

An Oshkosh Corporation Company



## 45 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 CAS45R Hydraulic system.

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#### 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: 99905396 Effective Date: 4/12

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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 IMT 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



Read this manual before operating or servicing the CAS45R Air Compressor System. Failure to do so could result in damaged equipment, bodily injury, or death.



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

### WARNING

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

## 

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.



the equipment by disconnecting it from its power source. Install a lock-out tag to identify the equipment as inoperable to other personnel.

- **DO NOT** attempt to service the equipment while it is operating.
- **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 it 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.
- **DO NOT** operate the compressor with any by-pass or other safety systems disconnected or rendered inoperative.
- Keep arms, hands, hair and other body parts, and loose clothing away from fans, drive shafts, and other moving parts.
- **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 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.
- 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.

#### 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.
- Wear appropriate protective (eye and hearing protection) equipment and clothing when operating or maintaining this equipment. **DO NOT** wear jewelry, loose clothing; and long hair should be restrained with headband or safety hat.
- The system package can be started remotely. Always clearly tag the start-up instrumentation against accidental system start-ups during maintenance.

#### 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 8.10**, **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.

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



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## SECTION 2: DESCRIPTION

### 2.1 GENERAL DESCRIPTION

The IMT CAS45R hydraulic module air compressor system will offer superior performance and reliability along with a minimal amount of maintenance requirements.

The compressor module is equipped with a Rotary Screw Compressor Unit which is renowned for its durability and reliability.

The CAS45R hydraulic package includes a heavy duty rotary screw air compressor with an integral air inlet valve assembly, oil separation system, minimum pressure/ discharge check valve and oil filter housing. The completed assembly incorporates a compressor oil cooling system, hydraulic drive, valving and respective instrumentation and control systems. The complete operating system is mounted in a compact, durable enclosure providing easy access for maintenance.

**Section 2, Description** provides brief descriptions of the components and systems on the CAS45R hydraulic compressor package.

System Component or Component Group	Manual Section
Compressed Air System	2.2
Hydraulic Drive System	2.3
Oil Cooling System	2.4
Instrumentation	2.5
Main Frame and Enclosure	2.6

## 2.2 COMPRESSED AIR SYSTEM

The compressor system consists of an oil injected, single-stage rotary screw compressor, air inlet valve and control assembly, air filter assembly, oil reservoir and primary oil separator, secondary spin-on oil coalescer, spin-on oil filter and minimum pressure/check valve. Each component's function is detailed in its particular section, which can be located per the following table:



### 

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.



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.

System Component or Component Group	Manual Section
Compressed Air System	2.2
Compressor Unit	2.2.1
Compressor Air Inlet Valve	2.2.2
Air Filter	2.2.3
Spin-on Oil Coalescer/Separator	2.2.4
Spin-on Oil Filter	2.2.5
Minimum Pressure Valve/Discharge Check Valve Assembly	2.2.6
Pressure Switch	2.2.7
Pressure Relief Valve	2.2.8

#### 2.2.1 COMPRESSOR UNIT

See *Figure 2-1*. The compressor unit is a single-stage, positive-displacement, oil-flooded, rotary screw type compressor system. Lubricant is injected into the compressor air end unit and mixes directly with the air in the compressions chamber. Internal porting also injects oil into the bearings and seal area. The lubricant has three primary functions:

- 1. As a coolant, it controls the rise of air temperature normally associated with the heat of compression.
- 2. Seals the leakage paths between the rotors and the stator, and also between the rotors themselves.
- 3. Acts as a lubricating film between the rotors, allowing one rotor to directly drive the other, which is an idler. It also lubricates the bearing 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.

## 2.2.1.1 OIL RESERVOIR AND PRIMARY OIL SEPARATION

Refer to *Figure 2-2*. The main casting of the compressor unit, which contains the compression screws, also serves as the main oil reservoir and primary oil separation chamber. The initial (primary) oil separation is caused by the sudden change in velocity and direction of the compressed air and oil blend as it collides with the main casting's inner chamber walls. A separate oil reservoir is not required. For a more detailed and visual description



		В			
KEY	DESCRIPTION	KEY	DESCRIPTION		
А	COMPRESSOR ASSEMBLY - DRIVE (FRONT) SIDE	F	PRESSURE RELIEF VALVE (200 psig)		
В	COMPRESSOR ASSEMBLY - COMPONENT (REAR) SIDE	G	MINIMUM PRESSURE/DISCHARGE CHECK VALVE		
С	AIR FILTER HOUSING (situated over air intake valve)	н	COMPRESSOR OIL FILTER		
D	COMPRESSOR UNIT DRIVE SHAFT	J	COMPRESSOR OIL FILL/OIL LEVEL PORT		
E	SPIN-ON COALESCER/SEPARATOR	К	AIR INLET SOLENOID CONTROL VALVE		
	Figure 2-1: Compressor Unit Assembly				

of the rotary screw air compression process, refer to **Section 8.11** of this manual.

#### 2.2.2 COMPRESSOR AIR INLET VALVE

See *Figure 2-3*. The compressor air 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 deactivates 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 (refer to **Section 2.2.7**), senses air demand and upon







reducing pressure in discharge line (i.e. air being used), will re-activate the inlet valve. The compressor will again start to load and produce air.

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

#### 2.2.3 AIR FILTER

See *Figure 2-3*. The CAS45R compressor system's 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. See *Section 6, Maintenance*.

#### 2.2.4 SPIN-ON OIL COALESCER/SEPARATOR

See *Figure 2-4*. The **spin-on coalescer element** screws directly onto the filter support housing at the rear of the compressor module. The coalescer (separator element) recovers the finer particles of residual oil after the main air/oil separation stage, which occurs in the main compressor unit reservoir.

#### NOTE

Refer to Sections 2.2.1.1 and 8.11 for additional information on oil integration in the rotary screw air compression cycle.

Oil which is collected on the coalescer/separator element, is scavenged back into the compressor unit.





#### 2.2.5 SPIN-ON OIL FILTER

See *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. The filter element rating is 10 micron.

For a more detailed and visual description of the rotary screw air compression process, refer to **Section 8.11** of this manual.

#### 2.2.6 MINIMUM PRESSURE VALVE/DISCHARGE CHECK VALVE ASSEMBLY

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

#### 2.2.6.1 MINIMUM PRESSURE VALVE

The minimum pressure valve maintains a pressure of approximately 65 psig in the compressor unit to ensure oil injection during load conditions and also to maintain effective oil separation. Once this internal pressure is exceeded, it will allow air to discharge downstream to the service outlet.

#### 2.2.6.2 DISCHARGE CHECK VALVE

The discharge check valve prevents air in service lines or downstream receiver from venting down through the compressor during unload (when the compressor automatically will unload to approximately 40 psig internally) and also during shutdown.

#### 2.2.7 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, which is preset at the factory.

#### 2.2.8 PRESSURE RELIEF VALVE

Refer to *Figure 2-8*. 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 receiver tank exceeds 200 psi (13.8 bar). The pressure relief valve is a safety device











to protect versus high pressure if the compressor system controls malfunction.

## 2.3 HYDRAULIC DRIVE SYSTEM

Refer to *Figures 2-9* and *2-10*. The packaged compressor unit will normally contain the hydraulic motor, hydraulic pressure relief valve, and on/off solenoid valve; the scope of supply may vary depending upon customer specifications.

#### NOTE

It is the customer's responsibility to provide the hydraulic pump, oil reservoir, return line oil filter and hoses to and from the completed packaged compressor. These components and their installation requirements are not furnished with the compressor.

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 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 overtemperature and over-pressure. If either condition occurs, it will shut down the unit 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 to provide both hydraulic feed and return lines.

The hydraulic motor powers the compressor through a belt drive system (*Figure 2-10*).

### 2.4 OIL COOLING SYSTEM

Refer to *Figure 2-11*. The package contains a cooler assembly powered by an electric fan. Oil from the



KEY	DESCRIPTION	KEY	DESCRIPTION
A	HYDRAULIC MOTOR	J	HYDRAULIC PUMP <sup>II</sup>
В	HYDRAULIC OIL COOLER	К	HYDRAULIC OIL FILTER <sup>II</sup>
B C	HYDRAULIC OIL COOLER ON/OFF SOLENOID VALVE	K L	HYDRAULIC OIL FILTER <sup>II</sup> HYDRAULIC OIL RESERVOIR <sup>II</sup>
B C D	HYDRAULIC OIL COOLER ON/OFF SOLENOID VALVE MANIFOLD	K L	HYDRAULIC OIL FILTER <sup>II</sup> HYDRAULIC OIL RESERVOIR <sup>II</sup> AIR
B C D E	HYDRAULIC OIL COOLER ON/OFF SOLENOID VALVE MANIFOLD MACHINE END PANEL	K L	HYDRAULIC OIL FILTER <sup>II</sup> HYDRAULIC OIL RESERVOIR <sup>II</sup> AIR   AIR/HYDRAULIC OIL
B C D E F	HYDRAULIC OIL COOLER ON/OFF SOLENOID VALVE MANIFOLD MACHINE END PANEL PRESSURE RELIEF VALVE	К L ()) ())	HYDRAULIC OIL FILTER <sup>II</sup> HYDRAULIC OIL RESERVOIR <sup>II</sup> AIR   AIR/HYDRAULIC OIL   HYDRAULIC OIL
B C D E F G	HYDRAULIC OIL COOLER   ON/OFF SOLENOID VALVE   MANIFOLD   MACHINE END PANEL   PRESSURE RELIEF VALVE   PRESSURE ACCUMULATOR HOSE	К L © С	HYDRAULIC OIL FILTER <sup>II</sup> HYDRAULIC OIL RESERVOIR <sup>II</sup> AIR   AIR/HYDRAULIC OIL   HYDRAULIC OIL   FLOW DIRECTION
B C D F G H	HYDRAULIC OIL COOLER   ON/OFF SOLENOID VALVE   MANIFOLD   MACHINE END PANEL   PRESSURE RELIEF VALVE   PRESSURE ACCUMULATOR HOSE   TRUCK SYSTEM <sup>I</sup>	κ     L     Image: Second	HYDRAULIC OIL FILTER <sup>II</sup> HYDRAULIC OIL RESERVOIR <sup>II</sup> AIR   AIR/HYDRAULIC OIL   HYDRAULIC OIL   FLOW DIRECTION
B C D F G H	HYDRAULIC OIL COOLER   ON/OFF SOLENOID VALVE   MANIFOLD   MACHINE END PANEL   PRESSURE RELIEF VALVE   PRESSURE ACCUMULATOR HOSE   TRUCK SYSTEM <sup>T</sup> recommends consulting a hydraulic supply expert for vehi	K L ⓒ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥	HYDRAULIC OIL FILTER <sup>II</sup> HYDRAULIC OIL RESERVOIR <sup>II</sup> AIR   AIR/HYDRAULIC OIL   HYDRAULIC OIL   FLOW DIRECTION   installation of the complete hydraulic system.
B C D F G H <sup>I</sup> IMT I <sup>I</sup> To	HYDRAULIC OIL COOLER   ON/OFF SOLENOID VALVE   MANIFOLD   MACHINE END PANEL   PRESSURE RELIEF VALVE   PRESSURE ACCUMULATOR HOSE   TRUCK SYSTEM <sup>T</sup> recommends consulting a hydraulic supply expert for vehi   be provided by the customer for complete installation.	K L ⓒ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥ ♥	HYDRAULIC OIL FILTER <sup>II</sup> HYDRAULIC OIL RESERVOIR <sup>II</sup> AIR   AIR/HYDRAULIC OIL   HYDRAULIC OIL   FLOW DIRECTION

