BULLET
OPERATORS, MAINTENANCE
AND PARTS MANUAL

MANUAL P/N: 300931

REVISED: 12/29/99-M.B.

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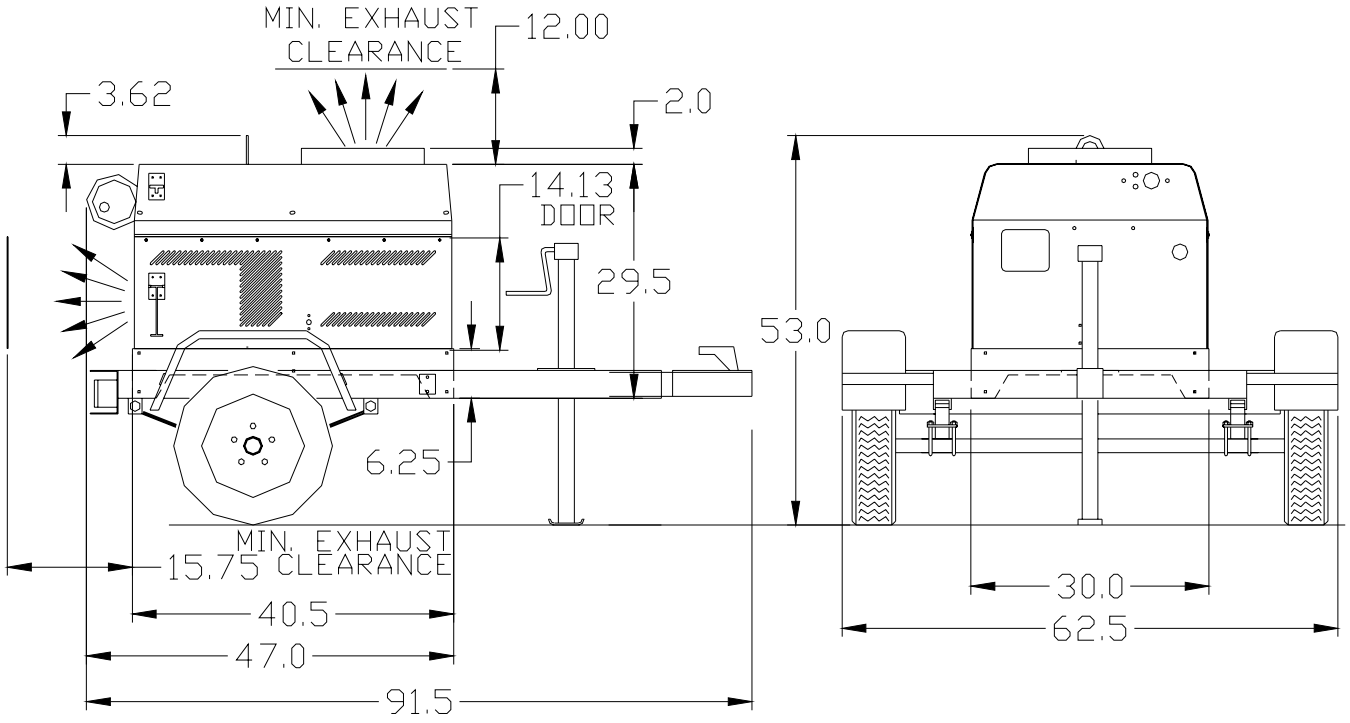
COMPRESSOR SPECIFICATIONS	
MODEL	BULLET
TYPE	OIL FLOODED ROTARY SCREW
DELIVERY (CFM)	70 CFM @ 100 PSIG (1.98m3/min)
OPERATING PRESSURE RANGE	80-115 PSIG
AMBIENT OPERATING TEMP. RANGE	-20 DEG TO +100 DEG F
OIL SUMP CAPACITY	1.6 GALLONS (6.06 LITERS)
TOTAL SYSTEM CAPACITY	2.2 GALLONS (8.32 LITERS)
AIR SERVICE CONNECTION	3/4" NPT
TYPE COOLING SYSTEM	OIL TO AIR
AIR INTAKE FILTER	SINGLE STAGE DRY
TYPE OF CONTROL	0 - 100% DEMAND

ENGINE SPECIFICATIONS	
TYPE	KOHLER 4-CYCLE, V-TWIN OHV AIR COOLED GASOLINE
MODEL	CH25
POWER @3600RPM - HP (kw)	25 HP (18.7kw)
DISPLACEMENT - cu. in. (cc)	44 cu. in. (725cc)
BORE & STROKE	B - 3.27in (83mm) & S - 2.64in (67mm)
OIL CAPACITY w/ FILTER	2.1 QUARTS (2 LITERS)
BATTERY	12V - 375cca @ 32 DEG F
FUEL TANK CAPACITY	7.4 GALLONS

TRAILER SPECIFICATIONS (OPTIONAL)

- 1000 LBS CAPACITY AXLE
- 480 x 12" B RATED TUBELESS TIRES
- SAFETY CHAINS
- 2" BALL HITCH (PINTLE OPTIONAL)
- DROP DOWN JACKET
- FENDERS

WEIGHT SKID MOUNTED 490lbs (186kg)
WEIGHT w/TRAILER 740lbs (281kg)



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SAFETY

WARNING

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

GENERAL

The compressor is designed and manufactured to operate with relative safety. However, the responsibility for safe operation rests with those who use and maintain these products. The following safety precautions are offered as a guide, which, if conscientiously followed, will minimize the possibility of accidents throughout the useful life of this equipment.

Only those who have read and understand this operator's manual should operate this air compressor. Failure to follow the instructions, procedures and safety precautions in this manual may increase the possibility of accidents and injuries.

Never start this air compressor unless it is safe to do so. Do not attempt to operate the air compressor with a known unsafe condition. Tag the air compressor and render it inoperative by disconnecting the battery so others who may not know of the unsafe condition will not attempt to operate it until the unsafe condition is corrected.

Use and operate this air compressor only in full compliance with all pertinent OSHA requirements and all pertinent Federal, State and Local codes or requirements.

Do not modify this compressor except with written factory approval. Any unauthorized modification automatically voids the factory warranty.

The operation of engine-powered equipment will always be somewhat dangerous. Do not consider this section to be complete, but always continue to be alert for hazards.

SAFETY

PARKING OR LOCATING COMPRESSOR

Locate compressor on level areas, if possible. If not, locate compressor across grade, so the compressor does not tend to roll down hill. Do not locate compressor on grades exceeding 15 degrees (27%).

Make sure compressor is parked or located on a firm surface that can support its weight.

Locate compressor so the wind, if any, tends to carry the engine exhaust fumes and radiator heat away from the compressor air inlet openings and also where the compressor will not be exposed to excessive dust from the work site. Muffler side of package must have 12 inches of clearance so engine-cooling air can escape from package without restriction or re-circulation. The topside of package at the compressor oil cooling fan must also have 12 inches of clearance so cooling air can escape from package without restriction or re-circulation.

Block or chock both sides of all wheels.

Block or chock both sides of stabilizer legs.

PRESSURE RELEASE

Install the appropriate flow limiting valves between the compressor service air outlet and the shut-off (throttle) valve. Air hoses exceeding 1/4" inside diameter are to be connected to the shut-off (throttle) valve to reduce pressure in case of hose or connection failure, per OSHA Standard 29 CFR 1926.302 (as) (7).

When the hose is to be used to supply a manifold, install an additional appropriate flow limiting valve between the manifold and each air hose exceeding 1/4" inside the diameter that is to be connected to the manifold to reduce pressure in case of hose failure.

Provide a flow-limiting valve every 75 feet of hose in runs of air hose exceeding 1/4" inside diameter to reduce pressure in case of hose failure.

Flow limiting valves are listed by pipe size and rated CFM. Select appropriate valves accordingly.

Do not use tools that are rated below the maximum relief valve rating on this compressor. Select tools, air hoses, pipes, valves, filters and fittings accordingly. Do not exceed manufacturer's rated safe operating pressures for these items.

SAFETY

PRESSURE RELEASE (CONT.)

Secure all hose connections by wire, chain or other suitable retaining devices to prevent tools or hose ends from being accidentally disconnected and expelled.

Open oil filler cap only when compressor is not running and is not pressurized. Shut down the compressor and bleed the sump (open service valve) pressure to zero before removing the oil filler cap.

Vent all internal pressure prior to opening any line, fitting, hose, valve, drain plug, connection or other components such as filters or line oilier, and before attempting to refill optional air line anti-ice systems with antifreeze compound.

Keep personnel out of line with and away from the discharge opening of hoses or tools or other points of compressed air discharge.

Do not use air pressures higher than 30 PSIG (207kPa) for cleaning purposes, and then only with effective chip guarding and personal protective equipment per OSHA Standard 29 CFR 1910.242 (b).

Do not engage in horseplay with air hoses, as serious injury or death may result.

FIRE AND EXPLOSION

Refuel at a service station or from a fuel tank designed for its intended purpose. If this is not possible then, ground the machine to the dispenser prior to refueling.

Immediately clean up any spills or leaking fuel, battery electrolyte, oil or antifreeze solution.

Shut off the air compressor and allow it to cool. Then keep sparks, flames and other sources of ignition away and do not permit smoking in the vicinity when adding fuel, when checking or adding electrolyte to batteries, when checking or adding oil, or when refilling air line anti-ice systems with antifreeze compound.

Do not permit liquids, including air line anti-ice system antifreeze compound or oil film to accumulate on bottom covers or on, under or around, or any external or internal surfaces of the air compressor. Wipe down using an industrial cleaner or steam clean as required. Do not use flammable solvents for cleaning purposes.

SAFETY

FIRE AND EXPLOSION (CONT.)

Disconnect the ground (negative) battery connection prior to attempting any repairs or cleaning inside the enclosure. Tag the battery connection so others will not unexpectedly reconnect it.

Keep electrical wiring, including the battery terminals and other terminals, in good condition. Replace any wiring that has cracked, cut, abraded, or otherwise degraded insulation; or terminals that are worn, discolored or corroded. Keep all terminals clean and tight.

Turn off battery charger before making or breaking connections to the battery.

Keep grounded conductive objects such as tools away from exposed live electrical parts such as terminals, to avoid arcing, which might serve as a source of ignition.

Replace damaged fuel tanks or lines immediately, rather than attempting to repair them. Do not store or attempt to operate the compressor with any known leaks in the fuel system or any oil lines.

Remove any other material that may be damaged by heat or that may support combustion, including anti-ice system components containing antifreeze compound, prior to attempting weld repairs.

Keep a suitable fully charged class BC or ABC fire extinguisher or extinguishers nearby when servicing and operating the compressor.

Do not store any type of containers with fuel or lubricants inside, inside or outside of canopy.

Keep oily rags, trash, leaves, litter or other combustibles out of and away from the compressor.

Open all access doors and allow the enclosure to ventilate prior to attempting to start the engine. (Use this time to check the engine and compressor oil levels, etc.)

Do not operate compressor under low overhanging leaves or permit such leaves to contact hot exhaust system surfaces when operating in forested areas.

Do not attempt to use ether as a starting aid in gasoline engines, as serious personal injury or property damage may result.

SAFETY

FIRE AND EXPLOSION (CONT.)

Antifreeze compound used in air line anti-ice systems contains methanol, which if flammable. Use systems and refill with compound only in well-ventilated areas away from heat, open flames, or sparks. Do not expose any part of these systems or the antifreeze compound to the temperatures above 150 degrees F (65 degrees C). Vapors from the antifreeze compound are heavier than air. Do not store compound or discharge treaded air in confined or unventilated area. Do not store containers or antifreeze compound in direct sunlight.

MOVING PARTS

Keep hands, arms and other parts of the body and also clothing away from belts pulleys and other moving parts.

Do not attempt to operate the compressor with the fan guard or other guards removed.

Wear snug fitting clothing and confine long hair when working around this compressor, especially when exposed to hot or moving parts inside the enclosure.

Keep access doors closed except when making repairs, adjustments or performing service.

Make sure all personnel are clear of the compressor prior to attempting to start to operate it, or shutting it off.

Shut off engine before adding fuel, oil, lubrications, air line anti-freeze compound or battery electrolyte.

Disconnect the grounded negative battery connection to prevent accidental engine operation prior to attempting repair or make adjustments. Tag the battery connection so others won't unexpectedly reconnect it. (Use appropriate lockout / tag-out procedures).

Make adjustments only when the engine is shut off. When necessary, make adjustment, and then start engine to check adjustment. If adjustment is incorrect shut off engine, readjust, and then restart engine to recheck adjustment.

SAFETY

HOT SURFACES, SHARP EDGES AND SHARP CORNERS, VACUUM

Avoid bodily contact with hot oil, hot coolant, hot surfaces and sharp edges and corners.

Keep all parts of the body away from all points of air discharge and away from hot exhaust gases.

Wear personal protective equipment, including gloves and head covering when working in, on, or around the compressor.

Keep a first aid kit handy. Seek medical assistance promptly in case of injury. Don't ignore small cuts and burns, as they may lead to infection.

Keep all loose clothing and parts of the body away from engine and/or compressor intakes or air filter intakes.

TOXIC AND IRRITATING SUBSTANCES

Do not use air from this compressor for breathing except in full compliance with OSHA Standards 29 CFM 1920 and any other Federal, State or Local Codes or Regulations.

Do not use air line anti-ice systems in air lines supplying respirators or other breathing air utilization equipment, and do not discharge air from these systems in non-ventilated or other confined areas.

Operate the compressor only in open or well-ventilated areas.

If the machine is operated indoors, discharge engine exhaust outdoors, being certain that there are no exhaust system leaks.

