OPERATING, MAINTENANCE & PARTS MANUAL

MODEL
DXL 1100H
DXL 1200P
DXL 1400

PART NO. PCD 872
FEBRUARY, 1982

COMPRESSOR SERIAL NUMBER RANGE

(APPLY SERIAL NO. LABEL HERE)

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.

FOREWORD

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 authorized 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.

INDEX

DANGER

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.

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

USE EXTREME CARE TO AVOID CONTACTING HOT SURFACES (ENGINE EXHAUST MANIFOLD AND PIPING, AIR RECEIVER AND AIR DISCHARGE PIPING, ETC.) THE RESULTING HIGH TEMPERATURES CAN CAUSE BURNS AND PERSONAL INJURY IF SAFETY PRECAUTIONS ARE NOT OBSERVED.

DO NOT LOOSEN OR REMOVE OIL FILLER PLUG OR PERFORM ANY MAINTENANCE FUNCTIONS WITHOUT FIRST MAKING SURE ALL AIR PRESSURE HAS BEEN RELIEVED FROM UNIT.

NEVER OPERATE THIS MACHINE WITH ANY GUARDS REMOVED.

THIS UNIT IS CAPABLE OF A RATED OPERATING PRESSURE OF 150 psi (10.55 kgf per cm^2) WITH A MAXIMUM SAFETY VALVE SETTING OF 175 psi (12.30 kgf per cm^2). ASSURE THAT ALL UNIT AIR AND OIL CONNECTIONS AS WELL AS ALL EXTERNAL AIR SYSTEMS ARE SAFELY MAINTAINED UNDER ALL OPERATING CONDITIONS. IF SAFETY PRECAUTIONS ARE NOT OBSERVED HIGH PRESSURE AIR CAN CAUSE SERIOUS PERSONAL INJURY OR RESULTING PROPERTY DAMAGE.

THE AIR DISCHARGED FROM THIS UNIT IS NOT SUITABLE FOR HUMAN CONSUMPTION. DO NOT USE FOR BREATHING AIR SERVICES.

NEVER OPERATE UNIT WITHOUT FIRST OBSERVING ALL CAUTION AND WARNING DECALS AND CAREFULLY READING THE OPERATOR'S AND MAINTENANCE MANUAL FURNISHED WITH THIS MACHINE. ADDITIONAL COPIES OF THE MANUAL CAN BE OBTAINED FROM INGERSOLL-RAND COMPANY, MOCKSVILLE, NC 27028, USA.

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MODEL DXL1100H ONLY

DANGER

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.

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

USE EXTREME CARE TO AVOID CONTACTING HOT SURFACES (ENGINE EXHAUST MANIFOLD AND PIPING, AIR RECEIVER AND AIR DISCHARGE PIPING, ETC.) THE RESULTING HIGH TEMPERATURES CAN CAUSE BURNS AND PERSONAL INJURY IF SAFETY PRECAUTIONS ARE NOT OBSERVED.

DO NOT LOOSEN OR REMOVE OIL FILLER PLUG OR PERFORM ANY MAINTENANCE FUNCTIONS WITHOUT FIRST MAKING SURE ALL AIR PRESSURE HAS BEEN RELIEVED FROM UNIT.

NEVER OPERATE THIS MACHINE WITH ANY GUARDS REMOVED.

THIS UNIT IS CAPABLE OF A RATED OPERATING PRESSURE OF 125 psi (8.79 kgf per cm^2) WITH A MAXIMUM SAFETY VALVE SETTING OF 150 psi (10.55 kgf per cm^2). ASSURE THAT ALL UNIT AIR AND OIL CONNECTIONS AS WELL AS ALL EXTERNAL AIR SYSTEMS ARE SAFELY MAINTAINED UNDER ALL OPERATING CONDITIONS. IF SAFETY PRECAUTIONS ARE NOT OBSERVED HIGH PRESSURE AIR CAN CAUSE SERIOUS PERSONAL INJURY OR RESULTING PROPERTY DAMAGE.

THE AIR DISCHARGED FROM THIS UNIT IS NOT SUITABLE FOR HUMAN CONSUMPTION. DO NOT USE FOR BREATHING AIR SERVICES.

NEVER OPERATE UNIT WITHOUT FIRST OBSERVING ALL CAUTION AND WARNING DECALS AND CAREFULLY READING THE OPERATOR'S AND MAINTENANCE MANUAL FURNISHED WITH THIS MACHINE. ADDITIONAL COPIES OF THE MANUAL CAN BE OBTAINED FROM INGERSOLL-RAND COMPANY, MOCKSVILLE, NC 27028, USA.

35842657

MODEL DXL1200P ONLY

DANGER

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.

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

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DO NOT LOOSEN OR REMOVE OIL FILLER PLUG OR PERFORM ANY MAINTENANCE FUNCTIONS WITHOUT FIRST MAKING SURE ALL AIR PRESSURE HAS BEEN RELIEVED FROM UNIT.

NEVER OPERATE THIS MACHINE WITH ANY GUARDS REMOVED.

THIS UNIT IS CAPABLE OF A RATED OPERATING PRESSURE OF 100 psi (7.03 kgf per cm^2) WITH A MAXIMUM SAFETY VALVE SETTING OF 150 psi (10.55 kgf per cm^2). ASSURE THAT ALL UNIT AIR AND OIL CONNECTIONS AS WELL AS ALL EXTERNAL AIR SYSTEMS ARE SAFELY MAINTAINED UNDER ALL OPERATING CONDITIONS. IF SAFETY PRECAUTIONS ARE NOT OBSERVED HIGH PRESSURE AIR CAN CAUSE SERIOUS PERSONAL INJURY OR RESULTING PROPERTY DAMAGE.

THE AIR DISCHARGED FROM THIS UNIT IS NOT SUITABLE FOR HUMAN CONSUMPTION. DO NOT USE FOR BREATHING AIR SERVICES.

NEVER OPERATE UNIT WITHOUT FIRST OBSERVING ALL CAUTION AND WARNING DECALS AND CAREFULLY READING THE OPERATOR'S AND MAINTENANCE MANUAL FURNISHED WITH THIS MACHINE. ADDITIONAL COPIES OF THE MANUAL CAN BE OBTAINED FROM INGERSOLL-RAND COMPANY, MOCKSVILLE, NC 27028, USA.

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MODEL DXL 1400 ONLY

GENERAL DATA

AIR COMPRESSOR	MODEL DXL 1100H	MODEL DXL 1200P	MODEL DXL 1400
ACTUAL DELIVERY OF COMPRESSOR	1100 cfm (519 litres per sec.)	1200 cfm (566 litres per sec.)	1400 cfm (661 litres per sec.)
RATED OPERATING PRESSURE	150 psi (10.55 kgf per cm^2)	125 psi (8.79 kgf per cm^2)	100 psi (7.03 kgf per cm^2)
AIR CLEANER PRIMARY ELEMENT	PART NO. 35123512	PART NO. 35123512	PART NO. 35123512
AIR CLEANER SAFETY ELEMENT	PART NO. 35123520	PART NO. 35123520	PART NO. 35123520
COMPRESSOR OIL FILTER ELEMENT	PART NO. 35330133	PART NO. 35330133	PART NO. 35330133
COMPRESSOR OIL CAPACITY*	50 US GALS. (189 litres)	50 US GALS. (189 litres)	50 US GALS. (189 litres)
DETROIT DIESEL ALLISON DIV., GENERAL MOTORS CORPORATION, SERIES 12V-71N	MODEL 7123-7000	MODEL 7123-7000	MODEL 7123-7000
ENGINE SPEED AT FULL LOAD	2100 RPM	2100 RPM	2100 RPM
ENGINE SPEED AT NO LOAD	1000 RPM	1000 RPM	1000 RPM
ELECTRICAL STARTING SYSTEM	24 Volt	24 Volt	24 Volt
ENGINE LUBE OIL CAPACITY** (INCLUDING OIL FILTER)	38 qts. (36.0 litres)	38 qts. (36.0 litres)	38 qts. (36.0 litres)
ENGINE COOLANT CAPACITY	25.5 US GALS. (96.5 litres)	25.5 US GALS. (96.5 litres)	25.5 US GALS. (96.5 litres)
FUEL TANK CAPACITY***	216 US GALS. (818 litres)	216 US GALS. (818 litres)	216 US GALS. (818 litres)
LENGTH (INCLUDING TOWBAR)	19.25′ (5.86 m)	19.25′ (5.86 m)	19.25′ (5.86 m)
HEIGHT	8.83′ (2.69 m)	8.83′ (2.69 m)	8.83′ (2.69 m)
WIDTH	7.25′ (2.2 m)	7.25′ (2.2 m)	7.25′ (2.2 m)
NET WEIGHT (INCLUDING LUBE OIL)	13,550 LBS. (6150 kg)	13,550 LBS. (6150 kg)	13,550 LBS. (6150 kg)
GROSS WEIGHT (INCLUDING FUEL AND COOLANT)	15,157 LBS. (6875 kg)	15,157 LBS. (6875 kg)	15,157 LBS. (6875 kg)

*RECOMMENDED COMPRESSOR LUBRICANT: USE DEXRON® II ATF OR A MOTOR OIL CONFORMING TO SPECIFICATION MIL-L-46152 GRADE SAE 10W, API CLASS CC (NOTE: NOT CD) FOR AMBIENT TEMPERATURE RANGE OF 125°F TO −10°F (52°C TO −23°C). FOR AMBIENT TEMPERATURES BELOW −10°F (−23°C) CONSULT COMPRESSOR OPERATING AND MAINTENANCE MANUAL.

**NOTE: DO NOT MIX DIFFERENT TYPES OF LUBRICANTS.

***USE NO. 2-D DIESEL FUEL OIL WITH A MINIMUM CETANE NUMBER OF 45 AND SULFUR CONTENT NOT GREATER THAN 0.5%.

THESE COMPRESSORS ARE EQUIPPED WITH 8.25 x 20, LOAD RANGE "E" SIZE TIRES, AS DESCRIBED IN TRA 1980 YEARBOOK, TABLE TB-1B. SERVICE LOAD AND INFLATION ARE IN COMPLIANCE WITH THE PROVISIONS AT THE RESTRICTED SPEED RANGE.

COLD INFLATION PRESSURE (FRONT) ..... 85 psi (5.98 kgf per cm^2)
COLD INFLATION PRESSURE (REAR) ..... 75 psi (5.27 kgf per cm^2)

MAXIMUM TOWING SPEED ..... 20 mph (32 km/h)

CAUTION: ANY DEPARTURE FROM THE ABOVE RECOMMENDATIONS MAY MAKE THIS EQUIPMENT UNSAFE.

SECTION 1

DESCRIPTION

GENERAL DESCRIPTION

The Spiro Flo® Model DXL series air compressor is a single-stage, positive displacement, cycloidal air compressor, directly connected to and driven by a compressor-matched, heavy-duty, industrial engine to provide optimum performance and fuel economy. The compressor and engine are mounted on a rugged channel-section welded steel frame and the entire assembly is completely enclosed in a sheet steel housing. The unit is equipped with rubber tires, semi-elliptical spring mountings, and automotive type steering to facilitate towing. Standard equipment includes compressor and engine inlet air cleaners, compressor butterfly-type inlet valve, engine speed regulator, full instrumentation and controls, and an air receiver-oil separator system. The compressor lubricating oil system includes an oil cooler, oil cooler by-pass valve, oil filters, and a combination primary oil separator tank and air receiver. The engine is provided with an electrical starting system, cold weather starting aid, large capacity fuel tanks, and a coolant radiator. An Engine Operator's and Parts Information Manual is provided with each unit shipped from the factory. Refer to this manual for specific information concerning the engine in your unit.

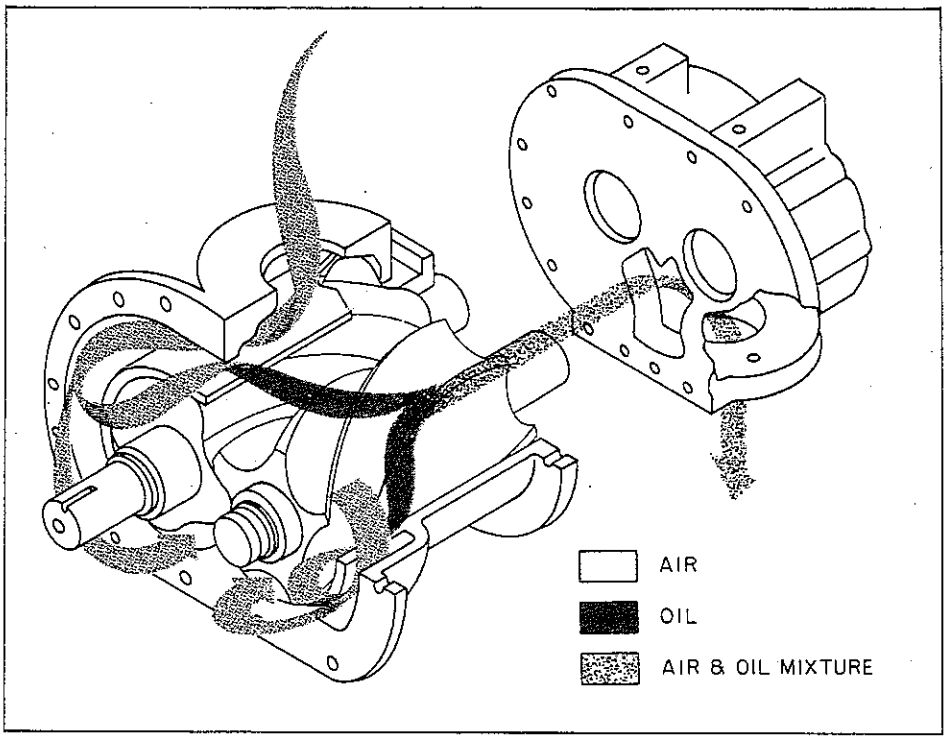
DESCRIPTION OF COMPRESSOR

Compression is created by the meshing of two helical rotors (male and female) on parallel shafts enclosed in a heavy-duty cast iron housing with air inlet and outlet ports located on opposite ends of the housing. The male rotor has four lobes 90 degrees apart and the female rotor has six grooves 60 degrees apart. The grooves of the female rotor mesh with and are driven by the male rotor. Thrust bearings at the rear of the airend prevent longitudinal movement of the rotors. As rotation in the compressor occurs, the rotors enmesh and free air is drawn into the cavities or pockets between the male rotor lobes and the grooves of the female rotor. The air is trapped in these pockets and follows the direction of rotation of each rotor. As soon as the inlet port is closed, the compression cycle begins and the trapped air is directed to the opposite or discharge side of the rotor housing. As the rotors mesh, the normal free volume of air is decreased and the pressure increased until the closing pocket reaches the discharge port. Cooled lubricating oil is admitted to the compressor by being injected, in a metered flow, directly into the rotor housing so that it passes on with the air being compressed. This removes the heat of compression to a large degree and results in an unusually low final discharge air temperature. From the discharge port, the compressed air and lubricating oil is directed to the receiver-separator which also serves as an oil storage reservoir.

DESCRIPTION OF AIR FLOW

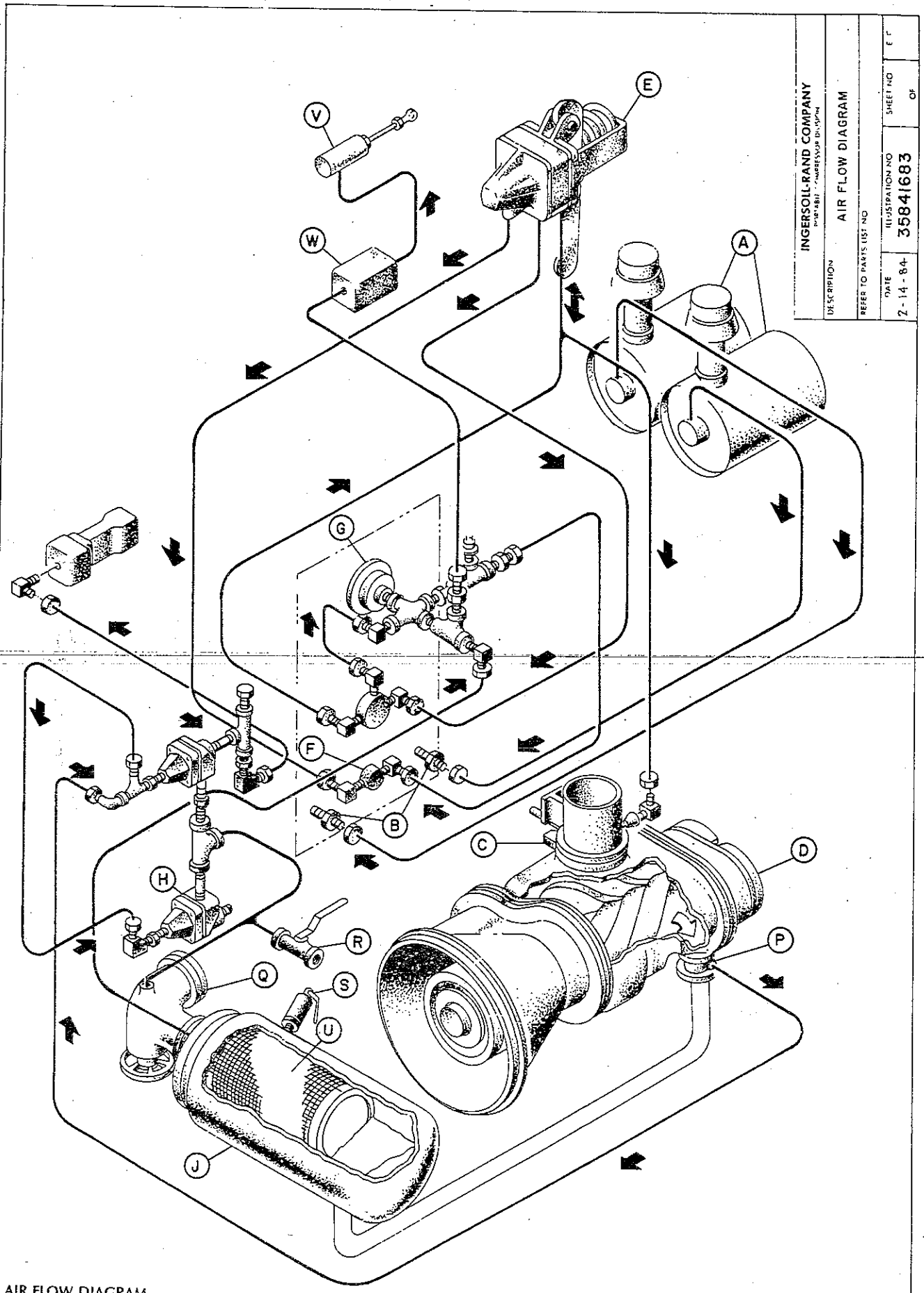
Air flow through the compressor can be regulated from full capacity to zero capacity dependent upon the air demand placed upon the unit. Reduction to zero capacity is accomplished by the butterfly-type air inlet valve. The inlet valve, mounted on the rotor housing intake port, controls the capacity of the com-

Spiro-Flo® - Reg. T.M. of Ingersoll-Rand Co.



pressor through a throttling effect. Discharge air pressure can be controlled between 70 psi (4.92 kgf per cm^2) and the unit's rated operating pressure (*) by adjustment of the speed and pressure regulator.

(*) Refer to the General Data page.



AIR FLOW DIAGRAM
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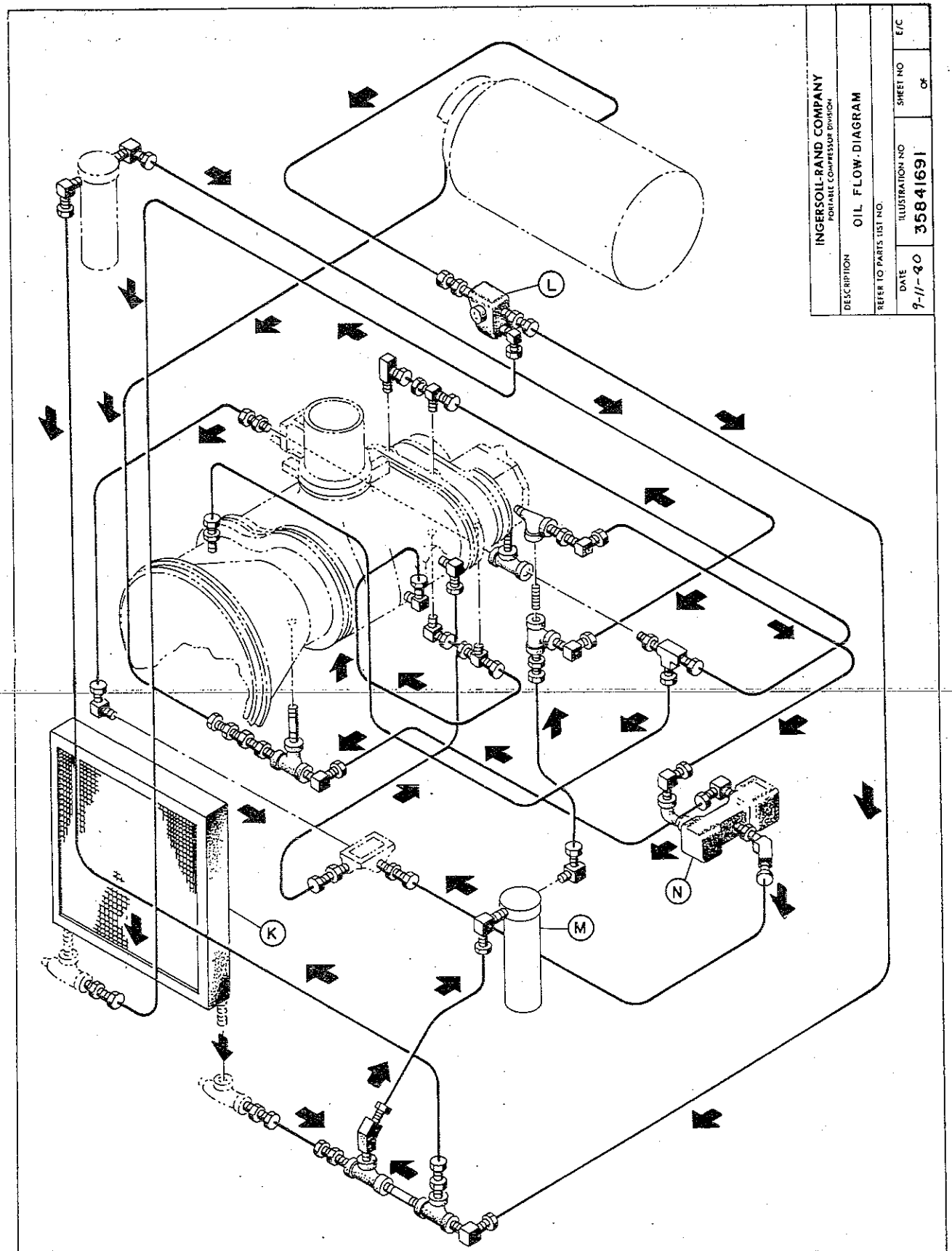


OIL FLOW DIAGRAM
35841691

A — INLET AIR CLEANERS

Prevents foreign particles such as dirt, dust and water from being inducted into engine and compressor air inlets.

B — AIR CLEANER SERVICE INDICATORS

Factory set to indicate when filter element change is necessary. Red flag in window slowly rises to top as resistance through element increases due to build-up of dirt on filtering surface.

C — AIR INLET BUTTERFLY VALVE

Controls volume of air allowed to enter compressor airend. Speed and pressure regulator holds valve open until set operating pressure is reached. When air pressure rises above set operating pressure regulator closes air inlet butterfly valve progressively to match output of compressor demand for air.

D — COMPRESSOR AIREND

A positive displacement, cycloidal-type compressor consisting of two one-piece meshing helical rotors within a compression chamber. Operating at high speed within a closely conforming casing, the rotors draw air in from the top inlet, compress it axially and discharge it from the bottom at the opposite end.Cooled oil is injected into the compression chamber under controlled pressure to perform three functions — cool the air, seal the rotor clearances and lubricate the rotor surfaces. Pressure lubrication is also supplied to the gears and bearings. The oil which mixes with the air during compression passes into the receiver-separator.

E — SPEED AND PRESSURE REGULATOR

Senses air pressure in receiver-separator system to provide automatic regulation of engine speed and air volume passed through air inlet butterfly valve.

F — (3-WAY) START-RUN VALVE

Reduces compressor airend horsepower load on engine during start-up and permits engine warm-up before loading the compressor to full capacity.

G — AIR DISCHARGE PRESSURE GAGE

Gage located on instrument panel indicates air pressure in receiver-separator system. Normal indication should be between 70 psi (4.92 kgf per cm^2) and the unit's rated operating pressure (*) by adjustment of the speed and pressure regulator.

(*) Refer to the General Data page.

H — AUTOMATIC BLOWDOWN VALVE

Releases compressed air from receiver-separator system when engine is shut down as unit should never stand idle with pressure in system. Pressure is vented to atmosphere through a hole in the oil shutoff valve cover.

J — RECEIVER-SEPARATOR

Receives compressed air and oil mist from compressor. Most of the oil falls immediately to bottom of receiver-separator tank. Any oil remaining in air is removed by the oil separator. Receiver-separator stores compressed air as well as compressor lubricating and cooling oil. Pressure of compressed air in the receiver tank is indicated by air discharge pressure gage on instrument panel.

K — OIL COOLER

Cools compressor lubricating and cooling oil to prevent overheating of compressor airend.

L — OIL TEMPERATURE BYPASS VALVE

Regulates cooling and lubricating oil flow to partially bypass oil cooler when oil is cold. Valve modulates oil flow between bypass and oil cooler to control oil temperature at an optimum level.

M — COMPRESSOR OIL FILTER

Removes foreign particles from compressor lubricating and cooling oil to a nominal 20 microns in size.

N — OIL SHUTOFF VALVE

Channels lubricating and cooling oil to compressor airend gears, bearings and rotor housing. Pressure from the blowdown valve operates this valve (a piston-type valve) to prevent flooding the compressor airend.

P — AIR DISCHARGE CHECK VALVE

Prevents reverse rotation of compressor airend upon shutdown of unit.

Q — MINIMUM PRESSURE VALVE

Automatically closes when air pressure in receiver-separator system drops below 70 psi (4.92 kgf per cm^2). This action ensures that excess amounts of lubricating and cooling oil are not drawn into air service lines. Also provides a manual shut-off to permit removal of any type of service outlet or hose line attached to the unit's service connections.

R — MANUAL BLOWDOWN VALVE

Hand-operated valve which allows receiver-separator system to be relieved of all pressure.

S — SAFETY VALVE

Releases compressed air from receiver-separator system to atmosphere when air pressure exceeds 150 psi (10.55 kgf per cm^2).

U — OIL SEPARATOR ELEMENT

Removes oil from the air discharged from the airend to provide oil-free service air.

V — ENGINE SHUTDOWN CYLINDER

Connected to governor lever on fuel rack. Actuated by air pressure admitted through opening of electrically actuated solenoid valve. Internal spring returns governor lever to run position.

W — SOLENOID VALVE

Held open electrically. Closes when safety shutdown switches function thus actuating engine shutdown cylinder to shut off fuel to the engine.

SECTION 2

OPERATION

OPERATING INSTRUCTIONS

BEFORE STARTING

Place the unit in a position as level as possible. This is necessary as an out-of-level unit may give a false coolant level in the radiator due to the coolant being trapped above the deaeration baffle in the radiator top tank. The design of these units permits a 20 degree lengthwise and a 20 degree sidewise limit on out-of-level operation. The engine, not the compressor, is the limiting factor in any case. 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 gage show no more than half full (with the unit level). Do not overfill either the engine crankcase or the compressor lubricating oil system.

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. It is extremely important that any backflow of discharge line pressure be prevented to insure against possible contamination of the compressor lubricating and cooling oil and to prevent the formation of scale in the receiver-separator.

Open the manual blowdown valve to ensure that pressure is relieved in the receiver-separator system. Close the valve after the system has been relieved.

Open the valve located on the bottom of the oil storage reservoir (oil separator tank) slightly to remove any condensation that may have accumulated. Close the valve when any lubricating oil appears.

Check the battery electrolyte level.

