. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by the listed corrective action, notify your Supervisor.

5-4. Troubleshooting

Refer to table 5-1 below for malfunctions, tests or inspections, and corrective actions.

Table 5-1. Troubleshooting

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

NOTE

Before you use this Table, be sure you have performed all operating checks.

1. COMPRESSOR PUMPING OIL.

Step 1. Check cylinders or piston for wear, scratches or scoring.

Replace defective cylinder or piston (para 6-6).

Step 2. Check for piston rings broken, or not seated in.

Replace piston rings (para 6-6).

2. KNOCKS OR RATTLES.

Step 1. Check for carbon on top of piston.

Remove air heads and check piston (para 6-6).

Step 2. Check for loose, broken, or carbonized air finger valves.

Separate air heads from spacers and look finger valves over carefully (para 6-6).
Replace defective finger valves (para 6-6).

Step 3. Check for worn or scored connecting rod, piston pin, or crank pin bushings.

Replace defective parts (para 6-6).

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

3. AIR DELIVERY DROPPING.

Step 1. Check for leaking, broken, carbonized or loose finger valves.

Tighten or clean leaking or carbonized valves. Replace defective valves (para 6-6).

Step 2. Check for scratched, worn or scored cylinders or pistons.

Replace defective cylinder or piston (para 6-6).

Step 3. Check for piston rings broken or not seated in.

Replace damaged piston rings (para 6-6).

4. MOTOR OVERLOAD RELAY TRIPS.

Step 1. Check line voltage.

Tighten loose connections. Replace defective fuses.

Step 2. Check for leaking, broken, or carbonized valves, or restricted air passages.

Remove restriction from air passages. Repeat Step 1 of Paragraph 3 above.

5. EXCESSIVE STARTING OR STOPPING.

Step 1. Check the receiver check valve for defect.

Remove check valve, disassemble and blow any dirt, dust, or blockage from seat. Replace a defective check valve (para 4-13).

Step 2. Check pressure switch for wear.

Replace a defective pressure switch (para 64).

6. COMPRESSOR RUNNING HOT.

Step 1. Check for blockage of air to fanwheel.

Remove any restriction to flow of air to fanwheel.

Step 2. Check for defective check valve in receiver.

Repeat Step 1 of Paragraph 5 above.

Step 3. Check for leaking, broken, carbonized, or loose valves.

Repeat Step 2 of Paragraph 4 above.

Step 4. Check for motor rotation.

Look at directional arrow at upper left of belt guard and see that belts are moving in that direction.

7. COMPRESSOR RUNNING SLOW.

Step 1. Check for low line voltage, or a defective starter heater.

Tighten loose connections. Replace a defective motor starter or heater (para 6-3).

Step 2. Check for leaking or maladjusted centrifugal unloader pilot valve.

Tighten a loose, leaking valve seat. Replace a defective valve (para 4-11).

Section III. GENERAL MAINTENANCE

There are no requirements for listing in this section.

Section IV. REMOVAL AND INSTALLATION OF MAJOR COMPONENTS

The major components of this air compressor assembly are removed and installed at lower levels of maintenance.

CHAPTER 6

REPAIR INSTRUCTIONS

Section I. ELECTRIC MOTOR AND COMPONENTS

6-1. General

The drive unit is a two horse power, 1 750 rpm, .115/ 230 volt ac, single phase, 60 hertz induction motor for horizontal mounting, with a type 182T frame and a drip proof enclosure" It is controlled -by a motor starter with heater and overload relay, plus a pressure switch nominally set to turn motor ON at 175 psi, and OFF at 200 psi plus or minus 5 psi. The motor is equipped with a two-groove belt pulley. This pulley is matched to the fanwheel pulley of compressor, and turns the compressor at 610 rpm.

6-2. Electric Motor Repair

- a. *Removal.* Refer to paragraph 4-8 and remove the motor
- b. *Disassembly.* Refer to figure 6-1 and disassemble the motor in numerical sequence.
- c. *Cleaning, Inspection, and Repair.*

(1) Clean all parts except rotor, bearings and stator in cleaning solvent Fed. Spec. P-D-680 and wipe dry with a lint free cloth.

(2) Use compressed air to clean dust and, dirt off rotor, bearings and stator, then wipe with a cloth dampened in solvent Fed Spec P-D-680.

(3) Inspect bearings and rotor shaft for excessive wear and rough or scored surfaces. Replace defective bearings. Replace a defective rotor shaft.

d. *Reassembly.* Reverse the procedures in b. above and reassemble the motor. Tighten all nuts to torque value shown in table 1-1.

e. *Installation.* Refer to paragraph 4-8 and install the motor.

6-3. Motor Starter Replacement

a. *Removal.* Refer to figure 6-2 and remove the motor starter.

