

**BOSS 80100  
PTO AIR COMPRESSOR  
OPERATORS, INSTALLATIONS, AND  
PARTS MANUAL**

# OPERATORS AND PARTS MANUAL

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## GENERAL ARRANGEMENT

BOSS Underdeck PTO Compressors are shipped in kit form for field installation. These kits include:

1. Rotary Screw Compressor and Mounting Bracket.
2. Oil Sump with Mounting Brackets.
3. Spin-on Coalescer/Air Manifold Assembly.
4. Compressor Oil Cooler.
5. Air Inlet Filtration System.
6. Hoses and Fittings.
7. All Necessary Safety and Informational Decals.
8. Wiring Harness.
9. Driveshaft Components
10. Parts, Service, Installation, and Maintenance Manual.

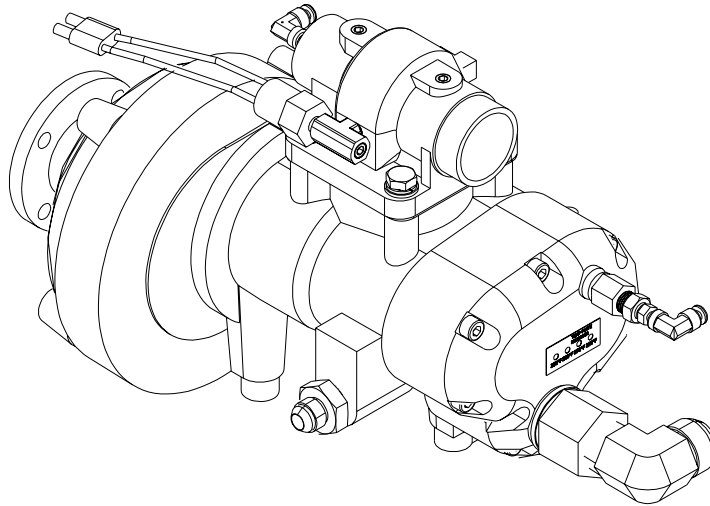
BOSS offers factory installation by qualified technicians, as well as a nationwide network of authorized distributors for field installations, parts and service.

# SPECIFICATIONS

## BOSS INDUSTRIES 80100-8G UBI COMPRESSOR

<b>DELIVERY @ 110 PSIG</b>	CFM	35	45	55	65	75	85
Input Speed RPM to Compressor	RPM	1110	1395	1685	1945	2250	2500
<b>Components - Compressor System</b>	(Overall Dimensions)						
Compressor / Air Inlet Assy.	10" W x 11" H x 14" L						
Receiver / Sump (TYP.)	10" Dia. x 20" L						
Spin - On Element (TYP.)	5" Dia x 13" H						
Remote Cooler / Fan Assembly (TYP.)	18" W x 10" H x 23" W						
Weight (dry) (TYP.)	300 lbs.						
Fluid Capacity (SYS.) (TYP.)	2.50 Gallons						

**PTO Drive Requirements:** Engine rotation on PTO. Clockwise rotation looking at compressor shaft.



W8GISO

R.R.M. 9/6/02

**Typical Applications:**

- Allison automatic transmission using hot shift PTO's with engine rotation.
- Manual transmissions using Chelsea 442 series PTO's with adapter gear assemblies to get the required engine rotation.

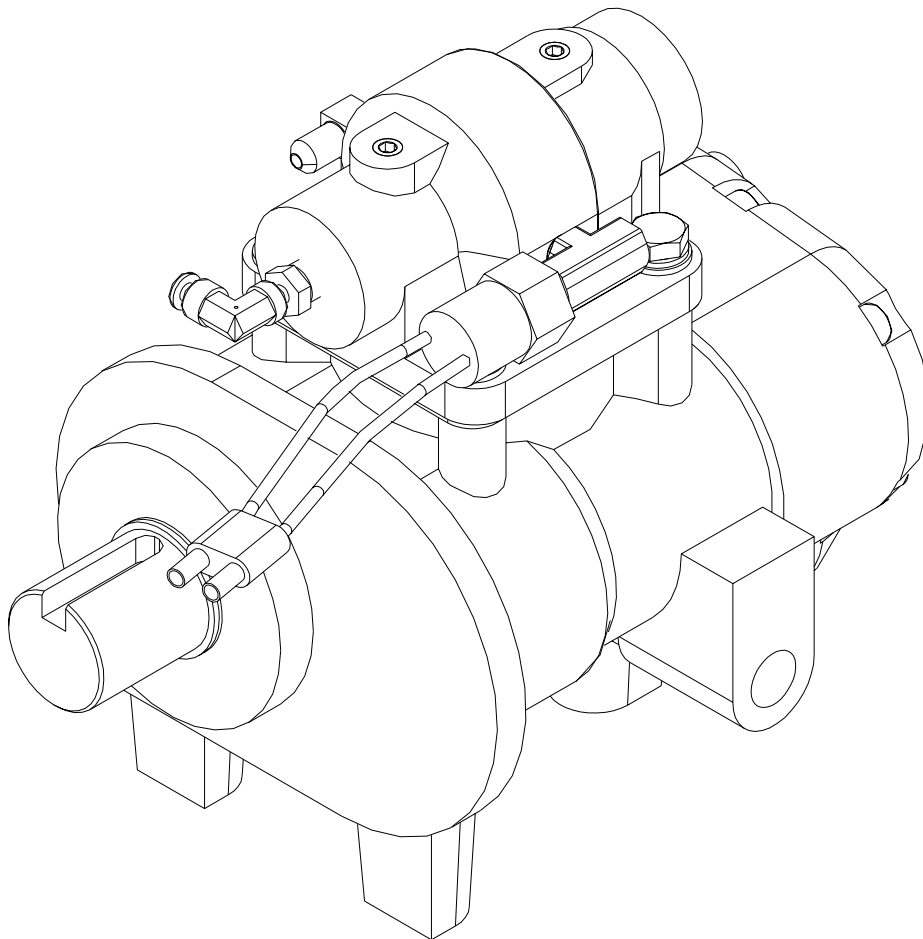
Typical Installation

## SPECIFICATIONS

### BOSS INDUSTRIES 80100-9D UBI COMPRESSOR

<b>DELIVERY @ 110 PSIG</b>	CFM	30	35	40	45
Input Speed RPM to Compressor	RPM	1700	1950	2200	2450
<b>Components - Compressor System</b>	(Overall Dimensions)				
Compressor / Air Inlet Assy.	11" W x 11" H x 14" L				

**PTO Drive Requirements:** Opposite engine rotation on PTO. Counter-clockwise rotation looking at the compressor shaft.



301702 VIEW

R.R.M. 9/6/02

**Typical Applications:**

- Ford 4R100 automatic transmissions using Chelsea 242 series hot shift PTO.
- Manual transmissions using Chelsea 442 series PTO's to get the required opposite engine rotation.

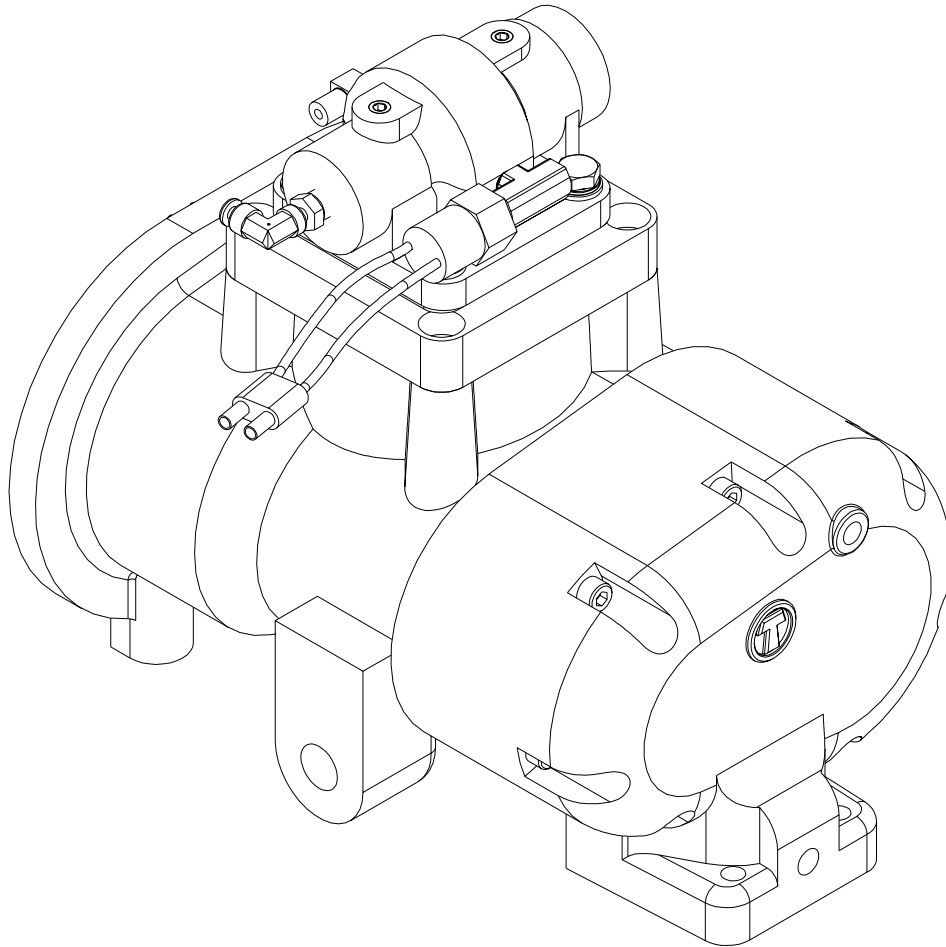
Typical Installation

## SPECIFICATIONS

### BOSS INDUSTRIES 80100-10D UBI COMPRESSOR

<b>DELIVERY @ 110 PSIG</b>	CFM	50	55	60	65	70
Input Speed RPM to Compressor	RPM	1825	2000	2190	2370	2500
<b>Components - Compressor System</b>	(Overall Dimensions)					
Compressor / Air Inlet Assy.	11" W x 12" H x 16" L					

**PTO Drive Requirements:** Opposite engine rotation on PTO. Counter-clockwise rotation looking at the compressor shaft.



W10DISO

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**Typical Applications:**

- Ford 4R100 automatic transmissions using Chelsea 242 series hot shift PTO.
- Manual transmissions using Chelsea 442 series PTO's to get the required opposite engine rotation.

Typical Installation

## SAFETY

### WARNING

**ALL UNITS ARE SHIPPED WITH A DETAILED OPERATORS AND PARTS MANUAL. THIS MANUAL CONTAINS VITAL INFORMATION FOR THE SAFE USE AND EFFICIENT OPERATION OF THIS UNIT. CAREFULLY READ THE OPERATORS MANUAL BEFORE STARTING THE UNIT. FAILURE TO ADHERE TO THE INSTRUCTIONS COULD RESULT IN SERIOUS BODILY INJURY OR PROPERTY DAMAGE.**

### 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. Therefore with your experience and common sense, you are in a position to ensure your safety. Lack of attention to safety can result in: accidents, personal injury, reduction of efficiency and worst of all - Loss of Life. Watch for safety hazards. 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 machine is operating.

### DANGER

**CHECK THE COMPRESSOR SUMP OIL LEVEL ONLY WHEN THE COMPRESSOR IS NOT OPERATING AND SYSTEM IS COMPLETELY RELIEVED OF PRESSURE. OPEN SERVICE VALVE TO ENSURE RELIEF OF SYSTEM AIR PRESSURE WHEN PERFORMING MAINTENANCE ON COMPRESSOR AIR/OIL SYSTEM. FAILURE TO COMPLY WITH THIS WARNING MAY CAUSE DAMAGE TO PROPERTY AND SERIOUS BODILY HARM.**

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.

## **SAFETY**

Do not install a shut-off valve between the compressor and compressor oil sump.

### **DANGER**

**DO NOT USE BOSS INDUSTRIES 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.**

**BOSS INDUSTRIES 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 BOSS INDUSTRIES COMPRESSORS USED TO SUPPLY BREATHING AIR.**

Do not disconnect or bypass safety circuit system.

Do not install safety devices other than authorized BOSS INDUSTRIES replacement devices.

Close all openings and replace all covers and guards before operating compressor unit.

Tools, rags, or loose parts must not be left 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.

BOSS INDUSTRIES 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.

## SAFETY

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. (Figures 1 through 6.)

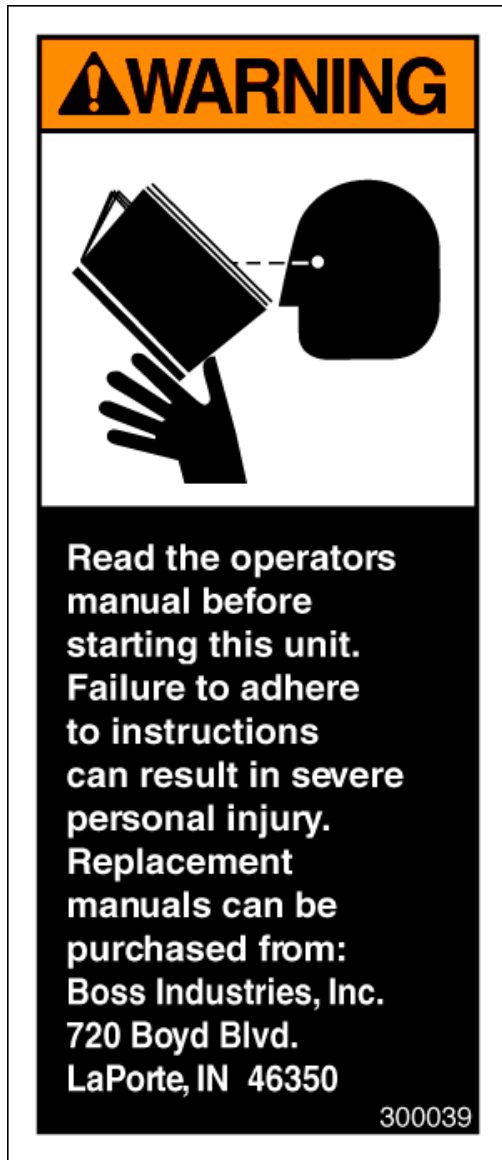


Figure 1. To be placed on visor or dash near start-up procedure decal.  
P/N 301474

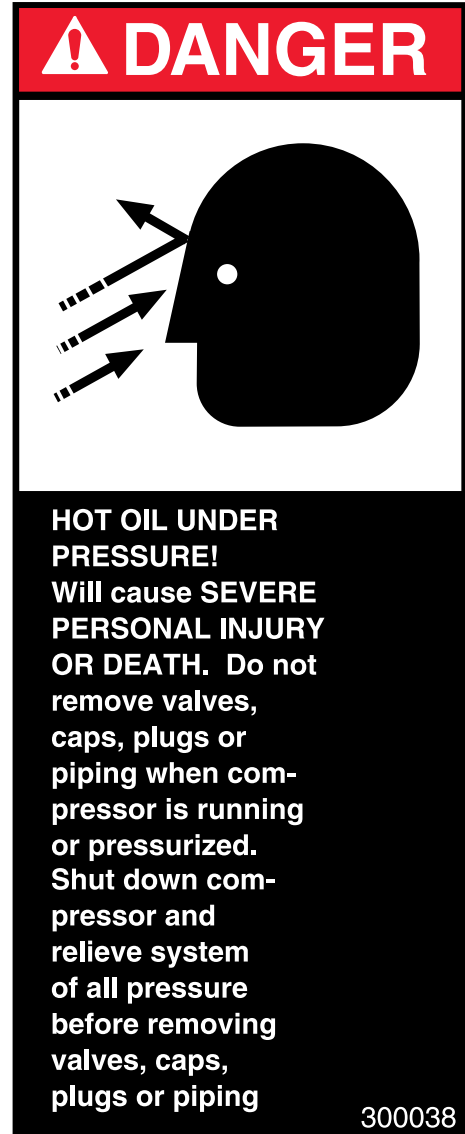


Figure 2. To be placed on body near oil sump filler cap.

## SAFETY



Figure 3. To be placed on body near air service valve.

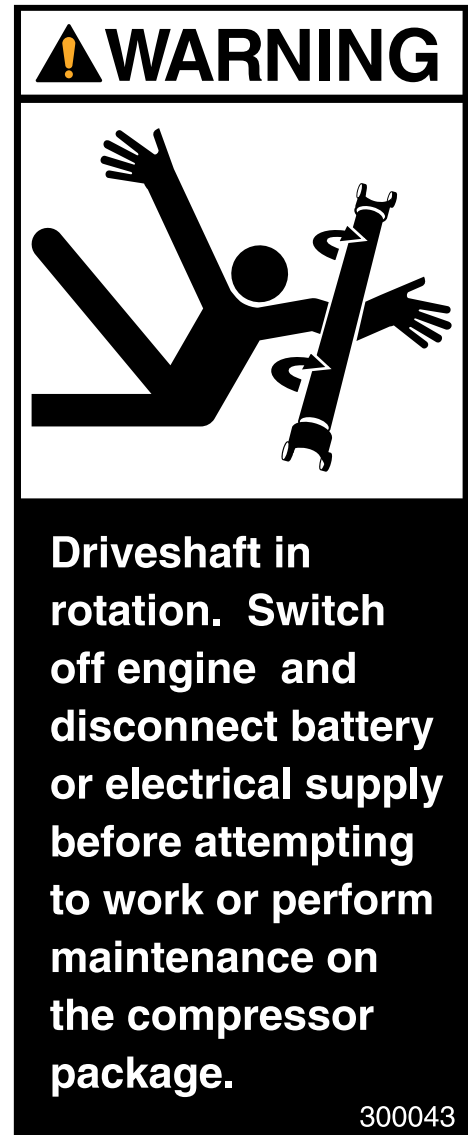


Figure 4. To be placed on body near compressor mounting foot.

# SAFETY

**⚠ WARNING**



**Do not  
operate  
without  
fan guard  
in place.**

300041

**⚠ WARNING**



**Connect air hoses only  
in full compliance  
with OSHA Standard 29  
CFR 1926:(b)(7)  
The required safety  
devices should be  
tested in accordance  
with their manufacturer's  
recommendations  
to verify that they  
reduce pressure in  
case of hose failure  
and will not nuisance  
trip with the hose  
and tool combinations  
in use.**

300042

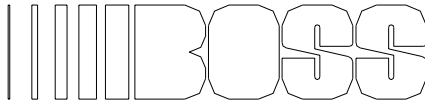
**SAFETY**

**COMPRESSOR FLUID**

USE AUTOMATIC TRANSMISSION FLUID  
DEXRON OR EQUIVALENT.

1. CHECK FLUID LEVEL WITH TRUCK OFF AND PARKED ON LEVEL GROUND BEFORE STARTING COMPRESSOR.
2. ADD FLUID IF NONE IS SHOWING IN SIGHTGLASS.
3. DO NOT FILL ABOVE LINE ON SIGHTGLASS

300047

	
BOSS INDUSTRIES, INC.	
720 BOYD BLVD. La PORTE, IN 46350	
MODEL NO.	_____
SERIAL NO.	_____
INPUT R.P.M.	_____

## COMPRESSOR TERMINOLOGY

**ATF** - Automatic transmission fluid.

**AIR/OIL COALESCER** - Performs second stage separation of oil from compressed air feeding air 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.

**LOAD CONTROLLER** - Sometimes referred to as the engine speed control.

**OIL SUMP** - The first stage of oil separation from compressed air. Also serves as reservoir area for compressor lubricant and 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.

**SAFETY VALVE** - A valve located on the oil sump which opens in case of excessive pressure. Sometimes referred to as the pop-off or pressure relief valve.

**SHUTDOWN SWITCH** - Works in conjunction with a power relay, sending a signal to stop the compressor power source in cases of high temperature. Power relay incorporates an additional wire for remote engine/speed control kill.

**SIDE MOUNT PTO** - Power take off gearbox that bolts to the side of the transmission. The PTO input gear meshes with one of the gears in the vehicle's transmission. The rotation developed by the engine drives the transmission which turns the PTO gear box and rotates the PTO output shaft. Special care during PTO selection should be taken to ensure proper compressor rotation and PTO % is achieved for specific compressor kit.

