

DA440HT: 99900838: 19990120



**Model DA440HT  
Hydraulic Driven  
Topdeck Compressor**



**IOWA MOLD TOOLING CO., INC.**

BOX 189, 500 HWY 18 WEST, GARNER, IA 50438

TEL: 515-923-3711

TECHNICAL SUPPORT FAX: 515-923-2424

MANUAL PART NUMBER 99900838

# PRECAUTIONS

## Read before operating your compressor!



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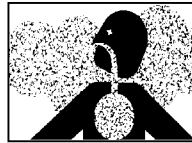

DANGER

**EXPLODING TANK WILL CAUSE  
DEATH, SERIOUS INJURY  
OR PROPERTY DAMAGE**

- Drain air tank after each use to prevent moisture build-up and corrosion which leads to tank failure.
- Assure that tank and compressor relief valves work properly, and are at correct pressure settings.
- **DO NOT** modify or repair air tank.
- **NEVER** drive vehicle with pressure in air tank.



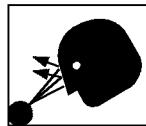
Failure to follow operating and maintenance procedures as outlined in this manual could result in equipment damage, personal injury or death. Follow all maintenance procedures and intervals.



Do not use air from this compressor for breathing or food processing. Air from this compressor will cause severe injury or death if used for breathing or food processing.



Maintenance must be performed only by trained and qualified personnel, using correct tools, specified torques and approved replacement parts.



Hot oil under pressure can cause severe injury or death. Shut down, let cool and relieve pressure in compressor before servicing.



All electrical components and cable wiring must be installed and grounded in accordance with NFPA, national electrical codes and applicable state and local codes.



Do not overfill the compressor with oil. Use correct quantity of manufacturer's lubricant. Repair leaks and clean spills immediately.



Before removing guards or servicing the compressor, disconnect all power supplies. Display warning signs and lock out electrical circuits.



Compressors generate high temperatures. Do not touch or otherwise come in contact with hot surfaces. Doing so can cause severe personal injury.



All guards must be in position and secure before and during operation.

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# RECOMMENDED SPARE PARTS LIST

## 1 Year Supply

### DA440HT HYDRAULIC DRIVEN TOPDECK COMPRESSOR

For Manual: 99900838

This spare parts list does not necessarily indicate that the items can be expected to fail in the course of a year. It is intended to provide the user with a stock of parts sufficient to keep the unit operating with minimal down-time waiting for parts. There may be parts failures not covered by this list. Parts not listed are considered as not being Critical or Normal Wear items during the first year of operations and you need to contact the distributor or manufacturer for availability.

| ASSEMBLY DESIGNATION             | ITEM NO. | PART NO. | DESCRIPTION                         | QTY | CODE | SHELF LIFE (MO) | ORDER QTY |
|----------------------------------|----------|----------|-------------------------------------|-----|------|-----------------|-----------|
| <b>23000080.01.19951220</b>      |          |          | <b>HYDRAULIC TOPDECK COMPRESSOR</b> |     |      |                 |           |
|                                  | 5        | 70058486 | BELT-POWER V 2B80                   | 1   | P    |                 |           |
|                                  | 9        | 73051614 | HYD MOTOR                           | 1   | W    |                 |           |
|                                  | 10       | 73054498 | RELIEF VALVE                        | 1   | W    |                 |           |
|                                  | 57       | 70048069 | MOISTURE REGULATOR                  | 1   | P    |                 |           |
|                                  | REF      | 73052014 | FILTER                              | 1   | P    |                 |           |
| <b>COMPRESSOR (R30)-70073051</b> |          |          |                                     |     |      |                 |           |
|                                  | REF      | 70073727 | LP INTAKE VALVE                     | 1   | W    |                 |           |
|                                  | REF      | 70073726 | LP EXHAUST VALVE                    | 1   | W    |                 |           |
|                                  | REF      | 70732447 | HP INTAKE VALVE                     | 1   | W    |                 |           |
|                                  | REF      | 73054340 | HP EXHAUST VALVE                    | 1   | W    |                 |           |
|                                  | REF      | 70073766 | RING SET                            | 1   | W    |                 |           |
|                                  | REF      | 70143298 | RELEASE VALVE KIT                   | 1   | W    |                 |           |
|                                  | REF      | 70732429 | INTERCOOLER TUBE LH                 | 1   | W    |                 |           |
|                                  | REF      | 70732430 | INTERCOOLER TUBE RH                 | 1   | W    |                 |           |
|                                  | REF      | 70732448 | AIR FILTERS                         | 1   | P    |                 |           |
|                                  | REF      | 76391490 | SHAFT SEAL                          | 1   | W    |                 |           |
|                                  | REF      | 73054339 | POP OFF 70PSI                       | 1   | W    |                 |           |
|                                  | REF      | 73054031 | PILOT VALVE                         | 1   | C    |                 |           |

# SECTION 1. GENERAL INFORMATION

## 1-1. INTRODUCTION

This manual provides information on the installation, operation and repair of the IMT DA440HT Hydraulic Top Deck Compressor.

Three means are used throughout this manual to gain the attention of operating and service personnel. They are NOTES, CAUTIONS and WARNINGS and are defined as follows:

### NOTE

A NOTE IS USED TO EITHER CONVEY ADDITIONAL INFORMATION OR TO PROVIDE FURTHER EMPHASIS FOR A PREVIOUS POINT.

### CAUTION

A CAUTION IS USED WHEN THERE IS THE STRONG POSSIBILITY OF DAMAGE TO THE EQUIPMENT OR PREMATURE EQUIPMENT FAILURE.

### WARNING

A WARNING IS USED WHEN THERE IS THE POTENTIAL FOR PERSONAL INJURY OR DEATH.

Operate this equipment with respect and service it regularly. These two things can add up to a safer working environment and longer equipment life.

## 1-2. ORDERING INFORMATION

When placing orders or requesting assistance, refer to the information below:

| TO BE COMPLETED BY DEALER                        |                       |
|--|-----------------------|
| <b>CHASSIS INFORMATION</b>                       |                       |
| <b>TRANSMISSION MAKE:</b>                        | <b>MODEL:</b>         |
| <b>PTO NUMBER:</b>                               | <b>PTO %:</b>         |
| <b>COMPRESSOR AND HYDRAULIC PUMP INFORMATION</b> |                       |
| <b>COMPRESSOR MODEL:</b>                         | <b>SERIAL NUMBER:</b> |
| <b>PUMP MAKE:</b>                                | <b>MODEL:</b>         |
| <b>RESERVOIR CAPACITY:</b>                       | <b>ENGINE RPM:</b>    |



## SECTION 2. INSTALLATION

### 2-1. GENERAL

This section deals with the installation of the PTO and pump and the IMT hydraulic compressor. The instructions are intended as a guide to assist you with your particular installation. We can not cover every make, model and year of truck manufactured world-wide, so these instructions will provide only general information. Use this section as a guide only.

### 2-2. PTO AND PUMP INSTALLATION

The pump may either be installed directly on the PTO or, as an optional method, it may be driven by a driveline.

#### 2-2-1. PTO INSTALLATION

Power take-off manufacturers provide specific installation instructions for their products. Those instructions should be followed when installing a PTO. Some trucks may require modification of the transmission cross-member to provide clearance and the exhaust pipe may need modification. Check with the PTO manufacturer's representative for specific instructions regarding your particular make, model and year of vehicle. The following instructions are a guide in this application.

1. If the vehicle is new, drain the transmission oil into a clean container for reuse. If the vehicle is used, drain and dispose of the transmission oil.
2. Temporarily install the PTO with the proper gaskets and only two studs. Snug the PTO down and check the backlash for maximum allowance of 1/32" to 1/16". If the backlash is excessive, remove gaskets and check backlash again until it is corrected.
3. Remove the PTO and apply Permatex® to the gaskets. If the holes for the studs are tapped through the transmission housing, apply Permatex to the studs and tighten them down. Make certain that the studs do not interfere with the transmission gears.

#### CAUTION

AVOID CONTACT OF PERMATEX WITH AUTOMATIC TRANSMISSION FLUID.

4. Install the PTO and gaskets. Torque the nuts to 30 - 35 ft-lbs (4.14 - 4.84 kg-m) for a 6-bolt PTO and 45 - 50 ft-lbs (6.22 - 6.91 kg-m) for 8-bolt PTO's. Recheck the backlash.