Locate this compressor so that exhaust is not apt to be carried towards personnel, air intakes servicing personnel areas, or towards the air intake of this or any other portable or stationary compressor.

SAFETY

TOXIC AND IRRITATING SUBSTANCES (CONT.)

Fuels, oils, coolants, lubricants and battery electrolyte used in this compressor are typical of the industry. Care should be taken to avoid accidental ingestion and/or skin or eye contact. In the event of indigestion, seek medical treatment promptly. Do not induce vomiting if fuel is ingested. Wash with soap and water in the event of skin contact.

Wear an acid resistant apron and a face shield or goggles when servicing the battery. If electrolyte is spilled on skin or clothing, immediately flush with large quantities of water.

If air line anti-ice system antifreeze compound enters the eyes or if fumes irritate the eyes, they should be washed with large quantities of clean water for 15 minutes. A physician, preferably an ophthalmologist, or eye specialist, should be contacted immediately.

The antifreeze compound used in air line anti-ice systems contains methanol and is toxic, harmful or fatal if swallowed. Avoid contact with the skin or eyes and avoid breathing the fumes. Call a physician immediately.

ELECTRICAL SHOCK

Keep the compressor or equipment carrier, compressor hoses, tools and all personnel at least 10 feet from power lines and buried cables.

Keep all parts of the body and any hand-held tools or other conductive objects away from exposed live parts of the electrical system. Maintain dry footing, stand on insulating surfaces and do not contact any other portion of the compressor when making adjustments or repairs to expose live parts of the electrical system.

Attempt repairs only in clean, dry, well lighted and ventilated areas.

SAFETY

LIFTING

This compressor is provided with a lifting bail for routine lifting, loading onto trucks, etc. Compressors to be air lifted by helicopter must not be supported by the lifting bail, but by slings with appropriate spreader bars instead. In any event, lift only in full compliance with OSHA standards 29 CFR 1910 subpart N.
Inspect lifting bail and points of attachment for cracked welds and for cracked, bent, corroded or otherwise degraded members and for loose bolts or nuts prior to lifting.

Make sure entire lifting, rigging and supporting structure has been inspected, is in good condition and had a rated capacity of at least the net weight of the compressor plus and additional 10% allowance for the weight of snow, ice, mud or stored tools and equipment. If you are unsure of the weight, then weigh the compressor before lifting.

Make sure lifting hook has a functional safety latch, or equivalent, and is fully engaged once it has been lifted clear of the ground.

Do not attempt to lift in high winds.

Keep all personnel out from under and away from the compressor when suspended.

Lift compressor slowly and smoothly, without jerking.

Lift compressor no higher than necessary.

Keep lift operators in constant attendance whenever compressor is suspended.

Set compressor down only on level surfaces capable of supporting at least its net weight plus an additional 10% allowance for the weight of snow, ice, mud or stored tools and equipment.

Chock both sides of wheels plus stabilizer legs before disengaging the lifting hook.

SAFETY

JUMP STARTING

Observe all safety precautions mentioned elsewhere in this manual.

Batteries may contain and/or generate gases that are flammable and explosive. Keep flames, sparks and other sources of ignition away.

Batteries contain acid that is corrosive. Do not allow battery acid to contact eyes, fabrics, or painted surfaces, as serious personal injury or property damage may result. Flush any contacted areas thoroughly with water immediately. Wear an acid resistant apron and face shield when attempting to jump-start the compressor.

Remove all vent caps from the battery in the compressor. Do not permit dirt of foreign matter to enter the open cells. Do not attempt to open sealed maintenance free batteries.

Check fluid level. If low, bring fluid to proper level before attempting to jump-start.

Do not attempt to jump-start if fluid is frozen or slushy. Bring batteries up to at least 40 degrees F (5 degrees C) before attempting to jump-start.

Cover open cells of all compressor batteries with clean dampened cloths before attempting to jump-start.

Attempt to jump start only with a vehicle with a negative ground electrical system with the same voltage and which is equipped with a battery of comparable size or larger than supplied with the compressor. Do not attempt to jump-start by using motor generator sets, welders, or other sources of DC power, as serious damage may result.

Bring the starting vehicle alongside the compressor, but do not permit metal-to-metal contact between the compressor and the starting vehicle.

Set the parking brakes of the starting vehicle, chock compressor wheels and stabilizer legs on both sides.

* *The use of maintenance-free batteries may eliminate this step.*

Place the starting vehicle in neutral or park, turn off all nonessential accessory electrical loads and start its engine.

SAFETY

JUMP STARTING (CONT.)

Use only jumper cables that are clean, in good condition, and are heavy enough to handle the starting current.

Avoid accidental contact between jumper cable terminal clips or clamps and each other or any metallic portion of either the compressor or the starting vehicle to minimize the possibility of uncontrolled arcing, which might serve as a source of ignition.

Positive battery terminals are usually identified by a plus (+) sign on the terminal and the letters POS adjacent to the terminal. Negative battery terminals are usually identified by a minus (-) sign on the terminal and the letters NEG adjacent to the terminal.

Connect one end of a jumper cable to the positive POS (+) battery terminal in the starting vehicle.

Connect one end of the other jumper cable to the grounded negative (NEG) terminal of the
battery in the starting vehicle.

Check you connections. Do not apply 24V to a 12V system in the compressor.

Connect the other end of this same jumper cable to a clean portion of the compressor engine block away from fuel lines, the crank case breather opening, and the battery.

Start the compressor in accordance with normal procedure. Avoid prolonged cranking.

Allow the compressor to warm-up. When the compressor is warm and operating smoothly at normal ideal RPM, disconnect the jumper cable from the engine block on the compressor, then disconnect the other end of this same cable from the grounded negative (NEG) terminal of the battery in the starting vehicle. Then disconnect the other jumper cable from the positive (POS) (+) terminal of the battery in the compressor, and finally, disconnect the other end of this same jumper cable from the positive (POS) (+) terminal of the battery in the starting vehicle.

SAFETY

NOTE

THE OWNER, LESSOR, OR OPERATOR OF THE COMPRESSOR IS HEREBY NOTIFIED AND FOREWARNED THAT ANY FAILURE TO OBSERVE THESE SAFETY PRECAUTIONS MAY RESULT IN DAMAGE OR INJURY.

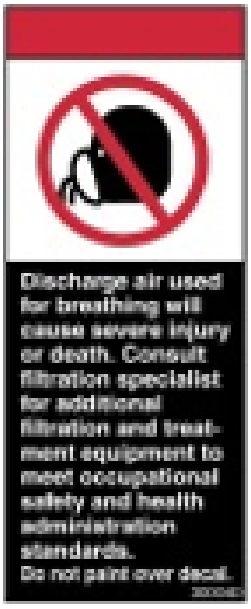
BOSS INDUSTRIES EXPRESSLY DISCLAIMS RESPONSIBILITY OR LIABILITY FOR ANY INJURY OR DAMAGE CAUSED BY FAILURE TO OBSERVE THESE SPECIFIED PRECAUTIONS OR BY FAILURE TO EXERCISE THAT ORDINARY CAUTION AND DUE CARE REQUIRED WHEN OPERATING OR HANDLING THE COMPRESSOR, EVEN THOUGH NOT EXPRESSLY SPECIFIED ABOVE.

Compliments of warning decals are supplied with each unit. These decals are affixed to the unit after it has been painted, prior to being put into service. The decals are placed so as to be clearly visible to the user and service personnel.

Located on or near
The start-up procedure decal.
BOSS P/N 300039

Located on oil sump
Near the fill cap.
BOSS P/N 300038

SAFETY



Located on the control panel
near air service valve
BOSS P/N 300040

Located on the control panel near the
Start-up procedure decal
BOSS P/N 300042

Located on the control panel near the
Start-up procedure decal
BOSS P/N 300041

Located on the exhaust panel between the
Muffler and belt drive
BOSS P/N 300968

SAFETY

DECALS NOT SHOWN

BOSS P/N	DESCRIPTION
301125	Decal, Operating Instructions
300518	Decal, 70
300519	Decal, Bullet
300649	Decal, BOSS
300516	Decal, Engine Oil Fill
300515	Decal, Fuel Fill
300204	Decal, Plate, Serial N.O. Aluminum
300913	Decal, Oil Drain
300969	Deacl, Belt Tension
300048	Decal, Direction of Rotation
300047	Decal, Compression Fluid
300046	Decal, Oil Level

NOTE: See canopy illustrations for these decal locations.

DESCRIPTION OF COMPONENTS

POWER UNIT

The power unit used to drive the compressor is a gasoline engine that has been carefully selected for its ability to provide an efficient and reliable source of power. For detailed information on the power unit, refer to the Engine Operator's Manual provided separately.

COMPRESSOR ASSEMBLY

The BULLET compressor assembly is a positive displacement. An 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. The power source drives the male rotor through the inlet housing. The male rotor drives the female rotor.

PRINCIPLES OF OPERATION

In operation, two helical grooved rotor 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 the compressor discharge pressure, is directed through the oil cooling system, then the oil filter, and back to the compressor stator, where it is injected into the compressor. At the same time oil is directed to the bearings and shaft seal of the compressor. The oil-laden air is then discharged back into the sump. See Air/Oil Schematic in the illustration section.

DESCRIPTION OF COMPONENTS

OIL SUMP

Compressed, oil-laden air enters the sump from the compressor. Most of the oil is separated from the air as it passes through a series of baffles and defusing plates. The oil accumulates at the bottom of the sump for re-circulation. Some small droplets of oil remain suspended in the air and are passed on to the coalescer. See Discharge System in the illustration section.

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. See Discharge System in the illustration section.

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 also contains an orifice and check valve located at the compressor in the elbow hose fitting. See Air/Oil Schematic and Compressor Mounting System in the illustration section.

AIR/OIL COALESCER

The coalescer is self-contained within a spin-on housing and is separate 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. See Discharge System in the illustration section.

MINIMUM PRESSURE ORIFICE

The minimum pressure orifice is located at the outlet of coalescer head and serves to maintain a minimum discharge pressure of 55 PSIG in operation, which is required to assure adequate compressor lubrication pressure, and air/oil separation at the coalescer element. See Discharge System in the illustration section.

OIL FILTER

The compressor oil filter is the full-flow replaceable element type and has a safety by-pass built into it. This element screws directly to the compressor stator housing. See Compressor Mounting System in the illustration section.

DESCRIPTION OF COMPONENTS

COMPRESSOR COOLING SYSTEM

The compressor cooling system consists of an oil cooler, electric fan and motor. See Oil Cooling System in the illustration section.

An automated thermostatic control system maintains a continuous temperature check of the lubricant. The fan sensor trips a normally open relay which sends power to the fan motor once compressor oil temperature reaches 190°F. The fan sensor stops power to the fan motor once the compressor oils temperature drops to 160°F.

INSTRUMENT PANEL AND OPERATING CONTROLS

The instrument panel contains all the necessary gauges and instruments for operation and is located outside of the main enclosure The following is an explanation of their use. See Electrical System & Wiring Diagram in the illustration section.

1. Override Button (switch)
The normally closed override button opens the circuit of the normally closed low oil pressure switch until engine oil pressure is accomplished once engine is running. Once low oil pressure switch opens it stops the circuit from grounding out the spark and stopping ignition.

2. Start (key)
The starter switch is used to electrically energize the engine starter motor solenoid to begin cranking of engine.

3. Choke (Gasoline Engine Only)
The choke is used to provide a richer fuel mixture to the engine for cold starts. Pulling the choke cable out increases the fuel mixture. As the engine warms up, the choke should be pushed inward. The engine should operate without choking as soon as possible after starting to avoid flooding or dilution of lubricating oil.

4. Hourmeter
The hourmeter records the total number of operating hours. It serves as a guide towards following the recommended inspection and maintenance schedule.

DESCRIPTION OF COMPONENTS

CONTROL SYSTEM

The prime components of the compressor control system include the compressor inlet valve and an air cylinder. The control system is designed to match air supply to air demand and to prevent excessive discharge pressure when compressed air is not being used. Control of air delivery is accomplished by the inlet valve regulation as directed by the discharge pressure regulator.

CONTROL SYSTEM OPERATION

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

The pressure Regulator mounted on the coalescer head and engine speed regulating cylinder operates as follows: See Air/Oil Schematic, Discharge System and Engine Mounting System in the illustration section.

1. As the demand for air decreases, the receiver pressure rises; and when this pressure exceeds the set point of the pressure regulator, the regulator opens sending a pressure signal to the inlet valve, and to the regulating cylinder.

    a. The inlet valve disc moves towards the valve inlet against the force of the modulating spring inside the valve. This regulates the opening area of the inlet valve.
    b. The regulating cylinder will reduce engine speed somewhere between full load and compressor idle.

2. If the air demand goes to zero, (service valve closed) the inlet valve will close completely, and the regulating cylinder will bring the engine to compressor idle.

3. As the demand for air increases, receiver pressure drops slightly below the set point of the pressure regulator eliminating the signal to the inlet valve and regulator cylinder.

    a. Inlet valve disc opens fully.
    b. Regulating cylinder retracts allowing the engine governor spring to bring the engine and compressor up to its high rpm.

DESCRIPTION OF COMPONENTS

INLET VALVE

The compressor inlet valve is a piston operated disc valve that has a dual function of regulating the inlet opening to control capacity and serving as a check valve at shutdown. See Compressor Mounting System in the illustration section.

DISCHARGE PRESSURE REGULATOR VALVE

This valve, located on the coalescer head, is used to select the desired discharge pressure within the operating pressure range. Turning the regulator screw clockwise increases the working pressure, a counter-clockwise movement of the screw reduces working pressure. See Discharge System in the illustration section.

