PARTS CATALOG

Launch Crown #2

APPLIES ONLY TO THE FOLLOWING ENGINES

12966

BORE 9" STROKE 12"

NO. CYL. 6 TYPE Marine

MODEL

WARNING

THE PARTS CATALOG SECTION OF THIS BOOK MAY CONTAIN EXTRA DATA (GROUP LISTS & SUB-ASSEMBLIES) WHICH DOES NOT APPLY TO THE ENGINES LISTED ABOVE.

USE ONLY THOSE GROUPS LISTED ON INDEX SHEET.

BEFORE USING THE PARTS CATALOG – READ CAREFULLY THE TWO INSTRUCTION PAGES IMMEDIATELY PRECEDING THE INDEX.

ATLAS IMPERIAL DIESEL ENGINE CO.

OAKLAND CALIF.

Printed in U.S.A.

TC 18-Edi(1)

TABLE OF CONTENTS

The material in the Instructions has been arranged in sections each dealing with a specific subject or subdivision of the engine. The sections are arranged alphabetically and the Titles and main contents are listed below.

GENERAL ENGINE DATA

The Atlas Imperial Diesel Engine described herein is of the heavy duty, solid injection, full Diesel type, designed especially for the reliability and a long life of trouble-free operation. It operates on the four stroke cycle, the sequence of operation being as follows:

1st Stroke — On the downward or suction stroke of the piston, the inlet valve is open and pure air is drawn into the cylinder through the air inlet manifold.

2nd Stroke — On the second or compression stroke, this air is compressed to about 400 lbs. per square inch, the heat of compression raising the air temperature to a point above the ignition temperature of the fuel. Just before the piston reaches top center fuel injection starts and is completed shortly after the piston has passed the top dead center.

3rd Stroke — On the power stroke the injected fuel oil burns, increasing the pressure within the cylinder, which drives the piston down through its working stroke. Shortly before bottom center position is reached, the exhaust valve opens.

4th Stroke — As the piston returns toward the head, the burned gases are forced out through the exhaust valve port, and as the piston reaches top center the exhaust valve is closed, the inlet valve is opened, and the cycle is repeated.

The horsepower rating and the rated speed of the engines are stamped on the engine nameplate and these ratings should never be exceeded.

On the nameplate will also be found the engine serial number which should always be stated when ordering parts and in any correspondence with the factory or Sales agencies. The firing order, valve timing and the model designation will also be found on the engine nameplate. When corresponding or ordering parts it is desirable that the model number be stated also. The engine serial number is, however, more important and if the model number is not known the number of cylinders and the bore and stroke of the engine may be stated.

The number of orifices, the orifice diameter and the angle of the orifices in the spray valve tip are also stamped on the engine nameplate. The number of holes or orifices is stamped first, followed by the diameter of the holes in thousandths and in turn followed by the hole angle in degrees. For example, 5-10-20 indicates a spray valve tip which has five holes or orifices of .010" diameter. The axis of the holes or orifices are inclined 20° with the horizontal. If ordering spray valve tips the stamping on the nameplate should be stated.

The following data applies to 6 cyl. model 6HM763 and 6HM763SC Marine Engines.

BORE - - - - - - - - 9" STROKE - - - - - - - - 12"

HORSEPOWER AND OPERATING SPEED -- See engine name plate.

Firing Order -- The firing order may vary due to rotation or hand of engine and therefore this data should be taken from the engine name plate. No. 1 Cylinder is at forward or Governor end of engine.

PRESSURES:

Lubricating Oil Pressure- - - - - - - - - - 20 to 40 lbs./Sq.In.
Cooling Water (at Pump discharge) - - - - 20 lbs./Sq.In. MAX.
Fuel Oil (at Transfer Pump discharge) - - 10 lbs./Sq.In. MAX.
Fuel Oil (In Rail)- - - - - - - - - - - - - 1500 to 4500 lbs./Sq.In.
Starting Air Pressure - - - - - - - - - - - 125 to 250 lbs./Sq.In.

TEMPERATURES:

Cooling Water - Engine Outlet
Direct Cooling (Raw Water) - - - - - 125° F. Max.
Indirect Cooling (Closed System) - - 160° F. Max.
Lubricating Oil - Cooler Outlet - - - - - 140° F. Max.
Exhaust Temperature (taken at Cylinder Head)
Full load and full speed - 770° F. Max.

EXPLANATION OF TERMS "RIGHT" AND "LEFT" HAND WHEN APPLIED TO COMPLETE ENGINES:-

Atlas engines are built and designated as Right and Left Hand Engines. This designation has no bearing as to the engine location or arrangement in a vessel or power plant. An engine can be easily identified by facing the governor or gear end of the engine and if the governor is to the Left of the observer the engine is Right Hand. If the governor is to the Right of the observer the engine is Left Hand.

FIRING ORDER:-

For "Firing Order" see engine name plate. This information is not given here on account of variations due to differences between Right and Left Hand engines and also rotation changes.

FUEL AND LUBRICATING OILS

1. RECOMMENDED FUEL OIL SPECIFICATION

Viscosity - - - - - - - - - - - - -	35 to 70 S.U. Seconds at 100° F.
Gravity (A.P.I.)- - - - - - - - - -	Minimum 24°
Conradson Carbon (A.S.T.M.-D189)-	Maximum 0.5%
Ash - - - - - - - - - - - - - - - -	Maximum 0.05%
B.S.&W. - - - - - - - - - - - - - -	Maximum 0.1%
Sulphur (A.S.T.M.-D129) - - - - -	Maximum 1.0%
Ignition Quality- - - - - - - - -	40 to 60 Cetane Number or equivalent in other ignition index.

2. EFFECT OF FUEL PROPERTIES ON PERFORMANCE

As adjusted at the factory the engine will operate satisfactorily on fuels with viscosities per above specification. It is possible to use thinner fuels but the operation is apt to be "snappy" and it may be difficult to maintain even cylinder load balance at varying loads. Fuels with viscosities less than 35 S.U.S. may also require special spray tips with smaller orifice holes than standard or the fuel pressure may have to be reduced. On the other hand fuels with high viscosities may require larger spray orifices than standard, increased fuel pressure and in extreme cases longer period of injection. To insure good operation it is recommended that the viscosity be held to the specification.

The gravity is of secondary importance. A minimum of 24° A.P.I. is merely given since heavier fuels generally require special treatment, such as heating and centrifuging, before they can be burned successfully.

The "Conradson Carbon" or "Carbon Residue" in the oil is an index to the amount of carbon which will form in the combustion chamber. Fuels with high "Conradson Carbon" may cause carbon to build up on the spray valve tips to such an extent that the fuel sprays are deflected causing poor operation and smoky exhaust. The higher the Conradson Carbon the more frequently will it be necessary to clean the spray valve tips. Experience also indicates that maintenance costs will be higher when fuels with high "Carbon Residues" are used.

The Ash content of a fuel is a measure of the amount of mineral material it contains. After burning the mineral residues are abrasive and it is consequently important that the Ash content be limited to 0.05%. If the content is higher rapid wear of cylinder liners, pistons and rings will result.

The item B.S.&W. (Bottom Sediment and Water) is an index to the fuel's cleanliness. It is good economy to use clean fuel and store it in clean tanks. Cleanliness in handling the fuel is also important (See paragraph entitled "Importance of Cleanliness in Fuel Handling" in Section N).

When the fuel oil is consumed in the engine Sulphur burns to Sulphur-dioxide. Under normal operating conditions most of this gas is ejected with the exhaust gases. If, however, temperature conditions are low enough, that is, if the engine is idling at low speed and under cold conditions, the sulphur-dioxide gas combines with condensed water vapors to form a corrosive acid which will attack metals used in the engine and exhaust system. It is consequently particularly important to hold the sulphur content low in fuels used for engines subject to variable loads with long periods of idling and also for engines subject to frequent starting and stopping.

The Cetane number of a fuel is an index of the ignition quality. Low Cetane values produce excessive knocking. Excessively high Cetane fuels cause high exhaust temperatures and smokiness of the exhaust.

Although the Flash Point does not affect the suitability of a diesel fuel it is well to specify a minimum of 150° F. since state laws and Classification Societies generally require this minimum. The Pour Point of the fuel should be at least 15° F. below the lowest temperature to which the fuel storage tank is subjected.

3. LUBRICATING OIL

We recommend that a good grade of Marine type pure mineral oil be used in these engines. The oil should be stable under the temperature conditions encountered in the engine and should be resistant to oxidation and sludging. In general, regarding quality of lubricating oil we refer you to a Lubrication Instruction Book which will be sent to any customer or operator requesting it. This book contains some good pointers on the selection and care of lubricating oils.

It is not necessary to use compounded oils, i.e., oils containing additives, inhibitors, anti-oxidants, carbon removers, etc. in Atlas Engines. There are, however, many good compounded oils on the market and these may be used providing extreme caution is exercised and the action of the oil in the engine is observed closely.

When a pure or "straight" mineral oil is used some carbon or other deposits will generally be found in the crankcase and sump tank. The amount of these deposits depend greatly on the quality of the oil which has been used and for good grades of oil the deposits are not excessive and in any way harmful to the engine. The chemicals contained in the compounded oils enable these oils to carry the carbon and other constituents of the usual crankcase deposits in suspension. The compounded oils also have a strong tendency to break loose and carry away any existing crankcase deposits and since there is a limit to the amount that can be carried in suspension clogging of filters and oil lines may result. It is consequently of utmost importance to thoroughly clean out the crankcase, oil lines and sump tank before changing from a straight mineral oil to a compounded oil. As an added precaution we suggest that the first batch of compounded oil be used only for about 25 hours and then drained off. These precautions apply also when changing from one compounded oil to another compounded oil of different make or brand.

If a compounded oil is used the non-corrosiveness of this oil must be looked into very carefully. In this connection the Engineering Dept. of the Atlas Imperial Diesel Engine Co. is available for consultation and they will be glad to advise whether or not an oil is suitable for use in this engine.

With regard to viscosity grade our recommendations are that the viscosity at 130° F. be between 235 and 270 Secs. Saybolt Universal. This corresponds to an S.A.E. viscosity rating of 30 to 40. In other words, the oil to be used should be a heavy S.A.E. 30 or a light S.A.E. 40 oil.

In regard to drainage periods we suggest that the first batch of oil be drained after 100 hours of service. Thereafter the suggested drainage period is 200 to 250 hours. This period may be lengthened somewhat on engines which are equipped with waste packed filters. In that case if the filter cartridge is changed before the oil is badly discolored and loaded up with insolubles or foreign particles, drainage periods of 400 to 600 hours can be used. In the cases where no waste packed filters are used the oil will of course not be "worn out" after 200 hours of service if it is of a good grade. It will, however, be dirty and will contain insolubles which should be removed from the lubricating oil before it is re-used.

The same lubricating oil as used in the crankcase of the engine is also suitable for use in the mechanical lubricator. In the case of the mechanical lubricator, however, it is highly desirable that new oil be used.

INSTALLATION INSTRUCTIONS

1. PREPARING THE ENGINE BED

The success of a Marine engine installation depends greatly upon the construction of the foundation and upon the care exercised in lining up the engine to the propeller shafting. Poor installations will result in excessive vibration and continual change in engine alignment. The result is poor performance and failure of vital parts. For this reason Atlas Imperial Diesel Engine Co. cannot guarantee an engine unless the engine foundation (engine bed) is strong and rigid enough to prevent vibration and changes in alignment.

The importance of rigidity in the engine foundation cannot be over-emphasized and it must be securely fastened to the hull of the vessel so as to be virtually a part of the hull construction. For installations in old hulls, where the rigidity of the hull is questionable, the foundation should be extended fore and aft as far as possible; twice the length of the engine is suggested. Stiffeners should be fitted to prevent the foundation from twisting and weaving. In twin screw installations it is advisable that both foundations be stiffly connected and braced to each other and to the hull. Steel foundations should be welded or riveted. Avoid bolts or screws which may work loose.

When preparing the engine foundation always obtain certified outline prints. Do not use figures or cuts in bulletins or sales literature. The top faces of the foundation must be straight and should be lined up so that they are parallel to the propeller shafting. Athwartships the two top faces should be level. The foundation should be constructed so as to allow 1" to 1½" thick shims or chocks between the engine supporting flanges and the top faces.

2. INSTALLING THE ENGINE

The engine should be lowered onto the foundation and allowed to rest on the leveling screws. For wooden foundations provide steel plates of sufficient area and thickness for the leveling screws to rest on. (Min. 4" x 4" x ¼" to 3/4" thick.) Shift the engine sideways until the centerline of the crankshaft lines up with the centerline of the propeller shafting. Then by means of the leveling screws adjust the height until the centerline of the crankshaft exactly lines up with the centerline of the propeller shafting. Also level the base athwartships. When alignment in all planes is at hand the following check should be made.

a. Turning over shaft there should be no binding between the centering spigot and recess of the two coupling halves.

b. The faces of the coupling halves should be parallel regardless of the angle through which either or both shafts are turned. With the propeller coupling half held against the engine coupling half, but not bolted, it should not be possible to insert a 0.003 in. feeler at any point between them. Check at top and bottom and the two sides before bolting flanges together.

If engine has been installed before launching it is advisable to temporarily bolt it to the foundation at this time. It is not advisable to proceed any further before launching unless the hull is extremely rigid. When the vessel is afloat the alignment should again be checked and if found satisfactory a chock should be carefully fitted at each holding down bolt. This applies to steel foundations. In wooden foundations careful measurements should be taken of the distance between the bottom of the engine supporting flanges and the top of the foundation. A continuous wooden shim should then be prepared and this shim should exactly fit the space between the foundation and the engine supporting flanges. The shims should be at least as wide as the supporting flanges.

After the engine is resting on the chocks or wooden shims it is advisable to check that the foundation is supporting the engine evenly over the entire length. This is best done with a #696 Starrett Strain Gage. Check the distance between the inside faces of the crankwebs with the corresponding crank on upper and lower centers. (See figure in Section F for strain gage location.) Readings for any one crank should not differ more than .003". Distortion of the last two cranks only indicates that the crankshaft is out of line with the propeller shafting. (When making this check the engine and propeller shaft couplings should be bolted together.) Check the last two cranks in the two horizontal positions also. If misalignment or uneven support is indicated determine the cause and correct.

When the final alignment has been accomplished permanent foundation bolts should be fitted. For steel foundations drill and ream for fitted bolts. Spaces between the foundation bolt chocks can then be filled with type metal.

3. SERVICE PIPING

Plan all piping carefully and use as short and direct lines as possible. To improve the general appearance of the installation, piping should be laid below the engine room floor when it is possible to do so. Removable floor plates should be provided and care should be taken that all piping is accessible.

4. FUEL AND LUBRICATING OIL PIPING

See Section N for pipe sizes and arrangement of the fuel day tank. See Section T for lubricating oil day tank connections. Pipe sizes are stated in these Sections. Provide drain valves and vent valves where necessary and remove all scale and dirt from pipes and fittings before installing.

5. COOLING WATER PIPING

Locate the sea chest far enough below the water line to prevent uncovering when the vessel rolls. It should be provided with a coarse grating. Inside the hull a strainer of ample size should be provided with gate valves on each side so that it can be isolated for cleaning. For engines equipped with centrifugal circulating water pumps it is particularly important that the resistance in the sea chest, strainer and piping be as small as possible. Use as few bends as possible and do not make either suction or discharge piping longer than necessary. Locate the overboard discharge not more than 3' above the water line. All valves should be gate valves - not globe valves. Use pipe sizes called for on the outline drawing.

6. STARTING AIR PIPING

Air tanks should conform to A.S.M.E. specifications and should have ample strength for 250 lbs. per square inch pressure. Each tank should be equipped with a safety valve and a globe valve for isolation. A drain valve should also be provided at the lowest point and this valve should be accessible.

Tanks should be connected to the engine starting air header using the pipe size called for on the outline drawing. Provide a globe valve next to the engine. All valves and fittings should be of heavy pattern for at least 250 lbs. per sq. inch pressure. The air compressor on the engine should be connected to the tanks with pipe of the size called for on the outline drawing and valves and fittings of heavy pattern. The air compressor discharge pipe should preferably be run to the air tank. It should not be connected to the piping between the tank and the starting air header. Air compressor unloader should preferably be connected to the tank with its own piping or tubing. Under no circumstances should it be connected to the compressor discharge line.

7. EXHAUST SYSTEM

All exhaust piping should be installed in the shortest and most direct manner possible. When bends are necessary use long sweep fittings. Use the pipe size called for on the outline drawing for lengths up to 20' containing a maximum of three bends. For 3 to 6 bends increase the pipe to the next nominal size and for each additional 30' length increase by one pipe size.

In order to protect the engine and piping from undue strains a length of flexible metal tubing should be installed as near to the engine as possible. It is also recommended that flanged connections be used for ease of dismantling and cleaning. For twin screw installations it is recommended that separate exhaust lines be used. If exhaust lines are combined and only one engine is running, soot and carbon will be blown into the other engine through the open exhaust valve.

OPERATING INSTRUCTIONS

Before the operator attempts to run the engine, he should carefully study the chapters dealing with the mechanical details, especially those of the Control System. After familiarizing himself with the principles of the control mechanism, the operator will understand the significance of each movement of the control wheel and will be able to handle the engine intelligently. In the following only a brief description of the proper method of operating the engine and controls is given.

Observe the construction of the handwheel (1) and its locking device. Note how plunger (9) enters locking disc (8). Observe the positions of pointer (7) when the plunger enters the locking disc. These positions, "AHEAD" and "ASTERN", are the normal running positions.

TO GO AHEAD FROM STOP (see Fig. D-1)

(a) In STOP position pointer (7) is vertical and indicates STOP position on telltale (10). Turn engine handwheel (1) in the AHEAD direction, so that pointer (7) moves in AHEAD direction, toward START position. At approximately 1-3/4 turns of the handwheel, the plunger (9) will enter locking disc hole. From this position the turning of the handwheel toward START should proceed more slowly for about 1/4 turn until motion is stopped by latch shaft "stop". (If handwheel is turned too quickly, control system may be damaged.) At this position the engine will begin to turn over on starting air.

(b) As soon as the engine has reached maximum cranking speed, turn the handwheel back about 1/4 turn until the plunger enters the locking disc. This will be the "AHEAD" running position.

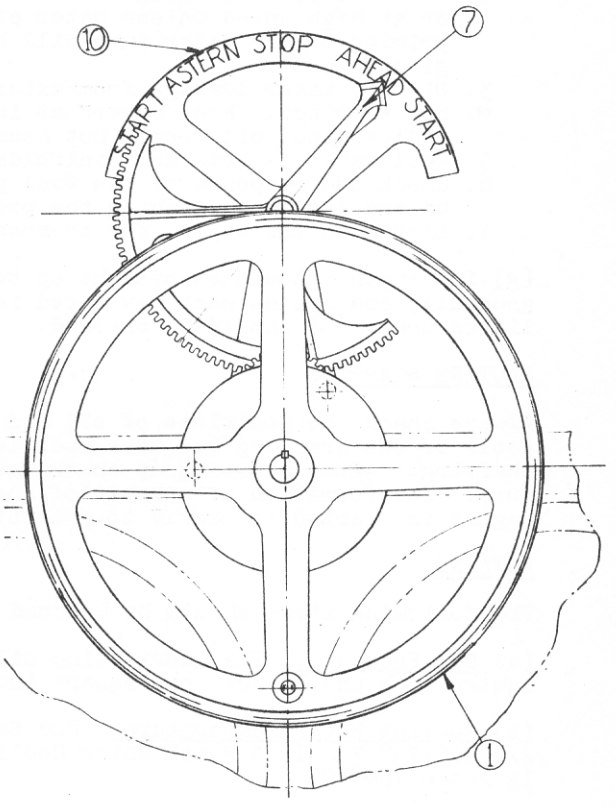

FIG. D-1

TO REVERSE THE ENGINE (see Fig. D-1)

(a) Turn handwheel in the ASTERN direction, causing pointer to move in the ASTERN direction. Continue to STOP position and after engine has stopped continue turning in the ASTERN direction until plunger enters locking disc. This will be about 3-1/2 turns from the AHEAD running position. From this position the same caution as above should be observed when approaching START position. In the START position the engine will begin to turn over on starting air.

(b) As soon as the engine has reached maximum cranking speed turn the handwheel back about 1/4 turn until the plunger enters the locking disc. This will be the ASTERN running position.

INITIAL STARTING AND STARTING AFTER PROLONGED SHUTDOWN

(a) A final check should be given all fuel, air, lubricating oil and water lines, giving attention to the location and position of shut-off valves, check valves, etc. It is well to trace each system through making sure that there are no short circuits or blockages.

(b) For the initial starting it is well, although not absolutely necessary, to fill the pressure lines and passages of the lubricating oil system. For this purpose a small hand operated gear pump or piston pump can be used. When the pressure lines are full, a slight pressure will register on the pressure gauge. This procedure will insure lubricating oil pressure immediately upon starting.

(c) Hand oil the engine at all the points listed under "4-HOUR ROUTINE" in the

"Maintenance & Inspection" section. Fill the mechanical lubricator and turn its crank several revolutions.

(d) Open the two small vents on top of the outlet fittings of the high pressure fuel pump and operate the hand priming pump until fuel flows from both of these points. Then close these vents and pump up approximately 1000 lbs. fuel pressure.

(e) See that valves in starting air piping between air receiver and engine are open and that there is sufficient air pressure available. With the spray valve isolating valves shut and with the "snifters" open crank the engine by air until any excess fuel in the combustion chambers has been blown out.

(f) Start the engine by the method described on the preceding page and run it at a slow speed by setting the governor speed control handle. Then immediately check and watch the following.

1. Lubricating oil pressure and circulation. Observe oil level in day tank. Engine will absorb several gallons when started up.
2. Circulation of cooling water. Do not run the engine longer than 2 minutes or at high speed unless water circulation has started. In some instances priming of the water pump will be necessary but do not prime until the engine is cool.
3. Oil and water leakage from external lines and fittings.
4. Hot bearings. Feel covers at intervals to locate any hot areas which would indicate hot oil from a hot bearing.
5. Feel water jackets and manifolds for even water circulation.
6. Check the response of the fuel pressure relief valve by moving the handle up and down and watching the pressure gauge.
7. Listen to the engine for evenness of firing and mechanical knocks.

(g) The engine should be brought up to full speed and load slowly. Increase speed gradually and run at each new speed for at least one minute. At each speed the items listed under (f) should be checked.

ROUTINE STARTING

Always check the positions of oil and water shut-off valves and make certain that no tools or the cranking bar have been left where they can interfere with flywheel or shafting. After starting up check water circulation, lubricating oil level and pressure. The formation of a habit of checking these items automatically whenever the engine is started is likely to prevent accidents and serious damage.

RUNNING

The following items should be watched and regulated if necessary:

(a) Oil Pressure. The lubricating oil pressure should be maintained between 30 lbs. per square inch and 40 lbs. per square inch.

(b) Cooling Water Temperature. For Seawater Cooling the outlet temperature should not exceed 125° F. If a Fresh Water Cooling system is used the outlet temperature may safely reach 160° F.

(c) Fuel Pressure. The fuel pressure should be varied with the engine speed. At full speed a pressure of around 4000 to 4500 lbs. per square inch will give the best results. However, as the speed is reduced the fuel pressure should also be lowered to prevent too great a withdrawal of the wedges. Too high a fuel pressure at low speeds causes very short injection periods resulting in roughness and uneven engine operation.

(d) Lubricating Oil Temperature: At the outlet of the oil cooler should not exceed 140° F.

(e) Mechanical Lubricator. The feed from the mechanical lubricator should be adjusted to 15 to 20 drops per minute per feed.

(f) Exhaust Temperature. The normal full load and speed exhaust temperatures range from 700 to 750 degrees. If the temperatures for all cylinders are above these limits the propeller is overloading the engine and should be changed. If the exhaust temperature for any one cylinder is too high or too low the injection system is probably at fault. (See section on "Smoky Exhaust" under "Maintenance & Inspection".)

(g) Exhaust Appearance. Observe the exhaust appearance. If it is smoky investigate the cause. In most cases the spray valves are responsible for smoke. (See section on "Smoky Exhaust" under "Maintenance & Inspection".)

LOWER BASE, CRANKSHAFT AND BEARINGS

1. BASE AND CRANKSHAFT

The cast iron base carries the main bearing saddles and the main lubricating oil manifold from which oil is piped to each main bearing and to the intermediate gear bearings. The crankshaft turns in babbitt lined steel backed bearing shells, held in place in the base by the main bearing caps. Adjustment is by shims, and running clearances should be .0008" to .00095" per inch of shaft diameter when bearings are fitted.

2. MAIN BEARING ADJUSTMENT

Bearing clearances can be accurately measured with two pieces of lead wire of about .025" diameter and one inch long, which are compressed between shell and journal about 1" from each end of the bearing by tightening the cap bolts. The thickness, measured with a micrometer, is the running clearance. Clearances should be checked annually, and should not be allowed to exceed .0015" per inch of shaft diameter. Keep shims even on both sides.

3. MAIN BEARING SHELLS

The bearing shells are prevented from rotating in the base by the shims, and are located fore and aft by a square head dowel pin in the bottom of the bearing saddles which engages a circumferential groove around the outside of the shell. As fitted the shells project above the base and face of the caps from .002" to .003" on each side, but are squeezed down flush when the capnuts are pulled up. There should not be any appreciable clearance between the base, shim, and cap after final tightening. The bearing shells and caps are all numbered and must always be replaced in the bearing from which they were removed. Never interchange them, either from one bearing to another, or from top to bottom.

4. REMOVAL AND ASSEMBLY OF MAIN BEARINGS

After removing the cotter pins and main bearing nuts, the cap, upper shell and shims may be lifted out. As this operation is performed the positions of the numbers stamped on each of these parts should be noted so that the parts can be reassembled in their proper positions. Unless the bearing is considerably worn it may not be possible to remove the lower shell by hand and it is usually necessary to turn it out of the base by barring the engine over after inserting a capscrew in the oil hole in the journal. The head of the capscrew will contact the edge of the bearing shell and roll the bearing out with the journal.

When assembling the main bearing shells care must be taken to keep all parts absolutely clean. It is of utmost importance that any dirt be prevented from lodging between the shell and the saddle. Extreme care must be exercised in locating the bottom shell in a fore and aft direction before turning it into the base. Misalignment will cause the groove to miss the dowel pin in the base and trouble will then be encountered in backing the shell out again for another try.

5. CRANKSHAFT ALIGNMENT

The crankshaft should be checked at annual overhauls, or at intervals not greater than 7000 service hours, for misalignment due to uneven wear of the bearings. When the engine was erected at the factory the bearings were carefully scraped in, so as to bring the bearing surface of all shells in line. If one of these surfaces, due to uneven wear, becomes lower than the adjacent shells, it is evident that the crankshaft will be bent each time the adjacent cylinders fire and the connecting rods force the journal down against this low bearing. This condition must be guarded against, as neglect or ignorance of it will ultimately result in a broken shaft.

The simplest way to check crankshaft alignment is by means of a bridge gauge, which can be supplied with the engine as extra equipment. If a bridge gauge is desired it must, however, be ordered when the order for the engine is placed. It can not be supplied later.

With the bridge gauge straddling the journal and resting firmly and squarely on the bearing cap seats in the lower base the distance between the top of the main bearing journal and the machined face on the bridge gauge is measured by means of a feeler gauge. At the time the engine was erected these measurements were taken and were stamped on the bridge gauge. As the age of the engine increases the bearing surfaces will wear, with the result that these measurements will gradually increase. As long as they all increase by the same amount the shaft will still be in line

however, and there need be no worry, even though they do not agree with the original readings stamped on the bridge gauge. But if at any time the reading for one bearing is found to be more than .004" greater than those for the adjacent bearings, this low shell should be replaced at once and the crankshaft re-aligned, a job that should be undertaken only by an experienced mechanic. A careful record should be kept of all bridge gauge readings taken from time to time.

The bridge gauge measurements described above should be made successively, removing one bearing cap at a time and replacing it before proceeding to the next bearing. When making measurements the crankshaft journal must be forced down against the shell by means of a jack bearing against the centerframe. Protect the shaft journal with a piece of wood or sheet copper. An indication of low bearing shells will usually be given by looseness of the shell in the saddle. If it is possible to freely rotate one of the lower shells by hand when adjacent bearing caps are bolted down, it is quite probable that this shell is unduly worn and it should be checked with the bridge gauge at once.

If a bridge gauge is not available, crankshaft alignment may be checked with a gap or strain gage as follows: Stamp two center punch marks as shown in Fig. F-1 on all cranks. Starting with No. 1 cylinder crank remove adjacent main bearing caps and locate the crank as near lower center as gap gage will permit. Using jack screws between bearing journal and center frame force shaft against lower bearing half (protect shaft with a piece of wood or sheet copper) and record the gap gauge reading. Then loosen jackscrews and bar over until crank is on upper dead center. Again tighten jack screws and record the gauge reading. Repeat on all other cranks.