**ADAPTER GEAR ASSEMBLY: SIDE MOUNT PTO** - The adapter gear assembly is to be used on the 80100-8G model when installed on manual transmissions that require the PTO rotation to be changed from "Opposite Engine" rotation to "Engine" rotation.

## DESCRIPTION OF COMPONENTS

### COMPRESSOR ASSEMBLY

The BOSS INDUSTRIES 80100-8G 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 engine is transferred to the male rotor through a drive shaft and gears in the gear housing. The female rotor is driven by the male rotor. There are five lobes on the male rotor while the female rotor has six roots. The 80100-9D and 80100-10D compressor assemblies are direct drive and do not incorporate the gear housing. Your compressor model is selected based on your air flow required and type of transmission mounted PTO that is used.

### 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 and serves these purposes:

1. Lubricates the rotating parts and bearings.
2. Serves as a cooling agent for the compressed air.
3. 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 de-fusion 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.

## DESCRIPTION OF COMPONENTS

### SAFETY VALVE

The pop safety valve is set at 175 PSI and 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 elbow hose fitting which is located at the compressor.

### MINIMUM PRESSURE ORIFICE

The minimum pressure orifice 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 and has a safety bypass built into it.

### COMPRESSOR COOLING SYSTEM (STANDARD)

The compressor cooling system consists of an oil cooler remote mounted aerodynamically designed cooling package or a cooler mounted in front of the truck's radiator. Oil temperature is controlled by a thermal switch on the remote mount cooler package. A thermal valve located down stream of the oil filter is used on the front mount oil cooler package. The switch or valve maintains compressor oil temperatures in the range of 160° - 200° F.

## **DESCRIPTION OF COMPONENTS**

### **INSTRUMENTATION**

The BOSS PTO unit incorporates a gauge panel that monitors temperature, hours of operation and pressure. It is designed to be mounted inside the cab or in a protected area outside of the cab.

#### **COMPRESSOR DISCHARGE PRESSURE SWITCHGAUGE**

This switchgauge indicates the discharge air/oil pressure. Operate compressor within the discharge pressure limits as indicated in specifications section. The switchgauge ensures high pressure safety shutdown before the safety relief valve on the sump is discharged, preventing hot pressurized oil spray on the vehicle and/or compressor components.

#### **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 SWITCHGAUGE**

This switchgauge indicates compressor air discharge temperature. The switchgauge ensures safety shutdown in case of excessive operating temperatures, preventing compressor damage.

### **ELECTRICAL AND SAFETY SYSTEM**

The BOSS compressor's standard electrical system consists of a gauge panel; a remote mount 12 VDC fan package with fan switch and relay assembly (for standard cooling system only); and a resettable normally closed shutdown switch. These components are integrated together to provide a safety shutdown system that is activated when extreme high temperature or pressure conditions are present. When the temperature or pressure exceeds the maximum set parameter of the respective switchgauge a signal is sent to "trip" the shutdown switch from normally closed to open. This signal will then shut off the engine in vehicles equipped with a CABLE PTO or disengage the PTO in "HOT SHIFT" PTO applications.

#### **ELECTRONIC ENGINE INTERFACE**

Electronic engine interface for the compressor speed control incorporates several BOSS supplied electrical components that are chassis specific. A chassis specific wiring diagram and electrical components are supplied per the information application data sheet at the time of the order. Most electronic engines will require programming by your dealer for the truck chassis.

## DESCRIPTION OF COMPONENTS

### 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. Blow down time interval takes between 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 175 psi.

***NOTE: Most air tools operating pressure range is between 90 and 125 psi. Operating above the tools recommended pressures will decrease the life of the tool. Higher operating pressure can also over torque nut and bolts fatiguing the fastener and mating parts. 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 serving as a check valve at shutdown.

### CONTROL SYSTEM OPERATION (ELECTRONIC ENGINES)

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”.

## DESCRIPTION OF COMPONENTS

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, and in case of two speed, engine speed controls, a timer is activated to slow the engine down to compressor idle. The poppet valve moves towards the valve inlet seat 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, and the engine returns to the programmed compressor high RPM.

## INSPECTION, LUBRICATION, AND MAINTENANCE

This section contains instructions for performing the inspection, lubrication, and maintenance procedures required to maintain the compressor in proper operating condition. The importance of performing the maintenance described herein cannot be over emphasized.

The periodic maintenance procedures to be performed on the equipment covered by this manual are listed below. It should be understood that the intervals between inspections specified are maximum interval. More frequent inspections should be made if the unit is operating in a dusty environment, in high ambient temperature, or in other unusual conditions. A planned program of periodic inspection and maintenance will help avoided premature failure and costly repairs. Daily visual inspections should become a routine.

The LUBRICATION AND MAINTENANCE CHART lists serviceable items on this compressor package. The items are listed according to their frequency of maintenance, followed by those items which need only “As Required” maintenance.

The maintenance time intervals are expressed in hours. The hourmeter shows the total number of hours your compressor has run. Use the hourmeter readings for determining your maintenance schedules. Perform the maintenance at multiple intervals of the hours shown. For example, when the hourmeter shows “100” on the dial, all items listed under “EVERY 10 HOURS” should be serviced for the tenth time, and all items under “EVERY 50 HOURS” should be serviced for the second time, and so on.

### DANGER

**COMPRESSOR MUST BE SHUT DOWN AND COMPLETELY RELIEVED OF PRESSURE PRIOR TO CHECKING FLUID LEVELS. OPEN SERVICE VALVE TO ENSURE RELIEF OF SYSTEM AIR PRESSURE. FAILURE TO COMPLY WITH THIS WARNING MAY CAUSE DAMAGE TO PROPERTY AND SERIOUS BODILY HARM.**

## LUBRICATION AND MAINTENANCE CHART

INTERVAL	ACTION
PERIODICALLY DURING OPERATION	1. Observe all gauge reading. Note any change from the normal reading and determine the cause. Have necessary repairs made. (NOTE: "NORMAL" is the usual gauge reading when operating at similar conditions on a day to day operation.)
EVERY 10 HOURS OR DAILY	1. Check the 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 HOURS OR MONTHLY	1. Drain water from compressor oil.
EVERY 100 HOURS	1. Grease compressor drive shaft.
EVERY 500 HOURS OR 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 HOURS	1. Change coalescing element.
PERIODICALLY OR 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 fins.

NOTE: Compressor oil and filter is to be changed after the first 50 hours of operation. After this, normal intervals are to be followed.

## LUBRICANT RECOMMENDATIONS

### WARNING

**IT IS IMPORTANT THAT THE COMPRESSOR OIL BE OF A RECOMMENDED TYPE AND THAT THIS OIL AS WELL AS THE AIR FILTER, OIL FILTER, AND COALESCER ELEMENTS BE INSPECTED AND REPLACED 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.**

**FAILURE TO COMPLY WITH THIS WARNING MAY CAUSE DAMAGE TO PROPERTY AND SERIOUS BODILY HARM.**

The following are general characteristics for a rotary screw lubricant. Due to the impossibility of 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, 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 BOSS INDUSTRIES 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 PTO helical screw type air compressors operating in the particular environment involved.

### CAUTION

**MIXING DIFFERENT TYPES OR BRANDS OF LUBRICANTS IS NOT RECOMMENDED DUE TO THE POSSIBILITY OF A DILUTION OF THE ADDITIVES OR A REACTION BETWEEN ADDITIVES OF DIFFERENT TYPES.**

# LUBRICANT RECOMMENDATIONS

## LUBRICANT CHARACTERISTICS

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. BOSS INDUSTRIES ENCOURAGES THE USER TO CLOSELY MONITOR THE LUBRICANT CONDITION AND TO PARTICIPATE IN AN OIL ANALYSIS PROGRAM WITH THE SUPPLIER.**

### NOTE

**NO LUBRICANT, HOWEVER GOOD AND/OR EXPENSIVE, CAN REPLACE PROPER MAINTENANCE AND ATTENTION. SELECT AND USE IT WISELY.**

## MAINTENANCE

If some of the maintenance intervals in the schedule outlined in this manual seem to be rather short, it should be considered that one hour's operation of a compressor is 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 make sure that the sump is completely relieved of pressure. Oil is added at the fill cap on the side of the receiver/sump. A drain plug is provided at the bottom of the sump. The proper oil level, when unit is shut down and 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 given in "Compressor Specifications".

### DANGER

**DO NOT ATTEMPT TO DRAIN CONDENSATE, REMOVE THE OIL LEVEL FILL PLUG, OR BREAK ANY CONNECTION IN THE AIR OR OIL SYSTEM WITHOUT SHUTTING OFF COMPRESSOR AND MANUALLY RELIEVING PRESSURE FROM THE SUMP. FAILURE TO COMPLY WITH THIS WARNING MAY CAUSE DAMAGE TO PROPERTY AND SERIOUS BODILY HARM.**

### GREASE

Lubricate the compressor drive shaft every time the truck is lubricated or every 100 hours of compressor operation, whichever comes first.

### 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.

Frequency of maintenance of the filter depends on dust conditions at the operating site. The filter element must be serviced when clogged (maximum pressure drop for proper operation is 15" H<sub>2</sub>O). The filter is equipped with a pressure drop indicator, and the element should be changed based on it's reading first and then by the maintenance intervals outlined.

## MAINTENANCE

### 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 pressure drop across it exceeds 15 PSI. Dirty oil clogs the element and increases the pressure drop across it.

To replace element proceed as follows:

1. Shutdown compressor and wait for complete blow down (zero pressure).
2. Disconnect drain line.
3. Turn element counterclockwise for removal (viewing element from bottom).
4. Install new rubber seal in head and supply a film of fluid directly to seal.
5. Rotate element clockwise by hand until element contacts seal (viewing element from bottom).
6. Rotate element approximately one more turn clockwise with band wrench near the top of element.
7. Reconnect drain line.
8. Run system and check for leaks.

***NOTE: When connecting drain line care must be taken to hold onto canister nut securely when tightening the hose fitting.***

### WARNING

**DO NOT SUBSTITUTE ELEMENT. USE ONLY A GENUINE BOSS INDUSTRIES 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, POSSIBLY VOIDING THE WARRANTY AND/OR RESULTING IN DAMAGE TO PROPERTY AND SERIOUS BODILY HARM.**

### OIL RETURN LINE

This line originates at the bottom of the air/oil coalescer and flows through a special 1/4 hose elbow located at the air-end. This elbow incorporates an oil return line check valve stopping the flow of oil into the coalescer at shutdown.

## MAINTENANCE

### OIL FILTER

The compressor oil filter is a spin-on, throw away type.

To replace filter proceed as follows:

1. Make sure system pressure is relieved.
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.

### WARNING

**DO NOT SUBSTITUTE ELEMENT. USE ONLY A GENUINE BOSS INDUSTRIES 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, POSSIBLY VOIDING THE WARRANTY AND/OR RESULTING IN DAMAGE TO PROPERTY AND SERIOUS BODILY HARM.**

### OIL COOLER

The interior of the oil cooler should be cleaned when the pressure drop across it at full flow exceeds 25 PSI. The following procedure has been recommended by the vendor who supplies the cooler:

1. Remove cooler.
2. Circulate a suitable solvent to dissolve and remove varnish and sludge.
3. Flush generously with BOSS INDUSTRIES compressor lubricant.
4. After cooler is reinstalled and compressor is filled with fresh oil, change compressor oil after 50 hours of normal operation.

# MAINTENANCE

## SHAFT SEAL

### SHAFT SEAL INSTALLATION INSTRUCTIONS:

1. Remove PTO drive shaft, companion flange and key.
2. Remove (5) socket head retaining bolts on cover and slide cover off shaft. Cover has the seal and snap ring assembled in it.
3. Press old snap ring and seal off the cover for assembly of new seal.
4. Pull seal wear sleeve off shaft with puller, adding heat to one area only on wear sleeve will help enlarge and aid in it's removal.
5. Clean shaft and surface of bearing removing all burrs from shaft where the wear sleeve gets installed.
6. Press new wear sleeve on to shaft. Oil heating new wear sleeve to 212°F approximately aids in the installation of this ring.
7. Clean seal cover and snap ring with solvent before installation.
8. Press new seal into cover (included in repair kit) and insert snap ring.
9. 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 and add Loctite 573 to seal cover.
10. Install cover, seal and snap ring assembly, over shaft and assembly tool. Note: Assembly tool is slip fit on shaft and allows new seal in cover to slide on to wear sleeve without cutting the lip of shaft seal. Reinstall the dirt ring retainer once the new seal and cover assembly is in place.
11. Place seal cover against rotor casting paying attention not to damage the seal and slide off assembly tool.
12. Screw down the socket head retaining bolts on the cover with a torque of 25Nm.
13. Reinstall companion flange, key and drive shaft assembly.

## PTO

The PTO should be serviced in accordance with the PTO manual. The SAE side-mount type of PTO is lubricated by the transmission oil and thus requires little maintenance. It is strongly recommended that you periodically torque the fasteners in accordance with the PTO manual.

## MAINTENANCE

### PTO

The PTO should be serviced in accordance with the PTO manual. The SAE side-mount type of PTO is lubricated by the transmission oil and thus requires little maintenance. It is strongly recommended that you periodically torque the fasteners in accordance with the PTO manual.

### HYDRAULIC PUMP OPTION

The 2 belt arrangement is sized for an average life of 1000 hours. This time frame can be increased or decreased depending on the end users periodic maintenance schedule. Drive belt tension should be checked for adjustment every 100 hours there after. Belt deflection is to be checked at midpoint between both pulleys on one belt at a time. Single belt deflection is to be 1/8" at 3.5 lbs. Minimum to 5.0 lbs. Maximum.

BELT TENSION - Belt tension is accomplished as follows:

1. Loosen the 3/8" bolts that attaches the hydraulic pump to mounting plate. Pump should now pivot free on bottom mounting bolt.
2. Pivot hydraulic pump until the correct deflection is accomplished. Hold pump in the position until the two 3/8" bolts are retightened.

***NOTE: Over-tensing belt can damage compressor and hydraulic pump. When tensing belt all hardware should be broken loose only to the point in which the hydraulic pump can pivot.***

## TROUBLESHOOTING

This section contains instructions for troubleshooting the equipment following a malfunction.

The troubleshooting procedures to be performed on the equipment are listed below. Each symptom of trouble for a component or system is followed by a list of probable causes of the trouble and suggested procedures to be followed to identify the cause.

In general, the procedures listed should be performed in the order in which they are listed, although the order may be varied if the need is indicated by conditions under which the trouble occurred. In any event, 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.

### TRUCK ENGINE WILL NOT START

Most problems in this area will not be connected with the compressor, and should therefore be checked out with the engine manual.

Manual transmissions require our safety shutdown switch to shut off the engine in cases of high temperature or pressure. If this occurs the truck can be restarted by pushing in the reset button on the shutdown switch. In most cases this switch is located in the 1.5" discharge line between the compressor and the receiver tank. If the compressor hi-temperature gauge on the pressure switchgauge has shut off the engine the compressor truck should be taken in for service/troubleshooting.

Trucks that have automatic transmissions that use hot shift PTO's should be wired so the PTO disengages in the event of a safety shutdown instead of shutting off the truck engine.

### UNPLANNED SHUTDOWN

When the operation of the machine has been interrupted by an unexplained shutdown, check the following:

1. Check the fuel level and truck dash gauges and indications for possible engine problems.
2. Check the compressor discharge temperature/pressure shutdown switch; it is normally closed. If it is popped out, it had opened the circuit and will need to be reset. Push the button in to reset it. You will then hear the button click if it was tripped by the switchgauges.
3. Check that the compressor oil is at proper level.
4. Check oil cooler for dirt, slush, ice on the fins, or any other obstructions to the cooling air flow.
5. Make a thorough external check for any cause of shutdown such as broken hose, broken oil lines, loose or broken wire, etc.

# TROUBLESHOOTING

## IMPROPER DISCHARGE PRESSURE

1. If discharge pressure is too low, check the following:
  - A. Too much air demand. (Air tools require more air than what the compressor can produce, air tools are free wheeling without resistance.)
  - B. Service valve wide open to atmosphere.
  - C. Leaks in service line.
  - D. Restricted compressor inlet air filter.
  - E. Faulty control system operation (i.e. regulator is sending a signal to close inlet valve at all times.)
2. If discharge pressure is too high, safety valve blows, or system shuts down on high pressure, check the following:
  - A. Faulty discharge pressure switch.
  - B. Coalescer plugged up.
  - C. Faulty safety valve.
  - D. Faulty regulator (regulator air pressure signal is not getting to inlet valve)
3. Hi pressure shutdown at compressor idle:
  - A. Inlet valve leaking or open
  - B. Faulty regulator

## SUMP PRESSURE DOES NOT BLOW DOWN

If after the compressor is shutdown, pressure does not automatically blow down, check for:

1. Automatic blow down valve may be inoperative at coalescer head.
2. Blockage in air line from side of inlet valve to blow down valve.
3. Muffler at blow down clogged.

## OIL CONSUMPTION

Abnormal oil consumption or oil in service line, check for the following:

1. Over filling of oil sump.
2. Leaking oil lines or oil cooler.
3. Plugged oil return line: check entire line, to the compressor.
4. Defective coalescer element.
5. Compressor shaft seal leakage.
6. Discharge pressure below 65 PSI or above 175 PSI.

## TROUBLESHOOTING

### ENGINE LUGGING

If engine does not accelerate or will not maintain full load speed, check the following:

1. Engine problem (refer to engine manual).
2. Compressor discharge pressure too high.
3. Improper compressor speed. (Compressor running at truck idle.)
4. Operating above maximum altitude rating of compressor and truck.

### COALESCER PLUGGING

If the coalescer element has to be replaced frequently because it is plugging up, it is an indication that foreign material may be entering the compressor inlet or the compressor oil is breaking down.

Compressor oil can break down prematurely for a number of reasons.

(1) Extreme operating temperature, (2) negligence in draining condensate from oil sump, (3) using the improper type of oil, (4) dirty oil, (5) oil return line plugged.

The complete air inlet system should be checked for leaks.

### HIGH COMPRESSOR DISCHARGE TEMPERATURE

1. Check compressor oil level. Add oil if required (see Section for oil specifications).
2. Check thermal valve operation. (Front mounting coolers only).
3. Clean outside of oil cooler.
4. Clean oil system (cooler) internally.
5. Check fan switch/relay harness.

## COMPRESSOR OPERATION

### STARTING/STOPPING

An operating procedure decal is furnished with every PTO Compressor. The decal should be attached to the dashboard or visor of the truck where it will be visible to the driver. Cable shift PTO's require the use of decal 300045.

The following decal is a sample.

**THIS TRUCK IS EQUIPPED WITH A  
|||BOSS  
PTO COMPRESSOR PACKAGE**

### START UP PROCEDURE

1. SET BRAKES PER COMPANY PROCEDURE AND CHOCK WHEELS.
2. CHECK COMPRESSOR OIL LEVEL, ADD IF LOW.
3. PLACE TRANSMISSION IN NEUTRAL.
4. ENGAGE P.T.O.
5. PLACE TRANSMISSION IN \_\_\_\_\_ AND DEPRESS FUEL PEDAL MOMENTARILY UNTIL ENGINE SPEED CONTROL TAKES OVER.

### SHUTDOWN PROCEDURE

1. CLOSE SERVICE VALVE.
2. DEPRESS CLUTCH AND HOLD FOR COMPRESSOR BLOWDOWN.
3. DISENGAGE P.T.O.

BOSS 300045

## **COMPRESSOR OPERATION**

Before starting the PTO/compressor, read this section thoroughly. Familiarize yourself with the controls and indicators, their purpose, location, and use.

# COMPRESSOR OPERATION

## OPERATING CONDITIONS

The following conditions should exist for maximum performance of the PTO/compressor. The truck should be as close to level as possible when operating. The compressor will operate on a 15 degree sideward and lengthwise tilt without any adverse problems. Fluid carry over and/or oil starvation may occur if operated beyond this tilt.