5. Install the shifter cable to suit conditions. Always allow for a slight overshift on lever or knob to ensure the PTO is fully disengaged.

#### CAUTION

IT IS IMPORTANT THAT ROOM BE ALLOWED FOR FULL ENGAGEMENT OF THE PTO. MODIFY THE EXHAUST OR OTHER OBSTRUCTIONS AS NEEDED.

#### CAUTION

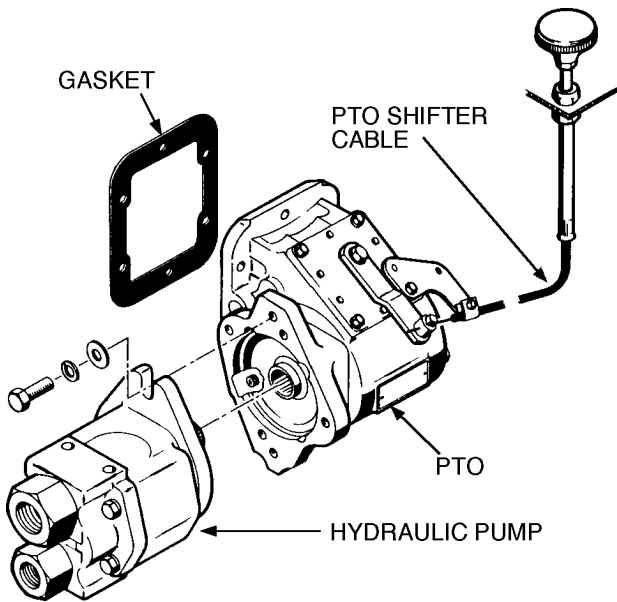
AVOID SHARP BENDS IN THE SHIFTER CABLE. ALL BENDS SHOULD HAVE AT LEAST A 6" RADIUS. TIGHTER BENDS WILL CAUSE DIFFICULT OPERATION OF THE SHIFTER KNOB.

6. Replace the transmission oil. If the PTO is located below the transmission oil level, an additional quantity of oil will be required.
7. Start the engine, engage the PTO and allow it to run for 5-10 minutes. Check for leaks, unusual noise and proper operation.
8. Retorque the mounting bolts.

### 2-2-2. DRIVELINE AND PUMP INSTALLATION

The pump may be driven as shown in Figure B-2 as an optional method to the one shown in Figure B-1. The following steps are a guide in this application.

1. Install the PTO (refer to Paragraph 2-2-1).
2. Loosely bolt the pump mounting bracket (A) to the adjustable bracket (B).
3. Bolt the adjustable bracket to the frame at a point that will not exceed 48" (122 cm) from the PTO and will not cause a joint angle greater than 8°.
4. Check pump rotation and install pump, pump end yoke and PTO end yoke.
5. Size, cut and weld the driveline to the necessary length. Ensure driveline balance. Allow 1" (2.54 cm) extra for PTO end yoke.
6. Install driveline, lock set screws and lubricate U-joints.
7. Ensure all mounting bolts are tight.



**FIGURE B-1. PTO INSTALLATION**

**WARNING**

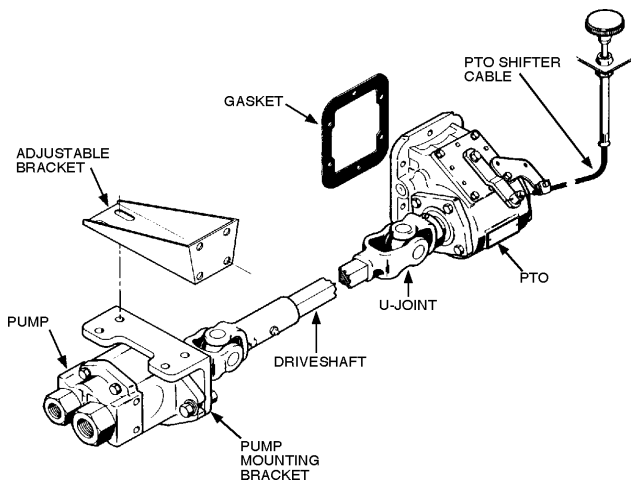
THE INSTALLER OF THE DRIVELINE MUST INSPECT THE FINAL POSITION OF THE DRIVELINE TO DETERMINE WHETHER ITS LOCATION PROVIDES SUFFICIENT PROTECTION TO AN OPERATOR, OR OTHER PERSONNEL, FROM HAZARDS ASSOCIATED WITH A ROTATING DRIVELINE. IF PROTECTION IS INSUFFICIENT, THE INSTALLATION OF A GUARD IS REQUIRED. IF YOU ARE UNSURE OF METHODS TO GUARD A ROTATING DRIVELINE, CALL IOWA MOLD TOOLING CO., INC. FOR INSTRUCTIONS. FAILURE TO DO SO MAY RESULT IN SERIOUS INJURY OR DEATH.

DANGER

**CONTACT WITH A ROTATING DRIVELINE  
WILL CAUSE  
DEATH OR SERIOUS INJURY  
KEEP AWAY**

- Keep clear of rotating drive shaft.
- Never work on or near an installed power take-off or driveline with the engine running.

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**FIGURE B-2. DRIVELINE & PUMP INSTALLATION**



### 2-3. TOPDECK COMPRESSOR INSTALLATION

The topdeck compressor is mounted on an oil reservoir which is bolted to the deck of the carrier vehicle. Due to variations, the instructions should be used as a guide only.

1. Locate compressor position on the deck. Layout mounting hole pattern per Figure B-4. Drill six 1/2" holes for mounting. Locate the positions of reservoir ports per Figure B-4 and drill two 3-1/4" holes for suction lines, two 3-1/4" holes for return lines and two 2" holes for drain lines.
2. Using 3/8" bolts, flat washers, lock washers and nuts, secure the compressor and tank to the deck of the truck.
3. Locate a position on the deck for a hole for the hose which runs from the pump to the control valve. Position the hole to provide the least interference with truck frame members, exhaust and driveshaft, and as near the compressor oil reservoir as possible. Drill a 1-3/4" hole at this location. Place a 1-3/4" diameter grommet into the hole to help prevent hose wear.
4. Route the hose through the hole and connect it to the pump and control valve using the fittings provided.
5. Drill a 2-1/4" hole in the bed of the truck for the hose from the cooler to the inlet side of the return filter. Install 2-3/4" diameter grommet into hole. Position the hole to provide the least interference with truck frame members, exhaust and driveshaft; and as near the compressor reservoir as possible. Install hose from cooler to return filter.
6. Drill two 5/8" diameter holes through the deck for the hoses from the air driven throttle control. Install the speed control on the engine. Route the hoses through these holes and connect them as shown in the Parts Section.
7. Install the barbed nipples, hose and hose clamps from the suction port of the reservoir to the suction filter.
8. Drill a 1" hole for the receiver drain as near the drain as possible and route a 1/2" diameter hose through the hole. Connect one end to the receiver drain. This will prevent drainage of the receiver onto the deck of the truck.

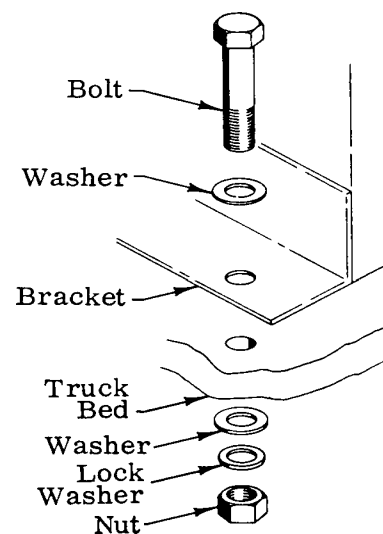
9. Connect the wiring to the compressor where applicable.

10. Fill the oil tank and open suction gate valve. Disconnect pressure hose at hydraulic pump. Engage the PTO and turn the engine with starter until oil comes out the pressure side of the pump. Connect pressure hose. Pull out the compressor switch and open the gate valve to the tank. Disengage the PTO and start the truck engine. Depress the clutch and engage the PTO. Release the clutch slowly. It may be necessary to allow the truck to idle until warmed up enough to pull at idle RPM. Push the compressor switch in. This will close the control valve and start the compressor. Allow the compressor to warm up (See Operation Section). Close the gate valve on the air tank. This will activate the speed control to the proper RPM. Check the system for leaks and proper operation.