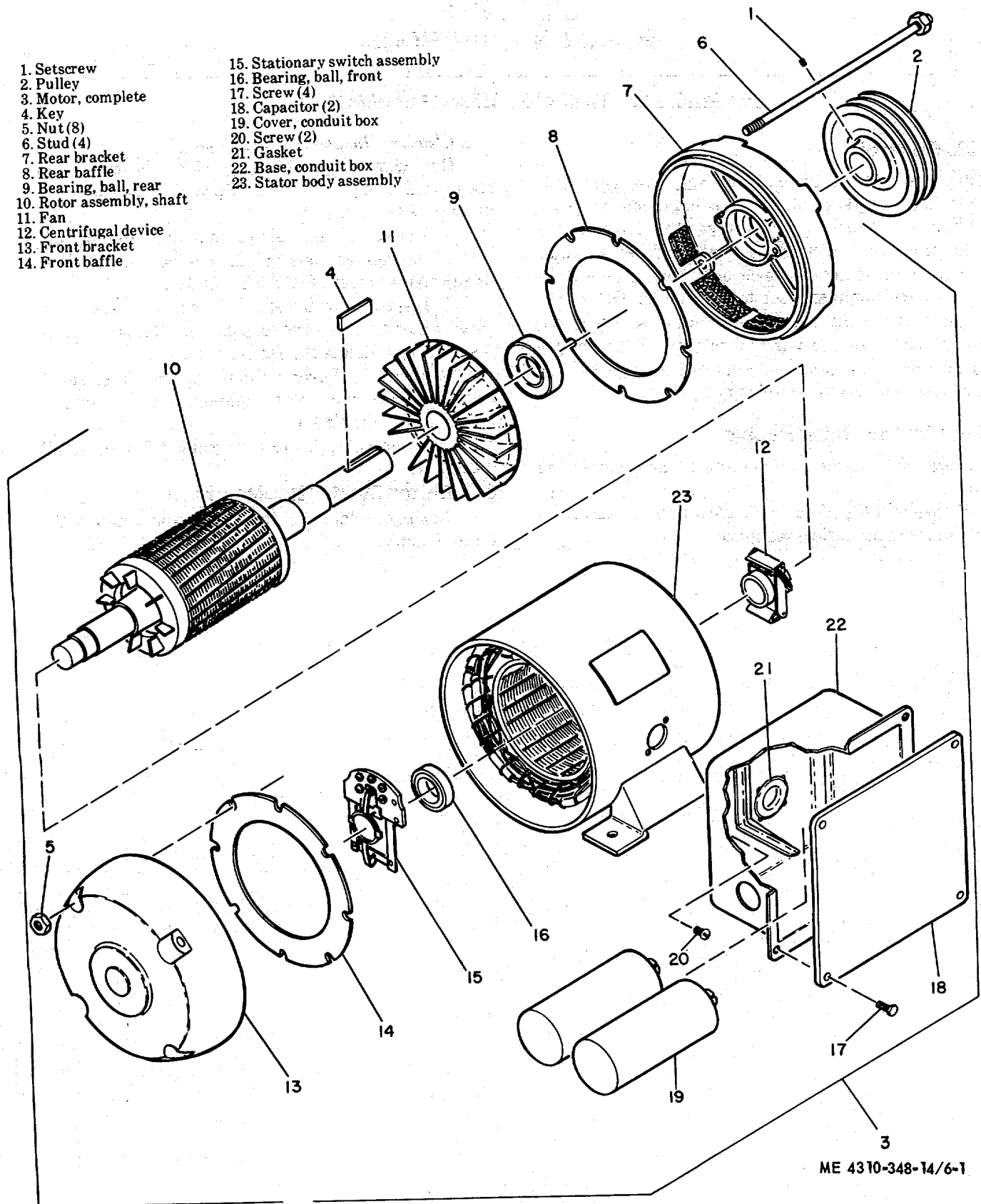


Figure 6-1. Electric motor, exploded view.

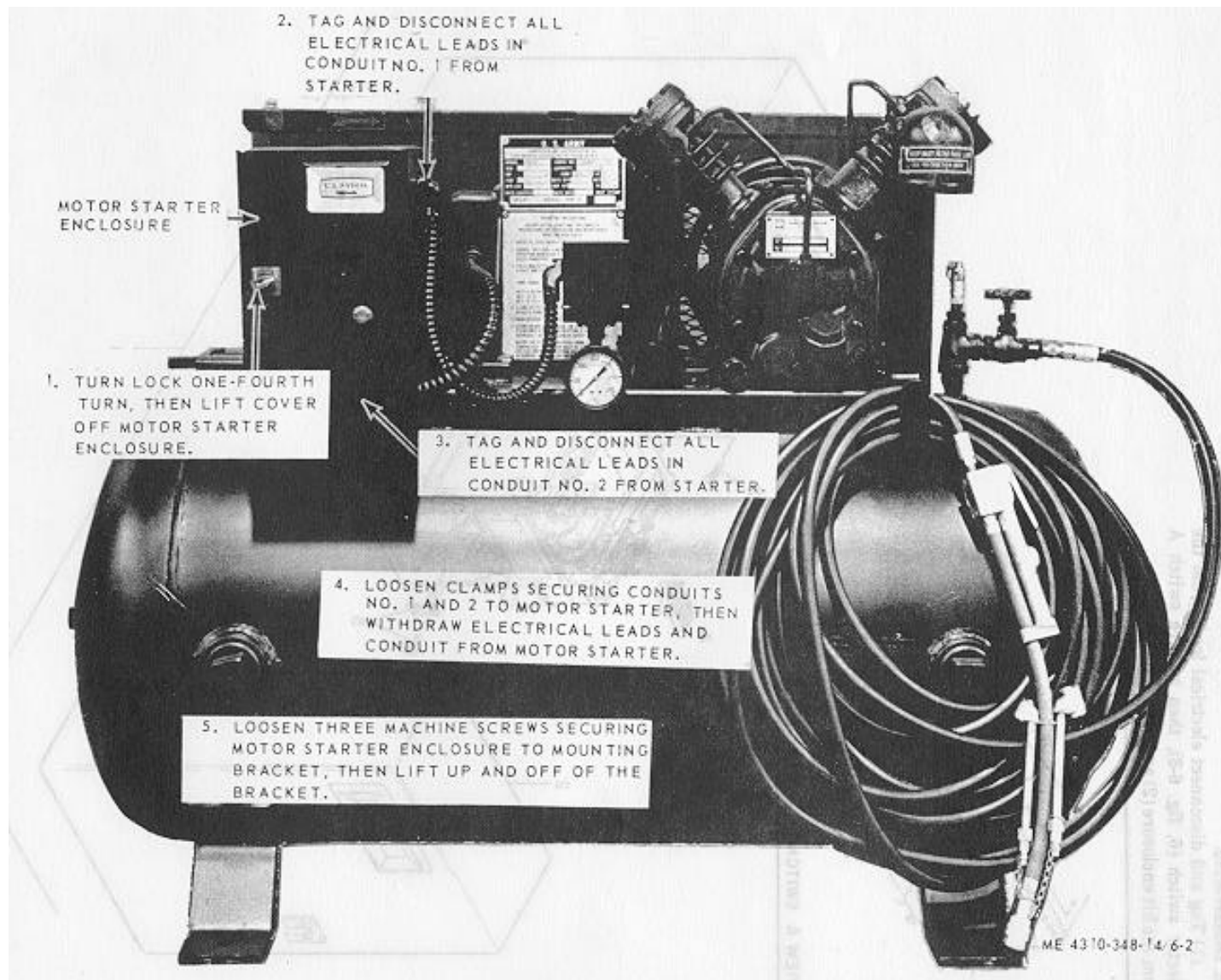
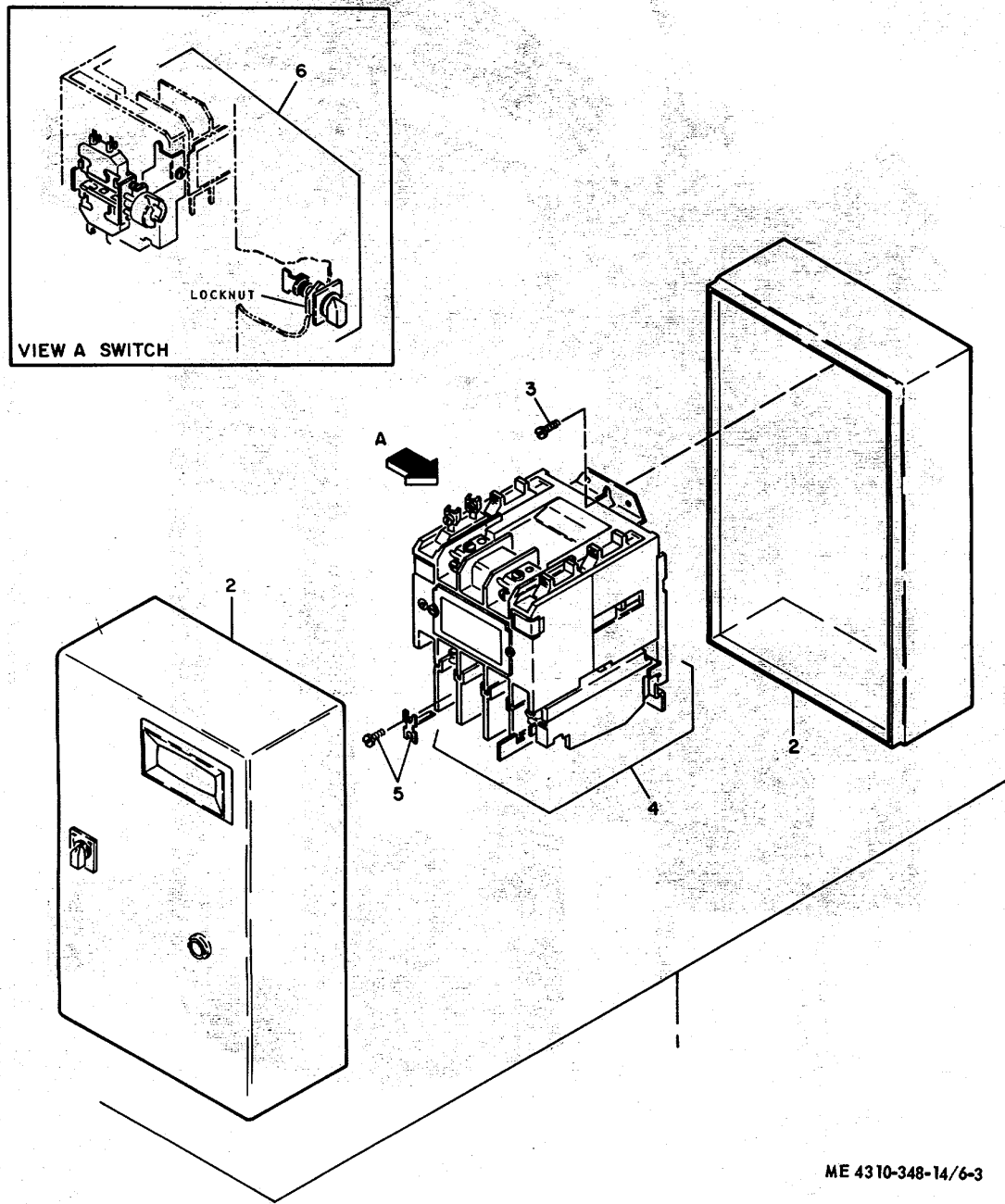


