Manual # 99903184

14K160TH OTR Body & Air Compressor

Commander IV OTR Body & Compressor Parts - Specifications - Instructions

Revised August 25, 2020

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Contents

CHAPTER 1

Introduction

This volume provides information on the installation, operation, spare parts, and repair of your Commander IV body and compressor.

WARNING

READ YOUR MANUAL!! FAILURE TO READ, UNDERSTAND AND FOLLOW ANY SAFETY PROCEDURES APPLICABLE TO YOUR EQUIPMENT MAY RESULT IN EQUIPMENT DAMAGE, SERIOUS INJURY, OR DEATH.

MANUAL STRUCTURE

Throughout this manual, three means are used to draw the attention of personnel. They are NOTEs, CAUTIONs and WARNINGs and are defined as follows:

NOTE

A NOTE is used to either convey additional information or to provide further emphasis for a previous point.

CAUTION

A CAUTION is used when there is the very strong possibility of damage to the equipment or premature equipment failure.

WARNING

A WARNING is used when there is the potential for personal injury or death.

Use caution and common sense while operating and maintaining the crane, and follow all safety procedures and regulations. Treat this equipment with respect and service it regularly. In addition to reading the manual, become familiar with government regulations, hazards, and the specific operation of your crane. Refer to ANSI/ASME B30.22, the standard for Articulating Boom Cranes, for more information on crane design and test criteria. (You may obtain this publication from ASME at *www.asme.org*.) Crane operators must also be familiar with OSHA 29CFR, Subpart N, Article 1926.550 and CAL-OSHA Title 8, Article 93 (California).

MODIFICATIONS

Modifications to your crane must be performed with IMT approved accessories, parts and optional equipment. If in doubt about the safety, compatibility, or appropriateness of any modifications, contact IMT prior to making those modifications. DO NOT alter or modify any safety device! All safety devices must be inspected, tested and maintained in proper working condition.

Note that decals regarding crane safety and operation are considered safety equipment. They must be maintained just as any other safety device. Decals must be kept clean and legible to the operator, operational personnel, and bystanders as specified in the decal section of this manual. DO NOT remove, disable, or disregard any safety device attached to your crane.

The crane owner and/or designated employee is responsible for informing all operators, maintenance personnel, and others involved in equipment operation about the safe operation and maintenance of the crane. If questions arise, contact IMT or your IMT distributor for clarification.

WARRANTY

Warranty of this unit will be void on any part of the unit subjected to misuse due to overloading, abuse, lack of maintenance and unauthorized modifications. No warranty - verbal, written or implied - other than the official, published IMT new machinery and equipment warranty will be valid with this unit.

NOTICE TO THE OWNER / USER

If your equipment is involved in a property damage accident, contact your IMT distributor immediately and provide them with the details of the accident and the serial number of the equipment. If an accident involves personal injury, immediately notify your distributor and IMT's Technical Support at:

IOWA MOLD TOOLING CO., INC.
500 HWY 18 WEST
GARNER, IA 50438
641 - 923 - 3711

Revisions

DATE	LOCATION	DESCRIPTION
20070424		Manual release in new format.
20070807	51715799-2	Hardware changes.
20080904	SPARE PARTS	Fan sensor # 302899
20090105	51715799	ECN 10854 - New body weldment drawings.
20090305	51715799-3	ECN 10854 – New drawing for page 3.
20090423	51715799-1	ECN 10938 - Update body lights to LED.
20090526	COMPRESSOR PARTS	Added additional spare parts drawings.
20110519	51716427	ECN 11459 - Removed chassis ground cable due to superior ground connections in chassis.
20200825	51715800	51744237 was 51715850

CHAPTER 2

Parts - OTR Body

In This Chapter

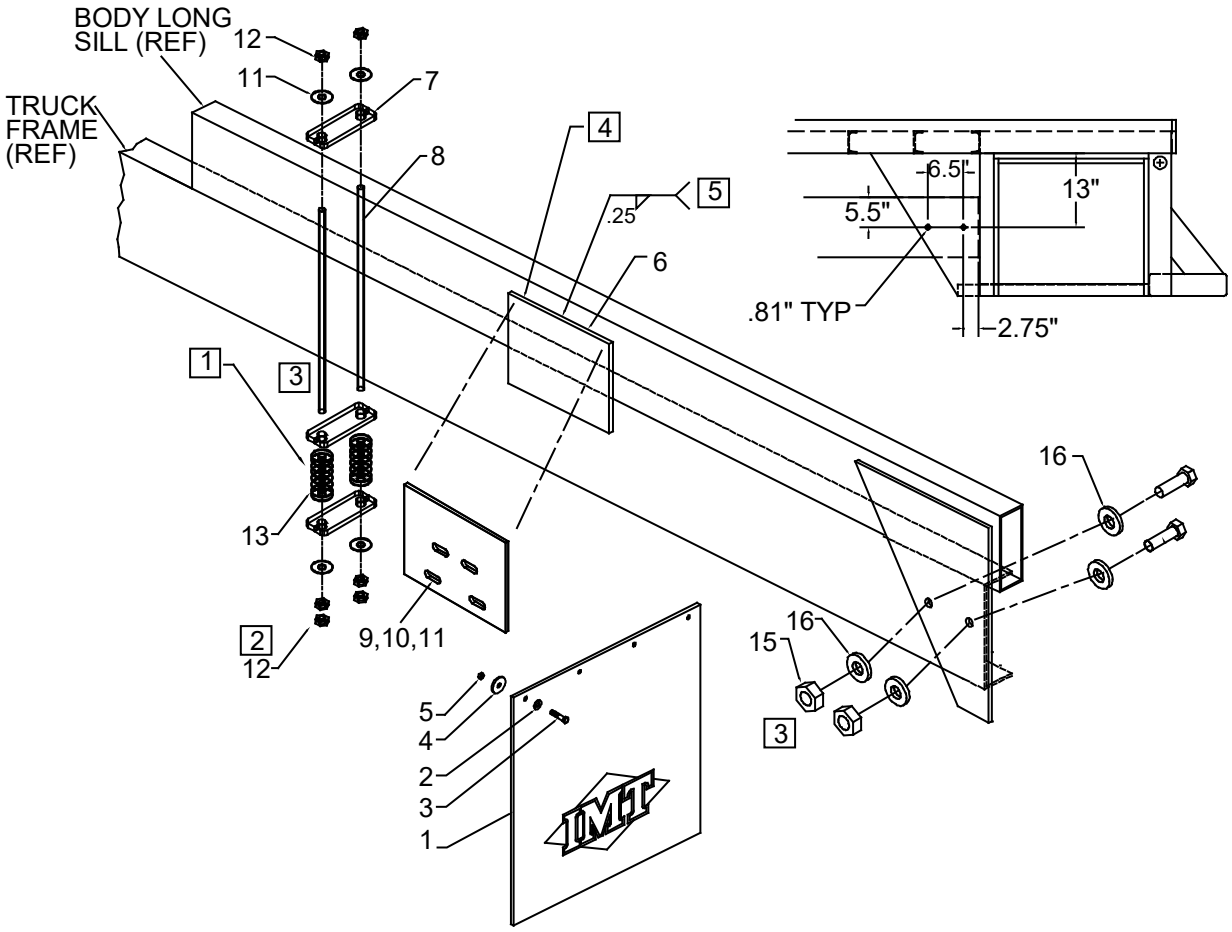
OTR Body Recommended Spare Parts

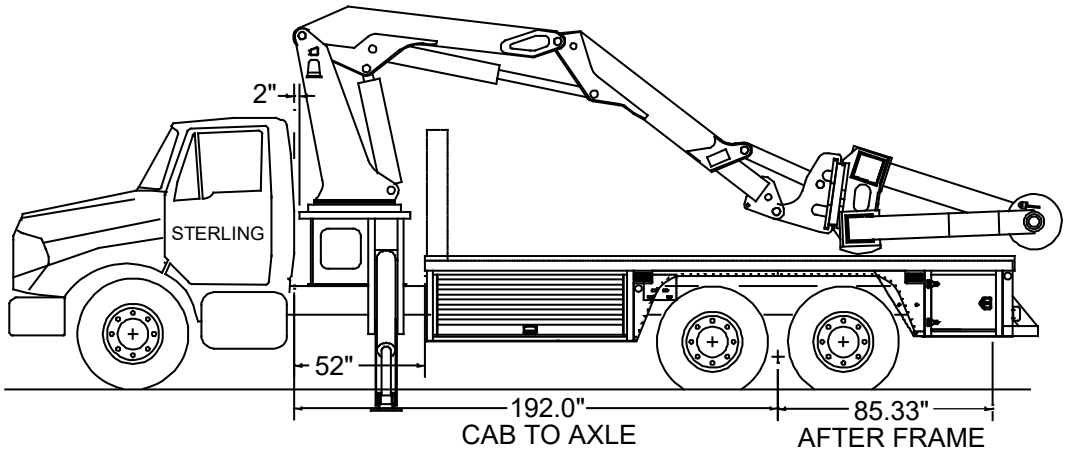
Recommended Spare Parts for one-year for Commander OTR Body:

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

ASSEMBLY PART #	PART NO.	DESCRIPTION	QTY	CODE
51715799-1 BODY ASSEMBLY				
	77040384	LIGHT-COMPARTMENT	2	C
	77040404	LIGHT-FLOOD BLACK	2	C
	77040543	LIGHT-MARKER-RED	2	C
	77040478	LIGHT-MARKER-AMBER	2	C
51715799-2 BODY ASSEMBLY				
	77040180	LIGHT-BACKUP	2	C
	77040493	LIGHT-STOP/TURN/TAIL	2	C
	77040006	LIGHT-LICENSE	1	C
ELECTRICAL KIT				
	77041251	RELAY-P&B	1	C
	77041014	SWITCH-PUSH/PULL	1	C
	77044672	CIRCUIT BREAKER-40A	1	C
	77041104	FUSE-AGC 5	1	C
	77042001	LIGHT-RED INDICATOR	1	C
PTO				
	77041008	SWITCH-PRESSURE PTO	2	C
	77041178	SOLENOID VALVE 12V 3WAY	1	C

Installation Kit - Body (93715891)





NOTES:

1 WHEN TIGHTENING CLAMP, SPRING WILL BE COMPRESSED FROM A RELAXED 5.50" LENGTH TO A COMPRESSED LENGTH OF 4.0".

2 USE DOUBLE NUTS ON THE BOTTOM TO AID INSTALLATION.

3 DRILL ALL CHASSIS FRAME HOLES THE SAME SIZE AS THE BOLTS USED.

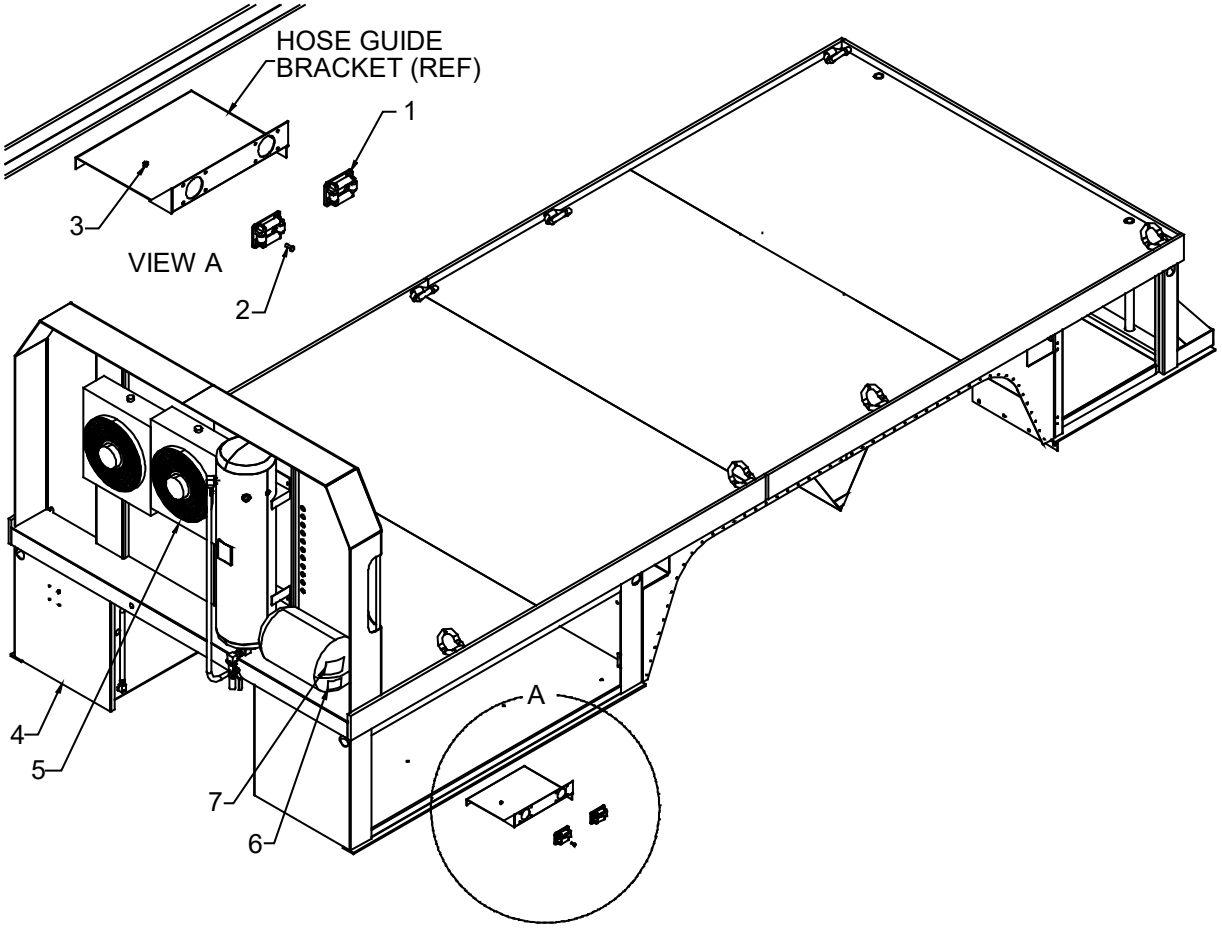
4 LOCATE SHEAR PLATE 4" BEHIND FRONT UNDERBODY TOOLBOX.

5 WELD LONGSILL ON 3 SIDES ONLY.

6 FOR REAR END, USE GRADE #8 FASTENERS. TORQUE TO 375 FT-LB PLAIN; OR 280 FT-LB PLATED. WHEN USING TORQUE WRENCH, ALWAYS HOLD THE BOLT AND APPLY TORQUE TO THE NUT. BOLTS MAY PASS THROUGH FRAME IN EITHER DIRECTION.

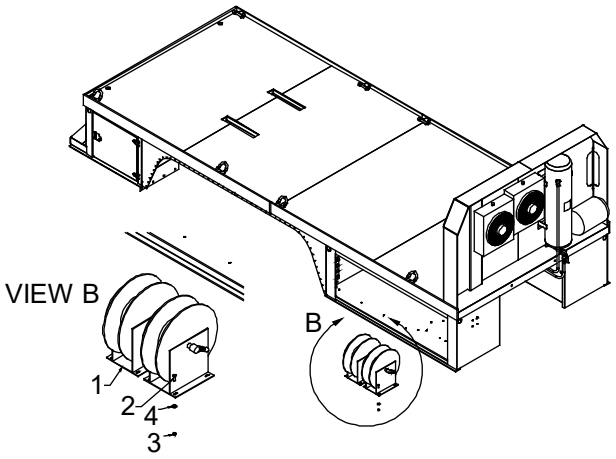
93715891 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	76393799	MUD FLAP	2
2.	72063001	WASHER 1/4 WRT	8
3.	72060025	CAP SCR 5/16-18X1 HHGR5	8
4.	72063078	WASHER 5/16X1-1/2 OD	8
5.	72062109	NUT 5/16-18 LOCK	8
6.	60105107	SHEAR PLATE	2
7.	60108859	CLAMP PLATE (WAS 60105958)	6
8.	60125817	ROD 5/8-11 X 29 (WAS 60109298 - 22.5” ROD)	4
9.	72060151	CAP SCR 5/8-11X2 HHGR8	4
10.	72062233	NUT 5/8-11 HEX TOP LOCK GR8	4
11.	72063119	WASHER 5/8 FLAT HARD	16
12.	72062091	NUT 5/8-11 LOCK (WAS 8)	12
13.	70141935	SPRING	4
14.	72060207	CAP SCR 3/4-10X3 HHGR8	4
15.	72601862	NUT 3/4-10 HEX ZINC NYLOC GR8 (WAS 72062272)	4
16.	72063116	WASHER 3/4 FLAT HARD	8
REV. C 20070424			

OTR Package Assembly (51715800-1)



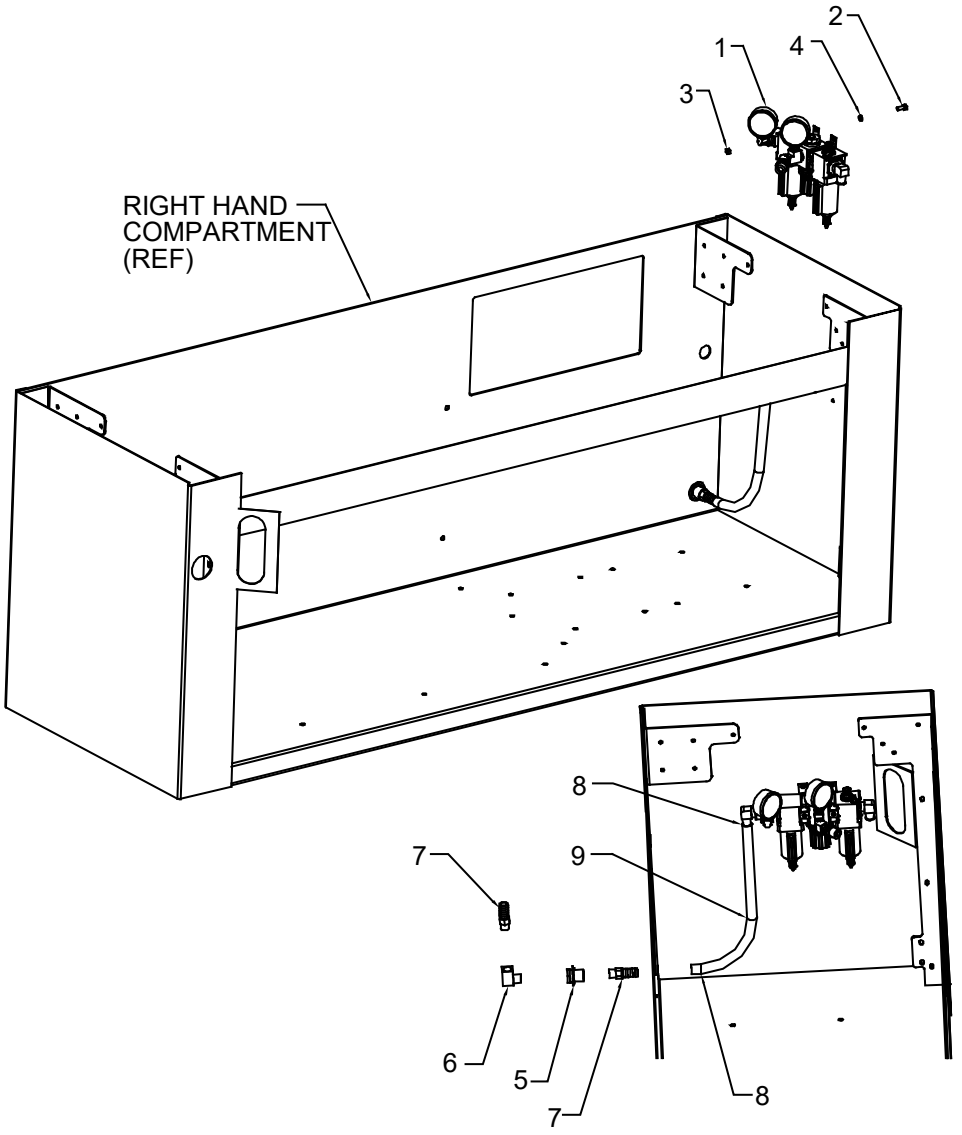
51715800 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	70731371	HOSE GUIDE & ROLLER ASM	2
2.	72060004	CAP SCR 1/4-20X1 HHGR5	4
3.	72062104	NUT 1/4-20 LOCK	4
4.	51715799	BODY ASM (SEE DWG)	1
5.	10001-CMMDR	HYD COMPRESSOR	1
	51716427	AUX GRD CABLE KIT	1
6.	70396127	DECAL	1
7.	301475	DECAL	1

