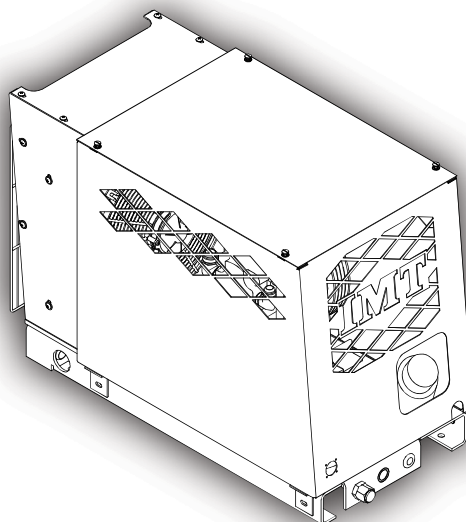




An Oshkosh Corporation Company

CAS60R

60 CFM/150 PSIG STANDARD ROTARY SCREW COMPRESSOR INSTALLATION, OPERATION, MAINTENANCE AND PARTS MANUAL



NOTE



Read this manual before installing, operating or servicing this equipment. Failure to comply with the operation and maintenance instructions in this manual **WILL VOID THE EQUIPMENT WARRANTY.**

NOTE

**Making unauthorized modifications to the compressor or system components
WILL VOID THE WARRANTY!**

Always inform Iowa Mold Tooling Co., Inc., before making any changes to the CAS60R hydraulic system.

Iowa Mold Tooling Co., Inc.

500 Highway 18 West
Garner, Iowa 50438
Phone: 641.923.3711
Fax: 641.923.6063

NOTE

**Use only IMT Premium Synthetic Oil and Genuine IMT Parts. Inspect and replace damaged components before operation. Substituting non-IMT Oil or non-genuine IMT filter components
WILL VOID THE COMPRESSOR WARRANTY!**

PART NUMBER:
99905395

Effective Date: 3/14

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NOTICE TO CUSTOMER

This manual is the final version and some of the information and specifications are subject to change without notice.

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SECTION 1: SAFETY

1.1 GENERAL INFORMATION

The products provided by Iowa Mold Tooling Co., Inc., are designed and manufactured for safe operation and maintenance. But it is ultimately the responsibility of the users and maintainers for safe use of this equipment. Part of this responsibility is to read and be familiar with the contents of this manual before operation or performing maintenance actions.

1.2 DANGERS, WARNINGS, CAUTIONS, AND NOTES

See information boxes at right column.

1.3 SUMMARY OF DANGERS, WARNINGS, CAUTIONS AND NOTES

These boxed inserts are placed throughout this manual in the sections where they apply. This subsection is a general summary of their contents.

1.3.1 DANGERS

- Keep tools or other conductive objects away from live electrical parts.
- Never touch electrical wires or components while the machine is operating. They can be sources of electrical shock.

1.3.2 WARNINGS

- **DO NOT EVER** use this compressor as a breathing air source. IMT disclaims any and all liabilities for damage or loss due to fatalities, personal injuries resulting from the use of an IMT compressor to supply breathing air.
- **DO NOT** perform any modifications to this equipment without prior factory approval.
- **DO NOT** operate the compressor or any of its systems if there is a known unsafe condition. Disable the equipment by disconnecting it from its power



IMPORTANT



Read this manual before operating or servicing the CAS60R AIR COMPRESSOR SYSTEM. Failure to do so could result in damaged equipment, bodily injury, or death.



DANGER

Identifies actions or conditions which will cause death, severe injury, or equipment damage or destructive malfunctions.



WARNING

Identifies actions or conditions which may cause death, severe injury, or equipment damage or destructive malfunctions.



CAUTION

Identifies actions or conditions which will or can cause injuries, equipment damage or malfunctions.

NOTE

Additional information (or existing information) which should be brought to the attention of operators/maintainers affecting safety, operation, maintenance, or warranty requirements.

source. Install a lock-out tag to identify the equipment as inoperable to other personnel.

- **DO NOT** operate the compressor with any by-pass or other safety systems disconnected or rendered inoperative.
- **DO NOT** operate the equipment while you are under the influence of alcohol or drugs.
- **DO NOT** operate the equipment while you are feeling ill.
- **DO NOT** attempt to service the equipment while it is operating.
- Before performing maintenance, or replacing parts, relieve the entire system pressure by opening a service valve which will vent all pressure to the atmosphere: remove all electrical power.
- **DO NOT** use the compressor for purposes other than for which it is intended. High pressure air can cause serious and even fatal injuries.
- **DO NOT** operate the compressor outside of its specified pressure and speed ratings. (See **Section 3: Specifications** or refer to the equipment data plate.)
- **DO NOT** use flammable solvents or cleaners for cleaning the compressor or its parts.
- **DO NOT** operate the compressor in areas where flammable, toxic, or corrosive fumes, or other damaging substance can be ingested by the compressor intakes.
- Keep arms, hands, hair and other body parts, and clothing away from fans, drive shafts, and other moving parts.
- **DO NOT** wear jewelry, unbuttoned cuffs, ties, or loose-fitting clothing when you are working near moving/rotating parts.
- **ALWAYS** confine long hair when working near moving/rotating parts.
- **NEVER** operate the equipment while wearing a headset to listen to music or the radio.
- Wear personal protective equipment such as gloves, work shoes, and eye and hearing protection as required for the task at hand.
- **DO NOT** operate the compressor with any guards removed or damaged, or other safety devices inoperative.
- **DO NOT** operate the compressor in enclosed or confined spaces where ventilation is restricted or closed-off.
- **DO NOT** install shut-off valves between the compressor and the compressor receiver tank (sump).
- Ensure that hoses connected to service valves are fitted with correctly sized and rated flow limiting devices which comply with applicable codes.

Pressurized broken or disconnected hoses can whip, causing injuries or damage.

- **DO NOT** use tools, hoses, or equipment that have maximum ratings below that of this compressor.
- Keep metal tools, and other conductive objects away from live electrical components.
- Before performing maintenance or repair operations on the compressor, ensure that all power has been removed and been locked out to prevent accidental application.
- **DO NOT** assume that because the compressor is in a STOPPED condition that hydraulic power has been removed.
- Use this compressor only to compress atmospheric air. Use of this equipment as a booster pump and/or to compress any other gaseous or aerosol substance constitutes improper use. It can also cause damage or injuries. Such misuse will also void the warranty.
- Install, operate, and maintain this equipment in full compliance with all applicable OSHA, other Federal, state, local codes, standards, and regulations.
- When lifting objects, be aware of proper lifting techniques to avoid injury.
- **ALWAYS** read and follow safety related precautions found on containers of hazardous substances.

1.3.3 CAUTIONS

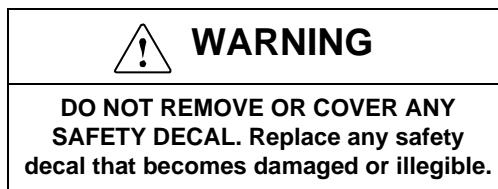
- Check all safety devices for proper operation on a routine basis.
- Ensure that no tools, rags, or other objects are left on compressor drive systems or near intakes.
- Keep the equipment clean when performing maintenance or service actions. Cover openings to prevent contamination.
- **DO NOT** operate the compressor if cooling air is not available (fan/cooler not operating) or if lubricant levels are below their specified minimum levels.
- Ensure all plugs, hoses, connectors, covers, and other parts removed for maintenance actions are replaced before applying power to the compressor.
- Avoid touching hot surfaces and components.
- Ensure that electrical wiring, terminals; hoses and fittings are kept in serviceable condition through routine inspections and maintenance. Replace any damaged or worn components.

1.3.4 SAFETY DECALS

Safety decals are placed onto, or located near, system components that can present a hazard to operators or service personnel. All pertinent decals listed in **Section 8.11, Decal Locations** are located near a component



which is subject to respect in terms of safety precautions.
Always heed the information noted on the safety decals.



SECTION 2: DESCRIPTION

2.1 GENERAL INFORMATION

The IMT CAS60R hydraulic module air compressor system offers superior performance and reliability while requiring very minimal maintenance.

This compressor system is equipped with a rotary screw compressor unit, which is renowned for its durability and reliability.

System Component or Component Group	Manual Section
GENERAL INFORMATION	2.1
COMPONENT DESCRIPTIONS	2.2
HYDRAULIC DRIVE SYSTEM	2.3
COMPRESSOR COOLING SYSTEM	2.4
INSTRUMENTATION SYSTEM	2.5
ELECTRICAL SYSTEM	2.6
MAIN FRAME AND ENCLOSURE	2.7

2.2 COMPONENT DESCRIPTIONS

The package includes:

- Heavy duty rotary screw air compressor with integral air inlet valve assembly
- Oil separation system
- Minimum pressure/discharge check valve
- Compressor oil cooling system
- Hydraulic drive and valving
- Instrumentation and control system

The component descriptions are arranged in this section as follows:

System Component or Component Group	Manual Section
COMPONENT DESCRIPTIONS	2.2
COMPRESSOR ASSEMBLY	2.2.1
<i>Continued on next page</i>	



WARNING

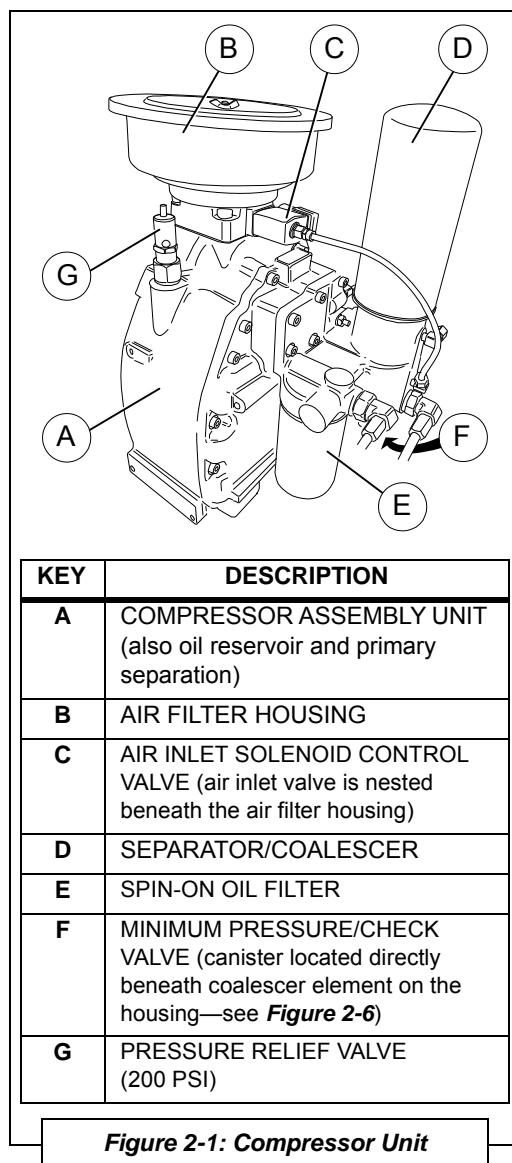
DO NOT attempt to remove any compressor part or work on the compressor or its systems without first relieving the entire system pressure. Open a service valve to atmosphere to assure all pressure is vented. Consult *Section 6, Maintenance* for specific maintenance procedures.

NOTE



Read this manual before operating or servicing this equipment. Failure to comply with the operation and maintenance instructions in this manual **WILL VOID THE EQUIPMENT WARRANTY.**

This manual should be read in conjunction with other appropriate supplied manuals, such as the vehicle owner's manual, etc.



System Component or Component Group	Manual Section
OIL INJECTED, SINGLE STAGE ROTARY SCREW COMPRESSOR	2.2.2
AIR INLET VALVE AND VALVE CONTROL SOLENOID	2.2.3
COMPRESSOR AIR FILTER	2.2.4
OIL RESERVOIR AND PRIMARY OIL SEPARATION	2.2.5
SPIN-ON OIL COALESCER/SEPARATOR FOR SECONDARY SEPARATION	2.2.6
SPIN-ON OIL FILTER	2.2.7
MINIMUM PRESSURE/DISCHARGE CHECK VALVE ASSEMBLY	2.2.8
PRESSURE SWITCH	2.2.9
PRESSURE RELIEF VALVE (200 PSI)	2.2.10

2.2.1 COMPRESSOR ASSEMBLY

This assembly incorporates various features into one unit (refer to **Figure 2-1**):

- Oil injected, single stage rotary screw compressor [A]
- Oil reservoir and primary oil separator (compressor housing encasement acts as both reservoir and primary oil separator [A])
- Inlet valve (beneath air filter housing [B]) and solenoid control valve [C]
- Air filter unit (within housing [B])
- Secondary spin-on oil coalescer/separator [D]
- Spin-on oil filter [E]
- Minimum pressure valve/check valve [F]
- Pressure relief valve [G]

This makes for a very compact integrated compressor assembly with reduced hose connections and consequently, fewer potential leak points.

2.2.2 OIL INJECTED, SINGLE STAGE ROTARY SCREW COMPRESSOR

Lubricant is injected into the compressor air end unit and mixes directly with the air in the compression chamber. Internal porting also injects oil into the bearings and seal area. The lubricant has three primary functions:

- As a coolant, it controls the rise of air temperature normally associated with the heat of compression.

- Seals the leakage paths between the rotors and the stator, and also between the rotors themselves.
- Acts as a lubricating film between the rotors allowing one rotor to directly drive the other, which is an idler. It also lubricates the bearings and seal.

The screw compressor assembly is mounted inside the main casting and consists of a male and female rotor, supported with anti-friction bearings suitably sized for long life.

2.2.3 OIL RESERVOIR AND PRIMARY OIL SEPARATION

The main casting, which contains the screw compressor, is also the oil reservoir and primary oil separation unit. The initial (primary) oil separation is caused by both changes in velocity and direction. The main casting also contains the oil level/fill plug and oil drain connection. A separate oil reservoir is not required.

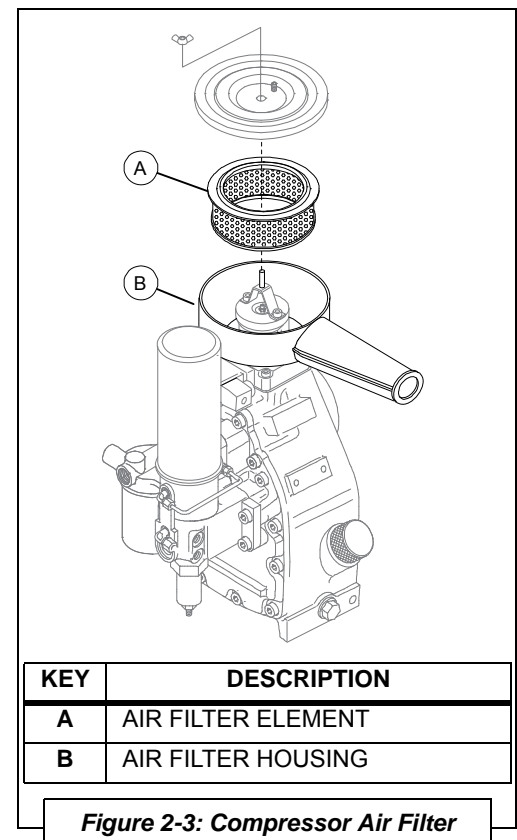
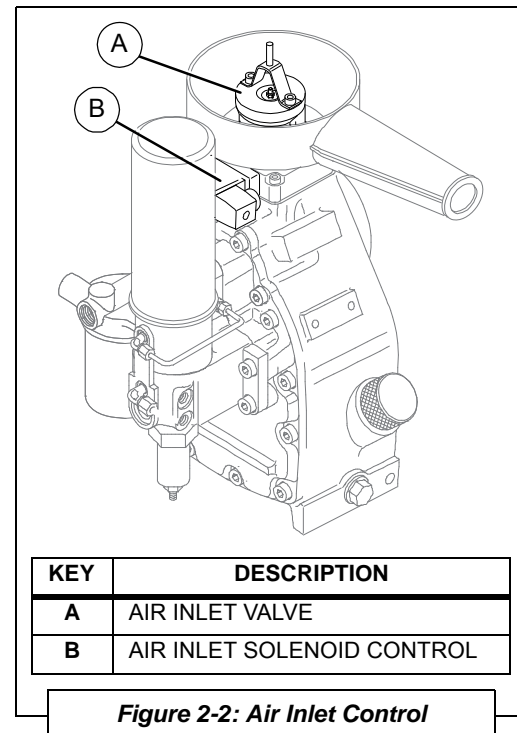
2.2.4 AIR INLET VALVE AND VALVE CONTROL SOLENOID

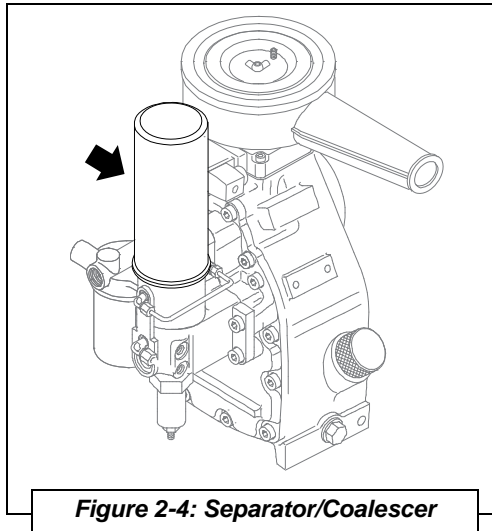
Refer to **Figure 2-2**. The inlet valve and control solenoid valve assembly are mounted directly on top of the compressor module. On initial start-up, the solenoid is energized and the inlet valve opens from pilot air being passed through the solenoid actuated valve. When final pressure is reached, a pressure switch de-activates the solenoid and the inlet valve closes. At the same time, the compressor pressure will relieve down to a low pressure (typically about 40 psig). Only the compressed air within the compressor module will reduce down to this lower pressure, due to the operation of the discharge minimum pressure/check valve. This reduction in internal air pressure reduces the power requirement considerably during this unloaded state. The pressure switch, located in the downstream air line, senses air demand and upon reducing pressure in discharge line (i.e. air being used) will re-activate the inlet valve and the compressor again starts to load and produce air.

The discharge air pressure switch will typically be set with a 30 psi differential pressure.

2.2.5 COMPRESSOR AIR FILTER

Refer to **Figure 2-3**. The air filter is a dry type, replaceable element and is mounted directly on top of the inlet valve assembly. The element is easily replaced for service change out. Refer to **Section 5, Maintenance**.





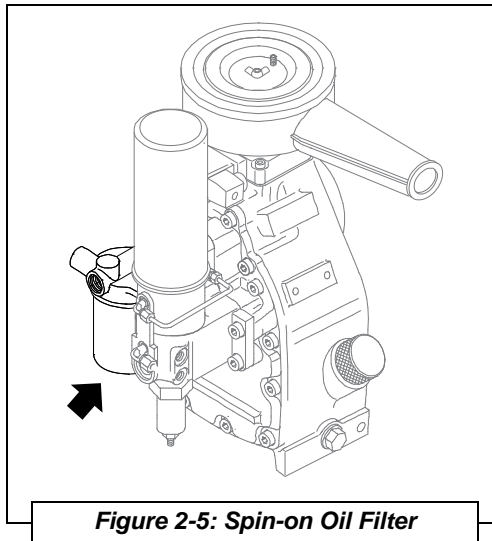
2.2.6 SPIN-ON OIL COALESCER/SEPARATOR FOR SECONDARY SEPARATION

Refer to **Figure 2-4**. The spin-on element screws directly onto the filter support housing at the rear of the compressor module. The separator element (coalescer) recovers the finer particles of residual oil after pre-separation, which occurs in the compressor unit reservoir to allow for maximum oil separation from the compressed air before service output. Oil, which is collected in this element, is scavenged back into the compressor unit.

2.2.7 SPIN-ON OIL FILTER

Refer to **Figure 2-5**. The spin-on oil filter is located on the filter support housing at the rear of the compressor. The filter incorporates a by-pass valve which will open to by-pass the filter during cold start-up when the oil is very viscous. It will also open if the filter element is plugged.

Filter element rating is 10 micron.



2.2.8 MINIMUM PRESSURE/DISCHARGE CHECK VALVE ASSEMBLY

Refer to **Figure 2-6**. This combined valve, located in the filter support housing, has two functions.

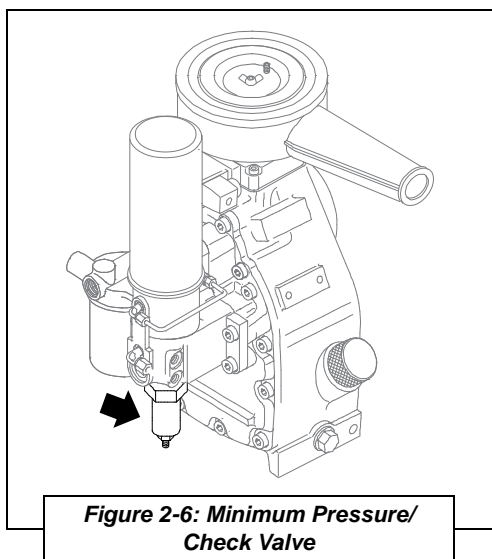
MINIMUM PRESSURE VALVE -

Maintains Minimum Pressure: This prevents downstream air to pass until compressor system is up to minimum pressure valve setting, which aids in maintaining good oil supply to the compressor. It also is a requirement for good oil separation.

Maintains a pressure of approximately 65 psig in the compressor unit to ensure oil injection during load conditions. Once this internal pressure is exceeded, it will allow air to discharge downstream to the service outlet.

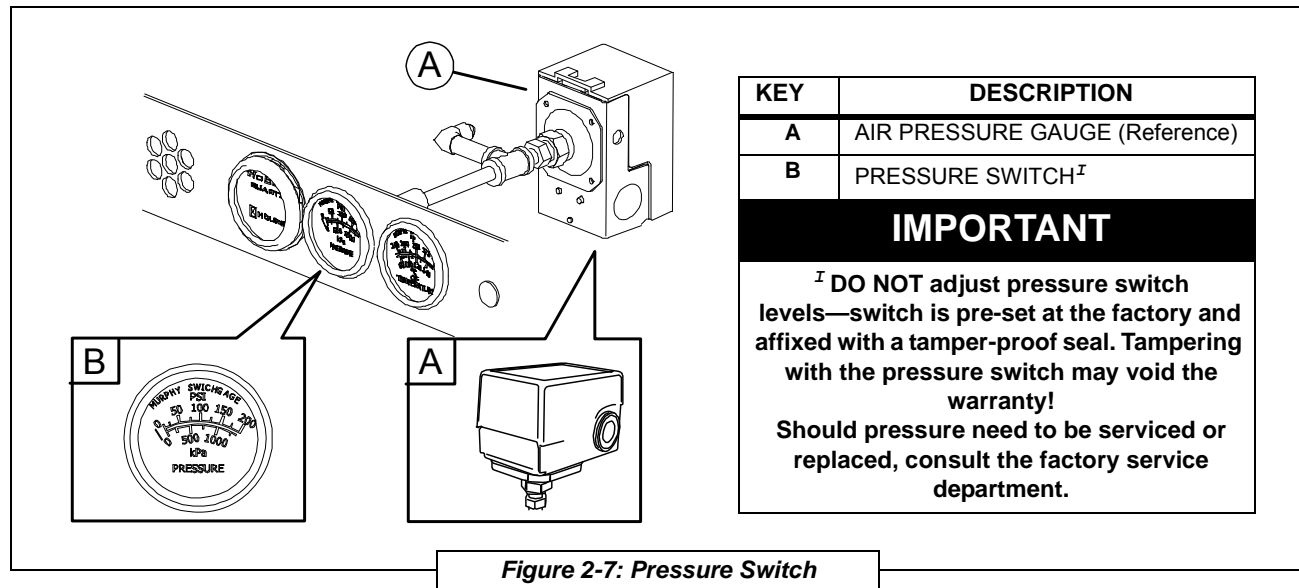
DISCHARGE CHECK VALVE -

Acts As a Back Pressure Check Valve: This allows for compressor to be unloaded to lower pressure than supply air line system, and permits compressor air pressure to be totally relieved when stopped. It prevents air in service lines or downstream receiver from venting back through the compressor during unload (when the compressor automatically will unload to approximately 40 psig internally), and also during shutdown.



2.2.9 PRESSURE SWITCH

Refer to **Figure 2-7**. The pressure switch pressure levels are preset at the factory.



The pressure switch provides a control for the inlet valve solenoid, much like a pneumatic regulator valve. When the pressure in the service line drops below the set limit, it reactivates the inlet valve control solenoid, allowing the inlet valve to draw in more air. The pressure switch has both a high and low pressure setting.

2.2.10 PRESSURE RELIEF VALVE

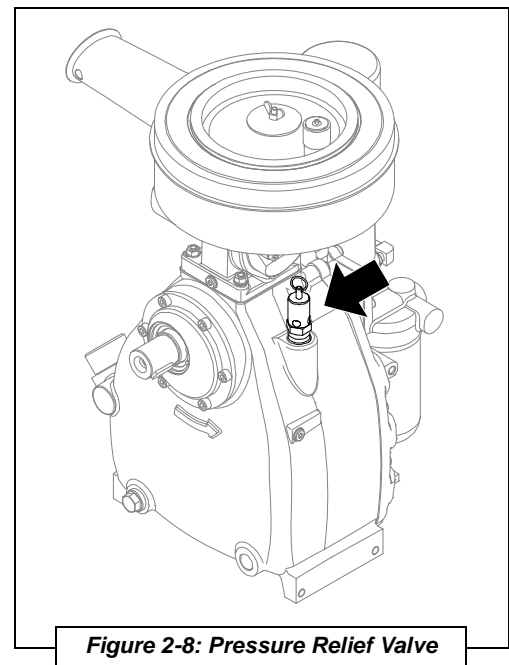
Refer to **Figure 2-8**. The pressure relief valve is a safety device that protects the unit against high pressure if the compressor system controls malfunction. The pressure relief valve is located at the upper right side of the compressor unit, facing the drive shaft. The pressure relief valve is designed to open if the internal pressure of the compressor exceeds 200 psi (13.8 bar).

2.3 HYDRAULIC DRIVE SYSTEM

Refer to **Figure 2-9**. Scope of supply may vary depending upon customer specifications.

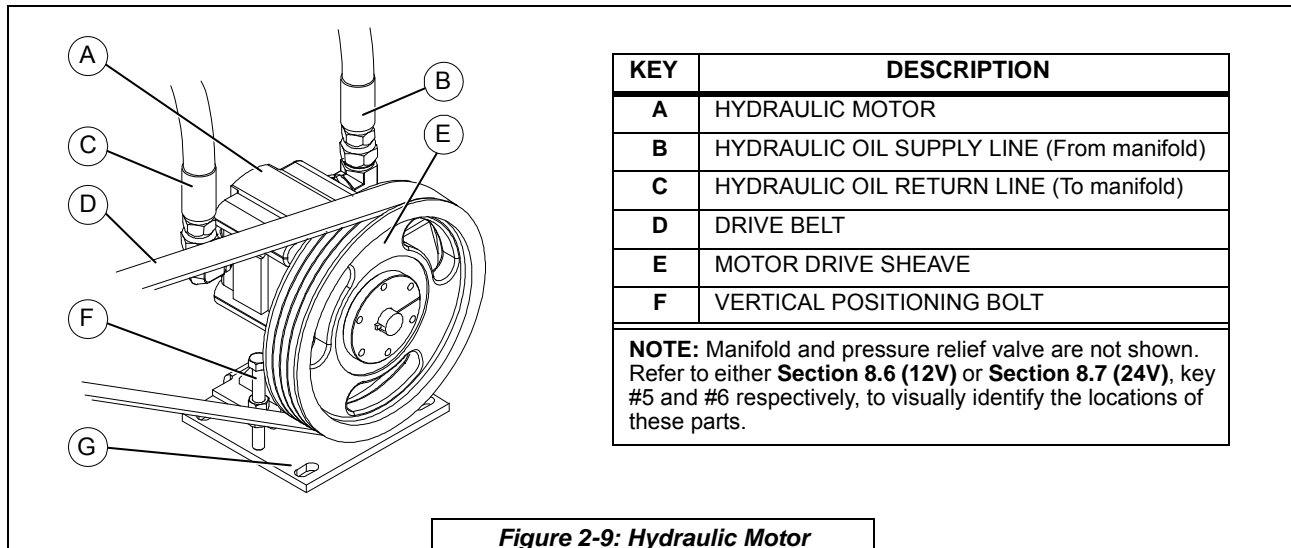
The packaged compressor unit will normally contain the hydraulic motor, hydraulic pressure relief valve, and on/off solenoid valve.

Input hydraulic oil pressure feed is connected to the bulkhead provided on the compressor package. Within the package, the high pressure oil feeds to a manifold containing the pressure relief valve and directional solenoid valve. If a malfunction in the hydraulic motor/compressor assembly causes the hydraulic pressure to



NOTE

Hydraulic pump, oil reservoir, return line oil filter and hoses to and from the completed packaged compressor are not furnished with the compressor. This is the customer's responsibility. Refer to Section 4.4 for hydraulic system requirements.



rise, it will bypass to the return line to safeguard damage or potential injury.

The directional solenoid valve is normally activated by the on/off selector switch mounted in the instrument cluster on the package. This valve is also connected through the compressor safety circuits for over-temperature and over-pressure. If either condition occurs, it will shut the unit down by diverting oil back to the tank. It is possible to add a remote on/off switch in parallel with the instrument cluster to permit on/off operation from another location on the vehicle.

Hydraulic oil from the manifold is hosed directly to the hydraulic motor and the outlet from the motor passes to the return line connection on the package. Customer is responsible for providing both hydraulic feed and return lines.

The hydraulic motor powers the compressor via a belt drive system.

