



OPERATING, MAINTENANCE & PARTS MANUAL

MODEL XHP-900-W-CAT

PART NO. 35377647
JUNE, 1989

COMPRESSOR SERIAL NUMBER RANGE

192095-192099



COMPRESSOR NOISE EMISSION CONTROL INFORMATION

THIS COMPRESSOR CONFORMS TO U.S. E.P.A. REGULATIONS FOR NOISE EMISSIONS APPLICABLE TO PORTABLE AIR COMPRESSORS. THE FOLLOWING ACTS OR THE CAUSING THEREOF BY ANY PERSON ARE PROHIBITED BY THE NOISE CONTROL ACT OF 1972:

(A) THE REMOVAL OR RENDERING INOPERATIVE, OTHER THAN FOR THE PURPOSE OF MAINTENANCE, REPAIR, OR REPLACEMENT, OF ANY NOISE CONTROL DEVICE OR ELEMENT OF DESIGN INCORPORATED INTO THIS COMPRESSOR IN COMPLIANCE WITH THE NOISE CONTROL ACT;

(B) THE USE OF THIS COMPRESSOR AFTER SUCH DEVICE OR ELEMENT OF DESIGN HAS BEEN REMOVED OR RENDERED INOPERATIVE.

NOTE: The above information applies only to units that are built in compliance with the U.S. Environmental Protection Agency.

IMPORTANT SAFETY INSTRUCTIONS

This manual provides important information to familiarize you with safe operating and maintenance procedures for your Ingersoll-Rand Compressor. Even though you may be familiar with similar equipment you **MUST** read and understand this manual before operating this unit.

LOOK FOR THESE SIGNS WHICH POINT OUT POTENTIAL HAZARDS TO THE SAFETY OF YOU AND OTHERS. READ AND UNDERSTAND THOROUGHLY. HEED WARNINGS AND FOLLOW INSTRUCTIONS. IF YOU DO NOT UNDERSTAND, INFORM YOUR SUPERVISOR.



(Red background)

Indicates the presence of a hazard which **WILL** cause *severe* injury, death or property damage, if ignored.



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Indicates the presence of a hazard which **CAN** cause *severe* injury, death or property damage, if ignored.



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STATEMENT CONCERNING THE USE OF THIS EQUIPMENT FOR BREATHING AIR AND/OR AQUA LUNG SERVICE

If the model number on this air compressor contains the letters "BAP", the compressor is suitable for use in breathing air services. In the absence of such a designation, the compressor is **not** considered as capable of producing air of breathing quality. For a compressor to be capable of use in breathing air services, it must be fitted with additional specialized equipment to properly filter and/or purify the air to meet all applicable federal, state and local laws, rules, regulations and codes, such as, but not limited to, OSHA 29 CFR 1910.134, Compressed Gas Association Commodity Specification G-7.1-1966, Grade D Breathing Air, and/or Canadian Standards Association. Should the Purchaser and/or User fail to add such specialized equipment and proceeds to use the compressor for breathing air service, the Purchaser/User assumes all liability resulting therefrom without any responsibility or liability being assumed by Ingersoll-Rand Company.

The Purchaser is urged to include the above provision in any agreement for any resale of this compressor.

***** DANGER *****

NEVER OPERATE UNIT WITHOUT FIRST OBSERVING ALL SAFETY WARNINGS AND CAREFULLY READING THE OPERATION AND MAINTENANCE MANUAL SHIPPED FROM THE FACTORY WITH THIS MACHINE.

AIR DISCHARGED FROM THIS MACHINE MAY CONTAIN CARBON MONOXIDE OR OTHER CONTAMINANTS WHICH WILL CAUSE SEVERE INJURY OR DEATH. DO NOT BREATHE THIS AIR EITHER DIRECTLY OR INDIRECTLY IN A CONFINED SPACE.

NEVER OPERATE THE ENGINE OF THIS MACHINE INSIDE A BUILDING WITHOUT ADEQUATE VENTILATION. AVOID BREATHING EXHAUST FUMES WHEN WORKING ON OR NEAR THE MACHINE.

NO SMOKING, SPARKS, OR OPEN FLAME NEAR FUEL.

A BATTERY CONTAINS SULFURIC ACID AND CAN GIVE OFF GASES WHICH ARE CORROSIVE AND POTENTIALLY EXPLOSIVE. AVOID CONTACT WITH SKIN, EYES AND CLOTHING. IN CASE OF CONTACT, FLUSH AREA IMMEDIATELY WITH WATER.

EXERCISE EXTREME CAUTION WHEN USING BOOSTER BATTERY. TO JUMP BATTERY, CONNECT ENDS OF ONE BOOSTER CABLE TO THE POSITIVE (+) TERMINAL OF EACH BATTERY. CONNECT ONE END OF OTHER CABLE TO THE NEGATIVE (-) TERMINAL OF THE BOOSTER BATTERY AND OTHER END TO A GROUND CONNECTION AWAY FROM DEAD BATTERY (TO AVOID A SPARK OCCURRING NEAR ANY EXPLOSIVE GASES THAT MAY BE PRESENT). AFTER STARTING UNIT, ALWAYS DISCONNECT CABLES IN REVERSE ORDER.

***** WARNING *****

TAMPERING WITH NOISE CONTROL SYSTEM PROHIBITED

Federal law prohibits the following acts or the causing thereof:

- (1) The removal or rendering inoperative by any persons, other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into any new compressor for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use;
- or (2) the use of the compressor after such device or element of design has been removed or rendered inoperative by any person.

Among those acts included in the prohibition against tampering are these:

- (1) Removal or rendering inoperative any of the following:
 - a. the engine exhaust system or parts thereof
 - b. the air intake system or parts thereof
 - c. enclosure or parts thereof
- (2) Removal of any of the following:
 - a. fan shroud
 - b. vibration mounts
 - c. sound absorption material
- (3) Operation of the compressor with any of the enclosure doors open.

* * * * * WARNING * * * * *

THIS MACHINE PRODUCES LOUD NOISE WITH THE DOORS OPEN OR SERVICE VALVE VENTED. EXTENDED EXPOSURE TO LOUD NOISE CAN CAUSE HEARING LOSS. ALWAYS WEAR HEARING PROTECTION WHEN DOORS ARE OPEN OR SERVICE VALVE IS VENTED.

THIS MACHINE CONTAINS HIGH PRESSURE AIR WHICH CAN CAUSE SEVERE INJURY OR DEATH FROM HOT OIL AND FLYING PARTS. ALWAYS RELIEVE PRESSURE BEFORE REMOVING CAPS, PLUGS, COVERS OR OTHER PARTS FROM THE PRESSURIZED AIR SYSTEM.

AIR PRESSURE CAN REMAIN TRAPPED IN AN AIR SUPPLY LINE WHICH CAN RESULT IN SERIOUS INJURY OR DEATH. ALWAYS VENT AIR SUPPLY LINE AT TOOL OR VENT VALVE BEFORE PERFORMING ANY SERVICE.

UNRESTRICTED AIR FLOW THROUGH A HOSE END WILL RESULT IN A WHIPPING ACTION WHICH CAN CAUSE SEVERE INJURY OR DEATH. ALWAYS ATTACH A SAFETY FLOW RESTRICTOR TO EACH HOSE "AT THE SOURCE OF SUPPLY OR BRANCH LINE" IN ACCORDANCE WITH OSHA REG. 29CFR SECT. 1926.302(b).

NEVER INSPECT OR SERVICE UNIT WITHOUT FIRST DISCONNECTING BATTERY CABLE(S) TO PREVENT ACCIDENTAL STARTING.

USE EXTREME CARE WHEN REMOVING A PRESSURE CAP FROM A LIQUID COOLING SYSTEM FOR THE ENGINE. THE SUDDEN RELEASE OF PRESSURE FROM A HEATED COOLING SYSTEM CAN RESULT IN A LOSS OF COOLANT AND SEVERE PERSONAL INJURY.

TOWING THIS VEHICLE AT EXCESSIVE SPEEDS OR WITH UNDERRATED TOW VEHICLE CAN RESULT IN LOSS OF DRIVING CONTROL AND GREATER STOPPING DISTANCES. ALWAYS DETERMINE THE MAXIMUM SAFE TOWING SPEED AND TOW VEHICLE RATING BEFORE TOWING. SEE GENERAL DATA DECAL LOCATED ON MACHINE OR SPECIFICATIONS IN THIS MANUAL - SECTION 2 FOR MAXIMUM SPEED AND GROSS WEIGHT FOR COMPARISON.

DO NOT STORE OR TRANSPORT MATERIAL OR EQUIPMENT IN OR ON THE UNIT.

NEVER RUN UNIT WITH GUARDS, COVERS OR SCREENS REMOVED. KEEP HANDS, HAIR, CLOTHING, TOOLS, BLOW GUN TIPS, ETC. WELL AWAY FROM MOVING PARTS.

DO NOT USE PETROLEUM PRODUCTS (SOLVENTS OR FUELS) UNDER HIGH PRESSURE AS THIS CAN PENETRATE THE SKIN AND RESULT IN SERIOUS ILLNESS. WEAR EYE PROTECTION WHILE CLEANING UNIT WITH COMPRESSED AIR TO PREVENT DEBRIS FROM INJURING EYE(S).

ALWAYS MAKE SURE WHEELS, TIRES AND TOW BAR CONNECTORS ARE IN SAFE OPERATING CONDITION AND TOW BAR IS PROPERLY CONNECTED BEFORE TOWING.

* * * * * CAUTION * * * * *

USE EXTREME CARE TO AVOID CONTACTING HOT SURFACES (ENGINE EXHAUST MANIFOLD AND PIPING, AIR RECEIVER AND AIR DISCHARGE PIPING, ETC.)

DO NOT CONNECT THE AIR DISCHARGE ON THIS UNIT ONTO A COMMON HEADER WITH ANY OTHER UNIT OF ANY DESCRIPTION, OR ANY OTHER SOURCE OF COMPRESSED AIR, WITHOUT FIRST MAKING SURE A CHECK-VALVE IS USED BETWEEN THE HEADER AND THE UNIT. IF THIS UNIT IS CONNECTED IN PARALLEL WITH ANOTHER UNIT OF HIGHER DISCHARGE PRESSURE AND CAPACITY, A SAFETY HAZARD COULD OCCUR IN A BACK-FLOW CONDITION.

ETHER IS AN EXTREMELY VOLATILE, HIGHLY FLAMMABLE GAS. USE SPARINGLY! IF TOO MUCH IS INJECTED, THE UNCONTROLLED EXPLOSION MAY RESULT IN COSTLY DAMAGE TO THE ENGINE.

NEVER ALLOW THE UNIT TO SIT STOPPED WITH PRESSURE IN THE RECEIVER-SEPARATOR SYSTEM. AS A PRECAUTION, OPEN THE SERVICE VALVE.

ANY UNAUTHORIZED MODIFICATION OR FAILURE TO MAINTAIN THIS EQUIPMENT MAY MAKE IT UNSAFE AND OUT OF WARRANTY.

WHEN LIFTING OR LOWERING DRAWBAR ALWAYS GRASP DRAWBAR FIRMLY AND STAND TO ONE SIDE.

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FOREWORD

1 During the preparation of this manual every effort was made to ensure the adequacy and accuracy of the contents. Only in this manner can the owner be provided with a tool that will aid him in obtaining maximum performance and trouble-free service from the compressor. Since all classes of equipment require a certain amount of attention, the purpose of this manual is to acquaint an operator with the functions, operation and lubrication of the compressor. This manual also provides the owner with the maintenance requirements applicable to the various components designed or selected for incorporation into this unit. Special attention has been given in an effort to make sure that only components built with the very best materials and the finest workmanship have been used, thus reducing the maintenance requirement to a bare minimum.

Before starting the compressor, the instructions should be carefully read to obtain a thorough knowledge of the duties to be performed. Take pride in the compressor, keep it clean, and in good mechanical condition.

For complete protection and minimum down-time to facilitate the maintenance effort that is required, it is suggested that a complete set of recommended spares be kept on hand during and after the first few months of operation. For recommended spares, replacement parts or information regarding the condition or operation of your unit or for major servicing not covered in this manual, consult your nearest sales office, autonomous company or au-

thorized distributor. Be sure to specify the model and serial number of the compressor during any correspondence with a company representative.

In addition to preventive maintenance, the compressor airend may require overhauling to maintain maximum output and performance of the unit. Your Ingersoll-Rand Company Construction Equipment Group Sales Offices and authorized distributors as well as Ingersoll-Rand International autonomous companies and authorized distributors now have a compressor airend exchange program, therefore we do not recommend overhaul of the airend by the customer. However, we do recognize the fact that circumstances may warrant field overhaul of the airend. Prior to any disassembly or reassembly of the airend we strongly suggest the owner contact the Customer Service Department, Ingersoll-Rand Company, Mocksville, North Carolina, 27028 for their advice and suggestions.

NOTE

For the purpose of encouraging proper maintenance, Ingersoll-Rand Company is providing a Maintenance Log Book (Form PCD 685) with each compressor shipped from the factory. This Log Book contains a performance schedule for all required noise emission control maintenance. Space is provided in this log book so that the owner of this compressor can note what maintenance was done, by whom, where and when.

SECTION 2 - GENERAL DATA

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SPECIFICATIONS

Unit Model: XHP-()-W-CAT	900
Rated Air Delivery - cfm (litres/sec)	900 (425)
Rated Operating Pressure - psi (kPa)	350 (2400)
Safety Valve Setting - psi (kPa)	400 (2800)
Full Load Engine Speed - rpm	1800

ENGINE - CATERPILLAR (DIESEL)

Model	3406B TA
No Load Speed - rpm	1200
Electrical System - volt	24

WEIGHT

Net Weight (less fuel)	13600 pounds (6200 kilograms)
Gross Weight (all fluids)	14900 pounds (6700 kilograms)

FLUID CAPACITIES

Compressor Lubricant	55 U.S. gallons (208 litres)
Fuel Tank (Use clean DIESEL fuel)	180 U.S. gallons (680 litres)
Engine Crankcase Lubricant	8.75 U.S. gallons (33 litres)
Engine Coolant (Radiator)	17.0 U.S. gallons (64 litres)

UNIT MEASUREMENTS

Overall Length, With Drawbar Up	15.9 feet (4.84 meters)
Overall Height	8.46 feet (2.58 meters)
Overall Width	7.38 feet (2.25 meters)

RUNNING GEAR

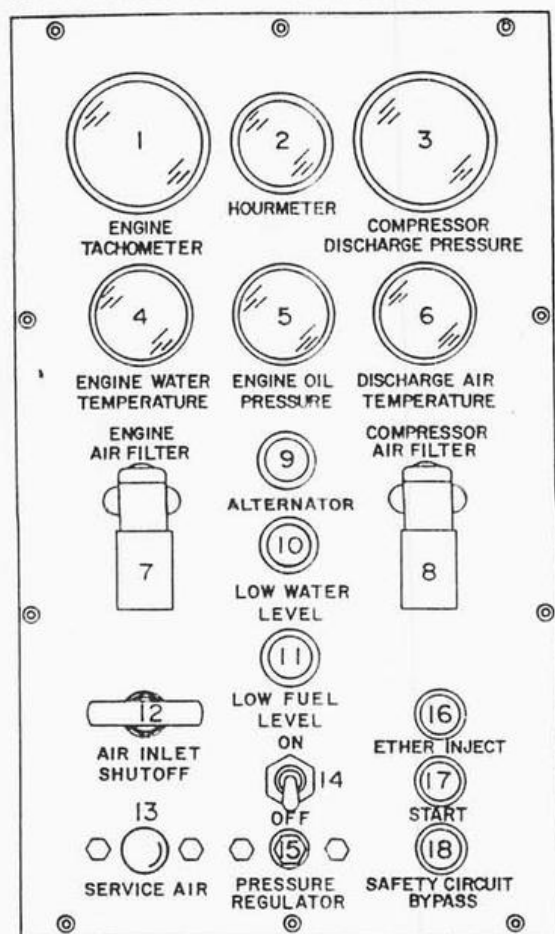
Tire Size	8.25 x 15 TR load range "F"
Inflation Pressure (Cold)	105 psi (720 kPa)
Towing Speed (Maximum)	20 mph (32 km/hr)

CAUTION: Any departure from the specifications may make this equipment unsafe.

EXPENDABLE SERVICE PARTS

Compressor Oil Filter Element (2 each)	Part No. 36758613
Compressor Oil Separator Element	Part No. 36762250
Air Cleaner Element (4 each), Inner	Part No. 35355353
(4 each), Outer	Part No. 35355395

OPERATING CONTROLS AND INSTRUMENTS - Standard



36509529

1. **Engine Tachometer** - - - Indicates engine speed in RPM.
2. **Hourmeter** - Records running time for maintenance purposes.
3. **Compressor Discharge Pressure Gauge** - - Indicates pressure (psi/kPa) in receiver tank.
4. **Engine Water Temperature Gauge** - Normal range from 180°F (82°C) to 200°F (93°C).
5. **Engine Oil Pressure Gauge** - See engine Operator's Manual for normal range.
6. **Discharge Air Temperature Gauge** - - Normal operating range is 185°F (85°C) to 230°F (110°C).

7-8 Air Filter Service Indicators - Indicates acceptable (green flag) or excessive (red flag) restriction within engine and compressor air cleaners.

9. **Alternator Lamp** - Glows when master switch is "ON" and alternator is not charging.
10. **Low Water Level Lamp** - Glows when coolant level drops excessively.
11. **Low Fuel Level Lamp** - Glows when about to run out.
12. **Air Inlet Shutoff Handle** - Pull when starting below 32°F (0°C).
13. **Service Air Button** - A two-way valve that must be tripped (pushed) after engine is warmed up to obtain full air pressure at the service outlet.
14. **Toggle Switch** - A master D.C. power switch. Flip "ON" to operate and "OFF" to stop.
15. **Pressure Regulator** - Valve that can be adjusted to automatically limit the operating pressure.
16. **Ether Inject Button** - A switch for injecting a measured shot of ether into the engine while the Start button is also depressed.
17. **Start Button** -- Switch that activates the engine starter. Do not crank for more than 10 seconds without allowing to cool for one (1) minute.
18. **Safety Circuit Bypass Button** - Switch that bypasses the safety shutdown system during start-up.

SECTION 3 - OPERATING INSTRUCTIONS

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BEFORE MOVING/MOVING**WARNING**

Failure to follow these instructions could result in serious injury or death.

* Do not climb on top of unit. The lifting eye can be reached through the roof door ONLY from INSIDE of the unit.

* When lifting or lowering drawbar, always grasp drawbar firmly and stand to one side.

* Ensure that the tires, wheels and running gear are in good condition and secure.

* Ensure that the tires are inflated to 105 psi (720 kPa).

* Do not tow this unit in excess of 20 mph (32 km/hr).

* Use a tow vehicle whose towing capacity is greater than the gross weight of this unit.

SETTING-UPALL UNITS

* Place the unit in a position as level as possible. The design of these units permits a 15 degree lengthwise and 15 degree sidewise limit on out-of-level operation. When the unit is to be operated out-of-level it is important: (1) to keep the engine crankcase oil level near the high level mark (with the unit level), and (2) to have the compressor oil level gauge show no more than half full (with the unit level). Do not overfill

either the engine crankcase or the compressor lubricating oil system.

* Chock the wheels or otherwise restrain the unit from moving.

* When putting drawbar in upright position, insure that latch is SECURELY engaged.

CAUTION

Do not connect the air discharge on this unit into a common header with any other unit of any description, or any other source of compressed air, without first making sure a check-valve is used between the header and the unit. If this unit is connected in parallel with another unit of higher discharge pressure and capacity, a safety hazard could occur in a back-flow condition.

WARNING

Unrestricted air flow from a hose will result in a whipping motion of the hose which can cause severe injury or death. A safety device must be attached to the hose at the source of supply to reduce pressure in case of hose failure or other sudden pressure release. Reference: OSHA regulation 29 CFR Section 1926.302(b).

BEFORE STARTING

* Open service valve(s) to ensure pressure is relieved in receiver-separator system. Close valve(s) in order to build up full air pressure and ensure proper oil circulation.

- * Check battery for proper connections and condition.

WARNING

- Exercise extreme caution when using a booster battery to start. To jump-start, connect the ends of one booster cable to the positive (+) terminals of each battery. Then connect one end of the other cable to the negative (-) terminal of the booster battery and the other end to the engine block (NOT TO THE NEGATIVE (-) TERMINAL OF THE WEAK BATTERY). After starting:
- a. Reduce engine speed to idle.
 - b. Disconnect negative (-) cable from engine block; then from booster battery.
 - c. Disconnect positive (+) cable from both batteries.

- * Check the compressor lubricating oil level. The proper oil level is mid-way on the sight gauge. Add oil if the level falls to the bottom of the sight gauge when the unit is not running. Do not overfill. If necessary, refer to Section 5 - Lubrication for recommended lubricant.

- * Check the engine lubricating oil level. Add oil if low on dipstick. Refer to the engine Operator's Manual for recommended lubricant.

WARNING

Do not remove the cap from a HOT engine radiator. The sudden release of pressure from a heated cooling system can result in a loss of coolant and possible severe personal injury.

- * Check the engine coolant level by looking for a liquid in the sight bubble at the top front of the radiator. If not visible in the sight bubble, look in the filler neck. Add coolant to bring the level above the sight bubble.

NOTICE

If the appropriate mixture of antifreeze is not used (during freezing temperatures), failure to drain the engine may cause costly damage. If water only is used, a corrosion inhibitor should be included.

WARNING

No smoking, sparks, or open flame near fuel.

- * Check the fuel level. Add only CLEAN DIESEL fuel for maximum service from the engine. Refer to the engine Operator's Manual for fuel specifications.

NOTICE

To minimize condensation (water) in the fuel tank, it is recommended to fill the tank at the end of each day.

WARNING

This machine produces loud noise with doors open. Extended exposure to loud noise can cause hearing loss. Wear hearing protection when doors or valve(s) are open.

- * Close the side doors to maintain a cooling air path and to avoid recirculation of hot air. This will maximize the life of the engine and compressor and protect the hearing of surrounding personnel.

- * Check the air cleaner service indicators of both engine and compressor. If the flag in either indicator shows red, refer to Section 4 - Maintenance for service instructions.

STARTING

* The SERVICE-AIR button (2-way or run-start valve) should be extended.

* Be sure no one is IN or ON the compressor unit.

NOTICE - COLD WEATHER

(Above 32°F/0°C)

Normally the service valve should be closed but in extremely cold weather, opening this valve partially will allow the engine to crank faster and start at a reduced load. Once the engine is running, close the valve slowly to ensure lubrication of the compressor.

(Below 32°F/0°C)

If the temperature is below 32°F/0°C it is essential to close the compressor inlet valve prior to cranking, as follows:

1. Pull and lock the Air Inlet Shutoff Handle on the control panel.

2. As soon as the engine speed reaches 1200 rpm, immediately unlock and GRADUALLY push in on the handle. The air inlet valve must be opened as quickly as possible to prevent oil pump cavitation and loss of air end lubrication.

* Flip the toggle switch to the "ON" position. The following lamps on the control panel should light:

Alternator - This lamp indicates whenever the alternator is not charging and should go "off" once the engine starts.

Low Water Level - This lamp should light for four (4) seconds and then go off. If the light stays on, the

coolant level is low and should be corrected. If the light doesn't come on, the bulb and the sensor should be checked and corrected.

CAUTION

Ether is an extremely volatile, highly flammable gas. Use sparingly! If too much is injected, the uncontrolled explosion may result in costly damage to the engine.

* In cold weather, as required, press the ETHER INJECT button while the engine is cranking. This injects a measured amount of ether to the engine and will operate only while the START button is pressed.

* Press the START button and the SAFETY CIRCUIT BYPASS button at the same time.

NOTE

Do not operate the starter motor for more than 10 seconds without allowing at least one minute cooling time between start attempts.

* Release the START button when the engine starts and sustains running. If the engine does not start after a couple of attempts, refer to Section 7 - Trouble Shooting.

* Release SAFETY CIRCUIT BYPASS button when the engine oil pressure exceeds 20 psi (140 kPa).

— If the engine oil pressure does not rise within five (5) seconds, stop the unit and refer to Section 7 - Trouble Shooting and the engine Operator's manual.

— The ALTERNATOR and the LOW WATER LEVEL lamps should both be off.

- * Watch the gauges while the unit warms up for five (5) to ten (10) minutes or until the coolant temperature reaches 140 °F (60°C).
- * Push the SERVICE AIR button. The engine should go to full speed and the discharge pressure rise to slightly over rated pressure. If there is no air being consumed the compressor will unload (intake be throttled or closed) and the engine speed drop to the no load speed.
- * Compressor is now ready to furnish air when the service valve is opened.

STOPPING

- * Close air service valve(s).
- * Allow the unit to run at "no load" for 3 to 5 minutes to reduce the engine temperatures.
- * Flip the toggle switch to "OFF".

NOTICE

Once the engine stops, the automatic blowdown valve will begin to relieve all pressure from the receiver-separator system.

CAUTION

Never allow the unit to sit stopped with pressure in the receiver-separator system. As a precaution, open the service valve.

DANGER

Even after pressure is relieved from the receiver-separator system, any air supply line from the compressor to a tool or machine could remain under pressure and cause very serious personal injury or death. After the compressor stops, carefully open a valve at any tool or machine to exhaust the pressure in any line prior to removal or servicing.

AUTOMATIC SAFETY SHUTDOWN

NOTICE

Do NOT wire around or bypass a shutdown sensor or switch.

All units in this family of machines are protected by five (5) sensors or switches at the following locations:

- (1)-High engine COOLANT temperature in the engine.
- (2)-Low engine oil pressure, in the engine.
- High discharge AIR temperature,
- (3) at the airend outlet.
- (4) in the top cover of the separator tank.
- (5) in the service pipe.

UNITS RATED BELOW 200 PSI(1400kPa)

These units include an additional low oil pressure switch in the supply line to the airend bearings.

ALL UNITS

Should any of these problem situations occur, the unit will shutdown and stop. Before restarting the unit, check the above areas for low fluid level and/or evidence of excessive heat.

The first three sensors, and additional low oil pressure switch (mentioned above) will automatically reset when the problem condition is corrected. The latter two sensors (4 and 5) employ a fusible material that melts at approximately 280°F (138°C). These fusible sensors must be replaced if activated. This would indicate a serious airend system problem that must be thoroughly investigated and corrected before returning the unit to operation.

Other possible causes for an unexpected shutdown are listed in Trouble Shooting - Section 7.

SECTION 4 - PREVENTIVE MAINTENANCE

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GENERAL

In addition to periodic inspections, many of the components in these units require periodic servicing to provide maximum output and performance. Servicing may consist of pre-operation and post-operation procedures to be performed by the operating or maintenance personnel. The primary function of preventive maintenance is to prevent failure, and consequently, the need for repair. Preventive maintenance is the easiest and the least expensive type of maintenance. Maintaining your unit and keeping it clean at all times will facilitate servicing.

Refer to the engine Operator's Manual furnished with the unit for the specific requirements on preventive maintenance for the engine.

SCHEDULED MAINTENANCE

The schedule on page 4-10 is based on normal operation of the unit. This page can be reproduced and used as a checklist by the service personnel. In the event you are operating in extreme environments (very hot, cold, dusty or wet), the schedule should be adjusted accordingly.

COMPRESSOR OIL LEVEL

The oil level is most consistent when the unit is RUNNING and should be checked at this time.

The optimum operating level is midway of the sight tube on the side of the receiver tank. See the decal beside the sight tube. If the oil level is not in the "OK" range, make appropriate corrections (Add or drain). A totally filled sight tube in which the level is not visible indicates an over-full condition and requires that oil be drained.

AIR CLEANER

This unit is equipped with restriction or service indicators for both the engine and the compressor. These should be checked daily before starting and during operation. If the window shows red with the unit operating at full speed, and remains red after the unit is shut down, servicing of the cleaner element is necessary. Also weekly squeeze the rubber valve (precleaner dirt dump) on each air cleaner housing to ensure that they are not clogged. NOTICE: Holes or cracks downstream of the air cleaner housing will cause the restriction indicators to be ineffective.

After servicing, the restriction indicator should be reset by pressing down on the indicator's flexible top.