OTR Package Assembly (51715800-2)



51715800-2 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	70733434	HOSE REEL 1/2X50'	2
2.	72060047	CAP SCR 3/8-16 X 1-1/4 HHGR5	8
3.	72062103	NUT 3/8-16 LOCK	8
4.	76392821	WASHER 3/8 BONDED	8

OTR Package Assembly (51715800-3)

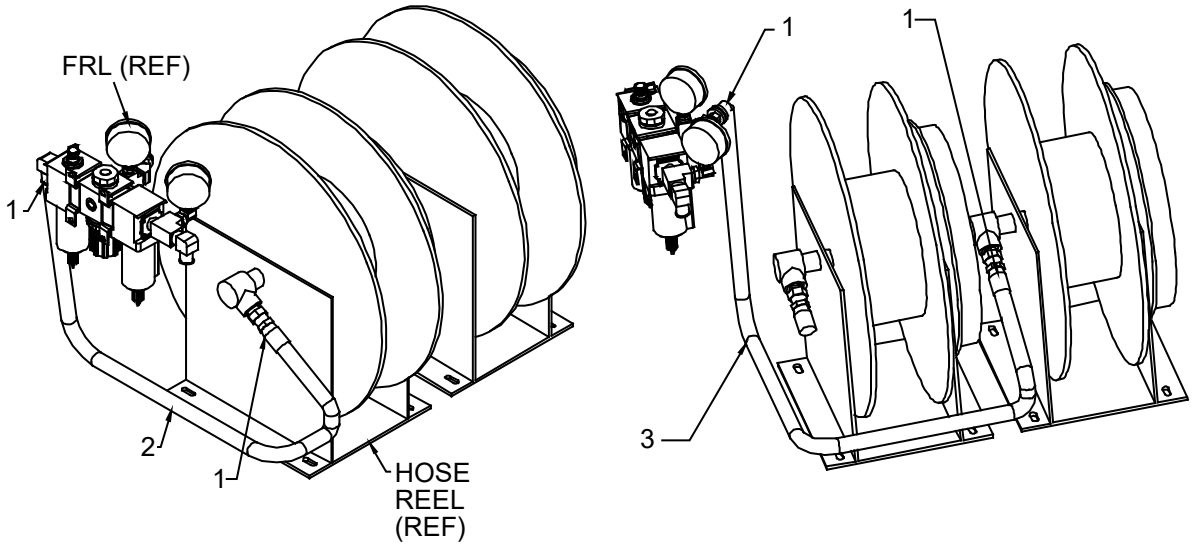


DETAIL VIEW
COMPARTMENT LAYOUT

51715800-3 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	51744237	FRL	1
2.	72060004	CAP SCR 1/4-20X1	4
3.	72062104	NUT 1/4-20 LOCK	4
4.	76392820	WASHER 1/4 BONDED	4
5.	72533140	COUPLING 1/2X1-1/2 BULKHD	1
6.	72053591	STREET ELBOW 1/2NPT 90°	1

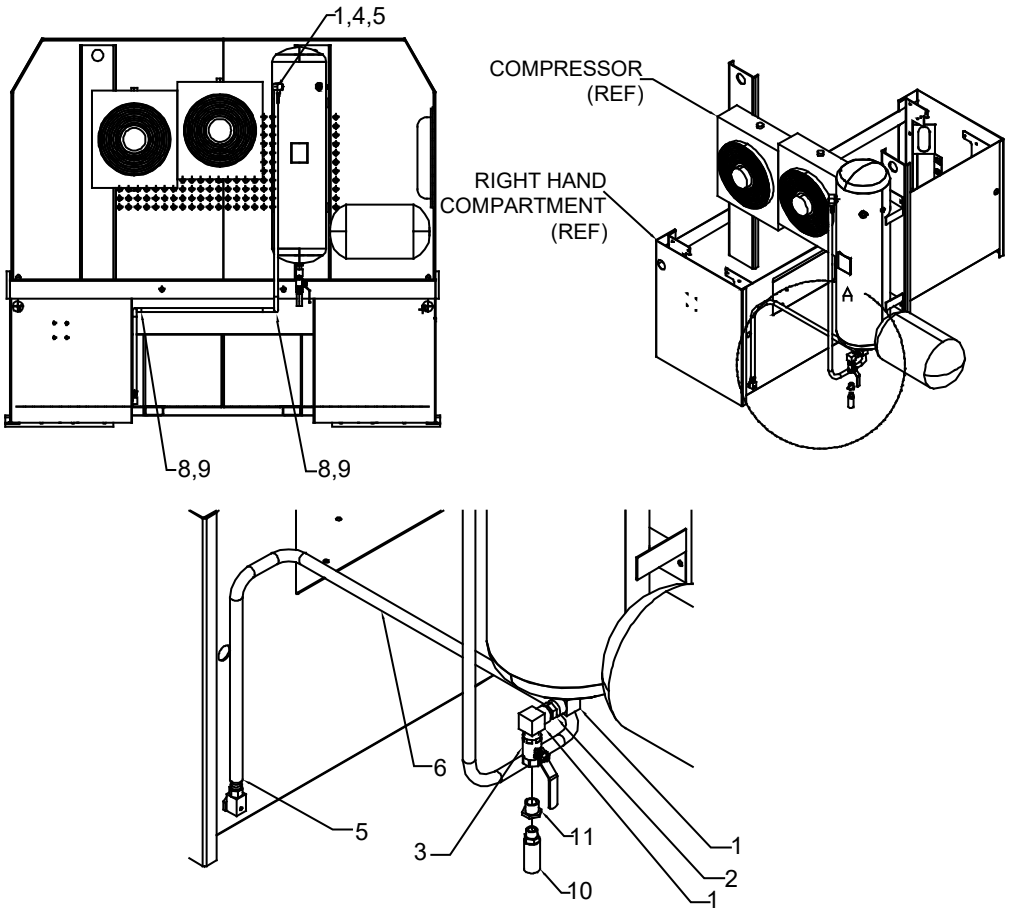
51715800-3 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
7.	72531547	BARB NIPPLE 1/2MPT 3/4HOSE BRS	2
8.	72066000	HOSE CLAMP SAE12	2
9.	89393634	HOSE 100R4 3/4X25	1
REV. C 20200825			

OTR Package Assembly (51715800-4)



51715800-4 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	72066000	HOSE CLAMP SAE12	4
2.	89393634	HOSE 100R4 3/4X39	1
3.	89393634	HOSE 100R4 3/4X55	1

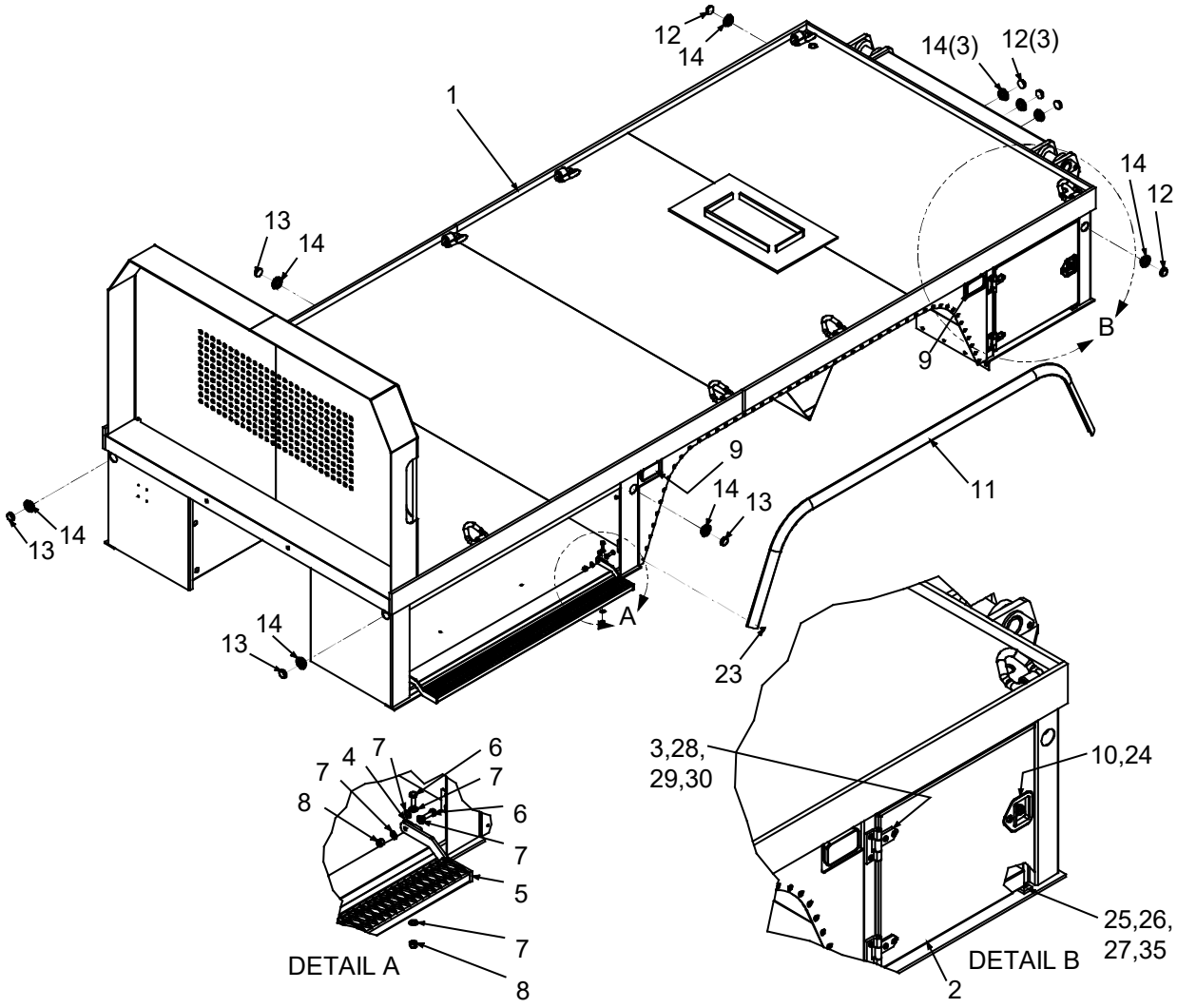
OTR Package Assembly (51715800-5)



VIEW A

51715800-5 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	72053556	STREET ELBOW 3/4NPT 90°	3
2.	72053558	ADAPTER 3/4MPT 3/4MPT HEX	1
3.	73054230	BALL VALVE 3/4NPT	1
4.	72053458	BARB NIPPLE 3/4MPT 3/4HOSE BRS	1
5.	72066000	HOSE CLAMP SAE12	2
6.	89393634	HOSE 100R4 3/4X120	1
8.	72066533	HOSE CLAMP-VINYL CVR 1/2	2
9.	72060833	SCR 5/16-18X3/4 HWH THRD CTG	2
10.	70396133	MUFFLER-AIR 3/4 NPT	1
11.	72053375	REDUCER BUSH-BLK 3/4-1/2	1

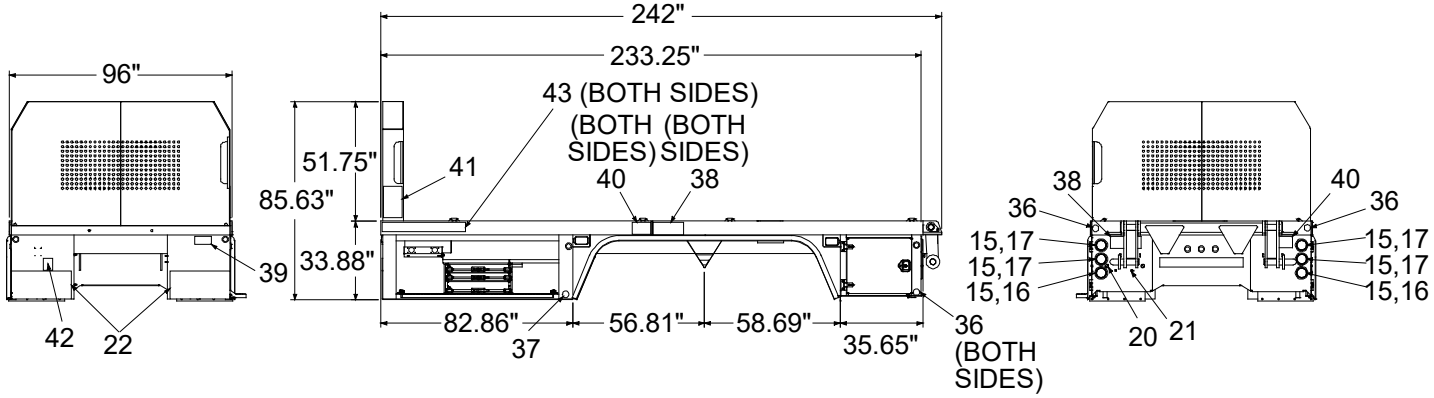
Body Assembly (51715799-1)



51715799-1 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	52718265	BODY	1
2.	60122496	DOOR-WLDMT 24.00H X 27.75W	2
3.	72661357	HINGE-BUTT 4-NB ZC .50 PIN	4
4.	60122663	BRACKET-HINGE COMMANDER IV STEP	2
5.	52716189	WLDMT-COMMANDER IV STEP	1
6.	72060093	CAP SCREW .50-13X 1.50 HH GR5 Z	4
7.	72063005	WASHER .50 FLAT	10
8.	72062080	NUT .50-13 HEX NYLOCK	4
9.	77040404	FLOODLIGHT-COMPOSITE WORK LAMP SIDE MTG	2
10.	72661470	LATCH ASSEMBLY-1PT W/HDW	2

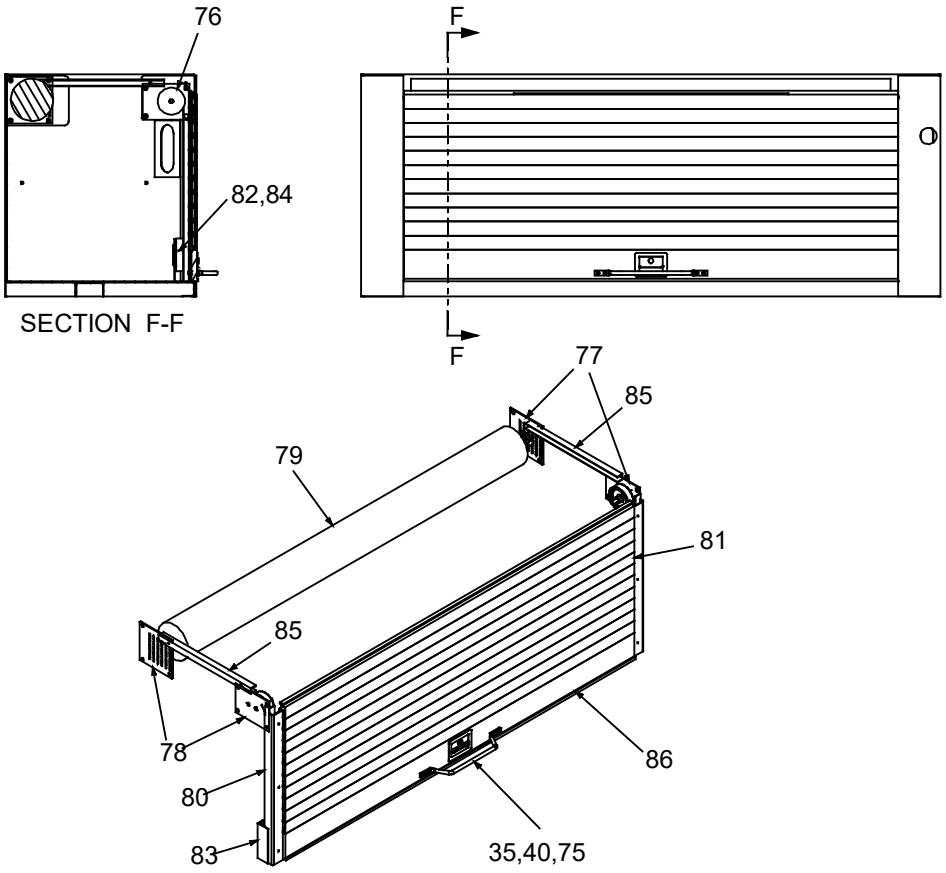
51715799-1 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
11.	89393137	FENDER RUBBER	2
12.	77040543	LIGHT-CLEAR RED LED (77040357 THRU 4-09)	5
13.	77040478	LIGHT-CLEAR AMBER LED (77040358 THRU 4-09)	4
14.	76393636	GROMMET-RUBBER 2.00	9
23.	72661384	RIVET-AL LG HD .25X .50 GRIP	96
24.	76393253	GASKET-LATCH W/STUDS	2
25.	60030324	SPACER-1.38 X 1.50 X .62 COMMANDER DOOR	2
26.	72063166	WASHER-SS .25 R WRT 18-8 .62OD	2
27.	72062194	NUT-SS .25-20 NYLOC	2
28.	72601590	CAP SCR-SS .31-18X1.00 TRH PHH	16
29.	72063002	WASHER .31 FLAT	16
30.	72062167	NUT-SS .31-18 HEX NYLOC	16
35.	72601593	SCR-MACH .25-20X 1.50 FLH SS	2
REV. L 20090423			

Body Assembly (51715799-2)



51715799-2 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
15.	76392275	GROMMET-TAIL LIGHT	6
16.	77040180	LIGHT-BACKUP	2
17.	77040493	LIGHT-STOP/TURN/TAIL LED 4"	4
20.	77040006	LIGHT-LICENSE PLATE	2
21.	51715985	KIT-LICENSE PLATE HARDWARE	1
22.	60350058	TREAD-SHUR STEP 12in X 26in	2
36.	70039057	REFLECTOR-RED RD	4
37.	70039058	REFLECTOR-AMBER RD	2
38.	70392865	DECAL-DANGER ELEC HAZARD(LARGE	3
39.	71393886	DECAL-DANGER EXPLODING TANK	1
40.	70392868	DECAL-DANGER CR LOADLINE (TRK)	3
41.	70395701	PLACARD-MAX LIFT 14K160TH	1
42.	70392891	DECAL-DANGER DRIVELINE	1
43.	70395823	DECAL-IDENT COMMANDER IV	3
REV. K 20090102			

Body Assembly (51715799-3)



51715799-3 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
35.	72601593	SCR-MACH .25-20X 1.50 FLH SS	6
40.	72062104	NUT .25-20 HEX NYLOCK	14
75.	72661269	HANDLE-GRAB CHROME 16L 3H 819	1
76.	71413562	WHEEL-.50 X 4.00 NYLON	1
77.	71413563	PLATE - RH HEAD ASM	1
78.	71413564	PLATE - LH HEAD ASM	1
79.	71413565	COUNTER BALANCE ROLLER	1
80.	71413566	TRACK - VERT RH OR LH	2
81.	71413567	SEAL - DOOR SIDE	2
82.	71413568	LATCH CATCH	2
83.	71413569	ANGLE - 2 X 1 X .12 X 6	2
84.	71413570	STUD .31-16 X .62	4
85.	71413571	TRACK-HORIZONTAL	2
86.	71413572	DOOR-ROLL UP 22.00 H X 70.00 W REPLACEMENT	1
REV. K 20090304			

ROLL-UP DOOR PROCEDURE:

1 CLAMP VERTICAL RAILS (#80) INTO PLACE. DO NOT INSTALL AT THIS TIME.

2 INSTALL DOOR HEADER. CENTER BETWEEN VERTICAL JAMS.

3 UNCLAMP VERTICAL RAILS (#80 AND PLACE OFF TO SIDE.

4 INSTALL COUNTERBALANCE ROLLER BRACKETS.

5 INSTALL HORIZONTAL RAILS (#85).

6 INSTALL COUNTERBALANCE ROLLER (#79). PAY CLOSE ATTENTION TO TO THE WRAP DIRECTION DECAL.

7 UNROLL SLATS ON ROLL-UP DOOR (#86) WHILE FEEDING IT INTO THE RADIUS CORNER COMPONENTS.

8 INSTALL THE THREE SHUTTER STRAPS ONTO THE COUNTERBALANCE ROLLER. INSTALL ONE STRAP IN THE MIDDLE OF THE COUNTERBALANCE ROLLER. INSTALL THE OTHER TWO STRAPS THREE INCHES FROM EACH END.