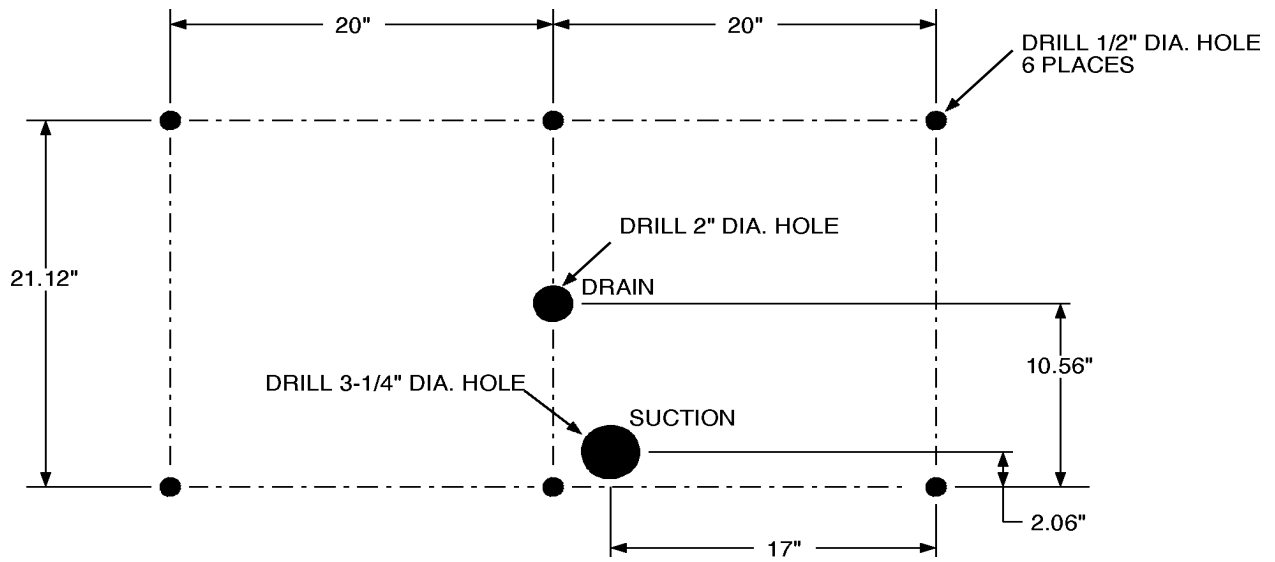
11. Install compressor kill switch. See Figure B-5.

### 2-4. OIL COOLER (OPTIONAL)

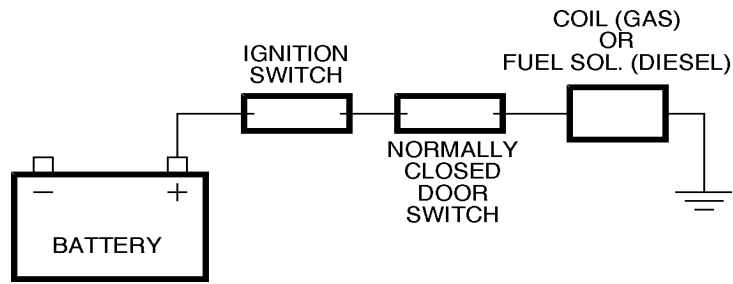
Oil coolers vary in their installation dependent on available space and other considerations. Install the oil cooler either in front of the carrier vehicle's radiator or, as an alternative, in a protective structure which is cooled by an electric fan. Refer to Figure B-4 for general location within the hydraulic system.



**FIGURE B-3. MOUNTING HARDWARE**



**FIGURE B-4. MOUNTING HOLE PATTERN**



**FIGURE B-5. KILL SWITCH WIRING DIAGRAM**

## SECTION 3. OPERATION

### 3-1. INTRODUCTION

This section deals with the proper methods of system operation and shutdown. These procedures should be followed to prevent damage and ensure efficient operation.

### 3-2. OPERATION

The compressor has an operating time limit of approximately 3-hours depending upon ambient air temperature (outside air temperature), weather conditions and whether an oil cooler has been installed.

**CAUTION**

THE HYDRAULIC OIL TEMPERATURE MUST NOT BE ALLOWED TO EXCEED 190°F (88°C). IF THE OIL TEMPERATURE REACHES THIS LIMIT, THE SYSTEM MUST BE SHUT DOWN AND ALLOWED TO COOL.

Oil coolers will extend the 3-hour limit.

To start the compressor:

1. Ensure the PTO is disengaged, control valve is open (pull the compressor switch out) and the receiver drain cock is open.
2. Start the truck engine and allow it to idle until it reaches the proper operating temperature (refer to the Owner's Manual).
3. Depress the clutch, engage the PTO and carefully release the clutch pedal. Allow the system to warm up for the time period specified in below.

| <b>COMPRESSOR WARM-UP TIME</b> |                       |
|--------------------------------|-----------------------|
| AMBIENT AIR TEMPERATURE (°F)   | IDLING TIME (WARM-UP) |
| +40 OR ABOVE                   | NONE                  |
| +20 TO +40                     | 2 - 5 MINUTES         |
| 0 TO +20                       | 5 - 10 MINUTES        |
| -20 TO 0                       | 10-15 MINUTES         |
| -40 TO -20                     | 15-20 MINUTES         |
| BELOW -40                      | 20 MINUTES MIN.       |

4. When starting the compressor, the RPM's will automatically increase due to low volume of air in the system.

**CAUTION**

**1000 RPM MAX.**

Operating this unit in excess of 1000 RPM, measured at the compressor flywheel, will void your warranty. Engine RPM may be different.

### 3-3. SYSTEM SHUTDOWN.

System shutdown is accomplished as follows:

1. Allow the compressor to build to maximum pressure and the truck engine will automatically idle down.
2. Place the compressor control valve in the open (off) position.
3. Depress the clutch pedal and disengage the PTO.
4. Open the receiver drain cock and discharge the air in the receiver.

**WARNING**

FEDERAL LAW PROHIBITS DRIVING THE CARRIER VEHICLE ON PUBLIC ROADS WITH THE RECEIVER FILLED WITH COMPRESSED AIR. ALWAYS DRAIN THE RECEIVER BEFORE MOVING THE VEHICLE.



## Section 4. PREVENTIVE MAINTENANCE

### 4-1. INTRODUCTION

Proper maintenance on a regular schedule is essential to keep your unit operating efficiently. Proper maintenance procedures and required service intervals are outlined in this section. Personnel responsible for unit upkeep should become familiar with frequency and type of maintenance required and perform these tasks at recommended intervals.

### 4-2. LUBRICATION

The only lubrication required is on the carrier vehicle and the compressor itself. Refer to the appropriate Owner’s Manual for information on the truck and compressor for the type and frequency of lubrication required.

### 4-3. HYDRAULIC SYSTEM

#### 4-3-1. HYDRAULIC FLUID SELECTION

Minimum viscosity specifications for hydraulic oil to be used in the hydraulic system are given in Figure D-1. Any major oil company can supply products which meet these requirements.

Oils selected for use with this class of equipment, in addition to meeting viscosity requirements, should have the following additives:

1. Antifoam Inhibitors
2. Antioxidant Inhibitors
3. Rust Resistant Additives
4. Antiwear Additives

#### 4-3-2. HYDRAULIC FLUID SPECIFICATIONS

Figure D-1 states oil specifications for a full range of operating temperatures encountered in the temperate zones. Arctic conditions present special requirements which are not in the scope of the table and must be analyzed individually. Consult your oil supplier for the proper hydraulic fluids for working under these severe conditions. Electric reservoir heaters are available to improve conditions at extremely low temperatures.

#### 4-3-3. HYDRAULIC FLUID DETERIORATION

Contamination of the hydraulic fluid by solvents, water, dust or other abrasives will cause deterioration of the fluid. Sustained presence of the impurities will result in premature breakdown of antifoam, lubrication, anti-rust and viscosity properties. Introduction of water to the system and operation at high temperatures (above 180°F) will result in an increase in the oil oxidation rate. Oxidation produces varnish forming materials and sludge in the oil.

