INDEX BY SUBJECTS (continued)

PART I
DESCRIPTION

GENERAL DESCRIPTION

The Gyro-Flo Portable Compressor consists of a single stage rotary air compressor directly connected to and driven by a heavy duty industrial type engine. This unit assembly is mounted on a sturdy, channel section, welded steel frame.

The running gear is a two wheel spring mounting, having pneumatic tired wheels. "Less running gear" and utility units are furnished on wooden shipping skids.

Large capacity tool boxes with lockable covers, as well as wheel fenders, can be furnished as optional equipment.

Operating accessories include oil cooler, fuel supply tank, combination air receiver-oil separator, and the necessary regulating devices, instruments, air filter, oil filter, etc.

COMPRESSOR

The compressor is single stage, and is of the sliding vane rotary type. The rotor chamber is supported by a yoke which is bolted directly to the flywheel housing of the engine with pilot fit to insure proper alignment. A rear bearing housing and oil pump casing with cover closes the rear end of the rotor chamber.

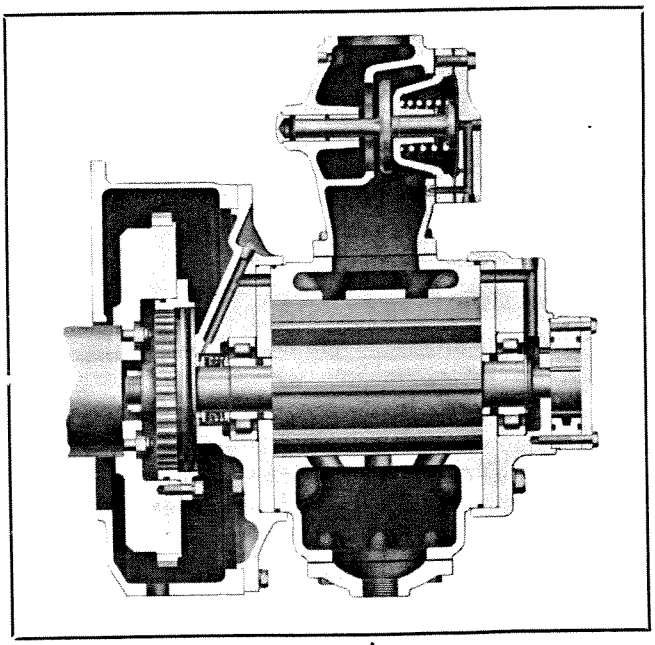


Fig. 3—Cross-sectional view of Gyro-Flo Single Stage Compressor.

A front bearing, with rotary shaft oil seal, is contained in the yoke. Special end plate inserts are located at each end of the rotor chamber and act as end guides for the vanes.

The cylinder bore (or rotor chamber) is offset from the shaft center line. This causes the cylinder bore to be eccentric to its rotor.

The rotor is slotted to receive sliding vanes which are sealed by the copious amount of lubricating oil fed to the bearings and bore. They are held against the bore wall by centrifugal force when operating.

AIR FLOW (Fig. 4)

Free air is taken into the chambers through large ports at an area where the vanes are well out of the rotor slots, thus filling the spaces or volumes between the vanes. As rotation proceeds, the vanes are moved radially inward in their slots by the bore wall. This causes the volume between the vanes to decrease and compresses the air trapped in this space. As this space volume approaches zero, a second series of ports is uncovered allowing the compressed air to discharge into the receiver-separator.

OIL FLOW (Figs. 13 and 14)

Relatively cool lubricating oil is admitted under pressure to the precision roller bearings and also is injected in metered amounts directly to the rotor chamber. The oil passes through the bearings at each end of the rotor, enters the close clearances at the vane ends, and thence to the rotor chamber.

All of the oil thus introduced, mixes with, and passes on with the air being compressed. This removes the heat of compression to a large degree and results in an unusually low final air discharge temperature.

The discharge air passes through a short connection into a combination air receiver-oil separator where the oil is removed from the air and collects in the storage reservoir formed by the lower portion of the receiver-separator shell. From there, the oil is forced through piping to an oil cooler assembly. This cooler is located at the radiator end of the portable in such a manner that the engine radiator fan serves to cool both the engine jacket water and the compressor lubricating and cooling oil.

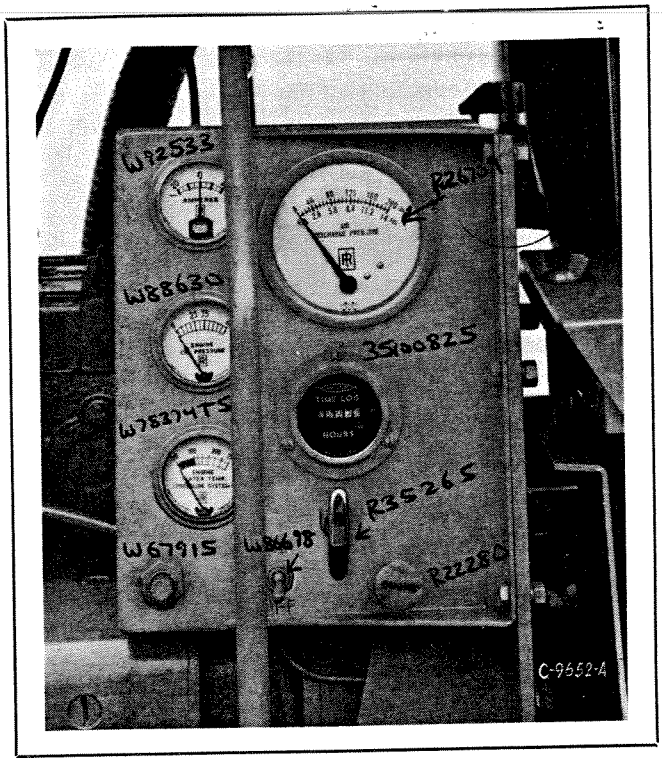


Fig. 5—Instrument Panel.

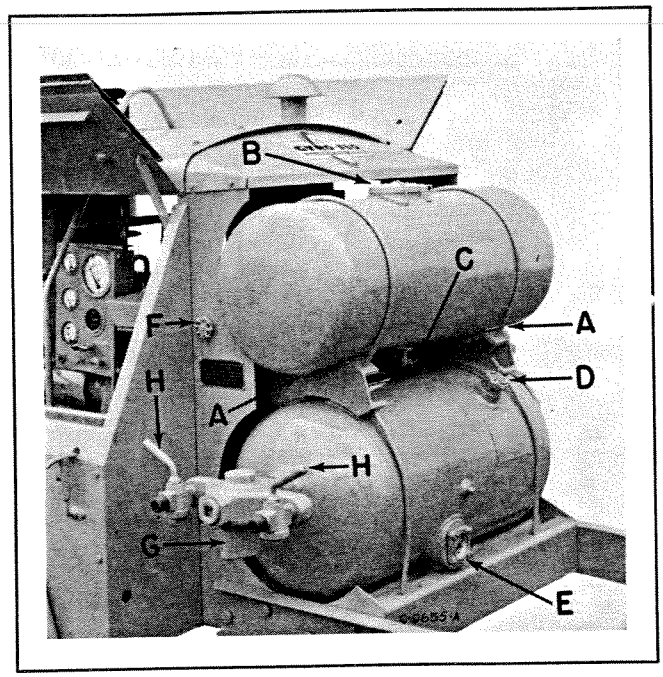


Fig. 6—Rear View of Compressor showing Receiver-Separator and Service Fittings.

AIR RECEIVER-OIL SEPARATOR (Figs. 6, 10 and 13)

The combination air receiver-oil separator (hereinafter called the receiver-separator) is comprised of a special ASME - National Board Code welded steel receiver shell designed for 150 psi (10.55 kg/cm²) working pressure.

Located entirely within the shell is a secondary separator nest and support tube. Removing the secondary separator nest and the support tube provides a very large opening through which perfect cleaning and inspection can be performed. An internal strainer at the receiver-separator tank (bottom) outlet connection provides a means of trapping any solids which might be carried by the oil flow toward the oil cooler. This strainer fitting is removable for cleaning. The delivery end of the receiver-separator is arranged to provide connections for the minimum pressure valve, service valves, a manual blowdown valve and the required safety valve.

It is continuously drained of any oil accumulation by a scavenger line which drains to the cylinder.

HOSE REELS (Fig. 7)

Hose reels are available as optional equipment. Each reel has a capacity for 50 ft. (15¼ meters) of ¾" (19 mm) air hose and includes a minimum pressure service valve "H".

The following "call-outs" are referenced on Fig. 6.

A. Plugged Drains
B. Fuel Tank Filler Cap
C. Fuel Shut-off Valve
D. Receiver-Separator Oil Filler Plug
E. Oil Level Indicator
F. Receiver-Separator Manual Blowdown Valve
G. Minimum Pressure Valve
H. Service Valves

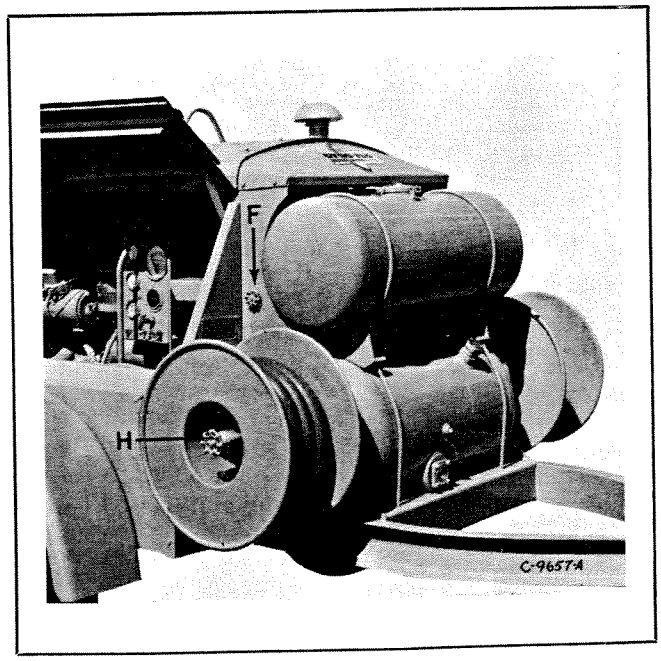


Fig. 7—Model GR85 with Hose Reels. Manual Blowdown Valve shown at "F". Minimum Pressure Service Valve shown at "H".

PROTECTIVE THERMAL SWITCH

The compressor is protected against overheating by a thermal switch located in the cylinder discharge chamber. The switch is of the "normally-closed" type and serves to open the ignition circuit to cause immediate shutdown should the temperature of the discharge air rise above 220°F to 230°F (104.4°C to 110°C).

Should the engine be shut down during operation by this switch, check immediately to determine where the trouble lies and correct it before attempting further operation.

SAFETY VALVE

A safety valve is connected to the receiver-separator to protect the compressor against any serious over-pressure. It should be operated manually once a month to make sure it is in proper operating condition. Should this safety valve "blow" at any time due to excessive discharge pressure, check the regulating devices for improper settings.

AIR FILTER

Both the engine and the compressor intake are protected against entrance of dust and foreign objects by an efficient, stack type, oil bath air filter which takes its air from above the roof.

The filter should be serviced as often as required in accordance with operating conditions; daily, if in a very dusty location.

Normal servicing requires only emptying and cleaning the bottom oil pan as shown in Fig. 8 and refilling with engine oil to the bead line "C". The oil pan can be dropped as shown after loosening the two wing nuts. Use the same oil as used in the engine or a heavier grade in hot weather. **The precleaner,** Fig. 9, located above the roof, should be checked occasionally to see that it is not clogged with dirt or foreign material.

If the screen element of the stack type air filter becomes clogged, remove the complete filter, and wash in a tub of hot water and soap powder or detergent. Then rinse thoroughly, drain and dry, re-oiling before reassembly to the unit.

NOTE:—Air filters on units for export are drained of oil when shipped and must be refilled before operation of unit.

RECEIVER-SEPARATOR

The secondary oil separator is mounted within a removable inner shell which is placed inside the primary receiver-separator shell. The inside of the primary receiver-separator shell may be cleaned by withdrawing the inner shell, allowing access to the inside of the receiver-separator.

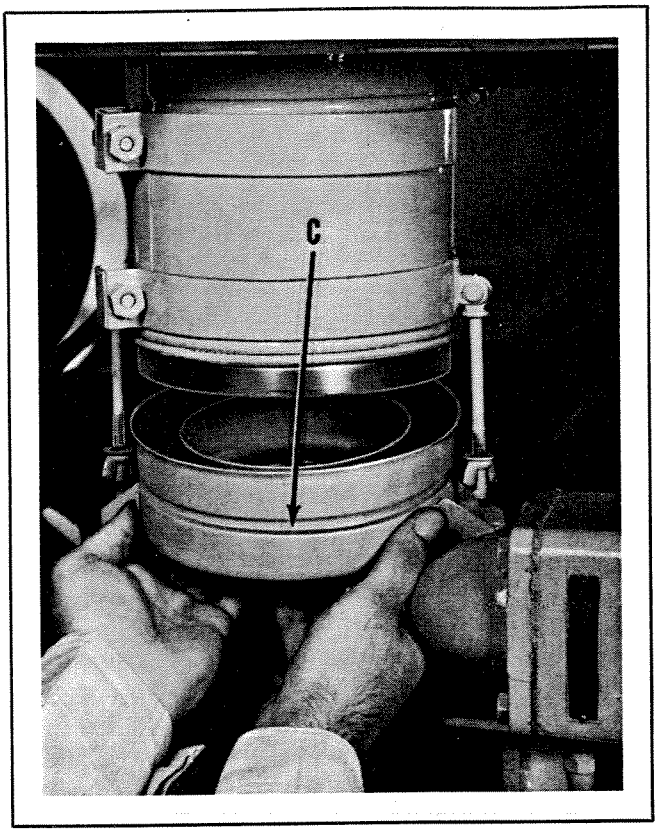


Fig. 8—Dropping Air Filter bottom pan for cleaning and renewing the oil. Fill to bead line "C" on the pan.

OIL SEPARATOR ELEMENT

The secondary oil separator element consists of a series of chambers each packed with an oil diverting medium through which the compressed air passes on its way to the final discharge connection. (Most

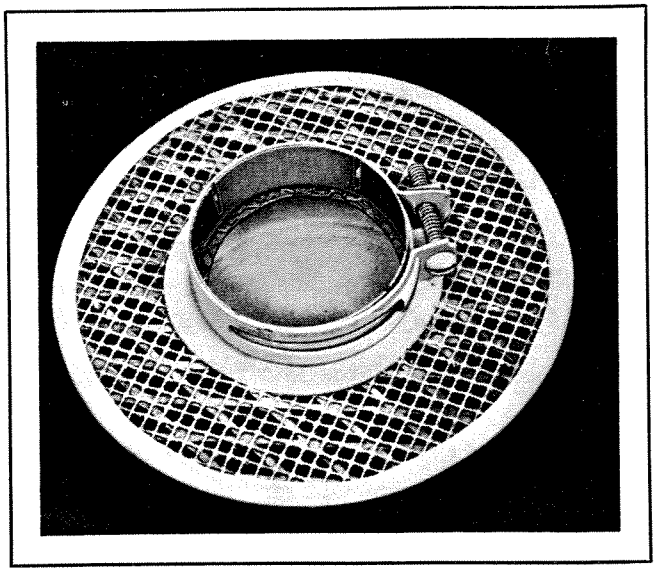


Fig. 9—Filter Pre-Cleaner, serves as a rain cap and screen to prevent entrance of leaves, etc. Keep screen open.

PART III
STARTING

BEFORE STARTING

1. Set the portable compressor on level ground and in as clean a location as possible.

   Note:—For Out-of-Level Operation, see page 12.

2. Check the oil level in both the compressor receiver-separator reservoir and engine crankcase. Add make up oil if required. (See special instructions under Lubrication.)

3. Check air filter for proper oil level in the bottom pan.

4. Check engine radiator to see that it is correctly filled with clean, soft water. Use permanent type anti-freeze solution if operating in below freezing temperatures. The use of a commercial rust inhibitor is recommended to prevent internal corrosion of the cooling system.

5. See that the fuel tank is filled with a good quality engine fuel. Use a good grade of regular motor fuel of at least 84-86 octane rating. Premium fuels are not required and highly leaded fuels should be avoided. Open shut-off valve underneath fuel tank to its fully open position.

6. Insure there is no air pressure in the receiver-separator system, either by observing the pressure gauge or by opening the manual blowdown valve. (See paragraph on "Stopping" and "F", Fig. 6).

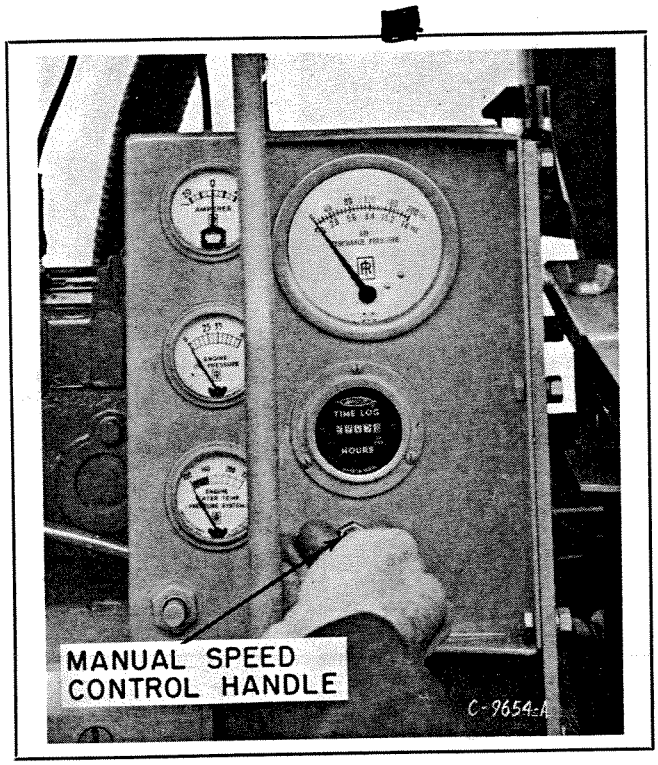


Fig. 11—Pulling Manual Speed Control Handle out and locking, preliminary to starting, Model GR85. Operating Instruments are located on the end of the Model GRU85.

STARTING

A manual speed control is furnished for easy starting of the gasoline engine any time after it has been shut down long enough to have cooled down to surrounding temperatures. The manual speed control holds the engine at a definite "warm-up" speed high enough to prevent stalling.

1. Refer to Fig. 11 and pull the manual speed control handle all the way out. Turn ¼ turn clockwise to lock. Depress the starter button to start the engine. ALL SERVICE VALVES AND THE MANUAL BLOWDOWN VALVE ON THE AIR RECEIVER-OIL SEPARATOR SYSTEM MUST BE CLOSED TO BUILD UP FULL AIR PRESSURE. This causes compressor unloading and results in minimum load on the engine while it is warming up. It also applies full pressure to the lubricating oil in the storage reservoir. This causes the oil to flow to the oil cooler or through the by-pass valve direct to the oil pump inlet to establish full lubricating pressure in the compressor immediately.

2. Keep the manual speed control handle pulled all the way out until the engine is warmed up.

3. When the unit is fully warmed up, the manual speed control handle should be turned ¼ turn counterclockwise to unlock it and then should be pushed all the way in. Now, air demand will regulate output as required.

4. In extremely cold weather, it may be necessary to turn the engine over two or three compressions with the choke completely closed and the ignition turned "off". Then, open choke part way, turn on ignition and start.

5. Normally the unit must be started with the manual blowdown valve closed; but, in extremely cold weather, it may be advisable to leave the valve partially open. This will allow the engine to be

PART IV
LUBRICATION

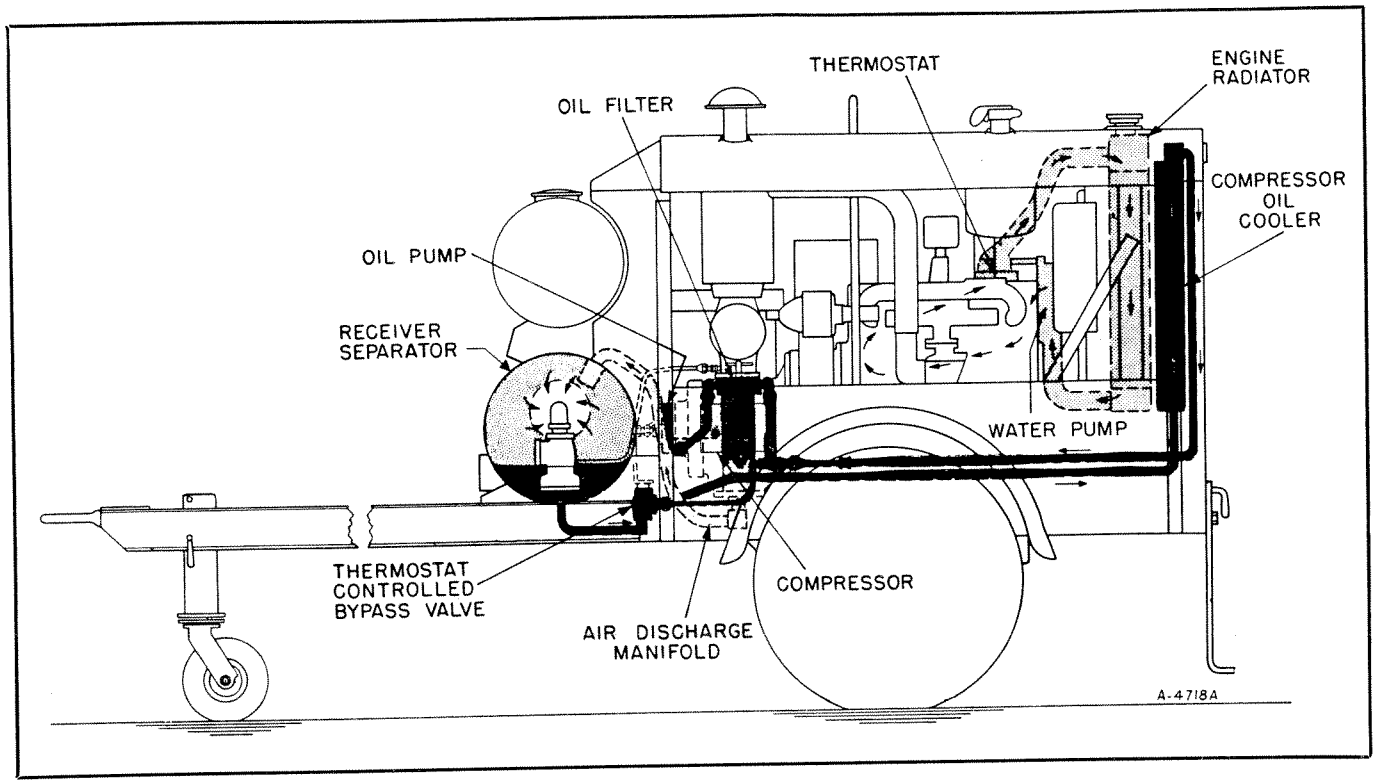


Fig. 13—Diagram showing the Cooling System of the Oil Cooled Compressor and Water Cooled Engine.

LUBRICATION (COMPRESSOR)

Compressor lubrication and cooling are both accomplished by the compressor lubricating oil. The compressor is cooled by oil injection directly into the rotor chamber. The compressor lubricating system consists of an oil pump, a storage reservoir, an oil cooler, and the necessary piping together with an oil filter.

The **oil cooler** is a radiator-like heat transfer core section placed immediately in front of the engine radiator core and having approximately the same frontal area. It is so arranged internally that the oil passes through the cooling air stream on its way through the core. Oil is piped from the storage space in the separator shell to the inlet opening of the cooler core. On leaving the cooler, it flows through the piping and the oil filter to the oil pump intake.

COMPRESSOR OIL FILTER

The oil filter (Fig. 13) is located in a loop of the oil piping so that the filter shell may be removed for servicing without having to drain any other part of the system. Only the oil in the filter shell itself is removed when the shell is removed for cleaning.

The oil filter is of a continuously cleanable type with a permanent all metal filtering element or cartridge. The filter operates on the principle of edge filtration. The positive combing action of the cleaner blades frees it of all solids collected on the filtering surface, restoring the initial conditions of flow. The handle should be turned one turn each day, preferably immediately after shutting down while the oil is still warm. Also, twice a month remove the filter shell and clean out any sludge or foreign material which may have collected. While shell is removed, inspect for lacquer deposit. If lacquer deposit is noted, change compressor oil completely to avoid vane sticking in the compressor.