2.4 COMPRESSOR COOLING SYSTEM

Refer to **Figure 2-10**. The package contains a cooler assembly powered by an electric fan. Oil from the compressor sump passes through this cooler before being filtered for re-injection into the compressor. When the oil temperature reaches 160°F, the thermal valve activates to gradually begin rerouting progressive amounts of heated oil to the cooler to maintain the correct operating temperature for the compressor oil. The valve

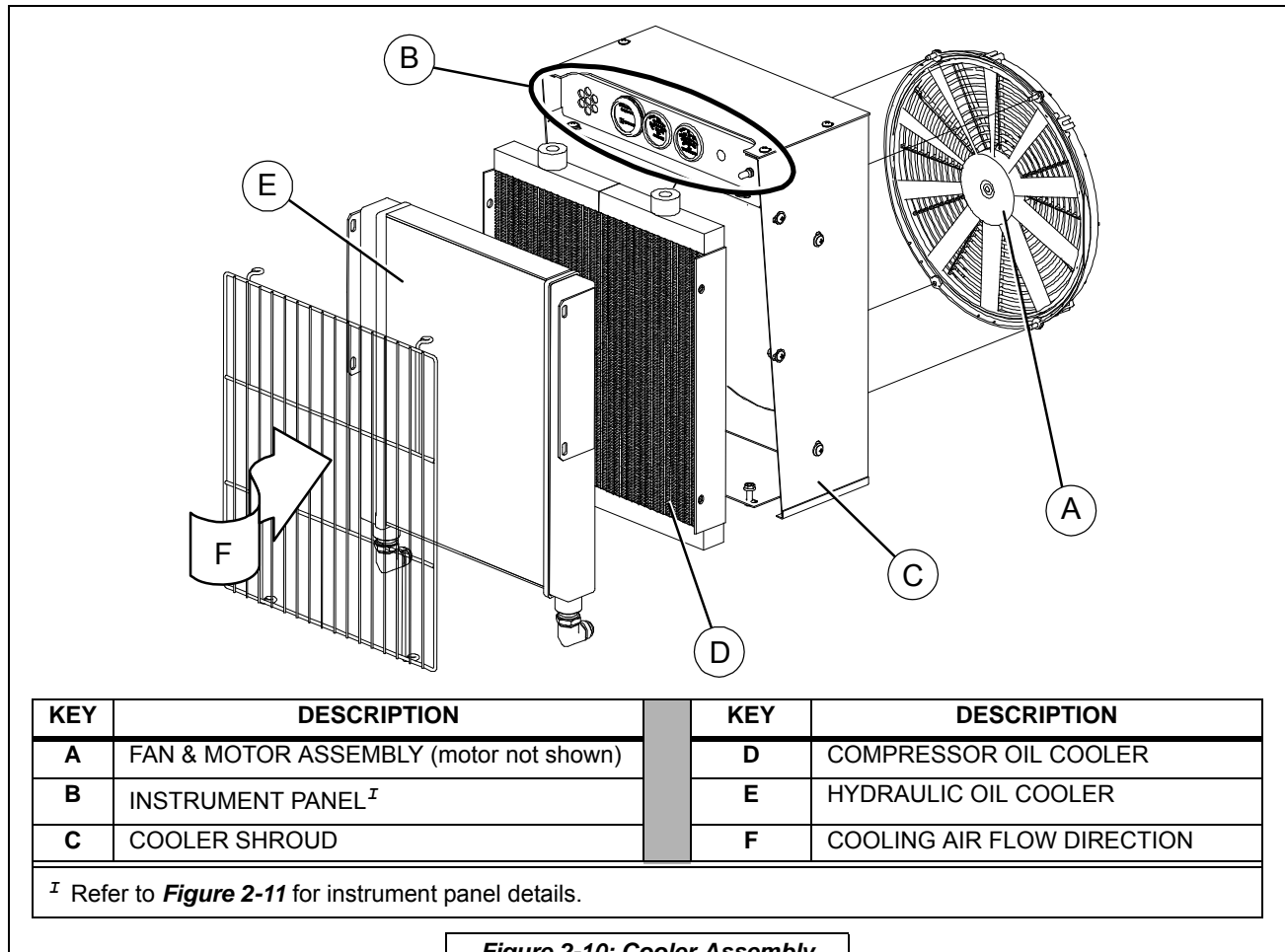


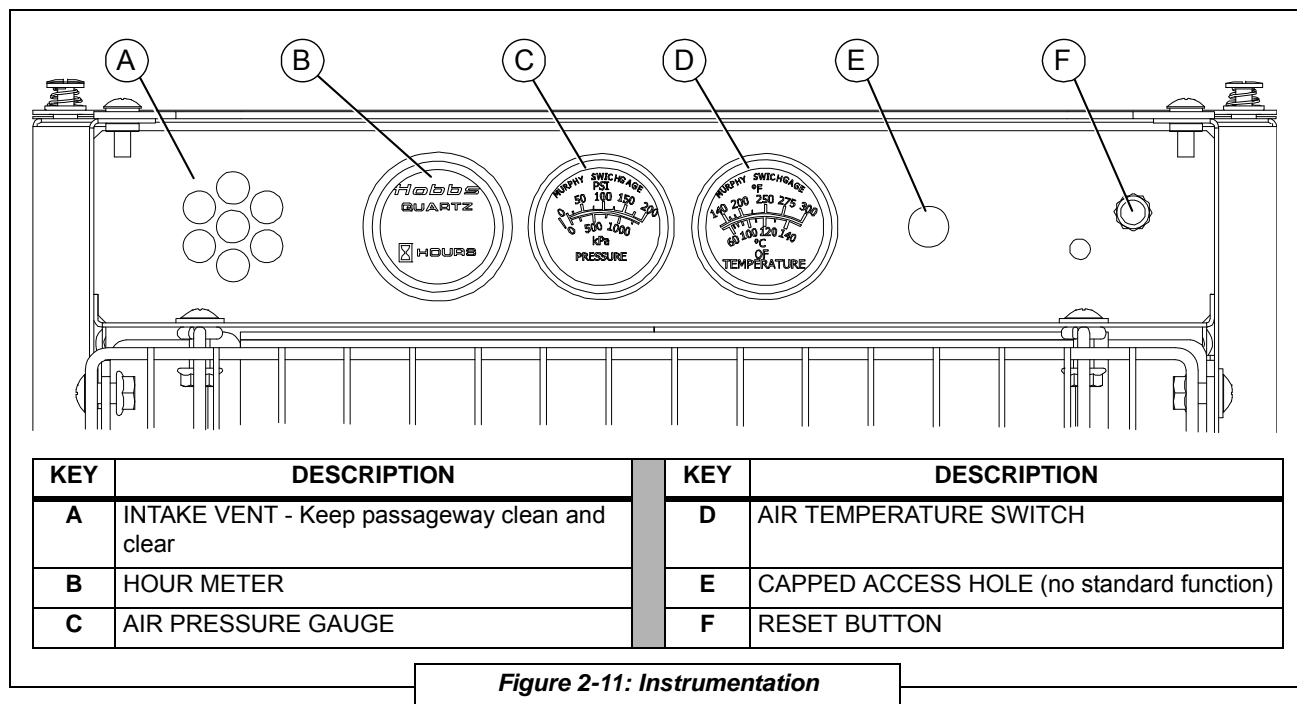
Figure 2-10: Cooler Assembly

is fully opened when oil temperature reaches 185°F, at which time all oil flow is diverted to the cooler for maximum cooling effect. Conversely, should the oil become cooled during operation, the reverse case is applicable; the valve begins closing, gradually rerouting the oil to bypass the cooling path, becoming fully closed when the temperature falls below 160°F.

The purpose of maintaining an elevated temperature during operation is to keep intake air moisture in suspension as it passes through the compressor. Thermal valve activation is affected by ambient conditions, load/unload cycles (or low oil level).

2.5 INSTRUMENTATION SYSTEM

Refer to **Figure 2-11** for instrument panel component locations.



2.5.1 HOUR METER

Figure 2-11 [B]: Monitors operation hours for service.

2.5.2 AIR PRESSURE GAUGE

Figure 2-11 [C]: Monitors service air pressure and incorporates an over-pressure shutdown switch.

2.5.3 AIR TEMPERATURE GAUGE

Figure 2-11 [D]: Monitors discharge air temperature at the compressor and incorporates an over-temperature shutdown switch.

2.5.4 RESET BUTTON

Figure 2-11 [E]: Cancels and/or resets over-pressure/over-temperature shut-down condition.



WARNING

NEVER FORCE the reset button back into position, or hinder it in any way, in order to allow for machine operation. A tripped reset button indicates a problem that should be addressed and resolved before operation can continue.

2.6 ELECTRICAL CONNECTIONS

Refer to **Figure 2-12**; for complete electrical connection procedure, refer to **Section 4.5.5**. Electrical connections to be made by the installer are provided at the bulkhead connection location. There are normally only three electrical connections to be made:

1. Ignition supply
2. Battery supply
3. Ground

2.7 MAIN FRAME AND ENCLOSURE

Refer to **Figure 2-13**. The steel mainframe is provided with bolt down holes.


The enclosure, which is attached to the mainframe, is made from steel and is powder coated to provide a durable finish. There are two main components:

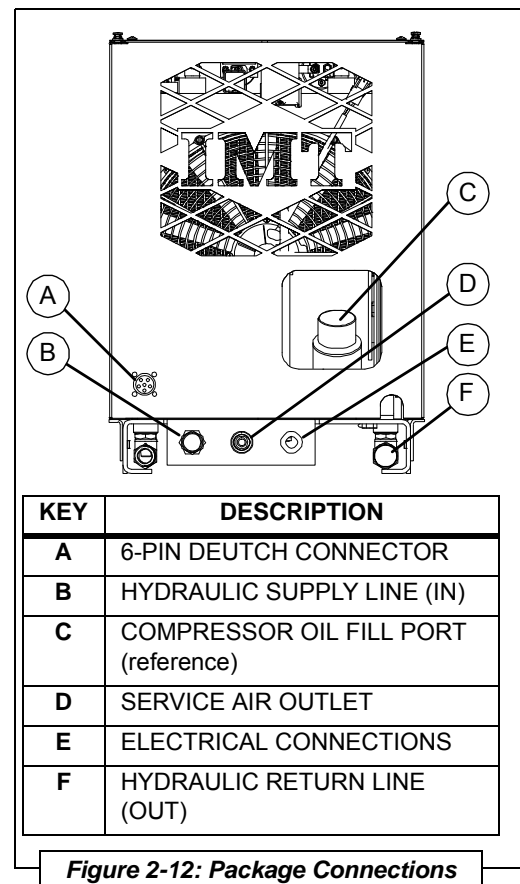
1. The main enclosure housing [B], which is bolted to the frame [A], provides overall protection for the various unit assemblies.
2. Cooler/instrumentation housing [C], which is bolted to the frame [A].

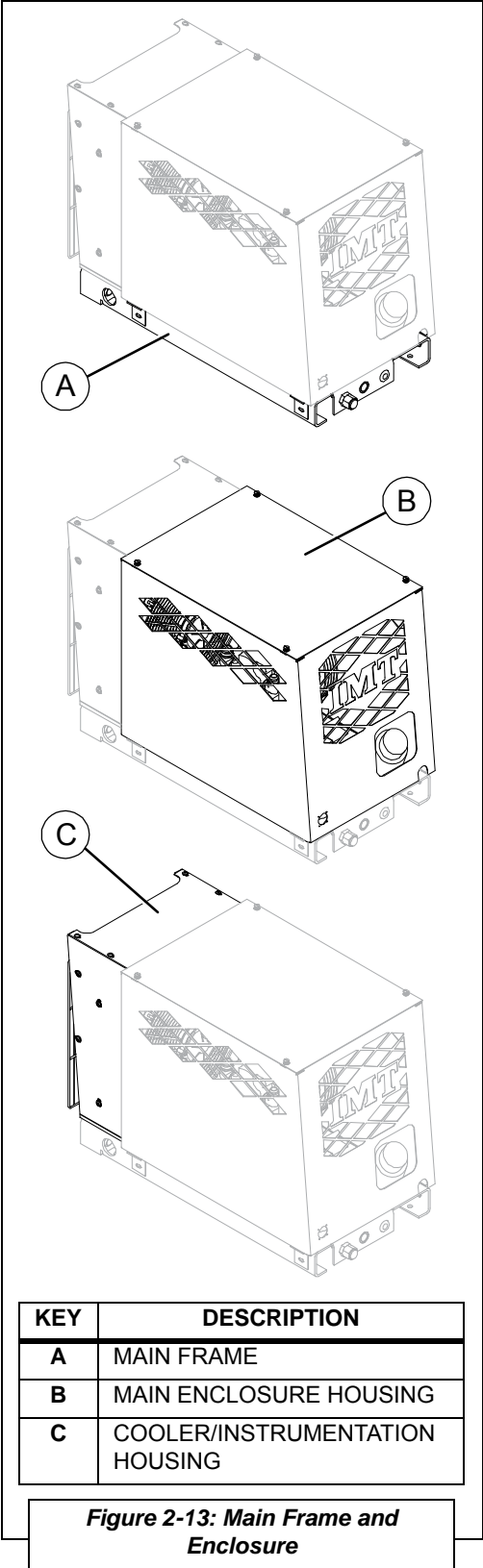
The service air outlet (**Figure 2-12**, [D]) is located on the main bulkhead connection strip, and the service valve incorporates a venting feature which relieves downstream air to the atmosphere when it is in the closed position.

Compressor oil level can be checked and filled from the outside of the enclosure (consult **Section 6.5.3** for oil check/change information).

Safety and Information decals are appropriately located on the machine. Please read and understand all the information contained thereon. For decal locations and information, refer to **Section 8.11**.

 WARNING
<p>DO NOT REMOVE OR COVER ANY SAFETY DECAL. Replace any safety decal that becomes damaged or illegible.</p>





SECTION 3: SPECIFICATIONS

TABLE 3A: CAS60R SPECIFICATIONS

GENERAL SYSTEM INFORMATION	SPECIFICATION
RATINGS	
Capacity (CFM @ 150 psig):	60
Air Pressure at tool [†] (psig):	150
Speed of compressor (RPM @ 100 psig):	7160
Hydraulic motor RPM	2130
Hydraulic flow (gpm @ 120°F hydraulic oil temperature):	16
Hydraulic pressure (psig @ 100/175 compressor psig):	2300
Maximum compressor oil temperature	250°F
Maximum Hydraulic oil temperature	180°F
COMPRESSOR	
Type:	Encapsulated, Oil-injected, Rotary Screw
Compressor oil tank capacity:	5 U.S. Quarts (4.7L)
Compressor overheating protection:	Shut Down at 250°F
Air inlet system:	Dry-type, Single Stage Filter
Drive coupling:	V-belt Drive System
Hydraulic motor:	Gear Type
PACKAGE	
Main frame:	Formed Steel with Boltdown Provision
Electrical supply:	12V Standard; 24V Optional
Electrical connections:	Weatherpack
Supply connections (customer hook-up):	Hydraulic: Oil In 3/4 in. 37° JIC
	Hydraulic: Oil Out 1 in. 37° JIC
	Electrical: 12V DC Positive and Ground (Standard) 24V DC Positive and Ground (Optional)
	Electrical: High Temp Shutdown
Enclosure:	Sheet Metal with Service Access
Cooler:	Hydraulic Oil Cooler/Radiator Core - Electric Fan
Dimensions:	42"L x 20"W x 21"H
Weight:	375 lbs.

[†] Air output expectations are at the end of the hose reel, not at the air end. The system includes an air tank and a hose reel with 50ft of 3/8" or 1/2" air hose.

TABLE 3B: PRIME LUBRICANT CHARACTERISTICS

Viscosity	178 SUS at 100° F (38°C)
Flashpoint	457° F (236°C)
Pour Point	-49° F (-45°C)
Contains	Rust and Oxidation Inhibitors and Detergents

TABLE 3C: RECOMMENDED TORQUE SPECIFICATIONS

Capscrew			Tightening Torque	
Size	Grade	Approximate Metric Equivalent	Dry	Lubricated
1/4-20 UNC	5	6 mm	8 ft-lbs	6 ft-lbs
5/16-18 UNC	5	8 mm	17 ft-lbs	13 ft-lbs
3/8-16 UNC	5	10 mm	30 ft-lbs	23 ft-lbs
1/2-13 UNC	5	12 mm	75 ft-lbs	55 ft-lbs
3/4-10 UNC	5	20 mm	260 ft-lbs	200 ft-lbs

SECTION 4: INSTALLATION

4.1 MACHINE PACKAGE RECEIPT/ INSPECTION

Upon receipt of the machine package, inspect the exterior of the shipping crate for signs of shipping/transit damage. Any damage should be reported immediately to the shipping company. Open the lid and inspect the component parts and supports to ensure that there has been no internal movement of assemblies or components which may have caused damage. To install the CAS60R compressor system, refer to the following sections:

4.2 GENERAL INSTRUCTIONS

This section provides general guidance for locating and preparing the CAS60R compressor package for operation. Each installation is unique and can be affected by location, ventilation, and other factors such as electrical and hydraulic power supply availability and location.

System Component or Component Group	Manual Section
GENERAL INSTRUCTIONS	4.2
DETERMINING THE CAS60R UNIT MOUNTING LOCATION	4.3
HYDRAULIC SYSTEM REQUIREMENTS	4.4
INSTALLATION	4.5

4.3 DETERMINING THE CAS60R UNIT MOUNTING LOCATION

When determining the location to mount the CAS60R unit, the following criteria must be taken into consideration:

- Refer to **Section 4.5**. The location must allow for the machine dimensions (**Figure 4-2**), and additional space requirements for minimum cooling, access and maintenance. Refer to **Figure 4-3** to determine the minimum space requirements.



WARNING

Install, operate, and maintain this equipment in full compliance with all applicable OSHA, other Federal, state, local codes, standards, and regulations.



WARNING

Before performing maintenance or repair operations on the compressor, ensure that all power has been removed and locked out to prevent accidental application.

DO NOT assume that because the compressor is in a STOPPED condition that power has been removed.



WARNING

DO NOT perform any modifications to this equipment without prior factory approval.



WARNING

DO NOT use plastic pipe, or incorrectly rated piping or hose. Incorrectly rated connection material can fail and cause injury or equipment damage.



WARNING

DO NOT operate the compressor in enclosed or confined spaces where ventilation is restricted or closed off.

IMPORTANT

IMT highly recommends consulting a hydraulic supply expert for specifying the correct hydraulic pump size and type, oil reservoir size, hydraulic cooler, hydraulic pressure relief, and other hydraulic supply components for your application.

NOTE

The temperature of the hydraulic oil should not exceed 140 °F due to the rating of the IMT-supplied hydraulic motor.

NOTE

IMT recommends a dedicated pump and hydraulic circuit.

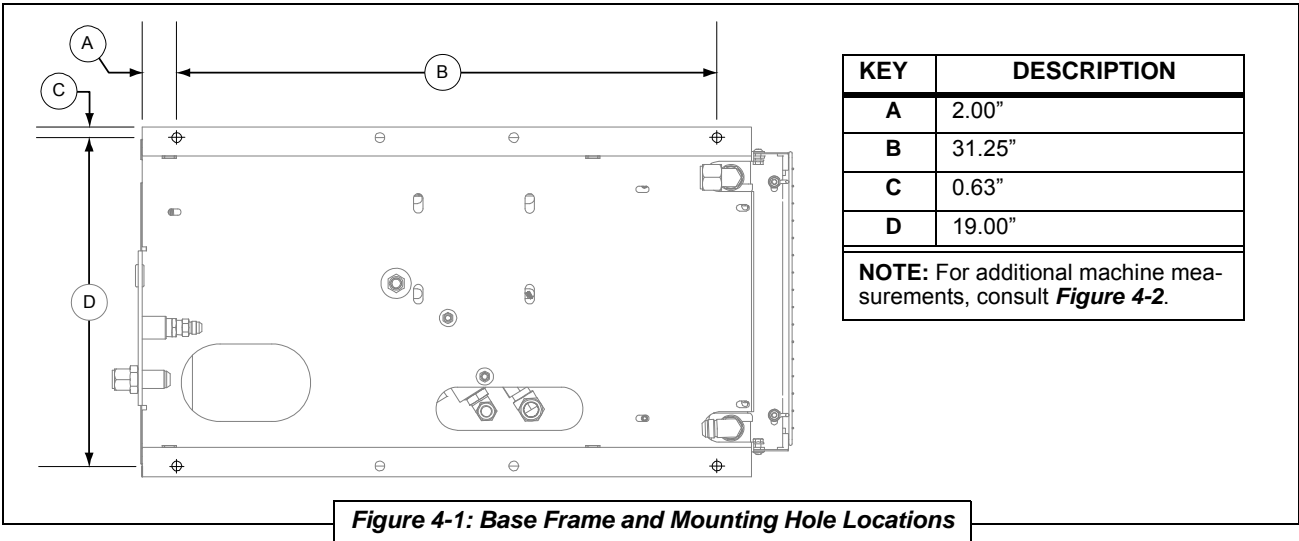
- The mounting surface must be level and able to accommodate the four [4] mounting bolts of the base frame. Refer to **Figure 4-1**.
- The mounting surface must be able to support the unit's weight (375 lbs.).
- The external gauges must be easily visible to the operator.

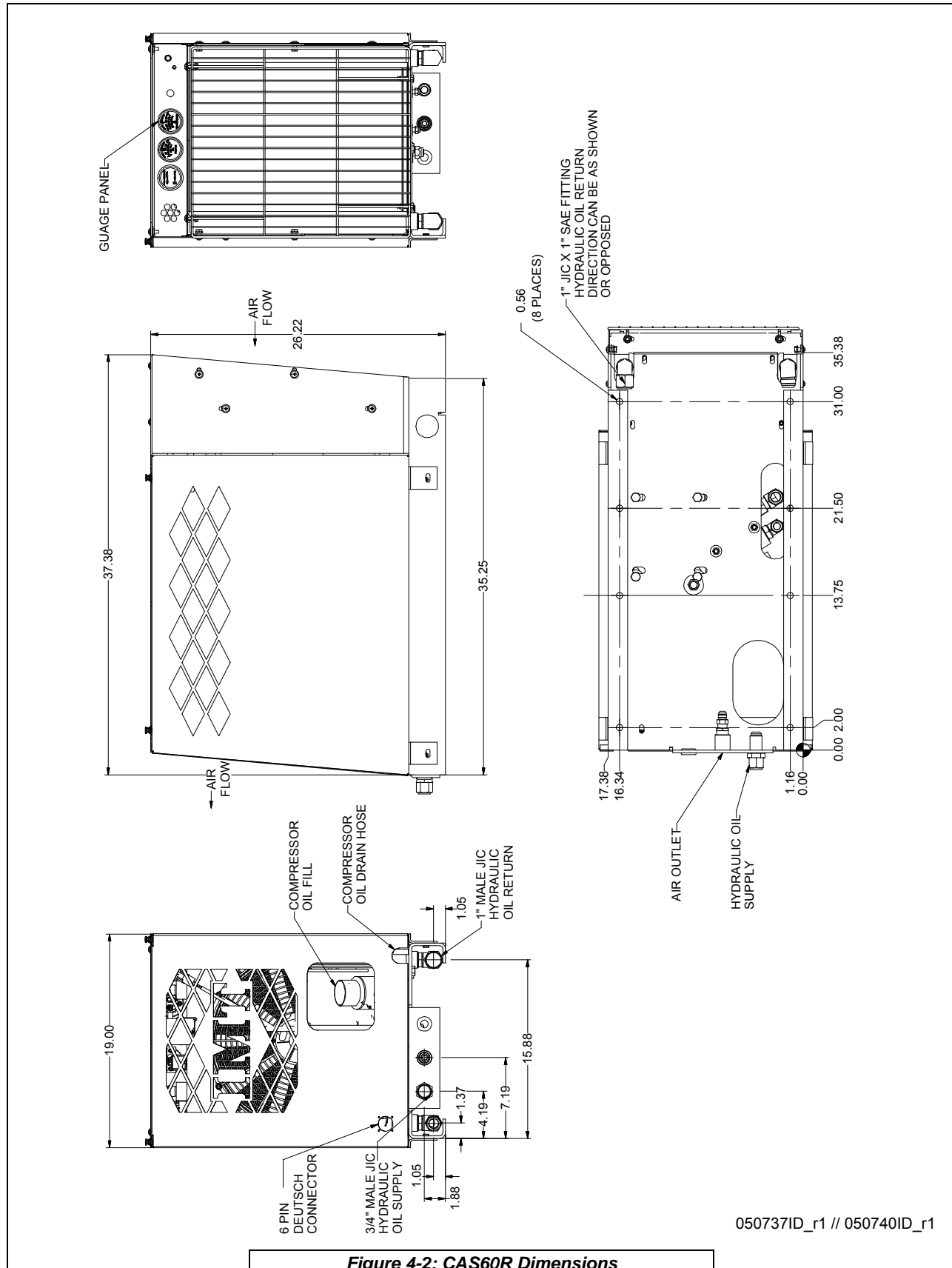
It is recommended, for most installations, to mount the compressor on the driver's side of the vehicle. The unit should be situated in such a manner that the fan (rear) and hydraulic cooler (front) are not obstructed. Do not place the compressor in any location where it can intake exhaust fumes, dust or debris.

4.4 HYDRAULIC SYSTEM REQUIREMENTS

The following criteria should be taken into consideration for the hydraulic system requirements:

- The hydraulic flow and pressure requirements of the air compressor.
- A continuous hydraulic load requirement is needed when the compressor is running.
- The duty cycle and ambient temperatures.
- Other hydraulic equipment which may share the same hydraulic supply system.





4.5 INSTALLATION

4.5.1 MACHINE LOCATION

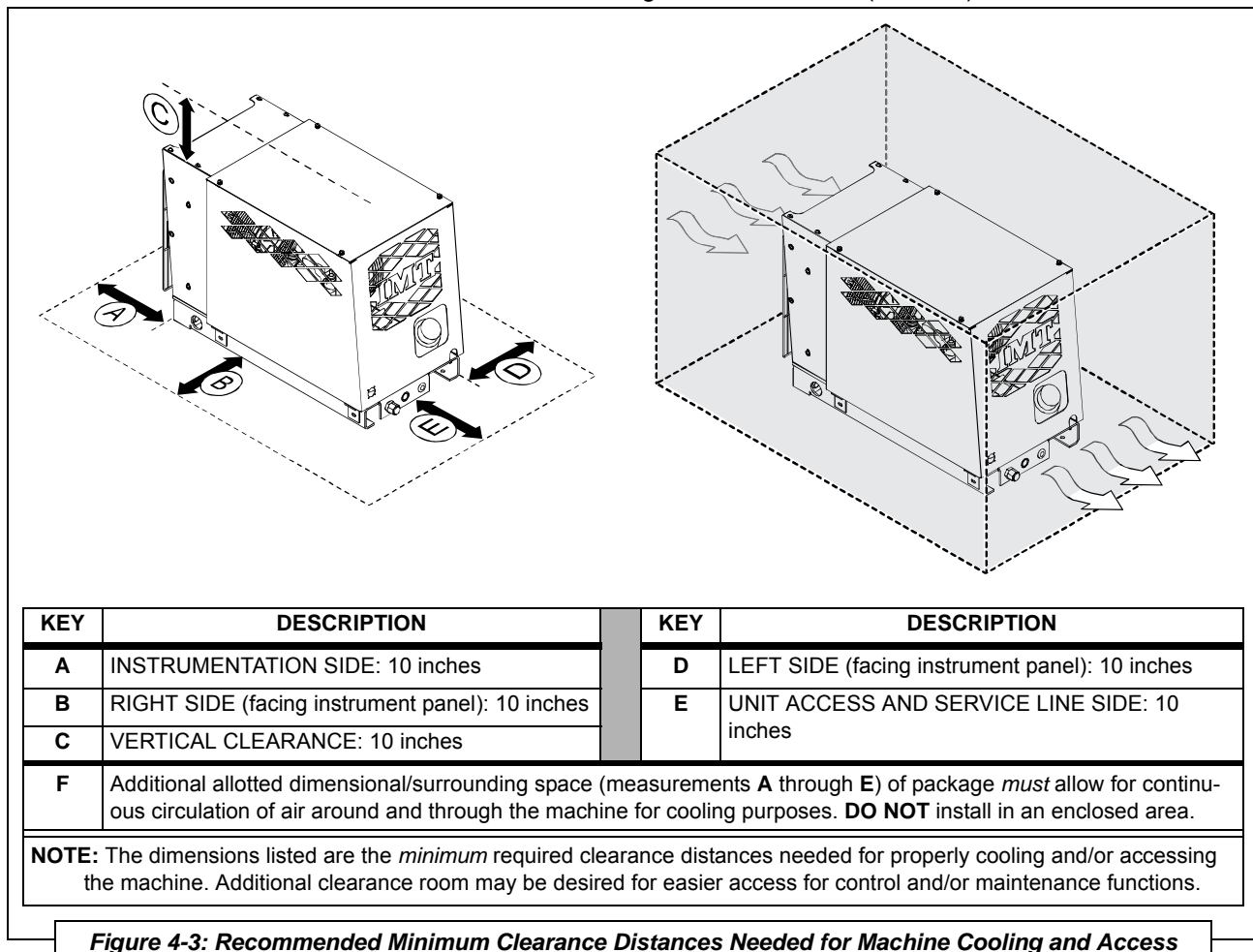
It is vital to locate the machine so that there is no restriction of cooling air through the enclosure (Refer to **Figure 4-3**). Cooling air enters the enclosure at the instrument panel end of the machine, passes through the cooler and exits through vents in the upper sides and the rear.

4.5.2 CLEARANCE

Refer to **Figure 4-3**. Ensure that adequate surrounding clearance exists to allow for the canopy shroud to be re-positioned or removed for service access.

4.5.3 MOUNTING

Mounting surface or support should be adequate for the weight of the machine (375 lbs.), and should be level for



normal operation. Mounting holes are located in the frame footing for four (4) 1/2" hold down bolts.

4.5.4 SERVICE CONNECTIONS

Refer to **Figure 4-4**. Service connections are conveniently grouped at the lower rear section of the unit in the base frame.

SERVICE LINE	CONNECTION TYPE
Hydraulic Supply (High Pressure)	1-1/6" - 12 x 37° flare (male) - 3/4" JIC
Hydraulic Return (Low Pressure)	1-5/16" - 12 X 37° flare (male) - 1" JIC
Air Service	3/4" NPT (female)
Electrical Connections	4 pin with leads (3 qty.)

4.5.5 ELECTRICAL CONNECTIONS

This system is offered with either 12V DC or 24V DC negative ground. Refer to **Figures 4-4**, and either **4-6** (for 12V machines), or **4-7** (for 24V machines).