Figure 6-2. Motor starter, removal and installation.

b. Disassembly.

(1) Tag and disconnect electrical leads from the selector switch 6, fig. 6-3), then remove switch A from the kit enclosure (2) and open starter (4).



- | | |
|----------------------------|-------------------------|
| 1. Motor starter, complete | 4. Starter, open |
| 2. Kit, enclosure | 5. Element, heater |
| 3. Screw, mounting | 6. Kit, selector switch |

Figure 6-3. Motor starter .

(2) Loosen screw and remove heater element (5) from the open starter (4).

(3) Remove mounting screw (3), then lift the open starter (4) from the enclosure(2).

(4) Remove locknut from stem of selector switch knob, then remove knob from enclosure cover(2)

c. Cleaning, Inspection, and Repair.

(1) Use compressed air and remove all dust or dirt from motor starter components.

(2) Check continuity of heater element-and the, open starter. Replace a defective open starter or heater element.

(3) Check selector switch continuity and stem action. Replace a defective selector switch.

d. Reassembly. Assemble the motor starter by reversing the procedures in Steps (1) through (4) of b. above. Be sure all electrical connection are tightened firmly and securely.

e. Installation. Refer to figure 6-2 and reverse the - removal procedure to install the motor starter.

6-4. Pressure Switch

a. Removal.

(1) Release pressure from the air receiver.

(2) Refer to figure 6-4 and remove the pressure switch from the air receiver.