Figure 2-9: Complete Hydraulic Drive System

	KE١
	Α
C C	В
	С
	D
	Е
	F
	G
A G	

KEY	DESCRIPTION
Α	COMPRESSOR DRIVE SHEAVE
В	DRIVE BELT
С	HYDRAULIC OIL SUPPLY LINE (from manifold)
D	HYDRAULIC RETURN LINE (to cooler, then manifold)
Е	HYDRAULIC MOTOR
F	HYDRAULIC MOTOR SHEAVE
G	VERTICAL POSITIONING BOLT
	·

Figure 2-10: Hydraulic Drive Assembly







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 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).

#### 2.4.1 COMPRESSOR THERMAL CONTROL VALVE

Refer to *Figure 2-12*. The compressor thermal valve controls the compressor oil temperature and permits for rapid compressor oil warm up. The valve commences to pass oil through the compressor oil cooler at 160°F (71°C) and is fully open at 185°F (85°C). The valve is preset, and cannot be adjusted.

## 2.5 INSTRUMENTATION

See *Figure 2-13*. The standard instrument panel for the CAS45R includes a reset button, air pressure gauge, hour meter and air temperature gauge.

System Component or Component Group	Manual Section
Instrumentation	2.5
Reset Button	2.5.1
Air Pressure Gauge	2.5.2
Hour Meter	2.5.3
Air Temperature Gauge	2.5.4
Electrical Connections	2.5.5

#### 2.5.1 RESET BUTTON

See *Figure 2-13*. The reset button is used to cancel/reset an over-pressure/over temperature shutdown condition.





operation can continue.

#### 2.5.2 AIR PRESSURE GAUGE

See *Figure 2-13*. The air pressure gauge monitors service air pressure and incorporates an over-pressure shutdown switch.

#### 2.5.3 HOUR METER

See *Figure 2-13*. The hour meter is used to monitor operation hours for service.

#### 2.5.4 AIR TEMPERATURE GAUGE

See *Figure 2-13*. The air temperature gauge monitors discharge air temperature at the compressor and incorporates an over-temperature shutdown switch.

#### 2.5.5 ELECTRICAL CONNECTIONS

Refer to *Figure 2-14* and *Figure 4-5* in Section 4, **Installation** for wiring diagram. Electrical connections to be made by the installer are provided at the bulkhead connection location. There are normally only three connections to be made:

- 1. Ignition supply
- 2. Battery supply
- 3. Ground

## 2.6 MAIN FRAME AND ENCLOSURE

The steel main frame 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 to this enclosure:

- 1. Cooler/Instrument housing, which is bolted to the frame.
- 2. Enclosure, which provides guarding, protection for the unit and an aesthetically appealing practical enclosure.

#### IMPORTANT

Reason(s) for shutdown should be investigated before pressing reset.







B				
KEY	DESCRIPTION		KEY	DESCRIPTION
A	MAIN FRAME		F	COMPRESSOR OIL FILL CAP (OIL FILL PORT)
B <sub>1</sub>	ENCLOSURE: COOLER/INSTRUMENT HOUSING		G	COMPRESSOR OIL DRAIN
B <sub>2</sub>	ENCLOSURE: MOTOR/UNIT HOUSING		Н	SERVICE AIR OUTLET
С	6-PIN DEUTCH CONNECTOR		J	ELECTRICAL CONNECTION
D	HYDRAULIC SUPPLY (IN)		К	FILL CAP BLEED VENT GROOVE
E HYDRAULIC RETURN (OUT)			L	Open/crack cap slightly to allow bleed vent to relieve pressure
	Figure 2-14: Main Frame, E	Inclo	osure	and Connections

#### 

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 2-14*. Open fill cap SLOWLY; contents may be under pressure. Loosen cap only enough to allow top of cap vent [L] to relieve any possible residual pressure before removing cap all the way. Refer to *Figure 2-14*. The service air outlet is located on the main bulkhead connections strip, and the service valve incorporates a venting feature, which vents downstream air to the atmosphere when it is in the closed position.

The compressor oil level and fill port is accessed from outside of the enclosure for convenient checking and refilling. Refer to **Section 6.5.2** in the maintenance section for oil check and oil change procedures.

Safety and information decals are appropriately located on the machine. Please read and understand all the information contained thereon. See **Section 8.10, Decal Locations**.



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



## SECTION 3: SPECIFICATIONS

TABLE 3A: CAS45R SPECIFICATIONS			
GENERAL SYSTEM INFORMATION	SPECIFICATION		
RATINGS			
Capacity (CFM @ 150 psig):	45		
Air Pressure Rating (psig):	150		
Speed of compressor (RPM @ 100 psig):	8400		
Hydraulic motor RPM	2100		
Hydraulic flow (gpm @ 120°F hydraulic oil temperature):	12		
Hydraulic pressure (psig @ 100/175 compressor psig):	2300		
Maximum compressor oil temperature	250°F		
Maximum Hydraulic oil temperature	180°F		
COMPR	ESSOR		
Туре:	Encapsulated, Oil-injected, Rotary Screw		
Compressor oil tank capacity:	4 U.S. Quarts (3.7L)		
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		
PACK	AGE		
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 5/8 in. 37° JIC		
	Electrical: 12V DC Positive and Ground (Standard) 24V DC Positive and Ground (Optional)		
Enclosure:	Sheet Metal with Service Access		
Cooler:	Hydraulic Oil Cooler/Radiator Core - Electric Fan		
Dimensions:	35.75"L x 17.5"W x 21"H		
Weight:	375 lbs.		
	Table continued on next page		



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TABLE 3A: CAS45R SPECIFICATIONS (continued)
---

GENERAL SYSTEM INFORMATION	SPECIFICATION	
Supply Connections (Customer Hook-Up)	Hydraulic: Oil In 3/4 in. 37° JIC	
	Hydraulic: Oil Out 1 in. 37° JIC	
	Electrical: 12 VDC Positive and Ground or 24 VDC Positive and Ground (optional)	
	Electrical: High Temp Shutdown	
Dimensions	35.75" (Length) x 19.50" (Width) x 21.30" (Height)	
Weight (Dry)	350 lbs.	
NOTE: For machine installation clearances, refer to Figure 4-2 in Section 4, Installation.		

NOTE: Specifications are subject to change without notice.

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	Dry	Lubricated
1/4-20 UNC	5	8 ft. lbs.	6 ft. lbs.
5/16-18 UNC	5	17 ft. lbs.	13 ft. lbs.
3/8-16 UNC	5	30 ft. lbs.	23 ft. lbs.
1/2-13 UNC	5	75 ft. lbs.	55 ft. lbs.
3/4-10 UNC	5	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. Access the roof panel and inspect the component parts and supports to ensure that there has been no internal movements of assemblies or components which may have caused damage. Remove manual from inside of canopy. To install the CAS45R Hydraulic Compressor System, refer to the following sections.

## 4.2 GENERAL INSTRUCTIONS

This section provides general guidance for locating and preparing the CAS45R 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 CAS45R Unit Mounting Location	4.3
Hydraulic System Requirements	4.4
Installation	4.5

#### 4.3 DETERMINING THE CAS45R UNIT MOUNTING LOCATION

When determining the location to mount the CAS45R unit, the following criteria must be taken into consideration:

• Refer to **Section 4.5**. The location must allow for the machine dimensions (*Figure 4-1*), and additional space requirements for minimum cooling, access



### 

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



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.





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



DO NOT operate the compressor in enclosed or confined spaces where ventilation is restricted or closed off. and maintenance. Refer to *Figure 4-2* to determine the minimum space requirements.

- The mounting surface must be level and able to accommodate the four [4] mounting bolts of the base frame. Refer to *Figure 4-1* for mounting hole location dimensions.
- The mounting surface must be able to support the units 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 intake side (front) are not obstructed. Do not place the compressor in any location where it can intake exhaust fumes, dust or debris.







KEY	DESCRIPTION	KEY	DESCRIPTION
Α	UTILITY ACCESS SIDE: 10 inches minimum	D	INSTRUMENT PANEL SIDE: 10 inches minimum
В	COMPRESSOR MAINTENANCE ACCESS SIDE: 10 inches minimum	E	REAR/COOLER SIDE: 10 inches minimum
С	ADDITIONAL HEIGHT CLEARANCE: 10 inches minimum	F	Additional allotted dimensional/surrounding space (measurements <b>A</b> through <b>E</b> ) of package <i>must</i> allow for continuous circulation of air around and through the machine for cooling purposes. <b>DO</b> <b>NOT</b> install in an enclosed area.

Figure 4-2: Minimum Clearance Distances Needed for Machine Cooling and Operation



#### 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

Refer to Section 4.3 for additional specific criteria before mounting the machine.

TABLE 4A: SERVICE CONNECTIONS			
Hydraulic Supply (high pressure)	1-1/6 - 12 x 37° Flare (male) - 3/4" J.I.C.		
Hydraulic Return (low pressure)	1-5/16 - 12 x 37° Flare (male) - 1" J.I.C.		
Air Service	3/4" N.P.T. (female)		
Electrical Connections	6-pin Deutsch Connector		

TABLE 4B: ELECTRICAL CONNECTIONS			
Wire #1	Battery +12V DC Supply		
	Battery +24V DC Supply		
Wire #9	Ignition Supply +12V DC Supply		
	Ignition Supply +24V DC Supply		
Wire #7/13/15	Ground - Battery / Chassis		

## 4.4 HYDRAULIC SYSTEM REQUIREMENTS

For a typical layout and component make up of the hydraulic system Refer to *Figure 4-4*. Please take into consideration the following:

- The hydraulic flow and pressure requirements of the air compressor.
- A continuous hydraulic load is necessary when the compressor is running.
- The duty cycle and ambient operating temperatures.
- Other hydraulic equipment which may share the same hydraulic supply system (IMT recommends a dedicated pump and hydraulic circuit).