Warning

Batteries contain sulfuric acid which causes severe burns. Use extreme caution when handling batteries to prevent spillage. Always remove batteries when loading, unloading or transporting unit.

If necessary to boost the batteries to start the unit **always** make the negative or ground connection last and away from the battery to avoid sparks igniting any gases.

Check the fuel level.

Caution

Use a No. 2-D diesel fuel oil with a minimum cetane number of 45 and a sulfur content not greater than 0.5%.

Check the compressor lubricating oil level. Refer to Section 3, Lubrication. The proper oil level should be within 3/8 of an inch (9.5 mm) of the center of the sight gage. Add oil only if the level falls below the "low" mark when the

unit is not running. Check the engine lubricating oil level (refer to the Engine Operator's Manual).

Check the engine coolant system level. Initially or whenever the cooling system is drained, the system must be filled slowly. Leave the radiator cap off at this point.

Note

After the unit has been started and allowed to warm up, sufficient enough to open the thermostat, observe the coolant level in the filler neck. Add makeup coolant as required.

If necessary, prime engine fuel system.

Close all service valves.

Caution

All service valves and the manual blowdown valve must be closed before starting the unit in order to build up full air pressure to ensure proper oil circulation.

STARTING UNIT

Turn 3-way valve to "START" position.

Make sure the manual speed control and stop handle is pushed all the way in. Press start switch and safety circuit bypass switch simultaneously. Release start switch as soon as engine starts. Release the bypass switch when air discharge pressure reaches approximately 40 psi (2.81 kgf per cm^2).

Note

In cold weather it may be necessary to operate the cold weather starting aid just prior to activating the starting switch, and during the cranking cycle.

Avoid engine damage and costly downtime. When using the cold weather starting aid follow the engine manufacturer's recommendations and don't over-use a good thing. This is one instance where a little too much can hurt. Follow the Engine Operator's Manual on the operation of this device.

Caution

Ether is an extremely volatile gas with a combustion temperature lower than that of vaporized diesel fuel. Because of this characteristic, ether is used to assist in starting the diesel engine during cold weather when compression temperatures may not be high enough to initiate combustion. "A little more won't hurt" is true for many things, but ether is not one of them. If too little ether is injected into the air intake system, the engine may not start. If too much is injected, the uncontrolled explosion which results can damage the engine.

Normally the unit must be started with the service valves and the manual blowdown valve closed; but in extremely cold weather it may be advisable to leave the manual blowdown valve partially open. This will allow the engine to warm up at a higher speed and reduced load. Once the unit starts, gradually close the manual blowdown valve until the engine comes to idle speed.

Caution

Never allow the system pressure to fall below 50 psi (3.52 kgf per cm^2) to assure adequate oil flow to the compressor at low temperature.

The manual blowdown valve is to be used

only as a safety precaution to assure zero system pressure before attempting repairs or maintenance checks and as an aid for cold weather starting.

Caution

Opening the manual blowdown valve during operation of the unit or upon shutdown will result in excessive compressor oil carryover.

If the engine does not start, refer to the Trouble Shooting Chart found in this publication (Section 4) and to the separate Engine Operator's Manual.

Immediately aftering starting, observe engine oil pressure gage. If no pressure is indicated, shut unit down and correct cause. If proper oil pressure is indicated, allow engine to warm up. Turn 3-way valve to "RUN" position.

With engine warmed, check engine coolant temperature to see that range of from 160°F to 185°F (71°C to 85°C) is maintained.

At this point it is safe to open any service valves and apply a full load to the engine.

STOPPING

Close all service valves. Allow the unit to run unloaded for a few minutes to reduce the engine temperature. It is important to idle an engine 3 to 5 minutes before shutting it down to allow lubricating oil and water to carry heat away from the combustion chamber, bearings, shafts, etc.

Pull the manual speed control and stop handle and hold it out until the engine comes to a complete stop.

Note

As soon as the engine stops the automatic blowdown valve should immediately relieve all pressure from the receiver-separator system.

Caution

Never allow the unit to stand idle with pressure in the receiver-separator system.

SECTION 3

LUBRICATION

GENERAL

Both compressor lubrication and cooling are accomplished by the compressor lubricating oil. The oil is forced from the oil storage reservoir (receiver-separator tank), under system pressure, to the oil cooler. The cooler is located at the radiator end of the unit in such a manner that the heat exchanger fan serves to cool both the engine jacket coolant and the compressor lubricating oil. When the compressor is operating at low capacity or low ambient temperatures, some of the oil may bypass the cooler through a thermostatically controlled bypass valve. This valve bypasses varying amounts of oil, depending upon the temperature, until the oil being circulated reaches a temperature of 185°F (85°C) thus maintaining a higher average oil temperature thereby reducing the possibility of water vapor condensation in the oil. From the oil cooler, the cooled oil is directed thru the oil filter then to the rotor bearings, gears, and in metered amounts directly into the rotor housing. All of the oil thus introduced mixes with, and passes on with the air being compressed, thus removing the heat of compression to a large degree. On its way to the final discharge connection the air passes through piping to the receiver-separator where the oil is removed from the air to collect in the oil storage reservoir. Primary separation of the oil takes place through a change in velocity and direction as the compressed air enters the receiver-separator, dropping out most of the oil from the air. Secondary separation of the oil takes place in the separator element, which is located entirely within the tank. The oil separator consists of a series of chambers packed with an oil diverting medium, designed to separate and trap the finely divided oil droplets carried in the compressed air as it passes through the separator element. Any oil accumulation in the secondary oil separator is continuously drained off by means of a scavenger line, which returns the accumulated oil to the compressor.

COMPRESSOR OIL CHANGE

These units are normally furnished with an initial supply of oil sufficient to allow operation of the unit for approximately 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 **Oil Recommendations.**

If the unit has been operated for 1000 hours (or 5000 hours, dependent upon the lubricant used), it should be completely drained of oil. If the unit has been operated under adverse conditions, or under long shutdown periods 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 500 to 1000 operating hours (or every twelve months, whichever comes first), depending upon operation conditions, is not only desirable, but is good insurance against the accumulation of dirt, sludge, or oxidized oil products.

Completely drain the receiver-separator, piping, and oil cooler. After the unit has been completely drained of all old oil, replace the drain plugs, making sure they are tight. 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.

Caution

Shorter oil change intervals may be necessary if unit is operated under adverse conditions.

Warning

Do not, under any circumstance, remove any drain plugs, or the oil filler plug from the compressor lubricating and cooling oil system without first making sure the receiver-separator system has been completely relieved of all air pressure.

Caution

Some oil mixtures are incompatible, and result in the formation of varnishes, shellacs, or lacquers which may be insoluble. Such deposits can cause serious troubles including clogging of the filter. Where possible, try to avoid mixing oils of the same type but of different brands. A brand change is best made at the time of a complete oil change.

OIL FILTER CHANGE

On new or overhauled units replace the oil filter element after the first 50 and 150 operating hours; thereafter service the oil filter every 500 operating hours or every six months, whichever comes first. When using an oil conforming to Specification MIL-L-46152 or DEXRON® automatic transmission fluid drain and refill with new oil every 1000 operating hours or every twelve months, whichever comes first.

ENGINE LUBRICATING OIL

Refer to Engine Operator's Manual.

COMPRESSOR LUBRICATING AND COOLING OIL RECOMMENDATIONS

Alternate lubricants should conform to the specifications found in Table 1.

Caution

Care should be taken to assure that all downstream components will be compatible with the synthetic lubricants.

TABLE 1

PORTABLE COMPRESSOR LUBRICANT SPECIFICATIONS

AMBIENT TEMPERATURE	125°F (51.7°C) TO —10°F (—23.3°C)	—10°F (—23.3°C) TO —50°F (—45.6°C)
COMPRESSOR LUBRICANTS	*MIL-L-46152—SAE 10W OR MIL-L-2104B—SAE 10W	.....
	DEXRON® OR DEXRON® II AUTOMATIC TRANSMISSION FLUID	.....
	.....	**MIL-L-23699B Synthetic Lubricant
	.....	***MIL-L-46167 Sub-zero Arctic Lubricant

DEXRON® - Reg. T. M. of General Motors Corp.

***MIL-L-46152** — Supersedes the former MIL-L-2104B. Ascertain that MIL-L-46152 lubricants meet API Class CC only and not CD.

****MIL-L-23699B** — Lubricants which meet this specification are used in most jet aircraft engines and should be available wordwide.

*****MIL-L-46167** — Is intended to supersede Federal Specification APG #1 (Aberdeen Proving Ground Purchase Description #1). APG #1 is the current designation for sub-zero arctic lubricants.

For temperatures above 125°F (51.7°C) or below —50°F (—45.6°C), please consult the Customer Service Department, Mocksville, North Carolina, USA, 27028.

SECTION 4

TROUBLE SHOOTING

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 problem areas covered in this trouble shooting chart apply to air compressors generally and may or may not be applicable to your particular unit. The operator should, therefore, use the information presented with discretion.

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. The main purpose of the chart is to stimulate a train of thought and to indicate a work procedure directed toward the source of trouble. To use the trouble shooting chart, determine the area or system that has the problem using the left-hand column; then pinpoint the specific trouble in the middle column. Refer to the right-hand column for the possible cause(s).

For trouble shooting electrical problems refer to the wiring diagram schematic found in the Parts List section of this manual.

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?

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.

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.

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		
AREA	**TROUBLE**	**CAUSE**
Air Flow System	Air Cleaner Element Life Too Short	Defective Service Indicator
	Operation of Blowdown Valve Erratic	Defective Blowdown Valve Diaphragm
		Dirty or Clogged Blowdown Valve
Lubricating and Cooling Oil Flow System	Excessive Carryover of Oil into Air Discharge	High Oil Level
		Separator Element Improperly Installed
		Clogged Oil Scavenger Line
		Leaking Oil Seal
		Ruptured Separator Element
		Worn or Damaged Oil Seal
		Plugged Orifice in Scavenger Line
		Defective Minimum Pressure Valve, Improper Shutdown
	Oil Seal Leaks	Contaminated Lube Oil
	Oil Blows Back into Air Cleaner	Leaking Oil Shutoff Valve
		Inoperable Discharge Check Valve
	Compressor Overheats	Dirty or Clogged Oil Cooler
		Low Oil Level
		Clogged Oil Filter
		Wrong Grade or Type of Oil
		Defective Oil Temperature Bypass Valve Element

TROUBLE SHOOTING

AREA	TROUBLE	CAUSE
Lubricating and Cooling Oil Flow System (continued)	Compressor Overheats	Incorrect Oil Cooler Piping
		Inadequate Oil Flow
	Engine Runs Backward Upon Shutdown	Leaking Oil Shutoff Valve
		Inoperable Discharge Check Valve, Improper Shutdown
Operational System	Air Cleaner Element Life Too Short	Excessive Exhaust Soot Entering Air Cleaners
		Contaminated Running Condition
		Oil Blowback Upon Shutdown
	Air Discharge Capacity Too Low	Engine Speed Too Low
	Unable to Obtain Correct Engine Speed	Clogged Fuel Filter or Air Filter
	Oil Consumption Too High	Unit Out of Level
		Oil Blowdown Upon Shutdown
	Oil Level Readings Erratic	Unit Out of Level, Improper Unit Shutdown
	Oil Blows Back into Air Cleaner	Improper Operation of Oil Shutoff Valve
		Improper Operation of Discharge Check Valve
	Compressor Overheats	Recirculation of Cooling Air
		Re-starting Too Soon
	Unit Shuts Down Prematurely	Excessive Vibration
	Engine Runs Backward Upon Shutdown	Improper Unit Shutdown, Defective Oil Shutoff Valve or Discharge Check Valve
	Excessive Vibration	Engine Speed Too Low

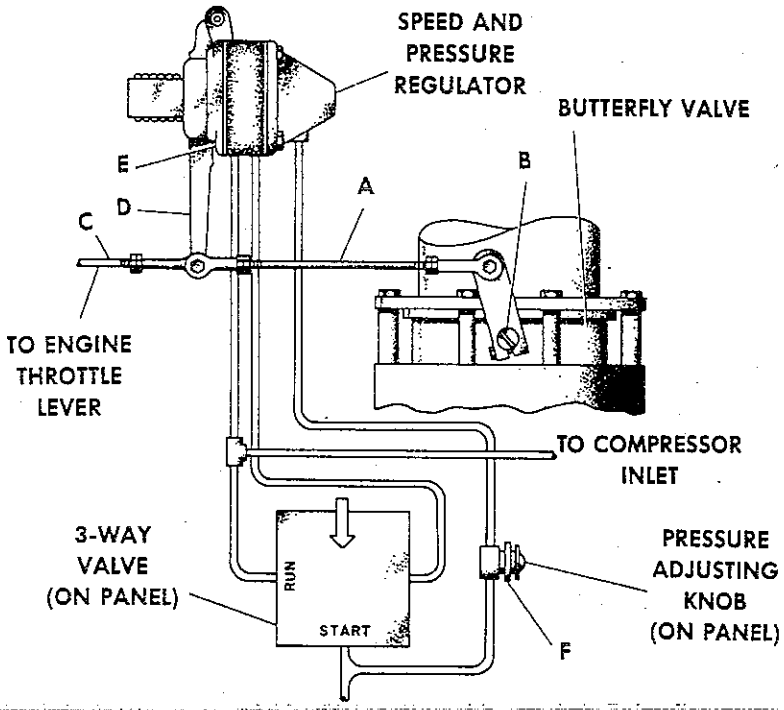
TROUBLE SHOOTING		
AREA	TROUBLE	CAUSE
Regulation System	Air Discharge Capacity Too Low	Improperly Set Butterfly Valve
	Butterfly Valve Sticking	Improperly Set Butterfly Valve
	Unable to Obtain Correct Engine Speed	Plugged Regulator Bleed Orifice
		Leaking Regulator Metering Pin Seat
	Unit Will Not Unload	Ruptured Regulator Diaphragm
	Oil Consumption Too High	Operating Pressure Too Low
	Excessive Carryover of Oil into Air Discharge	Operating Pressure Too Low
	Compressor Overheats	Operating Pressure Too High
		Operating Pressure Too Low
	Safety Valve Pops Off	Operating Pressure Too High
		Ruptured Regulator Diaphragm
		Worn Butterfly Valve Shaft Bushings
Maintenance Practice	Air Discharge Capacity Too Low	Dirty Intake Air Cleaner
	Unable to Obtain Correct Engine Speed	Engine in Poor Operating Condition
	Air and Oil Lines Leaking	Vibrating Air and Oil Lines
		O.E.M. Air and Oil Lines Not Used
	Oil Blows Back into Air Cleaner	Debris in Blowdown Valve
	Compressor Overheats	Dirty or Clogged Oil Cooler
		Low Oil Level
		Loose Fan Belt(s)
	Operation of Blowdown Valve Erratic	Debris in Blowdown Valve
	Wheel Bearings Worn	Inadequate Wheel Bearing Lube

TROUBLE SHOOTING

AREA	TROUBLE	CAUSE
Mechanical Adjustments	Air Discharge Capacity Too Low	Oversize Scavenger Orifice
		Excessive Discharge End Clearance
	Unable to Obtain Correct Engine Speed	Regulator Out of Adjustment
	Unit Will Not Unload	Regulator Out of Adjustment
	Oil Seal Leaks	Improperly Installed Oil Seal
		Scoured or Rough Rotor Shaft
	Oil Blows Back into Air Cleaner	Restriction Missing on Blowdown Valve
	Compressor Overheats	Faulty Temperature Shutdown Switch
		Incorrect Piping
	Safety Valve Pops Off	Regulator Out of Adjustment
	Unit Prematurely Shuts Down	Faulty Temperature Shutdown Switch
		Defective Wiring
	Excessive Vibration	Loose Fan Hub
		Bent or Broken Fan Blades
		Broken Compressor or Engine Mount

SECTION 5

SPEED AND PRESSURE REGULATOR ADJUSTING INSTRUCTIONS



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ADJUSTING INSTRUCTIONS

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

1. With unit stopped adjust length of butterfly valve link rod (A) so that line scribed on butterfly valve shaft (B) is 60° above the horizontal. Adjust length of engine throttle link rod (C) so that lever (D) is firmly against stop (E).

2. Start unit. Adjust service valve and adjusting knob on instrument panel regulator (F) so that lever (D) is firmly against stop (E) and discharge pressure gage shows 150 psi (10.55 kgf per cm^2) for DXL 1100H; 125 psi (8.79 kgf per cm^2) for DXL 1200P; and 100 psi (7.03 kgf per cm^2) for DXL 1400. Adjust length of engine throttle link rod (C) to hold engine speed of 2100 RPM with discharge pressure held at 150 psi (10.55 kgf per cm^2).

3. Back off adjusting knob on instrument panel regulator (F) so that lever (D) just starts to move away from stop (E) with pressure held at 150 psi (10.55 kgf per cm^2).

4. Close service valve completely. Back off engine slow speed stop screw to ensure that butterfly valve is completely closed. Adjust length of butterfly valve link rod (A) so that engine idles at 1000 RPM.

5. To select any pressure between 70 psi (4.92 kgf per cm^2) and the unit's rated operating pressure (*) change adjustment of pressure adjusting knob on instrument panel regulator (F) to obtain the desired discharge pressure at full speed. Lock adjusting knob.

(*) Refer to the General Data page.

SECTION 6

MAINTENANCE

PREVENTIVE MAINTENANCE

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 for specific requirements on preventive maintenance for the diesel engine.

SCHEDULED PREVENTIVE MAINTENANCE

The following attendance schedule is based on normal operation of the unit. In the event unusual environmental operating conditions exist, the schedule should be adjusted. The unit is also provided with a brief attendance schedule in the form of a decal on the inside of one of the doors.

Warning

Before inspecting or servicing the unit always be sure to disconnect the battery cables.

RECEIVER-SEPARATOR SYSTEM

Drain the condensate from the receiver-separator system daily. This can be done by opening the drain valve, located on the bottom of the oil storage reservoir (primary oil separator tank), slightly to remove any condensation that may have accumulated. Close the valve when any lubricating oil appears.

FUEL TANKS

The fuel tanks on the unit should be filled daily or every eight hours if necessary. However, in order to prevent condensation from forming in the fuel tanks, they should be filled immediately after the unit has been operated, for example, at the end of each working day. Using clean fuel in the fuel tanks is vitally important and every precaution should be taken to insure that only clean fuel is either poured or pumped into the fuel tanks.

When filling the fuel tanks on the unit, by methods other than a pump and a hose, use a **nonmetallic** funnel which is kept for this purpose only. Make sure the funnel is wiped clean before using.

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

AIR CLEANERS

Inspect the air cleaner service indicators daily. Never guess about restrictions in the air cleaners, always know what condition your air cleaners are in with the assistance of the service indicators. If they are not working properly, or are missing, replace them. Maximum compressor and engine protection against the

ravages of dust is possible only if the air cleaners are serviced at regular intervals or whenever the service indicator shows red at full speed. Visually inspect the position of the flag in both of the air cleaner restriction indicators. Normally, this flag shows green. If the red flag is locked in the up position, it is an indication that proper servicing or replacement of the filter element in either the compressor or engine air cleaners is necessary. In addition the air cleaners should be inspected periodically to maintain maximum protection to the compressor and engine and to obtain maximum service life. Make sure that all inlet accessories are free from obstructions. Make sure the air cleaner mounting bolts and clamps are tight and that the air cleaner is mounted securely. Check the air cleaner for dents or damage to the cleaner which could mean a leak. Inspect the air transfer ducting to the air cleaners and from the air cleaners to the compressor and the engine. Make sure that all clamps are tight, that all flange joints are tight and that there are no leaks in the ducting.

To service an air cleaner, first remove and empty the dust cup. Dirt should not be allowed to build up closer than one inch (25.4 mm) from the baffle. If the restriction indicates that element servicing is required, loosen the wing nut and remove the primary element. After the primary and the safety elements have been removed, wipe the inside of the air cleaner housing with a clean, damp cloth. If this surface is not cleaned, the gasket on the new elements may sit on top of some of this dirt and create potential leaks. If dirt on the inside of the air cleaner is left on the clean side of the element gasket it could find its way into the compressor or the engine.

In the event the primary element must be re-used immediately, maintenance of the element should be performed as follows: Direct compressed air through the primary 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. To prevent damage to the element, never exceed a maximum air pressure of 100 psi (7.03 kgf per cm^2).

Compressed air cleaning is recommended whenever the primary element must be re-used immediately because a washed element must be dried before re-using.

In the event a primary element is contaminated with dry dirt, oil or greasy dirt deposits, maintenance of the element should be performed as follows:

1. If only mild cleaning is required, mix a sufficient amount of warm water and household detergent to allow the primary element to be fully submerged; then place the element in the cleaning solution and allow to soak for five minutes. Agitate the element thoroughly in the cleaning solution after the soaking period. Remove the element from the cleaning solution, drain, and then flush using a gentle stream of clean water.

2. If stronger cleaning is required, wash the element in a thoroughly mixed cleaning solution consisting of four tablespoons of household detergent and one-half teaspoon of trisodium phosphate to each gallon of lukewarm water. After soaking the element in the cleaning solution for not less than five minutes, agitate the element in the solution to make sure it is thoroughly cleaned.

3. Discard the dirty solution and rewash the element in a newly mixed bath of cleaning solution. After the element has been thoroughly cleaned, flush the element with clear water, using a gentle stream and being careful not to point the stream directly at the element.

4. Inspect the washed element for any damage by placing a bright light inside the element and rotating the element slowly. Keep in mind the slightest rupture requires replacement of the element.

5. Allow the element to air-dry or use a stream of warm flowing air not exceeding a maximum temperature of 160°F (71°C). Do not use compressed air or the heat of light bulbs to dry the element.

Note

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

Caution

The safety element is not intended to be cleaned. For maximum protection and air cleaner service life, replace the safety element with a new safety element every third primary element change.

Before installing new elements, always inspect the elements and their gaskets for shipping or storage damage. Carefully install the elements and their attaching wing nut. Reinstall the dust cup, making sure it seals 360 degrees around the air cleaner body.

Reset the restriction indicator to green. This may be done by pressing down on the indicator's flexible top.

PNEUMATIC TIRES

Compressors for portable operation are designed to do a special job and are equipped with pneumatic tires that are designed for such service. The pneumatic tires should be checked for proper inflation each week or every 50 hours of operation. The correct cold inflation pressure for the tires used on these units is 85 psi (5.98 kgf per cm^2) front and 75 psi (5.27 kgf per cm^2) rear.

REGULATOR LINKAGE

The engine speed and pressure regulator linkage should not require lubrication more often than each week. Apply a small amount of oil, the same grade as the lubricating oil used in the engine crankcase, to the rod end swivels on the regulator to governor linkages. At the same time apply a few drops of the same grade oil to the regulator lever shafts on the regulator.

ENGINE RADIATOR

The diesel engine cooling system functions not only to prevent the high combustion chamber temperatures from damaging the engine but, at the same time, must maintain the operating temperatures within safe limits. It is extremely important to maintain efficiency in the engine cooling system as the engine temperatures must be brought up to and maintained within a satisfactory range for efficient operation but must also be kept from overheating in order to prevent damage to the engine moving parts.

To control the engine operating temperature range, the cooling system is designed so that the coolant is allowed to circulate only within the engine itself until normal operating temperatures are reached. At this point bypass-type thermostats open to allow all of the coolant to circulate through the radiator as

well as the engine. The radiator, which consists of a core section through which the coolant is circulated, is designed to provide an extended surface through which the heat of the coolant can be dissipated. It is, therefore, extremely important that this core section be kept clean on the inside and free from dirt on the outside so that maximum heat transfer can take place.

Blowing compressed air which contains a non-flammable safety solvent between the cooling fins of the radiator in a direction opposite to that of the fan-circulated air should serve to keep the exterior cooling surfaces of the radiator section free of dirt and other foreign particles. This cleaning operation should be performed each month.

The use of a permanent type of antifreeze is recommended for both summer and winter operations. When purchasing antifreeze, check to be sure that it contains rust inhibitors. If the use of water as the coolant medium cannot be avoided, add an approved nonchromate rust inhibitor (other than soluble oil) to help reduce the likelihood of rust formation when water is used.

Caution

If antifreeze is not used as the coolant, failure to drain the engine may cause serious damage during freezing weather.

Sludge and rust, as well as scale, which form when the use of hard water only as a coolant cannot be avoided, create deposits in the cooling system. These deposits can prevent normal heat transfer and in time can render the cooling system ineffective to properly maintain normal operating temperatures. The appearance of rust in a coolant system is a warning that the corrosion inhibitor has lost its effectiveness and that the system requires cleaning and flushing. Use a dependable cleaning compound and follow the specific procedure recommended by the supplier. This is of prime importance because different cleaners vary in concentration and chemical composition.

Whenever a cooling system is badly clogged, corrective cleaning by reverse flow flushing will most effectively remove the heavy deposits of sludge, rust and scale. The reverse flow flushing should be performed immediately after draining the cleaning solution and it is advisable to flush the radiator first, allowing the engine to cool as much as possible.

To reverse flush the radiator, first disconnect the engine-to-radiator inlet hoses. Seal off one of the inlet connections and to the other attach a section of hose long enough to allow the coolant and sediment to drain off without spilling on the engine. Disconnect the radiator outlet hose at the water pump and attach the flushing gun to this hose. First making sure that water will flow through the radiator, proceed to apply water and air pressure in short bursts. This pulsating flow will loosen sediment faster than a steady flow.

Caution

The use of excessive water or air pressure may damage the radiator core section when using a flushing gun, so be certain that water will flow through the core before attempting reverse flushing.

To reverse flush the engine cooling system first remove the thermostats. Attach the flushing gun to one of the radiator inlet hoses, sealing off the other connection; then, reverse this procedure by attaching the flushing gun to the other inlet hose, sealing off the opposite connection. Fill the engine cooling system

with water before applying any air pressure. Proceed to apply both water and air pressure in a pulsating manner until the system flows clear at the water pump inlet connection.

Before placing the unit back into service, make sure that all hose connections are tight and that all radiator draining points are tight, including all of the engine drain cocks, and fill the radiator with either clean, soft water or, if the unit will be operated in below freezing temperatures, with a permanent-type anti-freeze solution. When using water alone be sure to add a reputable brand of rust inhibitor to prevent internal corrosion.

COMPRESSOR OIL COOLER

The compressor lubricating and cooling oil is cooled by means of the fin and tube-type oil cooler, located immediately in front of the engine radiator. The oil cooler is so arranged that the lubricating and cooling oil, flowing internally through the core section, is cooled by the air stream to the heat exchanger or 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, carrying, if possible, a non-flammable 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 deposits 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 remove the oil cooler and clean it by using a cleaning compound. Use only a dependable cleaning compound and follow the procedure recommended by the manufacturer. This is of prime importance because different cleaners vary in concentration and chemical composition. After cleaning, the oil cooler must be flushed before being put back on the unit.

HOSES

Every 500 hours of operation it is necessary to inspect all of the intake lines to and from the air cleaner, the engine cooling system hoses and all of the flexible hoses used for air lines, oil lines and fuel lines.

The design of these units requires an elastically mounted engine and compressor combined with rigidly mounted air cleaners, so flexible links between them are an absolute necessity. 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 ambient, dust-laden air is permitted to enter the engine's combustion chamber on the compressor intake practically unfiltered.

All components of the engine cooling system, in addition to radiator maintenance should be checked periodically to keep the engine operating at peak efficiency. The cooling system hoses should be checked for wear or deterioration and replaced if necessary. At the same time the thermostats as well as the radiator pressure cap should be checked and replaced if necessary. Whenever new hoses are installed, be sure the connecting parts are properly aligned and that the hose is in its proper position before tightening the clamps. All external leaks should be corrected as soon as they are detected.

The flexible hoses used in the fuel, oil and air lines on these units are primarily used for their ability to accomodate relative movement between components. Secondarily, they reduce vibration problems found with fixed piping and they permit much more flexibility in routing. Because these hose lines are flexible 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 or that new clamps be added if required to prevent further wear. It is also important the operator does not use the hose as convenient hand holds or steps. Such use can cause early cover wear and hose failure.

COMPRESSOR OIL FILTER

The compressor lubricating and cooling oil system is equipped with an in-line, canister-type oil filter with an integral element condition indicator and a bypass valve. With a clean, new filter element all of the oil flows through the full element area from the inside/outside. As the element becomes contaminated with dirt, the element is compressed within the filter canister and the bypass valve cracks open, thus providing proportional filtration. Additional contamination further compresses the element and the bypass valve fully opens. This provides a maximum flow of the compressor lubricating and cooling oil at low pressure drop, thus precluding any possible damage from loss of oil. The design of the filter prevents washing off of any dirt on the element during bypassing.