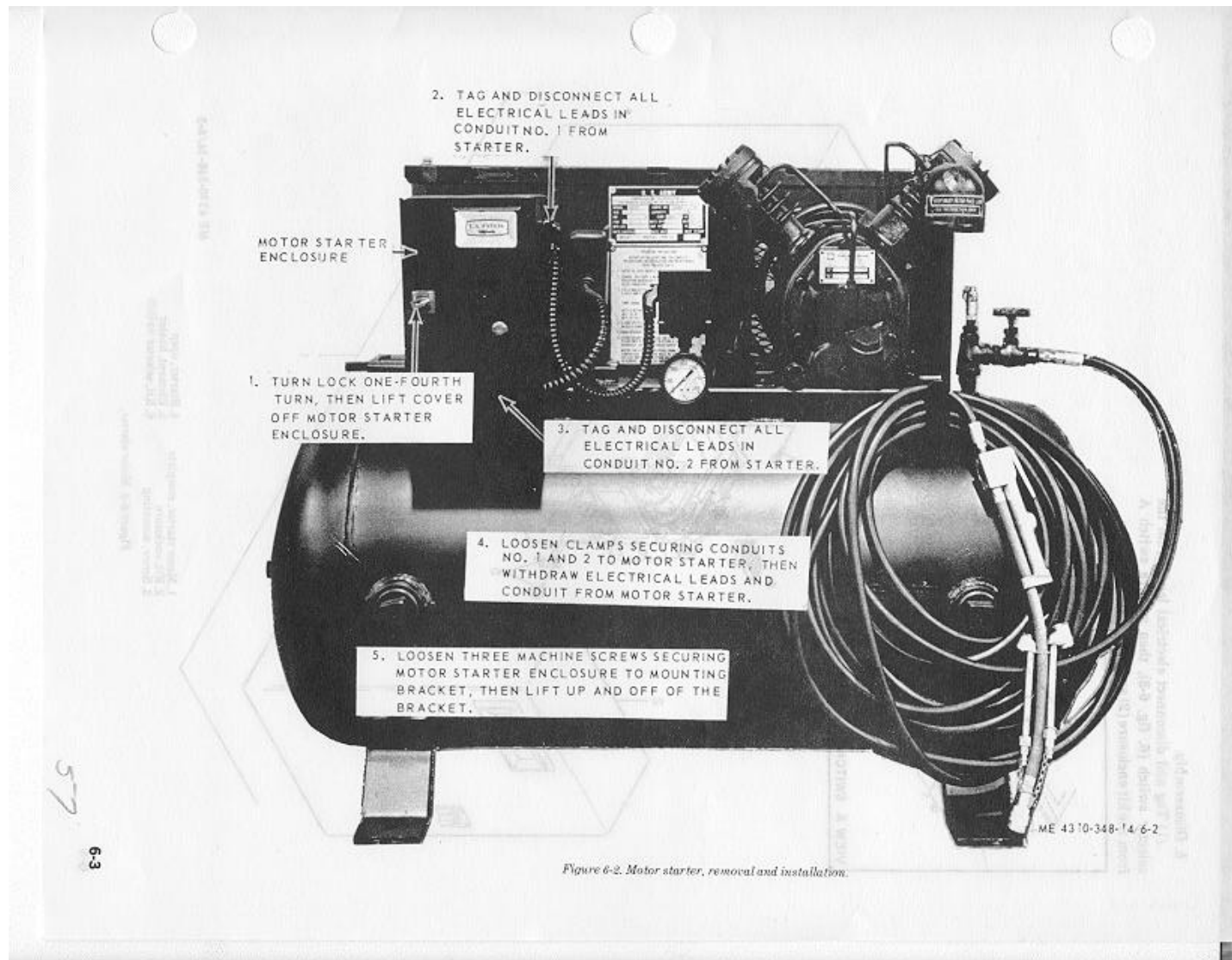
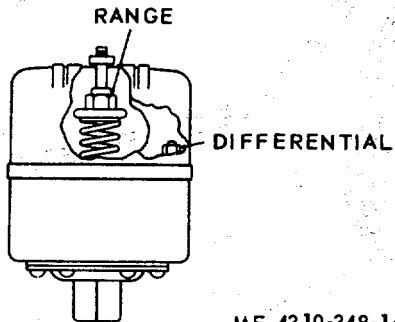


Figure 6-4. Pressure switch, removal and installation.

b. *Installation.* Refer to figure 6-4 and reverse the removal procedures to install the pressure switch.

c. *Adjustment.* The pressure switch has a cut-out adjustment and a differential adjustment. The cut-out is the pressure at which the switch contacts open, and the differential is the span between the cut-in and cut-out settings.



NOTE

There is interaction between these two adjustments. If the cut-out is increased, so will the differential increase. Or, if the differential is reduced, the cutout will be reduced. This factor must be considered, and compensated for when adjusting.

(1) Increase the cut-out point by turning the range nut (fig. 6-5) clockwise.

(2) Decrease the cut-out point by turning the range nut counterclockwise.

(3) Note the pressure gage readings at which the motor starts or stops. Re-establish the differential setting if necessary.

(4) Increase the differential by turning the differential (fig. 6-5) nut clockwise. Turning the nut counterclockwise decreases the span.

NOTE

It is advisable to have as wide a differential as possible to avoid frequent starting and stopping of the compressor.

Section II. AIR COMPRESSOR

6-5. General

The air compressor is a 2-cylinder, 2-stage air cooled compressor. It has a capacity of 5 cfm at 610 rpm, and the electric motor drive cuts-in at 175 psi. The compressor stops when the air pressure gage indicates 200 psi, plus or minus 5 psi. The compressed air is cooled by a finned inter-cooler tube between the first stage cylinder and the second stage cylinder. The second stage compression is cooled by an aftercooler tube on its way to the air receiver. These tubes remove most of the heat of compression before the air reaches the receiver. The compressor is equipped with a centrifugal unloader and pilot valve system, to unload/ internal pressure for

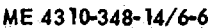
ease in starting, and to minimize wear on bearings and shaft of the drive motor.

6-6. Air Compressor

a. *Removal* Refer to paragraph 4-10 and remove the air compressor.

b. *Disassembly.*

(1) Refer to figure 6-6 and remove fanwheel, aftercooler, and the intercooler in numerical sequence.



8. Brace
9. Aftercooler tube
10. Elbow, tube (2)
11. Intercooler tube
12. Pipe plug
13. Elbow, tube
14. Elbow, tube

Figure 6-6. Fanwheel aftercooler. and intercooler removal

(2) Refer to figure 4-3 and remove the pilot valve, centrifugal unloader, and frame end cover in numerical sequence.

(3) Refer to figure 6-7 and remove the low pressure cylinder, piston, rod, and rings, in numerical sequence.