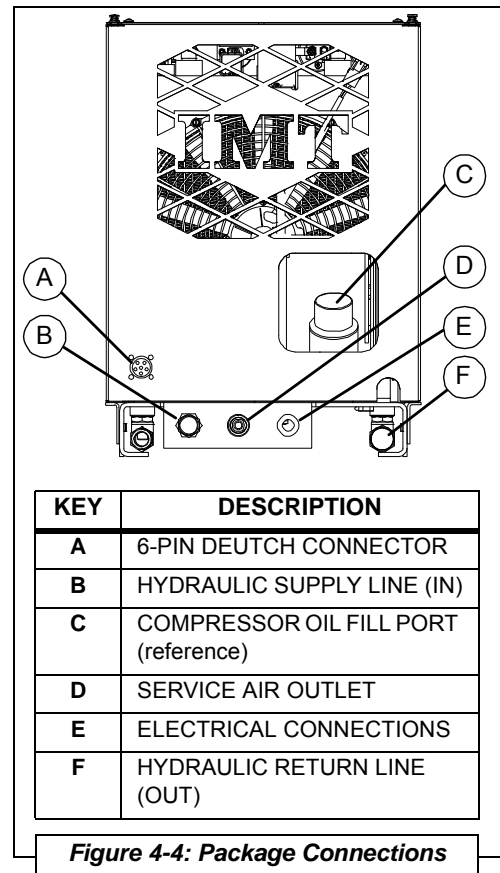
Wire #1	Battery (+) VDC supply
Wire #9	Ignition (+) VDC supply
Wire #7 / 13 / 15	Ground - Battery / Chassis

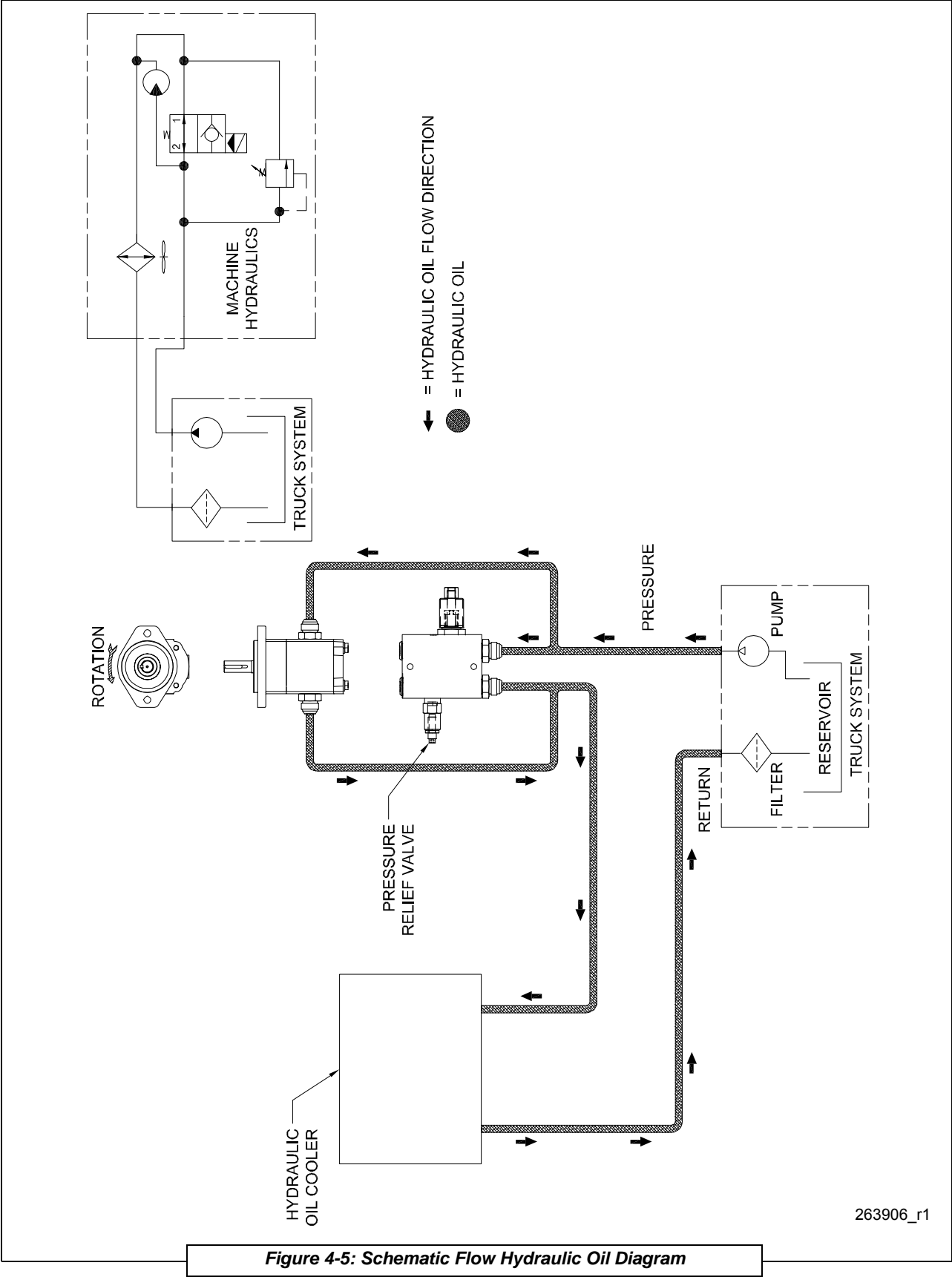
4.5.6 HYDRAULIC SUPPLY CIRCUIT

Refer to **Figures 4-5**. It is recommended that the compressor unit possesses a separate pump/flow/return hydraulic circuit to other hydraulic equipment. This is to prevent the possibility of pressure/flow drops that may occur if other hydraulically-powered equipment is activated during compressor operation, which may in turn, cause the compressor to stall out. Alternatively, use of a diverter valve will permit hydraulics to power different equipment selectively.

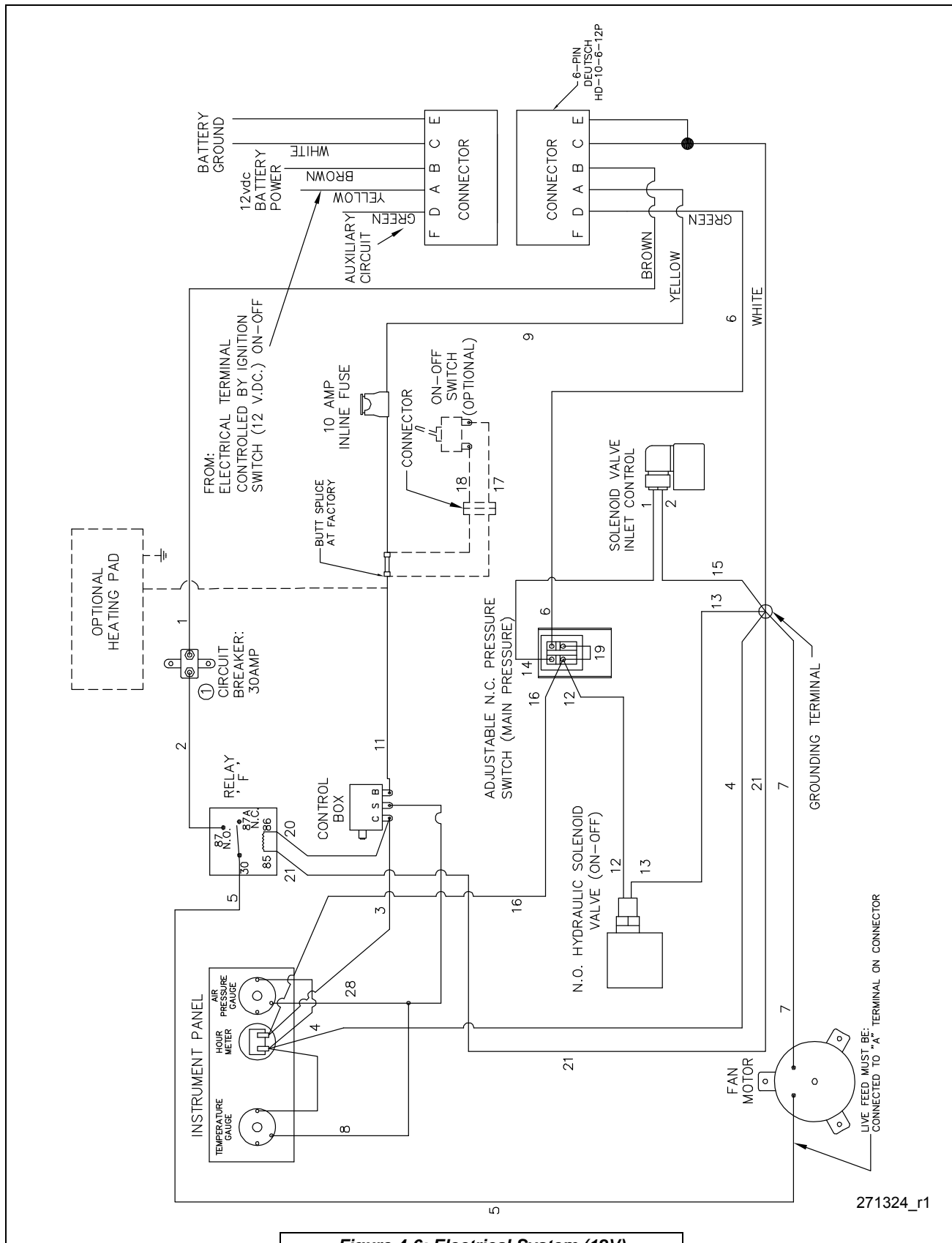
4.5.7 ROUTING

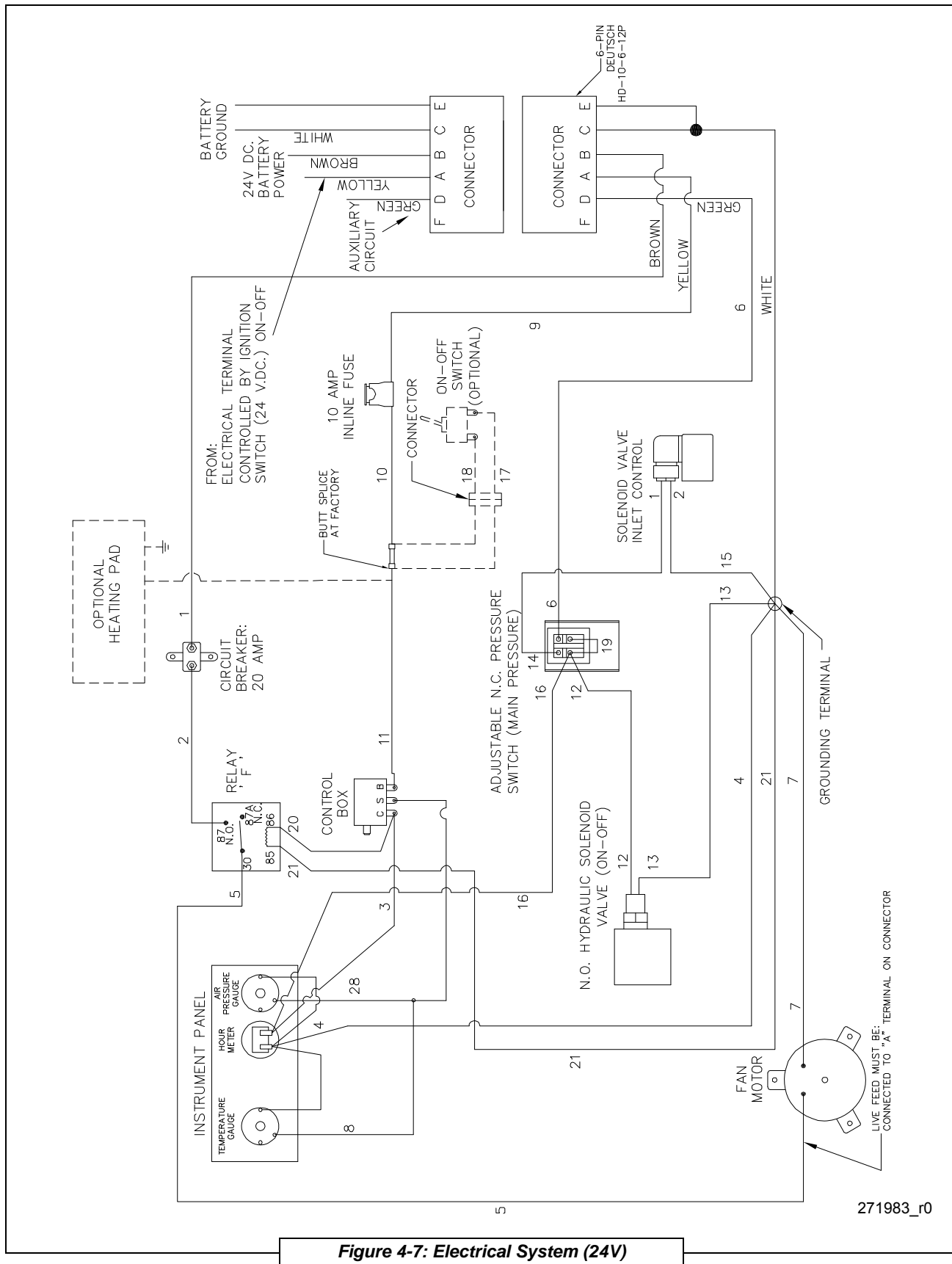
Refer to **Figures 4-5**, **4-6** or **4-7**. Ensure that all supply hoses and electrical wiring are correctly specified, adequately supported, and do not touch or rest on any sharp edges. Wiring should be protected with split loom to prevent corrosion, and consequently, loss due to down time.





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SECTION 5: OPERATION

5.1 GENERAL INFORMATION

The CAS60R compressor has a comprehensive array of controls and indicators. Understanding the correct operation of the system will help you to understand and recognize when it is operating optimally. The information in the Operation Section will help the operator to recognize and interpret the readings, which will call for service or indicate the beginning of a malfunction.

System Component or Component Group	Manual Section
GENERAL INFORMATION	5.1
PURPOSE OF CONTROLS	5.2
INITIAL START-UP PROCEDURE	5.3
NORMAL START-UP PROCEDURE	5.4
NORMAL SHUTDOWN PROCEDURE	5.5
OPERATING CONDITIONS	5.6



WARNING

Before starting, performing maintenance, or replacing parts, relieve the entire system pressure by opening a service valve which will vent all pressure to the atmosphere: remove all electrical power.

NOTE



Before starting the IMT CAS40P compressor, read this section thoroughly and familiarize yourself with the controls and indicators - their purpose, location and use.

5.2 PURPOSE OF CONTROLS

CONTROL OR INDICATOR	PURPOSE
Discharge Air Pressure (Pressure Gauge)	Continuously monitors service line discharge air temperature. Will activate shutdown if over-pressure occurs.
Discharge Air Temperature (Temperature Gauge)	Continuously monitors service line discharge temperature. Will activate shutdown if over-temperature occurs.
Hour Meter Gauge (Operation Hours)	Indicates accumulated hours of operation for planning and logging service schedules.
Reset Button	To reset latch-in relay in event of over-pressure or over-temperature.
Oil Fill/Level Plug	To check/fill compressor oil level.
Minimum Pressure Check Valve	Maintains minimum operating pressure and prevents back flow when unloaded/shutdown.
Pressure Switch	Controls operating pressure.
Inlet Solenoid Valve	Opens/closes inlet valve in response to pressure switch.

Continued on next page

5.2 PURPOSE OF CONTROLS

CONTROL OR INDICATOR	PURPOSE
Air Inlet Valve	Opens/closes in response to air demand and acts as check valve upon unload/shutdown to prevent oil blow back into air filter.
Fan Temperature Switch	Thermostatically switches cooling fan on/off to maintain optimum operating temperature.
Hydraulic Pressure Relief Valve	Relieves hydraulic pressure to return line in event of hydraulic over-pressure condition.
Hydraulic Solenoid Valve	Responds to on/off switch to direct flow to compressor motor or to return line.
Air Pressure Relief Valve	Opens sump pressure to atmosphere in case of air over-pressure condition.
Fault Reset	Fault button pops out if over temperature or over pressure condition is encountered. Button must be pressed to reset.

5.3 INITIAL START-UP PROCEDURE



WARNING

DO NOT remove caps, plugs and/or other components when compressor is running or pressurized. Stop compressor and de-pressurize system prior to maintenance of system. Relieve the entire system pressure by opening the air tank drain/vent valve, which will vent all pressure to the atmosphere.

Wear personal protective equipment such as gloves, work boots, and eye and hearing protection as required for the task at hand.

Refer to *Figure 5-1*. Open fill cap **SLOWLY** (contents under pressure) to make sure all pressure has been relieved.

The compressor has been factory-tested and its air and hydraulic valves have been adjusted to their specified operating settings. Although the compressor unit has also been filled at the factory, some settling may have occurred in transit. Refer to procedure below, and **Figure 5-2** for all unit checks to perform before initial start-up:

1. Position the compressor on a level surface so that proper amounts of liquid can be added if necessary.
2. Unit should be securely bolted down.



WARNING

Do not rely on hoses to hold the module in position.

3. Ensure all hose connections are tight, and wiring connections are correct and tight.
4. Check compressor oil level and add if necessary.
 - Refer to **Section 6.5.2** for procedure on checking and refilling oil to proper level.
5. Ensure hydraulic oil to pump inlet, and prime if necessary.
6. Make sure service valve on compressor is closed.
7. Engage hydraulic system (PTO or hydraulic supply), and allow hydraulic oil to circulate back

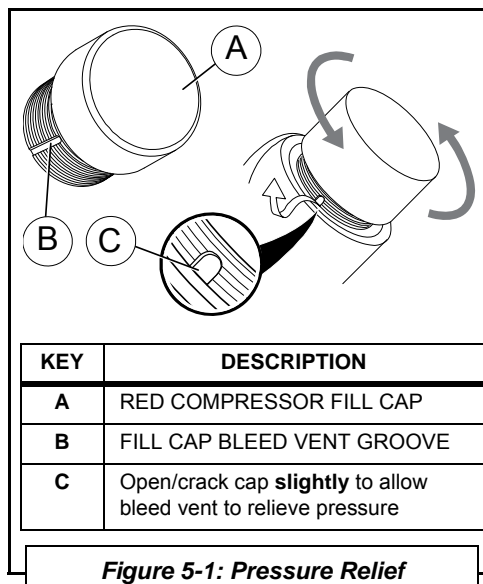
to tank. Oil should quickly circulate to the hydraulic motor on the compressor, and start producing air.

8. Check for leaks.
9. Check pressure and temperature gauges. Readings should be within the operating ranges specified in **Table 3A** (found in **Section 3, Specifications**).

IMPORTANT

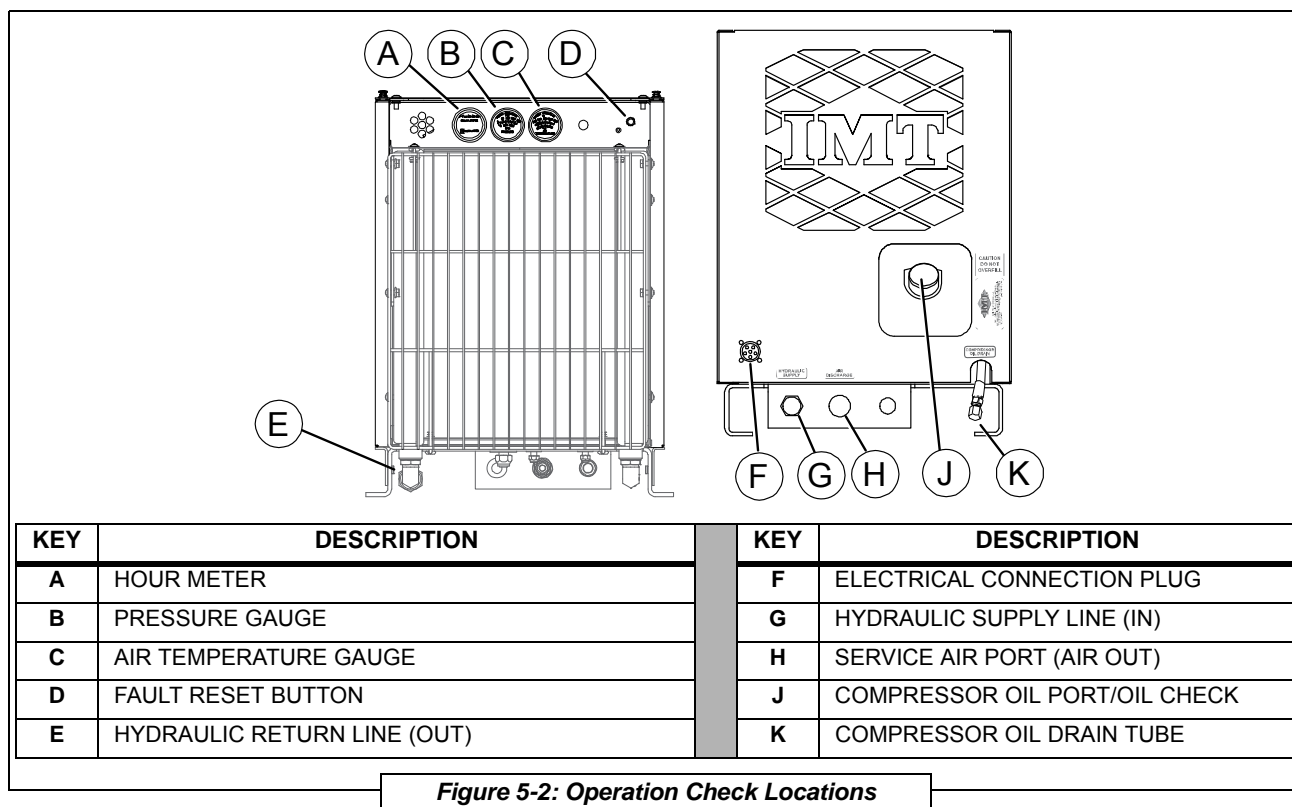
Pressure settings are pre-set at the factory—**DO NOT** manually attempt to adjust the pressure switch. Consult the factory if pressure readings deviate from the specified pressure rating range.

10. Partially open service valve to load compressor and allow to warm up. Monitor the temperature gauge for ideal operating temperature, which should be between 165°F and 190°F.
11. Cycle compressor on/off with service valve to ensure proper operation.
12. Close the service valve.



NOTE

Temperature may be above 190°F in high ambient conditions.



**WARNING**

If the reset button on the instrument panel has been tripped, **NEVER FORCE** the button back into position, or hinder it in any way, in order to allow for machine operation. A tripped reset button indicates a problem that should be addressed and resolved before operation can continue.

13. Disengage hydraulic system; compressor ceases to produce air.
14. Allow air to vent to atmosphere. Check compressor oil level and add if necessary. Check and correct any leaks, tighten any loose fittings and check drive belt tension.

5.4 ROUTINE START-UP PROCEDURE

1. Check compressor oil level and add if necessary. Refer to **Section 6.5.2**.
2. Close the air service valve.
3. Engage hydraulic system (PTO or hydraulic supply). This will activate the compressor.
4. Allow machine to warm up for several minutes before operating.

5.5 ROUTINE SHUTDOWN PROCEDURE

1. Close service valve and allow compressor to unload and cool down (approximately five [5] minutes.).
2. Shut off hydraulic power supply.

5.6 OPERATING CONDITIONS

1. Operate only in well ventilated areas.
2. Ensure there are no obstructions of cooling air intakes and outlets around the unit.
3. Do not leave anything resting on top of the machine. Hot cooling air will generate high heat and must not be restricted.
4. Be sure to leave sufficient room around the unit for cooling air circulation. A minimum of ten (10) inches clearance is needed for the cooler intake and sides, and ten (10) inches for the rear of the unit. Heated air must be able to vent away from the intake.
5. Operate machine with top cover closed.
6. Refer to specifications for operating parameters.

SECTION 6: MAINTENANCE

6.1 GENERAL INFORMATION

A good maintenance program is the key to long compressor life. This section contains a program that, when adhered to, should keep the compressor in top operating condition. However, it should be understood that these intervals are for normal operation in a good clean environment. More frequent inspections, oil changes and general maintenance should be carried out in dusty environments, high ambient temperatures or extended light load conditions.

Follow the prescribed periodic maintenance schedules given in this section as recommended. Failure to follow the prescribed periodic maintenance at the recommended intervals will impair the package safety, performance characteristics, shorten the package's life, and will negatively affect the warranty coverage of the package.

NOTE

It is important to keep in mind that operating the compressor package in a severe environment may require more frequent service intervals than prescribed in the periodic maintenance schedule.

Before starting the compressor system, inspect the machine package for any suspect condition that may cause a safety hazard or hamper operation. Replace damaged components with Genuine IMT Replacement Parts.

System Component or Component Group	Manual Section
GENERAL INFORMATION	6.1
MACHINE MAINTENANCE SCHEDULE	6.2
ROUTINE MAINTENANCE SCHEDULE	6.3
REPLACEMENT PARTS	6.4
PARTS REPLACEMENT AND ADJUSTMENT PROCEDURES	6.5



WARNING

DO NOT remove caps, plugs and/or other components when compressor is running or pressurized. Stop compressor and de-pressurize system prior to maintenance of system.

Wear personal protective equipment such as gloves, work shoes, and eye and hearing protection as required for the task at hand.



WARNING

Follow all applicable safety recommendations as outlined in *Section 1: Safety* of this manual.



WARNING

DO NOT work on any electrical components unless the battery is disconnected.



CAUTION

Always wear personal protective equipment such as gloves, work shoes, eye, and hearing protection as required for the task at hand.



CAUTION

Compressors and drive motors generate heat and create hot surfaces. Use caution when operating or servicing the compressor system. Some surfaces and components may be hot.

**WARNING**

It is important that the compressor oil be of a recommended type and that it is inspected and replaced together with the oil and air filters, in accordance with this manual.

**CAUTION**

Do not mix oils of different types.

**CAUTION**

Use only original IMT equipment filters. Other filters may not have correct pressure rating or may have different thread.

NOTE


Using replacement parts other than Genuine IMT Replacement Parts will void the warranty.

6.2 MACHINE MAINTENANCE SCHEDULE

Refer to **Section 6.3, Routine Maintenance Schedule**. A routine maintenance schedule based on time and/or hours logged, is given in **Section 6.3**. The intervals are determined from machine usage under typical operation conditions. However, the operator must be aware that operating conditions will vary depending on such things as specific customer requirements, environmental temperatures and cleanliness of the ambient air. With this in mind, the specifications given in **Section 6.3** should be used as a guideline instead of a fixed agenda. A safe approach to routine maintenance would be to perform the given maintenance task more frequently under harsher conditions.

IMT provides a routine maintenance parts list in **Section 8, Table 8A**. Should a non-routine part need replacement or servicing, peruse the various parts list illustrations in **Section 8** to help determine the exact part and part number in question. Our parts and service departments are ready to assist in identifying and/or replacing non-routine parts.

6.3 ROUTINE MAINTENANCE SCHEDULE

 WARNING Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual. NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY: Always clearly tag the start-up instrumentation against accidental system start-ups during maintenance.		MAINTENANCE INTERVALS Hourly or Calendar Period - whichever comes first			NOTE: If working in dusty or dirty conditions, reduce the recommended time intervals between servicing by half for engine and compressor oil change, and engine and compressor filter servicing.
KEY	TASK DESCRIPTION	After 8 Hours or Daily	After Initial 50 Hours	After 500 Hours or Annually	
					ACTION TO TAKE
1	Before starting , check compressor oil level.	•	•	•	Ensure vehicle is situated on a level surface before checking oil level. Add oil if necessary.
2	Check for any leaks or loose bolts.	•	•	•	Tighten if necessary.
3	Check drive belt for tension.	•	•	•	Re-tension if necessary.
4	After starting , check pressure gauge for correct operating pressure.	•	•	•	
5	Check for leaks.	•	•	•	Visually note any leaks or evidence of leaks around the compressor unit and hose connections. Tighten any loose connection point where needed. Repair or replace any damaged part.
6	Change oil filter element		•	•	Always replace the oil and oil filter element at the same change interval.
7	Compressor oil change		•	•	Drain and refill air/oil compressor sump tank.
8	Inspect intake air filter.		•	•	Change if necessary.
9	Replace separator element			•	Replace.
10	Inspect exterior of front-mounted oil cooler.			•	Clean if necessary.

NOTE

For routine, as well as non-routine, maintenance procedures, consult the sections listing table in **Section 6.5** to locate specific maintenance components.

Iowa Mold Tooling Co., Inc.

500 Highway 18 West
 Garner, Iowa 50438
 Phone: 641.923.3711
 Fax: 641.923.6063

6.4 REPLACEMENT PARTS

Replacement parts should be purchased through your local IMT representative or where the compressor system was purchased. If, for any reason, parts are not available in this manner, they can be purchased through IMT directly.

NOTE

If additional spare parts are being stored for future use, make certain that they are stored in proper containers that allow for protection against contamination, and kept in a clean area of moderate temperature reading. For information on storing the machine package for periods of non-use, consult *Section 6.5.14, Long Term Storage*.

6.5 PARTS REPLACEMENT AND ADJUSTMENT PROCEDURES**DANGER**

Adjustments should be made with compressor switched OFF since electrical terminals inside pressure switch will be exposed, and opening the canopy exposes the belt drive system.

**WARNING**

Before performing maintenance:
 Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual.

NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:

Always clearly tag the start-up instrumentation against accidental system start-ups during maintenance.

NOTE

It may be necessary to change the compressor fluid and fluid filter more frequently if the compressor fluid has water contamination, or if the compressor system is operated in a dirty environment.

System Component or Part Group Task	Manual Section
Parts Replacement and Adjustment Procedures	6.5
Removing Panels for Machine Maintenance Access	6.5.1
Removing and Replacing the Roof (Top) Access Panel	6.5.1.1
Removing and Replacing the Main Canopy Panel	6.5.1.2
Removing and Replacing the Cooler and Instrumentation Access Panel	6.5.1.3
Compressor Oil Maintenance	6.5.2
Lubrication Guide	6.5.2.1
Adding or Changing the Compressor Oil	6.5.2.2
Oil Filter Replacement	6.5.3
Removing the Oil Filter	6.5.3.1
Replacing the Oil Filter	6.5.3.2
Coalescer (Air/Oil Separator) Replacement	6.5.4
Removing the Coalescer Element	6.5.4.1
Replacing the Coalescer Element	6.5.4.2
Compressor Air Filter Maintenance	6.5.5
Removing the Air Filter	6.5.5.1
Compressor Air Filter Inspection	6.5.5.2
Replacing the Air Filter	6.5.5.3
Repairing the Inlet Control System	6.5.6
Rebuilding the Air Inlet Valve Assembly	6.5.6.1
Performing Maintenance on the Drive Belts	6.5.7
Adjusting the Drive Belts	6.5.7.1
Drive Belt Tension Data	6.5.7.2
Replacing the Drive Belts	6.5.7.3
Cleaning the Cooler Core	6.5.8
Pressure Switch	6.5.9
Servicing the Minimum Pressure/Discharge Check Valve	6.5.10
Rebuilding the Minimum Pressure/Discharge Check Valve	6.5.10.1
<i>Continued on next page</i>	

**CAUTION**

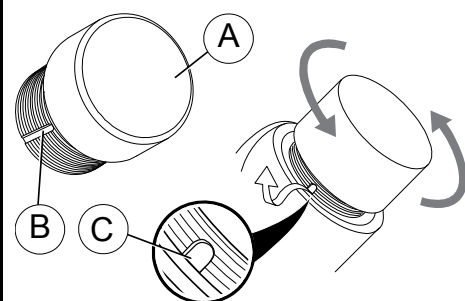
Use only original equipment filters. Other filters may not have correct pressure rating or may have different thread.

**WARNING**

DO NOT remove caps, plugs and/or other components when compressor is running or pressurized. Stop compressor and de-pressurize system prior to maintenance of system. Relieve the entire system pressure by opening the air tank drain/vent valve, which will vent all pressure to the atmosphere.

Wear personal protective equipment such as gloves, work boots, and eye and hearing protection as required for the task at hand.

Refer to *Figure 6-1*. Open fill cap **SLOWLY** (contents under pressure) to make sure all pressure has been relieved.