OIL STORAGE RESERVOIR IN RECEIVER-SEPARATOR

The oil storage reservoir is the lower portion of the shell of the receiver-separator, where most of the oil collects as it is thrown out of the compressed

has operated for 500 hours or until oil level gauge indicates about half full (when unit is standing approximately level and shut down).

A complete replacement of the old compressor oil with clean new oil every 500 hours is desirable and is good insurance. This practice tends to prevent accumulation of dirt or sludge or oxidized oil products in the system.

6. Frequent inspection and cleaning of the oil filter has several advantages. It makes the job of cleaning it much easier and provides a check on the condition of the oil and therefore of the whole compressor. Neglect of this operation results in the by-passing of unfiltered oil in reduced quantity, overheating of compressor and probable automatic shut-down.

   If any varnish or lacquer deposits are found in the filter, this indicates that the oil is deteriorating and it should be changed immediately.

COMPRESSOR OIL FILTER

Turn handle one full turn daily, preferably after stopping unit. Remove shell and clean out sludge every 100 hours of operation. While shell is removed, inspect for lacquer deposit. If **lacquer deposit is noted,** change compressor oil completely to avoid vane sticking in the compressor.

UNITS FOR DOMESTIC USE

Do not add oil to the compressor lubricating system of new units. These units are shipped with an initial supply sufficient to operate for 500 hours or until oil level gauge indicates about half full when unit is shut down and standing approximately level.

UNITS FOR EXPORT USE

The compressor lubricating system of units for export is completely drained at time of shipment and system must be refilled with new oil to the preceding recommendations before operation.

LUBRICATION (ENGINE)

Refer to manufacturer's instruction book. Use S.A.E. 10W-30 for the first 50 hours of operation, then S.A.E. 10-W, 20-W or 30 in accordance with surrounding temperatures:

Over 75°F (23.9°C)	SAE 30
75°F (23.9°C) to 32°F (0°C)	SAE 20-W
32°F (0°C) to −10°F (−23.3°C)	SAE 10-W
Below −10°F (−23.3°C)	SAE 5W-20

Change oil at regular intervals of 50 hours of operation. Lubricate the starter and generator sparingly once a week, using 3-5 drops of the same oil as for the engine. **Do not over oil.**

NOTE:—Engines of units for export are completely drained of oil before shipping and must be refilled before operation.

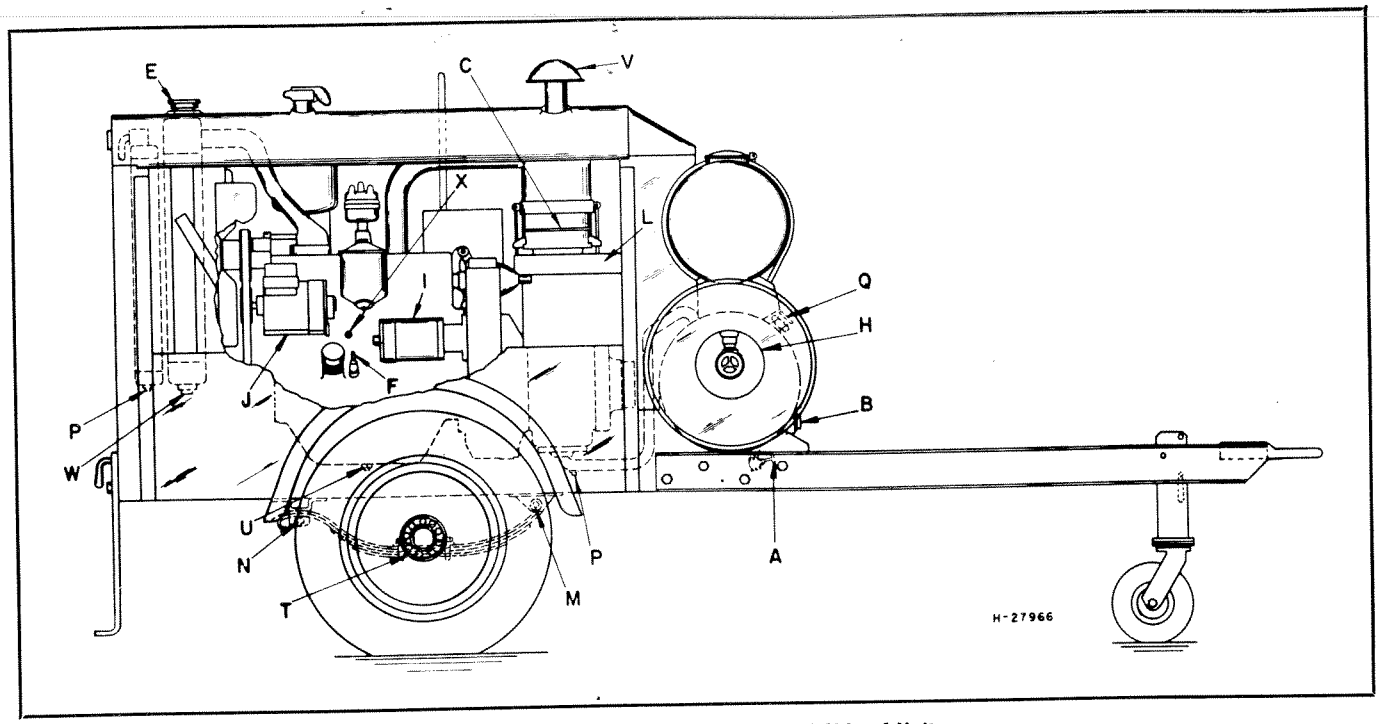


Fig. 16—Lubrication Chart - Left Hand Side of Unit.

TWICE A MONTH (or every 100 hours of operation)

1. Service the compressor lubricating oil filter "K". Remove filter shell and clean out sludge or foreign material.
2. Check the electrolyte level in each cell of the battery "L". Add distilled water if electrolyte is below battery manufacturer's recommended level.

ONCE A MONTH

1. Operate separator-receiver safety valve manually to make sure it is in proper operating condition.
2. Remove fuel tank drain plugs to draw off any collection of water and sediment.

EVERY THREE MONTHS (or every 500 hours of operation)

1. Lubricate the running gear spring bolts "M" by applying grease to fittings with a grease gun.
2. Lubricate the running gear springs "N" by applying light grease (or heavy oil with a brush) to the slip end of each spring.
3. Change compressor lubricating oil. If lacquer deposits are found, increase the frequency of oil change. To drain system, remove pipe plugs "P" and open valve "A". Never remove the pipe plugs "P", the oil filler plug "Q", or open drain "A" when the receiver-separator is under pressure.
4. Remove scavenger line and clean the oil line screen assembly "R". Also clean the inlet unloader orifice "S".

TWICE A YEAR (or every 1250 hours of operation)

1. Remove wheels. Replace any worn parts and repack wheel bearings "T" (not over one-half full with wheel bearing grease).
2. Clean the engine cooling system. Refer to the engine book for complete instructions.
3. Lubricate third wheel by applying grease to grease fittings "Y" with a grease gun. **Do not overgrease.**

ONCE A YEAR (or every 2000 hours of operation)

1. Inspect rotor vane tips for wear and breakage.

EVERY TWO YEARS (or every 4000 hours of operation)

1. Replace rotor vanes as a matter of routine preventive maintenance.
2. In normal operation, service secondary separator element.
3. Replace regulator diaphragms.

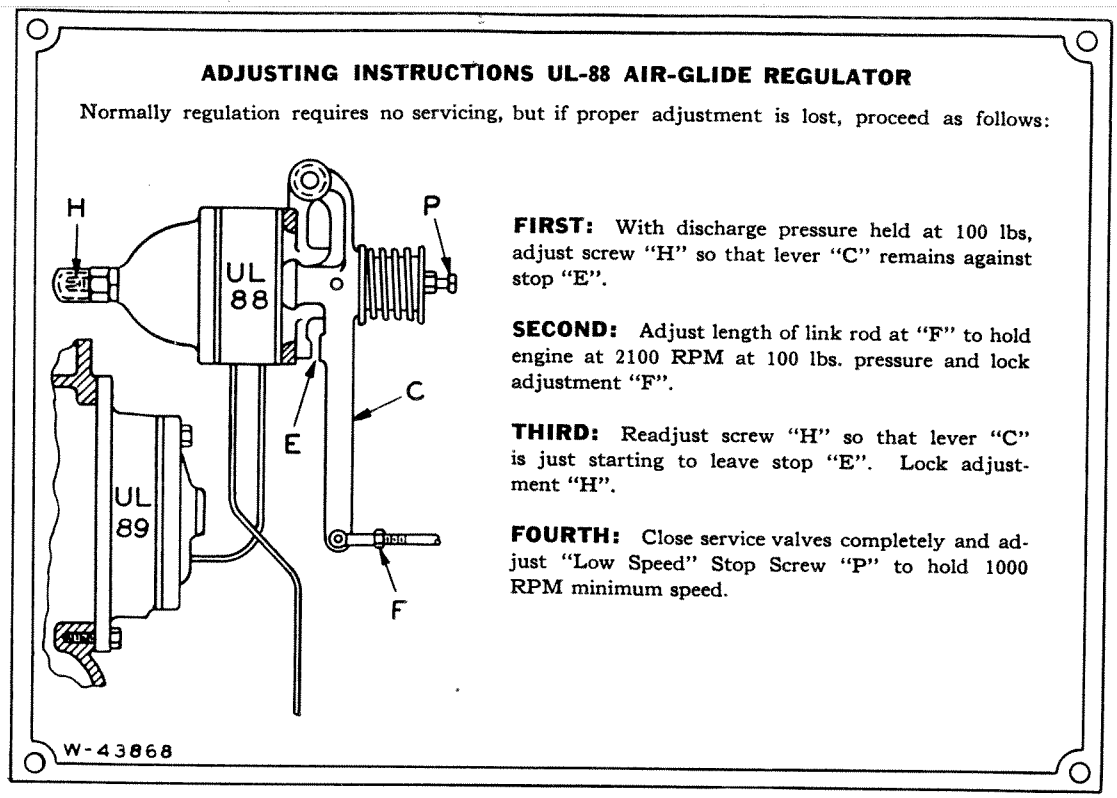


Fig. 18—UL-88 "Air Glide" Regulator Instruction Plate.

sion to prevent movement of the regulator diaphragm, (and the valve) until the pressure in chambers "B" and "L" has increased to a predetermined value. This allows compressor volumetric regulation to start approximately 60%. From there on it will become progressively more effective as the air demand decreases and the pressure in chamber "L" increases above the balancing point.

ADJUSTMENTS FOR SPEED AND PRESSURE

Maximum Rated Speed (Fig. 18)

With final pressure held at 100 psi (7.03 kg/cm²) and governor link rod attached to UL-88 lever arm, adjust screw "H" so that lever "C" remains firmly against stop "E", then adjust the length of link rod "F" to maintain full rated speed of 2100 RPM.

Minimum Low Speed

Close service valves, causing final pressure to increase and complete unloading to occur (zero delivery). Then adjust low speed stop screw "P" (Fig. 18) on UL-88 Regulator to hold engine speed at 1000 RPM.

Start of Speed Regulation

Hold final pressure at 100 psi (7.03 kg/cm²) and readjust screw "H" so that lever "C" is just leaving stop "E". (Speed starts to fall off if pressure is raised above 100 psi (7.03 kg/cm²).

Changing Pressure Range

By simple readjustment of screw "H", Fig. 18, the start of regulation can be raised or lowered from the normal 100 psi (7.03 kg/cm²) setting. This enables the operator to select an average operating pressure suitable for the tools being operated, or to compensate for pipe line loss to a certain extent where long lines must be used. Do not attempt to adjust for more than plus or minus 10 per cent from the normal 100 psi (7.03 kg/cm²) setting.

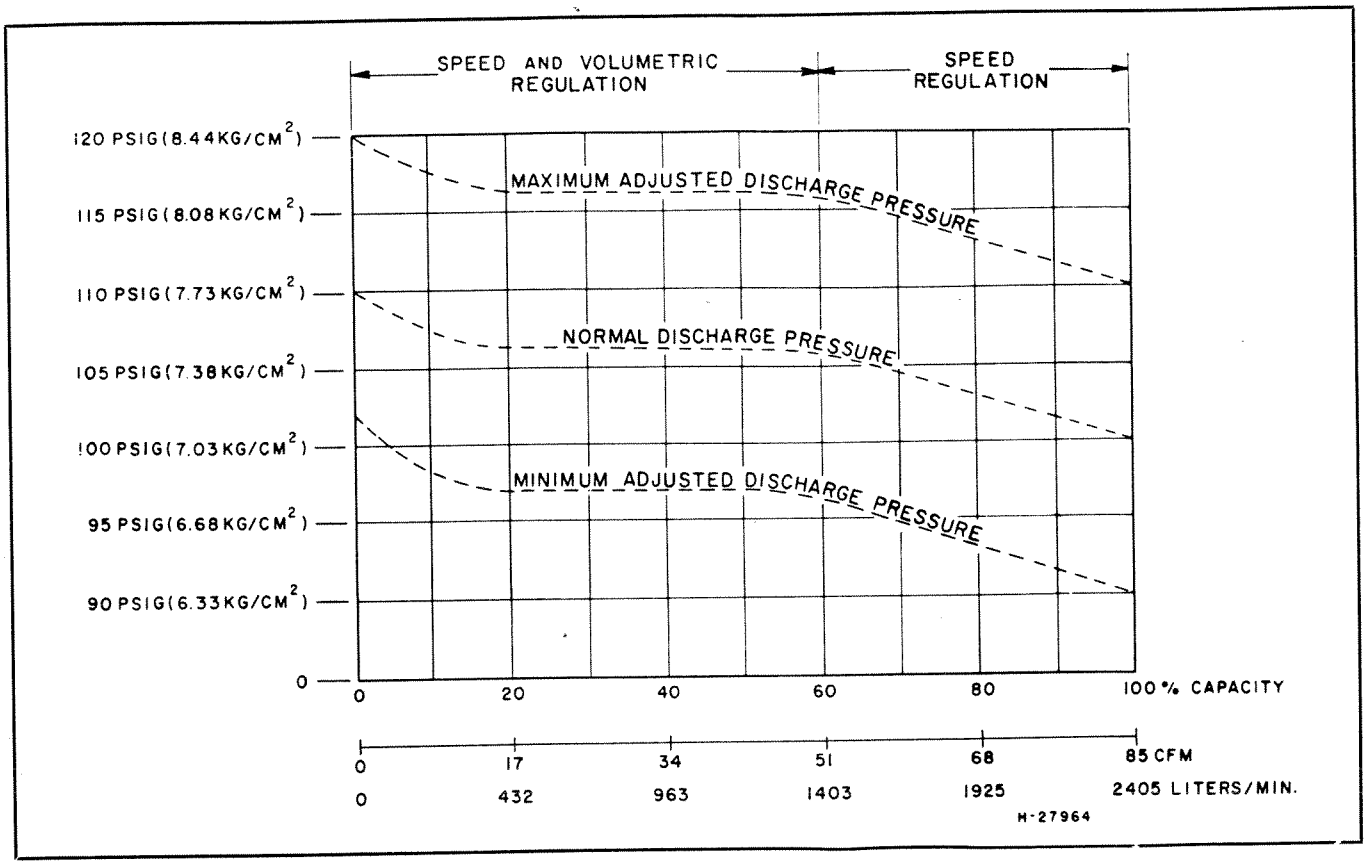


Fig. 19—Capacity-Pressure Chart.

PART VI
PARTS LIST

GENERAL

The Model GR85 Gyro-Flo Air Compressor is manufactured with the finest quality material. Years of research and experience have been combined with quality workmanship and careful inspection to provide many years of dependable trouble-free operation.

This section, which contains an illustrated parts breakdown, has been carefully 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 genuine parts are available world-wide. There are Ingersoll-Rand Company branch offices and authorized distributors or dealers conveniently located in the principle cities of the United States and throughout the free world. Each branch office, or authorized distributor or dealer, is thoroughly equipped with a full and adequate supply of genuine Ingersoll-Rand Company parts. For faster and better service, your parts requirements should be ordered from your nearest Ingersoll-Rand Company branch office or authorized distributor or dealer. A list of branch offices will be found in the rear of this publication. Each branch office is ably equipped to provide technical assistance with prompt, intelligent, and courteous service, either through correspondence or personal contact.

All parts orders pertaining to the gasoline engine should be referred to your nearest Continental Motors Corporation distributor or dealer. Correspondence concerning the engine should always include the information found on the engine Name Plate attached to the side of the cylinder block. This information should include the engine model, specification number and engine serial number stamped in engine block.

INTRODUCTION

The illustrated parts breakdown illustrates, lists and describes the various assemblies, subassemblies and detail parts which make up the Models GR85 and GRU85 Air Compressors. Each group of parts is accompanied by an illustration which shows each individual part as clearly as possible and in its correct location relative to the other parts in the illustration. Reference numbers only are used on each illustration. These numbers correspond to those in the illustration number column in the list of parts which follows each illustration.

Each illustration is followed immediately by a listing of the component parts. These component parts are listed in numerical order according to the reference number shown in the illustration.

A special feature of this parts listing is a system of identifying those parts which are included with an assembly or with other parts. The included part, or parts, is denoted by being indented from the previous item. When a part is ordered that has an indented item, or items, following the part, the indented items are always included with that part. Indented items may also be ordered individually.

There are a number of items in the parts listing that are located on the rear or front of the unit, or that are identified as being either right hand or left hand parts. These parts are modified with the necessary descriptive information to properly identify them. In referring to the rear, the front or to either side of the unit, always consider the receiver-separator as the rear of the unit. Standing at the rear of the unit facing the receiver-separator, will determine the right and left sides.

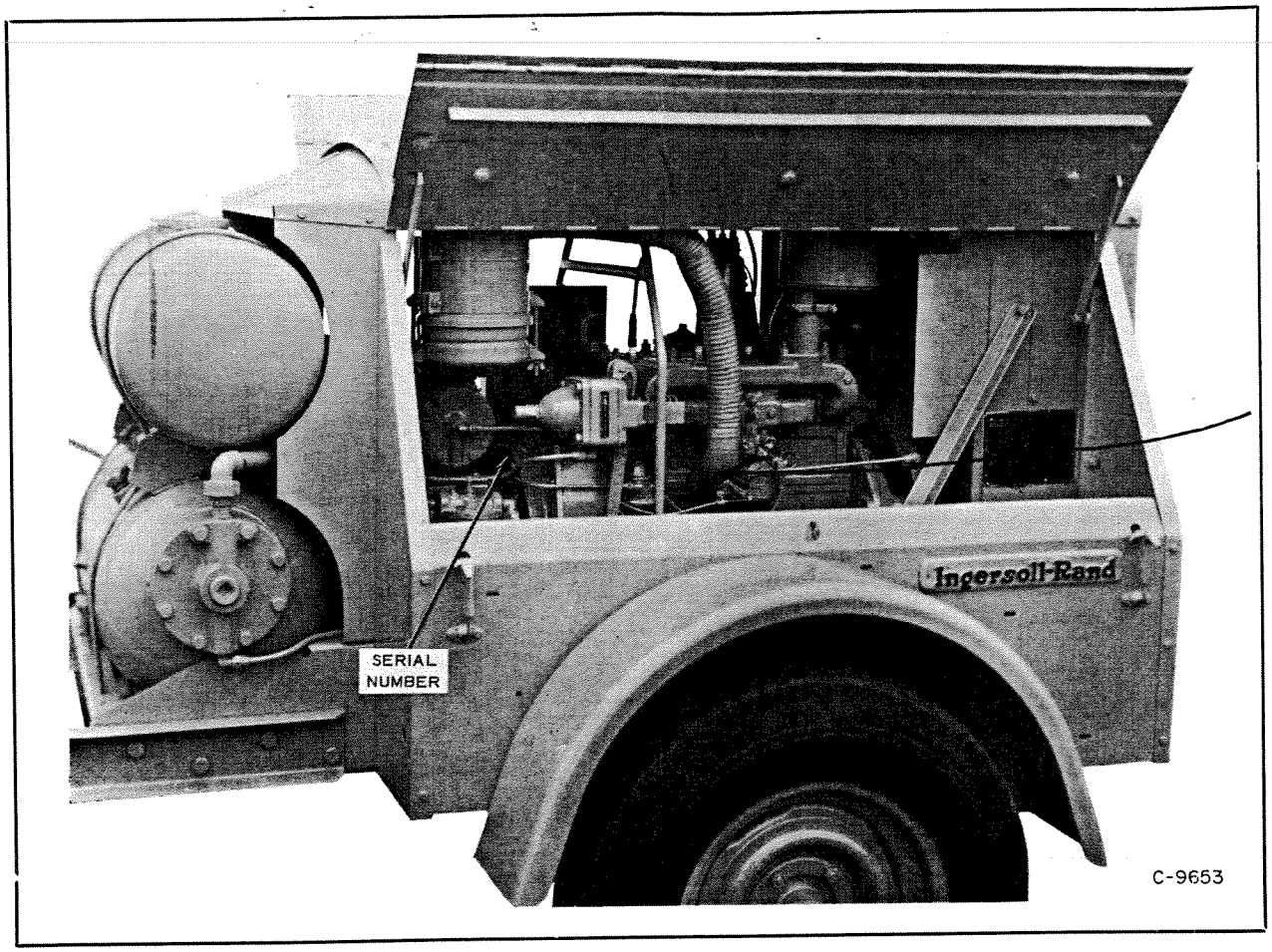
The right hand column show both the part number and the quantity of each item. The quantity given is the total quantity required per assembly or per group of parts.

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 Ingersoll-Rand Company branch office, or authorized distributor or dealer 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 model plate attached to the front housing. (Figure 21).

b. Always specify the serial number of the unit. THIS IS VERY IMPORTANT. The serial



R18604
E16u

Fig. 22—Location of Unit Serial Number.

Pages 51 and 52 will give you the correct part number and the contents of each box in the event they were not obtained at the time the compressor was purchased.

In addition to the spare parts boxes available for the Models GR85 and GRU85 Air Compressors, a selection of spare parts is available for the Continental F-163 Gasoline Engine.

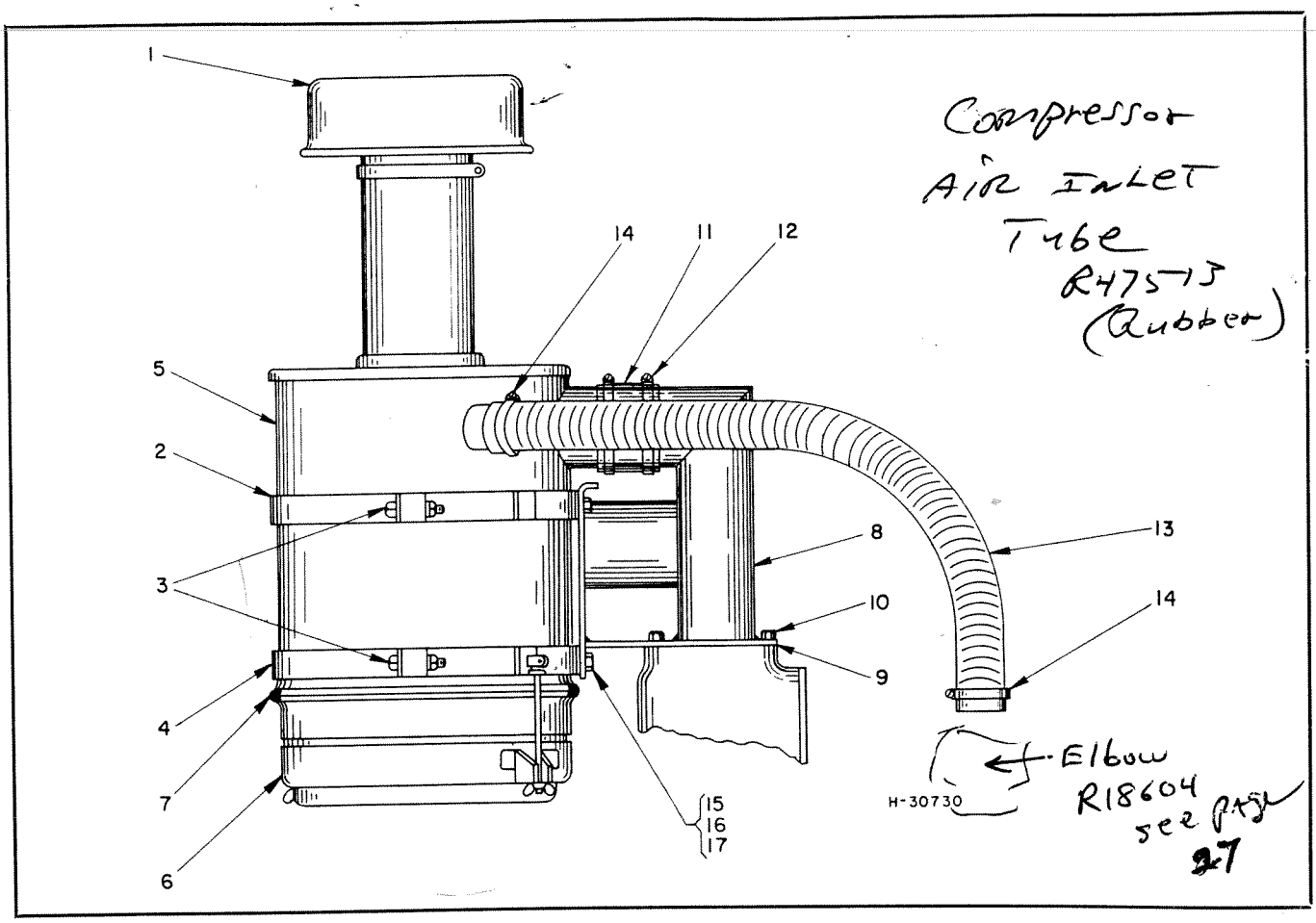
One complete set of instruction books and parts lists covering both the engine and compressor is shipped with each machine. For additional copies of the engine literature, consult your nearest engine authorized distributor or dealer. Additional copies of the compressor literature may be obtained from the nearest Ingersoll-Rand branch office.