### 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 (13.78kPa) OPERATING AND A CAPACITY RATING EQUAL TO THE COMPRESSOR.**

### NOTE

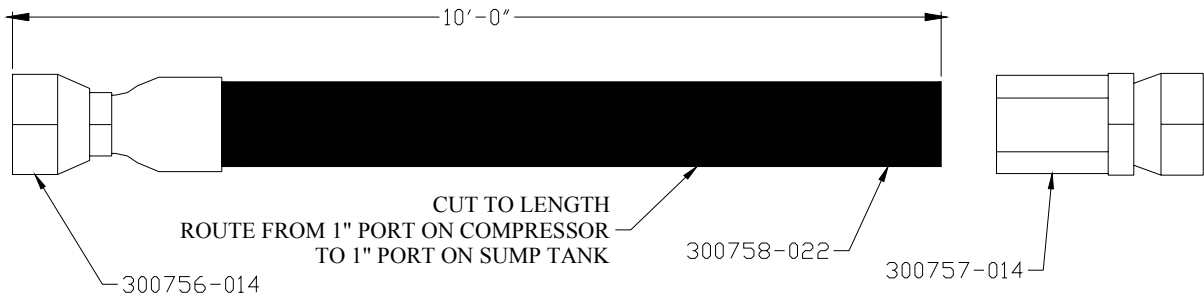
**THE COMPRESSOR SERVICE VALVE SHOULD BE RELOCATED TO THE HOSE REEL INLET OR BE THE CUSTOMERS AIR CONNECTION PORT WHEN A HOSE REEL IS NOT USED. TYPICAL PLUMBING FROM MINIMUM PRESSURE ORIFICE SHOULD FLOW IN THE FOLLOWING ORDER:**

- 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).**

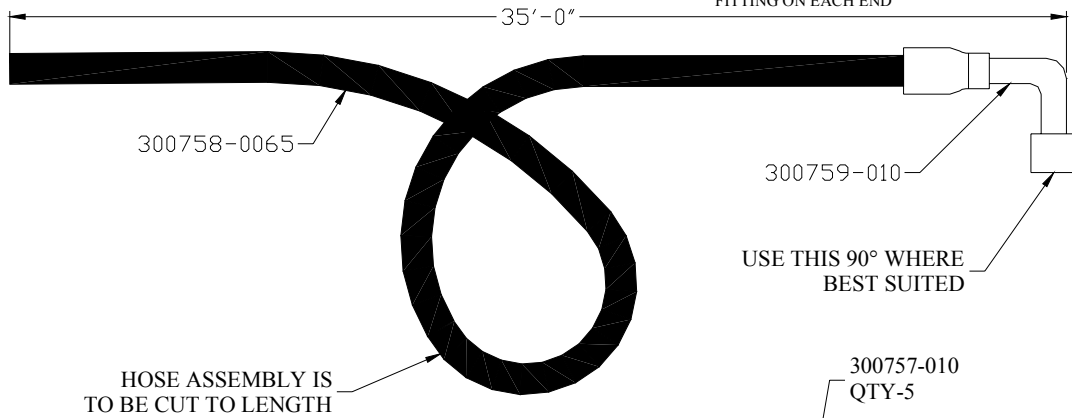
**PARTS AND  
ILLUSTRATION  
SECTION**

# HOSE SYSTEM

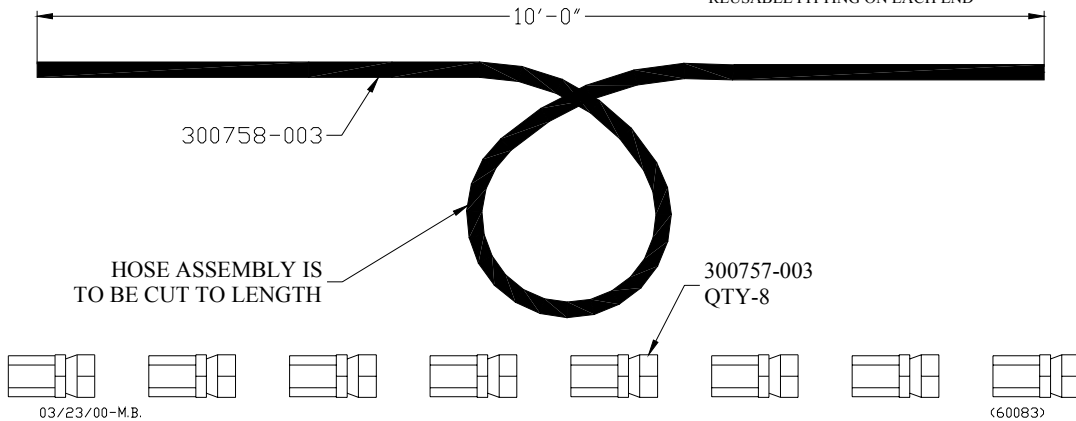
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NOTE: THREE HOSE ASSEMBLIES ARE REQUIRED  
CUT HOSE SO ONE ASSMBLY HAS ONE 90° CRIMP  
FITTING AND ONE REUSABLE FITTING, THE OTHER  
TWO ASSEMBLIES WILL HAVE TWO REUSABLE  
FITTING ON EACH END

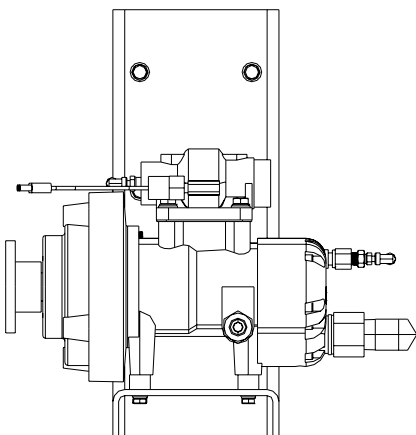
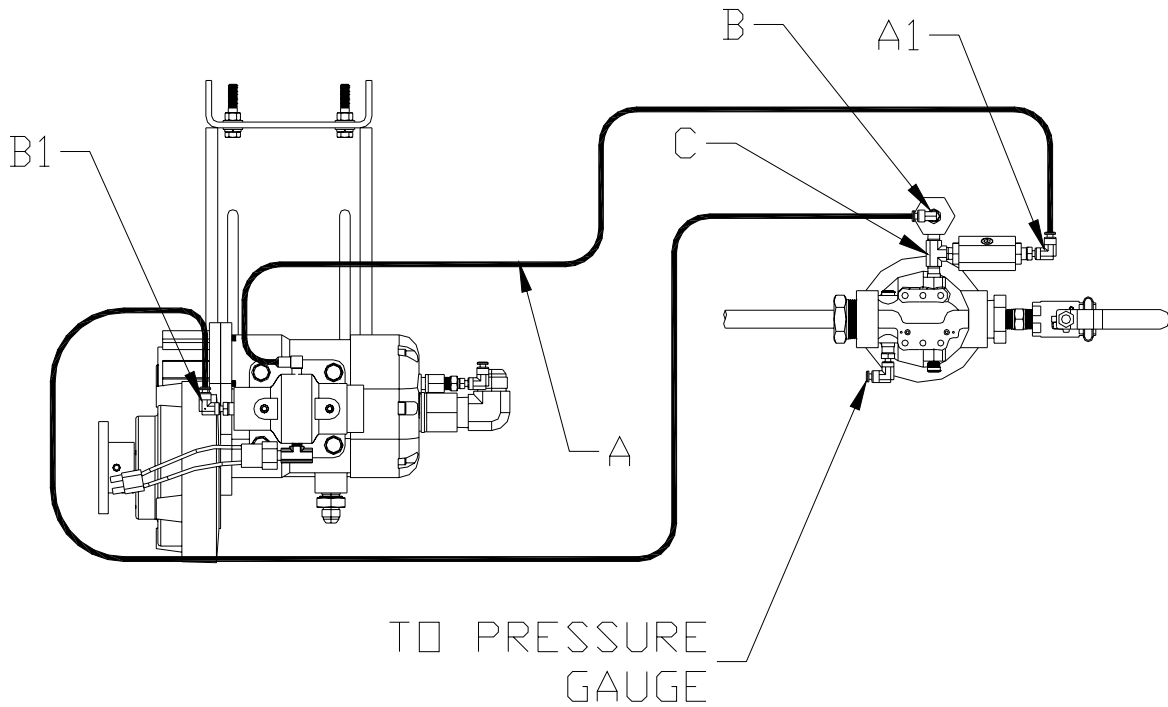


NOTE: FOUR HOSE ASSEMBLIES ARE REQUIRED  
CUT HOSE SO FOUR ASSMBLIES HAVE TWO  
REUSABLE FITTING ON EACH END

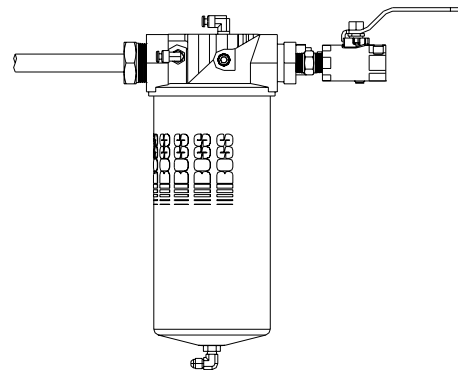


## CONTROL HOSE PORT CALL OUTS

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 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 MODULATES 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.



M10055



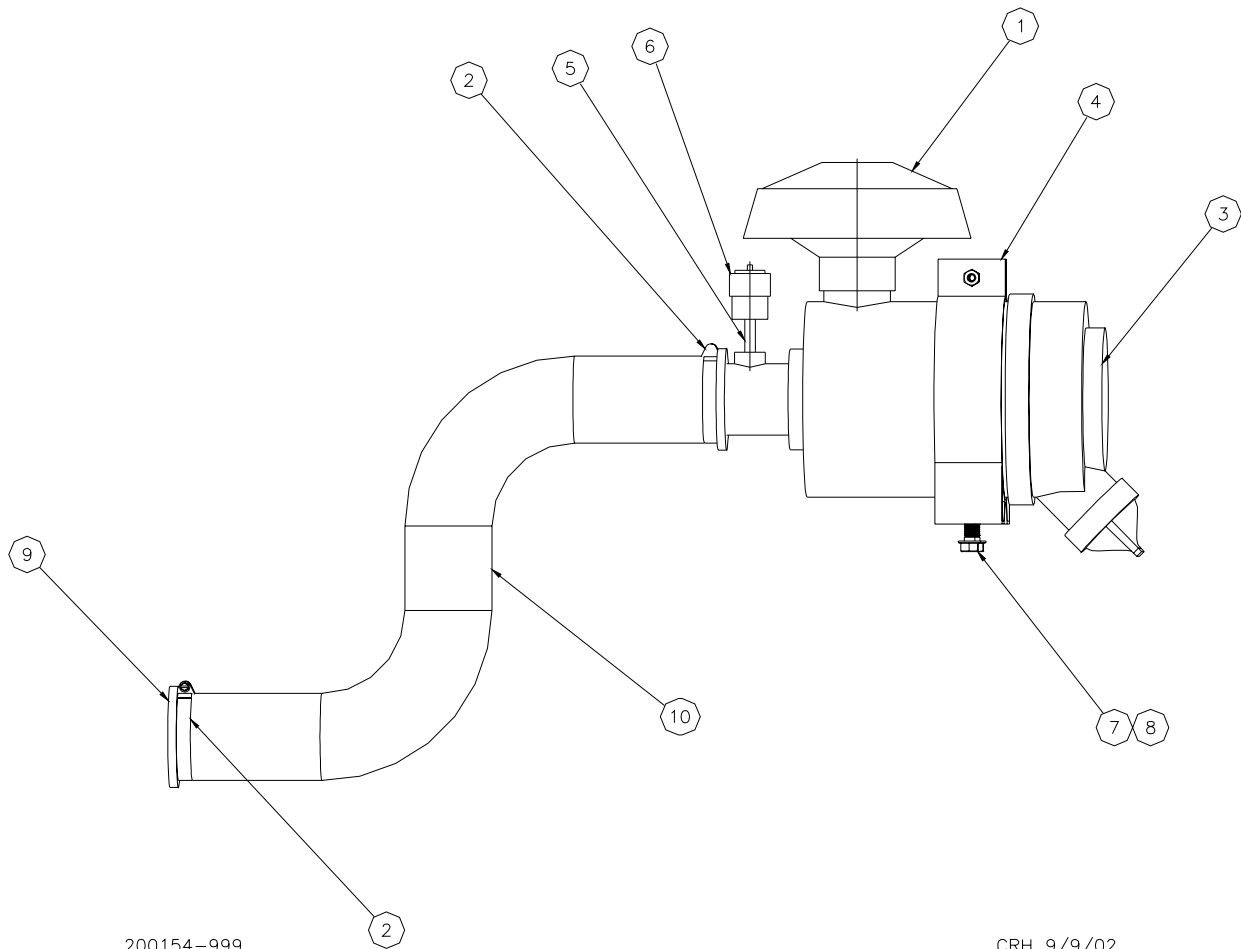
CRH 9/10/02

# AIR INLET SYSTEM

200154

PART NUMBER	QTY	DESCRIPTION	ITEM
302204	1 EACH	CAP, AIR FILTER 5.75 2	1
301786-250	2 EACH	CLAMP, AIR INLET 2.500 IN KFLEX	2
302205	1 EACH	ASSY, AIR FILTER - 5.75	3
302207	1 EACH	BAND, AIR FILTER MTG. 5.75	4
922102-015	1 EACH	NIPPLE, PIPE 1/8 X 1 1/2 GAL SCH40	5
300853	1 EACH	INDICATOR, AIR FILTER ELEMENT	6
929705-100	2 EACH	BOLT, WHIZLOCK GR5 .3125-18 X 1.000	7
925305-283	2 EACH	NUT, WHIZ LOCK .3125-18	8
301588	2 EACH	INSERT, RUBBER 2.500 X 2.000	9
301785-250	1 EACH	HOSE, AIR INLET 2.500 ID X 10 FT KFLEX	10

**\* REPLACEMENT AIR FILTER ELEMENT P/N 300854**

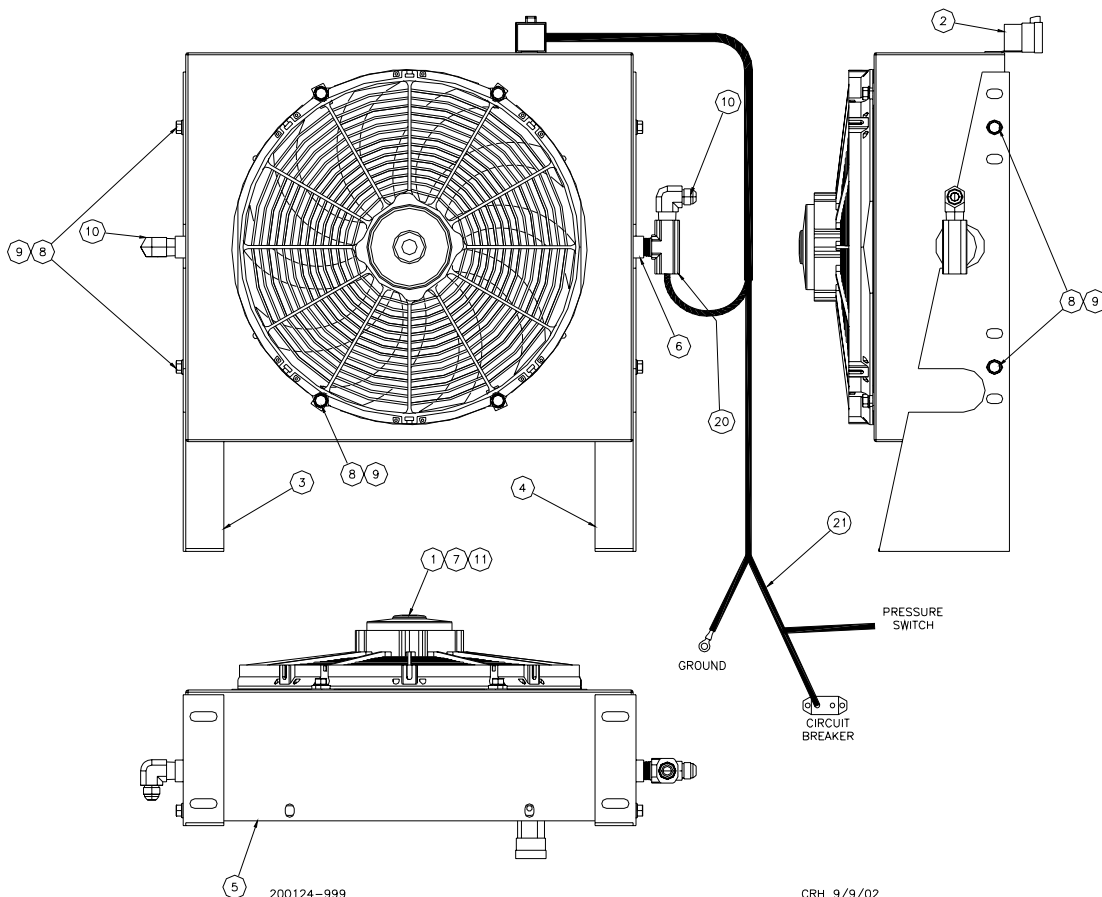




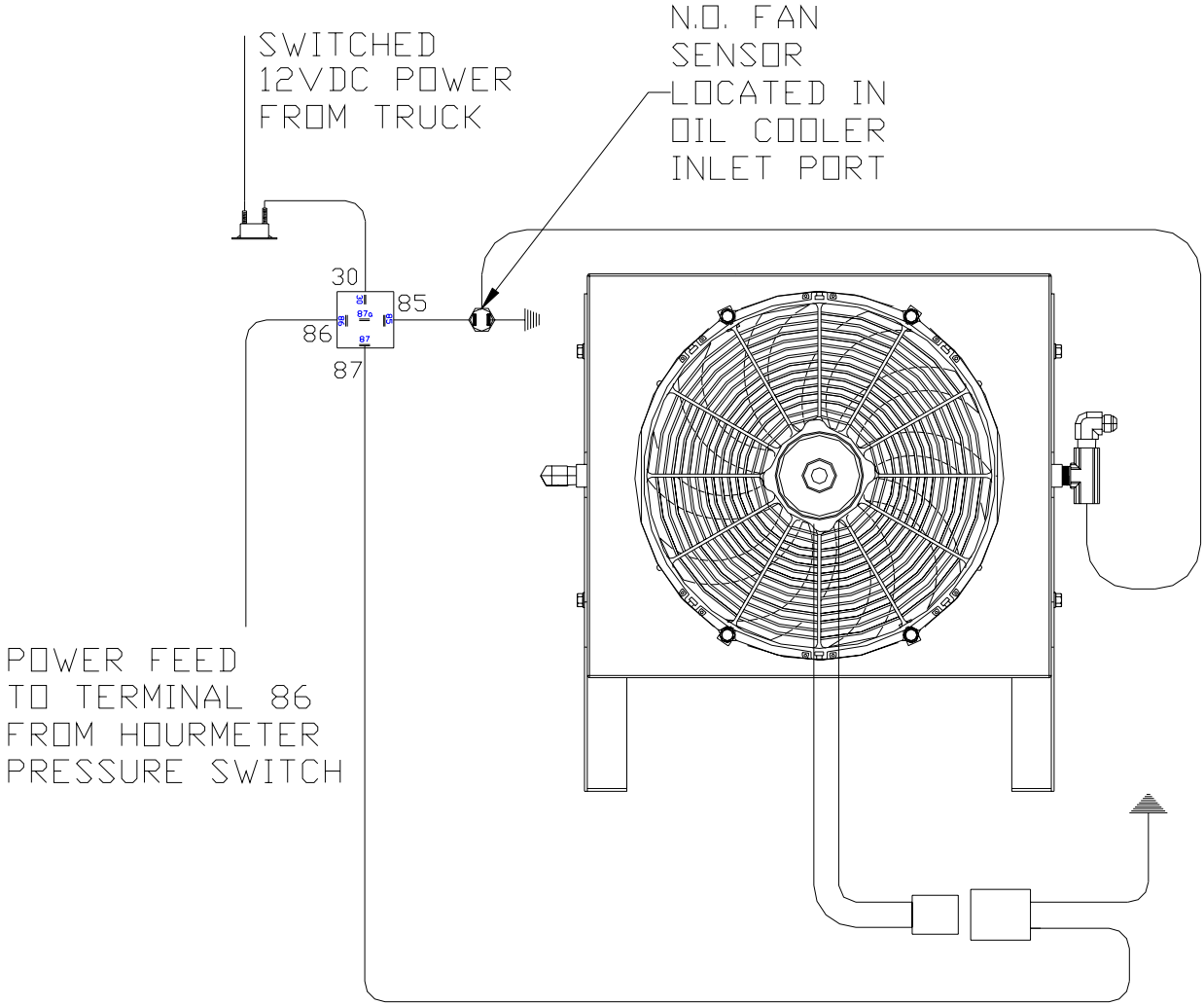
# OIL COOLING SYSTEM (REMOTE MOUNT)