COMPRESSOR DISCHARGE PRESSURE GAUGE

This gauge indicates the discharge air pressure. Operate compressor with discharge pressure within 70 to 115 PSIG. See Discharge System in the illustration section.

AUTOMATIC BLOW DOWN VALVE

The automatic blow down valve is located at the coalescer head. This valve will automatically bleed the sump to zero pressure when the compressor is stopped. See Discharge System in the illustration section.

LIFTING BAIL

Securely attached to the frame and extending to the enclosure roof is a lifting bail. It is located near the machine center of gravity and provides for hoisting the compressor with a crane. See specifications for compressor weight, and safety section on lifting.

DESCRIPTION OF COMPONENTS

ELECTRICAL AND PROTECTIVE CIRCUIT SYSTEM

The compressor electrical system is a 12-volt negative ground type. It is equipped with a protective circuit to minimize damage which could be caused by high compressor discharge temperature, or low engine oil pressure. See wiring diagram and electrical system in the illustrations section.

The following conditions will cause automatic shutdown of the compressor:

1. Compressor discharge temperature switch exceeds approximately 245°F. This switch is normally closed and opens at 245° F.
2. Low engine oil pressure (EOP) below approximately 10 PSI. This switch is normally closed and opens when the engine is started. If this pressure drops the switch closes and grounds out the spark module to shut off the engine.

NOTE

WHENEVER THE OPERATION OF THE PROTECTIVE CIRCUIT SHUTS THE MACHINE OFF, EXAMINE THE ENGINE OIL LEVEL INDICATOR STICK, THEREBY PROVIDING INDICATION OF POSSIBLE CAUSE OF SHUTDOWN.

DUE TO THE FACT THAT THE COMPRESSOR PROTECTIVE CIRCUIT IS AN 'ENERGIZED TO RUN" SYSTEM, ANY INTERRUPTION OF CURRENT WILL SHUT THE UNIT DOWN. IN EVENT OF AUTOMATIC SHUTDOWN, IT IS ALWAYS GOOD POLICY TO CHECK FOR LOOSE OR BROKEN WIRES OR CORRODED CONNECTIONS BY THE SHUTDOWN SWITCH LOCATED IN THE 1" DISCHARGE LINE AT SUMP. IF THE ELECTRICAL SYSTEM CHECKS OUT PROPERLY, REFER TO TROUBLESHOOTING SECTION.

COMPRESSOR OPERATION

GENERAL

Every BULLET compressor has been operated and tested at the factory before shipment. This testing assures that the unit is operating properly and that the compressor will deliver its rated capacity. Regardless of the care taken at the factory, there still exists a possibility that damage may occur during shipment. For this reason, it is recommended that the unit be carefully inspected for evidence of damage in shipment. During the first few hours of operation the machine should be carefully observed for any possible malfunction.

Satisfactory performance of the machine depends on the operator's knowledge of the controls, instruments, and recommended operating procedures. Consequently, the preceding sections of this manual should be read and understood before attempting to start and operate this machine.

PREPARATION FOR INITIAL START-UP

Inspect the compressor, engine, and other assemblies for loose connections or damage occurring during shipment. Position the compressor package on a level surface so the proper amounts of fluids can be added. Check the engine crankcase oil level. If required, add oil as recommended in the Engine Operator's manual. Fill fuel tank with grade of fuel recommended in the Engine Operator's manual. Connect negative battery cable to (-) battery terminal. Fill the compressor oil sump (see lubricant section of the operator and parts section for type of lubricant to use). DO NOT OVERFILL. Compressor system capacity is approximately 2.2 gallons.

NOTE

PROPER COMPRESSOR OIL LEVEL SHOULD FILL HALF THE SIGHTGLASS WHEN THE VEHICLE IS LEVEL AND THE COMPRESSOR IS NOT RUNNING.

COMPRESSOR OPERATION

NORMAL STARTING - GASOLINE ENGINE

1. Inspect the compressor, engine, and other assemblies for loose connections or damage that might have occurred since the last operation.
2. Check engine oil and fluid levels.
3. Check oil sump level.
4. Close service valves.
5. Pull the choke out as required, but avoid flooding the engine. Operate the engine without choking as soon after starting as possible.
6. Push override button.
7. Turn engine start switch and hold until engine starts, but do not hold any longer than 15 seconds at a time.
8. Release override button when engine has run for 5 to 10 seconds.
9. Let the engine warm-up. Compressor is now ready for full-load operation.

NOTE

IF ENGINE SHOULD STOP, DO NOT ATTEMPT TO RESTART WITH THE OIL SUMP UNDER PRESSURE, ALLOW BLOW DOWN OF SUMP TO END. REPEAT THE ABOVE PROCEDURE FROM STEP 3.

NORMAL STOPPING

Close the service valve, allowing compressor to “unload”. Operate compressor in unloaded condition for a few minutes to allow machine to cool down, and engine to return to compressor idle. Turn key to “OFF”.

OPERATING UNDER EXTREME CONDITIONS

When operating the compressor in extreme conditions, perform the following service functions as applicable.

COLD WEATHER OPERATION

When operating in lower than -20 degrees F ambient, perform the following service functions as applicable.

COMPRESSOR OPERATION

HOT WEATHER OPERATION

Keep the engine filled with clean oil and check the oil level more frequently than usual. Keep the outside of the compressor oil cooler clean. Locate the unit in a well-ventilated area. When operating in humid conditions, it is recommended that the compressor oil change interval be shortened.

DUSTY OR SANDY AREAS

When possible, wet down the area surrounding the operating site to keep dust and blowing sand to a minimum. Inspect air filters more frequently.

WARNING

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

OPERATING SUGGESTIONS

Replace any faulty gauge immediately.

Allow at least ten feet of unobstructed area in front of the engine muffler to assure good airflow. Do not place items under the package. Engine and compressor draws a majority of its cooling air from below.

Check instruments periodically during operation. If not in normal operating zone, refer to Section 6, “Troubleshooting”.

Make sure that correct type and viscosity lubricating oils and fuel are used, especially in extreme ambient temperatures.

Keep batteries fully charged and properly maintained.

Keep control linkage clean and lightly lubricated.

COMPRESSOR OPERATION

While BOSS Industries has built into its compressor several controls and indicators to assure you that it is running properly, you will want to recognize and interpret the readings which will call for service or indicate the beginning of a malfunction. Before starting the compressor, read this section thoroughly. Familiarize yourself with the controls and indicators, their purpose, location, and use.

CONTROL OR INDICATOR	PURPOSE
AIR PRESSURE GAUGE	Continually monitors the sump pressure at various load and unload conditions
FAN SWITCH	Monitors the temperature of the air/fluid mixture leaving the compressor unit. The normal reading should be approximately 175 to 220 degrees F. Switch closed to activate fan motor.
COMPRESSOR HIGH DISCHARGE TEMPERATURE SHUTDOWN SWITCH	Opens the electrical circuit to shut the machine down when the discharge temperature reaches 245 degrees F.
FLUID LEVEL SIGHTGLASS	Indicates the fluid level in sump. Proper level should fill half the glass. Check this level when the machine is shutdown.
PRESSURE RELIEF VALVE	Vents sump pressure to the atmosphere should pressure inside the sump exceed 175 PSIG.
COMPRESSOR INLET CONTROL VALVE	Regulates the amount of air intake in accordance with the amount of compressed air being used. Isolates fluid in compressor unit on shutdown.
PRESSURE REGULATING VALVE	Senses air pressure from sump to provide automatic regulation of the compressor inlet control valve and load controller.
BLOW DOWN VALVE	Vents sump pressure to the atmosphere at shutdown.
MINIMUM PRESSURE ORIFICE	Restricts airflow to balance sump and service air pressure. Assures a minimum of 55 PSIG to the service line.
OIL RETURN LINE ORIFICE AND CHECK VALVE	Orifice maintains adequate flow to compressor from coalescer allowing for maximum performance of the compressor. Check valve stops flooding of separator element when shutdown occurs.

COMPRESSOR OPERATION

OPERATING CONDITIONS

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

NOTE

IF THE COMPRESSOR IS BEING USED TO POWER SANDBLASTING EQUIPMENT OR AN AIR TANK, USE A CHECK VALVE DIRECTLY AFTER THE SERVICE VALVE TO PREVENT BACK-FLOW INTO THE SUMP. THIS CHECK VALVE SHOULD HAVE A MAXIMUM PRESSURE DROP RATING OF 2 PSIG (13.78 kPa) OPERATING AND A CAPACITY RATING EQUAL TO THE MAXIMUM RATING OF THE COMPRESSOR.

COMPRESSOR INSPECTION, LUBRICATION AND MAINTENANCE

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

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 intervals. 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 to avoid 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. 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 now for the tenth time, and all items under "EVERY 50 HOURS" should be served for the second time. In addition to the following LUBRICATION AND MAINTENANCE CHART refer to the Engine Operator's manual for recommended engine lubrication and maintenance.

DANGER

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

COMPRESSOR INSPECTION, LUBRICATION, AND MAINTENANCE CHART

INTERVAL	ACTION
EVERY 10 HOURS OR DAILY	1. Check compressors oil level. 2. Check air filter. 3. Check for oil and air leaks. 4. Check fuel supply after running. 5. Check for fuel, oil and compressor fluid leaks.
EVERY 50 HOURS OR WEEKLY	1. Drain water from compressor oil at sump. 2. Check belt tension. 3. Drain water and sediment from fuel tank.
EVERY 500 HOURS OR 6 MONTHS	1. Change compressor oil and oil filter. 2. Check air filter piping, fittings and clamps. 3. Install new air filter element. (Shorter interval may be necessary under dusty conditions). 4. Check tire pressure. 5. Check for excessive wear on drive belts. Replace if necessary.
EVERY 1000 HOURS OR 1 YEAR	1. Check safety circuit switches. 2. Clean battery terminals. 3. Check compressor shaft seal for leakage.
EVERY 2000 HOURS OR 1 YEAR	1. Install new air filter element. (Shorter interval may be necessary under dusty conditions). 2. Check all doors gaskets, hinges and latches.
PERIODICALLY OR AS REQUIRED	1. Inspect air filter element 2. Replace spin-on coalescer element if necessary. 3. Inspect and clean compressor oil system cooler, etc. 4. Check engine speed control adjustment, at hi-low compressor settings. 5. Inspect lifting frame (before each lift). 6. Grease wheel bearings 7. Check engine and compressor supports.

NOTE: See Maintenance Section for clarification on above.

COMPRESSOR INSPECTION, LUBRICATION, AND MAINTENANCE

NOTE

OBSERVE ALL GAUGE READINGS. NOTE ANY CHANGE FROM THE NORMAL READING AND DETERMINE THE CAUSE. HAVE NECESSARY REPAIRS MADE. "NORMAL" IS THE USUAL GAUGE READING WHEN OPERATING AT SIMILAR CONDITIONS ON A DAY-TO-DAY OPERATION.

FIRST COMPRESSOR OIL AND OIL FILTER ELEMENT CHANGE SHOULD BE MADE AT 50 HOURS. ALSO, MORE FREQUENT OIL CHANGES WILL BE REQUIRED UNDER EXTREME OPERATING CONDITIONS OF EXTREMELY HIGH OR LOW TEMPERATURES, AND HIGH HUMIDITY.

CHANGE OIL EVERY SIX MONTHS, EVEN IF THE NORMAL OIL CHANGE PERIOD, IN HOURS, HAS NOT YET ELAPSED.

ALWAYS WARM UP THOROUGHLY PRIOR TO CHANGING EITHER THE ENGINE OIL OR THE COMPRESSOR OIL.

DO NOT OPEN COMPRESSOR OIL DRAIN; OIL FILTER CAP, OR OIL FILTER UNTIL ALL PRESSURE HAS BEEN RELIEVED. CHECK BY MANUALLY OPENING THE ASME SUMP PRESSURE RELIEF VALVE.

LUBRICATION

LUBRICANT RECOMMENDATIONS

WARNING

IT IS IMPORTANT THAT THE COMPRESSOR FLUID BE OF A RECOMMENDED TYPE AND THAT THIS OIL AS WELL AS THE AIR FILTER, OIL FILTER AND SEPARATOR ELEMENTS BE INSPECTED AND REPLACED AS STATED IN THIS MANUAL.

THE COMBINATION OF A SEPARATOR 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 general characteristics categorize lubricants that have been found to be satisfactory for use in helical screw type air compressors. 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. The lubricant supplier's recommendation must, therefore, be based upon not only the following general characteristics, but also upon his own knowledge of the suitability of the recommended lubricant in helical screw type air compressors operating in the particular environment involved.

CAUTION

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

LUBRICATION

APPLICATION GUIDE

Not all lubricating oils are suitable for rotary screw compressor use. The most satisfactory oils are the non-detergent types that contain high levels of corrosion, oxidation, and foam inhibitors.

BULLET machines use Dextron III ATF. Other non-detergent motor oils, SAE 10W, class SE or CD, and SAE 30 meet these requirements.

The viscosity of the oil chosen depends largely on the ambient operating temperature range. The oil must provide sufficient lubrication for bearings and rotors at operating temperature, and it must have a pour point low enough to provide fluidity at low starting temperatures. In general, the viscosity range represented by these SAE grades is satisfactory for the temperature range shown:

+40 F to 120 F SAE 30
-10 F to 75 F SAE 10 W (-20 F Pour Point)
-40 F To 100 F Auto Trans. Fluid (-50 F Pour Point)

PRIME LUBRICANT CHARACTERISTICS

1. Flash point 400 degrees F minimum (ASTM D-92 — COC).
2. Pour point must be at least 20 degrees F lower than the lowest expected ambient temperature.
3. Contain rust and oxidation inhibitors.
4. Contain foam suppressers.