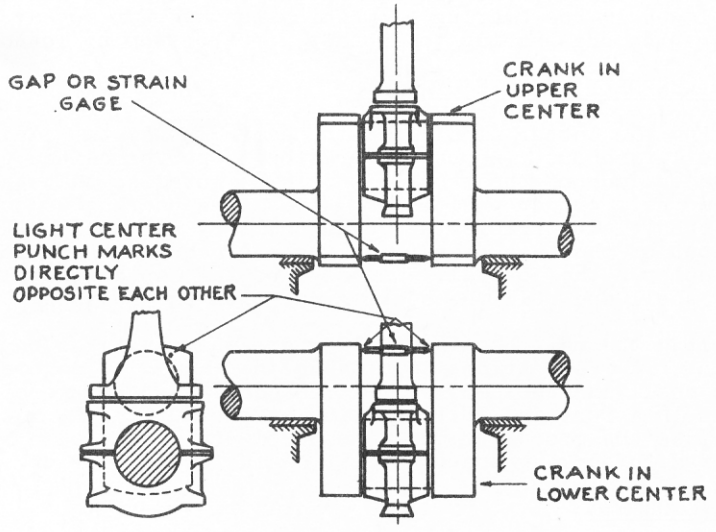

FIG. F-1

Comparison of gauge measurements in upper and lower centers will indicate crankshaft alignment conditions. Normally the measurements for the cranks in top position are slightly larger than measurements for the same cranks in the bottom position. However, the difference in measurement for any one crank should not exceed .0005" per inch of shaft diameter. If this is the case, realignment of the crankshaft bearings is indicated.

THRUST BEARING

1. MULTI-COLLAR TYPE

All loads in a fore and aft direction resulting from propeller thrust are carried by the thrust bearing. This bearing is located aft of the flywheel on pads at the end of the lower base. Water jackets are provided in the bearing castings and a small supply of cold water is bled from the main water inlet manifold to the bearing. A positive supply of oil is fed to the bearing from the mechanical lubricator located at the forward end of the engine.

In general the thrust bearing assembly consists of three parts: the bearing, the cap and the thrust shaft. Both the bearing and the cap are water jacketed. Each contains dovetailed circumferential grooves which when lined with babbitt about $\frac{1}{4}$" thick form grooves for the thrust shaft collars. Between the grooves the cylindrical areas are also lined with babbitt so that sufficient journal area to carry a substantial radial load is incorporated in the bearing.

In the erection of the engine at the factory the thrust bearing is treated as if it were an additional main bearing. After all the lower main bearing shells have been scraped into alignment the thrust shaft is bolted to the crankshaft and tested for trueness. It is required that the total run out of the thrust shaft at the aft end does not exceed .002". In the meantime the thrust bearing (lower half) is installed temporarily on the base. The thrust shaft is then coated with blueing and the whole shaft assembly is lowered into position. The bearing is then shimmed up or down, moved forward or backward, to one side or the other and scraped until the bearing is satisfactorily located. The finished bearing must be in line with the main bearings. The thrust shoulders on the shaft must be a close fit in the grooves but at the same time have clearance. An end play of approximately .005" to .010" is desirable. The location of the bearing should be such that the crankshaft is slightly aft of its central position in the base since the normal wear on the thrust bearing will allow the crankshaft to move forward slightly.

When the foregoing conditions have been met the thrust bearing (lower half) is doweled to the base. The thrust bearing cap is then scraped in and adjusted for clearance with shims.

2. KINGSBURY TYPE

Referring to Fig. G-1 the standard style GH Kingsbury thrust bearing is equipped with two pairs of thrust shoes (3) (two shoes for ahead and two for astern thrust). These shoes are individually adjustable fore and aft by jackscrews (5) which are locked by lock wrench (6). A journal bearing, babbitted directly in lower thrust bearing housing (1) and upper housing (2) is also incorporated. The journal bearing is located on the flywheel end of the thrust bearing.

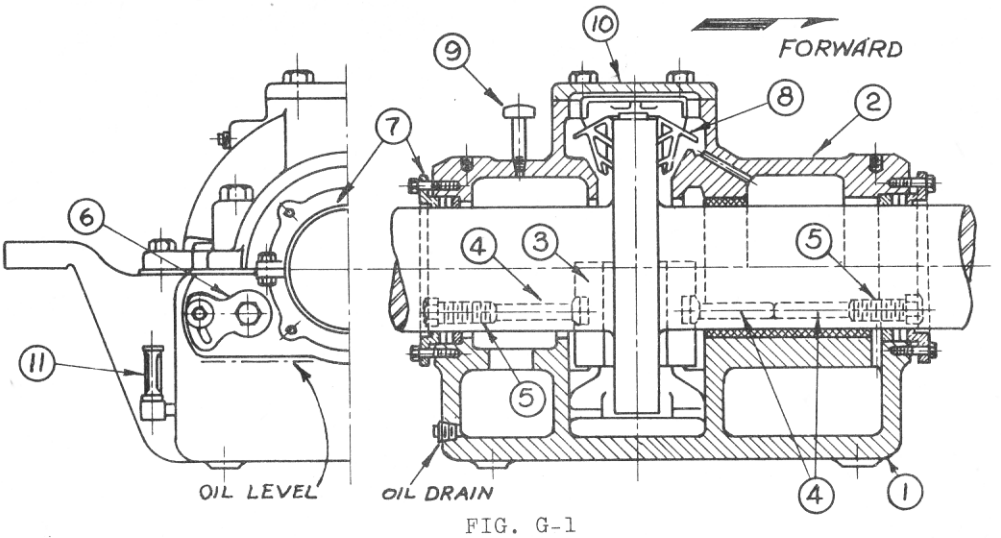

FIG. G-1

There is only one thrust collar which is forged integrally with the thrust shaft. Lubrication is self-contained and automatic. The lower housing contains the lubricating oil supply, the oil level being of such height that the lower part of the thrust collar dips into it. The oil is then carried to the top where scraper (8) distributes it over the collar thrust surfaces and takes off some oil for lubrication of the journal bearing. Oil is retained in the bearing by stuffing boxes at

both ends. Do not take up hard on stuffing box glands (7), as this will cause unnecessary heating of the shaft.

To allow for oil films between thrust bearing surfaces, and for expansion by heat, it is strictly necessary to provide longitudinal end play in accordance with the following table:

Engine Bore	End Play
14½ and 15"	.017"
13"	.015"
11½"	.014"
10"	.012"
9"	.012"

Using the jackscrews, adjust for end play as follows: Keeping thrust collar in desired fore and aft position, set up firmly on forward-end jackscrews so ahead shoes will bear equally against collar. Lock the screws. Next set up on after-end jackscrews, using a "feeler" gauge, with thickness equal to end play, back of the pivotal support of each shoe. Lock the jackscrews and remove the "feelers".

For average installation of propeller thrust bearings, a heavy turbine or engine oil should be used. The oil should be chosen with due regard to viscosity. If it is too light, the lubricating film may be dangerously thin. If it is too heavy, the friction is needlessly high. Specific advice as to proper viscosity for any definite installation is regularly marked on bearing nameplate. As a rule the viscosity should be about 200 seconds Saybolt at operating temperature of the oil bath.. The oil must be clean and free from grit and other injurious substances. Fine grit has a scouring action and may gradually wear down the bearing surfaces. Poor oil may cause corrosion. Oil of good quality does not "wear out" by use in these bearings, but lasts indefinitely if not contaminated.

<u>It is vitally important to maintain the oil at a suitable level.</u> Oil level plates are attached to both sides of housing, with "High" and "Low" oil levels noted. If necessary fill housing with oil to "High" mark when not running. A slight draw down of oil level will be noted when bearing is running. Occasionally oil should be added to make up for leakage and evaporation. Be sure the make up oil is clean. The air vent holes (9) should be kept open. Oil gauge (11) may be placed on either side of housing.

CYLINDER AND LINER, CYLINDER HEAD AND VALVES

1. CYLINDER

The individual cast iron cylinders are secured to the centerframe and base by four studs which are screwed into the base adjacent to the main bearing saddles. The cylinders are located transversely and are aligned to the centerframe by machined pads along one side which register with a step on the top of the centerframe. Crankcase sealer is used between the cylinders and the centerframe. If this joint is disturbed the old sealer must be scraped off and replaced by fresh sealer before tightening the cylinder nuts. Glyptal Lacquer is recommended for sealer.

On engines with $6\frac{1}{2}$" to 8" bore the cylinder bore is machined directly in the cylinder casting, which is made of a special alloy iron, heat treated to relieve stresses and secure the correct hardness. A cored space between the cylinder barrel and the outside wall forms the cooling water jacket, pipe plugs in the outside wall providing access for inspection and cleaning.

2. CYLINDER LINER (Engines with 9" or larger bore)

On the larger engines replaceable cylinder liners are used, mounted in the cast iron cylinders. Hand hole covers in the cylinder wall provide access to the water jackets.

The cylinder liners are special alloy iron castings, heat treated to relieve stresses and secure correct hardness. They are accurately machined to close tolerances and should be handled carefully and care taken not to damage the fits at top and bottom. Spare liners should always be stored in a vertical position and should be securely fastened down if stored on board ship. The water seal at the bottom of the liner consists of two rubber grommets which should always be replaced with new ones whenever a liner is pulled. When lowering a liner into place, grease the grommets freely with cup grease and use care to enter the grommets into the cylinder fit or they may be pinched and damaged. The liner has from .003" to .005" clearance in the cylinder at both top and bottom fits and no difficulty should be encountered in installing a new liner. A paper gasket .010" thick is used for the upper water seal between the liner and cylinder and a new gasket should always be used when replacing a liner. The fits and shoulders on both liner and cylinder should be carefully scraped and wiped clean to assure a water tight joint. Care must be taken not to damage these shoulders, as a water leak will result.

A copper gasket, 1/32" thick, forms the gas seal between the liner and the head. The gasket and both sealing surfaces must be carefully wiped free of all dirt when assembling.

3. CYLINDER HEAD

The individual cast iron cylinder heads are carefully designed to assure uniform cooling. On the smaller engines pipe plugs provide access to the head jackets, and cover plates are used on the larger engines.

The cylinder head is centered by means of a spigot which engages the bore at the top of the cylinder or liner. The face of this spigot bears upon the copper gasket forming the gas seal. In the larger engines in which cylinder liners are used, brass bushings screwed into the cylinder and extending up into the head carry the cooling water. They are sealed by rubber grommets. Passover pipes, connecting parts in cylinder and head make the connection in the smaller engines.

When a cylinder head is removed it should be placed on wooden blocks, never on concrete floor or steel deck. The rubber grommets should always be replaced by new ones and all dirt should be wiped from the bottom of the head before it is lowered onto the cylinder.

4. INLET AND EXHAUST VALVES

Two types of intake and exhaust valves are used on Atlas Imperial Diesel engines. One may be termed one-piece forged type and the other two-piece cast head type.

The two-piece cast head type consists of a valve head cast of special heat resisting alloy iron and a steel stem which is screwed and riveted to the head. Inlet and exhaust valves of the two-piece construction are interchangeable and the same valve may be used for either intake or exhaust.

On engines where valves of the one-piece forged type are used the exhaust valves are of a special heat resistant alloy steel and may be distinguished from the inlet

valves by the "EXH." and "INL." stamped on the valve heads. The inlet valves are forged of chrome nickel steel and are not suitable for exhaust valves. The one piece valves should never be used interchangeably except in an emergency.

The ends of the valve stems are threaded for retaining nuts which secure the valve springs in place. The valves seat directly in the cylinder head castings and the stems work in renewable guides pressed into the heads. If the guides are replaced they should be pressed in the same distances as the ones originally in the head and should be reamed after pressing in place. Use a standard reamer which produces a hole with a diameter to size or .0005" oversize. For example the valve stem diameter on the 6½" bore engine is 5/8" and a standard 5/8" reamer should be used which should then ream the hole to .6250" - .6255" diameter.

When grinding valves always finish the grinding with fine compound, and take particular care not to get any grinding compound into the guide. Thoroughly clean all traces of the grinding compound from valve and seat before reassembling.

Lubricate valve stem with clean engine oil before placing in guide. If valve faces are badly pitted they should be refaced in a lathe, as excessive grinding to remove pits will wear down the seats unnecessarily and will also cut a groove in the valve face. Badly pitted seats should also be refaced before grinding. Care must be taken to keep the seat concentric and square with the bore of the guide.

5. STARTING AIR VALVES

The starting air valve is guided in the head by a bushing which is clamped to the valve stem and works freely in the head. Two piston rings form the air seal between bushing and head. A nut on the stem secures the bushing and a spacer to the stem and also serves as retaining nut for the spring. The lower end of the spring is supported by a washer, bearing against the cylinder head. The starting air rocker is mounted eccentrically on the rocker shaft. The rocker shafts are connected between the cylinder heads, forming one complete shaft, and when the engine is to be started the entire shaft is rotated by means of a hand lever or an air cylinder on one end, the eccentrics bringing the push rod lifters or latches (on 6 cyl. 9 x 12 marine engines) down into engagement with the cams. When the engine is running the push rod lifters (or latches on 6 cyl. 9 x 12 marine engines) are held up free of the cams by springs.

6. PRESSURE RELIEF VALVES

Two pressure relief valves are provided for each cylinder, located near the bottom of the head on the operating side of the engine. These include a manually operated relief or "snifter valve", and a spring loaded safety valve.

The valves are mounted in a tee screwed into the cylinder head. The snifter valve is in the top of the tee pointing up and safety valve in the bottom.

7. SNIFTER VALVE

The hand operated relief or "snifter" valves are small needle valves for release of the compression when barring over the engine. They are also used as shut-off valves when indicating or taking compression pressures.

8. SAFETY VALVE

The safety valves are spring loaded relief valves for the purpose of relieving excessive cylinder pressures. They act as telltales to indicate that the pressure is too high, and the popping of these valves is a definite indication that something is wrong and should be investigated at once. The valves are adjustable by tightening the spring retaining cover, and should be set to relieve at 800 lbs. per square inch. A setscrew locks the cover to maintain the setting. They should be tried out occasionally by prying up the lower spring washer with a screw driver to assure that they are in operating condition.

PISTON AND CONNECTING ROD

1. PISTON

The pistons which are of the one-piece, solid-skirt type are made of high grade cast iron and are heat treated to relieve stresses and to obtain proper hardness. The piston is ground straight, that is without taper, from the bottom up to the ring belt. The clearance in the liner is .001" per inch of bore diameter. Due to manufacturing tolerances the total clearance of the piston skirt may vary .001" up or down from the above value. For example: the piston skirt clearance in a 13" bore engine should be between .012" and .014". The head of the piston being exposed to high temperatures is given a larger clearance, approximately .0055" to .006" per inch of bore diameter.

2. PISTON PIN

The case hardened and ground piston pin is stepped, with differential fits in the piston pin bosses. The fits are about .0005" to .0015" press on the small end and metal to metal to .0015" loose on the large end. Rotation of the pin in the piston is prevented by the engagement of a dowel which projects radially from the large end of the pin with a groove in the bottom of the boss. A setscrew threaded into the smaller pin boss enters an indentation in the pin to act as a retainer. The setscrew is in turn secured by a locknut.

3. PISTON RINGS

Six piston rings are used per piston, an oil ring above and below the piston pin and four compression rings. Always assemble the oil rings with the bevel up, to slide over the oil film on the upstroke and scrape it down on the return. When overhauling pistons, thoroughly clean all carbon from rings and grooves and top of piston. Fuel deposit on the piston skirt can best be dissolved with cleaning solvent or paint remover. Be sure oil drain holes below oil rings are open.

Check rings for side clearance in grooves and end clearance, as measured in place in the liner. Side clearance should be .003" to .005" with new pistons and rings and end or gap clearance .005" per inch of bore diameter for the two top rings. For the other rings the gap clearance should be .003" per inch of bore diameter.

Rings should be discarded when the side clearance exceeds .008" and the end clearance .007" to .008" per inch of bore diameter. It is also a good policy to discard any rings which have been stuck for any length of time as they are apt to be out of round and may not hold compression. Always check new rings, measuring the side clearance, in the groove in which the ring is to run, with feeler gauge, and the end clearance with the ring in the liner at the smallest diameter. Never install rings with less clearance than that given above. As the oil rings wear the width of the flat increases, with consequent decrease in width of bevel and oil scraping ability. Experience will determine permissible wear without excessive oil pumping.

4. CONNECTING ROD

The connecting rods are steel forgings, rifle drilled to carry oil to the piston pins. Shims between foot of rod and crankpin box provide adjustment to balance compression pressures in the cylinders to the desired value. The distance "X" (see Fig. K-1), between the top of the piston and the top of the liner should be in accordance with the tabulation below. If liners are not used, dimension X should be measured from the extreme top face of the cylinder, not from the recess for the copper gasket.

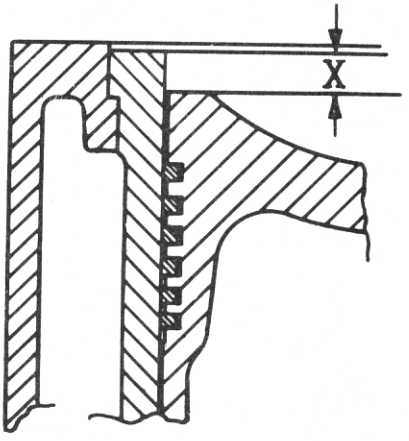

FIG. K-1

Engine Bore and Stroke	Dimension "X"
6½ x 8½	13/16
7½ x 10½	31/32
8 x 10½	31/32
9 x 12	3/4

When taking measurement "X" the piston should be at top dead center and the cylinder liner must be securely clamped down into the cylinder. The cylinder stud nuts must also be tight when making this adjustment. Connecting rod shim adjustment in accordance with the above tabulation should be used for altitudes from sea-level to 1500' and will then produce compression pressures of 400 to 410 pounds per square inch. If the engine is located at higher altitudes than 1500 feet above

sea-level dimension "X" should be smaller than the tabulated values. The Engineering Department of Atlas Imperial Diesel Engine Co. will advise the proper adjustment if the engine serial number and altitude is stated.

A bronze bushing for the piston pin is pressed in the upper end of the rod. If this bushing is replaced it must be reamed to allow a piston pin clearance of .0015" to .0025" on 6½" to 8" bore engines and .0020" to .0035" on engines with 9" bore. Care must be taken to keep the reamed hole exactly parallel with the foot of the rod. The oil grooving in the bushing is carefully designed for correct lubrication, and new bushings must be inserted in rod with the relief grooves on the horizontal axis of the pin. A ball check valve at the bottom of the rod prevents return of the column of oil in the rod. Examine these valves at annual overhauls. The ball lift should not exceed 3/32".

5. CONNECTING ROD BEARINGS

The crankpin boxes are steel castings with babbitt lining centrifugally cast and accurately bored. No attempt should be made to rebabbitt these boxes in the field. New boxes may be obtained from A.I.D.E. Co. and a credit allowance will be made for old boxes returned. Bearing adjustment is by means of shims between halves of bearing. Bearing clearances when adjusted should be .0008" to .0009" per inch of bearing diameter.

Clearances are best measured with a lead wire compressed between bearing and journal, as described in Section F. Keep the shim thickness equal on the two sides. Inspect the bearing surfaces for even bearing. Areas which are not bearing on the shaft will be discolored, and such bearings as well as new ones should be carefully scraped to secure even bearing over at least 3/4 of the entire area. End clearance is .007" to .015" and should not be allowed to exceed .025".

6. CONNECTING ROD BOLTS

The connecting rod bolts, fitting in reamed holes, hold the two halves of the crankpin boxes together and to the foot of the rod. The nuts should be kept pulled up tightly but not overstressed. They should not be sledged but should be pulled up by hand with a pipe about four feet long on the wrench. It is good practice to keep a record of the length of connecting rod bolts, measured with a micrometer at annual overhauls and to discard bolts that show more than .010" increase in length. It is further recommended that all connecting rod bolts be replaced every two years, assuming the engine to have had continuous service during that time, say 8000 hours or more. It is nearly always old bolts that have been in service for some time and have been overstressed by pulling up the nuts too tightly that fail. Replacing bolts as suggested above is cheap insurance against the possibility of wrecking an engine through connecting rod bolt failure. Replace cotter pins carefully, always using new cotter pins. Be sure that they are a close fit in the hole and bend the ends back tightly against the sides of the nut. If this work is left to inexperienced mechanics it should be very carefully inspected at the completion of the job. Always replace rods, bearings and pistons in the cylinders from which they were removed. All parts are numbered.

CAMSHAFT AND VALVE OPERATING GEAR

1. CAMSHAFT

The camshaft is made of 2" ground steel shafting. The keyways in the shaft are indexed for the firing sequence stamped on the engine nameplate when the engine is running in the "Ahead" direction of rotation. Number 1 cylinder is located at the forward end of the engine.

2. CAMSHAFT BEARINGS

The camshaft bearings are accurately machined cast iron blocks with pressed in bronze bushings. Bearing bore in bushing is reamed to allow a running clearance of .004" to .006". If replaced the bushings must be reamed and oil and mounting holes drilled through after pressing in. A groove must be chipped to cummunicate with the oil hole if it does not intersect the groove in the bushing. The bearing blocks are held in machined seats cut in the webs of the centerframe and are secured by capscrews.

The camshaft thrust is taken by the forward or governor end camshaft bearing. A thrust washer between the cam gear hub and bearing, and the lubricator eccentric (or water pump drive crank) which is pressed on the end of the shaft against a shoulder, bear against alternate ends of the bronze bushing. The gear hub should be located to allow .015" to .025" thrust clearance. This bearing and the two bearings on the aft end are supplied with oil from the pressure lubricating system. The intermediate bearings are lubricated from reservoirs in the top of the bearings, filled by splash from the connecting rods.

3. CAMS

The cams are accurately ground to shape. The inlet and exhaust cams with integral hubs are cast iron, while the balance are steel, case hardened.

Fuel valve cam consists of a steel disc into which a steel toe is inserted, both parts being case hardened. This toe controls the action of the fuel spray valve, the disc serving as a base circle. The disc bolts to the hub of either inlet or exhaust cam. Elongated holes in the disc provide for the necessary adjustment to obtain accurate settings for timing.

Inlet and exhaust cams are each composed of two cams bolted together. One of each inlet and exhaust cam has an integral hub to which is bolted either the air starting cams or the fuel cam disc. These cams are a sliding or light tap fit on the camshaft and are positioned and held by taper keys driven securely into place after the cams have been located so as to line up with the rollers in the latches.

Air starting cams of which there are also two, are both individual parts and bolt to the hub of either the inlet or exhaust cam hub.

4. CAMSHAFT REMOVAL

(a) Disconnect the linkage between the governor and the wedge shaft, and disconnect the lubricator strap and the pump connecting rods on the forward end of the camshaft.
(b) Remove the engine control parts and the pilot valves from the top of the latch box.
(c) Remove the latch box.
(d) Remove the latch shaft and latches.
(e) Remove all push-rods.
(f) Pull the lifters upward away from the cams and secure them in this raised position with a hose clamp or some other suitable device.
(g) Remove the rotary pump housing together with the pumps.
(h) Block up high pressure fuel pump lifters.
(i) Take out the cam bearing retaining capscrews.
(j) Loosen the cylinder nuts on the camshaft side of the engine.
(k) Remove the camshaft. Sledge each bearing block out of its seat a little at a time using a timber inserted through the openings on the exhaust manifold side. The end of the timber should be placed against the camshaft as close to the bearing as possible.

5. CAMSHAFT DISASSEMBLY

After the camshaft has been removed from the engine the cam hub locations should be marked on the shaft to aid in assembling. Caution - do not mark hard enough to raise any burrs, a light scratch may be sufficient. The camshaft may now be disassembled as follows: Remove the setscrews from the pump drive gear and fuel pump eccentrics. Slide these parts and the two rear camshaft bearings off the shaft. Next the cams should be loosened by driving the keys forward with a drift, then the cams and bearings should slide on the shaft freely after removing the keys, but if it should be necessary to drive them off only a babbitt hammer or brass drift should be used. Any burrs, particularly at keyways, must be dressed down with a file. If this precaution is not taken the cams may seize as they are being removed and then any further forcing will score the shaft. If further disassembly is required then the camshaft drive gear may be removed by driving the key aft for removal. The gear and forward bearing may now be removed using the same precautions regarding burrs as outlined above. The lubricator drive collar (or water pump drive crank) may be removed with a suitable puller or by driving with a babbitt hammer. The taper key must first be driven out toward the forward end.

6. CAMSHAFT ASSEMBLY & INSTALLATION

When the camshaft is being reassembled the same precautions with regard to burrs apply. Coating the bores of the cams with white lead will aid materially in sliding the cams into place without scratching the shaft. The bores of either new or old cams should be inspected carefully for any defects likely to scratch the shaft. If the shaft has been completely disassembled then as the first step the lubricator drive collar (or water pump drive crank) should be pressed on the forward end of the shaft tightly against the shoulder. Care must be taken to keep the keyways lined up while assembling. The key may now be driven in toward the aft end. The forward bearing, thrust washer and cam gear hub may now be assembled on the shaft. Locate the gear hub so as to provide .015" to .025" clearance between it and the thrust washer. Replace the taper key, driving it in place toward the forward end. Bearings and cams are installed successively from the aft end, and if the cam locations have been marked on the shaft before being disassembled, then the cams may be tightly keyed in place before the completed shaft is placed in the engine. If the cam locations were not marked before being removed from the shaft then it will be necessary to install the camshaft in the engine with the cams all loose. (Note: Only two cam bearings will be required on the shaft for locating.) Next replace the latch shaft (with latches) and then locate each cam directly under its corresponding latch roller. Now mark each cam location lightly on the shaft and remove both the latch shaft and camshaft from the engine. Remove all cams and reassemble with the bearings in their approximate locations. The cams may now be tightly keyed after being located according to the markings. Caution - it may be possible to crack the cam hubs (which are cast iron) if the keys are driven in to hard.

The assembled camshaft is then installed in the engine. After starting each cam bearing in its seat the bearings are driven into place a little at a time with a heavy brass bar. Each bearing should be driven a little and then left until all the others have been knocked in the same amount so that the camshaft will not be bent. The cam bearings will seat more easily if the cylinder nuts are loose.

After the cam bearings have been securely bolted, the latch shaft and latches should be installed. Remove high pressure fuel pump blocking. The engine should next be timed, in accordance with the detailed instructions in Paragraphs 14 to 16 after which the latch box and control parts may be reassembled on engine. For Fuel Spray Valve timing see Section O.

7. VALVE LIFTERS

The steel valve lifters work in cast iron guides bolted to the top of the centerframe and carry case hardened rollers on steel pins on their lower ends. (The air starting lifter does not have a roller.) Clearance between lifters and guides is .0015" to .0025", between rollers and pins is .001" to .002", and the pins are riveted into the lifter forks, with the ends flush, so that they may enter the guide bores. A hole in the lower end of the starting air lifter engages a pin carried in bosses on top of the latch, which serves to lift the latch clear of the cams when the engine is running.

8. PUSH-RODS

The push-rods connect to the valve rockers with forks which are screwed on to the end of the push-rod and secured by a locknut. The forks are connected to the rockers with steel pins which are held in place by a ball check pressed into the rocker. This ball check engages in a circumferential groove around the center of the pin, and may be removed by tapping with a hammer and drift. The pins are fitted with a clearance in the rocker of .000" to .0025", and a clearance of .0005" to .0027" in the forks. Holes located near the top of the push-rod provide a means for turning the rod when making adjustments.

9. VALVE ROCKERS

The rockers for the inlet, exhaust and starting air valves are fulcrumed on a shaft which is supported by bearings at each end. The bearings are mounted on studs screwed into the cylinder heads and are held between nuts on the studs. By screwing the nuts up or down the rocker shaft can be raised or lowered.

The three rockers are bronze bushed at their fulcrums and the bushings are reamed for .001" to .003" clearance with the rocker shaft after pressing in. The case hardened rollers at the valve end of the exhaust and inlet rockers work directly on the valve stems and turn on steel pins riveted in the rocker forks. The clearance of the rollers on the pins is .0005" to .0015".

The fuel valve rocker is not carried on the shaft with the other three rockers. A support located on the manifold side of the cylinder head acts as a fulcrum. The steel fulcrum pin, retained by cotter pins at each end, has a clearance of .000" to .0017" in both pieces.

10. VALVE TIMING

The correct valve timing for the engine is given in the following table.

Starting Air Valve	Opens	5° B.T.C.
" " "	Closes	40° B.B.C.
Inlet Valve	Opens	10° B.T.C.
" "	Closes	35° A.B.C.
Exhaust Valve	Opens	35° B.B.C.
" "	Closes	5° A.T.C.
Fuel Spray Valve	Opens	see engine name plate
" " "	Closes	see engine name plate

11. SPOTTING THE PISTON

Before proceeding with the discussion on valve timing the following instructions regarding the correct method of spotting a piston should be considered. Whenever a piston is to be spotted for valve setting it should be brought into position by turning the engine in the direction of ahead rotation in order to take up all gear back-lash. If the engine is turned past the desired position, it should be turned well back in the opposite direction, and then again brought up to the required point.

12. FLYWHEEL MARKINGS

NOTE: The following data is intended for a general description of the markings only. For actual figures for valve timing see paragraph 10 above.

The position of the piston may be determined from the flywheel pointer and the markings stamped on the flywheel rim. Top center of each piston is marked and stamped with the corresponding piston numbers, and degree marks are stamped for 25° on each side of top center. These markings are sufficient for all valve timings. The intake valves normally open 10° B.T.C. (Before Top Center) and the exhaust valves close 5° A.T.C. (After Top Center) and these points can of course be determined directly from the degree markings adjacent to the top center marking of the corresponding cylinder.