## 4.5 INSTALLATION

System Component or Component Group	Manual Section	
Installation	4.5	
Machine Location	4.5.1	
Clearance	4.5.2	
Mounting	4.5.3	
Service Connections	4.5.4	
Electrical Connections	4.5.5	
Hydraulic Supply Circuit	4.5.6	
Routing	4.5.7	

#### 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 4-2*). Cooling air enters the enclosure at the rear (cooler) package 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 4-2*. Ensure that adequate surrounding clearance exists to allow for the canopy shroud to be repositioned 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 4-3* and **Table 4A**. Service connections are conveniently grouped at the lower rear section of the unit in the base frame.

#### 4.5.5 ELECTRICAL CONNECTIONS

Refer to *Figures 4-3, 4-4* and **Table 4B**. This system is offered with either 12V DC or 24V DC negative ground.

#### 4.5.6 HYDRAULIC SUPPLY CIRCUIT

Refer to *Figure 4-4.* 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 4-4* and *4-5*. 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

Built into the IMT CAS45R hydraulic compressor system is a comprehensive array of controls and safety systems. You will want to recognize and interpret the readings or malfunctions which will call for service or indicate the beginning of a problem.

#### NOTE

If start-up and shut-down procedures are not followed, damage to the system and its components may occur.

#### 

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

NOTE



Before starting your IMT CAS45R rotary screw compressor system, 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		
On/Off Switch	Starts/stops compressor: Only when hydraulic pump is running.		
Discharge Air Pressure (Air Pressure Gauge)	Continuously monitors service line discharge air pressure. Will activate shut- down if over-pressure occurs.		
Discharge Air Temperature (Air Temperature Gauge)	Continuously monitors service line discharge temperature. Will activate shut- down if over-temperature occurs.		
Hour Meter Gauge (Operation Hours)	Indicates accumulated hours of operation for planning and logging service schedules.		
Fault Reset Button	Fault button pops out if over temperature or over pressure condition is encoun- tered. Button must be pressed to reset.		
		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.	





#### 5.2 PURPOSE OF CONTROLS CONTROL OR INDICATOR PURPOSE **Oil Fill/Level Plug** Check/fill compressor oil level. **Minimum Pressure/Check** Maintains minimum operating pressure and prevents back flow when Valve unloaded/shutdown. **Pressure Switch** Controls operating pressure. Inlet Solenoid Valve Opens/closes inlet valve in response to pressure switch. Opens/closes in response to air demand and acts as check valve upon unload/ Air Inlet Valve shutdown to prevent oil blow back into filter. **Hydraulic Pressure Relief** Relieves hydraulic pressure to return line in event of hydraulic over-pressure Valve 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.

## **5.3 NORMAL OPERATION**

System Component or Component Group	Manual Section
Normal Operation	5.3
Initial Start-up Procedure	5.3.1
Routine Start-up Procedure	5.3.2
Routine Shut-down Procedure	5.3.3
Operating Conditions	5.3.4
Extreme Condition Operation	5.3.5

Following is an overview of the normal operation of the IMT CAS45R hydraulic compressor system from start-up to shut-down. This overview of a typical sequence of events may not cover all situations.

#### 5.3.1 INITIAL START-UP PROCEDURE

Following are step-by-step instructions for the initial startup of the IMT CAS45R hydraulic compressor system:

- 1. Ensure the compressor is positioned on a level surface so that the proper amounts of oil can be added, if required.
- 2. Unit should be bolted down. **DO NOT** rely on hoses to hold the module in position.

### WARNING

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



#### IMPORTANT

If start-up and shut-down procedures are not followed, damage to the system and its components may occur.

- 3. Ensure all hose connections are tight and wiring connections correct and tight.
- Check compressor oil level (refer to *Figures* 5-1 and 5-2). Add or drain if necessary to accomplish the recommended compressor oil level.
- 5. Ensure hydraulic oil to pump inlet, and prime if necessary.
- 6. Ensure service valve on compressor is closed.
- 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. Pressure switch may need adjustment to achieve desired operating pressure. **See Maintenance Schedule, Section 6.3**.

#### 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.

Tampering with the pressure switch may void the warranty.

- Partly open service valve to load compressor and allow to warm up. Monitor temperature gauge. The ideal operating temperature should be between 165°F (74°C) and 190°F (88°C). NOTE: May be higher in high ambient conditions.
- 11. Cycle compressor on/off with service valve to ensure operation is working.
- 12. Close service valve.
- 13. Disengage hydraulic system.
- 14. Allow all air to vent to atmosphere. Check compressor oil level and top up if necessary. Inspect for and correct any leaks, tighten any loose fittings, and check drive belt tension.

#### 

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 may be under pressure. Loosen cap only enough to allow top of cap vent to relieve any possible residual pressure before removing cap all the way.







Figure 5-2: Compressor Oil Check

#### 5.3.2 ROUTINE START-UP PROCEDURE

#### NOTE

If start-up and shut-down procedures are not followed, damage to the system and its components may occur.

## 

If the reset button has been tripped ("popped outward"), NEVER FORCE the 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.

- Ensure the compressor is positioned on a level surface so that the proper amounts of oil can be added, if required.
- 2. Close the air service valve.
- 3. Engage the hydraulic system (PTO or hydraulic supply). This will activate the compressor.
- 4. Allow machine to warm up for several minutes before operating.

#### 5.3.3 ROUTINE SHUT-DOWN PROCEDURE

#### NOTE

If start-up and shut-down procedures are not followed, damage to the system and its components may occur.

- 1. Close service valve.
- 2. Allow compressor system to unload and cool down for approximately five (5) minutes.
- 3. Shut off hydraulic power supply.

#### 5.3.4 OPERATING CONDITIONS

- 1. Operate only in well-ventilated areas.
- 2. Ensure there are no obstructions of cooling air intakes and outlets around the machine.
- 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 machine for cooling air circulation. There must be a minimum of 10 (ten) inches for the cooler intake, and 10 (ten) inches for the sides and rear. Heated air must be able to vent away from the intake.
- 5. Operate machine with the top cover closed.
- 6. Refer to specifications for operating parameters.

#### 5.3.5 EXTREME CONDITION OPERATION

When operating in extreme hot or cold conditions, extra attention should be given to any indications that could lead to a serious problem. Machine review and maintenance check schedules should be more frequent than the normal suggestions given in **Section 6.3**, **Maintenance Schedule Table**.

#### 

Compressors and engines generate heat and create hot surfaces. Use caution when operating and servicing equipment. Some surfaces and components may be hot.

#### NOTE

If start-up and shut-down procedures are not followed, damage to the system and its components may occur.



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# 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, heavy load applications 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.



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
Machine Maintenance Schedule	6.2
Routine Maintenance Schedule	6.3
Replacement Parts	6.4
Parts Replacement and Adjustment Procedures	6.5



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.



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



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



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



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.



#### NOTE

Follow the prescribed periodic maintenance (PM) schedule as recommended. Perform the required PM schedule at recommended intervals. Failure to follow this 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.

# 

It is important that the compressor oil be of the recommended type and that it is inspected and replaced together with the oil filter and air filters, and (when necessary) the coalescer separator in accordance with this manual.

# 

Do not mix oils of different types.

# 

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 nonroutine parts.

For assistance in obtaining routine maintenance or replacement parts, consult *Section 8.1, Parts Ordering Procedure*, and **Table 8A: Recommended Spare Parts** List.



6.3 ROUTINE MAINTENANCE SCHEDULE						
		MAINTENANCE			NOTE:	
Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual. If machine is hot, allow package to cool before removing any panel. NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY: Always clearly tag the start-up instrumentation against accidental system. start-ups during maintenance.		Hourly or Calendar Period - whichever comes first		lendar chever rst	If working in dusty or dirty conditions, reduce the recommended time intervals	
		After 8 Hours or Daily	After Initial 50 Hours	After 500 Hours or Annually	between servicing by half for engine and compressor oil change, and engine and compressor filter servicing.	
KEY	TASK DESCRIPTION				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		٠	•	Always replace the oil and oil filter element at the same change interval.	
7	Compressor oil change		٠	•	Drain and refill air/oil compressor sump tank.	
8	Inspect intake air filter.		٠	•	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.



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Relieve pressure from the compressor system before removing any components. The compressor and engine oil levels should be checked with the unit shut down and the oil allowed to properly settle.

# 

Before performing maintenance or repair operations on the machine, ensure that all power has been removed and locked out to prevent accidental start-up.

# 

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

# 

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

# IMPORTANT

Inspect and replace damaged components before operation with Genuine IMT Parts. Using replacement parts other than Genuine IMT Replacement Parts will void the warranty.

#### NOTE

Do not mix different compressors oil types.

# 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.

#### Iowa Mold Tooling Co., Inc.

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

# 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 6.5.19 Long Term Storage.

# 6.5 PARTS REPLACEMENT AND ADJUSTMENT PROCEDURES

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 Panel	6.5.1.1	
Removing and Replacing a Side Panel	6.5.1.2	
Compressor Oil Filter Maintenance	6.5.2	
Adding or Changing the Compressor Oil	6.5.2.1	
Replacing the Compressor Oil Filter Element	6.5.3	
Removing the Compressor Oil	6.5.3.1	
Removing and Replacing the Oil Filter Element	6.5.3.2	
Replacing the Spin-on Coalescer Element	6.5.4	
Continued on next page		



System Component or Part Group Task	Manual Section
Removing the Compressor Oil (If Necessary)	6.5.4.1
Removing and Replacing the Coalescer Element	6.5.4.2
Compressor Air Filter Maintenance	6.5.5
Removing the Compressor Air Filter	6.5.5.1
Inspecting the Compressor Air Filter	6.5.5.2
Replacing the Compressor Air Filter	6.5.5.3
Replacing the Inlet Control System	6.5.6
Rebuilding the Air Inlet Valve Assembly	6.5.6.1
Performing Maintenance on the Drive Belt	6.5.7
Adjusting the Compressor Drive Belt	6.5.7.1
Drive Belt Tension/Deflection	6.5.7.2
Replacing the Compressor Drive Belt	6.5.7.3
Drive Sheave (Pulley) Alignment	6.5.7.4
Checking Hoses and Wiring	6.5.8
Checking Gauges	6.5.9
Checking Cooler Core	6.5.10
Replacing the Compressor Shaft Seal	6.5.11
Step 1 - Removing the Compressor Drive Belt	6.5.11.1
Step 2 - Accessing the Compressor Shaft Seal	6.5.11.2
Step 3 - Replacing the Compressor Drive Belt	6.5.11.3
Pressure Switch	6.5.12
Repairing the Minimum Pressure/Discharge Check Valve Assembly	6.5.13
Rebuilding the Minimum Pressure/Discharge Check Valve Assembly	6.5.13.1
Setting the Minimum Pressure Valve	6.5.13.2
Compressor Thermal Valve	6.5.14
Servicing the System Fuses and Circuit Breakers	6.5.15
Safety Shutdown Systems	6.5.16
Testing the Gauges' Shutdown Feature	6.5.16.1
Pressure Relief Valve	6.5.16.2
Storage and Intermittent Use	6.5.17
Intermittent Use	6.5.17.1
Long Term Storage	6.5.17.2

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 may be under pressure. Loosen cap only enough to allow top of cap vent to relieve any possible residual pressure before removing cap all the way.





Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual. If machine is hot, allow package to cool before removing any panel.

#### NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:

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

# 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 Top Panel	6.5.1.1
Removing and Replacing a Side Panel	6.5.1.2

#### 6.5.1.1 REMOVING AND REPLACING THE ROOF PANEL

#### TOP PANEL REMOVAL:

- With a flat head screwdriver turn the stud screw [E] a quarter turn counter-clockwise to allow the stud screw anchor [C] to detach from the panel clip. Repeat for all six (6) stud screws to free the panel.
- 2. Lift panel away from machine and set aside.

#### TOP PANEL REPLACEMENT:

- Carefully replace the roof panel onto the top portion of the machine aligning the six (6) stud screws [B] so that they match up with the six panel clips [D] located at the corners and mid-section of the panel edges.
- 2. Once all stud screws are set in the panel clips, turn each stud screw a quarter turn clockwise to fasten the top plate to the machine.

#### 6.5.1.2 REMOVING AND REPLACING A SIDE PANEL

To determine which side panel must be removed for a particular routine maintenance function, refer to **Table 6A** - **Access Panel Removal**. Consult *Figure 6-2* and the following procedure.

#### SIDE PANEL ([K or P]) REMOVAL:

 With a Phillips head screwdriver remove the four (4) 5/16-18 truss screws [K] and 5/16-18 nylon washers [J] from the side panel.



# NOTE

In order to remove a side panel for machine maintenance access, the top panel must first be removed. Consult Section 6.5.1.1 to remove the top panel.

TABLE 6A - ACCESS PANEL REMOVAL (Refer to Figure Below)								
PANEL				F	REMOVE FOR MAINTENANCE OF:			
	TOP PANEL	_ [ <b>A</b> ] <sup>I</sup>	Compresso	sor Air Filter, Air Inlet Valve Assembly Rebuild				
DRIVE	ASSEMBLY AC	CESS PANEL [ <b>B</b> ]	Drive Belt, Valve	Compress	or Shaft Seal Reb	ouild, Compress	sor Air Filter, Air Inlet	
COM	PRESSOR ACCI	ESS PANEL [ <b>C</b> ]	Compresso Minimum P	or Oil Filter, Pressure/Di	Compressor Oil I scharge Check V	Replacement, C alve Rebuild	Coalescer Replacement,	
<sup>I</sup> The to	op panel must be	removed prior to r	emoving the	compress	or access panel a	and/or the drive	assembly access panel.	
			<u>⁄</u> . w	ARNIN	IG			
		Before remo Shut down machi power, as per th hot, allow pa NOTE THAT TI Always clear accidenta	oving any a ne, relieve a e Safety Se ckage to co HE SYSTEM ly tag the si I system sta	ccess par all system ection of th ool before I CAN BE tart-up ins art-ups du	el for maintenar pressure and lo is manual. If ma removing any p STARTED REMC trumentation ag ring maintenanc	nce: ck out all ichine is anel. DTELY: ainst se.		
A								
KEY	[	DESCRIPTION		KEY		DESCRIPT	TION	
Α	ROOF PANEL	TOP SIDE		Н	PANEL CLIP ()	x6)		
В	DRIVE ASSEM	MBLY ACCESS SI	DE	J	COOLER SIDE	E PANEL (refere	ence)	
С	COMPRESSO	R ACCESS SIDE		К	COMPRESSO	R ACCESS PA	NEL	
D	ROOF PANEL	ROOF PANEL			NYLON WASHER, 5/16-18 (x4 each, per side)			
E	UTILITY SIDE	LITY SIDE PANEL (reference)     M     TRUSS SCREW, 5/16-18 (x4 each, per side)		each, per side)				
F	STUD SCREW	V (X6)		N COOLER (INSTRUMENT) SIDE PANEL (reference)		DE PANEL (reference)		
G	STUD SCREW	V - ANCHOR DETA	AIL	P	DRIVE ASSEM	IBLY ACCESS	PANEL	
Figure 6-2: Main Access Panels for Maintenance Removal								



Manual #99905396

- 2. Retain screws and washers for re-assembly.
- 3. Remove panel from the frame and set aside.

#### SIDE PANEL REPLACEMENT:

- Carefully re-set the side panel into position so that each of the two mounting slots on both sides of the panel align with the holes on the utility side panel [E] edge, and the coolerside panel [J or N, depending on side panel] edge.
- Secure into place with pairs of 5/16-18 nylon washers [L] and 5/16-18 truss screws [M], 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 IMT CAS45R hydraulic package. The compressor is fully charged at the factory with IMT Premium Synthetic Oil.

#### **IMPORTANT**

DO NOT mix different types of compressor oil. Use ONLY genuine IMT Premium Synthetic Oil.

Mixing different types of compressor oil will VOID THE WARRANTY.

System Component or Part Group Task	Manual Section
Compressor Oil Maintenance	6.5.2
Adding or Changing the Compressor Oil	6.5.2.1

# WARNING

The result of poorly maintained lubrication and/or filters may produce hazardous conditions resulting in ignition, which could cause a fire in the sump. 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.



#### 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.

# 

Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual. If machine is hot, allow package to cool before removing any panel.

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

Note that overfill can 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 four (4) quarts.

#### If changing oil...

Note that the oil filter will also need to replaced for this process (consult **Section 6.5.3)**. Access the compressor



<sup>*I*</sup> When level is low, add oil as needed. **NOTE: DO NOT** mix different types of oil; mixing different types of oil will void the warranty. For complete oil change maintenance, refer to **Section 6.5.5**, **Removing and Replacing the Compressor Oil**.

Figure 6-3: Compressor Oil Level Check



unit by removing the roof panel and the compressor access panel, per **Section 6.5.1**.

- A) Place a container capable of containing at least five quarts of oil below the oil drain adaptor (*Figure 6-3*, [E]) to catch the oil as it discharges.
- B) Unscrew the end cap of the oil drain adaptor and allow the oil to completely drain from the compressor unit.
- C) Replace and tighten the oil drain tube cap to the oil drain adaptor [E].
- D) Once the oil filter (**Section 6.5.3**) and coalescer (if necessary; **Section 6.5.4**) elements have been replaced, add new system oil.
- 5. Replace the red oil 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 REPLACING THE COMPRESSOR OIL FILTER ELEMENT

Refer to *Figures 6-1* and *6-4*. The compressor oil filter is a spin-on, disposable type. Always change the oil when changing the oil filter element (refer to **Section 6.5.2.1**).

System Component or Part Group Task	Manual Section
Replacing the Compressor Oil Filter Element	6.5.3
Removing the Compressor Oil	6.5.3.1
Removing and Replacing the Oil Filter Element	6.5.3.2

Access the compressor unit by removing the roof panel and the compressor access panel, per **Section 6.5.1**.

#### 6.5.3.1 REMOVING THE COMPRESSOR OIL

Before performing this maintenance, ensure that the compressor system is level. For information on



## NOTE

Dispose of discarded filter and oil within the guidelines of all applicable local, regional and/or federal laws.

# WARNING

Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual. If machine is hot, allow package to cool before removing any panel.

NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:

Always clearly tag the start-up instrumentation against accidental system start-ups during maintenance. compressor oil characteristics, consult **Section 3: Specifications, Table 3B**.

#### 6.5.3.2 REMOVING AND REPLACING THE OIL FILTER ELEMENT

Refer to *Figure 6-4* and the following procedure once the system oil has been drained.

 Locate the compressor oil filter element [B]. Remove the element using a strap wrench (if required) by turning counter-clockwise.



- 2. Clean filter seating on compressor unit filter head [**A**] with a clean lint free wiper or cloth.
- 3. Apply a light film of oil on the element's sealing surface [**C**] for an air-tight seal between the element and the filter head seating.
- Add approximately one cup of IMT Premium Synthetic Oil into the oil filter element for priming.
- Install the new element by manually turning it clockwise onto the filter head until the seal contacts the machined groove on the rim of the filter head. Then turn an additional 3/4 of a turn, using a strap wrench if necessary.
- 6. Consult **Section 6.5.2.1** to recharge the system with new oil.
- 7. Re-connect power, run the compressor momentarily to circulate the oil through the system, then shut it down.
- 8. Allow the oil to settle for approximately fifteen minutes, then check the oil level. Add as necessary.

## 6.5.4 REPLACING THE SPIN-ON COALESCER ELEMENT

The air/oil coalescer element is a spin-on disposable type. Consult *Figure 6-5*, and use the following procedure to replace the coalescer element. Consult *Section 6.3, Routine Maintenance Schedule* for routine coalescer element change intervals; note that



Before removing the oil filter element for replacement, follow the steps given in Section 6.5.2.1 to completely drain the compressor oil.





System Component or Part Group Task	Manual Section
Replacing the Spin-on Coalescer Element	6.5.4
Removing the Compressor Oil (If Necessary)	6.5.4.1
Removing and Replacing the Coalescer Element	6.5.4.2

some coalescer change intervals require an oil and the oil filter change at the same time.

# 

Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual. If machine is hot, allow package to cool before removing any panel.

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 compressor access panel, per **Section 6.5.1**.

# 6.5.4.1 REMOVING THE COMPRESSOR OIL (IF NECESSARY)

Before performing this maintenance, ensure that the compressor system is level. For information on compressor oil characteristics, consult **Section 3: Specifications, Table 3B**.



necessarily have to be replaced during every oil filter and oil recharge replacement.