AIR END PARTS

ILLUS. NO.	NAME OF PART PARTS INDENTED AFTER AN ITEM ARE INCLUDED WITH THE ITEM	PART NO.	QTY.
	AIR END ASSEMBLY	**R85P150**	**1**
1	Coupling Driven Gear	2H16351	1
2	Coupling Driven Gear "O" Ring	X1514T253C	1
3	**Cylinder**	**2F9828**	**1**
4	Bearing Housing to Cylinder "O" Ring	X1514T267C	2
5	Cylinder to Regulator Gasket	2W41172	1
6	Cylinder Discharge Cover Gasket	2W41171	1
*	Pipe Plug	30A7S2	1
7	**Rotor**	**2F9826**	**1**
8	Coupling Drive Key	X1495T13	1
9	Coupling Lock Nut	2W37667	1
10	Coupling Lock Washer	2W37668	1
11	Bearing Spacer	2W37373	2
12	Cylinder End Plate	2R16440P2	2
13	**Rotor Vane - Set (Consists of 8 Vanes)**	**R85P110**	**1**
14	Cylinder Roller Bearing	2W41186	2
15	Outer Bearing Retaining Ring	X1318T22	1
16	Inner Bearing Housing	2H16107	1
17	**Rotary Shaft Seal Replacement Parts** R26325	~~2W56901~~	**1**
18	Seal to Housing "O" Ring	X1514T228C	1
19	Seal to Housing Cap Screw - Allen Head	91A2A173	5
20	Ever-Lock Lock Washer	X1619T2	5
21	Bearing Housing to Cylinder Cap Screw	35A2-1D222	15
22	Bearing Housing to Cylinder Cap Screw	35A2-1D225	1
23	Cap Screw Steel Washer	X1016T91	16
24	Outer Bearing Housing	2H16110	1
25	Cylinder Discharge Cover	2W41165	1
6	Cylinder Discharge Cover Gasket	2W41171	1
26	Cover to Cylinder Cap Screw	35A2-1D111	6
27	Oil Pump Cylinder	2R22313	1
28	Cylinder to Housing, Cover "O" Ring	X1514T243C	2
29	Oil Pump Vane	2W43773	4
30	Oil Pump Cover	2W43772	1
31	Oil Pump Rotor	2W43776	1
32	Oil Pump Cap Screw	35A2-1D63	6
33	Coupling Drive Gear	2H16350	1
34	Coupling Drive Gear "O" Ring	X1514T258C	1
35	Coupling Drive Gear Cap Screw	35A2-1D111	6
*	Coupling Drive Gear Cap Screw Lock Washer	14A5C76	6
36	Housing to Engine Cap Screw	35A2-1D111	8

Always give the serial number of your compressor.

R26325 Includes: Spacer & Cover



AIR FILTER PARTS

ILLUS. NO.	NAME OF PART PARTS INDENTED AFTER AN ITEM ARE INCLUDED WITH THE ITEM	PART NO.	QTY.
	AIR FILTER ASSEMBLY	X1398T15	1
1	**Air Filter Pre-Cleaner**	16291	1
2	Filter Top Bracket	J140-145	1
3	Filter Bracket Bolt, Nut 21202 and Washer 22701	17214	1
4	Filter Bottom Bracket with Clamp Assembly	J140-240	1
3	Filter Bracket Bolt, Nut 21202 and Washer 22701	17214	1
5	**Filter Top Assembly**	**J140AJ-800**	1
6	**Filter Bowl and Baffle Plate Assembly**	**J140-862**	1
7	Koroseal "O" Ring	A19163-2125	1
8	**Air Inlet Elbow and Filter Bracket Assembly**	**2H16171**	1
*	Pipe Plug	30A7S2	1
9	Air Inlet Elbow Gasket	2W37558	1
10	Air Inlet Elbow Cap Screw	35A2-1C109	4
11	Air Inlet Elbow Hose	2W37428	1
12	Air Inlet Elbow Hose Clamp	2W86719	2
13	Engine Air Inlet Tube	2R35234	1
14	Engine Air Inlet Tube Hose Clamp	2W86684	2
15	Filter to Bracket Cap Screw	35A2-1C109	4
16	Filter to Bracket Cap Screw Nut	16A4C3	4
17	Filter to Bracket Cap Screw Nut Lock Washer	14A5C76	4

Always give the serial number of your compressor.

UL-88 REGULATOR AND LINKAGE PARTS

ILLUS. NO.	NAME OF PART PARTS INDENTED AFTER AN ITEM ARE INCLUDED WITH THE ITEM	PART NO.	QTY.
17	UL-88 Regulator Pilot Valve Adjusting Screw W26388	UL83-39	1
18	UL-88 Regulator Pilot Valve Adjusting Screw Lock Nut W46062	XX15L	1
19	UL-88 Regulator Pilot Valve Adjusting Screw Nut W12826P1	UL83-42	1
20	UL-88 Regulator Bottom Cover R17469P1	UL88-65A	1
21	UL-88 Regulator Lever R35135	UL88-66B	1
*	UL-88 Regulator Lever Bushing W37528	UL88-69	1
22	UL-88 Regulator Shaft W26387	UL83-67	2
23	UL-88 Regulator Retaining Ring	X1318T9	4
24	UL-88 Regulator Range Spring - Outside	PP604	1
25	UL-88 Regulator Range Spring - Inside	PP327	1
26	UL-88 Regulator Range Spring Seat W32830	UL88-73A	1
27	UL-88 Regulator Range Spring Support W34629	UL88-70B	1
28	UL-88 Support Socket Head Cap Screw	¼" - 20 x 1"	4
29	UL-88 Regulator Minimum Speed Screw	5/16" - 18 x 2¾"	1
30	UL-88 Regulator Minimum Speed Screw Lock Nut	5/16" - 18	1
31	UL-88 Regulator Name Plate R35207	7A16X172	1
32	UL-88 Regulator Name Plate Drive Screw	#2 x ¼"	2
*	UL-88 Regulator Bracket	2R22238	1
*	UL-88 Regulator to Bracket Cap Screw	35A2-1C216	2
*	UL-88 Regulator to Bracket Cap Screw Lock Washer	14A5C101	2
36	UL-88 Regulator Governor Lever Link Rod	X1580T15	1
37	UL-88 Regulator Adjustable Rod End Yoke	2W86703T1	1
38	UL-88 Regulator Rod End Lock Nut	22A4C1	1
39	UL-88 Regulator Rod End Pin	2W86704T2	1
40	UL-88 Regulator Rod End Cotter Pin	11A13C3E	1
41	UL-88 Regulator Governor Spring	2W34949	1
42	UL-88 Regulator Adjustable Rod End Yoke	2W86703T2	1
43	UL-88 Regulator Rod End Lock Nut	22A4C2	1
44	UL-88 Regulator Rod End Yoke Stud	2W26696P1	1
45	UL-88 Regulator Latch Pin	2W86704T1	1
46	UL-88 Regulator Latch Pin Cotter	11A13C16E	1
47	UL-88 Regulator Manual Speed Control Cable	2R35265	1
47	UL-88 Regulator Manual Speed Control Cable (Model GRU-85)	2R25640P3	1
*	UL-88 Regulator Control Cable Clamp	X1182T22	1
*	UL-88 Regulator Control Cable Clamp Cap Screw	35A2-1C3	1
*	UL-88 Regulator Control Cable Clamp Cap Screw Nut	16A4C1	1
*	UL-88 Regulator Control Cable Clamp Cap Screw Nut Lock Washer	14A5C55	1
52	UL-88 Regulator Control Cable Connector	2W86583	1
53	UL-88 Regulator Control Cable Connector Set Screw	2W88450	2
54	UL-88 Regulator Control Cable Lever Stop	2W56972	2
55	UL-88 Regulator Control Cable Lever Stop Set Screw	2W88450	2
*	UL-88 Regulator to Unloader Tubing	2W44155	1
*	Copper Tube	X1617T3x15⅞	1
*	Copper Tube Nut	X1086T68	2
*	90° Tube Elbow	X1086T25	1
*	90° Tube Elbow	X1086T3	1

***Not Illustrated.**

Always give the serial number of your compressor.

OIL SEPARATOR AND MINIMUM PRESSURE VALVE PARTS 35 S/6269

ILLUS. NO.	NAME OF PART PARTS INDENTED AFTER AN ITEM ARE INCLUDED WITH THE ITEM	PART NO.	QTY.
1	**OIL SEPARATOR TANK**	**2F15352**	**1**
*	Pipe Plug	30A7S3	1
2	Oil Separator Shell to Tank, Cover Gasket	2W41049	2
5	Oil Filler Hole Plug	2W48777	1
6	Oil Filler Hole Plug "O" Ring	X1514T214C	1
*	**Oil Separator Filter Screen Assembly**	**2R22177**	**1**
*	Oil Separator Filter Screen Nut	16A4C3	2
*	Oil Separator Filter Screen Nut Lock Washer	14A5C76	2
7	Oil Separator Tank Support Cushion	X1222T2	4
*	Support Cushion Rivet	2W86676	4
8	Oil Separator Tank Strap - Front	2W41125	2
9	Oil Separator Tank Strap Nut	X1302T36	4
10	Oil Separator Tank Strap - Rear	2W41124	2
9	Oil Separator Tank Strap Nut	X1302T36	4
11	Oil Separator Cover	2R22172	1
2	Oil Separator Shell to Tank, Cover Gasket	2W41049	2
12	Oil Separator Cover Cap Screw	35A2-1J221	6
12	Oil Separator Cover Cap Screw	35A2-1J225	2
13	Oil Separator Inner Shell	2R22167	1
2	Oil Separator Shell to Tank, Cover Gasket	2W41049	2
14	**Oil Separator Screen Assembly with Packing**	**2H16478TA**	**1**
2	Oil Separator Shell to Tank, Cover Gasket	2W41049	2
15	Oil Separator Screen "O" Ring	X1514T216C	1
16	Oil Separator Tank Oil Level Gauge	2R17410	1
17	Oil Separator Tank Oil Level Gauge Gasket	2W31890	1
18	Oil Separator Oil Level Gauge Cap Screw	2W41051	4
*	Condensate Drain Reducing Bushing	23A7M5	1
*	Condensate Drain Pipe Nipple	19A7W20	1
*	Condensate Drain Globe Valve	60A17B2	1
*	Condensate Drain Valve Pipe Plug	30A7S3	1
19	**Oil Separator to Safety Valve Piping Complete**	**2W57898**	**1**
19A	Close Nipple - Extra Heavy	19A7W5	1
20	Female Union Elbow - 90°	90A7M4	1
20A	Pipe Nipple - Extra Heavy	2W86677	1
21	Pipe Cross	73A7M5	1
21A	Reducing Bushing	23A7M9	1
22	Pipe Nipple	18A7W23	1
22A	Reducing Tee	74A7M16	1
23	Safety Valve - Standard	X1396T4-125	1
24	Pipe Nipple for Manual Blowdown	2W86678	1
25	Angle Valve for Manual Blowdown	84A17B2	1
*	Oil Separator to UL-88 Regulator Tubing (From Reducing Bushing in Safety Valve Line)	2W57870	1
*	Copper Tube	X1617T3x22	1
*	Copper Tube Nut	X1086T68	2
*	90° Tube Elbow	X1086T25	1
*	Tube Tee	X1086T8	1
	The following used on units up to and including Compressor Serial Number 85MR21720:		
	MINIMUM PRESSURE VALVE COMPLETE	**R125P510**	**1**
27	Valve Body	2H16116	1
28	Valve	2R22122	1
29	Valve Ring	X1244T2	1
30	Valve Spring	PP763	1
31	Valve Body Cover	2R22123	1
32	Valve Body Cover "O" Ring	X1514T224C	1
33	Valve Body Cover Cap Screw and Lock Washer	3/8" - 16 x 1"	2
	The following used on units Compressor Serial Number 85MR21721 and up:		
	MINIMUM PRESSURE VALVE COMPLETE	**RA125P510A**	**1**
35	Valve Body	2H20914	1
36	Valve	2R26640	1
37	Valve Ring	X1440T18A	1
38	Valve Spring	2W56947	1
39	Valve Body Cover	2R26641	1
40	Valve Body Cover "O" Ring	X1514T216C	1
41	Valve Body Cover Cap Screw	35A2-1D111	2
*	Valve Body Cover Cap Screw Lock Washer	14A5C76	2
42	Pipe Plug	31A7M8	1
*	Air Double Male Valve	2W57548	2

***Not Illustrated.**

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RADIATOR AND OIL COOLER PARTS

ILLUS. NO.	NAME OF PART PARTS INDENTED AFTER AN ITEM ARE INCLUDED WITH THE ITEM	PART NO.	QTY.
1	Radiator to Engine Water Pump Hose	2R22237	1
2	Radiator to Engine Water Pump Hose Clamp	2W86681	1
3	Radiator Top Inlet Elbow	2W56995P1	1
4	Radiator Top Inlet Elbow Hose Clamp	2W86684	3
5	Radiator Drain Cock	X1086T20	1
6	Radiator Drain Coupling	11A7W2	1
7	Radiator Drain Nipple	18A7W20	1
8	Radiator Fan Wing - Right Hand	2W43736	1
*	Radiator Fan Wing - Left Hand	2W43895	1
10	Radiator Fan Wing R.H. Machine Screw	83A2C69	6
11	Radiator Fan Wing R.H. Machine Screw Nut	21A4C8	6
12	Radiator Fan Wing R.H. Machine Screw Nut Flat Washer	12A5C25	6
13	Radiator Fan Wing R.H. Machine Screw Nut Lock Washer	14A5C28	6
14	**Radiator Fan Shroud Assembly**	**2H16177**	**1**
15	Fan Shroud to Radiator R.H. Machine Screw	83A2C95	12
16	Fan Shroud to Radiator R.H. Machine Screw Nut	21A4C9	12
17	Fan Shroud to Radiator R.H. Machine Screw Flat Washer	11A5C1	12
18	Fan Shroud to Radiator R.H. Machine Screw Nut Lock Washer	14A5C36	12
19	**Radiator†**	**2F18724**	**1**
19	**Radiator††**	**2F18725**	**1**
19	**Radiator†††**	**2F18726**	**1**
20	Radiator Pressure Cap	2R26166	1
21	Radiator Shims	X1406T17	2
22	Radiator to Support Stud Nut	X1302T8	2
23	Radiator and Oil Cooler Support Bracket - Right Hand	2H30047	1
*	Radiator and Oil Cooler Support Bracket - Left Hand	2R35245	1
25	Bracket to Radiator Cap Screw	35A2-1C109	6
26	Bracket to Radiator Cap Screw Nut	16A4C3	4
27	Bracket to Radiator Cap Screw Nut Lock Washer	14A5C76	6
28	Bracket to Radiator Cap Screw Nut Plain Washer	11A5C4	6
29	Bracket to Radiator Cap Screw	35A2-1C1	4
30	Bracket to Radiator Cap Screw Lock Washer	14A5C55	4
31	Bracket to Radiator Cap Screw Plain Washer	11A5C1	1
32	Oil Cooler Support Rod	2R35244	1
33	Oil Cooler Support Rod Nut	11A5C3	4
34	Oil Cooler Support Rod Plain Washer	14A5C76	4
35	Oil Cooler Support Rod Lock Washer	16A4C3	2
36	**Oil Cooler** Steel	**2F15302**	**1**
36	**Oil Cooler (Aluminum)**	**2F15484**	**1**
37	Oil Cooler Support Rod Cap Screw	35A2-1C107	2
38	Oil Cooler Support Rod Cap Screw Lock Washer	14A5C76	2
39	Oil Cooler to Bracket Cap Screw	35A2-1C109	2
40	Oil Cooler to Bracket Cap Screw Nut	16A4C3	2
41	Oil Cooler to Bracket Cap Screw Lock Washer	14A5C76	2
42	Radiator and Oil Cooler Support Bracket	2H16174	1
43	Support Bracket to Frame Cap Screw	35A2-1C110	4
44	Support Bracket to Frame Cap Screw Nut	16A4C3	4
45	Support Bracket to Frame Cap Screw Nut Lock Washer	14A5C76	4

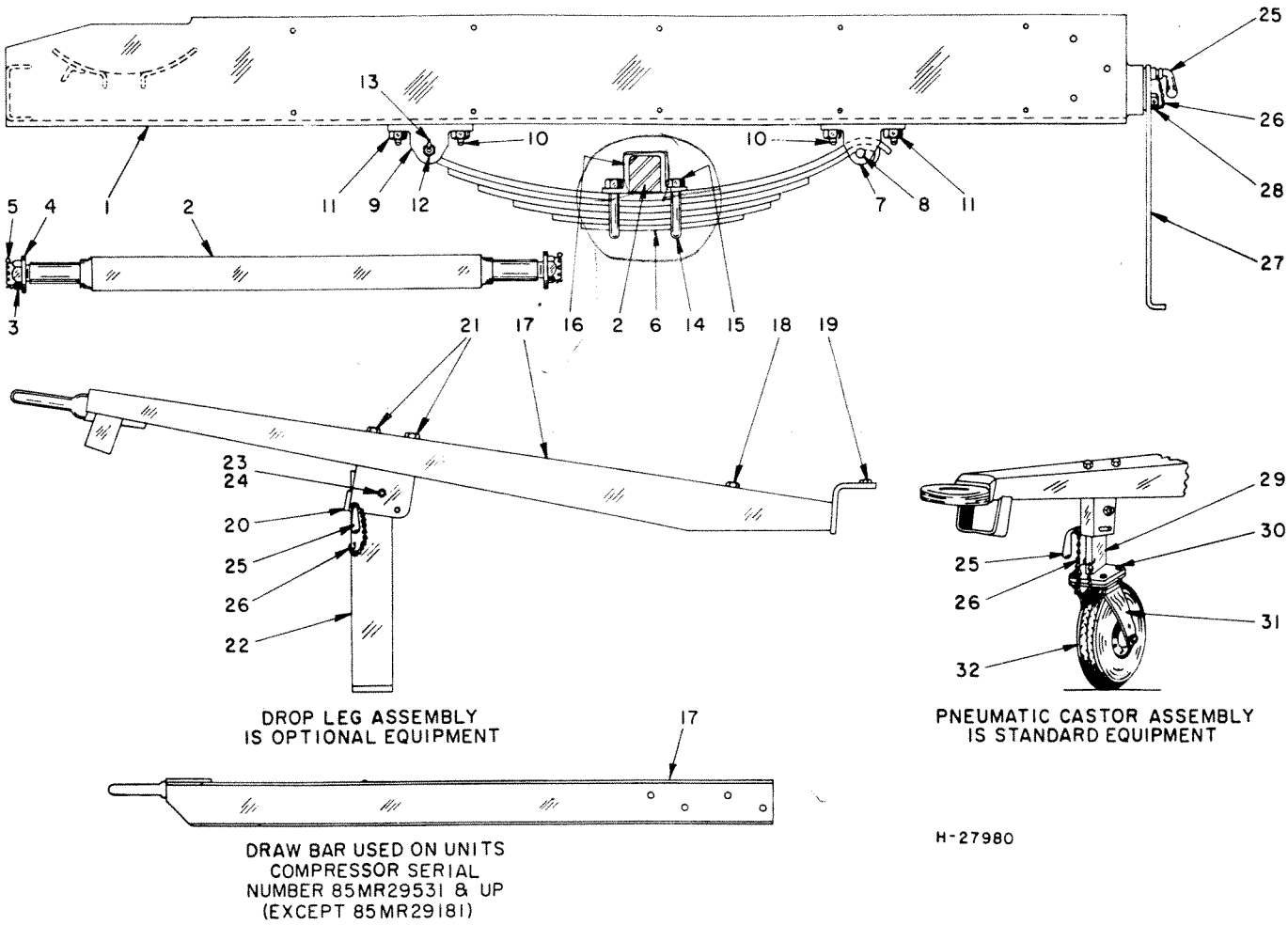
***Not Illustrated.**

Always give the serial number of your compressor.

†Manufactured by Modine Manufacturing Company.

††Manufactured by Perfex Corporation.

†††Manufactured by G and O Manufacturing Company and Equipped with integral Fan Shroud, does not require Items 12 and 13.



DROP LEG ASSEMBLY
IS OPTIONAL EQUIPMENT

PNEUMATIC CASTOR ASSEMBLY
IS STANDARD EQUIPMENT

DRAW BAR USED ON UNITS
COMPRESSOR SERIAL
NUMBER 85MR29531 & UP
(EXCEPT 85MR29181)

H-27980

RUNNING GEAR PARTS

ILLUS. NO.	NAME OF PART PARTS INDENTED AFTER AN ITEM ARE INCLUDED WITH THE ITEM	UNITED MFG. CO. PART NO.	QTY.	ELECTRIC WHEEL CO. PART NO. †	QTY.	UNITED MFG. CO. PART NO. ††	QTY.
1	Truck Frame	2F9614	1	2F11057	1	2F15475	1
1	Truck Frame (Model GRU-85)					2F10300	1
	RUNNING GEAR ASSEMBLY	**	1	***	1	**R85P631F**	1
	Spring and Axle Mounting	**	1	***	1	**R85P631D**	1
2	Axle Beam	**	1	***	1	31-4501	1
3	Spindle Nut	5X-407	2	HNRSF2H	2	~~5X-407~~	2
4	Spindle Nut Washer		2	FS11928	2	1TX-144	2
5	Spindle Nut Cotter	9X-146	2	INCLUDED	2	9X-146	2
6	Spring	1648	2	A937	2	1648-1	2
7	Spring Bracket - Slip End	1520-2	2	AFS2893	2	~~1520-2~~ 35106178	2
8	Spring Bracket Pin - Slip End	30269	2		—	~~6804~~ 35106152	2
*	Spring Bracket Pin Cotter Pin	9X-146	2		—	9X-146	2
9	Spring Bracket - Fixed End	31624	2	AFS2892	2	1521-4	2
10	Spring Bracket to Frame Cap Screw	35A2-1C219	8	35A2-1C219	6	35A2-1C219	8
11	Spring Bracket to Frame Cap Screw Nut	X1302T8	8	X1302T8	6	~~X1302T8~~ 67A465	8
12	Spring Bracket Bolt - Fixed End	31093	2	⅝"-11 x 4"	2	T0-801	2
*	Spring Bracket Bolt Nut - Fixed End	31095	2	X1302T10	2	1-906	2
*	Spring Bracket Bolt Nut Cotter Pin	9X-146	2		—	9X-146	2
13	Lubrication Fitting	1504-8	2		—	1504-8	2
14	Spring "U" Bolt	30327	4	FS12394 No. 2	4	4-1728	4
15	Spring "U" Bolt Nut	35X-192	8	INCLUDED	8	35X-192	8
16	Spring to Axle Clamp	**	2	B4468	2	3-1722	2
17	Draw Bar	2H16197	1	~~2H16197~~	1	2H25006	1
18	Draw Bar to Frame Cap Screw	½"-13 x 1¾"	8	½"-13 x 1¾"	8	35A2-1D323	8
*	Draw Bar to Frame Bevel Washer	2W32950	3	2W32950	3		
19	Draw Bar to Frame Cap Screw	½"-13 x 1¼"	4	½"-13 x 1¼"	4		
*	Draw Bar to Frame Cap Screw Lock Nut	X1302T8	7	X1302T8	7	X1302T10	8
20	Draw Bar Leg Support	2R10315	1	2R10315	1		
21	Draw Bar to Leg Support Cap Screw, Nut and Lock Washer	½"-13 x 1¼"	2	½"-13 x 1¼"	2		
22	Draw Bar Drop Leg	****	1	****	1	2W69302	1
23	Draw Bar Drop Leg Pivot Bolt	⅝"-11 x 2¼"	1	⅝"-11 x 2¼"	1	35A2-1C327	1
24	Draw Bar Drop Leg Pivot Bolt Nut	X1302T10	1	X1302T10	1	X1302T10	1
25	Drop Leg Locking Pin	2W24532	2	2W24532	2	2W24890	1
26	Drop Leg Locking Pin Chain with Hooks	2W34825	2	2W34825	2	2W34825	1
27	Front Drop Leg	2W41099	1	2W41099	1	2W41099	1
28	Front Drop Leg Pivot Bolt	2W41098	1	2W41098	1	2W41098	1
*	Front Drop Leg Pivot Bolt Washer	11A5C9	1	11A5C9	1	11A5C9	1
*	Front Drop Leg Pivot Bolt Nut	X1302T8	1	X1302T8	1	X1302T8	1
*	Front Drop Leg Pivot Bolt Plain Washer	11A5C6	1	11A5C6	1	11A5C6	1
	PNEUMATIC CASTER ASSEMBLY	**R85P50A**	1	**R85P50A**	1	**R85P50B** — H24792	1
29	Draw Bar Drop Leg	****	1	****	1	2W69217	1
25	Drop Leg Locking Pin	2W24532	1	2W24532	1	2W24532	1
26	Drop Leg Locking Pin Chain with Hooks	2W34825	1	2W34825	1	2W34825	1
30	Caster to Leg Cap Screw	35A2-1C113	4	35A2-1C113	4	35A2-1C113	4
*	Caster to Leg Cap Screw Nut	16A4C3	4	16A4C3	4	16A4C3	4
*	Caster to Leg Cap Screw Nut Lock Washer	14A5C76	4	14A5C76	4	14A5C76	4
31	Special Sealed Swivel Assembly Complete, less Wheel	FS-890 H24792A	1	FS-890	1	FS-890	1
32	Steel Disc Rubber Tired Wheel	8 x 2.50	1	8 x 2.50	1	8 x 2.50	1

35A2021

*Not illustrated.