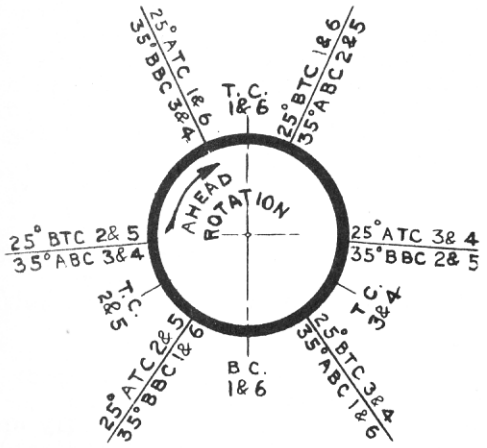

FIG. L-1

The intake valves normally close 35° A.B.C. and the exhaust valves open 35° B.B.C. Referring to Fig. L-1, these points may be obtained on the flywheel as follows. Since the crankshaft has three throws 120° apart the top centers of the three pairs of cylinders will be 120° apart. Bottom center of any pair of cylinders is 180° from top center. Therefore the bottom center of any pair of cylinders is 60° from the top centers of the other two pairs. As previously stated, each top center is marked for 25° in either direction. Subtracting this 25° from the above 60° leaves 35°. Hence each 25° A.T.C. point is also the 35° B.B.C. point for the preceding pair of cylinders and similarly each 25° B.T.C. point is also the 35° A.B.C. point for the following pair of cylinders.

13. POINTER LOCATION

The location of the flywheel pointer should be checked occasionally by "splitting the center". With one of the cylinder heads removed crank the engine to a point about 20° off top center. Measure the exact distance from the top of the liner down to the piston and observe the pointer reading on the flywheel. Then set the piston to the same distance below the top of the liner on the other side of top center and observe the flywheel pointer reading. If the readings do not agree adjust the pointer to give equal readings on each side. These readings should preferably be taken with an indicator and in each case the piston should be cranked upward into position.

14. CAMSHAFT TIMING

In order to time the engine it is necessary to determine the correct relation between the crankshaft and camshaft, which is done by positioning the camshaft gear on its hub, and then to adjust the push rods to open and close the valves at the correct points. Unless the crankshaft gear, camshaft gear or camshaft gear hub have been replaced, the camshaft can be correctly timed after overhauling as follows. Before breaking the gear train spot No. 1 piston exactly on firing top center. With a steel scale bearing firmly against the machined side of the centerframe scribe a line across the side of the camshaft gear parallel to the centerframe face. When re-assembling mesh the gears with the crankshaft and camshaft in the same relative positions, that is, with No. 1 piston on firing top center and the line on the camshaft gear in line with the centerframe face.

If the crankshaft gear, camshaft gear or the camshaft gear hub is replaced, the camshaft may be timed as follows:

(a) Spot No. 1 piston $2\frac{1}{2}^{\circ}$ B.T.C. in the AHEAD direction.
(b) Set the camshaft gear relative to its hub so that clamping bolts are approximately in the center of the slots. Orient camshaft gear so that old dowel holes will not interfere with redowelling.
(c) Turn the latch shaft to the AHEAD position (latches out).
(d) Turn the camshaft (with intermediate gear out of mesh) so that the inlet and exhaust lifters of No. 1 cylinder are each raised an equal distance. (NOTE: The piston was set at $2\frac{1}{2}^{\circ}$ B.T.C. as this is the mean position between the opening of the inlet valve, and the closing of the exhaust valve, and at this position both valves should be open an equal distance.)
(e) Holding crankshaft and camshaft in above positions and allowing the camshaft gear to slip on its hub as required, mesh the intermediate gear and tighten the clamp bolts between the camshaft gear and hub. After all valves have been timed and checked, drill 31/64" holes through gear in line with dowel holes in hub and ream to .497" - .498" for dowels.

After determining the correct relation between the camshaft and crankshaft the push rods must be adjusted as follows: (See Section O for timing of fuel spray valve.)

15. INLET & EXHAUST VALVE TIMING

(a) Spot piston at 10° B.T.C. at the end of the exhaust stroke.
(b) Adjust inlet push-rod so that valve is just opening.
(c) Spot piston at 5° A.T.C. on the suction stroke.
(d) Adjust exhaust push-rod so that valve is just closing.
(e) Check clearances between valve stems and rocker rollers. The cams are designed for 1/32" clearance with the valves set as above and with the engine cold, but this will vary somewhat due to manufacturing tolerances. When making the adjustments aim at the opening and closing points but keep the clearances between .020" and .040", varying the opening and closing points slightly if necessary. Excessive clearances mean a noisy engine and increased wear on parts. Insufficient clearances prevent valves from seating properly, with consequent blowby and destruction of valves and seats.
(f) Check and record closing point of inlet valve and opening point of exhaust valve. These points should fall within 5° of the position given in the timing table.
(g) Shift latch shaft to ASTERN and check opening and closing points of inlet and exhaust valves when running ASTERN. Discrepancies from the AHEAD timing up to 5° may occur due to manufacturing tolerances, but no attempt should be made to correct this condition, as any changes in the push-rod adjustments will upset the AHEAD timing.
(h) Adjust and record valve timing for the other cylinders as above.

16. STARTING AIR VALVE TIMING

(a) Bar the valve rocker shaft by hand to its starting position (up against the stop in the air cylinder).
(b) Spot piston at 5° B.T.C. at the end of the compression stroke (in the AHEAD direction and with latch shaft AHEAD) and adjust the pushrod so that the valve is just opening. Check the closing point, which should fall within 5° of the position given in the table. (See Paragraph 10)
(c) Shift latch shaft to ASTERN and spot piston at 5° B.T.C. ASTERN.
(d) Adjust astern air starting cam relative to its hub so that starting air valve is just opening and clamp cam to hub. Check closing point.
(e) Adjust and record starting air valves for the other cylinders as above.

17. CAMSHAFT GEARING

The camshaft is driven from a gear on the crankshaft by means of an intermediate gear. The crankshaft gear is shrunk on the shaft adjacent to the forward crank web. If replaced the new gear should be heated to approximately 600° F., slipped over the shaft and located against the shoulder on the shaft. Do not overheat the gear, as this will damage the steel structure, and once it is started on the shaft move it immediately to the final position, as it will be impossible to move it further once it begins to cool and seize the shaft.

The intermediate gear has replaceable bronze bushings and rotates on a case hardened steel shaft. The intermediate gear bracket in which the shaft is mounted is bolted and doweled to the centerframe cover on the governor end of the engine. It is adjusted before doweling to allow .006" - .008" gear backlash. If replaced the intermediate gear bushings should be reamed to 1.5000" - 1.5005" dia. after pressing in, which allows .002" - .004" running clearance. The bearing is lubricated by oil from the pressure pump.

FUEL SUPPLY SYSTEM

The complete fuel system may be conveniently divided into two parts, the fuel supply system and the fuel injection system. The fuel supply system is made up of the fuel transfer pump, the fuel day tank and the fuel filter, while the fuel injection system includes the high pressure fuel pump, the fuel rail, the accumulator, the fuel pressure regulating valve, the fuel spray valves, and the necessary connecting tubing.

1. IMPORTANCE OF CLEANLINESS IN FUEL HANDLING

The high pressure fuel pumps and fuel spray valves have been referred to as the heart of the Diesel engine and the proper functioning of these parts is necessary for the successful operation of the engine. These pumps depend upon lapped plungers working in cylinders with clearances measured in hundred thousandths of an inch and it is vital that the fuel entering these parts be kept free of any grit or foreign matter. The engine is equipped with filters for this purpose but it is also necessary for the operators to use every possible care in getting clean fuel oil and in keeping it clean until it is delivered to the engine. Fuel tanks and piping should be thoroughly cleaned when installed and should be kept covered at all times.

The fuel filter should be periodically cleaned and serviced according to the detail instructions given in paragraph #3. The best filters obtainable will be useless if dirt is introduced into the fuel after it has passed through them, and it is therefore of great importance that every effort be made to protect the fuel pipes after the filter during repairs and overhauls. Cleanliness in handling fuel, piping and injection equipment is of vital importance and will pay good dividends in trouble-free operation. Many times mysterious and expensive pump and fuel spray valve troubles have been traced to careless handling of fuel and carelessness in storing and installing spare parts.

2. FUEL TRANSFER PUMP

The fuel transfer pump, which is located in the rotary pump housing on the after end of the centerframe, delivers a continuous supply of fuel to the engine from the main storage tank. It is a rotary type gear pump, identical in construction (but smaller in size) with the lubricating oil pumps described in Section T. The description will not be repeated here, nor the instructions regarding direction of rotation, which apply equally well to the transfer pump. (On direct reversible marine engines the rotary gear type fuel transfer pump is reversible. Consequently fuel is delivered irrespective of direction of rotation.) The fuel transfer pump drive is shown on Fig. N-1. Transfer pump (9) is mounted in adapter (6) which is bolted and doweled to the housing. If the adapter is replaced it must be positioned for .004" to .005" gear backlash before doweling. A cylindrical fit between pump and adapter permits replacement of the pump without disturbing the drive gear setting. The pump shaft and rotor is carried in three bronze bushings, one in the adapter and two in bearing (5)

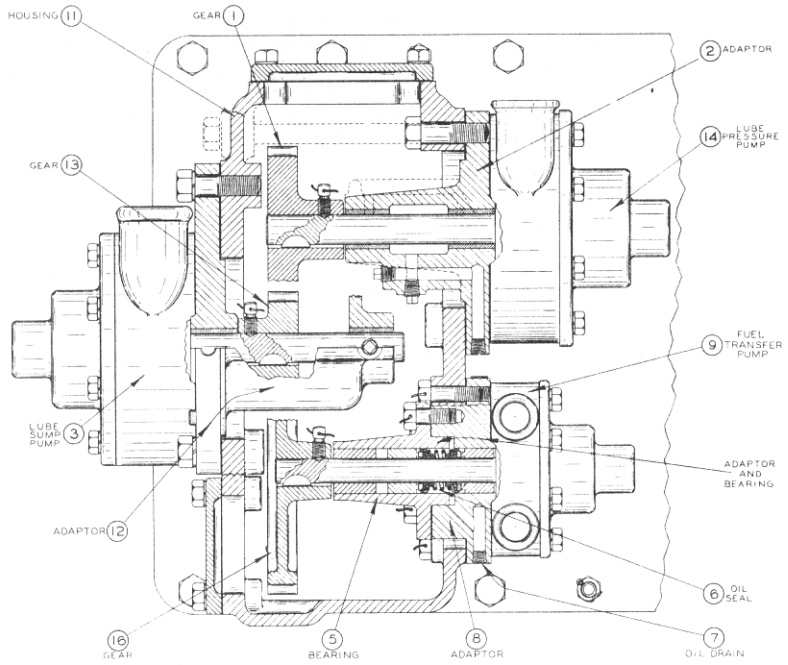

FIG. N-1

which is bolted to the adapter. If replaced these busnings must be line reamed to .6250" - .6255" dia. after pressing in and with the bearing bolted to the adapter.

The bushing in the adapter is lubricated by fuel oil from the pump, and the two in the bearing by lubricating oil, fed through drilled holes in the castings from a lubricating oil line connecting into the adapter. Oil seal (6) prevents contamination of the lubricating oil by the fuel oil. This type of seal rotates with the pump shaft and seals against the specially prepared faces of the adjacent bushings. Fuel leakage past the seal is drained off through connection (7) which may be piped back to the fuel tank. Under no circumstances should this opening be plugged, or the fuel will drain into the lubricating oil in the crankcase. The drive gear is secured to the shaft with a Woodruff key and setscrew, which should be securely wired, as should all the internal bolts in the assembly.

3. FUEL OIL FILTER - (Duplex Type)

The fuel oil filter is a metal edge type filter, similar to the lubricating oil filter described in Section T and the detailed description will not be repeated here. There are two elements, each with .0015" spacing, and the filter is provided with a switch-over valve which allows either element to be cut out for cleaning while the engine is running. The valve should normally be kept in the intermediate position, which connects both elements in parallel. The dirt is scraped off the outside of the elements by cleaning knives, which are operated by handles projecting from the top of each element. The elements should be cut out when cleaning so that the dirt can settle freely to the bottom of the sump tank. The sumps should be drained before the sediment builds up to the bottom of the elements.

After draining refill the filter through the priming plug in the top, and leave the vent cocks slightly open when starting the engine to allow the trapped air to bleed out. The filter elements may be replaced by removing the handles and sump tanks and unscrewing the elements from the head. CAUTION: Element is attached to head with left hand thread.

4. FUEL DAY TANK

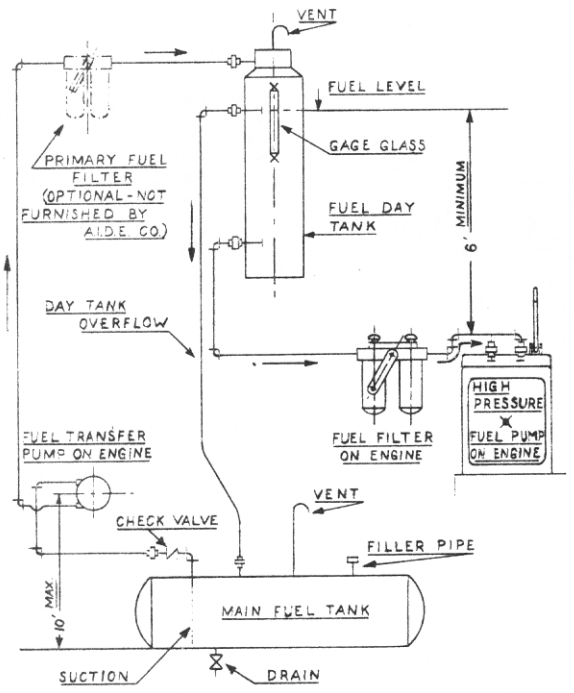

FIG. N-2

The fuel oil day tank should preferably be installed as shown in Fig. N-2. This hookup shows the fuel filter on the engine connected between the day tank and the high pressure fuel pump. This is quite desirable, as the filter then protects the engine against contamination of the fuel in the day tank. However, it requires a gravity head of at least six feet to force the fuel through the filter, and if the space limitations of the engine room will not permit locating the day tank to give this head, it will then be necessary to connect the filter between the pump and the day tank, that is, in the position of the optional filter shown in Fig. N-2.

FUEL INJECTION SYSTEM

1. HIGH PRESSURE FUEL PUMP

The high pressure fuel pump is located on top of the centerframe on the operating side of the engine. It consists of two single acting pump plungers, actuated by eccentrics mounted on the camshaft, and one hand operated plunger for priming and testing purposes.

Referring to Fig. O-1, cast iron guides (3) are located in holes in the centerframe and are secured in place by capscrews. Lifters (4) which work in these guides carry rollers (5) against which the eccentrics (19) operate. Clearance between lifters and guides is .0015" to .0025". The case hardened rollers have a clearance of .001" to .002" on pins (6), which are riveted in place in the lifters. Lubricating oil is piped from the pressure pump to the guides, as shown in the cross section view of Fig. O-1. At the top of the lifter stroke the drilled holes in the lifters communicate with the oil holes in the guides, flooding rollers and eccentrics with oil. A drain hole and counterbore at the top of the guide prevents pumping lubricating oil. Shields (2) secured to the tops of the lifters by plugs (1) prevent any fuel oil leaking down from the pump plungers from entering the tops of the guides.

Pump housing (31) and top cover (8) are both secured to the centerframe by means of through bolts (10). Top cover (8) carries the individual pump bodies (9) to which pump barrels (16) are secured. One of the pump bodies also carries the hand operated priming pump. Pump barrel (16) is threaded into the pump body and is seated at the upper end. A copper gasket (11) at this end provides a fuel tight seal. Spring

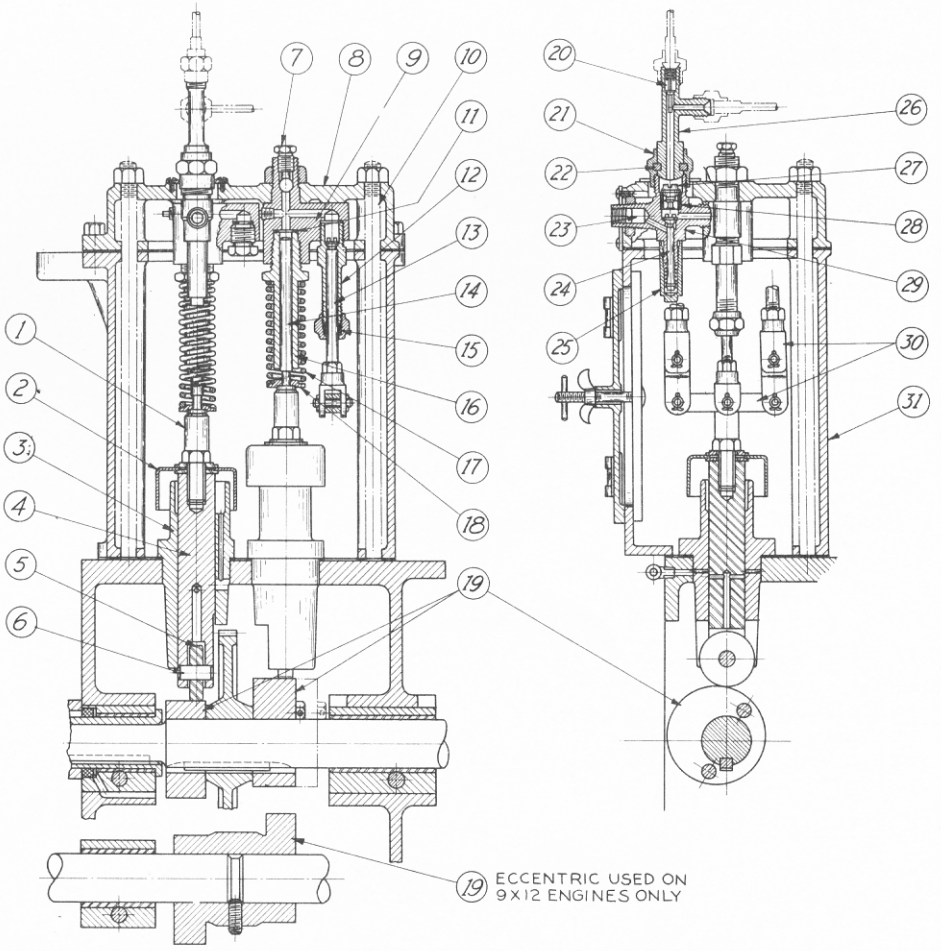

FIG. O-1

(17) is retained at the lower end of plunger (14) by washer (18) and forces the plunger downward on the suction stroke. The plungers and barrels are lapped together in matched pairs and are not interchangeable. In other words a plunger must always be used with the particular barrel to which it was lapped. If either piece becomes scored or damaged both must be replaced. Always wash parts thoroughly in clean solvent or fuel oil and lubricate with clean engine oil before replacing.

The suction and discharge valves are contained in housing (29) which in turn is screwed into pump body (9). Fuel under slight head from the filter and day tank unit is supplied through port (23). The fuel is discharged on top through discharge fitting (26) which is provided with two discharge connections, one being connected to the fuel rail and accumulator and the other to the side outlet of the second pump. A second discharge valve (20) is provided at the top discharge connection leading to the rail and accumulator. The seat and guide for suction valve (24) is formed in cage (29). The suction valve spring is enclosed by bonnet (25) which also prevents fuel leakage at that end. A flat is provided on the suction valve guide, connecting the bonnet space with the fuel supply. Discharge valve seat (28) is hardened and is pressed into cage (29). The discharge valve lift is limited by the lower end of fitting (26).

Both the suction and discharge valves may be removed and serviced by unscrewing nut (21) holding the discharge fitting to the valve cage by means of split collar (22). If the valves are leaky lapping the seats lightly with fine grinding compound is recommended but if this is not successful new valves and cage assembly should be installed. If the lower end of discharge fitting above the discharge valve shows signs of heavy hammering this is usually due to discharge valve seat (28) being loose in the cage. The cage and seat must then be replaced.

Priming pump barrel (12) is threaded into pump housing (9) and priming pump plunger (13) is actuated by linkage from the vertical priming lever on the pump housing top cover. Packing and nut (15) prevents leakage past the plunger. The upper end of the plunger is formed as a valve head which engages a seat in the barrel, preventing leakage when the priming pump is not in use. If the pump leaks while the engine is running the plunger valve head should be lapped in. If leakage takes place when the fuel system is being primed, packing (15) should be either tightened or replaced. When priming the fuel system loosen plug (7) which will allow air in the pump to escape. Tighten the plug when solid fuel appears.

Fuel leakage from the pumps and the priming pump collects on top of the centerframe inside the pump housing and is drained off through a hole in the end of the centerframe. The high pressure fuel pump has been designed to give long trouble-free performance, but it must be given reasonable care. Water, dirt and other impurities in the fuel will materially shorten the life of the plungers and barrels. The normal working pressure is 3000 to 4500 pounds per square inch but the pump is capable of building up pressures far in excess of these figures. It is consequently important that the fuel pressure regulating valve is functioning properly so that excessive pressures are not built up which may injure the pumps and may also damage other parts of the injection system.

2. FUEL RAIL

The fuel rail is located on the operating side of the engine level with the tops of the cylinder heads. One end of the rail is connected directly to the high pressure fuel pump and the other end is connected to the accumulator, pressure relief valve, and pressure gauge.

Isolating valves are built into the fuel rail at the outlets to the spray valves and an additional valve is provided for the purpose of testing the spray valves.

The fuel rail consists of a length of 3/4" O.D. x 3/8" I.D. seamless steel tubing inserted in and brazed to the bodies of the isolating valves. The isolating valve stems, which have hardened conical ends, are threaded into the valve bodies. The valve seats are replaceable tobin bronze washers and are held in place by plugs which are screwed into the valve bodies and to which the injection lines from the spray valve are connected.

3. INJECTION TUBING

All of the high pressure lines used in the injection system are seamless steel tubing. The ends are formed by brazing union sleeves to the tubing, and union nuts fasten these ends to the various fittings. Two different sizes of fuel tubes are used in the high pressure system. One size has an outside dia. of 1/4" and .065" wall thickness, and the other size is 3/8" outside dia. and .109" wall thickness. A high grade tubing is used, made especially for this service, and standard seamless steel tubing should never be substituted.

The importance of keeping the injection lines clean cannot be overemphasized. When an injection line is removed from the engine the open ends should be covered with clean paper which should not be removed until the tubing is to be placed on the engine again. If there is any doubt as to the cleanliness of an injection line it should be thoroughly cleaned before installing. To clean a line it should be washed repeatedly in cleaning solvent or gasoline and should be blown out with an air hose between each washing. This cleaning process should be carried on until there is no uncertainty as to the cleanliness of the tubing.

4. ACCUMULATOR

The accumulator is a welded steel bottle mounted on the centerframe, and connected to the fuel rail on certain sizes of engines or to both the rail and high-pressure pumps on other sizes. The function of the accumulator is to prevent large pressure fluctuations in the fuel system due to lowering of the pressure each time a spray valve opens, or to the increasing of pressure on each stroke of the fuel pump plungers. Therefore, due to the compressibility of the fuel oil, the accumulator helps to maintain an even pressure in the fuel system.

5. FUEL PRESSURE REGULATING VALVE

Fuel injection pressure is controlled by the adjustable pressure relief valve. This valve is of the by-pass type in which the opposing forces of a spring and the fuel pressure acting on the stem of a needle valve maintain constant fuel pressures. If the pressure starts to drop the spring closes the needle slightly reducing the amount of fuel by-passed with the result that the pressure is held constant.

Referring to Fig. O-2 the regulating valve is built around valve body (7). The hardened steel valve seat (8) is held between the body and adapter stud (9) which screws on the bottom of the body, and through passage (18) allows the by-passed fuel to escape. Fuel inlet elbow (16) is threaded into the side of the body, supplying fuel to the annular space around the reduced section of the valve stem (17). The top of the body is bored to receive stem packing (15) and packing gland (14). Screwed to the top of the body is relief valve spring cage (5). This cage is screwed down upon the drain cup holding the latter in place against a shoulder on the body.

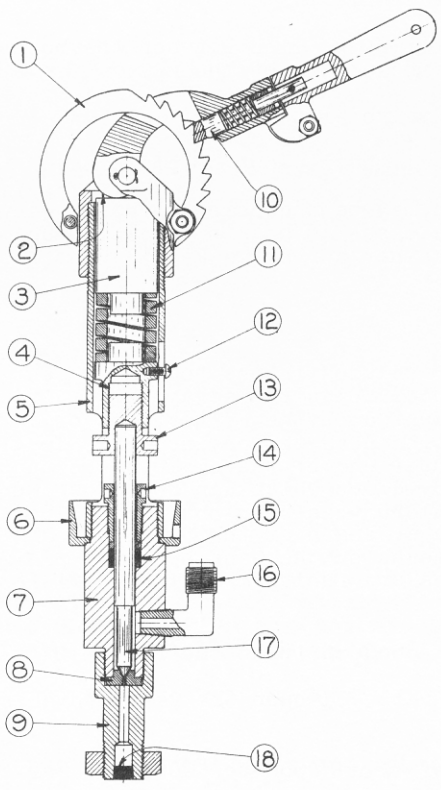

FIG. O-2

Cage (5) carries upper spring seat (3), Spring (11), and the lower spring seat. Valve spring adjusting screw (13) which is bored to receive the upper end of the valve is threaded into the bottom of the lower spring seat. A small machine screw in the lower spring seat engages a slot in the cage and prevents rotation of the seat when the adjusting screw is being turned. The bearing assembly which holds the control handle and sector (1) is threaded to the upper end of cage (5). The lower part of the control handle is shaped to form a cam which actuates the upper spring seat. A spring loaded pawl (10) in the handle engages teeth in sector (1) so that the handle will remain in position after it has been adjusted. A downward force on the end of the handle pulls the pawl away from the sector and allows the handle to be lowered.

The injection pressure is normally changed by moving the handle up or down. Moving the handle in an upward direction increases the pressure, downward movement lowers the pressure. The pressure increase or decrease per notch is approximately 600 to 800 lbs. However, the pressure in any notch may be changed by means of adjusting screw (13).

Packing (15) will need replacing when the fuel leakage around the valve stem (17) becomes excessive. Tighten the packing gland just enough to prevent leakage. Never attempt to stop leakage by tightening the gland severely when new packing is needed. A loss of fuel pressure can often be traced to dirt lodged between valve stem (17) and the seat (8). This condition can be remedied by removing adapter stud (9) and valve seat (8) from the bottom of the relief valve and thoroughly cleaning the valve and its seat. Occasionally it may be necessary to lap the needle and its seat to prevent excessive by-passing and a low fuel pressure. After performing this operation all

traces of grinding compound should be carefully washed off before the valve is re-assembled.

6. SPRAY VALVES

The purpose of the spray valve (or fuel injection valve) is to meter the fuel accurately, to deliver it precisely at a definite moment, in a definite time into the combustion chamber in the form of a finely atomized spray. It might be stated that the successful operation of the engine depends upon the proper functioning of the spray valves more than on any other item. If the engine does not perform properly and the exhaust is smoky, the functioning of the fuel valves should be checked first of all. In the great majority of cases servicing the fuel valves and making them function properly corrects the trouble.

Fundamentally, the spray valve is a heavily spring loaded needle valve. Referring to Fig. O-3 the seat of the needle valve is incorporated in the tip or nozzle (1) just above the entrances to the spray orifices. The lower end of valve body (4) is counterbored to receive the end of the spray valve tip. A shoulder on the spray tip (1) which is centered in the counterbore, is held securely against the lower end of the body by nut (2). Valve assembly (3) is made up of two sections. The lower section has a conical end which is ground to the seat in the spray valve tip. This lower stem section is pressed into an extension (10) to which the spring loading is applied and by which the stem is lifted. A shoulder on the extension carries a small ball type thrust bearing (14) which acts as a lower spring retainer. Upper spring retainer (12) screws into the upper end of valve spring casing (13) which in turn is threaded to the upper end of valve body (4).

The flange used for clamping the valve is drilled and tapped to receive fuel elbow (6) which supports the small metal edge type filter (15). Fuel is carried from this point to the nozzle in the annular space surrounding stem (3). Leakage upward along the stem is prevented by packing (7) held between an upper and lower gland and secured by packing nut (8).

7. REMOVAL OF SPRAY VALVE FROM ENGINE (See Fig. O-3)

(a) Remove the cotter pin from one end of pin (37) at the fulcrum end of spray valve rocker (36). Drive the pin out with a brass drift.

(b) Remove horseshoe shaped collar (16) which forms the link between the rocker and the upper end of the spray valve and swing the rocker out of the way.

(c) Disconnect the injection line at the spray valve filter.

(d) Loosen the clamp nut and slide spray valve clamp (11) out of position.

(e) Remove the spray valve from the engine. It may be necessary to work the valve loose by rotating it back and forth and in some cases to pry it upward with a bar to remove it. As the valve is removed, note whether copper gasket (5) remains in the cylinder head or on the end of the valve.