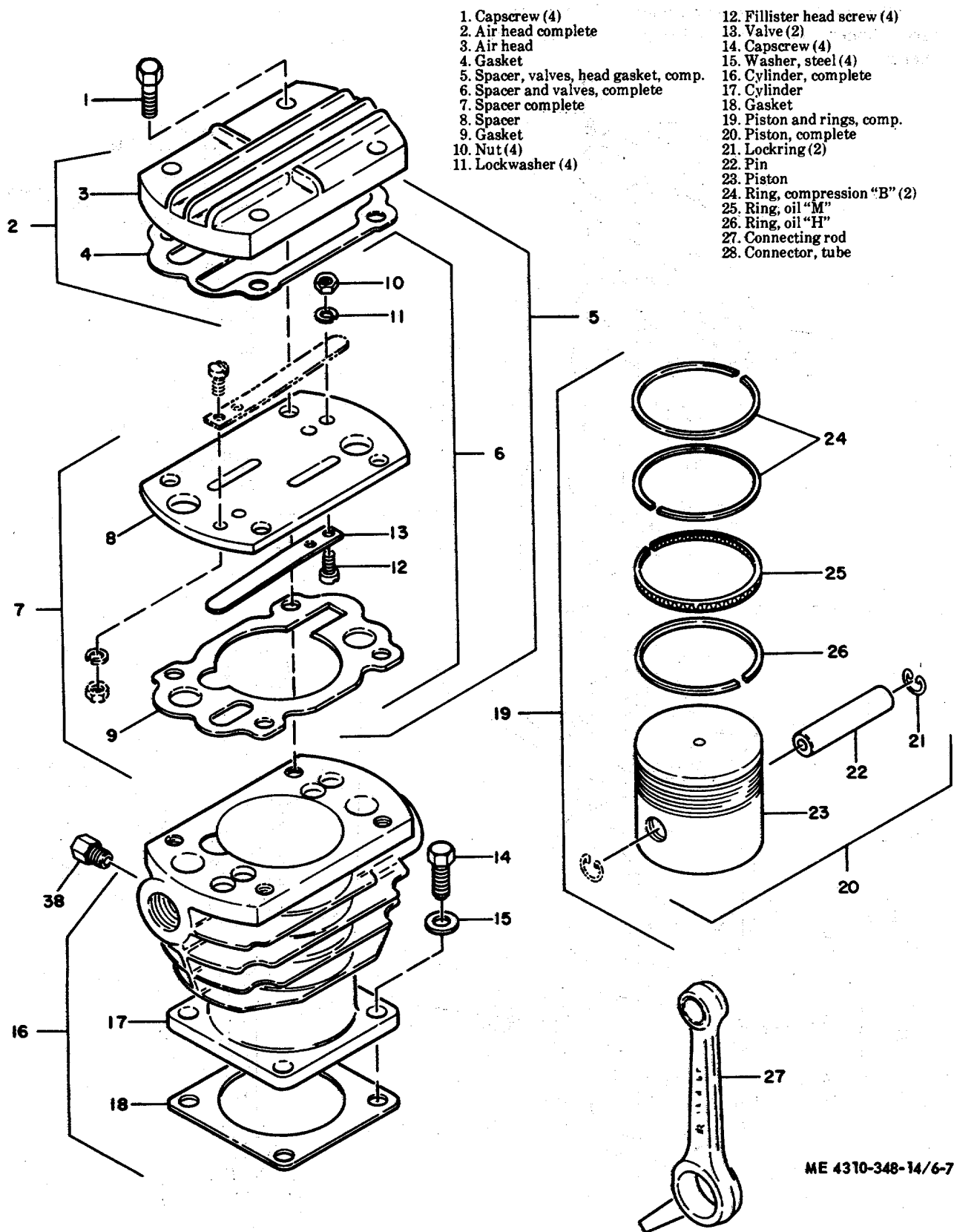


Figure 6-7. Low pressure cylinder, piston, rod, and rings removal

(4) Refer to figure 6-8 and remove the high pressure cylinder, piston, rod, and rings in numerical sequence.