With the lubricating and cooling oil at operating temperature and the system at normal operating flow, check the window in the visual service indicator to determine the position of the indicator. Service the oil filter when the indicator is in the red "change filter" half of the window. Refer to Figure 6-1.

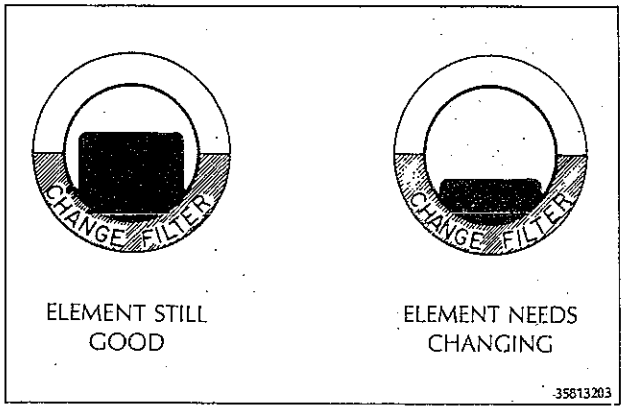


Figure 6-1. Oil Filter Service Indicator

Caution

The oil filter must be serviced every 500 hours of operation even if the position of the indicator has not shown a need for an element change. On new or overhauled units replace the element the first 50 and 150 hours of operation; thereafter service the oil filter whenever the indicator shows a need for an element change or every 500 hours of operation, whichever comes first.

To service the oil filter 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 system. Loosen the center bolt at the base of the filter canister, then remove the canister, the element and the plastic indicator as a complete assembly. Remove the element and the indicator assembly from the canister, then clean the canister thoroughly.

Caution

If there is any indication of formation of varnishes, shellacs or lacquers on

the oil filter element or in the canister, it is a warning the compressor lubricating and cooling oil has improper characteristics and should be immediately changed. Refer to Section 3, Lubrication.

Remove the indicator from the element by twisting slightly with a side loading force. Do not try to pull the indicator straight out or do not attempt to pry it loose. However, if the indicator comes out too easily the snap-in lugs are probably worn and the indicator should be replaced. Discard the old element. Making sure the part number on the new element is the same as that on the discarded element, snap the indicator into place on the new element. Push the center bolt back through the canister far enough to inspect the gasket washer for any nicks or deterioration. Replace if necessary. Place a new indicator seal on the bypass indicator then place the element and indicator assembly into the canister and bolt assembly. Make sure the center bolt passes through the indicator centering hole. Using a new housing O ring, install the canister/element assembly back into the filter head, making sure the indicator ears appear in the window. Tighten the center bolt snug to tight using an open end wrench. Start the unit and check the filter for any leaks. If leakage occurs, excess tightening of the center bolt will not correct the situation. Either the gasket washer on the center bolt or the housing O ring has been damaged and must be replaced.

Note

It is normal to see oil flow in the indicator window between the glass window and the indicator ear. However, accumulation of oil between the glass window and the plastic outer lens indicates a leak past the O ring seal. If vision of the indicator is thus impaired or external leakage occurs it should be repaired.

Repair the window assembly by first removing the oil filter from the unit. Remove the plastic lens using a knife or small screw driver. Remove the snap ring in front of the window glass, then pry outward on the glass with a screw driver inserted inside of indicator ring slot on the filter head. Remove the O ring from the groove on the outside diameter of the window seal. Replace the O ring and any other parts as required.

SAFETY SHUTDOWN SWITCHES

The operation of the safety shutdown switches should be checked every three months, or whenever it appears they are not operating properly. The three switches involved in this protective shutdown system are the air discharge temperature switch, the engine high coolant temperature switch and the engine oil pressure switch. 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 protects the engine from damage due to oil starvation.

Once each month check the entire safety shutdown system by temporarily removing the wire from the engine oil pressure switch. The unit should shut down immediately.

Once a year, the two temperature actuated switches should be tested by removing them from the unit and placing them in a bath of heated oil. The high engine temperature switch will require a temperature of approximately 210°F (99°C), while the high air discharge temperature switch will require approximately 248°F (120°C) to actuate. Test the switch's operation by connecting an ohmmeter between the case and the wire terminal. The ohmmeter should show zero ohms. When the switch is placed in the heated oil bath and its contacts open, the ohmmeter should indicate infinite ohms. Tap the switch lightly dur-

ing the checking operation. Replace any defective switch before continuing to operate the unit. Test the engine oil pressure switch 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 actuate at 20 psi (1.4 kgf per cm^2) and show continuity through the contacts. As the pressure is slowly decreased to 8 psi (0.56 kgf per cm^2) the contacts should open and the ohmmeter should show a lack of continuity (infinite ohms) through the contacts. Replace a defective switch before continuing to operate the unit.

AIR RECEIVER-OIL SEPARATOR

The air receiver-oil separator, usually referred to as the receiver-separator, is basically comprised of a special welded steel tank built for 150 psi (10.55 kgf per cm^2) working pressure. The receiver-separator is designed to serve as an air receiver, a lubricating and cooling oil storage reservoir, and a primary oil separator. The lower portion of the receiver-separator serves as the storage reservoir for the compressor lubricating and cooling oil. Primary separation of the compressor lubricating and cooling oil from the compressed air takes place through a change in velocity and direction as the compressed air enters the receiver-separator, dropping most of the oil out of the air and into the storage reservoir.

Located entirely within the receiver-separator, at its air delivery end, is a lubricating and cooling oil secondary separator.

Once a year, or after 2000 hours of operation, the receiver-separator should be completely drained of all lubricating and cooling oil and the secondary separator element removed for inspection.

Removal of the receiver-separator cover and the separator element and shell provides a large opening through which inspection and cleaning of the air receiver tank can be performed. A filter screen, attached internally to the bottom outlet connection of the tank, provides a means of trapping any solids which might be carried by the oil flow toward the oil cooler. The filter screen is removable so that cleaning of the screen may be performed.

Thoroughly clean the inside of the receiver-separator tank. This can be done by flooding the interior of the tank with several gallons of a non-flammable safety solvent with the aid of a force pump equipped with a suction strainer. After the interior of the receiver-separator tank has been cleaned, make sure it is thoroughly dried by blowing it out with clean, dry compressed air.

SECONDARY OIL SEPARATOR

The secondary oil separator contains a specially designed disposable element. This element separates and traps the finely divided oil droplets carried in the compressed air as it passes through on its way to final discharge. Change the element once a year.

Caution

When replacement of the oil separator element becomes necessary, be sure the new element is installed with the drain hole at the bottom as marked on the element.

When replacing the element make sure the lubricating and cooling oil system has been thoroughly flushed; the scavenger line, orifice and check valve have been thoroughly cleaned and the oil changed.

SCAVENGER LINE

In the compressor lubricating and cooling

oil system, primary separation of the oil from the compressed air takes place in the oil separator tank (receiver-separator). As the compressed air enters the tank, the change in velocity and direction drop out most of the oil from the air. Secondary separation of the oil takes place in the oil separator element, which is located entirely within this tank. Any oil accumulation in this separator element is continuously drained off by means of a scavenger line which returns the accumulated oil to the system.

The scavenger line originates at the receiver-separator tank cover and terminates at the compressor airend through an orifice. Once a year or every 1000 hours of operation (whichever comes first) remove this line and orifice. Make sure the orifice and line are not plugged and are thoroughly cleaned before replacing them.

RUNNING GEAR

The steering arm, the tie rods, the steering knuckles and the spring shackles are all equipped with grease fittings for lubrication of the running gear. It is recommended that the running gear be greased approximately every six months. Every six months, wheel bearings and axles should be inspected for contamination (i.e., from corrosion, scratches, metal particles). If the unit is exposed to prolonged operation in wet corrosive and dusty atmospheres, the frequency should be increased to every three months for inspection of the wheel bearings and axles. If, upon inspection, contamination is found, then the axles and bearings should be thoroughly cleaned and repacked immediately. Use a wheel bearing grease conforming to Specification MIL-G-10924 and suitable for all ambient temperatures. Moisture and metal chips are the first and second most prevalent causes of bearing failure.

Along with bearing adjustment, proper bearing lubrication is essential to the functioning and reliability of the axle. It is important to protect bearings from contaminants at all times whether in operation or during inspection or overhaul.

Work the grease into the bearing until the bearing is completely filled. The technique used here is to push a segment of the bottom (the wider end) of the bearing into the outer edge of the grease pile closest to the thumb. Keep doing this until the bearing interior is completely filled and the 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 drum.

Note

It is not important to pack an excessive amount of grease inside the hub or in the grease cap. Excessive grease in the hub or grease cap serves no purpose due to the fact that there is no way to get the grease to the bearing. The manufacturer's standard procedure is to pack the inner and outer bearing with grease and then to apply only a very small amount of grease into the grease cap. The hub itself is not packed with grease.

If bearing adjustment is required or the hub has been removed for any reason, the following procedure must be followed to insure a correct bearing adjustment of .001 to .012 end play.

(1) While rotating hub slowly to seat the bearings, tighten spindle nut to approximately 50 ft. lbs. (12" wrench or pliers with full hand force).

(2) Loosen nut slightly to remove preload torque. Do not rotate hub.

(3) Finger tighten nut until just snug and place cotter pin in the first nut castellation which lines up with cotter pin hole in spindle.

(4) Bend over cotter pin legs to secure nut and clear grease or oil cap.

(5) Nut should be free to move with only restraint being the cotter pin.

It is important to protect the wheel bearing bores from metallic chips. Make certain the wheel bearing cavities are clean and free of any contamination before reinstalling bearings and seals. Allowing contaminants to be present in the wheel bearing bores will lead to premature wheel bearing failure.

ENGINE

Refer to your Detroit Diesel Allison, Series 12V-71N Operator's and Maintenance Manual for their specific requirements on preventive maintenance for the diesel engine not found in this manual.

SECTION 7

PARTS LIST INTRODUCTION

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.

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 all of the options that are available. A series of illustrations shows 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 damaged threads by the use of wrong fasteners. In order to clarify the proper usage and for exact replacement parts, all fasteners have been identified by part number, size and description. This will enable a customer to order fasteners that may be available locally rather than factory replacement parts. 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.

HOW TO USE THIS ILLUSTRATED PARTS BREAKDOWN

a. Turn to the Index and find the Parts List Section.

b. Locate the proper illustration to find the section or system of the compressor in which the desired part is used.

c. Locate the desired part on the illustration by visual identification.

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:

a. Always specify the model number of the unit as shown on the general data decal attached to the unit.

b. 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 of the unit is also permanently stamped in the metal of the frame side rail.)

c. Always specify the part number of the 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.

PARTS ORDERS — TERMS AND CONDITIONS

Acceptance: Acceptance of this offer is expressly limited to the exact terms contained herein. If purchaser's order form is used for acceptance of this 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 Purchaser.

Warranty: The Company warrants that parts manufactured by it will be as specified and will be free from

SECTION 8

PARTS LIST

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.

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. THE ONLY EXCEPTION TO THE PREVIOUS STATEMENT IS THE EXTENDED WARRANTY AS IT APPLIES TO THE SPECIAL AIREND EXCHANGE PROGRAM.

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).

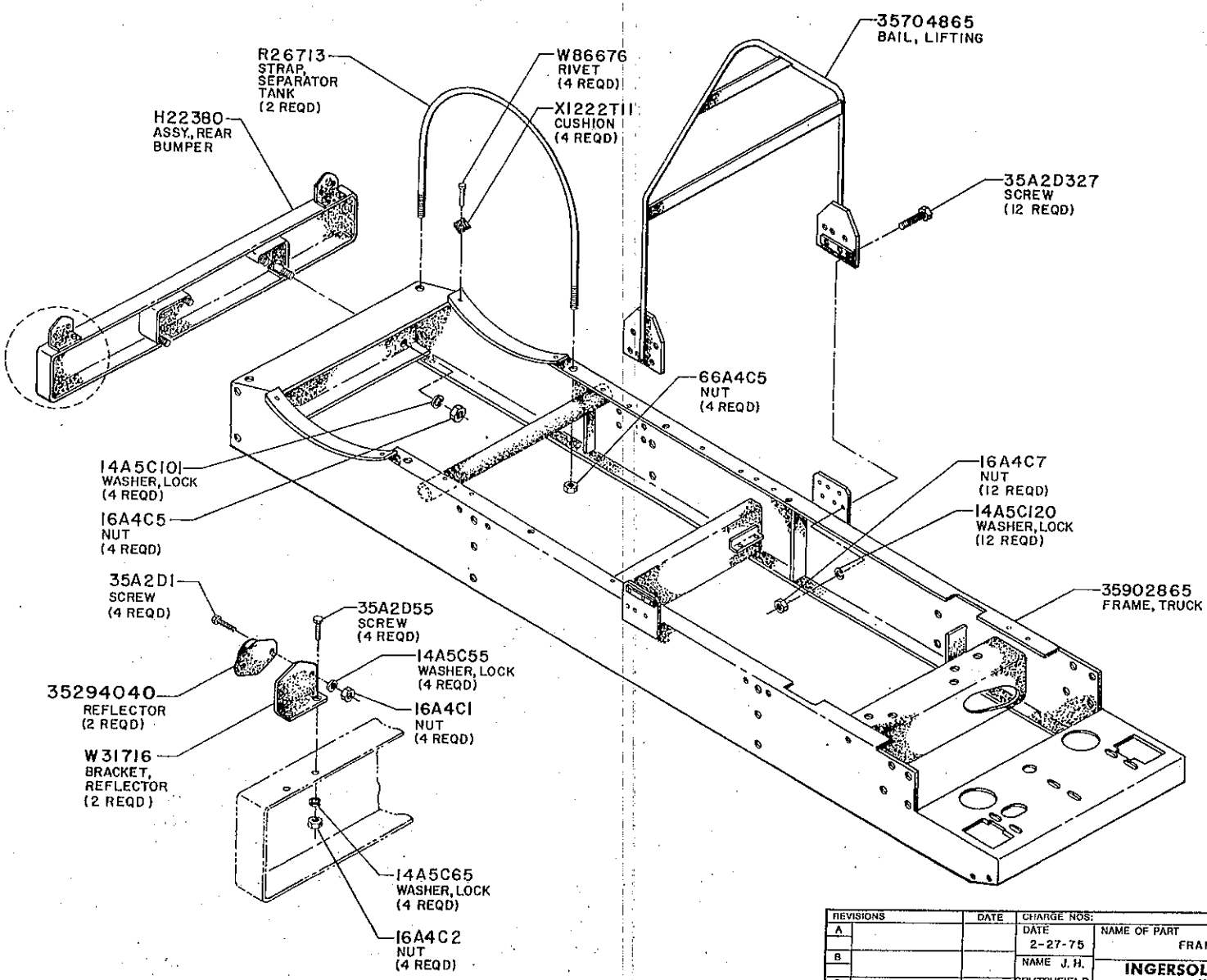
Category "B"
The airend must be between two and five years old and returned with two or more reusable major castings.

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.**



REVISIONS		DATE	CHARGE NOS:	
A			DATE 2-27-75	NAME OF PART: FRAME AND LIFTING BAIL
B			NAME J. H. CRUTCHFIELD	INGERSOLL-RAND COMPANY, MOCKSVILLE PLANT
C			E/C NO.	MODEL NO. DXL / DRAWING NO. 35801562
D				

INGERSOLL-RAND COMPANY
PORTABLE COMPRESSOR DIVISION

DESCRIPTION: RUNNING GEAR

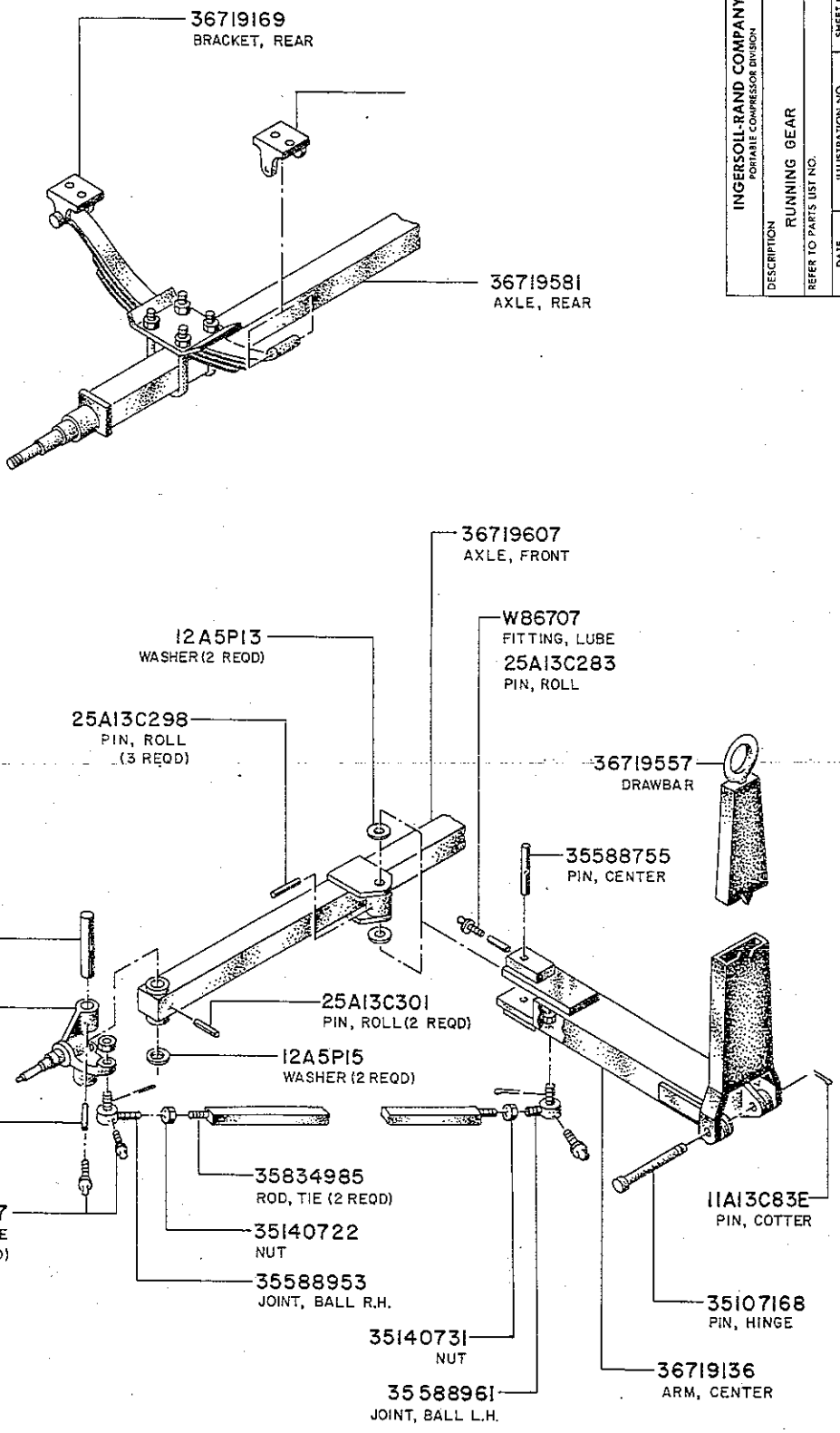
REFER TO PARTS LIST NO.

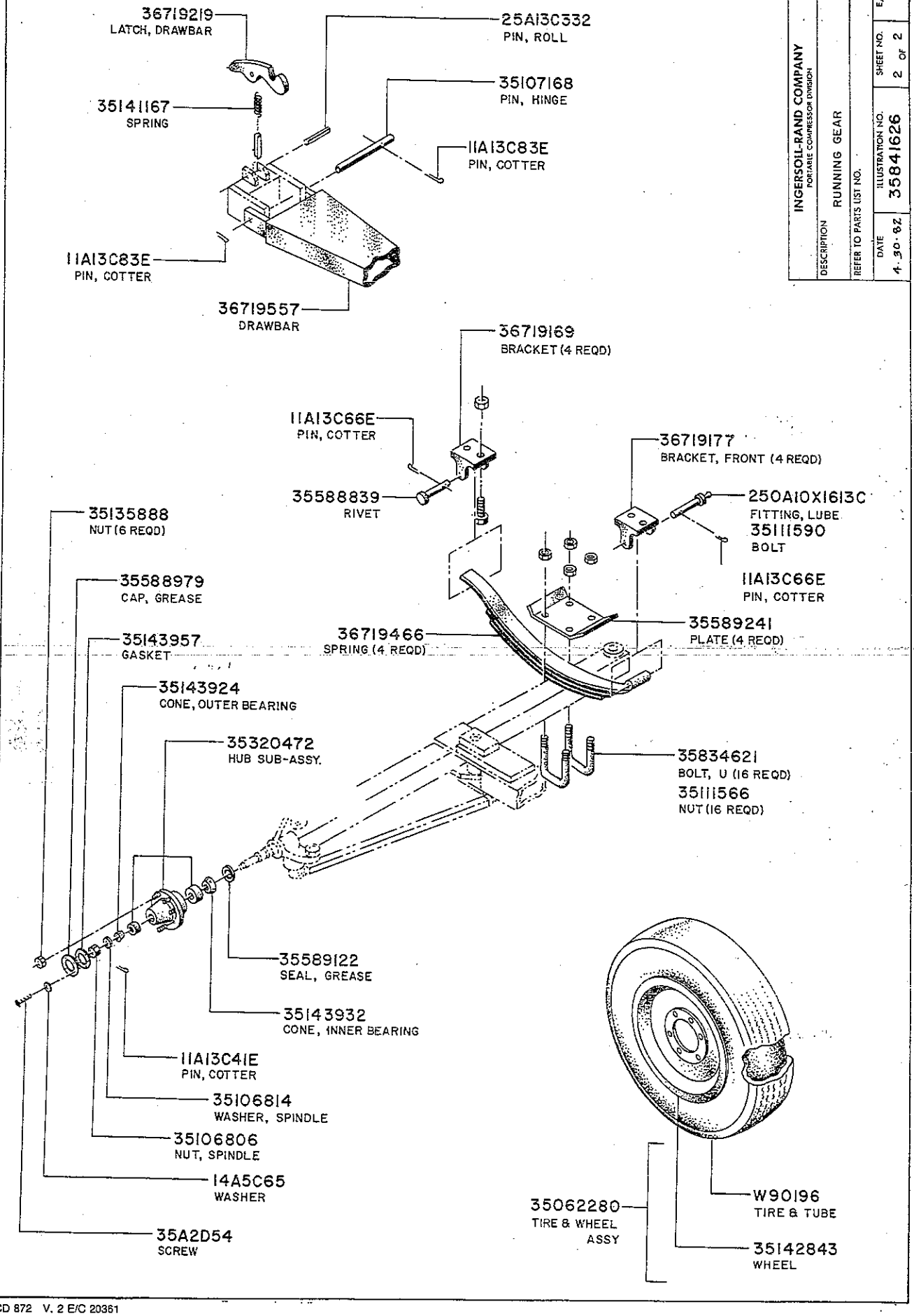
DATE: 9-11-80

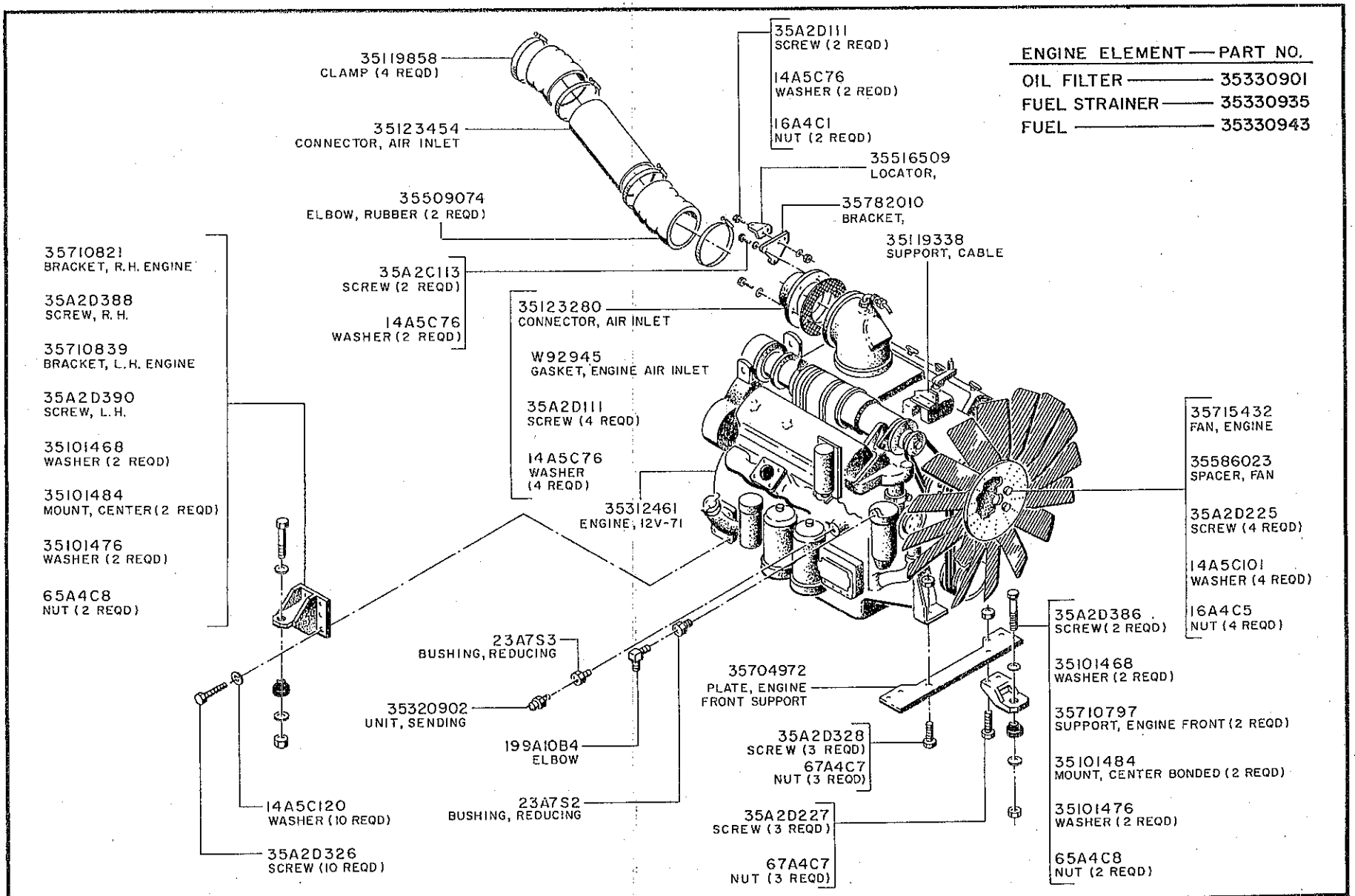
ILLUSTRATION NO.: 35841626

SHEET NO.: 1 OF 2

E/C




INGERSOLL-RAND COMPANY
PORTABLE COMPRESSOR DIVISION
DESCRIPTION RUNNING GEAR
REFER TO PARTS LIST NO.
DATE 4-30-82
ILLUSTRATION NO. 35841626
SHEET NO. 2 OF 2
E/C
36719219 LATCH, DRAWBAR
25A13C332 PIN, ROLL
35107168 PIN, HINGE
35141167 SPRING
11A13C83E PIN, COTTER
11A13C83E PIN, COTTER
36719557 DRAWBAR
36719169 BRACKET (4 REQD)
11A13C66E PIN, COTTER
35588839 RIVET
36719177 BRACKET, FRONT (4 REQD)
250A10X1613C FITTING, LUBE
35111590 BOLT
35135888 NUT (6 REQD)
11A13C66E PIN, COTTER
35588979 CAP, GREASE
35589241 PLATE (4 REQD)
36719466 SPRING (4 REQD)
35143957 GASKET
35143924 CONE, OUTER BEARING
35320472 HUB SUB-ASSY.
35834621 BOLT, U (16 REQD)
35111566 NUT (16 REQD)
35589122 SEAL, GREASE
35143932 CONE, INNER BEARING
11A13C41E PIN, COTTER
35106814 WASHER, SPINDLE
35106806 NUT, SPINDLE
14A5C65 WASHER
35A2D54 SCREW
35062280 TIRE & WHEEL ASSY
W90196 TIRE & TUBE
35142843 WHEEL