To service the air cleaners on all units proceed as follows:

1. Loosen outer wing nut and remove with outer element. Inspect red window on special inner wing nut to find small dot. If dot is not visible, remove cotter pin and special wing nut and inner (safety) element.
2. Inspect air cleaner housing for any condition that might cause a leak and correct as necessary.
3. Wipe inside of air cleaner housing with a clean, damp cloth to remove any dirt accumulation especially in the area where the element seals against the housing.
4. Inspect element by placing a bright light inside and rotating slowly. If any holes or tears are found in the paper, discard this element. If no ruptures are found, the element can be cleaned by one of the following procedures.
5. If a new air cleaner element is to be used check it closely for shipping damage. To reset the signal indicator in the special wing nut, apply suction to the red window.
6. Install cleaned or new elements in the reverse order to the above. Tighten wing nuts firmly and replace cotter pin.
7. Inspect to ensure that the end of the outer element seals tightly 360 degrees around the air cleaner housing.

In the event that the cleaner element must be put back into use immediately, compressed air cleaning (as follows) is recommended since the element must be thoroughly dry.

Direct compressed air through the element in the direction opposite to the normal air flow through the element. Move the nozzle up and down while rotating the element. Be sure to keep the nozzle at least one inch (25.4 mm) from the pleated paper.

NOTICE

To prevent damage to the element, never exceed a maximum air pressure of 100 psi (700 kPa).

In the event the element is contaminated with oil or greasy dirt and a new element is not available, cleaning can be accomplished by washing using the air cleaner element manufacturer's recommendations.

NOTICE

It is highly recommended that new replacement elements be installed in the unit immediately in order that the unit be returned to service in the shortest possible time. In this manner the elements just removed for cleaning can be washed and stored as future replacement elements.

In addition, the air cleaner system (housing and piping) should be inspected every month for any leakage paths or inlet obstructions. Make sure the air cleaner mounting bolts and clamps are tight. Check the air cleaner housing for dents or damage which could lead to a leak. Inspect the air transfer tubing from the air cleaner to the compressor and the engine for holes. Make sure that all clamps and flange joints are tight.

GAUGES

The instruments or gauges are essential for safety, maximum productivity and long service life of the machine. Inspect the gauges and test any diagnostic lamps prior to start-up. During operation observe the gauges and any lamps for proper functioning. Refer to page 2-2, Operating Controls, for the normal readings. To test the diagnostic lamps, refer to Section 3 - Starting, page 3-3.

FUEL TANK

This unit is equipped with dual tanks that can be filled from either side. Using clean fuel in the fuel tanks is vitally important and every precaution should be taken to ensure that only clean fuel is either poured or pumped into the tank.

When filling the fuel tank on this unit, by methods other than a pump and hose, use a **CLEAN nonmetallic** funnel.

Every six months the drain plugs should be removed from the tanks so that any sediment or accumulated condensate may be drained. When replacing the drain plugs, make sure they are tightened securely.

BATTERY

Heavy-duty, diesel cranking type batteries were installed at the factory and these should be inspected weekly. Keep the battery posts-to-cable connections clean, tight and lightly coated with a grease. Also the electrolyte level in each cell should cover the top of the plates. If necessary, top-up with clean distilled water.

TIRES

A weekly inspection is recommended. The proper inflation pressure for the tires is listed in Section 2 - Specifications. Tires that have cuts or cracks or little tread should be repaired or replaced. Monthly check the wheel lug nuts for tightness.

SAFETY SHUTDOWN SYSTEM**NOTICE**

Do NOT wire around or bypass a shutdown sensor or switch.

The operation of the safety shutdown system should be checked every month, or whenever it appears not to be operating properly. The five or six switches in this system are listed in Section 3 on page 3-4. The operation of these switches is extremely important in order to protect the engine and the compressor airend from overheating. The engine oil pressure switch prevents the engine from being damaged due to oil starvation. The remaining four switches help protect the engine and compressor from high temperatures.

Once a month remove a wire from the engine oil pressure switch to check the shutdown solenoid for proper operation.

Once a year, the temperature switches should be tested by removing from the unit. The two "fusible"(non-resettable) switches can be checked visually or with an ohmmeter (0 ohms = good). The other two "resettable" switches must be tested with an ohmmeter. There should be 0 ohms between the wire terminals. When the switch is placed in the heated oil bath and its contact open, the ohmmeter should indicate infinite ohms.

The high discharge air temperature switch will require approximately 248°F (120°C) to actuate. The engine coolant temperature switch will require approximately 210°F (99°C) to actuate. Replace any defective switch before continuing to operate the unit.

A low oil pressure switch may be tested by removing it and connecting it to a source of controlled pressure while monitoring an ohmmeter connected to the switch terminals. As pressure is applied slowly from the controlled source, the switch should close at 12 psi (.84 kgf per cm²) and show continuity through the contacts. As the pressure is slowly decreased to 8 psi (0.56 kgf per cm²) the contacts should open and the ohmmeter should show lack of continuity (infinite ohms) through the contacts. Replace a defective switch before continuing to operate the unit.

COMPRESSOR OIL COOLER

The compressor lubricating and cooling oil is cooled by means of the fin and tube-type oil cooler, located beside the radiator. The lubricating and cooling oil, flowing internally through the core section, is cooled by the air stream from the cooling fan flowing past the core section. When grease, oil and dirt accumulate on the exterior surfaces of the oil cooler, its efficiency is impaired.

Each month it is recommended that the oil cooler be cleaned by directing compressed air which contains a nonflammable safety solvent through the core of the oil cooler. This should remove the accumulation of grease, oil and dirt from the exterior surfaces of the oil cooler core so that the entire cooling area can transmit the heat of the lubricating and cooling oil to the air stream.

In the event foreign deposits, such as sludge and lacquer, accumulate in the oil cooler to the extent that its cooling efficiency is impaired, a resulting high discharge air temperature is likely to occur, causing shut down of the unit. To correct this situation it will be necessary to clean it using a cleaning compound in accordance with the manufacturer's recommendations. Use only a dependable cleaning compound. This is of prime importance because different cleaners vary in concentration and chemical composition. After completing the cleaning procedure, the oil cooler must be flushed before returning to service.

RADIATOR

WARNING

Do NOT remove the cap from a HOT engine radiator. The sudden release of pressure from a heated cooling system can result in a loss of coolant and possible severe personal injury.

The engine cooling system is filled at the factory with a 50/50 mixture of water and ethylene glycol. This permanent type antifreeze contains rust inhibitors and provides protection to -35°F (-37°C). The use of such a mixture is recommended for both summer and winter operation. When using water alone be sure to add a reputable brand of rust inhibitor to prevent internal corrosion.

It is recommended to test the freezing protection of the coolant every six months or prior to freezing temperatures. Replenish with a fresh mixture every twelve months. A drain for the system is located in the bottom radiator tank. An alternate method would be to disconnect a bottom radiator hose.

Each month, inspect the radiator exterior for obstructions (dirt, bugs, etc.). If present, blow water or compressed air containing a nonflammable solvent between the fins in a direction opposite the normal air flow. Should the radiator be clogged internally, standard automotive practices should be followed.

HOSES

Each month it is recommended that all of the intake lines to and from the air cleaners, the engine cooling system hoses and all of the flexible hoses used for air, oil, and fuel be inspected.

To ensure freedom from air leaks all rubber hose joints and the screw-type hose clamps must be absolutely tight. Regular inspection of these connections for wear or deterioration is a definite "must" if regular servicing of the air cleaners is not to prove futile. Premature wear of both the engine and compressor is ASSURED whenever dust-laden air is permitted to enter the engine's combustion chamber or the compressor intake practically unfiltered.

The flexible hoses used in the fuel, oil and air lines on these units are primarily used for their ability to accommodate relative movement between components. It is extremely important they be periodically inspected for wear and deterioration. Clamps are used to prevent hose cover abrasion through vibration. This abrasion may occur when two hose lines cross, or when a hose line rubs against a fixed point; therefore, it is necessary that all clamps be replaced if missing. It is also important the operator does not use the hoses as convenient hand holds or steps. Such use can cause early cover wear and hose failure.

NOTICE

Piping systems operating at less than 150 psi (1050 kPa) may use a special nylon tubing. The associated fittings are also of a special "push-in" design. If so, features are as follows:

Pulling on the tubing will cause the inner sleeve to withdraw and compress, thus tightening the connection. The tubing can be withdrawn only while holding the sleeve against the fitting. The tubing can be removed and replaced numerous times without losing its sealing ability.

To install the nylon tubing, make a mark (with tape or grease pencil) approximately 7/8 inch from the end of the tubing. Insert the tubing into the sleeve and "push-in" past the first resistance to the bottom. The mark should be approximately 1/16 inch from the sleeve, for the 3/8 inch O.D. tubing; 1/8 inch for the 0.25 inch O.D. tubing. This will ensure that the tubing is fully engaged in the sealing mechanism.

COMPRESSOR OIL FILTERS

The compressor lubrication and cooling oil system includes dual spin-on, throw away type oil filters, each with an internal bypass valve. With a clean, new filter element all of the oil flows through the full element area, from the outside/inside. As each element becomes contaminated with dirt, a pressure differential is created in the filter housing between the oil inlet and outlet ports. As this differential approaches 25 psi (175 kPa), the bypass valve starts to open, thus permitting a small quantity of oil to bypass the filter. As the contaminants continue to build up, more and more of the oil bypasses the filter media itself.

This does not provide any filtration but does allow a maximum flow of compressor lubricating and cooling oil to preclude any possible damage from loss of oil. Also the design of the filter prevents any washing-off of any dirt during oil bypassing.

NOTICE

The oil filter must be replaced every 500 hours of operation. On new or overhauled units replace the element after the first 50 and 150 hours of operation; thereafter, service the oil filter every 500 hours.

To service the oil filters it will first be necessary to shut the unit down. Wipe off any external dirt and oil from the exterior of the filter to minimize any contamination from entering the lubrication system. Proceed as follows:

WARNING

High pressure air can cause severe injury or death from hot oil and flying parts. Always relieve pressure before removing caps, plugs, covers or other parts from pressurized air system.

1. Open the service air valve(s) to ensure that system is relieved of all pressure. Close the valve(s).
2. Turn the spin-on filter element counterclockwise to remove it from the filter housing. Inspect the filter element and then discard.

NOTICE

If there is any indication of formation of varnishes, shellacs or lacquers on the oil filter element, it is a warning the compressor lubricating oil has improper characteristics and should be immediately changed. See Section 5 - Lubrication.

3. Inspect filter gasket contact area for cleanliness and damage. Clean or repair as necessary.
4. Install new filter by turning element clockwise until gasket makes initial contact. Tighten an additional 1/2 to 3/4 turn.
5. Start unit and allow to build up to rated pressure. Check for leaks before placing unit back into service.

FASTENERS

Visually check entire unit in regard to bolts, nuts and screws being properly secured. Spot check several capscrews and nuts for proper torque. If any are found loose a more thorough inspection must be made. Take corrective action.

COMPRESSOR OIL

The lubricating and cooling oil must be replaced every 1000 hours of operation or six (6) months, whichever comes first. Refer to Section 5 - Lubrication for detailed instructions and specifications.

RUNNING GEAR

Every month or 500 miles, tighten the wheel lug nuts to 85 - 95 lbs.-ft. Every six months the wheel bearings, grease seals and axle spindles should be inspected for damage (corrosion, etc.) or excessive wear. Replace any damaged or worn parts. Repack wheel bearings. Use a wheel bearing grease conforming to specification MIL-G-10924 and suitable for all ambient temperatures.

Grease can be replaced in a wheel bearing using a special fixture or by hand as follows.

Place a spoonful of grease in the palm of one hand and take the bearing in the other hand. Push a segment of the wider end of the bearing down into the outer edge of the grease pile closest to the thumb. Keep lifting and pushing the bearing down into the edge of the grease pile until grease oozes out both from the top and from between the rollers. Then rotate the bearing to repeat this operation on the next segment. Keep doing this until you have the entire bearing completely filled with grease. Before installing bearing, place a light coat of grease on the bearing cups which are pressed in the hub.

NOTE

Excessive grease in the hub or grease cap serves no purpose due to the fact that there is no way to force the grease into the bearing. The manufacturer's standard procedure is to thoroughly pack the inner and outer bearing with grease and then to apply only a very small amount of grease into the grease cap.

If bearing adjustment is required or the hub has been removed for any reason, the following procedure must be followed to ensure a correct bearing adjustment of 0.001 to .012 free play.

- (1) While rotating hub slowly to seat the bearings, tighten spindle nut to approximately 15 lbs.-ft. Grasp the tire at the top and bottom and rock, in and out. There should be no evidence of looseness (free play) at the bearing.
- (2) Loosen nut to remove preload torque. Do not rotate hub.

- (3) Finger tighten nut until just snug. Loosen nut until the first nut castellation lines up with cotter pin hole in spindle. Insert cotter pin.
- (4) Ensure a definite but minimal amount of free play by rocking the tire.
- (5) Bend over cotter pin legs to secure nut and clear grease cap.
- (6) Nut should be free to move with only restraint being the cotter pin.

RECEIVER-SEPARATOR SYSTEM

WARNING

High pressure air can cause severe injury or death from hot oil and flying parts. Always relieve pressure before removing caps, plugs, covers or other parts from pressurized air system.

- * Open service valve at end of machine.
- * Ensure pressure is relieved, with BOTH:
 - Discharge air pressure gauge reads zero (0).
 - No air discharging from service valve.
- * When draining oil, remove and replace (make tight) plug at bottom of separator tank.
- * When adding oil, remove and replace (make tight) plug on side of separator tank.

In the compressor lubricating and cooling system, separation of the oil from the compressed air takes place in the receiver-separator tank. As the compressed air enters the tank, the change in velocity and direction drop out most of the oil from the air.

Additional separation takes place in the oil separator element which is located in the top of the tank.

Any oil accumulation in this separator element is continuously drained off by means of a scavenge tube which returns the accumulated oil to the system.

The life of the oil separator element is dependent upon the operating environment (soot, dust, etc.) and should be replaced every twelve months or 2000 hours. To replace the element proceed as follows:

- * Ensure the tank pressure is zero.
- * Disconnect the hose from the scavenge tube.
- 4** * Remove scavenge tube from tank cover.
- * Disconnect service line from cover.

- * Remove (16) cover mounting screws.
- * Remove cover, element and inner shell.
- * Remove any gasket material left on cover or tank.
- * Install new gasket, inner shell and new element.

NOTICE

Do not remove staples from the element/gasket connection.

- * Place a straightedge across top of element and measure from bottom of straightedge to bottom of element (see Fig. 4.1).
- * Replace scavenge tube in cover (cover is still off of tank).
- * Measure from bottom of cover to end of scavenge tube (see Fig. 4.2). Measurement should be from 1/8" to 1/4" less than the element measurement. If not, cut to size.

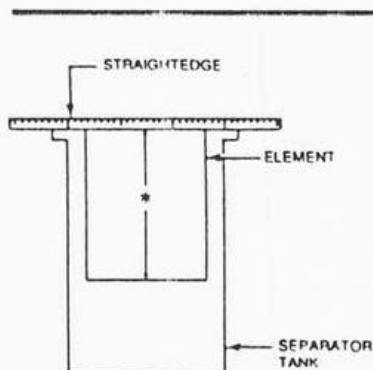


Figure No. 4.1

*Element Measurement

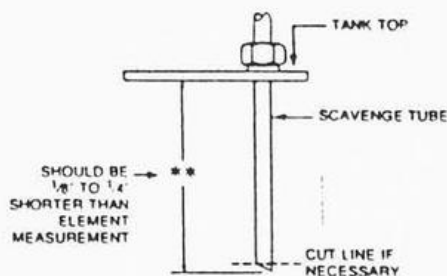


Figure No. 4.2

**Tube Measurement

- * Remove scavenge tube.
- * Reposition cover (use care not to damage gaskets).
- * Replace cover mounting screws; tighten in a crisscross pattern to 150 lbs.-ft.
- * Reconnect service line. Replace scavenge tube. Reconnect hose.
- * Close service valve. Start unit and look for leaks.

When replacing the element, the scavenge lines, orifice, filter, and check valve should be thoroughly cleaned and the oil changed.

SCAVENGE LINE

WARNING

High pressure air can cause severe injury or death from hot oil and flying parts. Always relieve pressure before removing caps, plugs, covers or other parts from pressurized air system.

The scavenge line originates at the receiver-separator tank cover and terminates at the compressor through an orifice (.063 inch/1.6 mm). Once a year or every 2000 hours of operation, whichever comes first, remove this line and orifice, thoroughly clean, then reassemble.

NOTE

Excessive oil carry-over may be caused by an oil-logged separator element. Do not replace element without first performing the following maintenance procedure:

1. Check oil level. Maintain as indicated earlier in this section.

2. Thoroughly clean scavenge line, orifice and check valve.
3. Assure minimum pressure valve has proper setting.
4. Run unit at rated operating pressure for 30 to 40 minutes to permit element to clear itself.

EXTERIOR FINISH CARE

This unit was painted at the factory with a high quality acrylic modified alkyd enamel. The following care will ensure the longest possible life from this finish.

1. Allow 30 days, if possible, before washing with anything but clean water. If necessary to remove dust, pollen, etc. from housing, rinse off with only a hose. Do not scrub with a rough cloth, pad, etc.
2. Do not use strong solvents or harsh abrasive cleaners to remove road film or tar. Use only mild tar removers or mild household detergents or detergents especially for automotive finishes.
3. If necessary to remove oxidized pigment and restore the gloss, do not use coarse rubbing compound. Use any automotive polish or wax.

CAUTION

- ANY UNAUTHORIZED MODIFICATION OR FAILURE TO MAINTAIN THIS EQUIPMENT MAY MAKE IT UNSAFE AND OUT OF FACTORY WARRANTY.
- IF PERFORMING MORE THAN VISUAL INSPECTIONS, DISCONNECT BATTERY CABLES AND OPEN MANUAL BLOWDOWN VALVE.
- USE EXTREME CARE TO AVOID CONTACTING HOT SURFACES (ENGINE EXHAUST MANIFOLD AND PIPING, AIR RECEIVER AND AIR DISCHARGE PIPING, ETC.).
- NEVER OPERATE THIS MACHINE WITH ANY GUARDS REMOVED.
- INCH AND METRIC HARDWARE WAS USED IN THE DESIGN AND ASSEMBLY OF THIS UNIT. CONSULT THE PARTS MANUAL FOR CLARIFICATION OF USAGE.

NOTICE: Disregard any maintenance pertaining to components not provided on your machine.

PREVENTIVE MAINTENANCE SCHEDULE

UNIT _____
HOURS _____

DATE _____
SERVICEMAN _____

PREVENTIVE MAINTENANCE SCHEDULE

If operating in extreme environments (very hot, cold, dusty or wet), these time periods should be reduced.

	DAILY	WKLY	MO.	3 MO. 500 HRS	6 MO. 1000 HRS	12 MO. 2000 HRS
COMPRESSOR OIL LEVEL	C					
ENGINE OIL LEVEL	C					
*RADIATOR COOLANT LEVEL	C					
GAUGES/LAMPS	C					
*AIR CLEANER SERVICE INDICATORS	C					
FUEL TANK (FILL AT END OF DAY)	C					
*FUEL/WATER SEPARATOR	C					
AIR CLEANER PRECLEANER DUMPS		C				
FAN/ALTERNATOR BELTS		C				
BATTERY CONNECTIONS/ELECTROLYTE		C				
TIRE PRESSURE AND SURFACE		C				
*WHEEL LUG NUTS			C			
HOSES (OIL, AIR, INTAKE, ETC.)			C			
SAFETY SHUTDOWN SYSTEM			C			
AIR CLEANER SYSTEM			C			
COMPRESSOR OIL COOLER			C			
*ENGINE RADIATOR			C			
FASTENERS				CLEAN C WI		
AIR CLEANER ELEMENTS					R	
*FUEL/WATER SEPARATOR ELEMENT				R		
COMPRESSOR OIL FILTER ELEMENT					R	
COMPRESSOR OIL					R	
*WHEELS (BEARINGS, SEALS, ETC.)					C	
*ENGINE COOLANT					C	
SHUTDOWN SWITCH SETTINGS						R
SCAVENGER ORIFICE & RELATED PARTS						C
OIL SEPARATOR ELEMENT						Clean R
ENGINE (OIL CHANGES, FILTERS, ETC.)	REFER TO ENGINE OPERATOR'S MANUAL					

*DISREGARD IF NOT APPROPRIATE FOR THIS PARTICULAR MACHINE. R = REPLACE.
C = CHECK (AND ADJUST OR REPLACE IF NECESSARY). WI = OR WHEN INDICATED.

INGERSOLL-RAND
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SECTION 5 - LUBRICATION

Contents	Page
General Information.....	1
Compressor Oil Change.....	1
Fluids & Lubricants Table.....	2

GENERAL INFORMATION

Lubrication is an essential part of preventive maintenance, affecting to a great extent the useful life of the unit. Different lubricants are needed and some components in the unit require more frequent lubrication than others. Therefore, it is important that the instructions regarding types of lubricants and the frequency of their application be explicitly followed. Periodic lubrication of the moving parts reduces to a minimum the possibility of mechanical failures.

The lubrication chart on page 5-2 shows those items requiring regular service and the interval in which they should be performed. A regular service program should be developed to include all items and fluids. These intervals are based on average operating conditions. In the event of extremely severe (hot, cold, dusty or wet) operating conditions, more frequent lubrication than specified may be necessary. Details concerning lubrication of the running gear are in Section 4 - Maintenance.

All filters and filter elements for air and compressor lubricant must be obtained through Ingersoll-Rand to assure the proper size and filtration for the compressor.

COMPRESSOR OIL CHANGE

These units are normally furnished with an initial supply of oil sufficient to allow operation of the unit for 1000 hours; however, if a unit has been completely drained of all oil, it must be refilled with new oil before it is placed in operation. Refer to specifications in table on page 5-2.

NOTICE

Some oil types are incompatible when mixed and result in the formation of varnishes, shellacs, or lacquers which may be insoluble. Such deposits can cause serious troubles including clogging of the filters. Where possible, do not mix oils of different types and avoid mixing different brands. A type or brand change is best made at the time of a complete oil drain and refill.

If the unit has been operated for 1000 hours, it should be completely drained of oil. If the unit has been operated under adverse conditions, or after long periods in storage, an earlier change period may be necessary as oil deteriorates with time as well as by operating conditions.

Complete replacement of the old oil with clean new oil every 1000 operating hours (or every six months, whichever comes first), depending upon operating conditions, is not only desirable, but is good insurance against the accumulation of dirt, sludge, or oxidized oil products.

WARNING

High pressure air can cause severe injury or death from hot oil and flying parts. Always relieve pressure before removing caps, plugs, covers or other parts from pressurized air system. Ensure the following conditions are met:

- Discharge air pressure gauge reads zero (0).
- No air discharging from manual blowdown valve.

Completely drain the receiver-separator, piping, and oil cooler. If the oil is drained immediately after the unit has been run for some time, most of the sediment will be in suspension and, therefore, will drain more readily. However, the fluid will be hot and care must be taken to avoid contact with the skin or eyes.

After the unit has been completely drained of all old oil, close the drain valve. Add oil in the specified quantity at the filler plug. Tighten the filler plug and run the machine to circulate the oil. Check the oil level WHEN RUNNING. If not within the "OK" range, stop the unit and make corrections. DO NOT OVERFILL OR OPERATE IN THE "ADD" RANGE.

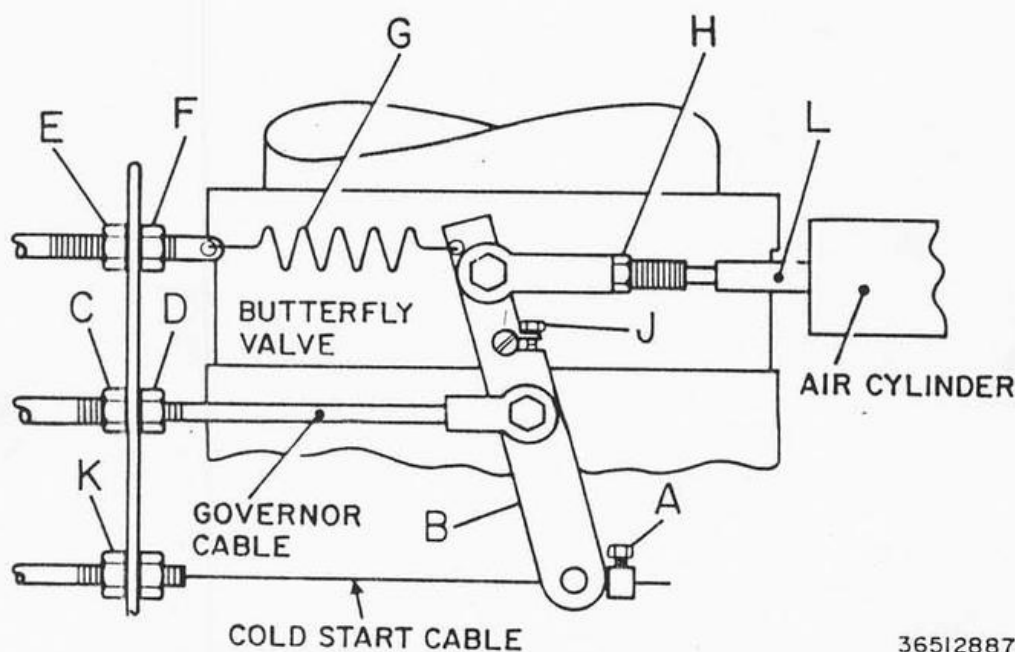
FLUIDS AND LUBRICANTS TABLE

ITEM	FLUID	AMBIENT TEMP.	SPECIFICATION	INTERVAL
Compressor	Lubricant	125°F to -10°F (52°C to -23°C)	• DEXRON ³ or DEXRON ³ II ATF	1000 hours*
XHP-750- (300 psi)		125°F to 0°F (52°C to -18°C)	• I-R XHP 505 Synthetic	1000 hours*
XHP-650- (350 psi)		0°F to 100°F (-18°C to 38°C)	I-R XHP 505 Synthetic Lubricant or Equivalent	1000 hours*
XHP-900- (350 psi)		70°F to 115°F (21°C to 46°C)	I-R XHP 1001 Synthetic Lubricant or Equivalent	1000 hours*
Engine	• Oil • Coolant • Fuel	Refer to Engine Operator's Manual or Manufacturer's Representative		
Running Gear				
• Wheel	Grease	All	MIL-G-10924	6 months
• Bearings				
• Other	Grease	All	Multi-Purpose	6 months

DEXRON³ — Reg. T.M. of General Motors Corp.

*Or every six months, whichever comes first.

SECTION 6

SPEED AND PRESSURE REGULATOR
ADJUSTING INSTRUCTIONS

36512887

The operating pressure of this unit was set at the factory to the maximum rating (at full speed). See General Data. However, this pressure may be reset down to 150 psi (1050 kPa).

Normally, regulation requires no adjusting; but if proper adjustment is lost, proceed as follows:

1. WITH UNIT STOPPED, disconnect rod end bearing on governor cable at engine governor lever.
2. Loosen set screw/block (A) on Cold Start Cable.
3. Run nut (C) back on Governor Cable housing. Push Governor Cable housing toward lever (B). Tighten nut (D).

4. Loosen nut (E) to relax spring (G).
5. Loosen nut (H). Turn rod (L) in Air Cylinder until approximately 3/4 inch (20 mm) between nut (H) and flats on rod (L).
6. Loosen screw (J) on lever (B). Rotate butterfly shaft clockwise until valve is closed. (Mark on end of shaft will be horizontal).
7. Tighten set screw/block (A) against lever (B). Pull Cold Start handle OUT. (Mark on butterfly shaft should remain horizontal).
8. Tighten screw (J) on lever (B).