SYNTHETIC DIESTER AND SYNTHESIZED HYDROCARBON LUBRICANTS OIL

All elastomeric components and all metal used in the compressor are fully compatible with synthetic diester and synthesized hydrocarbon lubricants. The viscosity grade chosen for synthetic diester base or SHC lubricants should be based upon the suggested viscosity ranges listed under prime lubricant characteristics and the lubricant supplier.

LUBRICATION

NOTE

UNKNOWN INFLUENCES OF ENVIRONMENTAL FACTORS SUCH AS THE INTAKE OF REACTIVE GASES OR VAPORS IN THE AIR MAY LEAD TO CHEMICAL CHANGES IN ANY OIL. CAUSING PREMATURE FAILURE OF THE LUBRICANT AND THE USEFUL LIFE OF ALL "EXTENDED LIFE" LUBRICANTS MAY BE SHORTER THAN QUOTED BY THE LUBRICANT SUPPLIER. BECAUSE THE NORMAL "DRAIN AND REPLACE" PERIOD MAY BE EXCEEDED USING SYNTHETIC LUBRICANTS, DIFFERING FROM THOSE SPECIFIED IN THIS MANUAL, RAILS 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.

ENGINE LUBRICATION

Refer to Engine Operator's manual for recommended engine lubricating oil.

MAINTENANCE

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 in the pipe tee 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 shutdown and has had time to settle is at the midpoint of the oil sightglass. The package must be level when checking the oil. DO NOT OVERFILL. The oil sump capacity is given in "Compressor Specifications".

DANGER

WHILE COMPRESSOR IS RUNNING 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.

AIR INTAKE FILTER

The air intake filter is a heavy-duty single-stage high efficiency filter designed to protect the compressor from dust and foreign objects. See compressor mounting system in illustration section.

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" H2O).

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. See Discharge System in the illustration section.

To replace element proceed as follows:

1. Shutdown compressor and wait for complete blow down. (zero pressure)
2. Disconnect oil return line and clean out.
3. Turn element counterclockwise for removal (as viewed from bottom).
4. Install new rubber seal in head and supply a film of fluid directly on the seal.
5. Rotate element clockwise by hand until element contact seal (as viewed from bottom).
6. Rotate element at top edge of can one more turn clockwise with band wrench.
7. Reconnect oil return line.
8. Run system and check for leaks.

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.

OIL RETURN LINE

This line originates at the bottom of the coalescer and flows through a orifice and a check valve built into the elbow hose fitting at the compressor port. If excessive oil consumption or carry over is present, check to make certain this line and fittings are not clogged.

MAINTENANCE

OIL FILTER

The compressor oil filter is a spin-on, throw away type. It is designed with a built in by-pass so that if there is a large restriction, due to cold oil or clogged element, the compressor will still be lubricated.

To replace filter proceed as follows:

1. Make sure system pressure is relieved.
2. Remove filter by unscrewing from compressor housing (turn counterclockwise by hand) and discard (as viewed from bottom).
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-half turn (as viewed from bottom).
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.

OIL COOLER

The interior of the oil cooler should be cleaned when the pressure drop across it at full flow exceeds 15 PSI. In the event the unit experiences this type of pressure drop we recommend the following:

1. Remove cooler.
2. Circulate a suitable solvent to dissolve and remove varnish and sludge.
3. Flush generously with oil.
4. After the cooler is cleaned and compressor is filled with fresh oil, operate the machine normally for 50 hours then change compressor oil.
5. If the above procedure does not correct the problem the cooler will need to be replaced.

MAINTENANCE

COMPRESSOR SHAFT OIL SEAL

REMOVAL:

1. Remove all hoses, one 1" discharge, one 1/2" oil feed, one 1/4" oil return line, one 5/32" tube blow down line, and one 5/32" tube inlet valve regulating air pressure line.
2. Remove compressor from mounting plate. There is one 5/16-18 pivot bolt and two 5/16-18 position locking bolts.
3. Remove pulley, one metric allen head bolt with left hand threads (clockwise to remove). Tap pulley off evenly.
4. Remove shaft seal wear ring from inside of pulley shaft.
5. Remove shaft seal with care. Do not damage bore.

RE-ASSEMBLY:

1. Clean area on inside pulley shaft where new wear ring is to be installed.
2. Apply glue loc-tite 601 to wear ring inside diameter and install on inside pulley shaft until it bottoms out. Do not deform wear ring and remove excess loc-tite.
3. Clean seal housing inside dia.
4. Apply loctite 542 on shaft seal O.D. and push seal into housing.
5. Mount pulley to rotor shaft by hand and bottom pulley out by hitting slightly with brass hammer.
6. Tighten the left-handed screw (counter clockwise) to 80Nm torque. Keep pulley from rotating while tightening bolt. If pulley does not rotate squarely, remove and check for contamination of end of compressor shaft and the mating surfaces.

COMPRESSOR DRIVE BELTS

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-user. Drive belt tension should be checked for adjustment after the first 10 hours of operation and checked for adjustment every 50 hours thereafter. Failure to follow the inspection can shorten the life expectancy of the belts. Belt deflection is to be checked at the midpoint between both pulleys. Single belt deflection is to be .25 inches at 2.9-lbs. minimum to 4.1 lbs. maximum

MAINTENANCE

Both belts are to be checked separately. If excessive wear is present on belts, chords wearing, then belts are to be replaced. If only one is worn, both belts should be replaced.

BELT REMOVAL

1. Loosen the 5/16-18 UNC bolt at the compressor mounting pivot bracket. Do not remove.
2. Remove qty. two 5/16-18 bolts that go through the adjuster bar, adjuster bracket, and air compressor flange.
3. Rotate compressor up. Remove belts.

BELT INSTALLATION

1. Place belts in pulley grooves and let weight of compressor pull belts taunt.
2. Replace the two 5/16-18 screws through the adjuster bar, compressor flange, and adjuster bracket.
3. Pull down on adjuster bar and set belts to deflection mentioned under compressor drive belts.
4. While holding the correct tension tighten two 5/16-18 bolts.
5. Tighten pivot bolt.

CONTROL ADJUSTMENTS

The engine speed governor and interconnecting linkage are preset at the factory and normally require no servicing other than keeping the linkage joints clean and lubricated. However, in the event it becomes necessary to make adjustments, use the following procedures.

DISCHARGE PRESSURE ADJUSTMENT

The normal operating pressure as indicated by the Compressor Discharge Pressure Gauge is 80-115 PSIG. To increase pressure, loosen lock nut on pressure regulator adjustment screw and turn screw clockwise. Lower operating pressure by turning screw counterclockwise. Reset lock nut after adjustment is completed. Do not adjust for operating pressure in excess of 115 PSIG or lower than 70 PSIG. Check engine speed adjustments whenever pressure settings have been changed. Only the unloaded pressure can be selected with the pressure regulating valve. Full and part load pressures are a function of air usage.

MAINTENANCE

NOTE

PARTS REQUIRED FOR ENGINE MAINTENANCE MAY BE FOUND IN THE ENGINE PARTS MANUAL, A COPY OF WHICH IS PROVIDED WITH EACH UNIT.

FULL LOAD SPEED

Using an air flow silencer, open service air valve until 100 PSI is being held on receiver pressure gauge. Be sure there is no air leakage from pressure regulator vent hole.

With the use of an electronic photo tachometer, set the full load speed at 3500 - 3600 RPM. The governor spring tension held by an anchor bolt allows adjustments to be made.

IDLE SPEED

To adjust idle speed, close service air valve and set idle speed to 2600-2850 RPM by moving idle stop screw at carburetor as required. For operation at higher altitudes, it may be desirable to raise the idle speed to improve part load response and acceleration. High altitude engine kits are available.

ENGINE INSPECTION, LUBRICATION AND MAINTENANCE

The following is a regular schedule of inspection and servicing for the engine based on operating hours. Use the factory recommended Periodic Maintenance Schedule (based on favorable operating conditions) to serve as a guide to get long and efficient engine life. Regular service periods are recommended for normal service and operating conditions. For severe duty, extreme temperature, etc., service more frequently. Neglecting routine maintenance can result in engine failure or permanent damage.

For any abnormalities in operation, unusual noises from the engine or accessories, loss of power, overheating, etc. contact your nearest Kohler Service Center.

MAINTENANCE

ENGINE, INSPECTION, LUBRICATION, AND MAINTENANCE CHART

SERVICE THESE ITEMS	AFTER EACH CYCLE OF INDICATED HOURS					
HOURS	8	25	50	100	200	500
INSPECT ENGINE GENERALLY	X1					
CHECK OIL LEVEL	X					
SERVICE AIR CLEANER ELEMENT WRAPPER		X2				
CHANGE CRANKCASE OIL (ALL ENGINES WITHOUT FILTER)		X2				
CHANGE CRANKCASE OIL (STANDARD WITH FILTER)		X3	X2			
CHANGE CRANKCASE OIL (HIGH CAPACITY BASE WITH FILTER)		X3		X2		
REPLACE OIL FILTER		X3		X2		
CHECK BATTERY ELECTROLYTE LEVEL				X		
CLEAN COOLING FANS				X2		
REPLACE AIR CLEANER ELEMENT					X2	
REPLACE FUEL FILTER					X	
CHECK OR REPLACE SPARK PLUGS						X

1. Check for fuel leaks. With engine running, visually and audibly check exhaust system for leaks.
2. Perform more often when running under severe operating conditions.
3. Required for initial break-in only.
4. For detailed maintenance, contact Kohler Service Center or refer to the SERVICE MANUAL.

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 eliminate 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 that can be performed in the least amount of time and with the least amount of removal or disassembly or parts should be performed first.

MACHINE WILL NOT START

1. Check fuel level and add fuel if necessary.
2. Plugged fuel filter and replace if necessary.
3. Low battery voltage, recharge if necessary.
4. Loose battery cables, tighten cable; dirty battery cables, clean thoroughly.
5. Plugged air filter, replace the element.
6. Engine problems may have developed, refer to your Engine Manual.
7. Defective engine oil pressure switch, check continuity and replace if necessary.
8. Blown fuse in wiring harness, check continuity of fuse and replace if necessary. Fuse located by engine starter solenoid.
9. Bad compressor high discharge temperature switch this switch is normally closed. Check for continuity across both terminals. Replace if it shows no continuity (normally open).

TROUBLESHOOTING

UNPLANNED SHUTDOWN

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

1. Check to determine if compressor oil is at proper level.
2. Check oil cooler for dirt, slush, ice on the fins, or any other obstructions to cooling airflow.
3. Make a thorough external check for any cause of shutdown such as broken hose, broken oil lines, loose or broken wire, etc.
4. Check compressor for high discharge temperature switches; it should be normally closed. C.D.T. switch located in piping on end of receiver/sump.
5. Check electric fan motor and wiring.
6. Check fuses in wire harness, check continuity of fuse and replace if necessary. Fuse located by starter solenoid.
7. Remove wire from engine oil pressure switch and try to start. If unit starts, add pressure gauge at pressure switch port to verify low pressure or take unit in to Kohler dealer for inspection.

IMPROPER DISCHARGE PRESSURE

1. If discharge pressure is too low, check the following:
    a. Too much air demand.
    b. Service valves open blowing to atmosphere.
    c. Leaks in service line.
    d. Restricted compressor inlet air filter.
    e. Faulty control system operation (regulator, inlet valve etc.)
    f. Low engine speed.

2. If discharge pressure is too high or safety valve blows, check the following:
    a. Oil separator plugged up.
    b. Faulty safety valve.
    c. Faulty regulator or set to high.
    d. Inlet valve leaking, or partially open. Loss of pressure signal to inlet valve from regulator causing inlet valve to stay open.

TROUBLESHOOTING

BLOW DOWN VALVE

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

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

ENGINE OVERHEATING

1. Low oil level, refill.
2. Air blockage into engine from blower/PTO side.
3. Air blockage from exhaust side of engine.
4. Dirty oil in engine.

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 and check valve/orifice fitting at compressor port.
4. Defective separator element.
5. Compressor shaft seal leakage.
6. Discharge pressure below 55 PSI.

SEPARATOR PLUGGING

If the separator 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.

The complete inlet system should be checked for leaks.

TROUBLESHOOTING

HIGH COMPRESSOR DISCHARGE TEMPERATURE

1. Check compressor oil level. Add oil if required (see section for oil specifications).
2. Check electric fan and switch.
3. Clean outside of oil cooler.
4. Clean oil system (cooler) internally.
5. Plugged compressor oil filter. Change element.
6. Plugged oil return line, clean orifice and check valve.

INSUFFICIENT AIR DELIVERY

1. Plugged air filter, clean or replace.
2. Plugged air/oil separator. Replace separator element and also change compressor oil and oil filter at this time.
3. Defective pressure regulator, adjust or repair.
4. Engine speed too low, readjust engine speed.