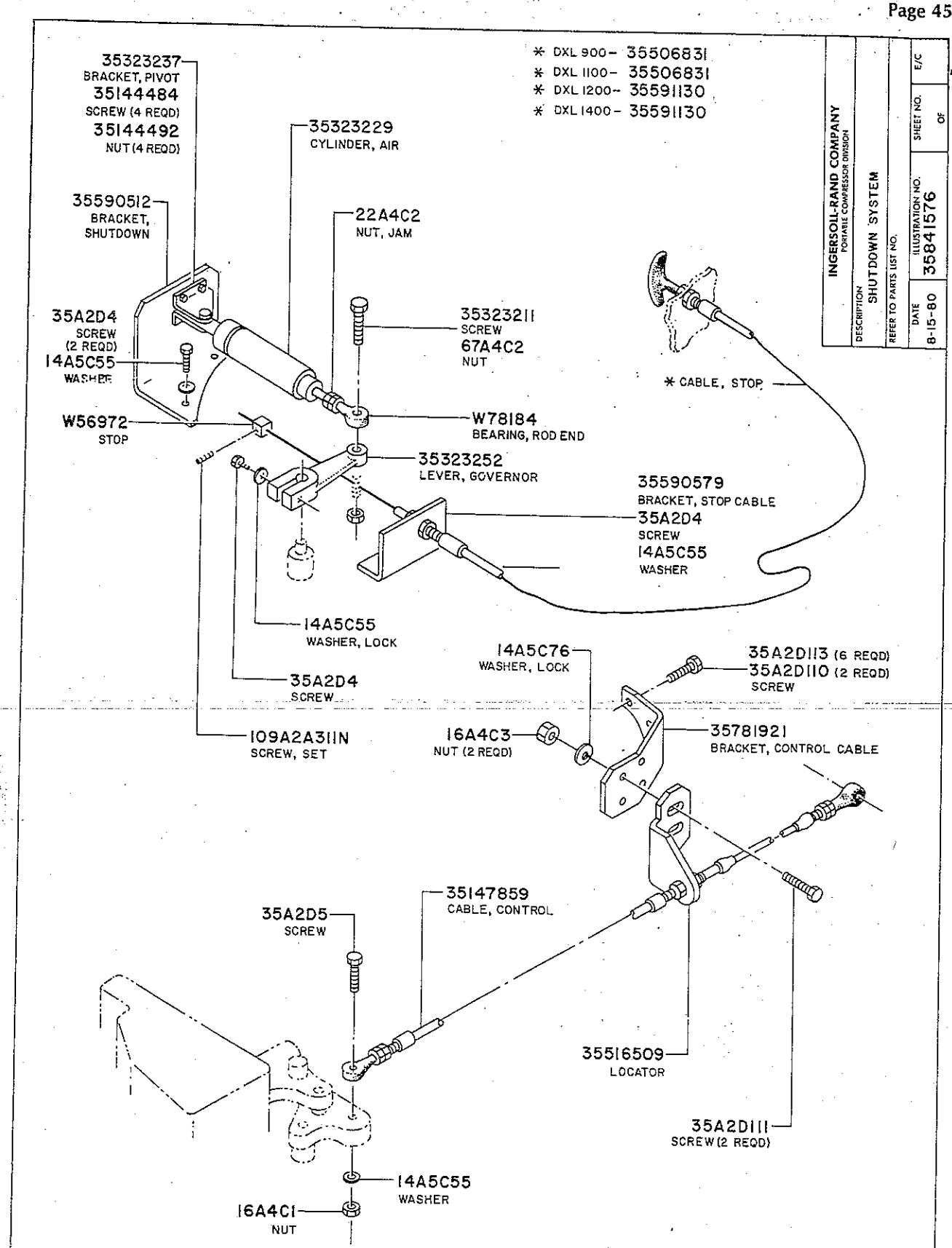


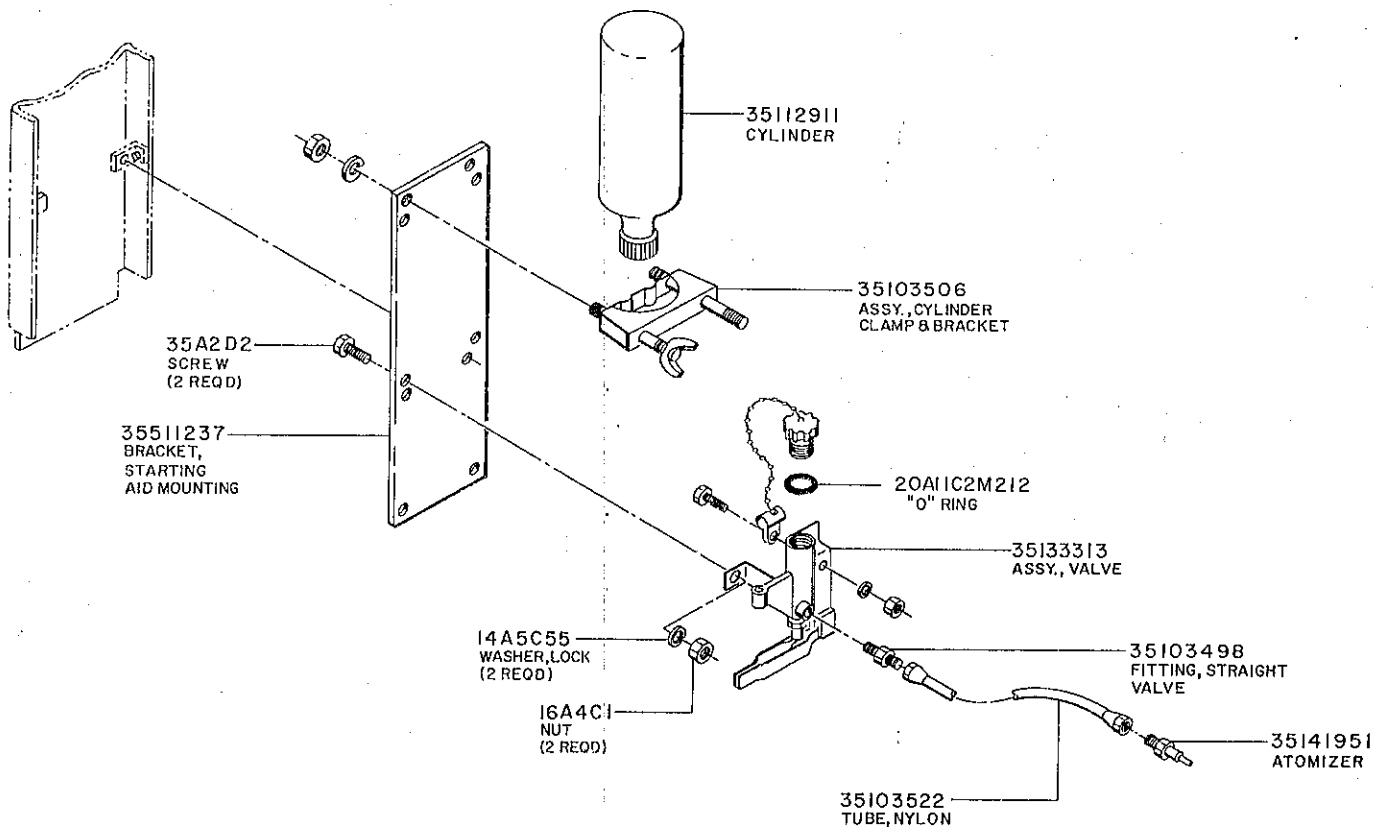
ENGINE ELEMENT — PART NO.

OIL FILTER	35330901
FUEL STRAINER	35330935
FUEL	35330943

REVISIONS		DATE	CHARGE NOS:	
A WAP	ADDED FILTER ELEMENTS	3-16-82	DATE 10-18-74	NAME OF PART ENGINE AND MOUNTING
B WAP	CHG. ENGINE ELEMENTS PER PAUL SCRUGGS REQUEST	11-10-82	NAME I. RILEY	INGERSOLL-RAND COMPANY MOCKSVILLE PLANT
C			E/C NO.	MODEL NO. DXL / DRAWING NO. 35796614
D				

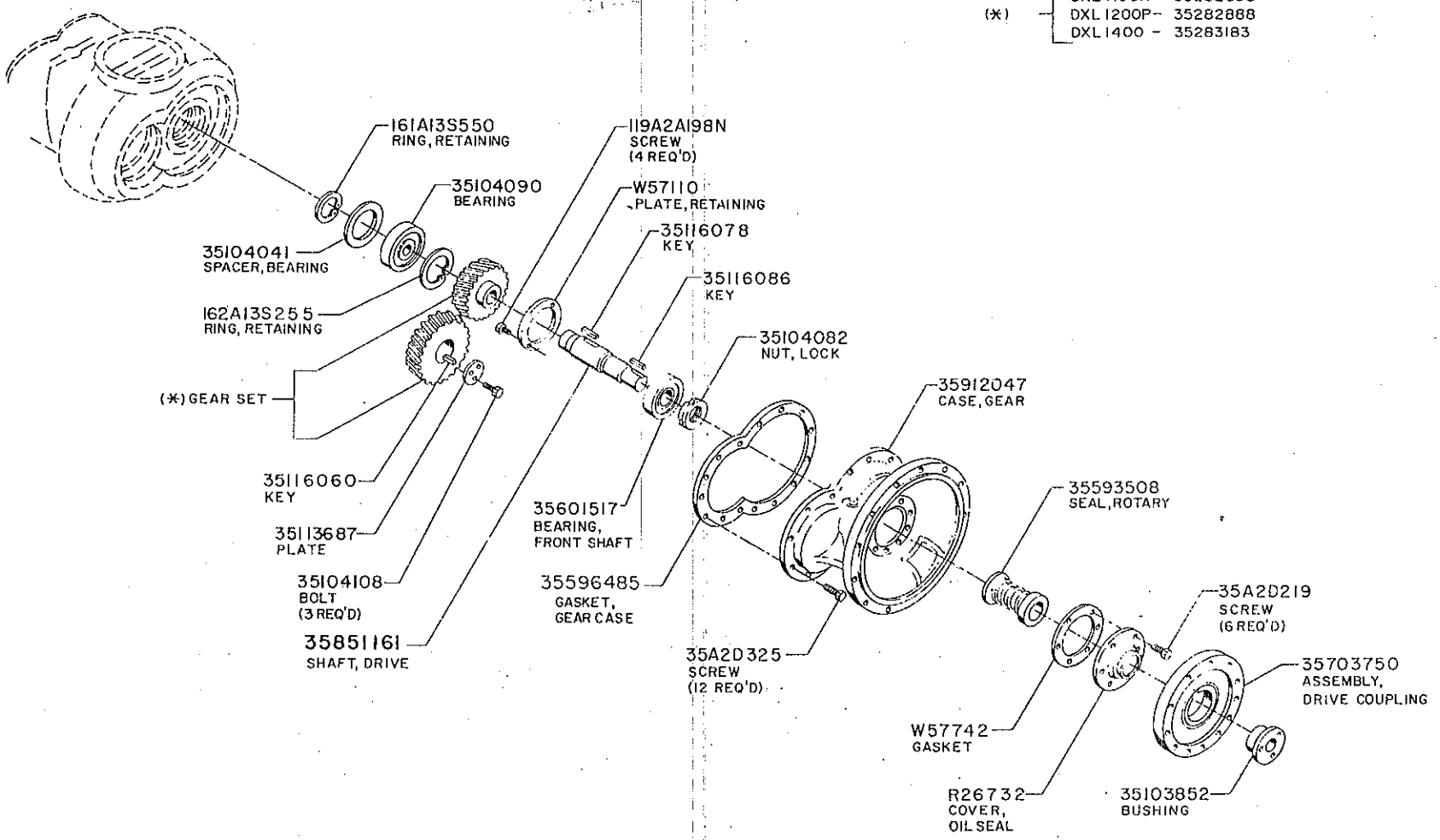
PCD 872 V3


* DXL 900- 3550683I
* DXL 1100- 3550683I
* DXL 1200- 35591130
* DXL 1400- 35591130
INGERSOLL-RAND COMPANY
PORTABLE COMPRESSOR DIVISION
DESCRIPTION
SHUTDOWN SYSTEM
REFER TO PARTS LIST NO.
DATE 8-15-80
ILLUSTRATION NO. 35841576
SHEET NO. OF
E/C
35323237
BRACKET, PIVOT
35144484
SCREW (4 REQD)
35144492
NUT (4 REQD)
35323229
CYLINDER, AIR
35590512
BRACKET, SHUTDOWN
22A4C2
NUT, JAM
35A2D4
SCREW (2 REQD)
14A5C55
WASHER
3532321I
SCREW
67A4C2
NUT
* CABLE, STOP
W56972
STOP
W78184
BEARING, ROD END
35323252
LEVER, GOVERNOR
35590579
BRACKET, STOP CABLE
35A2D4
SCREW
14A5C55
WASHER
14A5C55
WASHER, LOCK
35A2D4
SCREW
109A2A3IIN
SCREW, SET
14A5C76
WASHER, LOCK
35A2DII3 (6 REQD)
35A2DII0 (2 REQD)
SCREW
16A4C3
NUT (2 REQD)
35781921
BRACKET, CONTROL CABLE
35147859
CABLE, CONTROL
35A2D5
SCREW
35516509
LOCATOR
35A2DIII
SCREW (2 REQD)
14A5C55
WASHER
16A4CI
NUT



STARTING AID COMPLETE
PART NO. 35112887

REVISIONS		DATE	CHARGE NOS:	
A	REV. 8-15-	80	DATE 21 OCT 74	NAME OF PART STARTING AID KIT COMPLETE
B			NAME J. H. CRUTCHFIELD	INGERSOLL-RAND COMPANY MOCKSVILLE PLANT
C			E/C NO.	MODEL NO. DXL / DRAWING NO. 35797414
D				

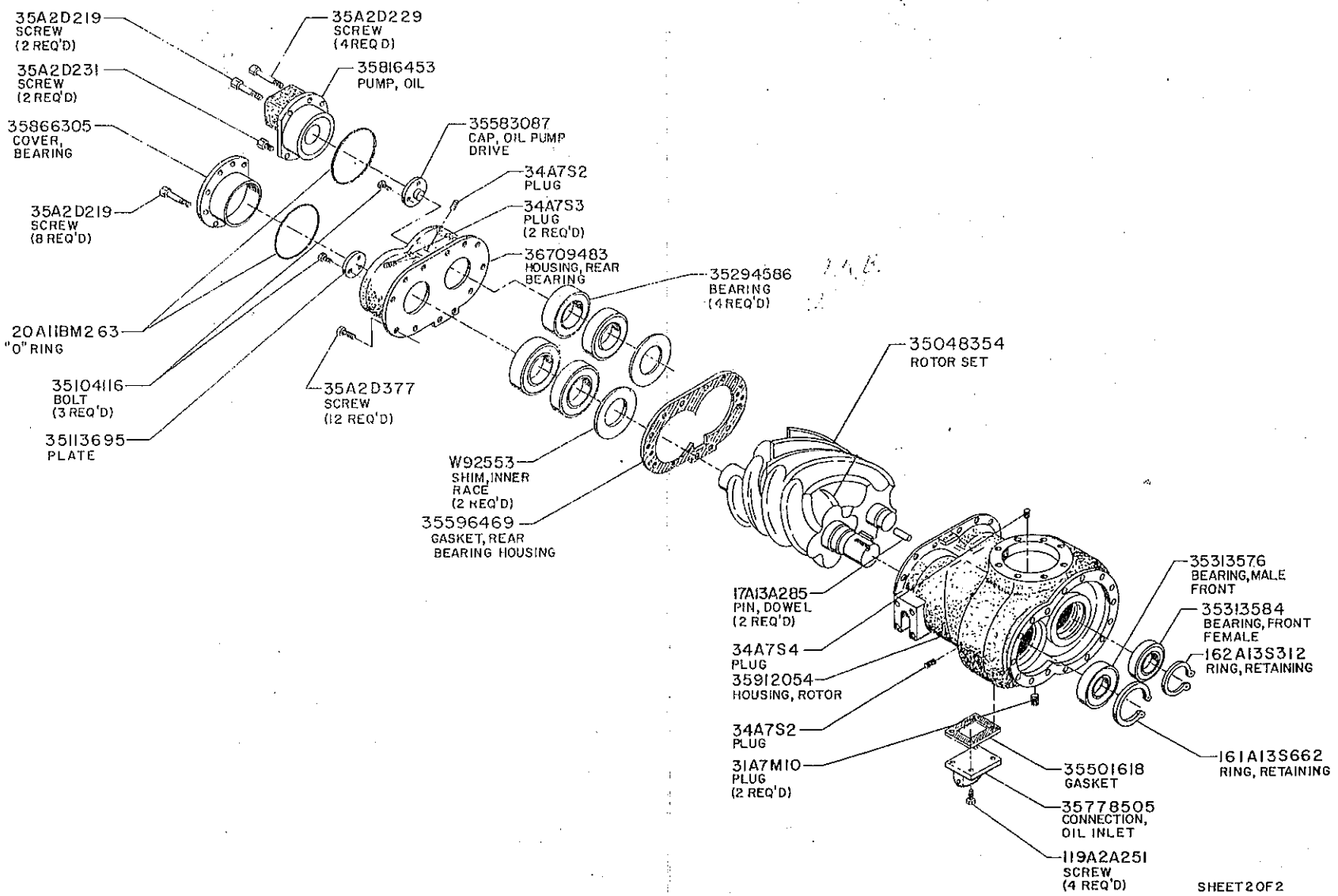


F WHP	SEAL 35513508 WAS W59381	11-11-85
E WAP	BEARING WAS W57085	11-3-82

SHEET 1 OF 2

REVISIONS		DATE
A EA	UPDATED	1-12-81
B SWC	REVISED GASKET P/N	12-14-81
C WAP	UPDATED GEAR SET NOS.	1-28-82
D WAP	DRIVE SHAFT NO. WAS 35701523	4-6-82 E/C 28814

CHARGE NOS.	
DATE 9-5-80	NAME OF PART AIR END
NAME J.H CRUTCHFIELD	INGERSOLL-RAND COMPANY MOCKSVILLE PLANT
E/C NO.	MODEL NO. DXL / DRAWING NO. 35794569



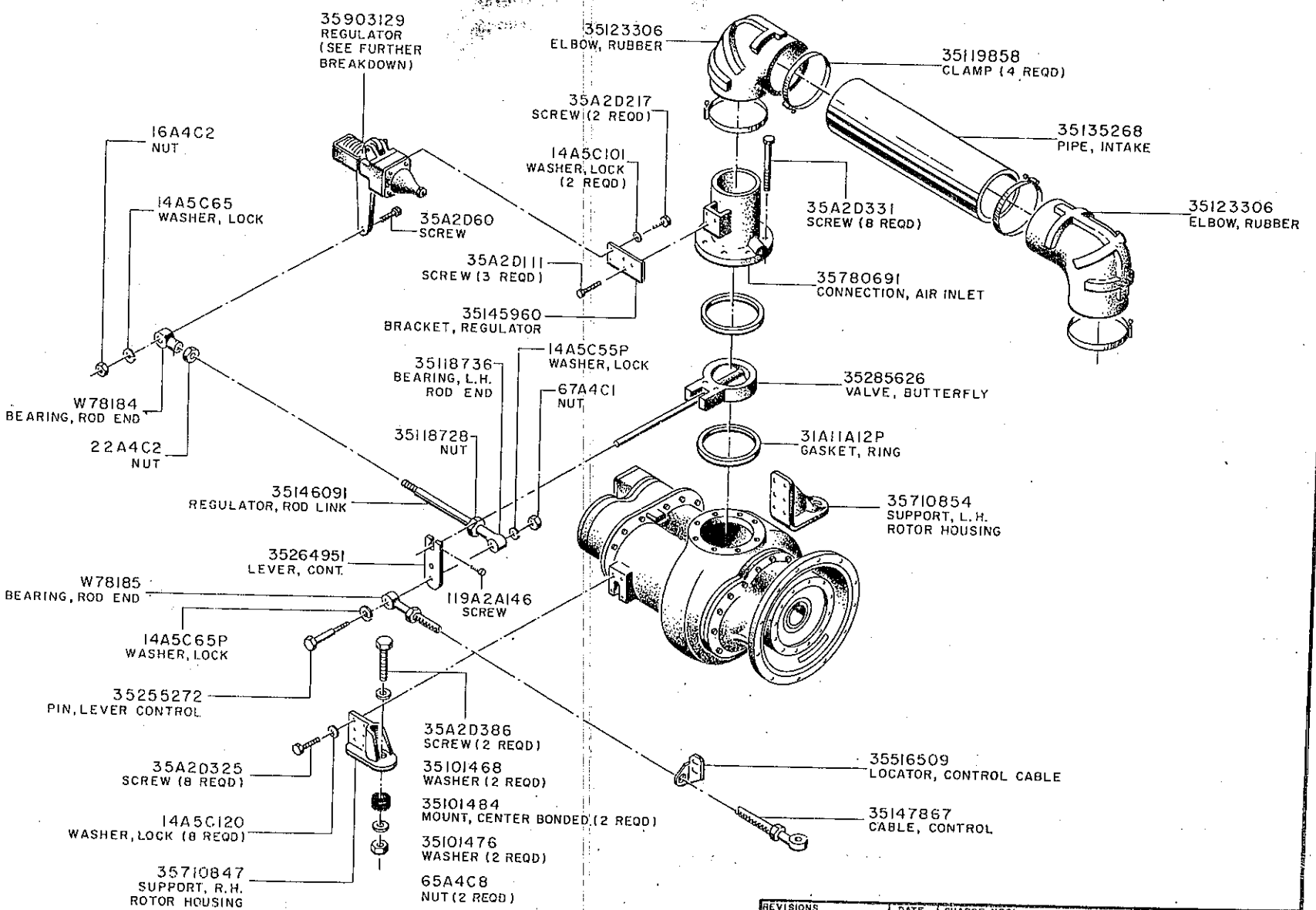
SHEET 2 OF 2

AIR END SUBASSEMBLY
PART NO. 35048362

REVISIONS		DATE
A	UPDATED	1-2-81
B	REVISED GASKET P/N	12-14-81
C		
D		

CHARGE NOS:

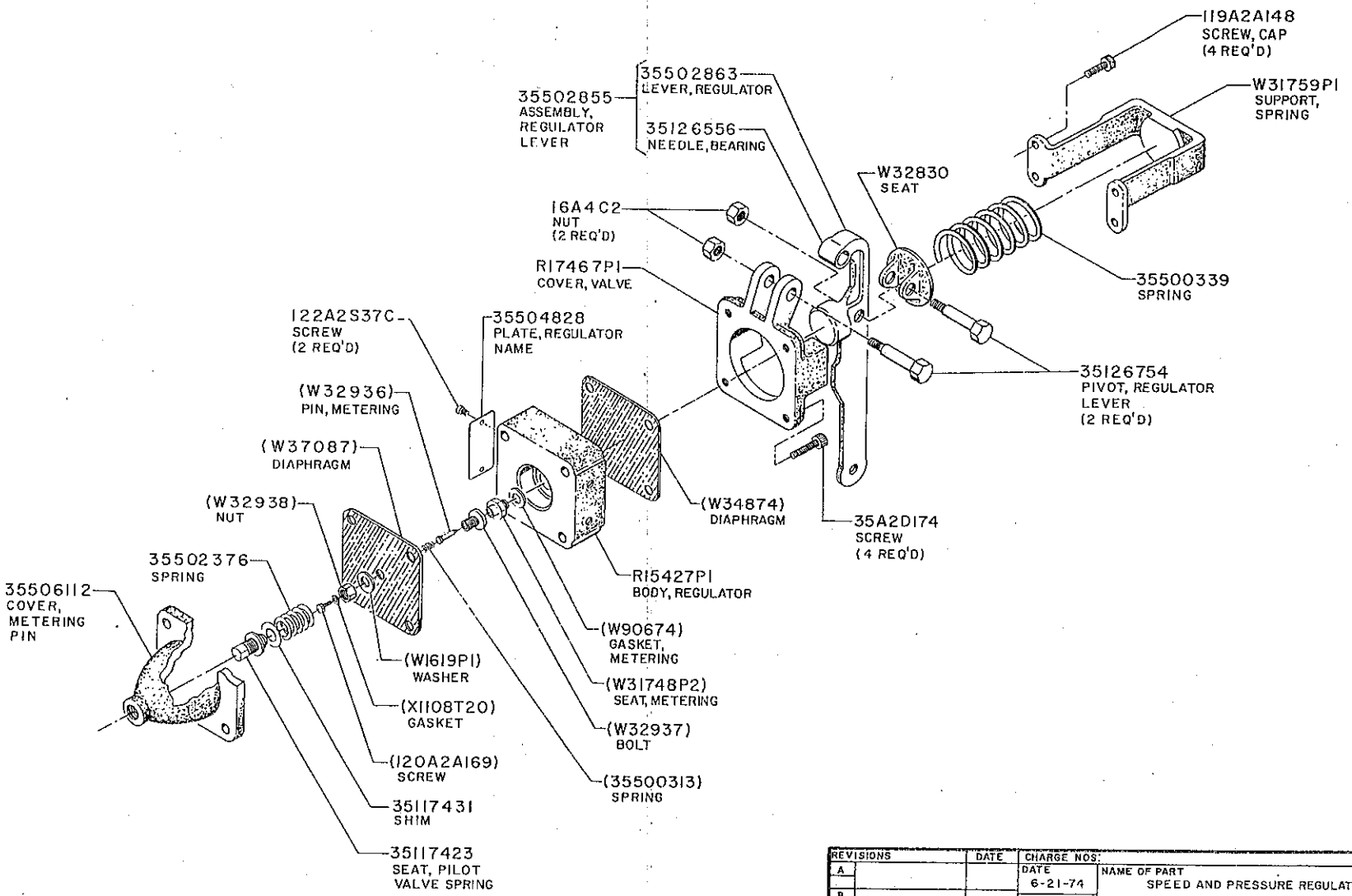
DATE 6-28-74	NAME OF PART AIR END
NAME J.H. CRUTCHFIELD	INGERSOLL-RAND COMPANY ROCKSVILLE PLANT
E/C NO.	MODEL NO. DXL / DRAWING NO. 35794569



REVISIONS	DATE	CHARGE NOS:	
A		DATE 10-4-74	NAME OF PART BUTTERFLY VALVE & REGULATOR LINKAGE
B		NAME T. RILEY	INGERSOLL-RAND COMPANY MOCKSVILLE PLANT
C		E/C NO.	MODEL NO. DXL / DRAWING NO. 35796267
D			

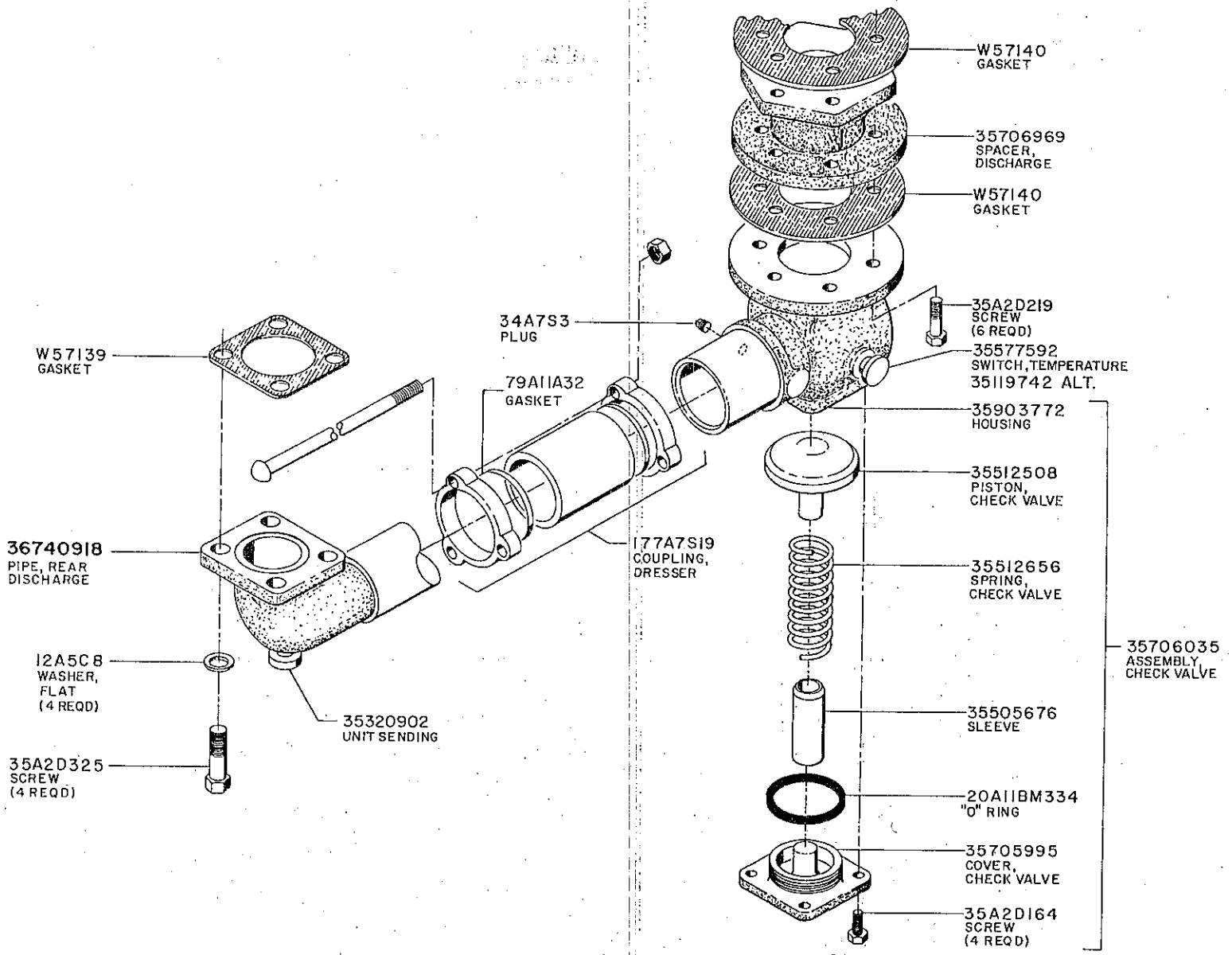
NOTES:

PART NOS. ENCLOSED IN PARENTHESES ARE INCLUDED IN REPAIR KIT PART NO. W52536.