Refer to *Figures 6-1* and *6-5*, and the following procedure:

#### 6.5.4.2 REMOVING AND REPLACING THE COALESCER ELEMENT

Refer to *Figure 6-5* and the following procedure (once the system oil has been drained, if an oil change is necessary).



#### IMPORTANT

Before removing the coalescer element for replacement, follow the steps given in *Section 6.5.2.1* to completely drain the compressor oil, if replacing the oil.

- 1. Locate the spin-on element [**A**] situated on the top side at the rear of the compressor unit.
- 2. Remove the old element by turning counterclockwise using a strap wrench.
- 3. Clean element seating on compressor unit with a clean lint free wiper or cloth.
- 4. Apply a thin film of compressor oil to the seal of the new element [**C**].
- 5. Place the new element onto the mounting seat.
- 6. Install the new coalescer element into place on the mounting seat of the compressor unit.
- 7. Turn element clockwise until it contacts the seal. Rotate one more complete turn, using a strap wrench if necessary.
- 8. Consult **Section 6.5.2.1** to recharge the system with new oil, if an oil change was necessary.
- 9. Run the compressor and check for leaks.
- 10. Dispose of discarded filter within the guidelines of all applicable local, regional and/or federal laws.

#### 6.5.5 COMPRESSOR AIR FILTER MAINTENANCE

The compressor oil is the key to a long useful life of the air compressor system. Dirt and other foreign matter can be introduced into the compressor system through the air intake. A clean air filter will ensure that the compressor is protected. Consult **Section 6.3, Routine Maintenance Schedule** for routine compressor air filter inspection intervals.

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

The air filter (air inlet filter) element is a drop-in disposable type. Refer to **Section 6.5.5.2**, **Inspecting the Compressor Air Filter** to check the condition of the air filter element. If, after an inspection, the element needs to be replaced, refer to **Section 6.5.5.3**, **Replacing the Compressor Air Filter**.





#### 6.5.5.1 REMOVING THE COMPRESSOR AIR FILTER

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



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

1. If applicable, remove the air restriction indicator [A].





- 2. Remove the three (3) wing nuts [**B**] from the air filter/inlet valve cover [**C**] on the top of the compressor unit.
- 3. Remove air filter element [**D**] from the air filter housing [**E**].
- Inspect the air filter element for visible dirt, debris, or damage. NOTE: to perform a more thorough inspection of the compressor air filter element, refer to Section 6.5.5.2.

If element is in adequate shape to continue using, refer to Steps #5 and #6 below; if filter element needs to be replaced, refer to **Section 6.5.5.3**.

- 5. Re-seat the filter element [D] into filter/inlet valve housing [E].
- Replace cover [C], wing nuts [B] and air restriction indicator [A], if applicable (Note: reset the restriction indicator only if the element has been replaced).

#### 6.5.5.2 INSPECTING THE COMPRESSOR AIR FILTER

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

- Place a bright light source 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.
- 2. Inspect the gaskets on the top and bottom of the air filter for any damage or wear.
- 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 the air filter needs to be replaced.

#### 6.5.5.3 REPLACING THE COMPRESSOR AIR FILTER

Refer to *Figure 6-6*. The air filter element uses a pleated paper-type filter to carefully remove accumulated dirt before compression can begin. **DO NOT** clean the compressor air filter element.

To replace worn or damaged air filter with new filter, consult *Figure 6-3*, and the following procedure:

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

# 

Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual. If machine is hot, allow package to cool before removing any panel.

NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:

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





AIR INLET VALVE ASSEMBLY

<sup>*I*</sup> For air filter maintenance, order air filter replacement element no. 70048253.

Figure 6-7: Air Inlet Control System

- 1. Remove the three (3) wing nuts [**B**] from the air filter/inlet valve cover [**C**] on the top of the compressor unit.
- 2. Remove air filter element [D] from air filter housing [E].
- 3. Seat a new filter element [D] into filter/inlet valve housing [E].
- 4. Replace cover [C] and wing nuts [B].

#### NOTE

Dispose of discarded filter within the guidelines of all applicable local, regional and/or federal laws.

# 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 [G] -

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 [B] -

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 states. 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 kit with instructions.

Access the compressor unit by removing the roof panel and, if needed, the compressor access-side panel per **Section 6.5.1**.



G

#### 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*), a rebuild kit is available. To rebuild the air inlet valve, order air inlet rebuild kit no. 73744212. Refer to *Figure 6-8* and the following procedure. Note which parts are to be replaced with new parts from the kit.



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

- Locate the compressor's air filter compartment housing [A] and remove the three (3) wing screws [C] from the cover [D].
- 2. Remove air filter [**E**], and put it aside temporarily so it will not get damaged or soiled; the full air filter inlet valve [**F**] is now accessible.
- 3. Remove the two (2) cylinder head screws [G].
- 4. Grasp the valve [F] and pull upwards to disengage the valve from its valve seating.
- Disassemble the valve and replace used parts with new parts found in the kit. Refer to *Figure 6-8* to assure correct replacement and part position.

#### NOTE

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

6. Once the valve's parts have been replaced with the kit parts and re-assembled, place the rebuilt, complete inlet valve assembly



	<ul> <li>Assembly Part</li> <li>Kit (Replacement) Part</li> </ul>				
KEY	DESCRIPTION	KEY	DESCRIPTION		
Α	AIR FILTER HOUSING	M	SPRING		
В	AIR RESTRICTION INDICATOR (Optional)	N	PISTON (COMPLETE W/ RING)		
C	WING SCREW	P	V-RING		
D	COVER	Q	GOVERNOR HOUSING		
E		R			
F	AIR INLET VALVE- COMPLETE ASSEMBLY	5			
G					
H	SPRING GUIDE	1			
J	SPRING	2	WEIGHT		
K	NUT	U	O-RING		
	L SPRING GUIDE V CONTROL LINKAGE				
Order Air Inlet Valve Rebuild Kit no. 73744212.         NOTE: Use all of the new parts provided in the kit; replace corresponding kit parts regardless of the old part's condition.					

Figure 6-8: Air Inlet Valve Rebuild Kit



back into position on the valve seating within the air filter housing.

- 7. Replace the two (2) cylinder head screws [**G**] and tighten securely.
- Replace the air filter [E], or exchange it for a new one if air filter is soiled or worn (refer to Section 6.5.5, Compressor Air Filter Maintenance for air filter inspection check, etc.).
- 9. Replace the cover [D].
- 10. Replace the three (3) wing screws [**C**] and secure tightly.

#### 6.5.7 PERFORMING MAINTENANCE ON THE DRIVE BELT

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 belt), the belt's tension should be checked several times during this period and corrected as required. The belt 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 Belt	6.5.7.1
Drive Belt Tension/Deflection	6.5.7.2
Replacing the Drive Belt	6.5.7.3

Access the drive assembly by removing the roof panel and the drive assembly access panel, per **Section 6.5.1**.

#### 6.5.7.1 ADJUSTING THE COMPRESSOR DRIVE BELT

The drive belt should be checked for signs of wear or slippage on a routine basis. If the belt has become loose, refer to *Figure 6-9* and the following procedure to retighten.

- 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] for the vertical tap bolt [C].

# WARNING

Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual. If machine is hot, allow package to cool before removing any panel.

#### NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:

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



- 3. Manipulate the vertical tap bolt [**C**] clockwise to tighten the belt.
- As the belt is tightened, check at intervals for a proper tension deflection (refer to Section 6.5.7.2).
- Once the belt is properly positioned to the correct tension, tighten vertical tap bolt [C], and locking nut [E] to insure no further movement.

#### IMPORTANT

DO NOT over-tension the belt.

 Hold horizontal tap bolt nut [H] in place with a wrench while tightening the horizontal tap bolt [F].



Figure 6-9: Drive Belt Adjustment and/or Removal



7. Recheck the belt tension, and adjust as necessary until proper tightness is achieved.

#### 6.5.7.2 DRIVE BELT TENSION/DEFLECTION

 Refer to *Figure 6-10*. To check the tension/ deflection of the drive belt, apply force midway on the belt between the pulleys. The deflection factor is approximately one inch (0.25") per four (4) pounds of force applied.

#### NOTE

When adjusting the tension of the drive belt, do not over-tighten the belt, as this puts undo strain on the pulleys, and could lead to mis-alignment or leaks in the compressor unit.

#### 6.5.7.3 REPLACING THE COMPRESSOR DRIVE BELT

Although the drive belt should be checked for fit and wear on a routine basis, it is not considered a routine maintenance item. However, the drive belt is 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.

Access the drive assembly by removing the roof panel and the drive assembly access panel, per **Section 6.5.1**.

- 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 [C] to allow for the hydraulic motor bracket [B] to pivot the motor assembly toward the compressor unit, which causes the belt to slacken.
- When the belt is slackened enough to be slipped off of the sheaves, remove the belt from the compressor sheave [N] and motor sheave [J].
- 5. Discard worn belt appropriately.
- 6. With the bracket still in the "loosened" position, thread new belt into place over the

## WARNING

Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual. If machine is hot, allow package to cool before removing any panel.

#### NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:

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



#### NOTE

When installing a new belt rotate sheaves 1-2 full rotations prior to checking tension. If tension increases or decreases rotation should occur.



compressor sheave [**N**] and motor drive sheave [**J**].

- Re-position the motor bracket angle [K] to tighten the belt, checking at intervals for a proper tension/deflection (see *Figure 6-9*).
- When the belt has been adjusted to proper tension, tighten the adjustment/locking nut [E].
- 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.

#### 6.5.7.4 DRIVE SHEAVE (PULLEY) ALIGNMENT

Refer to Figures 6-11, 6-12 and the following procedure:

Pulley alignment is set at factory and should not need to be adjusted. If it becomes necessary to adjust the pulley alignment, an alignment test may be performed with a straight edge, such as a yard stick, that is long enough to overlap both the compressor and motor drive sheaves. Adjustments are made via position of the hydraulic motor (bracket). Note that the compressor pulley always remains stationary during adjustment.

#### TO TEST PULLEY ALIGNMENT

1. Place the straight edge *flush* against both the face of the compressor pulley, and also, if possible, the face of the hydraulic motor pulley.

*Ideally* the straight edge should be flush to both the compressor drive pulley and the hydraulic motor pulley. However, a tolerance of no more than a 1/16 inch clearance is acceptable at either side between the motor pulley face and the straight edge, depending on the direction (toward compressor, or toward cooler) of the skew (see *Figure 6-11*).