RECOMMENDED SPARE PARTS LIST

ENGINE MAINTENANCE PARTS

DESCRIPTION	BOSS P/N
Engine Oil Filter	300324
Engine Fuel Filter	301126
Engine Air Cleaner Element	301127
Engine Air Cleaner Wrapper	301128
Spark Plugs	301129
Fuel Shut-Off Solenoid	301131

COMPRESSOR MAINTENANCE PARTS

DESCRIPTION	BOSS P/N
Drive Belts	300742-500
Compressor Air Cleaner Element	300773
Compressor Oil Filter	300324
Compressor Coalescing Element	300093
Hi-Temp Compressor Shutdown Switch	300320
Fan Sensor	300072
Inlet Valve Repair Kit	300186-002
Regulator Repair Kit	300187
Compressor Shaft Seal E3	300826
Pressure Gauge	300333
Compressor Manual	300931

PART NUMBER

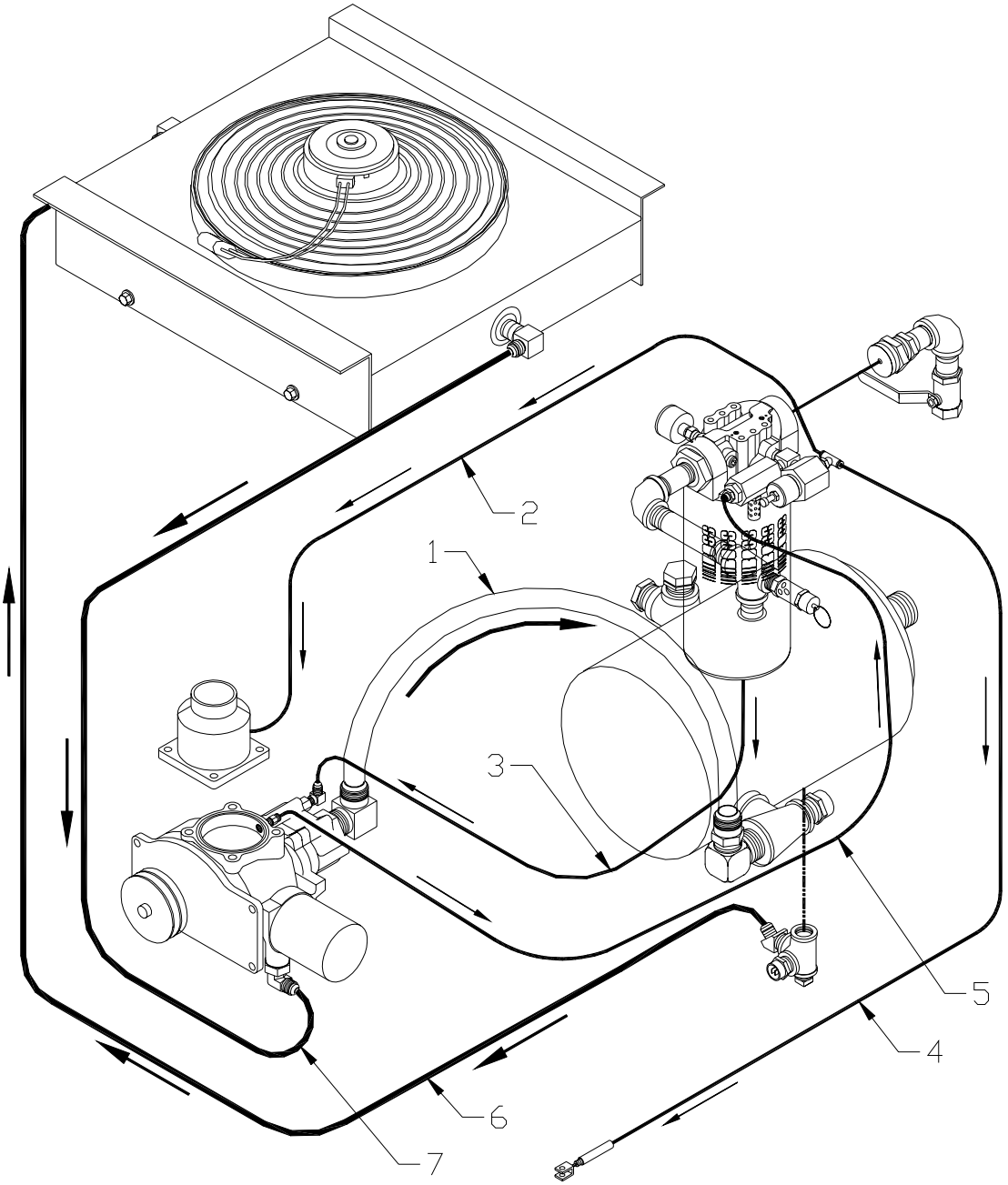
&

ILLUSTRATION SECTION

AIR AND OIL SCHEMATIC

(200030-001)

ITEM	PART NUMBER	DESCRIPTION
1	975416-040	1" DISCHARGE HOSE/AIR AND OIL
2	300964	5/32" TUBING/REGULATED AIR
3	975404-042	1/4" OIL RETURN HOSE/AIR AND OIL
4	300964	5/32" TUBING/REGULATED AIR
5	300964	5/32" TUBING/AIR AND OIL
6	975408-050	1/2" OIL FEED TO COOLER HOSE
7	975408-022	1/2" OIL RETURN TO COMPRESSOR HOSE
8	300217	TIE, 15 WIRE CABLR 50# TENSILE (NOT SHOWN)
9	300218	TIE, 24 WIRE CABLR 50# TENSILE (NOT SHOWN)



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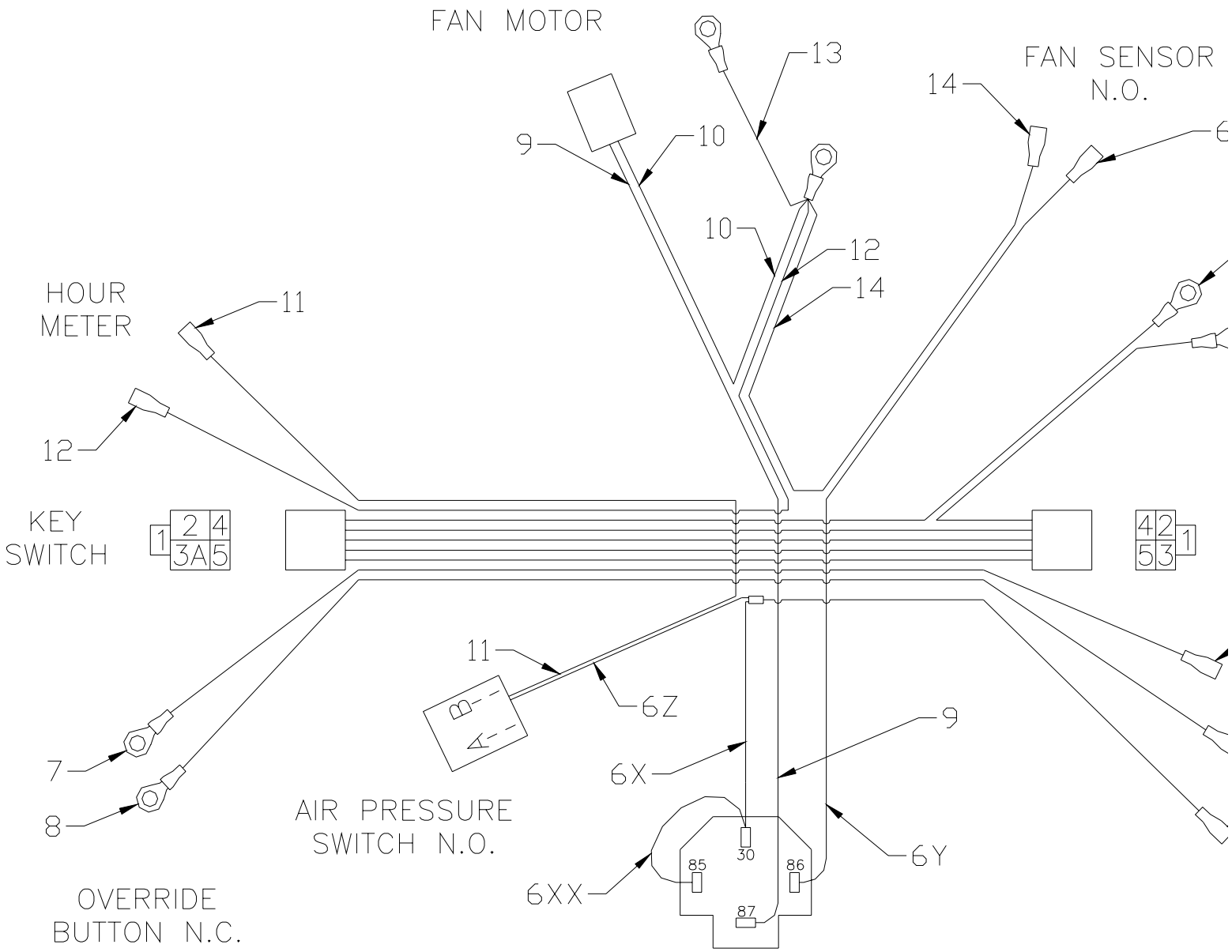
WIRING HARNESS/DIAGRAM



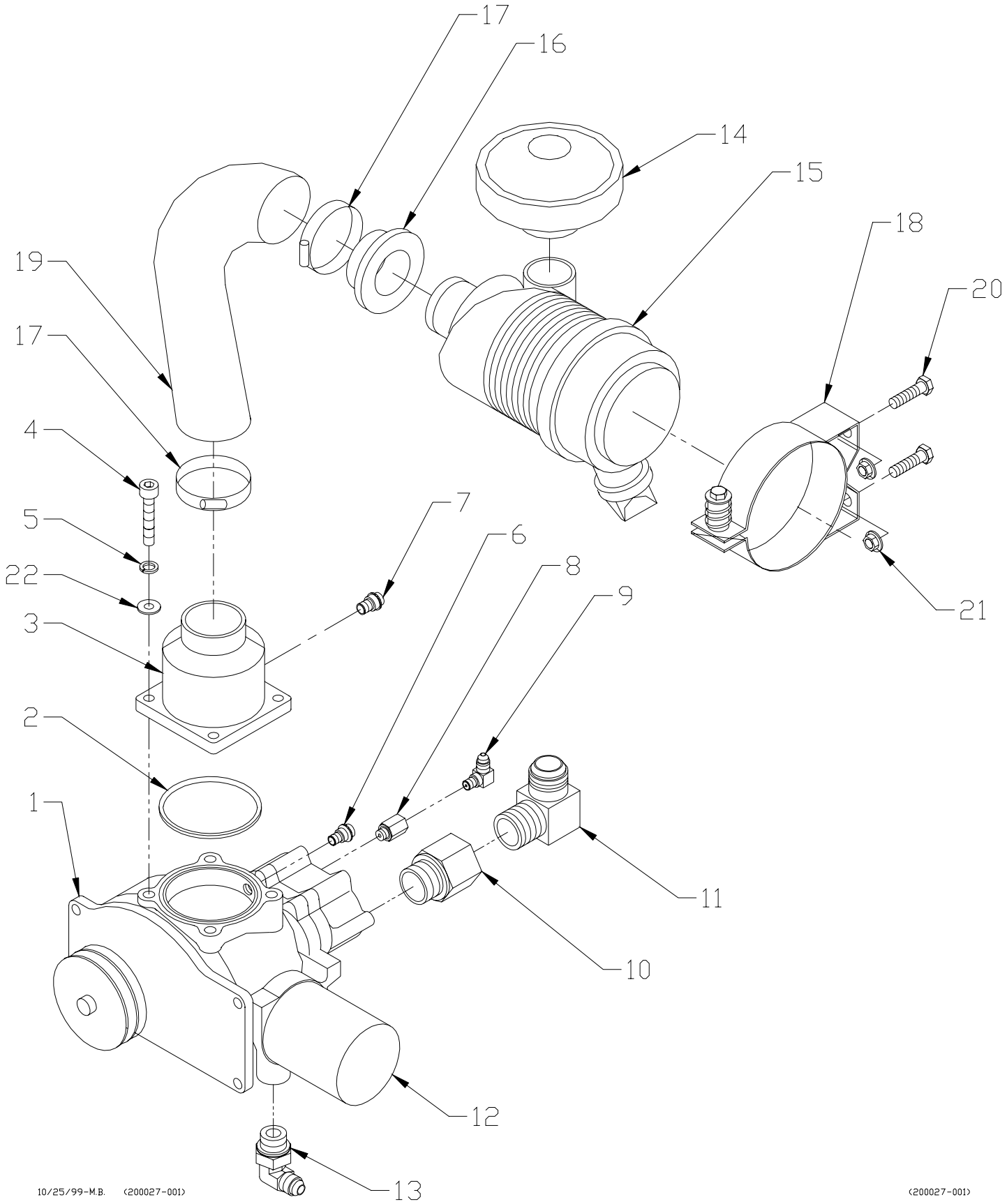
WIRING HARNESS/DIAGRAM

(300805)

WIRE NUMBER	CONNECTOR END STYLES	WIRE GAUGE AND COLOR
1	1/4M 5-WAY CONNECT TO 1/4M 5-WAY CONNECT	16 GA. BLUE
2	1/4M 5-WAY CONNECT TO 1/4M 5-WAY CONNECT	12 GA. RED
3	1/4M 5-WAY CONNECT TO #10 RING TERM.	12 GA. PURPLE
3A	1/4M 5-WAY CONNECT TO #10 RING TERM.	12 GA. PURPLE
4	1/4M 5-WAY CONNECT TO 1/4M 5-WAY CONNECT	12 GA. YELLOW
5	1/4M 5-WAY CONNECT TO 1/4M 5-WAY CONNECT	12 GA. WHITE
6W	BUTT CONNECT T 3-WAY SPLICE SLEEVE TO 30 @ RELAY SOCKET	14 GA. RED
6XX	RELAY JUMPER 30 TO 85 RELAY SOCKET 86 TO 1/4 F DISCONNECT @ FAN SENSOR	16 GA. WHITE
6Z	3-WAY SPLICE SLEEVE TO #10 RING STUD	14 GA. RED
7	1/4M DISCONNECT TO #10 RING TERMINALS	16 GA. WHITE
8	1/4F DISCONNECT TO #10 RING TERMINALS	16 GA. GREEN
9	1/4F DISCONNECT TO FAN CONNECTOR	14 GA. RED
10	FAN CONNECTOR TO 5/16 RING TERMINAL	14 GA. WHITE
11	1/4F DISCONNECT TO #10 RING TERMINAL	16 GA. RED
12	1/4F DISCONNECT TO 5/16 RING TERMINAL	16 GA. WHITE
13	5/16 RING TERMINAL TO 5/16 RING TERMINAL	16 GA. WHITE
14	5/16 RING TERMINAL TO 1/4F DISCONNECT	16 GA. WHITE