SPEED AND PRESSURE REGULATOR
COMPLETE PART NO. 35903129

REVISIONS		DATE	CHARGE NOS:	
A			DATE 6-21-74	NAME OF PART SPEED AND PRESSURE REGULATOR
B			NAME J.H. CRUTCHFIELD	INGERSOLL-RAND COMPANY MOCKSVILLE PLANT
C			E/C NO.	MODEL NO. DXL / DRAWING NO. 35794452
D				



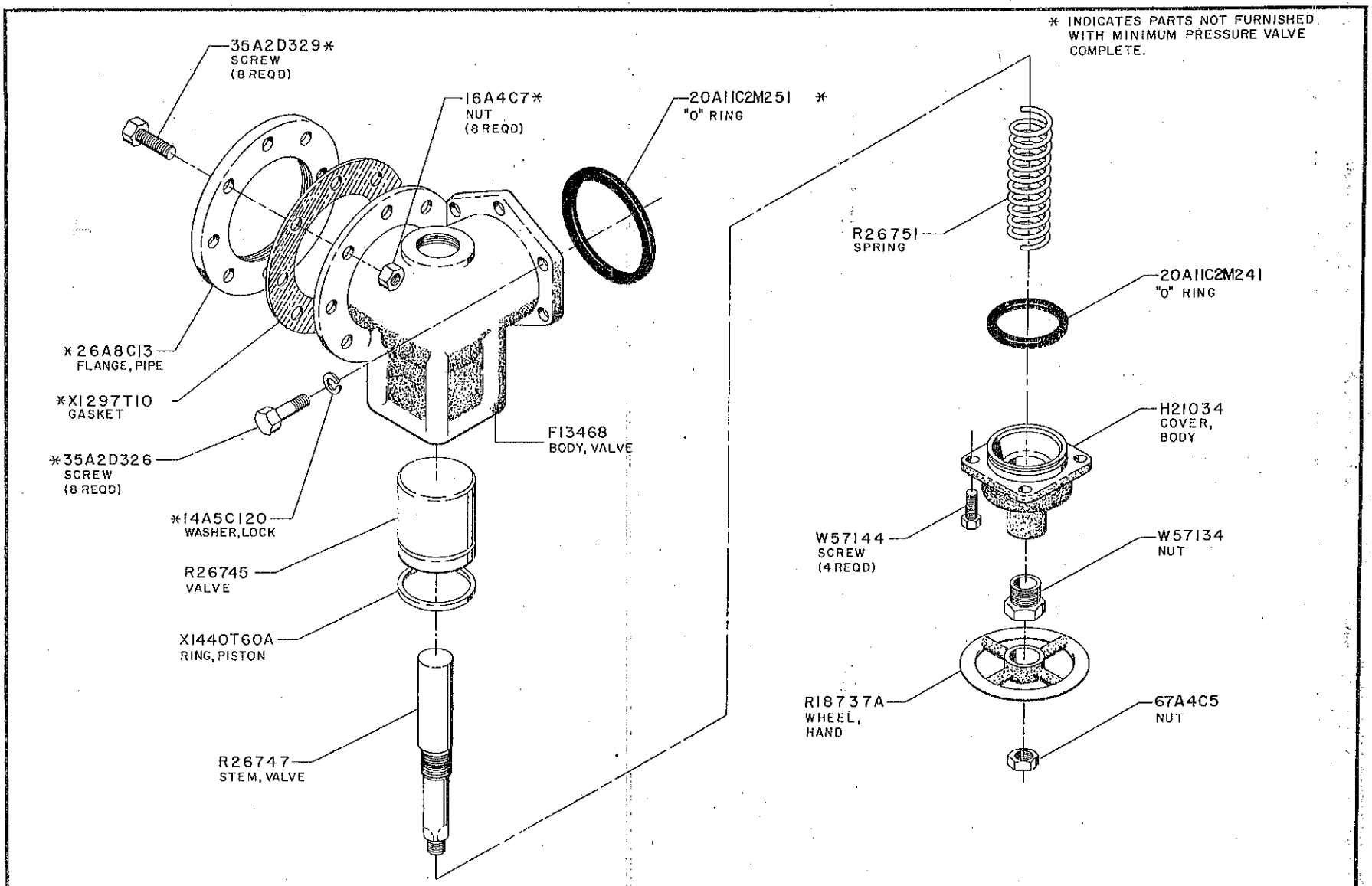
REVISIONS		DATE	CHARGE NOS:
A MWD	CHG: DISCH. PIPE WAS 35706977 PER E/C 21303	2-15-84	DATE 11-14-74
B			NAME J.H. CRUTCHFIELD
C			E/C NO.
D			

NAME OF PART: DISCHARGE PIPING

INGERSOLL-RAND COMPANY
MOCKSVILLE PLANT

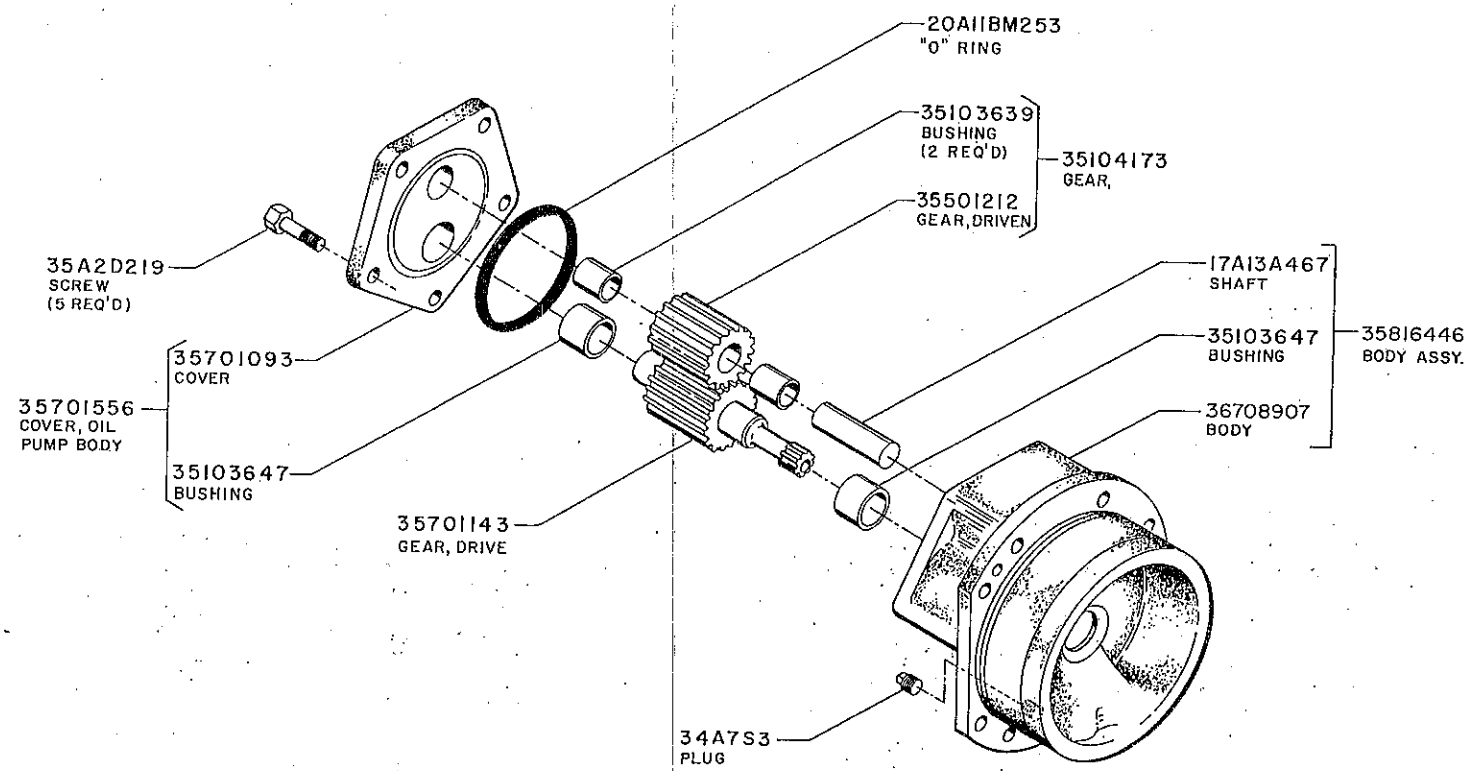
MODEL NO.: DXL

DRAWING NO.: 35797364



MINIMUM PRESSURE VALVE COMPLETE PART NO. F13471

REVISIONS	DATE	CHARGE NOS:	
A		DATE 12-6-74	NAME OF PART: MINIMUM PRESSURE VALVE COMPLETE
B		NAME J.H. CRUTCHFIELD	INGERSOLL-RAND COMPANY, MOCKSVILLE PLANT
C		E/C NO.	MODEL NO. DXL / DRAWING NO. 35796341
D			

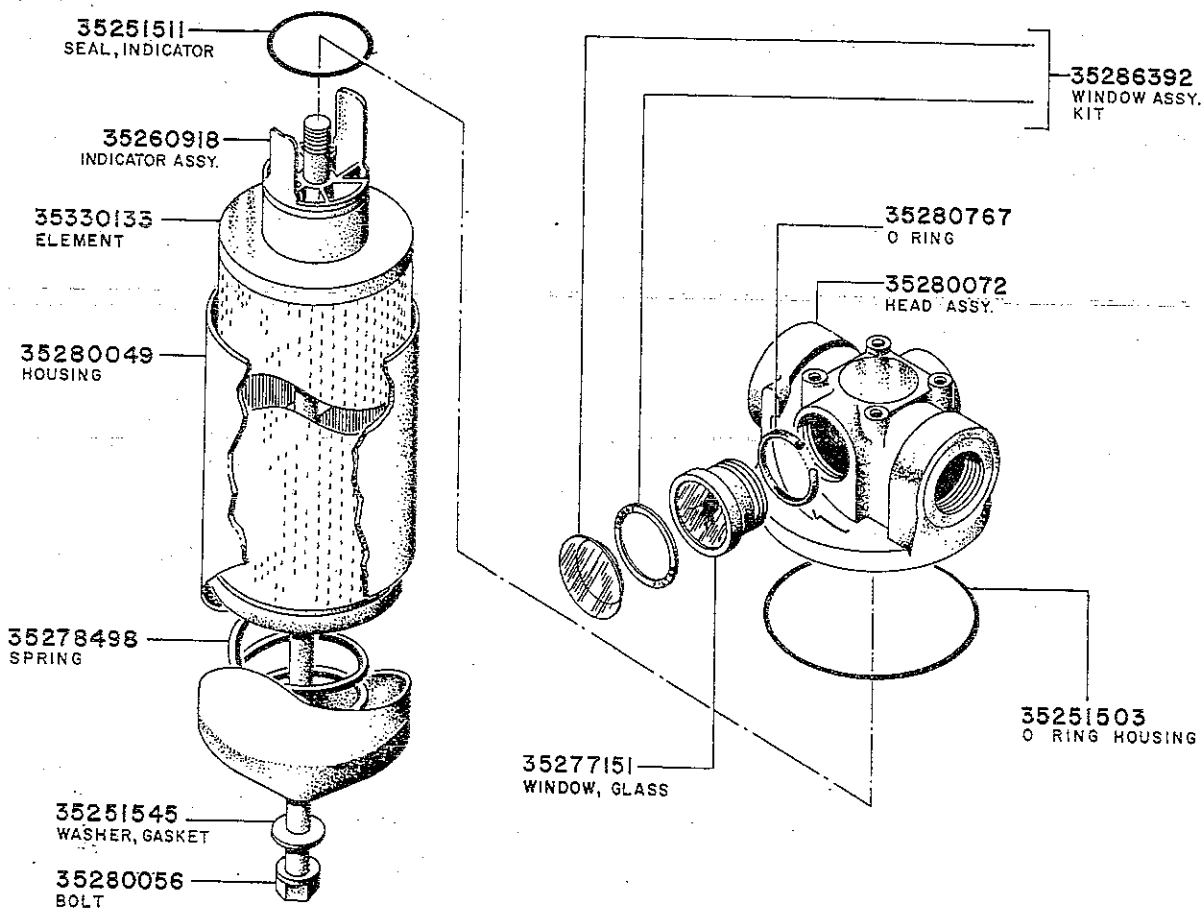


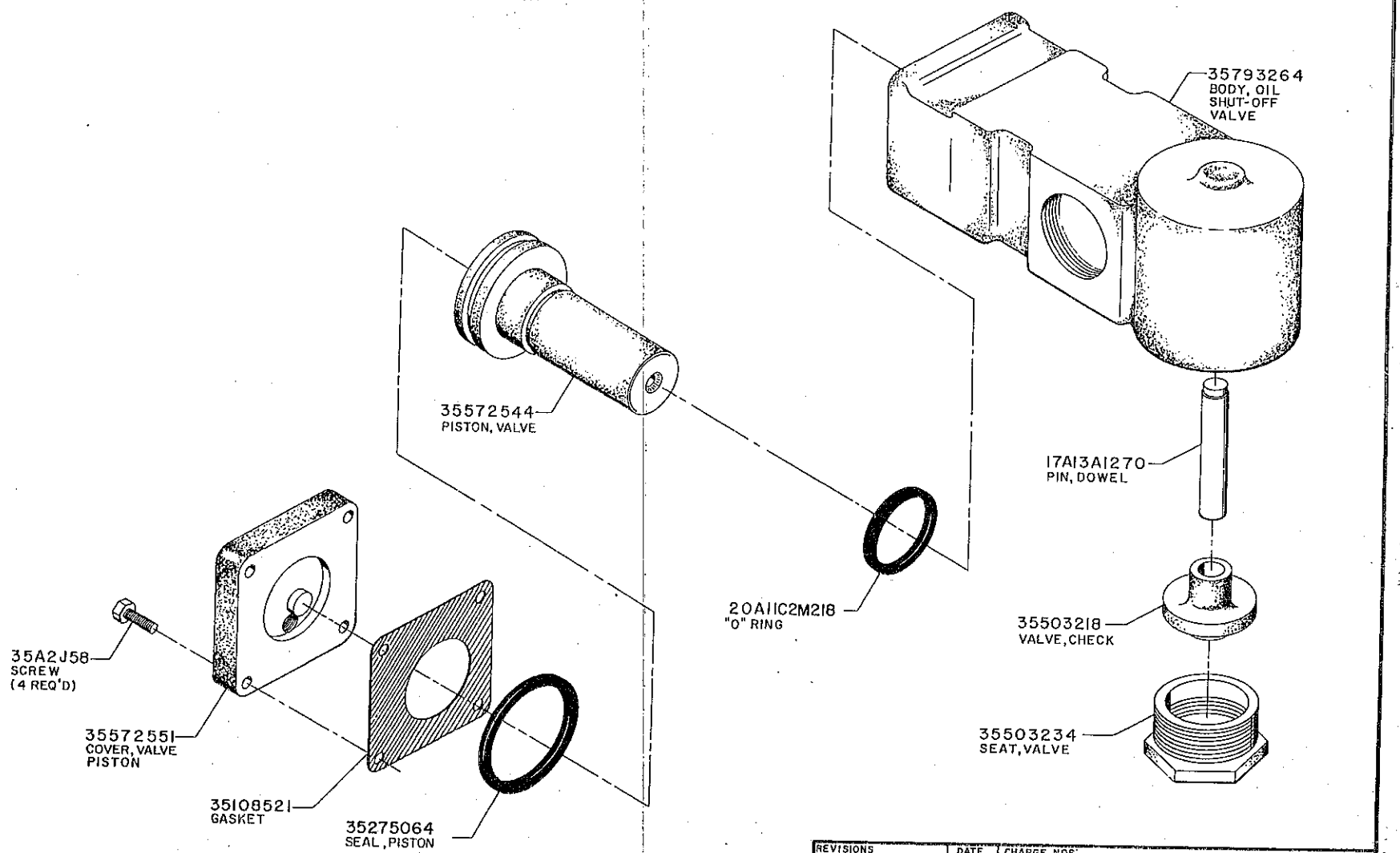
OIL PUMP COMPLETE
PART NO. 35816453

REVISIONS	DATE	CHARGE NOS.	
A		DATE 10 JUL 74	NAME OF PART OIL PUMP
B		NAME J.H. CRUTCHFIELD	INGERSOLL-RAND COMPANY MOCKSVILLE PLANT
C		E/C NO.	MODEL NO. DXL / DRAWING NO. 35794874
D			

OIL FILTER COMPLETE
PART NO. 35997352

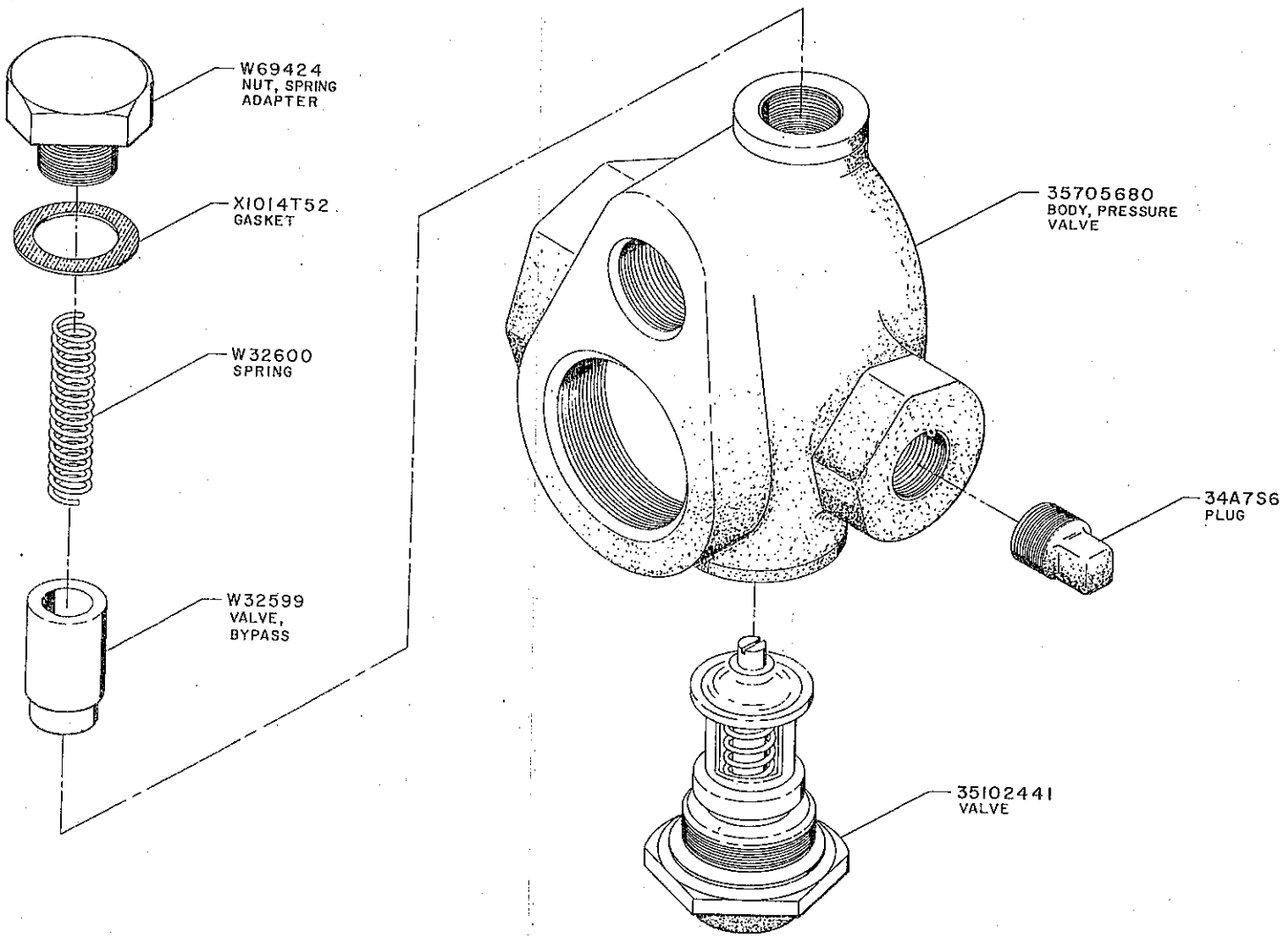
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION			E/C
DESCRIPTION OIL FILTER	REFER TO PARTS LIST NO. 35997352	SHEET NO.	1 OF 1
	DATE 4-21-81	ILLUSTRATION NO. 35821263	





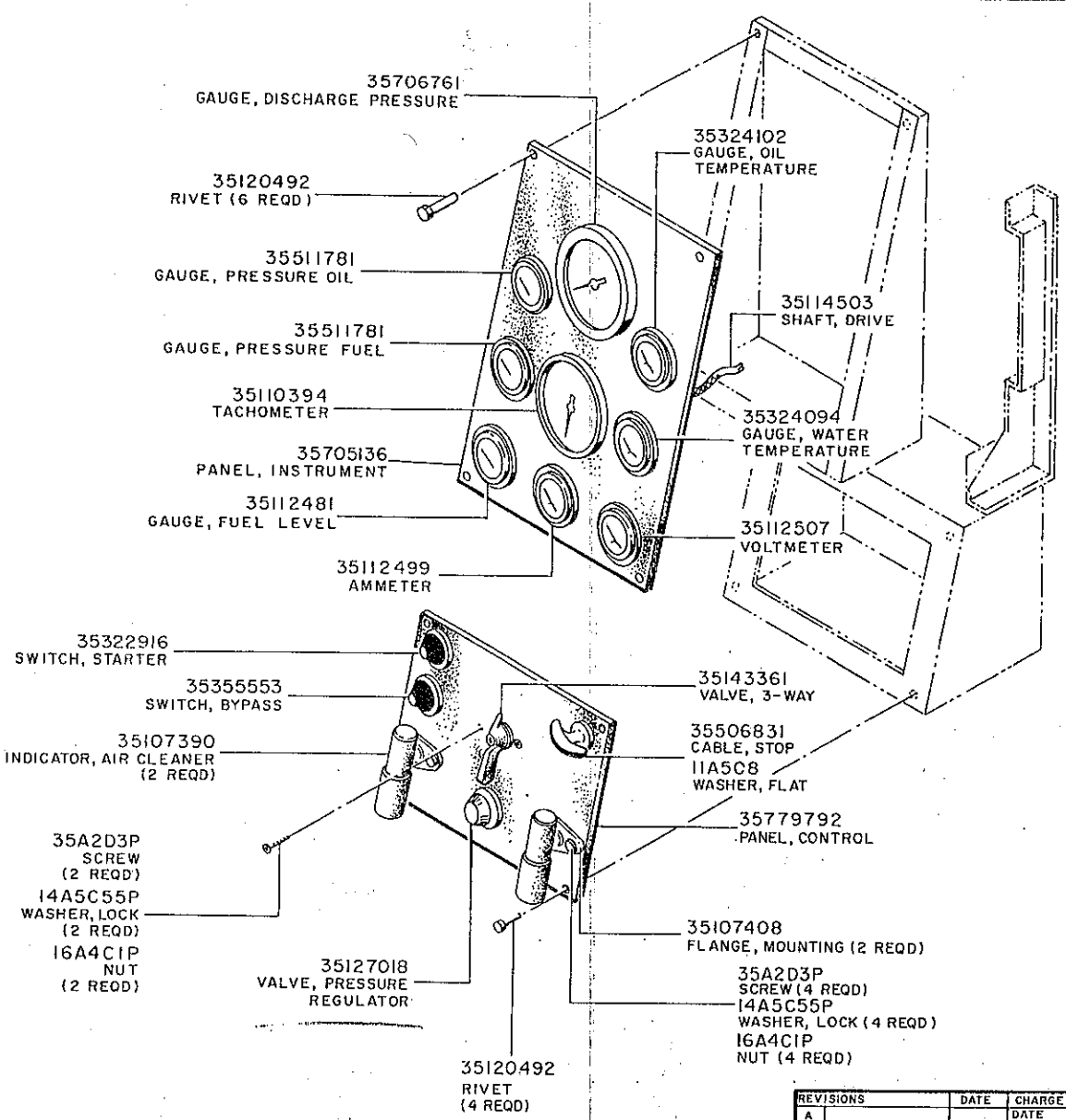
OIL SHUT-OFF VALVE
COMPLETE PART NO. 35793256

REVISIONS	DATE	CHARGE NOS:	
A		DATE 6-26-74	NAME OF PART: OIL SHUT-OFF VALVE COMPLETE
B		NAME J.H. CRUTCHFIELD	INGERSOLL-RAND COMPANY, MOCKSVILLE PLANT
C		E/C NO.	MODEL NO. DXL / DRAWING NO. 35794429
D			