#### TO ADJUST THE MOTOR PULLEY FOR ALIGNMENT

Before attempting to adjust the motor bracket to align the motor pulley, the drive belt should first be removed in order to remove belt tension while aligning the motor pulley. Consult **Section 6.5.7.3** to remove the belt.



#### IMPORTANT

DO NOT adjust or alter either sheave (pulley) for the purpose of adjusting alignment. Should either sheave become loose, consult the factory for tightening and torquing procedure.







Refer to *Figures 6-11* and *6-12*. In order to adjust the pulleys, the hydraulic motor bracket must be loosened enough to pivot/rotate the motor bracket into alignment.

- 1. Loosen the four (4) mounting bolt sets (bolt, washers, hex locking nuts) fastening the hydraulic motor bracket to the frame.
- 2. With the straight edge flush to the compressor unit, adjust the motor/bracket assembly's position so that the motor pulley aligns parallel within the 1/16" tolerance level (preferably flush) against the straight edge.
- 3. Carefully tighten the motor bracket bolts in a crisscross pattern (refer to **Table 3C**).
- 4. Check alignment with the straight edge to ensure that the motor assembly did not shift.
- 5. Replace the belt and adjust as necessary to get correct alignment and tension.

# IMPORTANT

#### DO NOT over-tension the belt.

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

# 6.5.8 CHECKING HOSES AND WIRING

# 

Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual. If machine is hot, allow package to cool before removing any panel.

NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:

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

Access the machine per Section 6.5.1.

Hoses and wires are routed away from potential pinch points, heat sources, and other hazards. However, when service is performed on a machine, it can become necessary to cut zip ties or remove hose clamps, which can allow hoses and wires to become exposed to some hazards within the enclosure. Verify that no hoses or



## NOTE

For hose replacements, order IMT Hose and Tubing Replacement Kit no. 73744215.

# NOTE

Make sure to secure all hoses and wires back to factory locations using factory clamps. Replace any damaged clamp. Replace any zip tie that may have been cut with a new zip tie. wires are near belts, exhaust, fan blades, sharp edges, or other pinch points.

Hoses and wires should perform for the service life of the product. Occasionally, a plug or hose end may work itself loose over time. Check all the hose fittings to see that there is no visible leakage.

#### 6.5.9 CHECKING GAUGES

Perform a visual inspection each time the compressor is started to ensure that all gauges and indicators are operating normally. Allow the compressor to warm up, and verify that the gauges are all within their recommended ranges. Such inspections will minimize the possibility of damage or an unsafe condition from occurring. Refer to **Section 3: Specifications**.

#### 6.5.10 CHECKING COOLER CORE

Refer to *Figure 6-13*. Periodically, leaves, paper, or other debris can get wedged into the vents on the side panels of the enclosure. The cooler cores within the enclosure can trap foreign matter that passes through the vents as well. Removing the cooling end panel and checking that the cooler is clean and free from debris will ensure that the IMT CAS45R hydraulic package operates safely within the temperature limits described in **Section 3**: **Specifications** of this manual.



Should the core become clogged, you can use low pressure compressed air to blow through the fins from the inside of the canopy to clean it out. You may need to remove the fan from the shroud in order to reach parts of the core. **DO NOT** use high pressure air or a pressure washer.



#### NOTE

Oil cooler core is aluminum; if this does at some point require internal cleaning, the task 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.



#### 6.5.11 REPLACING THE COMPRESSOR SHAFT SEAL

Depending on various operation factors, the seal on the compressor drive shaft may become worn and need to be replaced. Although not considered a routine maintenance item, there is a kit available to replace the shaft seal. Should the shaft seal need repair, order shaft seal kit no. 73744213, and refer to *Figure 6-12* and the following procedure:

System Component or Part Group Task	Manual Section
Replacing the Compressor Shaft Seal	6.5.11
Step 1 — Removing the Compressor Drive Belt	6.5.11.1
Step 2 — Accessing the Compressor Unit Shaft Seal	6.5.11.2
Step 3 — Replacing the Compressor Drive Belt	6.5.11.3

 Access the compressor unit by removing the roof panel (as per Section 6.5.1.1), and the drive assembly-side panel (as per Section 6.5.1.2).

#### 6.5.11.1 STEP 1 — REMOVING THE COMPRESSOR DRIVE BELT

The drive belt will need to be removed in order to access the compressor shaft seal for replacement. Refer to *Section 6.5.7.3, Replacing the Compressor Drive Belt*, Steps #1 through #4, to remove the drive belt.

#### 6.5.11.2 STEP 2 – ACCESSING THE COMPRESSOR UNIT SHAFT SEAL

Once the drive belt has been removed the shaft seal can be accessed. Refer to *Figure 6-14* and the following procedure to replace the shaft seal.

- Loosen and remove the GR5 1/4-20 capscrews [A], and washers [B] securing drive sheave [C] and adapter [D] into place.
- Remove the drive sheave [C] and adapter [D] from the end of the male rotor drive shaft [P].
- 3. Remove key [**N**] from the groove in the end of the male rotor drive shaft [**P**].
- 4. Remove the retaining ring [**F**] from the end of the male rotor drive shaft [**P**].
- 5. Remove the four (4) capscrews [**E**] securing the compressor front cover plate [**G**] to the compressor unit.



# 

Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual. If machine is hot, allow package to cool before removing any panel.

#### NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:

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

# NOTE

Rebuilding the compressor shaft seal affords an opportunity to replace the drive belt, since it will need to be removed for this purpose. Should the drive belt appear to be worn, cracked or damaged, replace it. Refer to Section 6.5.7 for further information.

## NOTE

Once the drive belt is removed, put it aside for safe keeping until the shaft seal replacement is finished.



- 6. Remove the front cover [G] to expose the seal assembly.
- Remove the worn shaft seal ring [J], seal oring [K], inner ring [L], and spacer [M] from the end of the male rotor drive shaft [P].
- Wipe down any excess contaminants that may have accumulated on the male rotor drive shaft.
- 9. Replace spacer [**M**] with its new counterpart from the kit.
- 10. Replace inner ring [L] with its new counterpart from the kit; the inner ring should





be gently tapped into place using the tool as a guide. Note that it should seat snugly on the spacer [**M**].

- Replace metal seal o-ring [K] within the lipend of the new shaft seal ring [J] (both parts from the kit).
- 12. Gently tap the shaft seal ring [J] onto the male rotor [P].
- When the edge of shaft seal ring [J] is flush with the inner ring [L] on the shaft, the shaft seal is in position.
- 14. Lubricate o-ring [H] with the silicon lubrication supplied with the kit.
- 15. Place o-ring [H] within the groove on the inside of the compressor cover [G].

#### NOTE

If present, scrape off any remnant pieces of previous gasket from the compressor cover [G] before replacing o-ring.

- Place the compressor cover [G] over its seating position on the compressor unit body.
- 17. Secure the compressor cover plate [G] into place on the compressor unit using the four (4) securing sets of capscrews [E] (see *Figure 6-15*).
- Replace retaining ring [F] into its seating groove on the outer side of the compressor cover [G].
- Replace the adapter [D] and drive sheave
   [C] onto the male rotor's [P] end, and secure into place using the two washers [B] and GR5 1/4-20 capscrew pairs [A] respectively.

#### 6.5.11.3 STEP 3 – REPLACING THE COMPRESSOR DRIVE BELT

Once the shaft seal has been replaced, the drive belt needs to be re-installed. Consult **Section 6.5.7.3**, **Replacing the Compressor Drive Belt**, and **Section 6.5.7.2**, **Drive Belt Tension/Deflection**.

# 6.5.12 PRESSURE SWITCH

Refer to *Figure 6-16*. The pressure switch is located on near the cooling fan inside a black plastic box, mounted to bracket on the panel wall. 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.

# 6.5.13 REPAIRING THE MINIMUM PRESSURE / DISCHARGE CHECK VALVE ASSEMBLY

Refer to *Figure 6-17*. The normal factory setting for the minimum pressure/check valve is 65 psig. The valve provides two main functions:

#### 1. Maintains Minimum Pressure -

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, and also is a requirement for good oil separation.

#### 2. Back Pressure Check Valve -

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.

Although not a routine maintenance item, internal parts within the valve are susceptible to wear. There is a rebuild kit available for the minimum pressure/check valve.

System Component or Part Group Task	Manual Section	
Repairing the Minimum Pressure/ Discharge Check Valve	6.5.13	
Rebuilding the Minimum Pressure/Check Valve	6.5.13.1	
Setting the Minimum Pressure/ Check Valve	6.5.13.2	

## 🔨 WARNING

Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual. If machine is hot, allow package to cool before removing any panel.

#### NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:

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





#### WARNING

Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual. If machine is hot, allow package to cool before removing any panel.

#### NOTE THAT THE SYSTEM CAN BE STARTED REMOTELY:

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

#### 6.5.13.1 REBUILDING THE MINIMUM PRESSURE/ DISCHARGE CHECK VALVE ASSEMBLY

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/check valve kit no. 73744214. Refer to **Figure 6-17**, and the following procedure:

Access the compressor unit by removing the roof panel (as per **Section 6.5.1.1**), and the compressor-side panel (as per **Section 6.5.1.2**).

1. Locate the minimum pressure/check valve [A] situated beneath the coalescer element on the compressor unit.



- 2. Loosen and remove the lock nut [**B**] securing the grub screw [**C**] in position.
- 3. Loosen the grub screw [C] to relieve any spring tension in the valve.
- Loosen and carefully remove the valve body [D], 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 [**D**] with a clean cloth.
- 6. Consult *Figure 6-17*, and re-assemble the kit by replacing all old parts with corresponding part provided in the kit.
- Once the kit parts (parts E through L) have been situated in correct order into the valve body, replace the valve body back into the mounting position. Retighten body securely.
- Replace the grub screw [C] into position on valve body [D], and hand-tighten. Replace the lock nut [B] over the grub screw, and position it loosely over the grub screw.

#### 6.5.13.2 SETTING THE MINIMUM PRESSURE VALVE

Refer to *Figure 6-17* 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 [**C**] until minimum pressure level is achieved.
- 4. Tighten the lock nut [**B**] to secure the grub screw at the proper minimum pressure level.

#### IMPORTANT

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





#### 6.5.14 COMPRESSOR THERMAL VALVE

Refer to Figure 6-18. 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. If maintenance is required due to a faulty or failing valve, the complete valve should be replaced. Consult the IMT Parts Department to obtain a

# 6.5.15 SERVICING THE SYSTEM FUSES AND

Consult Figure 6-19 for the locations of the fuses and circuit breaker. IMT recommends using a fuse removal tool, though pliers will suffice, when removing the fuse.