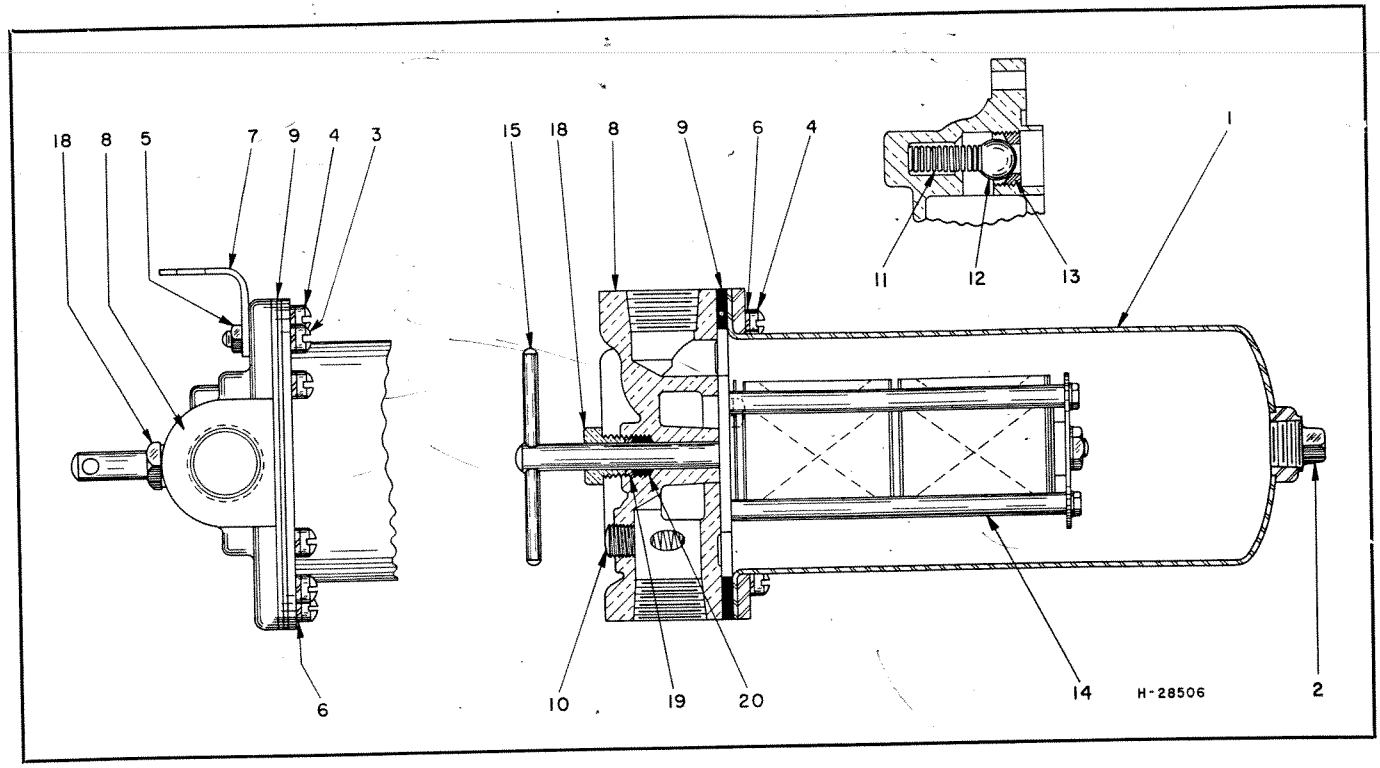
†Electric Wheel Company Mountings used on Serial Numbers 85MR14842, 85MR15628 up to and including 85MR24170.

††Units with Serial Numbers 85MR29181, 85MR29531 and up.

**For United Mfg. Co. Running Gear Axle Beam replacement, order as follows:
Units up thru Serial No. 85MR14848 (except 85MR14842) with 52" track, order Axle Beam UM-12-3500. The Axle Clamp is UM-30311. Spring and Axle Mounting is R85P631. Running Gear Assembly is R85P631A. Units 85MR14849 and up through 85MR15627 with 1¾" axle and 54" track, order 2" Axle Beam UM-31-4501 and Axle Clamp UM-30312. Spring and Axle Mounting is R85P631D. Running Gear Assembly is R85P631E. Units 85MR24171 and up with 54" track and 2" axle, order Axle Beam UM-31-4501. The Axle Clamp is UM-30312. Spring and Axle Mounting is R85P631D. Running Gear Assembly is R85P631E. (Units 85MR29181, 85MR29531 and up use R85-P631F).

***If Axle Beam, or Spring and Axle Mounting required, replacement is by United Mfg. Co. Spring and Axle Mounting R85P631D, old frame [illegible] have to be drilled to suit new running gear.

[illegible] Bar Drop Leg 2W41122 is used with 5.00x15 implement tires and Leg 2W56931 is used with 6.40x15 and 6.50x15 passenger tires. Caster Mountings, Draw Bar Drop Leg 2W43908 is used with 5.00x15 implement tires and Leg 2W56392 is used with 6.40x15 and 6.50x15 passenger tires.



OIL FILTER PARTS

ILLUS. NO.	NAME OF PART PARTS INDENTED AFTER AN ITEM ARE INCLUDED WITH THE ITEM	PART NO.	QTY.
	OIL FILTER ASSEMBLY	10159-01	1
		32151-01	1
1	**Oil Filter Sump Assembly**	31456-34	1
2	Oil Filter Sump Drain Plug	32504-40	2
3	Oil Filter Sump Screw - Long	32504-37	8
4	Oil Filter Sump Screw - Short	31259-49	2
5	Oil Filter Sump Screw Nut	31255-38	12
6	Oil Filter Sump Screw Lock Washer	31259-32	1
7	Oil Filter Mounting Bracket	32223-43	1
8	Oil Filter Head	32160-36	1
9	Oil Filter Head Gasket	31784-32	1
10	Oil Filter Vent Plug	32167-34	1
11	Oil Filter Relief Valve Spring (15 psi)	32061-32	1
12	Oil Filter Relief Valve Ball	32157-31	1
13	Oil Filter Relief Valve Seat	13008-07	1
14	**Oil Filter Cartridge Assembly**	31528-32	1
15	Oil Filter Cartridge Handle	32499-34	2
*	Oil Filter Cartridge Mounting Screw	31251-37	2
*	Oil Filter Cartridge Mounting Screw Lock Washer	32158-31	1
18	Oil Filter Cartridge Gland Nut	32059-31	1
19	Oil Filter Cartridge Gland Follower	32058-31	1
20	Oil Filter Cartridge Gland Packing		

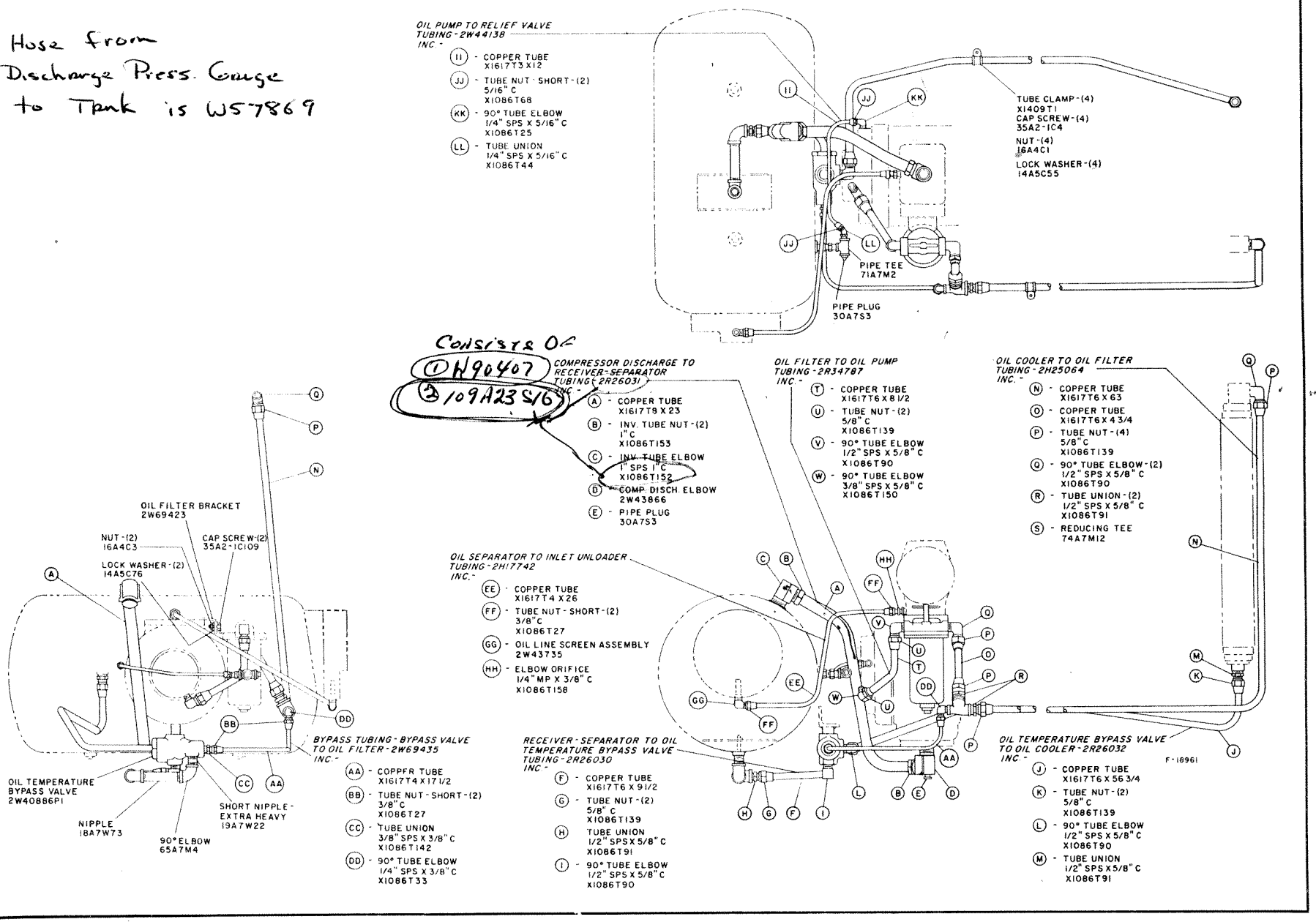
...l number of your compressor.

MISCELLANEOUS PARTS
(Not Illustrated)

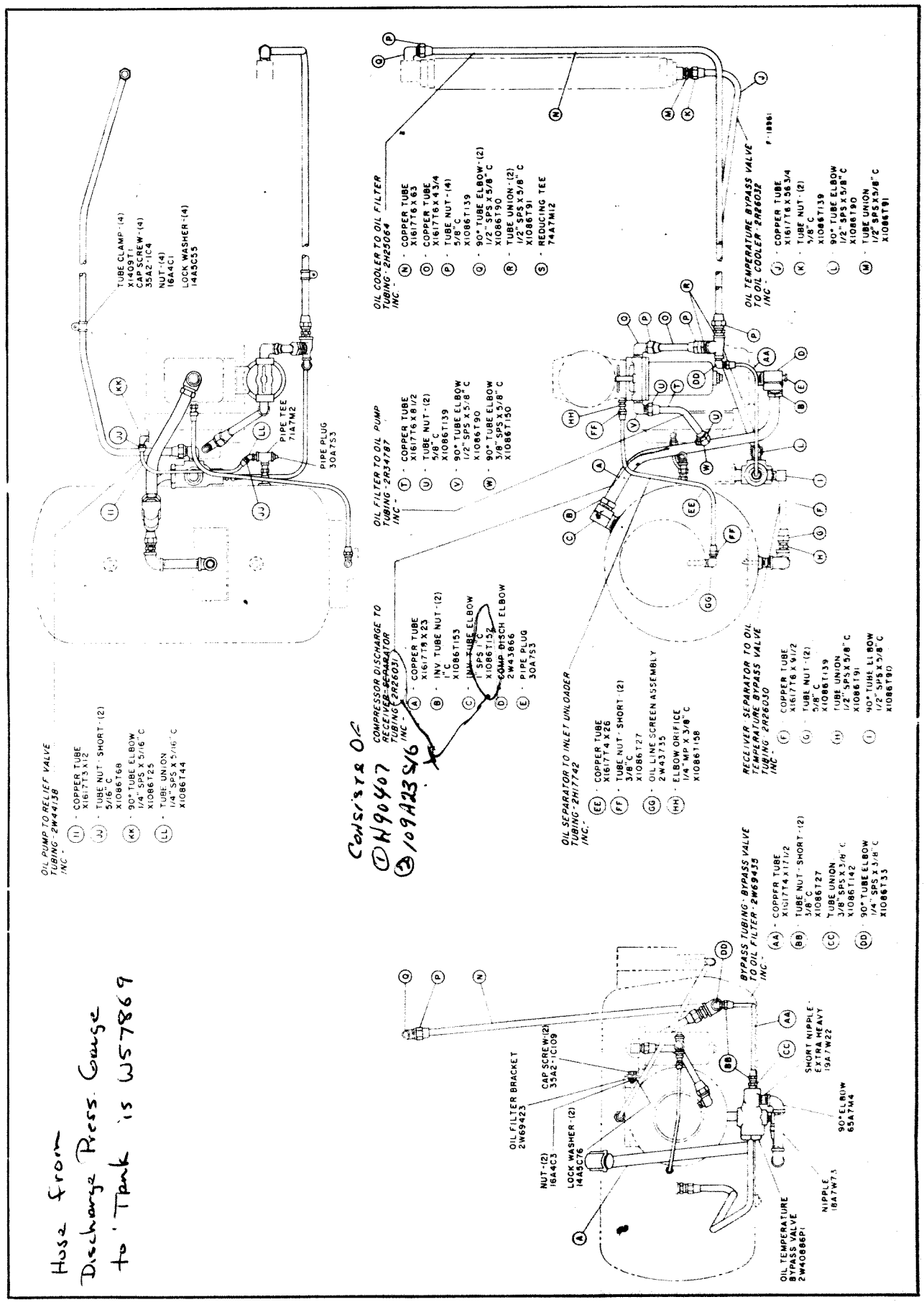
REF. NO.	NAME OF PART PARTS INDENTED AFTER AN ITEM ARE INCLUDED WITH THE ITEM	PART NO.	QTY.
1	Continental Model F-163 Gasoline Engine	2W86652	1
2	Engine Front Mounting Spacer	2W41079	1
3	Engine Rear Support Bracket	2R22192	2
4	Bracket to Engine Cap Screw	35A2-1D219	2
5	Bracket to Engine Cap Screw Lock Washer	14A5C101	2
6	Bracket to Engine Cap Screw	35A2-1D222	3
7	Bracket to Engine Cap Screw Lock Washer	14A5C101	3
8	Bracket to Frame Cap Screw	35A2-1D221	4
9	Bracket to Frame Cap Screw Lock Nut	X1302T8	4
10	Bracket to Engine Cap Screw	35A2-1D221	3
11	Bracket to Engine Cap Screw Lock Washer	14A5C101	3
12	Lifting Bale to Inlet Tube Clamp	X1182T18	1
13	Air Inlet Tube Clamp	2W37388	1
14	Air Inlet Tube Clamp Cap Screw	35A2-1C1	1
15	Air Inlet Tube Clamp Cap Screw Nut	16A4C1	1
16	Air Inlet Tube Clamp Cap Screw Nut Lock Washer	14A5C55	1
17	Engine Muffler	2H16312	1
18	Engine Exhaust Muffler Pipe	2W41102	1
19	Engine Exhaust Muffler Pipe Bronze Nut	16A4Z3	2
20	Engine Muffler Clamp	2W48119	1
21	Rain Cap	2W34780	1
22	Instrument Panel Assemby	2H24740	1
23	Instrument Panel Mounting Bracket	2H16413	1
24	Mounting Bracket to Panel Cap Screw	35A2-1C57	3
25	Mounting Bracket to Panel Cap Screw Nut	16A4C2	3
26	Mounting Bracket to Panel Cap Screw Nut Lock Washer	14A5C65	3
27	Ignition Control Switch	2W86698	1
28	Switch to Panel Nut	22A4C3	1
29	Switch to Panel Nut Lock Washer	14A5C76	1
30	Discharge Pressure Gauge	2R26709	1
31	Discharge Pressure Gauge (Model GRU-85)	X26T19A	1
32	Engine Water Temperature Gauge	2W37272	1
33	Engine Oil Pressure Gauge	X26T16A	1
34	Ammeter	2W86700	1
35	Magnetic Control Switch (Starter)	2W67915	1
36	Choke Wire	2R22280	1
37	Choke Wire (Model GRU-85)	2R17913	1
38	Hourmeter - 12 Volt	2W86696	1
39	Battery - 12 Volt	2W86690	1
40	Battery Bracket Assembly	2H16202	1
41	Bracket to Frame Cap Screw	35A2-1C110	4
42	Bracket to Frame Cap Screw Nut	16A4C3	4
43	Bracket to Frame Cap Screw Nut Lock Washer	14A5C76	4
44	Battery Lock Stud	2W48278	2
45	Battery Lock Stud Nut	16A4C3	6
46	Battery Lock Stud Plain Washer	12A5C4	2
47	Battery Hold Down Frame	2R26356	1
48	Battery Cover to Frame Spacer	2W48922	1
49	Battery Lock Cover	2R18587	1
50	Battery Lock Cover Washer	14A5C76	2
51	Battery Lock Cover Wing Nut	2W86691	2
52	Compressor Discharge Temperature Control Switch	2R17460	1
53	Temperature Control Switch Brass Nut	21A4B9	2
54	Temperature Control Switch Brass Nut Lock Washer	X1619T1	2
55	Battery to Ground Cable	X1467T1	1
56	Battery to Magnetic Switch Cable	X1467T6	1
57	Magnetic Switch (Mounted on Frame)	2W48252	1
58	Magnetic Switch Cap Screw	35A2-1C3	2
59	Magnetic Switch Cap Screw Nut	16A4C1	2
60	Magnetic Switch Cap Screw Nut Lock Washer	14A5C55	2
61	Magnetic Switch to Starter Connector	2W48285	1
62	Hourmeter to Switch Wire	2W88436T1	1
63	Hourmeter to Ground Wire	2W88436T3	1
64†	Voltage Regulator Bracket	2W88493	1
65†	Voltage Regulator Bracket Cap Screw	35A2-1C113	2
66†	Voltage Regulator Bracket Cap Screw Lock Washer	14A5C3	2
67†	Wiring Harness	2H30051	1
68	Tubing to High Pressure Discharge Gauge (From Tube Tee in Safety Valve Line)	2W57869	1
69	Copper Tube	X1617T1x37½	1
70	Copper Tube Nut	X1086T38	2
71	Tube Elbow	X1086T119	1

ed when Delco Remy Voltage Regulator and Alternator are furnished.
t Ignition System used on Serial Numbers 85MR15629, 85MR15632, 85MR15711 and up.
give the serial number of your compressor.

Hose from Discharge Press. Gauge to Tank is W57869



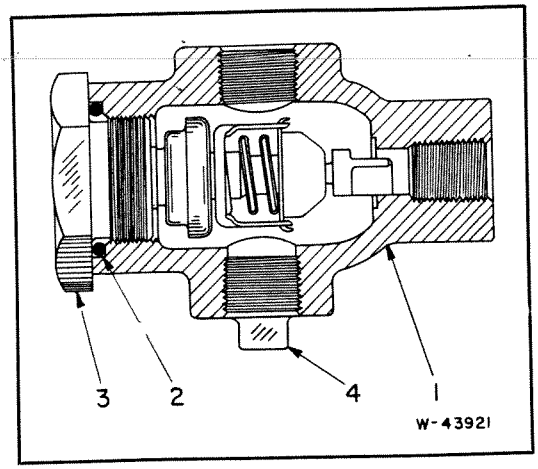
COMPRESSOR TUBING AND FITTINGS



Hose from Discharge Press. Gauge to Tank is W57869

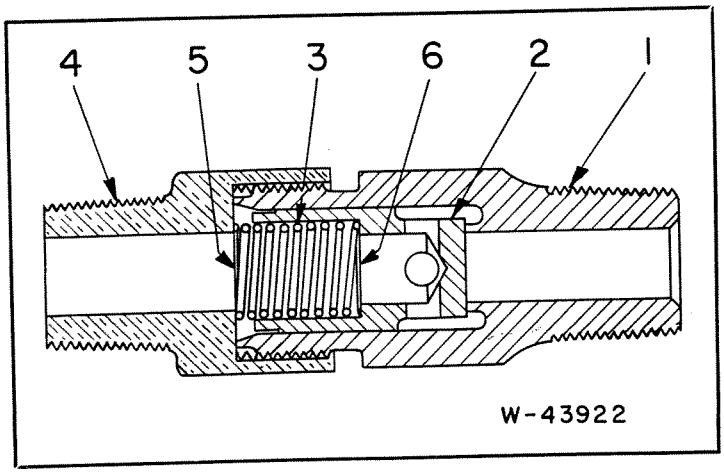
Consists of
① N90407
② 109A23 S/6

COMPRESSOR TUBING AND FITTINGS



OIL TEMPERATURE BY-PASS VALVE PARTS

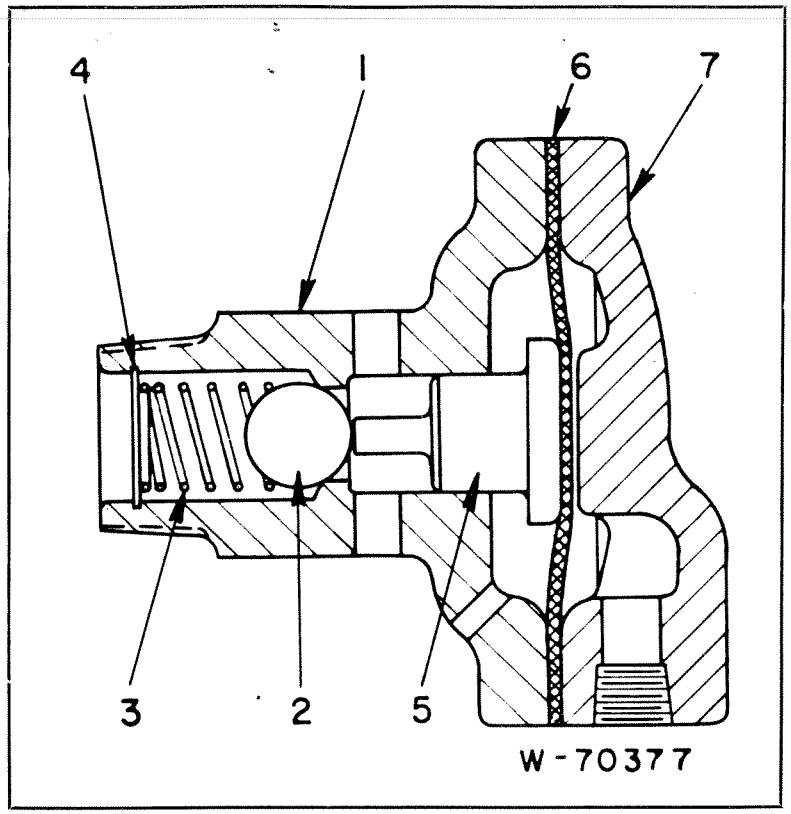
ILLUS. NO.	NAME OF PART PARTS INDENTED AFTER AN ITEM ARE INCLUDED WITH THE ITEM	PART NO.	QTY.
	OIL TEMPERATURE BY-PASS VALVE ASSEMBLY 35500974	2W40886P1	1
1	By-Pass Valve Body	2H16018P1	1
2	By-Pass Valve Body "O" Ring	X1514T220C	1
3	By-Pass Valve Assembly	2W40885	1
4	By-Pass Valve Pipe Plug	30A7S5	1



OIL PUMP RELIEF VALVE PARTS

ILLUS. NO.	NAME OF PART PARTS INDENTED AFTER AN ITEM ARE INCLUDED WITH THE ITEM	PART NO.	QTY.
	OIL PUMP RELIEF VALVE ASSEMBLY 35500782	2W43854T	1
1	Oil Pump Relief Valve Body	3W21461	1
2	Oil Pump Relief Valve Valve	3W21462	1
3	Oil Pump Relief Valve Spring	PP755	1
4	Oil Pump Relief Valve Cap	2W43853	1
5	Shim - if necessary (to decrease spring load)	X1026T26	1
6	Shim - if necessary (to increase spring load)	X1026T48	1

Always give the serial number of your compressor.