COMPRESSOR MOUNTING SYSTEM

(200027-001)



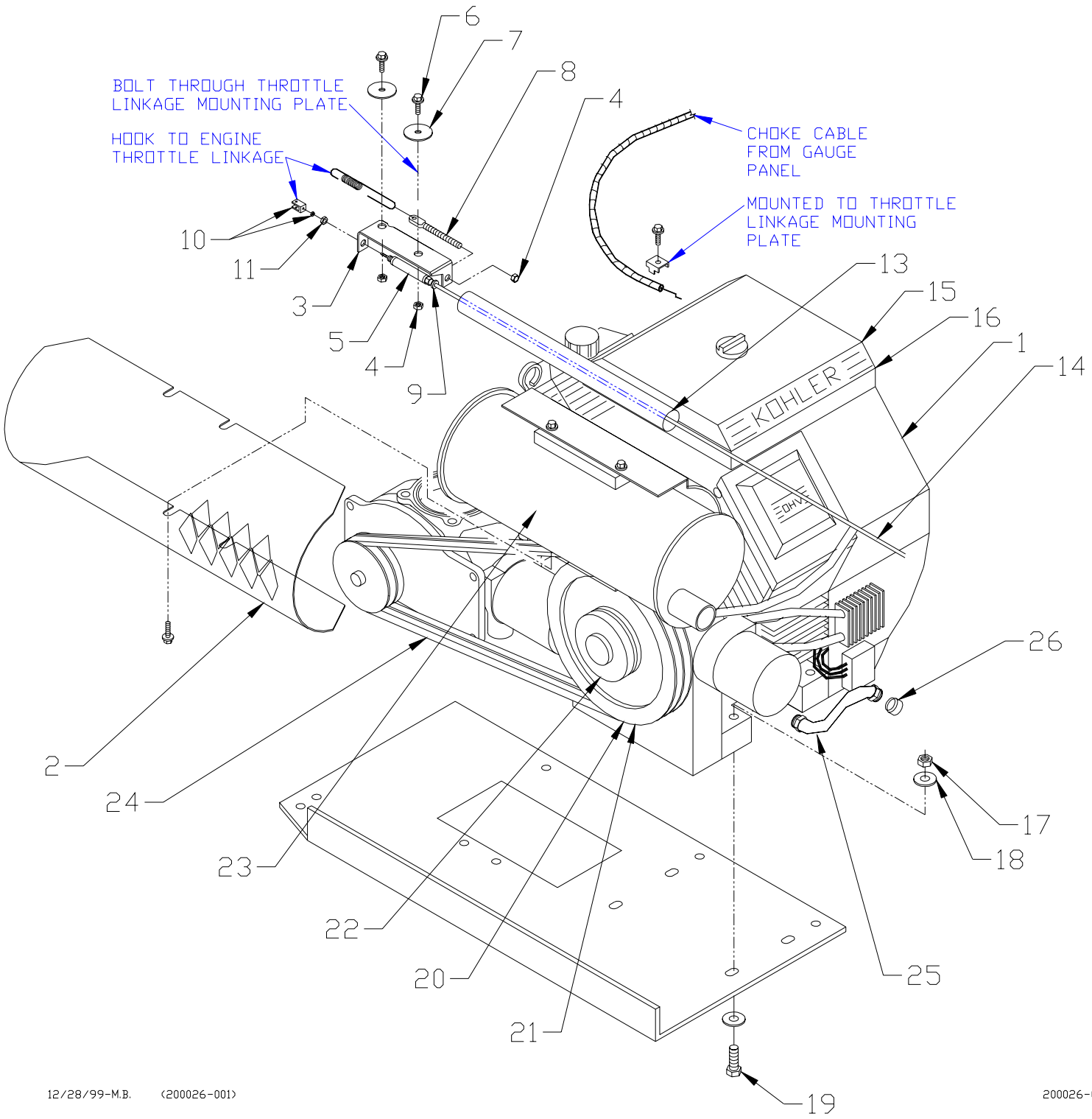
COMPRESSOR MOUNTING SYSTEM

(200027-001)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	300749	COMPRESSOR, AIR E-3	1
2	926102-235	O-RING, TAM 235	1
3	301010	VALVE, INLET 30-145 AC 2.5	1
4	929308-250	BOLT, SOC HD 8MM X 25MM	4
5	938808-200	WASHER, LOC M8	4
6	971104-012	CONNECTOR, 1/8 BSPP X 4MM TUBE	1
7	971225-025	CONNECTOR, 5-32 TUBE X 1/4 MNPT	1
8	970802-012	ADAPTER, 1/8M BSPP X 1/8 NPT	1
9	300721	VALVE, CHECK & OIL RETURN ELBOW	1
10	970816-100	ADAPTER, 1 BSPP X 1 NPT F	1
11	960216-100	ELBOW, 1 X 1 37 FL	1
12	300324	ELEMENT, OIL FILTER 3070 CNG	1
13	970608-050	ELBOW, 1/2 BSPP X 1/2 FL	1
14	300857	CAP, AIR FILTER 4.8	1
15	300918	ASSY, AIR FILTER 4.8	1
16	301397	INSERT, RUBBER 2 1/2 X 1 3/4	1
17	301786-250	CLAMP, AIR INLET HOSE 2 1/2	2
18	300855	BAND, AIR FILTER MTG 4.8	1
19	301785-250	HOSE, AIR INLET 2 1/2 ID GT	2.3
20	929705-100	BOLT, WHIZLOCK GR5 5/16-18 X 1	2
21	925305-283	NUT, WHIZLOCK 5/16-18	2
22	938908-180	WASHER, FLAT M8	4

ENGINE MOUNTING SYSTEM

(200026-001)



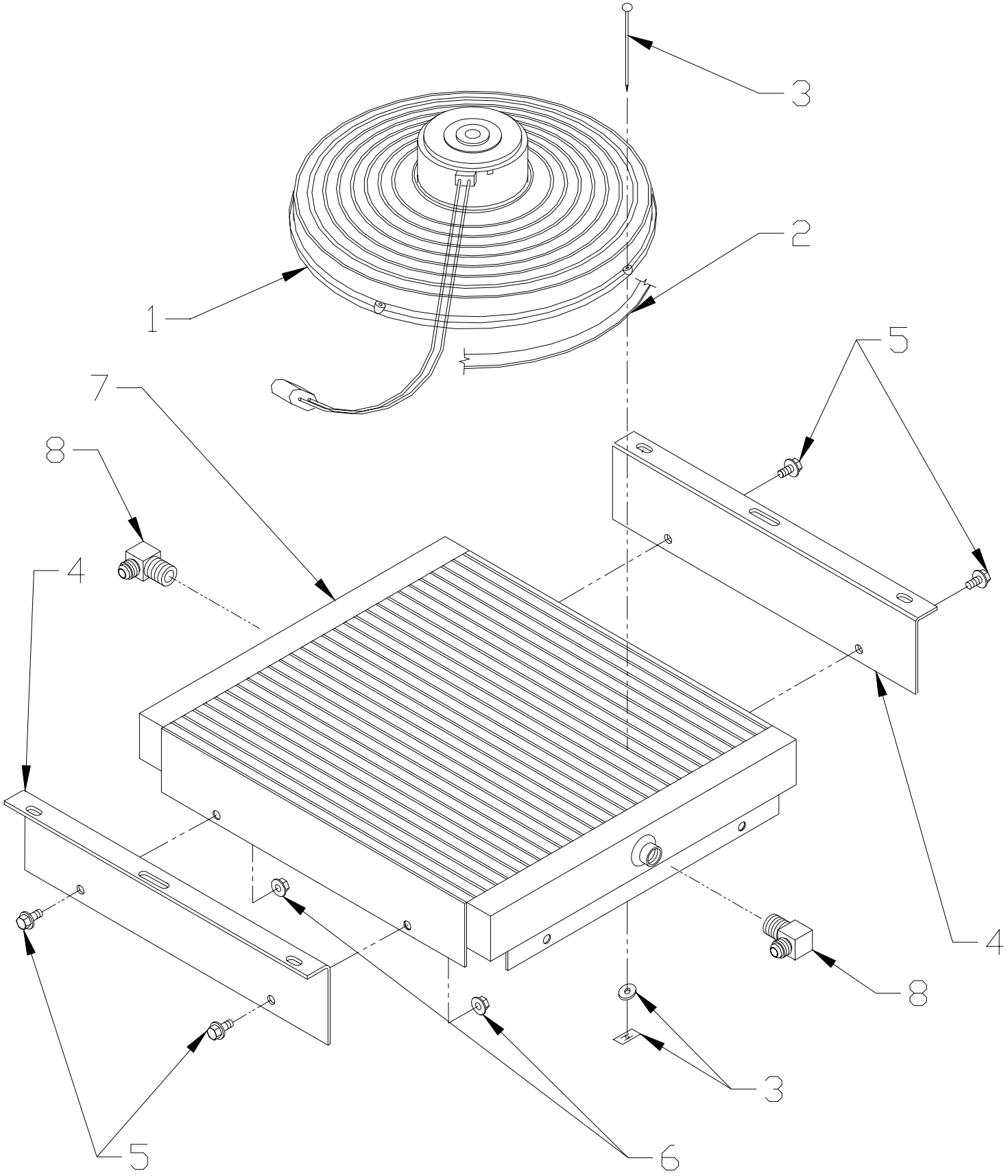
ENGINE MOUNTING SYSTEM

(200026-001)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	300751	ENGINE, GAS 25 HP	1
2	300712	GUARD, MUFFLER CH25	1
3	301335	BRACKET, ENGINE SPEED CONTROL	1
4	924304-145	NUT, HEX NYLOC GR5 1/4-20	3
5	301122	CYLINDER, SPEED CONTROL	1
6	929104-075	BOLT, HEX 1/4-20 X 3/4 GR5	2
7	300956	WASHER, NYLON BL .263 X 1.0	2
8	964904-030	BOLT, HANGER 1/4-20 X 3.0	1
9	971225-010	CONNECTOR, 5/32 TUBE X #10-32	1
10	301123	CLEVIS, ASSY SPEED CONTROL CYL	1
11	924604-164	NUT, JAM 1/4-28 PLTD	1
12	300574-004	SLEEVE, FIRE RETARDENT	2
13	300964	TUBING	2
14	300523	CLAMP, SPRING 1/4 FUEL	2
15	300524	HOSE, FUEL 1/4 I.D.	4
16	926006-337	NUT, HEX GR8 3/8-16	4
17	938206-071	WASHER, FLAT 3/8	8
18	929806-150	BOLT, HEX GR8 3/8-16 X 1 1/2	4
19	300807-001	PULLEY, 8.0 3V2GR	1
20	961106-150	KEY COMP 3/8 X 1 1/2 UNPLTD	1
21	300745-144	BUSHING, SDS 1 7/16 X 3/8	1
22	300772	MUFFLER, KIT CH25	1
23	300742-500	BELT, 3VX500	2
24	979404-014	HOSE, ASSY 1/4 X 1 S,S MNPT	1
25	906030-015	CAP, PIPE 3/8	1

OIL COOLING SYSTEM

(200050)