8. TEST EQUIPMENT

All the parts for a spray valve test stand are included in the tool equipment supplied with the engine. The spray test clamp which holds the spray valve directly below the flanged section of the body can be mounted on the centerframe or latch box of the engine or at some other convenient location near the engine. The long stud supplied with this equipment screws into the outer end of the clamp. The test handle is supported on the upper end of the stud by a nut which can be screwed up or down on the stud until the desired height of fulcrum has been obtained. Fuel is supplied from the extra fuel rail valve through a length of tubing supplied with the tool equipment. Fuel pressure is obtained by means of the hand operated priming pump located at the forward end of the high pressure fuel pump. To test a spray valve proceed as follows:

(a) Clamp the spray valve in the test stand and connect it to the fuel rail.

(b) Close all the isolating valves on the fuel rail and open the valve which supplies the test stand.

(c) With the priming pump build up a pressure of about 2000 to 4000 lbs. per square inch.

(d) Open the valve quickly three or four times by hitting the end of the test handle sharp blows with the fist, watching as the valve operates to see if a fine fuel spray comes out of each hole in the tip.

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(e) Wipe off the tip carefully, pump up the pressure to about 4000 lbs. per square inch again and operate the spray valve as described in step 4 until the pressure has dropped to about 2000 lbs. per square inch. Then watch the bottom of the tip for a period of time to see if drops of fuel form, indicating tip leakage.

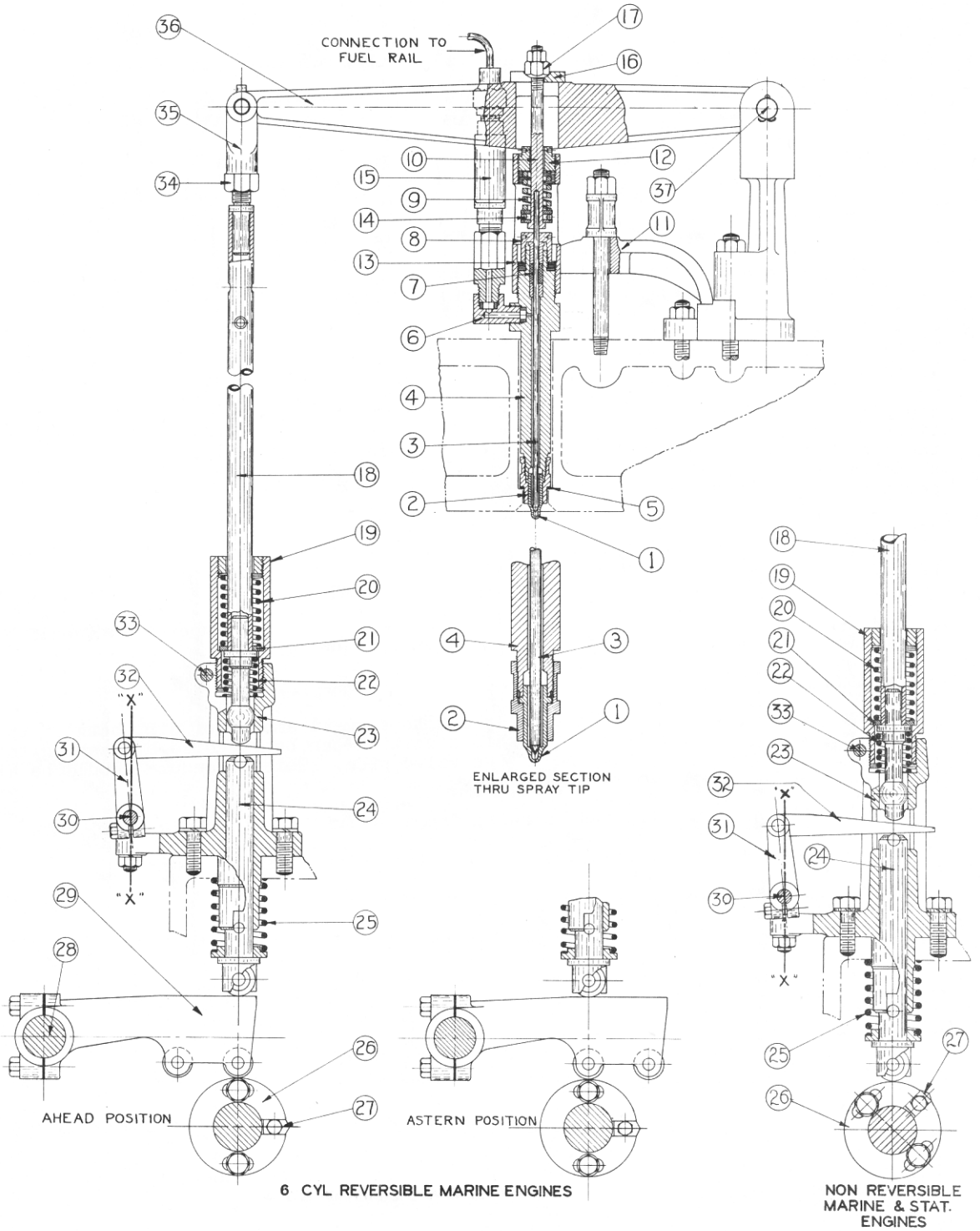

FIG. O-3

9. DISASSEMBLY OF SPRAY VALVE (See Fig. O-3)

If the sprays are not uniform, if one or more orifices are entirely plugged up, or if drops of fuel form on the end of the tip after testing as described in step (e) of the preceding section, the spray valve must be taken apart and serviced. Proceed as follows:

(a) Clamp the spray valve at the flanged section of the body in a vise.

(b) Unscrew upper spring retainer (12) with a suitable pin or drift.

(c) Loosen packing nut (8) and remove stem assembly (3 and 10) together with the retainer (12), spring (9) and thrust bearing (14).

(d) Unscrew valve seat nut (2). Spray tip (1) will usually come off with the nut.

(e) Drive the tip out of the nut with the punch supplied for this purpose in the tool equipment. Use care not to damage end of tip.

(f) Clean the outer surface of the tip with a wire brush dipping the tip into cleaning solvent or fuel oil frequently during the brushing.

10. CLEANING THE SPRAY ORIFICES

If the sprays are not uniform or an orifice is plugged up the holes in the spray tip must be cleaned. Again, if it is necessary to disassemble the spray valve for some other reason such as leakage, it is good practice to clean the orifices at the same time. It sometimes happens that all of the orifices become slightly clogged with the result that they deliver less fuel. Such a condition cannot be detected when the spray valve is tested but if the holes are cleaned every time service work is performed upon the spray valves this condition will be taken care of.

The cleaning of the orifices should be performed only with the music wire and pin vise supplied with the tool equipment, not with the ends of hat pins and other such devices. If the original wire is lost obtain a piece of music wire of not more than .011" dia. for this purpose. (Use .011" dia. wire for engines with bores of 11" dia. or more. If engine bore is 9" to 11" dia. use .009" dia. wire.) Work the wire in and out of each orifice until the holes are clean. This operation should be performed carefully so that the orifice will not be deformed.

11. CORRECTING SPRAY VALVE TIP LEAKAGE

Leakage of the spray valve is usually due to a small amount of dirt between the needle and the valve seat. Often this condition can be remedied by washing the tip thoroughly and cleaning the end of the valve stem. This procedure should be attempted first in all cases of valve leakage.

If, after washing the tip and spindle, drops of fuel still form on the bottom of the tip shortly after the fuel valve is sprayed, it will be necessary to reseat the valve by lapping. The procedure of reseating a tip is as follows:

(a) Clamp the valve body in a vise horizontally.
(b) Loosen spring retainer (12).
(c) Apply a small amount of fine valve grinding compound to the end of valve stem (3).
(d) Place the tip over the valve stem and insert it fully into the valve body.
(e) Adjust retainer (12) so that the stem exerts a light pressure on the tip.
(f) Oscillate the tip back and forth and rotate the spindle slowly. Be sure that the tip is held against the body as this operation is being performed so that the tip will be properly guided.
(g) Repeat steps "c", "d", and "f" if necessary.

It should not be necessary to lap the tip more than two or three times to correct ordinary cases of leakage. However, if the seat in the tip has been badly damaged no amount of lapping will remedy the situation. In such instances a new tip should be installed. When installing a new tip the joint between the tip and the valve body must first be lapped. A small amount of fine valve grinding compound is applied to the upper face on the shoulder of tip (1). The tip is then installed in the end of the valve body and oscillated back and forth. The tip is held gently against the body as this operation is being performed. One light lapping process should be sufficient to produce a perfect seal between the tip and valve body. The tip is then lapped to the valve stem by the method described in this paragraph.

12. VALVE PACKING ADJUSTMENT

Packing nut (8) snould never be appreciably more than finger-tight. A small amount of fuel leakage past the packing is necessary for proper lubrication of the spindle. Too tightly adjusted packing will prevent this lubrication and will result in a scored spindle and sluggish valve action. If a spray valve leaks excessively along the spindle after the packing has been lightly tightened up the need for new packing or a new spindle or both is indicated.

13. ASSEMBLY OF THE SPRAY VALVE - SPRAY VALVE "LIFT"

Referring to Fig. O-3, spring (9) must be adjusted to a certain tension in order to assure proper functioning of the spray valve. It is further important that the adjustment of all the spray valve springs be the same or that the "lift" on all the spray valves be the same. With "lift" as used in the following instructions is understood the lift which spring (9) will allow before its coils touch each other and prevent further upward movement of the valve stem. (The actual lift when the spray valves are operating in the engine is of course determined by the position of fuel wedge (32), the adjustment on pushrod (18) and cam (27). This actual lift is less than the "lift" as defined in this paragraph.) Proceed as follows to assemble the valve and adjust for proper "Lift" (or opening tension):

(a) Wet spindle (3) with clean fuel oil and slip it into position in the valve body.
(b) Clean the spray valve tip and install it carefully on the valve body. Tighten valve seat nut (2) securely.
(c) Screw down on spring retainer (12) carefully until the coils of spring (9) just touch. Be careful not to screw down so hard that valve stem (3) bends, rendering it useless. It is best to have the valve in the test stand when performing this operation and determine when spring (9) becomes solid by means of the test handle. When it is not possible to lift the spray valve stem by means of the test handle the spring coils are touching. The "Lift" is then zero.
(d) Unscrew spring retainer (12) 3/4 to 7/8 turns which will make the "lift" 1/16". The "lift" on all the valves should be between 1/16" and 5/64".
(e) Screw down on packing nut (8) until it is just finger-tight.
(f) Test the functioning of the valve as described in paragraph 8.

14. ASSEMBLY OF SPRAY VALVE IN ENGINE.

The spray valve is installed in the engine in the reverse order of its removal. Again referring to Fig. O-3, if copper gasket (5) is in the cylinder head merely lower the valve into position. If the copper gasket (5) was removed with the valve, the gasket can be held in position on the lower end of the valve by a thin coating of grease applied to the washer.

After installing the valve it will be necessary to reset the push rod as described in paragraph 18. After timing, in order to clear the cylinder of excess oil, always turn the engine over on air with the snifter valves open and with the fuel isolating valves closed.

15. SPRAY VALVE FUEL FILTERS

In addition to the fuel filter at the high pressure fuel pump an individual filter (15) is supplied at each spray valve. The spray valve filters are of the metal edge type and have a spacing of .0015". They are installed in housing (15) which screw into the fuel inlet elbows at the spray valves. The frequency at which these filters will need cleaning will depend upon the quality of the fuel and the condition of the filter located at the high pressure fuel pump. After disassembling the housings it will be possible to unscrew the filter unit. Wash each unit thoroughly in clean solvent or fuel and blow it clean with compressed air, being careful not to injure the windings when handling it.

16. SPRAY VALVE OPERATING MECHANISM (See Fig. O-3)

The spray valve is actuated by cam (27), lifter or cam follower (24), pushrod (18), and rocker arm (36). In stationary engines the lifter follows the fuel cam directly. In direct reversible marine engineslatch (29) is interposed between the lifter and the cam. Lifter (24) and latch (29) are held against the cam by spring (25).

Motion of the lifter is transmitted to the pushrod through wedge (32). As can readily be seen in Fig. O-3, moving the wedge inward will decrease the gap between the lifter and the pushrod. Consequently the spray valve will open sooner, will lift higher, and will close later. Moving the wedge outward produces the opposite re-

sults. The outer end of the wedge is pinned to lever (31) which is clamped to the wedge shaft, which in turn is connected to the governor. Accordingly the governor, by rotating the wedge shaft, completely controls the action of the spray valves.

When the engine was tested at the factory, wedge levers (31) were adjusted to be parallel to each other and in line on wedge shaft (30) and were then clamped and pinned to the shaft. If new levers or a new wedge shaft are installed it is important that they be lined up in accordance with the above. The position of the fulcrum of wedges (32) for the full load full speed position (wedges fully in) should be about 1/4" inside the vertical line X-X through the center of the wedge shaft. The position of the wedge fulcrum for idling at low speed should be as shown in Fig. 11, that is, about 1/4" outside line X-X. In other words, line X-X should approximately divide the total movement of the wedge fulcrum in two equal parts.

Levers (36) should be approximately horizontal and should be approximately parallel for all the spray valves. This is accomplished by means of adjusting nut (17) which bears down on horseshoe collar (16) which in turn bears down on lever (36). With the lever disconnected from push rod fork (35) hold it up against collar (16) and nut (17) without opening the spray valve. Then adjust nut (17) for the proper lever position and lock by means of the lock nut on top.

Buffer spring assembly (19), positions the pushrod relative to the lifter and assists spray valve spring (9) in returning the valve mechanism (rocker, pushrod, etc.) as the spray valve is being closed. The weak spring (22) below buffer spring (20) merely holds the pushrod against washer (21). As buffer spring assembly (19) is screwed down buffer spring (20) and washer (21) force the pushrod downward against the weaker spring and bring the end of the pushrod closer to the wedge and lifter. Proper adjustment of the buffer spring assembly is as follows:

(a) Bar the engine until the fuel cam follower is on the base circle of the cam.

(b) Set the wedge shaft and wedges in <u>full load position</u> (wedges "fully in" as determined by the governor weights being fully in) and unscrew cage (19) until there is clearance between the lower end of the pushrod and the upper face of the wedge.

(c) Slowly screw down cage (19) and at the same time move the wedge back and forth sideways with fingers.

(d) As soon as the wedge is felt to tighten unscrew the cage one-half turn and lock it in this position with the clamping screw.

NOTE: When timing the spray valves as described in the following the buffer spring assembly should always be unscrewed about one or two turns. When timing is completed adjust the buffer spring in accordance with instructions in this paragraph.

17. <u>SPRAY VALVE TIMING</u> (See Fig. O-3)

The timing procedure described in the following is for a spray valve opening of 8° B.T.C. (Before Top Center) and a spray valve closing of 18° A.T.C. (After Top Center). <u>The proper spray valve timing to use is stamped in the engine name plate and should always be followed.</u> If the timing in the name plate differs from 8° - 18° opening and closing the following instructions should be modified accordingly. Proceed as follows:

(a) Turn the latch shaft to the AHEAD position and unscrew all Buffer Spring Cages one or two turns. Shut off all the isolating valves in the fuel rail except for Number 1 cylinder.

(b) Be sure that wedges are in the full load position ("fully in") as determined by the governor weights being against their inner stops. (Normally the wedges will be "fully in" when the engine is shut down but it is well to check this point.)

(c) Spot Number 1 cylinder at 5° A.T.C. on the power stroke. (Half way point between 8° B.T.C. opening point and 18° A.T.C. closing point). Then unbolt and turn the fuel cam until the center of the toe is directly in line with the axis of the lifter. Clamp the fuel cam temporarily.

(d) Set the crankshaft 8° B.T.C. on the compression stroke. Bar the engine up to this point in the ahead direction of rotation.

(e) Pump up a fuel pressure of about 1500 lbs. per sq. inch with the hand pump.

(f) Slowly lengthen the spray valve pushrod until the needle of the pressure

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gauge drops indicating that the spray valve has opened. Check this adjustment by backing the engine up a few degrees, pumping the fuel pressure up again and barring the engine slowly in the ahead direction until the pressure again drops. If the flywheel pointer is not at 8° B.T.C. readjust the pushrod and check again.

To adjust the length of pushrod (18) loosen locknut (34) and turn the pushrod, using a pin or drift in the holes provided at its upper end. Then tighten the locknut.

If the push-rods use the ball and socket connection to the rocker, then loosen the clamp screw in the rocker and screw the ball stud up or down until the proper adjustment is reached. Be sure that the clamp screw is tightened after the ball stud is adjusted.

(g) Bar the engine over to 25° A.T.C. and again pump up the fuel pressure. Then bar the engine backwards slowly until the pressure drops. This point, which is the closing of the spray valve, should be 18° A.T.C.

(h) If this point is past 18° A.T.C. too long a spray period is at hand. It will be necessary to advance the fuel cam slightly and repeat steps "d", "e", "f", and "g". If on the other hand the spray valve closes before 18° A.T.C., retard the cam slightly and repeat steps "d", "e", "f", and "g".

(i) Repeat steps "c" to "g" on the remaining cylinders. Check and record the spray valve timings for ASTERN. The timing going Astern may be slightly different than the ahead timing. However, the ahead timing is the more important and no changes should be made to favor the astern timing.

(j) Adjust the buffer springs as per instructions in paragraph 16. Note that buffer spring cages should always be unscrewed when spray valves are timed.

18. BALANCING THE ENGINE FOR EQUAL LOAD ON ALL CYLINDERS

Theoretically, if the spray valves have been timed exactly and correctly (as outlined in the preceding paragraph) the amount of fuel injected in each cylinder should be the same. Consequently, the total engine load should also be equally divided between all the cylinders. Practically however, it is impossible to time all the spray valves exactly alike, and even if that could be accomplished manufacturing tolerances on such items as orifices in the spray valve tips, fuel cams, wedges, etc. are apt to affect the cylinder balance. The division of load between the various cylinders should consequently be checked after the engine is running, preferably at full load. Since the exhaust temperatures are proportional to the loads that the various cylinders are carrying the amount of fuel injected should be adjusted so that the exhaust temperatures for the various cylinders are alike, or nearly alike.

The amount of fuel injected and consequently the load carrying capacity of a cylinder may be changed by adjusting the length of pushrod (18). It should be noted, however, that readjusting the pushrod length will affect the spray valve timing. Therefore, this adjustment should not be appreciable and should not exceed one-half turn of the pushrod or ball stud from the position obtained when timing the spray valve.

The proper procedure for balancing the engine can be summarized as follows:

(a) Assuming that all the spray valves have been correctly timed it should be possible to balance the engine by merely lengthening or shortening the pushrods by one-half turn or less. Lengthening a pushrod will increase the exhaust temperature of the cylinder and vice versa.

(b) If a pushrod adjustment of one-half turn is not sufficient, the timing of all the spray valves should be checked and, if necessary, readjusted to the proper timing as indicated on the engine name plate.

(c) If the valve timing is found to be satisfactory or if, after making any necessary correction in the spray valve timing, a correction of one-half turn of the pushrod is still insufficient, defective combustion is indicated. This may be due to one or more spray tip orifices being plugged or to any of the defects dealt with under the heading "Smoky Exhaust" in the "Maintenance and Inspection" section.

When the engine was tested at the factory spray valves were carefully timed and adjusted to equalize the exhaust temperatures in the various cylinders and while the operator should not continually change adjustments in an effort to improve an engine that is operating satisfactorily he should keep the balance of the various cylinders fairly even. The cylinder balance should be checked whenever a spray valve has been changed. If the exhaust temperatures are kept within a total range of 20° the balance will be excellent, while a range of 50° may not be considered excessive and will give fairly satisfactory operation. However, do not allow the cylinder unbalance to exceed the last mentioned value.

CONTROL SYSTEM

The Control System includes all of the parts necessary for reversing the engine and operating it in the desired direction of rotation, starting and stopping the engine, and controlling its speed of rotation. According to the specific functions of the component parts, it may be subdivided as follows:

The Reversing Mechanism consisting of the Latches, Latch Shaft, Control Wheel and the interconnecting gearing between this control wheel and latch shaft.

The Starting Mechanism which consists of the individual starting air valves in each cylinder head (described in detail in Section H), the Master Starting Air Valve in the starting air manifold, and the Pilot Valve for operating the master valve. In some engine models, as described later, the pilot valve actuates an Air Ram which in turn operates the air starting valves in the cylinder heads and the master valve.

The Fuel Cut-Out Mechanism which operates to stop the engine by taking the wedge shaft out of control of the governor, rotating it to pull out the fuel wedges thereby cutting off the fuel to the engine.

The Flywheel Air Brake which assists in stopping the engine between reversals and is therefore closely related to the reversing mechanism. It is also controlled by a pilot valve.

The Governor which maintains the desired speed of rotation and the Speed Control Lever (or Throttle Lever) by means of which this speed may be changed.

1. LATCHES AND LATCH SHAFT

For a given direction of rotation all the valves must be actuated in a definite sequence and with a definite timing. For direct reversible engines it is consequently necessary to provide dual sets of cams, one set for operation in the AHEAD direction of rotation, the other set for operation when running ASTERN. At the same time means must be provided for throwing one set of cams into operation, while at the same time the other set must be made inoperative.

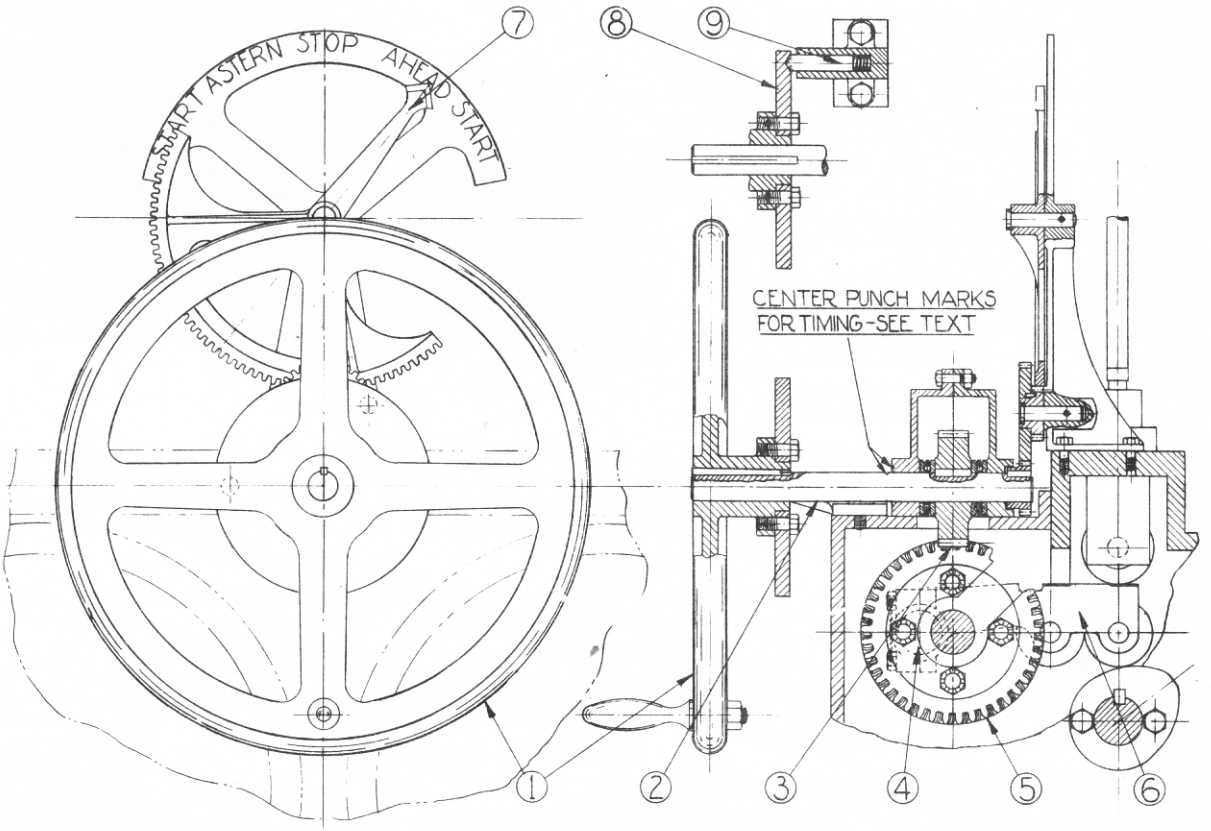

FIG. R-1

In Atlas engines the AHEAD and ASTERN cams are mounted side by side on the camshaft. Referring to Fig. R-1 it will be noted that latches equipped with two rollers are interposed between the cams and the valve lifter rollers. The two latch rollers are offset and lined up relative to the cams in such a manner that in the AHEAD position of the latches one set of rollers contact the AHEAD cams while at the same time the other set of rollers are free of the ASTERN cams. (Astern cam not shown in Fig. R-1) Thus in the position shown in Fig. R-1 the AHEAD cams actuate the latches which in turn actuate the valves by means of the lifters, pushrods and rockers.

By rotating the latch shaft 180° the latch fulcrum points are moved inward (toward the center of the engine) to a point where the ASTERN cams contact the other set of latch rollers. This inward movement frees the AHEAD latch rollers of the AHEAD cams and consequently the ASTERN cams now control the actuation of the valves.

The fuel valve timing is very nearly the same for both directions of rotation. For example, in one direction of rotation the fuel valve may open 8° before top center and close 18° after top center. Then if the rotation was reversed and the latch kept in the same position the fuel valve would open 18° before top center and close 8° after top center. In other words, the timing would be 10° early. It is possible to compensate for this slight difference in timing by properly positioning the ASTERN roller on the fuel valve latch. Consequently only one fuel cam is provided which serves for both AHEAD and ASTERN running and the fuel latch rollers are in line, not offset as on the other latches.

The case hardened steel latch rollers turn on steel pins carried in the bodies of the latches and riveted in place. In the inlet, exhaust and starting air latches, spacers between the walls of the latches and the sides of the rollers establish the positions of the rollers in line with the cams. The fuel valve latch does not require any spacers since only one cam is used and both rollers are in line. The rollers all have a clearance of .001" to .002" on the pins and a side clearance of 1/64".

The latch shaft is built up of six sections, each section comprising the crankshaft for the four latches of a single cylinder. The shaft is mounted on cast iron bearings which are bolted to the side of the centerframe. Journals are turned on the shaft at each end of each crank, and flanges at the ends of each section provide means of bolting the sections together. Bearing clearance is .001" to .0025" and end play is taken by the two outer bearings.

2. MANEUVERING WHEEL & LATCH SHAFT CONTROL

The latch shaft control mechanism is illustrated in Fig. R-1. It is shown in the AHEAD position in which position latch shaft crank (4) and latch (6) are "out" away from the center of the engine. In this position all the AHEAD latch rollers are contacting the AHEAD cams and a line connecting the latch roller centers and the center of the latch shaft crank is horizontal. The latch shaft is rotated to the ASTERN position by means of handwheel (1) to which it is connected by helical gears (3) and (5) and shaft (2). Approximately 3½ turns of the handwheel are required to move the latch shaft from the AHEAD to the ASTERN position or vice versa.

The position of the latch shaft is at all times indicated by pointer (7) which is geared to the handwheel shaft as shown in Fig. R-1. The latch shaft is locked in either AHEAD or ASTERN running position by plunger (9) engaging holes in locking disc (8) which is bolted to the handwheel hub.

3. LATCH SHAFT CAMS AND STOPS

The rotation of the latch shaft by the handwheel is limited by a "stop" cam bolted to one of the flanges. Do not force the shaft against this stop by turning the handwheel fast when the starting positions are approached. The stop will permit the handwheel to be turned approximately 90° beyond the AHEAD and ASTERN running positions.

The extra travel of the latch shaft beyond the running position is used to operate a pilot valve which controls the starting mechanism, admitting air to the air start manifold. The pilot valve is operated by means of a cam bolted to one of the latch shaft flanges. Another cam, also bolted to one of the latch shaft flanges operates the flywheel air brake. The pilot valves are described in detail in paragraph 6. A third cam on one of the latch flanges actuates the fuel cut-out mechanism described in paragraph 8.

4. TIMING LATCH SHAFT CONTROL MECHANISM

If the latch shaft control mechanism has been dismantled it may be timed when reassembling as follows. Place the latch shaft in AHEAD position (crank out). A

pointer is mounted on one of the latch shaft bearings for this purpose, and the shaft should be spotted so that the line scribed on the corresponding shaft flange exactly registers with this pointer. Then, with the handwheel in the AHEAD position, as indicated by the register of center punch marks on the handwheel shaft and the end of the bearing housing (See Fig. R-1) mesh helical gears (4) & (5). NOTE: Before dismantling the handwheel assembly observe whether or not these parts have been marked. If not, mark them as indicated, with the latch shaft in the AHEAD running position. The handwheel and gear assembly may then be bolted in place and the indicator assembled, meshing the gears with the pointer midway between AHEAD and START.

5. STARTING MECHANISM - ENGINES WITH 13" BORE

The starting mechanism used on engines with 13" bore differs from that used on engines with smaller bore and the two systems will be described separately.

Fig. R-2 illustrates the master starting air manifold valve. It is pneumatically operated by means of a pilot valve located on top of the latch box. (Pilot valve described in Paragraph 6). The pilot valve is connected by means of tube (7) and for the position of the master valve shown in Fig. R-2 the pilot valve is venting tube (7) and the space above plunger (1) to atmosphere. Consequently spring (4) will hold plunger (1) against its upper stop and in this position the reduced diameter at the middle of the plunger will form a passage through which tube (8) and the starting air manifold is vented to atmosphere. Valve (5) is held closed against its seat by spring (11) and also by the air pressure in chamber (6) which is connected to the air tank.