UL-108 AUTOMATIC BLOWDOWN VALVE PARTS

ILLUS. NO.	NAME OF PART PARTS INDENTED AFTER AN ITEM ARE INCLUDED WITH THE ITEM	PART NO.	QTY.
	AUTOMATIC BLOWDOWN VALVE ASSEMBLY 3550/337	UL-108-1	1
1	Automatic Blowdown Valve Body	2W56993	1
2	Automatic Blowdown Valve Ball	2W86706	1
3	Automatic Blowdown Valve Spring R35205	PP888 X1091T888 1-R3520	
4	Automatic Blowdown Valve Retaining Ring	X1319T12	1
5	Automatic Blowdown Valve Piston	2W56922	1
6	Automatic Blowdown Valve Diaphragm	2W48114	1
7	Automatic Blowdown Valve Cover	2W48116	1
*	Automatic Blowdown Valve Cap Screw	35A2-1D58	4

PARTS NECESSARY TO CONVERT TO UL-108 AUTOMATIC BLOWDOWN VALVE

	NAME OF PART PARTS INDENTED AFTER AN ITEM ARE INCLUDED WITH THE ITEM	PART NO.	QTY.
	Kit, Automatic Blowdown Valve Conversion	R85P55A	1
	Valve Assembly, Automatic Blowdown	UL108-1 3550/337	1
	Gasket, Inlet Elbow	2W37558	1
	Gasket, Regulator Body to Cylinder	2W41172	1
	Cross, Pipe	¾" 10GH7	1
	Bushing, Reducing	¾" x ¼" 23A7M9	1
	Tube Assembly, Blowdown Valve	2W57868	1
	Tube Assembly, Gauge Line	2W57869	1
	Tube Assembly, Pressure Line	2W57870	1

*Not illustrated.

Always give the serial number of your compressor.

HOSE REEL AND FITTINGS

ILLUS. NO.	NAME OF PART PARTS INDENTED AFTER AN ITEM ARE INCLUDED WITH THE ITEM	PART NO.	QTY.
	DOUBLE HOSE REEL ASSEMBLY	**R85P785**	**1**
1	Hose Reel	2H16275	2
2	Hose Reel Bearing	2R16217	2
3	Hose Reel Bracket	2W32959	2
4	Hose Reel Bearing "O" Ring	X1514T326C	4
5	Hose Reel Bearing Retaining Ring	2W26741	2
6	Hose Reel Bearing Cover	2W26742	2
7	Hose Reel Bearing Cover "O" Ring	X1514T230C	2
8	Revolution Retard Spring	PP331	2
9	Revolution Retard Ball	2W86708	2
10	Revolution Retard Spring Hole Plug	30A7M4	2
11	Grease Fitting	2W86707	2
12	Hose Reel to Cover Cap Screw	35A2-1C109	4
*	Hose Reel to Cover Cap Screw Lock Washer	14A5C76	4
13	Hose Reel to Bearing Cap Screw	35A2-1C113	8
*	Reel to Bearing Cap Screw Lock Washer	14A5C76	8
14	Close Nipple	18A7W5	2
15	Short Nipple	18A7W45	2
16	Elbow - 90°	65A7M5	4
*	Long Nipple	18A7W53	2
	Minimum Pressure Service Valve Assembly	**R125P510A**	**2**
17	Minimum Pressure Valve Body	2H16138	2
18	Minimum Pressure Valve	2R22147	2
19	Minimum Pressure Valve Ring	X1440T15A	2
20	Minimum Pressure Valve Spring	PP762	2
21	Minimum Pressure Valve Stem	2W41017	2
22	Minimum Pressure Valve Body Cover	2R22256	2
23	Body Cover "O" Ring	X1514T214C	2
24	Minimum Pressure Valve Stem Handle	2W41178	2
25	Valve Handle Nut	#12 - 24	2
26	Valve Body Cover Cap Screw	5/16" - 18 x 3/4"	4
*	Valve Body Cover Cap Screw Lock Washer	5/16"	4
*	Hose Lock	2W86709	2
*	Hose Lock Coupling Cap	2W20684	2
*	Plain Washer	11A5C10	2

***Not Illustrated.**

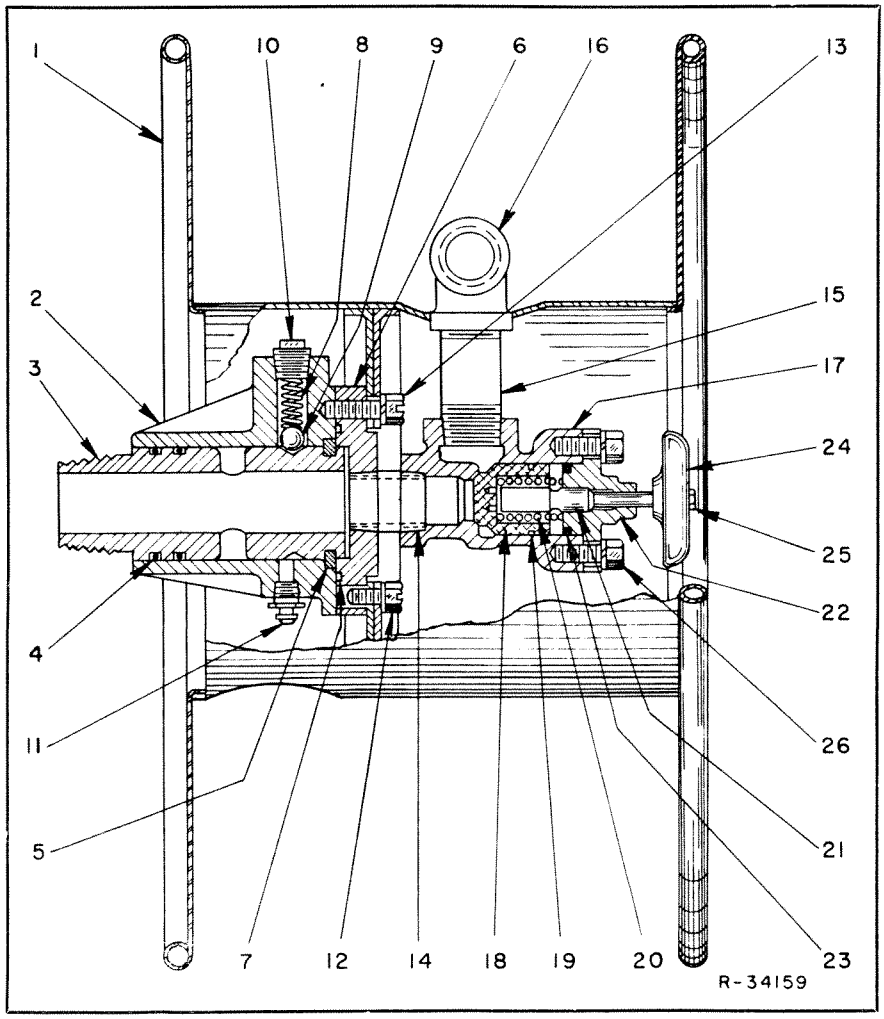
Always give the serial number of your compressor.

970 - 245 - 7268

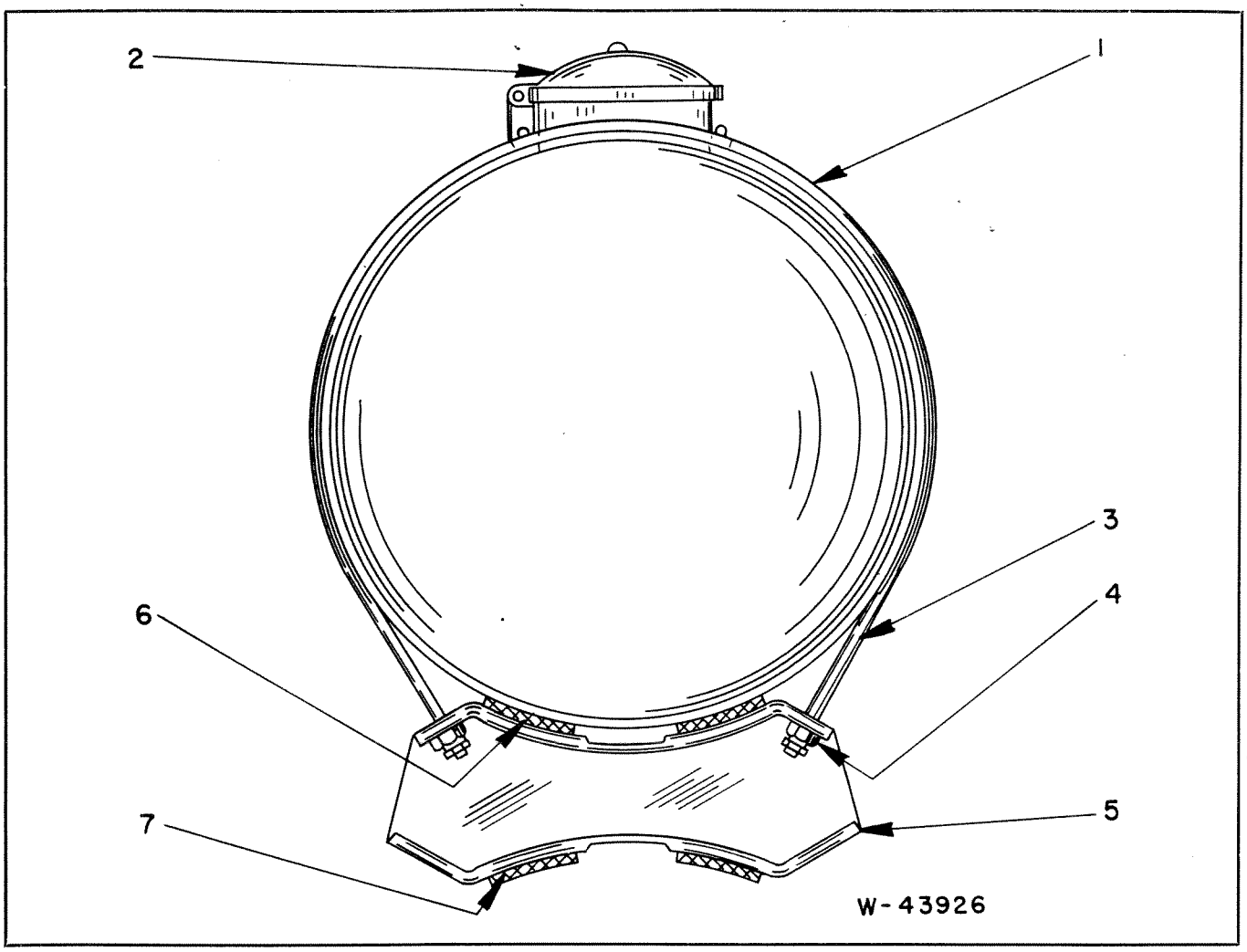
MISCELLANEOUS PARTS (Cont'd)

(Not Illustrated)

REF. NO.	NAME OF PART PARTS INDENTED AFTER AN ITEM ARE INCLUDED WITH THE ITEM	PART NO.	QTY.
72	Tube Elbow	X1086T138	1
73	Tubing to Engine Oil Pressure Gauge	2W44158	1
74	Copper Tube	X1617T1x17½	1
75	Copper Tube Nut	X1086T38	2
76	90° Tube Elbow	X1086T119	1
77	90° Tube Elbow	X1086T138	1
78	Instruction Plate Set	2W57816	1
79	Complete Set of Gaskets and "O" Rings	R85P750	1



HOSE REEL AND FITTINGS



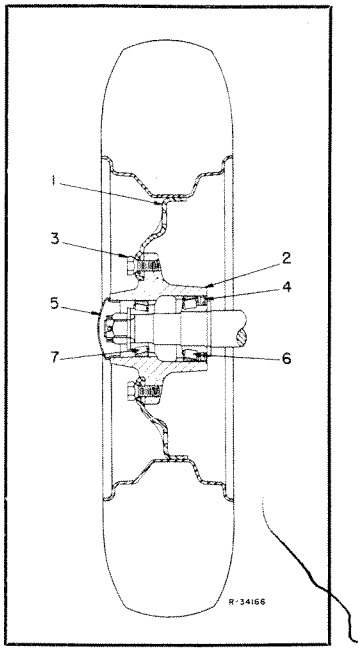
FUEL TANK PARTS

ILLUS. NO.	NAME OF PART PARTS INDENTED AFTER AN ITEM ARE INCLUDED WITH THE ITEM	PART NO.	QTY.
1	Fuel Tank 35103795	2R22194	1
2	Fuel Tank Cap	2R18674	1
*	Fuel Tank Pipe Plug - Drain	30A7S3	2
3	Fuel Tank Strap	2W41134	2
4	Fuel Tank Strap Nut	X1302T36	4
5	Fuel Tank Saddle	2R22193	2
6	Fuel Tank Cushion	X1221T1	4
7	Oil Separator Lining	X1222T1	4
*	Drive Rivet	2W86676	8
*	Fuel Tank to Fuel Pump Tubing	2W44154	1
*	90° Street Elbow	67A7M2	1
*	Shut-off Valve	X1086T102	1
*	Copper Tube	X1617T2x31	1
*	Copper Tube Nut	X1086T56	2
*	90° Tube Elbow	X1086T55	1
*	Tube Clamp	X1182T12	1
*	Tube Clamp Cap Screw	35A2-1C4	1
*	Tube Clamp Cap Screw Nut	16A4C1	1
*	Tube Clamp Cap Screw Nut Lock Washer	14A5C55	1

***Not Illustrated.**

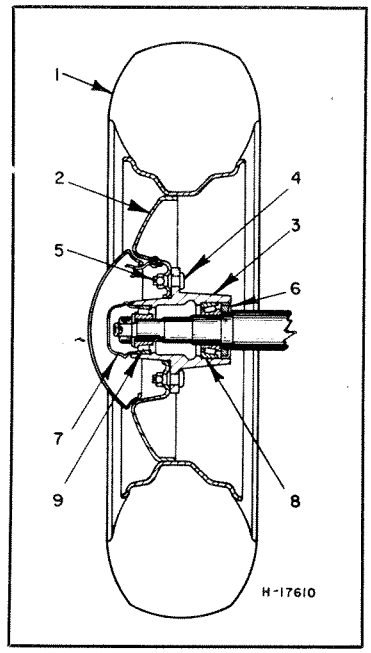
Always give the serial number of your compressor.

038553



ELECTRIC WHEEL CO. WHEEL PARTS

For units with 52" track, thru Serial No. 85MR14848 (except 85MR14842), 500 x 15 Ribbed Implement Tires and Tubes are used.



UNITED MANUFACTURING CO. WHEEL PARTS

ILLUS. NO.	NAME OF PART PARTS INDENTED AFTER AN ITEM ARE INCLUDED WITH THE ITEM	PART NO.	QTY.
	ELECTRIC WHEEL CO. WHEEL PARTS		
	Wheel Complete, Pneumatic Tired	X39TC12851B	1
	Tire and Tube, Passenger, 4 Ply	2W88438 650x15	1
	Wheel Complete	X39TC12851A	1
1	Disc and Rim 041189	C11895	1
2	Hub 020544	C633	1
3	Bolt, Wheel 060849	FS8449K	6
	Cup, Inner Bearing	LM67010	1
	Cup, Outer Bearing	LM11910	1
4	Seal, Grease 020278	AFS2782	1
5	Cap, Grease	FS12063	1
6	Cone, Inner Bearing	LM7048 LM67048	1
7	Cone, Outer Bearing	LM11949	1
	UNITED MANUFACTURING CO. WHEEL PARTS		
	Wheel Complete, Pneumatic Tired	X39T11-1596T	1
	Tire and Tube, Passenger, 4 Ply W92869	2W88438	1
1	**Wheel Complete**	X39T11-1596TA	1
2	Wheel	UM 11-1596	1
3	**Hub Assembly**	UM 9-604	1
5	Nut, Hexagon	UM 6-904	5
6	Seal, Grease	UM 12-1000	1
7	Cap, Grease	UM 12-1001	1
8	Cone, Inner Bearing	15118	1
9	Cone, Outer Bearing	09074	1
3	**Hub, Sub-Assembly**	11-604	1
4	Stud	13-806	5
	Cup, Inner Bearing	15250	1
	Cup, Outer Bearing	09196	1
3	Hub	2-604	1

*Not illustrated.

†Electric Wheel Company Mountings used on Serial Numbers 85MR14842, 85MR15629 and up to and including 85MR24170. Always give the serial number of your compressor.

HOUSING PARTS (Cont'd)

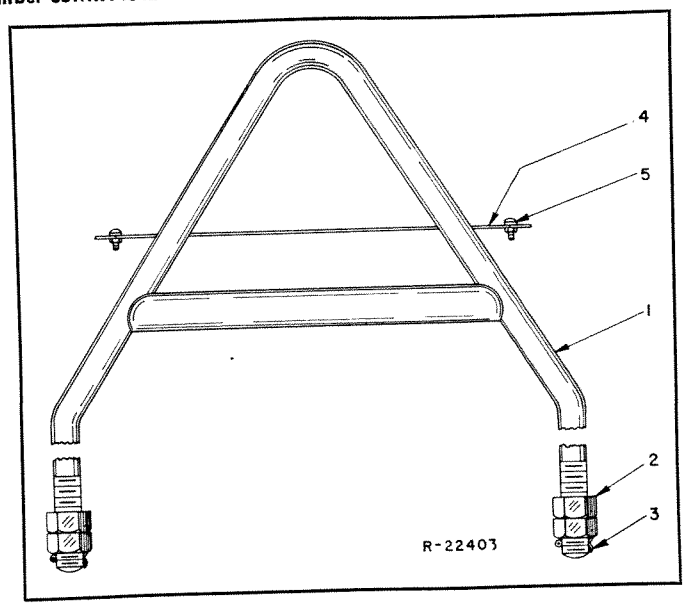
ILLUS. NO.	NAME OF PART PARTS INDENTED AFTER AN ITEM ARE INCLUDED WITH THE ITEM	PART NO.	QTY.
*	Tool Box Complete - Specify Right Hand or Left Hand	2H17785T	2
12	Tool Box End Plate - R.H. Front and L.H. Rear	2H17785	2
*	Tool Box End Plate - L.H. Front and R.H. Rear	2R26064	2
*	Tool Box End Plate Cap Screw	35A2-1C109	12
*	Tool Box End Plate Cap Screw Nut	16A4C3	12
*	Tool Box End Plate Cap Screw Nut Lock Washer	14A5C76	12
*	Tool Box Rear End Plate Spacer	2W41152	2
14	Tool Box Main Sheet	2H17786	2
*	Tool Box Main Sheet to Frame Cap Screw	35A2-1C2	34
*	Tool Box Main Sheet Cap Screw Nut	16A4C1	34
*	Tool Box Main Sheet Cap Screw Nut Lock Washer	14A5C55	34
*	Tool Box Main Sheet Cap Screw Nut Plain Washer	11A5C2	34
15	Side Cover Hood Latch	2W30144	4
*	Side Cover Hood Latch Cap Screw	35A2-1C1	8
*	Side Cover Hood Latch Cap Screw Nut	16A4C1	8
*	Side Cover Hood Latch Cap Screw Nut Lock Washer	14A5C55	8
*	Reflex Marker Unit	2W31704	2
*	Reflex Marker Unit Cap Screw	35A2-1C2	4
*	Reflex Marker Unit Cap Screw Nut	16A4C1	4
*	Reflex Marker Unit Cap Screw Nut Lock Washer	14A5C55	4
16	Fender†	2R22029 R22290	2
16	Fender††	2R26068	2
*	Fender Cap Screw	35A2-1C2	10
*	Fender Cap Screw Nut	16A4C1	10
*	Fender Cap Screw Nut Lock Washer	14A5C55	10
*	Fender Cap Screw Nut Plain Washer	11A5C2	10

***Not Illustrated.**

Always give the serial number of your compressor.

†Used on units up to and including Serial Number 85MR14848.

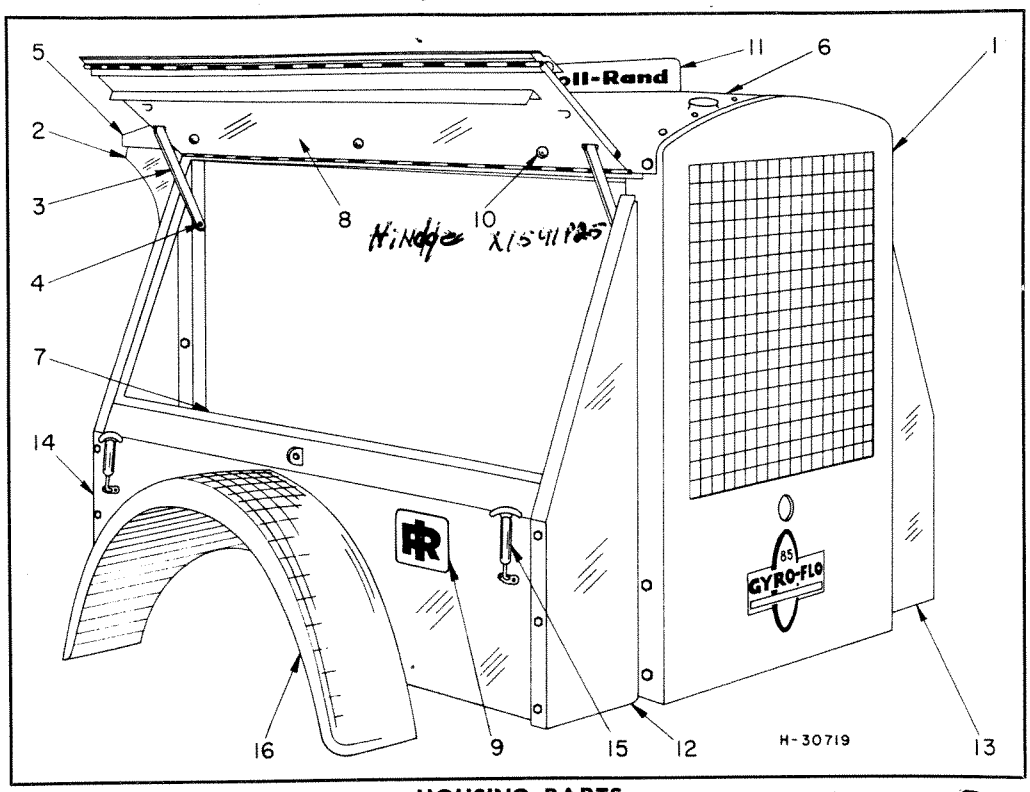
††Used on units Serial Number 85MR14842 and 85MR14849 and up.