Operating the system on a sustained basis with contaminated or broken down oil will increase wear and can significantly shorten the efficient service life of the unit.

|                                |         |          |         |          |
|--------------------------------|---------|----------|---------|----------|
| AMBIENT TEMPERATURE RANGE, °F  | 0-90    | Below 32 | 32-90   | Above 90 |
| MINIMUM POUR POINT, °F         | -30     | -25      | +10     | +10      |
| MAXIMUM VISCOSITY, SSU @ 0°F   | 4000    | 4000     | ---     | ---      |
| MINIMUM VISCOSITY, SSU @ 100°F | 140-190 | 100-130  | 150-200 | 200-315  |
| MINIMUM VISCOSITY, SSU @ 210°F | 40      | 41       | 43      | 47       |
| MINIMUM VISCOSITY INDEX        | 139     | 90       | 90      | 90       |

**FIGURE D-1. HYDRAULIC FLUID SPECIFICATIONS**

Periodically, draw off a sample of the oil and check the oil for breakdown. To check oil quality:

1. Place the oil in a clean glass.
2. Smell the oil to detect a burnt or rancid odor.
3. Visually examine the oil for a dark or cloudy appearance.
4. Allow the sample to stand for several minutes. Inspect the sample for water which will settle to the bottom of the glass if present. Water can result from a system leak or condensation due to temperature extremes.

When any of these conditions is observed, the system should be purged and filled with new oil. In addition, the oil should be changed in the reservoir and complete system:

1. After every 800 hours of operation or every six months, whichever occurs first.
2. After pump or other major hydraulic component failure, drain the hoses.

#### 4-3-4. HYDRAULIC SYSTEM PURGING

Purging the hydraulic system requires a new oil supply sufficient to completely fill the reservoir, hoses, filters, valves, etc., and an extra allowance for loss during this procedure. To reduce oil loss, operate the engine at a low speed (idle).

When purging, new oil is supplied to the pump suction line via the reservoir, and the old oil is discharged through the reservoir return line.

Two operators will be required; one to operate the compressor and the other to regulate pump flow (engine speed).

Purging is accomplished as follows:

1. Drain the hydraulic reservoir and disconnect the suction hose to the pump. Drain the hose and reassemble. Change the suction filter cartridge (Paragraph 4-3-5).

#### NOTE

THE METHOD OF WASTE DISPOSAL IS LEFT TO THE DISCRETION OF SERVICE PERSONNEL.

2. Disconnect the reservoir return line at the reservoir and direct the discharge into a sump or waste container. Plug the return line port on the reservoir and fill the reservoir with clean oil (refer to Paragraph 4-3-1).

#### NOTE

BE THOROUGHLY FAMILIAR WITH THE FOLLOWING STEPS AND PREPARED TO PERFORM THEM IN AN UNINTERRUPTED SEQUENCE. IF THIS IS NOT DONE, EXCESSIVE OIL WASTE WILL OCCUR.

#### CAUTION

DO NOT ALLOW THE RESERVOIR LEVEL TO DROP BELOW 1/3 CAPACITY DURING THIS OPERATION.

3. Start the engine and engage the PTO. Slowly release the clutch. Activate the control valve so that the fluid passes through the motor. Allow fluid to discharge for about 15 seconds. Kill the engine.
4. Reconnect the return line to the reservoir port and change the return line filter. All components of the system are now purged.
5. Check the reservoir oil level and add oil as necessary.

#### 4-3-5. FILTER ELEMENT REPLACEMENT

To avoid residue accumulation in the reservoir and to protect the hydraulic components (valves, pumps, motors, etc.), the filters must be serviced on a regular basis.

They must be changed after the initial 50-hours of new unit operation and every 200-hours thereafter. To change filter elements:

1. Shut the gate valve and remove the filter element.
2. Install the new filter ensuring proper rubber seal seating and tighten as much as possible using both hands.
3. Open the gate valve and check for leaks.

#### CAUTION

PUMP FAILURE CAN RESULT IF THE SHUTOFF VALVE IS LEFT CLOSED.

### 4-4. PREVENTIVE MAINTENANCE CHECKLIST

The checklist (Figure D-2) is designed to assist you in keeping your unit in efficient operating condition. Items in this section apply to the unit only. The carrier vehicle should also be inspected regularly (refer to the carrier vehicle’s service manual).

| ITEM                   | DESCRIPTION  | INTERVAL |        |                  |              |        |        |         |
|------------------------|--|----------|--------|------------------|--------------|--------|--------|---------|
|                        |  | DAILY    | WEEKLY | EVERY<br>200 HRS | HOURS/MONTHS |        |        |         |
|                        |  |          |        |                  | 500/3        | 1000/6 | 1500/9 | 2000/12 |
| COMPRESSOR             | AIR INTAKE - INSPECT AND CLEAN                     |          |        |                  |              |        |        |         |
|                        | FRAME OIL LEVEL - CHECK                            |          |        |                  |              |        |        |         |
|                        | FRAME OIL - CHANGE **                              |          |        |                  |              |        |        |         |
|                        | VALVES - INSPECT AND CLEAN                         |          |        |                  |              |        |        |         |
|                        | INTER COOLER - CLEAN EXTERIOR                      |          |        |                  |              |        |        |         |
|                        | LOW OIL LEVEL SWITCH - CHECK                       |          |        |                  |              |        |        |         |
|                        | OPERATE SAFETY VALVES<br>CLEAN SAFETY VALVES       |          |        |                  |              |        |        |         |
| V-BELT DRIVE           | BELT TENSION - CHECK                               |          |        |                  |              |        |        |         |
| RECEIVER               | DRAIN CONDENSATION - MANUAL                        |          |        |                  |              |        |        |         |
|                        | OPERATE SAFETY VALVES                              |          |        |                  |              |        |        |         |
| HYDRAULIC DRIVE SYSTEM | CHECK OIL RESERVOIR LEVEL                          |          |        |                  |              |        |        |         |
|                        | CHECK AND CHANGE FILTER                            |          |        |                  |              |        |        |         |
|                        | CHECK SAFETY DOOR SWITCH                           |          |        |                  |              |        |        |         |
|                        | CHECK PTO CABLE                                    |          |        |                  |              |        |        |         |
|                        | CHECK SPEED CONTROL & RESET                        |          |        |                  |              |        |        |         |
|                        | CHANGE HYDRAULIC OIL<br>CHECK FOR LEAKS AND REPAIR |          |        |                  |              |        |        |         |
| GENERAL                | CHECK AND TIGHTEN ALL BOLTS                        |          |        |                  |              |        |        |         |
|                        | CHECK ALL ELECT. CONNECTIONS                       |          |        |                  |              |        |        |         |
|                        | CHECK LUBRICATION                                  |          |        |                  |              |        |        |         |

\* INTERVALS ARE LISTED IN HOURS/MONTHS, WHICHEVER COMES FIRST (UNLESS OTHERWISE SPECIFIED).

\*\* REFER TO THE APPROPRIATE COMPRESSOR MANUAL FOR INFORMATION REGARDING TYPE OF OIL AND FREQUENCY OF CHANGE.

**FIGURE D-2. PREVENTIVE MAINTENANCE CHECKLIST**





## SECTION 5. REPAIR

### 5-1. INTRODUCTION

This section deals with the disassembly and repair of the components as well as troubleshooting information.

### 5-2. HYDRAULIC SYSTEM COMPONENTS

Disassembly and repair of components in the hydraulic system requires special consideration for proper functioning and service life of the unit. These steps are to be followed whenever a hydraulic component is removed from the system.

1. ALWAYS relieve internal hydraulic pressure before proceeding with a repair, carefully loosen a fitting and allow the pressure to bleed off.
2. NEVER allow foreign matter (dirt, water, metal particles, etc.) to enter the system through the open connections. Cap or plug any openings. If dirt does get in, a filter change is required after 50 hours of operation.
3. ALWAYS check for high pressure leaks after completing a repair. A high pressure leak is hazardous and must be repaired.