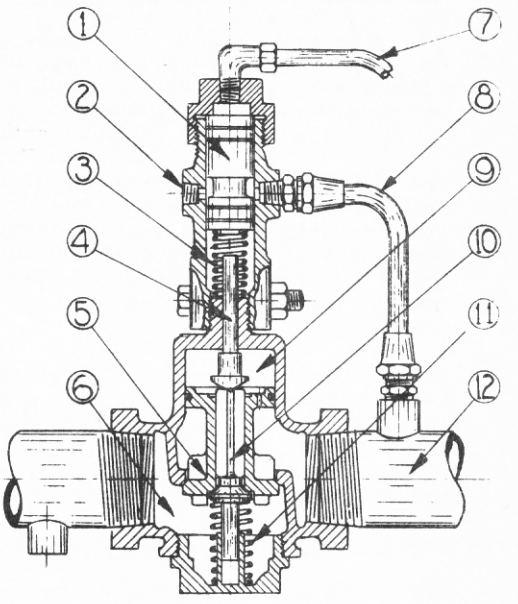

FIG. R-2

When the engine is to be started the pilot valve is opened by the cam on the latch shaft as described in paragraph 6, admitting air through tube (7) to the top of plunger (1). The plunger is thus forced down, closing the starting air manifold vent passage and opening the main operating valve (5). As this valve is opened starting air is admitted to manifold (12), leading to the individual starting air valves in the cylinder heads. By-pass valve (10), which is first opened by plunger (1) and pin (4) admits air pressure to chamber (9) above the main operating valve, balancing the air forces acting thereon and permitting it to open under the downward force of plunger (1).

For the operation of the air start valves in the cylinder head refer to Section H.

6. PILOT VALVES

All the pilot valves for operation of the starting air valve, flywheel brake, etc. are identical and are illustrated in Fig. R-3. They are mounted on top of the latch box between cylinders No. 5 & 6. The operation of all valves is exactly the same, their function being to control the supply of air to the device to which they are connected.

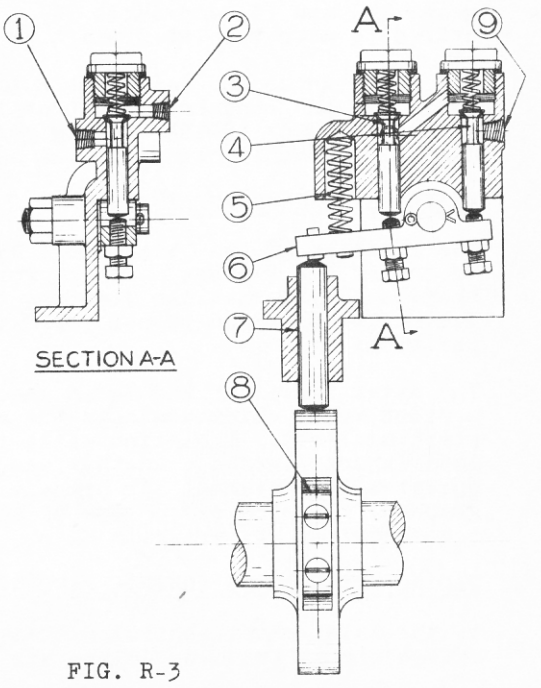

FIG. R-3

Two valves are provided, pilot valve (3) and vent valve (4). The housing is provided with three pipe tapped connections. Hole (2) is connected to the source of air supply, (1) to the device to be operated, and (9), the vent, is open to the atmosphere.

The valve as shown in Fig. R-3 is in the normal position assumed when the engine is running. Plunger (7) is then held down

against the latch shaft flange by spring (5) acting on rocker (6). The vent valve is open and the pilot valve is closed under the action of the spring. Connection (1), to which the device to be operated is connected is thus vented through the diagonal hole connecting the two valves.

When the latch shaft is rotated so that cam (8) contacts plunger (7) it raises rocker (6) closing the vent valve and opening the pilot valve, admitting air to the device to which the valve is connected. The adjusting screws in the rocker should be set to allow approximately 1/16" clearance between the ends of the screws and the ends of the valve stems when the valves are seated.

7. STARTING MECHANISM
ENGINES WITH 11½" OR SMALLER BORE

Referring to Section H the air starting valves in the cylinder heads on the smaller bore engines are actuated by rockers mounted eccentrically on the rocker shaft. Consequently turning the rocker shaft will raise or lower the air start lifter and latch. The individual rocker shafts are all interconnected by means of bell cranks and consequently turning the rocker shaft on No. 1 cylinder through an arc of approximately 110° will lower all the air start latches to a point where they contact the air start cams, throwing

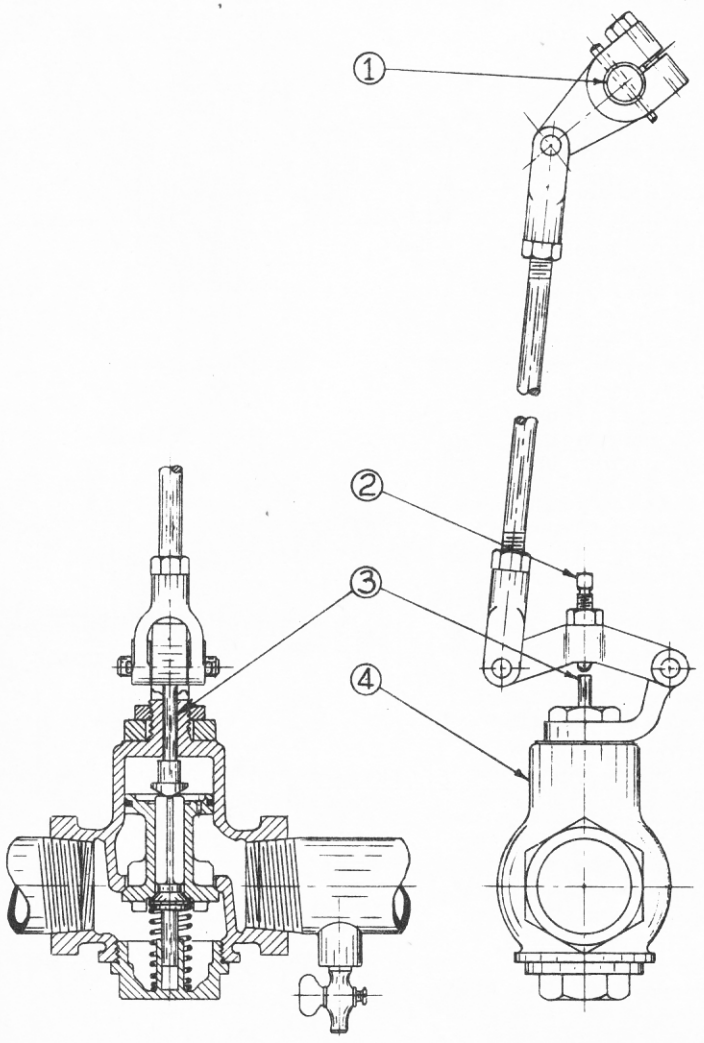

FIG. R-5

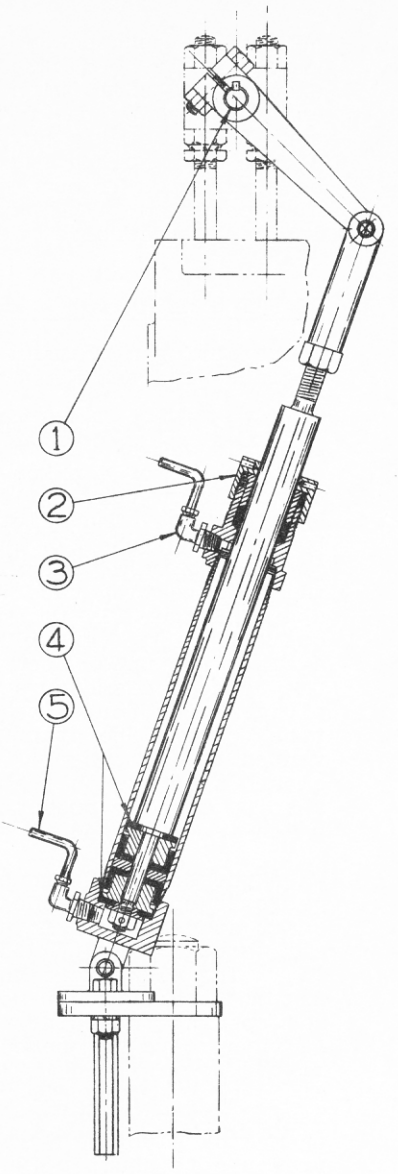

FIG. R-4

the starting air valves into operation.

The rocker shaft is shifted from one position to the other by means of a pneumatic cylinder mounted forward of cylinder No. 1 and illustrated in Fig. R-4. The pilot valve controlling this cylinder and the manner in which it is operated from the latch shaft are identical with the pilot valve, described in Paragraph 6. As shown in Fig. R-4, it is in the inoperative position, with the plunger down. Air pressure admitted above the piston through connection (3), which is permanently connected to the source of air supply normally holds it in this position. The pilot valve is piped to connection (5), and when in the RUN position vents the

lower end of the cylinder. When the latch shaft is shifted to the START position the pilot valve opens, admitting air below the piston. Since the area below the piston is considerably larger than that above the piston it is forced up, shifting rocker shaft (1) to the START position. As soon as the pilot valve closes the space below the piston is vented and the air pressure above immediately returns the piston to the RUN position.

The travel of the piston is limited by contact of thrust washers (4) with the upper and lower heads of the cylinder and the stroke is 9-5/8" for the 11½" bore engine and 7½" for engines with 10" or 10½" bore. Packing gland (2) should be kept sufficiently tight to prevent air leakage, but should not be tightened more than necessary.

The position of the rocker shaft relative to the air ram can be adjusted by means of the threaded end of the air ram piston, turning it in the clevis connecting to the rocker shaft lever. The rocker shaft position should be adjusted so that the bell cranks connecting the various rocker shafts point straight up when air ram piston is in the RUN position.

The master starting air manifold valve used on the smaller bore engines is illustrated in Fig. R-5. Valve (4) is essentially the same as that used on the 13" bore engines and described in Paragraph 5. It is mechanically operated however, by linkage connecting to the valve rocker shaft (1), this linkage replacing the pneumatic piston construction used on the 13" bore engines. When the rocker shaft shifts to the "START" position, adjusting screw (2) contacts pin (3) and opens the valve. Screw (2) should be set so that the valve is opened about ½" when the rocker shaft is in the "START" position.

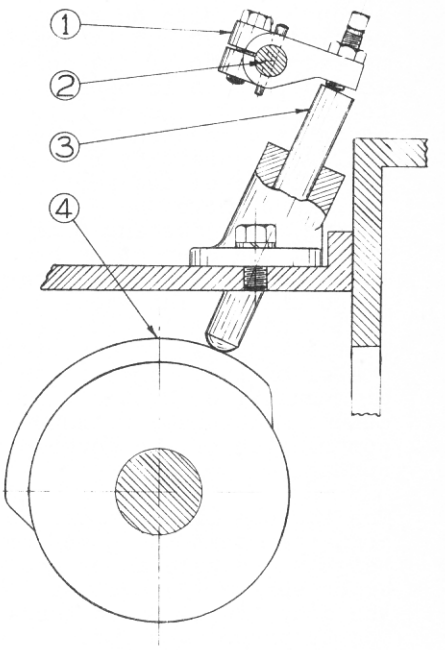

FIG. R-6

8. FUEL CUT-OUT MECHANISM

The fuel cut-out plunger is illustrated in Fig. R-6. As shown in Fig. R-6 the latch shaft is in or near the "STOP" position, with plunger (3) up on cam (4), which is mounted on one of the latch shaft webs. The upper end of the plunger has engaged the adjusting screw in lever (1), rotating the lever and the fuel wedge shaft (2) to pull out the fuel wedges and cut off fuel from the engine. The adjusting screw in lever (1) should be set to allow 1/8" clearance with the top of the plunger when the latter is down off the cam and the fuel wedges are in at the full load position.

9. FLYWHEEL BRAKE

The flywheel brake assembly is shown in Fig. R-7. Brake shoe (1) which is faced with brake lining, is carried by the horizontal arm of crank shaped lever (2). This lever is mounted on shaft (3), and carries the brake cylinder (4) in trunnions on its vertical arm. Shaft (3) is supported by bracket (5) which is bolted to the after end of the centerframe. The projecting end of the piston rod (6) bears against the compressor cylinder and therefore the piston and rod remain stationary when air is admitted to the cylinder. When the pilot valve is opened and air is admitted to the brake, the cylinder moves relative to the piston. Lever (2) is rotated about its fulcrum, applying the brake to the flywheel and stopping the engine. When the air pressure is relieved the brake shoe is withdrawn from the flywheel by spring (7), which bears against a third arm on lever (2).

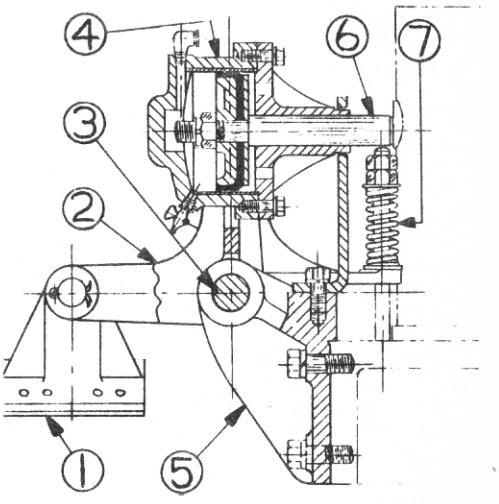

FIG. R-7

There are no adjustments necessary on the brake and the only service requirements are the replacement of the shoe lining and the piston cup leather when necessary.

10. GOVERNOR AND SPEED CONTROL

The flyball type governor, mounted near the bottom of the forward end of the latch box and driven from the camshaft gear, is shown in Fig. R-8. Cast iron bearing (20) is adjusted and doweled to the latch box to allow .004" to .005" backlash between governor gear (19) which is pressed and keyed to the governor body, and the camshaft gear. Running clearance between governor body (21) and the bearing is .0015" to .0025" and lubrication is from a catch basin (11) in the top of the bearing. Basin (11) can be filled from an oil cup in the side of the latch box.

Governor weights (18) mounted on pins in the governor body, carry rollers (14) on riveted pins. As the flyballs tend to move out due to centrifugal force the rollers exert a force against quill rod (22) acting through plate (16) and ball bearing (17). The plate, which is loosely riveted to the rod cap to maintain the assembly when dismantling, rotates with the balls while the rod and cap remain stationary. The thrust reaction is taken by ball bearing (23) and retaining collar (24), which is secured to the governor body by two taper pins. The flyball thrust from the quill rod is transmitted, by means of forked lever (25), vertical shaft (10), lever (8) and rod (5) to governor spring (3).

Lever (8) floats on the vertical shaft and is connected thereto by jaw collar (9), which is pinned to the shaft. Lever (7), which is connected to the fuel wedge shaft by rod (6), floats on the vertical shaft above the jaw collar, the jaws engaging to form the connection between the governor and the wedge shaft. This construction permits rotation of the wedge shaft and withdrawal of the wedges (either manually or by the fuel cutout mechanism) without compression of the governor spring.

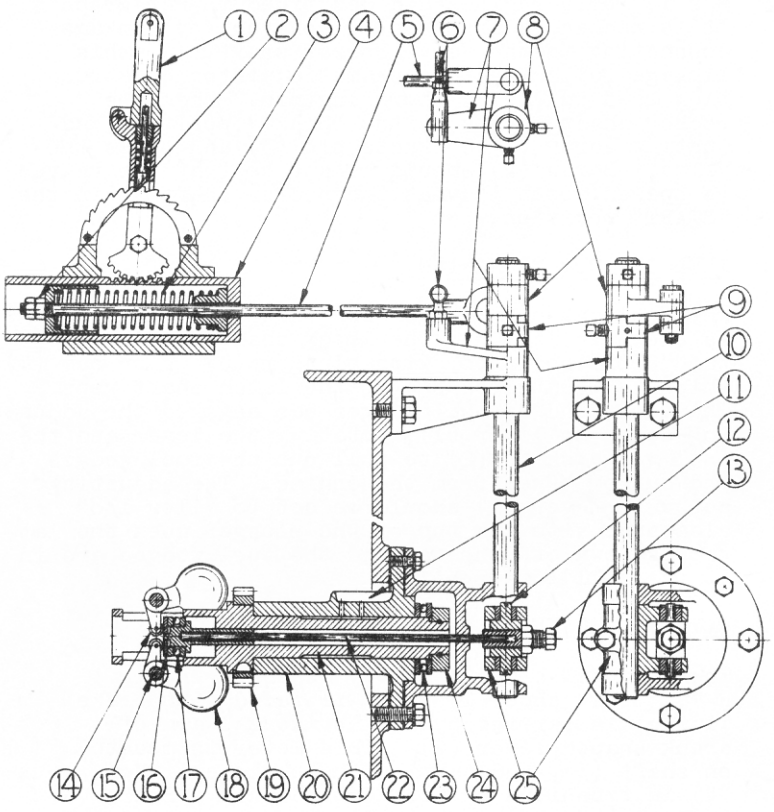

FIG. R-8

The various linkages are so connected that the governor weights are held in by governor spring (3) against the centrifugal force tending to throw them out. Through the connection to the fuel wedge shaft the wedges follow the motion of the weights, decreasing the fuel supplied to the engine as the weights move out with increase in engine speed.

The construction on 10" and 10½" bore engines differs slightly from that described above and shown in Fig. R-8 in that the quill rod (22) rotates with the governor body and flyballs. Thrust bearing (17) is moved to the outer end of the quill rod, where it is mounted in a thrust block, supported by the fork lever. A cover plate excludes dirt and supports a light spring which bears against the thrust block, holding the weights in. The adjusting screw (13) is not used in this construction.

The engine speed is controlled by varying the tension of governor spring (3). As will be seen in Fig. R-8 the "fixed" end of the governor spring is supported by spring cage (4), which follows the motion of control lever (1). Moving the lever to the right in Fig. R-8 increases the spring tension and hence the engine speed and conversely moving it to the left decreases the engine speed.

Three adjustments are provided in the governor linkage, setscrew (13) on the quill rod, threaded rod ends on rod (6) connecting to the wedge shaft, and adjusting nut (2), with its locknut, on the end of governor spring rod (5). Nut (2) controls the engine speed, and should be set to give the desired full load speed with the control handle in the last notch to the right. (NOTE: When the engine is idling

these nuts project beyond the spring cage and are accessible for adjustment.) This is the only adjustment with which the operator need normally be concerned. The others were set at the factory and should require no attention, unless parts are replaced. In such cases the rod ends on rod (6) should be set so that lever (7) is parallel with the centerline of the engine when the fuel wedge levers are vertical. Adjusting screw (3) should then be set to place the fuel wedges in the full load position when the engine is shut down, and the governor weights are fully in (See Section 0). Speed adjustment at full load should then be made as above.

11. MANEUVERING THE ENGINE

In the following the sequence of events as they take place when reversing the engine from AHEAD to ASTERN are described. Assuming that the engine is running the indicator pointer (See Fig. R-1) is in front of AHEAD and locking pin is registering with the hole in the locking disc. The handwheel is then turned in a direction to move the pointer toward "STOP" and when the wheel has been rotated approximately 90° the fuel cutout mechanism (See Paragraph 8) operates to pull out the fuel wedges and the engine begins to slow down. When the handwheel has been turned approximately one revolution from the "AHEAD" position the air brake pilot valve opens applying the brake and stopping the engine. When the indicator pointer reaches "STOP" the operator should hold the handwheel in this position until the engine has come to a full stop. Further rotation of the hand-wheel closes the air brake pilot valve and allows the fuel cutout mechanism to release the wedge shaft. After approximately $3\frac{1}{2}$ turns of the handwheel the latch shaft is in the ASTERN position and indicator pointer in front of ASTERN.

The handwheel can still be moved an additional 80 to 90° before the latch shaft comes up against its stop. This additional movement operates the pilot valve for the starting mechanism (See Paragraphs 5 and 7) and the engine begins to turn over on air. Almost immediately it begins to fire and the handwheel should then be turned back to bring the latch shaft in the ASTERN position which is reached when locking plunger (9) (See Fig. R-1) enters the hole in the locking disc. The engine will then be under governor control, its speed being determined by the setting of the speed control lever and fuel pressure regulating valve lever.

Maneuvering from full speed AHEAD to full speed ASTERN may be accomplished in approximately 10 seconds. Although not absolutely necessary it is advisable to slow the engine down to say 1/2 or 3/4 speed by means of the speed control lever before maneuvering. Maneuvering operations will also be smoother if the fuel pressure is lowered somewhat by means of the fuel pressure regulating valve. About 2500 to 3000 lbs. per square inch fuel pressure is suitable for maneuvering.

LUBRICATING OIL SYSTEM

1. The lubricating oil system consists of the day tank, two lubricating oil pumps (pressure and scavenge), the lubricating oil filter, the lubricating oil cooler and the necessary piping and manifolds to carry the oil through the system and to the bearings. In addition to the main lubricating oil system as outlined above there is also the Madison-Kipp lubricator, supplying a measured quantity of oil to each piston and cylinder liner. The normal oil flow is from the day tank to the pressure pump, then through the oil cooler to the manifold in the base supplying the main bearings. In special cases (when engines are ordered with a full flow filter) the normal oil flow is from the pressure pump through the filter and then through the oil cooler to the manifold in the base supplying the main bearings. Drilled holes in the crankshaft carry oil to the crankpin bearings and the rifle drilled connecting rods feed the piston pins. The oil from the bearings drains down to a sump in the after end of the base, from which it is sucked up by the scavenge pump and discharged back to the day tank.

   The by-pass filter (Std. equip.) is fed from the pressure pump discharge line, ahead of the oil cooler, and the discharge from this filter lubricates the rotary pump drive and the camshaft bearings adjacent to the camshaft gear and the high pressure fuel pump crank. When a full flow filter is used this line comes direct from the pressure pump discharge line to the rotary pump drive and camshaft bearings. The intermediate camshaft bearings are lubricated from catch basins in the tops of the bearings.

   A four-way cock interconnecting the piping to and from the lubricating oil cooler permits by-passing and isolating the cooler. A pressure relief valve in the line protects the pressure pump in the event that the cock is thrown to an intermediate position (and thus shut off), or against a stopping up of the oil cooler. The cock should always be thrown quickly from one position to the other, and should never be left in an intermediate position.

   The lubricating oil pressure is regulated by means of a relief valve connected in the pressure pump discharge line. This valve should be adjusted so that the pressure gage (located on the gage board) shows a reading of 35 to 40 lbs. per square inch, when the oil is hot.

   Note that low lubricating oil pressure may not necessarily be due to relief valve adjustment. It may result from one or more of the following causes. They should be investigated before attempting to correct the pressure by adjusting relief valve at the pressure pump.

   (a) Low lubricating oil level in day tank.
   (b) Restriction in suction pipe to either of the lubricating oil pumps.
   (c) Broken pressure pipe or fitting.
   (d) Crankshaft bearing failure.
   (e) Worn pump gears.
   (f) Viscosity of oil too low, excessive temperature of oil, or thinning out with fuel oil.

2. LUBRICATING OIL DAY TANK

   The cylindrical lubricating oil day tank, has a capacity of about 16 gallons on 10" bore engines and about 20 gallons on engines with larger bore. It should be mounted vertically with the bottom at least three feet above the engine room floor, and should be piped by the customer to the discharge from the lubricating oil sump pump and the suction of the pressure pump. The former connection should be 1" to 1-1/4" pipe, leading to the 1-1/4" pipe tap hole in the top of the tank, and the latter connection should be 1-1/4" to 1-1/2" pipe, and should lead to the 1-1/4" or 1-1/2" pipe tap hole 6" to 8" above the bottom of the tank. A drain valve should be connected to the bottom of the tank.

   A gage glass near the top indicates the oil level, which should be maintained between the center and top of the glass when the engine is running. Under no circumstances should it be permitted to drop below the glass. The tank should be drained and flushed out at intervals to keep the sludge in the bottom from building up to the pump suction connection. New oil should be added to the system through the filler hole in the top of the tank, which is protected by a screen.

3. LUBRICATING OIL PUMPS

   The lubricating oil pump drive is shown in Fig. T-1. The pressure pump (14) and scavenge pump (3), together with the fuel transfer pump (9) are mounted in a common housing on the after end of the control side of the engine. The lubricating oil

pumps, which are identical except for the length of the shafts and the keyways, are gear type reversible pumps, employing an internal gear, an idler and a crescent shaped baffle to maintain the direction of flow through the pump regardless of direction of rotation. When the engine reverses the crescent shifts position, following the rotation of the idler, and maintaining the direction of flow of the oil through the pump.

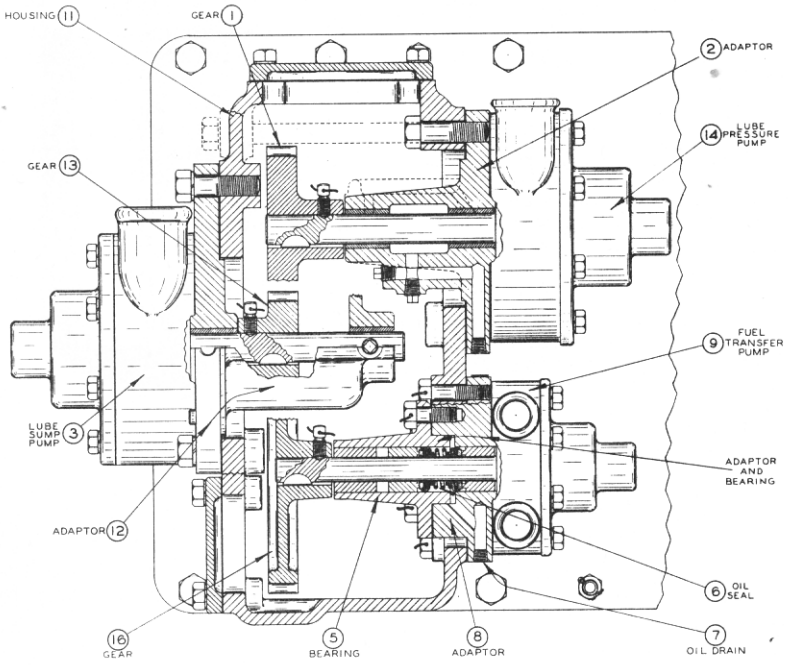

FIG. T-1

If dismantled the pump must be reassembled with the parts in the same positions, as reversing the assembly will reverse the suction and discharge ports. The correct assembly may be determined by remembering that the crescent always moves through the suction zone when reversing. There is a projection on one side of the cover which acts as a stop for the crescent, and the cover should be assembled with this projection on the suction port side of the pump. Follow these instructions in determining the flow direction of the pumps rather than the arrows stamped on the casings, as these arrows may not always be correct.

The total end play between the pump rotor and the end covers and adapters (2) and (12) should be very small, only about .001" to .003". However, some end play must be allowed so that when the engine is reversed the crescent can move in the new direction of rotation until it is up against the stop. If a pump has been disassembled, re-assemble it to adapters (2) or (12) and turn the shaft by hand in both directions of rotation. It can then be felt when the crescent hits the stops. This is important because if the crescent cannot move the oil flow will not be reversed when the engine reverses and consequently the lubricating oil pressure will drop.

The lubricating oil pumps are mounted in the housing in adapters (12) and (2) which are doweled to the housing after positioning for a gear backlash of .004" - .005". Cylindrical fits locate the pumps in the adapters so that the pumps may be replaced without disturbing the gear setting. If the adapters are ever replaced for any reason however, they must be located on the housing to properly mesh the gears, and new dowel holes drilled.

Bronze bushings in the adapters carry the pump shafts, and if replaced must be reamed to .7500" - .7505" after pressing in. Use care to keep reamed holes square with face of adapter. The bushings adjacent to the pumps are lubricated by leakage along the shaft from the pump and the outboard bushings from catch basins on the adapter castings which are filled by the lubricating oil spray nozzle which lubricates the whole assembly. The oil holes for the outboard bushings must be drilled when renewing bushings. The pinions driving the pumps are keyed to the shafts and locked with setscrews and mesh with a gear on the after end of the camshaft. The setscrew heads are drilled for locking wire, and should be well wired when reassembling. The gears are accessible through cover plates on the housing.

4. LUBRICATING OIL FILTER - (By-pass Type - Standard Equip.)

The filter is of the metal element type as shown on Fig. T-2. The elements are made up of flat metal ribbon wound around a central spool, adjacent layers being slightly separated from each other by raised ridges running across the ribbon. The successive

layers of the ribbon are spaced .003" apart and it is these spaces that form the filtering medium. The oil flows from the outside toward the center and leaves the dirt on the outside of the spool. The filter may be cleaned by turning the cleaning handles on top, which rotates a knife bearing on the edge of the windings, scraping off the dirt and allowing it to settle to the bottom of the sump tank. The filter should preferably be cleaned when the engine is not running so that the dirt may settle to the bottom, although there is no objection to cleaning with the engine running. Cleaning should be at sufficiently frequent intervals to prevent stoppage of oil flow and the sump tanks should be drained before the dirt in the bottom builds up to the level of the elements. Experience will determine the correct intervals.