LIFTING BAIL PARTS

ILLUS. NO.	NAME OF PART PARTS INDENTED AFTER AN ITEM ARE INCLUDED WITH THE ITEM	PART NO.	QTY.
1	Lifting Bail	2H16364	1
2	Lifting Bail Nut	16A4C7	4
*	Lifting Bail Nut Lock Washer	14A5C120	4
3	Lifting Bail Cotter Pin	11A13C36H	2
4	Lifting Bail Hole Cover	2W43858	1
5	Lifting Bail Hole Cover Cap Screw	35A2-1C2	4
*	Lifting Bail Hole Cover Cap Screw Nut	16A4C1	4
*	Lifting Bail Hole Cover Cap Screw Nut Lock Washer	14A5C55	4

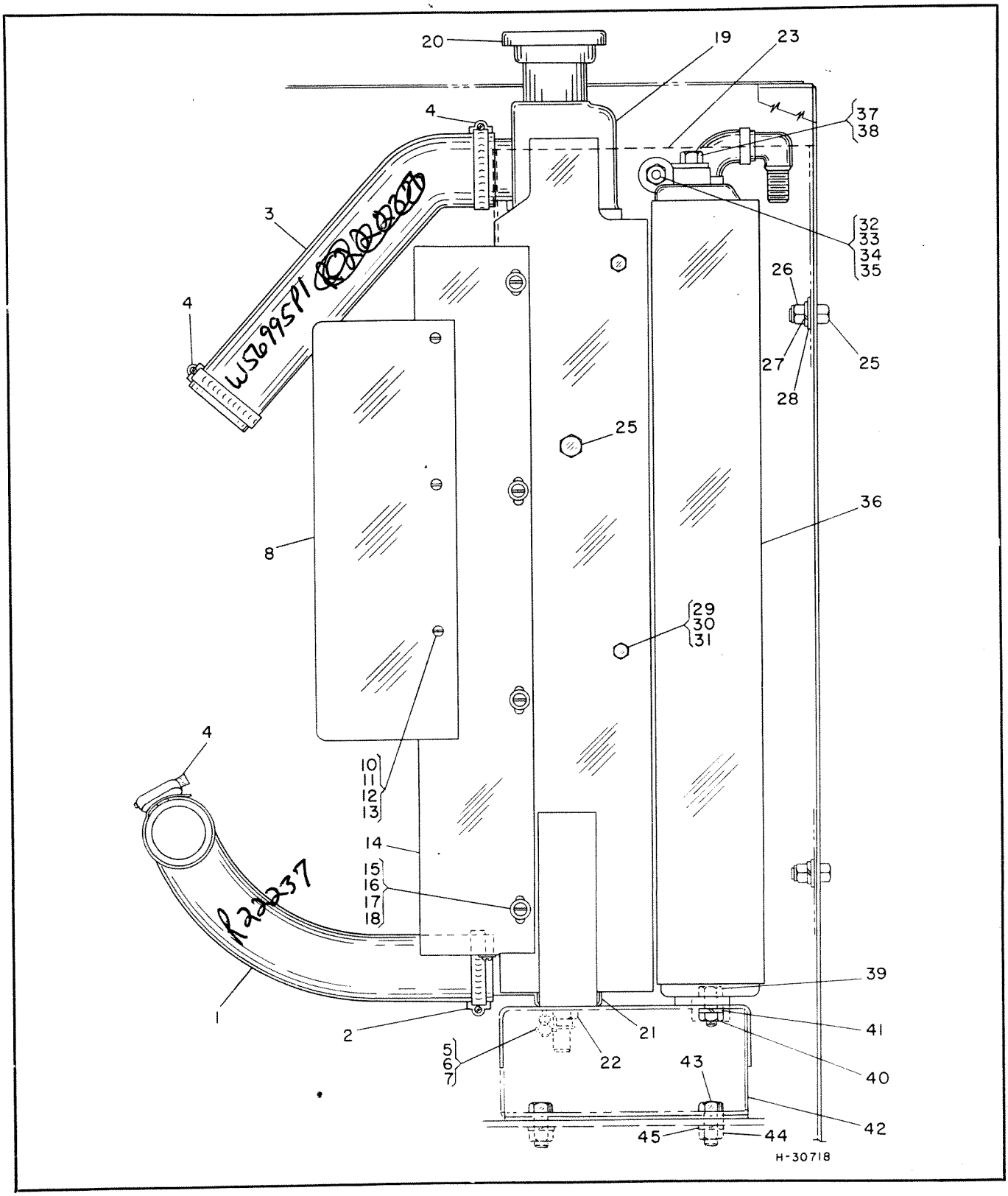
Always give the serial number of your compressor.



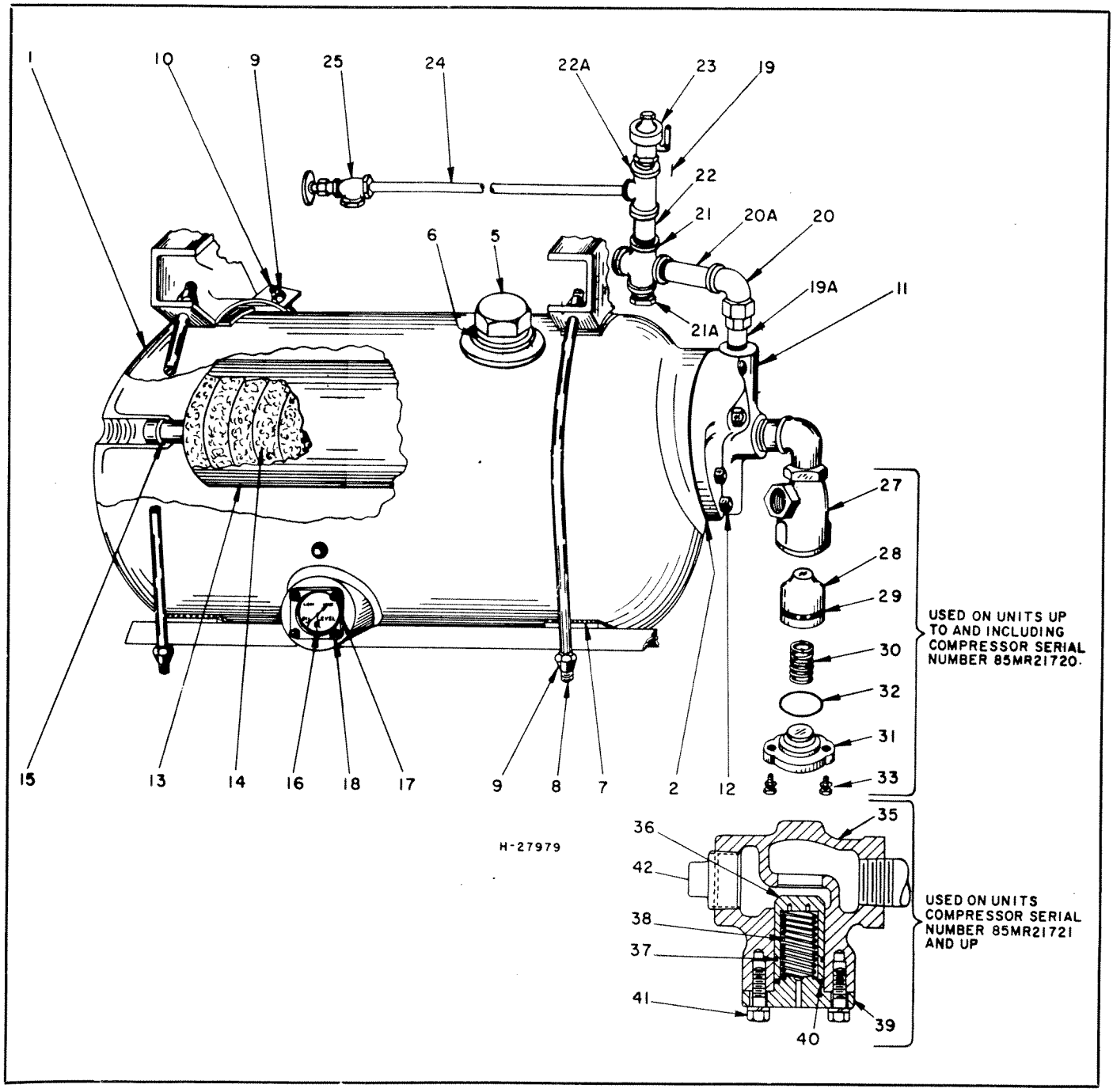
HOUSING PARTS

X1591P25

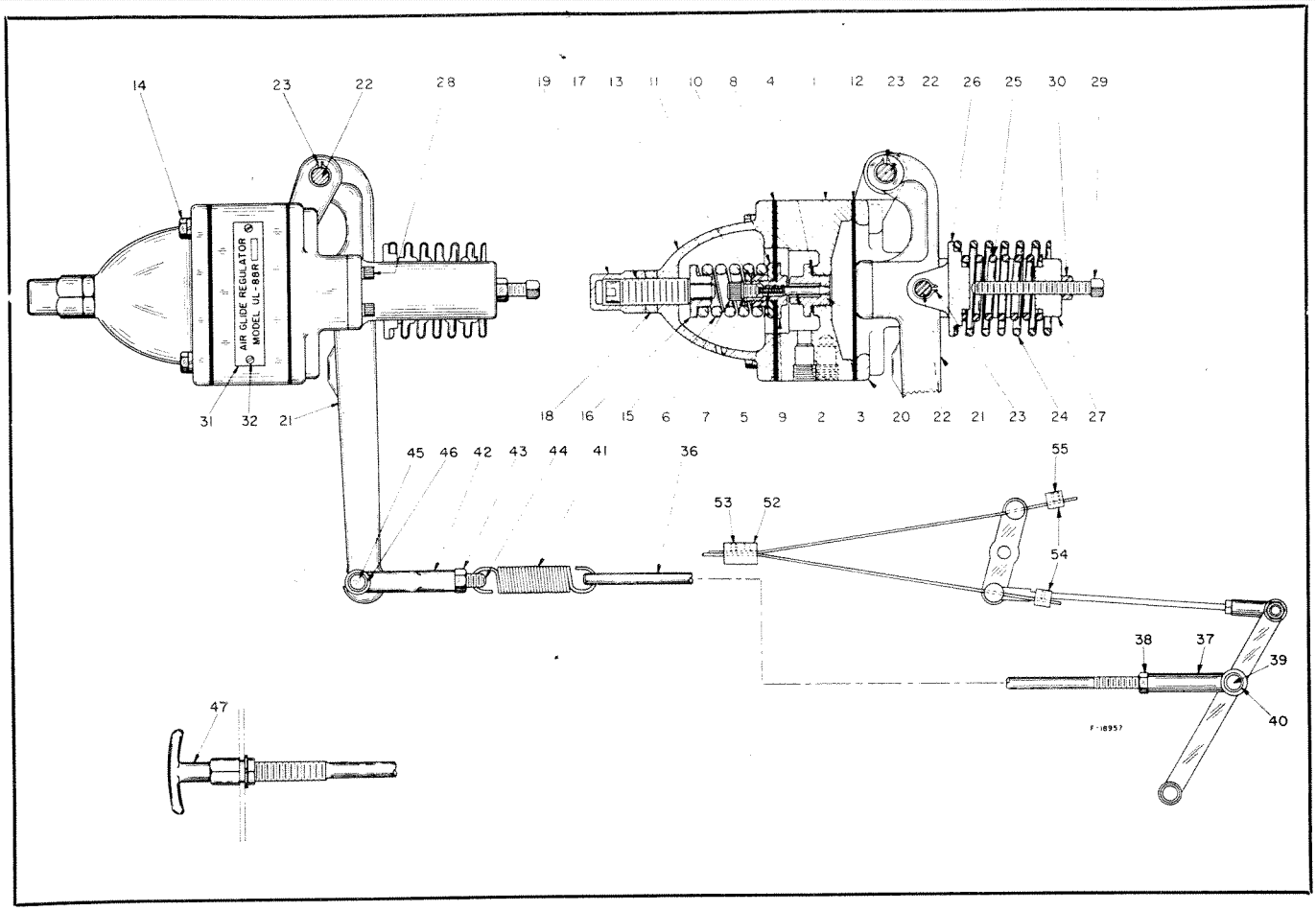
ILLUS. NO.	NAME OF PART PARTS INDENTED AFTER AN ITEM ARE INCLUDED WITH THE ITEM	PART NO.	QTY.
1	Housing Front Plate Assembly	2H17868	1
*	Front Plate to Frame Cap Screw	35A2-1C110	6
*	Front Plate to Frame Cap Screw Nut	16A4C3	6
*	Front Plate to Frame Cap Screw Nut Lock Washer	14A5C76	6
2	Rear Housing Plate - Right Hand	2H16193	1
*	Rear Housing Plate - Left Hand	2H16194	1
*	Rear Housing Plate Cap Screw	35A2-1C109	6
*	Rear Housing Plate Cap Screw Nut	16A4C3	4
*	Housing Plate Cap Screw Nut Lock Washer	14A5C76	4
3	Side Cover Support Arm	2W24025	4
4	Cupped Spring Washer - Slotted	2W30033	4
*	Cap Screw Nut	X1302T6	2
*	Front Plate Cap Screw	35A2-1C109	2
*	Front Plate Cap Screw Lock Nut	16A4C3	2
*	Top Cover Rear Support	2R22223	1
*	Top Cover Rear Support to Housing Plate Cap Screw	35A2-1C109	2
*	Top Cover Rear Support to Housing Plate Cap Screw Nut	16A4C3	2
*	Top Cover Rear Support to Housing Plate Cap Screw Nut Lock Washer	14A5C76	2
*	Nut Retainer	2W86714T2	14
5	Top Cover Rear Visor	2H16210	1
*	Visor to Rear Housing Cap Screw	35A2-1C2	4
*	Visor to Rear Housing Cap Screw Nut†	16A4C1	4
*	Visor to Rear Housing Cap Screw Lock Washer	14A5C55	4
6	Top Cover	2H16201P1	1
*	Top Cover to Support Cap Screw	35A2-1C1	14
7	Housing Side Sheet - Right Hand	2H17787	1
*	Housing Side Sheet - Left Hand	2R26069	1
*	Housing Side Sheet Cap Screw	35A2-1C2	8
*	Housing Side Sheet Cap Screw Nut	16A4C1	8
*	Housing Side Sheet Cap Screw Nut Lock Washer	14A5C55	8
8	Side Cover Assembly	2H17788	2
9	Ingersoll-Rand Nameplate for Tool Box	20A16A2D	2
*	Ingersoll-Rand Nameplate Rivet	2W86689T1	8
10	Rubber Bumper	2W13762	6
11	Nameplate for Top Cover	22A16X1	1
*	Nameplate Cap Screw	35A2-1X2	3
*	Nameplate Cap Screw Nut	16A4C1	3
*	Nameplate Cap Screw Nut Copper Washer	X1026T45	3
*	Nameplate Cap Screw Lock Washer	14A5C55	3



RADIATOR AND OIL COOLER



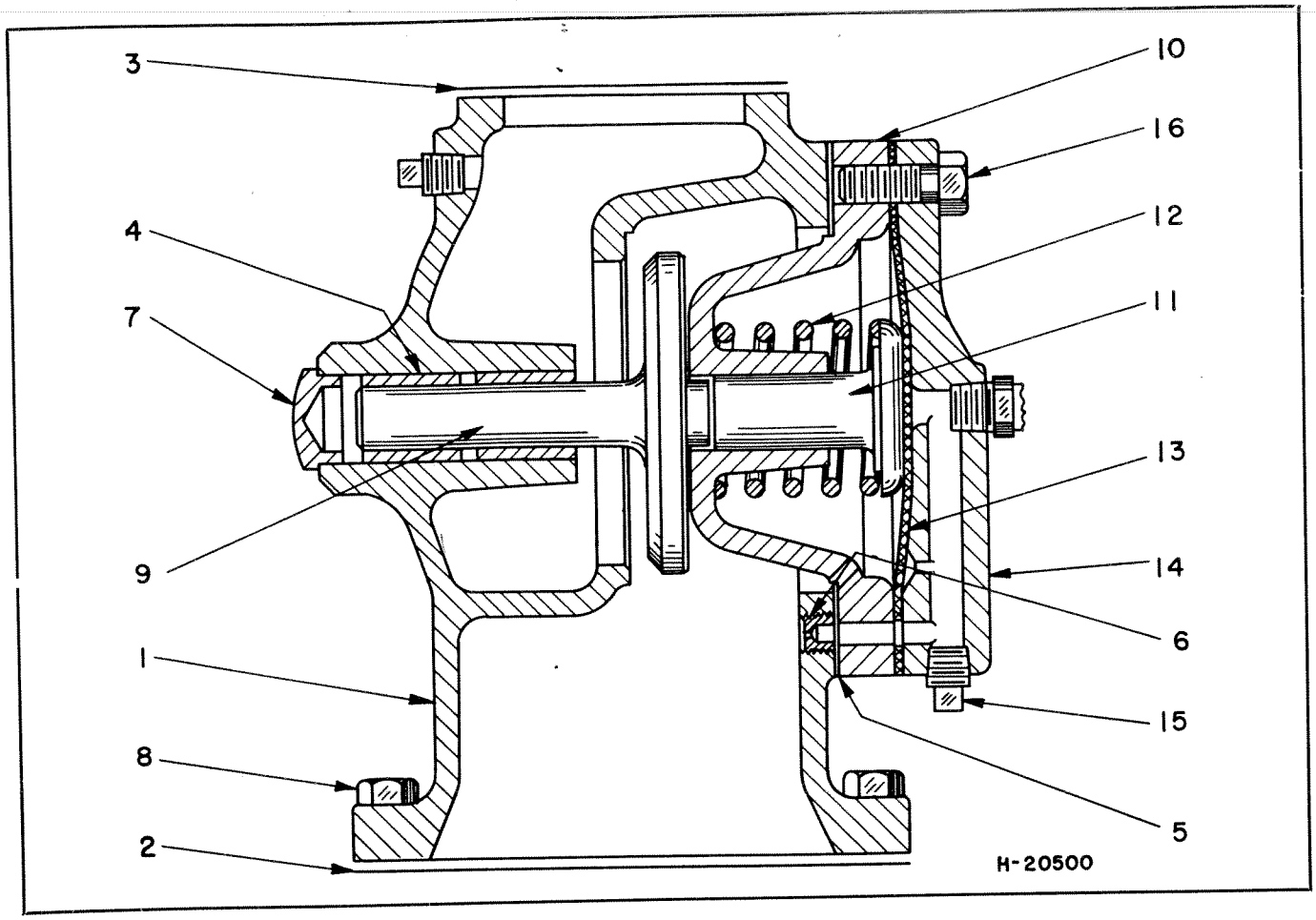
OIL SEPARATOR AND MINIMUM PRESSURE VALVE



UL-88 REGULATOR PARTS

ILLUS. NO.	NAME OF PART PARTS INDENTED AFTER AN ITEM ARE INCLUDED WITH THE ITEM	PART NO.	QTY.
	UL-88 SPEED AND PRESSURE REGULATOR ASSEMBLY (Includes 1 thru 32)	**UL88R85A**	**1**
1	UL-88 Regulator Body R15427P2	UL83-2B	1
	UL-88 Regulator Repair Kit W52536	**UL88-200**	**1**
2	UL-88 Regulator Metering Pin W32936	UL88-5B	1
3	UL-88 Regulator Metering Pin Seat W31748P2	UL88-6B	1
4	UL-88 Regulator Metering Pin Seat Gasket E1293	UF1-31	1
5	UL-88 Regulator Metering Pin Spring	PP607	1
6	UL-88 Regulator Socket Head Cap Screw ~~W56703T2~~	5/16" - 24 x 3/8"	1
7	UL-88 Regulator Cap Screw Gasket	X1108T20	1
8	UL-88 Regulator Top Cover Diaphragm W37087	UL83-33A	1
9	UL-88 Regulator Top Cover Diaphragm Bolt W32937	UL88-7A	1
10	UL-88 Regulator Top Cover Diaphragm Washer	1W1619P1	1
11	UL-88 Regulator Top Cover Diaphragm Bolt Nut W32938	UL88-9	1
12	UL-88 Regulator Bottom Cover Diaphragm W34874	UL88-3	1
13	UL-88 Regulator Top Cover R15430	UL83-40	1
14	UL-88 Regulator Top Cover Cap Screw	7/16" - 14 x 3"	4
15	UL-88 Regulator Pilot Valve Spring	PP412	1
16	UL-88 Regulator Pilot Valve Spring Seat D42616	UF1-38	1

Always give the serial number of your compressor.



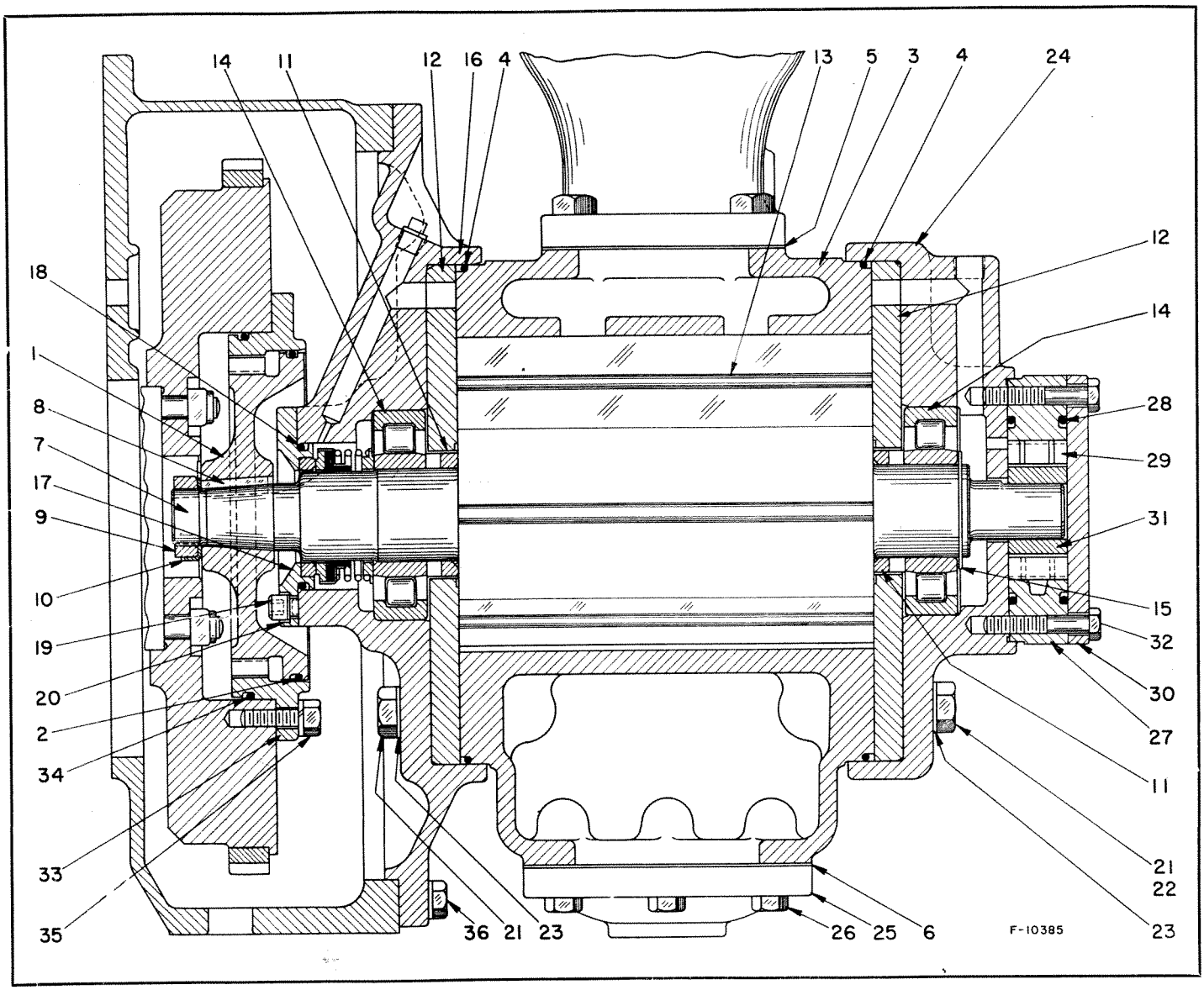
UL-89 VOLUMETRIC REGULATOR PARTS

ILLUS. NO.	NAME OF PART PARTS INDENTED AFTER AN ITEM ARE INCLUDED WITH THE ITEM	PART NO.	QTY.
	UL-89 VOLUMETRIC REGULATOR ASSEMBLY	UL89R85A ~~3570~~ 1184-625	1
		2F9507P3 ~~2800~~	1
1	**UL-89 Volumetric Regulator Body**	2W41172	1
2	UL-89 Regulator Body to Cylinder Gasket	2W37558	1
3	Compressor Air Inlet Elbow Gasket	2W43898	2
4	UL-89 Regulator Valve Bushing	2W37988	1
5	UL-89 Regulator Diaphragm Body Gasket	X1080T38	1
6	UL-89 Regulator Body Orifice Plug	2W57581	1
7	UL-89 Regulator Body Plug	35A2-1D219	1
8	UL-89 Regulator to Cylinder Cap Screw	2W37985	
9	UL-89 Regulator Unloader Valve	2R22315	
10	UL-89 Regulator Diaphragm Body	2W37988	
5	UL-89 Regulator Diaphragm Body Gasket	2W37987	
11	UL-89 Regulator Diaphragm Piston	PP754	
12	UL-89 Regulator Diaphragm Piston Spring	2W43779	
13	UL-89 Regulator Diaphragm	2R22316	
14	UL-89 Regulator Diaphragm Cover	30A7S2	
15	UL-89 Regulator Diaphragm Cover Pipe Plug	35A2-1D111	
16	UL-89 Diaphragm Cover to Diaphragm Body Cap Screw	35A2-1D116	
*	UL-89 Diaphragm Cover to Regulator Body Cap Screw	2W57868	
*	Atmospheric Relief Valve Tubing (From Regulator Body)	X1617T3X14½	1
*	Copper Tube	X1086T68	1
*	Copper Tube Nut	X1086T3	1
*	Tube Elbow	X1086T118	1
*	Inverted Tube Elbow	X1086T116	1
*	Inverted Tube Nut		