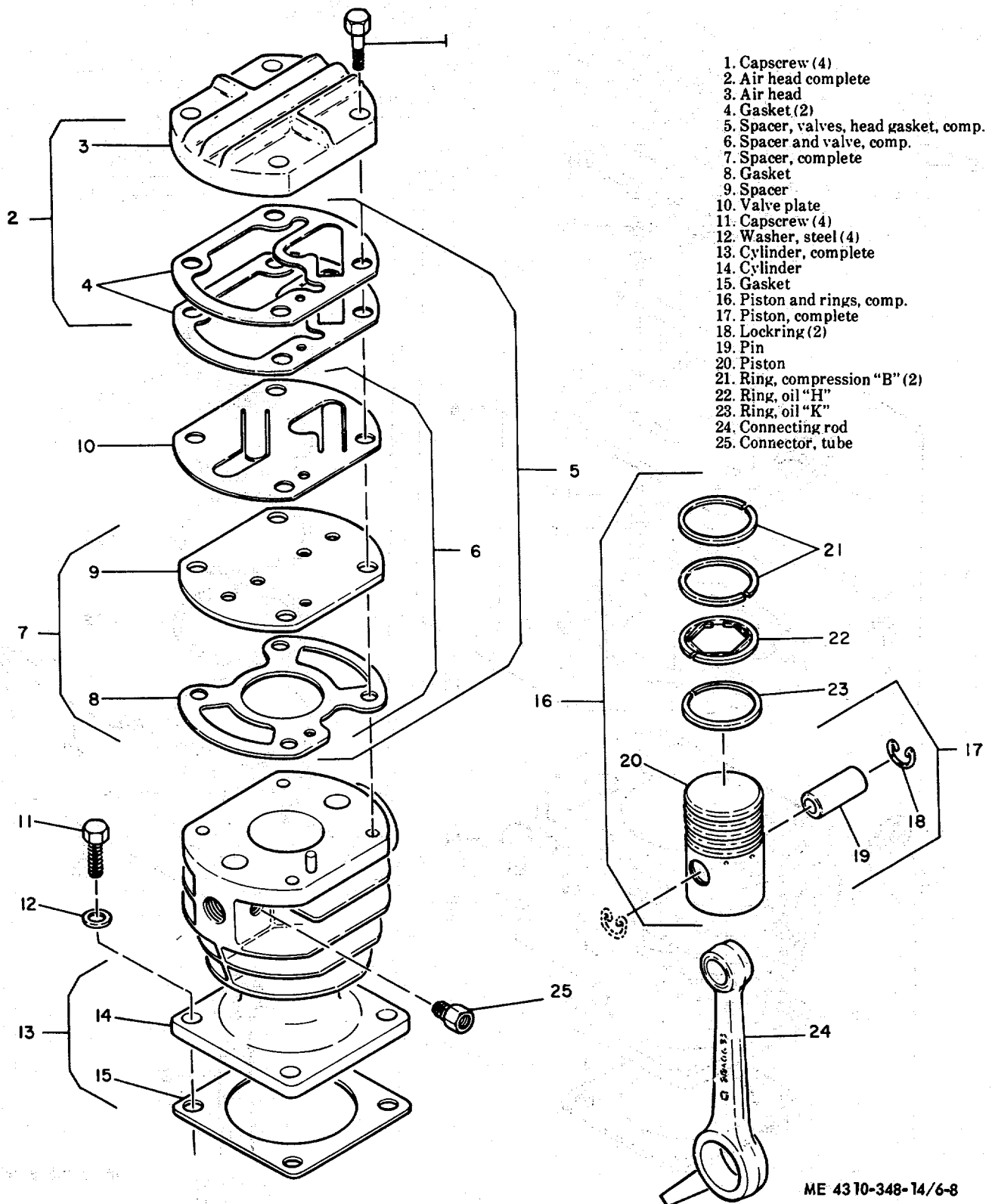
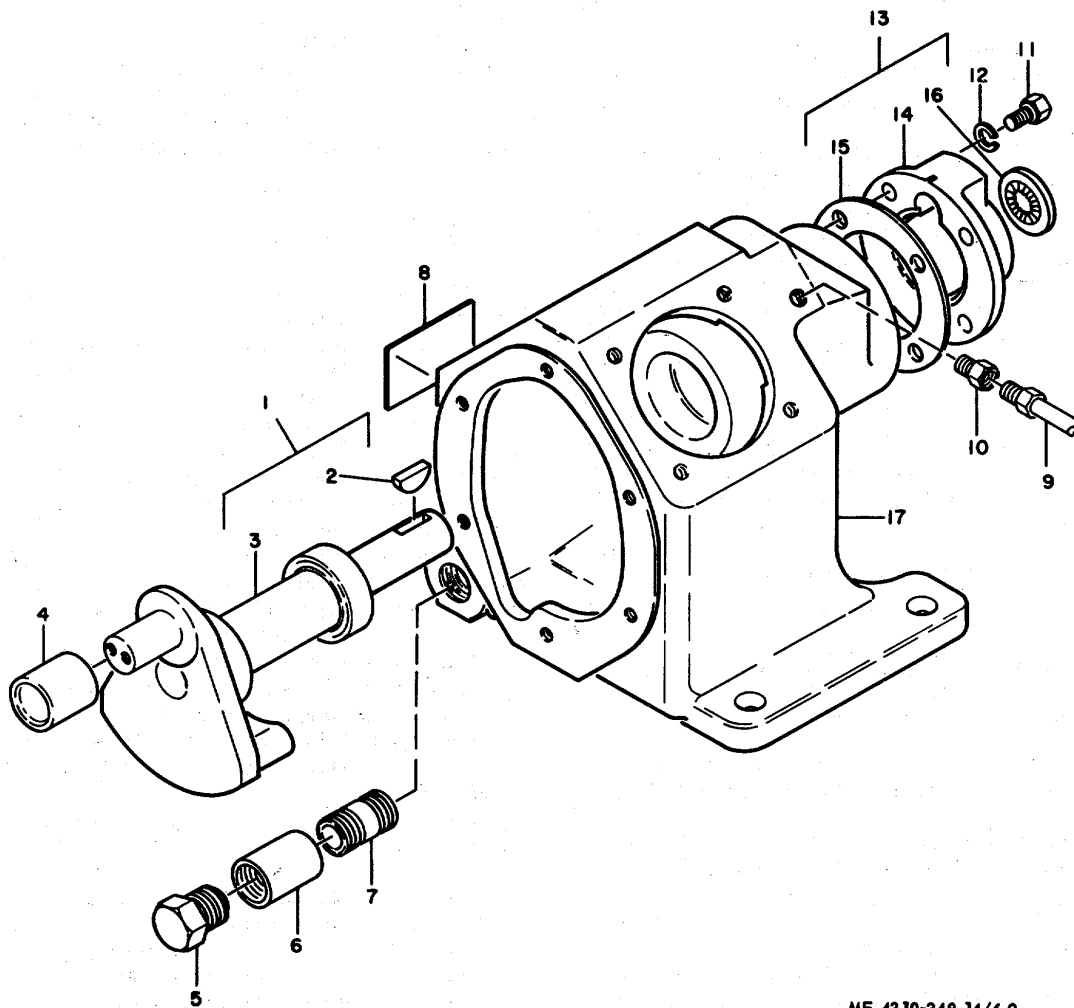


Figure 6-8. High pressure cylinder, piston, rod, and rings removal .

(5) Refer to figure 6-9 and remove the crankshaft assembly in numerical sequence. Do not remove decals.



ME 4310-348-14/6-9

- | | |
|-------------------------|-----------------------------|
| 1. Crankshaft, complete | 9. Breather tube |
| 2. Woodruff key | 10. Connector, tube |
| 3. Crankshaft-assembly | 11. Capscrew (4) |
| 4. Bushing, crankpin | 12. Washer, steel (4) |
| 5. Nipple, pipe | 13. Cover, shaft end, comp. |
| 6. Coupling, pipe | 14. Cover, shaft end |
| 7. Plug, pipe, hex head | 15. Gasket |
| 8. Decal, instruction | 16. Seal, shaft end oil |
| | 17. Frame, compressor |

Figure 6-9. Crankshaft assembly, removal.

c. *Cleaning, Inspection, and Repair.*

(1) Thoroughly clean the air heads by brushing or scraping lightly to remove accumulations of carbon deposits, being careful not to damage gasket surfaces. Be sure the gasket surface is free of all gasket particles.

(2) Use solvent Fed Spec P-D-680 and wash away all accumulated oil. Be sure bore of cylinder is clean, and that all gasket particles are removed from surfaces to be gasketed.

(3) Wash pistons in P-D-680 solvent and remove all accumulated oil or carbon. Pay particular attention to the ring grooves. Be sure that oil return holes in the oil control wiper ring grooves are open, and that grooves themselves are absolutely clean.

(4) Inspect the cylinder bore for any signs of scoring or scuffing. If the cylinder bore shows signs of wear or scoring, as indicated by visible ridging-at the end of ring travel, it must be replaced (see (6) below).