9 PULL NAIL ON THE COUNTERBALANCE ROLLER. THIS WILL CREATE TENSION TO HELP THE DOOR ROLL UP.

10 INSTALL THE VERTICAL RAILS (#80). LEAVE DOOR DOWN A FEW INCHES AND ANGLE DOOR BACK ENOUGH TO ALLOW VERTICAL RAILS (#80) TO SLIDE INTO PLACE.

11 INSTALL FLIPPER CATCHES (#82). THE RUBBER ON THE BOTTOM OF THE DOOR MUST BE COMPLETELY FLAT WHEN THE DOOR IS SHUT.

12 INSTALL THE HANDLE (#75). DRILL HOLES IN DOOR FOR INSTALLATION.

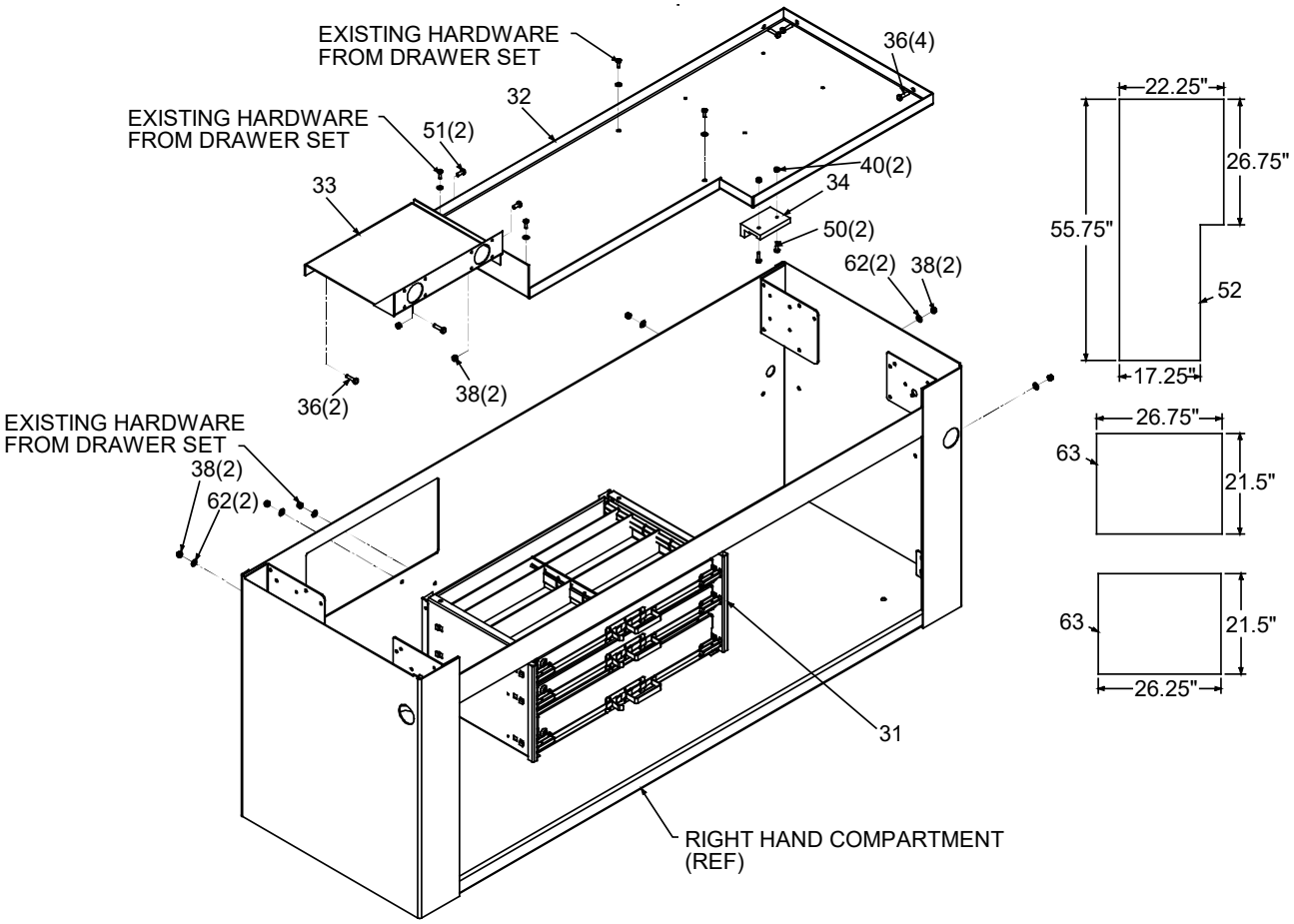
13 ADJUST THE CABLE LENGTH WITH THE TURN BUCKLE. MAKE SURE THE CABLE IS JUST TIGHT ENOUGH TO ALLOW PADDLE HANDLE LOCKS TO COMPLETELY OPEN. TIGHTEN DOUBLE NUTS.

14 INSTALL ALUMINUM PROTECTIVE COVER. USE COVER AS A TEMPLATE TO DRILL HOLES. USE #7 CAP SCREWS AND #5 NYLOC NUTS.

15 APPLY DOOR LUBRICANT. MAKE SURE ALL DEBRIS IS OUT OF DOOR RAILS AND RUBBER SEALS BEFORE APPLYING LUBRICANT.

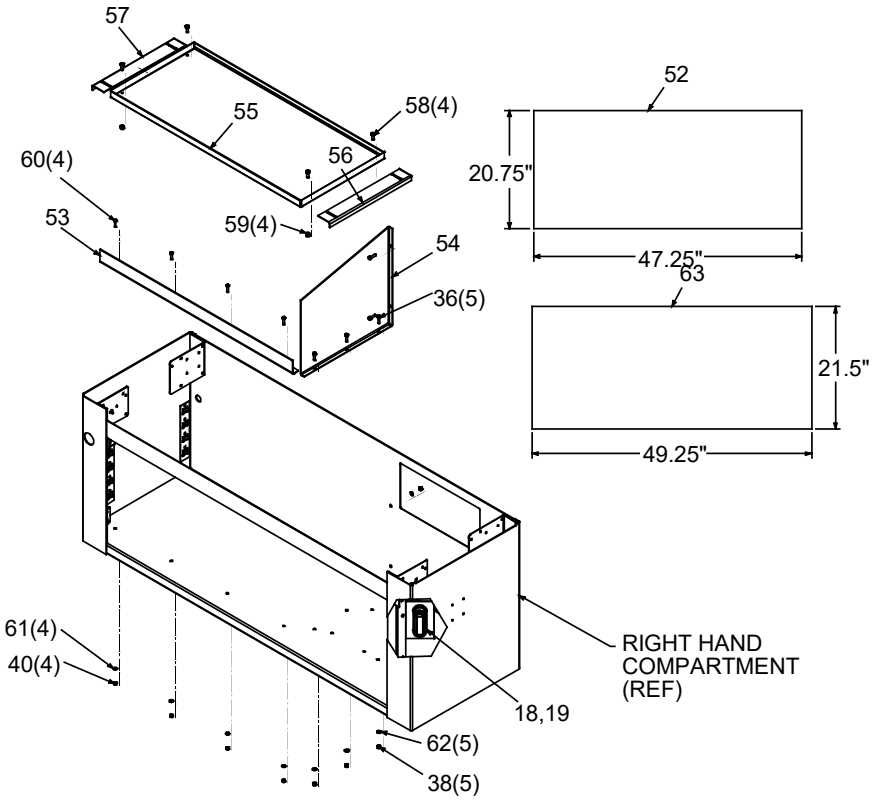
16 APPLY WHITE PERFLEX SEALANT BETWEEN COMPARTMENT AND ROLL-UP DOOR.

Body Assembly (51715799-4)



51715799-4 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
31.	70733807	DRAWERS PAINTED 26W 2-3in/1-5in 42.62X17.5	1
32.	52716191	WELDMENT-SHELF FRONT LH COMPT COMMANDER IV	1
33.	52716192	WELDMENT-SHELF FRONT LH COMPT COMMANDER IV	1
34.	60030316	STOP-UHMW COMMANDER 4 STEP	1
36.	72060026	CAP SCREW .31-18X 1.25 HH GR5 Z	11
38.	72062109	NUT .31-18 HEX NYLOCK	13
40.	72062104	NUT .25-20 HEX NYLOCK	10
50.	72060004	CAP SCREW .25-20X 1.00 HH GR5 Z	2
51.	72060023	CAP SCREW .31-18X .75 HH GR5 Z	2
52.	76395950	MAT-RUBBER .08" THK 2'W	3.9 FT
62.	76392598	WASHER-BONDED PLTD .31	11
63.	76393340	MAT-RUBBER .38X 24.00	6 FT
REV. K 20090105			

Body Assembly (51715799-5)

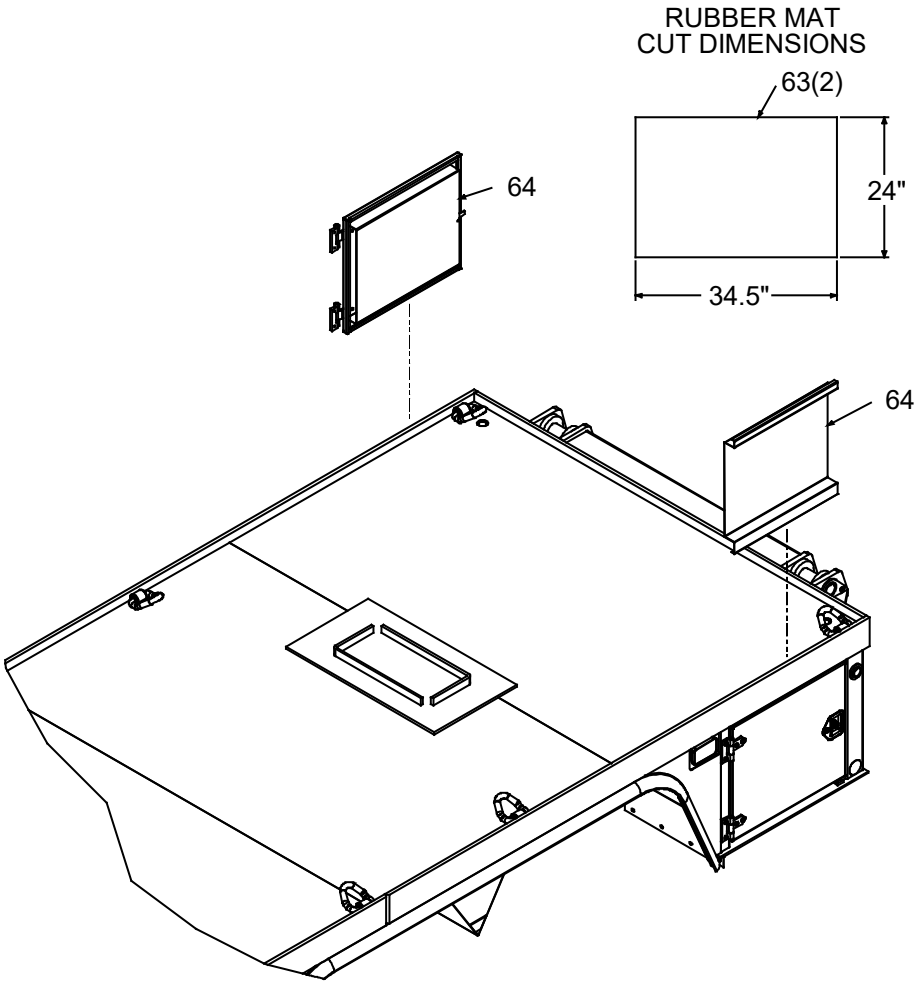


NOTE:

1 INSTALL ITEM #63 INSIDE BOTTOM OF COMPARTMENT.

51715799-5 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
18.	76394572	GROMMET-2 X 6 OVAL CMPT LIGHT	6
19.	77040384	LIGHT-COMPARTMENT 12V 2.1AMP	6
52.	76395950	MAT-RUBBER	3.9 FT
53.	60122686	ANGLE-DOOR PROTECTOR COMMANDER IV	1
54.	52716198	DIVIDER-SHELF UNDER-BODY TOOLBOX W/HANGER BRACKET	1
55.	60122685	SHELF-21.00X 47.50 (ADJ SHELF)	1
56.	60110252	END-ADJ SHELF RH 21.00	1
57.	60110251	END-ADJ SHELF LH 21.00	1
58.	72060046	CAP SCR .38-16X 1.00 HH GR5 Z	4
59.	72062103	NUT .38-16 HEX NYLOCK	4
60.	72060005	CAP SCR .25-20X 1.25 HH GR5 Z	4
61.	76392820	WASHER-BONDED PLTD .25	4
62.	76392598	WASHER-BONDED PLTD .31	11
63.	76393340	MAT-RUBBER .38X 24.00	6 FT
REV. K 20090105			

Body Assembly (51715799-6)



NOTE:

1 INSTALL ITEM #4 INSIDE BOTTOM OF COMPARTMENT. MAKE SURE TO BUTT FACTORY EDGES TOGETHER.

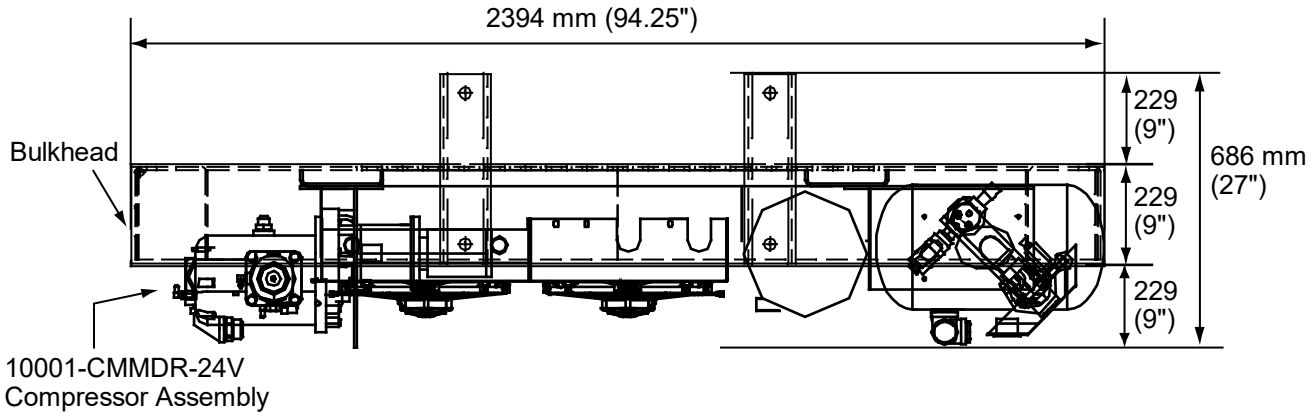
51715799-6 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
63.	76393340	MAT-RUBBER .38X 24.00	6 FT
64.	60122684	PANEL-DOOR LINER (SIDE) COMMANDER IV	2
REV. K 20090105			