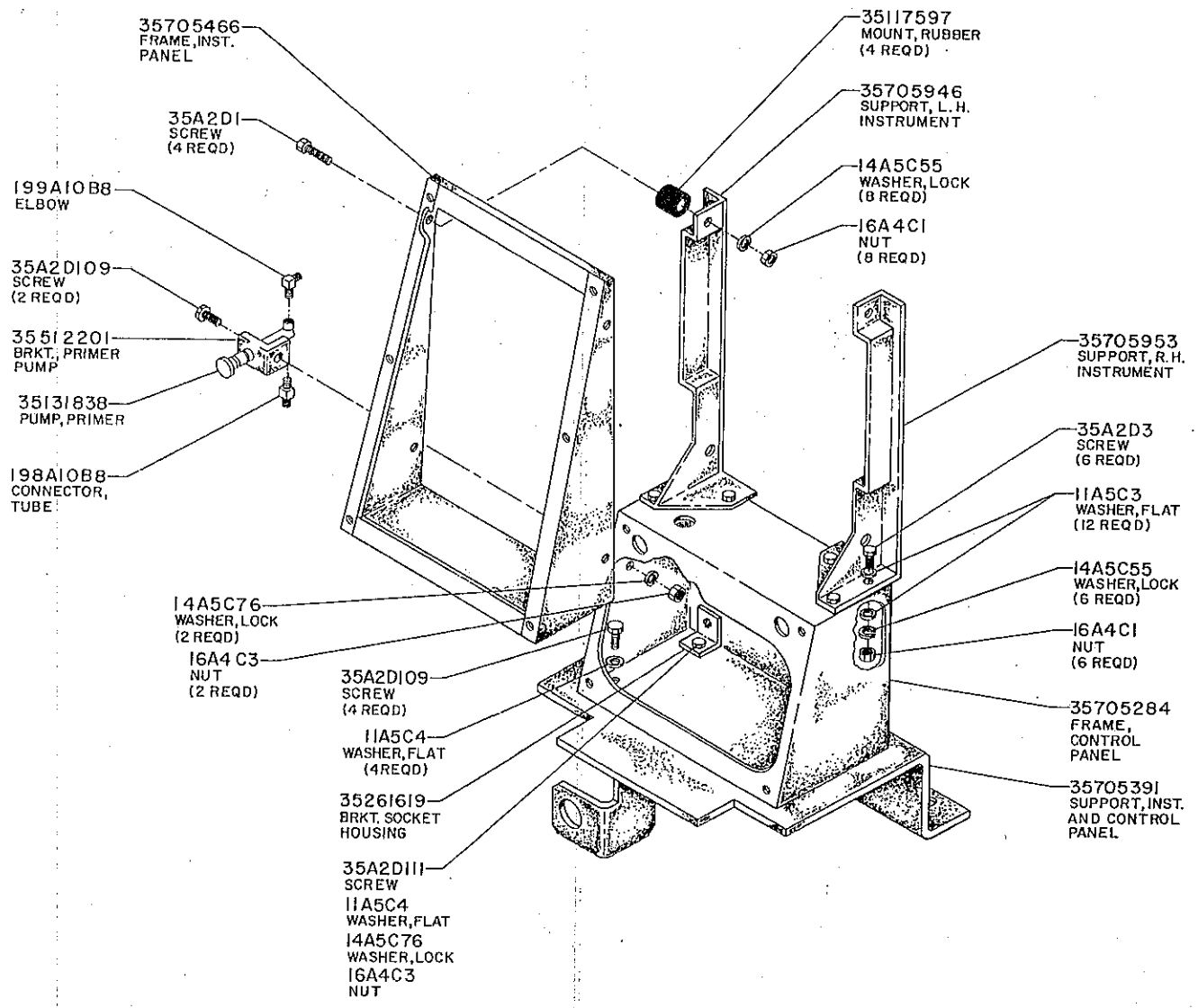


BY-PASS VALVE COMPLETE
PART NO. 35705888

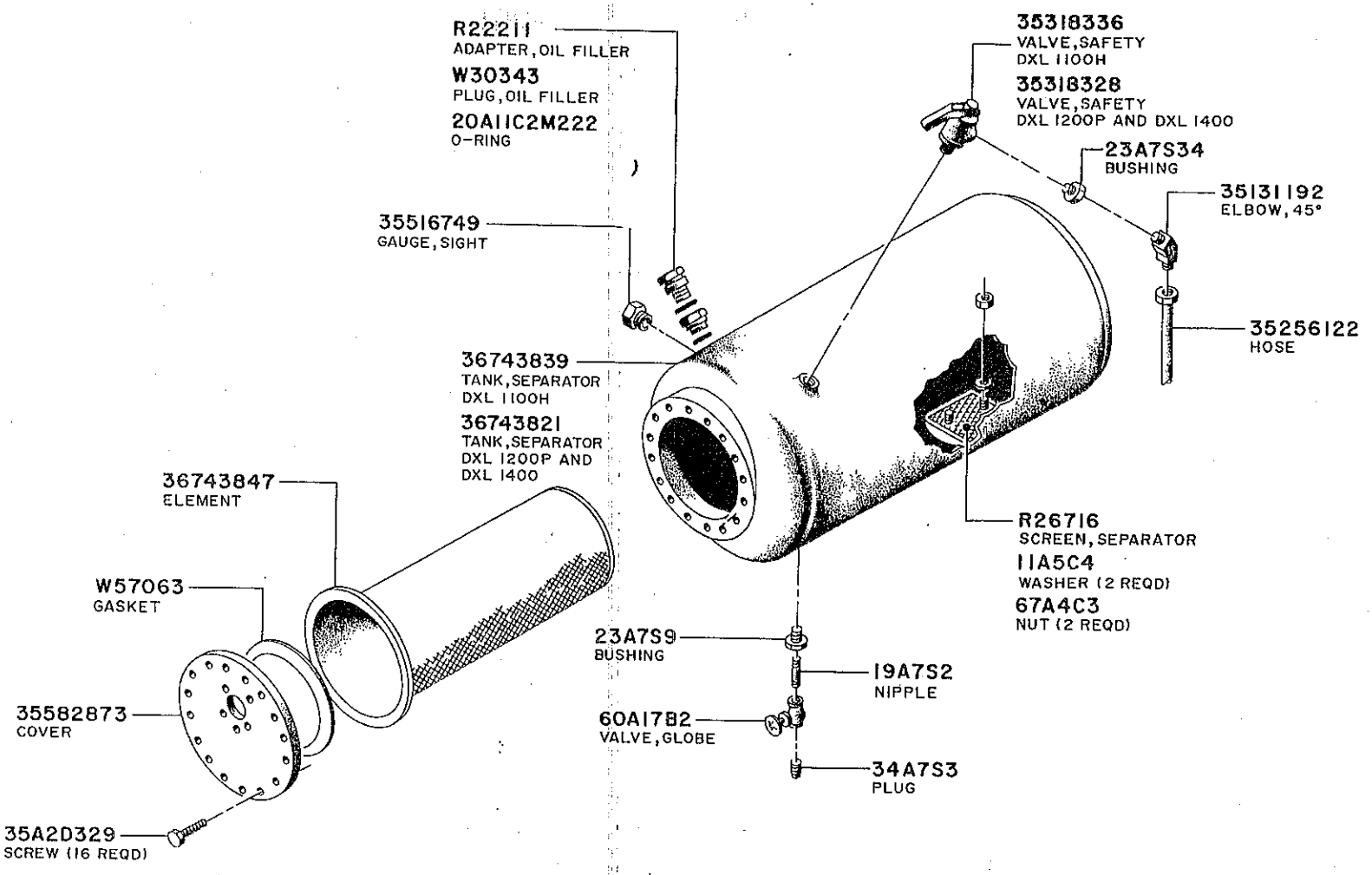
REVISIONS		DATE	CHARGE NOS:	
A			DATE 11-20-74	NAME OF PART BY-PASS VALVE COMPLETE
B			NAME J. H. CRUTCHFIELD	INGERSOLL-RAND COMPANY MOCKSVILLE PLANT
C			E/C NO.	MODEL NO. DXL / DRAWING NO. 35797588
D				



REVISIONS		DATE	CHARGE NOS.	
A			DATE 12-3-74	NAME OF PART INSTRUMENT AND CONTROL PANELS
B			NAME I. RILEY	INGERSOLL-RAND COMPANY MOCKSVILLE PLANT
C			E/C NO.	MODEL NO. DXL / DRAWING NO. 35797653
D				



REVISIONS	DATE	CHARGE NOS:	
A		DATE 10-17-74	NAME OF PART: INSTRUMENT AND CONTROL PANEL SUPPORT
B		NAME J. H. CRUTCHFIELD	INGERSOLL-RAND COMPANY, MOCKSVILLE PLANT
C		E/C NO.	MODEL NO. DXL / DRAWING NO. 35797430
D			



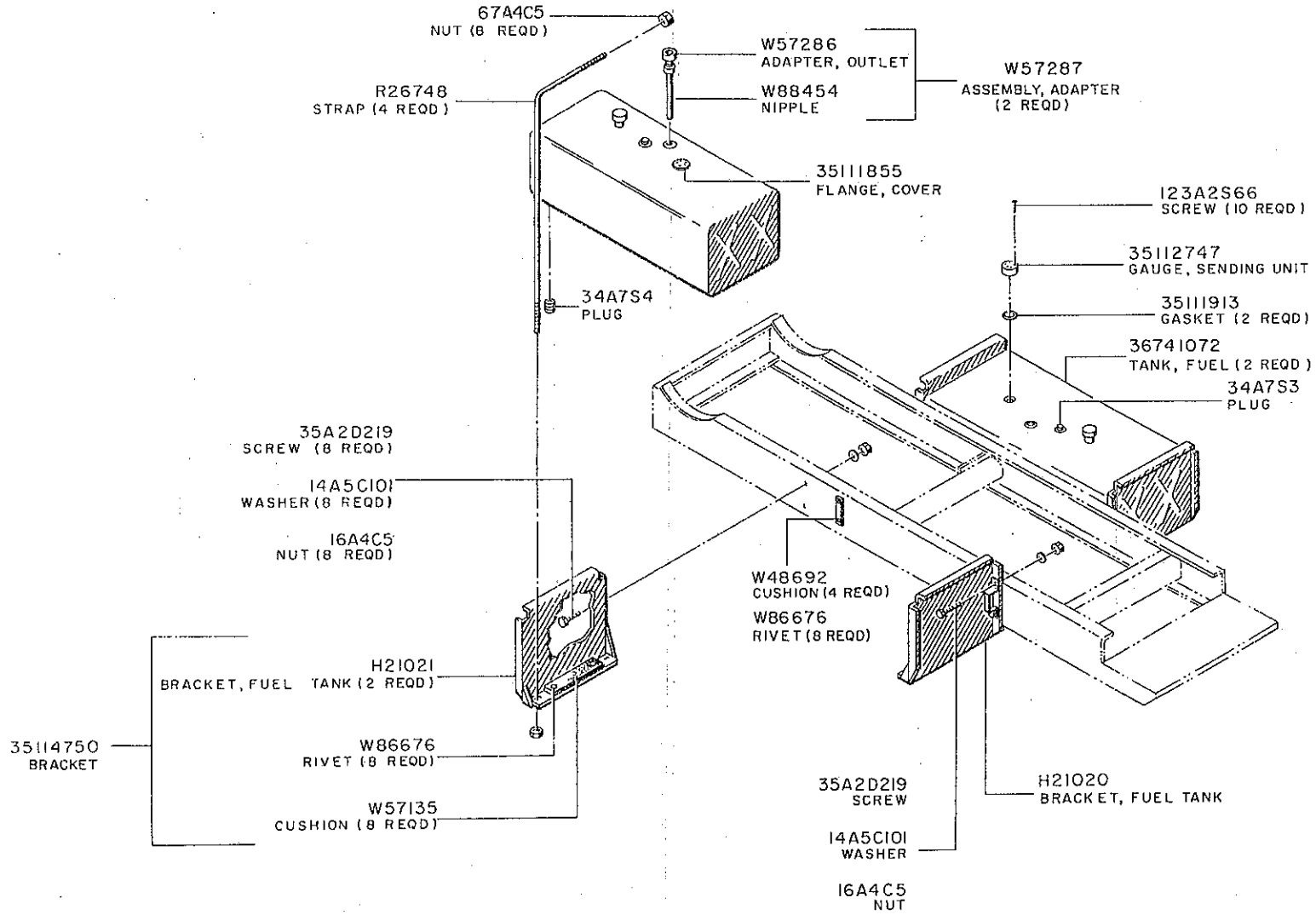
REVISIONS		DATE	E/C NO.
A	CHG: TANK & SAFE. VALVE PER E/C 21303	2-15-84	21303
WAP			
B			
C			
D			

INGERSOLL-RAND COMPANY
PORTABLE COMPRESSOR DIVISION

CHARGE NOS:

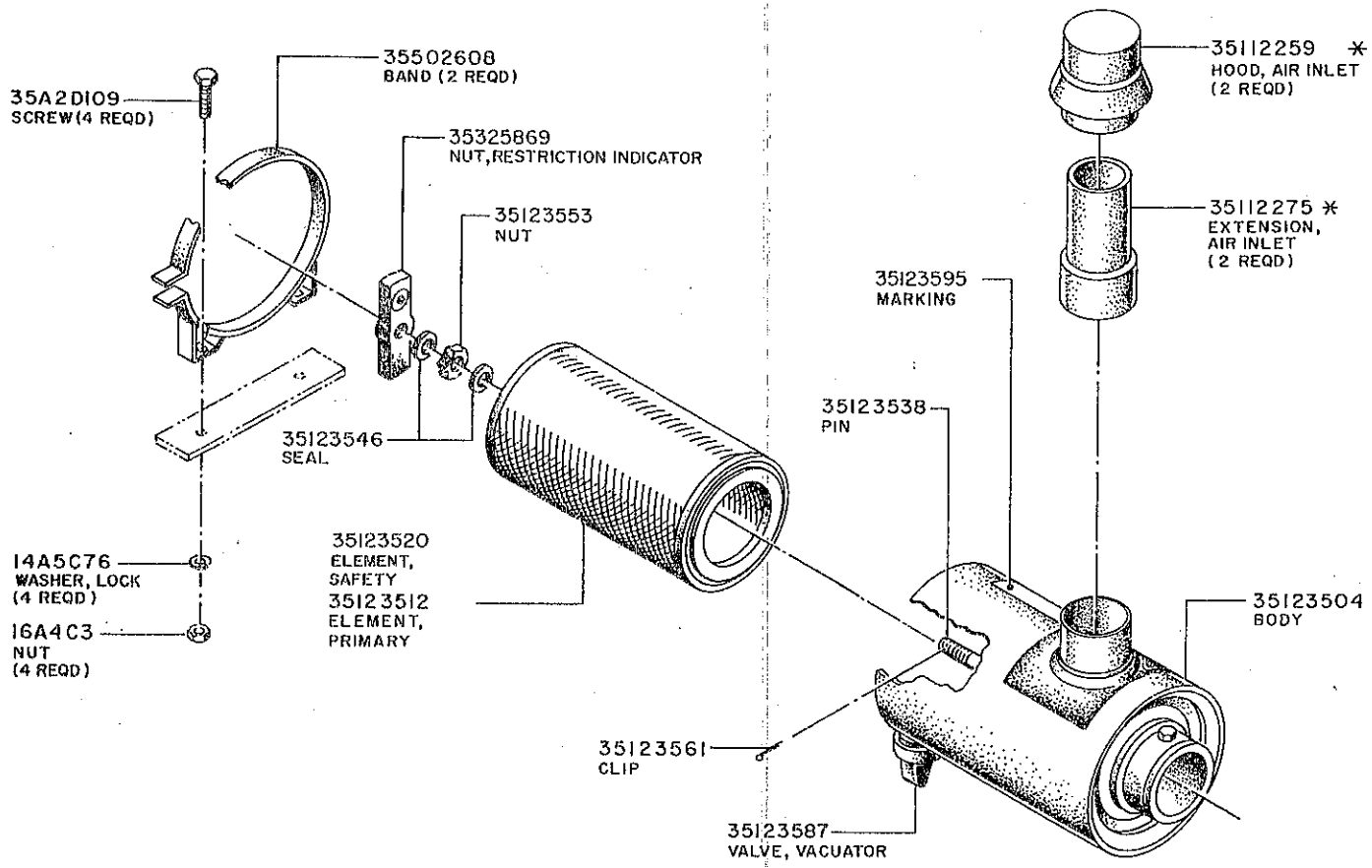
DESCRIPTION
OIL SEPARATOR TANK ASSY.

MODEL NO.	ILLUSTRATION NO.	SHEET NO.	E/C NO.
DXL1400	35801497	1 OF 1	



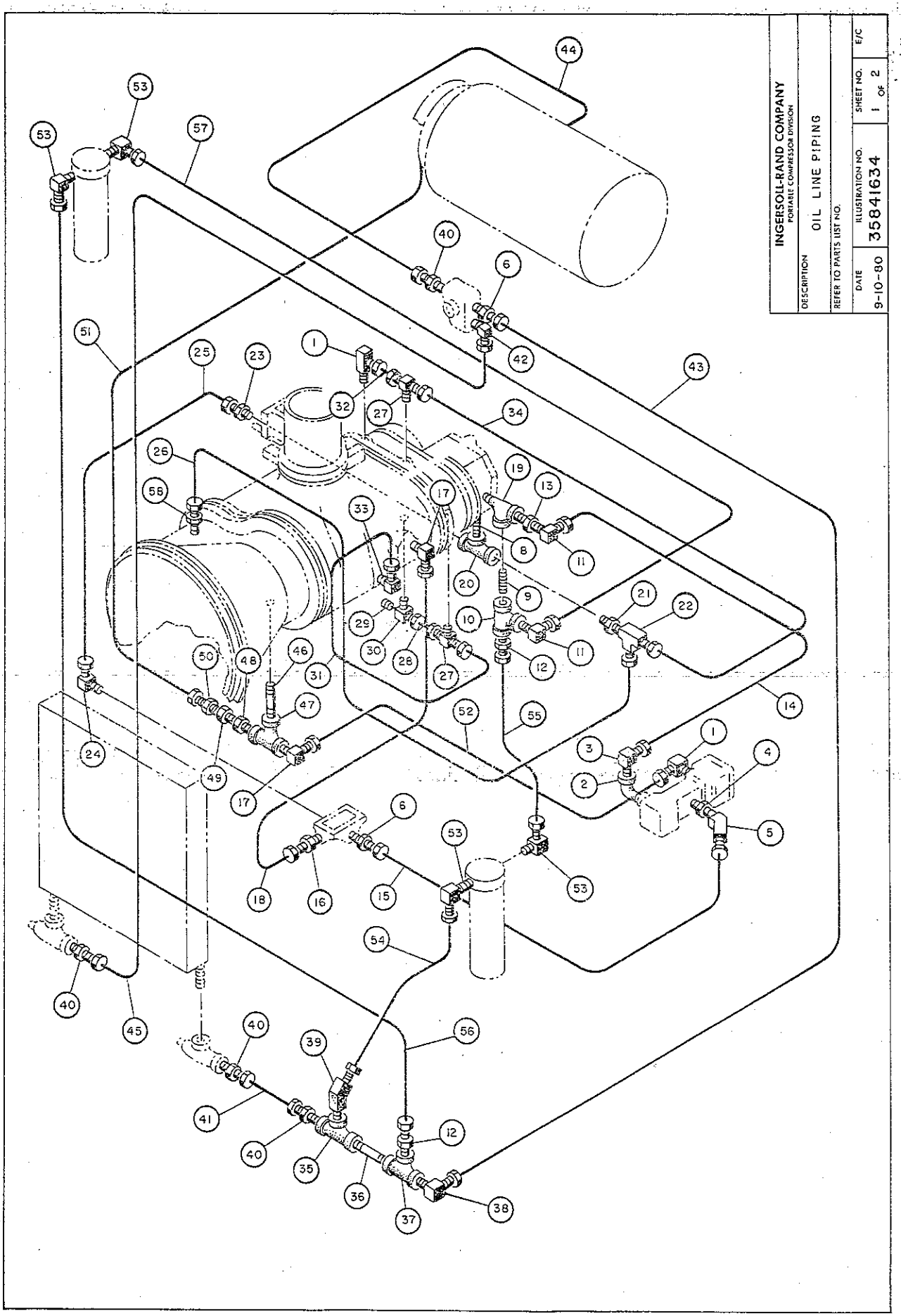
REVISIONS		DATE	CHARGE NOS:	
A	CHG: FUEL TANK NO. PER E/C A09734	5-10-85 WAP	DATE 10-8-74	NAME OF PART FUEL TANKS
B			NAME I. RILEY	INGERSOLL-RAND COMPANY MOCKSVILLE PLANT
C			E/C NO.	MODEL NO. DXL / DRAWING NO. 35796358
D				

NOTE:
*PARTS INDICATED BY * ARE NOT A PART OF AIR CLEANER COMPLETE.*



AIR CLEANER COMPLETE
PART NO. 35711209 (2 REQD)

REVISIONS		DATE	CHARGE NOS:	
A	CHG: PER E/C 20973	2-14-85	DATE 2-24-75	NAME OF PART AIR INTAKE SYSTEM
B			NAME I. RILEY	INGERSOLL-RAND COMPANY MOCKSVILLE PLANT
C			E/C NO.	MODEL NO. DXL1400 / DRAWING NO. 35801463
D				


INGERSOLL-RAND COMPANY
PORTABLE COMPRESSOR DIVISION
DESCRIPTION
OIL LINE PIPING
REFER TO PARTS LIST NO.
DATE
9-10-80
ILLUSTRATION NO.
35841634
SHEET NO.
1 OF 2
E/C

1	199A10B7	ELBOW, 90°
2	67A7M7	ELBOW, STREET
3	109A23S20	ELBOW, TUBE
4	23A7S16	BUSHING, REDUCING
5	W90351	ELBOW, 45°
6	108A23S16C	ADAPTER
7	74A7M72	TEE, REDUCING
8	19A7S8	NIPPLE
9	19A7S27	NIPPLE
10	74A7M78	TEE, REDUCING
11	109A23S20	ELBOW
12	108A23S20	ADAPTER
13	23A7S28	BUSHING
14	35130038	HOSE, ASSEMBLY
15	35114149	HOSE, ASSEMBLY
16	198A10B10	CONNECTOR
17	199A10B10	ELBOW, 90°
18	35120609	HOSE, ASSEMBLY
19	74A7M72	TEE, REDUCING
20	74A7M64	TEE, REDUCING
21	23A7SS	BUSHING
22	201A10B4	TEE
23	108A23S24	ADAPTER
24	35100664	ELBOW
25	W90374	HOSE, ASSEMBLY
26	35129584	HOSE, ASSEMBLY
27	195A10B4	TEE
28	35119619	HOSE, ASSEMBLY
29	34A7S2	PLUG
30	X1086T103	TEE
31	35119528	HOSE, ASSEMBLY
32	35119502	HOSE, ASSEMBLY
33	199A10B9	ELBOW, 90°
34	35119494	HOSE, ASSEMBLY
35	74A7M74	TEE
36	19A7S26	NIPPLE
37	74A7M61	TEE, REDUCING
38	109A23S16	ELBOW
39	W92760	ELBOW
40	108A23S32	ADAPTER
41	35114297	HOSE, ASSEMBLY
42	109A23532	ELBOW
43	35130830	HOSE, ASSEMBLY
44	35256122	HOSE, ASSEMBLY
45	35124239	HOSE, ASSEMBLY
46	19A7S22	NIPPLE
47	71A7M4	TEE, PIPE
48	23A7S6	BUSHING, REDUCING
49	X1080T29A	ORIFICE
50	198A10B8	CONNECTOR
51	35119460	HOSE, ASSEMBLY
52	35127000	HOSE, ASSEMBLY
53	35279777	ELBOW, 90°
54	35114313	HOSE, ASSEMBLY
55	W92556	HOSE, ASSEMBLY
56	35114099	HOSE, ASSEMBLY
57	35114305	HOSE, ASSEMBLY
58	198A10B7	ADAPTER

SHEET 2 OF 2

REVISIONS

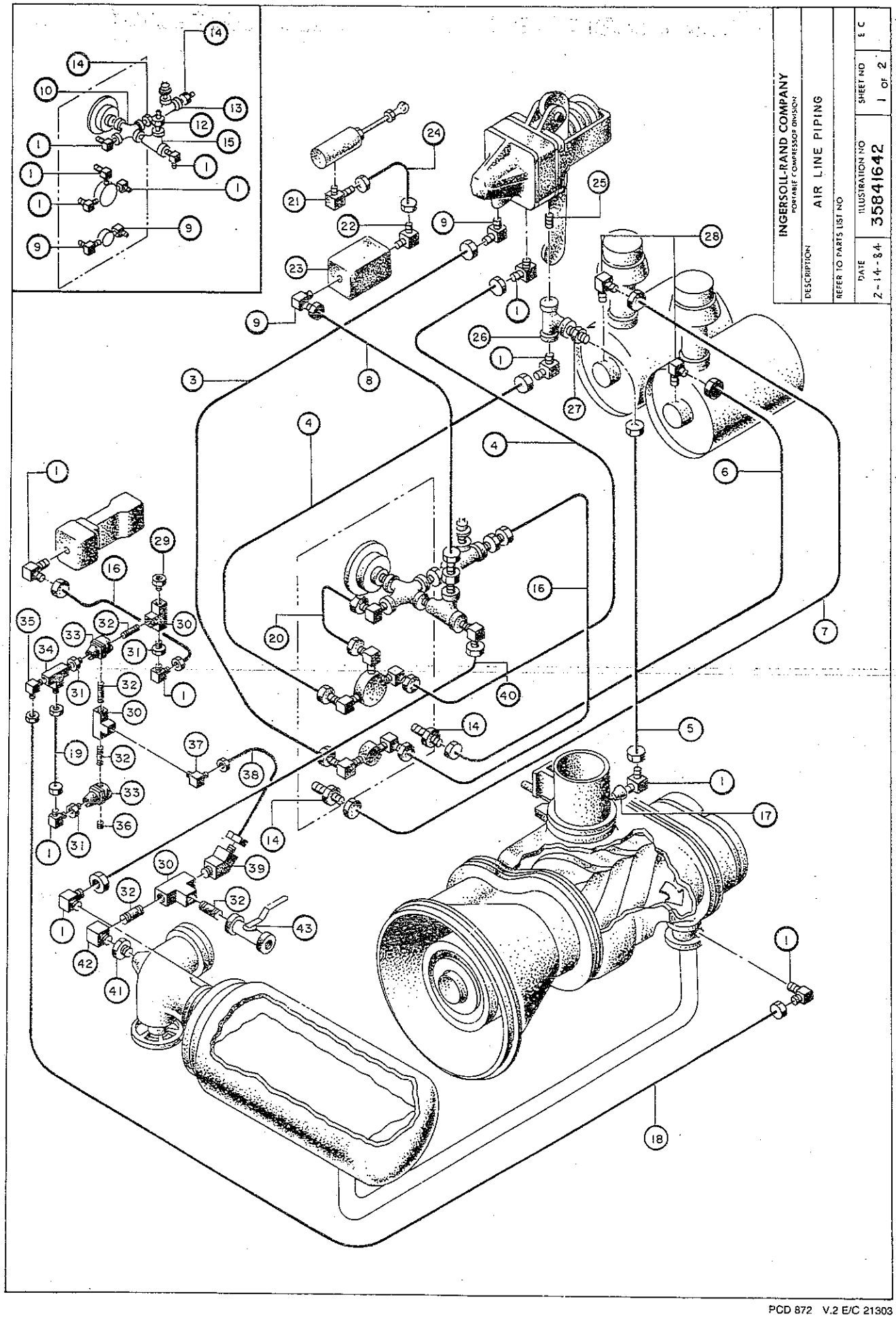
	DATE	CHARGE NOS.
A	2-15-84	DATE 9-10-80
B		NAME
C		E/C NO.
D		

NAME OF PART: OIL PIPING

INGERSOLL-RAND COMPANY
MICHIGAN CITY PLANT

MODEL NO. DXL 1200 & 1400

DRAWING NO. 35841634


INGERSOLL-RAND COMPANY
PORTABLE COMPRESSOR DIVISION
DESCRIPTION
AIR LINE PIPING
REFER TO PARTS LIST NO
DATE
2-14-84
ILLUSTRATION NO
35841642
SHEET NO
1 OF 2
E C

DXL-1200/1400

INGERSOLL-RAND COMPANY
PORTABLE COMPRESSOR DIVISION

DESCRIPTION: AIR LINE PIPING

REFER TO PARTS LIST NO.