9. Turn rod (L) one round into rod end bearing. Tighten nut (H). Rotate butterfly shaft/lever (B) ,open and closed, several times to assure that linkage is not binding.
10. Push Cold Start handle IN. Then pull OUT approximately 1 inch (25 mm).
11. With engine governor lever in full speed position, reconnect rod end bearing.
12. Take slack out of spring (G) by moving nuts (E) and (F). Tighten nuts.
13. START UNIT. Push Cold Start handle IN and allow unit to warm up for 3 to 5 minutes.
14. Push "Service Air" button on control panel. Adjust "Pressure Regulator" on control panel to give Rated Operating Pressure (*).
15. Close service air valve. Butterfly valve should close, discharge air pressure rise slightly and engine go to No Load or Idle speed (*).
16. Set No Load speed (*) by adjusting position of rod end bearing on governor cable at engine. Tighten lock nut.
17. Open service air valve and observe Full Load engine speed(*). Assure that set screw/block (A) on Cold Start Cable is against lever (B). If necessary, adjust Full Load speed (*) by moving nuts(K) on Cold Start Cable housing.
18. Close and slowly open service air valve. If engine speed surges, increase tension on spring (G) by moving nuts (E) and (F). If set speeds are not correct, repeat Steps 15 ,16 and 17 as required.
19. To regulate to any pressure between 150 psi (1050 kPa) and maximum rating(*), make adjustments at the "Pressure Regulator". Tighten locknut to hold setting.

(*) See General Data

SECTION 7 - TROUBLE SHOOTING

Contents	Page
Introduction.....	1
Action Plan.....	1
Chart.....	3

INTRODUCTION

Trouble shooting for a portable air compressor is an organized study of a particular problem or series of problems and a planned method of procedure for investigation and correction. The trouble shooting chart that follows includes some of the problems that an operator may encounter during the operation of a portable compressor.

The chart does not attempt to list all of the troubles that may occur, nor does it attempt to give all of the answers for correction of the problems. The chart does give those problems that are most apt to occur. To use the trouble shooting chart:

- A. Find the "complaint" in the top horizontal line.
- B. Follow down that column to find the potential cause or causes. The numbers (1,2,3 etc.) suggest an order to follow in trouble shooting.
- C. A reference for most causes is indicated in the extreme right column and the footnotes. For example, "M" stands for Maintenance - Section 4 in this manual.

For trouble shooting electrical problems refer to the Wiring Diagram Schematic found in the Section 9 - Parts List.

ACTION PLAN

A. Think Before Acting

Study the problem thoroughly and ask yourself these questions:

- (1) What were the warning signals that preceded the trouble?
- (2) Has a similar trouble occurred before?
- (3) What previous maintenance work has been done?
- (4) If the compressor will still operate, is it safe to continue operating it to make further checks?

B. Do The Simplest Things First

Most troubles are simple and easily corrected. For example, most complaints are "low capacity" which may be caused by too low an engine speed or "compressor overheats" which may be caused by low oil level.

Always check the easiest and most obvious things first; following this simple rule will save time and trouble.

C. Double Check Before Disassembly

The source of most compressor troubles can be traced not to one component alone, but to the relationship of one component with another. Too often, a compressor can be partially disassembled in search of the cause of a certain trouble and all evidence is destroyed during disassembly. Check again to be sure an easy solution to the problem has not been overlooked.

D. Find And Correct Basic Cause

After a mechanical failure has been corrected, be sure to locate and correct the cause of the trouble so the same failure will not be repeated. A complaint of "premature breakdown" may be corrected by repairing any improper wiring connections, but something caused the defective wiring. The cause may be excessive vibration.

TROUBLE SHOOTING I-R PORTABLE COMPRESSOR

CAUSE

COMPLAINT

Short Air Cleaner Life	Excessive Oil In Air	Oil Seal Leak	Oil In Air Cleaner	Excessive Comp. Oil Temperature	Engine RPM Down	Will Not Unload	Safety Valve Relieves	Low CFM	Unit Shutdown	Unit Falls To Shutdown	Excessive Vibration	Won't Start/Run	Alternator Lamp Stays On	Alternator Lamp Stays Off	Engine Temp. Lamp Stays On	Engine Temp. Lamp Stays Off	Engine Oil Press. Lamp Stays On	Engine Oil Press. Lamp Stays Off	*REFER TO: SECTION
---------------------------	-------------------------	------------------	-----------------------	------------------------------------	--------------------	--------------------	--------------------------	---------	------------------	---------------------------	------------------------	--------------------	-----------------------------	------------------------------	-------------------------------	--------------------------------	------------------------------------	-------------------------------------	-----------------------

Numbers (1, 2, 3, Etc.) Suggest
Order To Follow In Cause
Trouble Shooting

Dirty Operating Conditions	1		1	6				3							5				M
Wrong Air Filter Element	6				8			13											P
Defective Service Indicator	3																		P
Inadequate Element Cleaning	2							4											M
High Oil Level		1																	M
Out Of Level - 15°		2		2											7		3		O
Clogged Scavenge Orifice	3																		M
Defective Separator Element	8				9		7	12											P
Scavenge Tube Blocked	4																		M
Defective Scavenge Check Valve	5																		M
Defective Minimum Pressure Valve	7			14				11											P
Contaminated Lube Oil		2																	M
Malfunctioning Seal		6																	P
Scored Shaft		7																	P
Malfunctioning Inlet Unloader	5		3			5	6	9											P
Incorrect Stopping Procedure	4		1																O
Dirty Cooler				5											6				M
Low Oil Level				3													2		M
Clogged Oil Filter Elements				7													5		M
Wrong Lube Oil		3		4													4		L
Malfunctioning Thermostat				12															P
Defective Oil Cooler Relief Valve				13															P
Recirculation Of Cooling Air				10											11				RA
Operating Pressure Too High		5		9	2	1	8								9				O/A
Loose Or Broken Belts				8						1		1			8				M/P
Blocked Or Restricted Oil Lines		4		15													6		—
Incorrect Linkage Adjustment					5			5											A
Clogged Fuel Filters					1							5							EM
Incorrect Pressure Regulator Adjustment					3	3	3	6											A
Ruptured Inlet Unloader Diaphragm			2			2	5												P
Defective Discharge Air Temp. Switch									7	1		11							P/M
Defective Engine Belt Break Switch									8	2		12			3	4			P/M
Defective Engine Oil Pressure Switch									9	3		13					3		P/M
Defective Shutdown Solenoid									10	4		14							P/M
Malfunctioning Relay									11	5		15							P/M
Loose Wire Connection									6			10	2	2		2			W/P
Blown Fuse									1			3							P
Low Battery Voltage												2	3						—
Malfunctioning Start Switch												4							P
Defective Safety Bypass Switch										6		16							P
9 Volts At Shutdown Solenoid																			—
Malfunctioning Alternator									12			1							P
Bulb Burnt Out													4						P
Broken Engine Fan Belt									4			8			1	1	1		M
Malfunctioning Circuit Board														5	3	2	3	2	P
Ambient Temp. +125°F (+52°C)				1												4			RA
Ice In Regulation Lines Orifice					10	6	8	14											RA
See Tank Blown Down Too Quickly	6																		O
Dirty Air Filter					6			1											M
Malfunctioning Pressure Regulator					4	4	4	7											P
Malfunctioning Air Cylinder					7			10											P
Leaks In Regulator Piping						1	2	2											—
Compressor Oil Temp. Too High									3			7							TC
Engine Water Temp. Too High									4			8							TC
Engine Oil Pressure Too Low									5			9							TC
Out Of Fuel									2			6							—
Malfunctioning Fan				12							3						9		P
Rubber Mounts Damaged											2								P
Engine Malfunctioning					11				14		5	18					12	7	EM
Drive Coupling Defective											4								P
Airend Malfunctioning					17	12					6	19							P
Defective Safety Valve							9												P

MA - Maintenance (5)
P - Parts (10)

O - Operating (4)
L - Lubrication (6)

RA - Review Application
A - Adjustments (7)

EM - Engine Manual
W - Wiring Diagram (10)

TC - Trouble Complaint

SECTION 8 - PARTS ORDERING INFORMATION

Contents	Page	Contents	Page
General.....	1	How to Use Parts List.....	2
Description.....	1	How to Order.....	2
Fasteners.....	2	Terms and Conditions.....	3
Markings and Decals.....	2	Airend Exchange Program.....	4

GENERAL

This publication, which contains an illustrated parts breakdown, has been prepared as an aid in locating those parts which may be required in the maintenance of the unit. All of the compressor parts, listed in the parts breakdown, are manufactured with the same precision as the original equipment. For the greatest protection always insist on genuine Ingersoll-Rand Company parts for your compressor.

NOTE

Ingersoll-Rand Company can bear no responsibility for injury or damages resulting directly from the use of non-approved repair parts.

Ingersoll-Rand Company service facilities and parts are available worldwide. There are Ingersoll-Rand Company Construction Equipment Group Sales Offices and authorized distributors located in the principal cities of the United States. In Canada our customers are serviced by the Canadian Ingersoll-Rand Company, Limited. There are also Ingersoll-Rand International autonomous companies and authorized distributors located in the principal cities throughout the free world.

All parts orders pertaining to your engine should be referred to your particular engine manufacturer's authorized distributor or dealer.

DESCRIPTION

The illustrated parts breakdown illustrates and lists the various assemblies, subassemblies and detailed parts which make up this particular air compressor. This includes the standard unit along with some of the options that are available. A series of illustrations show each part clearly and in its correct location relative to the other parts in the illustration. The part number, the description of the part, the quantity of parts required, and the part number of the next higher assembly in which a particular part is used are shown on each illustration. The quantities specified are the number of parts used per one assembly and are not necessarily the total number of parts used in the overall unit. Where no quantity is specified the quantity is assumed to be one.

Each description of a part is based upon the "noun first" method, i.e., the identifying noun or item name is always the first part of the description. In the event the item is an assembly or sub-assembly, the abbreviation "assy" or "subassy" follows the noun name. If the previous conditions do not exist, the noun name is followed by a single descriptive modifier. The descriptive modifier may be followed by words or abbreviations such as upper, lower, inner, outer, front, rear, RH, LH, etc. when they are required to modify the part noun.

In referring to the rear, the front or to either side of the unit, always consider the flywheel end of the engine as the rear of the unit. Standing at the rear of the unit facing the flywheel end of the engine, will determine the right and left sides.

FASTENERS

Both SAE/inch and ISO/metric hardware have been used in the design and assembly of these units. In the disassembly and reassembly of parts, extreme care must be taken to avoid damaging threads by the use of wrong fasteners. In order to clarify the proper usage and for exact replacement parts, all standard fasteners have been identified by part number, size and description. This will enable a customer to obtain fasteners locally rather than ordering from the factory. These parts are identified in tables that will be found at the rear of the parts illustrations. Any fastener that has not been identified by both part number and size is a specially engineered part that must be ordered by part number to obtain the exact replacement part. Refer to Section 10 - Common Fasteners.

MARKINGS AND DECALS

NOTE

Do not paint over safety warnings or instructional decals. If safety warning decals become illegible, immediately order replacements from the factory.

Part numbers for sets of original-type exterior markings (IR logotype etc.) and warnings/instructional decals are listed on the index page of Section 9 - Parts List. Individual decals are available as long as a particular model is in production.

Afterwards, service sets of exterior decals and current production safety warning decals are available. Contact the Product Support Group at Mocksville for your particular needs and availability.

HOW TO USE PARTS LIST

- Turn to Section 9 - Parts List.
- Locate the area or system of the compressor in which the desired part is used and find illustration page number.
- Locate the desired part on the illustration by visual identification and make note of part number and description.

HOW TO ORDER

The satisfactory ordering of parts by a purchaser is greatly dependent upon the proper use of all available information. By supplying your nearest sales office, autonomous company or authorized distributor, with complete information, you will enable them to fill your order correctly and to avoid any unnecessary delays.

In order that all avoidable errors may be eliminated, the following instructions are offered as a guide to the purchaser when ordering replacement parts:

- Always specify the model number of the unit as shown on the general data decal attached to the unit.
- Always specify the serial number of the unit. **THIS IS IMPORTANT.** The serial number of the unit will be found stamped on a plate attached to the unit. (The serial number on the unit is also permanently stamped in the metal of the frame side rail.)

- c. Always specify the number of the parts list publication.
- d. Always specify the quantity of parts required.
- e. Always specify the part number, as well as the description of the part, or parts, exactly as it is given on the parts list illustration.

In the event parts are being returned to your nearest sales office, autonomous company or authorized distributor, for inspection or repair, it is important to include the serial number of the unit from which the parts were removed.

TERMS AND CONDITIONS ON PARTS ORDERS

Acceptance: Acceptance of an offer is expressly limited to the exact terms contained herein. If purchaser's order form is used for acceptance of an offer, it is expressly understood and agreed that the terms and conditions of such order form shall not apply unless expressly agreed to by Ingersoll-Rand Company ("Company") in writing. No additional or contrary terms will be binding upon the Company unless expressly agreed to in writing.

Taxes: Any tax or other governmental charge now or hereafter levied upon the production, sale, use or shipment of material and equipment ordered or sold is not included in the Company's price and will be charged to and paid for by the Purchaser.

Delivery: Shipping dates are approximate. The Company will use best efforts to ship by the dates specified; however, the Company shall not be liable for any delay or failure in the estimated delivery or shipment of material and equipment or for any damages suffered by reason thereof.

Shipping dates shall be extended for delays due to acts of God, acts of Purchaser, acts of Government, fires, floods, strikes, riot, war, embargo, transportation shortages, delay or default on the part of the Company's vendors, or any other cause beyond the Company's reasonable control.

Should Purchaser request special shipping instruction, such as exclusive use of shipping facilities, including air freight when common carrier has been quoted and before change order to purchase order can be received by the Company, the additional charges will be honored by the Purchaser.

Warranty: The Company warrants that parts manufactured by it will be as specified and will be free from defects in materials and workmanship. The Company's liability under this warranty shall be limited to the repair or replacement of any part which was defective at the time of shipment provided Purchaser notifies the Company of any such defect promptly upon discovery, but in no event later than three (3) months from the date of shipment of such part by the Company. The only exception to the previous statement is the extended warranty as it applies to the special airend exchange program.

Repairs and replacements shall be made by the Company F.O.B. point of shipment. The Company shall not be responsible for costs of transportation, removal or installation.

Warranties applicable to material and equipment supplied by the Company but wholly manufactured by others shall be limited to the warranties extended to the Company by the manufacturer which are able to be conveyed to the Purchaser.

THE COMPANY MAKES NO OTHER WARRANTY OR REPRESENTATION OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES, INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED.

Limitation of Liability: The remedies of the Purchaser set forth herein are exclusive, and the total liability of the Company with respect to this order whether based on contract, warranty, negligence, indemnity, strict liability or otherwise, shall not exceed the purchase price of the part upon which such liability is based.

The Company shall in no event be liable to the Purchaser, any successors in interest or any beneficiary of this order for any consequential, incidental, indirect, special or punitive damages arising out of this order or any breach thereof, or any defect in, or failure of, or malfunction of the parts hereunder, ~~whether based upon~~ loss of use, lost profits or revenue, interest, lost goodwill, work stoppage, impairment of other goods, loss by reason of shutdown or non-operation, increased expenses of operation or claims of customers of Purchaser for service interruption whether or not such loss or damage is based on contract, warranty, negligence, indemnity, strict liability or otherwise.

AIREND EXCHANGE PROGRAM

Your Ingersoll-Rand Company Construction Equipment Group Sales Offices and authorized distributors as well as Ingersoll-Rand International autonomous companies and authorized distributors now have an airend exchange program to benefit portable compressor users.

On the airend exchange program the exchange price is determined by the age and condition of the airend and may be classified by one of the following categories.

Category "A": The airend must not be over two years old and must have reusable rotor housing(s) and rotor(s).

Category "B": The airend must be between two and five years old and returned with two or more reusable major castings.

Category "C": The airend must be over five years old.

Your nearest sales office, autonomous company or authorized distributor must first contact the Parts Service Department at the factory at which your portable air compressor was manufactured for an airend exchange number. The airend must be tagged with this preassigned number and returned to the factory prepaid. The airend must be intact, with no excluded parts, otherwise the exchange agreement may be cancelled. The warranty on an exchange or factory rebuilt airend is 365 days.

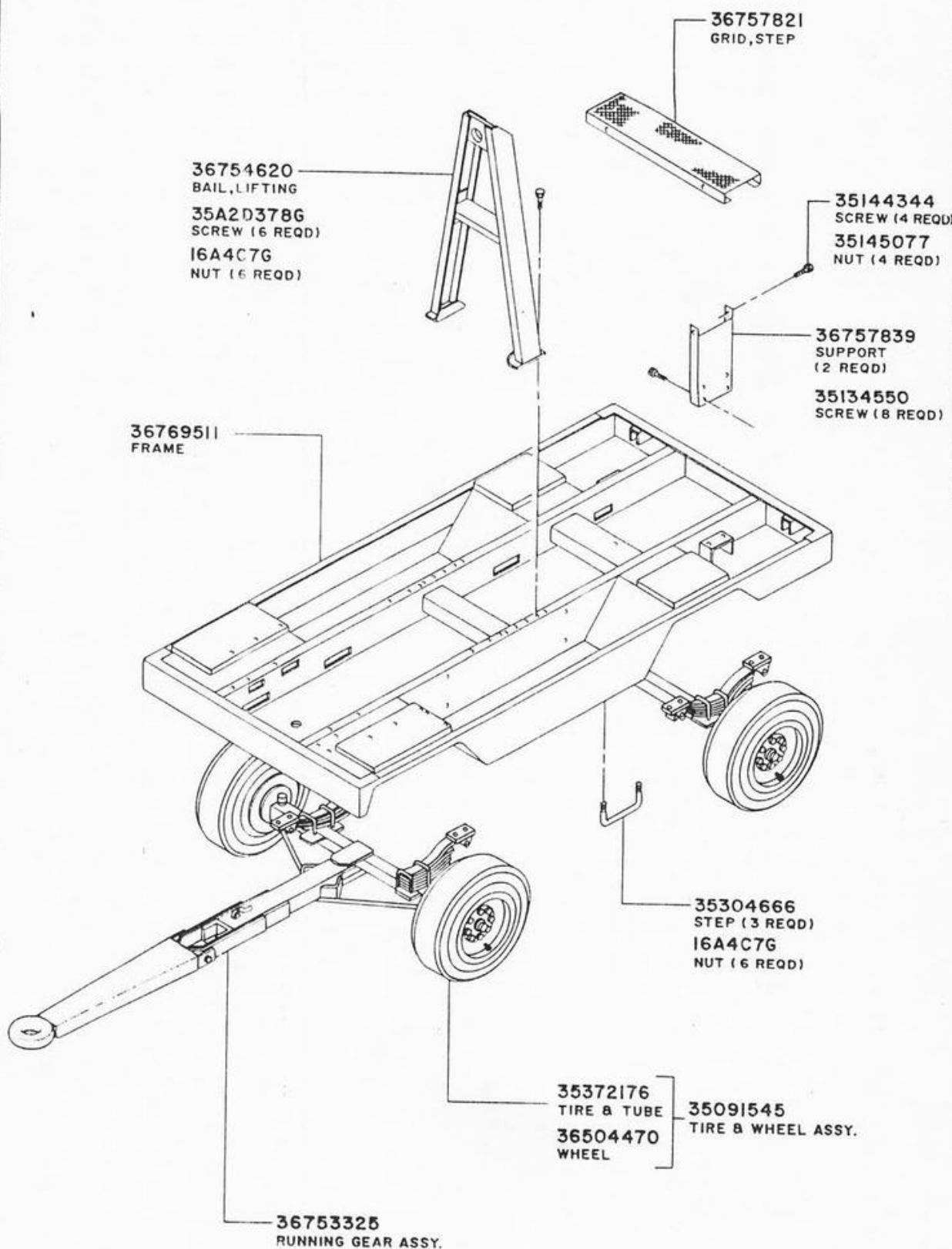
NOTE

Airends being returned to the factory in connection with a warranty claim must be processed through the Customer Service Department. If returned as an exchange airend, no warranty claim will be considered.

SECTION 9 — PARTS LIST

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			Exhaust System (EEC)	36515781	9-38

MODEL	EXTERIOR MARKING SET	DECAL SET
XHP-900-W-CAT	35099639	35099654



REVISIONS		CHARGE NOS.		NAME OF PART	
A.	ORIGINAL RELEASE	DATE	DATE	NAME	NAME
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2	4-19-81	4-19-81	4-19-81	W. POOLE	W. POOLE
3	4-19-81	4-19-81	4-19-81	W. POOLE	W. POOLE
4	4-19-81	4-19-81	4-19-81	W. POOLE	W. POOLE
5	4-19-81	4-19-81	4-19-81	W. POOLE	W. POOLE
6	4-19-81	4-19-81	4-19-81	W. POOLE	W. POOLE
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100	4-19-81	4-19-81	4-19-81	W. POOLE	W. POOLE

36719169
BRACKET (2 REQD)

11A13C66E
PIN, COTTER
(2 REQD)

36719466
SPRING (2 REQD)

11A13C66E
PIN, COTTER

36719177
BRACKET (2 REQD)

35111590
BOLT, SHACKLE
(2 REQD)

250A10X1613C
FITTING, LUBE (2 REQD)

35319045
PIN, KING (2 REQD)

25A13C28I
PIN, ROLL (4 REQD)

36719649 L.H.
36719631 R.H.
KNUCKLE ASSY.

12A5P13
WASHER (2 REQD)

25A13C30I
PIN, ROLL

W86707
FITTING, LUBE

35588755
PIN, CENTER

25A13C298
PIN, ROLL
(3 REQD)

36719557
DRAWBAR

25A13C283
PIN, ROLL

36753259
AXLE, FRONT

35107168
PIN, HINGE

W86707
FITTING, LUBE

36753242
ARM, CENTER

11A13C83E
PIN, COTTER

35588961
BALL JOINT, L.H.

35588953
BALL JOINT, R.H.
(2 REQD)

35140722
NUT, JAM (2 REQD)

35140730
NUT, JAM (2 REQD)

36504389
ROD, TIE (2 REQD)

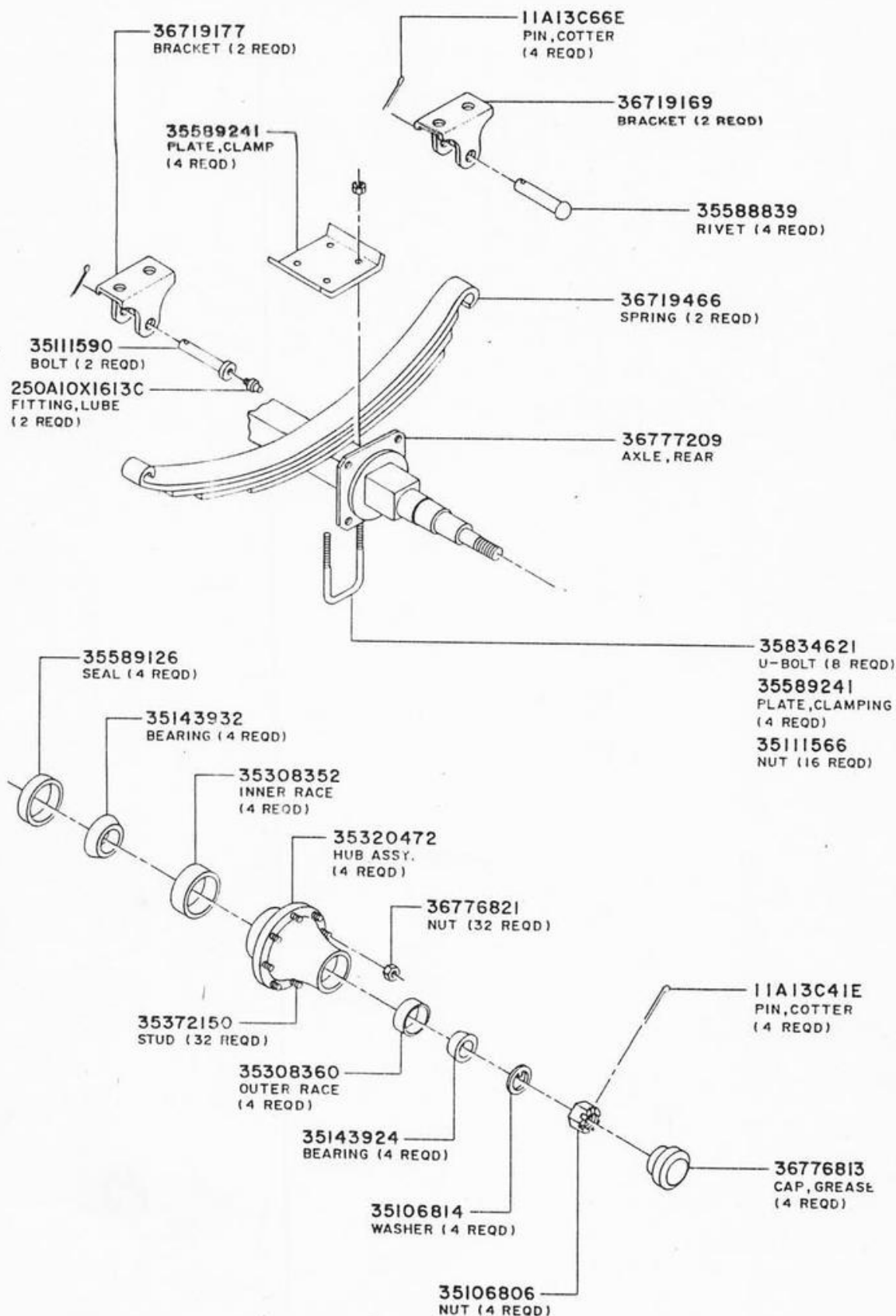
36719219
LATCH

35141167
SPRING

25A13C332
PIN, ROLL

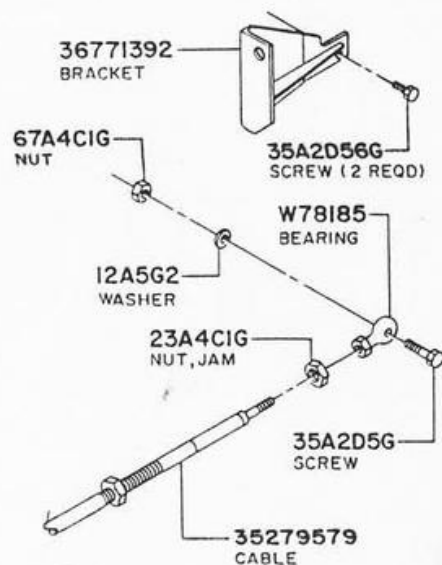
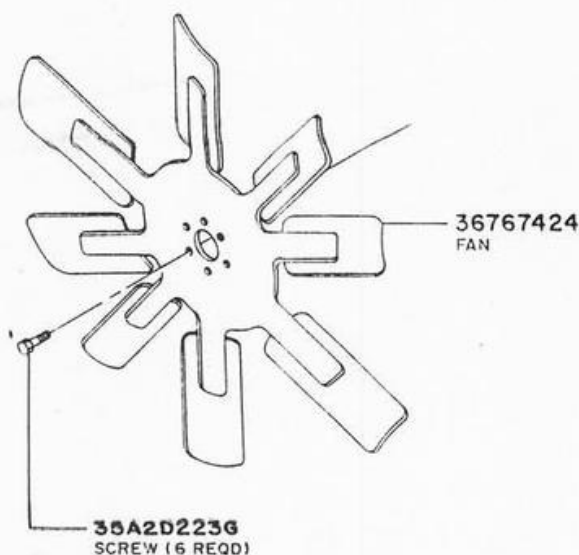
SHEET 1 OF 2

REVISIONS	DATE	CHARGE NOS.	NAME OF PART
A	1-7-88	1-7-88	FRONT AND REAR AXLE ASSY.
B	4-6-89	W. POOLE	INGERSOLL-RAND COMPANY
C			MODEL NO. P-1600-W-CU
D			DRAWING NO. 36508620



SHEET 2 OF 2

REVISIONS	DATE	CHARGE NOS.	NAME OF PART	QUANTITY	UNIT	W	C	U
A	1-7-88		FRONT AND REAR AXLE ASSY.					
B	11-21-88		INGERSOLL-RAND COMPANY					
C			W. POOLE					
D								
E								
F								
G								
H								
I								
J								
K								
L								
M								
N								
O								
P								
Q								
R								
S								
T								
U								
V								
W								
X								
Y								
Z								



REVISIONS		CHARGE NOS.		NAME OF PART	
A.	ORIGINAL RELEASE	DATE	2-13-89	ENGINE ASSEMBLY	
B.	CHG. PER. E/C 23194	DATE	6-19-89	INGERSOLL-RAND COMPANY	
C.	CHG. PER. E/C 24080	NAME	W. POOLE	MODEL NO.	
D.	CHG. PER. E/C 24391	E/C NO.	11-17-85	XHP-900-W-CA	
				DRAWING NO.	
				36510402	