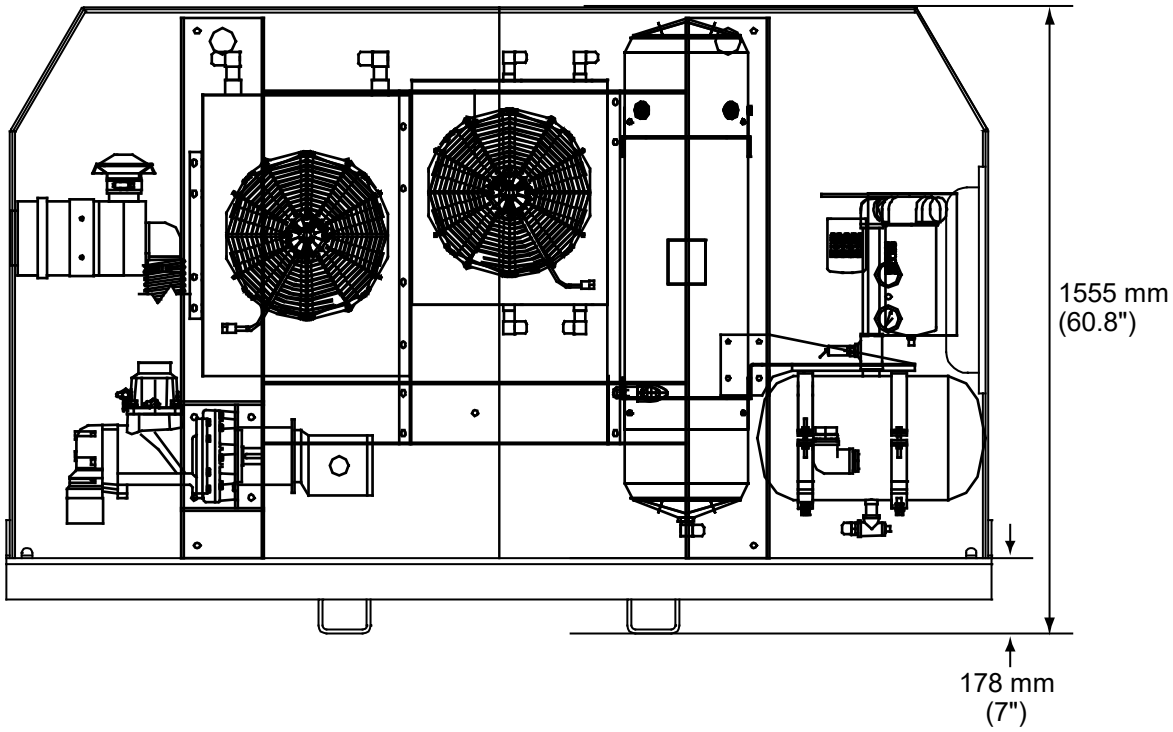
CHAPTER 3

DAR130 Compressor Specifications

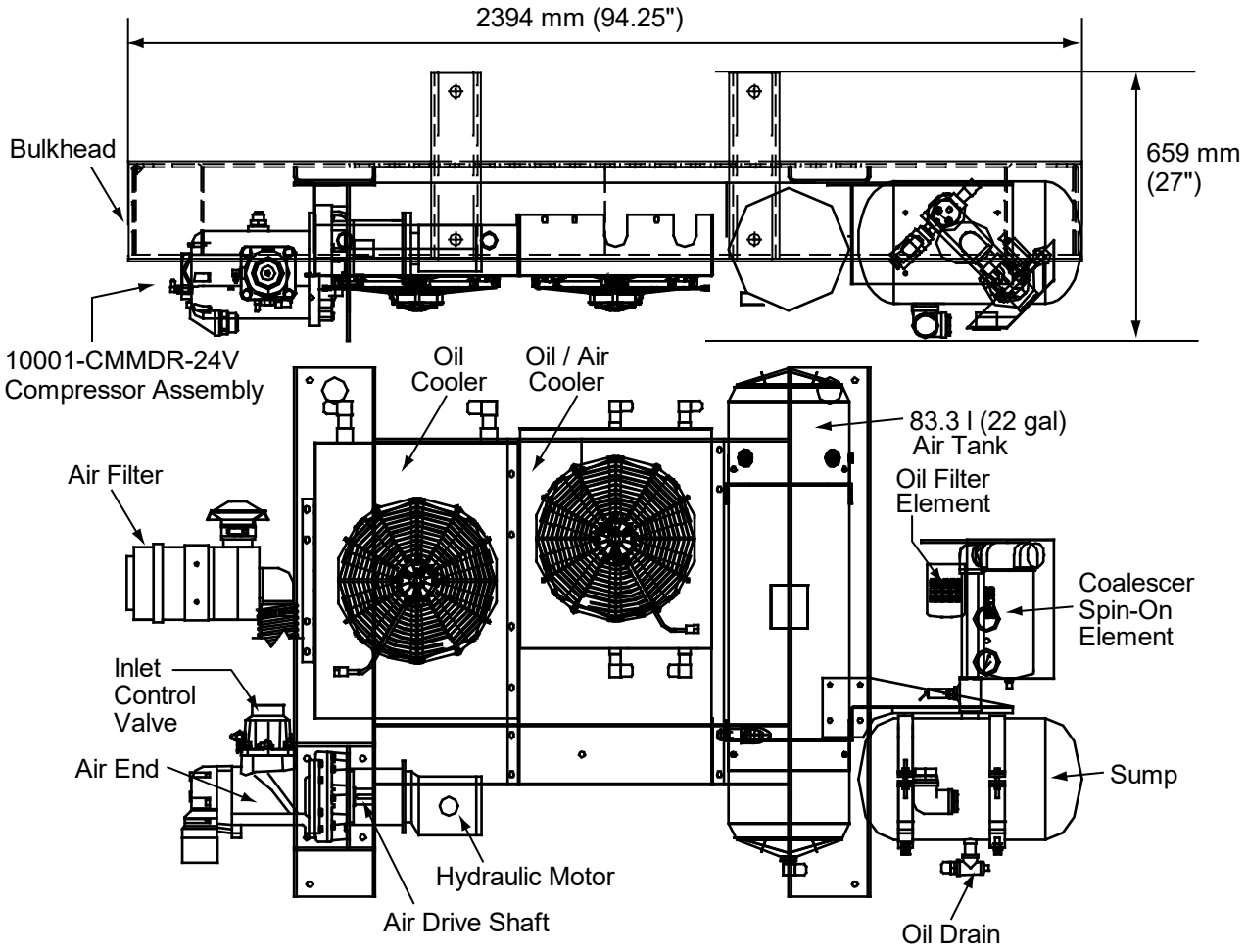
COMPRESSOR SPECIFICATIONS	
TYPE	Rotary Screw
POWER SOURCE	Hydraulic Motor
NORMAL HYDRAULIC OPERATING PRESSURE	2800 psi at 30 gpm (193 bar at 113 lpm)
AIR DELIVERY @ 110 PSIG (7.58 bar)	130 cfm (3.68 cubic meters/min.)
COMPRESSOR SPEED	1400 rpm
FLUID CAPACITY-COMPRESSOR (not hydraulic)	3.75 gallons (14.2 liters)
MOUNTED COMPRESSOR DIMENSIONS	27" (686 mm) from back of mounting surface to front of compressor 94.25" (2394 mm) overall width
COMPRESSOR / AIR INLET	10” w x 16” h x 18” l (254 x 406 x 457 mm)
RECEIVER / SUMP	12” diameter x 22” l (305 x 559 mm)
SPIN-ON ELEMENT	5” diameter x 13” h (127 x 330 mm)
WEIGHT (dry)	575 lb (261 kg)
Specifications subject to change without notice.	

Compressor Dimensions, Shown Mounted in Bulkhead





Compressor Item Locations



TYPICAL COMPRESSOR INSTALLATION

CHAPTER 4

Compressor Safety

In This Chapter

Compressor Precautions

	Failure to follow operating and maintenance procedures as outlined in this manual could result in equipment damage, personal injury or death. Follow all maintenance procedures and intervals.
	Maintenance must be performed only by trained and qualified personnel, using correct tools, specified torques and approved replacement parts.
	All electrical components and cable wiring must be installed and grounded in accordance with NFPA, national electrical codes and applicable state and local codes.
	Before removing guards or servicing the compressor, disconnect all power supplies. Display warning signs and lock out electrical circuits.
	All guards must be in position and secure before and during operation.

	Do not use air from this compressor for breathing or food processing. Air from this compressor will cause severe injury or death i used for breathing or food processing.
	Hot oil under pressure can cause severe injury or death. Shut down, let cool and relieve pressure in compressor before servicing.
	Do not overfill the compressor with oil. Use correct quantity of manufacturer's lubricant. Repair leaks and clean spills immediately.
	Compressors generate high temperatures. Do not touch or otherwise come in contact with ho surfaces. Doing so can cause severe persona injury.

Compressor Safety

WARNING

AVOID PERSONAL INJURY OR PROPERTY DAMAGE! READ YOUR MANUAL! All units are shipped with a detailed operators and parts manual which contains vital information for the safe use and efficient operation of this unit.

AIR COMPRESSOR SAFETY PRECAUTIONS

Safety is basically common sense. While there are standard safety rules, each situation has its own peculiarities that cannot always be covered by rules, and with your experience and common sense, you are in a position to ensure your safety. Lack of attention to safety can result in death, serious injury, accidents, and efficiency reductions. Watch for safety hazards and correct them promptly. Use the following safety precautions as a general guide to safe operation:

- Do not attempt to remove any compressor parts without first relieving the entire system of pressure.
- Do not attempt to service any part while the machine is operating.

WARNING

AVOID PERSONAL INJURY OR PROPERTY DAMAGE! Check the compressor sump oil level only when the compressor is not operating and the system is completely relieved of pressure. Open the service valve to ensure relief of system air pressure when performing maintenance on compressor air/oil system.

- Do not operate the compressor at pressure or speed in excess of its rating as indicated in Compressor Specifications.
- Periodically check all safety devices for proper operation.
- Do not play with compressed air. Pressurized air can cause serious injury to personnel.
- Exercise cleanliness during maintenance and when making repairs. Keep dirt away from parts by covering parts and exposed openings.
- Do not install a shut-off valve between the compressor and compressor oil sump.

DANGER

AVOID DEATH OR SERIOUS INJURY!

Do not use IMT compressor systems to provide breathing air. Such usage, whether supplied immediately from the compressor source, or supplied to breathing tanks for subsequent use, can cause serious bodily injury.

IMT disclaims any and all liabilities for damage for loss due to personal injuries, including death, and/or property damage including consequential damages arising out of any IMT compressors used to supply breathing air.

- Do not disconnect or bypass safety circuit system.
- Do not install safety devices other than authorized IMT replacement devices.
- Close all openings and replace all covers and guards before operating compressor unit.
- Do not leave tools, rags, or loose parts on the compressor or drive parts.
- Do not use flammable solvents for cleaning parts.
- Keep combustibles out of and away from the compressor and any associated enclosures.

The owner, lessor, or operator of the compressor are hereby notified and forewarned that any failure to observe these safety precautions may result in damage or injury.

IMT expressly disclaims responsibility or liability for any injury or damage caused by failure to observe these specified precautions or by failure to exercise that ordinary caution and due care required when operating or handling the compressor, even though not expressly specified above.

Compressor Warning Decals

A compliment of warning decals is supplied with each unit. These decals must be affixed to the vehicle after it has been painted, trimmed, and undercoat, etc. and prior to being put into service. The decals shall be placed so as to be clearly visible to the user and service personnel.

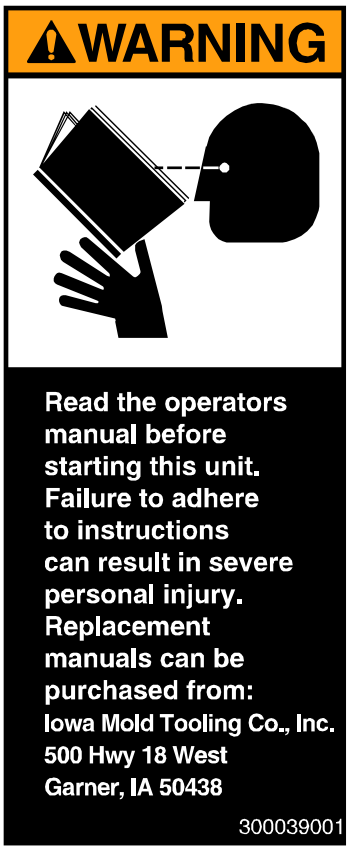


Figure 1: Place on visor or dash near start-up procedure decal.

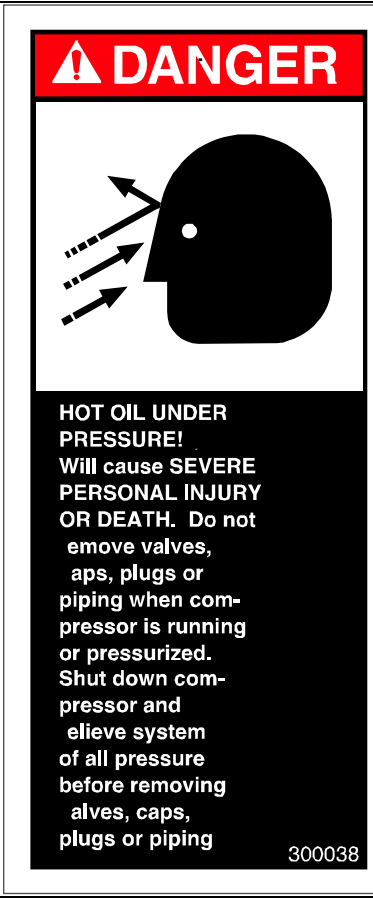
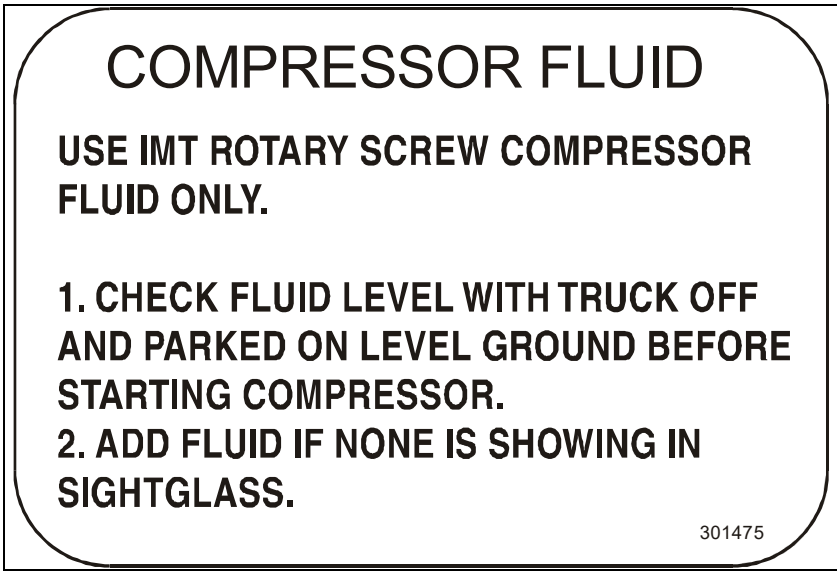


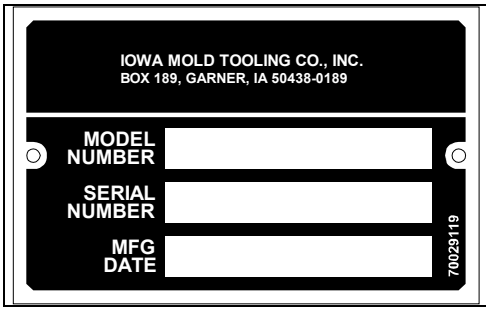
Figure 2: Place on body near oil sump filler cap.

Figure 3: Place on body near air service valve.

Figure 4: Place on body near compressor mounting foot.

Compressor Instruction Decals





Compressor Terminology

AIR/OIL COALESCER	Performs second stage separation of oil from compressed air feeding tools. Sometimes referred to as the separator element.
CFM	Refers to the volume of compressed air being produced expressed as cubic feet of air per minute.
COMPRESSOR LUBRICANT	IMT blue lube.
GPM	Refers to the gallons per minute of hydraulic fluid flowing through the pump.
OIL SUMP	The first stage of oil separation from compressed air. Also serves as reservoir area for compressor lubricant. Sometimes referred to as the receiver tank.
PSI	Refers to the operating pressure the system is set up at, expressed as pounds per square inch.
PRESSURE RELIEF VALVE	A valve located on the oil sump which opens in case of excessive pressure. Sometimes referred to as the pop-off valve or the check valve.

Description of Components

COMPRESSOR ASSEMBLY

The IMT compressor assembly is a positive displacement, oil flooded, rotary screw type unit employing one stage of compression to achieve the desired pressure. Components include a housing (stator), two screws (rotors), bearings, and bearing supports. Power from the hydraulic motor is transferred to the male rotor through a belt and pulley configuration. The female rotor is driven by the male rotor. There are four lobes on the male rotor and five roots on the female rotor.

PRINCIPLES OF OPERATION

In operation, two helical grooved rotors mesh to compress air. Inlet air is trapped as the male lobes roll down the female grooves, pushing trapped air along, compressing it until it reaches the discharge port in the end of the stator and delivers smooth-flowing, pulse-free air to the receiver.

During the compression cycle, oil is injected into the compressor. The oil lubricates the rotating parts and bearings, serves as a cooling agent for the compressed air, and seals the running clearances.

LUBRICATION SYSTEM

Oil from the compressor oil sump, at compressor discharge pressure, is directed through the oil filter, cooling system, and to the side of the compressor stator, where it is injected into the compressor. At the same time oil is directed internally to the bearings and shaft seal of the compressor. The oil-laden air is then discharged back into the sump.

OIL SUMP

Compressed, oil-laden air enters the sump from the compressor. As the oil-laden air enters the sump, most of the oil is separated from the air as it passes through a series of baffles and diffusion plates. The oil accumulates at the bottom of the sump for recirculation. However, some small droplets of oil remain suspended in the air and are passed on to the coalescer.

PRESSURE RELIEF VALVE

The pressure relief valve is set at 200 PSI. It is located at the top of the air/oil sump. This valve acts as a backup to protect the system from excessive pressure that might result from a malfunction.

AIR/OIL COALESCER

The coalescer is self-contained within a spin-on housing and is independent of the sump. When air is demanded at the service line, it passes through the coalescer which efficiently provides the final stage of oil separation.

OIL RETURN LINE

The oil that is removed by the coalescer accumulates at the bottom of the can and is returned through an oil return line leading to the compressor. The oil return line is 1/4" and goes to the elbow hose fitting which is located at the compressor.

MINIMUM PRESSURE VALVE

The minimum pressure valve is located at the outlet of the coalescer head and serves to maintain a minimum discharge pressure of 65 PSIG in operation, which is required to assure adequate compressor lubrication pressure.

OIL FILTER

The compressor oil filter is the full-flow replaceable element type. It has a built in safety bypass.

COMPRESSOR COOLING SYSTEM

The compressor cooling system consists of a combination aftercooler and oil cooler remote mounted on the common frame. Compressor oil temperature is controlled by a thermal valve located downstream of the oil filter. This valve maintains compressor oil temperature at 185° F. Compressed air is cooled in the small section of the combo cooler and sent directly to the 22-gallon air tank.

INSTRUMENTATION

The IMT hydraulic drive compressor unit incorporates a gauge panel that monitors temperature and hours of operation.

HOURMETER

The hourmeter records the total number of operating hours. It serves as a guide in following the recommended inspection and maintenance schedule. The hourmeter will only run when there is pressure in the system.

COMPRESSOR DISCHARGE AIR/OIL TEMPERATURE SWITCH GAUGE

This switch/gauge indicated compressor air discharge temperature. The switch/gauge ensures safety shutdown in case of excessive operating temperatures, preventing compressor damage.

ELECTRICAL AND SAFETY SYSTEM

The IMT compressor includes the following in the standard electrical system:

- Gauge panel with a temperature switch gauge and high temperature hydraulic cooling light.
- Hydraulic oil cooler / fan assembly with temperature sender and relay.
- Compressor aftercooler/oil cooler fan assembly with relay.
- N.O. hourmeter pressure switch.
- N.C blowdown pressure switch.
- 12 V DC N.O. hydraulic solenoid and relay.
- 12 V DC diode protected power feed for engine speed control activation.

AUTOMATIC BLOW DOWN VALVE

There is one blow down valve in the compressor system. It is located at the downstream side of the coalescer head and will automatically bleed the sump to zero pressure when the compressor is disengaged. The blow down time interval is typically 30 to 60 seconds.

CONTROL SYSTEM

The prime component of the compressor control system is the compressor inlet valve. The control system is designed to match air supply to air demand and to prevent excessive discharge pressure when compressor is at idle. Control of air delivery is accomplished by the inlet valve regulation and modulation as directed by the discharge pressure regulator.

DISCHARGE PRESSURE REGULATOR VALVE

This valve, located on the coalescer head, is used to set the desired discharge pressure within the operating pressure range. Turning the regulator screw clockwise increases the working pressure; a counterclockwise movement of the screw reduces the working pressure. This system has a maximum operating pressure of 150 psi.

NOTE

The operating pressure range for most air tools is between 90 and 100 psi. Operating above the tools' recommended pressure will decrease the life of the tool. Higher operating pressure can also overtorque nuts and bolts, causing fastener and mating part fatigue. Strictly adhere to tool operating pressures and torque standards set forth by the tool manufacturer and the specifications of the equipment that work is being performed on.

INLET VALVE

The compressor inlet valve is a piston operated disc valve that regulates the inlet opening to control capacity and serves as a check valve at shutdown.

CONTROL SYSTEM OPERATION

The following discussion explains the operation of the control system from a condition of “no load” to a condition of “full capacity” at working pressure. For the working pressure range of your machine, refer to applicable data in “Specifications”.

The pressure regulator, mounted on the coalescer head, operates as follows:

1 As the demand for air decreases, the receiver pressure rises. When this pressure exceeds the set point of the pressure regulator, the regulator opens sending a secondary pressure signal to the inlet valve. The poppet valve moves towards the valve inlet against the force of the modulating spring inside the valve. This regulates the opening area of the inlet valve.

2 If the air demand goes to zero, (service valve closed or air dead headed at tool) the inlet valve will close completely.

3 As the demand for air increases, the secondary pressure signal to the inlet valve is removed and the inlet valve poppet modulates to full open.

CHAPTER 5

Compressor Lubrication & Maintenance

In This Chapter

Lubrication and Maintenance Chart

PERIODICALLY DURING OPERATION

1 Observe all gauge readings. Note any change from the normal reading and determine the cause. Repair as necessary. Note: “Normal” is the usual gauge reading when operating at similar conditions on a day-to-day operation.