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.



Figure 6-19: Main Frame, Enclosure and Connections



#### 6.5.16 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 reset on the instrument panel will pop out and stay out until reset.

System Component or Part Group Task	Manual Section
Safety Shutdown Systems	6.5.16
Testing the Gauges' Shutdown Feature	6.5.16.1
Pressure Relief Valve	6.5.16.2

# / 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

Reason(s) for shutdown should be investigated before pressing reset.

#### 6.5.16.1 TESTING THE GAUGES' SHUTDOWN FEATURE

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

#### NOTE

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

#### Refer to Figure 6-20.

- While compressor is operating, close service valve and allow compressor to unload (approximately two [2] minutes).
- 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.

- 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.

#### NOTE

Ensure that system blows down fully before restarting.

#### 6.5.16.2 PRESSURE RELIEF VALVE

Refer to *Figure 6-21*. 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.

# 6.5.17 STORAGE AND INTERMITTENT USE

System Component or Part Group Task	Manual Section
Storage and Intermittent Use	6.5.17
Intermittent Use	6.5.17.1
Long Term Storage	6.5.17.2

# 

Parts can wear over time. Do not operate with worn equipment; replace as needed.

#### NOTE

Do not blow out hydraulic circuit; it is acceptable to have oil in the hydraulic circuit. Ensure that compressor oil level is full. Periodically rotate motor and

compressor sheaves to prevent ceasing.

#### 6.5.17.1 INTERMITTENT USE

Check the belt and hoses for signs of deterioration such as visible surface cracks, stiffness or discoloration.

#### 6.5.17.2 LONG TERM STORAGE

Cover the unit with a tarp or plastic to prevent the accumulation of dust, but leave the bottom open for air circulation.



# 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.

#### 

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.



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.

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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.
		Continued on next page



Compropor obuito dours and	Diverged all filter	
Compressor shuts down air with demand present (Continued)	Plugged oli filter	
	Dirty cooler core (exterior)	Clean cooler core.
	(interior)	Remove and clean cooler core. Consult service department for recommended flushing procedure.
	Hydraulic pressure and flow incorrect	Adjust and reset.
	Air domand is too groat	Chack convice lines for looks or open
Compressor will not build up pressure	Air demand is too great	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.
	Belt slipping	Readjust belt tension; replace if worn.
	Service valve wide open	Close service valve.
	Solenoid valve stuck	Replace solenoid valve.
	Leak in air pilot line	Check for leaks and correct.
Compressor over pres- sures	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.


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 to 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; replace if worn.	
	Minimum pressure / check valve malfunctioning	Rebuild or replace check valve.	
Oll services		Drain to proper level	
Oil carryover			
	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 air pressure switch.	
		Check circuit breaker.	
		Check for short in wires.	
		Check fan motor.	
	Plugged oil filter	Replace oil filter.	
	Contaminated cooler core	Remove and clean cooler core. Consult service department for recommended flushing procedure.	
	Pressure set too high	Contact factory service department.	
	Unit running too fast	Check hydraulic flow and pressure and adjust if necessary.	
	Thermal valve	Faulty valve; replace thermal valve.	
System retains pressure	Solenoid valve stuck	Should be no power to solenoid valve.	
atter shutdown		Replace solenoid valve.	
		Pressure switch faulty; replace.	
		Continued on next page	



7.2 TROUBLESH	7.2 TROUBLESHOOTING GUIDE				
MALFUNCTION/FAULT	POSSIBLE CAUSE	CORRECTIVE ACTION			
System retains pressure after shutdown (Continued)	Leak back from air line	Check minimum pressure valve for leaks.			
Compressor stalls	Belts slipping	Readjust belt tension; replace if worn.			
	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. <b>NOTE:</b> 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.

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TABL	TABLE 8A: RECOMMENDED SPARE PARTS LIST					
KEY	PART NUMBER	ART NUMBER DESCRIPTION QTY	QTY	IDENTI REFE	FICATION RENCE	
NO.				SECTION	KEY NO.	
		ROUTINE/SCHEDULED MAINTENANCE	ITEMS			
1	70048252	Filter, Oil Element Replacement		8.2	21	
2	70048251	Coalescer, Replacement Element		8.2	20	
3	70048253	Filter, Air Element Replacement		8.2	18	
4	89086222	Oil, Rotary Compressor (1 Gallon Container)		-	-	
5	70580212	Belt, Drive Replacement		6.5.7	Figure 6-9	
		NON-ROUTINE MAINTENANCE ITEM	IS			
6	73744215	Kit, Hose and Tubing Replacement\		8.12	as shown	
7	73744212	Kit, Air Inlet Rebuild		6.5.6	Figure 6-8	
8	73744214	Kit, Minimum Pressure / Discharge Check Valve		6.5.13	Figure 6-17	
9	77041906	Fuse, 10A (Red)		6.5.15	Figure 6-19	
10	77041905	Fuse, 14A		6.5.15	Figure 6-19	
11	77441500	Breaker, Circuit 20A (for 12V DC)		6.5.15	Figure 6-19	
12	77441501	Breaker, Circuit 10A (for 24V DC)		6.5.15	Figure 6-19	
13	77040596	Boot, Rubber Reset Switch Replacement		8.4	10	
14	73744213	Kit, Shaft Seal Replacement		6.5.11	Figure 6-14	
When	ordering parts, alway	s indicate the machine serial number found on the s	erial plate	(see Figure a	<b>B-1</b> ).	

#### 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 pro-offered 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 6.5.17.2, Long Term Storage.

#### NOTE

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



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DATE	DESCRIPTION OF MAINTENANCE	PART(S) REPLACED

#### TABLE 8B: MAINTENANCE TRACKING LOG



#### **8.2 COMPRESSOR AND PARTS**



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#### 8.2 COMPRESSOR AND PARTS

ITEM	DESCRIPTION	PART NUMBER	QTY
1	ELBOW, 90 DEG. PUSH ON 1/4T x 1/4P		1
2	ELBOW, 90 DEG. MJIC x MBSPP 1/2		3
3	ADAPTER, FEMALE PIPE x BSPP 1/4		2
4	CAP, PIPE HEX 1/2 NPT		1
5	SHEAVE, DRIVE 16 J GROOVE	60030470	1
6	BUSHING, SPLIT TAPER G TYPE 25mm		1
7	COMPRESSOR	70734689	1
8	VALVE, RELIEF 200 PSI 1/4 NPT MALE	73540478	1
9	WASHER, SEALING BSPP #4		1
10	HEATER, INLET VALVE 7W 1 x 2		1
11	ADAPTER, 1/2 BSPP TO 1/2 NPT		1
12	PLATE, SERIAL COMPRESSOR (OPTIONAL)		1
13	PLUG, PIPE 1/8		1
14	CAPSCREW, HEX GR5 1/4-20 x 2		2
15	WASHER, LOCK 1/4		2
16	WINGSCREW		3
17	COVER, AIR FILTER HOUSING		1
18	FILTER, COMPRESSOR AIR	70048253	1
19	ASSEMBLY, AIR INLET VALVE		1
20	COALESCER	70048251	1
21	FILTER, COMPRESSOR OIL	70048252	1



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## **8.3 MOTOR DRIVE AND PARTS**



#### **8.3 MOTOR DRIVE AND PARTS**

ITEM	DESCRIPTION	PART NUMBER	QTY
1	CONNECTOR, O-RING 5/8 X 3/4 JIC		1
2	CONNECTOR, O-RING 3/4 x 3/4 JIC		1
3	BOLT, TAP 1/2-13 x 6.0 FULL THREAD		1
4	SHEAVE, DRIVE 10.6	60030469	1
5	BRACKET, HYD. MOTOR SAE "A"		1
6	MTR, HDRLC EXTND SHAFT	73540479	1
7	BUSHING, SPLIT TAPER Q1 (1 1/8)		1
8	NUT, HEX 1/2-13		1
9	NUT, HEX LOCKING 3/8-16		2
10	NUT, HEX LOCKING 1/2-13		1
11	CAPSCREW, HEX GR8 3/8-16X1 1/2		2
12	CAPSCREW, HEX GR8 1/2-13X5		1
13	WASHER, FLAT 1/2		2



## 8.4 COOLING AND CONTROL SYSTEM (12V)





# 8.4 COOLING AND CONTROL SYSTEM (12V)

	DESCRIPTION	PART NUMBER	QTY
1	GAUGE, HOUR METER	77441491	1
2	BREAKER, CIRCUIT w/ STUDS 20A	77441500	1
3	RELAY, NO/NC WEATHERPROOF w/RESISTOR		1
4	ELBOW, 90 DEG #8 MJIC x #8 MSAE		2
5	SWITCH, HIGH TEMP. SHUTDOWN	70734663	1
6	ELBOW, 1/4T x 1/8P PUSH-ON		1
7	TEE, 1/4P x 1/4 T		1
8	GAUGE, AIR PRESSURE w/ SWITCH	70048247	1
9	CLIP, FAN & MOTOR MOUNTING		6
10	BOOT, RUBBER RESET SWITCH	77040596	1
11	WASHER, NYLON FLAT 1/4		2
12	BUMPER, RUBBER 3/16 MTG REV.0		3
13	WASHER, NYLON 5/16-18		10
14	SCREW, TRUSS HD 5/16-18x3/4 SS		10
15	SCREW, TRUSS HD 1/4-20 x 3/4		2
16	FAN & MOTOR ASSY. 60-85 CFM	51724597	1
17	GAUGE, TEMP. MURPHY	70734664	1
18	SWITCH, PRESSURE ADJUSTABLE	77041904	1
19	CLIP		2
20	COOLER	51724598	1
21	COOLER, OIL RECIP COMPR ALUM RS-4872	51724600	1
22	SEAL, KNOCKOUT 1/2"		1
23	SHROUD,COOLER		1
24	BRACKET, PRESSURE SWITCH MOUNTING		1
25	DECAL, INSTRUMENT PANEL		1
26	PANEL,COOLER SIDE		1
27	COUPLING, PIPE 1/8		1
28	NUT, HEX FLANGE 1/4-20		2
29	NUT, HEX FLANGE 5/16-18		9
30	NUT, HEX LOCKING 5/16-18 GR8		1
.31	SCREW, SER WASH 5/16-18 x 1		1