610 - 921 - 2686

*Not Illustrated.
Always give the serial number of your compressor. 404-691-5701

214-838-5048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AIR END

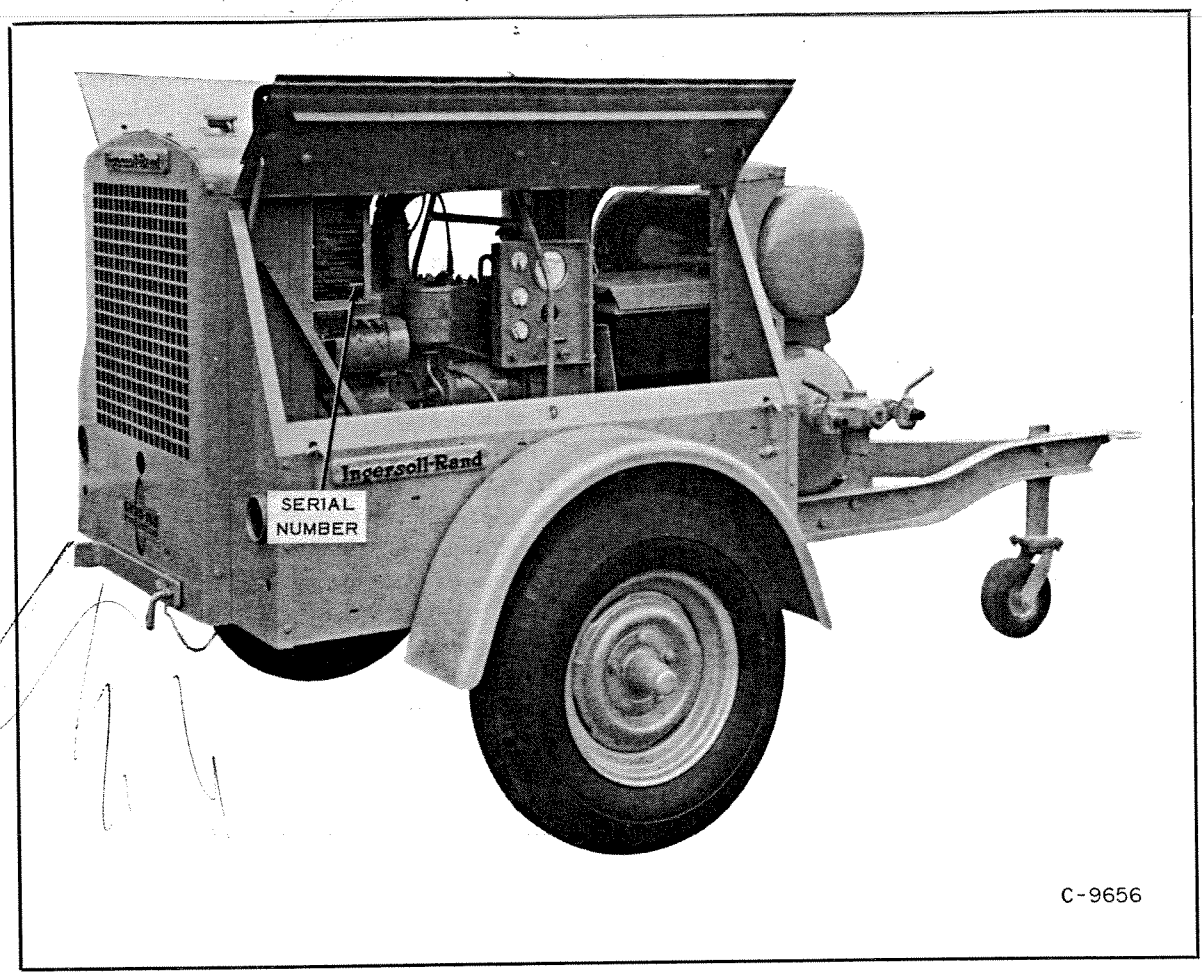

Fig. 21—Location of Unit Serial Number.

number of the unit will be found stamped on a brass instruction plate attached to the housing. The serial number of the unit will also be found stamped in the metal on the top edge of the L.P. Inner Bearing Housing. (Figure 22).

c. Always specify the form number of this publication.

d. Always specify the description of the part, or parts, as well as the part number exactly as it is given in the parts listing. Do not order a part, or parts, using the illustration number.

e. Never use such terms as "Assembly", "Complete" or "Sets" unless these terms appear specifically in the parts listing.

f. Always specify the quantity of parts required.

In the event parts are being returned to your nearest Ingersoll-Rand Company branch office, or authorized distributor or dealer, for inspection or repair, it is extremely important to include the serial number of the unit from which the parts were removed. This is necessary if the branch, distributor, or dealer is to take care of your order promptly.

Engine parts must be ordered from your nearest engine authorized distributor or dealer.

SPARE PARTS

Special selections of spare parts have been prepared as insurance against prolonged shutdown periods. These selected parts, called spare parts boxes, are shown itemized in the rear of this section. The contents of each spare parts box are carefully selected so as to provide maximum protection for the unit with a minimum number of parts. Three sizes of spare parts boxes, ranging from small to extra large, are available. The small spare parts box is suitable for minimum domestic use while the large is suitable for average domestic use or for minimum export use. The extra large spare parts box is suitable to maintain up to five units, domestically; or up to two units in foreign countries, or in remote locations, where transportation facilities may be slow.

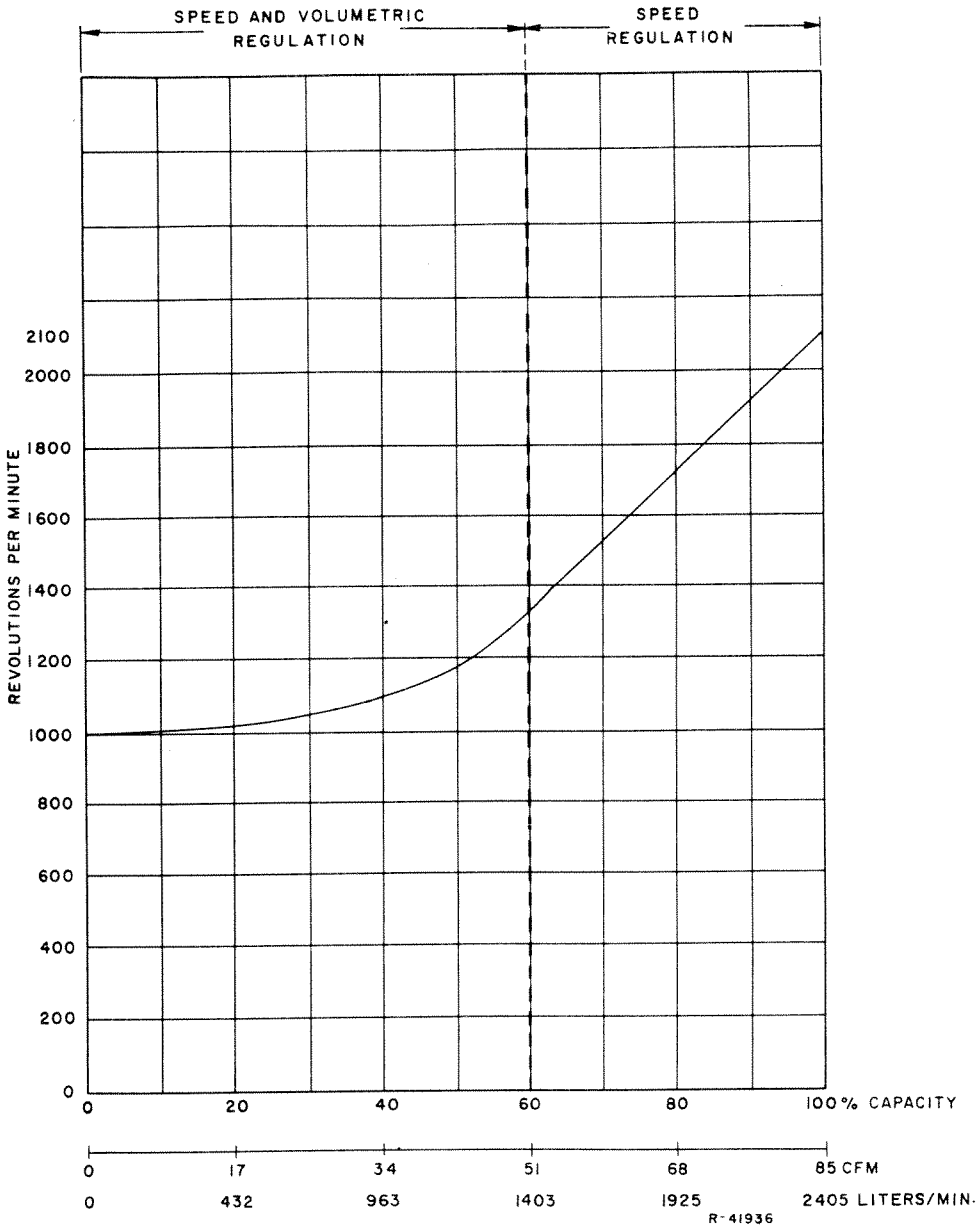

Fig. 20—Capacity-Speed Chart.

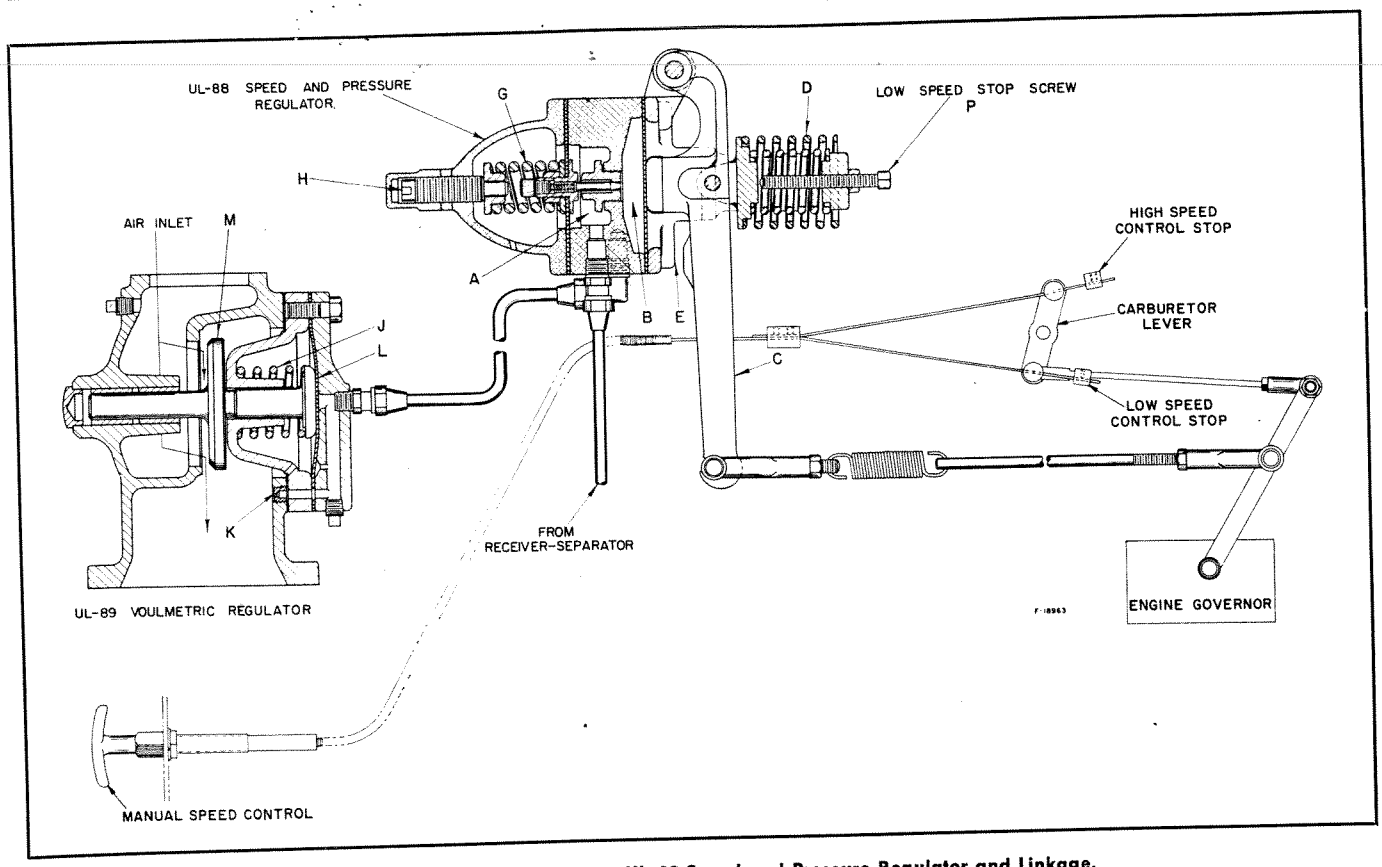

Fig. 17—UL-89 Volumetric Regulator, UL-88 Speed and Pressure Regulator and Linkage.

and chamber "A" pressure to rise above 100 psi (7.03 kg/cm²), then movement of the needle valve will permit sufficient air to pass to chamber "B" to overcome the bleed loss. This will build up enough pressure to move lever "C" in an infinitely variable manner from the full speed position to a reduced speed, just sufficient to meet the reduced air demand. This speed and capacity change, from 100% down to 60% capacity, results in a drop of from full engine speed of 2100 RPM down to approximately 1400 RPM, and occurs with a discharge pressure increase of approximately six psi (.42 kg/cm²); for example, from 100 to 106 psi (7.03 to 7.45 kg/cm²).

On further reduction of air demand, the final discharge pressure will rise above 106 psi (7.45 kg/cm²); lifting the chamber "A" needle valve still more and further increasing the pressure in chamber "B", whereupon two controlling functions occur simultaneously.

1. Since movement of lever "C" continues with further increase of pressure in chamber "B", there will be additional speed reduction, which, carried to its full limit, will reduce the speed proportionately from 1400 RPM approximately down to 1000 RPM. The low speed limit is adjusted by the low speed stop screw "P" on the UL-88 regulator. It limits the movement of the regulator lever in this direction.
2. At the same time, the increase in chamber "B" pressure, which is also effective on the operating diaphragm "L" of the UL-89 Volumetric Regulator, is now sufficient to start closing the intake regulator valve "M". Here again the closing of the valve is in an infinitely variable manner and the resulting capacity of the unit is progressively reduced.

The combined effect of functions (1) and (2) is such that the capacity of the unit is reduced from 60% capacity to zero capacity while the final discharge pressure is rising from 106 to 110 psi (7.45 kg/cm² to 7.73 kg/cm²).

Complete regulation therefore has occured within a pressure range of approximately 10 psi (.703 kg/cm²) and in an infinitely variable or stepless manner. (See Speed and Volumetric Regulation Diagrams, Figs. 19 and 20).

UL-89 VOLUMETRIC REGULATOR (Fig. 17)

The UL-89 Volumetric Regulator consists of an intake housing equipped with a port and a diaphragm operated valve "M". The diaphragm chamber "L" receives its operating pressure from the UL-88 Speed and Pressure Regulator as explained previously.

Balancing control of the diaphragm is obtained by spring "J". This spring maintains sufficient ten-

IDENTIFICATION OF OTHER SERVICE PARTS

1. Engine crankcase drain plug "U".
2. Air filter pre-cleaner "V". Keep screen free of dirt, leaves, etc. at all times. To remove dirt, wash screen in a non-flammable safety solvent.
3. Radiator drain plug "W". Drain engine cooling water in freezing weather if system not protected by antifreeze. Refer to the engine book.
4. Engine cylinder block drain cocks "X". Drain engine cooling water in freezing weather if system not protected by antifreeze. Refer to the engine book.
5. The tightness of all screws and nuts should be checked periodically, especially the wheel nuts.

PART V
REGULATION

REGULATION

100% regulation is provided for by a proportional speed reduction from full capacity down to approximately 60% capacity, and a combination of further speed reduction with volumetric regulation of the compressor for capacities from 60% down to zero capacity.

The total effect is accomplished by the "Air Glide" UL-88 Speed and Pressure Regulator in conjunction with the UL-89 Volumteric Regulator. (See Figure 17.)

UL-88 "AIR GLIDE" SPEED AND PRESSURE REGULATOR (Fig. 17)

The UL-88 Speed and Pressure Regulator is an air pressure operated device consisting of a spring loaded diaphragm on one side of a central body with an operating diaphragm on the opposite side of the same body. The central body forms two chambers "A" and "B", with a needle valve orifice located to pass air from one chamber to the other.

Chamber "A" is directly connected through tubing to the air delivery end of the receiver-separator and thus is subject to final discharge pressure at all times. Chamber "B" is connected through tubing to the operating diaphragm chamber "L" of the UL-89 Volumetric Regulator, where a small orifice "K" is provided to bleed off a portion of the regulating air to give range control to the system.

The spring loaded diaphragm of chamber "A" controls the positioning of the orifice needle, thus controlling the amount of pressure passing from chamber "A" to chamber "B". A spring loaded lever "C" is so arranged against the chamber "B" diaphragm that movement of this diaphragm is multiplied, and conveyed by linkage, to the engine governing system.

The pressure in chamber "B" will always be less than that in chamber "A" because of the throttling effect of the needle valve orifice and the fact that, when less than full capacity is being used and the discharge pressure is above the set pressure, chamber "B" pressure is then constantly bleeding off through the small vent "K" in the UL-89 Volumetric Regulator. Thus, when final discharge pressure (and chamber "A" pressure) is sufficient to cause the diaphragm to raise the needle valve off its seat, chamber "B" pressure will slowly raise and gradually overcome force of spring "D" and move lever "C" to cause speed reduction of the engine and compressor.

Since spring "D" is designed to be stronger than the engine governor spring, lever "C" will be held against the stop "E" as long as there is insufficient pressure in chamber "B" to overcome the difference in balance between spring "D" and the engine governor spring. Therefore, the engine will operate at full rated speed as long as the pressure in chamber "A" is insufficient to raise the needle valve.

The force of spring "G" on the needle valve diaphragm is so adjusted by screw "H" that no lever movement occurs until final discharge pressure has reached 100 psi (7.03 kg/cm²); or whatever set pressure between 90 and 110 psi (6.33 and 7.73 kg/cm²) is desired, in accordance with the tools being operated. Do not attempt to adjust below 90 psi (6.33 kg/cm²) or above 110 psi (7.73 kg/cm²).

If the air demand is less than the full capacity of the compressor, causing the final discharge pressure

LUBRICATION AND PREVENTIVE MAINTENANCE

(For Periodic Engine Maintenance, Refer To Engine Operation and Maintenance Instructions)

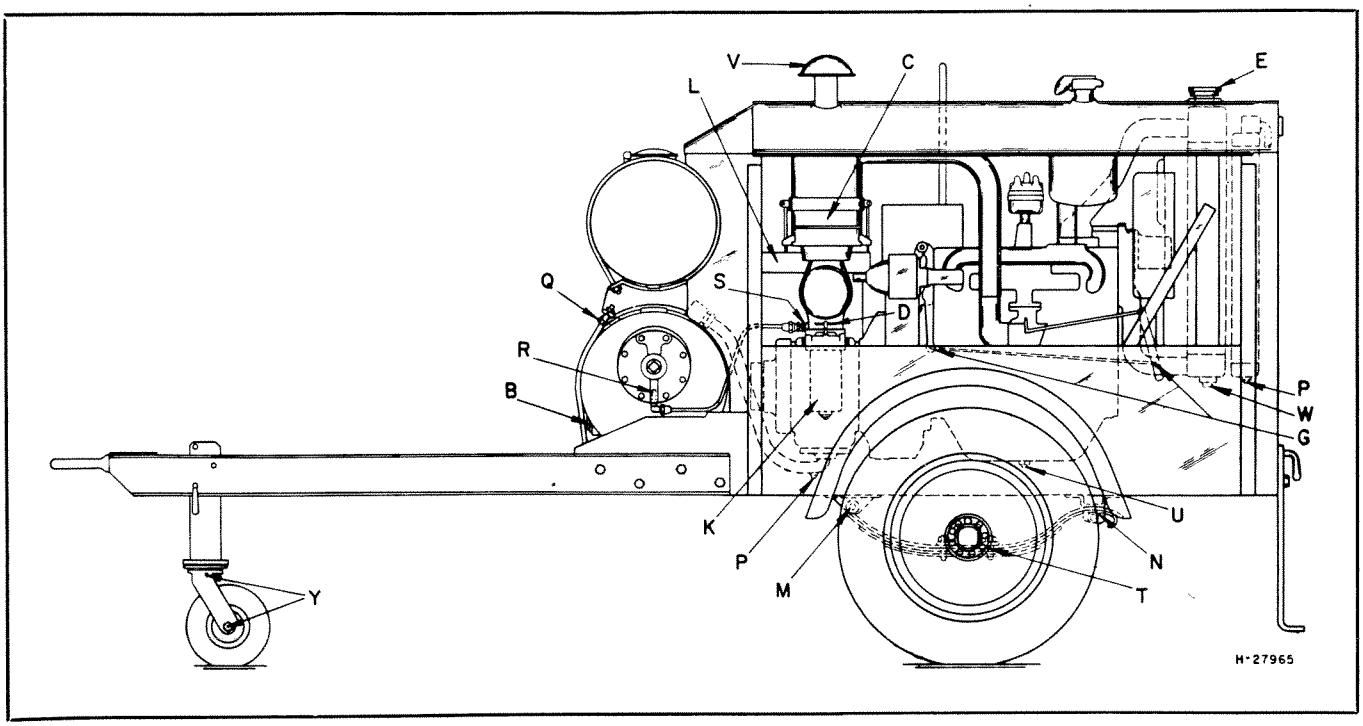

Fig. 15—Lubrication Chart - Right Hand Side of Unit.

ONCE A DAY (or every 8 hours of operation)

1. Open the small condensate drain valve "A" under the receiver-separator to draw off any accumulated condensate which may collect under the compressor lubricating oil. Close as soon as oil appears. Do this each morning before starting the days run.
2. Maintain an oil level in the receiver-separator between one-half and full on the oil level indicator gauge "B". Check this gauge each morning before starting.
3. Service the air filter "C" if the compressor is operating in an extremely dusty location. Remove the bottom oil pan; drain off the oil and clean out the sludge and dirt; refill with new oil to bead line and replace pan.
4. Turn handle "D" of oil filter one complete revolution, preferably immediately after shutting down while oil is still warm.
5. Check engine fuel strainer. See engine book.
6. Check the coolant level in the engine radiator "E". Add make-up coolant if necessary.
7. Check the oil level in the engine crankcase by removing the oil level dipstick "F". Add make-up oil if necessary. Refer to the engine book.