EVERY 10 HRS (DAILY)

1 Check compressor oil level.

2 Check air filter. Pressure drop indicator while compressor is operating.

3 Check for oil and air leaks.

4 Check safety circuit switches.

EVERY 25 HRS (MONTHLY)

1 Drain water from compressor oil.

EVERY 100 HRS

1 Grease compressor drive shaft (if applicable).

EVERY 500 HRS (6 MONTHS)

1 Change compressor oil and oil filter.

2 Check compressor shaft seal for leakage.

3 Check air filter piping, fittings and clamps.

4 Check compressor supports.

5 Install new air filter element. Shorter interval may be necessary under dusty conditions.

6 Check sump safety valve.

EVERY 1000 HRS

1 Change coalescer element.

PERIODICALLY (AS REQUIRED)

1 Inspect and clean air filter element.

2 Inspect and replace spin-on coalescer element if necessary.

3 Inspect and clean oil cooler fans.

NOTE: Compressor oil and filter must be changed after the first 50 hours of operation. After this, follow normal intervals.

Lubricant Recommendations

WARNING

AVOID INJURY OR EQUIPMENT DAMAGE!

Use IMT-recommended compressor oil. Inspect and replace oil, air filter, oil filter, and coalescer elements as stated in this manual.

The combination of a coalescer element loaded with dirt and oxidized oil products together with increased air velocity as a result of this clogged condition may produce a critical point while the machine is in operation where ignition can take place and could cause a fire in the oil sump.

The following are general characteristics for IMT rotary screw lubricant. It is impossible to establishing limits on all physical and chemical properties of lubricants which can affect their performance in the compressor over a broad range of environmental influences, so the responsibility for recommending and consistently furnishing a suitable heavy duty lubricant must rest with the individual supplier if they choose not to use the recommended IMT rotary screw lubricant. The lubricant supplier's recommendation must, therefore, be based upon not only the following general characteristics, but also upon his own knowledge of the suitability of the recommended lubricant in helical screw type air compressors operating in the particular environment involved. The owner of this equipment should contact the factory if IMT rotary screw lubricant is not used as supplied with this equipment.

CAUTION

We do not recommend mixing different types or brands of lubricants, due to the possibility of a dilution of the additives or reaction between additives of different types.

LUBRICANT SPECIFICATIONS

IMT "Cool Blue" rotary screw lubricant shipped with your kit contains additives for rust, corrosion, and anti-wear inhibitors. Use of any other lubricant is not recommended and may void the equipment warranty.

1 Flash point 400°F minimum

2 Pour point -40°F.

3 Contains rust and corrosion inhibitors.

4 Contains foam suppressors.

5 Contains oxidation stabilizer.

NOTE

Due to environmental factors, the useful life of all 'Extended Life' lubricants may be shorter than quoted by the lubricant supplier. IMT encourages the user to closely monitor the lubricant condition and to participate in an oil analysis program with the supplier.

No lubricant, however good and/or expensive, can replace proper maintenance and attention. Select and use lubricant wisely.

Commander IV Compressor Preventative Maintenance Kit

91716201 PREVENTATIVE MAINTENANCE KIT			
PART #	DESCRIPTION	QUANTITY IN KIT	FREQUENCY
301669	COALESCER-LONG SPIN-ON ELEMENT	1	1/YEAR
70733495	LUBRICANT-DIAMOND DOOR LUBE	1	1 CAN. USE AS REQUIRED TO LUBRICATE ROLL-UP DOOR.
70048209	ELEMENT-AIR (FRL)	2	2/YEAR
73052088	FILTER ELEMENT-RETURN	2	2/YEAR
73054974	FILTER-BREATHER OIL RESERVOIR	2	2/YEAR
300005001	ELEMENT-OIL FILTER 80	2	2/YEAR
302014	AIR FILTER ELEMENT	2	2/YEAR
70048148	ELEMENT-FILTER 100 MESH W/GSKT	2	2/YEAR
89086201	COMPRESSOR OIL-IMT GALLON ROTARY SCREW	6	2/YEAR (3 GALLONS EACH)

Compressor Maintenance Procedure

Maintenance intervals in the schedule outlined in this manual are based on one hour of compressor operation equal to about 40 road miles on an engine. Thus, eight hours operation is equal to 320 road miles, 250 hours is equal to 10,000 road miles, etc.

COMPRESSOR OIL SUMP FILL, LEVEL, AND DRAIN

Before adding or changing compressor oil, relieve all pressure from the sump. Add oil at the fill cap located between the cooler assembly and the cab. Use the drain plug provided at the bottom of the sump. The proper oil level, when the unit is shut down and oil has had time to settle, is at the midpoint of the oil sightglass. The truck must be level when checking the oil. DO NOT OVERFILL. The oil sump capacity is listed in the Compressor Specifications section.

WARNING

AVOID EQUIPMENT DAMAGE AND PERSONAL INJURY! Shut off the compressor and manually relieve pressure from the sump before attempting to drain condensate, remove the oil level fill plug, or break any connection in the air or oil system.

AIR INTAKE FILTER

The air intake filter is a heavy-duty two-stage dry type high efficiency filter designed to protect the compressor from dust and foreign objects. The filter is equipped with an evacuator cup for continuous dust ejection while operating and when stopped. Maintain the filter depending on the dust conditions at the operating site. Service the filter element when clogged (maximum pressure drop for proper operation is 15" H2O). The filter is equipped with a pressure drop indicator, and the element should be changed based on the pressure drop reading first, at least as frequently as outlined in the maintenance schedule.

AIR/OIL COALESCER

The air/oil coalescer employs an element permanently housed within a spin-on canister. This is a single piece unit that requires replacement when it fails to remove the oil from the discharge air, or when the pressure drop across it exceeds 15 PSI. Dirty oil clogs the element and increases the pressure drop across it.

To replace the coalescer element:

1 Shut down compressor and wait for complete blow down (zero pressure).

2 Disconnect drain line.

3 Turn element counterclockwise for removal (viewing element from the bottom).

4 Install new rubber seal in head. Supply a film of fluid directly to seal.

5 Rotate element clockwise, by hand, until element contacts seal (viewing element from the bottom).

6 Using band wrench near the top of the element, rotate element approximately one more turn clockwise.

7 Reconnect drain line.

8 Run system. Check for leaks.

WARNING

AVOID PERSONAL INJURY, PROPERTY DAMAGE, AND VOIDED WARRANTY! Do not substitute element. Use only a genuine IMT replacement element. This element is rated at 200 psi working pressure. Use of any other element may be hazardous and could impair the performance and reliability of the compressor.

NOTE

When connecting drain line, hold canister nut securely when tightening the hose fitting.

OIL RETURN LINE

This line originates at the bottom of the air/oil coalescer and flows through a 1/4" hose elbow, located at the air end. On the DAR130 Rotary Screw Compressor, the elbow incorporates an oil return line check valve which stops the flow of oil into the coalescer at shutdown.

OIL FILTER

The compressor oil filter is a spin-on, throw away type. After replacing filter, dispose of used filter according to local and state hazardous waste regulations.

To replace filter:

1 Relieve system pressure.

2 Remove filter by unscrewing from filter head (turn counterclockwise by hand, viewing from bottom) and discard.

3 Install a new filter by applying a little oil to the seal and then screw the filter on by hand (turning it clockwise until hand tight, plus one - third turn, viewing from bottom). Do not use tools to tighten the filter.

4 Check for leaks in operation.

5 Re-check compressor oil level.

WARNING

AVOID PERSONAL INJURY, PROPERTY DAMAGE, AND VOIDED WARRANTY! Do not substitute element. Use only a genuine IMT replacement element. This element is rated at 200 psi working pressure. Use of any other element may be hazardous and could impair the performance and reliability of the compressor.

HYDRAULIC OIL COOLER & COMPRESSOR AFTER/OIL COOLER COMBINATION

The interior of the oil cooler should be cleaned when the pressure drop across it at full flow exceeds 25 PSI. Follow these steps to clean the oil cooler:

1 Remove cooler.

2 Circulate a suitable solvent to dissolve and remove varnish and sludge.

3 Flush the compressor oil cooler section generously with IMT compressor lubricant. Do not use oil to flush the aftercooler portion on the combo cooler.

4 After coolers are reinstalled, fill the compressor and hydraulic system with the proper fluids, to their appropriate levels. Change compressor oil after 50 hours of normal operation.

SHAFT SEAL INSTALLATION

1 Remove all hoses and fittings from the compressor unit, including 1/2" discharge line, 3/4" main oil injection, 1/4" regulator, 1/4" blowdown, and 3" air intake.

2 Strap compressor unit. Remove 7 mounting screws from mounting bracket.

3 Remove hydraulic motor and coupling hub from the compressor shaft along the key.

4 Remove (5) socket head retaining bolts on cover. Slide cover off shaft. The cover has the seal and snap ring assembly within.

5 Press old snap ring and seal off the cover for assembly of new seal.

6 Pull seal wear sleeve off shaft with puller. Adding heat to one area only on wear sleeve will help enlarge and aid in removal.

7 Clean shaft and surface of bearing. Remove all burrs from shaft where the wear sleeve gets installed.

8 Press new wear sleeve onto shaft. Oil. To aid in installation, oil heat new wear sleeve to approximately 212° F.

9 Clean seal cover and snap ring with solvent before installation.

10 Press new seal (included in repair kit) into cover. Insert snap ring.

11 Place the assembly tool on the drive shaft until it sits on the end of the wear sleeve. Slightly lubricate the assembly tool on the external surface. Add Loctite 573 to seal cover.

12 Install cover, seal, and snap ring assembly over shaft and assembly tool. Note: The assembly tool slip fits on the shaft and allows the new seal, in cover, to slide onto wear sleeve without cutting the lip of the shaft seal. Reinstall the dirt ring retainer once the new seal and cover assembly are in place.

13 Place seal cover against rotor casting. Do not damage the seal. Slide off assembly tool.

14 Screw down the socket head retaining bolts on the cover with a torque of 220 in-lb (25 Nm).

15 Reinstall coupling hub and key. Circulate a suitable solvent to dissolve and remove varnish and sludge. Replace cooler.

NOTE

The seal cover is installed using an o-ring gasket. Avoid pinching the o-ring out of its groove upon reinstallation.

Compressor Troubleshooting

This section includes instructions for troubleshooting the equipment following a malfunction. Each problem symptom for a component or system is followed by a list of probable causes and suggested resolutions.

In general, perform the procedures in the order in which they are listed. Vary the order if needed due to specific conditions.

PROBLEM	CAUSE	RESOLUTION
Truck Engine Will Not Start	Vehicle engine problem.	▪ Check vehicle manual.
	High temperature.	▪ The compressor shutdown safety switch causes the vehicle engine to shut down on vehicles with manual transmissions. If this occurs, restart the truck once the temperature drops, or by disengaging the PTO. If the compressor high-temperature switch has shut off the engine, take the vehicle for service.
Unplanned Shutdown	Engine problem.	▪ Check fuel level, truck dash gauges and indicators.
	Check compressor discharge temperature / switch gauge.	▪ If the relay circuit is tripped, the 12V DC solenoid will lose power and divert hydraulic oil back to the reservoir. The blowdown switch and the temperature switchgauge will not allow power to the hydraulic solenoid until the air has blown down and the temperature has dropped into its normal operating range. Take for service if high temperature shutdown has occurred.
	Low compressor oil.	▪ Check compressor oil level. Add if needed.
	Airflow obstruction.	▪ Check the oil cooler for dirt, slush, ice on fins, or other obstructions.
	Hose or wiring break.	▪ Check for broken hoses, oil lines, or loose or broken wires.
Low Discharge Pressure	Too much air demand.	▪ If air tools require more air than the compressor can produce, change tools.
	Open service valve.	▪ Close service valve.
	Leaks in service lines.	▪ Repair line leaks

PROBLEM	CAUSE	RESOLUTION
	Restricted compressor inlet air filter.	▪ Replace filter.
	Faulty control system operation.	▪ Check regulator signal. Repair system if needed.
High Discharge Pressure (Indicated if the safety valve blows or the system shuts down on high pressure)	Faulty discharge pressure gauge.	▪ Replace pressure gauge.
	Coalescer plugged.	▪ Clean coalescer.
	Faulty safety valve.	▪ Replace safety valve.
	No regulator air pressure signal to inlet valve.	▪ Check signal, and replace faulty components.
Sump Relief Valve Activates	Inlet valve leaks or is open.	▪ Repair or replace valve.
	Faulty regulator.	▪ Repair or replace regulator.
Sump Pressure Does Not Blow Down	Inoperative automatic blow down valve at coalescer head.	▪ Replace valve
	Blockage.	▪ Check air line from side of inlet valve to blow down valve.
	Clogged muffler.	▪ Check / clean muffler.
Oil Consumption	Excess oil consumption, or oil in service line.	▪ Check overfilling of oil sump. ▪ Repair leaking oil lines or oil cooler. ▪ Inspect oil line to the compressor. Open plugged oil return line if needed. ▪ Replace coalescer element if defective. ▪ Repair leaks in compressor shaft seal. ▪ Check discharge pressure. Pressure should be between 65 PSI and 150 PSI.
Engine Will Not Accelerate or Maintain Full Load Speed	Engine problem.	▪ Refer to engine manual.
	High compressor discharge pressure.	▪ Reduce discharge pressure
	Compressor running at truck idle. (Improper speed)	▪ Correct speed
	Operating above maximum altitude rating of compressor and truck.	▪ Move to lower altitude

PROBLEM	CAUSE	RESOLUTION
Coalescer Element Plugging	Oil breakdown.	▪ Extreme operating temperature - reduce temperature. ▪ Water in oil. Drain condensate from oil sump. ▪ Wrong oil. Use only IMT-approved compressor oil. ▪ Dirty oil - change oil. ▪ Oil return line plugged. Clean oil return line. Change oil and oil filter per maintenance schedule.
	Compressor air inlet.	▪ Check system for leaks.
High Compressor Discharge Temperature	Low oil level.	▪ Add oil if required
	Thermal valve	▪ Check thermal valve operation
	Reduced flow through cooler.	▪ Clean outside of oil cooler
		▪ Clean oil system (cooler) internally.
		▪ Check fan relay harness.

Compressor Recommended Spare Parts

Recommended Spare Parts for one-year:

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

ASSEMBLY PART #	PART NO.	DESCRIPTION	QTY	CODE
INTEGRAL COMPRESSOR COMPONENTS				
	301669	SPIN-ON COALESCER	1	P
	300005-001	OIL FILTER ELEMENT	2	P
	301921	FAN ASSEMBLY (12V)	1	W
	303185	FAN ASSEMBLY (24V)	1	W
	300057	REGULATOR VALVE	1	W
	301827	BLOW DOWN VALVE	1	W
AIR INLET SYSTEM				
	300031	INLET RAIN CAP	1	
	300853	AIR FILTER SERVICE INDICATOR	1	W
DISCHARGE SYSTEM				
	300331	COALESCER HEAD	1	W
	300023-200	RELIEF VALVE	1	W
	300107	RECEIVER SIGHT GLASS	1	W
	300021	BLOWDOWN MUFFLER	1	W
	300187	REGULATOR VALVE REPAIR KIT	1	W
	300186	INLET VALVE REPAIR KIT	1	W
	301421	NORMALLY CLOSED PRESSURE SWITCH #5	1	W
	300072	FAN SENSOR	1	W
	300076-016	MURPHY TEMPERATURE GAUGE	1	W
	300074	HOURMETER	1	W
	300845	MINIMUM PRESSURE VALVE	1	W
	300599	OIL FILTER HEAD	1	W
	300721	OIL LINE CHECK VALVE	1	W
	301448-300	OIL-COOL BLUE CASE	2	P
	300909-025	BREAKER (25A)	1	W
	302014	AIR FILTER ELEMENT	2	P
	301932-10G4	SHAFT SEAL KIT T10G	1	W
	300730	COUPLING SLEEVE	1	W
	301755	RELAYS	1	W

ASSEMBLY PART #	PART NO.	DESCRIPTION	QTY	CODE
	302899	FAN SENSOR-100	1	W
	302024	COIL	1	W
	302025	SOLENOID	1	W
	302026	RELIEF-MANIFOLD	1	W
	301834	NORMALLY OPEN PRESSURE SWITCH (20#)	1	W
	302028	SHAFT SEAL REMOVAL TOOL T10G	1	P
	302030	HYD MOTOR SEAL KIT	1	W
	301662	THERMAL VALVE	1	W
REPAIR KITS				
	307471	REGULATOR REPAIR KIT	1	W
	307095	SHAFT SEAL REPAIR KIT	1	W

CHAPTER 6

Compressor Operation

In This Chapter

Compressor Start Up/Shutdown

An operating procedure decal is furnished with every PTO compressor. The decal should be attached to the truck dashboard or visor where it will be visible to the driver.

Cable Shift PTO Operating Procedure (Decal # 301476)

Start-Up

1 Set brakes per company procedure. Chock wheels.

2 Check compressor oil level. Add oil if low.

3 Depress clutch. Engage PTO.

4 Put transmission in neutral.

5 Let out clutch. Depress fuel pedal momentarily.

Shutdown

1 Close service valve.

2 Depress clutch and hold for compressor blowdown.

3 Disengage PTO.

Hot Shift PTO Operating Procedure (Decal # 301661)

Start-Up

1 Stop vehicle. Engage parking brakes.

2 Shift transmission to neutral.

3 Depress PTO On/Off switch to *on* position. Engagement is complete when red indicator light comes on.

Shutdown

1 Close service valve.

2 Depress PTO On/Off switch to *off* position.

Compressor Controls

CONTROL OR INDICATOR	PURPOSE
TEMPERATURE SWITCH GAUGE	Monitors the temperature of the air/fluid mixture leaving the compressor. The normal reading should be approximately 175 to 210° F. Sends signal to relay when the compressor reaches 240° and the compressor will shut off.
HOURMETER	Indicates accumulated hours of actual compressor operation.
FLUID LEVEL SIGHTGLASS	Indicates fluid level in the sump. Should be half full when at proper level. Check this level when the compressor is disengaged and the vehicle is parked on level ground.
PRESSURE RELIEF VALVE	Vents sump pressure to the atmosphere if the pressure inside the sump exceeds 200 PSI.
COMPRESSOR INLET CONTROL VALVE	Regulates the amount of air intake in accordance with the amount of compressed air being used. Isolates fluid in compressor on shutdown.
PRESSURE REGULATING VALVE	Senses air pressure from sump to provide automatic regulation of the compressor inlet control valve and load controller.
BLOW DOWN VALVE	Coalescer head blow down valve vents the sump pressure to the atmosphere at shut down.
MINIMUM PRESSURE VALVE	Restricts air flow to balance sump and service air pressure. Assures a minimum of 65 PSI to maintain compressor lubrication.
RETURN LINE CHECK VALVE	Ensures that the back flow to the coalescer element does not occur during shutdown.

Compressor Operating Conditions

If possible, operate the compressor with the truck as close to level as possible. The compressor will operate on a 15° tilt from side to side and end to end without adverse problems. Fluid carry over and/or oil starvation may occur if operated at a tilt beyond 15°. Operation in ambient temperatures above 100° F may result in high temperature shutdown.

NOTE

If the compressor is being used to power sandblasting equipment or an air storage tank, use a check valve directly after the minimum pressure orifice to prevent backflow into the sump. This check valve should have a maximum pressure drop rating of 2 PSIG (13.78 kPa) operating and a capacity rating equal to the compressor.

NOTE

When a hose reel is not used, the compressor service valve should be relocated to the hose reel inlet, or to a customer-supplied air connection port. Typical plumbing from a minimum pressure orifice should flow in the following order:

1 Minimum pressure orifice

2 Check valve

3 Air tank (when used)

4 Service valve

5 Moisture trap/ gauge / oiler combination (when used)

6 Hose reel (when used)

Sub-Zero Temperature Operating Instructions

For IMT rotary screw compressors (both shaft driven and hydraulically driven) sub-zero temperature operation is defined as operation of the compressor when the oil temperature is below 0º F. It is possible to operate an IMT rotary screw compressor when the ambient temperature is below 0º F, as long as the oil temperature is above 0° F. Follow these guidelines to protect the compressor:

1 MAINTENANCE REQUIREMENTS

If the IMT rotary screw compressor is expected to operate at temperatures below 0º F, the oil filter, coalescer, air filter, and oil should be changed before the compressor is run in sub-zero temperatures (ex: late fall, but this may vary by location and environment). Performing this maintenance will improve the performance of the system during sub-zero temperature operation. Use only IMT approved rotary screw compressor oils and filters.