200124

PART NUMBER	QTY	DESCRIPTION	ITEM
300444-015	2 EACH	TAPE, .0625 X .500 X 15 in CLOSED CELLO	1
301755-012	1 EACH	RELAY, PWR WTHRPRF 12VDC	2
301784-L	1 EACH	BRACKET, VNTRI CLR HRZTL SPPRT LH (REV 2)	3
301784-R	1 EACH	BRACKET, VNTRI CLR HRZTL SPPRT RH (REV 2)	4
301815	1 EACH	SHROUD, OIL CLR 17.50 (REV 1)	5
300424	1 EACH	CLR, OIL 17.5	6
302254	1 EACH	FAN, ASSY. WITH MTR. & GRILL, 14.09 PULLER CURVED	7
929705-075	8 EACH	BOLT, WHIZLOCK GR5 .3125-18 X .750	8
961505-140	8 EACH	NUT, TINNERMAN - .3125-18	9
960206-050	2 EACH	ELBOW, .500 JIC X .500 MNPT	10
300444-007	2 EACH	TAPE, .0625 X .500 X 7 in CLOSED CELLO	11
302120	1 EACH	KIT, WIRE MATES TO 301502 (NOT SHOWN)	12
300599	1 EACH	HD, OIL FILTER (NOT SHOWN)	13
300005	1 EACH	ELEMENT, OIL FILTER 8060 (NOT SHOWN)	14
301487	1 EACH	GUARD, OIL FILTER (REV 1) (NOT SHOWN)	15
929104-050	2 EACH	BOLT, HEX GR5 .250-20 X .500 (NOT SHOWN)	16
938004-062	2 EACH	WASHER, LOC GR5 .250 (NOT SHOWN)	17
960412-075	1 EACH	NIPPLE, HYD. HEX. .750 (NOT SHOWN)	18
960206-075	1 EACH	ELBOW, HYD. .500 MJIC X .750 MNPT (NOT SHOWN)	19
961908-050	1 EACH	TEE, MB .500 F X .500 F X .500 M	20
302770	1 EACH	HARNESS, FAN SENSOR RELAY ASSY. SIEMENS	21
302771	1 EACH	WIRE ASSY, 16 GAUGE X005X25FSPX10RS (NOT SHOWN)	22



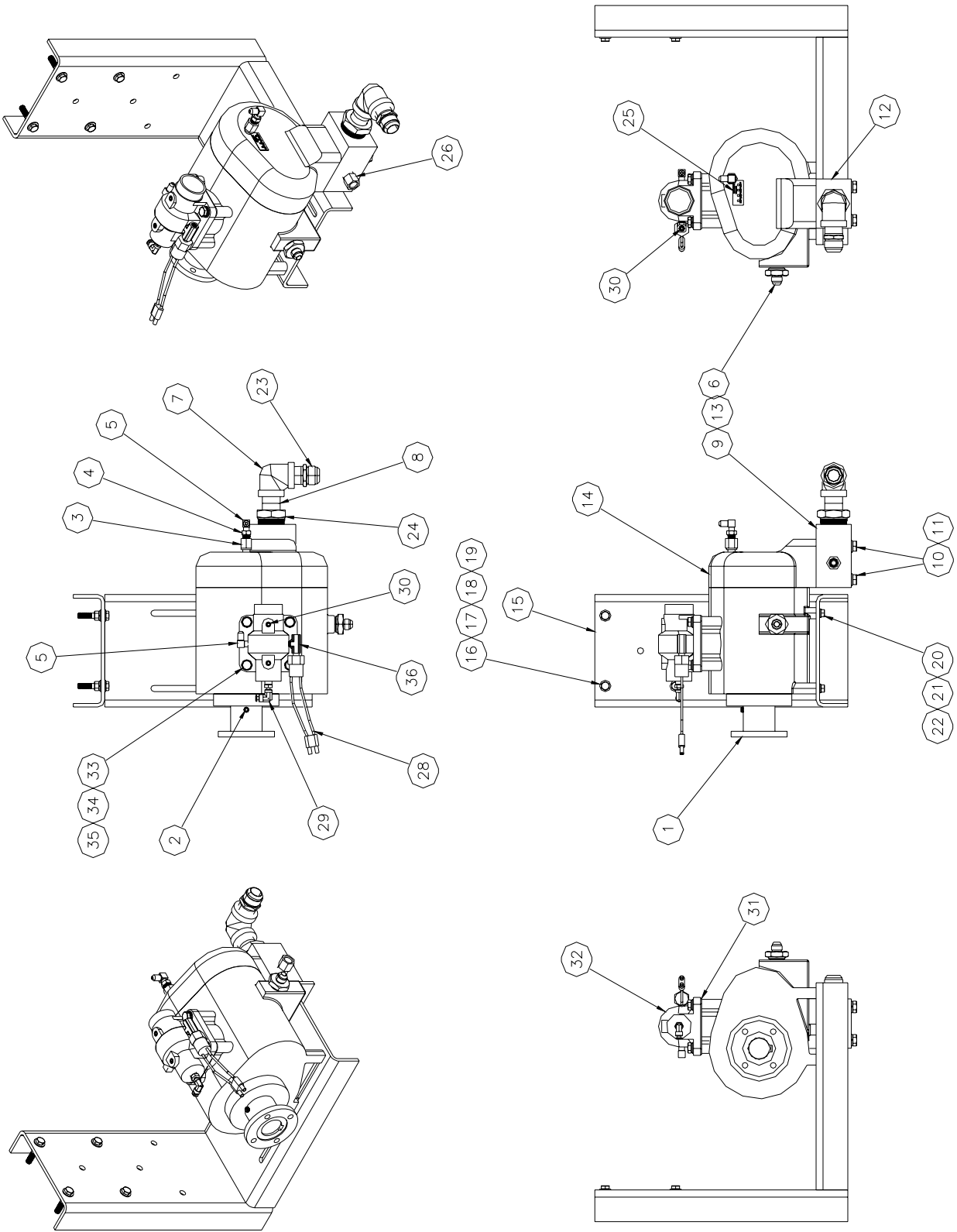
# FAN SENSOR RELAY HARNESS



701028-160

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# 80100-9D COMPRESSOR MOUNTING OPTION



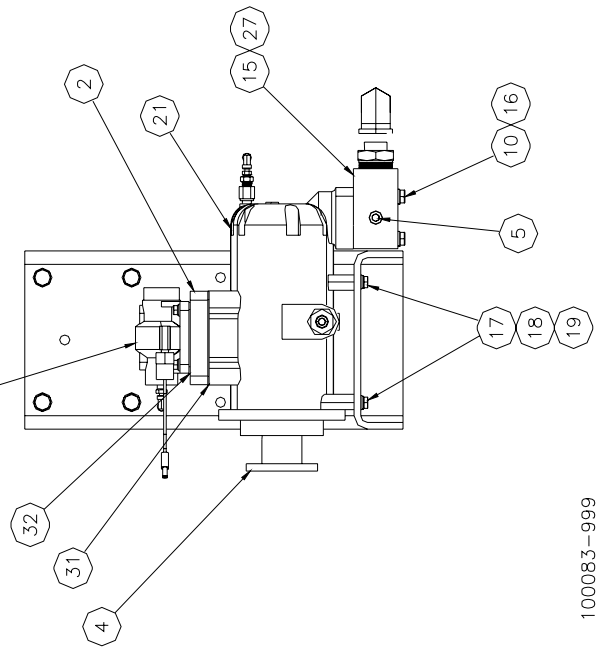
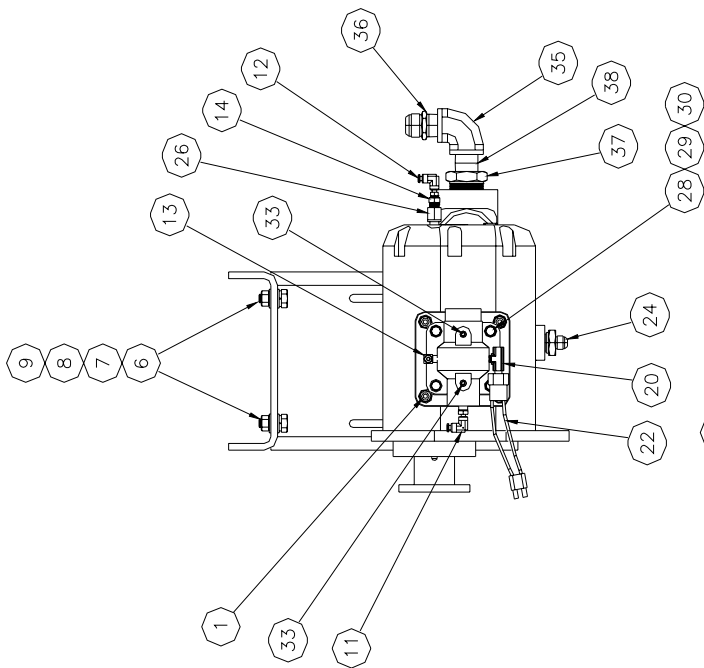
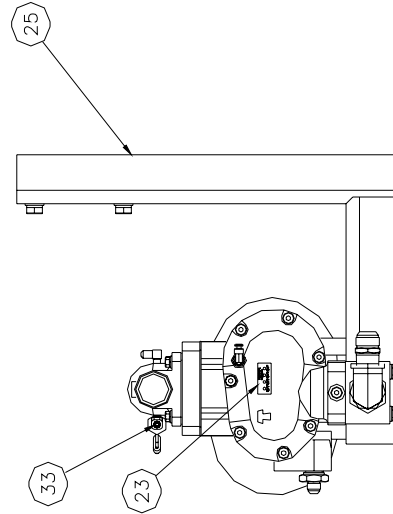
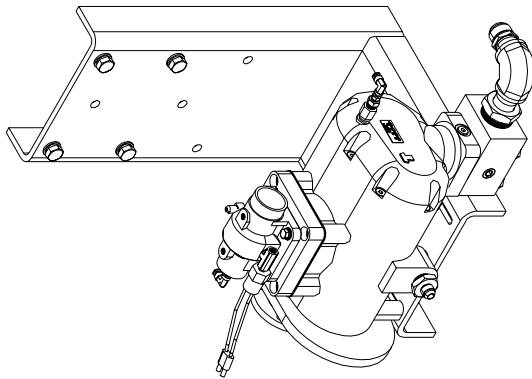
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200051-999

## 80100-9D COMPRESSOR MOUNTING OPTION

PART NUMBER	QTY	DESCRIPTION	ITEM
301917	1 EACH	FLANGE, CMPNN 40MM T10G BGPWRM	1
932206-050	1 EACH	SCREW, SET .375 X .500	2
970804-025	1 EACH	ADAPTER, .250 MBSPP X .250 FNPT	3
907600-005	1 EACH	BUSHING, RED .250 X .125 GAL	4
300721	1 EACH	VALVE, CHCK ELBW .125 NPT X .250 JIC	5
970708-075	1 EACH	CONNECTOR, .500 MJIC X .750 MBSPP	6
901515-040	1 EACH	ELBOW, PIPE 1.000 GAL 150PSI	7
922216-000	1 EACH	PIPE 1.000 X CLOSE GAL SCH80	8
926102-145	1 EACH	O-RING, DISCHARGE BLOCK 8060 T10G	9
929212-800	4 EACH	BOLT, HEX 12MM X 80MM GR 10.9	10
938812-250	4 EACH	WASHER LOC M12	11
902915-020	2 EACH	PLUG, PIPE .500 RECESSED ZINC	12
301703	1 EACH	FLANGE, DISCHARGE T10G (REV 1)	13
301702	1 EACH	COMPRESSOR, AIR SCA9D	14
302022	1 EACH	FOOT, COMP MTG SCA9	15
929806-200	4 EACH	BOLT, HEX GR8 .375-16 X 2.000	16
937806-094	4 EACH	WASHER, LOC GR8 .375	17
938206-071	8 EACH	WASHER, FLAT GR8 .375	18
926006-337	4 EACH	NUT, HEX GR8 .375-16	19
928008-250	3 EACH	BOLT, HEX 8MM X 25MM GR8.8	20
938908-180	3 EACH	WASHER, FLAT M8	21
938806-200	3 EACH	WASHER, LOC M8	22
960116-100	1 EACH	CONNECTOR, 1.000 MJIC X 1.000 MNPT	23
907606-040	1 EACH	BUSHING, RED 1.500 X 1.000 GAL	24
301594	1 EACH	DECAL, TEMP. COMPR. - 250 DEG. F	25
302087	1 EACH	BULB WELL, .625 UNF X .500 NPT	26
301503	1 EACH	KIT, WIRE CONNECTOR METER (NOT SHOWN)	27
301421	1 EACH	SWITCH, PRESSURE N.C.	28
980704-025M	1 EACH	ELBOW, .250 TUBE SWVL X .250 MNPT WITH HOLE	29
902915-005	3 EACH	PLUG, PIPE .125 RECESSED ZINC	30
302467	1 EACH	GASKET, INLET VLV .1875 TO ADAPTER	31
302203	1 EACH	VALVE, INLET 30-90 AC 2.090	32
929210-300	4 EACH	BOLT, HEX 10MM X 30MM GR10.9	33
938810-220	4 EACH	WASHER, LOC M10	34
938910-200	4 EACH	WASHER, FLAT M10	35
961902-012	1 EACH	TEE, MB .125 F X .125 F X .125 M	36

# 80100-10D COMPRESSOR MOUNTING OPTION



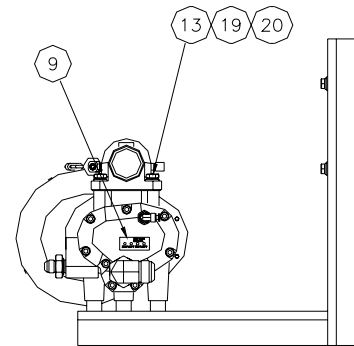
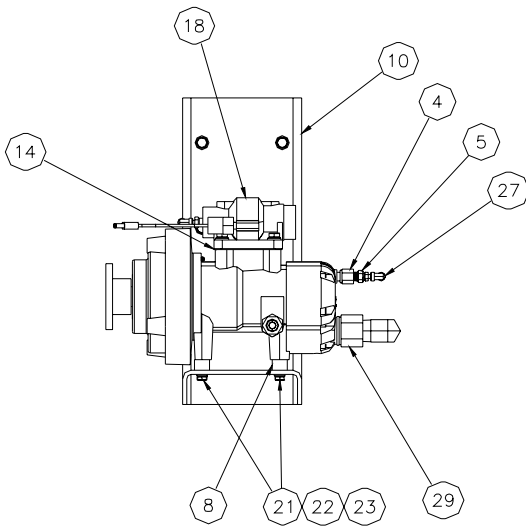
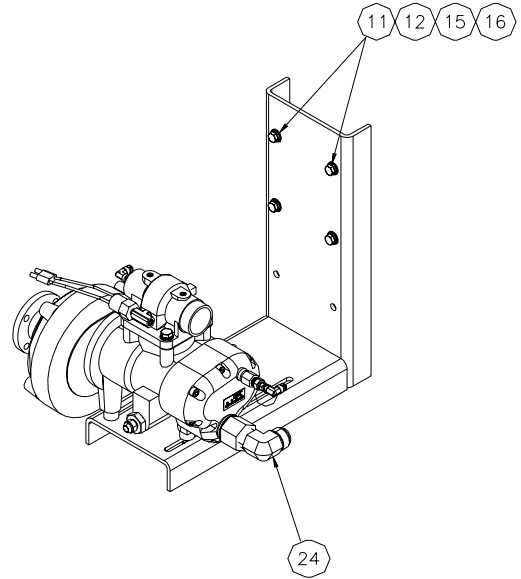
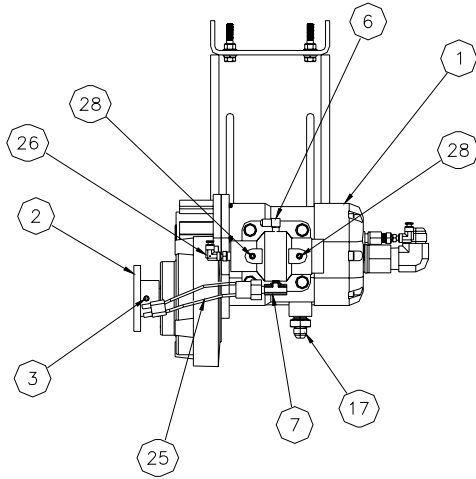
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100083-999

## 80100-10D COMPRESSOR MOUNTING OPTION

PART NUMBER	QTY	DESCRIPTION	ITEM
929312-250	4	EACH BOLT, SOC HD 12MM X 25MM GR 10.9	1
302466	1	EACH ADAPTER, INLET VALVE T10D TO 1850	2
302203	1	EACH VALVE, INLET 30 - 90 AC 2.090	3
301917	1	EACH FLANGE, CMPNN 40MM T10G BGPWRM	4
902915-020	2	EACH PLUG, PIPE .500 RECESSED ZINC	5
929808-125	4	EACH BOLT, HEX GR8 .500-13 X 1.250	6
926008-448	4	EACH NUT, HEX GR8 .500-13	7
937808-125	4	EACH WASHER, LOC GR8 .500	8
938208-112	8	EACH WASHER, FLAT GR8 .500	9
938812-250	4	EACH WASHER, LOC M12	10
980704-025M	1	EACH ELBOW, .250 TUBE SWVL X .250 MNPT WITH HOLE	11
980704-012	1	EACH ELBOW, .250 TUBE SWVL X .125 MNPT	12
300721	1	EACH VALVE, CHCK ELBW .125 NPT X .250 JIC	13
907600-005	1	EACH BUSHING, RED .250 X .125 GAL	14
926102-145	1	EACH O-RING, DISCHARGE BLOCK 8060 T10G	15
929212-800	4	EACH BOLT, HEX 12MM X 80MM GR 10.9	16
929210-300	3	EACH BOLT, HEX 10MM X 30MM GR10.9	17
938810-220	3	EACH WASHER, LOC M10	18
938910-200	3	EACH WASHER, FLAT M10	19
961902-012	1	EACH TEE, MB .125 F X .125 F X .125 M	20
301677	1	EACH COMPRESSOR, AIR SCA10D (REV 0)	21
301421	1	EACH SWITCH, PRESSURE N.C.	22
301594	1	EACH DECAL, TEMP. COMPR. - 250 DEG F	23
970708-075	1	EACH CONNECTOR, .50 MJIC X .750 MBSPP	24
301704	1	EACH FOOT, COMP. MTG. T10G (REV 2)	25
970804-025	1	EACH ADAPTER, .250 MBSPP X .250 FNPT	26
301703	1	EACH FLANGE, DISCHARGE T10G (REV 1)	27
929105-100	4	EACH BOLT, HEX. GR5 .3125-18 X 1.000	28
938005-078	4	EACH WASHER, LOC GR5 .3125	29
938605-071	4	EACH WASHER, FLAT GR5 .3125	30
301694	1	EACH GASKET, INLT VLV .062 301097	31
302467	1	EACH GASKET, INLET VLV .1875 TO ADAPTER	32
902915-005	3	EACH PLUG, PIPE .125 RECESSED ZINC	33
301503	1	EACH KIT, WIRE CONNECTOR METR (NOT SHOWN)	34
977616-100	1	EACH ELBOW, HYD. 1.000 FNPT	35
960116-100	1	EACH CONNECTOR, 1.000 MJIC X 1.000 MNPT	36
907606-040	1	EACH BUSHING, RED. 1.500 X 1.000 GAL.	37
922216-000	1	EACH NIPPLE, PIPE 1.000 X CLOSE GAL SCH80	38