36765477
ENGINE, CAT 3406

35A2D386G
SCREW

35273937
WASHER

36767044
BRACKET

35302835
MOUNT, RUBBER

16A4C8G
NUT (2 REQD)

35101476
WASHER

16A4C8G
NUT

TO OIL PAN DRAIN

23A7S11
BUSHING

67A7M5
ELBOW

19A7S5
NIPPLE

36777399
VALVE, BALL

34A7S6
PLUG

35A2D378G
SCREW (2 REQD)

ENGINE FUEL FILTER — 35362243

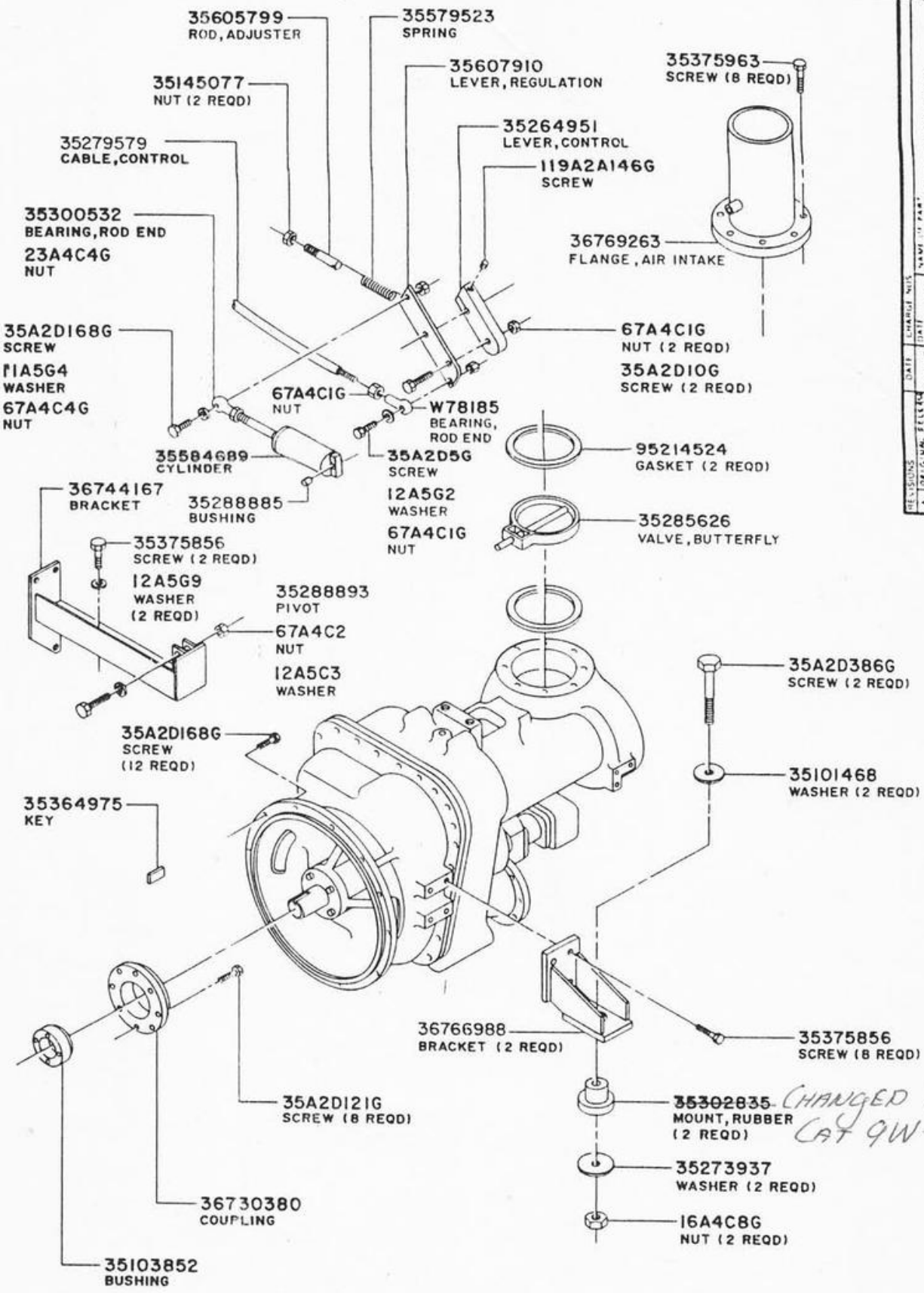
ENGINE OIL FILTER — 35362235

ENGINE WATER
SEPARATOR FILTER — 35362268

PRIMARY FUEL FILTER — 35362250

CHANGED TO CAT.
9W-9930

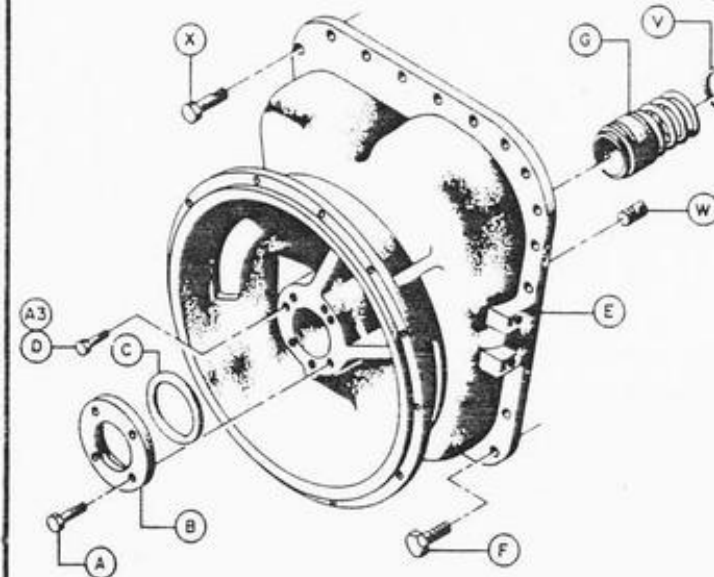
REVISIONS	DATE	CHANGE NO.	NAME	INITIALS
1	5-1-89	5-1-89	W. J. R.	
2	5-1-89	5-1-89	W. J. R.	
3	5-1-89	5-1-89	W. J. R.	
4	5-1-89	5-1-89	W. J. R.	
5	5-1-89	5-1-89	W. J. R.	
6	5-1-89	5-1-89	W. J. R.	
7	5-1-89	5-1-89	W. J. R.	
8	5-1-89	5-1-89	W. J. R.	
9	5-1-89	5-1-89	W. J. R.	
10	5-1-89	5-1-89	W. J. R.	



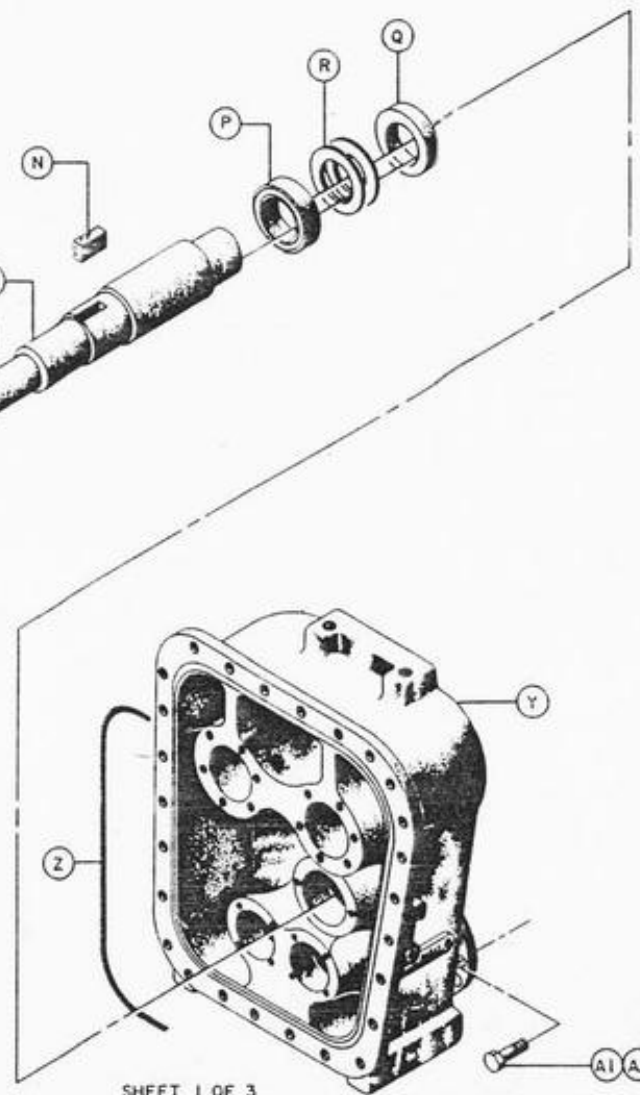
CHANGED TO
CAT 9W-9930

HP	INPUT SPEED	GEAR SET PART NO	AE 3327 101
800	2100	36746436	35086339
850	1850	36746410	35086347
750-S	2100	36746410	35086347
750-W	1850	36763183	35086205
825	2100	36750651	35089879
900	1800	36765113	35097468
900	2100	36746428	35086354
1000	2100	36747087	35097575

- (A) 92304435 BOLT
(B) 35856467 COVER, OIL SEAL
(C) 95022372 O-RING
(D) 35361286 BOLT
(E) 36750909 CASE, GEAR
(F) 35318146 BOLT
(G) 35593516 SEAL, OIL
(H) 35104082 NUT, LOCK
(J) 35610195 BEARING, TAPER ROLLER
(K) 35372002 SPACER
(L) SEE GEAR SET CHART
(M) 36504116 SHAFT, DRIVE

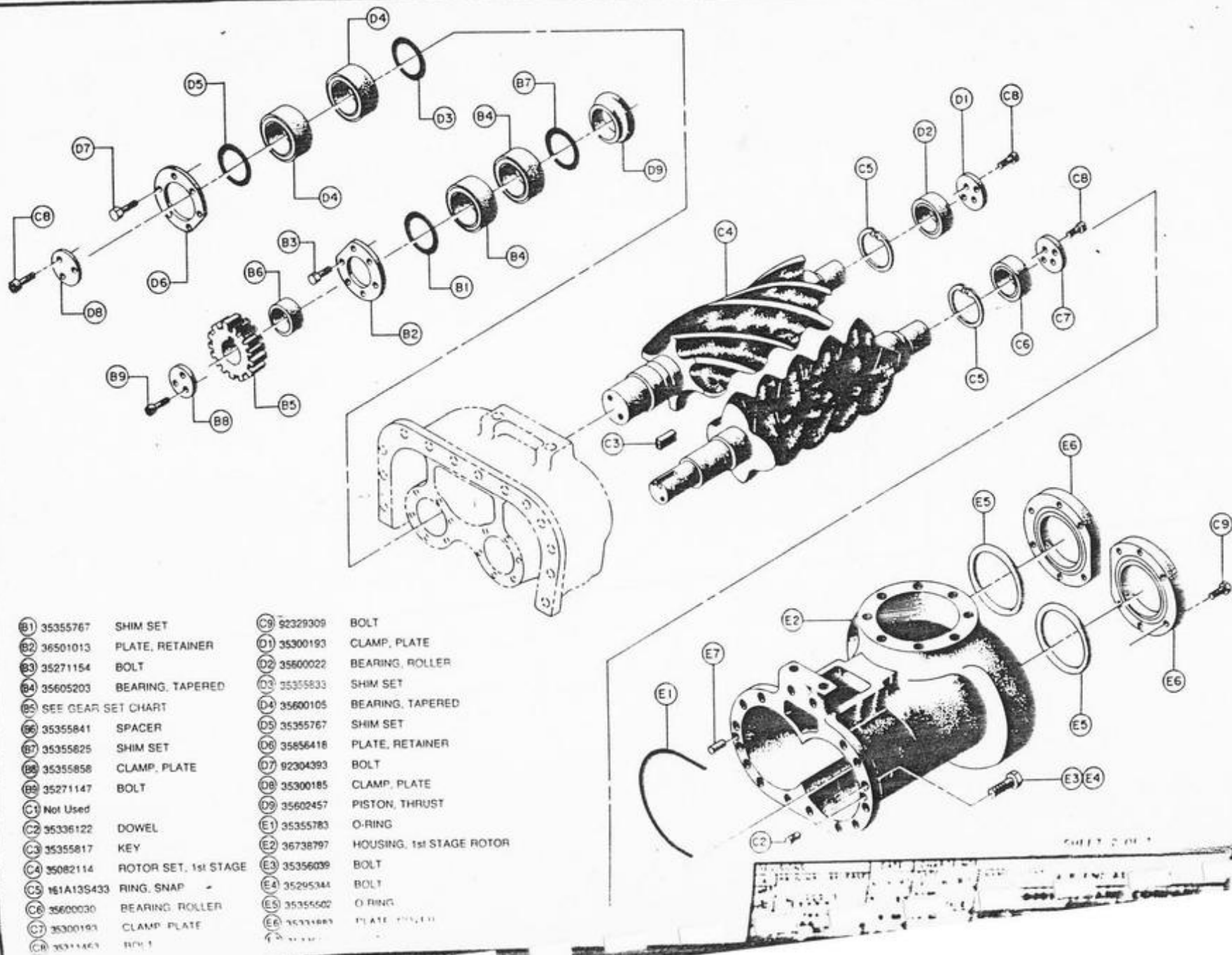


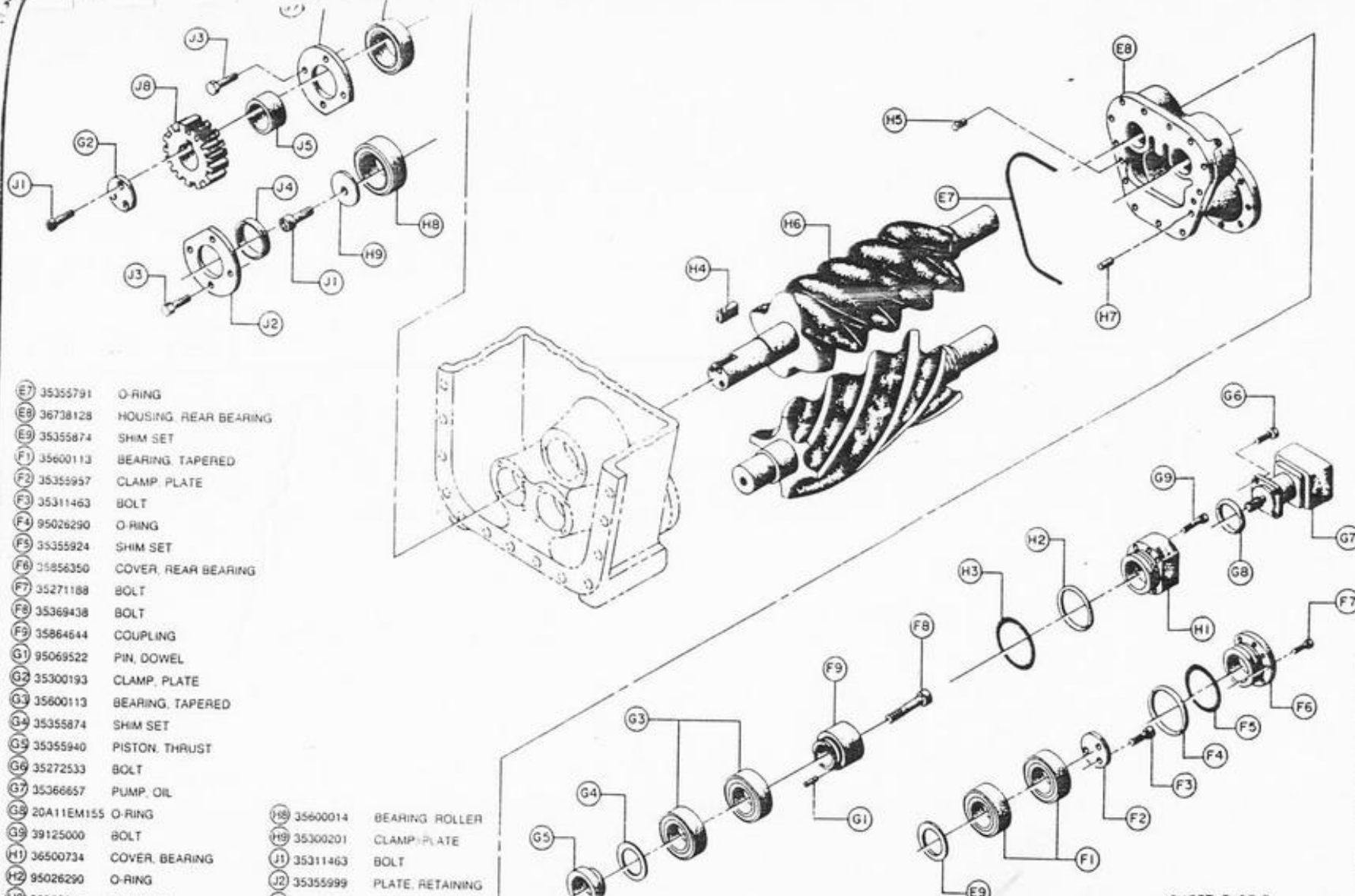
- (N) 35355809 KEY
(P) 35610203 BEARING, TAPER ROLLER
(O) 35372010 SPACER
(R) 35372028 SHIM SET
(S) 35364975 KEY
(T) 35610153 PLATE, RETAINING
(U) 35371996 SPACER
(V) 35337583 SPACER
(W) 35336122 DOWEL
(X) 35272541 BOLT
(Y) 36737161 HOUSING, MAIN
(Z) 35355775 O-RING
(A1) 35271139 BOLT
(A2) 35272533 BOLT
(A3) 39101449 PLUG



SHEET 1 OF 3

REVISIONS	DATE	CHARGE NOS.	NAME OF PART
A ORIGINAL RELEASE	6-16-87	DATE	AIR END ASSEMBLY
B CIG. PER	12-4-87	NAME	INGERSOLL-RAND COMPANY
C CIG. PER	3-8-88	E/C NO	MODEL NO
D CIG. PER	6-5-88		DRAWING NO.
			HR-2
			36505865



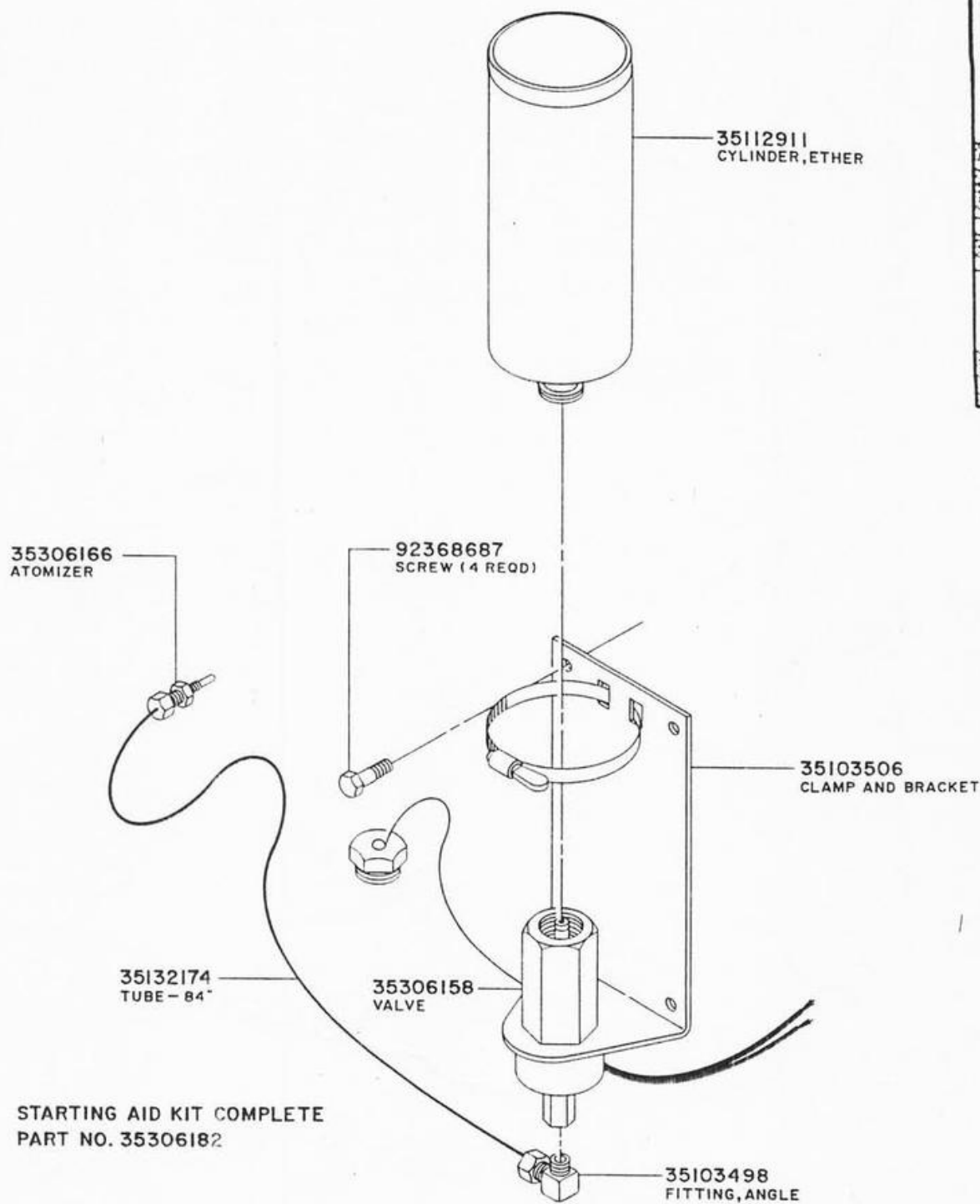


- E1 35355791 O-RING
- E2 36738128 HOUSING, REAR BEARING
- E3 35355874 SHIM SET
- F1 35600113 BEARING, TAPERED
- F2 35355957 CLAMP PLATE
- F3 35311463 BOLT
- F4 95026290 O-RING
- F5 35355924 SHIM SET
- F6 35856350 COVER, REAR BEARING
- F7 35271188 BOLT
- F8 35369438 BOLT
- F9 35864644 COUPLING
- G1 95069522 PIN, DOWEL
- G2 35300193 CLAMP PLATE
- G3 35600113 BEARING, TAPERED
- G4 35355874 SHIM SET
- G5 35355940 PISTON THRUST
- G6 35272533 BOLT
- G7 35366657 PUMP OIL
- G8 20A11EM155 O-RING
- G9 39125000 BOLT
- H1 36500734 COVER, BEARING
- H2 95026290 O-RING
- H3 35355916 SHIM SET
- H4 35355817 KEY
- H5 35336122 DOWEL
- H6 35088954 ROTOR SET, 2nd STAGE
- H7 35336130 DOWEL

- H8 35600014 BEARING ROLLER
- H9 35300201 CLAMP PLATE
- J1 35311463 BOLT
- J2 35355999 PLATE, RETAINING
- J3 35273408 BOLT
- J4 35355973 SPACER BEARING
- J5 35355866 SPACER
- J6 35600022 BEARING ROLLER
- J7 35355965 PLATE, RETAINING

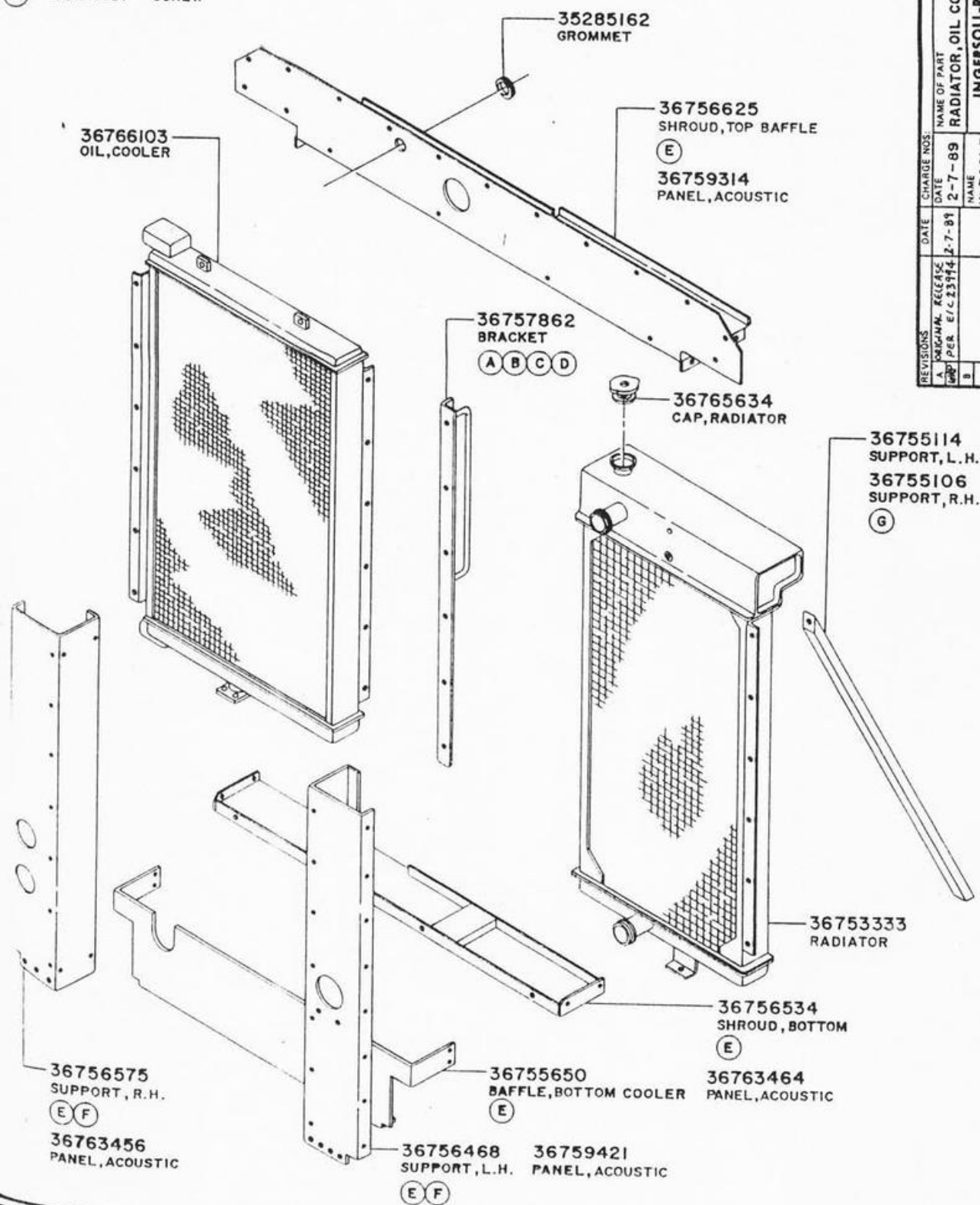
SHEET 3 OF 3

REVISIONS		DATE	CHARGE NOS.	NAME OF PART	
A	ORIGINAL RELEASE	6-16-87	6-16-87	AIR END ASSEMBLY	
B	CHG: PER. ETC	9-11-87	NAME	INGERSOLL-RAND COMPANY	
C	CHG: PER. ETC	3-5-88	E/C NO	MOCKVILLE PLANT	
D	REVISE TEST ERROR CORRECTION	7-15-88		MODEL NO	DRAWING NO
				HR-2	36505865