2 STORAGE REQUIREMENTS

The IMT rotary screw compressor should be stored at or above 0º F. If the ambient temperature is below 0º F the vehicle should be stored inside, preferably in a heated environment. After moving the vehicle from the heated environment, the compressor system should be operated for 15 minutes before proceeding to a job site. During this time, the service valve must be slightly ajar such that the pressure gauge reads between 100 and 140 psi. This ensures that the oil temperature has had adequate time to come up to operating temperature, and that most of the water in the system has been removed. This will allow for approximately one hour of travel time before the oil cools to ambient temperature. If an extended driving time is expected, the operator may need to stop driving and run the system for 15 minutes every hour to ensure that the oil temperature does not cool to below 0º F. The operator should use his/her judgment when deciding what interval is needed between running the compressor to warm the oil. Lower ambient temperature will require more frequent warming of the compressor oil.

3 FAILURE TO FOLLOW MAINTENANCE AND STORAGE REQUIREMENTS

At temperatures below 0º F, failure to follow the guidelines may result overheating of the compressor due to the oil's inability to circulate through the compressor system. The lack of circulation leads to rapid warming of the compressor air end, and eventually the compressor air end will exceed the maximum operating temperature. If the system shuts down due to high temperature during sub-zero temperature operation, the oil will need to be warmed before restarting. This may require moving the vehicle to a heated location or waiting for the ambient temperature (and therefore the oil temperature) to exceed 0º F.

CAUTION

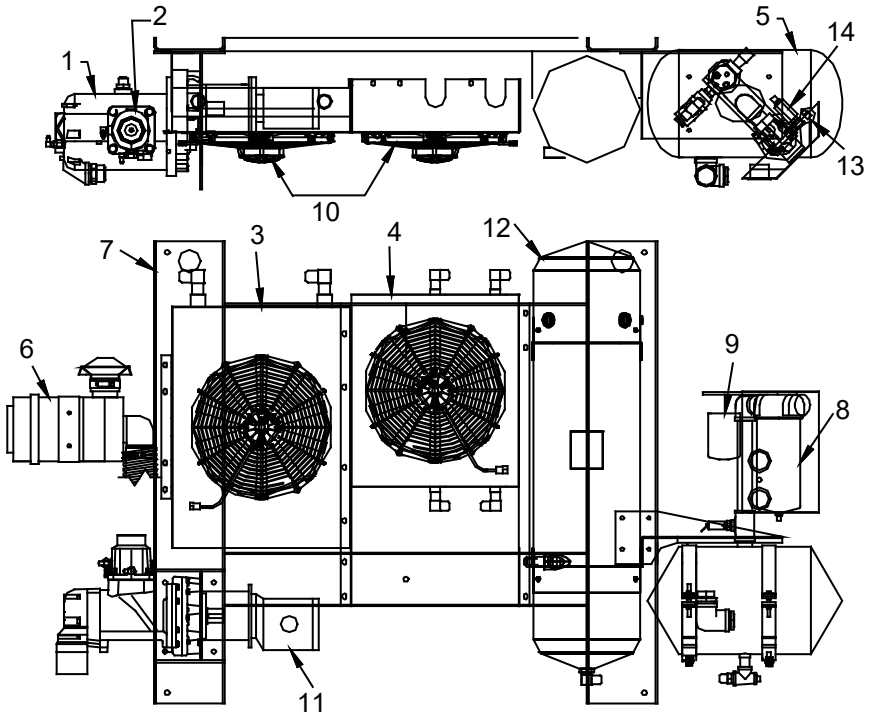
Failure to adhere to these guidelines and repeated running of the compressor to high temperature shutdown may result in permanent damage to the air end.

CHAPTER 7

Compressor Parts

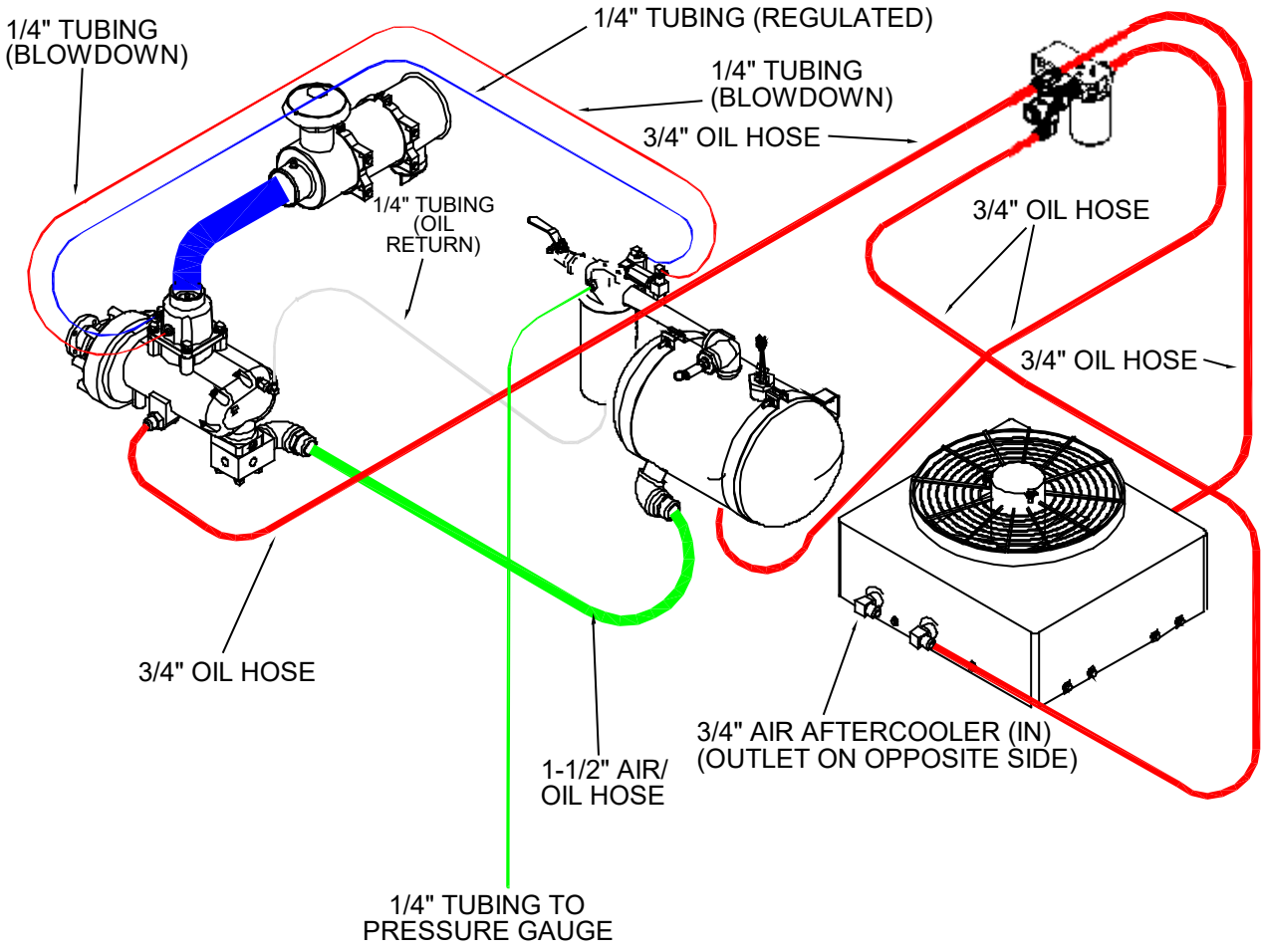
In This Chapter

Compressor Integral Components

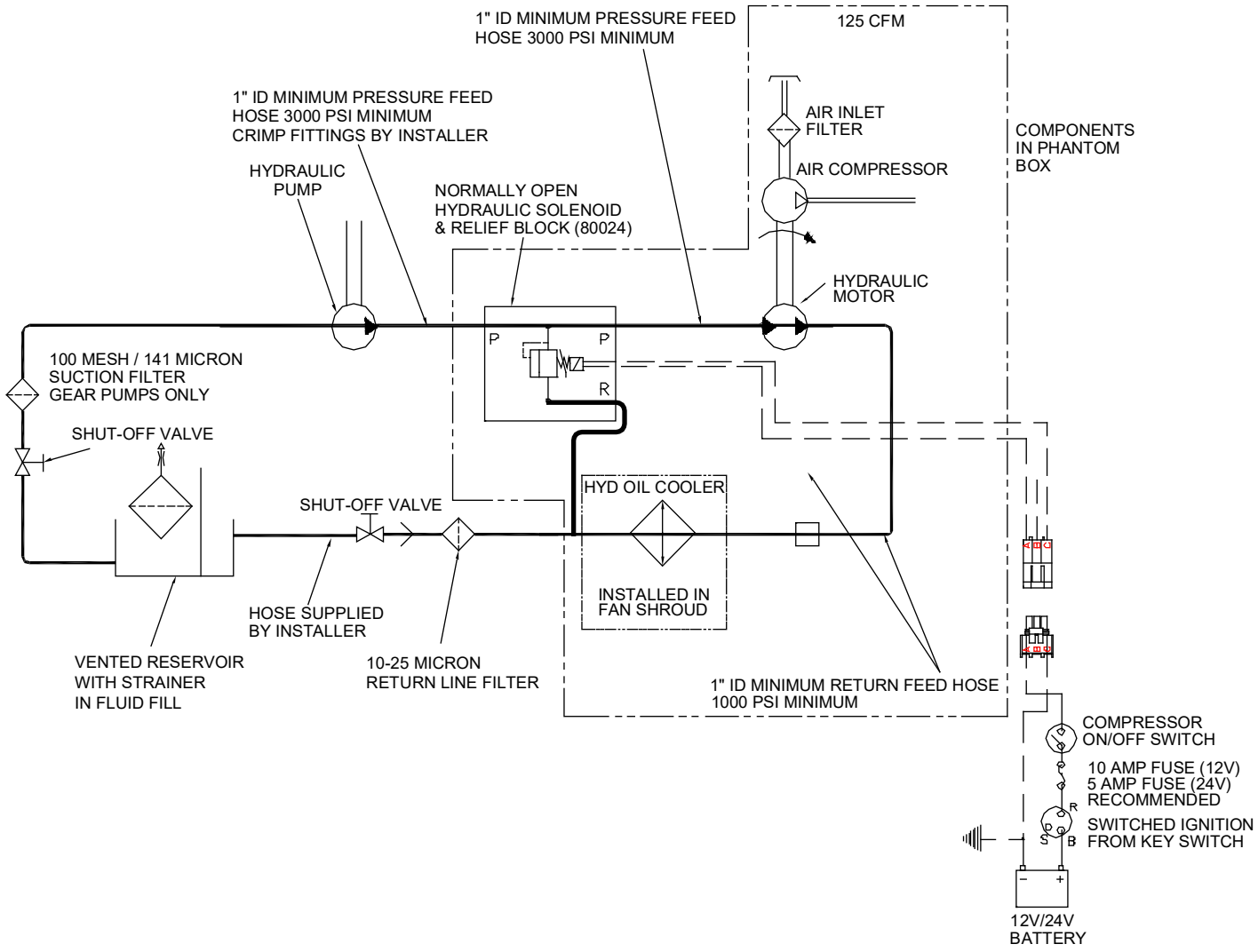


COMPRESSOR PARTS LIST				
ITEM	PART #	DESCRIPTION	DETAILS	QUANTITY
1.	301677-305	COMPRESSOR, AIR		1
2.	300036	VALVE, INLET CONTROL		1
3.	301992	COOLER, OIL	18.6 X 27	1
4.	301804	COOLER, OIL/AIR		1
5.	300225	SUMP, 12" DISCHARGE WITH PLATE BAFFLE		1
6.	302013	ASSEMBLY, AIR FILTER		1
7.	302003	FRAME		1
8.	301669	COALESCER, SPIN-ON ELEMENT		1
9.	300005-001	ELEMENT, OIL FILTER		1
10.	301921	FAN, ASSEMBLY WITH MOTOR & GRILL		1
11.	300724	MOTOR, HYDRAULIC	4.48 CIR SAE “B” 2	1
12.	70733413	TANK, AIR 22 GALLON VERTICAL		1
13.	300057	VALVE, REGULATOR	1/4	1
14.	301827	VALVE, BLOWDOWN	1/4 N.C.	1

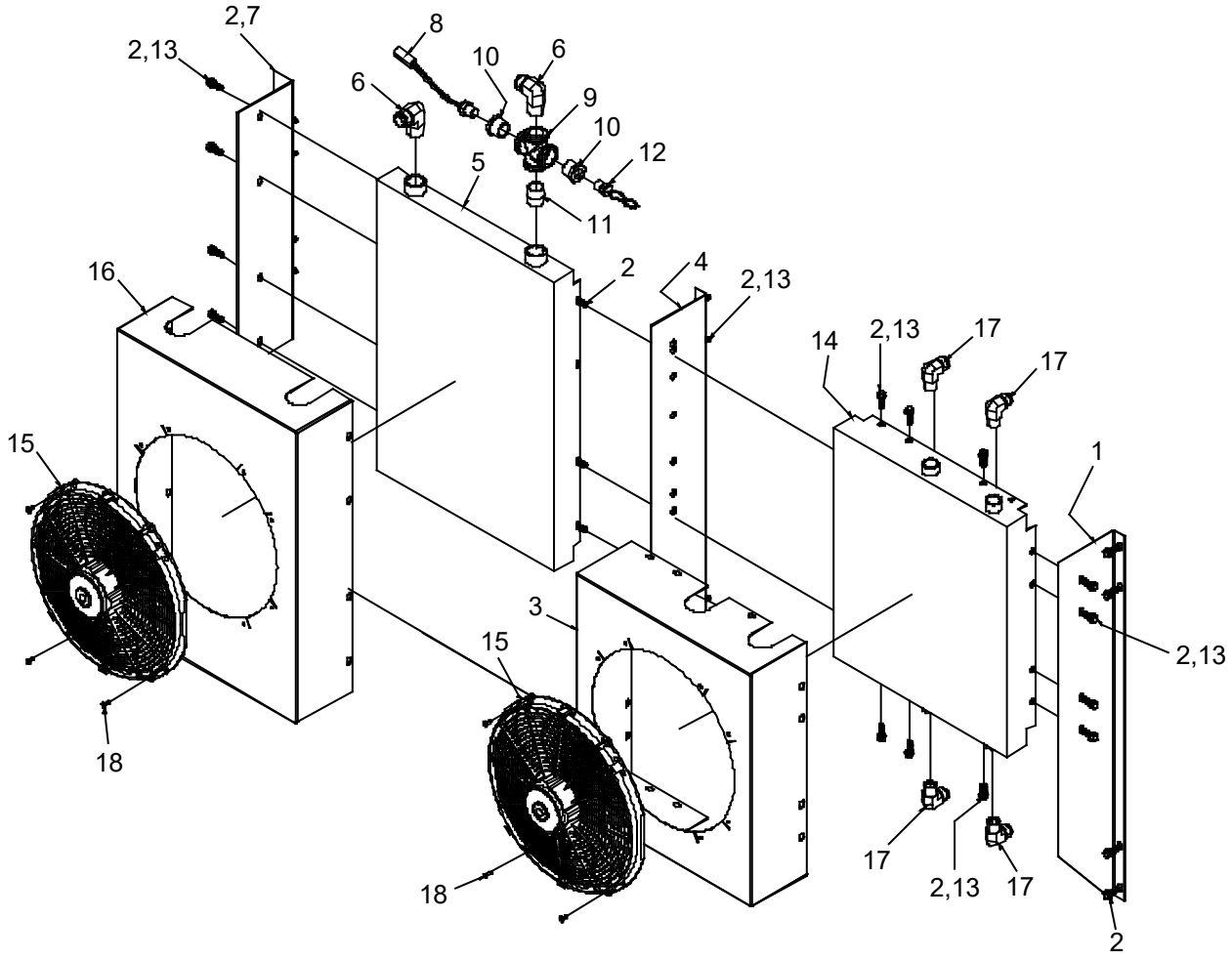
Compressor Air-Oil Schematic



Hydraulic Schematic



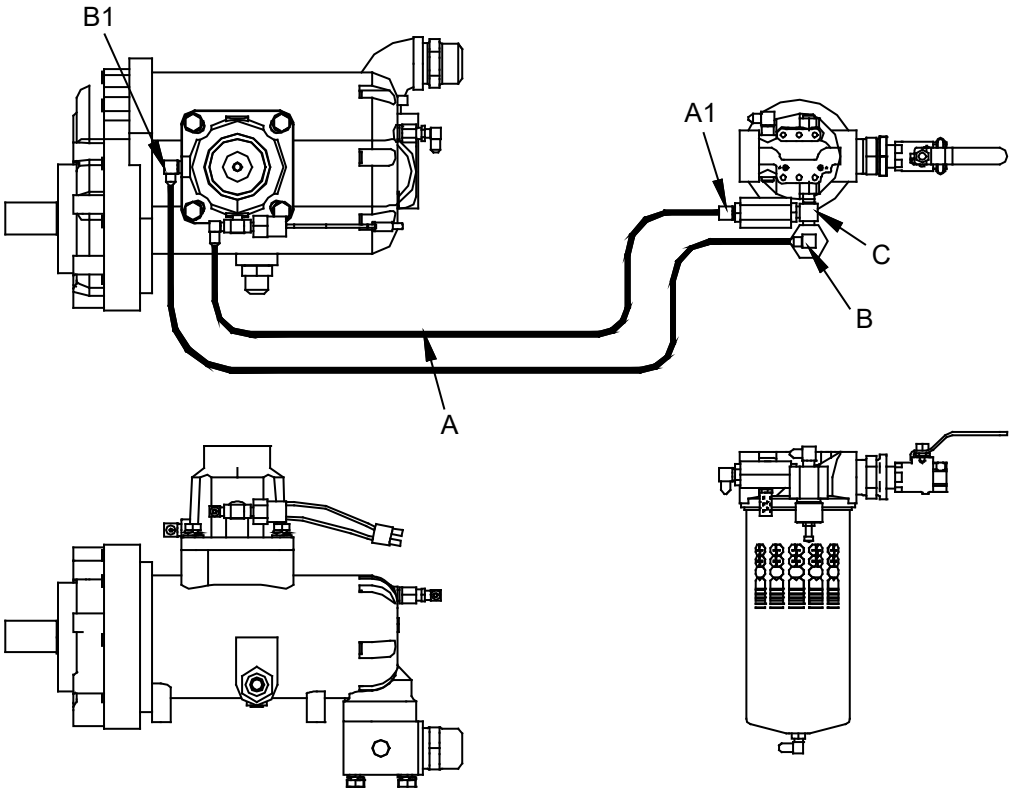
Oil Cooler



OIL COOLER SYSTEM PARTS				
ITEM	PART #	DESCRIPTION	DETAILS	QUANTITY
1.	302009	BRACKET, MOUNTING		1
2.	929705-100	BOLT, WHIZLOCK	GR5 5/16-18 X 1	29
3.	301813	SHROUD, OIL/AIR COOLER		1
4.	302008	BRACKET, HYD/COMBO MOUNTING		1
5.	301992	COOLER, OIL	18.6 X 27	1
6.	960216-100	ELBOW, HYDRAULIC	1 MJIC X 1 MNPT	2
7.	302005	BRACKET, OIL COOLER		1
8.	302865	SENSOR, TEMPERATURE	175 F NO W/WP CONN	1
9.	901315-040	CROSS, PIPE	1 GAL 150PSI	1
10.	907604-020	BUSHING, RED	1 X 1/2 GAL	2
11.	922216-000	NIPPLE, PIPE	1 X CLOSE GAL SCH80	1
12.	302899	SENSOR, TEMPERATURE	90 F NO W/WP CONN	1