### 5-3. DRIVE BELT

To adjust the drive belt tension and alignment:

1. Loosen the four bolts securing the motor mounting bracket to the base plate.
2. Turn the drawbolt in a clockwise direction to tighten the belt until there is 1/4" - 1/2" play at the center of the belt between the pulleys.
3. Adjust the alignment drawbolt until the motor pulley is square with the compressor. Use a straightedge across the compressor pulley (Figure E-3) and check the gap between the motor pulley and the straight edge. The gap (1-3/4") on the compressor side of the motor pulley should be the same as on the far side of the pulley.

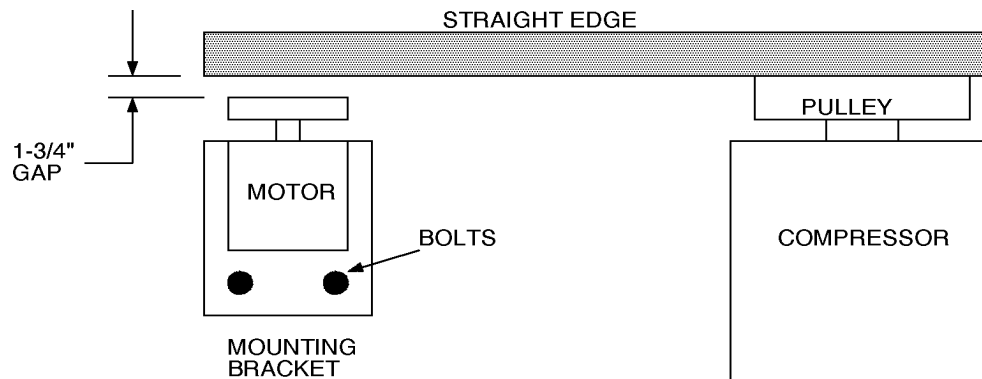


FIGURE E-1. DRIVE BELT ADJUSTMENT

| SYMPTOM   | PROBABLE CAUSE   |
|---|--|
| <p>AIR COMPRESSOR SLOWS DOWN AS AIR PRESSURE INCREASES AND THE ENGINE RPM REMAINS THE SAME OR INCREASES SLIGHTLY.</p> | <p>1. RELIEF VALVE BYPASSING OIL. ADJUST RELIEF VALVE. TURN CLOCKWISE TO INCREASE BYPASS PRESSURE. IF THIS DOES NOT CORRECT THE PROBLEM, RETURN THE RELIEF VALVE TO THE ORIGINAL POSITION AND PROCEED WITH STEP 2.</p> <p>2. HYDRAULIC PUMP FAILURE. DISCONNECT THE PRESSURE HOSES AT THE MOTOR INLET SWIVEL (FIGURE F-1). CAP THE HOSE AND PLUG THE SWIVEL. IF THE SYSTEM DOES NOT HAVE A PRESSURE GAUGE, INSTALL ONE AT THE END OF THE HOSE FOR TESTING PURPOSES. ENGAGE THE PTO AND RELEASE THE CLUTCH SLOWLY. HYDRAULIC OIL PRESSURE SHOULD REACH 2300-2500 PSI BEFORE THE RELIEF VALVE OPENS.</p> <p>3. HYDRAULIC MOTOR OR VALVE FAILURE. DISCONNECT PRESSURE HOSE FROM PUMP (FIGURE F-1) AT GAUGE SWIVEL. CONNECT PRESSURE HOSE FROM PUMP TO MOTOR INLET SWIVEL. SHUT CONTROL VALVE. ENGAGE THE PTO AND START THE COMPRESSOR. IF THIS DOES NOT CORRECT THE PROBLEM, REPLACE THE MOTOR. IF THE PROBLEM IS CORRECTED, REPLACE THE VALVE.</p> |
| <p>MOTOR DOES NOT TURN WHEN HYDRAULIC VALVE IS CLOSED. OIL DOES NOT REACH 2300-2500 PSI.</p>                          | <p>1. COMPRESSOR LOCKED UP. DISCONNECT DRIVE SYSTEM AND TRY TO TURN THE COMPRESSOR BY HAND. IF IT CANNOT BE TURNED, REPAIR THE COMPRESSOR.</p> <p>2. HYDRAULIC MOTOR FAILURE. REPLACE THE MOTOR IF THE COMPRESSOR IS OPERATIONAL.</p>  |
| <p>MOTOR DOES NOT TURN WHEN HYDRAULIC SYSTEM IS ACTIVATED AND RELIEF VALVE REACHES 2300-2500 PSI.</p>                 | <p>1. HYDRAULIC MOTOR BEGINNING TO FAIL. REPLACE HYDRAULIC MOTOR BEFORE THE REST OF THE SYSTEM IS DAMAGED.</p>   |
| <p>EXCESSIVE NOISE IN HYDRAULIC MOTOR AND MOTOR GETS VERY HOT</p>   | <p>1. RESTRICTION IN OIL HOSES AND FITTINGS. CHECK AND CORRECT ANY RESTRICTIONS.</p> <p>2. HYDRAULIC PUMP BEGINNING TO FAIL. REPLACE PUMP BEFORE IT DAMAGES THE REST OF THE SYSTEM.</p>  |
| <p>EXCESSIVE NOISE IN HYDRAULIC PUMP AND PUMP GETS VERY HOT</p>   | <p>1. RESTRICTIONS IN OIL HOSES AND FITTINGS. CHECK AND CORRECT ANY RESTRICTIONS.</p> <p>2. OIL TANK VENT PLUGGED. CHECK AND CLEAN OIL TANK VENT.</p> <p>3. HYDRAULIC OIL BREAKDOWN. DRAIN AND REPLACE.</p>  |
| <p>HYDRAULIC SYSTEM DAMAGES PUMPS.OIL TANK OVERFLOWS.</p>   | <p>1. TANK TOO FULL TO ALLOW FOR EXPANSION. DRAIN EXCESS OIL FROM THE TANK.</p> <p>2. OIL TANK VENT PLUGGED. CHECK AND CLEAN.</p> <p style="text-align: center;"><b>NOTE</b></p> <div style="border: 1px solid black; padding: 5px;"> <p>IF YOUR TRUCK HAS TWO TANKS, THE RETURN HOSE FROM THE TOP TANK TO THE LOWER TANK MAY BE RESTRICTED</p> </div>   |
| <p>OIL IS COLD. COMPRESSOR IS STARTED COLD AND FAILS TO CONTINUE TO OPERATE.</p>                                      | <p>1. COMPRESSOR STARTED TOO QUICKLY - INSUFFICIENT WARM-UP AND PUMP HAS FAILED. REPLACE THE PUMP, START COMPRESSOR AND ALLOW IT TO WARM UP (REFER TO SECTION 3).</p>  |

**FIGURE E-2. HYDRAULIC SYSTEM TROUBLESHOOTING CHART**

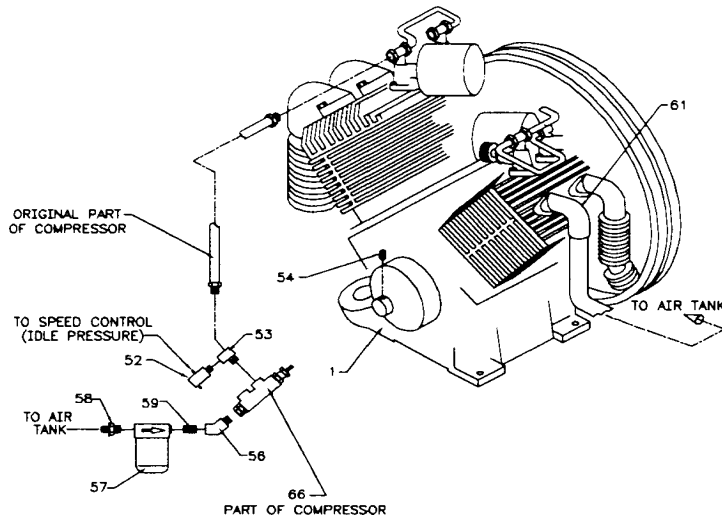
# SECTION 6. PARTS

## 6-1. GENERAL

This section contains the exploded parts drawings with accompanying parts lists for associated assemblies. These drawings are intended to be used in conjunction with the instructions found elsewhere in this manual.