# 80100-8G COMPRESSOR MOUNTING OPTION



200152-999

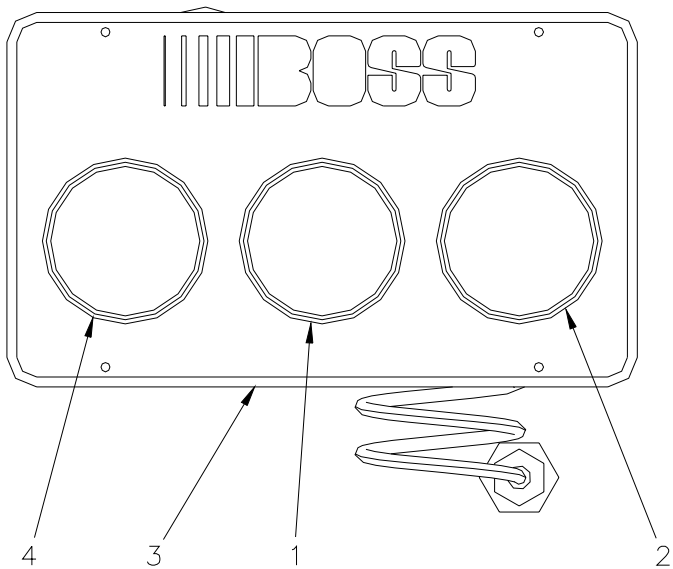
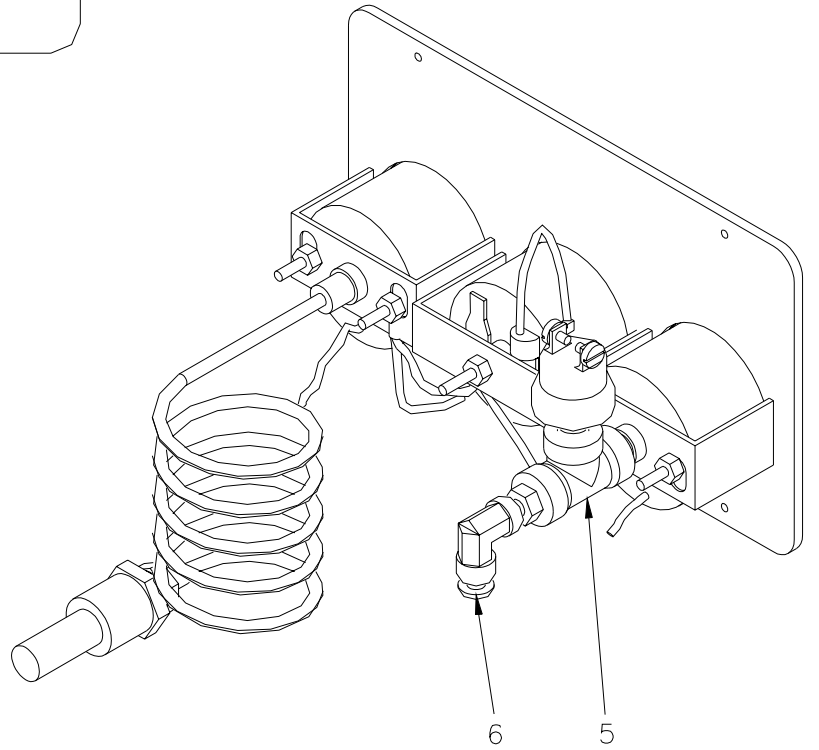
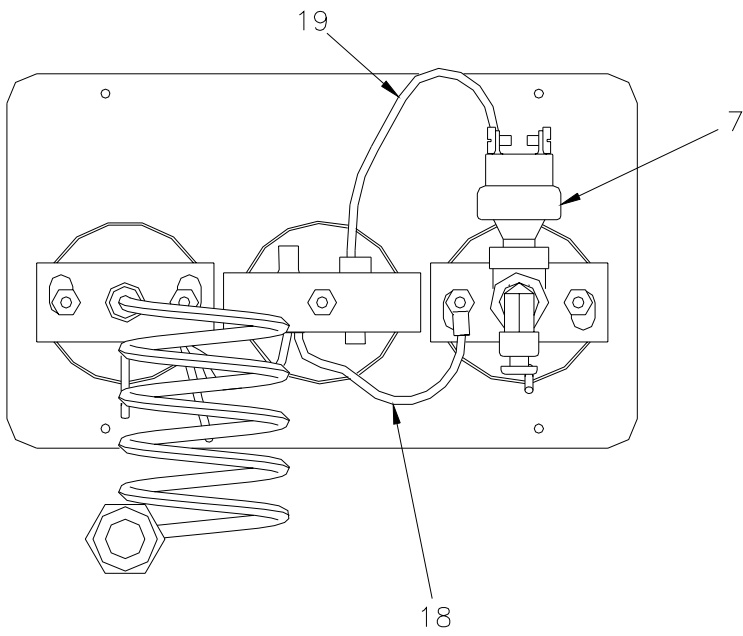
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## 80100-8G COMPRESSOR MOUNTING OPTION

PART NUMBER	QTY	DESCRIPTION	ITEM
301709	1	EACH COMPRESSOR, AIR SCA8G 3.69:1 RATIO (REV 0)	1
301724	1	EACH FLANGE, COMPANION 25MM (REV 1)	2
932206-050	1	EACH SCREW, SET .375 X .500	3
970804-025	1	EACH ADAPTER, .250 MBSPP X .250 FNPT	4
907600-005	1	EACH BUSHING, RED .250 X .125 GAL	5
300721	1	EACH VALVE, CHCK ELBW .125 NPT .250 JIC	6
961902-012	1	EACH TEE, MB .125 F X .125 F X .125 M	7
301881	3	EACH SPACER, DIA. .44 ID X .875 OD X .62 LG (REV 1)	8
301594	1	EACH DECAL, TEMP. COMPR. - 250 DEG. F	9
301725	1	EACH FOOT, COMP. MTG. SCA8	10
929806-200	4	EACH BOLT, HEX GR8 .375-16 X 2.000	11
937806-094	4	EACH WASHER, LOC GR8 .375	12
929210-300	4	EACH BOLT, HEX 10MM X 30MM GR10.9	13
302467	1	EACH GASKET, INLET VLV .1875 TO ADAPTER	14
938206-071	8	EACH WASHER, FLAT GR8 .375	15
926006-337	4	EACH NUT, HEX GR8 .375-16	16
973108-050	1	EACH CONNECTOR, .500 JIC X .500 BSPP FS	17
302203	1	EACH VALVE, INLET 30 - 90 AC 2.090	18
938810-220	4	EACH WASHER, LOC M10	19
938910-200	4	EACH WASHER, FLAT M10	20
929206-450	3	EACH BOLT, HEX 8MM X 45MM GR 10.9	21
938906-180	3	EACH WASHER, FLAT M8	22
938806-200	3	EACH WASHER, LOC M8	23
960216-100	1	EACH ELBOW, 1.000 JIC X 1.000 MNPT	24
301421	1	EACH SWITCH, PRESSURE N.C.	25
980704-025M	1	EACH ELBOW, .250 TUBE SWVL X .250 MNPT WITH HOLE	26
980704-012	1	EACH ELBOW, .250 TUBE SWVL X .125 MNPT	27
902915-005	3	EACH PLUG, PIPE .125 RECESSED ZINC	28
970816-100	1	EACH ADAPTER, 1.000 MBSPP M X 1.000 FNPT	29
301503	1	EACH KIT, WIRE CONNECTOR METR (NOT SHOWN)	30
302607	1	EACH THREADLOCKER, .5ml CAPSULE 242 LOCTITE LOCTITE P/N 24205 (NOT SHOWN)	31
60307-IST	1	EACH DWG, SERV-KIT T10G/8G MTG SYS (NOT SHOWN)	32

# ELECTRICAL SYSTEM

100008



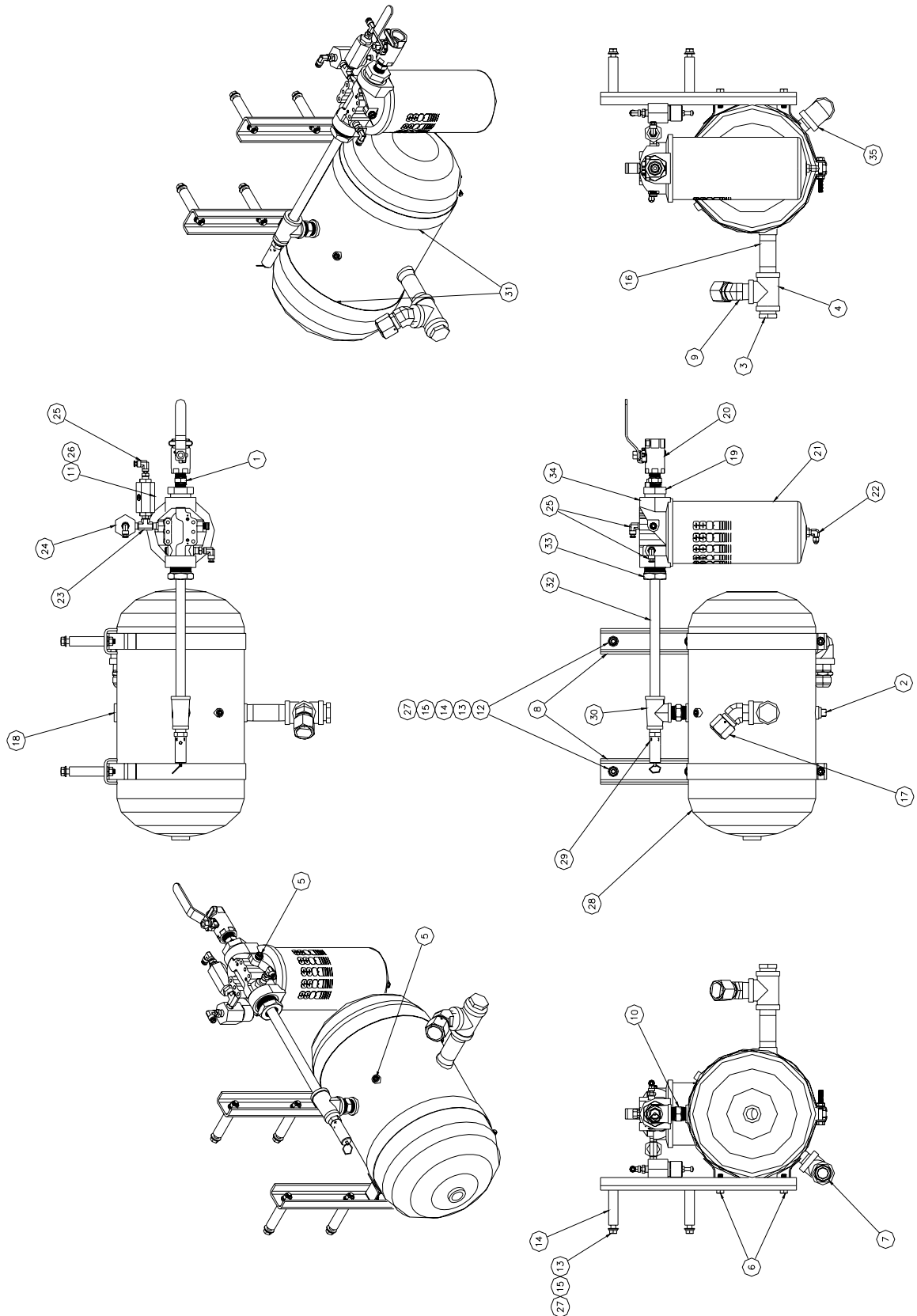
# ELECTRICAL SYSTEM

100008

PART NUMBER	QTY	DESCRIPTION	ITEM
300074	1	EACH GAUGE, HOURMETER	1
300076-016	1	EACH SWITCHGAUGE, TEMP W/THRMWL-16'	2
300227	1	EACH GAUGE, PANEL	3
300075	1	EACH SWITCHGAUGE, PRESSURE	4
960602-012	1	EACH TEE, PIPE 1/8 HYD	5
980704-012	1	EACH ELBOW, 1/4 TB SW X 1/8 NPT 90°	6
301834	1	EACH SWITCH, PRESSURE 18#	7
974216-YW	15	FOOT WIRE, 16 GA YELLOW (NOT SHOWN)	8
979110-014	4	EACH TERMINAL, RING #10 HS 16-14 (NOT SHOWN)	9
300079	1	EACH SWITCH, SHUTDOWN (NOT SHOWN)	10
300909-025	1	EACH BREAKER, 25 AMP CIRCUIT (NOT SHOWN)	11
925801-130	2	EACH NUT, HEX GR5 #10-32 UNF (NOT SHOWN)	12
974212-RD	10	FOOT WIRE, 12 GA RED BOSS LOGO (NOT SHOWN)	13
974216-BE	10	FOOT WIRE, 16 GA BLUE BOSS LOGO (NOT SHOWN)	14
979125-010	2	EACH TERMINAL, RING 1/4 HS 12-10 (NOT SHOWN)	15
979138-014	2	EACH TERMINAL, RING 3/8 X 16-14 (NOT SHOWN)	16
979315-014	1	EACH TERMINAL, BUTT TYPE 16-14 (NOT SHOWN)	17
301885	1	EACH HARNESS, GAUGE PNL	18
979516-2S10R005	1	EACH WIRE ASSY, 16GAX005X25FSPX10RS	19
979138-010	1	EACH TERMINAL, RING 3/8 X 12-10 (NOT SHOWN)	20

# DISCHARGE SYSTEM

200153



CRH 9/27/02

200153-999

# DISCHARGE SYSTEM

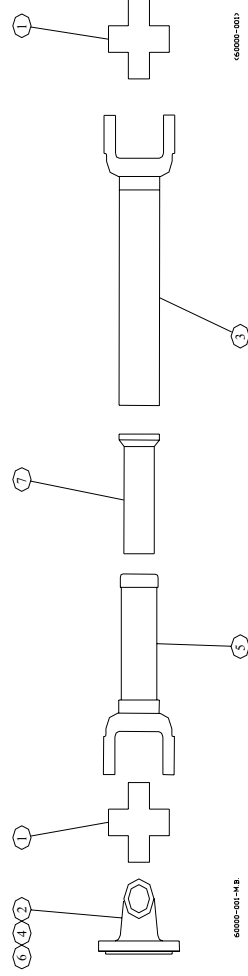
200153

PART NUMBER	QTY	DESCRIPTION	ITEM
960408-050	1 EACH	NIPPLE, HEX .500	1
300108	1 EACH	PLUG, MAGNETIC .500 NPT	2
300783	1 EACH	SIGHTGLASS, OIL LEVEL 1.000	3
906630-040	1 EACH	TEE, PIPE 1.000 SCH 80 HVY	4
902915-010	3 EACH	PLUG, PIPE .250 RECESSED ZINC	5
929806-125	4 EACH	BOLT, HEX GR 8 .375-16 X 1.250	6
960116-100	1 EACH	CONNECTOR, 1.000 JIC X 1.000 MNPT	7
300068-1541	2 EACH	BRACKET, TANK MTG 15.41 (REV 3)	8
960016-100	1 EACH	ELBOW, 1.000 JIC X 1.000 MNPT 45 DEG.	9
960412-075	1 EACH	NIPPLE, HEX .750 X .750	10
301977	1 EACH	ORIFICE, BLWDWN .250 PLG WITH 5/64 HOLE	11
926006-337	4 EACH	NUT, HEX GR8 .375-16	12
938206-071	8 EACH	WASHER, FLAT .375	13
301601	4 EACH	SPACER, .44 IN X 2.75 LG (REV 0)	14
929806-400	4 EACH	BOLT, HEX GR8 .375-16 X 4.000	15
922216-040	1 EACH	NIPPLE, 1.000 X 4.000 HVY	16
301466-100	1 EACH	CAP, JIC 1.000 WITH HOLE	17
902915-040	1 EACH	PLUG, PIPE 1.000 RECESSED ZINC	18
300290	1 EACH	ORIFICE, MIN. PRESS. 1.750 X .750 X .250 (REV 4)	19
300022-075	1 EACH	VALVE, SERVICE - .750 VENTED	20
300093	1 EACH	COALESCER, SPIN-ON ELEMENT	21
960204-012	1 EACH	ELBOW, .250 JIC X .125 MNPT 90 DEG.	22
977704-0404	1 EACH	TEE, .250M X .250M X .250M	23
300057	1 EACH	VALVE, REGULATOR .250	24
980704-025	3 EACH	ELBOW, .250 PAR TUBE SW X .250 NPT	25
301827	1 EACH	VALVE, BLOWDOWN .250 N.C. 55502	26
937806-094	8 EACH	WASHER, LOC .375 GR 8	27
300017	1 EACH	SUMP, 10 IN DISCHARGE (REV 8)	28
300023-200	1 EACH	VALVE, RELIEF .500 NPT 200 LBS	29
902203-023	1 EACH	TEE, PIPE RED .750 X .500 X .750 GALV	30
300067	2 EACH	BAND, SUMP MTG 10	31
922112-100	1 EACH	NIPPLE, PIPE .750 X 10.000 GAL SCH40	32
907605-030	1 EACH	BUSHING, REDUCING 1.250 X .750	33
300331	1 EACH	HEAD, COALESCER	34
901515-040	1 EACH	ELBOW, PIPE 1.000 GAL 150 PSI	35

**PTO AND DRIVELINE SYSTEM**

<b>ITEM</b>	<b>PART NUMBER</b>	<b>DESCRIPTION</b>	<b>QTY</b>
1	300154-625	U-JOINT 5-625X	2
2	300196-329	YOKE, FLANGE	1
3	301598-3672	YOKE, TUBE 2 1/2 X 0.83	1
4	301622	TUBE, DRIVELINE 2 1/2 X 0.83	1
5	925706-198	NUT, NYLOC GR8 3/8-24 UNF	4
6	300155-8021	YOKE, SLIP 1 3/8-16 SPLINE X 1	1
7	929406-125	BOLT, HX HD GR8 3/8-24 X 1 1/4	4
8	300198-8512	SHAFT, SLIP 1 3/8-16 2 1/2 X 0.83	1

NOTE: PTO END YOKE TO BE SUPPLIED BY PTO SUPPLIER



## RECOMMENDED SPARE PARTS LIST

<b>PART NUMBER</b>	<b>DESCRIPTION</b>	<b>QTY</b>
300005-001	OIL FILTER ELEMENT	1
300854	AIR FILTER ELEMENT	1
301670	SPIN ON COALESCER	1
300187	REGULATOR REPAIR KIT	1
301409	SHAFT SEAL REPAIR KIT	1
300186-003 (USED ON 301010)	INLET VALVE REPAIR KIT	1
300186-004 (USED ON 301587)	INLET VALVE REPAIR KIT	1

# SERVICE QUESTIONNAIRE

DATE: \_\_\_\_\_

1. Information given by: \_\_\_\_\_

2. Information received by: \_\_\_\_\_

3. Has anyone helped you: Yes \_\_\_\_\_ No \_\_\_\_\_

4. Distributor: \_\_\_\_\_

5. End-User: \_\_\_\_\_

6. Phone Number: \_\_\_\_\_

7. Make and Model for PTO: \_\_\_\_\_

8. BOSS Serial #: \_\_\_\_\_

9. Make and Model of Engine: \_\_\_\_\_

10. Engine: \_\_\_\_\_

11. Transmission: \_\_\_\_\_

12. Nature of Problem: \_\_\_\_\_

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13. Engine RPM: \_\_\_\_\_

14. Compressor RPM: \_\_\_\_\_

15. Action Taken: \_\_\_\_\_

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ADDITIONAL COMMENTS: \_\_\_\_\_

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**INSTALLATION**

**SECTION**

# **Instructional Procedures for the Installation of BOSS 80100 Rotary Screw Air Compressor**

Do not install a non-gearred compressor kit if the PTO is not capable of producing the cfm you require at your desired engine speed. Minimum compressor shaft speed is 1700 rpm.