DATE: 2-15-84

ILLUSTRATION NO.: 35841642

SHEET NO.: 2 OF 2

E C

1	199A10B7	ELBOW, 90°
2	35129576	HOSE, ASSEMBLY
3	35136704	HOSE, ASSEMBLY
4	35119510	HOSE, ASSEMBLY
5	35120609	HOSE, ASSEMBLY
6	35127091	HOSE ASSEMBLY
7	35127083	HOSE, ASSEMBLY
8	35129956	HOSE, ASSEMBLY
9	199A10B4	ELBOW, 90°
10	74A7M2	CROSS, PIPE
11	23A7S1	BUSHING, REDUCING
12	198A10B4	CONNECTOR
13	X1086T108	TEE
14	198A10B3	CONNECTOR
15	72A7M2	TEE, PIPE STREET
16	35126994	HOSE, ASSEMBLY
17	35123124	REDUCING BUSHING
18	35127117	HOSE, ASSEMBLY
19	35119619	HOSE, ASSEMBLY
20	35131127	HOSE, ASSEMBLY
21	199A10B3	ELBOW, 90°
22	35324672	ELBOW, ORIFICE
23	35324169	VALVE, SOLENOID
24	35131630	HOSE, ASSEMBLY
25	19A7S2	NIPPLE
26	71A7M2	TEE
27	198A10B7	CONNECTOR
28	200A10B2	ELBOW
29	23A7S8	BUSHING
30	71A7M5	TEE
31	23A7S9	BUSHING
32	19A7S5	NIPPLE
33	35245455	VALVE, BLOWDOWN
34	X1086T103	TEE
35	199A10B8	ELBOW, 90°
36	34A7S5	PLUG
37	35294735	ELBOW, 90°
38	35289496	HOSE ASSEMBLY
39	104A23S11	ELBOW, 45°
40	35119460	HOSE ASSEMBLY
41	23A7S23	BUSHING
42	67A7M5	ELBOW, 90°
43	35576115	VALVE, BALL

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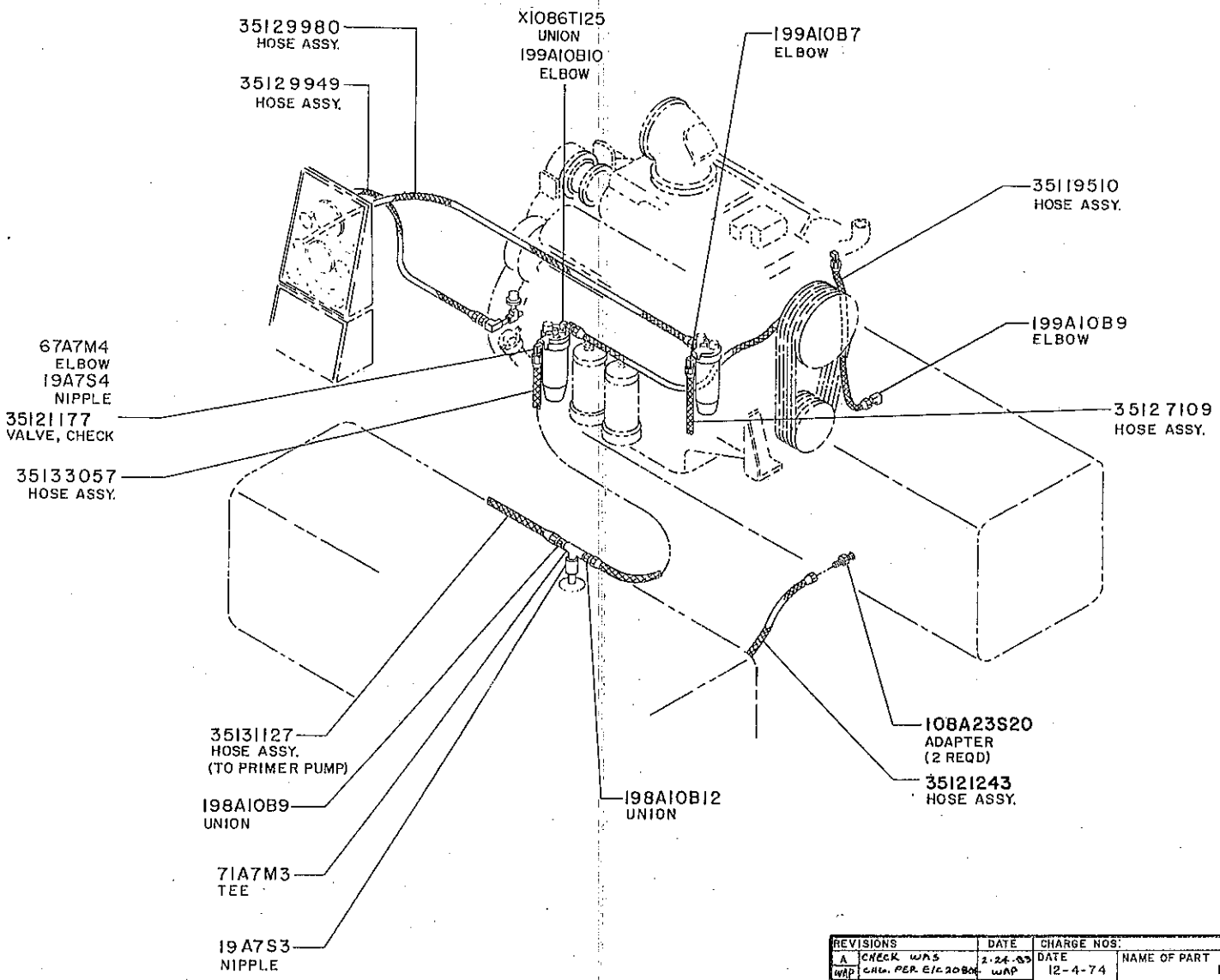
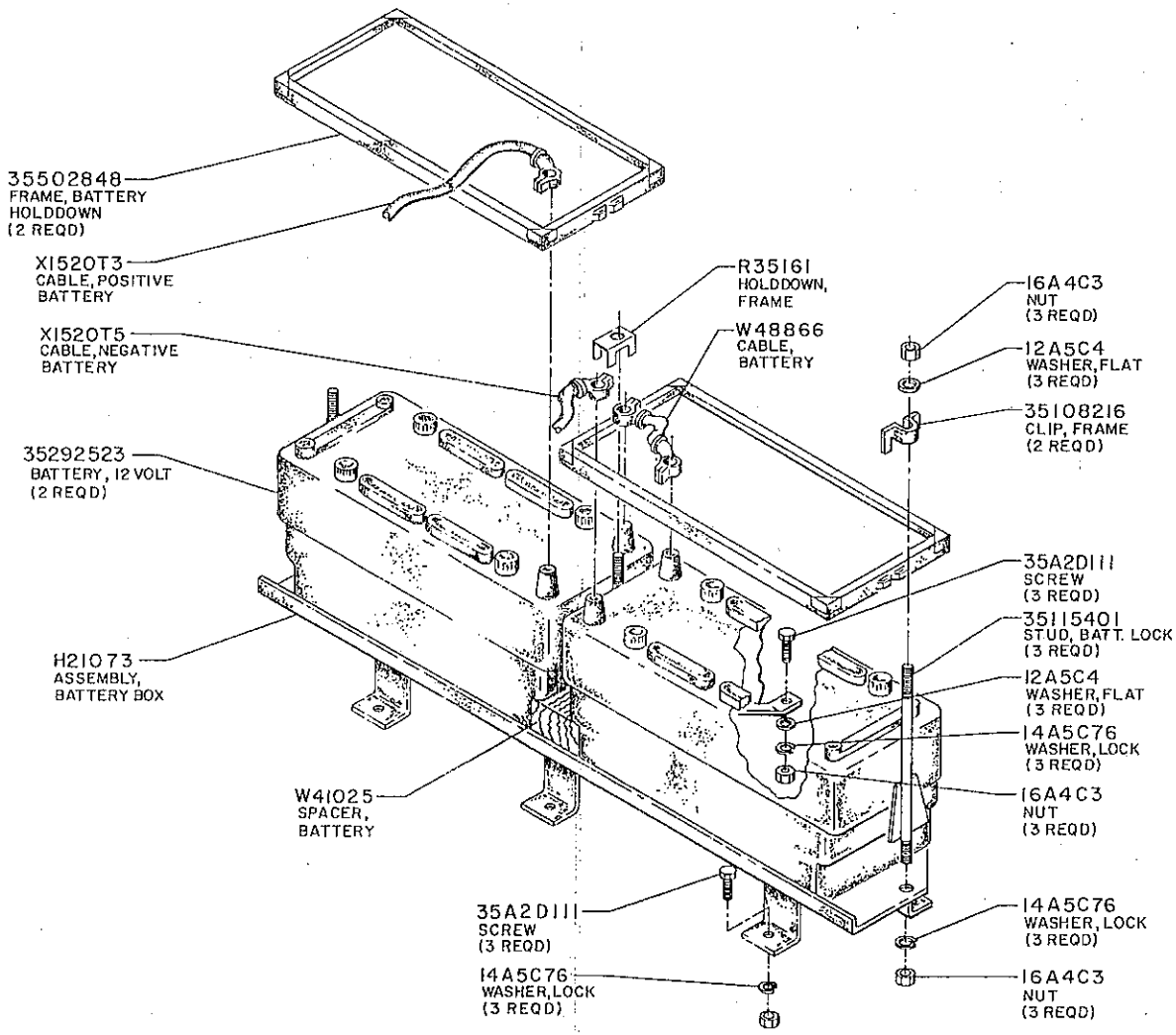
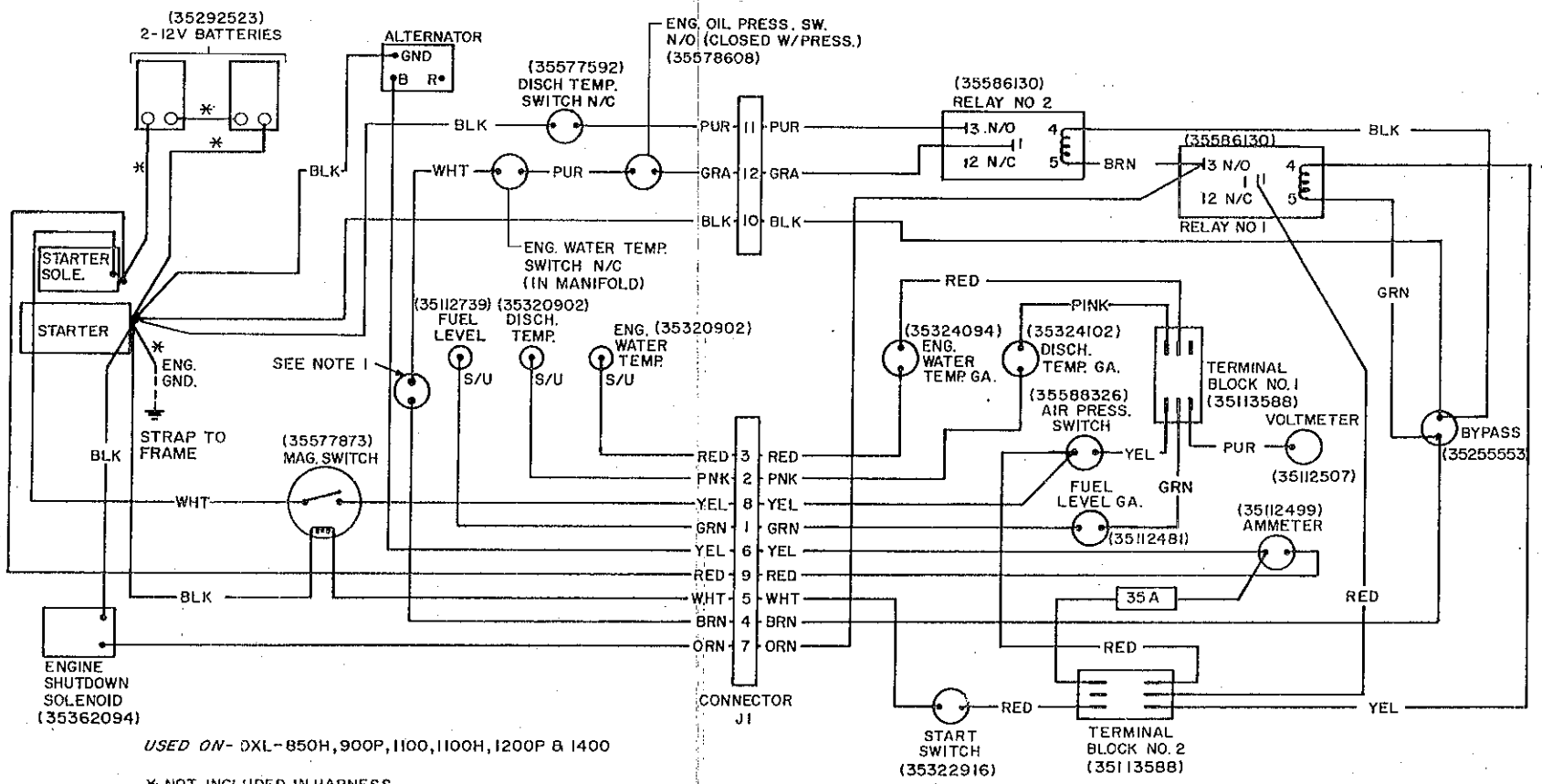


REVISIONS		DATE	CHARGE NOS.	
A WAP	CHECK WAS CHG. PER E/C 20804	2-24-83 WAP	DATE 12-4-74	NAME OF PART ENGINE LINE TUBING
B WAC	CHG: CROSS-OVER HOSE ASS'D FITTINGS PER E/C 20920	5-10-83	NAME J. H. CRUTCHFIELD	INGERSOLL-RAND COMPANY MOCKSVILLE PLANT
C			E/C NO.	MODEL NO. DXL / DRAWING NO. 35797737
D				



REVISIONS		DATE	CHARGE NOS.		
A			DATE 10-14-74	NAME OF PART BATTERIES WITH MOUNTING	
B			NAME J.H. CRUTCHFIELD	INGERSOLL-RAND COMPANY MOCKSVILLE PLANT	
C			E/C NO.	MODEL NO. DXL	DRAWING NO. 35797448
D					



USED ON- DXL-850H, 900P, 1100, 1100H, 1200P & 1400

* NOT INCLUDED IN HARNESS

ENGINE HARNESS NO. 36741429 (8V-71 ENGINE) AND 36741437 (12V-71 ENGINE)

PANEL HARNESS NO. 35844976

NOTE: 1. ENGINE WATER TEMPERATURE SWITCH N/C (IN THERMOSTAT HOUSING-8V-71)
(IN WATER HEADER-12V-71)

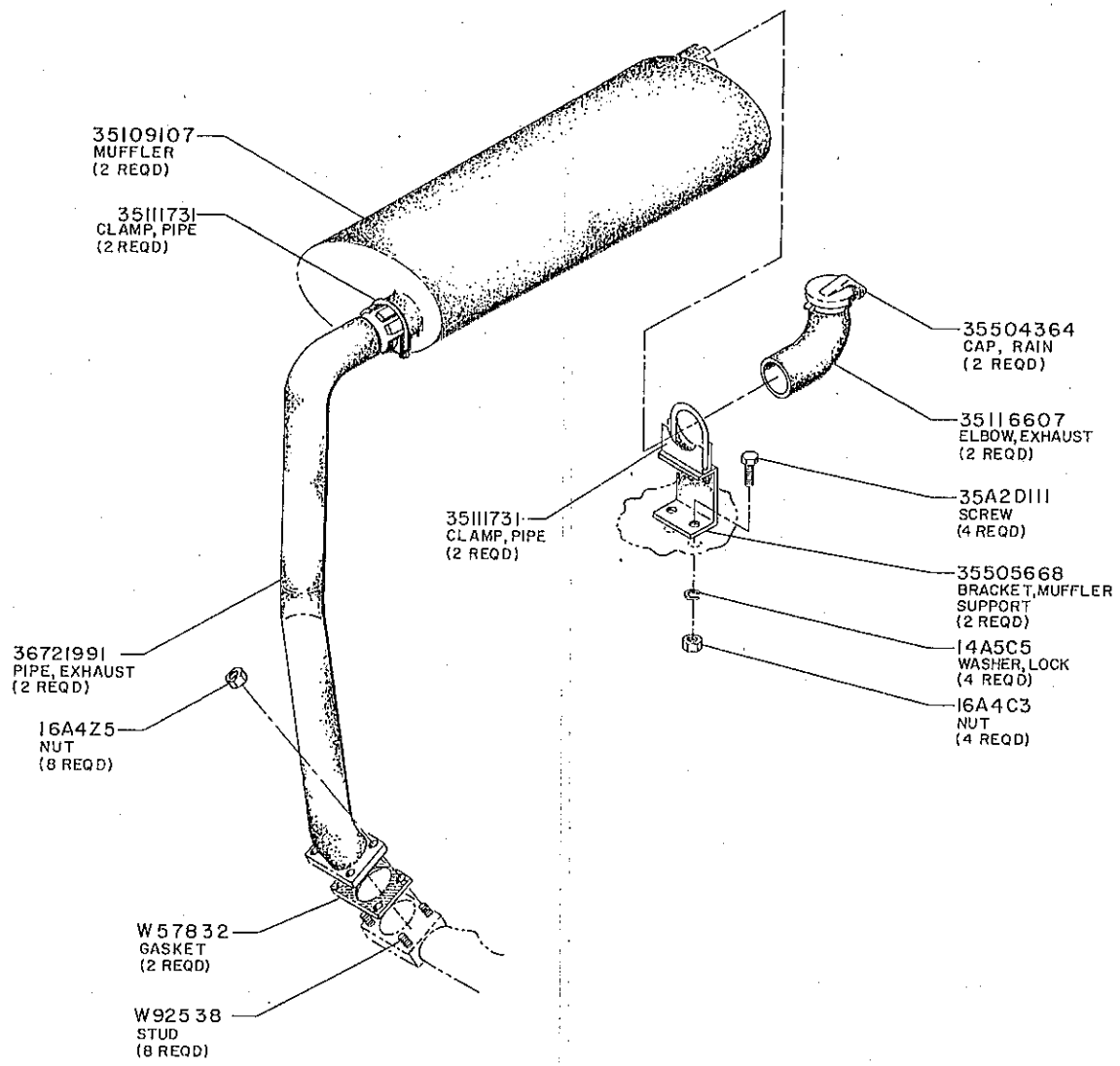
REVISIONS		DATE	E/C NO.
A WAP	ORIGINAL RELEASE E/C 20308	3-18-82	20308
B WAP	CHG: PER PAUL BEAVERS REQUEST	11-6-82	20688
C WAP	ADDED ENG. TEMP. SWITCH	5-19-83	20976
D WAP	CHG: PER E/C 21318	4-3-84	21318

INGERSOLL-RAND COMPANY
PORTABLE COMPRESSOR DIVISION

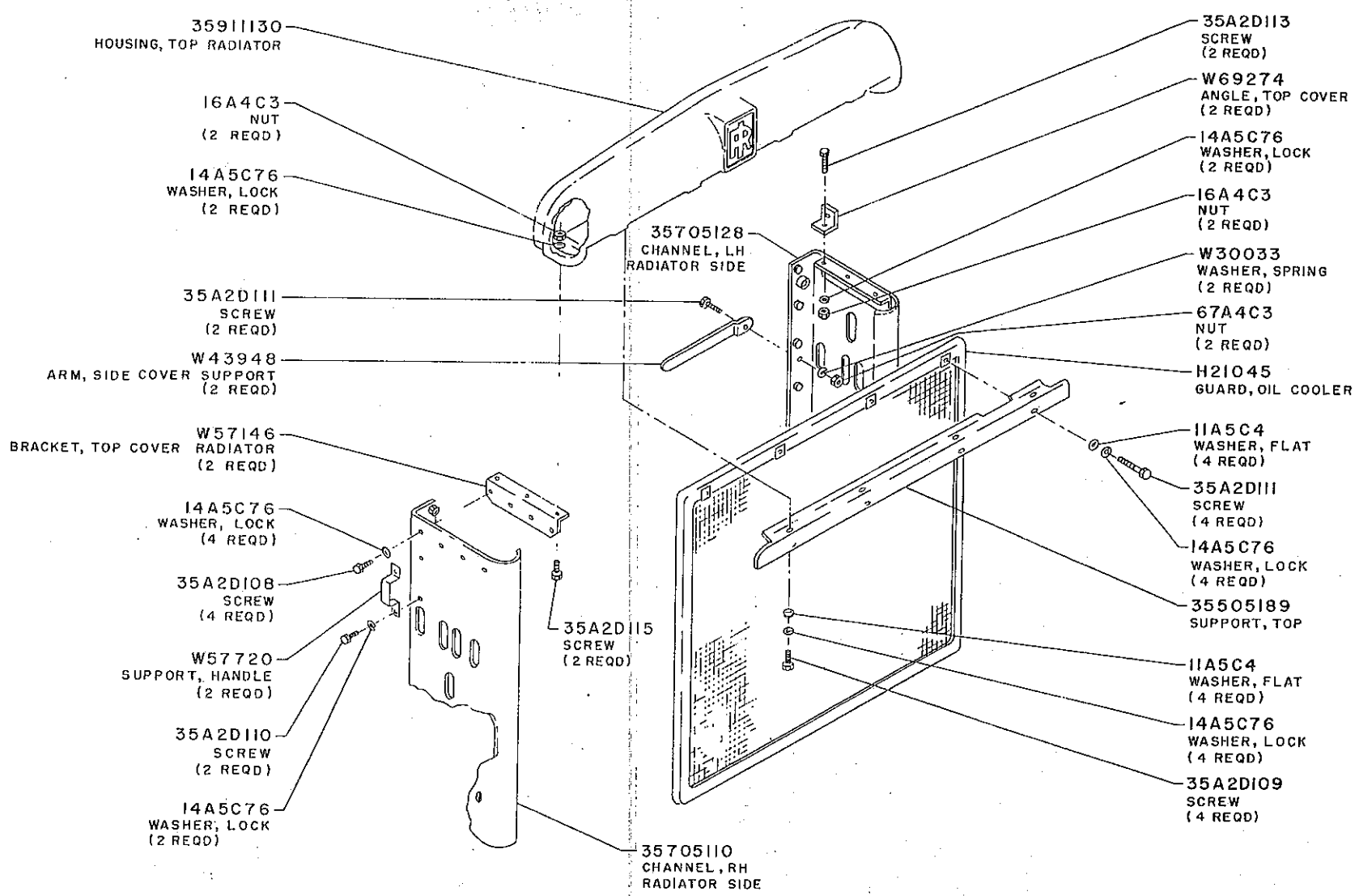
CHARGE NOS:

DESCRIPTION
DECAL- WIRING DIAGRAM

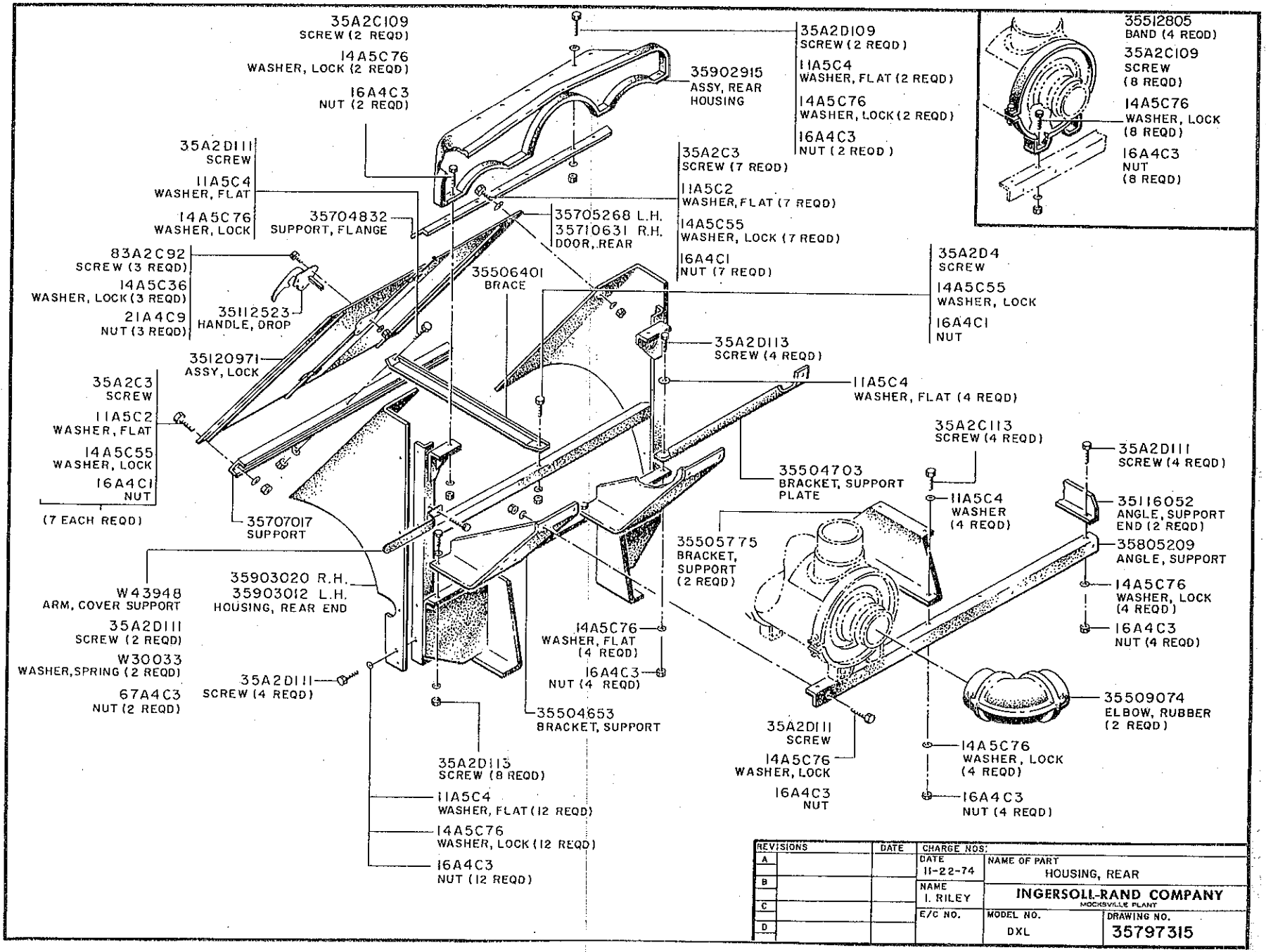
MODEL NO.	ILLUSTRATION NO.	SHEET NO.	E/C NO.
	35861798	1 OF 1	21318



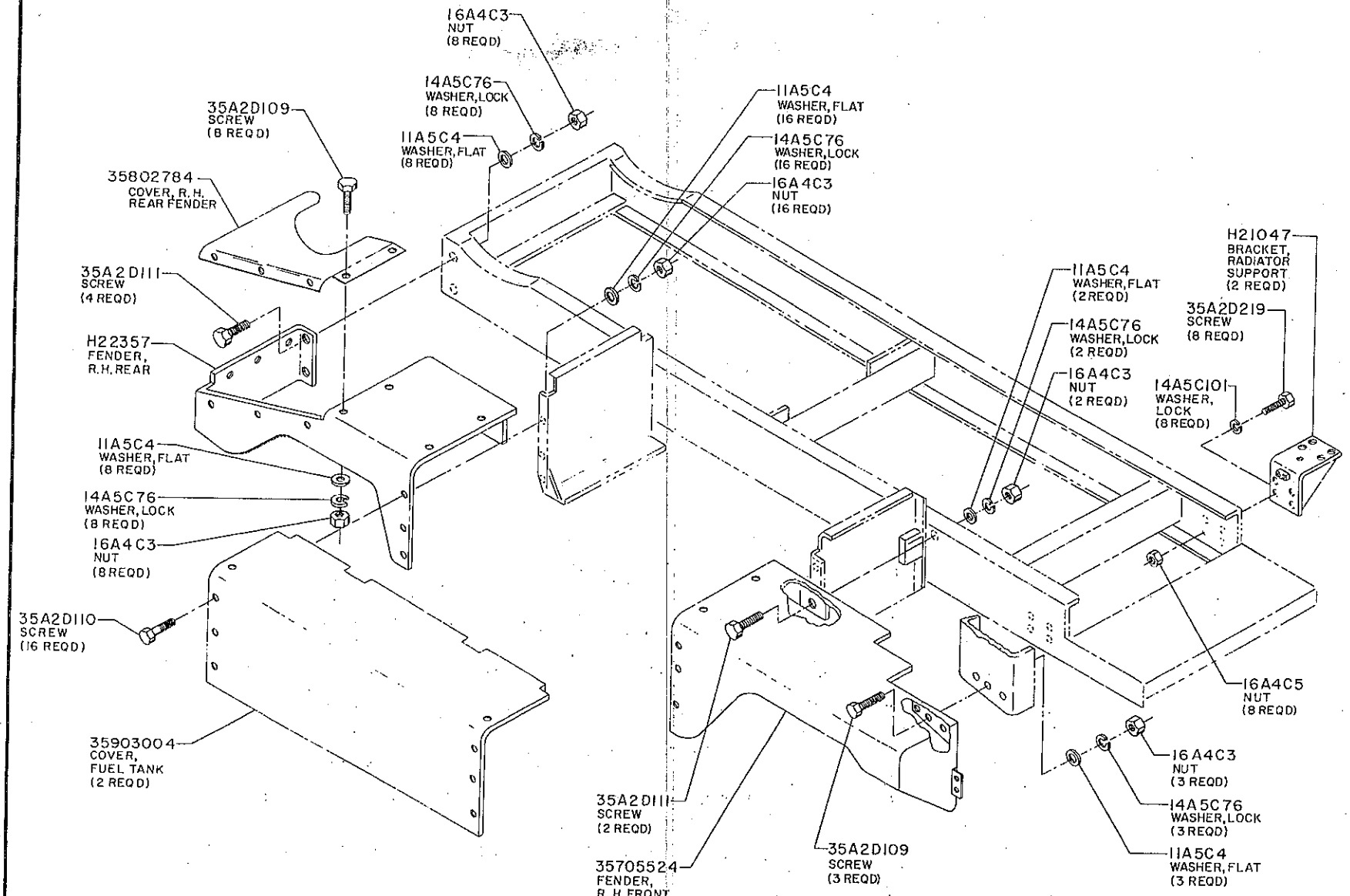
REVISIONS	DATE	CHARGE NOS:	
A		DATE 11-12-74	NAME OF PART: ENGINE EXHAUST SYSTEM
B		NAME J. H. CRUTCHFIELD	INGERSOLL-RAND COMPANY, MOCKSVILLE PLANT
C		E/C NO.	MODEL NO. DXL / DRAWING NO. 35797380
D			