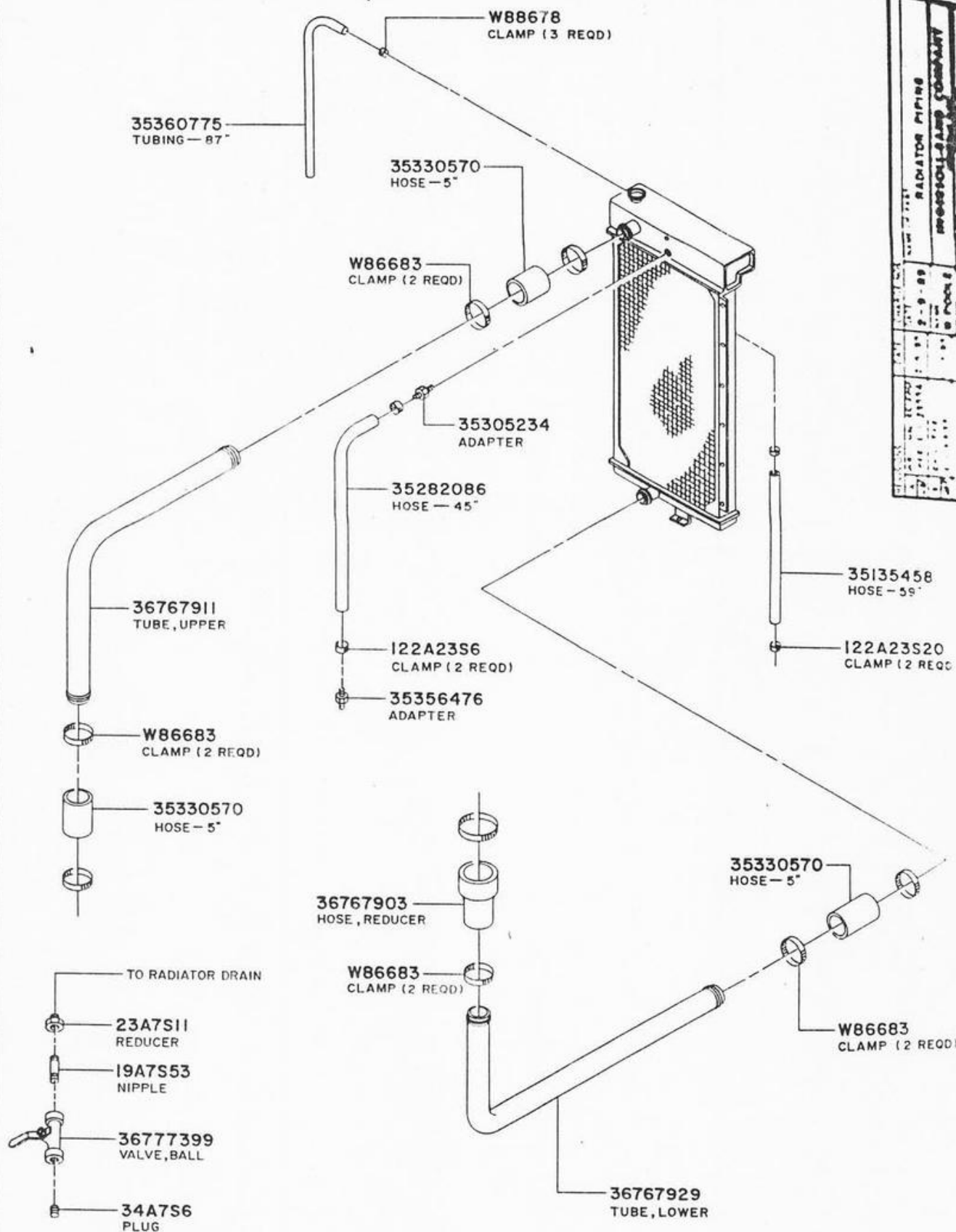


STARTING AID ASSEMBLY	9-13-88	INSTRUMENTS COMPANY	10-10-88
9-13-88	9-13-88	9-13-88	9-13-88
9-13-88	9-13-88	9-13-88	9-13-88
9-13-88	9-13-88	9-13-88	9-13-88
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9-13-88	9-13-88	9-13-88	9-13-88
9-13-88	9-13-88	9-13-88	9-13-88

(A)	35144344	SCREW	(F)	35138171	SCREW
(B)	35145077	NUT	(G)	35134550	SCREW
(C)	35252725	SCREW			
(D)	35145259	SCREW			
(E)	92368687	SCREW			



REVISIONS	DATE	CHARGE NOS.	NAME OF PART	MODEL NO.	DRAWING NO.
A	2-7-89	2-7-89	RADIATOR, OIL COOLER & MOUNTS	INGERSOLL-RAND COMPANY	36510410
B					
C					
D					



RADIATOR PIPING			
DATE	BY	REV	DESCRIPTION
10-1-88	J. J. J.	1	INITIAL DESIGN
10-1-88	J. J. J.	2	REVISION
10-1-88	J. J. J.	3	REVISION
10-1-88	J. J. J.	4	REVISION
10-1-88	J. J. J.	5	REVISION
10-1-88	J. J. J.	6	REVISION
10-1-88	J. J. J.	7	REVISION
10-1-88	J. J. J.	8	REVISION
10-1-88	J. J. J.	9	REVISION
10-1-88	J. J. J.	10	REVISION

35300771
SCREW (22 REQD)

36768901
ORIFICE

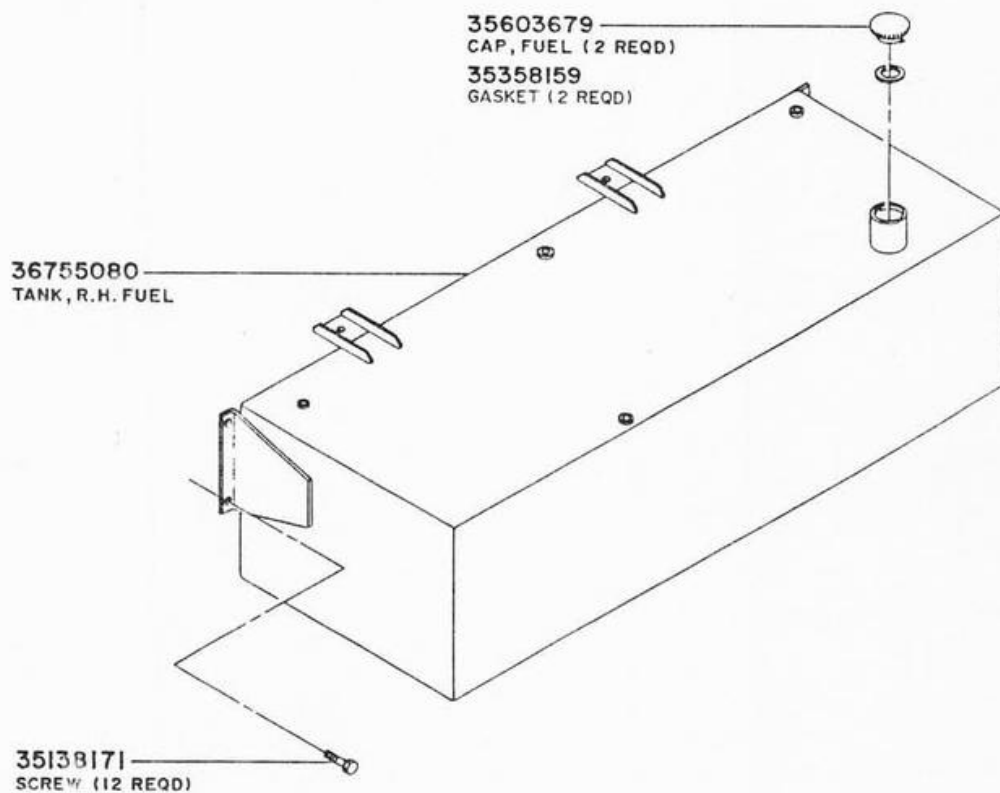
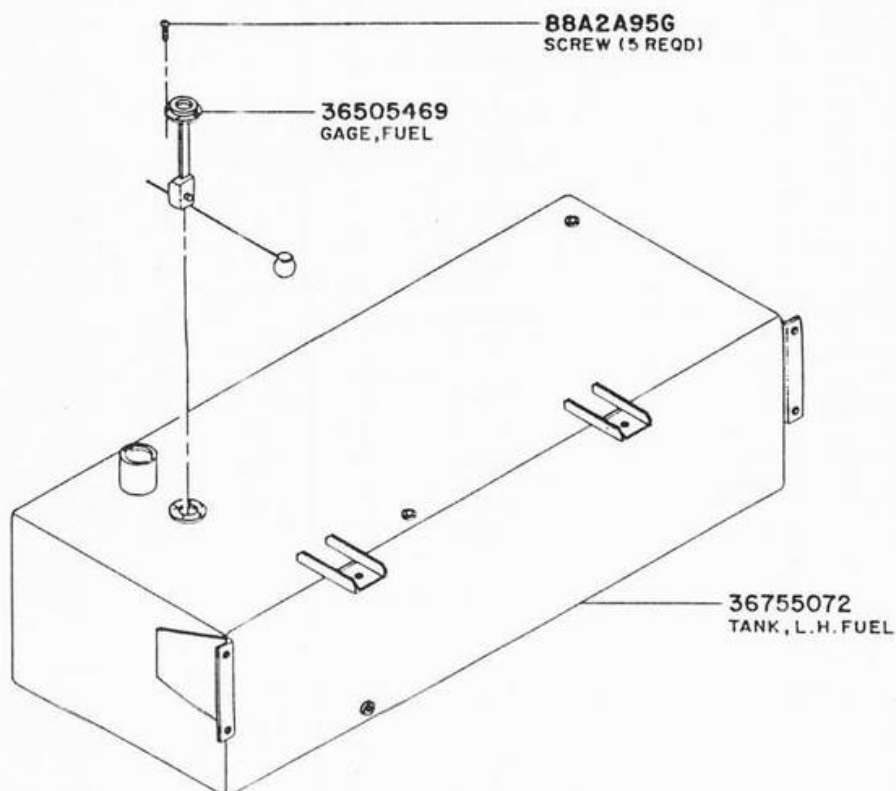
W90555T1
RETAINER (8 REQD)

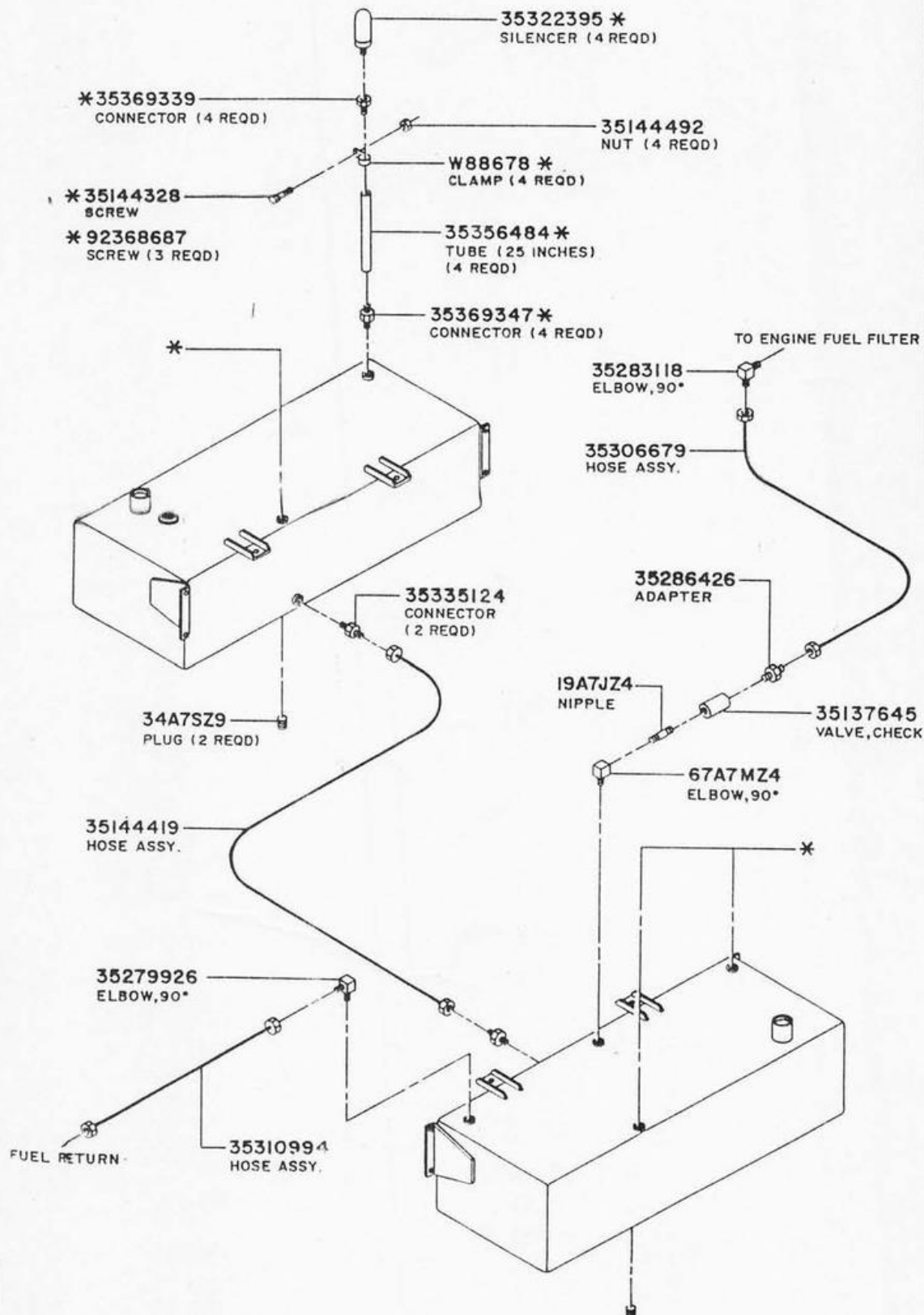
35144336
SCREW (6 REQD)

36770667
GUARD, FAN

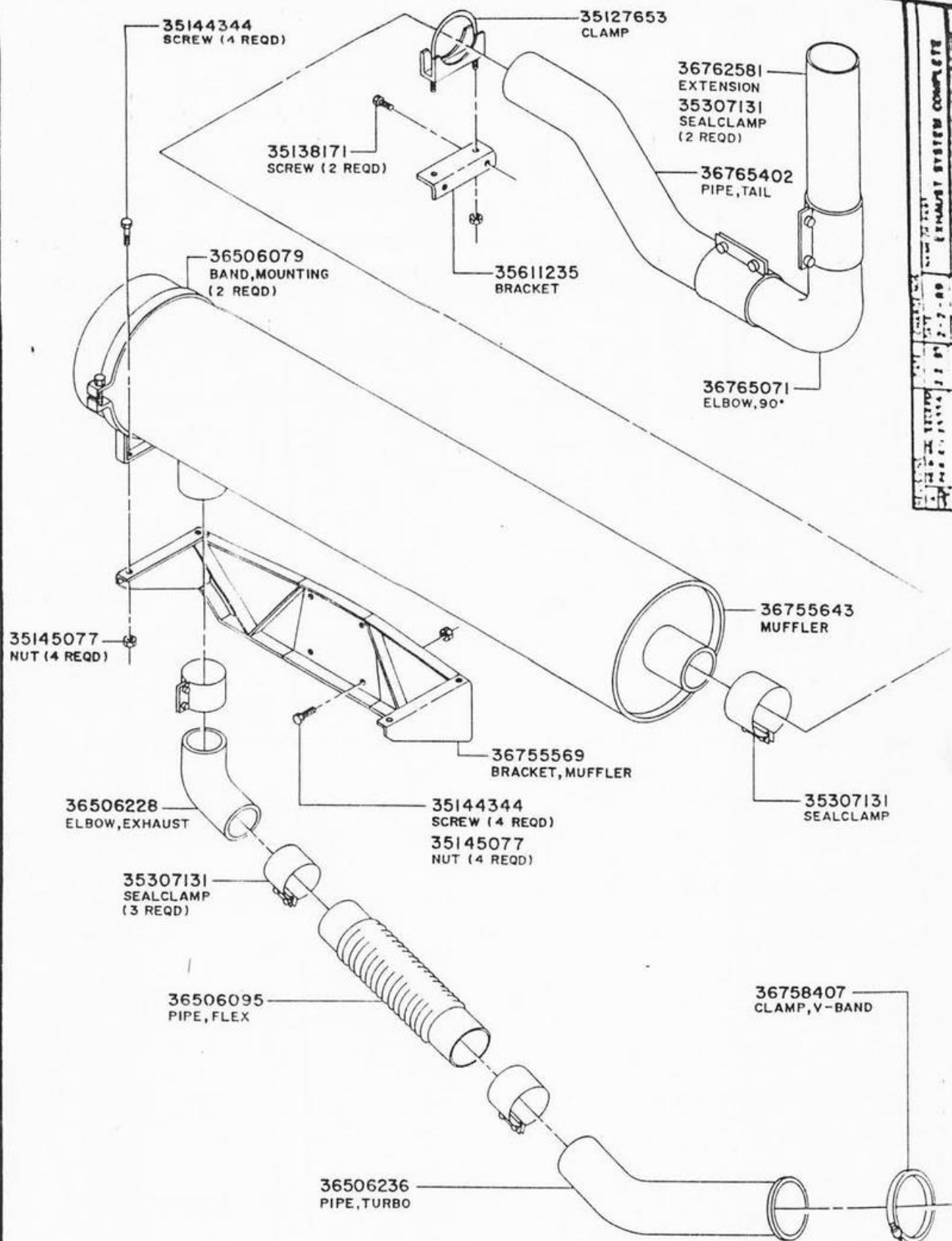
35144336
SCREW (8 REQD)

REVISIONS	DATE	CHARGE NOS.	NAME OF PART
A	ORIGINAL RELEASED	DATE 4-25-89	FAN GUARDS & ORIFICE
B	IMP PER E/C 2394	NAME W. POOLE	INGERSOLL-RAND COMPANY
C		E/C NO	MODEL NO. XHP-900-W-CA
D			DRAWING NO. 36510436



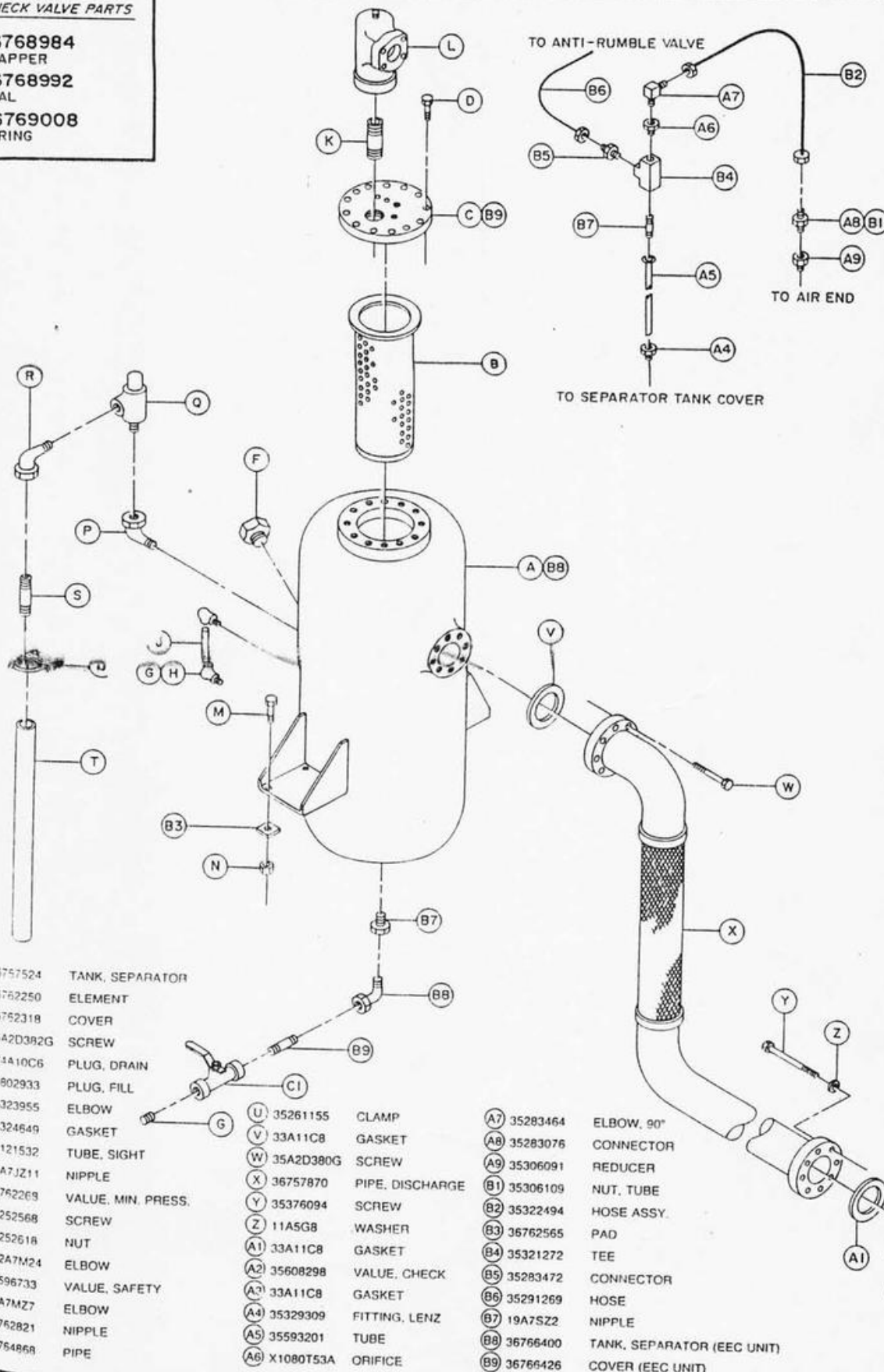


REVISIONS		DATE	CHARGE NOS.	NAME OF PART	DRAWING NO.
A	ORIGINAL	2-23-89		FUEL TANK PIPING	36510444
B	PER EIC 23994				
C	ENG: PER				
D	EIC 24080				
		NAME	W. POOLE	MODEL NO.	XHP-900-W-CA
		E/C NO.			

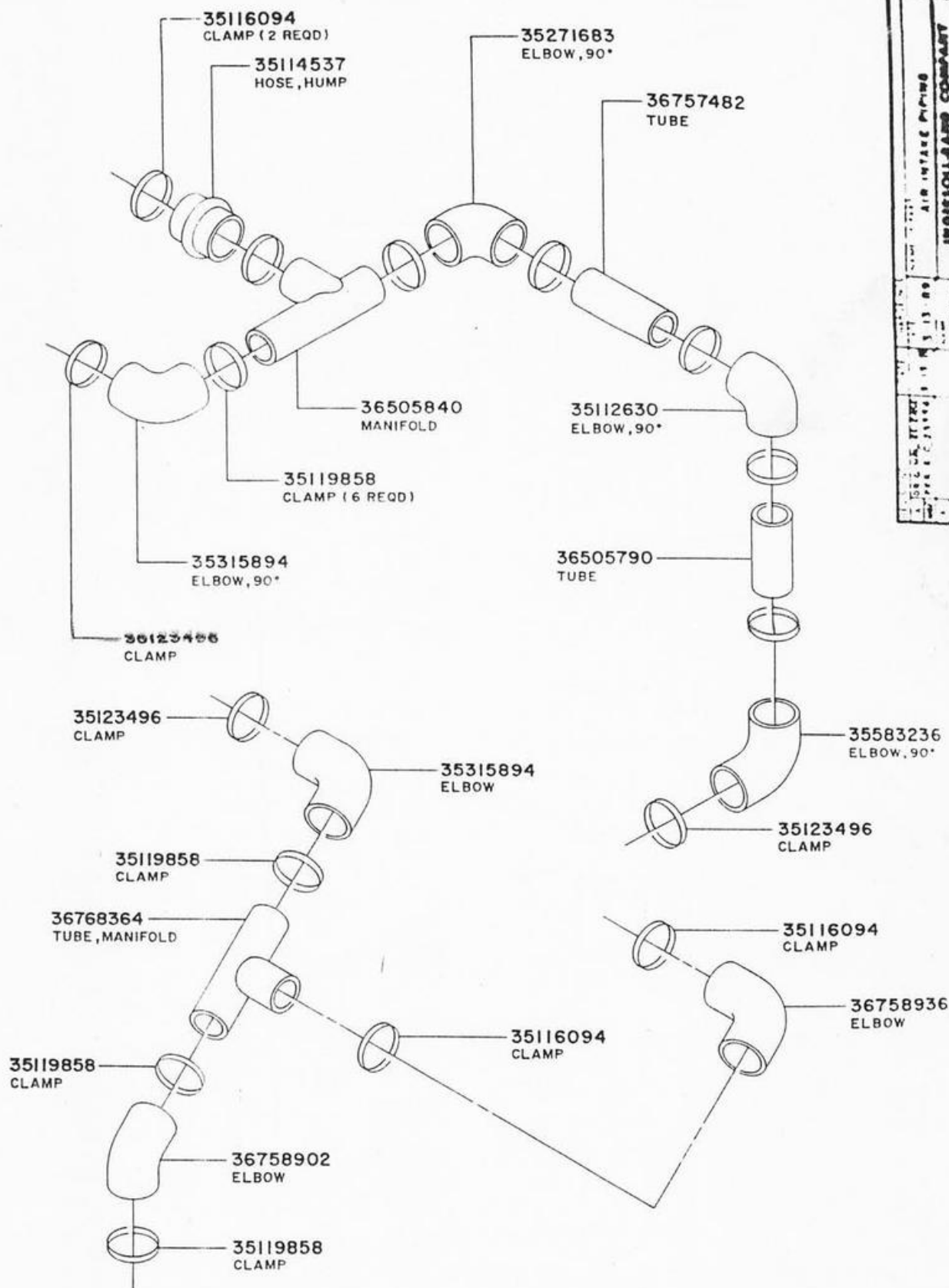


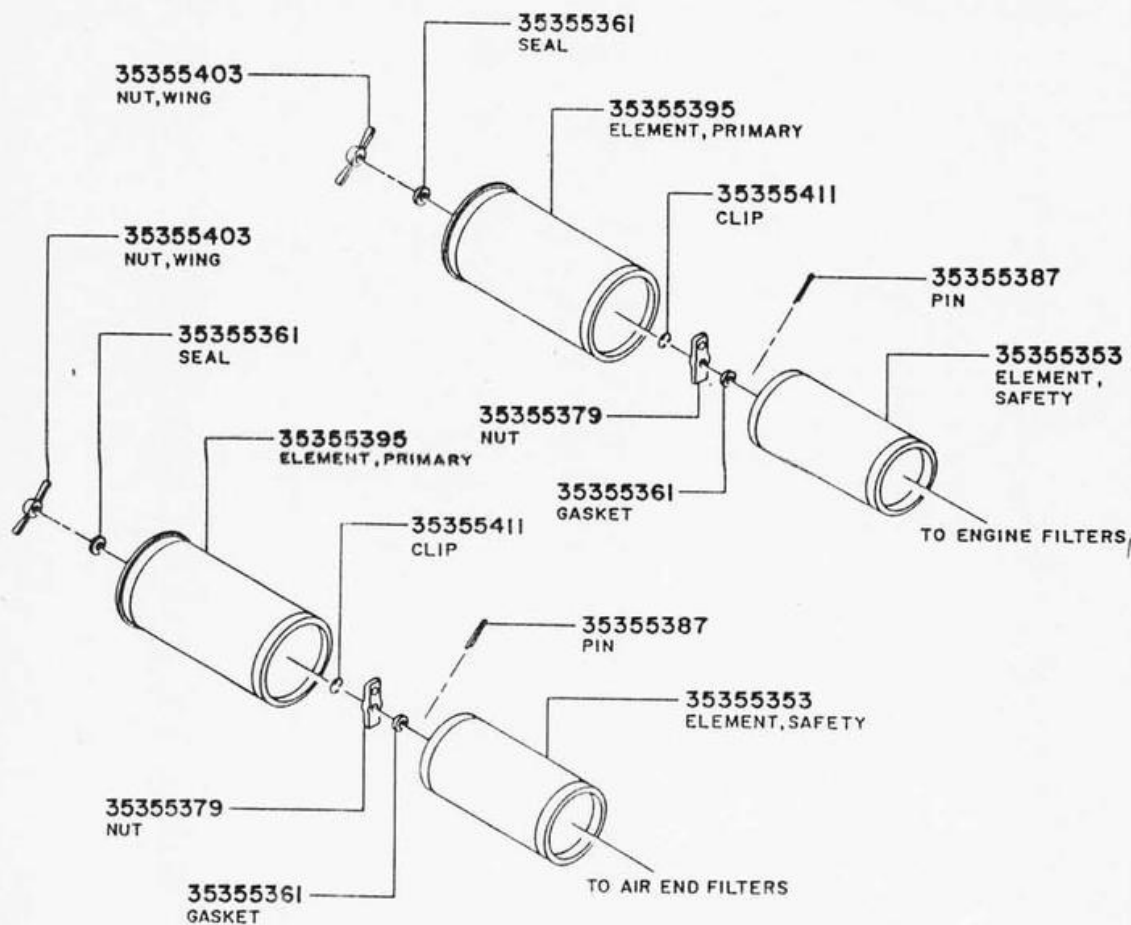
CHECK VALVE PARTS

36768984
FLAPPER
36768992
SEAL
36769008
SPRING

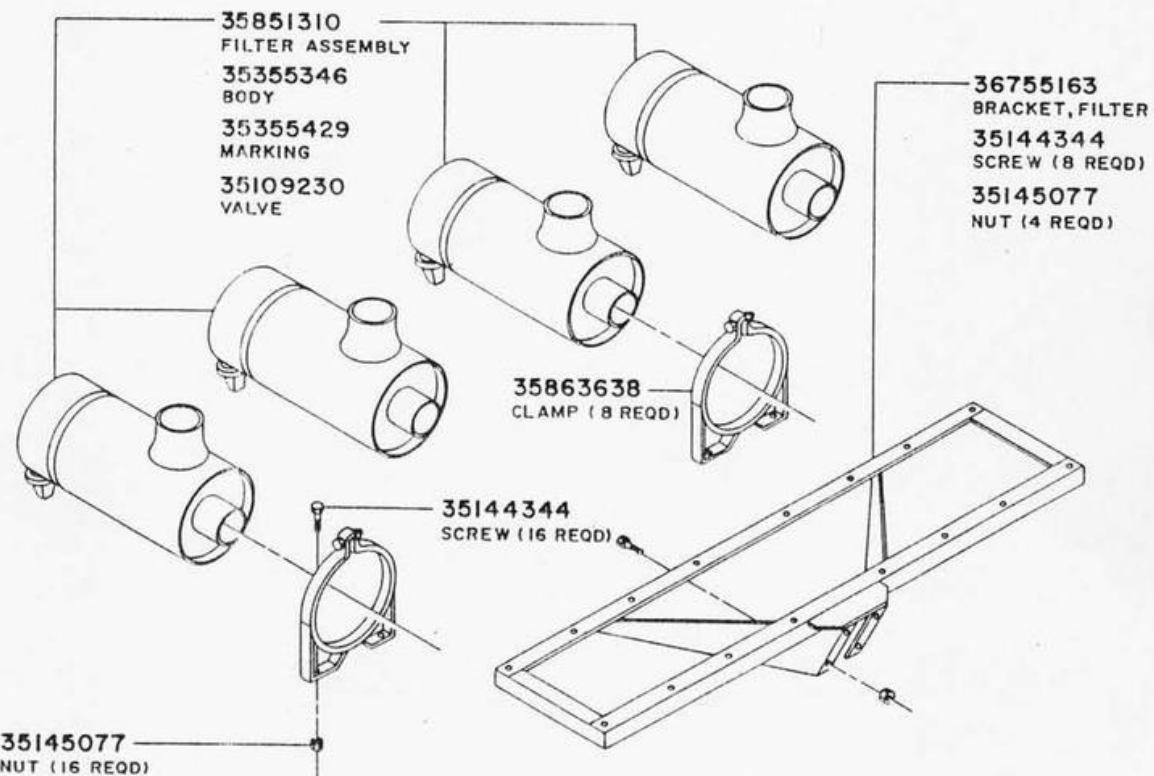


REVISIONS		DATE	CHARGE NOS.	NAME OF PART	
A	ORIGINAL RELEASE	2-6-89		SEPARATOR TANK ASSEMBLY	
B	WIP PER E/C 23994	2-6-89		INGERSOLL-RAND COMPANY	
C	WIP PER E/C 24120	6-20-89		INGERSOLL-RAND COMPANY	
D	WIP PER E/C 24120	11-16-89		INGERSOLL-RAND COMPANY	
E	WIP PER E/C 24584	2-11-91		INGERSOLL-RAND COMPANY	
F	WIP PER E/C 24792	2-11-91		INGERSOLL-RAND COMPANY	
				MODEL NO.	DRAWING NO.
				XHP-900-W-CA	36510469