KEY	DESCRIPTION
A	RED COMPRESSOR FILL CAP
B	FILL CAP BLEED VENT GROOVE
C	Open/crack cap slightly to allow bleed vent to relieve pressure

Figure 6-1: Pressure Relief

System Component or Part Group Task	Manual Section
Setting the Minimum Pressure/Discharge Check Valve	6.5.10.2
Compressor Control Thermal Valve	6.5.11
Servicing the Fuses and Circuit Breaker	6.5.12
Safety Shutdown Systems	6.5.13
Testing the Gauges' Shutdown Feature	6.5.13.1
Pressure Relief Valve	6.5.13.2
Long Term Storage	6.5.14

6.5.1 REMOVING PANELS FOR MACHINE MAINTENANCE ACCESS

In order to perform many of the maintenance procedures one or more of the machine panels will need to be temporarily removed. Consult **Table 6A**, **Figure 6-2** and the proper panel removal sub-section listed below to remove the desired panel.

System Component or Part Group Task	Manual Section
REMOVING PANELS FOR MACHINE MAINTENANCE ACCESS	6.5.1
Removing and Replacing the Roof (Top) Panel	6.5.1.1
Removing and Replacing a Side Panel	6.5.1.2
Removing and Replacing the Cooler and Instrumentation Access Panel	6.5.1.3



WARNING

Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual.

NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:

Always clearly tag the start-up instrumentation against accidental system start-ups during maintenance.

NOTE

The canopy panel is comprised of the main side panels and the utility-access side panel as a single panel unit. Care should be taken to minimize bending of the main canopy while it is being removed to avoid any bending. Place the canopy on a level surface while maintenance is being performed.

6.5.1.1 REMOVING AND REPLACING THE ROOF (TOP) PANEL

TOP PANEL REMOVAL:

Refer to **Figure 6-2**.

1. With a flat head screwdriver turn the stud screw [D] a quarter turn to allow the stud screw anchor [E] to detach from the panel clip. Repeat for all four (4) stud screws to free the panel.
2. Lift panel away from machine and set aside.

TOP PANEL REPLACEMENT:

1. Carefully replace the roof panel onto the top portion of the machine aligning the four (4) stud screws [D] so that they match up with the four panel clips [F] located at the corners and mid-section of the panel edges.

TABLE 6A - ACCESS PANEL REMOVAL

PANEL	REMOVE FOR MAINTENANCE OF:
ROOF (TOP) PANEL [A]	Compressor Air Filter, Air Inlet Valve Assembly Rebuild
COOLER AND INSTRUMENTATION ACCESS PANEL [B]	Fuses and Circuit Breaker
CAS60R MAIN CANOPY PANEL ¹ [C]	Compressor Oil Filter, Compressor Oil Replacement, Coalescer Replacement, Compressor Air Filter, Air Inlet Valve Rebuild, Drive Belts, Cooler Core Cleaning, Minimum Pressure/Discharge Check Valve Rebuild, Compressor Shaft Seal Rebuild

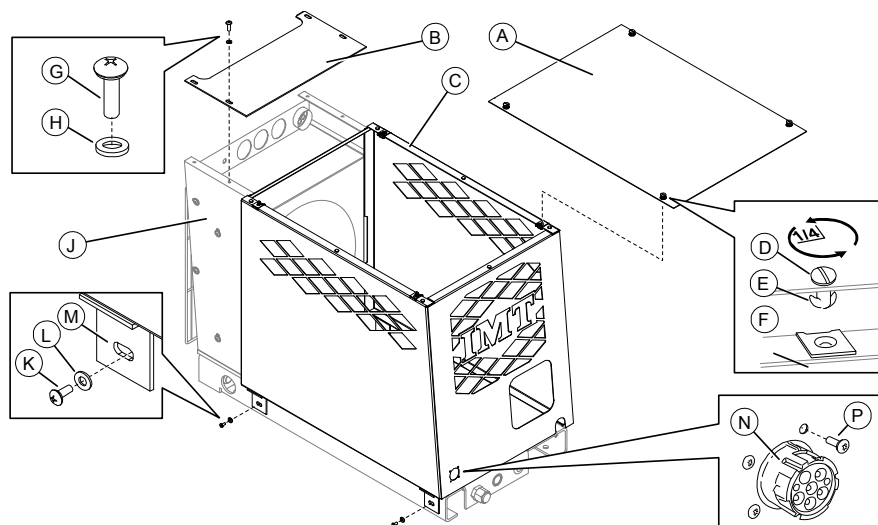
¹ The canopy panel is comprised of the main side panels and the utility-access side panel as a single panel unit.

**WARNING**

Before removing any access panel for maintenance:
Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual.

NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:

Always clearly tag the start-up instrumentation against accidental system start-ups during maintenance.



KEY	DESCRIPTION	KEY	DESCRIPTION
A	TOP (ROOF) PANEL	H	NYLON WASHER, 1/4-20 (x4)
B	COOLER AND INSTRUMENTATION ACCESS PANEL	J	COOLER ASSEMBLY (reference)
C	CAS60R MAIN CANOPY ¹	K	TRUSS SCREW, 5/16-18 (x4)
D	STUD SCREW (x4)	L	NYLON WASHER, 5/16-18 (x4)
E	STUD SCREW - ANCHOR DETAIL	M	MAIN CANOPY MOUNTING FLANGE (detail: x4; 2 per each side)
F	PANEL CLIP (x4)	N	6-PIN DEUTCH CONNECTOR
G	TRUSS SCREW, 1/4-20 (x4)	P	CONNECTOR MOUNTING SCREW (x4)

Figure 6-2: Package Panel Connections

2. Once all stud screws are set in their panel clips, turn each stud screw a quarter turn to fasten the roof plate to the machine.

6.5.1.2 REMOVING AND REPLACING THE MAIN CANOPY PANEL

Most routine and non-routine maintenance issues can be accessed by the removal of the main canopy. Refer to **Figure 6-2** and the following procedure.

MAIN CANOPY PANEL REMOVAL:

1. With a Phillips head screwdriver remove the four (4) fastening sets consisting of the 5/16-18 truss screws [K], and the 5/16-18 nylon washers [L], from the four mounting flanges [M] used to fasten the main canopy to the base frame.
2. Remove the four connector screws [P] securing the 6-pin Deutsch connector [N] to the frame.
3. Carefully disengage the connector from the panel, from the inside.
4. Remove panel from the frame and set aside.
5. Retain all screws and washers for re-assembly.

MAIN CANOPY PANEL REPLACEMENT:

1. Carefully re-set the main canopy panel into position so that the slots on each of the four (4) mounting flanges [M] aligns to the mounting holes on the base frame.
2. Secure into place with four (4) pairs of 5/16-18 nylon washers [L] and 5/16-18 truss screws [K], as shown in **Figure 6-2**.
3. Position the 6-pin Deutsch connector [N] in alignment from the inside with the connector access and screw holes at the corner of the main panel, as indicated in **Figure 6-2**.
4. Replace the four (4) connector mounting screws [P] from the panel-side into the connector's mounting holes.
5. Tighten the connector mounting screws to secure the connector.

6.5.1.3 REMOVING AND REPLACING THE COOLER AND INSTRUMENTATION ACCESS PANEL

The cooler and instrumentation access panel is removed in order to change a fuse or the circuit breaker. Refer to **Figure 6-2** and the following procedure.

**COOLER AND INSTRUMENT ACCESS PANEL
REMOVAL:**

1. With a Phillips head screwdriver remove the four (4) fastening sets consisting of the 1/4-20 truss screws [G], and the 1/4-20 nylon washers [H], from the cooler and instrumentation access panel [B].
2. Retain screws and washers for re-assembly.
3. Remove panel from the frame and set aside.

**COOLER AND INSTRUMENT ACCESS PANEL
REPLACEMENT:**

1. Carefully re-set the cooler and instrumentation access panel [B] into position so that the four (4) mounting holes align with the mounting holes on the top edges of the cooler assembly [J].
2. Secure into place with four (4) pairs of 1/4-20 nylon washers [H] and 1/4-20 truss screws [G], as shown in **Figure 6-2**.

6.5.2 COMPRESSOR OIL MAINTENANCE

Having the proper amount of oil in the compressor system is essential to prolonging the equipment's useful life. Checking the compressor oil is the most important service to perform on the CAS60R package. The compressor is fully charged at the factory with IMT Premium Synthetic Oil.

IMPORTANT

DO NOT mix different types of compressor oil—mixing oil will void the warranty! Use **ONLY** genuine IMT Premium Synthetic Oil.

System Component or Part Group Task	Manual Section
Compressor Oil Maintenance	6.5.2
Adding or Changing the Compressor Oil	6.5.2.2

**WARNING**

The result of poorly maintained lubrication and/or filters may produce hazardous conditions resulting in overheating, which could cause machine shutdown. Damage to equipment and serious bodily harm may result.

**6.5.2.1 ADDING OR CHANGING THE
COMPRESSOR OIL**

Consult **Figure 6-1**, **Figure 6-3** and the following procedure to check the compressor oil.



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NOTE

The vehicle should be situated on a level surface to ensure that the oil level reading is accurate. Otherwise a false oil level indication will occur.

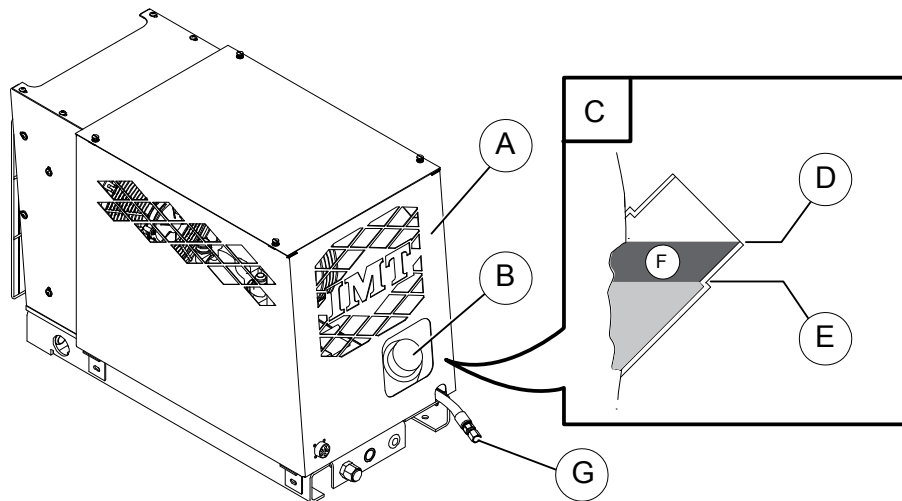
**WARNING**

Before performing maintenance:
Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual.

NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:

Always clearly tag the start-up instrumentation against accidental system start-ups during maintenance.

1. Locate the oil fill port [B] on the unit, access and service line utility side of the unit package [A].
2. Slowly, as per **Figure 6-1**, unscrew the red, knurled fill cap [B] enough to gradually relieve any internal sump pressure, and then remove the cap.
3. Refer to **Figure 6-3**. Determine the oil level: correct level is within minimum (to bottom threads on oil fill port [E]) to maximum (until oil runs out of port [D]) range (within [F]).



KEY	DESCRIPTION	KEY	DESCRIPTION
A	UNIT ACCESS AND SERVICE LINE SIDE OF UNIT PACKAGE	D	MAXIMUM ACCEPTABLE OIL LEVEL (even with bottom rim edge of oil fill port)
B	COMPRESSOR (RED KNURLED) OIL FILL PORT CAP	E	MINIMUM OIL LEVEL (even with bottom threads of the fill port)
C	PROFILE OF COMPRESSOR FILL PORT	F	ACCEPTABLE OIL RANGE

For oil supply order rotary screw compressor oil no. 89086222 (available in one [1] gallon containers).

Figure 6-3: Compressor Oil Fill Level Check

Note that overfill can only occur if unit is not level.

4. **If adding oil...**

Carefully add lubricant and monitor oil level, allowing time for oil to level out. A complete refill is approximately 5-1/4 quarts.

If changing oil...

- A) Place a vessel capable of containing at least six quarts of oil below the oil drain tube (**Figure 6-3, [G]**) to catch the oil as it discharges.
 - B) Unscrew the end cap of the oil drain tube and allow the oil to completely drain from the compressor unit.
 - C) Replace and tighten the oil drain tube cap to the oil drain tube **[G]**.
 - D) Replace the oil filter per the procedural steps given in **Section 6.5.3**. Once the oil filter element has been replaced, add new system oil.
5. Replace the red oil fill cap **[B]** tightly by hand.
 6. Run unit and recheck oil level after shutdown, allowing time for oil to settle.
 7. Add appropriate amount of oil to achieve acceptable range **[F]**.

Oil drain is provided with short drain hose **[G]**. This can be routed to a more convenient location if required, dependent upon installation. Use only 80 pipe or suitably rated hose.

6.5.3 PERFORMING AN OIL FILTER CHANGE

Refer to **Figure 6-4**. The compressor oil filter is a spin-on, throw away type.

System Component or Part Group Task	Manual Section
Performing an Oil Filter Change	6.5.3
Removing the Oil Filter	6.5.3.1
Replacing the Oil Filter	6.5.3.2

Access the compressor unit by removing the roof panel and the main CAS60R canopy panel, per **Section 6.5.1**.

6.5.3.1 REMOVING THE OIL FILTER

1. Drain oil from compressor unit per **Section 6.5.2.1**.

NOTE

When performing a system oil change the oil filter element and coalescer elements should also be changed at the same time. Refer to **Sections 6.5.3, Oil Filter Replacement**, and **6.5.4, Coalescer (Air/Oil Separator) Replacement** respectively.

NOTE

Dispose of used oil and worn filter element appropriately and in accordance with any pertinent environmental regulations.

IMPORTANT

Always change the oil when changing the oil filter element. Refer to **Section 6.5.2.1**.



WARNING

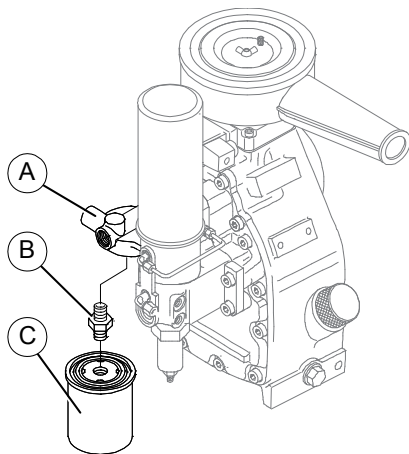
Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the **Safety Section** of this manual.

NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:

Always clearly tag the start-up instrumentation against accidental system start-ups during maintenance.

NOTE

Always replace the oil when replacing the oil filter.



KEY	DESCRIPTION
A	OIL FILTER HEAD
B	OIL FILTER MOUNTING POST ^I
C	OIL FILTER ELEMENT ^{II}
^I Shown extracted in this view—post does not have to be removed from the filter head.	
^{II} For oil filter maintenance, order replacement filter no. 70048249.	

Figure 6-4: Compressor Oil Filter

2. Remove worn filter element [C] using strap wrench, if necessary, by turning counter-clockwise. Discard as appropriate and in accordance with any pertinent regulations.
3. Clean the filter head's [A] connection surface with a lint-free wipe or cloth.

6.5.3.2 REPLACING THE OIL FILTER

1. Apply a light film of oil to the seal surface on the new filter element.
2. With the seal-side facing upward, pour approximately one (1) cup of fill oil into the element for priming.
3. Screw new element onto oil filter mounting post [B] clockwise by hand until seal contacts filter head; then turn an additional 3/4 turn by hand.
4. Refer to **Section 6.5.2**, and replace the system oil.
5. Run compressor and test for leaks.

6.5.4 COALESCER (AIR/OIL SEPARATOR) REPLACEMENT

Refer to **Figure 6-5**. This is a spin-on, throw away type unit. If oil carryover into the service line occurs and the oil scavenge return line scavenge shows little or no oil return, then change the element. Verify oil level.

System Component or Part Group Task	Manual Section
Coalescer (Air/Oil Separator) Replacement	6.5.4
Removing the Coalescer Element	6.5.4.1
Replacing the Coalescer Element	6.5.4.2



WARNING

Before performing maintenance:
Shut down machine, relieve all system pressure and lock out all power, as per the **Safety Section** of this manual.

NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:

Always clearly tag the start-up instrumentation against accidental system start-ups during maintenance.

Access the compressor unit by removing the roof panel and the main CAS60R canopy panel per **Section 6.5.1**.

6.5.4.1 REMOVING THE COALESCER ELEMENT

1. Remove old element [A] (use strap wrench if required) by turning counter-clockwise.
2. Discard worn element as appropriate and in accordance with any pertinent regulations.

6.5.4.2 REPLACING THE COALESCER ELEMENT

1. Apply a light film of oil to the seal surface [C] on the new element.
2. Screw element on clockwise until it seats evenly and snugly on the mounting post [B]; rotate an additional 3/4 turn (by hand), taking care not to damage the element.

6.5.5 COMPRESSOR AIR FILTER MAINTENANCE

Refer to **Figure 6-6** and **Figure 6-7**. For correct filtration, use only original IMT equipment filters.

System Component or Part Group Task	Manual Section
Compressor Air Filter	6.5.5
Removing the Air Filter	6.5.5.1
Compressor Air Filter Inspection	6.5.5.2
Replacing the Air Filter	6.5.5.3

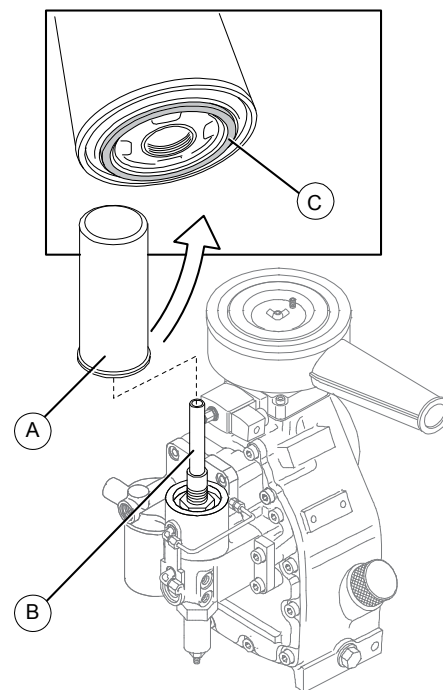


WARNING

Before performing maintenance:
Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual.

NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:

Always clearly tag the start-up instrumentation against accidental system start-ups during maintenance.



KEY	DESCRIPTION
A	COALESCER ELEMENT FILTER ^I
B	COALSCER ELEMENT MOUNTING POST
C	ELEMENT SEALING GASKET ^{II}

^I For maintenance on coalescer, order replacement element no. 70048248.

^{II} Coat element gasket surface with a layer of machine fill oil to ensure a complete seal of the element with the mounting surface.

Figure 6-5: Coalescer Maintenance

Access the air filter inlet housing by removing the roof panel per **Section 6.5.1**.

6.5.5.1 REMOVING THE AIR FILTER

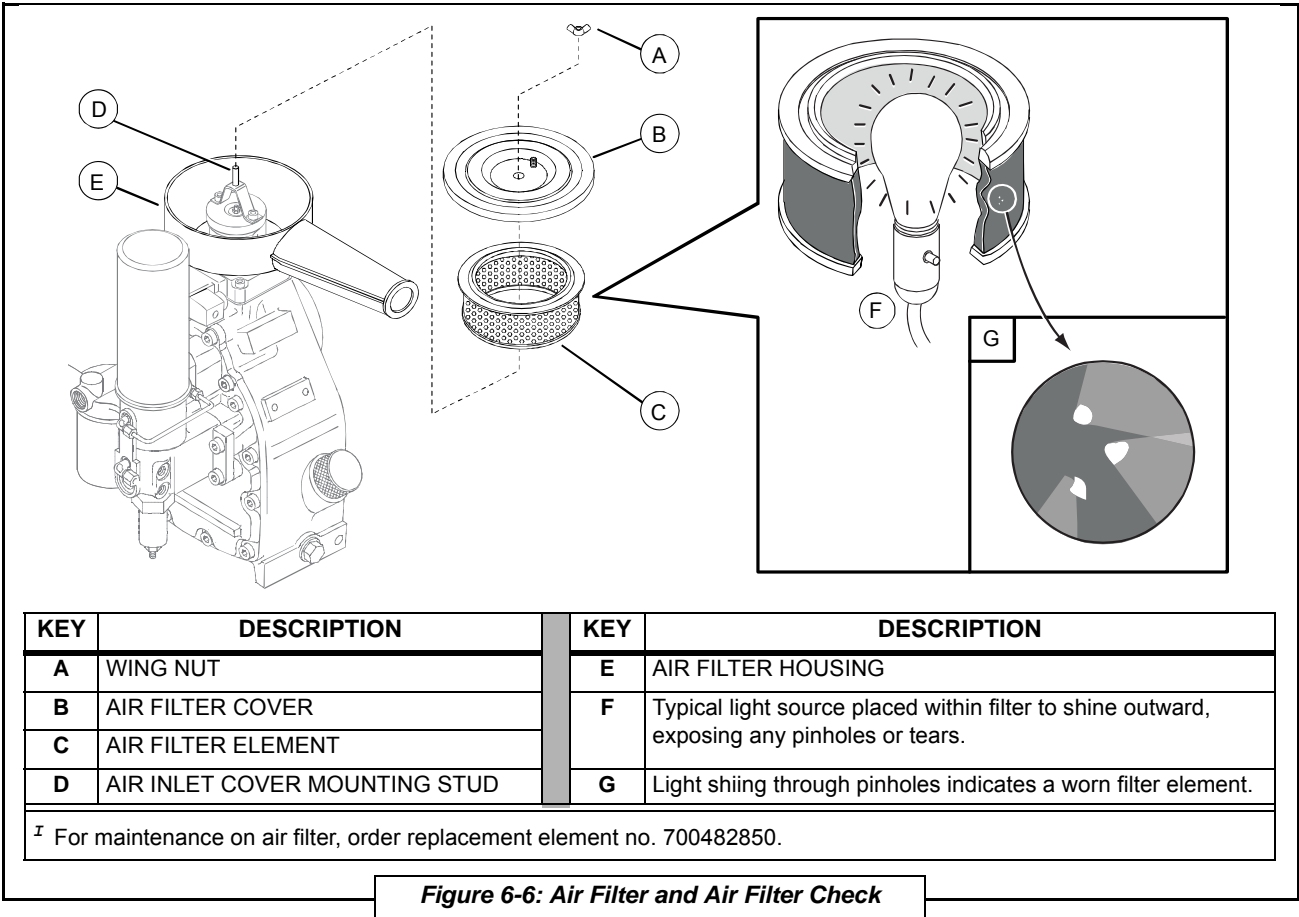
1. Per **Figure 6-6**, unscrew the wing nut [A] on top of the air filter housing cover [B] and remove filter cover.

- 2. Remove and discard the filter element [C] as appropriate, and in accordance with any pertinent regulations.

6.5.5.2 COMPRESSOR AIR FILTER INSPECTION

Consult **Figure 6-6** and the following procedure to inspect the compressor air filter.

- 1. Place a bright light source [F] inside of the filter element and carefully inspect the filter from the outside in a dark environment to detect any pinholes or tears that may have developed [H].
- 2. Inspect the gaskets on the top and bottom of the air filter element [C] for any damage or wear.
- 3. Replace the element if it shows any damage or wear, even if the inspection occurs before the recommended replacement interval. Consult **Section 6.5.5.3** if filter needs to be replaced.



6.5.5.3 REPLACING THE AIR FILTER

Refer to **Figure 6-6** and the following procedure:

1. Clean cover [B] and remove any dirt inside filter housing [E], taking extreme care that no dust or dirt particles reach the air intake of the compressor.
2. Fit the new element inside housing [E].
3. Replace cover [B] onto mounting stud [D], and tighten wing nut [A] on top of air filter assembly.
4. Perform test run and functional test.

6.5.6 REPAIRING THE INLET CONTROL SYSTEM

System Component or Part Group Task	Manual Section
Repairing the Inlet Control System	6.5.6
Rebuilding the Air Inlet Valve Assembly	6.5.6.1

Refer to **Figure 6-7**. The inlet control system consists of two main sub-assemblies, in addition to the air filter:

1. Inlet Valve Assembly [D] -

The inlet valve opening/closing (load/unload) is controlled by admitting/exhausting pilot air pressure through the solenoid valve to the piston, which is part of the inlet valve assembly. The air inlet valve is not a routine maintenance item. However, there is a rebuild kit available; refer to **Section 6.5.6.1**.

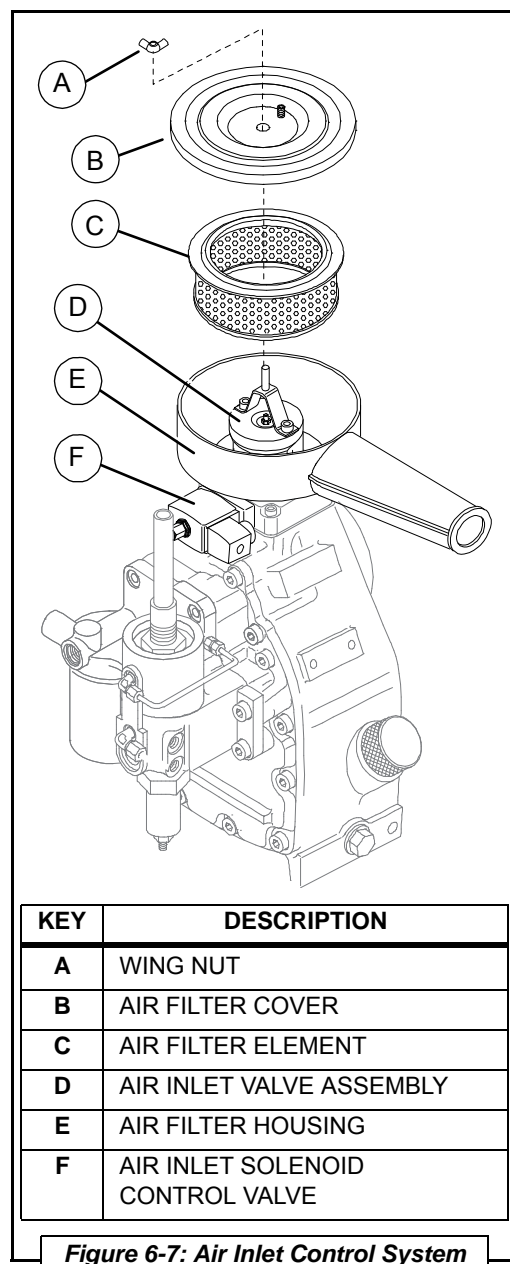
2. Inlet Control Solenoid Valve [F] -

The solenoid valve attaches directly to the inlet valve, and responds to signals from the pressure switch to admit/vent pilot air pressure to the inlet valve to control load/unload. The solenoid valve is not a routine maintenance item. In the unlikely event of failure, the complete valve should be replaced. Consult the IMT Parts Department to obtain a replacement valve.


Access the compressor unit by removing the roof panel and, if needed, the main CAS60R canopy panel per **Section 6.5.1**.

6.5.6.1 REBUILDING THE AIR INLET VALVE ASSEMBLY

Should a condition occur that requires air inlet valve maintenance (see **Section 7.2, Troubleshooting Guide**), an air inlet assembly rebuild kit is available. To



rebuild the air inlet valve, order air inlet rebuild kit no. 73744210. Refer to **Figure 6-8**, and the following procedure:

 WARNING
<p>Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual.</p> <p>NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:</p> <p>Always clearly tag the start-up instrumentation against accidental system start-ups during maintenance.</p>

1. Locate the compressor's air filter compartment housing [E] at the top of the compressor unit, and remove the wing nut [B] from cover [C].
2. Remove air filter [D], and put it aside temporarily so it will not get damaged or soiled; the full air filter inlet valve [A₁] is now accessible.
3. Loosen the two (2) pan head screws [F] to free the nested air inlet assembly.
4. Grasp the valve [A₁] and pull upwards to disengage it from its seating.
5. Disassemble the valve and replace used parts with new parts found in the kit. Refer to **Figure 6-8** to assure correct integration of replacement parts and part re-assembly positions.
6. Replace the base flange o-ring [Y] with new o-ring into air inlet base flange [Z] seating.
7. Once the valve's parts have been replaced with the kit parts and re-assembled, place the rebuilt, complete inlet valve assembly into position on the valve seating within the air filter housing.
8. Replace the two (2) pan head screws [F] and tighten securely.
9. Replace the air filter housing [C] into position on the inlet base flange [Z].
10. Inspect the air filter: exchange it for a new one if air filter is soiled (refer to **Section 6.5.5.2, Compressor Air Filter Inspection**

NOTE

Use all of the parts provided in the kit regardless of the old part condition.

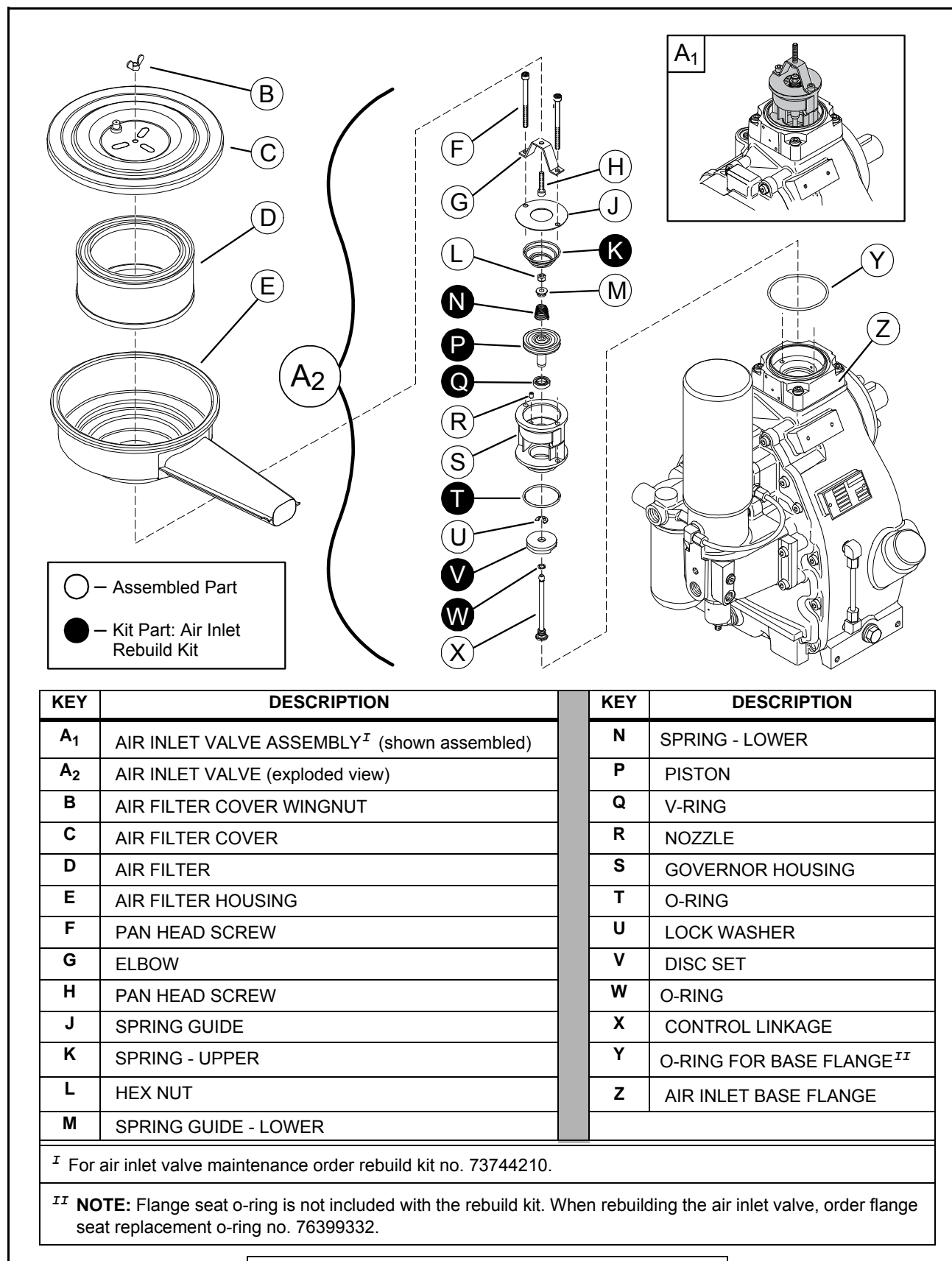


Figure 6-8: Air Inlet Valve Assembly

for air filter condition check, etc.). If filter is in satisfactory shape, or if using a replacement filter element, seat the air filter [D] into position in the housing [E].