FIG. T-2

5. LUBRICATING OIL FILTER - (Full Flow Type - Special Equip.)

The filter is a duplex unit of the metal element type and is very similar to the by-pass type described above, except that the filter is equipped with a switch over valve which allows either of the two units to be cut out for cleaning or servicing. For care and operation of this filter follow instructions shown above for the by-pass type.

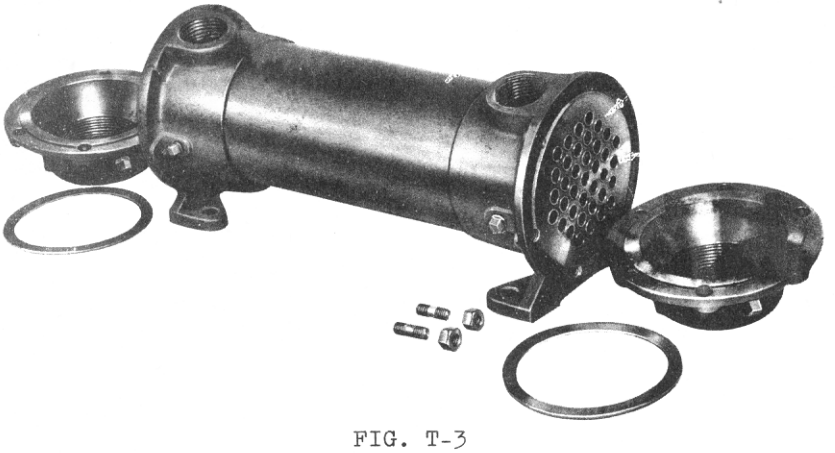

FIG. T-3

6. LUBRICATING OIL COOLER

The construction of the Ross type oil cooler is shown on Fig. T-3. The shell of the cooler is a completely closed circuit effected by brazing the tube sheets on each end to the seamless copper shell, and then mechanically rolling the tubes securely into the tube sheets at both ends. The bonnets are bolted to the shell flanges, with molded asbestos gaskets between, and can be removed for inspection and cleaning of the inside of tubes. The flow of the oil is guided by bronze baffles inside the shell to produce the most efficient heat transfer.

Zinc electrode plugs are provided in the bonnets to prevent electrolysis. They should be examined thirty days after installation and every thirty days thereafter. Any appreciable erosion within this period indicates electrolytic action, and if

present a careful inspection should be made to determine if it is due to short circuits or external grounded electric currents. Any such conditions should be corrected at once, but if no external currents are found it is evident that the erosion is due to local electrolysis, and the zincs should be replaced frequently to protect the equipment.

The cooler should be cleaned periodically. Remove the cooler from the engine, take off the bonnets and clean the inside of the tubes. Fill the jacket with suitable cleaning solution, but avoid any fluids which are corrosive to bronze or copper. Drain and blow out with compressed air carefully.

The drain plugs at the bottom of both bonnets should be removed and all water in the cooler drained out whenever the engine is allowed to stand in freezing weather.

7. LUBRICATOR AND DRIVE

The Madison-Kipp lubricator supplies a measured quantity of lubricating oil to the pistons, introduced at the center of the liner on each side. Nipples screwed into the liners and projecting through the cylinders and sealed thereto by packing glands carry the oil through the water jackets. It also feeds oil to the thrust bearing (multi-collar thrust bearings only).

The lubricator is fully described in the Madison-Kipp bulletin attached at the end of the book. Oil feeds to the pistons should be adjusted to 20-25 drops per minute when the engine is new, but this may be reduced to approximately 15 to 20 drops per minute after the pistons and rings have been well worn in. KEEP THE LUBRICATOR WELL FILLED WITH CLEAN OIL. Use the same oil that is used in the engine. Do not under any circumstances allow it to run dry as serious damage to the pistons and liners may result. This should be made a regular part of the engine room routine and should never be neglected. The lubricator is mounted on a bracket on the forward end of the engine, and is driven from an eccentric on the end of the camshaft.

WATER COOLING SYSTEM

1. Atlas Diesel Engines are furnished with either raw water or fresh water cooling systems.

   In raw water systems, the sea water is pumped directly thru the oil cooler, thru the engine and is then discharged overboard. This system uses a single pump either centrifugal or plunger type.

   Fresh water or closed cooling systems, recirculates fresh water from a storage or surge tank and requires dual water pumps, one for the fresh water and the other for the raw water which is pumped thru a heat exchanger for cooling the fresh water.

   With either of the above systems the water circuit from the oil cooler thru the engine is the same, while the arrangement or flow to the pump and cooler can vary considerably.

2. The water circuit from the oil cooler thru the engine is as follows:

   (a) The water passes thru the oil cooler, cooling the lube oil and then to the water inlet manifold which distributes the water to the lower portion of each cylinder. The water rises to the top of the cylinders and then thru brass nipples (screwed into the cylinder) up into the cylinder head. Each nipple is sealed between the cylinder and head by means of a rubber grommet. The water circulates thru the cylinder heads and out thru elbows to the exhaust manifold. The exhaust manifold is made up of several sections and the water is by-passed from each and finally discharged at the top of the forward end of the manifold. From here, the water is passed overboard (in the case of raw water cooling) or recirculated back to the pump or surge tank depending on the type of installation.

   (b) In addition to the main flow there are several minor parallel circuits as follows:

      1. Air Compressor - The water is piped directly from the main cylinder inlet manifold to the air compressor cylinder. From this cylinder it flows thru a pass-over pipe to the cylinder head and then to the aft end of the exhaust manifold.

      2. Fuel Spray Valve Cooling (Engines with 11½" or larger bore) - On engines with 11½" or larger bore there is provided a fuel spray valve cooling circuit. Nozzles, discharging cool water directly against the spray valve bosses, are screwed into the cylinder head water jackets, and greatly reduce the tendency for coke to build up on the spray valve tips. The nozzles also prevent muck and scale from accumulating in the center of the heads around the valve bosses. The nozzles are fed from a manifold extending fore and aft just below the exhaust manifold. Since these nozzles discharge into the cylinder head water jackets there is no return line for this circuit.

      3. Valve Cage Cooling (Engines with 11½" or larger bore only) - Water is piped from the main water inlet manifold up to the valve cage cooling manifold (inlet) and then by copper tubing to each valve cage. The water is then returned to an outlet manifold which discharges into the exhaust manifold water outlet connection. On certain raw water cooling installations, this water is piped overboard.

      4. Thrust Bearing - Atlas Multi-collared Type (Used only with raw water cooling systems) - The thrust bearing cooling water is piped directly from either the main water inlet manifold, or the circulating water pump discharge. The water circulates thru the lower half of the bearing and then by means of pass-over pipes to the upper half of the bearing. After circulating thru the upper portion of the bearing the water is piped overboard.

      5. On certain engines (raw water cooled) the bilge pump discharge is connected to the water inlet manifold by a three-way cock, and the engine may be temporarily run <u>at slow speed</u> on this pump if the main circulating pump is out of service. Provision should be made for connecting the suction to a sea chest if the pump is to be used in this way.

3. <u>DRAINING THE WATER</u>

   If the engine is to be allowed to stand idle in freezing weather it will be necessary to drain all water. Drain plugs will be found on the water pumps, air compressor exhaust manifold, water inlet manifold and the thrust bearing if it is the Atlas multi-collared type. If the engine is equipped with valve cages it will also

be necessary to remove the water. This can be accomplished by removing the cages, blowing the water out with air, or sucking it out with a hand suction pump.

4. PISTON TYPE CIRCULATING WATER PUMP (Engines with 13" or larger bore)

For construction of the pump refer to the Parts Catalog Plate facing the "Circulating Water Pump" group list sheet. Referring to this plate the pump piston is connected by means of a piston rod, crosshead, connecting rod and strap to an eccentric on the crankshaft. The pump body is divided into two chambers so that each side of the piston acts as a separate pump. Each chamber has a separate set of disc type, spring loaded, suction and discharge valves.

The piston rod packing nut is easily accessible and can be tightened with a pin or drift. New packing can be installed after loosening the splash guard and sliding it out of the way. A hand hole in the outer end of the pump body permits inspection and servicing of the piston. However, if much work is to be done on the pump, it is recommended that the connecting rod be unbolted from the eccentric and the whole pump assembly removed from the centerframe.

The piston assembly is made up of two piston discs, separated by a spacer and faced with cup leathers. Brass washers, approximately five on each side, are let into the leathers between the pistons and spacers, so that the clamping is through metal only, and the assembly cannot work loose due to compression of the leathers. It is important that these washers always be used on each side, and that the clamp nut be securely tightened and cotter pinned.

By removing the whole pump assembly as previously described and also the centerframe cover above the pump mounting, the crosshead and eccentric strap are made readily accessible for inspection or service. The strap which is babbitt lined, is fitted to the eccentric with a clearance of .006" - .010" on the diameter and has a side clearance of .003" - .006".

A bronze bushing is pressed into the crosshead end of the connecting rod for the wrist pin bearing. If replaced the new bushing should be reamed after pressing in to allow a clearance of .001" to .002" between the bushing and pins. The crosshead is reamed to a slightly smaller diameter, so that the clearance between crosshead and pin is .0005" to .0015".

Air chambers are provided to prevent water hammer, one on the suction and one in the discharge side of the pump. The chamber on the suction side is fitted with a ball check or snifter valve and a pet cock. When the pet cock is opened air is admitted to the chambers with each suction stroke of the pump. This valve should be opened as often as necessary to keep the chamber charged with air. Water hammer in the system indicates a lack of air in the chamber and the snifter valve should be opened. If the pet cock is left open continuously it should be opened just enough to prevent water hammer. If left wide open the pump capacity is lowered and the engine may not receive enough cooling water.

A zinc block is bolted in the bottom of the pump suction chamber to protect the various metals from electrolytic action. This block should be replaced when about 75% dissolved. New blocks can be installed after removing either the air chamber elbow or the suction line flange from the suction chamber.

5. PISTON TYPE CIRCULATING WATER PUMP (Engines with 11½" or smaller bore)

For construction of pump refer to Parts Catalog Plate facing the "Circulating Water Pump" group list sheet. The drive is by means of piston rod, crosshead and connecting rod to a crank which in the case of 10" and 10½" bore engines is mounted on the end of the camshaft. On 11½" bore engines the crank is on the end of the jackshaft which is gear driven from the crankshaft.

For the functioning of the pump, servicing of the piston rod packing, and the piston construction see paragraph 4. Crank pins and crosshead pins should slide freely in the corresponding connecting rod bushings. Allow about .0015" to .003" clearance.

6. CENTRIFUGAL PUMPS (Single or Dual)

The water pumps, driven by a roller chain from a sprocket on the crankshaft, are mounted on a housing at the end of the engine. For illustration of the pumps and drive refer to the Parts Catalog Plate facing the "Circulating Water Pump" group sheet. The pumps are driven from opposite ends of a common drive shaft, rotating on ball bearings. Either pump may be removed by unbolting the pump mounting bracket from the drive housing and breaking the shaft coupling. Both pumps are identical and are interchangeable. When replacing a pump, the half coupling on the drive shaft should be removed and replaced by the one supplied with the new pump. The

pump packing gland should be kept only sufficiently tight to prevent excessive leakage, and should never be tightened unnecessarily.

7. WATER PUMP DRIVE

The tension on the pump drive chain is adjusted by means of an idler sprocket bearing against the outside of the chain. The sprocket rotates on ball bearings which are eccentrically mounted on a fixed shaft. Referring to the Parts Catalog Plate it will be seen that the idler shaft is keyed to the idler adjusting disc which is bolted to the drive housing. To tighten the chain remove the retaining bolts and rotate the adjusting disc to move the sprocket in against the chain. Do not tighten chain excessively. With all of the slack on the top side, the chain should be loose enough to permit a vertical movement of approximately 3/4" to 1". If the eccentric does not provide sufficient adjustment to take up the slack in the chain it is probable that the chain is excessively worn and should be replaced. The ball bearings for the pump drive shaft and idler sprocket are force feed lubricated from the engine pump. They should be examined at annual inspections, and replaced if showing evidence of wear.

AIR COMPRESSOR

1. SINGLE STAGE COMPRESSOR

On 6 cyl. 9 x 12 engines a single stage compressor is used. This air compressor has a 5" bore and is of the single acting type and is located at the after end of the engine. The cast iron, jacketed cylinder is bolted to the top of the centerframe directly behind number six cylinder. The cylinder head contains the spring loaded, disc type, suction and discharge valves. The compressor output is controlled by a diaphragm type suction valve unloader. This unloader is connected to the air tanks and when the pressure in these tanks reaches a pre-determined value, usually 225 lbs. per square inch, it acts to hold the suction valve open, thus cutting out the compressed air delivery. The unloader is mounted directly over the suction valve.

The piston, which is driven from the crankshaft by a connecting rod, strap and eccentric, is fitted in the cylinder with a clearance of .004" to .005". Three 1/4" wide piston rings are used, all above the pin. The top two are compression rings and the bottom one is a ventilated oil comtrol ring. Ring side clearance is .002" to .004" and the gap clearance should be .012" for the compression rings and .009" for the oil rings.

The wrist pin has a fit .005" loose to .0005" tight in the pin bores and a clearance of .0005" to .0015" in the bearing assembly of the connecting rod. The pin is secured in the piston by a setscrew threaded into one of the pin bosses and locked by a jam nut. Shims between the foot of connecting rod and the strap allow for adjustment of the piston height. The top of the piston should be flush with the top of the cylinder when the cylinder is pulled down, and with the eccentric at top center. The strap is allowed a diametral clearance of .006" to .010" and a side clearance of .003" to .005".

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MAINTENANCE & INSPECTION

1. GENERAL RULES

Observing the following general rules will go a long way toward insuring satisfactory and trouble-free operation. Refer to preceding sections for detail instructions.

KEEP YOUR ENGINE CLEAN

Inspect the engine regularly and keep it wiped clean. If oil is left standing it quickly hardens and must be washed or scraped off. It is much easier to keep the engine clean than to get it clean, and there is always less trouble with a clean engine than with one that is covered with oil and dirt.

LEAVE WELL ENOUGH ALONE

When the engine is running satisfactorily and smoothly, do not continually try to better the operation with minor adjustments.

NEVER ALLOW YOUR ENGINE TO SMOKE

When the exhaust from an engine is smoky it clearly indicates that combustion is not perfect and that residue, in the shape of smoke, is clinging to the oily surfaces of the cylinders, pistons, piston rings, valves, etc. When this happens you are creating trouble for yourself and doing an injustice to the engine. Therefore, the first thing in consideration of the operation of a Diesel engine is: DO NOT ALLOW YOUR ENGINE TO SMOKE

KEEP A COMPLETE LOG OF ENGINE OPERATION

A complete log should always be kept of the engine operation, and back sheets should be consulted frequently and compared with present conditions. In this way gradual changes can be detected and investigated and insignificant troubles corrected before becoming real ones. Any unusual noises or other irregularities should be logged so that they will be investigated at the regular routine inspections.

INSPECTING REPAIRS

At completion of any adjustment or repair job, always make a thorough inspection to see that all parts have been correctly replaced, that bolts and nuts are tight, and that all cotter pins and locking wires are in place. If work involved rotating parts, bar engine around at least two full revolutions (so that camshaft is turned one revolution) to be sure that all parts are clear. Be sure that no tools or rags are left inside the engine.

2. SMOKY EXHAUST

Smoky exhaust indicates defective combustion which is usually due to one of the following causes:

(a) Excessive carbon on spray valve tips.

(b) Leaking spray valve.

(c) Leaky exhaust, inlet, or air starting valves.

(d) Buffer springs may be incorrectly adjusted.

(e) Fuel cam or roller may be worn.

(f) Leaky or stuck piston rings.

(g) Uneven cylinder load balance.

TURBO-CHARGER

Maintenance, inspection, general instructions and parts list are contained in a separate booklet usually placed after the parts catalog section of this book. If this booklet is not included, one will be supplied by writing the A.I.D.E. Co., Oakland or the Elliot Co. at Jeannette, Pa. When requesting a new booklet always be sure and give the Turbo-charger Serial Number and the Engine Serial Number.

If exhaust smoke is not even but occurs in the form of puffs it is likely that the combustion is defective in one or two cylinders only. Where the trouble lies can usually be determined by cutting out spray valves one at a time. When this is done however, the engine should not carry more than about 3/4 load or the remaining cylinders will be overloaded.

3. INSPECTION AND MAINTENANCE ROUTINE

The following routine for regular inspection and maintenance work is suggested as a guide for the operator, but experience with the engine over a period of time may indicate changes that should be made in the schedule.

It will be noted in the following schedules that spray valve cleaning has not been included. It is believed the spray valves should be cleaned only when necessary, rather than at definite intervals. The necessity for cleaning will be indicated by increased or uneven exhaust temperatures or smoky exhaust and at either of these indications the spray valves should be inspected and cleaned, if necessary.

In the following, work to be done under each routine should include work listed under preceding routines. For example, work under "Annual Routine" includes everything listed under all other routines.

4-HOUR ROUTINE

(a) Hand oil the following points:

1. The inlet and exhaust valve stems.
2. The rocker arms at their fulcrums and at their push rod ends.
3. Inlet and exhaust lifters, fuel wedges, lifter and buffers.
4. Wedge shaft bearings.
5. Tachometer drive.
6. Governor bearing.
7. Bilge pump connecting rod - both ends.
8. Mechanical lubricator strap.

For oiling the inlet and exhaust valve stems it is preferable to use penetrating oil. If this is not available a mixture of equal parts of engine lubricating oil and kerosene may be used. (A mixture of two-thirds engine fuel oil and one-third lubricating oil can be used in an emergency.) For all other points in above schedule use engine lubricating oil.

(b) Check the oil level in the mechanical lubricator. Fill the lubricator with clean engine oil of the grade used in the engine when necessary.

(c) Turn the handle of the lubricating oil filter.

(d) Turn the handle of the fuel oil filter.

Always turn filter handles immediately after stopping the engine.

DAILY OR 24-HOUR ROUTINE

(a) Clean out the sump tanks of the lubricating oil and fuel oil filters.

(b) Hand oil the air brake.

(c) On engines equipped with pneumatic control, hand oil the air ram and interlock and grease the control unit shaft with cup grease.

200 TO 300-HOUR ROUTINE

(a) Check intake and exhaust valve timing.

(b) Check spray valve timing. (After starting engine check cylinder load balance.) (See Section O)

(c) Clean out lubricating oil day tank if lubricating oil is dirty or dark in color.

(d) Remove crankcase doors and inspect connecting rods. Be sure that all connecting rod bolts are tight and that everything is in order. Inspect lower part of cylinder liner bore.

(e) On engines equipped with waste type filters these may or may not need repacking. The time between packings will vary with the type of lubricating oil used and with the operating conditions to which the engine is subjected. When the lubricating oil turns black rapidly following an oil change, the filter should be repacked.

SEMI-ANNUAL ROUTINE

(a) Pull cylinder heads and pistons, remove rings and clean pistons and grooves thoroughly. Check rings for side and end clearance.

(b) Examine cylinder liner walls. Watch for shoulders due to ring travel.

(c) Grind intake and exhaust valves. Check valve springs for length and tension and for defects.

(d) Recondition spray valves. Inspect stem packing and repack if necessary. Inspect stem for wear and replace if worn. Inspect and clean spray valve tips. Grind stem to tip.

(e) Inspect main and connecting rod bearings. Check clearances and inspect bearing surfaces. Adjust clearances if necessary.

(f) Inspect gear train carefully, observing backlash, indications of wear on teeth, and clearance on intermediate gear bearings.

(g) Inspect camshaft and latch shaft assemblies. Watch for worn or loose cams, loose or worn rollers or pins on the lifters. Be sure all keys and lock bolts are in place and tight.

(h) Inspect water pump and renew zinc plug if necessary.

(i) Inspect engine control parts, adjust and grind valves if necessary.

(j) Disassemble lubricating oil cooler and inspect for corrosion. Clean thoroughly before reassembling. Renew zinc plugs if necessary.

(k) Check propeller shaft coupling bolts and thrust bearing and flywheel clamp bolts.

(l) Check all hold-down bolts between engine and foundation. If they are loose check the engine alignment.

ANNUAL ROUTINE

(a) Check crankshaft and thrust shaft alignment. If shaft needs realignment it is recommended that the work be done by an experienced and careful mechanic.

(b) Examine cylinder jackets and exhaust manifold water jackets. If scale is over 1/16" thick it should be removed by scale remover solution.

(c) Remove and inspect lubricating oil and fuel oil transfer pumps. Note conditions of bearings, shafts and seals. Replace if necessary.

(d) Remove the high pressure and fuel priming pumps. Note condition of pump plungers and barrels. Disassemble crossheads and connecting rods or lifters and inspect for wear. Inspect suction and discharge valves and grind seats. Check valve lifts.

(e) Disassemble governor and inspect carefully all moving parts for wear and signs of distress. Inspect entire linkage between governor and wedge shaft for lost motion and wear. Fuel wedges, links and pins should also be inspected for wear and replaced if necessary.

(f) Inspect Mechanical Lubricator and connections to cylinder liners. Inspect ratchet mechanism for wear and proper functioning. Hand crank lubricator and observe the feed to each liner. Watch for water leaks at the nipples going through the water jackets.

(g) Clean out crankcase thoroughly. Be sure that all cleaning solution is drained out after cleaning is completed.

FOREWORD

This Parts Catalog has been compiled to serve the dual purpose of providing a means for ordering parts and to furnish illustrations to aid in the dismantling and reassembling of the various units of the engine.

This Parts Catalog is made to conform to the original construction of the engine, and the Atlas Imperial Diesel Engine Co. does not assume the responsibility or obligate itself to maintain this catalog to conform to any subsequent changes made on the engine after it leaves the factory. Complete records of all changes and service orders for each engine are maintained at the factory in an effort to always supply correct parts, but due to occasional substitution of parts in the field, of which we have no knowledge, and the fact that we have no assurance that parts furnished from the factory are installed, we cannot guarantee the furnishing of correct parts.

The right is reserved to change the construction or material of any part or parts without incurring the obligation of installing such changes on engines already delivered.

INSTRUCTIONS FOR ORDERING PARTS

Always furnish Engine Number when ordering parts or when communicating with factory or agency. This number will be found on name plate located on operating side of engine. It is VERY NECESSARY THAT THE ENGINE NUMBER BE GIVEN as it helps to insure the furnishing of correct parts and is also the means whereby the factory service records of each engine are maintained.

Always give PART NUMBER, PART NAME AND QUANTITY. If part has no Part Number then give a COMPLETE DESCRIPTION AND SIZE OF PART.

Be particular to state POST OFFICE ADDRESS, TOWN, COUNTY and STATE to which parts are to be shipped.

Specify how merchandise is to be shipped--whether by FREIGHT, EXPRESS or PARCEL POST.

Confirm all Telephone and Telegraph orders in writing.

Claims for shortages or errors must be made within five days from the receipt of goods or same will not be considered.

Broken or damaged goods should be refused, or a complete description made of damage by the carrier agent on the freight bill. If this is done, full damage can generally be collected from the transportation company.

No responsibility is assumed for delay or damage to merchandise while in transit. Our responsibility ceases upon delivery of shipment to the transportation company, from whom a receipt is received showing that shipment was in good condition when delivered to them; therefore, claims if any, should be made with the transportation company and not with the Atlas Imperial Diesel Engine Co.

Code Address: "ATGAS" - OAKLAND --- Codes: BENTLEY'S - PRIVATE

INSTRUCTIONS ON "HOW TO USE PARTS CATALOG"

In order TO LOCATE PART NUMBERS it is IMPERATIVE that the person concerned thoroughly understands the makeup of this book. He should CAREFULLY READ THE INSTRUCTIONS given on this and the following page, and thoroughly familiarize himself with the necessary steps involved. Particularly is this important when sub-assemblies are involved.

DO NOT ORDER PARTS BY REFERENCE NUMBERS as these numbers sometimes change and wrong parts might be supplied.

This catalog is made up of four basic sections, as follows:-

1. INDEX SHEET -- This sheet lists the various groups into which the engine is divided and must be used for obtaining the group sheet number. This sheet also lists any special parts used on engine.

2. GROUP LIST SHEET -- This sheet lists the parts which comprise the group, and are numbered with the prefix "L" or "2L". -- NOTE - Catalog may contain sheets which are not used - Use only those sheets listed on index.

3. PLATE (OR LINE DRAWING) -- Plates are arranged to face the group sheet to which they apply, and in most cases shows only the parts listed in the group. Occasionally a plate may include two or more groups making it necessary to always first obtain the group number from the index. If this is not done you may by chance turn to a plate showing the part wanted but will not find it listed on the group sheet facing this plate.

   NOTE:----- If no plate is found facing the group sheet, then the part wanted can be identified by the description. This will apply mainly to piping, and in this connection the actual pipe and fittings on the engine should always be measured and then ordered accordingly, due to unavoidable variations between engines.

4. SUB-ASSEMBLIES -- The term "Sub-assembly" (or the Word "Assembly" appearing in the part name) is used to indicate parts which are made up of two or more parts (or pieces) and yet must be considered as a unit part. For example, parts that are welded together, parts that have bushings pressed in, or parts that have to be machined together.

   A Sub-assembly list will be found immediately following the last group sheet, and itemizes the various parts used in ecah assembly. These assemblies are arranged in numerical sequence and always have the prefix "X", "G" or "GA" in the assembly number.

   NOTE:----- Certain parts of assemblies indicated by an "*" in place of a reference number are not sold individually, and if wanted, the complete assembly must be ordered.

   Sub-assembly lists contains assemblies used on several different engines. Use only assemblies listed on group list sheets.

REFERENCE NUMBERS ON PLATES OR ASSEMBLY DRAWINGS

SINGLE NUMBERS or the TOP NUMBER (when more than one number appears in the circle) refers directly to a corresponding number on the group list sheet.

A circle with MORE THAN ONE NUMBER indicates part in question is a component part of a sub-assembly. The top number will refer to a corresponding number on the group list sheet, and the lower number will refer to a corresponding number in the sub-assembly.

TO FIND A PART WITH TWO REFERENCE NUMBERS IN THE CIRCLE PROCEED AS FOLLOWS:- (NOTE:- Select a part on any plate and follow step by step as explained.)

1st -- Using the top number in the circle locate corresponding reference number on the group list sheet, which will be an assembly ("X" or "G" number).

2nd -- Using the Part Number ("X" or "G" No.) of the assembly locate same in the numerical assembly list at rear of book.

3rd -- Refer back to the plate and obtain the second or lower number in the reference circle, then locate this number in the reference number column of the sub-assembly, and this will be the part desired.

If there are MORE THAN TWO NUMBERS in the reference number circle, proceed exactly as outlined above, only this time the part in the first assembly located will be another sub-assembly, so therefore it will be necessary to find the second assembly, and then referring back to the plate take the third number in the reference circle and match it with the corresponding number in the second assembly.

The following page will show a typical example and illustrate the above explanation step by step.

The following illustrated example will show the procedure as explained on opposite Page, for finding parts involved in sub-assemblies.

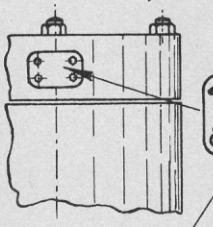
For this illustration assume that the part number for the Cylinder Head Cleanout Cover is wanted:-

We know that this cover would be listed with the "Cylinder Head" so we turn to the Index Sheet and locate the "Cylinder & Head Group" which gives us the sheet number.

PARTS CATALOG ---- INDEX — ENGINE NO. 11830
6 Cyl. 13 x 16 Marine Engine

	No. Req'd.	Group No.
BASE SECTION		
Base -- (Studs - Covers - Bearing Caps Etc.)	1	2L27
Base Oil Piping-(Main Manifold - Crank Brg.Oil Lines)	1	2L629
Crankshaft & Flywheel -- (Thrust Shaft & Bearing)	1	2L30
CYLINDER & VALVE MECHANISM SECTION		
Cylinder & Head	6	L-9776
Valve Rockers & Push-Rods	6	L-9777
Valve Lifters & Guide	6	L-6919
Piston & Connecting Rod	6	2L351

We find the sheet number for this group to be L-9776, and now we turn to this sheet and opposite we find a Plate or group drawing.



ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
* INDICATES PART NOT SERVICED INDIVIDUALLY

L-9776
PLATE NO. K-1890

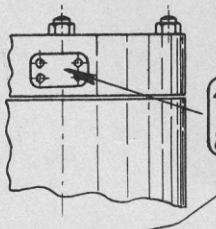
REF. NO.	*	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1		X1283	1	CYLINDER ASSEMBLY	
2		753A-FB4	4	WASHER - Cyl. to Centerframe Stud	
3			4	NUT -- 1 3/4-5-NC-Hex. - - (Steel)	
4		X2810	1	HEAD ASSEMBLY - Cylinder	
5		C-3957	1	GASKET - Head to Cylinder	
6		610A-03	8	GROMMET - Cyl. to Head Water By-Pass Pipe	
7			8	NUT -- 1 1/2-6-NC-Hex. - - (Steel)	
8		785	1	FLANGE - Cyl. Head Water Outlet Hole (Blind)	

NAME CYLINDER & HEAD GROUP
ORIGINALLY ISSUED FOR 13 x 16 MAR. - STAT.
FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR THIS GROUP GIVEN ON INDEX SHEET

PARTS LIST — ATLAS IMPERIAL DIESEL ENGINE CO. OAKLAND, CALIF. MATTOON, ILL.