ONCE A WEEK (or every 50 hours of operation)

1. Service the air filter "C" if the unit is being operated in a reasonably clean atmosphere. Remove the bottom oil pan; drain off the oil and clean out the sludge and dirt; refill with new oil to bead line and replace pan.
2. Lubricate the regulator to engine governor linkage "G" with a few drops of oil. Use the same grade of oil as that used in the engine crankcase.
3. Lubricate the hose reel bearings "H" (where applicable). Apply grease to the fittings on each reel, using a low pressure grease gun.
4. Change engine lubricating oil. Refer to engine book.
5. Lubricate the starter "I" and generator "J" sparingly. Use a few drops of oil the same grade as that used in the engine crankcase.

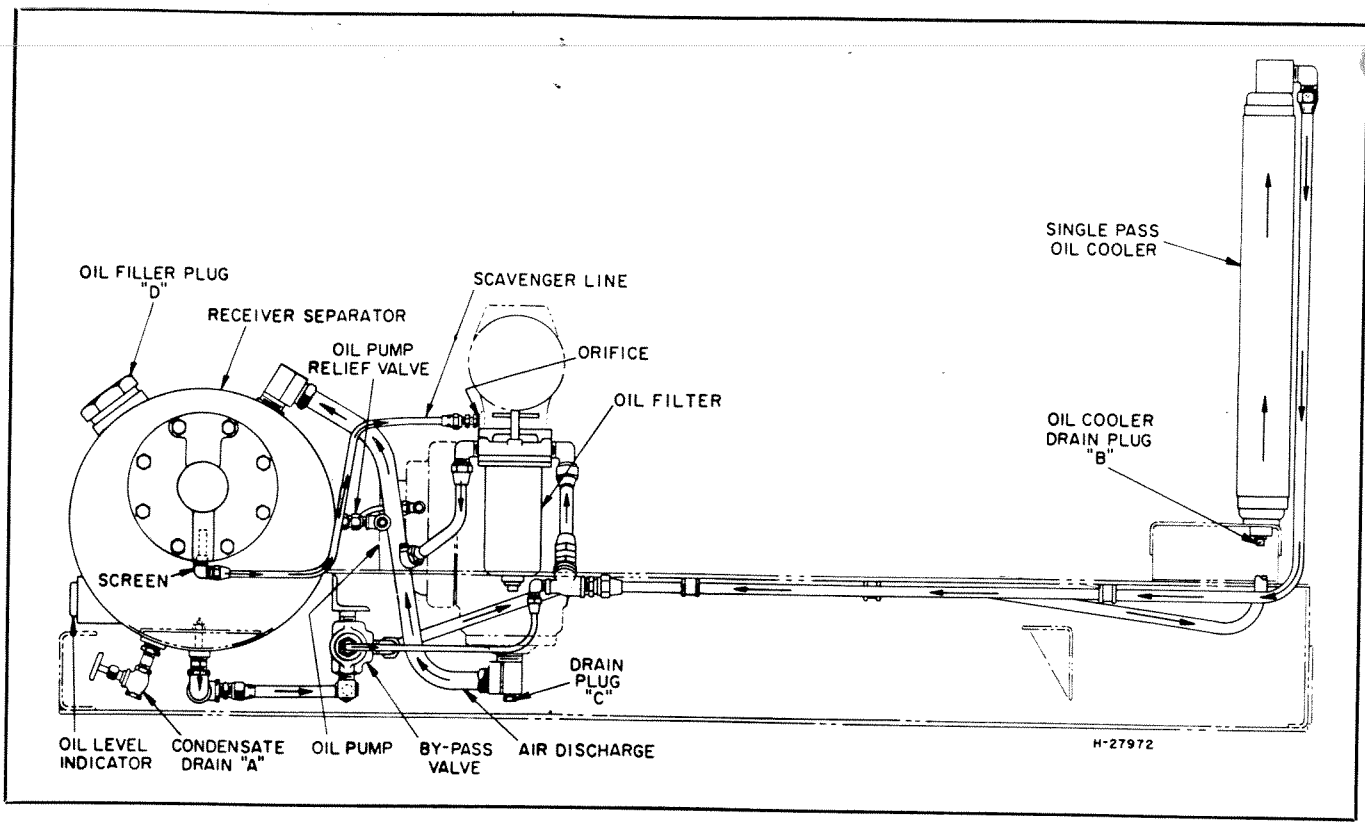

Fig. 14—Diagram of Compressor Lubricating and Cooling Oil Systems.

air before it enters the secondary receiver-separator section. The **level of the oil** in this storage reservoir is indicated by an oil level dial gauge, visible from the rear of the unit. This should indicate at least between "½ and full" when the unit is shut down and on **fairly level ground.** The storage reservoir (shell) is equipped with a special filler plug and a small drain valve "A" Fig. 14.

The small drain valve "A" is used in testing for condensate which may accumulate under the oil in the bottom of the reservoir during certain climatic conditions, especially if operating at less than 40% load capacity. For **complete draining** of the reservoir and piping, open the small drain valve "A" at the low end of the receiver-separator. Also, remove the drain plug "B", under the oil cooler, and the drain plug "C" in the cylinder discharge elbow.

Do not attempt to remove the oil filler plug "D" without first releasing all pressure in the receiver-separator by opening manual blowdown valve "F", Fig. 6.

COMPRESSOR LUBRICATING OIL RECOMMENDATIONS

These instructions are very important.

1. Use a quality turbine type oil, containing only rust and oxidation inhibitors, that has a viscosity at 100°F. of 150-220 sec. Saybolt (37.8°C of 33-48 Centistokes) and having a pour point low enough so it will flow at the lowest starting temperature encountered.

2. Service the compressor lubricating oil filter every 100 hours.

3. The oils specified previously provide adequate lubrication at all ambient temperatures and load conditions. They give maximum efficiency and easiest cold starting and make seasonal changes unnecessary. The absence of detergents minimizes water pick-up and emulsification under low load conditions. Thus, swelling of vanes and consequent loss of slot clearance is prevented.

4. Some oil mixtures are incompatible, resulting in the formation of varnishes, shellacs or lacquers which may be insoluble. Such deposits can cause serious troubles, including clogging of oil filter, sticking vanes and possibly vane breakage.

   Therefore, Do Not Mix Different Brands Of Oils.

5. The receiver-separator, oil cooler and oil filter should be drained completely and refilled with new oil, as supplied by your preferred oil supplier to meet preceding recommendations, when unit

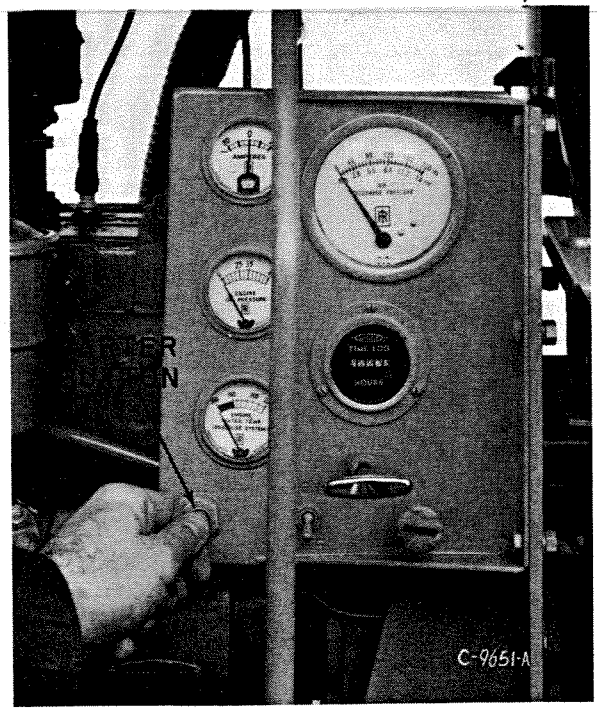

Fig. 12—Operating the Starter Button on Model GR85. Operating Instruments are mounted on the end of the Model GRU85.

started against a lighter load than normal. However, the manual blowdown valve must be closed as soon as it is possible to do so without stalling the engine.

STOPPING

Close the service valves and the manual blowdown valve causing compressor to unload and engine to operate at minimum reduced speed. Continue to operate at this reduced speed until the engine has cooled down sufficiently to prevent the radiator from boiling over, then turn ignition switch off.

Air pressure must now be relieved from the receiver-separator system. Normally, this is accomplished by the automatic blowdown valve; however, on earlier models not equipped with an automatic blowdown valve, the operator must relieve the pressure from the receiver-separator by opening the manual blowdown valve. The unit should never stand idle with pressure in the system.

Close shut-off valve underneath fuel tank.

MINIMUM PRESSURE VALVE (G. Fig. 6)

This is an automatic valve which maintains a minimum pressure of about 45 psi (3.16 kg/cm²) in the receiver-separator so as to insure oil circulation.

Shut-off of discharge is accomplished by means of service valves located on the downstream side of the receiver-separator. On units equipped with hose reels, minimum pressure service valves with hand wheels are provided so that manual shut-off may be accomplished.

The minimum pressure valve cannot be used as a check valve in any operation where a check valve is required to prevent back flow of line pressure such as in parallel operation, etc.

Note:—See page 12 for special warning on Rotary Compressors on Pump-up Jobs.

See page 12 for special warning for Parallel Operation.

AUTOMATIC BLOWDOWN VALVE

The air flow system is equipped with an air actuated automatic blowdown valve, located in the air receiver safety valve piping, to automatically relieve the air pressure in the air flow system each time the unit is shutdown. When the compressor is stopped and no longer pumps air, the pressure within the compressor and the receiver-separator system becomes equalized. This equalization of pressure creates a positive presure within the UL-89 Volumetric Regulator. This positive pressure is then transmitted, through tubing, to the automatic blowdown valve diaphragm chamber. This positive pressure, acting upon the larger area of the blowdown valve diaphragm, causes a piston to unseat a ball check. This allows the receiver-separator air pressure to be blown-down to atmospheric pressure.

On earlier units not equipped with an automatic blowdown valve, the receiver-separator pressure must be relieved by use of the manual blowdown valve.

The unit should never stand idle with pressure in the receiver-separator.

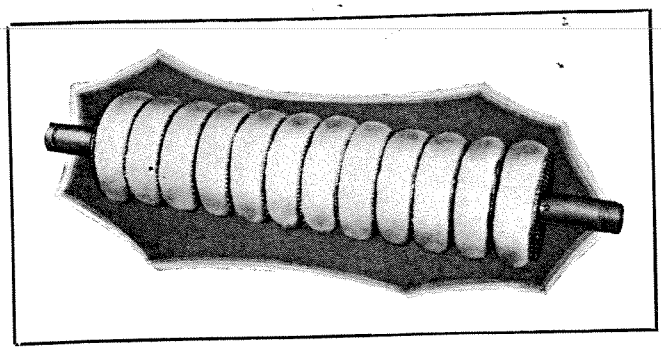

Fig. 10—Secondary Oil Separator Element, factory packed, and replaceable as a complete unit only.

of the oil is thrown out of the air mechanically in the primary oil separator, before the air enters the secondary oil separator.)

The secondary separator section (as shown in Fig. 10) is removable as a unit for replacement when required. This is indicated by more oil consumption by the compressor than usual. In normal operation, servicing of the secondary separator element should not be required for two or three years.

The diverting medium is a very special material, purchased to a strict specification and installed in the screen element to a definite density. Servicing, therefore, is by replacement only with a complete factory packed screen assembly as shown in Fig. 10.

CHASSIS (GENERAL)

The spring mounting is equipped with grease fittings at wear points for use of a normal grease gun. The wheels should be removed and the bearings cleaned and repacked twice a year. The slip ends of the springs should be lubricated every three months with heavy oil or light grease.

In greasing tapered roller bearing equipped wheels **do NOT overgrease.** Keep the outside of the dust seal clean and free of grease. **Keep the disc wheel hub bolts tight.**

Grease fittings are provided on the third wheel swivel and on the hub. **Do not overgrease.** Keep the third wheel disc nuts tight.

Maintain 26 psi (1.82 kg/cm²) air pressure in the 6.50 x 15, 4 ply tires to obtain maximum tire life.

MAXIMUM ALLOWABLE TOWING SPEED

Speed on this unit is 35 MPH (56 km/hr.)

ROTARY COMPRESSORS ON PUMP-UP JOBS

The oil separator on the rotary portable air compressor is designed to function correctly at normal operating pressures.

The high air velocities (zero pressure or low pressure) will carry considerable quantities of oil from the secondary oil separator over into the discharge line; therefore, it is essential to hold a minimum pressure of 45 psi (3.16 kg/cm²) in the receiver-separator system until such time as the discharge line pressure has increased to that amount. This is accomplished by a minimum pressure valve which automatically maintains a minimum pressure of 45 psi (3.16 kg/sq. cm²) in the air receiver and oil separator system.

Attempting to operate at discharge pressures below 45 psi (3.16 kg/cm²) will not increase the actual delivery.

OUT-OF-LEVEL OPERATION

The limit of out-of-level operation is 15° lengthwise and 15° sidewise. The engine, and not the compressor, is the limiting factor in all cases. When the unit is to be operated out of level, it is more important to keep engine crankcase oil level near the high level mark than when operating on level ground. The above out-of-level degrees are given on the assumption that the engine crankcase is filled to the high level mark (with the unit level) and the compressor oil gauge shows nearly full. Do not overfill either the compressor lubricating system or the engine crankcase.

Another factor that must be kept in mind is that the static tipping angle of the unit is approximately 42° (90% slope) sideways.

COMPRESSOR COUPLING

The complete coupling assembly is sealed to prevent the entrance of dirt and to retain the permanent lubrication installed on the original assembly.

If the engine and compressor are separated during a major overhaul, the coupling gear teeth should be repacked with grease before reassembling.

Use an automotive type front wheel bearing grease available at any service station. Use only enough to fill the gear teeth, as an excess of grease in the chamber will expand with heat and the resulting end thrust may cause compressor failure.

SPECIAL WARNING FOR PARALLEL OPERATION

Do not connect a Gyro-Flo Portable Air Compressor into a common header with any other units of any description, or any other source of compressed air, without placing a check valve between the header and each Gyro-Flo Compressor.

Backflow of line pressure and possible contamination of the receiver-separator and lubricating system with oil, water, or scale MUST BE PREVENTED.

SPRING MOUNTING

The complete unit is carried on sturdy two wheel mounting.

The mounting has semi-elliptic springs of the self-snubbing type. Pneumatic tired disc-type wheels equipped with tapered roller bearings are standard.

LESS RUNNING GEAR UNITS

"Less running gear" units are furnished on temporary wooden shipping skids. If customer mounts a "less running gear" unit on other equipment, it is his responsibility to see that the frame is not stressed or warped because of the mounting arrangement. The use of special rubber mounts may be desirable or necessary.

MODEL GRU85 COMPRESSOR

The GRU85 units, designed for truck mounting, are furnished on temporary wooden shipping skids. The operating instruments are mounted at the end of the unit.

PART II
CARE and OPERATION

ENGINE RADIATOR AND COMPRESSOR OIL COOLER

Keep all core sections of both the radiator and oil cooler clean by using a cleaning solution. Higher efficiency and lower temperatures will result when the external grease and grime and the internal oxidation of the lubricating oil is thoroughly removed. Use only clean, soft water for filling the radiator. Where the water is known to be "hard" or alkaline, treat it with a softening compound to prevent formation of scale and rust, both in the engine jacket spaces and in the radiator itself.

Freezing of water in the cooling system may result in serious damage. If the unit is to stand idle in freezing temperatures, the only safe plan is to drain the system unless an anti-freeze solution is used.

Before adding any anti-freeze solution, tighten up all joints in the cooling system and make sure there are no leaks.

Ethylene-glycol solutions are recommended since they are not lost by evaporation and only water need be added to maintain a full system. If any of the solution is lost by leakage, foaming, etc., it must be replaced by new anti-freeze solution.

The entire cooling system must be thoroughly cleaned and flushed before using an ethylene-glycol solution. All hose connections and joints must be kept tight, as any leakage of air into the system may cause acid formation and corrosion.

ANTI-FREEZE SOLUTIONS

Percentages by volume Ethylene Glycol	Freezing Temperature
16%	20°F (–6.6°C)
25%	10°F (–12.2°C)
33%	0°F (–17.8°C)
39%	–10°F (–23.3°C)
44%	–20°F (–28.9°C)
48%	–30°F (–34.4°C)

FUEL SYSTEM

The compressor is equipped with a cylindrical fuel tank located above the receiver-separator. The fuel tank filler cap, "B" Fig. 6, is of the lockable type.

The capacity of the fuel tank is 14 U. S. Gallons (52.7 Liters).

The outlet connection of the tank is so arranged that fuel is taken from a point somewhat above the floor of the tank thus providing a settling space where water and sediment can collect without being drawn into the fuel system. Bottom drain openings, "A" Fig. 6, are provided for removal of any collected water and sediment.

Drain the settlings frequently. See that the vent hole in the filler cap does not become plugged with dirt, or gum from the fuel.

Clean fuel is vitally important and every precaution should be taken to insure the fuel being clean when it is poured or pumped into the supply tank.

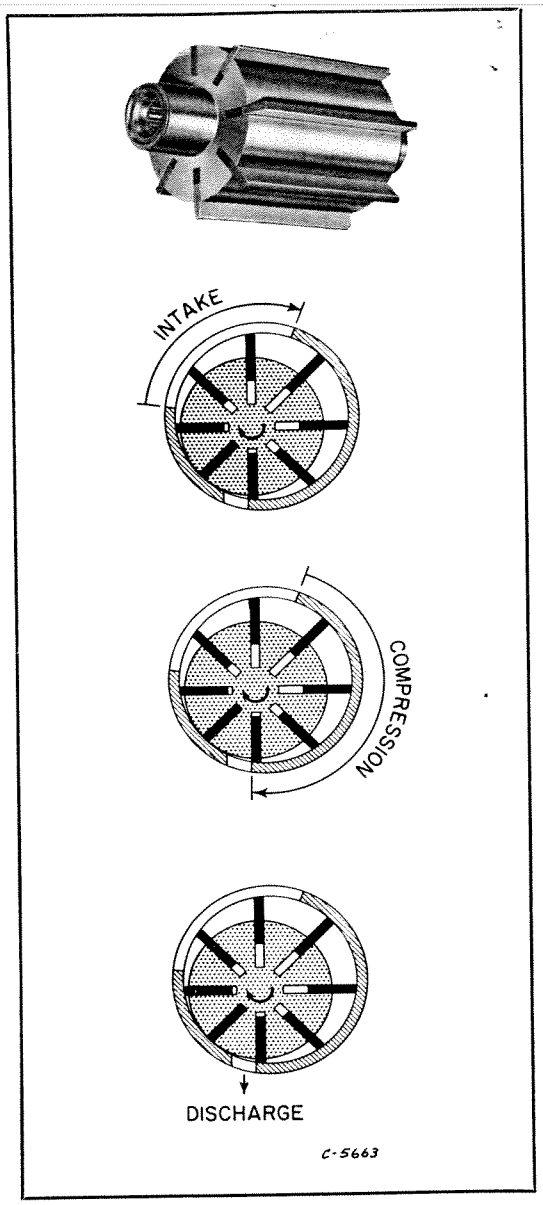

Fig. 4—Diagram showing compression cycle of the Gyro-Flo.

The **oil pump** is located at the rear end of the rotor chamber. This is of the sliding vane type with the rotor mounted on and driven by the rotor shaft.

The oil pump receives its supply from the oil cooler through piping and an oil filter. It discharges the oil through internal passages directly to the rotor bearings and chambers.

An adjustable spring loaded by-pass valve in the receiver-separator prevents any possibility of damage due to over-pressure.

When the compressor is operating at low capacity, some of the oil may by-pass the cooler through a thermostatically controlled by-pass valve. This arrangement helps to maintain a higher average compressor oil temperature, thereby reducing the possibility of water vapor condensation in the oil system. This valve, located in the oil piping, by-passes varying amounts of oil, depending on the temperature, until the oil being circulated reaches a temperature of 185°F (85°C). At this point, the valve closes the by-pass completely and all the oil is circulated through the cooler.

GENERAL - AIR END

The rotor chamber intake is equipped with a UL-89 Volumetric Regulator (Fig. 17). The incoming air passes through an efficient oil bath (stack type) air filter before entering the regulator and the compressor.

The rotor shaft extends forward to carry an internal-external gear toothed coupling, the outer ring of which is bolted directly to the engine flywheel. This coupling assembly is lubricated and sealed against the entrance of dirt or moisture and provides necessary flexibility. The rotor, which rides in its own set of caged roller bearings, also serves to drive the oil pump.

Regulation is 100%, from full capacity to zero capacity, and is accomplished by a combination of engine (and compressor) speed reduction together with proportional compressor volumetric regulation.

It is recommended that vane tips be inspected at 2000 hours or after one year. Vanes should be replaced after 4000 hours service or every two years as a matter of routine preventive maintenance. When vanes are replaced, make sure that driving or trailing tips of rotor slots are not razor sharp. They should be slightly rounded. This can be easily accomplished by using a fine grained stone to produce a radius of about 1/64" (0.4 mm).

To make an inspection of the vanes with a minimum removal of parts, the following procedure is recommended. Remove UL-89 Regulator Assembly and then "inch" engine over with the starter and inspect vanes through the exposed air intake in cylinder.

INSTRUMENT PANEL (Fig. 5)

The instruments are located on one panel at the center of the unit. Instruments include discharge air pressure gauge, engine water temperature indicator, engine oil pressure gauge and ammeter. Other panel mounted items include ignition switch, choke, starting button, manual speed control handle and hourmeter.

ELECTRIC STARTING

Electric starting is standard and includes starting motor, generator, voltage regulator, and battery with necessary wiring and terminals.

GENERAL DATA

Gyro-Flo Air Compressor	Model GR85
Actual Delivery of Compressor	85 Cubic Feet Per Minute (2405 Liters Per Minute)
Normal Operating Pressure	100 Pounds Per Square Inch (7.03 Kilograms Per Centimeter Squared)
Continental Gasoline Engine	Model F163
Engine Speed at Full Load	2100 Revolutions Per Minute
Engine Speed at No Load (Approximate)	1000 Revolutions Per Minute
Air Maze Air Filter	Model J140AJ
Capacity of Air Cleaner (To Beading)	1.75 Pints (.825 Liters)
Electrical Starting System	12 Volt
Capacity of Compressor Lubricating and Cooling Oil System	4.5 U. S. Gallons (17 Liters)
Capacity of Engine Lubricating Oil System, Including Oil Filter	4.5 Quarts (4.25 Liters)
Capacity of Engine Cooling System	3.5 U. S. Gallons (13.2 Liters)
Capacity of Fuel Tank	14 U. S. Gallons (52.7 Liters)
Size of Pneumatic Tires	6.50 x 15, 4 Ply
*Net Weight, Including Lubricating Oil and Running Gear	1724 Pounds (781 Kilograms)
Net Weight, Including Lubricating Oil and Shipping Skid, Less Running Gear	1470 Pounds (665 Kilograms)
Add for Required Engine Fuel and Coolant (Approximate)	135 Pounds (61.2 Kilograms)
Add for Boxing of Export Unit	34 Percent
Length, Including Pneumatic Tires and Drawbar	117 7/16 Inches (2910 Millimeters)
Length, Less Running Gear	67 7/16 Inches(1719 Millimeters)
Height	59 3/8 Inches (2700 Millimeters)
Height, Less Running Gear	42 3/8 Inches (1078 Millimeters)
Width, Including Pneumatic Tires and Fenders	62 1/8 Inches (1588 Millimeters)
Width, Including Minimum Pressure Valve, Less Running Gear	37 1/4 Inches (946 Millimeters)
Track Width	54 Inches (1372 Millimeters)
Cubage (For Export)	167 Cubic Feet (4.72 Cubic Meters)
Cubage, Less Running Gear (For Export) (Approximate)	69 Cubic Feet (1.95 Cubic Meters)

*Deduct 114 lbs. when unit is furnished less Tool Boxes and Fenders.

LUBRICATING OILS

Air Compressor	See Part IV	
Continental F163 Gasoline Engine	Over 75°F (23.9°C)	SAE 30
	75°F (23.9°C) to 32°F (0°C)	SAE 20-W
	32°F (0°C) to −10°F (−23.3°C)	SAE 10-W
	Below −10°F (−23.3°C)	SAE 5W-20

NOTE

Units for export are completely drained of all lubricating oil before shipment. This includes the engine, compressor and air filter. All Domestic and Export units are shipped less fuel and engine coolant.