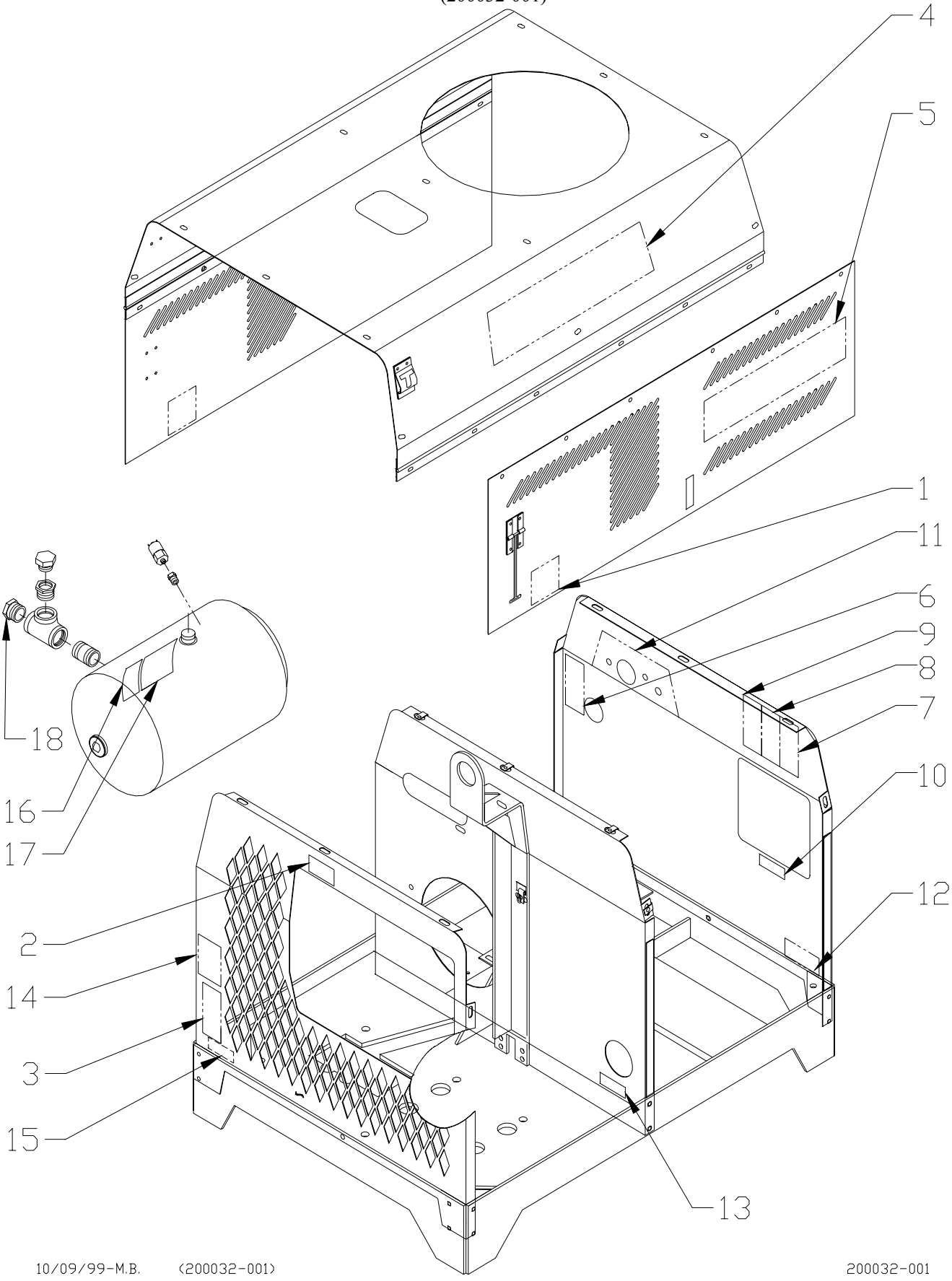
OIL COOLING SYSTEM

(200050)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	300989	FAN, ASSY 14.09 DIA PULLER	1
2	3000444	TAPE, WEATHER STRIP 1/16 X 3/4	5
3	300817	KIT, FAN MTG (4 PCS)	1
4	301124	BRACKET, COOLER OIL 17.5 CORE	2
5	929705-075	BOLT,WHIZLOCK GR5 5/16-18 X 3	4
6	925305-283	NUT, WHIZLOCK 5/16-18	4
7	300424	COOLER, OIL 17.5	1
8	960208-050	ELBOW, 1/2 X 1/2 37 FL	2

DECAL AND IDENTIFICATION SYSTEM

(200032-001)



10/09/99-M.B. (200032-001) 200032-001

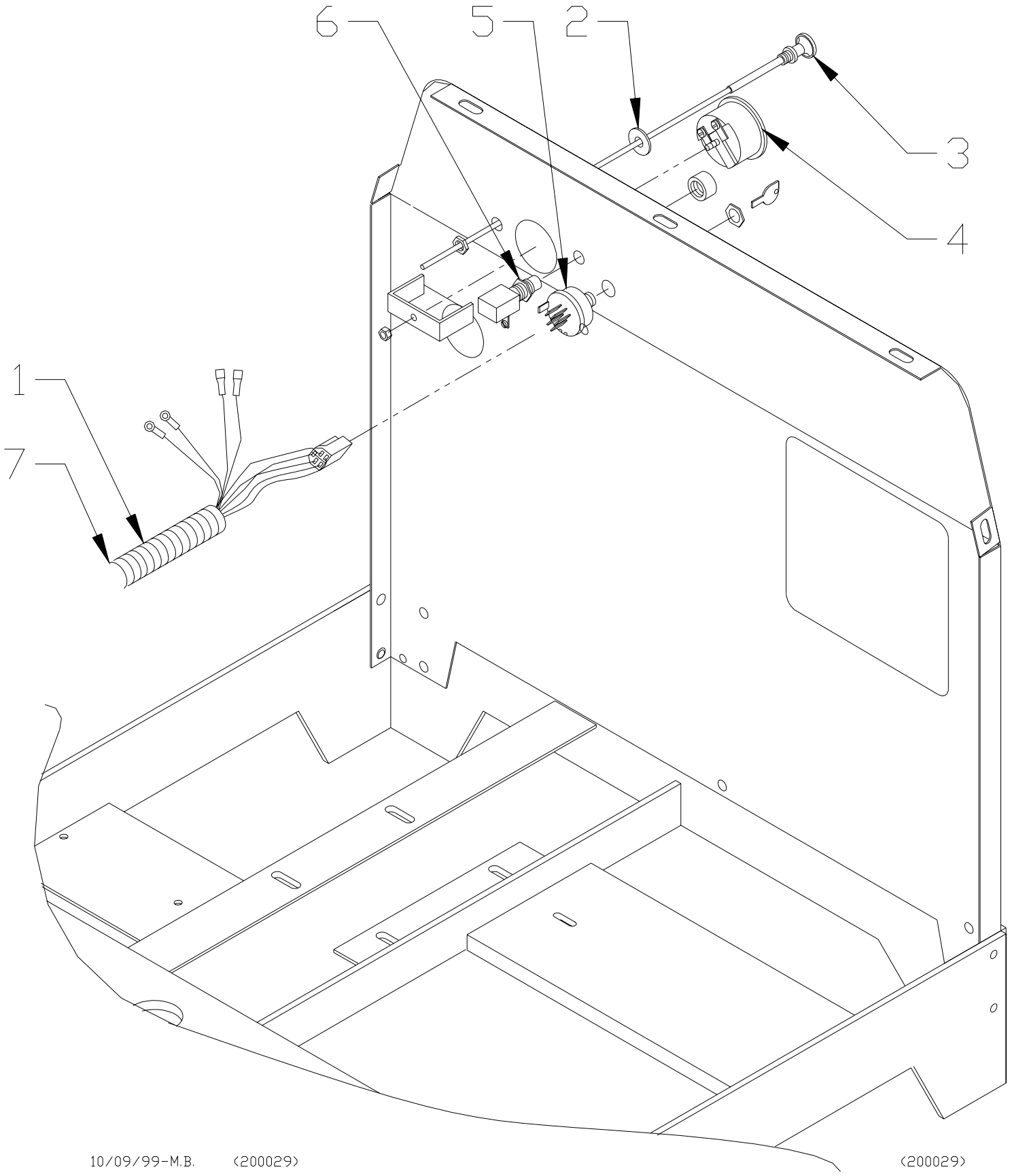
DECAL AND IDENTIFICATION SYSTEM

(200032-001)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	300518	DECAL, 70	2
2	300516	DECAL, ENGINE OIL FILL	1
3	300968	DECAL, BELT GUARD	1
4	300649	DECAL, BOSS	2
5	300519	DECAL, BULLET	2
6	300040	DECAL, DANGER BREATHING AIR	1
7	300039	DECAL, WARNING READ MANUAL	1
8	300041	DECAL, WARNING FAN GUARD	1
9	300042	DECAL, WARNING CONNECT AIR	1
10	300515	DECAL, FUEL FILL	1
11	301125	DECAL, OPERATING INSTRUCTIONS	1
12	300204	PLATE, SERIAL NO. ALUMINUM	1
13	300913	DECAL, OIL DRAIN	2
14	300969	DECAL, BELT TENSION	1
15	300048	DECAL, DIRECTION OF ROTATION	1
16	300038	DECAL, DANGER HOT OIL	1
17	300047	DECAL, COMPRESSOR FLUID	1
18	300046	DECAL, OIL LEVEL	1

ELECTRICAL SYSTEM

(200029)



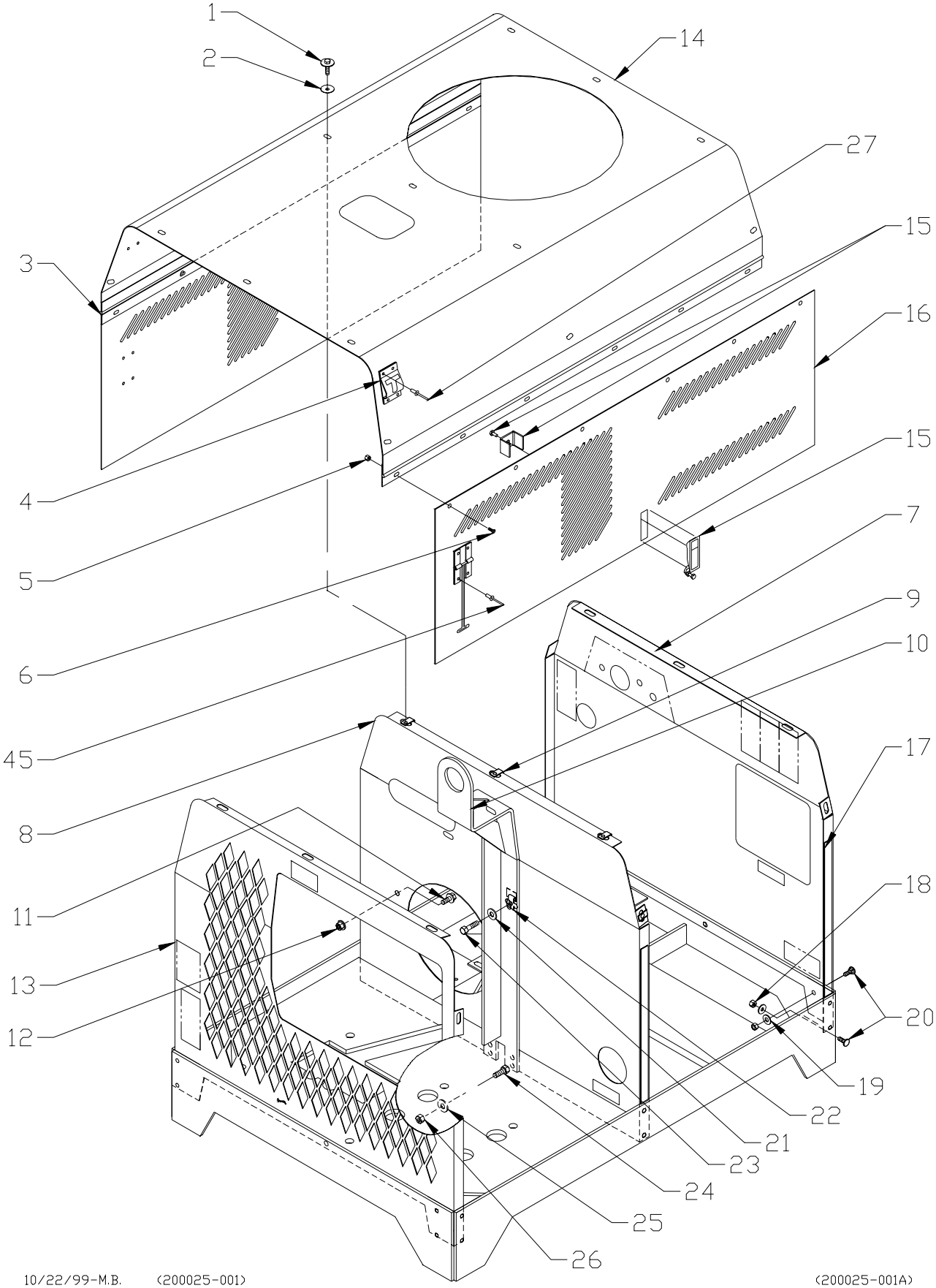
ELECTRICAL SYSTEM

(200029)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	300805	HARNESS, WIRE CH25	1
2	938205-071	WASHER, FLAT 5/16	1
3	300399	CABLE, CHOKE	1
4	300074	GAUGE, HOUR METER	1
5	300803	SWITCH, STARTER KOHLER ENGINE	1
6	301140	SWITCH, OVER RIDE N.C.	1
7	300211	RELAY, POWER (NOT SHOWN)	1

FRAME AND CANOPY SYSTEM

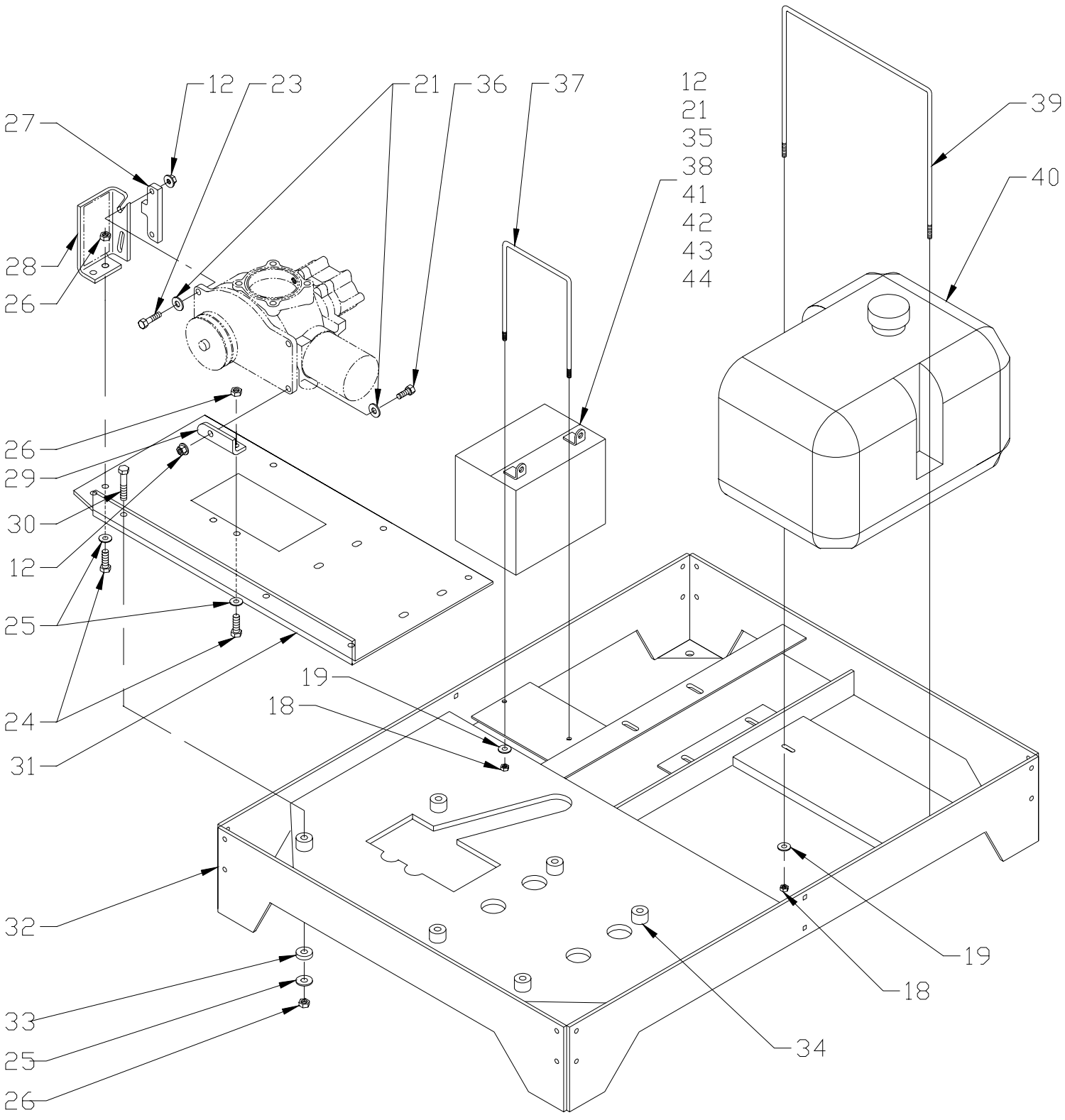
(200025-001A)