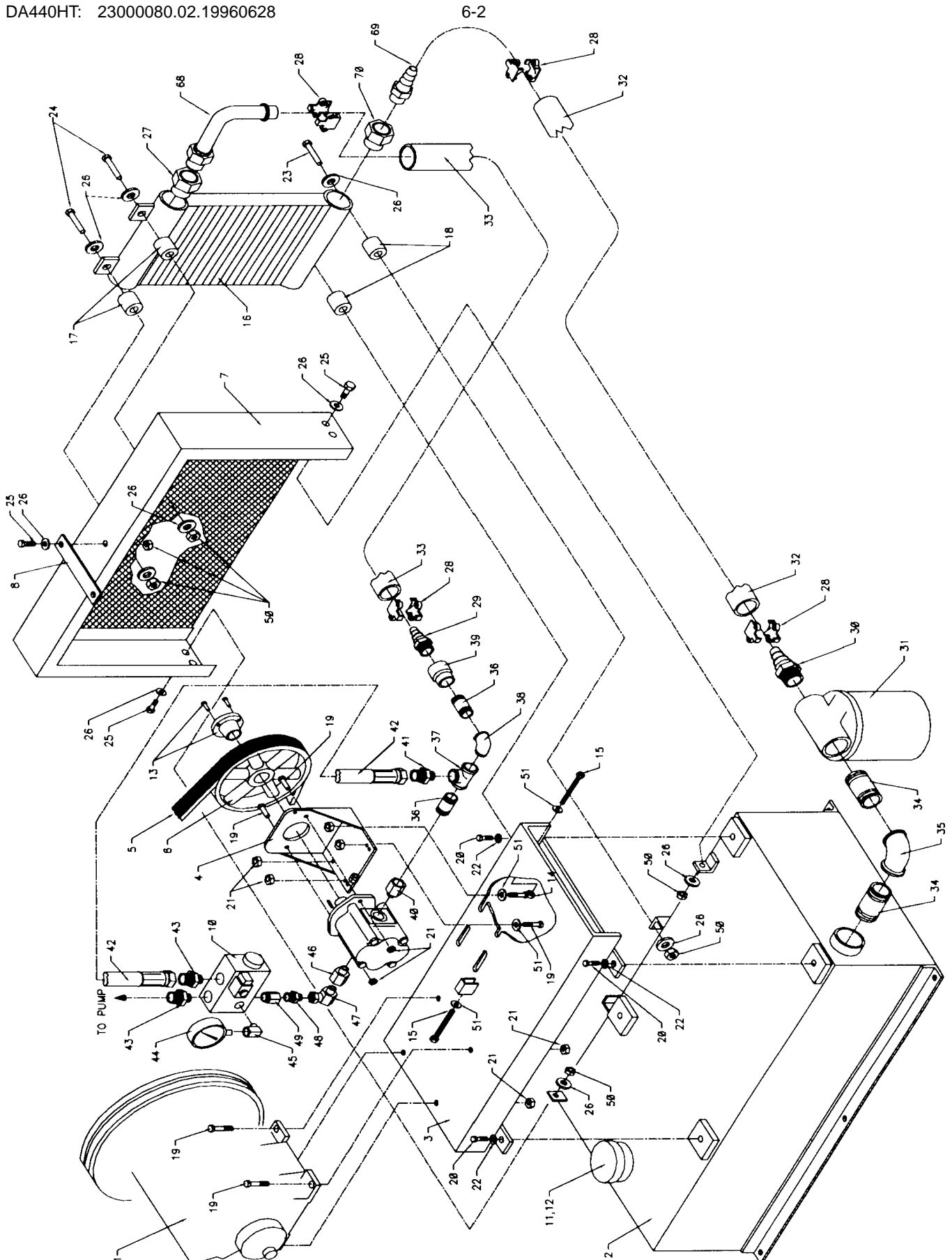
For information pertaining to the compressor, refer to its specific manual.

See Section 7 for reference data which may be useful in the repair and operation of your compressor.



| ITEM | PART NO. | DESCRIPTION                  | QTY | ITEM | PART NO. | DESCRIPTION                   | QTY  |
|------|----------|------------------------------|-----|------|----------|-------------------------------|------|
| 1.   | 70073051 | COMPRESSOR                   | 1   | 34.  | 72053211 | PIPE NIPPLE 1-1/4NPT X CLOSE  | 2    |
| 2.   | 52702370 | RESERVOIR                    | 1   | 35.  | 72053327 | ELBOW 1-1/4NPT 90°            | 1    |
| 3.   | 52702371 | BASE                         | 1   | 36.  | 72053141 | PIPE NIPPLE 3/4NPT X CLOSE    | 2    |
| 4.   | 52070749 | BRACKET                      | 1   | 37.  | 72053604 | TEE 3/4NPT                    | 1    |
| 5.   | 70058486 | BELT-POWER V 2B80            | 1   | 38.  | 73053285 | STREET ELBOW 3/4NPT 90°       | 1    |
| 6.   | 70056043 | PULLY-BROWNING 2BK110H       | 1   | 39.  | 72053436 | REDUCER COUPLING 1.0-3/4NPT   | 1    |
| 7.   | 52705590 | BELT GUARD                   | 1   | 40.  | 72053747 | ADAPTER #12MSTR 3/4FPT        | 1    |
| 8.   | 60104650 | BRACE                        | 1   | 41.  | 72053676 | ADAPTER 3/4MPT #12MJIC        | 1    |
| 9.   | 73051614 | HYD MOTOR-M20A897BEEF10      | 1   | 42.  | 51705296 | HOSE ASM 3/4X20 FF            | 1    |
| 10.  | 73054995 | RELIEF VALVE-FV1196-AG1004   | 1   | 43.  | 72532367 | ADAPTER #16MSTR #12MJIC       | 2    |
| 11.  | 73014671 | FILL CAP                     | 1   | 44.  | 73054435 | PRESSURE GAUGE 5000PSI        | 1    |
| 12.  | 73141276 | FILL NECK SCREEN             | 1   | 45.  | 72531131 | STREET ELBOW 1/4NPT 90°       | 1    |
| 13.  | 60106708 | BUSHING                      | 1   | 46.  | 72053747 | ADAPTER #12MSTR 3/4FPT        | 1    |
| 14.  | 52702304 | BOLT-CMPRSR HOLD DOWN        | 1   | 47.  | 72053713 | ELBOW 3/4MPT 1/4FPT 90° SWVL  | 1    |
| 15.  | 52706302 | TIGHTENER BOLT 8"            | 2   | 48.  | 72053558 | ADAPTER 3/4MPT 3/4MPT         | 1    |
| 16.  | 70141102 | OIL COOLER                   | 1   | 49.  | 72053750 | ADAPTER #16MSTR 3/4FPT        | 1    |
| 17.  | 60104673 | SLEEVE .39X1X1.19            | 2   | 50.  | 72062104 | NUT 1/4-20 LOCK               | 7    |
| 18.  | 60104783 | SLEEVE .34X.75X.62           | 2   | 51.  | 72063005 | WASHER 1/2 WRT                | 6    |
| 19.  | 72060094 | CAP SCR 1/2-13X1-3/4 HHGR5   | 9   | 52.  | 77041008 | PRESSURE SWITCH               | 1    |
| 20.  | 72060091 | CAP SCR 1/2-13X1 HHGR5       | 4   | 53.  | 72532013 | STREET TEE 1/4NPT BRASS       | 1    |
| 21.  | 72062080 | NUT 1/2-13 LOCK              | 10  | 54.  | 72053411 | PIPE PLUG 1/8NPT SQHD         | 1    |
| 22.  | 72063053 | WASHER 1/2 LOCK              | 4   | 55.  | 72053371 | REDUCER BUSHING 1/4-1/8NPT    | 1    |
| 23.  | 72060007 | CAP SCR 1/4-20X1-3/4 HHGR5   | 2   | 56.  | 72053533 | STREET ELBOW 1/4NPT 45°       | 1    |
| 24.  | 72060008 | CAP SCR 1/4-20X2 HHGR5       | 2   | 57.  | 70048069 | MOISTURE REGULATOR            | 1    |
| 25.  | 72060004 | CAP SCR 1/4-20X1 HHGR5       | 3   | 58.  | 72532552 | HOSE FITTING 1/4-1/4 TYPE O   | 1    |
| 26.  | 72063001 | WASHER 1/4 WRT               | 13  | 59.  | 72053013 | PIPE NIPPLE 1/4NPT X CLOSE    | 1    |
| 27.  | 72533429 | ADAPTER #12MSTR #16FSTR      | 1   | 61.  | 72053245 | PIPE PLUG 1/4NPT SQHD         | 1REF |
| 28.  | 72066516 | HOSE CLAMP 1-1/4 2-BOLT      | 4   | 65.  | 89086120 | OIL-30W NON-DETERGENT         | 1GAL |
| 29.  | 72532833 | BEAD NIPPLE 1MPT 1-1/4HOSE   | 2   | 66.  | 73054031 | VALVE-UNLOADER 155-175PSI     | 1REF |
| 30.  | 72531550 | BARB NIPPLE 1-1/4MPT 1-1/4   | 1   | 67.  | 70029117 | IDENTIFICATION PLACARD        | 1    |
| 31.  | 73052091 | RETURN FILTER 10MIL 1-1/4FPT | 1   | 68.  | 72532708 | BEAD NIPPLE 90° 1-1/4HOSE #16 | 1    |
| 32.  | 89393401 | HOSE 1-1/4 100R4             | 40" | 69.  | 72532833 | BEAD NIPPLE 1MPT 1-1/4HOSE    | 1    |
| 33.  | 89393401 | HOSE 1-1/4 100R4             | 60" | 70.  | 72533496 | ADAPTER #12MSTR 1FPT          | 1    |