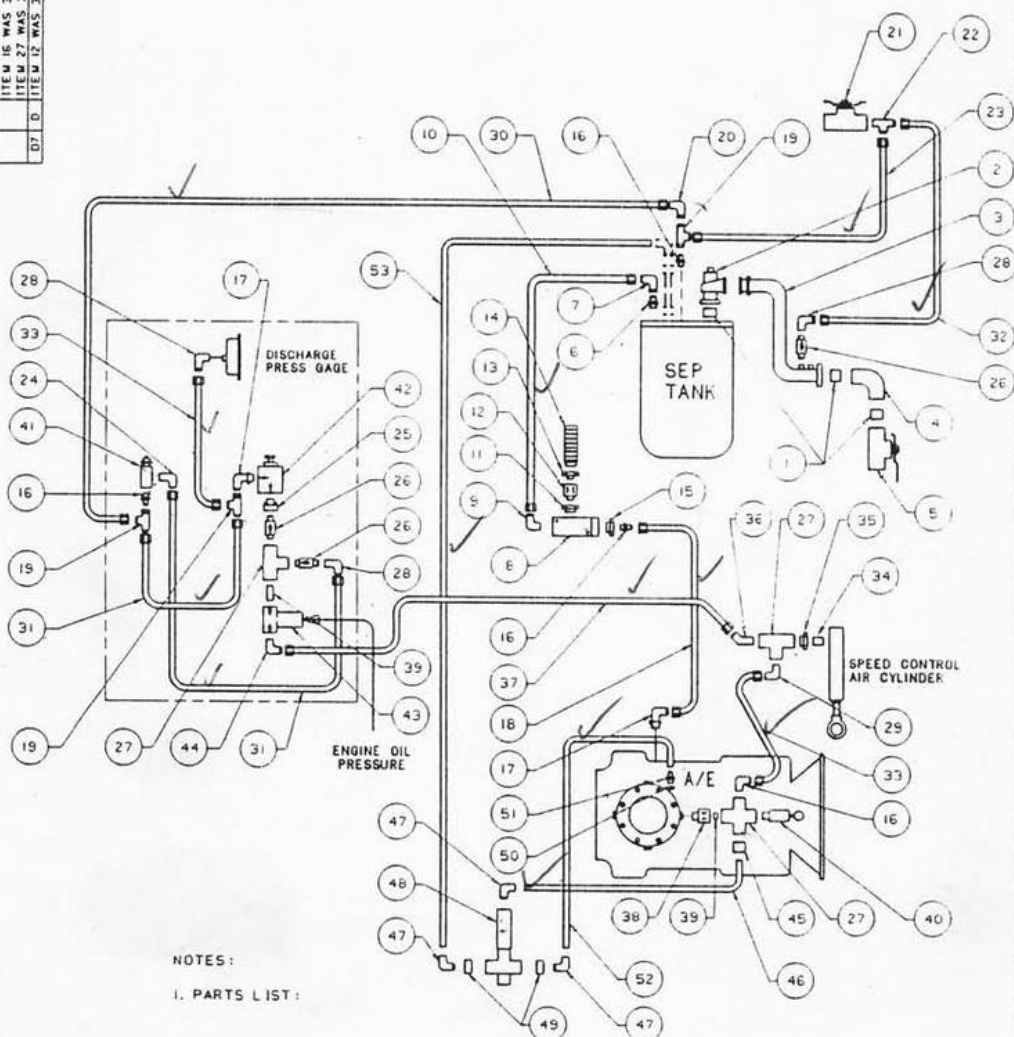




REVISIONS		DATE	CHARGE NOS.	NAME OF PART	MODEL NO.	DRAWING NO.
A	ORIGINAL	3-13-89		AIR FILTERS AND MOUNTING	XHP-900-W-CA	36510485
B	PER E/C 13144					
C						
D						



ZONE	REV	DESCRIPTION	DATE	BY	APP
	A	ORIGINAL RELEASE	12/18/82	WAC	22729
	B	ADDED ITEM 43644	12/18/82	WAC	24167
	C	ADDED ITEM 45-53	12/18/82	WAC	24384
	D	ITEM 16 WAS 35284082	12/18/82	WAC	24384
	E	ITEM 27 WAS 35321264	12/18/82	WAC	24384
	F	ITEM 12 WAS 35316025	12/18/82	WAC	24384



NOTES:

I. PARTS LIST:

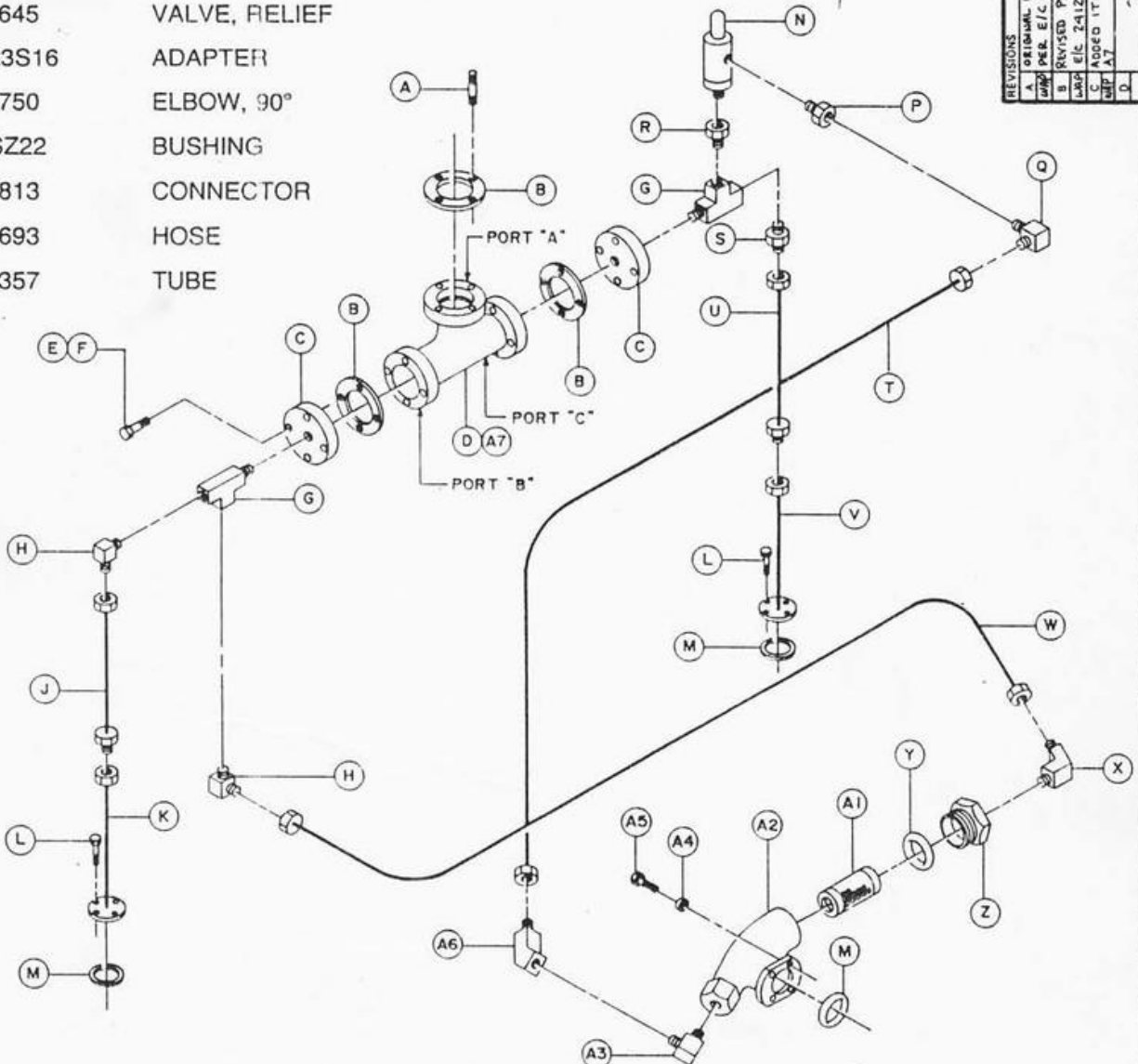
1	19A7J229	NIP CL 3.0NPT X 3.0
2	36755155	V 3.0 MIN PRESS CHK
3	36762276	PIPE SERV
4	100A7M210	ELB 3.00NPT X 90
5	36755718	V 3.00 BALL
6	108A235120	ADPTR 3/4PX3/4JIC
7	35301506	ELB 90 SWIV NUT -12
8	35849215	VALVE AUTO BLOWDOWN
9	35294735	ELB 3/4NPT X -12JIC
10	35376110	HOSE -12 X 54.00
11	23A7S29	BSHG RDC .75 X .25 NPT
12	35322346	ORIFICE .156 1/4 NPT
13	305A10528	ADPTR NPT 050 X 025
14	35132299	SILENCER, BLOWDOWN
15	23A7S22	BSHG RDC .38 X .25NPT
16	35280098	CONN, 1/4 NPT X -6JIC
17	35279827	ELL, 90.9/16-18X-6JIC
18	35282987	HOSE, JIC -6 X 34
19	35283084	TEE, RN, SWV NUT, -6JIC
20	35263068	HOSE, JIC -6 X 56.5
21	35324839	VALVE BALL 1/4 NPT
22	35283050	TEE, RUN 1/4 NPT -6
23	35283027	HOSE, JIC -6 X 56.5
24	35301126	ELB 90 1/8NPT X -6
25	35302314	ADAPTER

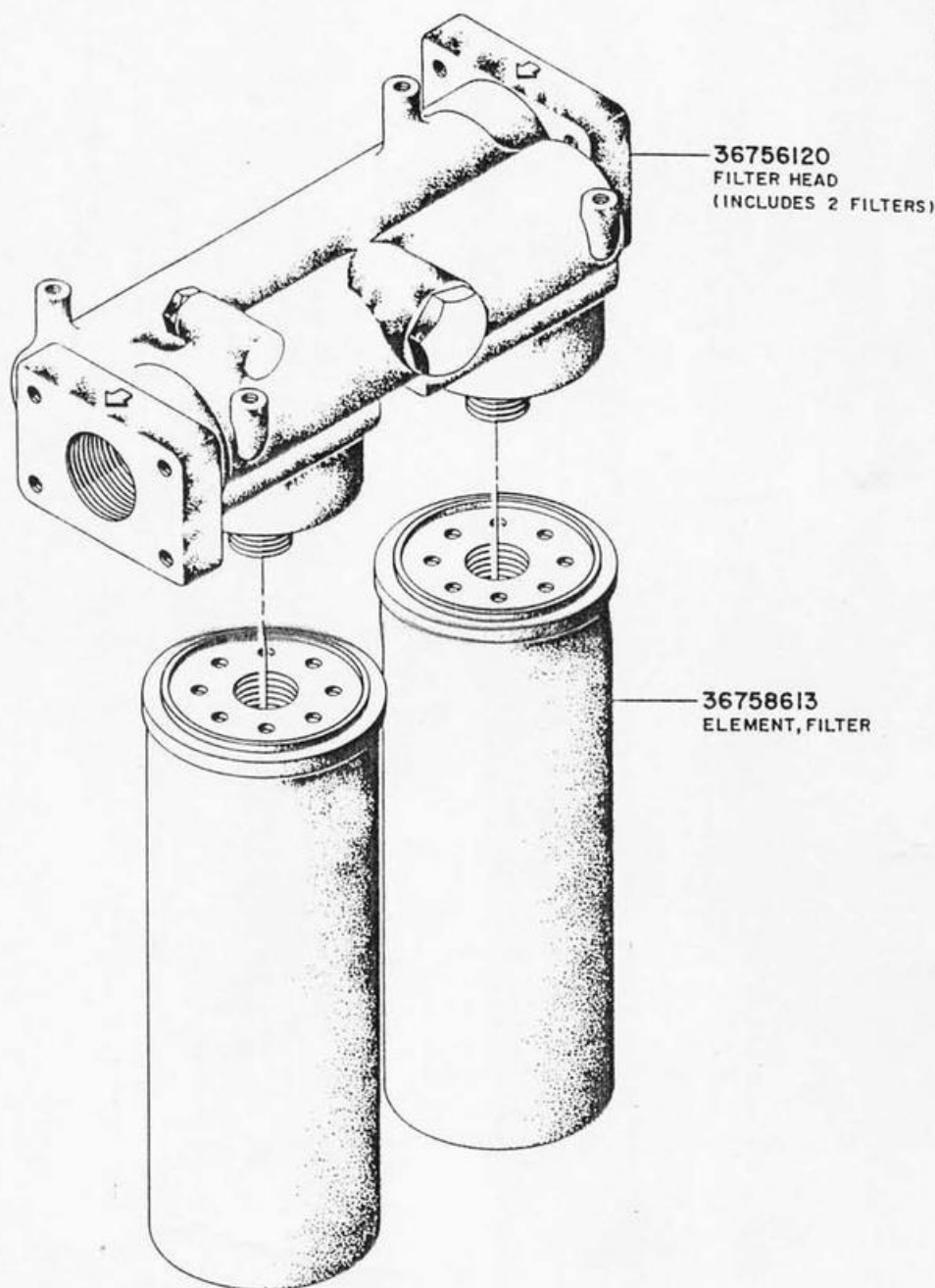
26	35248145	VALVE 1/4 CHECK
27	35321264	CROSS 1/4 NPT
28	35280098	L 90, 1/4NPT FEM, 6JIC
29	35279934	ELL 90, 1/4NPT -6JIC
30	35283027	HOSE, JIC -6 X 56.5
31	35282961	HOSE, JIC -6 X 13
32	35311026	HOSE, JIC -6 X 15
33	35283282	HOSE, JIC -6 X 18
34	19A7J21	NIP CL NPT .12 X .75
35	23A7S21	BUSHING PIPE
36	35376995	ELB 45, 1/4 NPT X -8
37	35305499	HOSE, JIC -8 X 112
38	35248319	ORIFICE .094
39	19A7J22	NIP CL NPT .25 X .88
40	35325133	VALVE, SAFETY
41	35315795	VALVE REGULATOR
42	35583210	VALVE TWO-WAY 90 DEG
43	35322379	VALVE BLOWDOWN PILOT
44	35296250	ELL, 90, 1/4NPT, -8JIC
45	35294487	CONN, 1/4 NPTF -4JIC
46	35282920	HOSE ASSY #4 X 30
47	35283464	ELBOW, 90, 1/4 NPTX -6 JIC
48	35316405	ANTI-RUMBLE VALVE
49	23A7S25	RED BUSH 1/2 X 1/4 NPT
50	35309657	ADPTR, 9/16 O-RING 7/16 O-RING
51	35287903	CONN 7/16-20 X 4 JIC
52	35315407	HOSE JIC -4 X 24
53	35291265	HOSE JIC -4 X 60

INGERSOLL-RAND COMPANY 1000 WEST 10TH AVENUE DENVER, COLORADO 80202	
PART NO. 35377647 REV. 4	DATE 12/18/82 BY WAC
TITLE 35377647 V 4 E C 24645	
PROJECT 35377647 V 4 E C 24645	
DRAWING NO. 35377647 V 4 E C 24645	
SHEET NO. 1 OF 1	
CHECKED BY WAC	
APPROVED BY WAC	
DATE 12/18/82	
BY WAC	
35377647 V 4 E C 24645	

REVISIONS		CHARGE NOS.		NAME OF PART	
A	ORIGINAL	DATE	5-5-89	OIL PIPING COMPLETE	
B	REVISED PER E/C 21994	NAME	W POOLE	INGERSOLL-RAND COMPANY	
C	REVISED PER E/C 24120	DATE	5-30-90	MODEL NO. XHP-900-W-CA	
D	ADDED ITEM	E/C NO.	AT	DRAWING NO. 36510717	

(Y) 11A3J463G	STUD	(V) 36767978	TUBE
(F) 95746434	GASKET	(W) 35130863	HOSE
(W) 35370394	FLANGE	(X) 35296425	ELBOW, 45°
(J) 35863620	VALVE, BYPASS	(Y) 35277797	O-RING
(E) 35A2D381G	SCREW	(Z) 35609098	PLUG
(F) 16A4C8G	NUT	(A1) 35370063	ELEMENT
(E) 95433751	TEE	(A2) 36751295	BODY
(H) 109A23S24	ELBOW, 90°	(A3) 35294750	ELBOW, 90°
(J) 36763324	TUBE	(A4) 14A5C101	WASHER
(K) 36767986	TUBE	(A5) 119A2A254	SCREW
(L) 35A2D221G	SCREW	(A6) 35323922	ELBOW, 45°
(M) 20A11C2M225	O-RING	(A7) 35371079	THERMOSTAT
(N) 35321645	VALVE, RELIEF		
(P) 108A23S16	ADAPTER		
(Q) 35294750	ELBOW, 90°		
(R) 23A7SZ22	BUSHING		
(S) 35357813	CONNECTOR		
(T) 35294693	HOSE		
(U) 36763357	TUBE		

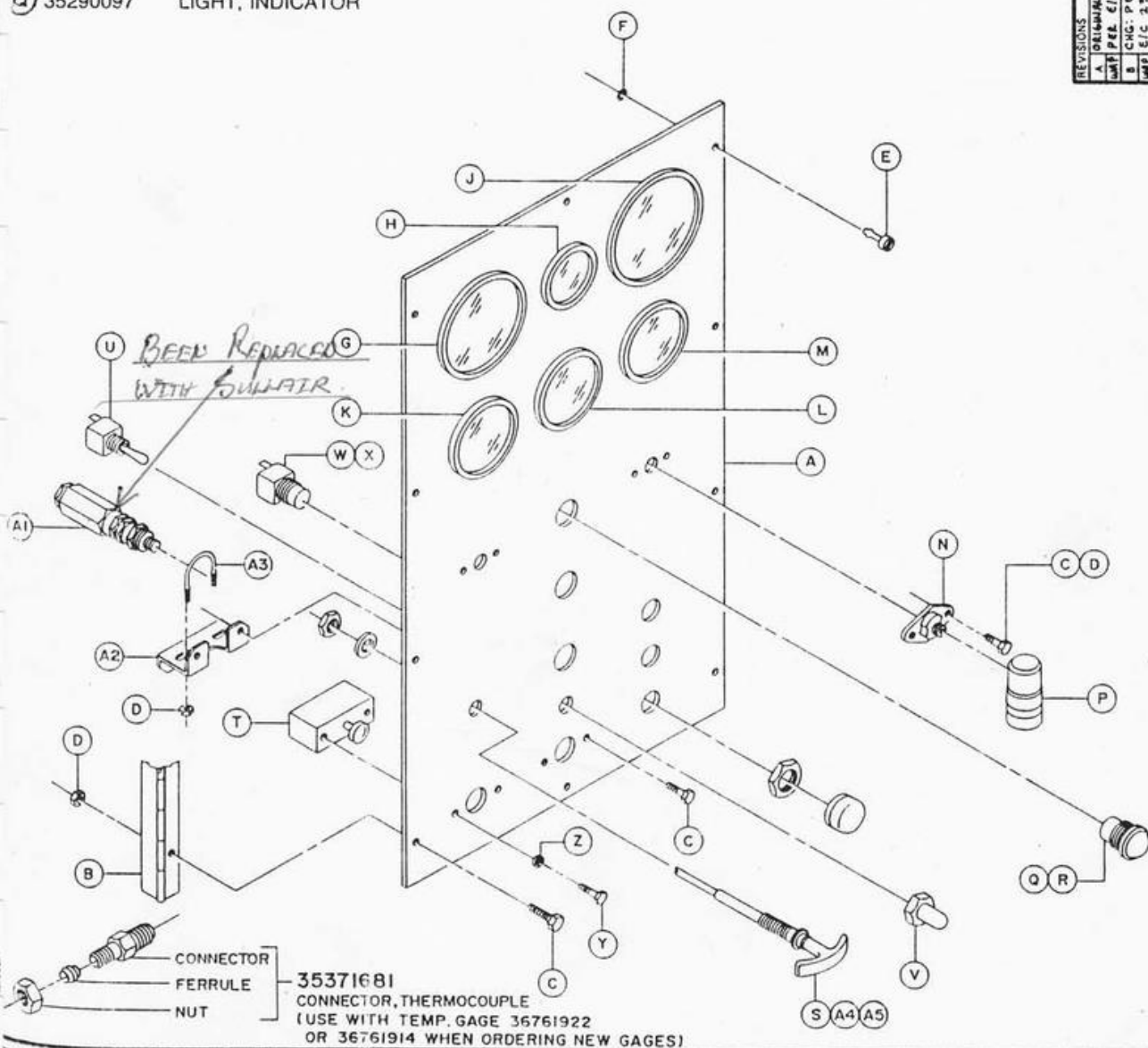




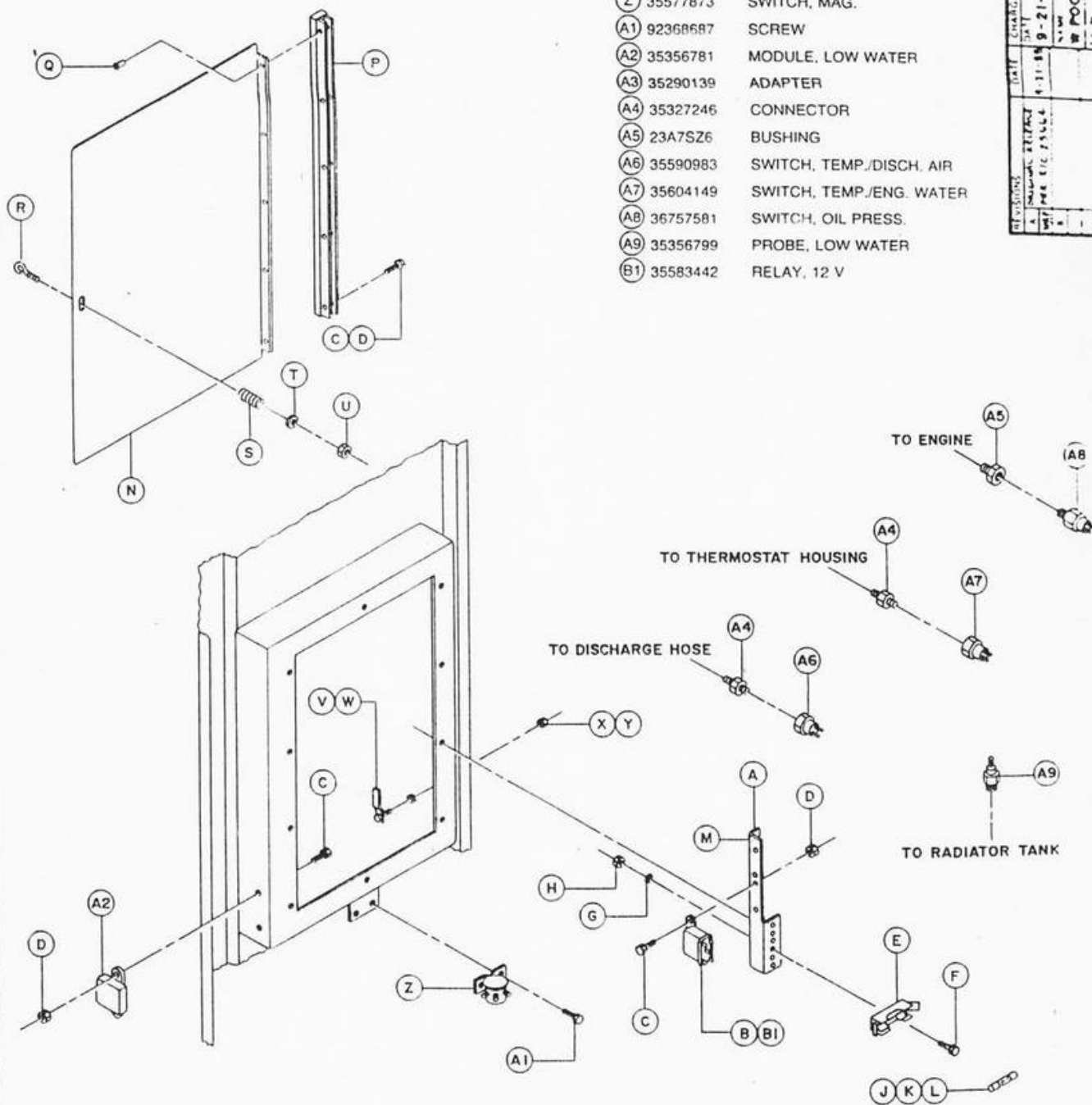
REVISION	DATE	BY	DESCRIPTION
1	3-14-88	W. POOLE	COMPRESSOR OIL FILTER ASSY
2	3-14-88	W. POOLE	INGERSOLL-RAND COMPANY