(5) Inspect the piston for signs of scoring, or for any indication of cracked or broken lands. If these signs are found, replace the piston. If piston shows no signs of scoring, or cracked or broken lands, check the condition of ring grooves for signs of excessive wear. A tapered ring groove would result in excessive clearance, and that piston should be replaced.

NOTE

If new ring sets are to be installed on pistons, and the old cylinder is going to be re-used, the cylinder walls must be de-glazed, or slightly roughened to provide a proper seating-in surface for the new piston rings.

(6) Cylinders that passed inspection in (4) above, and are to be re-used, must be de-glazed as follows:

(a) Use a No. 80 grit abrasive cloth dampened in oleum spirits, or solvent Fed. Spec. P-D-680, and move it over the surface of the bore in a rotating and reciprocating motion with a very light pressure.

(b) After de-glazing, the cylinder wall should be thoroughly cleaned with a hot soapy solution, using a good stiff bristle (not wire) brush. Rinse thoroughly with hot water then check cleanliness of the bore by wiping with a soft white paper cloth. If the paper shows more than a slight discoloring, the cylinder has not been properly cleaned.

(7) Wash the oil reservoir portion of the frame, being sure that accumulations of oil and sludge are removed. Clean gasket surfaces for cylinders and end covers. Be sure no particles of old gaskets remain on the surfaces.

(8) Clean the air valves in solvent Fed. Spec. P-D680. Clean both valve and seat by brushing with a stiff bristle (not wire) brush. Should it be necessary to scrape carbon or sludge, do so lightly-with something soft, like a square edge piece of hardwood. This will prevent marring of valve or seating surface.

(9) Clean thoroughly, then inspect bearings for signs of wear, or roughness. If bearings are worn, rough, or have other damage, replace the crankshaft assembly.

(10) Clean the unloader parts (fig. 4-3) thoroughly, then inspect weights and pins for a free fit.

d. *Reassembly.* Position the compressor frame (crankcase) on workbench. Fasten it down so it will not tip over when weight is added by assembly.

NOTE

Install new gaskets in all positions at reassembly, and a new oil seal in the shaft end cover.

(1) Install the crankshaft, complete (1, fig. 6-9) from frame end as follows:

(a) Remove the retaining ring from groove at

outer end bearing (near threaded end of shaft) then insert shaft into the frame.

(b) Guide threaded end through housing until bearings reach their position, then tap gently with a soft hammer on the journal end of shaft until the empty retaining ring groove extends approximately 1/16 inch out of the housing.

(c) Insert retaining ring in its groove, then tap the threaded end of shaft gently with a soft hammer, until the retaining ring is tight against the housing.:

CAUTION

Install oil seal with the sealing lip facing inside of the shaft end cover, then press into position. If a vise is used to press the seal, be sure serrated jaws, if any, are covered to protect seal from distortion.

(2) Install the shaft end oil seal (16) (see Caution above) in housing(14).

CAUTION

Protect lip of the seal from cutting by the threads on end of crankshaft by wrapping a sheet of 0.003 inch brass shim stock around threads, then slipping shaft end cover and seal in position on frame.

(3) Place gasket (15) in position around shaft, then install shaft end cover and seal as described in caution above. Secure cover with four steel washers (12) and capscrews :(11). Tighten capscrews-to the torque value given for their size in table 1-1. Install connector (10) and breather tube (9) in frame (17), then install nipple:(5), coupling (6), and plug (7).

(4) Install connector (25, fig. 6-8) and connecting rod (24). Check clearance between crankpin bushing and connecting rod. It should be between 0.001 and 0.002 in. If clearance is 0.0025 in. replace bushing and connecting rod.

(5) Measure the clearance between piston pin (19) and piston (20). This is a very close tolerance. It should be between 0.0003 in. and 0.0009 in. If clearance is as much as 0.0012 in. replace pin and piston. Install pin (19) through rod (24) and piston (20), and secure with the lockrings (18).

NOTE

Place piston rings in cylinder bore to measure end gap before installation in ring rooves. Also measure piston to bore clearance. If ring end gap is between 0.005 and 0.015 in., they are satisfactory. If piston clearance in bore of high pressure cylinder (1 3/4" dial) is between 0.0025 and 0.0035 in. the clearance is satisfactory. Piston pin to connecting rod clearance should be between 0.0002 and 0.0007 in. If in this range, they are satisfactory.

(6) Before installing rings, see that all ring grooves are lubricated with compressor lubricating oil.

(7) Install ring (23) in bottom groove of piston (20). Install the expander in groove first, before ring (22), in the second groove from bottom of piston, then install rings (21) in the second groove from top, and the top groove of piston (20). Move end gap at all rings of set until they are staggered at 90° to each other.

(8) Position cylinder gasket (15) on frame, then position cylinder (14) over piston (20) and press in on rings until they slip into the tapered bottom of the cylinder. It is recommended that a ring compressor be used at this time to avoid distorting or breaking the rings. Seat cylinder on gasket, then install steel washers (12) and capscREW (11). Tighten to a torque value for size given in table 1-1.

(9) Install gasket (8), spacer (9) and valve plate (10). Install two gaskets (4) and air head (3), then install capscREWS (1) and tighten to a torque value given for the size in table 1-1.

(10) Install connecting rod (27, fig. 6-7) on crankshaft crank pin bushing. Check that clearance is between 0.001 and 0.002 in. (table 1-2). After checking clearance between pin (22) and rod (27), a close tolerance of between 0.0002 and 0.0007 in., if satisfactory install pin (22) through rod (27) and piston (23), then secure pin with lockrings (21).

(11) Fill oil ring grooves of piston (23) with compressor lubricating oil. Place ring set in cylinder (17) bore, then measure end gap. It should measure between 0.005 and 0.015 in. If satisfactory, install ring (26) in bottom groove of piston (23). Install ring (25) in the second groove from the bottom. Install one ring (24) in the second groove from the top, and the other ring (24) in the top groove. Turn end gaps of rings until they are 90° from each other.

(12) Lubricate bore of cylinder (17); position gasket (18) over rod (27) to fit on frame. Position cylinder (17) over piston and rings, press in on rings until they slip into the tapered skirt of the bore. It is recommended that a ring compressor be used for this purpose to avoid distorting or breaking the rings. Install steel washers (15) and capscREWS (14). Tighten to a torque value given for the size in table 1-1.