11. Replace the cover [C].
12. Replace the wing nut [B], and secure tightly.

6.5.7 PERFORMING MAINTENANCE ON THE DRIVE BELTS


Correct tensioning and alignment is important for belt life, bearing life and power transmission. Drive belt tensioning and alignment is performed at the factory at time of shipment. However, since maximum belt elongation will occur within the first 50 hours of operation (of new belts), the belts' tension should be checked several times during this period and corrected as required. The belts should, thereafter, be checked periodically in order to obtain maximum life and performance.

System Component or Part Group Task	Manual Section
Performing Maintenance on the Drive Belts	6.5.7
Adjusting the Drive Belts	6.5.7.1
Drive Belt Tension Data	6.5.7.2
Replacing the Drive Belts	6.5.7.3

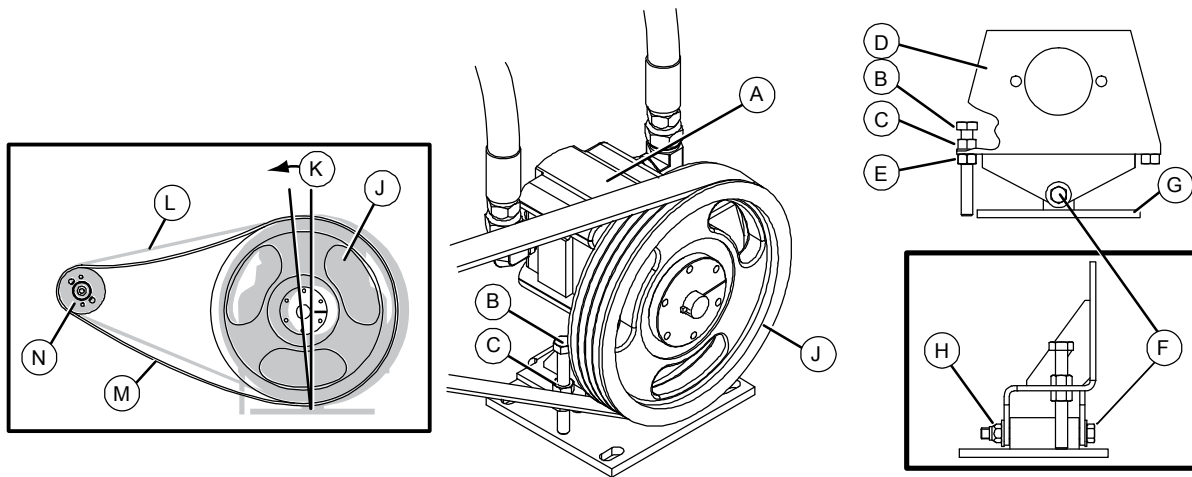
Access the drive system by removing the roof panel and the main CAS60R canopy panel per **Section 6.5.1**.

6.5.7.1 ADJUSTING THE DRIVE BELTS

Refer to **Figure 6-9** and the following procedure:

 WARNING
<p>Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual.</p> <p>NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:</p> <p>Always clearly tag the start-up instrumentation against accidental system start-ups during maintenance.</p>

1. Slightly loosen the vertical tap bolt [B].
2. Back off adjusting bolt lock nut [E]; screw the adjusting bolt clockwise to tighten belts or



KEY	DESCRIPTION	KEY	DESCRIPTION
A	HYDRAULIC MOTOR	H	NUT (horizontal tap bolt)
B	VERTICAL TAP BOLT	J	MOTOR DRIVE SHEAVE
C	WELD NUT	K	BRACKET PIVOT ANGLE
D	HYDRAULIC MOTOR BRACKET	L	DRIVE BELT (under tension)
E	ADJUSTMENT/LOCKING NUT	M	LOOSENED BELT
F	HORIZONTAL TAP BOLT (anchor and adjustment)	N	COMPRESSOR SHEAVE [‡]
G	BASE PLATE OF HYDRAULIC MOTOR BRACKET		

For belt replacement order belt no. 70580211.

[‡] Compressor sheave remains stationary when performing belt adjustment or removal.

Figure 6-9: Drive Belt Adjustment/Removal

counter-clockwise to loosen belts. This will allow the hydraulic motor sheave [J] to be re-positioned on an angle [K], in order to tighten or slacken the belts.

- After adjustments have been made, ensure that belt is properly tensioned (refer to **Section 6.5.7.2**). Then, with belt properly positioned to the correct tension, tighten vertical tap bolt [B], and locking nut [E] to insure no further movement.

IMPORTANT

DO NOT over-tension the belts.

6.5.7.2 DRIVE BELT TENSION DATA

Refer to **Figure 6-10** and the following procedure:

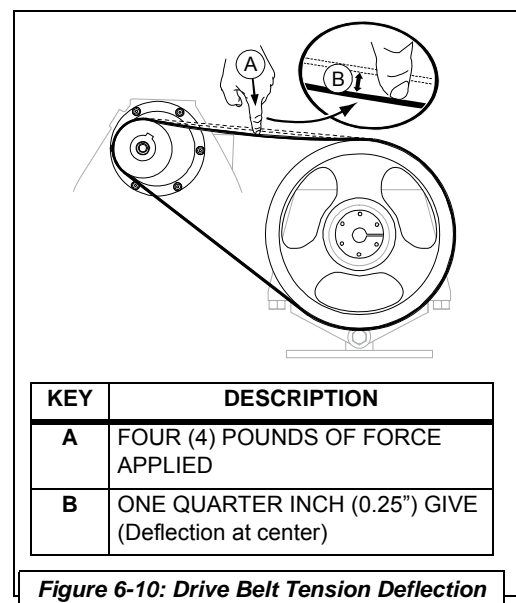


Figure 6-10: Drive Belt Tension Deflection

- Deflection at center of belt span: 0.25 inches with a force of 4 (four) pounds.
- Pulley alignment is set at factory and should not need to be adjusted. If it is found necessary to adjust the pulley alignment, loosen the four bolts that hold down the base plate to the frame and adjust per the following instructions:
 1. Ensure sheaves are aligned by using a long straight edge that will span the length of both pulleys.
 2. Position the straight edge on the sides of the sheaves; if they are in line, there should be no gaps between the straight edge and the sheaves (for the full contact distance across each sheave side).
 3. Adjust as necessary to get correct alignment and tension.

IMPORTANT

DO NOT over-tension the belts.

4. It may be necessary to repeat and check several times before both tension and alignment are satisfactory.

6.5.7.3 REPLACING THE DRIVE BELTS

Although the drive belts should be checked for fit and wear on a routine basis, they are not considered routine maintenance items. However, the drive belts are subject to wear out over a period of time and use, and should be replaced if worn, cracked or otherwise damaged. The belt is loosened by pivoting the hydraulic motor assembly's bracket, which temporarily repositions the hydraulic motor sheave enough to loosen the belt. Refer to **Figure 6-9** and the following procedure.

1. Loosen the horizontal tap bolt [F] and securing nut [H] enough to allow movement, but **DO NOT** remove the tap bolt.
2. Loosen the adjustment/locking nut [E].
3. Loosen the vertical tap bolt [B] to allow for the hydraulic motor bracket [D] to pivot the motor assembly toward the compressor unit, which causes the belts to slacken.
4. When the belts are slackened enough to be slipped off of the sheaves, remove all of the belts from the compressor sheave [N] and motor sheave [J].



WARNING

Before performing maintenance:
Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual.

NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:

Always clearly tag the start-up instrumentation against accidental system start-ups during maintenance.

5. Discard worn belts appropriately.
6. With the bracket still in the “loosened” position, thread new serpentine belts into place over the compressor sheave [N] and motor drive sheave [J].
7. Re-position the motor bracket angle [K] to tighten the belts, checking at intervals for a proper tension deflection.

NOTE

BELT TENSION DEFLECTION DATA:

Deflection at center of belt span is 0.25 inches with a force of four (4) pounds
(Refer to *Figure 6-10*).

8. When the belt has been adjusted to proper tension, tighten the adjustment/locking nut [E].
9. Hold horizontal tap bolt nut [H] in place with a wrench while tightening the horizontal tap bolt [F].
10. Recheck the belt tension, and adjust as necessary until proper tightness is achieved.

IMPORTANT

DO NOT over-tension the belts.

6.5.8 CLEANING THE COOLER CORE

Refer to *Figure 6-11*.

COOLER EXTERIOR:

Remove leaves, paper, and debris from outside face [A] of cooler assembly.

COOLER INTERIOR:

NOTE

Do not use high pressure air or pressure washer to clean cooler core.

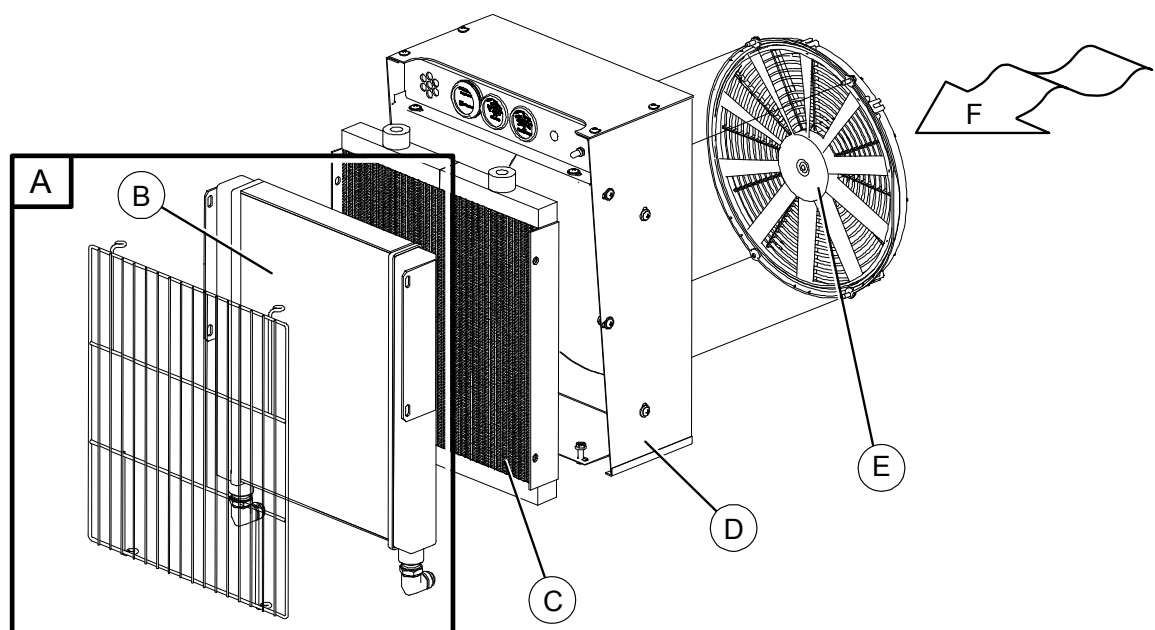


WARNING

Before performing maintenance:
Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual.

NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:

Always clearly tag the start-up instrumentation against accidental system start-ups during maintenance.



KEY	DESCRIPTION	KEY	DESCRIPTION
A	OUTSIDE FACE OF COOLER ASSEMBLY	D	COOLER SHROUD
B	HYDRAULIC OIL COOLER	E	FAN AND MOTOR ASSEMBLY
C	COMPRESSOR OIL COOLER	F	DIRECTION OF CLEANING AIR SOURCE ¹

¹ Independent compressed air source situated from inside the canopy blowing outwards.

Figure 6-11: Cooler Assembly Maintenance

Access the interior by removing the roof panel, and if necessary, the main CAS60R canopy panel per **Section 6.5.1**.

Use compressed air and carefully blow through the core from the inside of the canopy [F] (through fan assembly or remove fan assembly).

The oil cooler core is aluminum. If this does, at some point, require internal cleaning, this is best done by a suitably equipped radiator shop. Internal cleaning is not a normal maintenance item if the oil is maintained in good condition.

6.5.9 PRESSURE SWITCH

Refer to **Figure 6-12**. The pressure switch is mounted directly on the sub-assembly piping located on the piping behind the pressure gauge on the instrument panel.

IMPORTANT

Because of the risks involved with manually re-adjusting the pressure switch settings, the switch cover contains a tamper-proof seal, and should not be breached for any reason.

Tampering with the pressure switch may void the warranty!

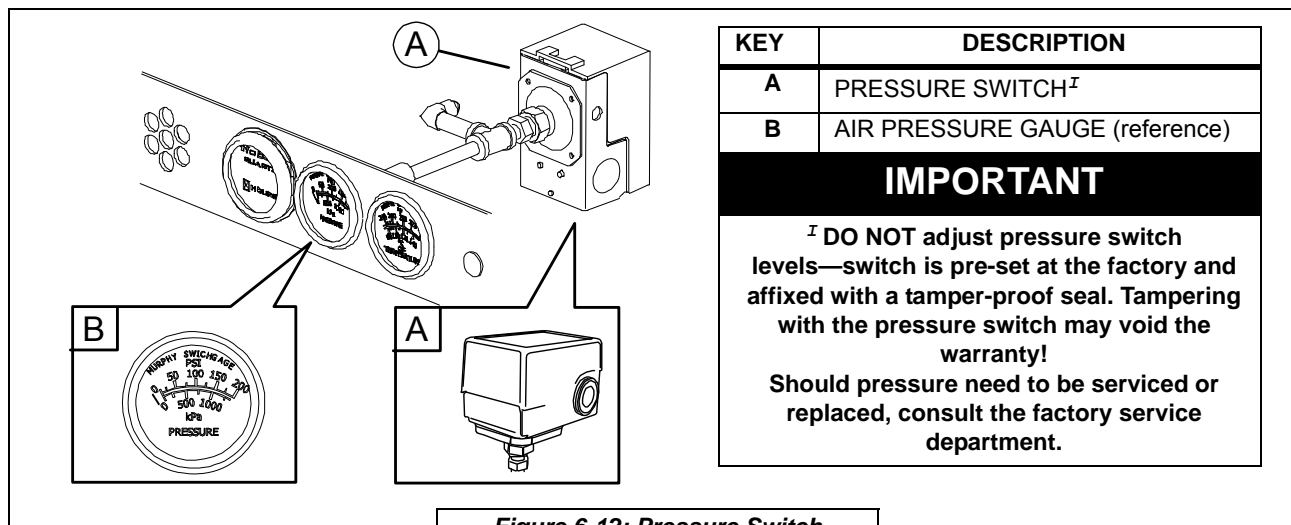


Figure 6-12: Pressure Switch

**WARNING**

Before performing maintenance:
Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual.

NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:

Always clearly tag the start-up instrumentation against accidental system start-ups during maintenance.

**WARNING**

Altering the pre-set pressure switch levels could result in bodily injury or damage to the machine.

The pressure switch is accessed by removing the roof panel, and if necessary, the cooler and instrumentation access panel per **Section 6.5.1**.

The pressure switch defines pressure level parameters for both low and high pressure operation. These levels are pre-determined and adjusted at the factory for optimal package performance.

Should the pressure switch sustain damage, or become faulty, contact the factory service department for recommended action.

6.5.10 SERVICING THE MINIMUM PRESSURE/ DISCHARGE CHECK VALVE

Refer to **Figure 6-13**. The minimum pressure valve is normally factory set to 65 psig. This valve is not a routine maintenance item.

6.5.10.1 REBUILDING THE MINIMUM PRESSURE/ DISCHARGE CHECK VALVE

Should a condition occur that requires the minimum pressure/check valve to be serviced (see **Section 7.2, Troubleshooting Guide**), a repair kit is available. To repair the minimum pressure/check valve, order minimum pressure/discharge check valve kit no. 73744211. Refer to **Figure 6-13**, and the following procedure.



WARNING

Before performing maintenance:
Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual.

NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:

Always clearly tag the start-up instrumentation against accidental system start-ups during maintenance.

Access the compressor unit by removing the roof panel and the main CAS60R canopy panel per **Section 6.5.1**.

KEY	DESCRIPTION
A	MINIMUM PRESSURE/ DISCHARGE CHECK VALVE
B	BUSHING
C^I	VALVE HEAD COUPLING
D^I	SPRING
E^I	PISTOL COUPLING
F^I	PRESSURE SPRING
G^I	SPRING GUIDE
H^I	O-RING
J^I	O-RING
K	VALVE BODY
L	GRUB SCREW
M	LOCK NUT

^I This replacement part is found in the minimum pressure / discharge check valve rebuild kit no. 73744211.

○ – Assembled Part

● – Kit Part: Air Inlet Rebuild Kit

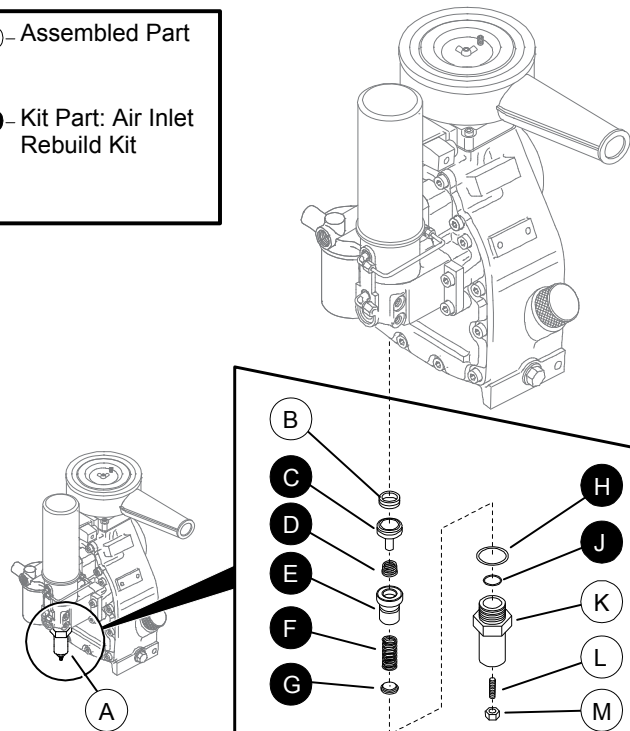


Figure 6-13: Minimum Pressure/Discharge Check Valve

1. Locate the minimum pressure/discharge check valve [A] situated beneath the coalescer element on the compressor unit.
2. Loosen and remove the hex nut [M] securing the grub screw [L] in position.
3. Loosen the grub screw [L] to relieve any spring tension in the valve.
4. Loosen and carefully remove the valve body [K], which holds the internal parts in place. The internal parts will be free to drop out with the removal of the valve body.
5. Wipe internal surface of valve body [K] with a clean cloth.
6. Consult **Figure 6-13**, and re-assemble the kit by replacing all old parts with corresponding part provided in the kit. Use all parts provided in the kit regardless of current part condition.
7. Once the kit parts (parts C through J) have been situated in correct order into the valve body, replace the valve body back into the mounting position. Retighten body securely.
8. Replace the grub screw [L] into position on valve body [K], and hand-tighten. Replace the lock nut [M] over the grub screw, and position it loosely over the grub screw.

6.5.10.2 SETTING THE MINIMUM PRESSURE VALVE

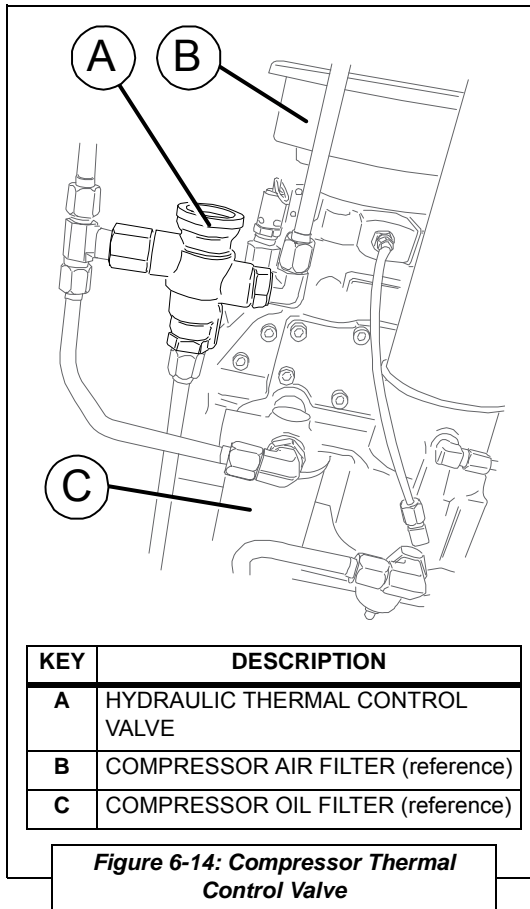
Refer to **Figure 6-13** and the following procedure:

1. Start the machine and allow it to assume idle speed.
2. Start the compressor and allow it to accumulate pressure build-up.
3. Using the panel pressure gauge as a guide, adjust the grub screw [L] until minimum pressure level is achieved.

IMPORTANT

Refer to the IMT Service Department for the minimum pressure reset level settings.

4. Tighten the lock nut [M] to secure the grub screw at the proper minimum pressure level.



6.5.11 COMPRESSOR CONTROL THERMAL VALVE

Refer to **Figure 6-14**. The thermal valve controls the compressor oil temperature and permits for rapid compressor oil warm up. The valve commences to pass a portion of the oil through the cooler at 160°F (71°C), and is fully open at 185°F (85°C). The valve is preset, and cannot be adjusted. In the unlikely event of failure, this item is to be replaced as a complete item. Consult the IMT Service Department for thermal valve replacement assistance.



WARNING

Before performing maintenance:
Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual.

NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:

Always clearly tag the start-up instrumentation against accidental system start-ups during maintenance.

6.5.12 SERVICING THE FUSES AND CIRCUIT BREAKER

The fuse and circuit breaker can both be found on the inside of the control panel, accessed with the shroud removed. Consult **Figure 6-15** for the location of the fuses and circuit breaker. IMT recommends using a fuse removal tool, though pliers will suffice when removing the fuse.



DANGER

Fuses will need to be replaced if blown when tripped. When changing a fuse, or dealing directly with any function of the electrical system maintenance, always be aware of the safety warnings given in **Section 1, Safety**.



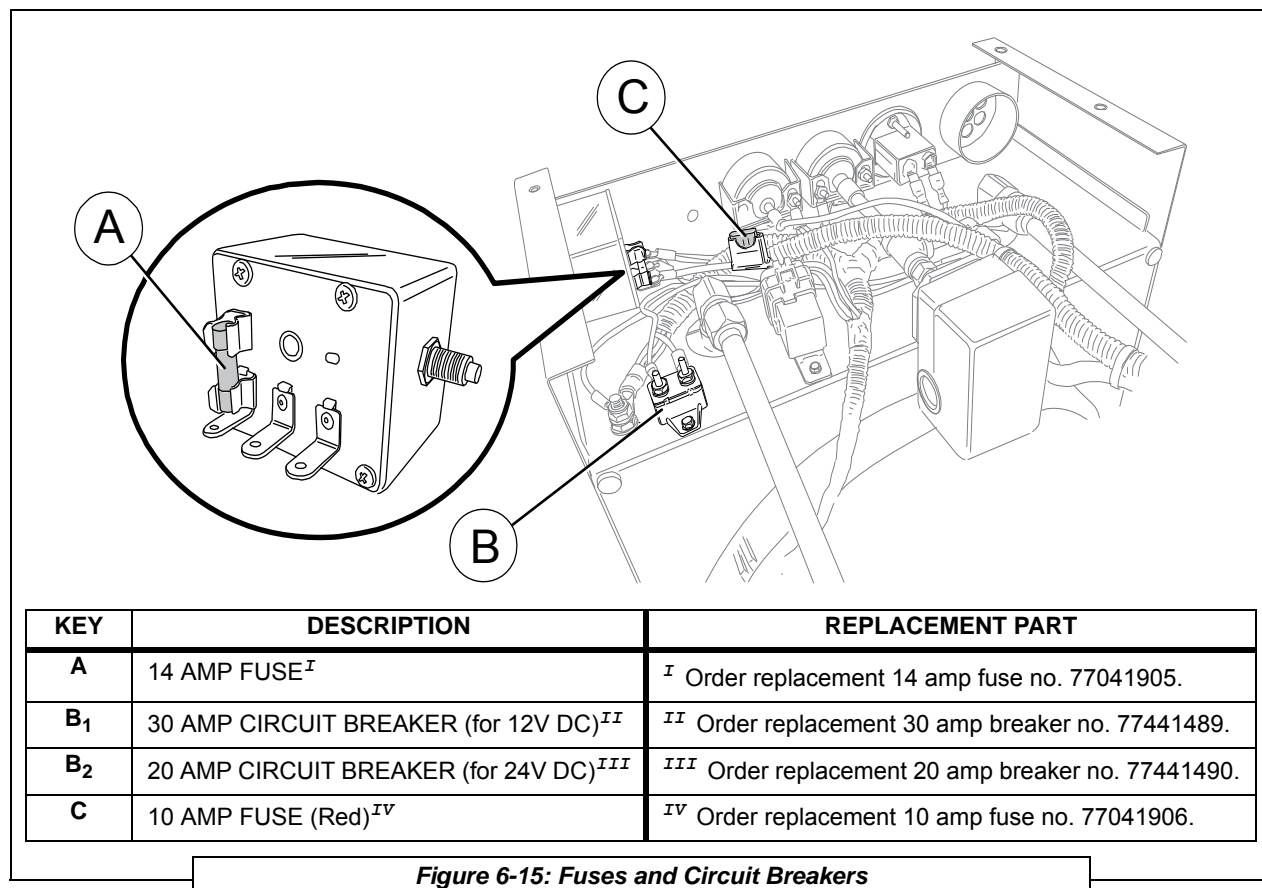
WARNING

Before performing maintenance:
Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual.

NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:

Always clearly tag the start-up instrumentation against accidental system start-ups during maintenance.

Access the fuse and breaker locations by removing the cooler and instrumentation access panel per **Section 6.5.1**.



6.5.13 SAFETY SHUTDOWN SYSTEMS

Protection for over-pressure and/or over-temperature is provided. If either condition should occur, the diverter valve should activate to divert hydraulic fluid back to the tank and the compressor will stop, the fault reset on the instrument panel will pop out and stay out until reset.

IMPORTANT

Reason for shutdown should be investigated before pressing reset.



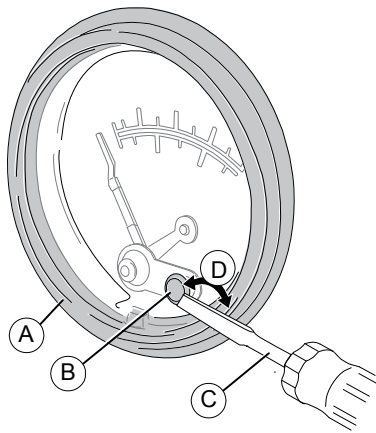
WARNING

NEVER FORCE the reset button back into position, or hinder it in any way, in order to allow for machine operation. A tripped reset button indicates a problem that should be addressed and resolved before operation can continue.

IMPORTANT

Because of the risks involved with manually re-adjusting the pressure switch settings, the switch cover contains a tamper-proof seal, and should not be breached for any reason.

Tampering with the pressure switch may void the warranty!



KEY	DESCRIPTION
A	GAUGE BEZEL
B	GAUGE TEST METAL CONTACT
C	INSULATED SCREWDRIVER
D	SAFETY TEST CONTACT CONNECTION

Figure 6-16: Safety Shutdown Test

NOTE

Both the temperature and the pressure gauges should be tested using the contact method explained above.

6.5.13.1 TESTING THE GAUGES' SHUTDOWN FEATURE

Periodically (every 6 months or every 500 hours), the shutdown system should be tested as follows:

Refer to **Figure 6-16**.

1. While compressor is operating, close service valve and allow compressor to unload (approximately two [2] minutes).
2. Touch across button contact [B] on gauge face to bezel [A] (surrounding the respective gauge) with an insulated screwdriver.



WARNING

Before making the contact connection [D] between the test contact [B] and the bezel [A], ensure that you are not touching the machine to allow for grounding—only the screwdriver should be making any connection with the machine, and at the contact points indicated.

3. The reset button should pop out and the compressor should stop, indicating that the gauge shutdown contact is working.
4. Switch compressor OFF and press reset button to reactivate shutdown system.

6.5.13.2 PRESSURE RELIEF VALVE

Refer to **Figure 6-17**. Although the pressure relief valve has a reset ring at the cap, **DO NOT** test the pressure relief valve by pulling on the reset ring. The pressure relief valve requires no safety testing.

6.5.14 LONG TERM STORAGE

Parts can wear out over time, regardless of the degree of usage. If storing the CAS60R unit for long periods of time, depressurize the air tank and open the drain valve on the tank. Cover with a tarp or plastic to prevent the accumulation of dust, but leave the bottom open for air circulation. Whenever possible, store in a sheltered area to minimize exposure to the elements.

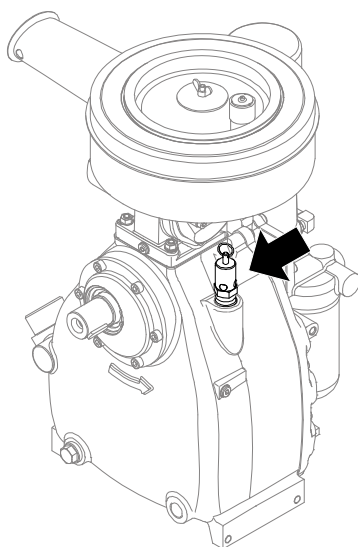


Figure 6-17: Pressure Relief Valve

SECTION 7: TROUBLESHOOTING

7.1 GENERAL INFORMATION

The information contained in this section has been compiled from field report data and factory experience. It contains symptoms and usual causes for the most common types of problems that may occur. However, **DO NOT** assume that these are the only problems that may occur. All available data concerning the trouble should be systematically analyzed before undertaking any repairs or component replacement procedures.