This air compressor should be installed only by those who have been trained and delegated to do so and who have read and understand both the operators' manual and the installation manual. Failure to follow the instructions, procedures, and safety precautions in this manual may result in accidents and injuries.

Install, use, and operate this air compressor only in full compliance with all pertinent O.S.H.A. requirements and all pertinent Federal, State, and Local codes or requirements and with BOSS Industries, Inc. instructions.

Do not modify this compressor except with written factory approval.

## **GENERAL**

The overall installation of the BOSS PTO air compressor lends itself well to staging. By handling the installation in various stages, the job becomes much easier and efficient. The following sequence should be adhered to when installing a BOSS PTO compressor: All trucks should be road tested prior to installing BOSS equipment to determine if trucks have any prior problems.

1. Install the PTO
2. Install the compressor and the mounting bracket
3. Install the drive shaft
4. Install the oil cooler
5. Install the oil sump
6. Install the coalescer assembly
7. Install the oil filter
8. Install the air cleaner
9. Prepare and install the hoses
10. Prepare and install the electrical components
11. Pre-start up inspection tests
12. Initial startup and test

# Installation

The chassis should be scrutinized for the best location of the compressor and its components with the least amount of relocating equipment previously mounted on the chassis. In most applications, the driver's side is the preferred side, due to the exhaust tubing typically located on the right side. However, if there is only one PTO opening on the transmission, there is no choice. The compressor and mounting bracket is designed for 80100 application of either side. In order to ensure long, trouble-free service of the drive line to the compressor, the compressor must be located such that the angle requirements of the driveshaft are met. Direct drive air compressor requires opposite engine rotation on the output shaft of the PTO (counterclockwise looking at the compressor shaft) and typically a high shaft PTO is most suitable, offering better clearances when installing on the (s6-650) zed-f 6-speed manual transmission. Relocate any equipment that will cause interference with mounting the compressor and driveline. Geared air compressor requires rotation on the output shaft of the PTO (clockwise looking at the compressor shaft) and typically a low shaft PTO is most suitable. Most manual transmissions will require an adapter gear assembly to get the proper rotation to the compressor. When installing on Allison automatic transmissions the Chelsea Hot Switch PTO is recommended. Relocate any equipment that will cause interference with mounting the compressor and driveline.

## 1. INSTALL THE PTO

The manual supplied with each PTO gives clear installation instructions. Because of the high level of engine vibration encountered by the PTO, particular attention must be given to proper tightening of all studs, nuts, and cap screws. Tighten to PTO manual specifications. The following are 80100 requirements for mounting PTO's:

1. Drain the transmission into a clean container.
2. Remove the container from the work area and cover to avoid contamination.
3. Remove the PTO port access cover from transmission.
4. Install PTO mounting studs.
5. Temporarily mount PTO gaskets to check backlash and shim accordingly.
6. Once backlash has been determined torque all fasteners to their recommended torque specified in PTO manual.
7. Fill transmission and check for leaks. Shift PTO by hand into PTO mode. Run briefly to check rotation.
8. Check continuity of PTO switch with PTO engaged, but not running. Verify that the light comes on.
9. Install the PTO cable. The engaging cable must be routed such that it is not in the close proximity to the engine exhaust pipes, muffler, or sharp edges. Do not kink cable, no bends smaller than 6" radius. The total bends in the cable should not exceed 360°. The shift lever must be installed so it completes 100% of its

## **Installation**

required travel. The cable must be mounted very rigidly to the PTO. If a PTO has a forward and reverse gear a mechanical block must be added to the outside or inside of the PTO to prevent shifting into the wrong gear. **The air compressor requires opposite engine rotation on the output shaft of PTO for direct drive units** (clockwise looking at PTO shaft). **The air compressor requires engine rotation on the output shaft of PTO for geared units** (counterclockwise looking at PTO shaft). Failure to run the compressor in the proper rotation will damage the compressor and void the warranty.

### **2. INSTALL COMPRESSOR AND MOUNTING BRACKET**

The location on the frame rail is determined by the following factors:

1. Does the drive shaft reach the compressor when the drive shaft is assembled using the supplied components. The maximum length is a function of shaft speed and the true operating angles.
2. Can the proper operating angles (see chart) be obtained and are there any obstructions between the compressor and PTO, i.e. cross-members, transmission bulges, etc.
3. Is there clearance to route the compressor intake hose and do you have acceptable ground clearance in your final compressor location.

The BOSS PTO compressor/mounting bracket can be handled and installed as an assembly. Clamp the compressor-mounting bracket to the chassis frame. Using an angle finder, angle the compressor such that the compressor-input shaft is parallel to the PTO output shaft. Comparing the PTO output shaft to the compressor input shaft the compressor must be located such that the true operating angles of the driveline are met. The angle of the PTO output shaft can be measured before the end yoke is on the PTO shaft. The shorter the driveline the smaller the allowable side and top offsets of the two shaft centerlines.

Excessive driveline vibration will occur if operating angles are out of their acceptable range for the speed and overall length.

### **3. INSTALL DRIVE SHAFT**

The compressor is furnished with a companion flange mounted to the compressor input shaft, which will accept a 1310 series driveline. The PTO box should have the end yoke installed and the splined slip yoke assembly should attach to the PTO end yoke. A pre-made (welded) tube and tube yoke assembly is supplied in kit. Welding of the slip tube shaft into the tube and yoke assembly is required and should be performed at a qualified Spicer driveshaft distributor. The shaft must meet the minimum balance and run out specifications required by Spicer. Ensure the PTO yoke is engaged onto the PTO shaft so the setscrew in the end yoke lines

# Installation

up with the middle of the undercut on PTO shaft. Install the setscrew so it bottoms out in this groove and secure with the supplied mechanics wire. Bolt the flange yoke to the compressor flange with the four 3/8" x 1 1/4" UNF bolts and lock nuts. After installing the drive shaft, grease the slip yoke assembly with approved driveline grease.

## 4. INSTALL THE OIL COOLER/FAN ASSEMBLY

The 12 Volt DC motor-driven fan and oil cooler package is suitable for mounting many positions in several locations on the vehicle. The fan is a pull-type, pulling air through the cooler and past the motor. The motor is designed to run in one direction (note direction arrow decal on motor). Be sure to connect the wires for proper rotation. The black and white fan motor wire lead is hot.

### STAGES OF INSTALLATION

The best location for the oil cooler package is cantilevered over the top of the truck cab, with the cooling air blowing vertically upwards. The oil cooler will remain clean, and the fan will always work with cool air. A minimum of four inches of clearance between the oil cooler and the top of the cab is required for proper air flow.

Another common location for the oil cooler/fan assembly is under the truck between the frame rails, behind the rear axle, installed so the cooler package will blow the air from the front of the truck toward the rear.

The truck engine muffler may require relocation to keep the exhaust and the heat from entering the oil cooler. It must be recognized that under-the-truck mounting of the oil cooler subjects it to road dirt, mud, slush, and ice. Deflectors, shields, or pans can be installed to protect the oil cooler. The shields must not increase the fans discharge air temperature by more than 5 degrees F.

Recirculation of hot air must also be prevented when shielding. When locating the fan on top of cab or under truck, the motor/fan assembly must be on top.

Mounting in the body wall is common in the walk-in van type body. It is recommended to use louvers on the outside wall to help prevent rain and/or snow from entering the body. Sufficient opening in the truck body (i.e. rear doors open) must be provided for the cooling air. Air flow can be changed in this application to pushing instead of pulling if requested. The fan motor has several drain holes. When mounting the package in a wall or behind the frame rail, fan motor leads should point down. Boss Industries can supply cooler package mounting hardware when requested (i.e. wall, louvers, etc.).

## 5. INSTALL THE OIL COOLER

Depending on the chassis, removal of the grill or hood may be required to gain access. Install the oil cooler in front of the radiator. Mount the oil cooler in such a manner that the oil cooler does not rub on the radiator or any other component. The cooler must be mounted to the existing truck's cooler support so that it can move as one unit or such that when the truck's existing radiator moves it does not

## **Installation**

make contact with the compressor cooler. 80100 brackets are supplied but in some installations these brackets will need to be modified or new mounting hardware will need to be fabricated in house. Some chassis will not have the necessary room to install the cooler in front of the truck's radiator and a remote mount style oil cooler will need to be exchanged for the front mount and it's related components.

### **6. INSTALL THE OIL SUMP**

When beginning the sump mount you will want to consider the following before permanently installing;

1. The PTO oil sump is designed for horizontal mounting only.
2. The sump can be mounted on the inside of the frame rails, or on the outside the frame.
3. The final location must allow for easy access to the oil fill and sight glass. Answer the following questions and the sump mounting will fall into place, How can I plumb the oil fill port so that it is accessible and will remain level? Where is the body in relationship to the fill and sight glass? Will the sight glass be visible with the body on? If the oil fill piping is extended, it is better to have the piping slope down hill towards the sump Vs up hill. Up hill the piping will always show a false reading at the sight glass. If mounting to the outside of the frame rail will the body interfere with the tank? The vessel is 10 inches in diameter and approximately 20 inches long. Longer if the oil filter and the coalescer are mounted directly to the tank. Move the tank assembly around to various locations to see what best fits on your specific chassis and body. Locate a position on the chassis frame rail that will allow the oil sump tank to be mounted as close to the compressor as possible. The sump tank comes equipped with mounting brackets for bolting to the chassis frame. Sump mounting bands are to be bolted on to the sump mounting brackets. There are 4-holes in each of the sump brackets. Two of these holes must go through the frame rail. In some cases the bolts that hold the bands to the sump brackets can also travel through the frame to improve ground height. It is important to be sure that the sightglass is level on the centerline of the tank from end to end. Not centering the sightglass can cause possible over or under filling of the tank. Also, the air outlet leading to the coalescer should be centered on top.

### **7. INSTALL COALESCER ASSEMBLY**

The head for the spin-on coalescer canister should be located in an area that allows for easy access to the canister. The head must be mounted so that the canister is vertical when in place. As mentioned above the coalescer can be mounted directly to the tank or remote mounted. When remote mounting, minimize the distance away from the tank while allowing easy access for service. The farther away from the

## **Installation**

tank, the compressed air can cool and the resulting moisture can cause problems with the control air line off the coalescer head that feeds the air pressure regular.

**THE COALESCER HEAD IS DESIGNED FOR AIRFLOW IN ONE DIRECTION ONLY. PROPER DIRECTION IS INSIDE OUT FLOW THROUGH THE HEAD AND ELEMENT.**

Once the head is in place spin on the coalescer:

1. Put a film of oil on the gasket.
2. Rotate element clockwise by hand until element seal contacts the head. Hand tighten then rotate element one more turn clockwise with band wrench. The fitting on the bottom of the canister is for the oil return line. Care should be taken when connecting this line so damage or over torqueing does not take place. Hold the nut on the bottom of the can stationary with wrench while tightening the fitting and hose to the coalescer. A minimum pressure orifice is built into a hex plug located in the outlet port of the coalescer head and will automatically maintain the minimum pressure needed for the unit to function properly. Do not remove this fitting. A service valve is installed directly after the minimum pressure orifice. The service valve should be relocated to an easy access area that allows the operator to control the flow of air. If a hose reel compartment is on the body the valve should be located before the reel inlet. The automatic blowdown valve and the air pressure regulator located on the down stream side (outlet side) of the coalescer head. The blowdown valve and air pressure regulator should remain intact as it was shipped.

### **8. INSTALL THE OIL FILTER**

The oil filter assembly includes a filter head and oil filter canister. When mounting, apply a film of oil to gasket. Screw the element on until gasket makes contact then tighten  $\frac{1}{2}$  turn farther. As mentioned earlier the oil filter can be mounted directly off the tank. This offers excellent support for the filter. If space is a concern the element can be remote mounted.

### **9. INSTALL THERMAL VALVE**

The thermal valve typically mounted to the oil filter outlet has four ports. It regulates the flow of oil to the compressor oil cooler. Cold oil less than 180 deg. F is sent back to the compressor for quick warm-up. As the oil approaches 180 deg. F it is sent thru the compressor oil cooler. Leave the thermal valve plumbed to the oil filter head and the head plumbed to the tank when ever possible. This eliminates the need for two additional hose assemblies. When remote mounting the thermal valve the following four ports are plumbed as described below:

# Installation

- E1 - To oil filter outlet
- E2 - To compressor from injection port
- C1 - To compressor oil cooler inlet
- C2 - To compressor oil cooler outlet

## 10. INSTALL THE AIR CLEANER

The air cleaner kit consists of a heavy-duty, 2-stage, dry type air cleaner, suitable for horizontal mounting, Two clamps, and ten feet of 2 ½" id air intake hose is supplied with each kit. Locate the air cleaner at a point where it can draw in cool, clean air and that it will reach to the final compressor location. Stay away from areas where the filter can pull in flammable vapors. A preferred location is above the cab. When mounting air intake hose try to have minimum number of bends. The intake hose is extremely flexible for ease of installation. Be sure to check that all clamps are installed properly and that outside unfiltered air can not enter without going through the filter. Failure to do so could result in dirty air bypassing the filter and entering into the compressor system.

## 11. PREPARE AND INSTALL HOSES

The hose kit consists of a generous amount of bulk hose in various sizes and fittings. The fittings were selected for their ease of assembly in the field, without special tools. A simple five-step procedure is used to make up the hoses:

- Step 1. Determine the hose length.
- Step 2. Put hose in vise just tight enough to prevent it from turning. Cut hose square with fine tooth hacksaw or cut-off wheel. Clean hose with compressed air.
- Step 3. Screw socket counterclockwise onto hose until it bottoms. Back off ½ turn.
- Step 4. Oil nipple threads and screw clockwise into socket and hose, leaving 1/32 to 1 1/16" clearance between nipple box and socket.
- Step 5. Clean assembly by blowing with compressed air.

Be sure to route all hoses so that they do not bind or kink.

Avoid hose contact to exhaust piping, muffler, engine manifold, or any other hot surfaces. Secure hoses with tie downs or clamps. Inspect hose for possible areas where chaffing may occur. It may be necessary to use a protective sleeve on the hose(s) in these areas or to re-route hose. Check that all fittings are tight and secure.

## **Installation**

**KEEP THE CONTROL AIR LINE HOSES AS SHORT AS POSSIBLE AND RUN THEM SO THEY SLOPE DOWN TOWARD THE AIR COMPRESSOR IN ORDER TO PROMOTE MOISTURE DRAINAGE AT SHUTDOWN, WHICH WILL HELP TO PREVENT ICING IN COLD WEATHER. DO NOT USE OR SUBSTITUTE A DIFFERENT MANUFACTURERS HOSE WITH DIFFERENT MANUFACTURED ENDS/FITTING. IF ADDITIONAL HOSE IS REQUIRED CONTACT THE FACTORY FOR BOSS SPECIFICATIONS.**

The 1" discharge line runs from the compressor discharge fitting to the oil sump tank inlet fitting. This is the only 1" hose assembly required in the basic kit so there should be no confusion as to what ports to hook the hose assembly up to. When the oil filter and thermal valve are mounted to the sump, there are three 1/2" oil lines originating from the thermal valve. These fitting are color coded. The port on the thermal valve directly opposite where it mounts to the filter head should feed the lowest port on the oil cooler. The other thermal valve port directly next to the cooler feed port in the cooler return port. The last and final port on the thermal valve should be run to the 1/2" port on the compressor. There are three 1/4" airlines that originate at the coalescer. These lines are also color coded. One of the lines starts at the bottom of the coalescer element and runs to the oil return line port on the end of the compressor opposite the drive shaft. The other two lines start up on top of the coalescer. One line starts at the air pressure regulator to the 1/4" npt elbow at the compressor inlet valve. This valve is located on top of the compressor. The last line starts at the blowdown valve and runs to the 1/8" npt elbow at the inlet valve.

### **12. INSTALLING THE WIRE HARNESS**

Start with the three two-pin weather pack connectors:

1. Take the one with blue/black wire and connect to pressure switch on inlet valve of compressor.
2. Take the two-pin weather pack connector with red/black wires in it to the pressure switch located in the discharge flanges.
3. Take the last two-pin weather pack connector with two black wires to the high temperature shutdown switch located in discharge block.
4. Route the rest of the harness down along the frame rail of the truck.
5. The red wire should go to a keyed ignition source under the hood of the vehicle.
6. Route the remaining portion of harness through the cab/engine bulkhead.
7. The relay connector consisting of wire colors red, black, blue, and white connects to the relay.
8. Purple and white joined together with a ring terminal are to be put to a good ground.
9. The red and blue with butt connectors are to go to engine shutdown device.
10. The single blue wire with butt connector goes to the engine speed control

# Installation

device.

11. The single black wire next to the single blue wire goes to the remote kill device.
12. The remaining two wires in purple color with female quick connectors goes to the hour meter.

## 13. PRE-START-UP INSPECTION CHECKS

This inspection should be done prior to removing truck from bay. Final testing of the system, including checking for leaks, is to be done outside.

### **ALL TRUCKS SHOULD BE ROAD TESTED PRIOR TO STARTING INSTALLATION TO ISOLATE ANY PREVIOUS TRUCK PROBLEMS.**

- I. Check sales order to verify that all compressor related items originally ordered have been installed or are ready to ship with the truck. This would include any special filters, oils, hoses, etc.
- II. Vacuum inside of truck and all areas (including frame and underhood) that have metal or plastic shavings. Wipe all fingerprints off truck.
- III. Apply decals to proper location. Make sure that the area is cleaned prior to applying decals. All decals should have a professional appearance upon application. Additional decals that need to be applied by the body company should be placed inside the BOSS manual and left in the cab of the truck.
- IV. Check all assemblies, clamps, fittings, drivelines, angles, nuts, and bolts to ensure they are properly tied and secured to the vehicle. This is a very critical area of inspection. The vehicle should not be moved until this inspection has been completed.
- V. Record all serial numbers for this installation.
  - A. Truck V.I.N.
  - B. PTO Model no#
  - C. Air-End Serial Number
  - D. BOSS Serial Number
  - E. Receiver Tank Serial Number
  - F. Note any special applications relating to specific installations.
  - G. Driveshaft should have an identification no# if supplied by a qualified Spicer distributor.
  - H. Record the slopes of the PTO, drive line and the air compressor in the side plane when the truck is on level ground. Record the total offset in the top plane of the PTO shaft to the compressor drive shaft. Record the center to center distance of the drive shaft installed.

## Installation

- VI. Check all fluid levels (position the truck on a level surface so that proper amount of fluids can be added).
- A. Fuel - enough for three hours of operation.
  - B. Transmission fluid and PTO box.
  - C. Compressor. Fill the compressor oil sump with blue lube. 1) Capacity is approximately 2.5 gallons. Add one quart of blue lube down through the compressor inlet valve. Be careful not to damage the teflon o-ring in the inlet valve when holding open and adding the one quart of blue lube. 2) Additional oil may need to be added after test. 3) Top off oil level to half the sightglass when finished with the test.
  - D. Lube for driveline slip yoke assembly. The u-joint are lube for life bearings and do not require any lube.
  - E. Brake fluid.
  - F. Anti-freeze – coolant.
  - G. Any other applicable fluids.

The vehicle should be ready for removal from bay at this point. Road test all vehicles after compressor testing.

### 14. INITIAL START-UP AND TEST

- A. Start truck engine and allow for warm-up.
- B. Read the operation section in the operator and parts manual carefully before proceeding onto the initial start-up.
- C. Engage PTO as per the start-up /shutdown decal supplied with the unit. A direction of rotation arrow is attached to the compressor package above the flange. The shaft must be rotating in the direction the arrow is pointing. If for any reason this arrow has been removed the correct compressor rotation is opposite engine rotation of output shaft on PTO for direct drive units or clockwise when looking at the PTO shaft. The correct compressor rotation is engine rotation of output shaft on PTO for geared units or counterclockwise when looking at the PTO shaft. Check the direction of rotation by quickly engaging and then disengaging the compressor.