10/22/99-M.B. (200025-001) (200025-001A)

FRAME AND CANOPY SYSTEM

(200025-001B)



FRAME AND CANOPY SYSTEM

(200025-001)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	300457	SCREW, 1/4-20 X 1 W/WASHER	15
2	300956	WASHER, NYLON BLK .263 X 1	15
3	300426A	DOOR, BULLET RIGHT	1
4	300509	KEEPER, DOOR	2
5	924301-156	NUT, NYLOC GR5 #8-32	12
6	931201-038	SCREW, MACH FL HD #8-32 X3/8	12
7	301121	PANEL, FRONT BULLET WITH SPAL	1
8	300835	PANEL, CENTER CH25	1
9	961504-090	NUT, TINNERMAN 1/4-20	15
10	300840	BAIL, LIFT	1
11	929705-050	BOLT, WHIZLOCK GR5 5/16-18 X 1	1
12	924305-166	NUT, NYLOC GR5 5/16-18	6
13	300834	PANEL, ENGINE BULLET CH25	1
14	300799	CANOPY, K-BUL TAM	1
15	301383	LATCH, BULLET DOOR HANDLE	2
16	300426B	DOOR, BULLET LEFT	1
17	300444	TAPE, 1/16 X 3/4	12
18	924304-145	NUT, NYLOC GR5 1/4-20	26
19	938604-071	WASHER, FLAT 1/4 GR5	26
20	929104-075	BOLT, 1/4-20 X 3/4 GR5	22
21	938605-071	WASHER, FLAT 5/16 GR5	7
22	961505-140	NUT, TINNERMAN 5/16-18	2
23	929105-150	BOLT, HEX GR5 5/16-18 X 1 1/2	2

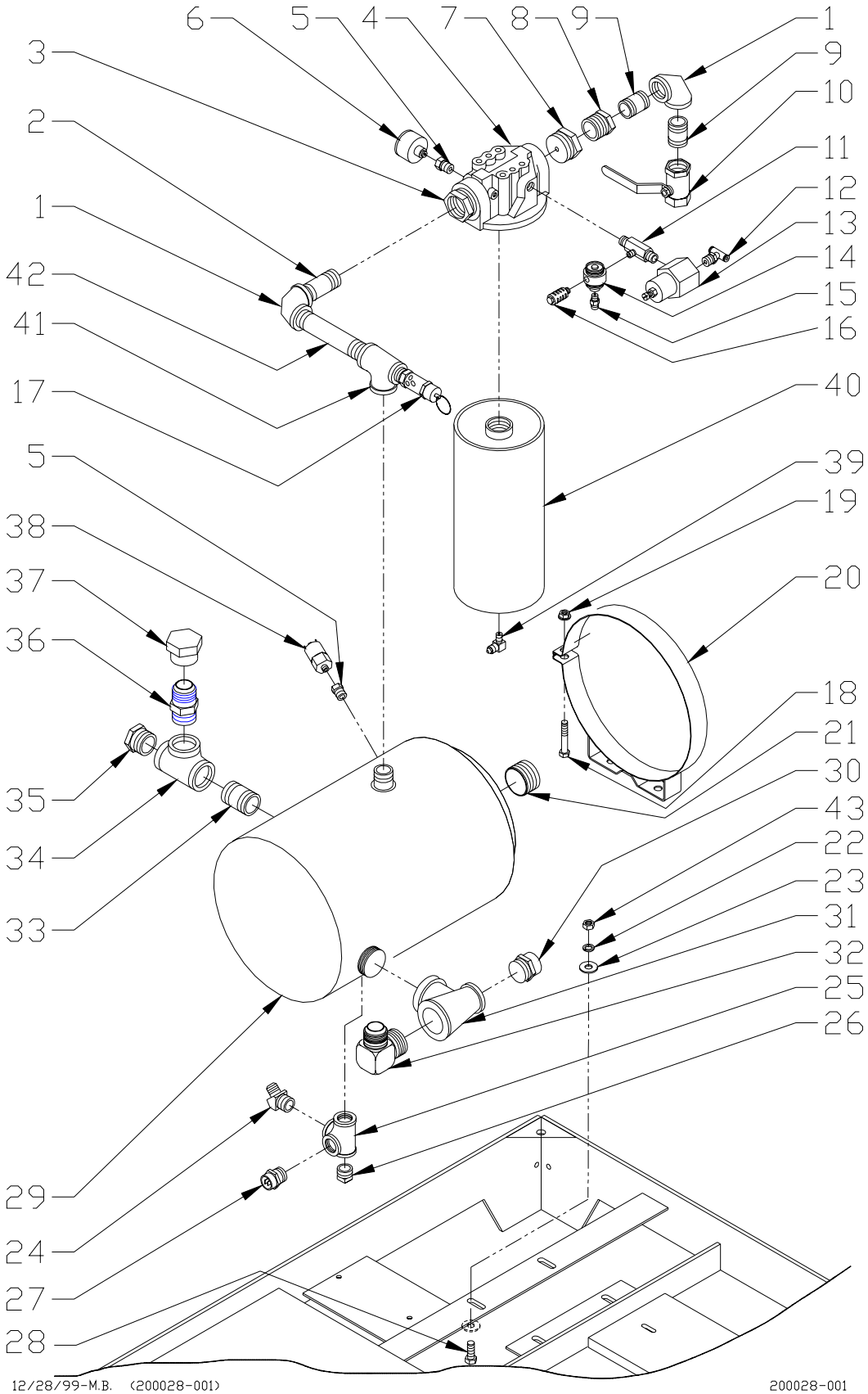
FRAME AND CANOPY SYSTEM

(200025-001)

ITEM	PART NUMBER	DESCRIPTION	QTY
24	929806-100	BOLT, HEX GR8 3/8-16 X 1	8
25	938206-071	WASHER, FLAT 3/8	14
26	925506-198	NUT, NYLOC GR8 3/8-16	14
27	300790	ADJUSTER, BELT K-BUL	1
28	300833	BRACKET, K-BUL ADJUSTER	1
29	300787	BRACKET, PIVOT K-BUL	1
30	929806-200	BOLT, HEX GR8 3/8-16 X 2	6
31	300832	PLATE, VIBRATION ISOLATOR CH25	1
32	300831	FRAME, CH25 BULLET	1
33	300541-001	WASHER, ISOLATOR 60A HARD	6
34	300540-001	ISOLATOR, 60A HARD	6
35	300801	CABLE, BATTERY NEG 24	1
36	929105-100	BOLT, HEX GR5 5/16-18 X 1	1
37	300843	STRAP, BATTERY HOLDER	1
38	300907	BATTERY, SP 20	1
39	300709	STRAP, 8 GAL FUEL TANK ROD	1
40	300694	TANK, FUEL 8 GAL ROD	1
41	300800	CABLE, BATTERY POS 24	1
42	301174	COVER, BATTERY CABLE END POS	1
43	301175	COVER, BATTERY CABLE END NEG	1
44	929505-100	BOLT, CARRIAGE 5/16-18 X 1	2
45	943103-025	RIVET, 3/16 X 1/4 GRIP ALUM	8
46	943102-038	RIVET, 1/8 X 3/8 GRIP ALUM(NOT SHOWN)	

DISCHARGE SYSTEM

(200028-001)



DISCHARGE SYSTEM

(200028-001)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	901515-030	ELBOW, PIPE 3/4	2
2	922112-030	NIPPLE, PIPE 3/4 X 3	1
3	907605-030	BUSHING, REDUCING 1 1/4 X 3/4	1
4	300331	HEAD, COALESCER	1
5	907602-010	BUSHING, REDUCING 1/2 X 1/4	2
6	300333	GAUGE, PRESSURE 1/4 NPT	1
7	300290	ORIFICE, MIN PRESS 1 1/4 X 3/4	1
8	907604-030	BUSHING, REDUCING 1 X 3/4	1
9	922112-020	NIPPLE, PIPE 3/4 X 2	2
10	300022-075	VALVE, SERVICE 3/4 VENTED	1
11	977704-0404	TEE, PIPE 1/4 MNPT X 1/4 MNPT X 1/4 MNPT	1
12	971425-025	TEE, BLK 1/4 NPT X 5/32 TUBE	1
13	300057	VALVE, REGULATOR 1/4	1
14	300020-10	VALVE, BLOWDOWN 1/4 NPT	1
15	971225-025	CONNECTOR, 5/32 TUBE X 1/4 NPT	1
16	301977	ORIFICE, BLWDWN 1/4 PLG W/5/64 HOLE	1
17	300023-175	VALVE, RELIEF 1/2 NPT X 175#	1
18	929105-200	BOLT, HEX GR5 5/16-18 X 2	2
19	925305-283	NUT, WHIZLOCK 5/16-18	2
20	300067	BAND, SUMP MTG 10	2
21	907800-040	PLUG, PIPE 1	1
22	937806-094	WASHER, LOC 3/8 GR8	4

DISCHARGE SYSTEM

(200028-001)

ITEM	PART NUMBER	DESCRIPTION	QTY
23	938206-071	WASHER, FLAT 3/8	8
24	960008-050	ELBOW, 45 DEG 1/2 X 1/2 37 FL	1
25	902715-020	TEE, PIPE SIDE OUTLET 1/2	1
26	300108	PLUG, MAGNETIC 1/2 NPT	1
27	300072	SENSOR, FAN 190-160	1
28	929806-100	BOLT, HEX GR8 3/8-16 X 1	4
29	300017	SUMP, 10 DISCHARGE	1
30	300320	SWITCH, SHUTDOWN 240 DEG	1
31	902204-024	TEE, PIPE RED 1 X 1/2 X 1	1
32	960216-100	ELBOW, 1 X 1 37 FL	1
33	922216-000	NIPPLE, PIPE 1 X CLOSED SCH 80	1
34	902415-040	TEE, PIPE 1	1
35	300783	SIGHTGLASS, OIL LEVEL 1	1
36	960116-100	CONNECTOR, 1 X 1 37 FL	1
37	301466-100	CAP, JIC 1" W/HOLE	1
38	301422	SWITCH, PRESSURE N.O. 30 PSI	1
39	960204-012	ELBOW, 90 DEG 1/4 JIC X 1/8 NPT	1
40	300093	COALESCER, SPIN ON ELEMENT	1
41	902203-023	TEE, PIPE RED 3/4 X 1/2 X 3/4	1
42	922112-060	NIPPLE, PIPE 3/4 X 6	1
43	926006-337	NUT, HEX GR8 3/8-16	4

WARRANTY CLAIMS

WARRANTY

Boss Industries, Inc.. (BOSS) 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 non-conformance 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 of 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
720 BOYD BLVD.
LA PORTE, IN 46350
1-800-635-6587

SUMMARY OF MAIN WARRANTY PROVISIONS

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

The BOSS INDUSTRIES 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, filters, and shaft seals are not warrantable items.

Parts not of BOSS INDUSTRIES 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 INDUSTRIES 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 INDUSTRIES replacement parts covers the net cost of the party only, not labor and mileage.

The BOSS INDUSTRIES 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 INDUSTRIES 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 INDUSTRIES prior to receiving written notification of BOSS INDUSTRIES 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 INDUSTRIES 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 number must be issued by BOSS INDUSTRIES. (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 INDUSTRIES.

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 INDUSTRIES 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 INDUSTRIES 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
720 BOYD BLVD.
LA PORTE, IN 46350

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 Number.

2. Distributor or end-users return address.

3. Correct factory address.

4. Warranty Claim/Service Report Number.

5. Number of packages pertaining to each claim.

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

DAMAGE IN TRANSIT

Do not return damaged merchandise to BOSS INDUSTRIES, 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 Industries, Inc. or an authorized BOSS distributor. Prices are F.O.B. shipping point. Prices do not include labor for removal or installation.