A detailed visual inspection is worth performing for almost all problems, and may avoid unnecessary additional damage to the machine. The procedures which can be performed in the least amount of time and with the least amount of removal or disassembly of parts, should be performed first. Always remember to:

1. Check for loose wiring.
2. Check for damaged piping.
3. Check for parts damaged by heat or an electrical short circuit, usually noticeable by discoloration or a burnt odor.

Should the problem persist after making the recommended check, consult your nearest IMT representative or the Iowa Mold Tooling Co., Inc. Service Department.



WARNING

DO NOT operate the compressor or any of its systems if there is a known unsafe condition. Disable the equipment by disconnecting it from its power source.

NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:

Install a lock-out tag to identify the equipment as inoperable to other personnel to prevent accidental application.



WARNING

Before starting, performing maintenance, or replacing parts, relieve the entire system pressure by opening a service valve, which will vent all pressure to the atmosphere.

IOWA MOLD TOOLING CO., INC.

500 Highway 18 West
Garner, Iowa 50438
Phone: 641.923.3711
Fax: 641.923.6063
www.imt.com

7.2 TROUBLESHOOTING GUIDE

MALFUNCTION/FAULT	POSSIBLE CAUSE	CORRECTIVE ACTION
Compressor shuts down air with demand present	Compressor discharge temperature switch is open	Cooling air flow is insufficient; clean cooler and check for proper ventilation.
		Low fluid sump level; add fluid.
		Fan not operating. Check ground and fan switch.

Continued on next page

7.2 TROUBLESHOOTING GUIDE

MALFUNCTION/FAULT	POSSIBLE CAUSE	CORRECTIVE ACTION
Compressor shuts down air with demand present (Continued)	Plugged oil filter	Replace oil filter.
	Dirty cooler core	Clean cooler core.
	Contaminated cooler core	Remove and clean cooler core.
	Hydraulic pressure and flow incorrect	Adjust and reset.
Compressor will not build up pressure	Air demand is too great	Check service lines for leaks or open valves. Too much air demand.
	Dirty air filter	Check the filter and clean or change element if required.
	Pressure switch out of adjustment	DO NOT ATTEMPT TO ADJUST. Contact the IMT Service Department for assistance.
	Defective pressure switch	Replace pressure switch.
	Motor does not speed up	Check hydraulic flow and pressure and adjust if necessary.
	Belts slipping	Readjust or tighten belts.
	Service valve wide open	Close service valve.
	Solenoid valve stuck	Replace solenoid valve.
Compressor over pressures	Leak in air pilot line	Check for leaks and correct.
	Pressure regulator out of adjustment	Contact factory service department.
	Defective pressure switch	Replace pressure switch; Contact factory service department.
	Leak in air control line	Check line and correct.
	Inlet valve jammed	Free or replace valve.
	Restriction in control line	Dirt or ice present. Clean or free up.
	Solenoid valve not energized or faulty	Check for power. Replace if necessary.
	Faulty gauge	Check using an auxiliary air source. Replace if necessary.
	Defective safety valve	Replace safety valve.
	Plugged coalescer	Replace coalescer.
Continued on next page		

7.2 TROUBLESHOOTING GUIDE

MALFUNCTION/FAULT	POSSIBLE CAUSE	CORRECTIVE ACTION
Insufficient air delivery	Plugged air filter	Replace air filter.
	Plugged coalescer	Replace coalescer element.
	Motor speed too low	Check hydraulic flow and pressure and adjust if necessary.
	Inlet valve stuck	Free or replace inlet valve. Order rebuild kit if necessary.
	Belts slipping	Readjust belt tension.
Oil carryover	Oil level overfull	Drain to proper level.
	Plugged oil scavenge line	Remove and clean tube thoroughly.
	Discharge pressure too low	Check minimum pressure valve and adjust. Replace if necessary.
	Defective coalescer	Replace coalescer element.
Compressor overheating	Insufficient oil	Check oil level and fill to proper level.
	Restricted cooling air flow	Reposition machine to assure proper air flow.
	Fan not operating	Check ground connection and ensure proper connection.
		Check fan switch.
		Check air pressure switch.
		Check circuit breaker.
		Check for short in wires.
		Check fan motor.
	Plugged oil filter	Replace oil filter.
	Cooler core plugged	Clean cooler core.
	Pressure set too high	Contact factory service department.
	Contaminated cooler core	Remove and clean cooler core.
	Unit running too fast	Check hydraulic flow and pressure and adjust if necessary.
	Thermal valve	Faulty valve; replace thermal valve.
System retains pressure after shutdown	Solenoid valve stuck	Should be no power to solenoid valve.
		Replace solenoid valve.
		Pressure switch faulty; replace.
	Leak back from air line	Check minimum pressure valve for leaks.

Continued on next page

7.2 TROUBLESHOOTING GUIDE

MALFUNCTION/FAULT	POSSIBLE CAUSE	CORRECTIVE ACTION
Compressor stalls	Belts slipping	Readjust or tighten belts.
	Insufficient hydraulic system pressure flow. This can occur if another hydraulically activated component is used off same pump system. Activating the secondary component may drop hydraulic supply system pressure/flow and leave insufficient for compressor. NOTE: Even a momentary drop in supply hydraulic supply pressure/flow may initiate compressor blowdown to commence.	Check setting on supply pressure system relief valve. Check to ensure adequate pressure/flow. Check if other systems are activated off same supply.
	Pressure relief valve set too low	Contact factory service department.
	Leak in seals on pressure relief valve.	Remove and check seals or fit new valve cartridge.
	Air pressure set too high for hydraulic system.	Adjust pressure switch to reduce air pressure.
	Leak in solenoid valve cartridge (directional flow control valve) on manifold.	Remove and check seals or fit new valve cartridge.
	Check over-pressure or over-temperature	Adjust if necessary.

SECTION 8:

ILLUSTRATED PARTS LIST

8.1 PARTS ORDERING PROCEDURE

Part orders should be placed through the distributor from whom the unit was purchased. If for any reason parts cannot be obtained in this manner, contact the factory directly at the address or phone numbers below.

When ordering parts always indicate the **Serial Number** of the machine package. This can be obtained from the Bill of Lading for the machine package, or from the compressor unit serial number plate. See **Figure 8-1** for location of machine package serial plate. Consult **Table 8A: Recommended Spare Parts List** on the next page for a listing of replacement parts.

IOWA MOLD TOOLING CO., INC.

500 Highway 18 West

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Phone: 641.923.3711

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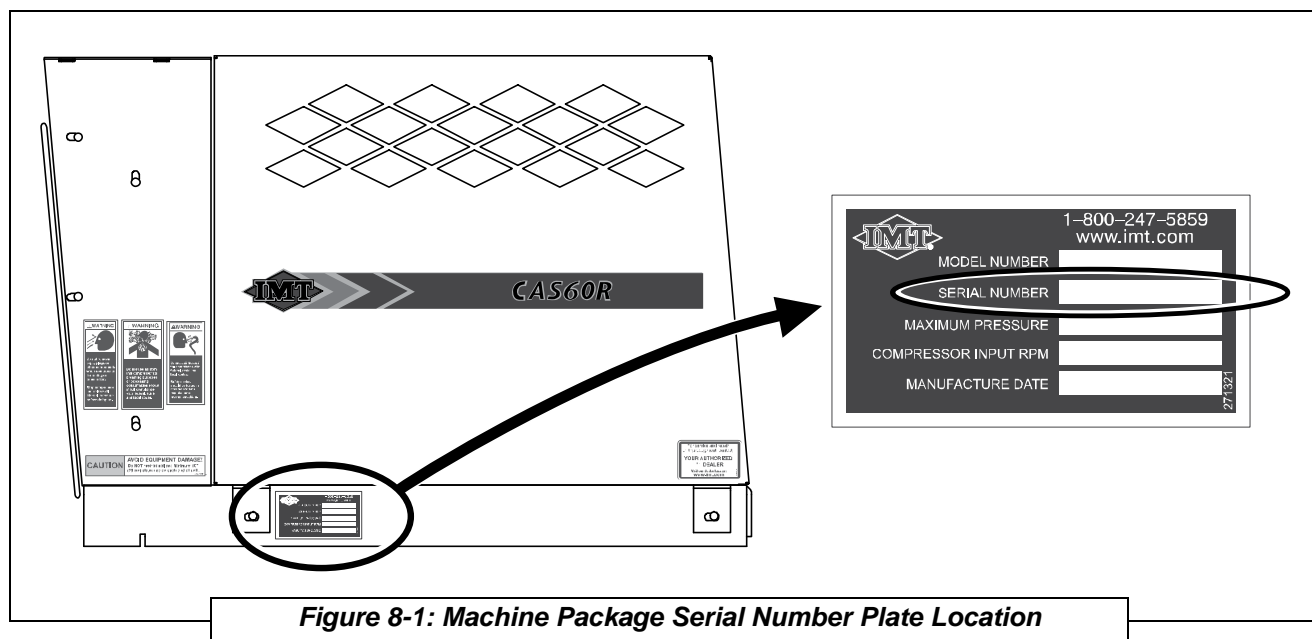


Figure 8-1: Machine Package Serial Number Plate Location

TABLE 8A: RECOMMENDED SPARE PARTS LIST					
KEY NO.	PART NUMBER	DESCRIPTION	QTY	IDENTIFICATION REFERENCE	
				SECTION	KEY NO.
ROUTINE/SCHEDULED MAINTENANCE ITEMS					
1	70048249	Filter, Oil Element Replacement	1	8.2	10
2	70048248	Coalescer, Replacement Element	1	8.2	8
3	70048250	Filter, Air Element Replacement	1	8.2	5
4	89086222	Oil, Rotary Compressor (1 Gallon Container)	5.25 qts.	-	-
5	70580211	Belt, Drive Replacement	1	6.9	Figure 6-9 & Figure 6-10
NON-ROUTINE MAINTENANCE ITEMS					
6	91724538	Kit, Hose and Tubing	1	-	Kit Instructions
7	73744210	Kit, Air Inlet Rebuild	1	6.8.1	Figure 6-8
8	76399332	O-ring, Flange Seat for Inlet Valve	1	6.8.1	Figure 6-8
9	73744211	Kit, Minimum Pressure / Discharge Check Valve	1	6.12	Figure 6-13
10	77041906	Fuse, 10A (Red)	1	6.13	Figure 6-15
11	77041905	Fuse, 14A	1	6.13	Figure 6-15
12	77441489	Breaker, Circuit 30A (for 12V DC)	1	6.13	Figure 6-15
13	77441490	Breaker, Circuit 20A (for 24V DC)	1	6.13	Figure 6-15
14	77040596	Boot, Rubber Reset Switch Replacement	1	8.4 // 8.5	9 // 7
15	73744222	Kit, Shaft Seal Replacement	1	-	-
When ordering parts, always indicate the machine serial number found on the serial plate (see <i>Figure 8-1</i>).					
[†] The compressor shaft seal may wear over a period of prolonged operation. Although there is a kit available for seal replacement, special tooling is needed to perform a complete seal and ring replacement. Consult the IMT service department for information on shaft seal replacement.					

IMPORTANT

Use only approved oil and genuine IMT parts. Inspect damaged components before operation. Substituting non-approved oil will void the compressor warranty.

IMPORTANT

The above table listing contains items that require maintenance on a routine basis, and also those parts that may require maintenance over the course of the compressor package's performance schedule. Although this recommended list is proffered as a comprehensive guide to replacement parts, damage may occur to the machine beyond the scope of this listing.

Should any part of the compressor package that is not listed in Table 8A become damaged or inoperable, use the various sub-sections in Section 8 to best locate and identify the damaged part(s).

IMPORTANT

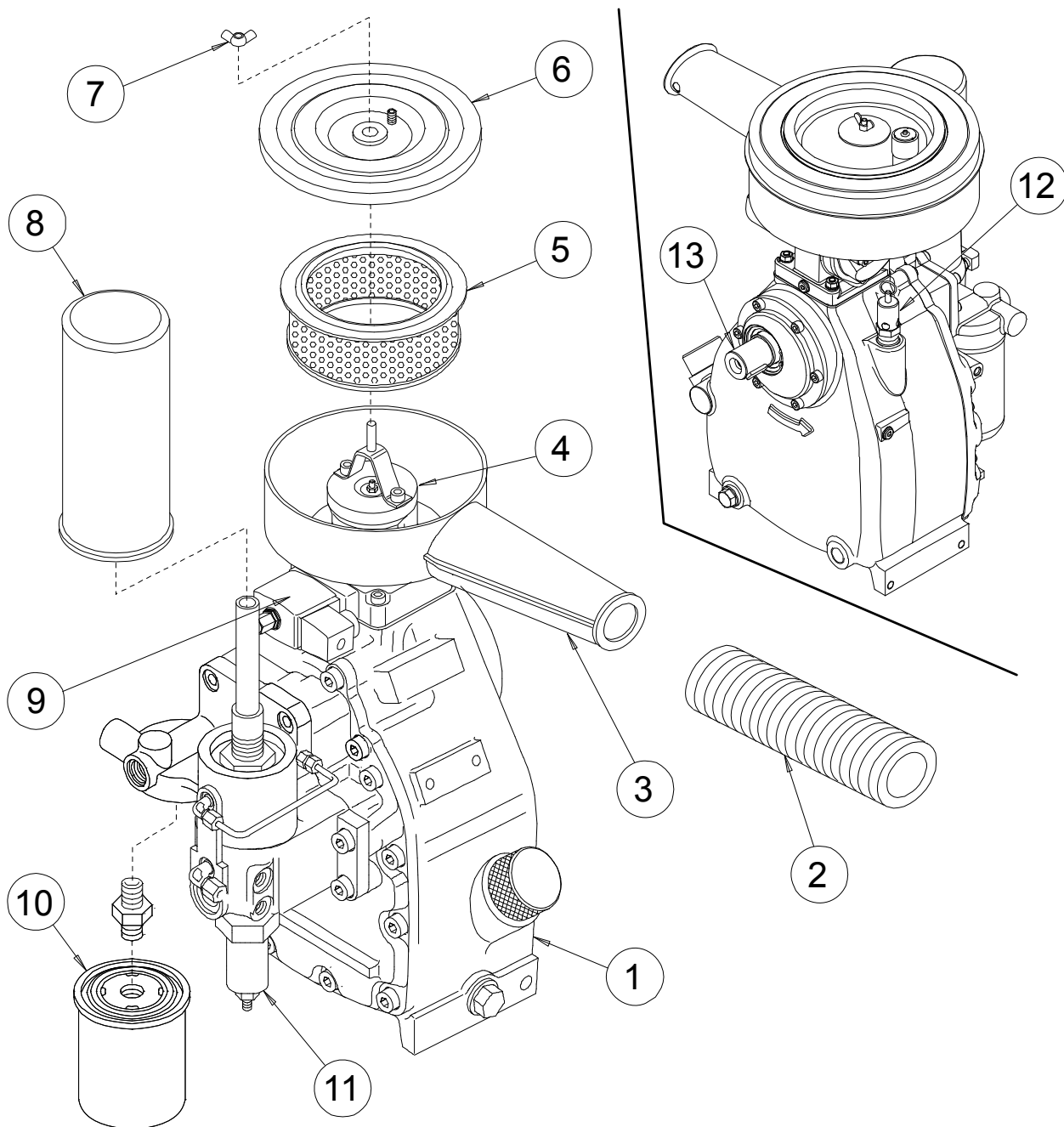
If additional spare parts are being stored for future use, ensure that they are stored in proper containers that allow for protection against contamination, and kept in a clean area of moderate temperature reading. For information on storing the machine package for periods of non-use, consult **Section 6.5.14, Long Term Storage**.

NOTE

An optional heating package is offered for cold weather operation. Consult factory for details.

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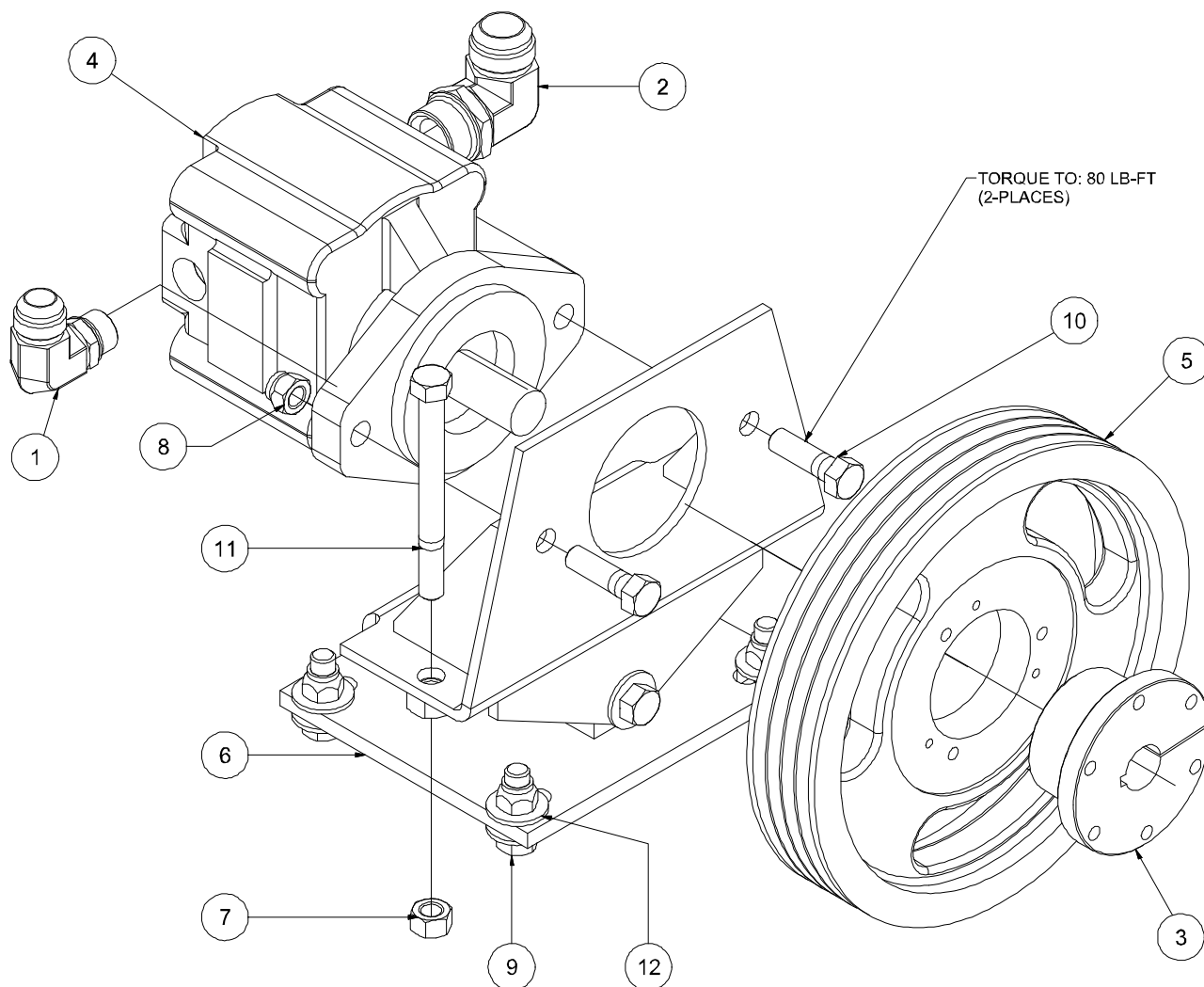
8.2 COMPRESSOR ASSEMBLY AND REPLACEMENT PARTS



8.2 COMPRESSOR ASSEMBLY AND REPLACEMENT PARTS

ITEM	DESCRIPTION	PART NUMBER	QTY
1	COMPRESSOR ASSEMBLY	70734662	1
2	FLEX HOSE		1
3	AIR FILTER BODY		1
4	AIR INLET VALVE	73744210	1
5	AIR FILTER	70048250	1
6	AIR FILTER COVER		1
7	WING NUT		1
8	COALESCER ELEMENT FILTER	70048248	1
9	SOLENOID AND INLET VALVE ASSEMBLED	Consult Factory	1
10	OIL FILTER	70048249	1
11	MINIMUM PRESSURE/CHECK VALVE	73744211	1
12	PRESSURE RELIEF VALVE (200PSI)		1
13	DRIVE SHAFT (MALE ROTOR)		1

8.3 HYDRAULIC MOTOR AND DRIVE



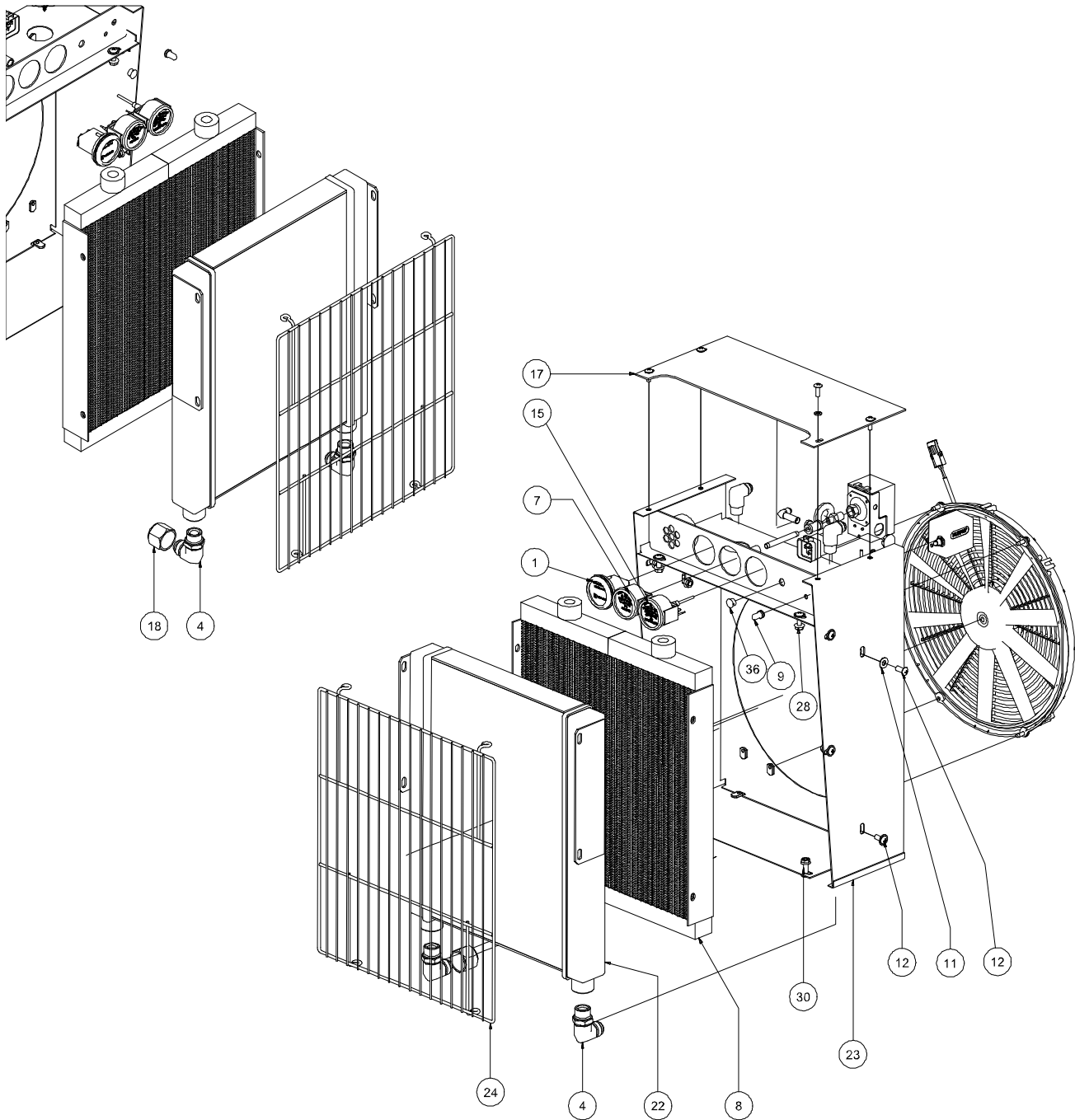
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8.3 HYDRAULIC MOTOR AND DRIVE

ITEM	DESCRIPTION	PART NUMBER	QTY
1	ELBOW, 90 DEG #12 MJIC x #10 MSAE		1
2	ELBOW, 90 DEG #16 MJIC x #16 MSAE		1
3	BUSHING, QD STYLE SK TYPE 1"		1
4	HYDRAULIC MOTOR	73540474	1
5	SHEAVE, 4 GROOVE 10.6 DIA	60030467	1
6	BRACKET, HYDRAULIC MOTOR MNTG ASSY		1
7	NUT, HEX 1/2-13		1
8	NUT, HEX LOCKING 1/2-13 GR8		6
9	CAPSCREW, HEX GR8 1/2-13X11/2		4
10	CAPSCREW, HEX GR8 1/2-13 x1 3/4		2
11	CAPSCREW, HEX GR8 1/2-13 x 5		1
12	WASHER, FLAT 1/2		8

8.4 COOLING AND CONTROL SYSTEM (1 of 3) (12V)

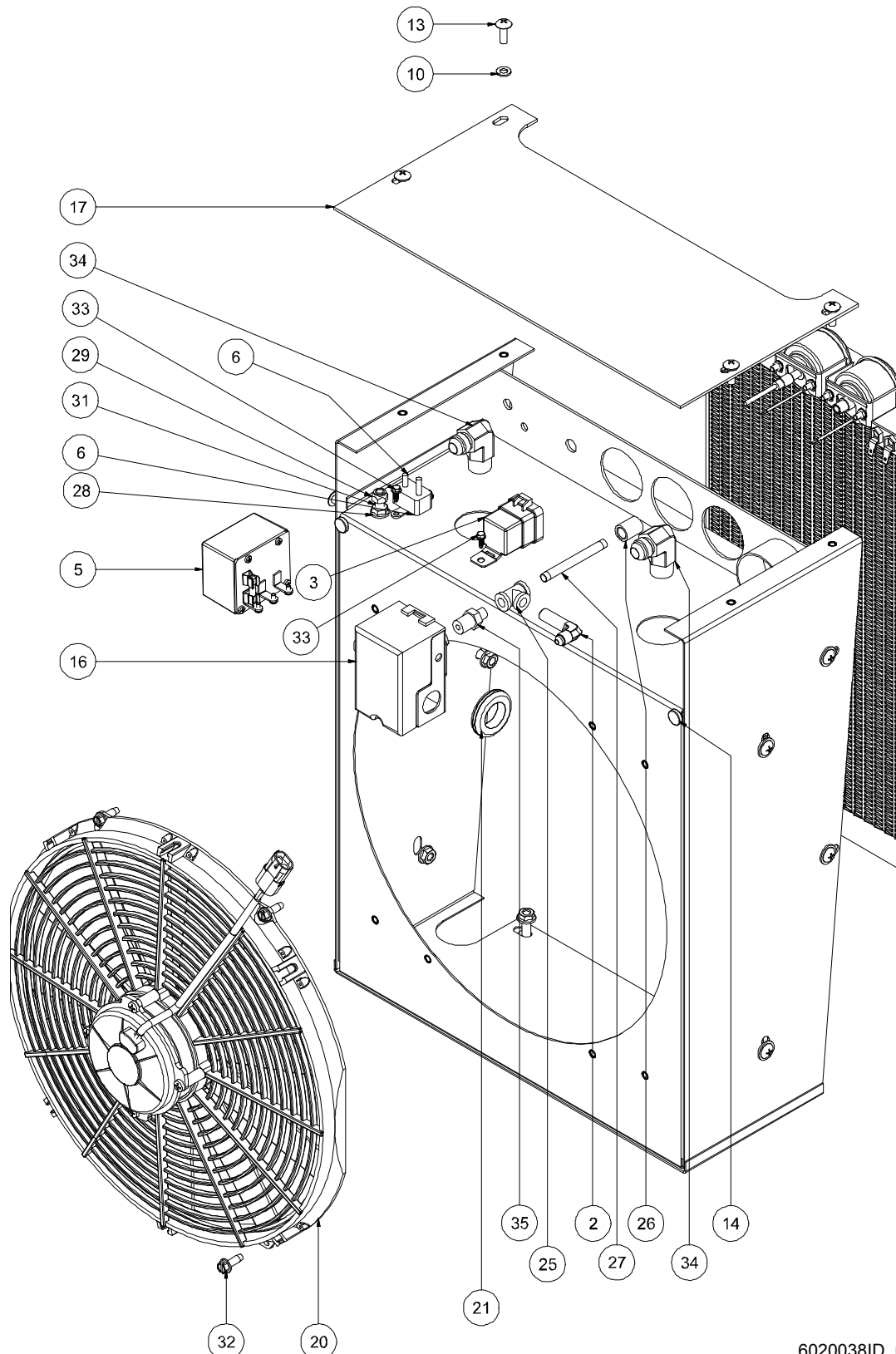


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8.4 COOLING AND CONTROL SYSTEM (1 of 3) (12V)

ITEM	DESCRIPTION	PART NUMBER	QTY
1	GAUGE, HOUR METER	77441491	1
2	ELBOW, 90 DEG 1/8P x 1/4JIC LONG		1
3	RELAY, NO/NC WEATHERPROOF w/RESISTOR		1
4	ELBOW, 90 DEG #12 MJIC x #12 MSAE		2
5	SWITCH, HIGH TEMP. SHUTDOWN	70734663	1
6	BREAKER, CIRCUIT w/ STUDS 30A	77441489	1
7	GAUGE, AIR PRESSURE w/ SWITCH	70048247	1
8	COOLER, OIL 60 CFM	51724560	1
9	BOOT, RUBBER RESET SWITCH	77040596	1
10	WASHER, NYLON FLAT 1/4		4
11	WASHER, NYLON 5/16-18		10
12	SCREW, TRUSS HD 5/16-18 x 3/4 SS		10
13	SCREW, TRUSS HD 1/4-20 x 3/4		4
14	BUMPER, RUBBER 9/16 DIA		2
15	GAUGE, TEMP. MURPHY	70734664	1
16	SWITCH, PRESSURE ADJUSTABLE	77041904	1
17	PLATE, COOLER SHROUD TOP HYD SRS65		1
18	CAP, FEMALE JIC 1 5/16-12 #16		1
19	SEAL, KNOCKOUT 1/2"		1
20	FAN AND MOTOR ASSY.	51724557	1
21	GROMMET, RUBBER 1 x 1 3/32 x 3/32		1
22	COOLER, OIL 2.00 CORE SINGLE PASS SPCL	51724558	1
23	SHROUD, COOLER		1
24	GUARD, OIL COOLERS		1
25	TEE, PIPE GALV 1/8		1
26	COUPLING, PIPE GALV 1/8 300#		1
27	NIPPLE, PIPE GALV 1/8 x 3		1
28	NUT, HEX FLANGE 5/16-18		13
29	NUT, HEX LOCKING 5/16-18		1
30	SCREW, SER WASH 5/16-18 x 0.75		2
31	SCREW, SER WASH 5/16-18 x 1		1
32	SCREW, HEX SELF THREAD 1/4 x 3/4		4
33	SCREW, SELF-DRILL #8 x 1/2		3
34	ELBOW, 37FL/90M #08 x 1/2		2
35	NIPPLE, HEX RED 1/4 x 1/8		1
36	PLUG, 1/2, PUSH IN, BLACK PLASTIC		1

8.4 COOLING AND CONTROL SYSTEM (2 of 3) (12V) (CONT.)

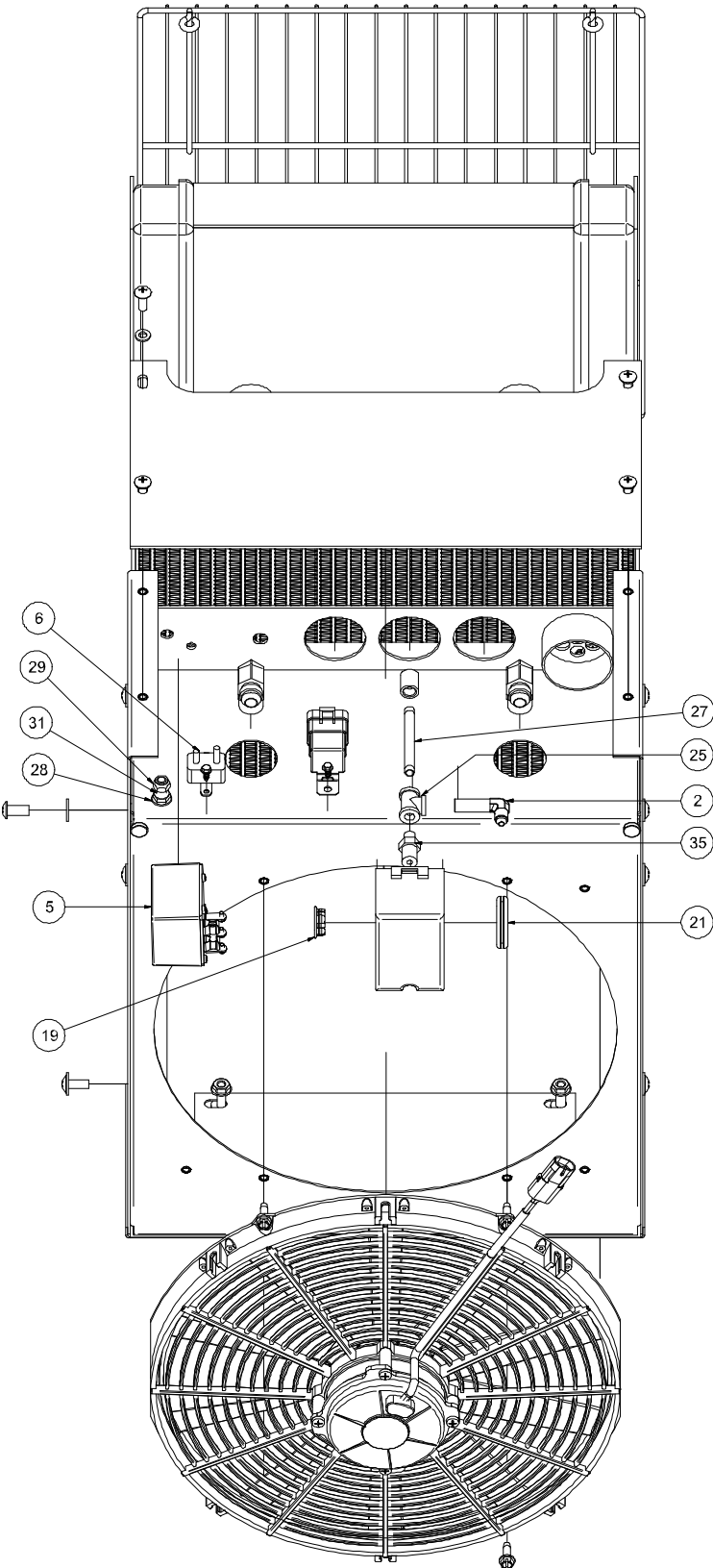


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8.4 COOLING AND CONTROL SYSTEM (2 of 3) (12V) (CONT.)