#### 8.4 COOLING AND CONTROL SYSTEM (12V) (CONTINUED)





## 8.4 COOLING AND CONTROL SYSTEM (12V) (CONTINUED)

ITEM	DESCRIPTION	PART NUMBER	QTY
32	SCREW, HEX SELF THREAD 1/4 x 3/4		6
33	SCREW, SELF-DRILL #8 x 1/2		3
34	ELBOW, 37FL/90M #08 x 1/2		2
35	NIPPLE, PIPE HEX 1/4 x 1/4		1



## 8.5 COOLING AND CONTROL SYSTEM (24V)





# 8.5 COOLING AND CONTROL SYSTEM (24V)

ITEM	DESCRIPTION	PART NUMBER	QTY
1	GAUGE, HOUR METER	77441491	1
2	ELBOW, 90 DEG #8 MJIC x #8 MSAE		2
3	SWITCH, HIGH TEMP. SHUTDOWN	70734663	1
4	ELBOW, 1/4T x 1/8P PUSH-ON		1
5	TEE, 1/4P x 1/4 T		1
6	GAUGE, AIR PRESSURE w/ SWITCH	70048247	1
7	CLIP, FAN & MOTOR MOUNTING		6
8	BREAKER, CIRCUIT w/ STUDS 10A 24V	77441501	1
9	BOOT, RUBBER RESET SWITCH	77040596	1
10	WASHER, NYLON FLAT 1/4		2
11	BUMPER, RUBBER 3/16 MTG REV.0		3
12	WASHER, NYLON 5/16-18		10
13	SCREW,TRUSS HD 5/16-18x3/4 SS		10
14	SCREW, TRUSS HD 1/4-20 x 3/4		2
15	GAUGE, TEMP. MURPHY	70734664	1
16	SWITCH, PRESSURE ADJUSTABLE	77041904	1
17	CLIP		2
18	COOLER, OIL	5172598	1
19	COOLER, OIL RECIP COMPR ALUM RS-4872	51724600	1
20	SEAL, KNOCKOUT 1/2"		1
21	RELAY, NC/NO WEATHERPROOF 24V		1
22	FAN & MOTOR ASSY. 60-85 CFM	51724599	1
23	SHROUD,COOLER		1
24	BRACKET, PRESSURE SWITCH MOUNTING		1
25	DECAL, INSTRUMENT PANEL		1
26	PANEL, COOLER SIDE TIGER		1
27	COUPLING, PIPE 1/8		1
28	NUT, HEX FLANGE 1/4-20		2
29	NUT, HEX FLANGE 5/16-18		9
30	NUT, HEX LOCKING 5/16-18 GR8		1
31	SCREW, SER WASH 5/16-18 x 1		1
		Continued of	on page 83



#### 8.5 COOLING AND CONTROL SYSTEM (24V) (CONTINUED)





## 8.5 COOLING AND CONTROL SYSTEM (24V) (CONTINUED)

ITEM	DESCRIPTION	PART NUMBER	QTY
32	SCREW, HEX SELF THREAD 1/4 x 3/4		6
33	SCREW, SELF-DRILL #8 x 1/2		3
34	ELBOW, 37FL/90M #08 x 1/2		2
35	NIPPLE, PIPE HEX 1/4 x 1/4		1



# 8.6 FRAME AND PARTS (12V)







# 8.6 FRAME AND PARTS (12V)

ITEM	DESCRIPTION	PART NUMBER	QTY
1	CONNECTOR, O-RING 3/4 x 3/4 JIC		3
2	CONNECTOR, #12 MSAE x #16 MJIC		1
3	TERMINAL, FEMALE		2
4	CONNECTOR, FEMALE		1
5	MANIFOLD, HYDRAULIC SOLENOID	71414997	1
6	VALVE, PRESSURE RELIEF	73540470	1
7	VALVE, SOLENOID WITH 12V. COIL	73540471	1
8	FRAME, HYDRAULIC MODULE		1
9	SEAL, CABLE GREEN 16-14 GA		2
10	CAP, FEMALE JIC 1 1/16-12 #12		1
11	CAP, FEMALE JIC 1 5/16-12 #16		1
12	GROMMET, RUBBER 11/16 x 1 x 3/16		2
15	BUSHING, RED STEEL 3/4 x 1/2		1
16	NUT, HEX LOCKING 3/8-16		2
17	CAPSCREW, HEX GR5 3/8-16 x 3.5		2



## 8.7 FRAME AND PARTS (24V)







# 8.7 FRAME AND PARTS (24V)

ITEM	DESCRIPTION	PART NUMBER	QTY
1	CONNECTOR, O-RING 3/4 x 3/4 JIC		3
2	CONNECTOR, #12 MSAE x #16 MJIC		1
3	TERMINAL, FEMALE		2
4	CONNECTOR, FEMALE		1
5	MANIFOLD, HYDRAULIC SOLENOID	71414997	1
6	VALVE, PRESSURE RELIEF	73540470	1
7	VALVE, SOLENOID w/ 24V COIL	73540471	1
8	FRAME, HYDRAULIC MODULE		1
9	SEAL, CABLE GREEN 16-14 GA		2
10	CAP, FEMALE JIC 1 1/16-12 #12		1
11	CAP, FEMALE JIC 1 5/16-12 #16		1
12	GROMMET, RUBBER 11/16 x 1 x 3/16		2
13	BUSHING, RED STEEL 3/4 x 1/2		1
14	NUT, HEX LOCKING 3/8-16		2
15	CAPSCREW, HEX GR5 3/8-16 x 3.5		2
16	WASHER, FLAT 3/8		2
17	CONNECTOR, 37FL/MPT #08 x 1/2		1



#### **8.8A CANOPY AND PARTS**



#### **8.8B CANOPY AND PARTS**



6030035ID\_Br0



#### 8.8A CANOPY AND PARTS

ITEM	DESCRIPTION	PART NUMBER	QTY
1	RETAINER		6
2	WASHER		6
3	SPRING		6
4	STUD, FLAT HEAD		6
5	PANEL, TOP MODULE		1

#### **8.8B CANOPY AND PARTS**

ITEM	DESCRIPTION	PART NUMBER	QTY
1	BUMPER, RUBBER 3/16 MTG REV.0		1
2	CLIP	71415013	2
3	PANEL, COMPRESSOR SIDE (IMT CAS45R)		1



#### **8.8C CANOPY AND PARTS**



6030035ID\_Cr0

#### **8.8D CANOPY AND PARTS**



6030035ID\_Dr0



#### 8.8C CANOPY AND PARTS

ITEM	DESCRIPTION	PART NUMBER	QTY
1	BUMPER, RUBBER 3/16 MTG REV.0		3
2	CLIP	71415013	1
3	PANEL, GUAGE SIDE		1

#### **8.8D CANOPY AND PARTS**

ITEM	DESCRIPTION	PART NUMBER	QTY
1	BUMPER, RUBBER 3/16 MTG REV.0		3
2	CLIP	71415013	1
3	PANEL, SIDE RH		1



#### **8.9 THERMAL CONTROL**





#### **8.9 THERMAL CONTROL**

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



#### 8.10 DECAL LOCATIONS (1 OF 2 / DECAL SHEET #95724529)





#### 8.10 DECAL LOCATIONS (2 OF 2 / DECAL SHEET #95724529)





#### 8.11 OVERVIEW OF ROTARY SCREW AIR COMPRESSION

#### NOTE

This explanation is intended to describe the general concepts of rotary screw compression; it does not detail the various interaction of the controls or conditions, which complete the system as a whole. Refer to Section 2, Description and Section 5, Operation for details of how the components work integrally.

Refer to *Figures 8-11A*, *8-11B* and the following description.

- Suction of compression screws draws air through the air filter [A] and inlet valve controller [B] into the main compression chamber of the compressor assembly [C].
- 2. The air drawn in by the suction created by the compression screws [**D**] mixes with the recirculated oil in the main chamber. As the rotors turn in unison, the small path clearance between them forces the air/oil mixture to compress. This compression causes oil to form a "seal" with the rotors, which traps the compressed air (see *Figure 8-14B*).
- As shown in the close-up, the compressed air/oil mixture is discharged from the screws, and collides with the main chamber's wall [E].
- 4. The sudden change of direction and velocity of impacting with the wall causes the air and oil to separate.

- The heavier oil collects and forms droplets, which tend toward the bottom of the chamber. This oil is filtered through the oil filter [G] before the suction draw recirculates/reintroduces the oil back into the main chamber for the air/oil compression phase to repeat the cycle.
- 6. Meanwhile, at the same time the separated oil is siphoned back into the system (Step #5), the compressed air, which still contains a scant amount of oil, moves toward the separator/ coalescer for secondary separation.
- The scant amounts of oil still remaining in the compressed air collect on the coalescer filter [F]. This remaining collected oil is routed to the oil filter [G], and then re-introduced back into the vacuum-side of the main oil reservoir [C] for repeating the compression cycle (refer to Step #5).
- The compressed air, which now contains only a trace amount of oil after passing through the coalescer filter [F], is ready for output use at the machine package service valve [H].

#### WARNING

Do not use air from this compressor for breathing purposes or processing consumables except in full compliance with federal, state and local codes.



#### 8.11 OVERVIEW OF ROTARY SCREW AIR COMPRESSION







#### 8.12 HYDRAULIC HOSE SYSTEM



HYDRAULIC SYSTEM COMPONENTS				
KEY	DESCRIPTION	KEY	DESCRIPTION	
Α	MANIFOLD	F	VEHICLE-SIDE OF HYDRAULIC SYSTEM:	
В	HYDRAULIC MOTOR	G	HYDRAULIC PUMP	
С	HYDRAULIC OIL COOLER	н	HYDRAULIC OIL RESERVOIR	
D	PRESSURE ACCUMULATOR HOSE	J	HYDRAULIC OIL RESERVOIR FILTER	
E	MACHINE END PANEL			

HYDRAULIC SYSTEM HOSE IDENTIFICATION (IMT hose kit no. 7744215)					
KEY	DESCRIPTION	HOSE ID #	KEY	DESCRIPTION	HOSE ID #
1	Manifold to motor oil supply	I	5	Dedicated pump to manifold	II
2	Motor to hydraulic cooler assembly	I	6	Dedicated hydraulic oil reservoir to pump	II
3	Cooler assembly to manifold	I	7	Dedicated manifold to reservoir filter	II
4	Pressure accumulator hose	I	8	Dedicated reservoir filter to reservoir	II
<sup><i>I</i></sup> Hose is included in Hose and Tubing Replacement Kit no. 73744215.					

<sup>II</sup> Customer is responsible for vehicle-side of hydraulic hose system, including set-up and maintenance. Customer should be aware of, and make arrangements for, any vehicle-side hose maintenance or replacement, as these hoses are not included with the IMT kit.



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