**DO NOT RUN THE COMPRESSOR IN A REVERSE ROTATION FOR PERIODS LONGER THAN 5 SECONDS. CONTINUED OPERATION IN THIS MANNER WILL RESULT IN EXTENSIVE COMPRESSOR UNIT DAMAGE.**

### D. SAFETY CIRCUIT TESTING FOR 80100 COMPRESSOR PACKAGE

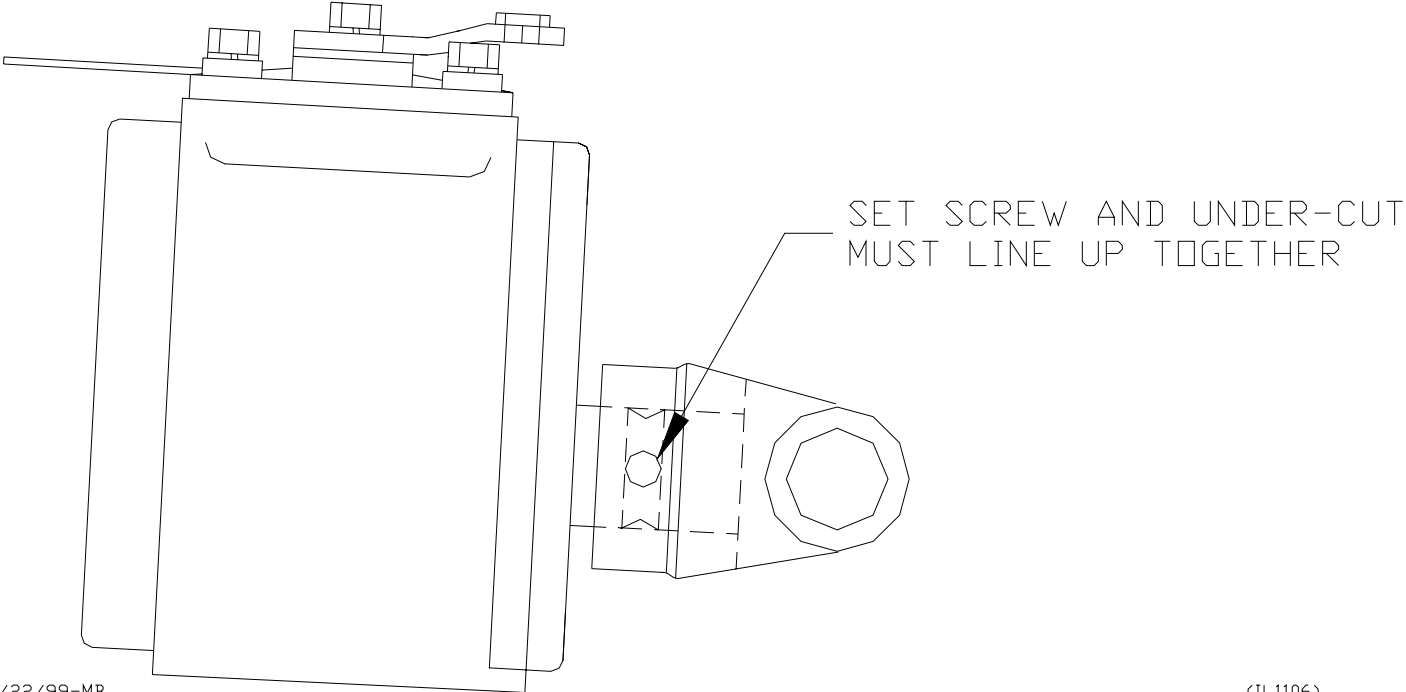
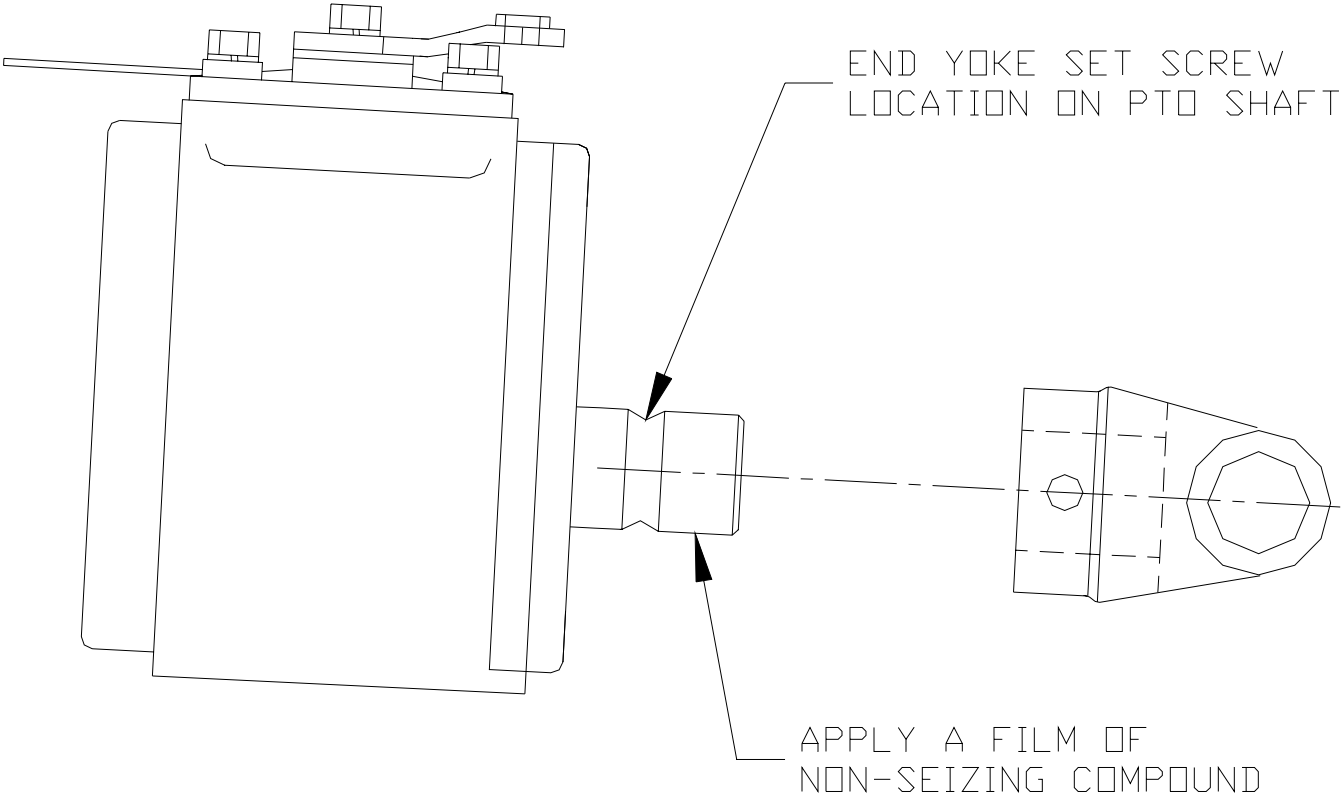
Safety circuit testing can be done before starting the PTO and compressor when using this model. This model requires the shutdown switch to be wired in series with the

## **Installation**

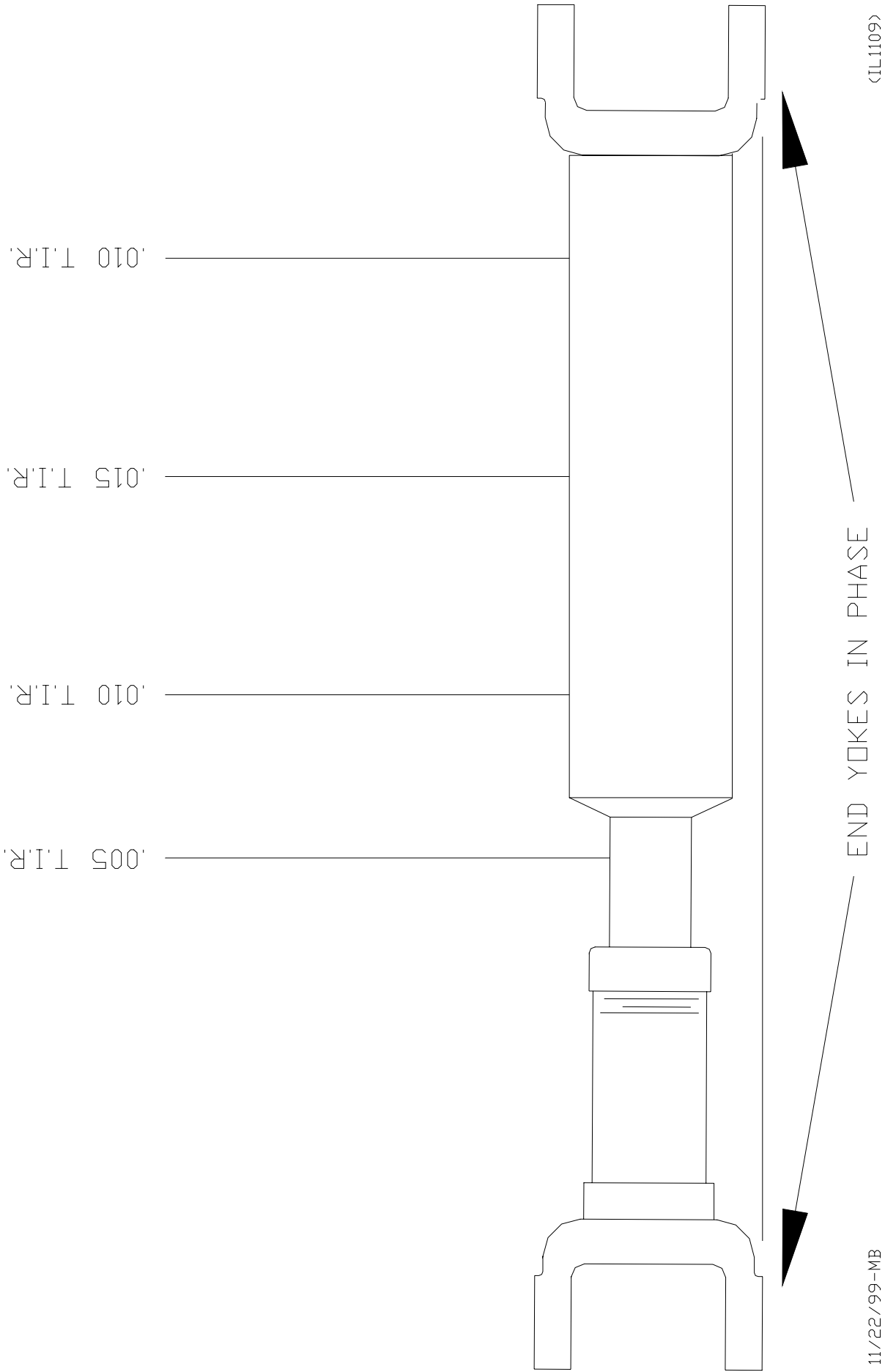
ignition coil on gas engine vehicles. Using a 1/16" Allen wrench, set the temperature switchgauge shutdown set point at 240 degrees F. This is done on the face of the gauge. The pressure switchgauge will need to be set at 160 PSI and is adjusted at the face of the gauge using a 1/16" Allen wrench also. Start the truck (do not engage the compressor) and take a screw driver and touch the 1/16" Allen head screw on the face of the temperature switchgauge and simultaneously touch the outside ring on the face of the gauge, and this should shut down the engine. Push in the button on the shutdown switch to reset. Repeat the test with the pressure switchgauge. If engine does not shutdown, check compressor wiring.

**INSTALLATION**  
**ILLUSTRATIONS**

# PTO End Yoke Installation



# Driveline Runout Specifications



# Driveline Installation Techniques

## 1. U-JOINT OPERATING ANGLES

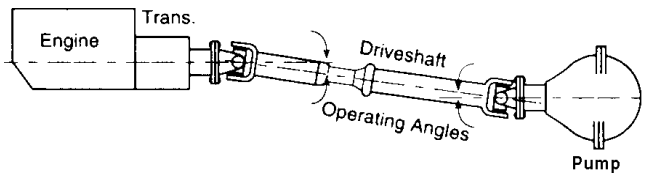
Every U-joint that operates at an angle creates vibration.

U-joint operating angles are probably the most common cause for driveline vibration in vehicles that have been reworked or that have had auxiliary equipment installed.

When reworking a chassis or installing a new driveshaft in a vehicle, make sure that you follow the basic rules that apply to u-joint operating angles, as follows:

1. U-joint operating angles at each end of a shaft should always be at least  $1^\circ$ .
2. U-joint operating angles on each end of a driveshaft should always be equal within  $1^\circ$  of each other.
3. U-joint operating angles should not be larger than  $3^\circ$ . If more than  $3^\circ$ , make sure they do not exceed the maximum recommended angles for the RPM at which they will be operating.

A u-joint operating angle is the angle that occurs at each end of a driveshaft when the output shaft of the transmission and the input shaft of the pump are not in line. See figure.

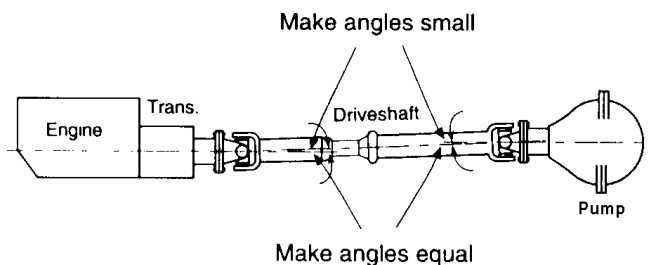


The connecting driveshaft operates with an angle at each u-joint. It is that angle that creates a vibration.

## REDUCING AND CANCELING VIBRATION

A key point to remember about u-joint operating angles: To reduce the amount of vibration, the angles on each end of a driveshaft should always be SMALL.

To cancel an angle vibration, the u-joint operating angles need to be EQUAL within  $1^\circ$  at each end of a shaft. See figure.



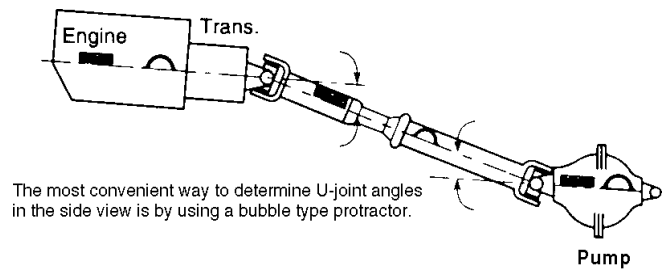
## 2. SINGLE PLANE AND COMPOUND U-JOINT OPERATING ANGLES

There are two types of u-joint operating angles, single plane and compound.

### SINGLE PLANE

Single plane angles occur when the transmission and pump components are in line when viewed from either the top or side, but not both.

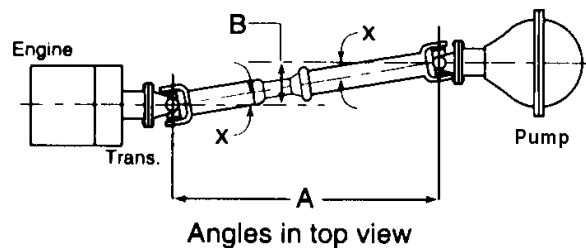
Determine the u-joint operating angle in an application where the components are in line when viewed from the top, but not in line when viewed from the side, is as simple as measuring the slope of the components in the side view, and adding or subtracting those slopes to determine the angle. See figure.



Angles in side view

These angles should be SMALL and equal within  $1^\circ$ .

Determine the u-joint operating angles on a shaft that is straight when viewed from the side and offset when viewed from the top requires the use of a special chart (See accompanying chart). In this type of application, the centerlines of the connected components must be parallel when viewed from the top, as shown. These angles should also be SMALL and equal within  $1^\circ$ . See figure.



Look at the angle chart and note that the smaller the offset, the smaller the resultant angle.

To reduce the possibility of vibration, keep any offset between connected points to a minimum.

# Driveline Installation Techniques

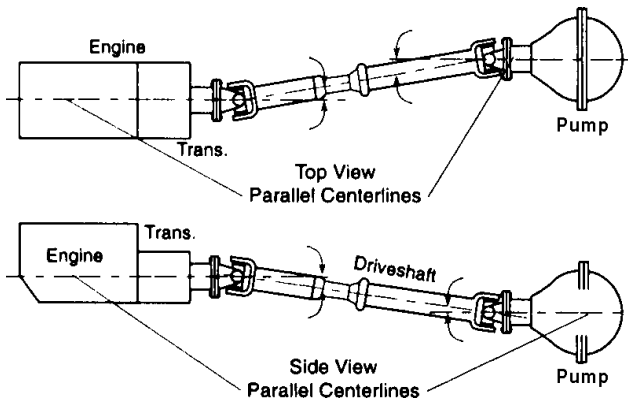
There are two things which can be done to make certain single plane angles are SMALL and EQUAL:

Make sure that the transmission and pump are mounted so that their centerlines are parallel when viewed from both the side and the top.

Make sure the offset between them is small in both views.

## COMPOUND ANGLES

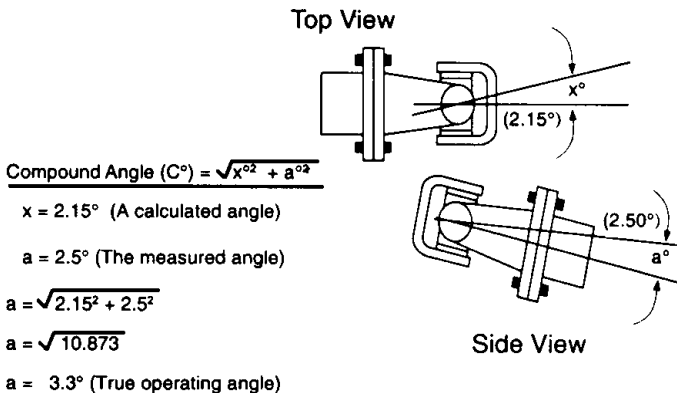
Compound u-joint operating angles occur when the transmission and pump are not in line when viewed from both, the top and side. Their centerlines, however, are parallel in both views. See figure.



## TRUE U-JOINT OPERATING ANGLE

The true u-joint operating angle, which must be calculated for each end of the shaft with compound angles, is a combination of the u-joint operating angle in the top view, as determined from the chart, and the measured u-joint operating angle in the side view.

To determine the true u-joint operating angle for one end of a shaft, (compound angle  $C^\circ$  in the formula shown in figure below) insert the u-joint operating angle measurement obtained in the side view and the u-joint operating angle obtained from the chart into the formula.



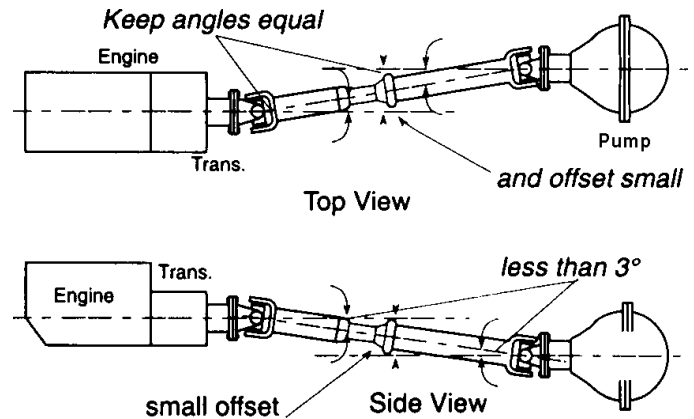
Do the same for the other end of the shaft. Compare the resultant calculated u-joint operating angle for each end. They should be EQUAL within  $1^\circ$ . If they are not, the driveshaft will vibrate.

## 3. ELIMINATING COMPOUND ANGLE INDUCED VIBRATIONS

Compound u-joint operating angles are one of the most common causes for driveline vibration. To avoid these problems, remember these important considerations:

When setting up an application that requires compound u-joint operating angles, always keep the centerlines of the transmission and pump parallel in both views.

Always keep the offset between their horizontal and vertical centerlines small.



### NOTE

CENTERLINES OF TRANSMISSION AND AXLE MUST BE PARALLEL IN BOTH TOP AND SIDE VIEWS TO USE THIS METHOD OF DETERMINING TRUE U-JOINT OPERATING ANGLE. CONTACT BOSS TECHNICAL SUPPORT IF YOU HAVE AN APPLICATION WHICH CANNOT BE INSTALLED WITH THEIR CENTERLINES PARALLEL.