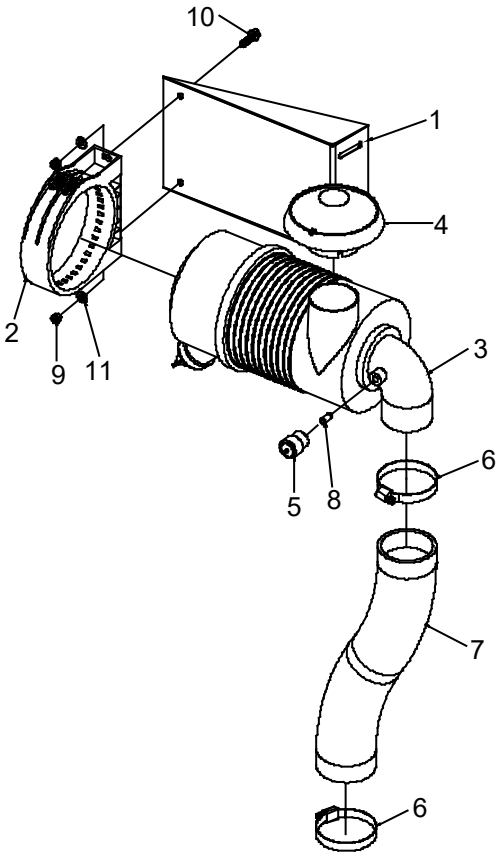
OIL COOLER SYSTEM PARTS				
ITEM	PART #	DESCRIPTION	DETAILS	QUANTITY
13.	925305-283	NUT, WHIZ LOCK	5/16-18	17
14.	301804	COOLER, OIL-AIR	18.6	1
15.	300989	FAN ASSEMBLY WITH MOTOR & GRILL		2
16.	302017	SHROUD, OIL COOLER	18.88 X 27.0	1
17.	960212-075	ELBOW	3/4 JIC X 3/4 MNPT	4
18.	943104-038	RIVET, POP	1/4 X 3/8 ALUMINUM	8

Hose Ports



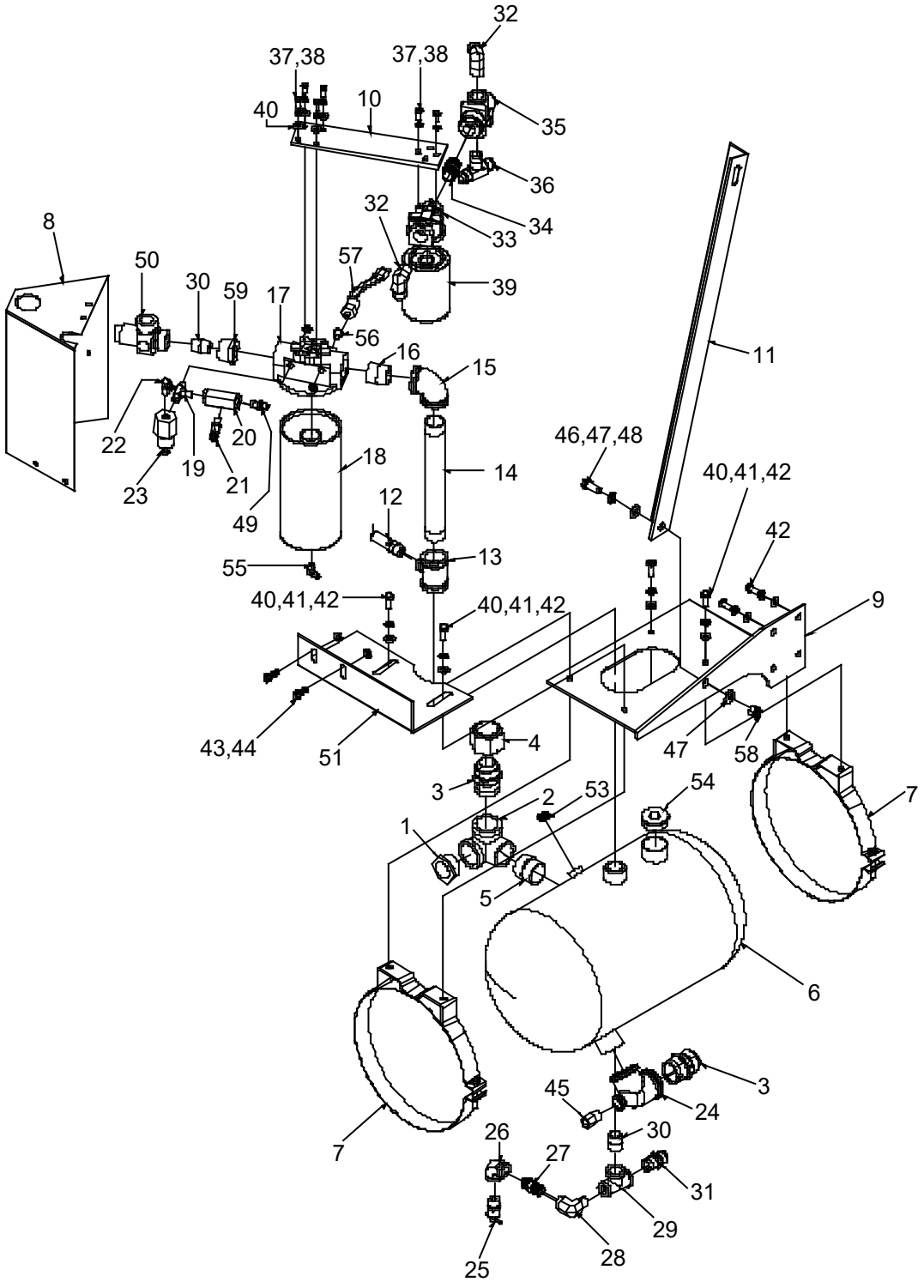
PORT	DESCRIPTION
A	Air signal supply, at shutdown only to A1
A1	Signal from "A" at shutdown to exhaust air from compressor system
B	Outlet regulated air pressure signal, present only when there is no demand for air. (i.e. Closed service valve or air pressure dead headed into a tool that is not being used.) Maximum pressure in this line is 50 PSIG.
B1	Air signal from "B" regulator outlet to compressor inlet valve regulating port. Air signal modulated air opening from open to closed when there is no demand for air.
C	System air pressure signal port to air pressure regulator inlet. Air pressure is present anytime there is air pressure in the system.

Compressor Air Inlet System



AIR INLET SYSTEM PARTS				
ITEM	PART #	DESCRIPTION	DETAILS	QUANTITY
1.	302018	BRACKET, AIR FILTER MOUTING		1
2.	302015	BAND, AIR FILTER MOUNTING		1
3.	302013	ASSEMBLY, AIR FILTER		1
4.	300031	CAP, AIR FILTER		1
5.	70048222	INDICATOR, AIR FILTER	25" H2O	1
6.	301786-300	CLAMP, AIR INLET	3"	2
7.	301785-300	HOSE, AIR INLET	3" ID	1.6 ft
8.	922202-000	NIPPLE, PIPE	1/8 X CLOSE GAL SCH80	1
9.	924305-166	NUT, NYLOC	GR5 5/16-18	2
10.	929705-125	BOLT, WHIZLOCK	GR5 5/16-18 X 1 1/4	2
11.	938205-071	WASHER, FLAT	GR8 5/16	2

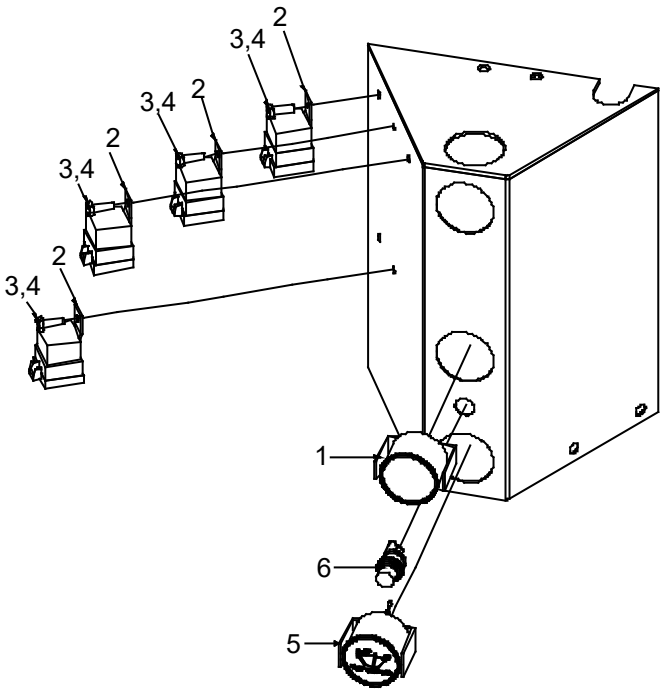
Compressor Discharge System



DISCHARGE SYSTEM PARTS				
ITEM	PART #	DESCRIPTION	DETAILS	QUANTITY
1.	300107	SIGHTGLASS, OIL LEVEL	1 1/2	1
2.	902615-060	ELBOW, PIPE SIDE OUT	1 1/2 GAL 150PSI	1
3.	72534409	CONNECTOR	1 1/2 MJIC X 1 1/2 MNPT	2
4.	301466-150	CAP, JIC	1 1/2 W/ HOLE	1
5.	702053251	NIPPLE, PIPE	1 1/2 X CLOSE GAL SCH80	1
6.	300225	SUMP, 12 in DISCHARGE WITH PLATE BAFFLE		1
7.	300234	BAND, SUMP MOUNTING 12		2
8.	302010	PANEL, GAUGE-COALESCER GUARD		1
9.	302007	BRACKET, TANK MOUNTING		1
10.	302012	BRACKET, OIL FILTER MOUNTING		1
11.	302289	BRACKET, SUMP TANK SUPPORT		1
12.	300023-200	VALVE, RELIEF	1/2 NPT 200#	1
13.	902205-052	TEE, PIPE REDUCER	1 1/4 X 1 1/4 X 1/2 GAL 150PSI	1
14.	922120-110	NIPPLE, PIPE	1 1/4 X 11 GAL SCH40	1
15.	901515-050	ELBOW, PIPE	1 1/4 GAL 150PSI	1
16.	922220-000	NIPPLE, PIPE	1 1/4 X CLOSE GAL SCH80	1
17.	300331	HEAD, COALESCER		1
18.	301669	COALESCER, SPIN-ON LONG IMT		1
19.	977704-0404	TEE	1/4 MNPT	1
20.	73540110	VALVE, BLOWDOWN	1/4 N.C.	1
21.	60124689	MUFFLER, EXHAUST	1/4	1
22.	960204-025	ELBOW, HYDRAULIC	1/4 MJIC X 1/4 MNPT	1
23.	73540109	VALVE, REGULATOR	1/4	1
24.	902206-026	TEE, PIPE REDUCER	1 1/2 X 1/2 X 1 1/2 GAL 150PSI	1
25.	73540114	VALVE, DRAIN COCK	1/2" MPT	1
26.	977608-050	ELBOW, HYD	1/2 FNPT	1
27.	960408-050	NIPPLE, HYD	HEX 1/2	1
28.	960708-050	ELBOW, HYD	1/2 FNPT X MNPT STREET	1
29.	902203-023	TEE, PIPE REDUCER	3/4 X 1/2 X 3/4 GAL 150PSI	1
30.	922212-000	NIPPLE, PIPE	3/4 X CLOSE GAL SCH80	2
31.	960112-075	CONNECTOR	3/4 MJIC X 3/4 MNPT	1
32.	960212-075	ELBOW, HYD	3/4 MJIC X 3/4 MNPT	2
33.	300599	HEAD, OIL FILTER	3/4 FNPT 15-PSI BY PASS	1
34.	960412-075	NIPPLE, HYDRAULIC	HEX 3/4	1
35.	301662	VALVE, THERMAL	3/4 3-PORT	1
36.	961712-075	TEE, MBR	3/4 JIC X 3/4 JIC X 3/4 MNPT	1
37.	938004-062	WASHER, LOC	GR5 1/4	6
38.	929104-075	BOLT, HEX	GR5 1/4-20 X 3/4	6
39.	300005-001	ELEMENT, OIL FILTER IMT		1
40.	72063003	WASHER, FLAT	GR8 3/8	12
41.	72063225	WASHER, LOC	GR8 3/8	8
42.	72060046	BOLT, HEX	GR8 3/8-16 X 1	8
43.	72062109	NUT, WHIZ LOCK	5/16-18	2
44.	929705-100	BOLT, WHIZLOCK	GR5 5/16-18 X 1	2
45.	302087	BULBWELL,	5/8 UNF X 1/2 NPT	1

DISCHARGE SYSTEM PARTS				
ITEM	PART #	DESCRIPTION	DETAILS	QUANTITY
46.	929808-125	BOLT, HEX	GR8 1/2-13 X 1 1/4	1
47.	938208-112	WASHER, FLAT	GR8 1/2	2
48.	937808-125	WASHER, LOCK	GR8 1/2	1
49.	960104-025	CONNECTOR	1/4 MJIC X 1/4 MNPT	1
50.	300845	VALVE, MINIMUM PRESS	3/4	1
51.	302287	BRACKET, COALESER SUPPORT		1
52.	902915-010	PLUG, PIPE	1/4 RECESSED ZINC	2
53.	72053404	PLUG, PIPE	1/2 RECESSED ZINC	1
54.	984724-188	PLUG,	24 SAE(1.875-12)	1
55.	960204-012	ELBOW,	1/4 JIC X 1/8 MNPT	1
56.	907600-005	BUSHING, REDUCER	1/4 X 1/8 GAL	1
57.	301422	SWITCH, PRESS	NO 20 PSI	1
58.	925508-262	NUT, NYLOC	GR8 1/2-13	1
59.	907605-030	BUSHING, REDUCER	1 1/4 X 3/4 GAL	1
REV 20090525				

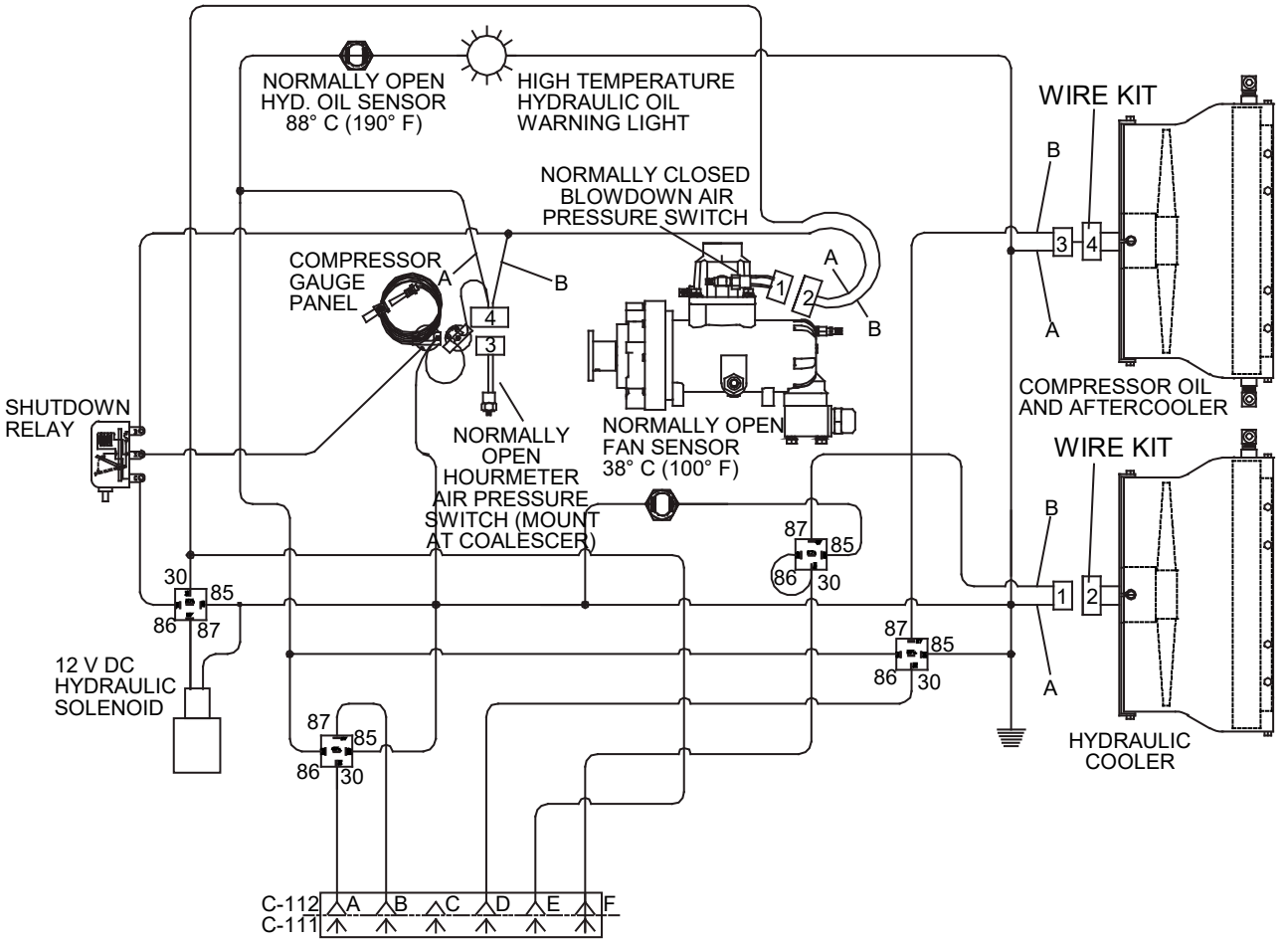
Compressor Electrical System



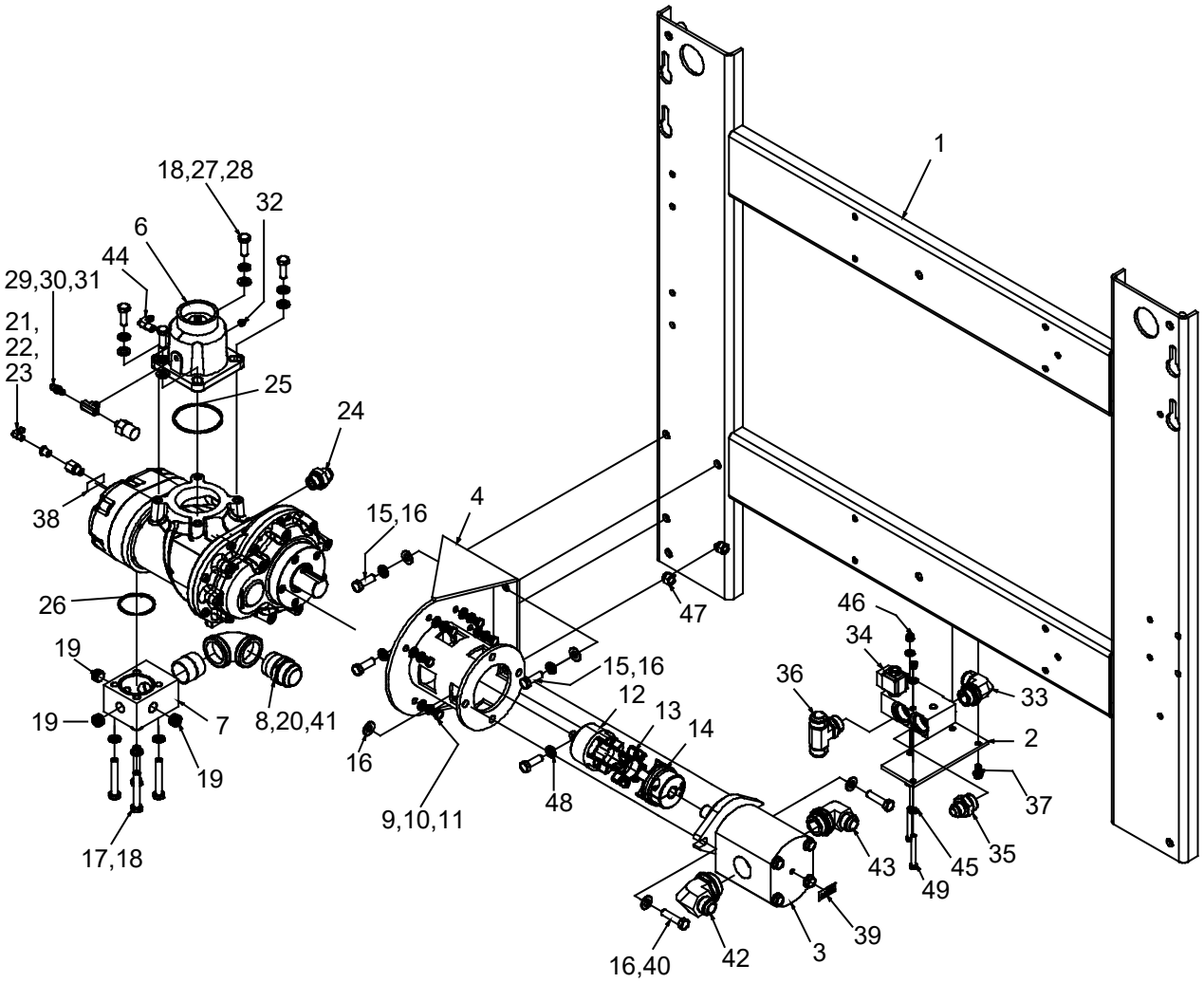
COMPRESSOR ELECTRICAL BOX PARTS				
ITEM	PART #	DESCRIPTION	DETAILS	QUANTITY
1.	300074	GAUGE, HOURMETER		1
2.	301755-012	RELAY, POWER	12VDC	4
3.	929104-075	BOLT, HEX	GR5 1/4-20 X 3/4	4
4.	924304-145	NUT, NYLOC	GR5 1/4-20	4
5.	302139-004	SWITCHGAUGE, TEMPERATURE		1
6.	302027	INDICATOR, RED LIGHT	12V	1
REF	60225-999	KIT, LATCHING RELAY		1
REF	302016	WIRE HARNESS (NOT SHOWN)		1
REV 20090525				