ITEM	DESCRIPTION	PART NUMBER	QTY
1	GAUGE, HOUR METER	77441491	1
2	ELBOW, 90 DEG 1/8P x 1/4JIC LONG		1
3	RELAY, NO/NC WEATHERPROOF w/RESISTOR		1
4	ELBOW, 90 DEG #12 MJIC x #12 MSAE		2
5	SWITCH, HIGH TEMP. SHUTDOWN	70734663	1
6	BREAKER, CIRCUIT w/ STUDS 30A	77441489	1
7	GAUGE, AIR PRESSURE w/ SWITCH	70048247	1
8	COOLER, OIL 60 CFM	51724560	1
9	BOOT, RUBBER RESET SWITCH	77040596	1
10	WASHER, NYLON FLAT 1/4		4
11	WASHER, NYLON 5/16-18		10
12	SCREW, TRUSS HD 5/16-18 x 3/4 SS		10
13	SCREW, TRUSS HD 1/4-20 x 3/4		4
14	BUMPER, RUBBER 9/16 DIA		2
15	GAUGE, TEMP. MURPHY	70734664	1
16	SWITCH, PRESSURE ADJUSTABLE	77041904	1
17	PLATE, COOLER SHROUD TOP HYD SRS65		1
18	CAP, FEMALE JIC 1 5/16-12 #16		1
19	SEAL, KNOCKOUT 1/2"		1
20	FAN AND MOTOR ASSY.	51724557	1
21	GROMMET, RUBBER 1 x 1 3/32 x 3/32		1
22	COOLER, OIL 2.00 CORE SINGLE PASS SPCL	51724558	1
23	SHROUD, COOLER		1
24	GUARD, OIL COOLERS		1
25	TEE, PIPE GALV 1/8		1
26	COUPLING, PIPE GALV 1/8 300#		1
27	NIPPLE, PIPE GALV 1/8 x 3		1
28	NUT, HEX FLANGE 5/16-18		13
29	NUT, HEX LOCKING 5/16-18		1
30	SCREW, SER WASH 5/16-18 x 0.75		2
31	SCREW, SER WASH 5/16-18 x 1		1
32	SCREW, HEX SELF THREAD 1/4 x 3/4		4
33	SCREW, SELF-DRILL #8 x 1/2		3
34	ELBOW, 37FL/90M #08 x 1/2		2
35	NIPPLE, HEX RED 1/4 x 1/8		1
36	PLUG, 1/2, PUSH IN, BLACK PLASTIC		1

8.4 COOLING AND CONTROL SYSTEM (3 of 3) (12V) (CONT.)

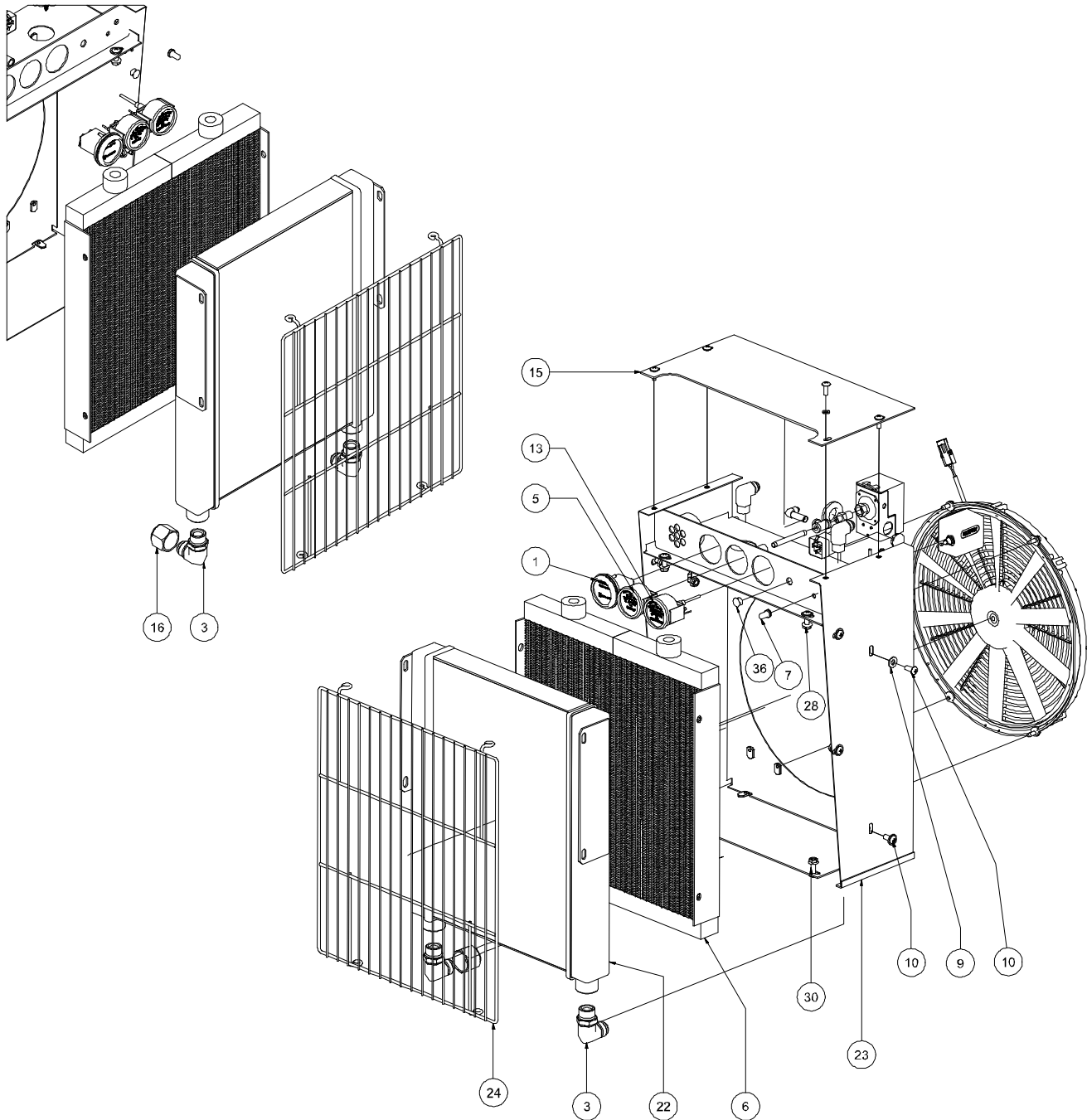


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8.4 COOLING AND CONTROL SYSTEM (3 OF 3) (12V) (CONT.)

ITEM	DESCRIPTION	PART NUMBER	QTY
1	GAUGE, HOUR METER	77441491	1
2	ELBOW, 90 DEG 1/8P x 1/4JIC LONG		1
3	RELAY, NO/NC WEATHERPROOF w/RESISTOR		1
4	ELBOW, 90 DEG #12 MJIC x #12 MSAE		2
5	SWITCH, HIGH TEMP. SHUTDOWN	70734663	1
6	BREAKER, CIRCUIT w/ STUDS 30A	77441489	1
7	GAUGE, AIR PRESSURE w/ SWITCH	70048247	1
8	COOLER, OIL 60 CFM	51724560	1
9	BOOT, RUBBER RESET SWITCH	77040596	1
10	WASHER, NYLON FLAT 1/4		4
11	WASHER, NYLON 5/16-18		10
12	SCREW, TRUSS HD 5/16-18 x 3/4 SS		10
13	SCREW, TRUSS HD 1/4-20 x 3/4		4
14	BUMPER, RUBBER 9/16 DIA		2
15	GAUGE, TEMP. MURPHY	70734664	1
16	SWITCH, PRESSURE ADJUSTABLE	77041904	1
17	PLATE, COOLER SHROUD TOP HYD SRS65		1
18	CAP, FEMALE JIC 1 5/16-12 #16		1
19	SEAL, KNOCKOUT 1/2"		1
20	FAN AND MOTOR ASSY.	51724557	1
21	GROMMET, RUBBER 1 x 1 3/32 x 3/32		1
22	COOLER, OIL 2.00 CORE SINGLE PASS SPCL	51724558	1
23	SHROUD, COOLER		1
24	GUARD, OIL COOLERS		1
25	TEE, PIPE GALV 1/8		1
26	COUPLING, PIPE GALV 1/8 300#		1
27	NIPPLE, PIPE GALV 1/8 x 3		1
28	NUT, HEX FLANGE 5/16-18		13
29	NUT, HEX LOCKING 5/16-18		1
30	SCREW, SER WASH 5/16-18 x 0.75		2
31	SCREW, SER WASH 5/16-18 x 1		1
32	SCREW, HEX SELF THREAD 1/4 x 3/4		4
33	SCREW, SELF-DRILL #8 x 1/2		3
34	ELBOW, 37FL/90M #08 x 1/2		2
35	NIPPLE, HEX RED 1/4 x 1/8		1
36	PLUG, 1/2, PUSH IN, BLACK PLASTIC		1

8.5 COOLING AND CONTROL SYSTEM (1 of 3) (24V)

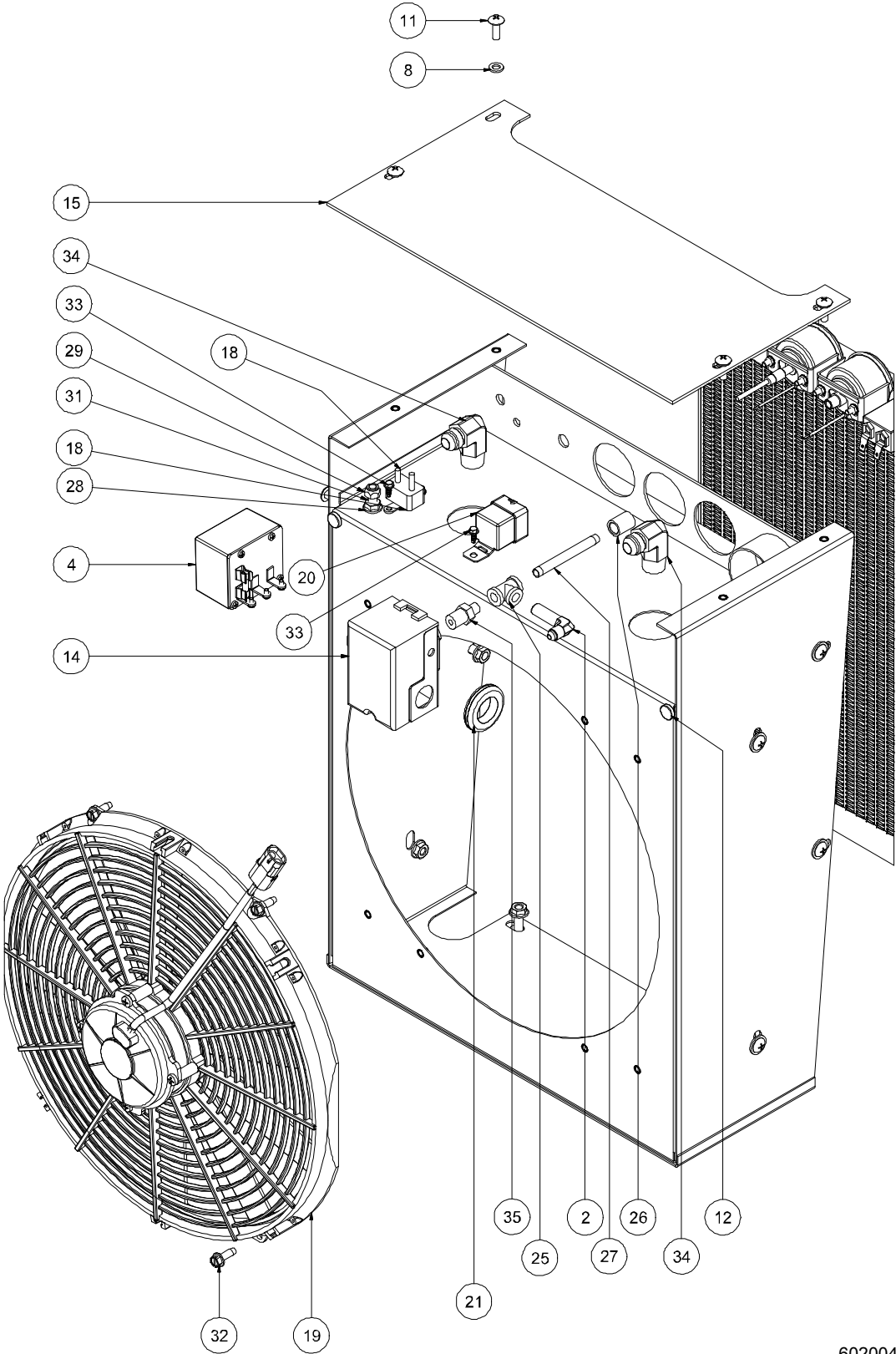


6020048ID_r0_1of3

8.5 COOLING AND CONTROL SYSTEM (1 of 3) (24V)

ITEM	DESCRIPTION	PART NUMBER	QTY
1	GAUGE, HOUR METER	77441491	1
2	ELBOW, 90 DEG 1/8P x 1/4JIC LONG		1
3	ELBOW, 90 DEG #12 MJIC x #12 MSAE		2
4	SWITCH, HIGH TEMP. SHUTDOWN	70734663	1
5	GAUGE, AIR PRESSURE w/ SWITCH	70048247	1
6	COOLER, OIL 60 CFM	51724560	1
7	BOOT, RUBBER RESET SWITCH	77040596	1
8	WASHER, NYLON FLAT 1/4		4
9	WASHER, NYLON 5/16-18		10
10	SCREW, TRUSS HD 5/16-18 x 3/4 SS		10
11	SCREW, TRUSS HD 1/4-20 x 3/4		4
12	BUMPER, RUBBER 9/16 DIA		2
13	GAUGE, TEMP. MURPHY	70734664	1
14	SWITCH, PRESSURE ADJUSTABLE	77041904	1
15	PLATE, COOLER SHROUD TOP HYD SRS65		1
16	CAP, FEMALE JIC 1 5/16-12 #16		1
17	SEAL, KNOCKOUT 1/2"		1
18	BREAKER, CIRCUIT w/ STUDS 20A 24V	77441490	1
19	FAN & MOTOR ASSY., 125/185 24V	51724559	1
20	RELAY, NC/NO WEATHERPROOF 24V		1
21	GROMMET, RUBBER 1 x 1 3/32 x 3/32		1
22	COOLER, OIL 2.00 CORE SINGLE PASS SPCL	51724558	1
23	SHROUD, COOLER		1
24	GUARD, OIL COOLERS		1
25	TEE, PIPE GALV 1/8		1
26	COUPLING, PIPE GALV 1/8 300#		1
27	NIPPLE, PIPE GALV 1/8 x 3		1
28	NUT, HEX FLANGE 5/16-18		13
29	NUT, HEX LOCKING 5/16-18		1
30	SCREW, SER WASH 5/16-18 x 0.75		2
31	SCREW, SER WASH 5/16-18 x 1		1
32	SCREW, HEX SELF THREAD 1/4 x 3/4		4
33	SCREW, SELF-DRILL #8 x 1/2		3
34	ELBOW, 37FL/90M #08 x 1/2		2
35	NIPPLE, HEX RED 1/4 x 1/8		1
36	PLUG, 1/2, PUSH IN, BLACK PLASTIC		1

8.5 COOLING AND CONTROL SYSTEM (2 OF 3) (24V) (CONT.)

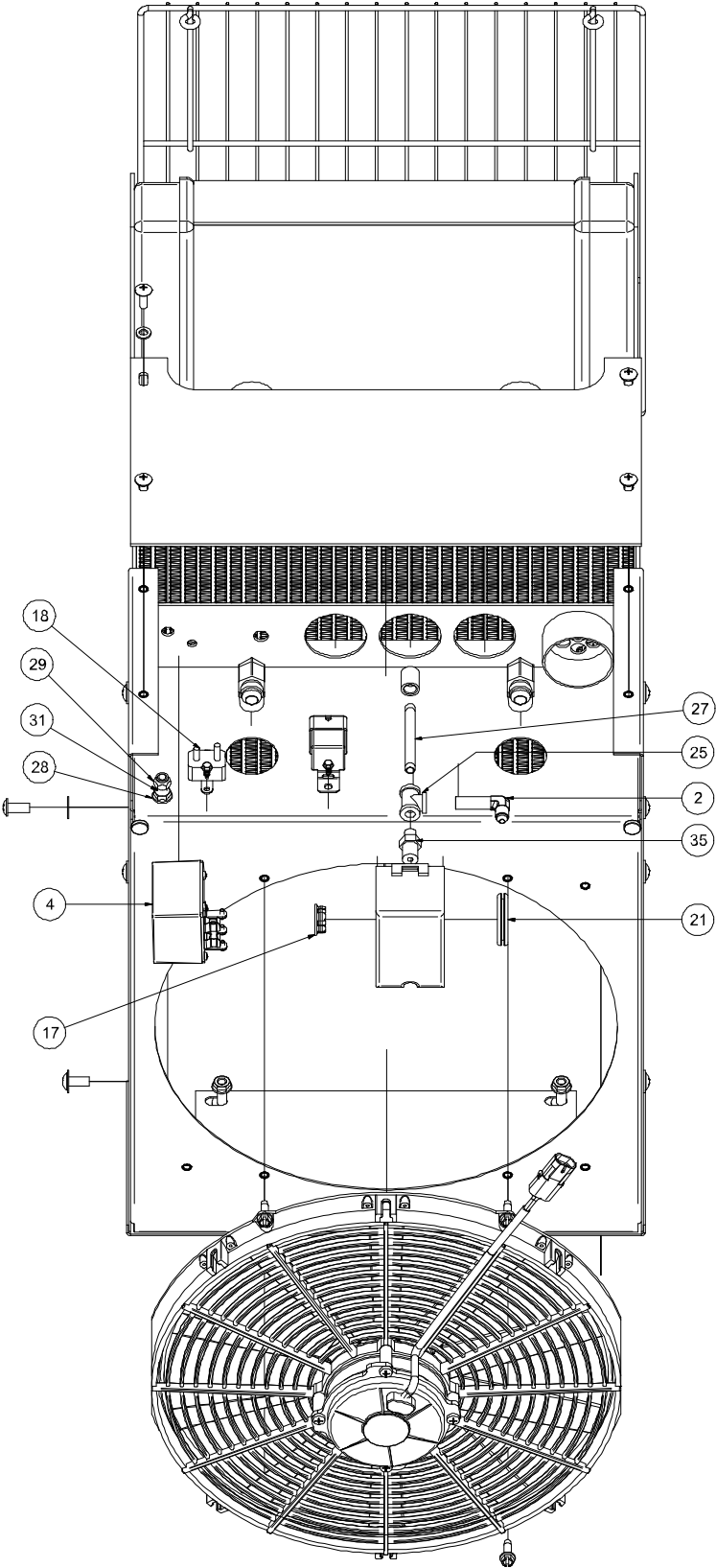


6020048ID_r0_2of3

8.5 COOLING AND CONTROL SYSTEM (2 of 3) (24V) (CONT.)

ITEM	DESCRIPTION	PART NUMBER	QTY
1	GAUGE, HOUR METER	77441491	1
2	ELBOW, 90 DEG 1/8P x 1/4JIC LONG		1
3	ELBOW, 90 DEG #12 MJIC x #12 MSAE		2
4	SWITCH, HIGH TEMP. SHUTDOWN	70734663	1
5	GAUGE, AIR PRESSURE w/ SWITCH	70048247	1
6	COOLER, OIL 60 CFM	51724560	1
7	BOOT, RUBBER RESET SWITCH	77040596	1
8	WASHER, NYLON FLAT 1/4		4
9	WASHER, NYLON 5/16-18		10
10	SCREW, TRUSS HD 5/16-18 x 3/4 SS		10
11	SCREW, TRUSS HD 1/4-20 x 3/4		4
12	BUMPER, RUBBER 9/16 DIA		2
13	GAUGE, TEMP. MURPHY	70734664	1
14	SWITCH, PRESSURE ADJUSTABLE	77041904	1
15	PLATE, COOLER SHROUD TOP HYD SRS65		1
16	CAP, FEMALE JIC 1 5/16-12 #16		1
17	SEAL, KNOCKOUT 1/2"		1
18	BREAKER, CIRCUIT w/ STUDS 20A 24V	77441490	1
19	FAN & MOTOR ASSY., 125/185 24V	51724559	1
20	RELAY, NC/NO WEATHERPROOF 24V		1
21	GROMMET, RUBBER 1 x 1 3/32 x 3/32		1
22	COOLER, OIL 2.00 CORE SINGLE PASS SPCL	51724558	1
23	SHROUD, COOLER		1
24	GUARD, OIL COOLERS		1
25	TEE, PIPE GALV 1/8		1
26	COUPLING, PIPE GALV 1/8 300#		1
27	NIPPLE, PIPE GALV 1/8 x 3		1
28	NUT, HEX FLANGE 5/16-18		13
29	NUT, HEX LOCKING 5/16-18		1
30	SCREW, SER WASH 5/16-18 x 0.75		2
31	SCREW, SER WASH 5/16-18 x 1		1
32	SCREW, HEX SELF THREAD 1/4 x 3/4		4
33	SCREW, SELF-DRILL #8 x 1/2		3
34	ELBOW, 37FL/90M #08 x 1/2		2
35	NIPPLE, HEX RED 1/4 x 1/8		1
36	PLUG, 1/2, PUSH IN, BLACK PLASTIC		1

8.5 COOLING AND CONTROL SYSTEM (3 OF 3) (24V) (CONT.)

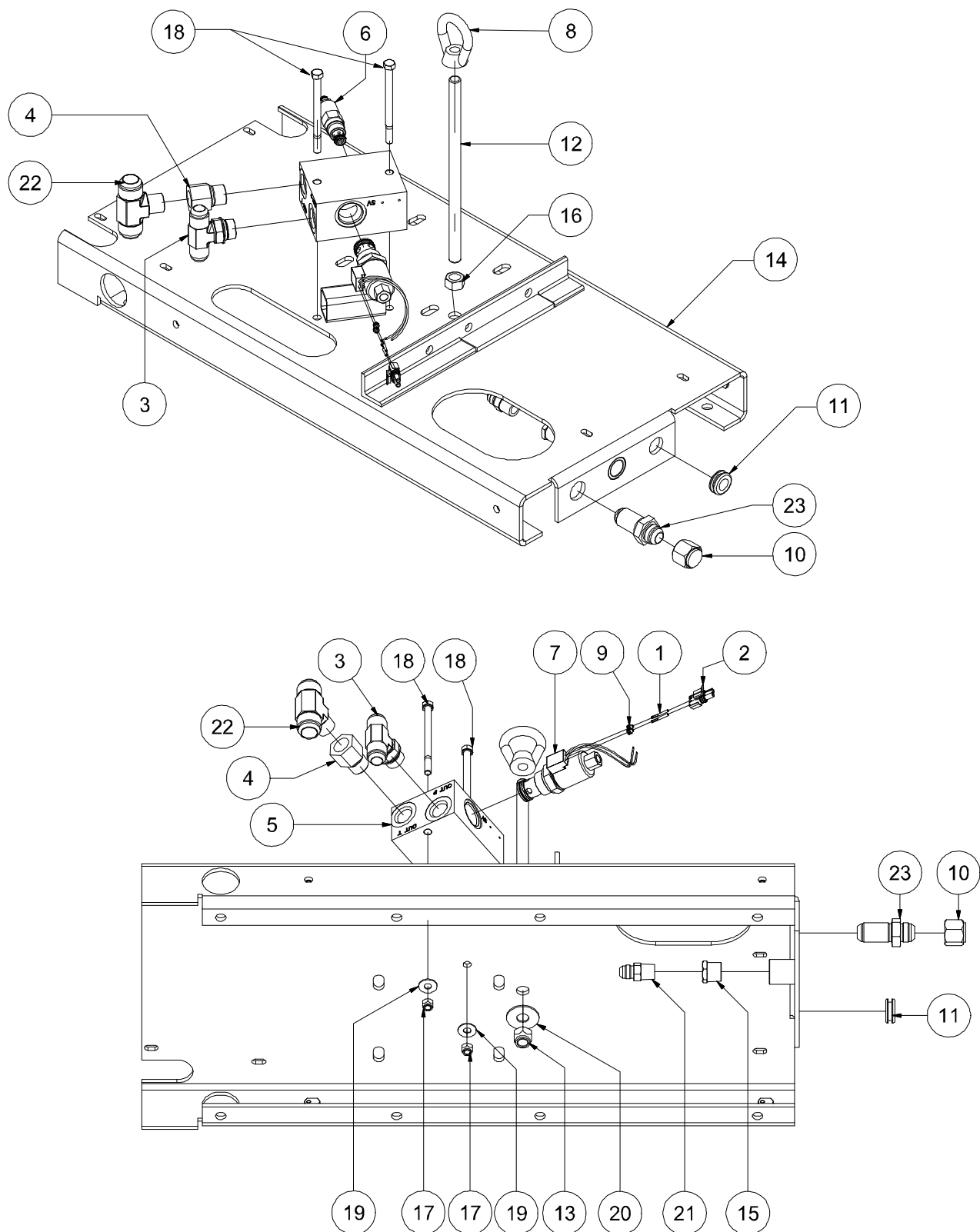


6020048ID_r0_3of3

8.5 COOLING AND CONTROL SYSTEM (3 of 3) (24V) (CONT.)

ITEM	DESCRIPTION	PART NUMBER	QTY
1	GAUGE, HOUR METER	77441491	1
2	ELBOW, 90 DEG 1/8P x 1/4JIC LONG		1
3	ELBOW, 90 DEG #12 MJIC x #12 MSAE		2
4	SWITCH, HIGH TEMP. SHUTDOWN	70734663	1
5	GAUGE, AIR PRESSURE w/ SWITCH	70048247	1
6	COOLER, OIL 60 CFM	51724560	1
7	BOOT, RUBBER RESET SWITCH	77040596	1
8	WASHER, NYLON FLAT 1/4		4
9	WASHER, NYLON 5/16-18		10
10	SCREW, TRUSS HD 5/16-18 x 3/4 SS		10
11	SCREW, TRUSS HD 1/4-20 x 3/4		4
12	BUMPER, RUBBER 9/16 DIA		2
13	GAUGE, TEMP. MURPHY	70734664	1
14	SWITCH, PRESSURE ADJUSTABLE	77041904	1
15	PLATE, COOLER SHROUD TOP HYD SRS65		1
16	CAP, FEMALE JIC 1 5/16-12 #16		1
17	SEAL, KNOCKOUT 1/2"		1
18	BREAKER, CIRCUIT w/ STUDS 20A 24V	77441490	1
19	FAN & MOTOR ASSY., 125/185 24V	51724559	1
20	RELAY, NC/NO WEATHERPROOF 24V		1
21	GROMMET, RUBBER 1 x 1 3/32 x 3/32		1
22	COOLER, OIL 2.00 CORE SINGLE PASS SPCL	51724558	1
23	SHROUD, COOLER		1
24	GUARD, OIL COOLERS		1
25	TEE, PIPE GALV 1/8		1
26	COUPLING, PIPE GALV 1/8 300#		1
27	NIPPLE, PIPE GALV 1/8 x 3		1
28	NUT, HEX FLANGE 5/16-18		13
29	NUT, HEX LOCKING 5/16-18		1
30	SCREW, SER WASH 5/16-18 x 0.75		2
31	SCREW, SER WASH 5/16-18 x 1		1
32	SCREW, HEX SELF THREAD 1/4 x 3/4		4
33	SCREW, SELF-DRILL #8 x 1/2		3
34	ELBOW, 37FL/90M #08 x 1/2		2
35	NIPPLE, HEX RED 1/4 x 1/8		1
36	PLUG, 1/2, PUSH IN, BLACK PLASTIC		1