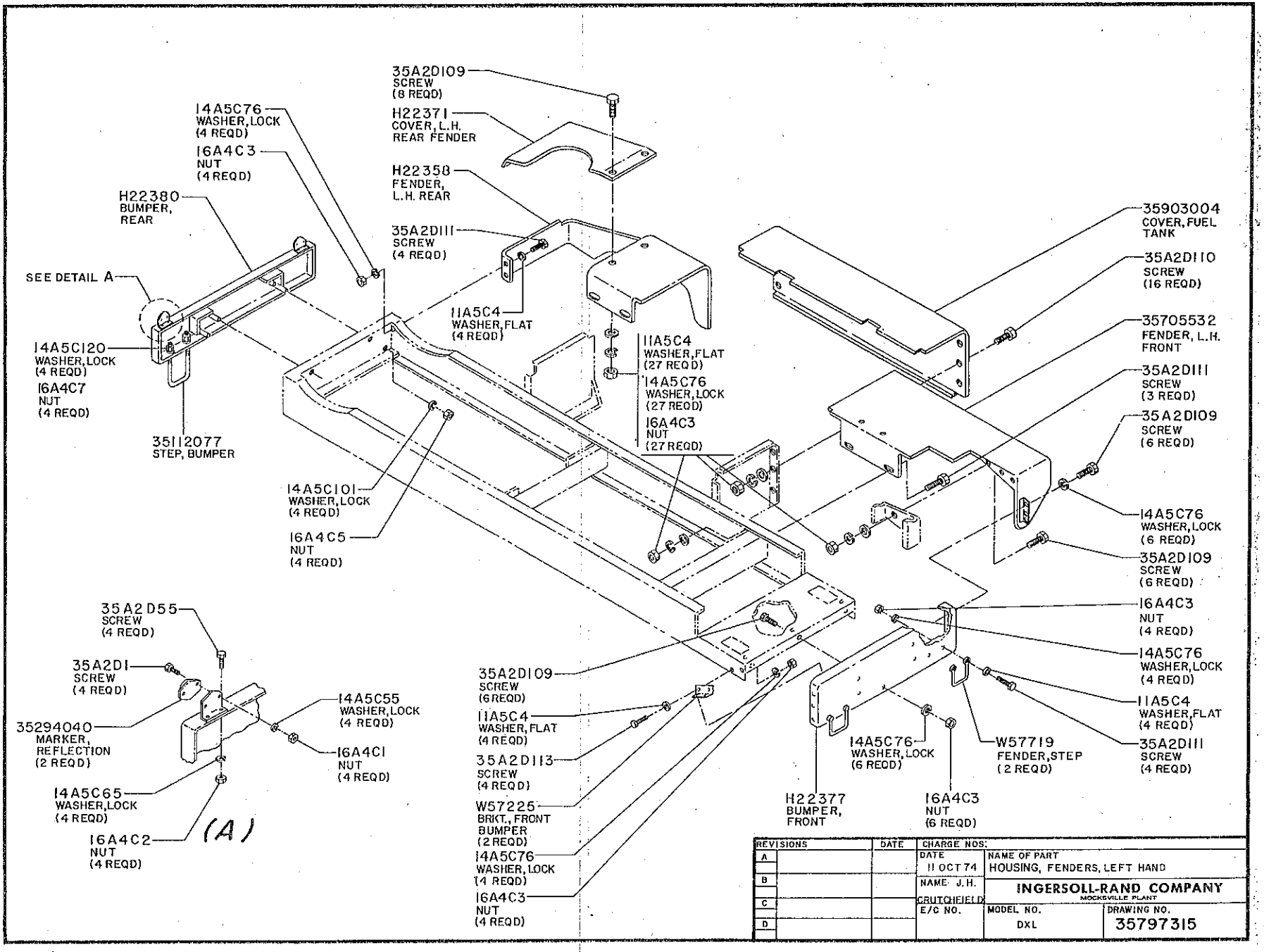
REVISIONS	DATE	CHANGE NOS: 14-97	
A		DATE 11-15-74	NAME OF PART HOUSING, FRONT
B		NAME H.O. SMITH	INGERSOLL-RAND COMPANY MOCKSVILLE PLANT
C		E/C NO.	MODEL NO. DXL / DRAWING NO. 35797315
D			



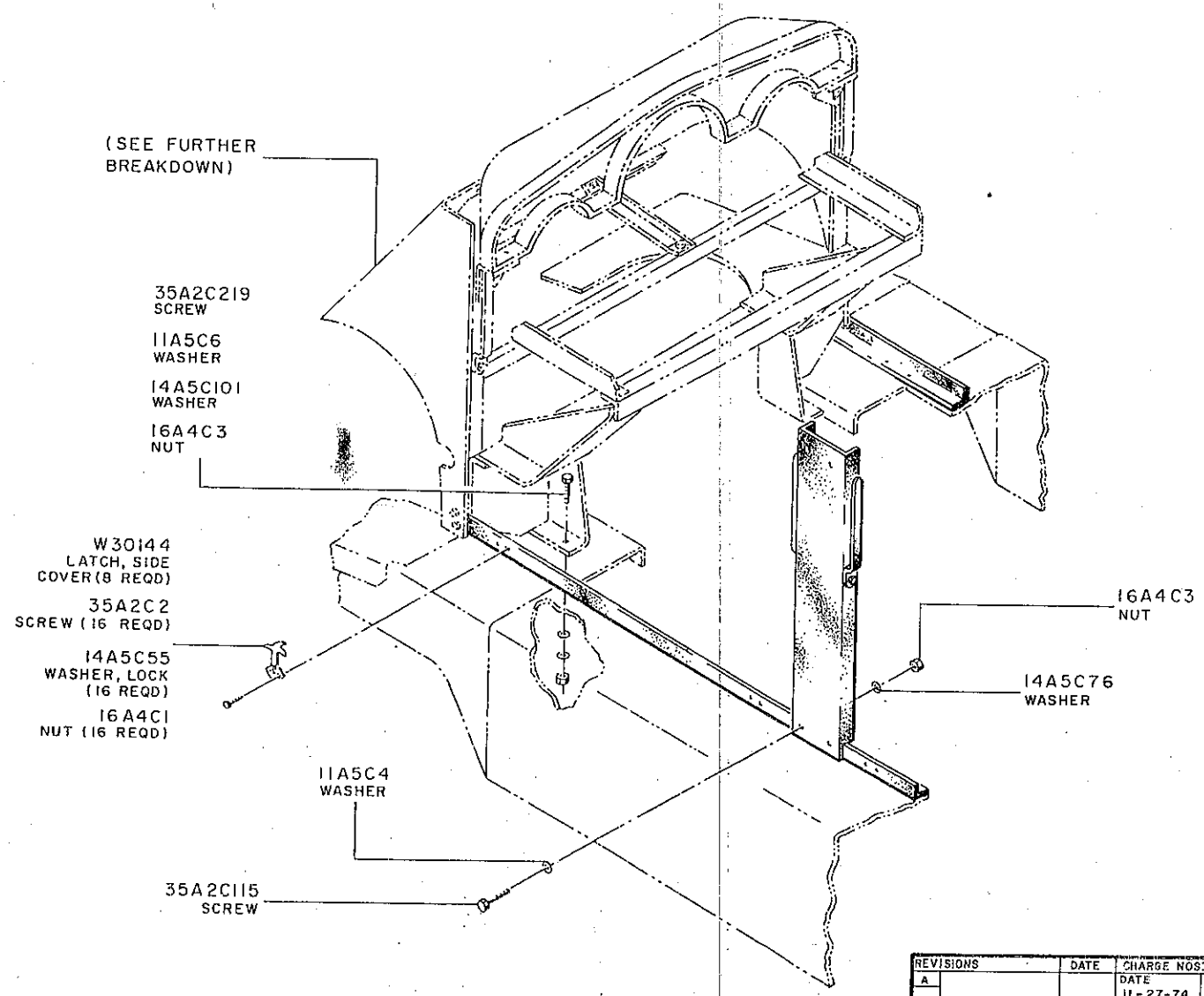
REVISIONS	DATE	CHARGE NOS:	
A		DATE 11-22-74	NAME OF PART HOUSING, REAR
B		NAME I. RILEY	INGERSOLL-RAND COMPANY MOCKSVILLE PLANT
C		E/C NO.	MODEL NO. DXL / DRAWING NO. 35797315
D			



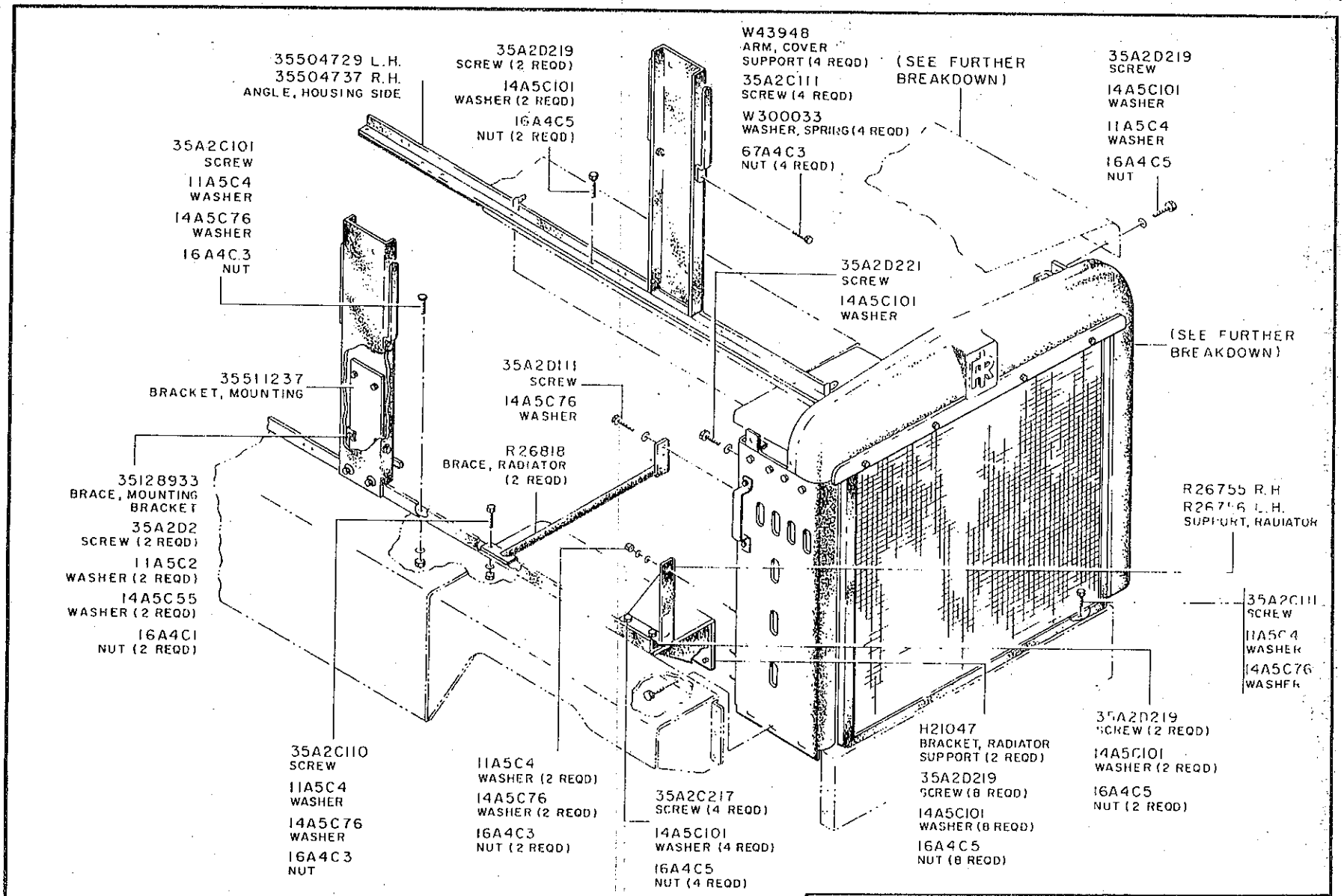
REVISIONS	DATE	CHARGE NOS:	
A		DATE 22 OCT 74	NAME OF PART HOUSING, FENDERS, RIGHT HAND
B		NAME J.H. CRUTCHFIELD	INGERSOLL-RAND COMPANY MOCKSVILLE PLANT
C		E/C NO.	MODEL NO. DXL / DRAWING NO. 35797315
D			



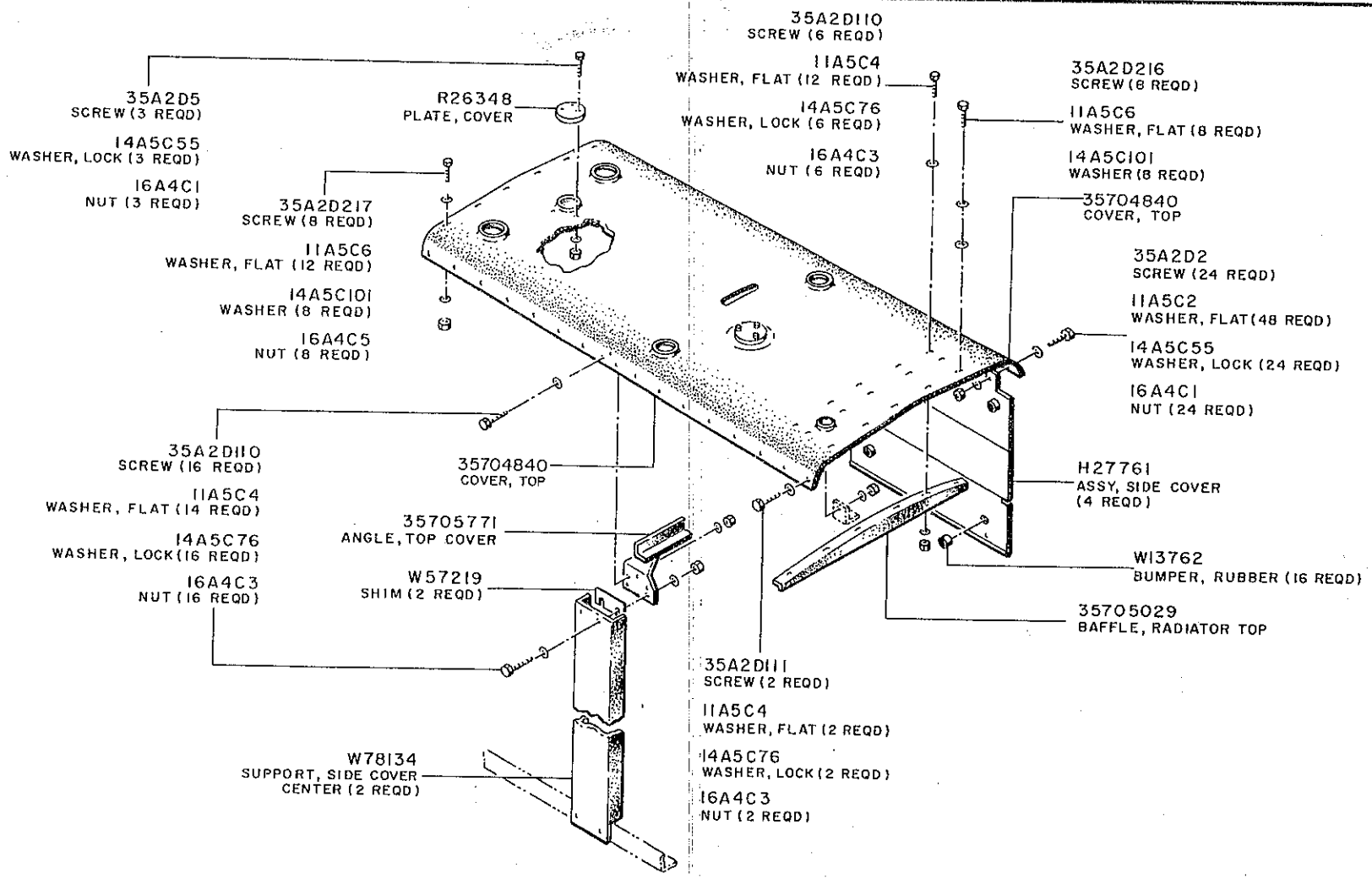
REVISIONS		DATE	CHARGE NOS:	
A			DATE 11 OCT 74	NAME OF PART HOUSING, FENDERS, LEFT HAND
B			NAME J.H. GRUTCHFIELD	INGERSOLL-RAND COMPANY MOCKSVILLE PLANT
C			E/C NO.	MODEL NO. DXL / DRAWING NO. 35797315
D				



REVISIONS	DATE	CHARGE NOS:	
A		DATE 11-27-74	NAME OF PART: HOUSING PARTS
B		NAME I. RILEY	INGERSOLL-RAND COMPANY, MOCKSVILLE PLANT
C		E/C NO.	MODEL NO.: DXL; DRAWING NO.: 35797315
D			



REVISIONS	DATE	CHARGE NOS.	NAME OF PART
A		DATE 11-27-74	HOUSING PARTS
B		NAME I. RILEY	INGERSOLL-RAND COMPANY
C		E/C NO.	MODEL NO. DXL / DRAWING NO. 35797315
D			



REVISIONS	DATE	CHARGE NOS.	
A		DATE 12-2-74	NAME OF PART HOUSING, TOP COVER
B		NAME I. RILEY	INGERSOLL-RAND COMPANY MOCKSVILLE PLANT
C		E/C NO.	MODEL NO. DXL / DRAWING NO. 35797315
D			

SECTION 9

HARDWARE

TABLE 1
SAE/Inch Screws

Part Number	Size	Description
119A2A117N	5/16"—18 UNC—3A x 1-1/4"	Hex. Socket Head (Nylon Insert)
119A2A146	1/4"—20 UNC—3A x 3/4"	Hex. Socket Head
119A2A148	1/4"—20 UNC—3A x 3/8"	Hex. Socket Head
119A2A198	3/8"—16 UNC—3A x 3/4"	Hex. Socket Head
119A2A202N	3/8"—16 UNC—3A x 1/1/4"	Hex. Socket Head (Nylon Insert)
119A2A206N	3/4"—16 UNC—3A x 2"	Hex. Socket Head (Nylon Insert)
120A2A169	5/16"—24 UNF—3A x 3/8"	Hex. Socket Head
123A2S66	.190 x 10—24 x1/2"	Self-Tapping
125A2C46P	#6—32 UNC—3A x 5/16"	Round Head Phillips
35A2D1	1/4"—20 UNC—2A x 1/2"	Hex Head
35A2D109	3/8"—15 UNC—2A x 3/4"	Hex Head
35A2D111	3/8"—16 UNC—2A x 1"	Hex Head
35A2D113	3/8"—16 UNC—2A x 1-1/4"	Hex Head
35A2D115	3/8"—16 UNC—2A x 1-1/2"	Hex Head
35A2D117	3/8"—16 UNC—2A x 2"	Hex Head
35A2D123	3/8"—16 UNC—2A x 3-1/2"	Hex Head
35A2D13	1/4"—20 UNC—2A x 2-1/2"	Hex Head
35A2D166	7/16"—14 UNC—2A x 1-1/4"	Hex Head
35A2D170	7/16"—14 UNC—2A x 2"	Hex Head
35A2D174	7/16"—14 UNC—2A x 3"	Hex Head
35A2D219	1/2"—13 UNC—2A x 1-1/4"	Hex Head
35A2D221	1/2"—13 UNC—2A x 1-1/2"	Hex Head
35A2D225	1/2"—13 UNC—2A x 1/2"	Hex Head
35A2D277	1/2"—13 UNC—2A x 3"	Hex Head
35A2D3P	1/4"—20 UNC—2A x 3/4"	Hex Head
35A2D326	5/8"—11 UNC—2A x 1-3/4"	Hex Head
35A2D327	5/8"—11 UNC—2A x 2"	Hex Head
35A2D330	5/8"—11 UNC—2A x 2-3/4"	Hex Head
35A2D335	5/8"—11 UNC—2A x 4"	Hex Head
35A2D377	3/4"—10 UNC—2A x 3/4"	Hex Head
35A2D382	3/4"—10 UNC—2A x 3"	Hex Head
35A2D384	3/4"—10 UNC—2A x 4"	Hex Head
35A2D386	3/4"—10 UNC—2A x 4"	Hex Head
35A2D4	1/4"—20 UNC—2A x 7/8"	Hex Head
35A2D5	1/4"—20 UNC—2A x 1"	Hex Head
35A2D56	5/16"—18 UNC—2A x 3/4"	Hex Head
35A2D58	5/16"—18 UNC—2A x 1"	Hex Head
35A2D60	5/16"—18 UNC—2A x 1-1/4"	Hex Head
35A2D68	5/16"—18 UNC—2A x 3"	Hex Head
35A2D9	1/4"—20 UNC—2A x 1-1/2"	Hex Head
35138759	1/4"—20 x 5/8"	Hex Washer Head, Thread-Forming, Type W Point
35139047	.190 x 10—24 x 3/4"	Hex Head, Self Tapping
35139781	#440 x 3/8"	Hex Washer Head, Thread-Forming, Type W Point
35144328	5/16"—18 x 3/4"	M-F Flange Whiz-Lock®
35144336	5/16"—18 x 3/4"	M-F Flange, Whiz-Lock®
35144344	3/8"—16 x 1"	M-F Flange, Whiz-Lock®
35144484	1/4"—20 x 5/8"	M-F Flange, Whiz-Lock®
35145259	3/8"—16 x 1 1/4"	M-F Flange, Whiz-Lock®
35252451	1/4"—20 x 1"	M-F Flange, Whiz-Lock®
35252493	3/8"—16 x 3/4"	M-F Flange, Whiz-Lock®
35252568	1/2"—13 x 1-1/4"	M-F Flange, Whiz-Lock®
35252725	3/8"—16 x 1/2"	M-F Flange, Whiz-Lock®
35252741	1/2"—13 x 1-1/2"	M-F Flange, Whiz-Lock®
35277631	#6—32 UNC—2A x 3/16"	Round Head, Slotted
35284371	1/4" x 3/4"	Hex Washer Head, Self Tapping, Type A-B
35287119	1/4"—14 x 3/4"	Hex Washer Head, Self Tapping
83A2C144	1/4"—20 UNC—2A x 1/2"	Round Head, Slotted
83A2C49	#6—32 UNC—2A x 1/2"	Round Head, Slotted

SAE/Inch Nuts

Part Number	Size	Description
16A4C1	1/4"—10 UNC—2B	Hex
16A4C1P	1/4"—20 UNC—2B	Hex
16A4C2	5/16"—18 UNC—2B	Hex
16A4C3	3/8"—16 UNC—2B	Hex
16A4C5	1/2"—13 UNC—2B	Hex
16A4C7	5/8"—11 UNC—2B	Hex
16A4C8	3/4"—10 UNC—2B	Hex
21A4C7	#6-32 UNC—2B	Hex
22A4C2	5/16"—24 UNF—2B	Hex
35144492	1/4"—20	M-F Flange, Whiz-Lock®
35145077	3/8"—16	M-F Flange, Whiz-Lock®
35252600	5/16"—18	M-F Flange, Whiz-Lock®
35252618	1/2"—13	M-F Flange, Whiz-Lock®

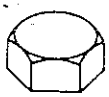
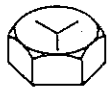
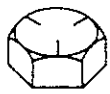
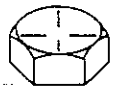
®Reg. T.M. of MacLean-Fogg Lock Nut Co.
(Alternate Suppliers are Acceptable for this Part Number)

SAE/Inch Washers

Part Number	Size	Description
11A5C2	1/4"	Flat (Commercial)
11A5C3	5/16"	Flat (Commercial)
12A5C26	#6	Flat (SAE)
12A5C3	7/16"	Flat (SAE)
12A5C4	3/8"	Flat (SAE)
14A5C101	1/2"	Spring Lock
14A5C120	5/8"	Spring Lock
14A5C133	3/4"	Spring Lock
14A5C19	#6	Spring Lock
14A5C55	1/4"	Spring Lock
14A5C55P	1/4"	Spring Lock, Cadmium Plate
14A5C65	5/16"	Spring Lock
14A5C76	3/8"	Spring Lock
14A5C91	7/16"	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	SAE Grade 5	SAE Grade 6 or 7	SAE Grade 8
	   	 	
QUALITY OF MATERIAL INDETERMINATE	QUALITY OF MATERIAL MINIMUM COMMERCIAL	QUALITY OF MATERIAL MEDIUM COMMERCIAL	QUALITY OF MATERIAL BEST COMMERCIAL
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.

TABLE 2
ISO/Metric Screws

Part Number	Size	Description
35271147	M12 x 1.75 x 30 MM	Hex Head, Class 8.8
35271188	M10 x 1.5 x 25 MM	Hex Head, Class 8.8
35272533	M12 x 1.75 x 35 MM	Hex Head, Class 8.8
35272541	M16 x 2 x 40 MM	Hex Head, Class 8.8
35272558	M20 x 2.5 x 45 MM	Hex Head, Class 8.8
35273341	M12 x 1.75 x 35 MM	Socket Head, Class 12.9
35273408	M8 x 1.25 x 20 MM	Hex Head, Class 8.8
35273945	M10 x 1.5 x 55 MM	Hex Head, Class 8.8
35278977	M12 x 1.75 x 75 MM	Hex Head, Class 8.8
35278985	M12 x 1.75 x 30 MM	Socket Head, Class 12.9
35279025	M8 x 1.25 x 20 MM	Hex Washer Head, Class 8.8
35279702	M16 x 2 x 65 MM	Hex Head, Class 8.8
35285584	M12 x 1.75 x 25 MM	Socket Head, Class 12.9
35286335	M12 x 1.75 x 120 MM	Hex Head, Class 8.8
35286343	M5 x .8 x 10 MM	Set, Socket Head, Class 8.8
92304393	M10 x 1.5 x 20 MM	Hex Head, Class 8.8
92368687	M6 x 1 x 12 MM	Hex Washer Head, Class 8.8

ISO/Metric Nuts

Part Number	Size	Description
35273366	M10 x 1.5	Lock, Nylon Insert
35278522	M6 x 1	Lock, Nylon Insert
35278530	M8 x 1.25	Lock, Nylon Insert
35284058	M10 x 1.5	Lock, Conical
35285576	M12 x 1.75	Lock, Conical
90103839	M16 x 2	Hex
90103854	M12 x 1.75	Hex

ISO/Metric Washer

Part Number	Size	Description
35280619	12 MM	Flat
35286889	12 MM	x 2 MM Thick, Lock, Conical Contact

ISO/Metric Capscrews
Grade Identification

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

CLASS 4.6	CLASS 5.8	CLASS 8.8	CLASS 9.8	CLASS 10.9	CLASS 12.9
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
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 applictions, class 10.9 and 12.9 capscrews are acceptable.

SECTION 10

MARKINGS AND DECALS