(R)	36764934	PANEL, INSTRUMENT/CONTROL	(R)	35290089	BULB
(F)	36750420	HINGE	(S)	35590595	CABLE, CONTROL
(Z)	35144328	SCREW	(T)	35583210	VALVE, TWO-WAY
(J)	35144492	NUT	(U)	35337435	SWITCH, POWER
(E)	36761906	STUD	(V)	39104765	BOOT, RUBBER
(=)	35369180	RETAINER	(W)	35255553	SWITCH, START & ETHER INJ.
(3)	36762185	TACHOMETER	(X)	35255561	SWITCH, BYPASS
(4)	35602788	HOURMETER	(Y)	35307818	SCREW
(J)	35517085	GAUGE, DISCHARGE PRESSURE	(Z)	92304658	WASHER
(K)	36765808	GAUGE, ENGINE WATER TEMP.	(A1)	35315795	VALVE, REGULATOR <i>SULLAIR 48059</i>
(L)	36765758	GAUGE, ENGINE OIL PRESSURE	(A2)	35588722	BRACKET
(M)	36765790	GAUGE, DISCHARGE AIR TEMP.	(A3)	W32935	U-BOLT
(N)	35107408	FLANGE, RESTRICTOR INDICATOR	(A4)	W56972	STOP, CABLE
(P)	35261122	INDICATOR, RESTRICTOR	(A5)	109A2A311N	SCREW
(Q)	35290097	LIGHT, INDICATOR			

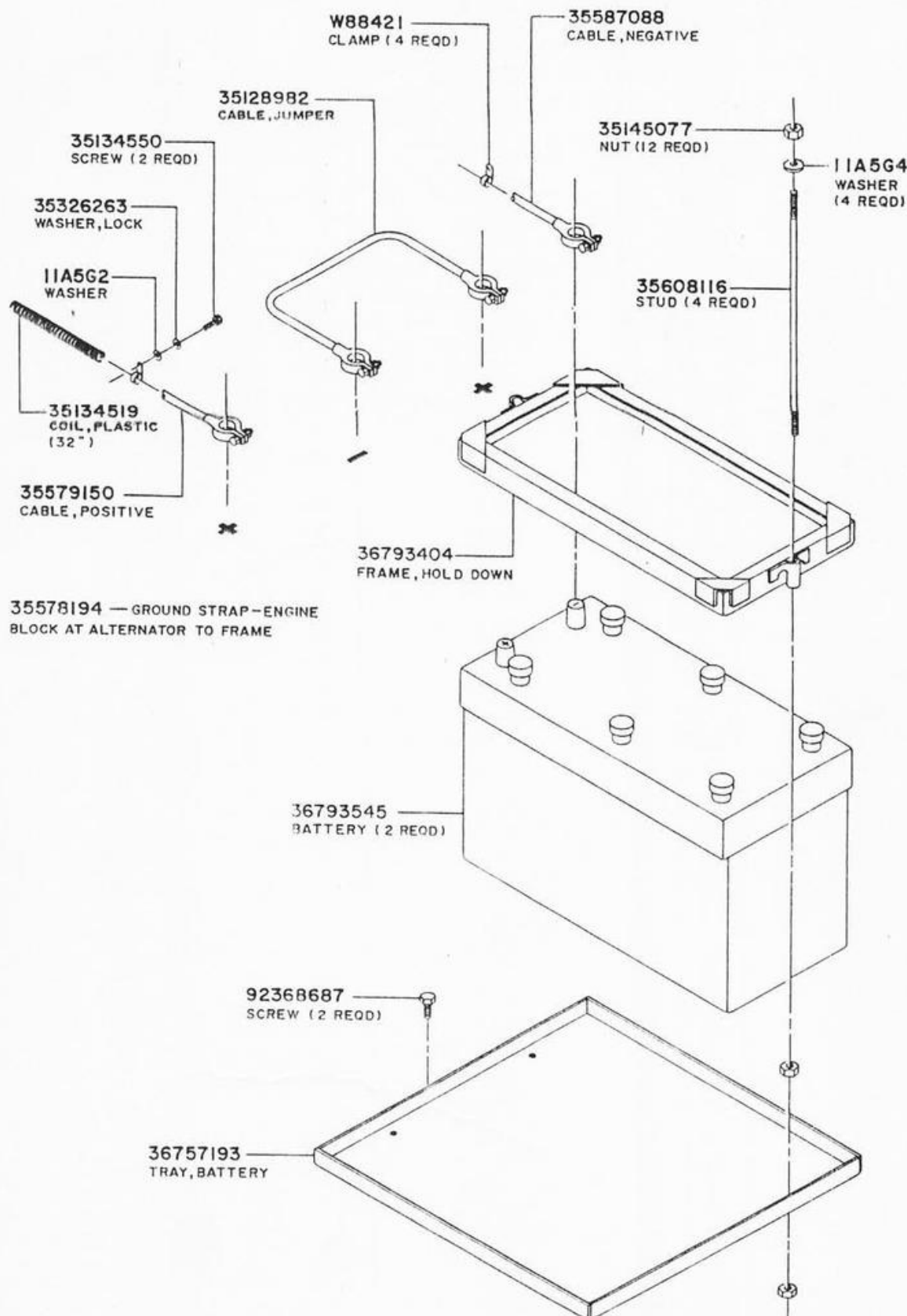
REVISED	DATE	CHARGE NOS.	NAME OF PART	NAME OF COMPANY	DRAWING NO.
1	9-20-88	4-20-88	INSTRUMENT & CONTROL PANEL	INGERSOLL-RAND COMPANY	36509255
2	9-20-88	4-20-88	NAME	W. POOLE	
3	3-13-88	3-13-88	NAME	W. POOLE	
4	2-23-80	2-23-80	NAME	W. POOLE	
5	7-12-77	7-12-77	NAME	W. POOLE	



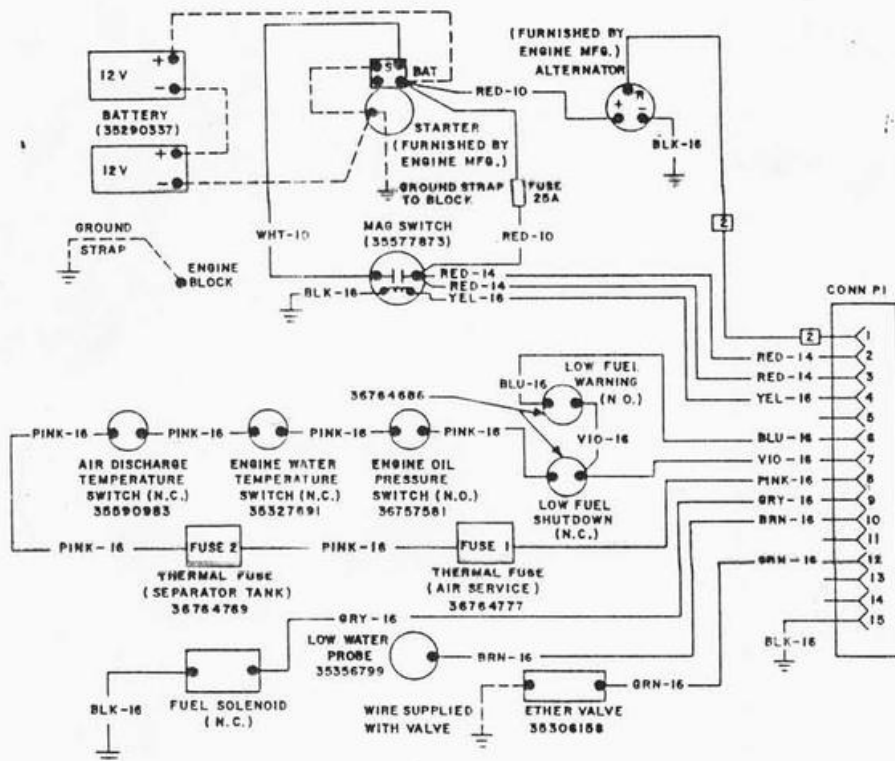
(A) 36762193	BRACKET, RELAY/FUSE	(G) 35368901	WASHER	(N) 36738565	DOOR, CONTROL PANEL
(B) 35586130	RELAY, 24 V	(H) 35368919	NUT	(P) 36740405	HINGE, DOOR
(C) 35144328	SCREW	(J) 36762383	FUSE, 7 AMP	(Q) 35356617	RIVET
(D) 35144492	NUT	(K) 36762375	FUSE, 4 AMP	(R) 35327303	EYEBOLT
(E) 36763886	BLOCK, FUSE	(L) 36762391	FUSE, 15 AMP	(S) 35327311	SPRING
(F) 35368893	SCREW	(M) 35314582	RECEPTACLE	(T) 11A5G3	WASHER
				(U) 67A4C2G	NUT
				(V) 35603349	HOLDER, DOOR
				(W) 35357995	STUD
				(X) 11A5G4	WASHER
				(Y) 35273366	NUT
				(Z) 35577873	SWITCH, MAG.
				(A1) 92368687	SCREW
				(A2) 35356781	MODULE, LOW WATER
				(A3) 35290139	ADAPTER
				(A4) 35327246	CONNECTOR
				(A5) 23A7S26	BUSHING
				(A6) 35590983	SWITCH, TEMP./DISCH. AIR
				(A7) 35604149	SWITCH, TEMP./ENG. WATER
				(A8) 36757581	SWITCH, OIL PRESS.
				(A9) 35356799	PROBE, LOW WATER
				(B1) 35583442	RELAY, 12 V



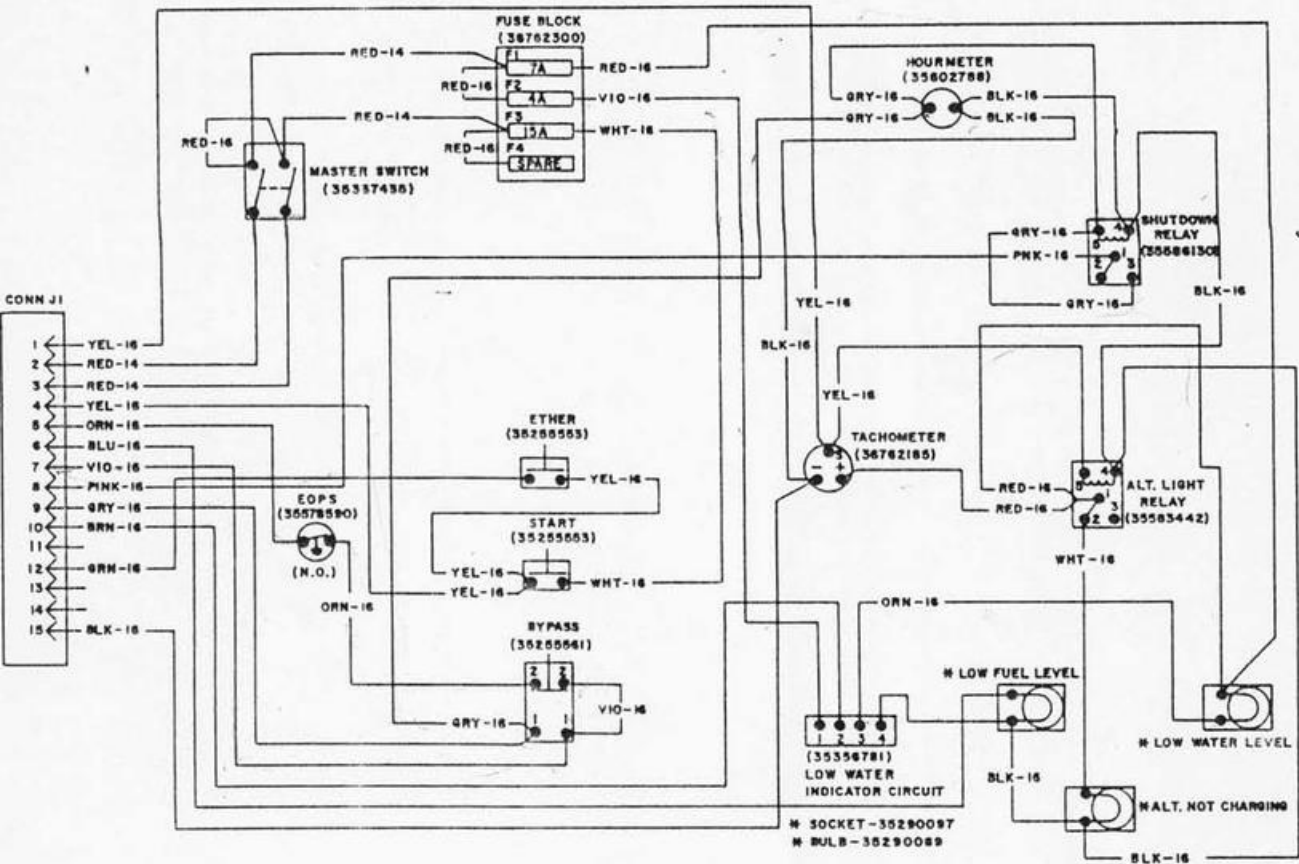
MADE IN PART
ELECTRICAL SWITCHES & FUSES
INTEGRAL-BAND COMPANY
NEW YORK, N.Y.
9-21-88
W. POOLE



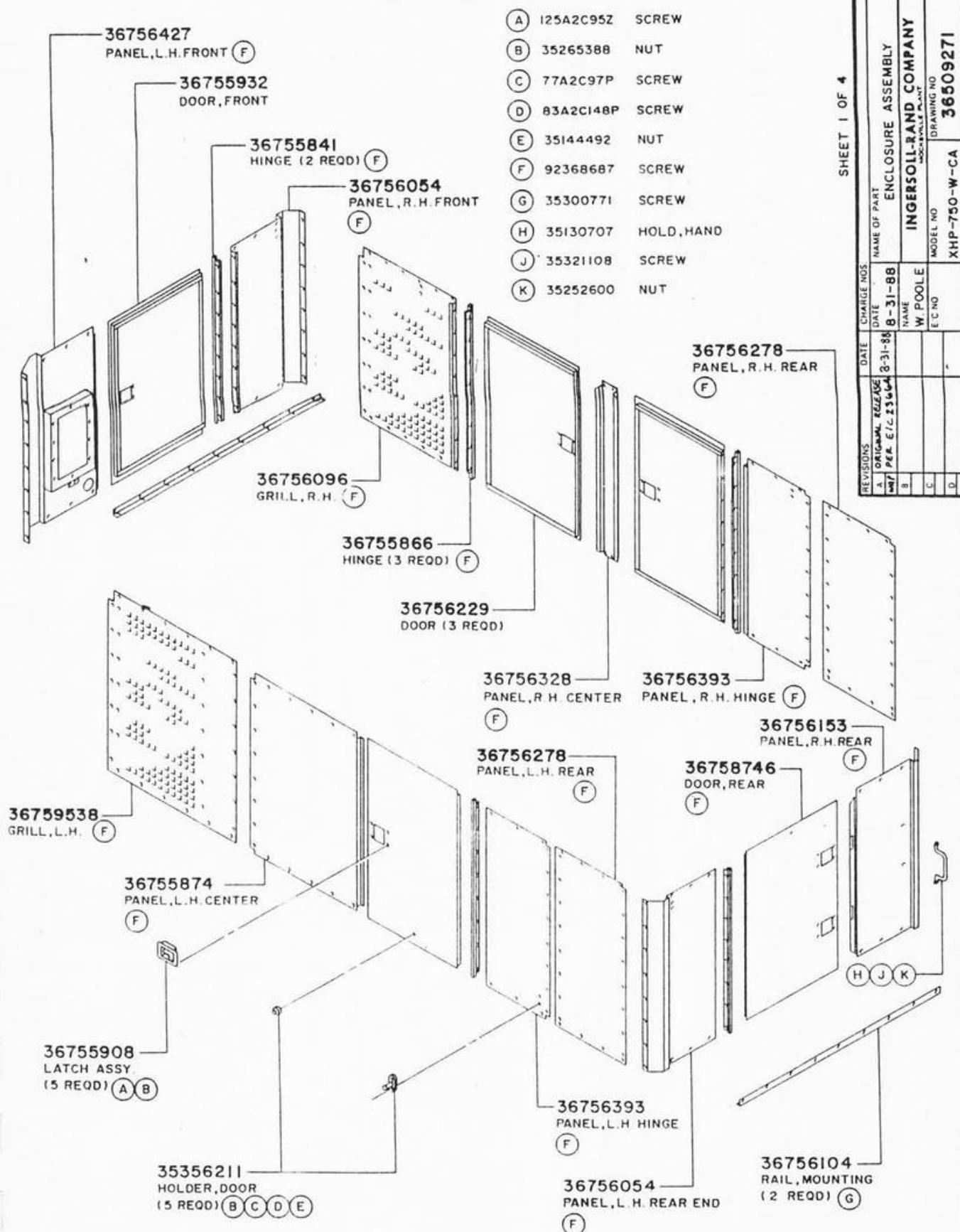
REVISIONS		DATE	CHARGE NOS.	NAME OF PART	
A	ORIGINAL	3-4-89		BATTERIES, MOUNTING & CABLES	
WMP	PER. E/C 23114			INGERSOLL-RAND COMPANY	
B	CHG. PER.	12-19-90		INGERSOLL-RAND COMPANY	
WMP	E/C 25250			INGERSOLL-RAND COMPANY	
C				INGERSOLL-RAND COMPANY	
D				INGERSOLL-RAND COMPANY	
				MODEL NO.	DRAWING NO.
				XHP-900-W-CA	36510501
				25250	



ENGINE WIRING HARNESS 36769693 / INSTRUMENT PANEL HARNESS 36761534



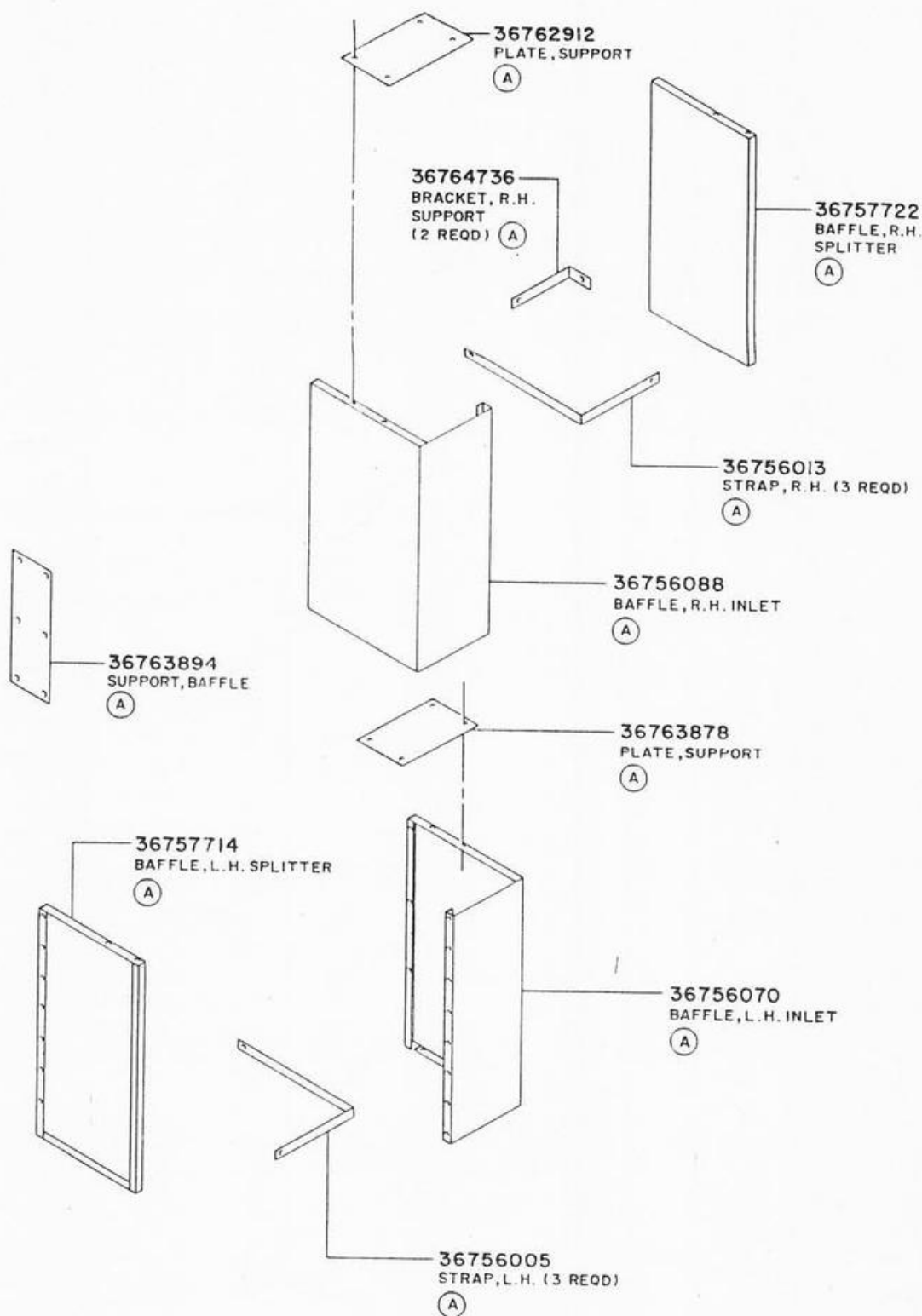
REVISIONS		DATE	CHARGE NOS.		NAME OF PART
A	ORIGINAL RELEASE		DATE		
WAP	PER E/C 23994	2-14-89	2-14-89		WIRING DIAGRAM
B	CHG: PER		NAME		INGERSOLL-RAND COMPANY MOCKSVILLE PLANT
WAP	E/C 24698	10-9-90	W. POOLE		
C			E/C NO.	MODEL NO.	DRAWING NO.
D			24698	XHP-900-W-CA	36514131



SEE SHEET 4 OF 4 FOR ACOUSTICAL PANEL PART NUMBERS

SHEET 2 OF 4

(A) 92368687 SCREW



SEE SHEET 4 OF 4 FOR ACOUSTICAL PANEL PART NUMBERS

REVISIONS	DATE	CHANGE NOS.	NAME OF PART
A	8-31-88	8-31-88	ENCLOSURE ASSEMBLY
W	8-31-88	W POOLE	INGERSOLL-RAND COMPANY
B			
C			
D			
E			
F			
G			
H			
I			
J			
K			
L			
M			
N			
O			
P			
Q			
R			
S			
T			
U			
V			
W			
X			
Y			
Z			

- (A) 92368687 SCREW
 (B) 35291467 RIVET
 (C) 11A5G2 WASHER
 (D) 11A5G6 WASHER

36756773
HINGE
(A)

36771186
CABLE
(A) (C) (D)

36757086
DOOR
(A)

35131051
LATCH, DOOR
(B)

35305416
PLATE, STRIKER
(A)

36756880
PANEL, FRONT TOP
(A)

36756823
PANEL, CENTER TOP
(A)

36756989
PANEL, DOOR TOP
(A)

36756807
PANEL, REAR TOP
(A)

36756674
PANEL, TOP FRONT END
(A)

36756518
PANEL, L. H. FRONT
TOP (A)

36756997
SECTION, CENTER HAT
(A)

36757730
PANEL, R. H. CENTER TOP
(A)

36756286
PANEL, R. H. REAR TOP
(A)

36756500
PANEL, L. H. FRONT TOP
(A)

36757748
PANEL, L. H. CENTER TOP
(A)

36756781
SECTION, ROOF HAT
(3 REQD)
(A)

36755742
STRAP, CONNECTOR
(8 REQD)
(A)

36756286
PANEL, L. H. REAR TOP
(A)

36756674
PANEL, TOP REAR END
(A)

36755981
CORNER, END CAP
(4 REQD)
(A)

SHEET 3 OF 4

REVISIONS	DATE	CHARGE NOS.	NAME OF PART	ENCLOSURE ASSEMBLY	INGERSOLL-RAND COMPANY	MODEL NO.	DRAWING NO.
A	8-31-88	8-31-88	WMP PER EIC 23664	W POOLE	W POOLE	XHP-750-W-CA	36509271
B	10-6-91		WMP PER EIC 24336				
C	11-28-91		WMP PER EIC 24336				
D	4-2-92		WMP PER EIC 24336				

SEE SHEET 4 OF 4 FOR ACOUSTICAL PANEL PART NUMBERS

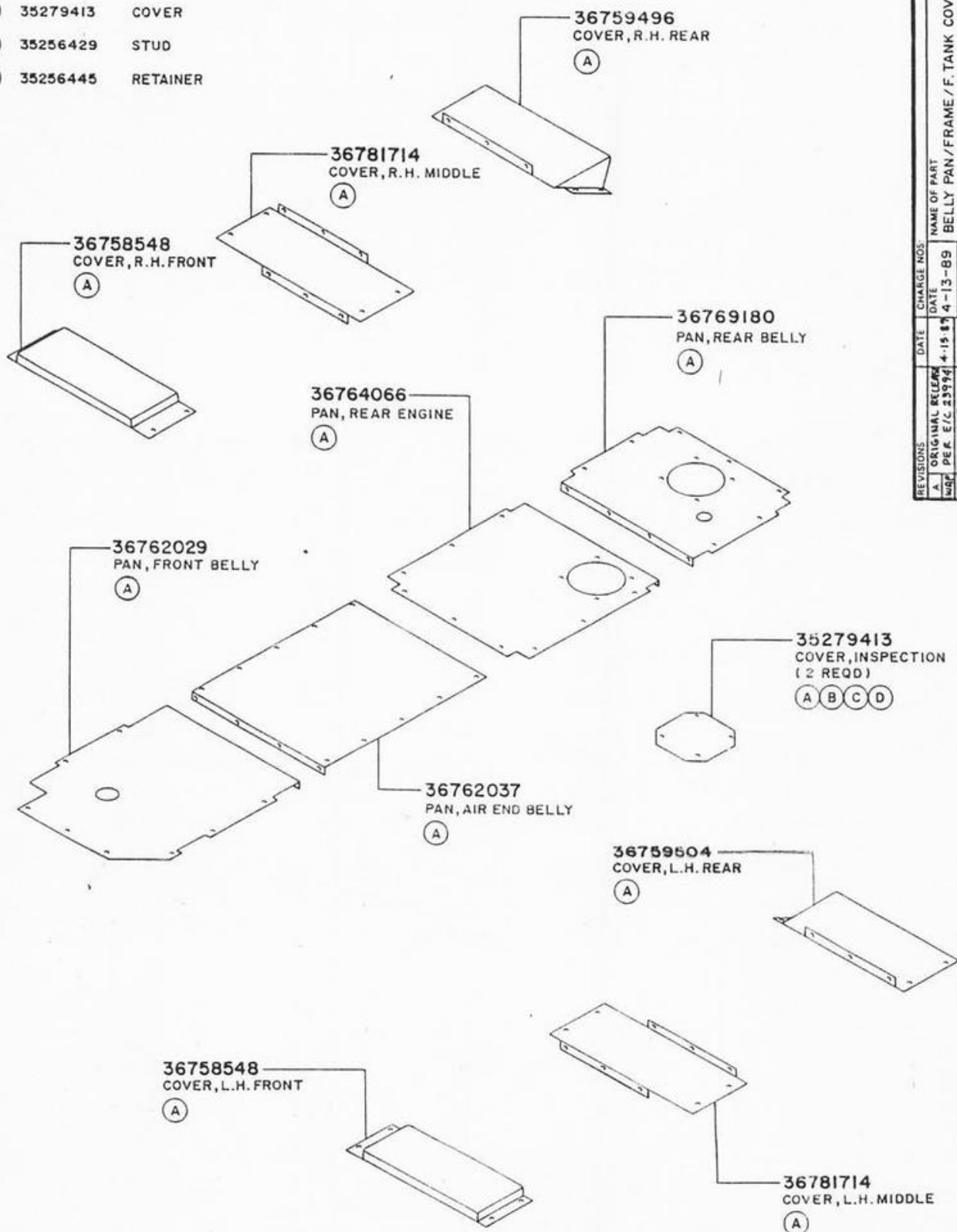
ACOUSTICAL PANELS

Page No.	Panel P/N	Panel Description	Acoustical P/N
9-29	36756427	Panel, L.H. Front	36759298/ 36759306
9-29	36755932	Door, Front	36759322
9-29	36756054	Panel, R.H. Front/L.H. Rear End	36759397
9-29	36756229	Door, Side	36759330
9-29	36756328	Panel, R.H. Center	36761583/ 36759355
9-29	36756278	Panel, R.H. Rear/L.H. Rear	36759405
9-29	36758746	Door, Rear	36759348
9-29	36756153	Panel, R.H. Rear	36759397
9-29	36759538	Grill, L.H.	36759389
9-29	36755874	Panel, L.H. Center	36759371
9-29	36756393	Panel, R.H./L.H. Hinge	36759363
9-30	36757722	Baffle, R.H. Splitter	36757938
9-30	36756088	Baffle, R.H. Inlet	36757946 36757953 36761591
9-30	36757714	Baffle, L.H. Splitter	36757946
9-30	36756070	Baffle, L.H. Inlet	36757920 36761609 36757938
9-31	36757086	Door, Lifting Bail	36757888
9-31	36756880	Panel, Front Top	36757912
9-31	36756989	Panel, Door Top	36757896 36757904
9-31	36756807	Panel, Rear Top	36757912