Wiring Diagram

FITTINGS	
1	METRIPACK 280 FEMALE CONNECTOR #15300027
2	METRIPACK 280 MALE CONNECTOR #15300002
3	WEATHERPACK SHROUD #12010973
4	WEATHERPACK TOWER #12015792
	ALL RELAYS - HELLA #66211
	ALL RELAYS - SOCKETS - METRIPACK #630 WEATHERPROOF RELAY CONNECTOR. PACKARD ASSEMBLY LESS TERMINALS #12065686.



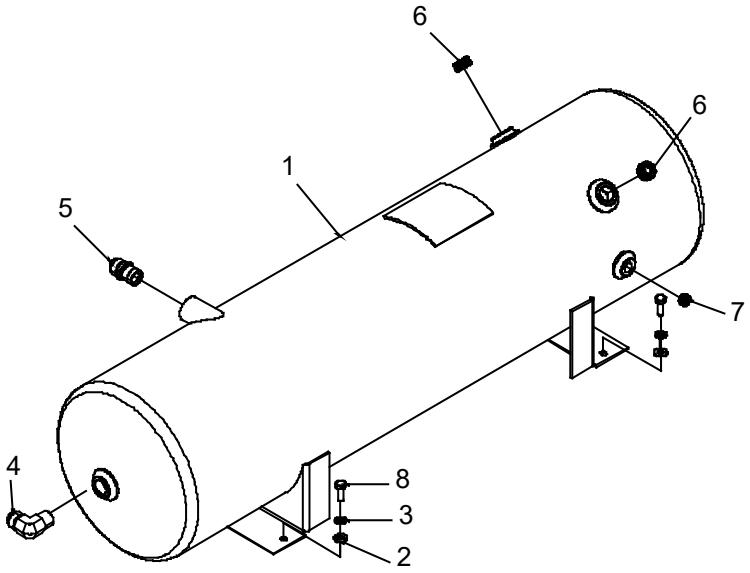
Compressor & Mounting System



COMPRESSOR PARTS & MOUNTING SYSTEM				
ITEM	PART #	DESCRIPTION	DETAILS	QUANTITY
1.	302003	FRAME		1
2.	302045	BRACKET, HYDRAULIC VALVE BLOCK MOUNTING		1
3.	300724	MOTOR, HYDRAULIC		1
4.	302006	BRACKET, COMPRESSOR MOUNTING		1
5.	301677-305	AIR END		1
6.	300036	VALVE, INLET CONTROL		1
7.	301703	FLANGE, DISCHARGE		1
8.	960124-150	CONNECTOR	1 1/2 MJIC X 1 1/2 MNPT	1
9.	929210-300	BOLT, HEX	10MM X 30MM GR 10.9	7
10.	938810-220	WASHER, LOCK	10MM	7
11.	938910-200	WASHER, FLAT	10MM	7

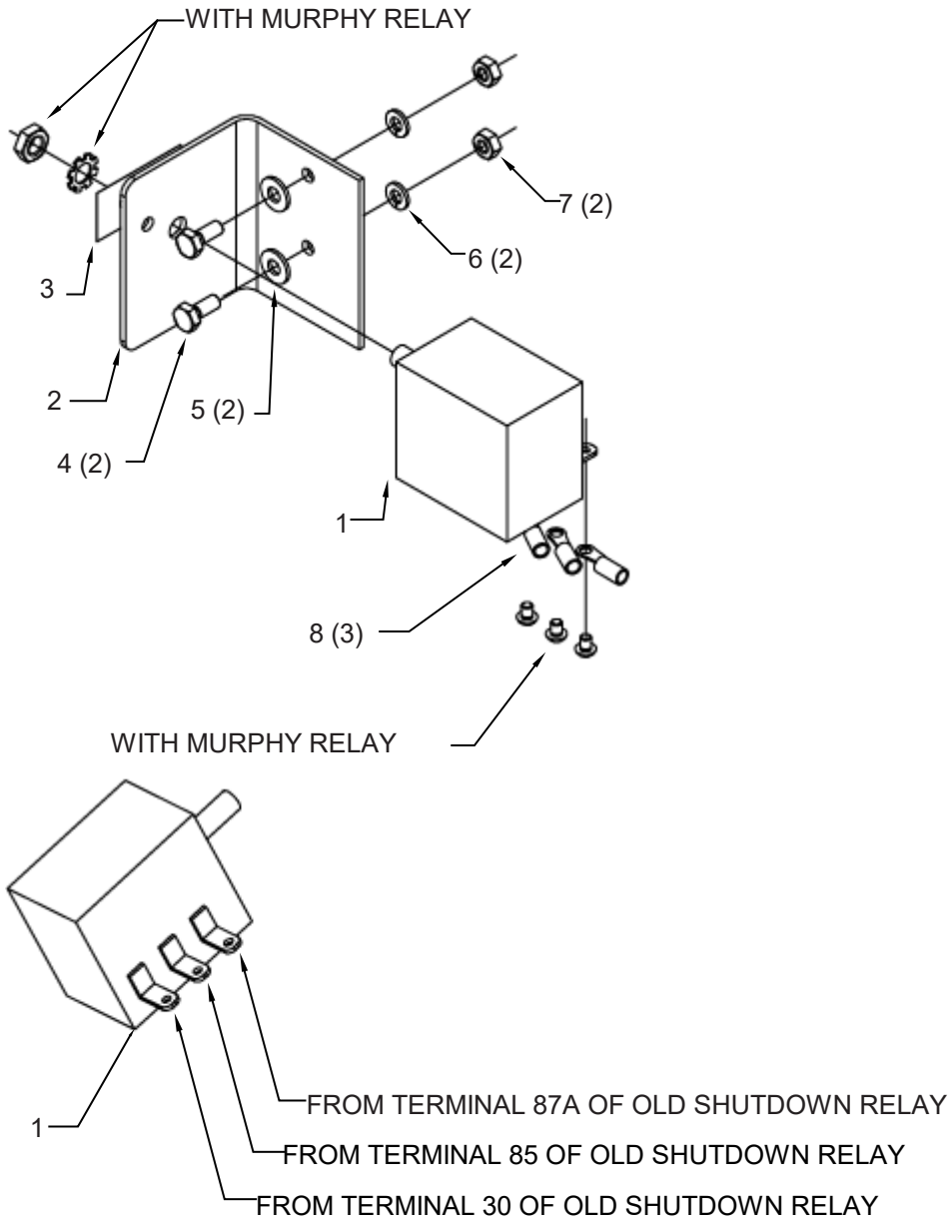
COMPRESSOR PARTS & MOUNTING SYSTEM				
ITEM	PART #	DESCRIPTION	DETAILS	QUANTITY
12.	302132	HUB, HYDRAULIC COUPLING		1
13.	302134	SPIDER, HYDRAULIC COUPLING		1
14.	302133	HUB, HYD COUPLING		1
15.	929808-150	BOLT, HEX	GR8 1/2-13 X 1 1/2	4
16.	938208-112	WASHER, FLAT	GR8 1/2	8
17.	929212-800	BOLT, HEX	12MM X 80MM GR 10.9	4
18.	938812-250	WASHER, LOCK	12MM	8
19.	902915-020	PLUG, PIPE	1/2 RECESSED ZINC	3
20.	922224-000	NIPPLE, PIPE	1 1/2 X CLOSE GAL SCH80	1
21.	970804-025	ADAPTER	1/4 MBSPP X 1/4 FNPT	1
22.	907600-005	BUSHING, RED	1/4 X 1/8 GAL	1
23.	300721	VALVE, CHECK ELBOW	1/8NPTx1/4JIC	1
24.	973112-075	CONNECTOR	3/4 JIC X 3/4 BSPP	1
25.	926102-238	O-RING, INLET VALVE		1
26.	926102-145	O-RING, DISCHARGE BLOCK		1
27.	938912-200	WASHER, FLAT	12MM	4
28.	929212-350	BOLT, HEX	12MM X 35MM GR 10.9	4
29.	960104-012	CONNECTOR	1/4 MJIC X 1/8 MNPT	1
30.	961902-012	TEE	MB 1/8 F X 1/8 F X 1/8 M	1
31.	301421	SWITCH, PRESSURE NORMALLY CLOSED		1
32.	902915-005	PLUG, PIPE	1/8 RECESSED ZINC	1
33.	970416-131	ELBOW, HYDRAULIC	1 MJIC X -16 MSAE	1
34.	80024	KIT, HYDRAULIC VALVE BLOCK	1" SAE	1
	302024	COIL, HYDRAULIC SOLENOID	12VDC NORMALLY OPEN	1
	302025	VALVE, HYDRAULIC SOLENOID NORMALLY OPEN	12VDC	1
	302026	VALVE, CARTRIDGE RELIEF		1
35.	970512-131	CONNECTOR	3/4 MJIC X -16 MSAE	1
36.	976516-131	TEE	1 JIC X 16 SAE X 1 JIC	1
37.	929705-075	BOLT, WHIZLOCK	GR5 5/16-18 X 3/4	2
38.	301594	DECAL, TEMPERATURE COMPRESSOR- 250 F		1
39.	301593	DECAL, TEMP. HYDRAULIC 140 F30		1
40.	929808-200	BOLT, HEX	GR8 1/2-13 X 2	2
41.	901515-060	ELBOW, PIPE	1 1/2 GAL 150PSI	1
42.	970416-188	ELBOW, HYDRAULIC	1 MJIC X -24 MSAE	1
43.	970416-162	ELBOW, HYDRAULIC	1 MJIC X -20 MSAE	1
44.	960204-025M	ELBOW, HYDRAULIC	1/4 MJIC X 1/4 MNPT W/HOLE	1
45.	938605-071	WASHER, FLAT	GR5 5/16	4
46.	925505-273	NUT, NYLOC	GR8 5/16-18	2
47.	925508-262	NUT, NYLOC	GR8 1/2-13	2
48.	937808-125	WASHER, LOC	GR8 1/2	4
49.	929105-275	BOLT, HEX	GR5 5/16-18 X 2 3/4	2
REV 20090526				

Air Tank



AIR TANK PARTS				
ITEM	PART #	DESCRIPTION	DETAILS	QUANTITY
1.	70733413	TANK, AIR 22 GALLON VERTICAL	22-GAL VERTICAL	1
2.	938206-071	WASHER	FLAT GR8 3/8	4
3.	937806-094	WASHER	LOCK GR8 3/8	4
4.	960212-075	ELBOW	3/4 JIC X 3/4 MNPT	1
5.	960112-075	CONNECTOR	3/4 MJIC X 3/4 MNPT	2
6.	902915-030	PLUG, PIPE	3/4 RECESSED ZINC	2
7.	902915-015	PLUG, PIPE	3/8 RECESSED ZINC	1
8.	929806-100	BOLT, HEX	GR8 3/8-16 X 1	4
REV 20090526				

Murphy Latching Relay - Retrofit Kit (99903400)



99903400 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	300079	SHUTDOWN SWITCH 117	1
2.	60123836	MOUNTING BRACKET	1
3.	70396134	DECAL-HI-TEMP SHUTDOWN	1
4.	72060002	CAP SCR 1/4-20 X 3/4	2
5.	72063001	WASHER 1/4 FLAT	2
6.	72063049	WASHER 1/4 LOCK	2
7.	72062104	NUT 1/4-20 HEX	2
8.	77040000	RING TERMINAL	3
9.	77040048	BUTT TERMINAL (NS)	3
10.	70146065	HEAT SHRINK .250 DUAL WALL (NS)	2
11.	89044235	WIRE-14 GA WHITE STRD (NS)	3FT
12.	76393038	GROMMET - SBR .44 (NS)	1
13.	99903401	MURPHY 177 RELAY INSTRUCTIONS	1
14.	99903402	WIRING SCHEMATIC	1

Wiring Instructions - Murphy Latching Relay Kit (99903401)

This kit contains the parts and instructions needed to install the 117 Murphy latching relay on IMT Commander IV models with rotary screw air compressors. The Murphy latching relay replaces the compressor shutdown relay on all three wiring revisions.

1 Find the shut down relay, which is present on all three wiring revisions. The relay can be found by locating the Murphy temperature switch gauge. Look at the back of the switchgauge and find the black wire; this wire will connect to terminal 85 of the shut down relay. If the black wire can not be followed visually, a continuity test can be performed to find the relay. One at a time, remove the relay from the base and check continuity from terminal 85 to the black wire on the switch gauge.

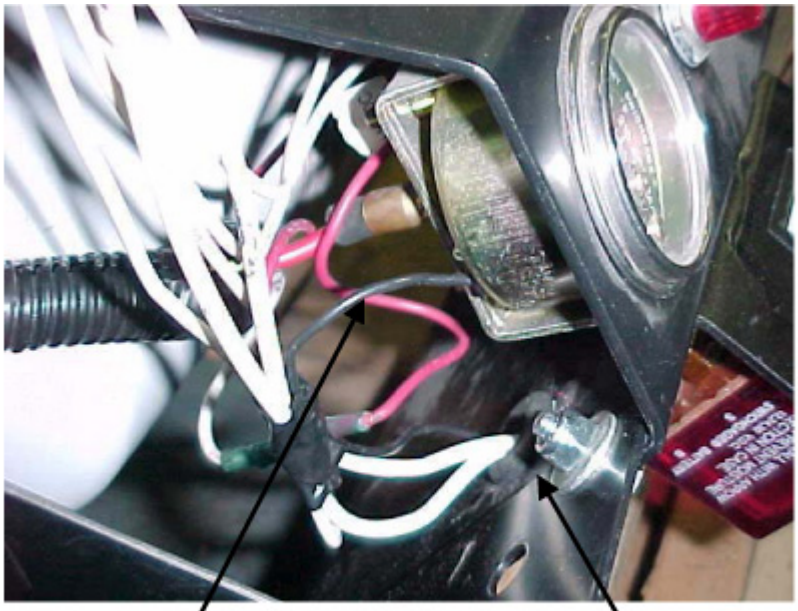


Figure 1

2 Place and mount the bracket that will hold the Murphy latching relay. The bracket can be placed as shown in the picture below. Use the ¼" bolts, washers and nuts supplied in the kit to attach the bracket to the compressor control panel. A grommet is supplied to pass the wires through the panel to the Murphy relay. See figure 1.

3 Replace the shutdown relay with the Murphy 117 latching relay supplied in the kit. Schematic 701029-006 shows how the wires attach to the Murphy relay. The wires from the old shutdown relay may have to be lengthened to be connected to the Murphy relay at its mounting locations. If the relay wires must be lengthened, use the supplied butt connectors, wire, and heat shrink. Use the #10 terminal rings supplied in the kit along with the #10 screws supplied with the Murphy relay to attach the three wires to the relay. The wire that was connected to terminal 30 of the shutdown relay will now connect to the “B” terminal of the Murphy relay. The wire that was connected to terminal 85 of the shutdown relay will now connect to the “S” terminal of the Murphy relay. Finally, the wire that was connected to terminal 87A of the shutdown relay will now connect to the “C” terminal of the Murphy relay.

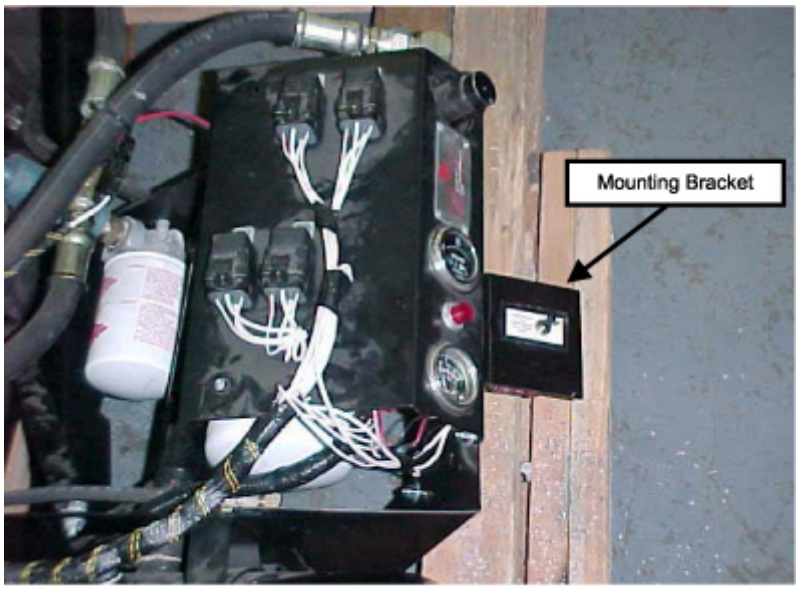


Figure 2

4 Place the decal supplied in the kit in the appropriate place (see Figure 2). Next, mount the Murphy relay into the bracket and attach with the supplied washer and nut.

5 Installation of the Murphy latching relay is complete. Be aware that if the compressor shuts down due to temperature, the reset button on the latching relay must be pushed to restart the compressor.

6 The system can be tested by jumping across one of the two silver posts on the front of the Murphy temperature gauge to the chrome bezel. When the contact is shorted across, the latching relay will trip and the compressor will stop running. Reset the latching relay by pushing the button in. The compressor will resume normal running after completing the blowdown cycle.

Figure 3

Jump across the gauge bezel to one of these contacts to test the latching relay.