# Driveline Installation Techniques

## 4. ANGLE SIZE

The magnitude of a vibration created by a u-joint operating angle is proportional to the size of the u-joint operating angle. BOSS recommends true u-joint operating angles of 3° or less.

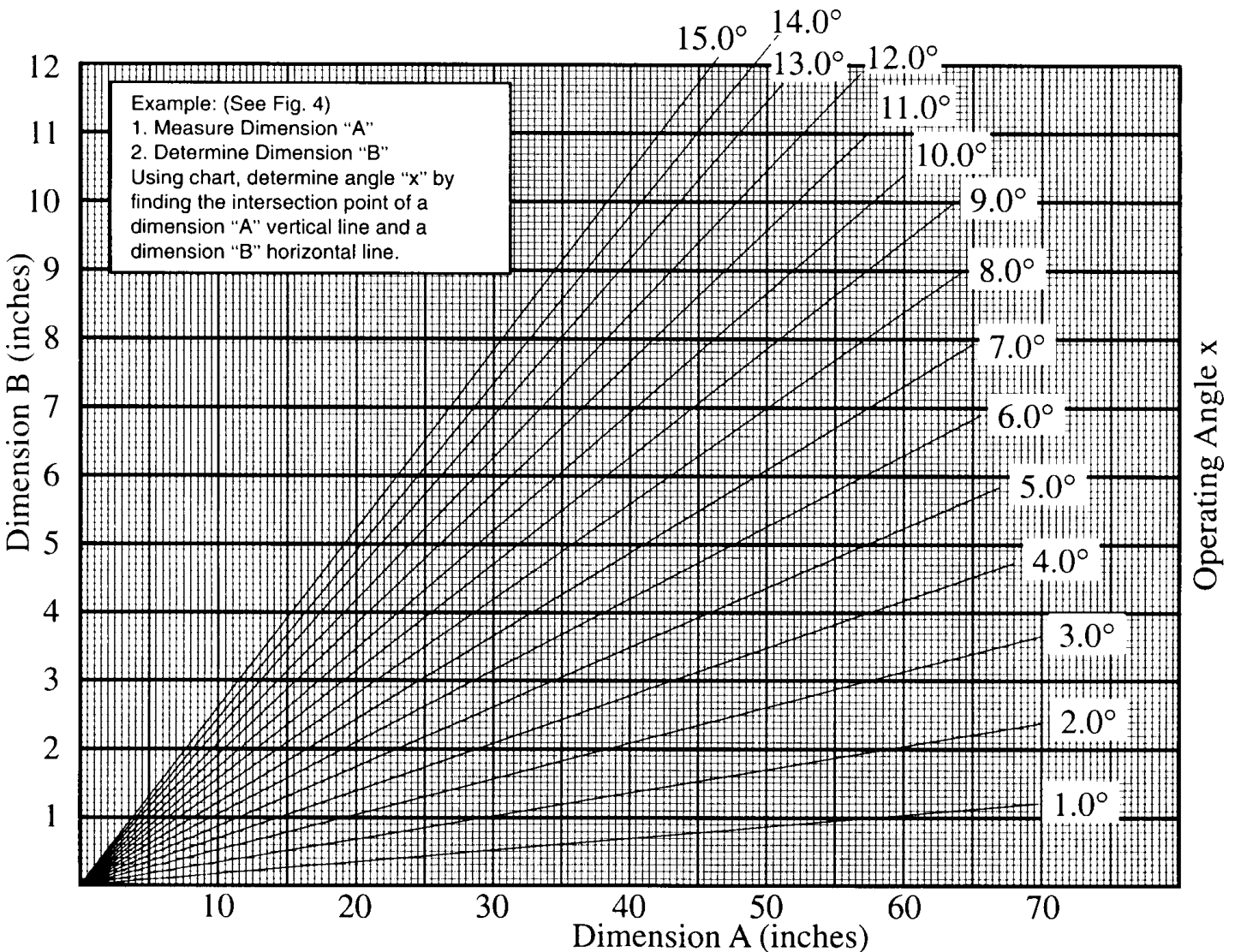
Obtain the true u-joint operating angle, as explained above, and if it is greater than 3°, compare it to the following chart.

DRIVESHAFT	MAXIMUM
5000	3.2°
4500	3.7°
4000	4.2°
3500	5.0°
3000	5.8°
2500	7.0°
2000	8.7°

The angles shown on the chart are the MAXIMUM u-joint operating angles recommended by BOSS and are directly related to the speed of the driveshaft. Any u-joint operating angle greater than 3° will lower u-joint life and may cause vibration. Remember to check maximum safe driveshaft RPM as recommended by the driveshaft manufacturer.

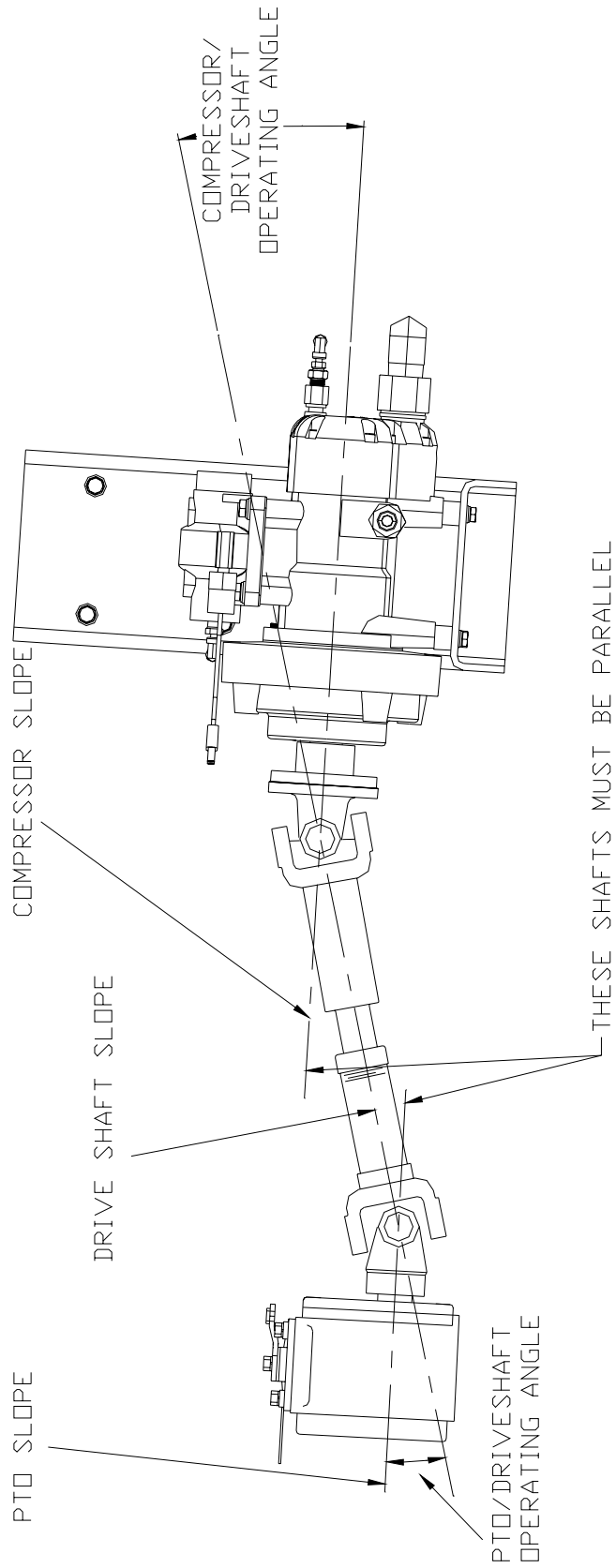
### ANGLE CHART

FOR DRIVESHAFTS HAVING AN ANGLE IN THE TOP VIEW



# Side View Operating Angle Calculations with Up Hill Shaft

SIDE VIEW OPERATING ANGLE CALCULATIONS WITH UP HILL SHAFT



SIDE VIEW OPERATING ANGLE CALCULATIONS

$$\begin{array}{r}
 \text{PTO SLOPE--} \\
 \text{SHAFT SLOPE} \\
 + \\
 \text{DEGREE DOWN} \\
 \text{DEGREE UP} \\
 \hline
 = \\
 \text{PTO/DRIVE SHAFT} \\
 \text{OPERATING ANGLE}
 \end{array}
 \quad
 \begin{array}{r}
 \text{SHAFT SLOPE--} \\
 \text{COMPR. SLOPE} \\
 + \\
 \text{DEGREE UP} \\
 \text{DEGREE DOWN} \\
 \hline
 = \\
 \text{PTO/DRIVE SHAFT} \\
 \text{OPERATING ANGLE}
 \end{array}$$

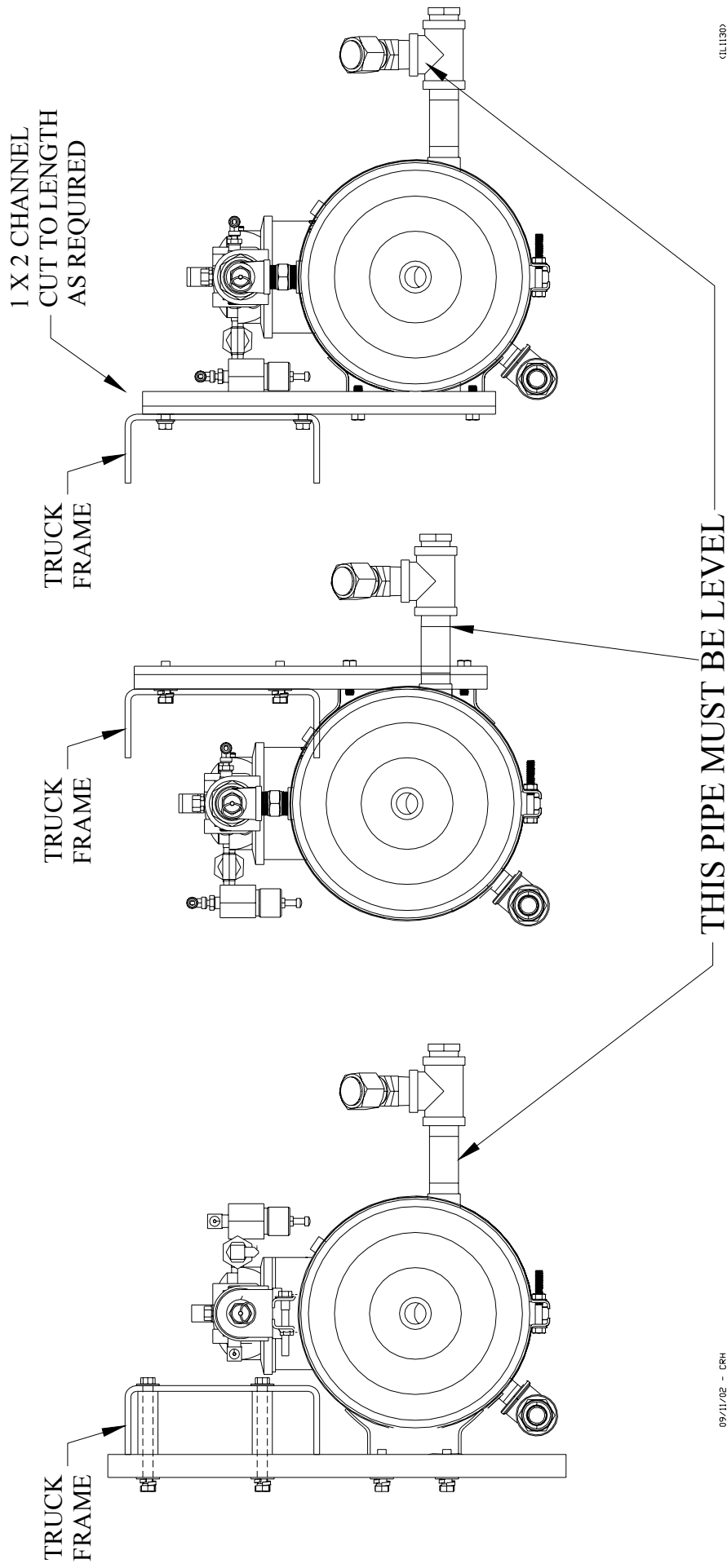
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OPERATING ANGLES MUST BE WITHIN 1 DEGREE OF EACH OTHER

CIU1107



# Oil Sump Mounting Configurations



**WARRANTY**

**SECTION**

## WARRANTY

BOSS INDUSTRIES, Inc. warrants that this Rotary Screw Compressor unit conforms to applicable drawings and specifications approved in writing by BOSS. The unit assembly will be free from defects in material and workmanship for a period of two (2) years from the date of initial operation or thirty (30) months from the date of shipment, whichever period first expires. All other components and parts of BOSS manufacture, will be free from defects in material and workmanship for a period of one (1) year from the date of initial operation or eighteen (18) months from the date of shipment, whichever period first expires. If within such period BOSS receives from the Buyer written notice of and alleged defect in or nonconformance of the unit, all other components and parts of BOSS manufacture and if in the judgment of BOSS these items do not conform or are found to be defective in material or workmanship, BOSS will at its option either, (a) furnish a Service Representative to correct defective workmanship, or (b) upon return of the item F.O.B. BOSS original shipping point, repair or replace the item or issue credit for the replacement item ordered by Buyer, (Defective material must be returned within thirty (30) days of return shipping instructions from BOSS. Failure to do so within specified time will result in forfeiture of claim), or (c) refund the full purchase price for the item without interest. Factory installed units will also include warranty on installation for a period of one (1) year. This warranty does not cover damage caused by accident, misuse or negligence. If the compressor unit is disassembled the warranty is void. BOSS's sole responsibility and Buyer's exclusive remedy hereunder is limited to such repair, replacement, or repayment of the purchase price. Parts not of BOSS manufacture are warranted only to the extent that they are warranted by the original manufacture. BOSS shall have no responsibility for any cost or expense incurred by Buyer from inability of BOSS to repair under said warranty when such inability is beyond the control of BOSS or caused solely by Buyer.

**There are no other warranties, express, statutory or implied, including those of merchantability and of fitness of purpose; nor any affirmation of fact or representation which extends beyond the description of the face hereof.**

This warranty shall be void and BOSS shall have no responsibility to repair, replace, or repay the purchase price of defective or damaged parts or components resulting directly or indirectly from the use of repair or replacement parts not of BOSS manufacture or approved by BOSS or from Buyer's failure to store, install, maintain, and operate the compressor according to the recommendations contained in the Operating and Parts Manual and good engineering practice. The total responsibility of BOSS for claims, losses, liabilities or damages, whether in contract or tort, arising out of or related to its products shall not exceed the purchase price. In no event shall BOSS be liable for any special, indirect, incidental or consequential damages of any charter, including, but not limited to, loss of use of productive facilities or equipment, loss of profits, property damage, expenses incurred in reliance on the performance of BOSS, or lost production, whether suffered by Buyer or any third party.

**BOSS INDUSTRIES, INC.**  
**720 BOYD BLVD**  
**LAPORTE, IN 46350**  
**(800)635-6587 TOLL FREE PHONE**

## SUMMARY OF MAIN WARRANTY PROVISIONS

As claims, policies and procedure are governed by the terms of the BOSS INDUSTRIES, Inc. warranty, it is necessary to outline some of the more important provisions.

The BOSS warranty applies only to new and unused products which, after shipment from the factory, have not been altered, changed, repaired or mistreated in any manner whatsoever. Normal maintenance items such as lubricants and filters are not warrantable items.

Parts not of BOSS manufacture are warranted only to the extent they are warranted by the original manufacturer.

Damage resulting from abuse, neglect, misapplication or overloading of a machine, accessory or part is not covered under warranty.

Deterioration or wear occasioned by chemical and/or abrasive action or excessive heat shall not constitute defects.

Parts replacement and/or correction of defective workmanship will normally be handled by BOSS or their authorized distributor.

Failure to file a detailed warranty claim/service report for each occurrence of material defect of defective workmanship will cause warranty claim to be rejected.

Defective material must be returned within 30 days of receipt of shipping instructions. Failure to do so within specified time will result in forfeiture of claim.

The distributor is responsible for the initial investigation and write up of the warranty claim.

Distributor shall be allowed no more than 30 days from date of repair to file a warranty claim/service report.

Warranty for failure of BOSS replacement parts covers the net cost of the party only, not labor and mileage.

The BOSS warranty does not cover diagnostic calls and travel. That is time spent traveling to the machine to analyze the problem and returning with the proper tools and parts to correct the problem.

BOSS will deduct from allowable credits for excess freight caused by sender failing to follow return shipping instructions.

Distributors or end-users automatically deducting the value of a warranty claim from outstanding balances due and payable to BOSS prior to receiving written notification of BOSS approval of the warranty claim may be subject to forfeiture of the entire claim.

## **WARRANTY INTRODUCTION**

The warranty policy and procedures outlined here within are detailed to provide the claimant with the information necessary when filing a warranty claim, and enabling BOSS the ability to serve it's customers best.

### **WARRANTY CLAIMS - GENERAL**

An approved claim depends on the following provision:

1. A warranty claim/service report # must be issued by BOSS. (See filing procedures).
2. Failed part must be returned within 30 days, freight prepaid, with receipt of warranty claim/service report.
3. Part is definitely defective.
4. Workmanship is definitely defective.
5. Machine is within warranty period.
6. Machine has been operating within design conditions.

Claims made by distributors must be verified by distributor prior to contracting BOSS.

### **WARRANTY CLAIMS - FILING PROCEDURES**

1. Initiate through purchase order for warranty part or request for credit.
2. Warranty Claims/Service Report will accompany replacement part. When returning failed part to the factory for warranty credit, fill out all information requested on Warranty Claims/Service Report when it is returned to you with replacement part.
3. BOSS will confirm disposition of failed part within 30 days, and or request additional information.
4. Claim acceptance or denial will result in release of a credit or confirmation letter of denial.
5. BOSS will consider each claim on it's own merit and reserves the right to accept or reject claim request. In case of air-ends, these will be returned to the manufacturer for their analysis/input.
6. Send Warranty Claim/Service Report request to:

**BOSS INDUSTRIES, INC.**  
**720 BOYD BLVD**  
**LAPORTE, IN 46350**  
**ATTN: WARRANTY CLAIM ENCLOSED**

## WARRANTY CLAIMS - PREPARATION OF PART RETURN

Parts returned to the factory must be properly packaged to prevent damage during shipment. Damage to a part as a result of improper handling or packing could be cause for claims disallowance of credit. When addressing the package for shipment, the following information must be on the outside of or tagged clearly to package.

1. Return Goods Authorization.
2. Distributor or end-users return address.
3. Correct factory address.
4. Warranty Claim/Service Report #.
5. Number of packages pertaining to each claim.

**NOTE: Our warranty requires that all defective parts be returned to BOSS freight prepaid. Items sent without RGA number will not be accepted.**

## DAMAGE IN TRANSIT

Do not return damaged merchandise to BOSS, please follow claim procedure.

1. Loss in transit:

The merchandise in our kit or provided in our factory installations has been thoroughly inspected or carefully installed and tested before leaving our plant. However, regardless of the care taken at the factory, there is a possibility that damage may occur in shipment. For this reason, it is recommended that the unit be carefully inspected for evidence of possible damage or malfunction during the first few hours of operation. Responsibility for the safe delivery of the kit or factory installed unit was assumed by the carrier at the time of shipment. Therefore, claims for loss or damage to the contents of the kit or factory installed unit should be made upon the carrier.

2. Concealed loss or damage:

Concealed loss or damage means loss or damage which does not become apparent until the kit is unpacked or the factory installed unit is run by the end-user. The contents of the kit or factory installed unit may be damaged due to rough handling while in route to its destination, even though the kit or factory installed unit shows no external damage. When the damage is discovered upon unpacking, make a written request for inspection by the carrier agent within fifteen days of delivery date. Then file a claim with the carrier since such damage is the carrier's responsibility.

## **SCREW COMPRESSOR AIR-END EXCHANGE PROGRAM**

Replacement air-ends are available from the factory. For current prices and availability, contact BOSS Co., Inc. or an authorized BOSS distributor. Prices are F.O.B. shipping point. Prices do not include labor for removal or installation.