SHEET 4 OF 4

REVISIONS	DATE	CHARGE NOS.	NAME OF PART
A	8-31-88		ENCLOSURE ASSEMBLY
B	8-31-88		INGERSOLL-RAND COMPANY
C			W. POOLE
D			
E			
F			
G			
H			
I			
J			
K			
L			
M			
N			
O			
P			
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R			
S			
T			
U			
V			
W			
X			
Y			
Z			

- (A) 92368687 SCREW
 (B) 35279413 COVER
 (C) 35256429 STUD
 (D) 35256445 RETAINER



REVISIONS		DATE	CHARGE NOS.	NAME OF PART	MODEL NO.	DRAWING NO.
A	ORIGINAL RELEASE	4-15-87	4-13-89	BELLY PAN / FRAME / F. TANK COVERS	INGERSOLL-RAND COMPANY	36510519
B	CHG: PER	4-20-87		W. POOLE		
C	CHG: PER	4-20-87				
D	CHG: PER	4-20-87				

SHEET 2 OF 2

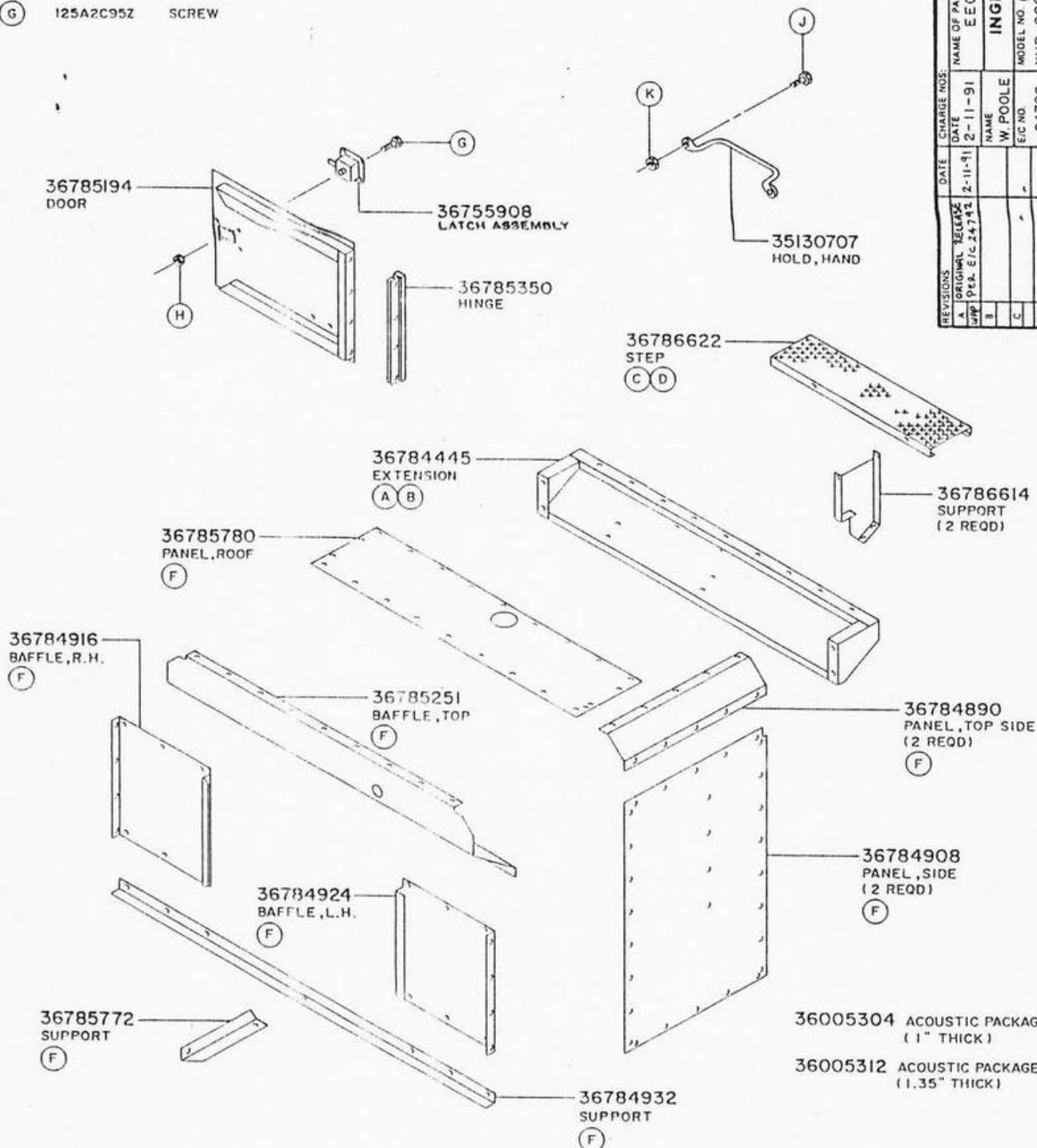
DECAL LOCATION

LOCATION	DESCRIPTION	Part No.
A	General Data — XHP-900-W-CAT	36510386
B	Operating Instructions	36508281
C	Wiring Diagram	36510394
D	Breathing Air	36507416
E	Radiator Cap	35859339
F	Diesel Fuel	35859388
G	Safety Code	36506525
H	Dexron	36500072
J	Oil Filler	35810357
K	Oil Level	36512739
L	Preventive Maintenance	36509966
M	Roof/Lifting Eye	36508307
N	Coolant Level	36509370
P	Door Under Pressure	36508323
Q	Pressure Adjusting	36512911
R	Air Noise	36504967
S	General Caution	36502086
T	Battery	36503225
U	Hot Surface	35859321
V	Ether	35861236
W	Fuse Location	36508232
X	EPA	35863703
Y	Unrestricted Air Flow	36507424
Z	Trapped Air	36508976
A1	Towing Vehicle	36504991
A2	High Pressure Air	36504942

Decal Set No. 35099654 — XHP-900-W-CAT

REVISIONS		DATE	CHARGE NOS.	NAME OF PART	DECAL LOCATION
A	ORIGINAL DESIGN	5-15-88	5-15-89		
B	PER E/C 24195				
C	ADDED NEW DECALS	6-20-89		W. POOLE	
D	REVISED	2-27-90			
E	PER E/C 24531				
F	CHG. ITEM Q PER	5-17-90			
G	PER E/C 24576				
				MODEL NO.	DRAWING NO.
				LARGE UNITS	36510766

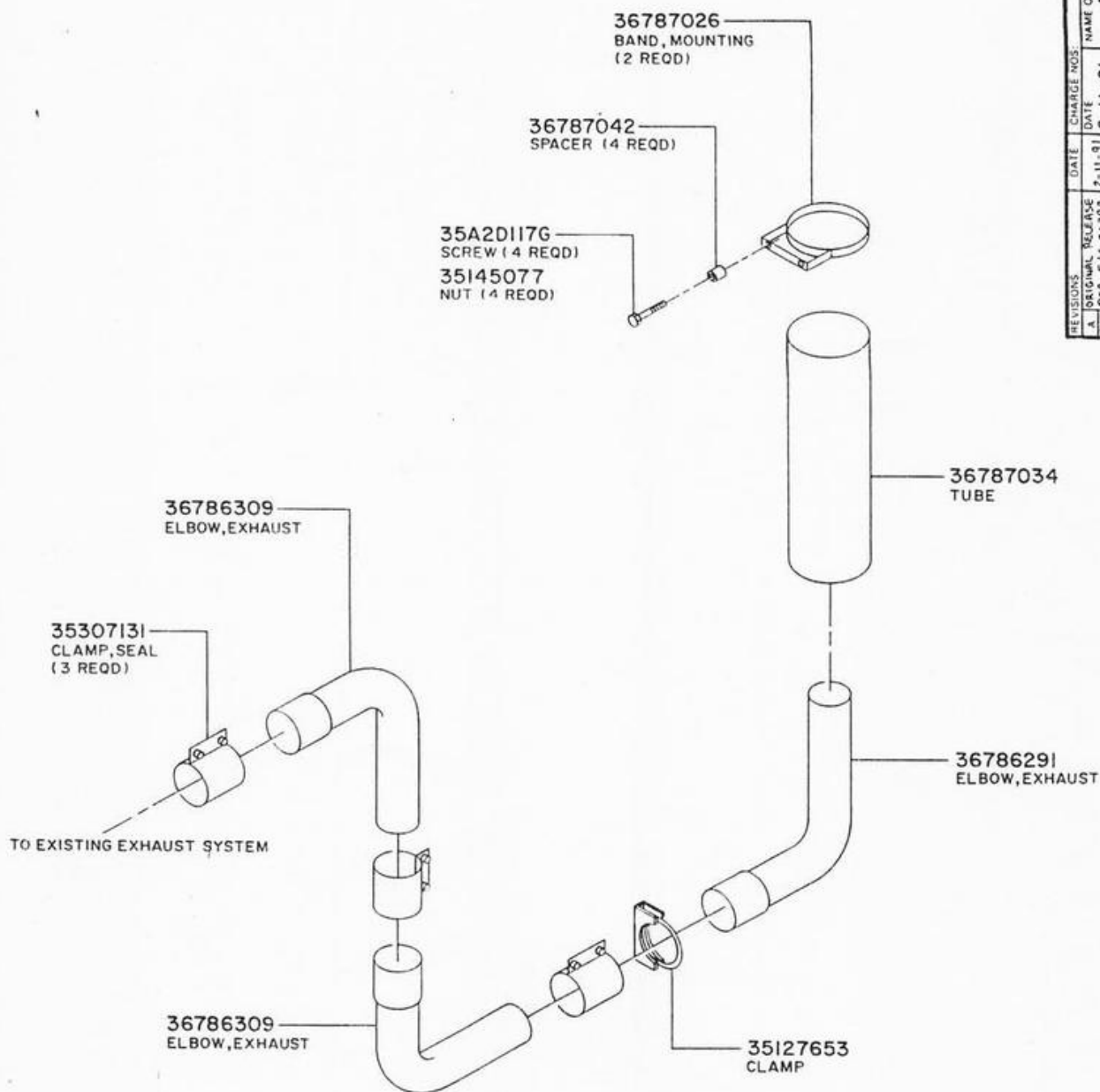
(A)	35A2D219G	SCREW	(H)	35265388	NUT
(B)	16A4C5G	NUT	(J)	35321108	SCREW
(C)	35144344	SCREW	(K)	35252600	NUT
(D)	35145077	NUT			
(E)	35A2D117G	SCREW			
(F)	92368687	SCREW			
(G)	125A2C95Z	SCREW			



REVISIONS	DATE	CHARGE NOS.	NAME OF PART	MODEL NO. (EEC)	DRAWING NO.
A	2-11-91	2-11-91	EEC ENCLOSURE COMPLETE	XHP-900-W-CAT	36515773
B					
C					
D					

INGERSOLL-RAND COMPANY
MOBILE PLANT

W. POOLE
E/C NO. 24792



REVISIONS		CHARGE NOS.		NAME OF PART	
A	ORIGINAL RELEASE	DATE	DATE	NAME	QUANTITY
1	2-11-91	2-11-91	2-11-91	W. POOLE	1
B					
C					
D					
INGERSOLL-RAND COMPANY		XHP-900 - W-CAT		36515781	







SAE/Inch Nuts

Part Number	Size	Description
16A4C1	1/4"—20 UNC—2B	Hex
16A4C2	3/8"—18 UNC—2B	Hex
16A4C3	3/8"—16 UNC—2B	Hex
16A4C5	1/2"—13 UNC—2B	Hex
16A4C7	3/8"—11 UNC—2B	Hex
16A4C8	3/4"—10 UNC—2B	Hex
16A4H7	3/8"—11 UNC—2B	Hex
21A4C10	12—24 UNC—2B	Hex
21A4C5	4—40 UNC—2B	Hex
21A4C8	8—32 UNC—2B	Hex
21A4C9	10—24 UNC—2B	Hex
22A4C1	1/4"—28 UNC—2B	Hex
22A4C2	3/8"—24 UNF—2B	Hex
22A4C3	3/8"—24 UNC—2B	Hex
22A4C5	1/2"—20 UNC—2B	Hex
23A4C3	3/8"—24 UNC—2B	Hex
23A4C4	3/8"—20 UNC—2B	Hex
23A4C5	1/2"—20 UNC—2B	Hex
23A4C8	3/4"—16 UNC—2B	Hex
35144492	1/4"—20	Whiz-Lock*
35145077	3/8"—16	Whiz-Lock*
35252600	3/8"—18	Whiz-Lock*
35252618	1/2"—13	Whiz-Lock*
35265388	10—24	Whiz-Lock*
35321504	3/8"—11	Hex
35326420	1/2"—13	Hex
35332980	1/2"—13	Hex
35336700	3/8"—18	Torque/Grade 8
66A4C3	3/8"—24	Nyloc
66A4C5	1/4"—20	Nyloc
67A4C1	1/4"—20	Nyloc
67A4C2	3/8"—18	Nyloc
67A4C3	3/8"—16	Nyloc
67A4C5	1/2"—13	Nyloc

SAE/Inch Washers

Part Number	Size	Description
11A5C1	#10	Flat (Commercial)
11A5C2	1/4"	Flat (Commercial)
11A5C3	3/8"	Flat (Commercial)
11A5C4	3/8"	Flat (Commercial)
11A5C6	1/2"	Flat (Commercial)
11A5C8	3/8"	Flat (Commercial)
12A5C2	1/4"	Flat (SAE)
12A5C3	3/8"	Flat (SAE)
12A5C4	3/8"	Flat (SAE)
12A5C6	1/2"	Flat (SAE)
12A5C13	1.25"	Flat (SAE)
12A5C15	1.50"	Flat (SAE)
12A5D24	#10	Flat (SAE)
14A5C101	1/2"	Spring Lock
14A5C110	3/8"	Spring Lock
14A5C119	3/8"	Spring Lock
14A5C120	3/8"	Spring Lock
14A5C133	1/4"	Spring Lock
14A5C28	#8	Spring Lock
14A5C36	#10	Spring Lock
14A5C55	1/4"	Spring Lock
14A5C55P	1/4"	Spring Lock, Cadmium Plate
14A5C65	3/8"	Spring Lock
14A5C65P	3/8"	Spring Lock, Cadmium Plate
14A5C76	3/8"	Spring Lock
14A5C9	#4	Spring Lock
14A5C91	3/8"	Spring Lock
35326233	3/8"	Spring Lock

SAE/Inch Capscrews
Grade Identification

Grade identification markings are normally stamped on the heads of capscrews, however these marks may vary slightly from manufacturer to manufacturer.				
SAE Grade	1 or 2	5	6 or 7	8
		 	 	
QUALITY OF MATERIAL	MATERIAL INDETERMINATE	MINIMUM COMMERCIAL	MEDIUM COMMERCIAL	BEST COMMERCIAL
USAGE	UNACCEPTABLE	PREFERRED	ALTERNATE IF PREFERRED NOT AVAILABLE	*

* Due to their material and hardness, grade 8 capscrews are **not** suitable for use on the pressurized air systems on an Ingersoll-Rand Portable Air Compressor. On uses other than pressure applications, grade 8 capscrews are acceptable.

SECTION 10 — COMMON FASTENERS

Contents	Page	Contents	Page
Table 1 — SAE/Inch	1	Table 2 — ISO/Metric	3
Screws	1	Screws, Nuts & Washers	3
Nuts & Washers	2	Grade Identification	3
Grade Identification	2		

TABLE 1
SAE/Inch Screws

Part Number	Size	Description
109A2A311N	#10—24 UNC—3A × 1/4"	Hex Socket Head (Nylon Insert)
119A2A146	1/4"—20 UNC—3A × 1/4"	Hex Socket Head
119A2A148	1/4"—20 UNC—3A × 1/4"	Hex Socket Head
119A2A198N	1/4"—16 UNC—3A × 1/4"	Hex Socket Head (Nylon Insert)
119A2A206N	1/4"—16 UNC—3A × 2"	Hex Socket Head (Nylon Insert)
119A2A251	1/2"—13 UNC—3A × 1 1/4"	Hex Socket Head
121A2A175	1/2"—16 UNC—3A × 1"	Hex Socket Head
125A2C1012	#10—24 UNC—5A × 1 1/4"	Hex Socket Head
133A2C44	#4—10 UNC—3A × 1/2"	Hex Socket Head
35A2D110	1/4"—16 UNC—2A × 1/4"	Hex Head
35A2D111	1/4"—16 UNC—2A × 1"	Hex Head
35A2D112	1/4"—16 UNC—2A × 1 1/4"	Hex Head
35A2D113	1/4"—16 UNC—2A × 1 1/4"	Hex Head
35A2D117	1/4"—16 UNC—2A × 2"	Hex Head
35A2D118	1/4"—16 UNC—2A × 2 1/4"	Hex Head
35A2D119	1/4"—16 UNC—2A × 2 1/4"	Hex Head
35A2D120	1/4"—16 UNC—2A × 2 1/4"	Hex Head
35A2D122	1/4"—16 UNC—2A × 3 1/4"	Hex Head
35A2D127	1/4"—16 UNC—2A × 4 1/4"	Hex Head
35A2D131	1/4"—16 UNC—2A × 6"	Hex Head
35A2D168	1/2"—14 UNC—2A × 1 1/2"	Hex Head
35A2D174	1/2"—14 UNC—2A × 3"	Hex Head
35A2D215	1/2"—13 UNC—2A × 1/4"	Hex Head
35A2D216	1/2"—13 UNC—2A × 1/4"	Hex Head
35A2D217	1/2"—13 UNC—2A × 1"	Hex Head
35A2D219	1/2"—13 UNC—2A × 1 1/4"	Hex Head
35A2D221	1/2"—13 UNC—2A × 1 1/2"	Hex Head
35A2D223	1/2"—13 UNC—2A × 2"	Hex Head
35A2D229	1/2"—13 UNC—2A × 3 1/2"	Hex Head
35A2D231	1/2"—13 UNC—2A × 4"	Hex Head
35A2D232	1/2"—13 UNC—2A × 4 1/4"	Hex Head
35A2D3	1/4"—20 UNC—2A × 1/4"	Hex Head
35A2D323	1/4"—11 UNC—2A × 1 1/4"	Hex Head
35A2D325	1/4"—11 UNC—2A × 1 1/2"	Hex Head
35A2D326	1/4"—11 UNC—2A × 1 1/4"	Hex Head
35A2D327	1/4"—11 UNC—2A × 2"	Hex Head
35A2D328	1/4"—11 UNC—2A × 2 1/4"	Hex Head
35A2D329	1/4"—11 UNC—2A × 2 1/2"	Hex Head
35A2D330	1/4"—11 UNC—2A × 2 1/4"	Hex Head
35A2D331	1/4"—11 UNC—2A × 1 1/2"	Hex Head
35A2D380	1/4"—10 UNC—2A × 2 1/2"	Hex Head
35A2D382	1/4"—10 UNC—2A × 3"	Hex Head
35A2D384	1/4"—10 UNC—2A × 3 1/2"	Hex Head

35A2D386	1/4"—10 UNC—2A × 4"	Hex Head
35A2D388	1/4"—10 UNC—2A × 4 1/4"	Hex Head
35A2D390	1/4"—10 UNC—2A × 5"	Hex Head
35A2D4	1/4"—20 UNC—2A × 1/4"	Hex Head
35A2D5	1/4"—18 UNC—2A × 3"	Hex Head
35A2D54	1/4"—18 UNC—2A × 1/2"	Hex Head
35A2D57	1/4"—18 UNC—2A × 1/4"	Hex Head
35A2D58	1/4"—18 UNC—2A × 1"	Hex Head
35A2D60	1/4"—18 UNC—2A × 1 1/4"	Hex Head
35A2D62	1/4"—18 UNC—2A × 1 1/2"	Hex Head
35A2D64	1/4"—18 UNC—2A × 2"	Hex Head
35A2D7	1/4"—20 UNC—2A × 1 1/4"	Hex Head
35A2D8	1/4"—20 UNC—2A × 1 1/4"	Hex Head
35130293	1/4"—16 × 1/4"	Hex Head Self-Tapping
35130301	1/4"—18 × 1/4"	Hex Head Self-Tapping
35141365	1/4"—18 × 1/2"	Hex Head Self-Tapping
35144328	1/4"—20 × 1/4"	Whiz-Lock®
35144336	1/4"—18 × 1/4"	Whiz-Lock®
35144344	1/4"—16 × 1"	Whiz-Lock®
35144484	1/4"—20 × 1"	Whiz-Lock®
35145242	1/4"—20 × 1 1/4"	Whiz-Lock®
35148030	1/2"—13 × 1"	Hex Head Self-Tapping
35252451	1/4"—20 × 1"	Whiz-Lock®
35252493	1/4"—16 × 1/4"	Whiz-Lock®
35252568	1/2"—13 × 1 1/4"	Whiz-Lock®
35252741	1/2"—13 × 1 1/2"	Whiz-Lock®
35252758	1/2"—13 × 1"	Whiz-Lock®
35287119	1/4"—14 × 1/4"	Hex Head Self-Tapping
35321108	1/4"—18 × 1"	Whiz-Lock®
35334879	1/4"—18 × 1"	Hex Head Self-Tapping
36A2A275	1/4"—18 × 2"	Hex Head
87A2C93P	10—24 × 1/4"	Round Head Phillips
95095659	10—24 × 1/2"	Round Head Phillips

Whiz-Lock® is a Registered T.M. of MacLean-Fogg Nut Co.
(Alternate Suppliers are Acceptable for this Part Number)

TABLE 2
ISO/Metric Screws

Part Number	Size (mm)	Description
35271139	M12 × 1.75 × 40	Hex Head, Class 8.8
35271147	M12 × 1.75 × 30	Hex Head, Class 8.8
35271154	M10 × 1.50 × 30	Hex Head, Class 8.8
35271162	M8 × 1.25 × 30	Hex Head, Class 8.8
35271188	M10 × 1.5 × 25	Hex Head, Class 8.8
35272533	M12 × 1.75 × 35	Hex Head, Class 8.8
35272541	M16 × 2.25 × 40	Hex Head, Class 8.8
35273408	M8 × 1.25 × 20	Hex Head, Class 8.8
35273416	M8 × 1.25 × 25	Hex Head, Class 8.8
35273945	M10 × 1.5 × 55	Hex Head, Class 8.8
35275007	M6 × 1 × 25	Hex Head, Class 8.8
35279025	M8 × 1.25 × 20	Self-Tapping
35284678	M8 × 1.25 × 20	Hex Head, Class 8.8
35284793	M8 × 1.25 × 70	Hex Head, Class 8.8
35285584	M12 × 1.75 × 25	Hex Head, Class 12.9
35287648	M8 × 1.25 × 16	Hex Head, Class 8.8
35288422	M8 × 1.25 × 80	Hex Head, Class 8.8
35291640	M14 × 2 × 40	Hex Head, Class 8.8
35290113	M16 × 2.25 × 75	Hex Head, Class 8.8
35295013	M10 × 1.5 × 70	Hex Head, Class 8.8
35295351	M10 × 1.5 × 25	Hex Head, Class 8.8
35295484	M12 × 1.75 × 16	Hex Head, Class 8.8
35295757	M12 × 1.75 × 20	Hex Head, Class 8.8
35300623	M16 × 2.25 × 140	Hex Head, Class 8.8
35300771	M6 × 1 × 20	Self-Tapping
35301746	M12 × 1.75 × 55	Hex Head, Class 8.8
35307818	M6 × 1 × 10	Hex Head, Class 8.8
35309715	M16 × 2.25 × 25	Hex Head, Class 8.8
35317106	M6 × 1 × 25	Hex Head, Class 8.8
35317148	M8 × 1.25 × 60	Hex Head, Class 8.8
35321520	M16 × 2.25 × 30	Hex Head, Class 8.8
35322908	M6 × 1 × 20	Hex Head, Class 8.8
35327550	M8 × 1.25 × 70	Hex Head, Class 8.8

35330539	M12 × 1.75 × 100	Hex Head, Class 8.8
35353978	M10 × 1.25 × 50	Hex Head, Class 8.8
35356518	M20 × 2.5 × 90	Hex Head, Class 8.8
35358266	M10 × 1.5 × 160	Hex Head, Class 8.8
35358274	M16 × 2.25 × 25	Hex Head, Class 8.8
35361807	M16 × 2.25 × 120	Hex Head, Class 8.8
92304385	M10 × 1.5 × 16	Hex Head, Class 8.8
92304393	M10 × 1.5 × 20	Hex Head, Class 8.8
92304419	M10 × 1.5 × 40	Hex Head, Class 8.8
92304435	M12 × 1.75 × 25	Hex Head, Class 8.8
92304450	M12 × 1.75 × 50	Hex Head, Class 8.8
92329309	M10 × 1.5 × 35	Hex Head, Class 8.8
92341239	M20 × 2.5 × 40	Hex Head, Class 8.8
92367663	M16 × 2.25 × 35	Hex Head, Class 8.8
92368687	M6 × 1 × 72	Hex Head, Class 8.8

ISO/Metric Nuts

Part Number	Size (mm)	Description
35273366	M10 × 1.5	Lock, Nylon Insert
35275023	M8 × 1.25	Lock, Nylon Insert
35304047	M12 × 1.75	Lock, Nylon Insert
35356526	M20 × 2.5	Lock, Nylon Insert
35361815	M16 × 2.0	Lock, Nylon Insert
90103839	M16 × 2.0	Hex
90103854	M12 × 1.75	Hex
92304500	M6 × 1	Hex
92304526	M10 × 1.5	Hex

ISO/Metric Washers

Part Number	Size (mm)	Description
35317114	6	Flat
92304658	6	Spring Lock
92304674	10	Flat

ISO/Metric Capscrews
Grade Identification

Capscrews shall be identified with their property class symbol with the manufacturer's identification symbol at his option. Grade identification markings (8.8, etc.) are normally located at the top of the screw head, or alternatively, on the side of the head, and may either be raised or depressed at option of the manufacturer.

CLASS	4.6	5.8	8.8	9.8	10.9	12.9
SAE EQUIVALENT	EQUIVALENT TO SAE GRADE 1	EQUIVALENT TO SAE GRADE 2	EQUIVALENT TO SAE GRADE 5	APPROXIMATELY 9 PER CENT STRONGER THAN SAE GRADE 5	EQUIVALENT TO SAE GRADE 8	NO EQUIVALENT SAE GRADE
USAGE	UNACCEPTABLE	UNACCEPTABLE	PREFERRED	ALTERNATE IF PREFERRED NOT AVAILABLE	*	*

* Due to the material and hardness, class 10.9 and 12.9 capscrews are **not** suitable for use on the pressurized air systems on an Ingersoll-Rand Portable air Compressor. On uses other than pressure applications, class 10.9 and 12.9 capscrews are acceptable.