L-9776

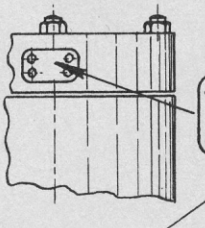
Looking at the Plate we locate the part we want and find the reference number to be 4-1-8. We now take the top number "4" and match this with the reference number "4" on the group list sheet. We find this to be X2810 Head Assembly, so that this assembly must next be found in the sub-assembly list at rear of book.



SUB-ASSEMBLY LIST

REF. NO.	PART NO.	NO. REQD.	NAME
	X2810		HEAD ASSEM. - CYLINDER -- Includes
1	X2818	1	HEAD ASSEM.
2	X2811	1	VALVE & CAGE ASSEM.
3	X2812	1	VALVE & CAGE ASSEM.
4	C-2155L5	2	RING - Piston

After finding assembly X2810 in sub-assembly list, we now take the second of the reference numbers in the oval which is "1" and match this with the corresponding number of the sub-assembly. We find this to be X2818 Head Assembly so we now have to proceed to this assembly.



SUB-ASSEMBLY LIST

REF. NO.	PART NO.	NO. REQD.	NAME
	X2818		HEAD ASSEM. - CYLINDER -- Includes
*		1	HEAD CYLINDER
*		6	PIPE PLUG -- 1 1/4 Std.
1	C-5520L5	4	STUD - In. & Exh. Cage
2	S-3060	2	STUD - Air Valve Cage
7	C-447	2	NOZZLE - Cooling
8	C-8214	2	COVER - Cleanout (Blind)

After this assembly X2818 is found we now take the bottom reference number in the oval which is "8" and match this with the corresponding reference number in X2818. We now have the unit part which we want.

PARTS CATALOG

ATLAS IMPERIAL DIESEL ENGINE CO.

INDEX

CATALOG APPLIES ONLY TO ENGINES INDICATED →

ENG NO. 12966

ENG. SIZE 9 x 12 NO. CYL. 6 TYPE Marine TO INCL.

SPEC. NO. 1576-2

ES NO. 285

DATE TYPED 12-19-49

ISSUE NO. 1

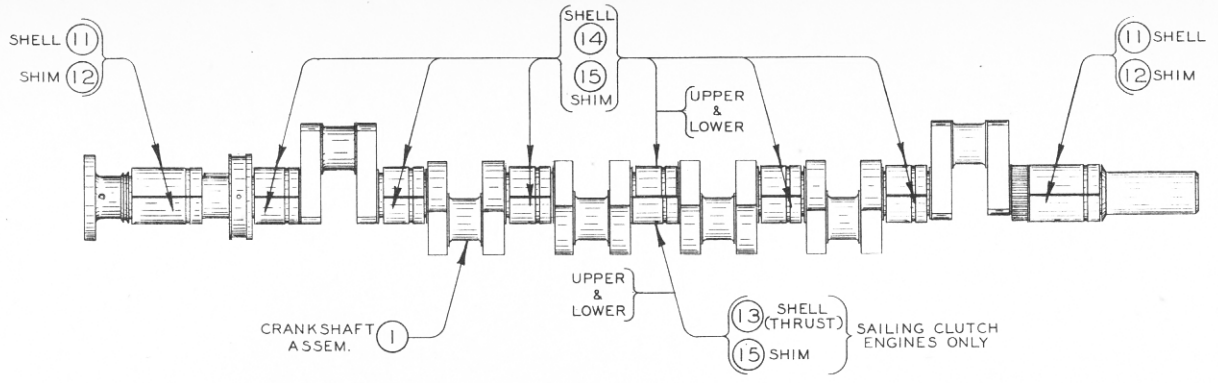
INSTR. 31 (M)

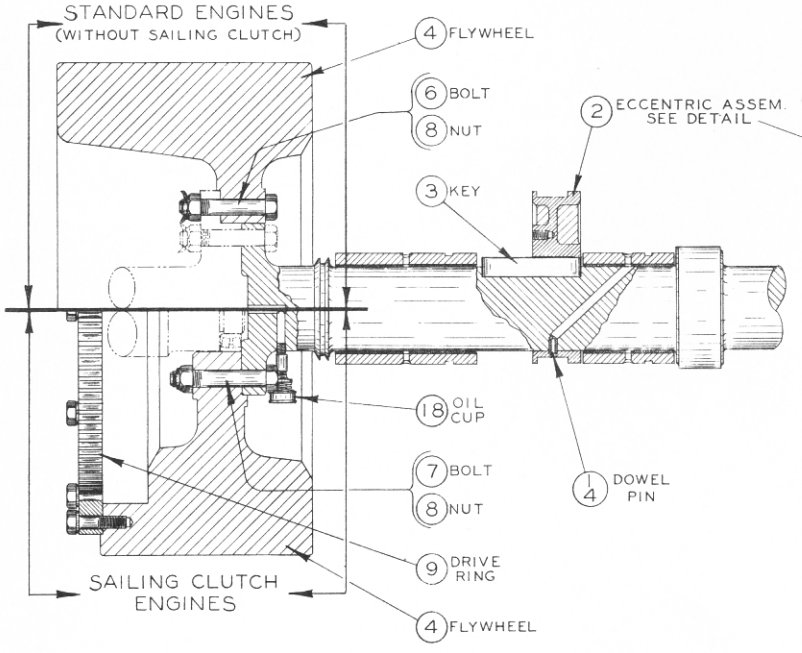
GROUP NAME	NO. USED	GROUP SHEET NUMBER
Base -- (Studs - Covers - Bearing Caps Etc.)	1	2L1452
Base Oil Piping - (Main Manifold - Crank Brg. Oil Lines)	1	2L1454
Crankshaft & Flywheel	1	2L120
Thrust Bearing (& Shaft)	1	2L2409
Flywheel Air Brake	1	L-8496
Centerframe & Covers - (Covers - Studs - Breather)	1	2L1457
Intermediate Gear	1	L-8504
Camshaft -- (Bearing - Fuel Pump Crank - Gears)	1	2L1459
Cams	6	2L2412
Latches & Shaft	1	2L736
Latch Shaft Control -- (Control Wheel - Telltale)	1	L-7099
Cylinder & Head	6	L-9889
Valve Rockers & Push-Rods	1	2L738
Valve Lifters & Guides	6	L-6919
Piston & Connecting Rod	6	L-8884
Fuel Spray Valve	6	L-9483
Spray Valve Tip.... ---- Part No. 5843 ----	6	
Inlet & Exhaust Manifolds	1	2L740
Air Starting Manifold	1	2L1461
Air Starting Cylinder	1	L-6950
Water Inlet & Outlet Manifolds	1	2L1462
Priming & High Pressure Fuel Pumps	1	2L1161
Fuel Transfer Pump	1	2L1466
Lube Oil Pumps - (Sump - Pressure - Housing & Covers)	1	2L1921
Circulating Water Pump	1	2L1467
Bilge Pump	1	L-9434
Governor & Control	1	2L746
Fuel Wedge Shaft -- (& Linkage to Governor)	1	2L748
Fuel Wedge Shaft Spring	1	L-8205
Fuel System -- (Rail - Accumulator --Filter Etc.)	1	2L1470
Cylinder & Head - Air Compressor	1	2L1469
Piston - Connecting Rod - Eccentric Strap	1	2L743
Lubricator -- (Lubricator - Drive - Piping)	1	2L1978
Lube Oil Pressure Piping	1	2L1474
Water Piping	1	2L1475
Cooler - Lube Oil	1	2L1473
Air Piping	1	L-9872
Gage Board	1	2L1602

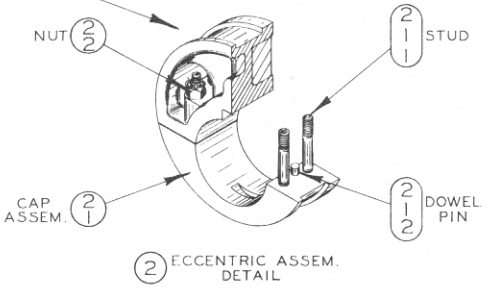
FORM 322 REV 500 PRINTED IN U.S.A.

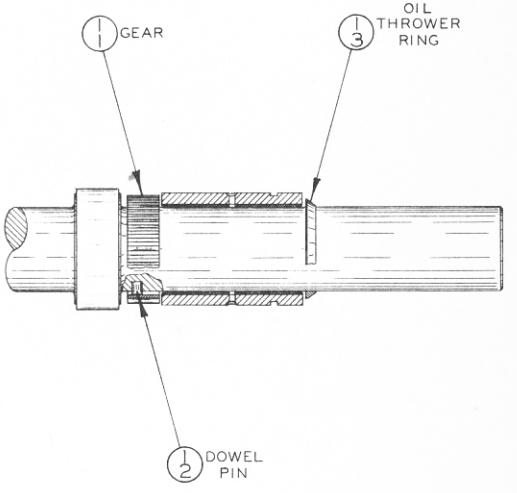
PLATE No. K-2711

DO NOT ORDER PARTS BY REFER. NUMBERS









EXTRA COPIES TO

TYPED BY ABW DATE 11-4-49 CHKD. ISSUED BY abw DATE 11-4-49

#1 Revised & Retyped from 12-29-39

CHANGES

CHANGES

2L120

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE

PLATE No. K-2711

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1		1	X2086	1	CRANKSHAFT ASSEMBLY	
2	F-4354	2	X1247	1	ECCENTRIC ASSEM. - Air Compressor	
3	C-7320	3	C-7320L6 3/8	1	KEY - Eccentric to Crankshaft	
4		4	W-1554	1	FLYWHEEL	
5	C-2616	6	C-2616L5 1/4	6	BOLT - Flywheel to Thrust Shaft	
6		8		6	CASTLE NUT -- 1-14-NF-Hex. - - (St.)	
7				6	COTTER PIN -- 1/8 x 1 3/4 Lg. - - (St.)	
8						
9	F-5282	11	644-E32	4	SHELL - Crankshaft Bearing - (End)	
10	C-8506	12	719A-E32-A	4	SHIM - Crank. End Brg. - (1/16)	
11	C-8506	12	719A-E32-B	8	SHIM - Crank. End Brg. - (1/32)	
12	C-8506	12	719A-E32-D	20	SHIM - Crank. End Brg. - (.010)	
13	C-8506	12	719A-E32-E	16	SHIM - Crank. End Brg. - (.003)	
14						
15	C-597	14	646-E32	12	SHELL - Crankshaft Bearing	
16	C-8505	15	720A-E32-A	12	SHIM - Crank. Bearing - (1/16)	
17	C-8505	15	720A-E32-B	24	SHIM - Crank. Bearing - (1/32)	
18	C-8505	15	720A-E32-D	60	SHIM - Crank. Bearing - (.010)	
19	C-8505	15	720A-E32-E	48	SHIM - Crank. Bearing - (.003)	
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FOR OPP. HAND SEE

FOR OPP. ROT. SEE

NAME CRANKSHAFT & FLYWHEEL GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MAR. (FLY. AFT)

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY No. REQ'D FOR GROUP GIVEN ON INDEX SHEET

FORM 240 REV. 12-48 1M TRANS. PRINTED IN U.S.A.

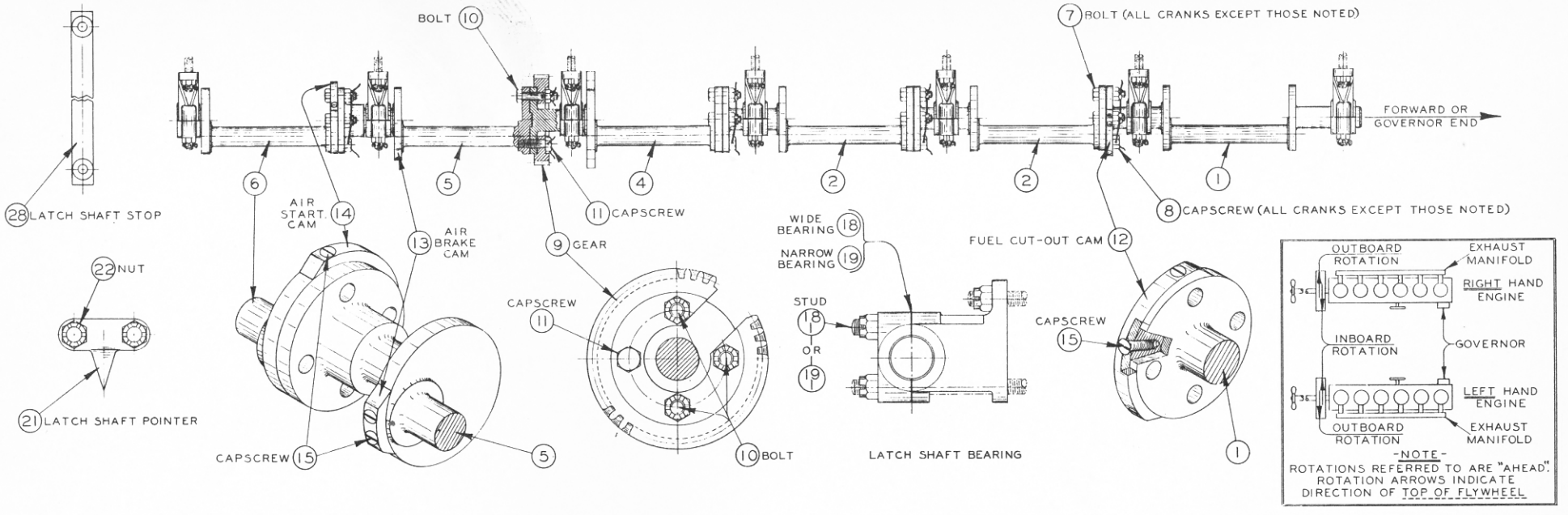
PARTS LIST

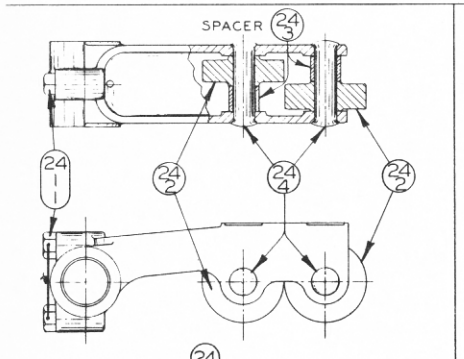
ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

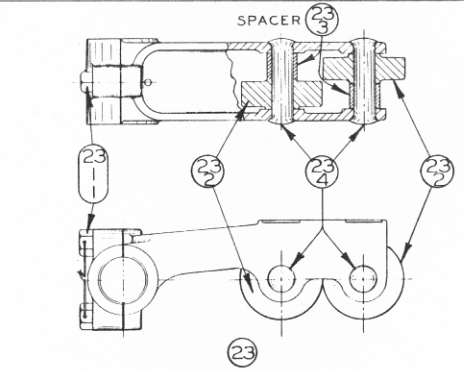
2L120

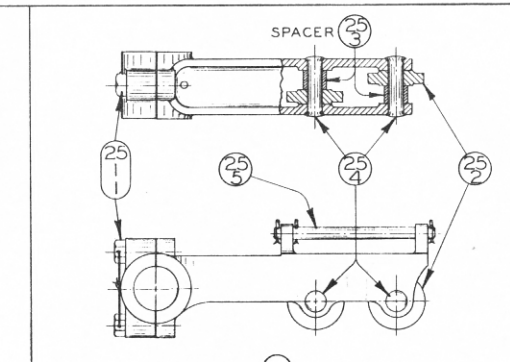
PLATE No. 3A1970

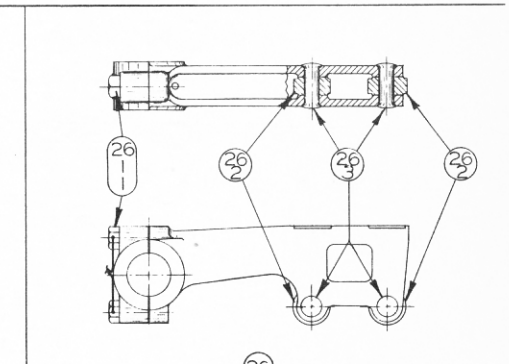
DO NOT ORDER PARTS BY REFER. NUMBERS.











INBOARD ROTATION–EXHAUST
OUTBOARD ROTATION–INLET

INBOARD ROTATION–INLET
OUTBOARD ROTATION–EXHAUST

EXTRA COPIES TO

TYPED BY MED DATE 10-30-41 ISSUED BY [illegible] DATE 11-5-41 CHKD. [illegible] APRVD.

CHANGES

#1 2/7/49 Added C-9205 and Capscrews

#2 11-9-49 Revised

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
* INDICATES PART NOT SERVICED INDIVIDUALLY

2L736

PLATE NO. 3A1970

K-1016

LINE NO.	DRWG. NO.	REF. NO.	*	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1		1		F-1059	1	CRANK - Latch Shaft (Cyl. #1 - Fwd.)	
2		2		F-4218	2	CRANK - Latch Shaft (Cyl. #2-3)	
3		4		F-4251	1	CRANK - Latch Shaft (Cyl. #4)	
4		5		F-4252	1	CRANK - Latch Shaft (Cyl. #5)	
5		6		F-1060	1	CRANK - Latch Shaft (Cyl. #6)	
6	C-9965	7		C-9965L2 1/8	12	BOLT - Latch Shaft Crank to Crank	
7					12	CASTLE NUT -- 5/8-18-NF-Hex. -- (St.)	
8	C-2410	8		C-2410L1 1/4	4	CAPSCREW - Latch Shaft Crank to Crank	
9					4	WIRE -- #16 Ga. x 16 Lg. - (St.)	
10		9		S-1893	1	GEAR - Latch Shaft	
11	C-9965	10		C-9965L2 3/4	3	BOLT - Latch Shaft Gear & Crank to Crank	
12					3	CASTLE NUT -- 5/8-18-NF-Hex. -- (St.)	
13	C-2410	11		C-2410L2	1	CAPSCREW - Gear & Latch Shaft Crank to Crank	
14					1	WIRE -- #16 Ga. x 16 Lg. - (St.)	
15		12		S-1887	1	CAM - Fuel Cut-out	
16		13		S-1894	1	CAM - Air Brake	
17		14		S-2421	1	CAM - Air Starting	
18		15			7	CAPSCREW -- 3/8-16-NC x 1 Lg.-Flat Hd.-(St.)	
19							
20							
21	F-3698	18		X376	5	BEARING ASSEM. - Latch Shaft - (Wide)	
22	F-3699	19		X377	2	BEARING ASSEM. - Latch Shaft - (Narrow)	
23					12	CASTLE NUT -- 5/8-18-NF-Hex. -- (St.)	
24					12	COTTER PIN -- 1/8 x 1 1/4 Lg. - (St.)	
25		21		2C1891	1	POINTER - Latch Shaft	
26		22		C-9321	2	NUT - Latch Shaft Brg. Cap (& Pointer)	
27					2	COTTER PIN -- 1/8 x 1 1/4 Lg. - - (St.)	
28	F-3125	23		X56	6	LATCH ASSEM. - Inlet	
29	F-3126	24		X57	6	LATCH ASSEM. - Exhaust	
30	F-3327	25		X323	6	LATCH ASSEM. - Air Starting	
31	F-3329	26		X327	6	LATCH ASSEM. - Fuel Spray Valve	
32					24	WIRE -- #16 Ga. x 8 Lg. - (St.)	
33							
34		28		C-9205	1	STOP-Latch Shaft	
35					2	CAPSCREW -- 3/8-16-NC x 1 Lg. - Flat Hd.-(St.)	
36							
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2L736

FOR OPP. HAND SEE 2L737

FOR OPP. ROT. SEE

NAME LATCH SHAFT GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MARINE - R.H.

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR THIS GROUP GIVEN ON INDEX SHEET

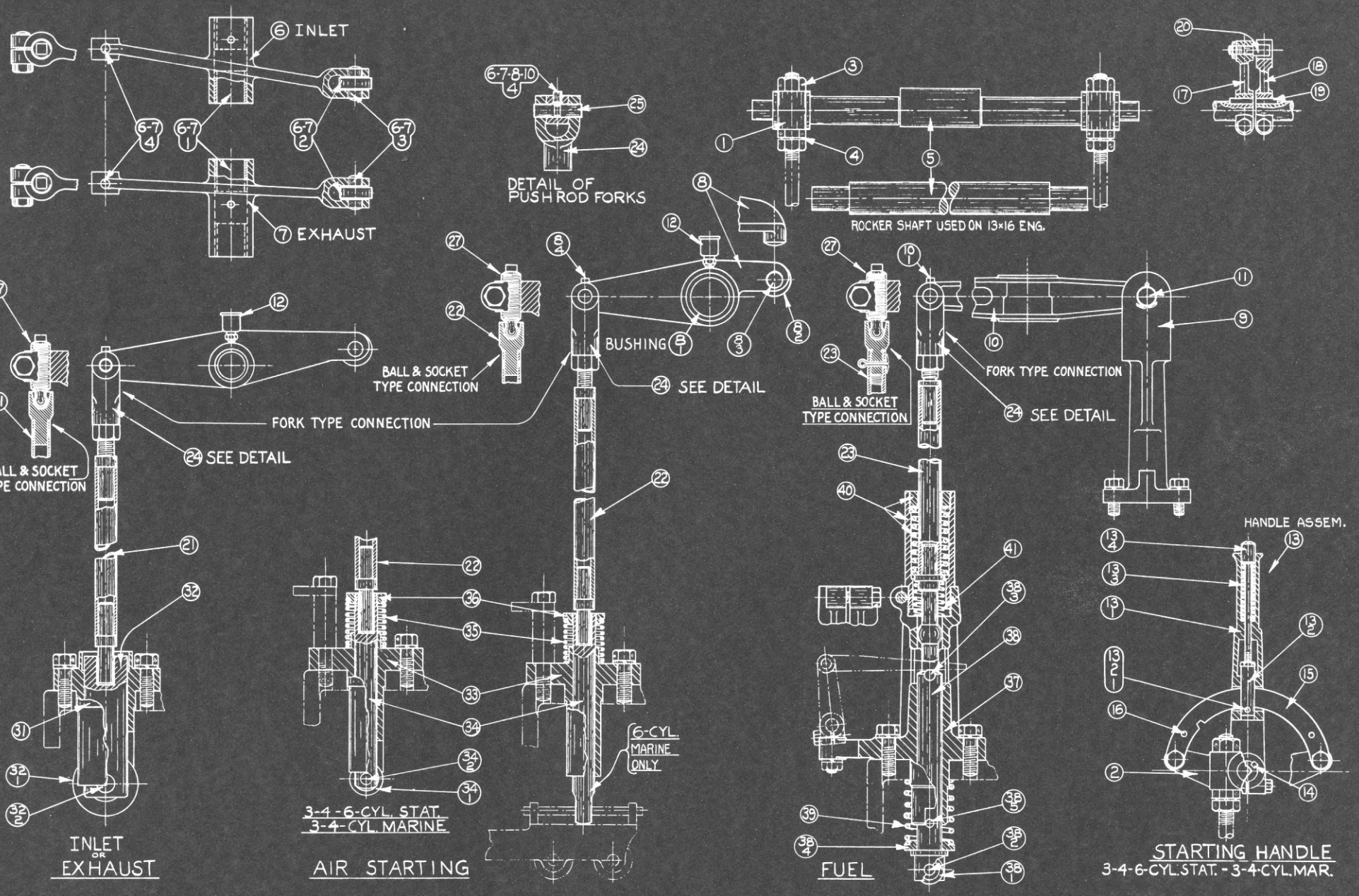
PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

FORM NO. 240 10-39

PLATE No. K-1926 (ED. 2)

DO NOT ORDER PARTS BY REF. NUMBERS



EXTRA COPIES TO

TYPED BY MED DATE 10-30-41 ISSUED BY MR DATE 11-5-41 CHKD. MR APRVD. S

CHANGES

#1 1-7-42 Line 8 Was Lunkenheimer #540
#2 11-10-49 Revised for catalog purposes

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
* INDICATES PART NOT SERVICED INDIVIDUALLY

2L738

PLATE NO. K-1926

LINE NO.	DRWG. NO.	REF. NO.	*	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1	S-2846	1		38-R8	12	BEARING - Valve Rocker Shaft	
2		3			24	NUT -- 5/8-11-NC-Hex. - - (St.)	
3		4			24	LOCKNUT -- Drake - 5/8-11-NC-Hex. - (St.)	
4	F-5480	5		565-E1	6	SHAFT - Valve Rocker	
5	F-5474	6		G520-E32	6	ROCKER ASSEM. - Inlet Valve	
6	F-5476	7		G550-E32	6	ROCKER ASSEM. - Exhaust Valve	
7	F-5478	8		G590-E32	6	ROCKER ASSEM. - Air Start. Valve	
8							
9							
10	F-3089	9		872-E1	6	STAND - Fuel Spray Valve Rocker	
11					12	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg. - (St.)	
12					12	LOCKWASHER -- 1/2 SAE Reg. - - (St.)	
13		10		X1306	6	ROCKER ASSEM. - Fuel Spray Valve	
14	S-2448	11		873-H	6	PIN - Spray Valve Rocker to Stand	
15					12	COTTER PIN -- 3/32 x 1 1/2 Lg. - (St.)	
16		12			18	OIL CUP--Bowen No. 5 -- Hinged Lid-1/8 P.T.(St.)	
17	C-832	17		564A-E	5	CRANK - Rocker Shaft Connecting (Male)	
18	S-1415	18		564-E	5	CRANK - Rocker Shaft Connecting (Female)	
19	S-3137	19		5123	10	KEY - Crank to Rocker Shaft	
20					10	CAPSCREW -- 3/8-16-NC x 1 3/4 Lg. - (St.)	
21	S-2688	20		564B-E	5	PIN - Rocker Shaft Connect. Crank Drive	
22					5	HALF NUT -- 3/8-16-NC-Hex. - - (St.)	
23							
24	C-1068	21		525-E6	12	PUSH-ROD - Inlet & Exhaust Valve	
25	C-1067	22		593-E6	6	PUSH-ROD - Air Starting Valve	
26	F-4270	23		X1086	6	PUSH-ROD ASSEM. - Fuel Spray Valve	
27	C-281	24		526-R	24	FORK - Push-Rod to Valve Rocker Connecting	
28					24	NUT -- 3/4-16-NF-Hex. - - (St.)	
29	S-748	25		527-E1	24	PIN - Fork to Valve Rocker	
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---- PARTS CATALOG NOTE ----

Inlet, Exhaust & Air Starting Push-Rods are solid in place of Tubular as shown on Plate K-1926

2L738

FOR OPP. HAND SEE 2L739

FOR OPP. ROT. SEE

NAME VALVE ROCKER & PUSH-ROD GROUP

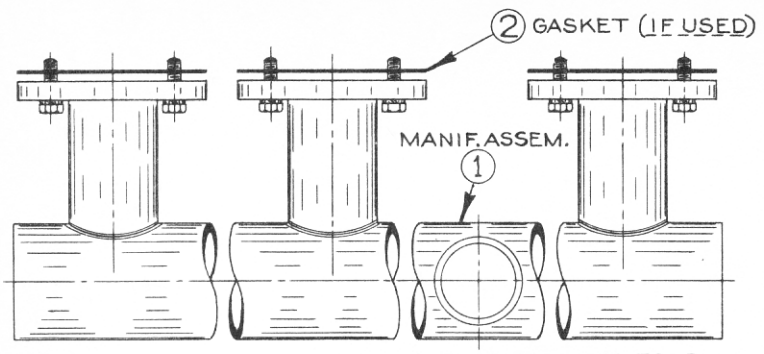
ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MARINE - R.H.