**FIGURE F-1. DA440HT HYDRAULIC TOPDECK COMPRESSOR (23000080-1)**



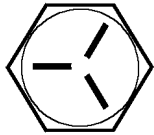

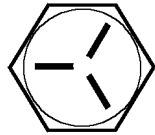

**FIGURE F-1A. DA440HT HYDRAULIC TOPDECK COMPRESSOR (23000080-2)**

## SECTION 7. REFERENCE

### TORQUE DATA CHART - DOMESTIC

#### FINE THREAD BOLTS

#### COARSE THREAD BOLTS

| SIZE<br>(DIA-TPI) | BOLT DIA<br>(INCHES) | TIGHTENING TORQUE   |                   |   |                   | SIZE<br>(DIA-TPI) | BOLT DIA<br>(INCHES) | TIGHTENING TORQUE   |                   |   |                   |
|-------------------|----------------------|---|-------------------|---|-------------------|-------------------|----------------------|---|-------------------|---|-------------------|
|                   |                      |  |                   |  |                   |                   |                      |  |                   |  |                   |
|                   |                      | SAE J429<br>GRADE 5   |                   | SAE J429<br>GRADE 8   |                   |                   |                      | SAE J429<br>GRADE 5   |                   | SAE J429<br>GRADE 8   |                   |
|                   |                      | PLAIN<br>(FT-LB)  | PLATED<br>(FT-LB) | PLAIN<br>(FT-LB)  | PLATED<br>(FT-LB) |                   |                      | PLAIN<br>(FT-LB)  | PLATED<br>(FT-LB) | PLAIN<br>(FT-LB)  | PLATED<br>(FT-LB) |
| 5/16-24           | 0.3125               | 19  | 14                | 27  | 20                | 5/16-18           | 0.3125               | 17  | 13                | 25  | 18                |
| 3/8-24            | 0.3750               | 35  | 26                | 49  | 35                | 3/8-16            | 0.3750               | 31  | 23                | 44  | 33                |
| 7/16-20           | 0.4375               | 55  | 41                | 78  | 58                | 7/16-14           | 0.4375               | 49  | 37                | 70  | 52                |
| 1/2-20            | 0.5000               | 90  | 64                | 120   | 90                | 1/2-13            | 0.5000               | 75  | 57                | 105   | 80                |
| 9/16-18           | 0.5625               | 120   | 90                | 170   | 130               | 9/16-12           | 0.5625               | 110   | 82                | 155   | 115               |
| 5/8-18            | 0.6250               | 170   | 130               | 240   | 180               | 5/8-11            | 0.6250               | 150   | 115               | 220   | 160               |
| 3/4-16            | 0.7500               | 300   | 225               | 420   | 315               | 3/4-10            | 0.7500               | 265   | 200               | 375   | 280               |
| 7/8-11            | 0.8750               | 445   | 325               | 670   | 500               | 7/8-9             | 0.8750               | 395   | 295               | 605   | 455               |
| 1-12              | 1.0000               | 645   | 485               | 995   | 745               | 1-8               | 1.0000               | 590   | 445               | 910   | 680               |
| 1 1/8-12          | 1.1250               | 890   | 670               | 1445  | 1085              | 1 1/8-7           | 1.1250               | 795   | 595               | 1290  | 965               |
| 1 1/4-12          | 1.2500               | 1240  | 930               | 2010  | 1510              | 1 1/4-7           | 1.2500               | 1120  | 840               | 1815  | 1360              |
| 1-3/8-12          | 1.3750               | 1675  | 1255              | 2710  | 2035              | 1-3/8-6           | 1.3750               | 1470  | 1100              | 2380  | 1780              |
| 1 1/2-12          | 1.5000               | 2195  | 1645              | 3560  | 2670              | 1 1/2-6           | 1.5000               | 1950  | 1460              | 3160  | 2370              |

When using the torque data in the charts above, the following rules should be observed.

1. Bolt manufacturer's particular specifications should be consulted when provided.
2. Flat washers of equal strength must be used.
3. All torque measurements are given in foot-pounds. To convert to inch-pounds, multiply by 12.
4. Torque values specified are for bolts with residual oils or no special lubricants applied. If special lubricants of high stress ability, such as Never-Seez compound graphite and oil, molybdenum disulphite, colloidal copper or white lead are applied, multiply the torque values in the charts by the factor .90. The use of Loctite does not affect the torque values listed above.
5. Torque values for socket-head capscrews are the same as for Grade 8 capscrews.

**FIGURE G-1. TORQUE DATA CHART**

| SINGLE TIRES FOR TRUCKS IN HIGHWAY SERVICE |            |   |      |      |      |      |      |      |      |      |      |      |
|--|------------|---|------|------|------|------|------|------|------|------|------|------|
| TIRE SIZE                                  | LOAD RANGE | TIRE LOAD LIMITS AT VARIOUS INFLATION PRESSURES |      |      |      |      |      |      |      |      |      |      |
|  |            | 50  | 55   | 60   | 65   | 70   | 75   | 80   | 85   | 90   | 95   | 100  |
| 7.00-20                                    | D          | 2100  | 2260 | 2390 | 2530 | 2670 | 2790 |      |      |      |      |      |
| 7.00-20                                    | E          | 2100  | 2260 | 2390 | 2530 | 2670 | 2920 | 3030 | 3150 |      |      |      |
| 7.50-20                                    | D          | 2360  | 2530 | 2680 | 2840 | 2990 | 3140 |      |      |      |      |      |
| 7.50-20                                    | E          | 2360  | 2530 | 2680 | 2840 | 2990 | 3140 | 3270 | 3410 | 3530 |      |      |
| 8.25-20                                    | E          | 2800  | 3010 | 3190 | 3370 | 3560 | 3730 | 3890 | 4050 |      |      |      |
| 8.25-20                                    | F          | 2800  | 3010 | 3190 | 3370 | 3560 | 3730 | 3890 | 4050 | 4210 | 4350 | 4500 |
| 9.00-20                                    | E          |   | 3560 | 3770 | 4000 | 4210 | 4410 | 4610 |      |      |      |      |
| 9.00-20                                    | F          |   | 3560 | 3770 | 4000 | 4210 | 4410 | 4610 | 4790 | 4970 | 5150 |      |
| 10.00-20                                   | F          |   |      | 4290 | 4530 | 4770 | 4990 | 5220 | 5430 |      |      |      |
| 10.00-20                                   | G          |   |      | 4290 | 4530 | 4770 | 4990 | 5220 | 5430 | 5640 | 5840 | 6040 |
| 11.00-20                                   | F          |   |      | 4670 | 4940 | 5200 | 5450 | 5690 | 5920 |      |      |      |
| 11.00-20                                   | G          |   |      | 4670 | 4940 | 5200 | 5450 | 5690 | 5920 | 6140 | 6370 | 6590 |
| 11.00-22                                   | F          |   |      | 4960 | 5240 | 5520 | 5790 | 6040 | 6290 |      |      |      |
| 11.00-22                                   | G          |   |      | 4960 | 5240 | 5520 | 5790 | 6040 | 6290 | 6530 | 6770 | 7000 |