(13) Install valves (13) and secure with fillister head screws (12), lockwashers (11), and nuts (10). Install gasket (9), spacer and valves complete (6), gasket (4), and air head (3). Secure with four capscREWS (1). Tighten to a torque value for the size given in table 1-1. Install connector (28) in cylinder (17).

(14) Install elbows (14 and 13, fig. 6-6), in cylinders. Install pipe plug (12) in elbow (13), then install intercooler tube (11) in elbows (13 and 14).

(15) Install 2 elbows (10). Install aftercooler tube (9) in elbows (10). Install 3 clamps (7), and brace (8) on aftercooler (9) and secure with internal lockwashers (6) and capscREW (5). Tighten to a torque value given for size in table 1-1.

(16) Install fanwheel (4) on crankshaft and secure with capscREW (3), lockwasher (2) and nut (1). Tighten to a torque value given for size in table 1-1.

e. Installation. Refer to paragraph 4-10 and install the air compressor.

APPENDIX A REFERENCES

A-1. Fire Protection

TM 5-4200-200-10 Hand Portable Fire Extinguishers for Army Users

A-2. Lubrication

LO 5-4310-348-12 Lubrication Order

C9100IL Fuel, Lubricants, Oils, and Waxes

A-3. Painting

TM 9-213 Painting Instructions for Field Use

A-4. Maintenance

TM 38-750 The Army Maintenance Management System (TAMMS)

TB 742-93-1 Inspection and Test of Air and Other Gas Compressors

TM 5-4310-348-24P Organizational, Direct Support and General Support Maintenance Repair Parts and Special Tools Lists for Compressor, Air, Reciprocating, Electric Motor Driven, Receiver Mounted, 2HP, 5CFM, 175 PSI (Ingersoll-Rand Model 234C2) FSN 4310-155-7101.

A-5. Shipment and Storage

TR 740-93-2 Preservation of USAMEC Mechanical Equipment for Shipment and Storage.

TM 740-90-1 Administrative Storage of Equipment.

A-6. Destruction of Army Materiel

TM 750-244-3 Procedures for Destruction of Equipment to Prevent Enemy Use.

APPENDIX B MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. General

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance levels.

b. Section II designates overall responsibility for the performance of maintenance functions on the identified end item or component and the work measurement time required to perform the functions by the designated maintenance level. The implementation of the maintenance functions upon the end item or component will be consistent with the assigned maintenance functions.

c. Section III lists the special tools and test equipment required for each maintenance function as referenced from Section II (Not Applicable).

d. Section IV contains supplemental instructions or explanatory notes for a particular maintenance function (Not Applicable).

B-2. Explanation of Columns in Section II

a. *Column 1, Group Number.* A number is assigned to each group in a top down breakdown sequence. The applicable groups are listed on the MAC in disassembly sequence beginning with the first group removed.

b. *Column (2), Function Group.* This column contains a brief description of the components of each numerical group.

c. *Column (3), Maintenance Functions.* This column lists the various maintenance functions (A through K). The lowest maintenance level authorized to perform these functions is indicated by a symbol in the appropriate column. Work measurement time standards (the active repair time required to perform the maintenance function) are shown directly below the symbol identifying the maintenance level. The symbol designations for the various maintenance levels are as follows:

C	Operator or crew
O	Organization maintenance
F	Direct support maintenance
H	General support maintenance
D	Depot maintenance

The maintenance functions are defined as follows:

A-Inspect: To determine serviceability of an item by comparing its physical, mechanical, and electrical characteristics with established standards through examination.

B-Test: To verify serviceability and detect incipient failure by measuring the mechanical or electrical characteristics

of an item and comparing those characteristics with prescribed standards.

C-Service: Operations required periodically to keep an item in proper operating condition, i.e., to clean, to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

D-Adjust: To maintain within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.

E-Align: To adjust specified variable elements of an item to bring about optimum or desired performance.

F-Calibrate: To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

G-Install The act of emplacing, seating, or fixing into position an item, part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

H-Replace: The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

I-Repair: The application of maintenance services (inspect, test, service, adjust, align, calibrate, or replace) or other maintenance actions (welding, grinding, reveting, straightening, facing, remachining or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

J-Overhaul That maintenance effort (service/ action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publication. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

K-Rebuild: Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to

Army equipment. The rebuild operation includes the act of returning to zero those age measurement (hours/miles, etc.) considered in classifying Army equipment/ components.

d. Column (4), Tools and Equipment. This column is provided for referencing by code the special tools and test equipment, (see III) required to perform the maintenance functions (sec II).

e. Column (5), Remarks. This column is provided for referencing by code the remarks (sec IV) pertinent to the maintenance functions.

Section II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) Assembly group	(3) Maintenance functions											(4) Tools and equipment	(5) Remarks
		A	B	C	D	E	F	G	H	I	J	K		
		I N S P E C T	T E S T	S E R V I C E	A D J U S T	A L I G N	F C A L I B R A T E	I N S T A L L	R E P L A C E	R E P A I R	O V E R H A U L	R E B U I L D		
0101	01 GROUP, GUARD BELT Belt Guard	C 0.1							C 0.5					
0201	02 GROUP, ELECTRIC MOTOR AND RELATED COMPONENTS Electric Motor			C 0.3					O 1.0 F 2.0 F 1.0 F 0.8	F 4.0				
0202	Rotor	F 0.1												
0203	Starter	F 0.1												
0204	Pressure Switch				F 0.5									
	03 GROUP, AIR COMPRESSOR ASSEMBLY	0.8												
0301	V-Belts (matched pair)	C 0.5			C 0.8				O 0.9					
0302	Air Compressor	C 0.3						O 4.1	O 1.5 O 0.5 O 0.2 F 3.0 F 3.0	F 4.0	H 8.0			
0303	Valve, Pilot				C 0.3									
0304	Filter, Inlet			C 0.3										
0305	Rod Assembly	F 0.2												
0306	Crankshaft	F 0.2												
0401	04 GROUP, RECEIVER Receiver, Air	C 0.2		C 0.2	0.2			O						

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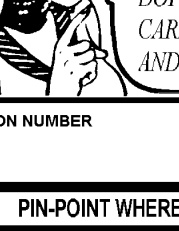
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