8.6 FRAME AND PARTS (12V)

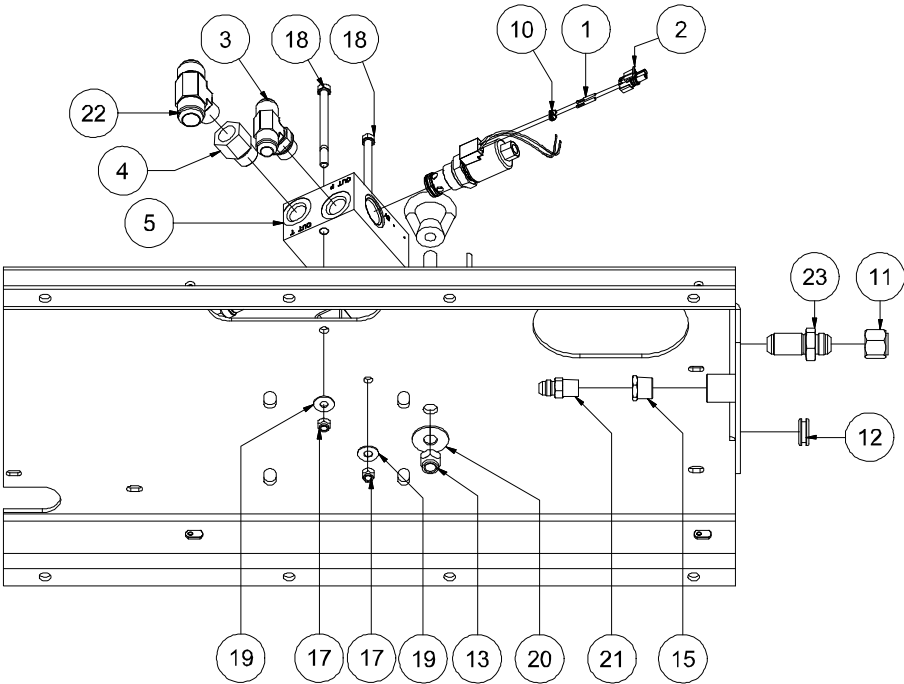
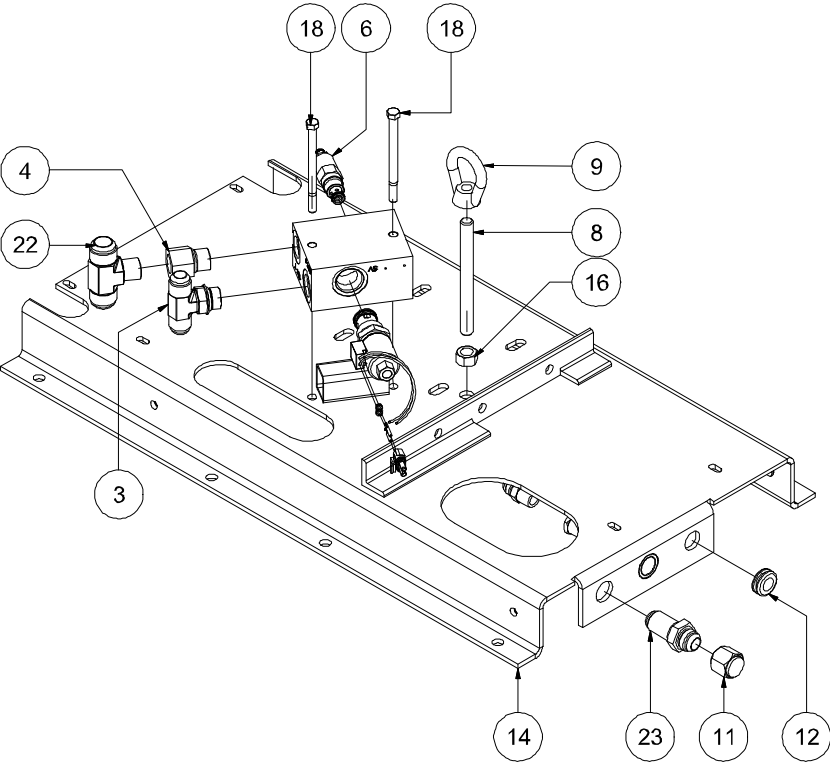


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8.6 FRAME AND PARTS (12V)

ITEM	DESCRIPTION	PART NUMBER	QTY
1	TERMINAL, FEMALE		2
2	CONNECTOR, FEMALE		1
3	TEE, JIC/JIC/SAE 3/4		1
4	ADAPTER, #12 MSAE O-RING x 3/4 FNPT		1
5	MANIFOLD, HYDRAULIC SOLENOID	71414997	1
6	VALVE, PRESSURE RELIEF	73540470	1
7	VALVE, SOLENOID WITH 12V. COIL	73540471	1
8	EYENUT, 5/8-11		1
9	SEAL, CABLE GREEN 16-14 GA		2
10	CAP, FEMALE JIC 1 1/16-12 #12		1
11	GROMMET, RUBBER 11/16 x 1 x 3/16		1
12	ROD, TIE DOWN BODY 5/8-11 x 12		1
13	NUT, HEX LOCKING 5/8-11 GR8		1
14	FRAME, HYDRAULIC VIKING		1
15	BUSHING, RED STEEL 3/4 x 1/2		1
16	NUT, HEX 5/8-11		1
17	NUT, HEX LOCKING 3/8-16		2
18	CAPSCREW, HEX GR8 3/8-16 x 5		2
19	WASHER, FLAT 3/8		2
20	WASHER, FLAT 5/8		1
21	CONNECTOR, 37FL/MPT #08 x 1/2		1
22	TEE, 37FL M BR 1 JIC X 3/4NPT		1
23	BULKHEAD, MJIC x MJIC #12		1

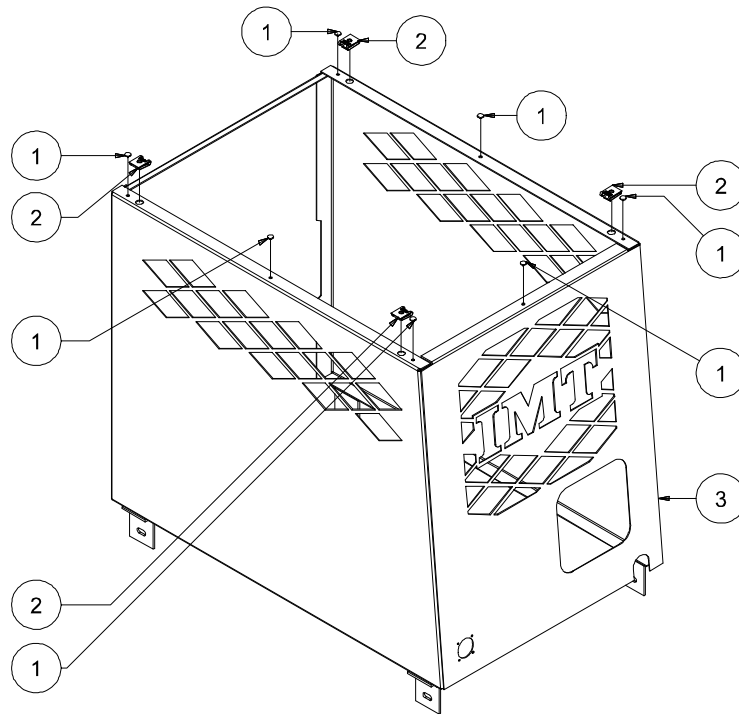
8.7 FRAME AND PARTS (24V)



8.7 FRAME AND PARTS (24V)

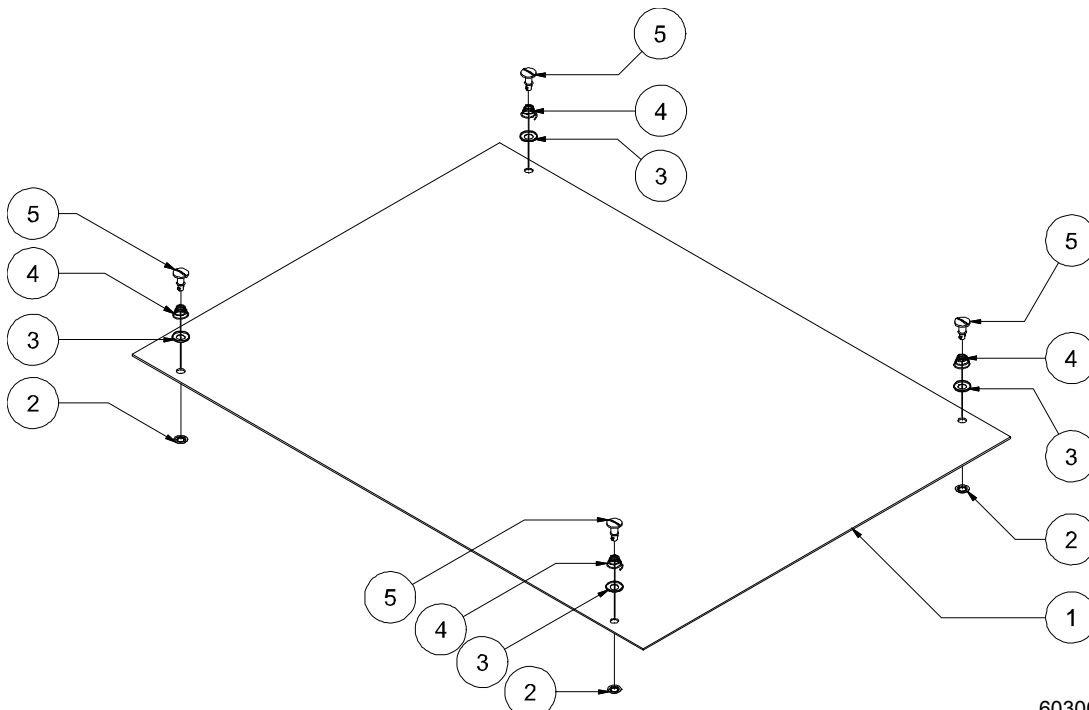
ITEM	DESCRIPTION	PART NUMBER	QTY
1	TERMINAL, FEMALE		2
2	CONNECTOR, FEMALE		1
3	TEE, JIC/JIC/SAE 3/4		1
4	ADAPTER, #12 MSAE O-RING x 3/4 FNPT		1
5	MANIFOLD, HYDRAULIC SOLENOID	71414997	1
6	VALVE, PRESSURE RELIEF	73540470	1
7	VALVE, SOLENOID w/ 24V COIL	73540472	1
8	ROD, THREADED 5/8-11 GR B7		1
9	EYENUT, 5/8-11		1
10	SEAL, CABLE GREEN 16-14 GA		2
11	CAP, FEMALE JIC 1 1/16-12 #12		1
12	GROMMET, RUBBER 11/16 x 1 x 3/16		1
13	NUT, HEX LOCKING 5/8-11 GR8		1
14	FRAME, HYDRAULIC		1
15	BUSHING, RED STEEL 3/4 x 1/2		1
16	NUT, HEX 5/8-11		1
17	NUT, HEX LOCKING 3/8-16		2
18	CAPSCREW, HEX GR8 3/8-16 x 5		2
19	WASHER, FLAT 3/8		2
20	WASHER, FLAT 5/8		1
21	CONNECTOR, 37FL/MPT #08 x 1/2		1
22	TEE, 37FL M BR 1 JIC x 3/4NPT		1
23	BULKHEAD, MJIC x MJIC #12		1

8.8 CANOPY AND PARTS (1 OF 2)



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8.8 CANOPY AND PARTS (2 OF 2)



6030041ID_r0_2of2

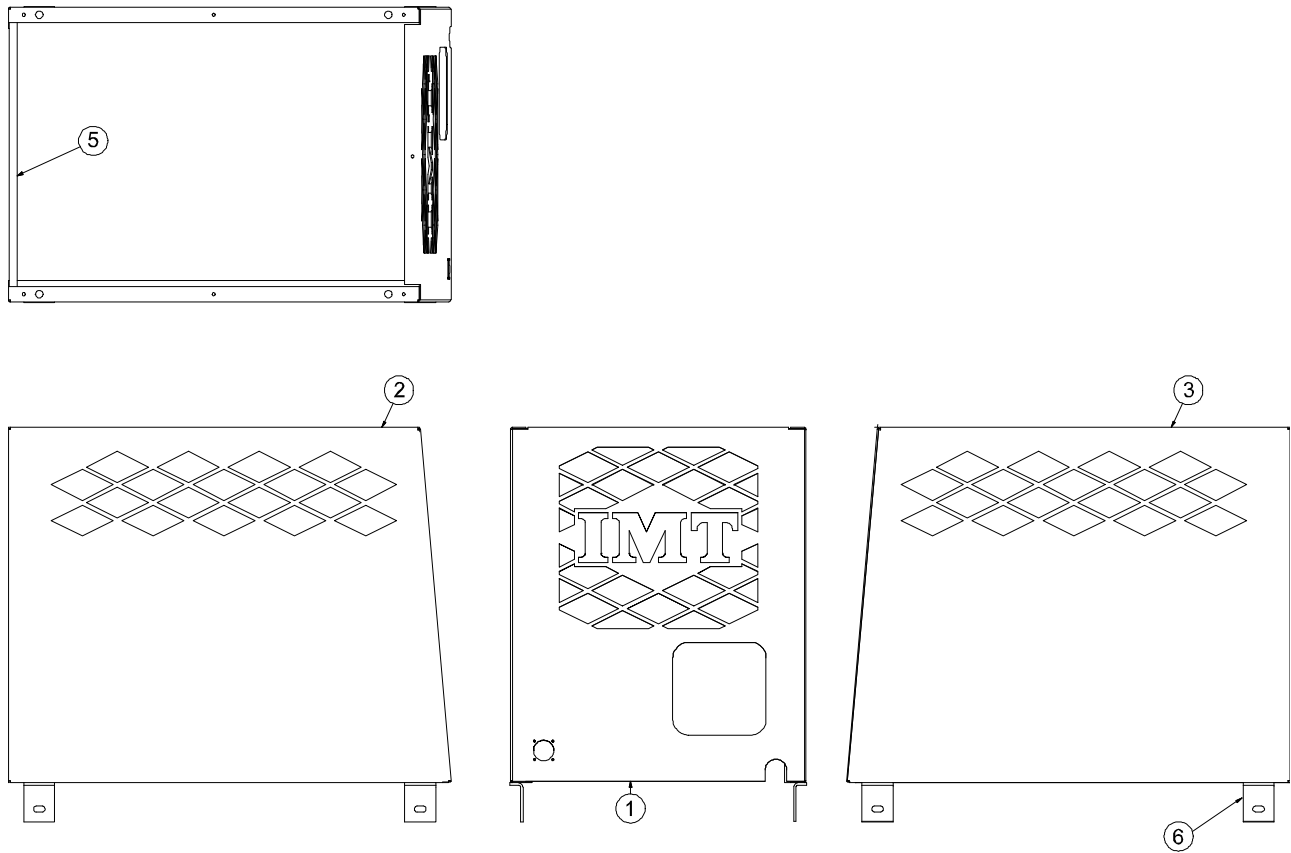
8.8 CANOPY AND PARTS (1 of 2)

ITEM	DESCRIPTION	PART NUMBER	QTY
1	BUMPER, RUBBER 3/16 MTG REV.0		7
2	CLIP	71415013	4
3	CANOPY ^I		1
^I Refer to Section 8.9 for canopy panel details.			

8.8 CANOPY AND PARTS (2 of 2)

ITEM	DESCRIPTION	PART NUMBER	QTY
1	PLATE, TOP SRS65		1
2	RETAINER		4
3	WASHER		4
4	SPRING		4
5	STUD, FLAT HEAD		4

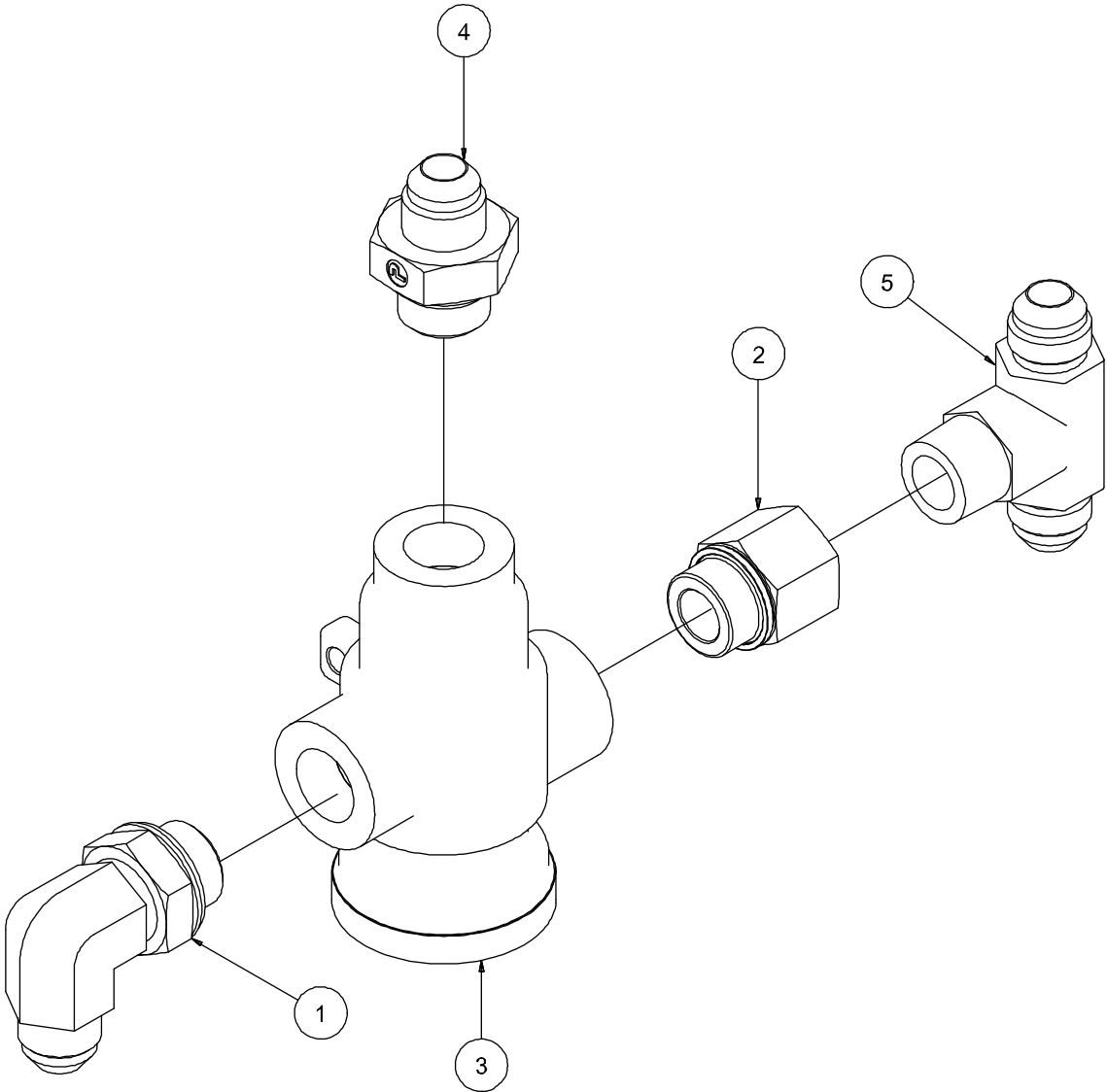
8.9 CANOPY PANELS



8.9 CANOPY PANELS

ITEM	DESCRIPTION	PART NUMBER	QTY
1	TOP, CANOPY		1
2	PANEL, CANOPY R.H.		1
3	PANEL, CANOPY L.H.		1
5	ANGLE, SUPPORT		1
6	ANGLE, CANOPY MTG.		4

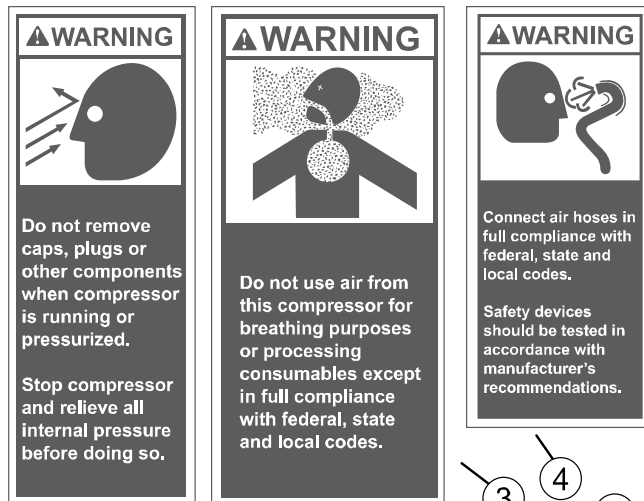
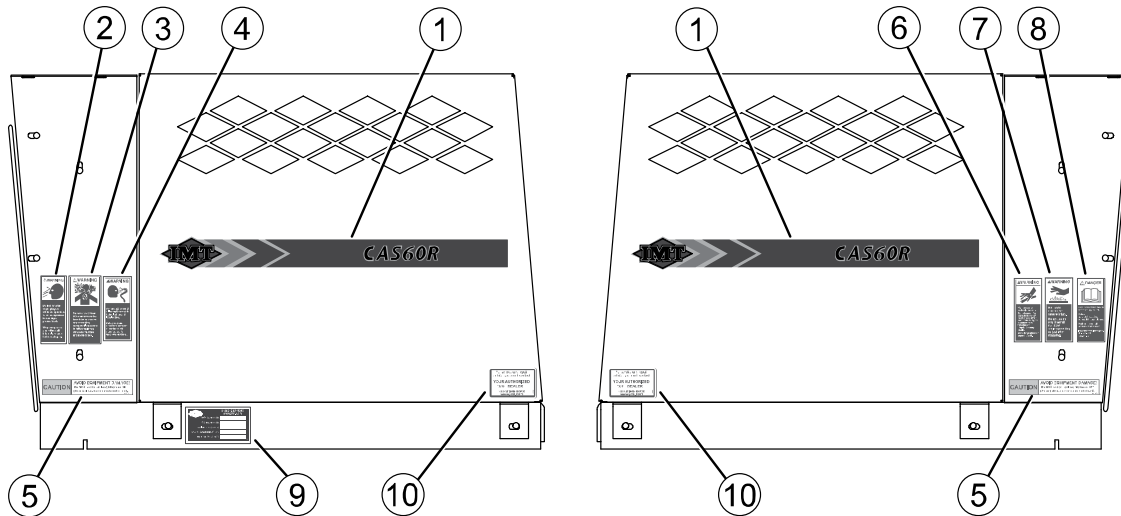
8.10 THERMAL CONTROL



8.10 THERMAL CONTROL

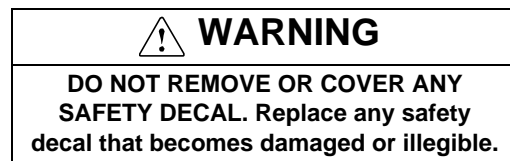
ITEM	DESCRIPTION	PART NUMBER	QTY
1	ELBOW, 90 DEG. MJIC x MBSP 1/2		1
2	ADAPTER, FEMALE PIPE x BSPP 1/2		1
3	VALVE, THERMAL 1/2 BSPP	73540475	1
4	ADAPTER, MJIC x MBSP 1/2 x 1/2		1
5	TEE, 37FL/M BR #8 x 1/2		1

8.11 DECAL LOCATIONS (PART 1 of 2 / DECAL SHEET #95724529)

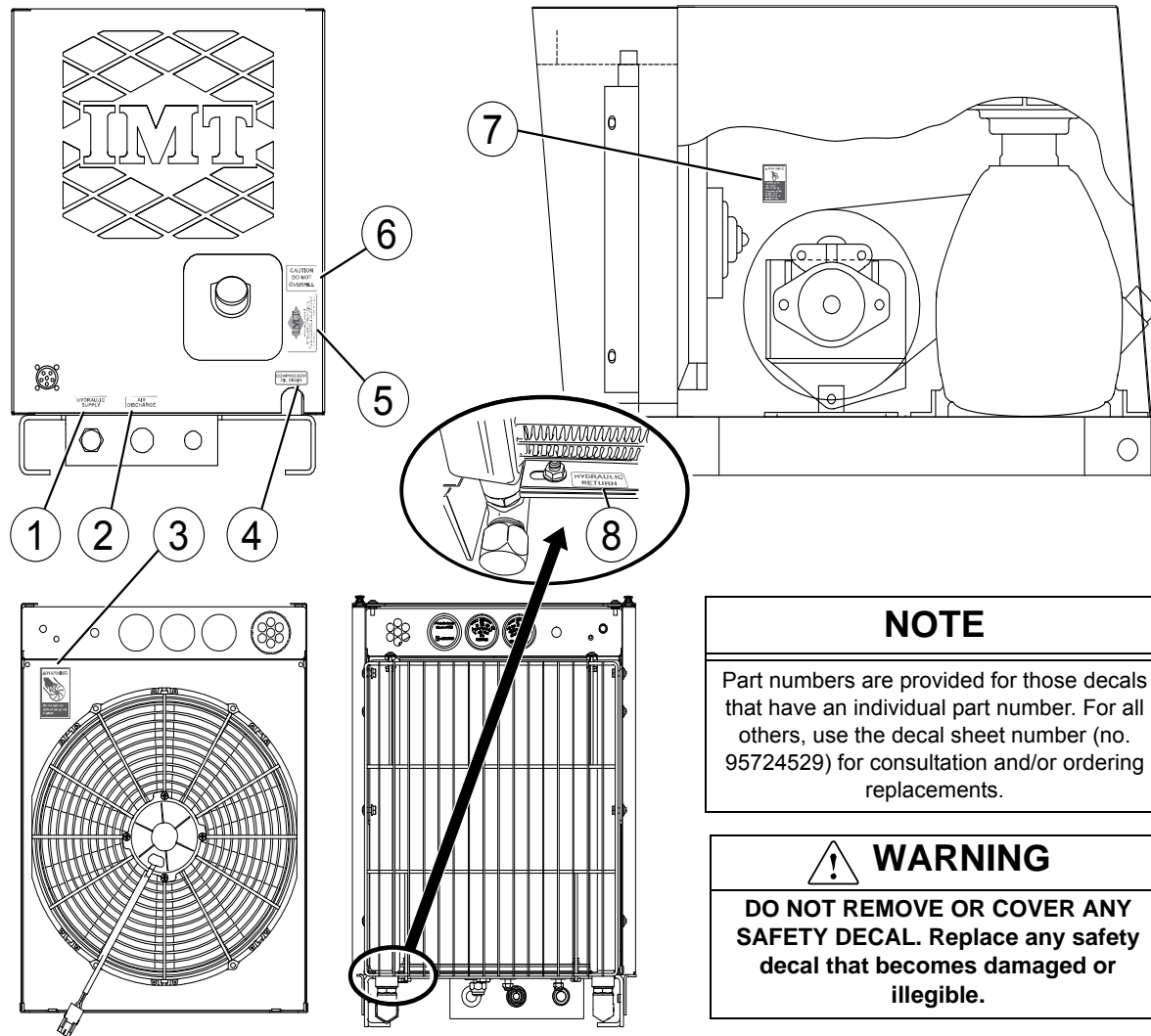


KEY	PART NUMBER	QTY
1	70399256	2
5	70397804	2
10	70392982	2

Part numbers are provided for those decals that have an individual part number. For all others, use the decal sheet number (no. 95724529) for consultation and/or ordering replacements.



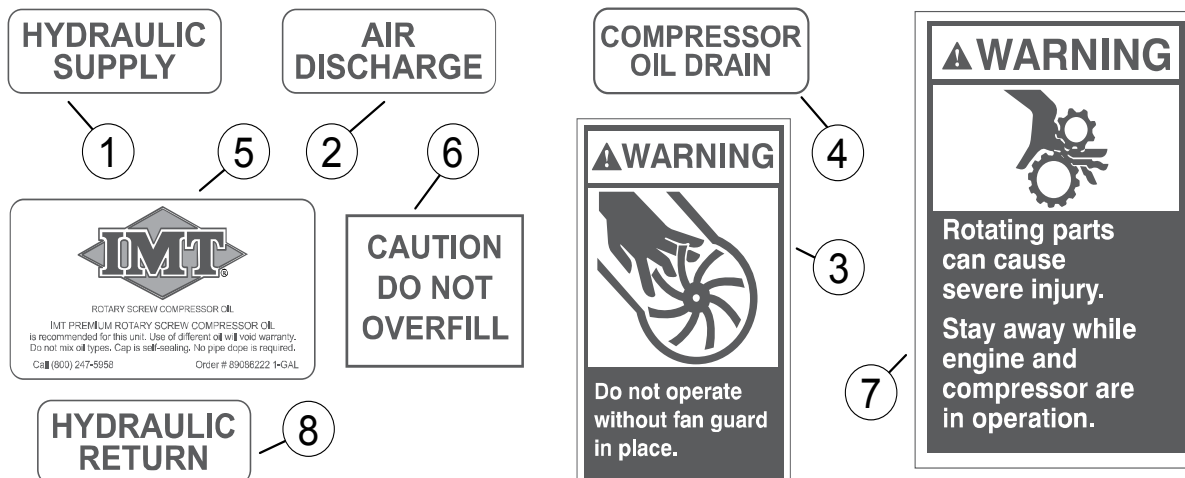
8.11 DECAL LOCATIONS (PART 2 OF 2 / DECAL SHEET #95724529)

**NOTE**

Part numbers are provided for those decals that have an individual part number. For all others, use the decal sheet number (no. 95724529) for consultation and/or ordering replacements.

**WARNING**

DO NOT REMOVE OR COVER ANY SAFETY DECAL. Replace any safety decal that becomes damaged or illegible.



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