| DUAL TIRE FOR TRUCKS IN HIGHWAY SERVICE |            |   |      |      |      |      |      |      |      |      |      |      |
|---|------------|---|------|------|------|------|------|------|------|------|------|------|
| TIRE SIZE                               | LOAD RANGE | TIRE LOAD LIMITS AT VARIOUS INFLATION PRESSURES |      |      |      |      |      |      |      |      |      |      |
|   |            | 40  | 45   | 50   | 55   | 60   | 65   | 70   | 75   | 80   | 85   | 90   |
| 7.00-20                                 | D          | 1840  | 1980 | 2100 | 2220 | 2340 | 2450 |      |      |      |      |      |
| 7.00-20                                 | E          | 1840  | 1980 | 2100 | 2220 | 2340 | 2450 | 2560 | 2660 | 2760 |      |      |
| 7.50-20                                 | D          | 2070  | 2220 | 2350 | 2490 | 2620 | 2750 |      |      |      |      |      |
| 7.50-20                                 | E          | 2070  | 2220 | 2350 | 2490 | 2620 | 2750 | 2870 | 2990 | 3100 |      |      |
| 8.25-20                                 | E          | 2460  | 2640 | 2800 | 2960 | 3120 | 3270 | 3410 | 3550 |      |      |      |
| 8.25-20                                 | F          | 2460  | 2640 | 2800 | 2960 | 3120 | 3270 | 3410 | 3550 | 3690 | 3820 | 3950 |
| 9.00-20                                 | E          |   | 3120 | 3310 | 3510 | 3690 | 3870 | 4040 |      |      |      |      |
| 9.00-20                                 | F          |   | 3120 | 3310 | 3510 | 3690 | 3870 | 4040 | 4200 | 4360 | 5420 |      |
| 10.00-20                                | F          |   |      | 3760 | 3970 | 4180 | 4380 | 4580 | 4760 |      |      |      |
| 10.00-20                                | G          |   |      | 3760 | 3970 | 4180 | 4380 | 4580 | 4760 | 4950 | 5120 | 5300 |
| 11.00-20                                | F          |   |      | 4100 | 4330 | 4560 | 4780 | 4990 | 5190 |      |      |      |
| 11.00-20                                | G          |   |      | 4100 | 4330 | 4560 | 4780 | 4990 | 5190 | 5390 | 5590 | 5780 |
| 11.00-22                                | F          |   |      | 4350 | 4600 | 4840 | 5080 | 5300 | 5520 |      |      |      |
| 11.00-22                                | G          |   |      | 4350 | 4600 | 4840 | 5080 | 5300 | 5520 | 5730 | 5940 | 6140 |

DEFINITE TIRE INFLATION PRESSURES ARE ESTABLISHED FOR EACH TIRE SIZE DEPENDING UPON THE LOAD IMPOSED ON THE TIRE. FOR GREATER STABILITY, RIDING COMFORT AND PROLONGED TIRE LIFE, TIRES SHOULD BE INFLATED FOR THE LOADS CARRIED. THE "LOAD AND INFLATION TABLE" SHOWN ABOVE, INDICATES THE PROPER INFLATION PRESSURES.

TIRE AND RIM ASSOCIATION STANDARD TIRE LOADS AT VARIOUS INFLATION PRESSURES. LOAD RANGE LETTERS AND CORRESPONDING PLY RATING (D=8 PLY, E=10 PLY, F=12 PLY AND G=14 PLY).

**FIGURE G-2. TIRE LOAD AND INFLATION PRESSURES**

DA440HT:99900838:

The information within this manual has been compiled and checked but errors do occur. To provide our customers with a method of communicating those errors we have provided the Manual Change Request form below. In addition to error reporting, you are encouraged to suggest changes or additions to the manual which would be of benefit to you. We cannot guarantee that these additions will be made but we do promise to consider them. When completing the form, please write or print clearly. Submit a copy of the completed form to the address listed below.

## MANUAL CHANGE REQUEST

|                  |                   |                    |
|------------------|-------------------|--------------------|
| DATE             | PRODUCT<br>MANUAL | MANUAL<br>PART NO. |
| SUBMITTED BY     |                   |                    |
| COMPANY          |                   |                    |
| ADDRESS          |                   |                    |
| CITY, STATE, ZIP |                   |                    |
| TELEPHONE        |                   |                    |

ERROR FOUND

LOCATION OF ERROR (page no.): \_\_\_\_\_

DESCRIPTION OF ERROR: \_\_\_\_\_

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REQUEST FOR ADDITION TO MANUAL

DESCRIPTION OF ADDITION: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

REASON FOR ADDITION: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

MAIL TO: IOWA MOLD TOOLING Co., Inc.  
Box 189,  
Garner IA 50438-0189  
ATTN: Technical Publications

## LIMITED WARRANTY

**WARRANTY COVERAGE** - Products manufactured by Iowa Mold Tooling Co., Inc. (IMT) are warranted to be free from defects in material and workmanship, under proper use, application and maintenance in accordance with IMT's written recommendations, instructions and specifications as follows:

1. Ninety (90) days; labor on IMT workmanship from the date of shipment to the end user.
2. One (1) year; original IMT parts from the date of shipment to the end user.

IMT's obligation under this warranty is limited to, and the sole remedy for any such defect shall be the repair or replacement (at IMT's option) of unaltered parts returned to IMT, freight prepaid, and proven to have such defect, provided such defect occurs within the above stated warranty period and is reported within fourteen (14) days of its occurrence.

**IMPLIED WARRANTY EXCLUDED** - This is the only authorized IMT warranty and is in lieu of all other express or implied warranties or representations, including any implied warranties of merchantability or fitness for any particular purpose or of any other obligations on the part of IMT.

**ITEMS EXCLUDED** - The manufacturer gives no warranty on any components purchased by the manufacturer, and such components as are covered only by the warranties of their respective manufacturers.

**WARRANTY CLAIMS** - Warranty claims must be submitted and shall be processed in accordance with IMT's established warranty claim procedure.

**WARRANTY SERVICE** - Warranty service will be performed by any IMT distributor authorized to sell new IMT products of the type involved or by any IMT Service Center authorized to service the type of product involved or by IMT in the event of direct sales made by IMT. At the time of requesting warranty service, the purchaser must present evidence of the date of delivery of the product. The purchaser shall pay any premium for overtime labor requested by the purchaser, any charge for making service calls and for transporting the equipment to the place where warranty work is performed.

**WARRANTY VOIDED** - All obligations of IMT under this warranty shall be terminated:(1) if service other than normal maintenance or normal replacement of service items is performed by someone other than an authorized IMT dealer, (2) if product is modified or altered in ways not approved by IMT.

**PURCHASER'S RESPONSIBILITY** - This warranty covers only defective material and workmanship. It does not cover depreciation or damage caused by normal wear, accident, improper protection in storage, or improper use. The purchaser has the obligation of performing the care and maintenance duties discussed in IMT's written recommendations, instructions and specifications. Any damage which results because of purchaser's failure to perform such duties shall not be covered by this warranty. The cost of normal maintenance and normal replacement of service items such as filters, belts, etc. shall be paid by the purchaser.

**CONSEQUENTIAL DAMAGES** - The only remedies the purchaser has in connection with the breach or performance of any warranty on IMT products are those set forth above. In no event will the dealer, IMT or any company affiliated with IMT, be liable for business interruptions, loss of sales and/or profits, rental or substitute equipment, costs of delay or for any other special, indirect, incidental or consequential losses, costs or damages.

**REPRESENTATIONS EXCLUDED** - IMT products are subject to no expressed, implied or statutory warranty other than herein set forth, and no agent, representative or distributor of the manufacturer has any authority to alter the terms of this warranty in any way whatsoever or to make any representations or promises, express or implied, as to the quality or performance of IMT products other than those set forth above.

**CHANGE IN DESIGN** - IMT reserves the right to make changes in design or improvements upon its products without imposing any obligation upon itself to install the same upon its products theretofore manufactured.

Effective January, 1985

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**IOWA MOLD TOOLING CO., INC.**  
BOX 189, GARNER, IA 50438-0189  
TEL: 515-923-3711  
TECHNICAL SUPPORT FAX: 515-923-2424