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR THIS GROUP GIVEN ON INDEX SHEET

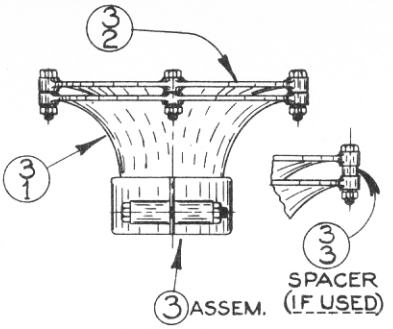
PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

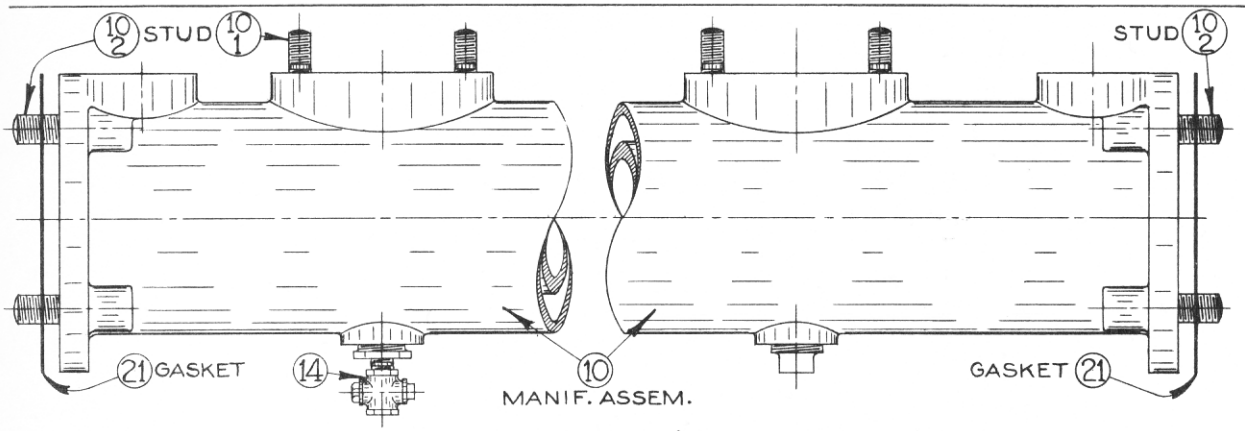
FORM NO. 240 10-39



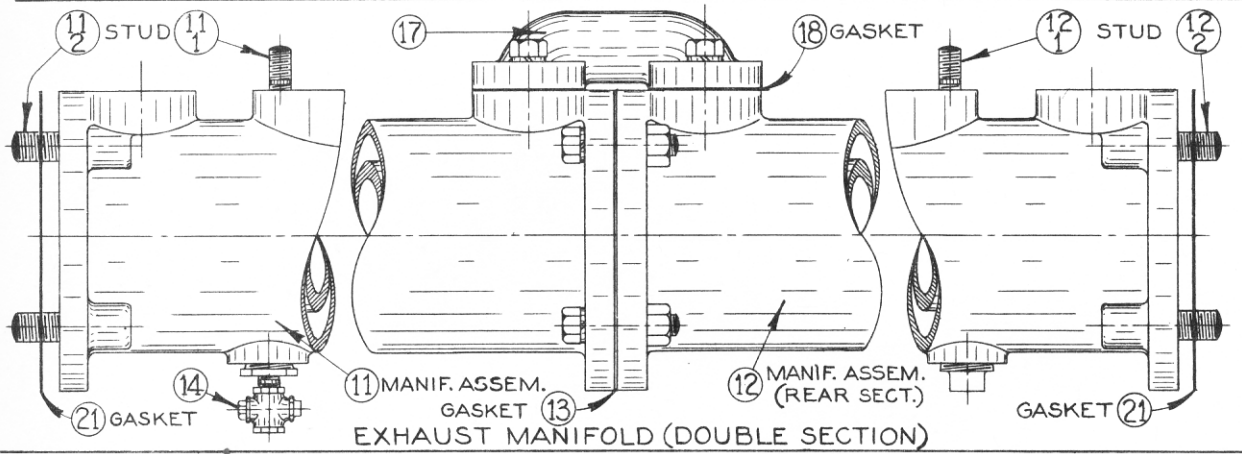
AIR INLET MANIFOLD



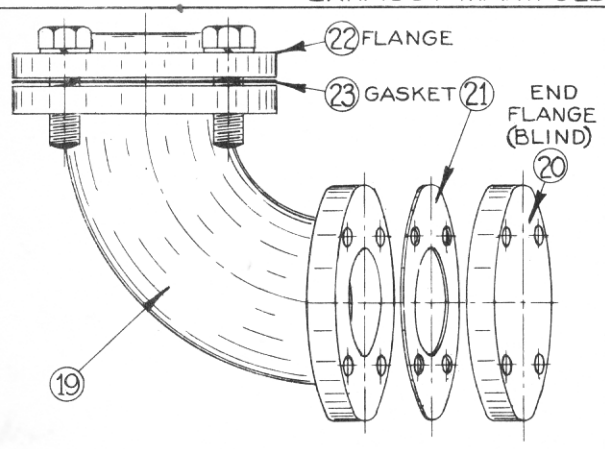
AIR SUCTION SILENCER



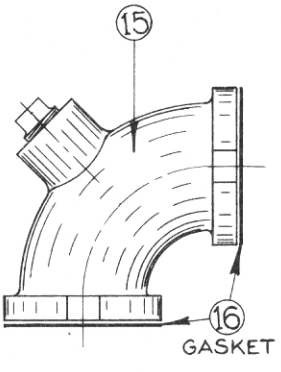
EXHAUST MANIFOLD (SINGLE SECTION)



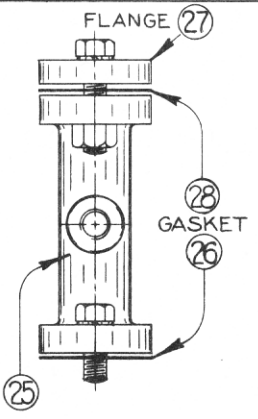
EXHAUST MANIFOLD (DOUBLE SECTION)



MANIF. END ELBOW & BLIND FLANGE



ELBOW CYL. HEAD TO MANIFOLD



EXH. MANIF. WATER OUTLET PIPE

PLATE No.
W-2123

DO NOT ORDER PARTS BY REF. NUMBERS

EXTRA COPIES TO

TYPED BY MED DATE 10-31-41 ISSUED BY [illegible] DATE 11-5-41 CHKD [illegible] APRVD [illegible]

CHANGES

#1 8-28-45 Added Lines 33 to 41 Incl.
#2 11-10-49 Revised for catalog purposes

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
* INDICATES PART NOT SERVICED INDIVIDUALLY

PLATE NO. 2L740 W-2123

LINE NO.	DRWG. NO.	REF. NO.	*	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1	F-2446	1		X3363	1	MANIFOLD ASSEM. - Air Inlet	
2					12	CAPSCREW --1/2-13-NC x 1 1/4 Lg. - (St.)	
3					12	LOCKWASHER -- 1/2 SAE Reg. - - (St.)	
4		3		X368	1	SILENCER ASSEM. - Air Suction	
5							
6							
7		11 12		X1429	2	MANIFOLD ASSEM. - Exhaust	
8		13		C-6144	1	GASKET - Manifold to Manifold	
9					4	CAPSCREW -- 5/8-11-NC x 2 1/2 Lg. - (St.)	
10					4	NUT -- 5/8-11-NC-Hex. - - (St.)	
11					2	REDUCING BUSHING -- 1 1/4 x 1/2 Std.-(C.I.)	
12					2	CLOSE NIPPLE -- 1/2 Std. - (Brass)	
13	C-9053	14		C-9053-P 1/2	2	COCK - Manifold Drain	
14	C-630	15		398-R6	6	ELBOW - Cyl. Head to Manifold Exhaust	
15					6	PIPE PLUG -- 1/2 Std. - - (C.I.)	
16		16		S-3287	12	GASKET - Elbow to Man. & Cyl. Head	
17					24	NUT -- 5/8-11-NC-Hex. - - (St.)	
18	F-2819	17		792-BX6	1	PIPE - Water By-Pass	
19		18		S-2334	2	GASKET - Pipe to Manifold	
20					4	CAPSCREW -- 1/2-13-NC x 1 3/4 Lg. - (St.)	
21					4	LOCKWASHER -- 1/2 SAE Reg. - - (St.)	
22	F-2975	19		398-R10	1	ELBOW - Exhaust Outlet	
23					1	PIPE PLUG -- 1/2 Std. - - (C.I.)	
24	C-4023	20		763-C3	1	FLANGE - Manifold End (Blind)	
25		21		C-836	2	GASKET - Flange & Elbow to Manifold	
26					8	NUT -- 5/8-11-NC-Hex. - - (St.)	
27		22		C-1381	1	FLANGE - Exhaust Outlet Pipe	
28		23		C-836	1	GASKET - Flange to Elbow	
29					4	CAPSCREW -- 5/8-11-NC x 2 1/2 Lg. - (St.)	
30					4	NUT -- 5/8-11-NC-Hex. - - (St.)	
31							
32							
33	C-7946	25		791-C	1	PIPE - Exhaust Man. Water Outlet	
34		26		S-1042	1	GASKET - Pipe to Manifold	
35					2	CAPSCREW -- 1/2-13-NC x 1 1/2 Lg. - - (St.)	
36					2	LOCKWASHER -- 1/2 SAE Reg. - - (St.)	
37	C-5351	27		786-B	1	FLANGE - Exhaust Man. Water Outlet Pipe	
38		28		S-1042	1	GASKET - Flange to Pipe	
39					2	CAPSCREW -- 1/2-13-NC x 2 1/4 Lg. - - (St.)	
40					2	NUT -- 1/2-13-NC-Hex. - - (St.)	
41					2	LOCKWASHER -- 1/2 SAE Reg. - - (St.)	
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FOR OPP. HAND SEE

FOR OPP. ROT. SEE

NAME INLET & EXHAUST MANIFOLD GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MARINE

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR THIS GROUP GIVEN ON INDEX SHEET

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

FORM NO. 240 10-39

2L740

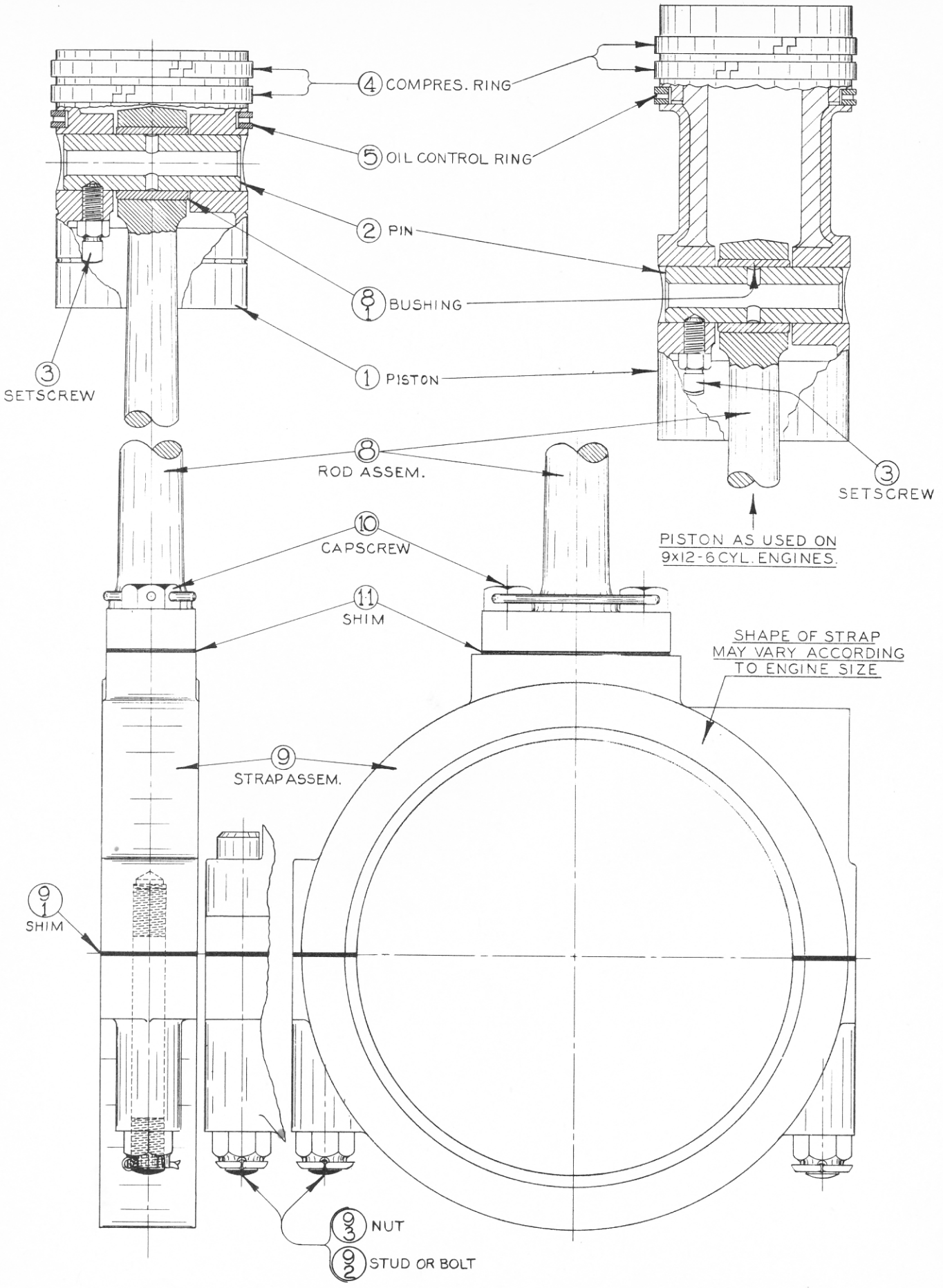

PLATE No.
W-2107 (ED. 2) DO NOT ORDER PARTS BY REF. NUMBERS

EXTRA COPIES TO

TYPED BY MED DATE 10-31-41 ISSUED BY [illegible] DATE 11-5-41 CHKD. [illegible] APRVD. [illegible]

CHANGES #1 11-11-49 Revised for catalog purposes

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
* INDICATES PART NOT SERVICED INDIVIDUALLY

2L743

PLATE NO. W-2107 (Ed 2)

LINE NO.	DRWG. NO.	REF. NO.	*	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1	F-3094	1		3634	1	PISTON	
2		2		C-1351	1	PIN - Piston	
3		3			1	SETSCREW--1/2-13-NC x 1 Lg.-Sq.Hd.-Cup Pt.(St.)	
4					1	HALF NUT -- 1/2-13-NC-Hex. - - (St.)	
5	C-2153	4		C-2153L5	2	RING - Piston - (Compression)	
6	C-2453	5		C-2453L5	1	RING - Piston - (Ventilated)	
7							
8		8		X1252	1	ROD ASSEM. - Air Comp. Connecting	
9	F-4353	9		X1248	1	STRAP ASSEM. - Compressor Eccentric	
10	C-2412	10		C-2412L1 5/8	2	CAPSCREW - Conn. Rod to Strap	
11					1	WIRE -- #16 Ga. x 9 Lg. - (St.)	
12	C-4432	11		C-4432-B	3	SHIM - Conn. Rod to Eccent. Strap - (1/32)	
13	C-4432	11		C-4432-D	3	SHIM - Conn. Rod to Eccent. Strap - (.010)	
14							
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FOR OPP. HAND SEE

FOR OPP. ROT. SEE

NAME PISTON, ROD & ECCENTRIC STRAP GROUP - - - (5" AIR COMP.)

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MARINE

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR THIS GROUP GIVEN ON INDEX SHEET

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

FORM NO. 240 10-39

2L743

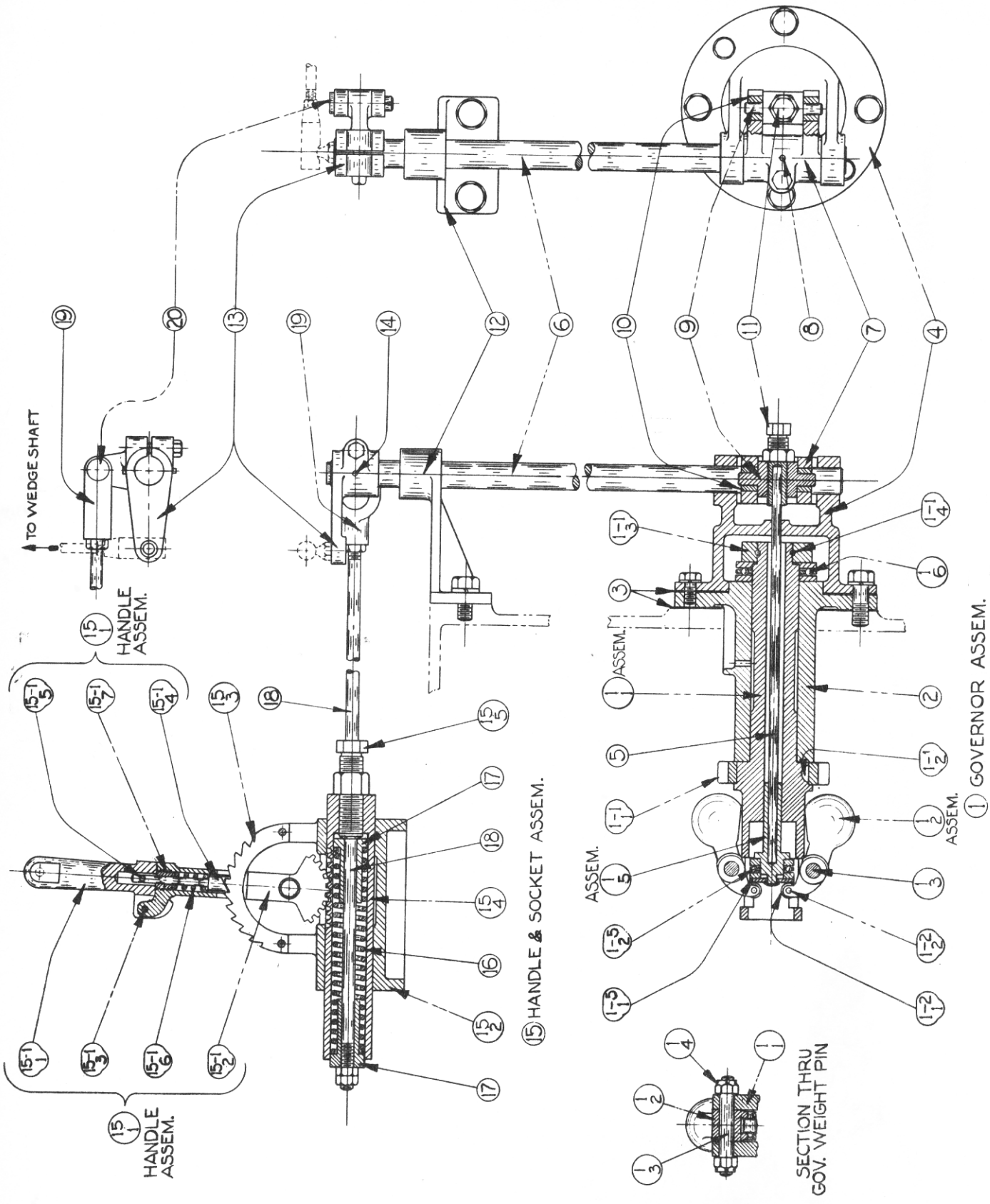

PLATE
No. W-1720

DO NOT ORDER PARTS BY REF. NUMBER

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CHANGES

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
* INDICATES PART NOT SERVICED INDIVIDUALLY

2L746

PLATE NO. W-1720

LINE NO.	DRWG. NO.	REF. NO.	*	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1		1		X487	1	GOVERNOR ASSEMBLY	
2	F-6577	2		1112-E6	1	BEARING - Governor	
3		3		C-73	2	GASKET - Gov. & Vertical Shaft Bearing	
4	W-1873	4		1123-E6	1	BEARING - Vertical Shaft	
5					4	CAPSCREW -- 1/2-13-NC x 1 1/2 Lg. - (St.)	
6					4	LOCKWASHER -- 1/2 SAE Reg. - - (St.)	
7					2	CAPSCREW -- 3/8-16-NC x 7/8 Lg. - (St.)	
8					2	LOCKWASHER -- 3/8 SAE Reg. - - (St.)	
9	F-3748	5		1109-E6	1	ROD - Governor Thrust Quill	
10	C-9217	6		C-9217L16 1/4	1	SHAFT - Governor Vertical	
11	2C2464	7		1128-E6	1	FORK - Vertical Shaft	
12					1	CAPSCREW -- 3/8-16-NC x 1 1/2 Lg. - (St.)	
13		8			1	TAPER PIN -- #2 x 2 Lg. - (St.)	
14	2C2462	9		1115-C	1	BLOCK - Thrust Quill Rod Adjusting Screw	
15		10		C-75	2	BLOCK - Vertical Shaft Fork	
16	2C2463	11		1121-C	1	SCREW - Thrust Quill Rod Adjusting	
17					1	HALF NUT -- 5/8-18-NF-Hex. - - (St.)	
18	2C2461	12		4043	1	BEARING - Vertical Shaft (Upper)	
19					2	CAPSCREW -- 1/2-13-NC x 1 Lg. - (St.)	
20					2	LOCKWASHER -- 1/2 SAE Reg. - - (St.)	
21		13		2C2385	1	LEVER - Bell Crank	
22					1	CAPSCREW -- 3/8-16-NC x 1 1/2 Lg. - (St.)	
23		14			1	TAPER PIN -- #2 x 2 Lg. - (St.)	
24							
25		15		G1122-E6	1	HANDLE & SOCKET ASSEM. - Gov. Control	
26					4	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg. - (St.)	
27					4	LOCKWASHER -- 1/2 SAE Reg. - - (St.)	
28		16		C-4547	1	SPRING - Governor	
29	3182	17		1114B-C31	2	SLEEVE - Spring	
30		18		C-9752	1	ROD - Governor Control	
31					3	NUT -- 3/8-16-NC-Hex. - - (St.)	
32		19		C-76	1	FORK - Governor Control Rod	
33		20		C-3216	1	PIN - Fork to Bell Crank	
34					1	COTTER PIN -- 1/8 x 7/8 Lg. - (St.)	
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FOR OPP. HAND SEE 2L747

FOR OPP. ROT. SEE

NAME GOVERNOR & CONTROL GROUP

ORIGINALLY ISSUED FOR 6 Cyl. 9 x 12 MARINE - R.H.

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR THIS GROUP GIVEN ON INDEX SHEET

PARTS LIST

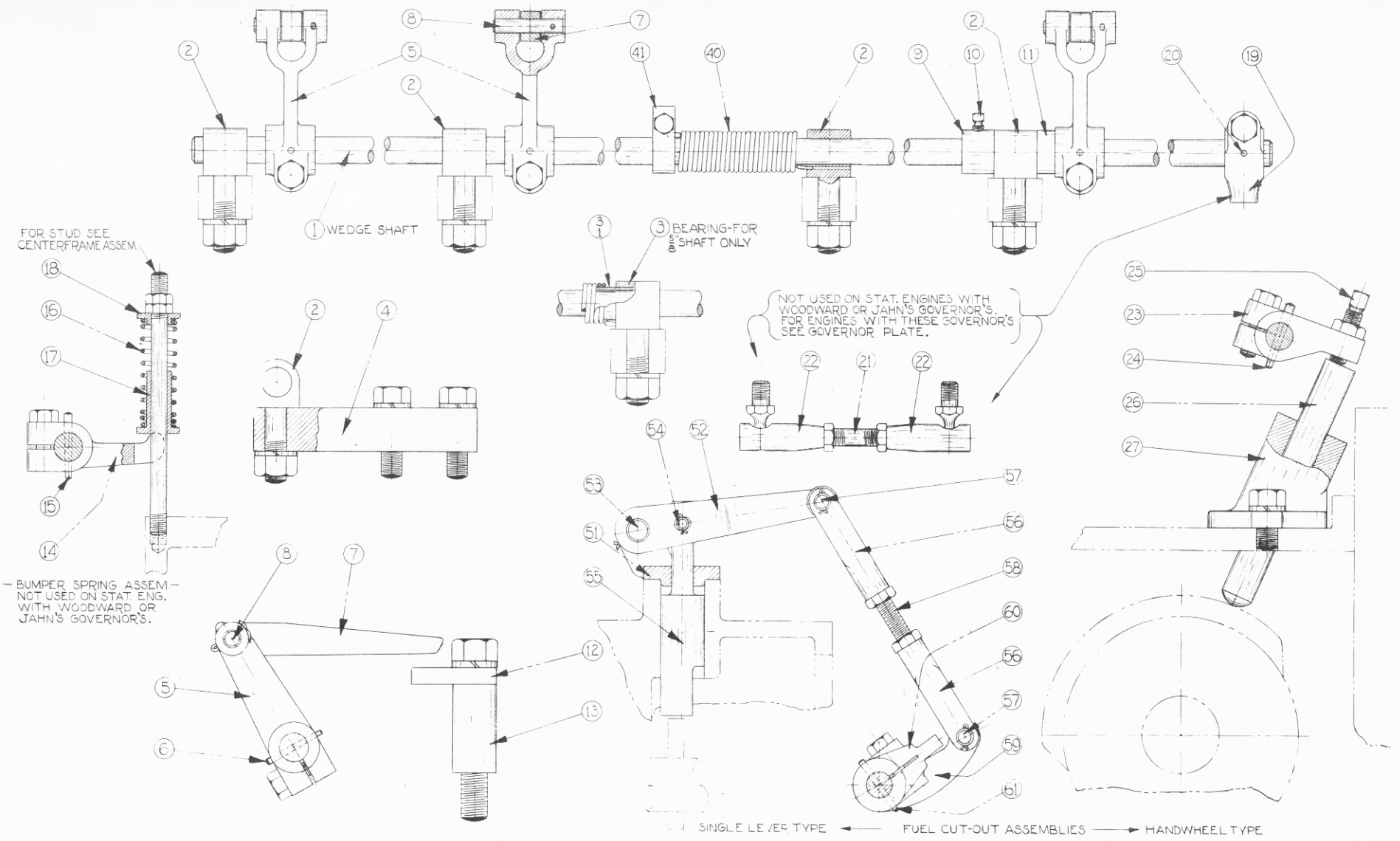
ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

FORM NO. 240 10-39

2L746

PLATE No.
K-1907
(ED.-3)

DO NOT ORDER PARTS BY REF. No.



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TYPED BY MED DATE 11-4-41 ISSUED BY [illegible] DATE 11-5-41 CHKD. [illegible] APRVD. [illegible]

CHANGES

#1 4-26-43 Line 43 Drg. No. Was 4052
#2 5-18-43 Line 38 Drg. No. Was 4052

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
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2L748

PLATE NO. K-1907

LINE NO.	DRWG. NO.	REF. NO.	*	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO. F-5674 (Bumper Spring)
1	C-6623	1		C-6623L95 1/2	1	SHAFT - Fuel Wedge	
2	S-3292	2		1134-E	6	BEARING - Wedge Shaft	
3	C-4363	3		X929	1	BEARING ASSEM. - Fuel Wedge Shaft	
4					7	NUT -- 1/2-13-NC-Hex. - - (St.)	
5					7	LOCKWASHER -- 1/2 SAE Reg. - - (St.)	
6		4		C-3385	1	BRACKET - Wedge Shaft End Brg.	
7					2	CAPSCREW -- 1/2-13-NC x 1 1/2 Lg. - (St.)	
8					2	LOCKWASHER -- 1/2 SAE Reg. - - (St.)	
9	C-3465	5		1131-C4	6	FORK - Fuel Wedge	
10					6	CAPSCREW -- 3/8-16-NC x 1 Lg. - (St.)	
11					6	TAPER PIN -- #3 x 1 1/2 Lg. - (St.)	
12	F-897	7		1132-E	6	WEDGE - Fuel	
13	S-752	8		1132A-E	6	PIN - Fuel Wedge to Fork	
14					6	COTTER PIN -- 1/8 x 1 Lg. - (St.)	
15		9		S-862	1	COLLAR - Fuel Wedge Shaft Retainer	
16		10			1	SETSCREW--1/4-20-NC x 3/8 Lg.-Sq.Hd.-Cup Pt.(St)	
17		11		S-1582	1	SPACER - Fuel Wedge Shaft	
18	C-3172	12		1139-E6	1	GUARD - Fuel Wedge Shaft (Pump End)	
19	F-3378	12		1139-E4	1	GUARD - Fuel Wedge Shaft (Gov. End)	
20	S-2004	13		1141-E	6	SPACER - Fuel Wedge Shaft Guard	
21					6	CAPSCREW -- 5/8-11-NC x 4 1/2 Lg. - (St.)	
22		14		C-9185	1	FORK - Wedge Shaft Bumper Spring	
23					1	CAPSCREW -- 3/8-16-NC x 1 Lg. - (St.)	
24		15			1	TAPER PIN -- #3 x 1 1/2 Lg. - (St.)	
25		16		S-2632	1	SPRING - Wedge Shaft Bumper	
26		17		S-2631	1	GUIDE - Wedge Shaft Bumper Spring	
27		18		C-97	1	WASHER - Bumper Spring Retainer	
28					2	HALF NUT -- 3/8-24-NF-Hex. - - (St.)	
29							
30							
31		19		F-973	1	LEVER - Wedge Shaft Control	
32					1	CAPSCREW -- 3/8-16-NC x 1 1/4 Lg. - (St.)	
33		20			1	TAPER PIN -- #2 x 1 1/4 Lg. - (St.)	
34		21		C-4514	1	ROD - Wedge Shaft Control	
35		22		C-8410	2	JOINT - Ball & Socket	
36					4	NUT -- 3/8-24-NF-Hex. - - (St.)	
37							
38	2C3338	23		4053	1	LEVER - Fuel Cut-off	
39					1	CAPSCREW -- 3/8-16-NC x 1 1/4 Lg. - (St.)	
40		24			1	TAPER PIN -- #3 x 1 1/2 Lg. - (St.)	
41		25			1	SETSCREW -- 3/8-16-NC x 1 1/4 Lg. - (St.)	
42					1	HALF NUT -- 3/8-16-NC-Hex. - - (St.)	
43	2C2757	26		5880	1	PLUNGER - Fuel Cut-off	
44	C-1746	27		4052	1	GUIDE - Plunger	
45					2	CAPSCREW -- 1/2-13-NC x 1 Lg. - (St.)	
46					2	LOCKWASHER -- 1/2 SAE Reg. - - (St.)	
47							
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FOR OPP. HAND SEE

FOR OPP. ROT. SEE

NAME FUEL WEDGE SHAFT & CONTROL GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MARINE

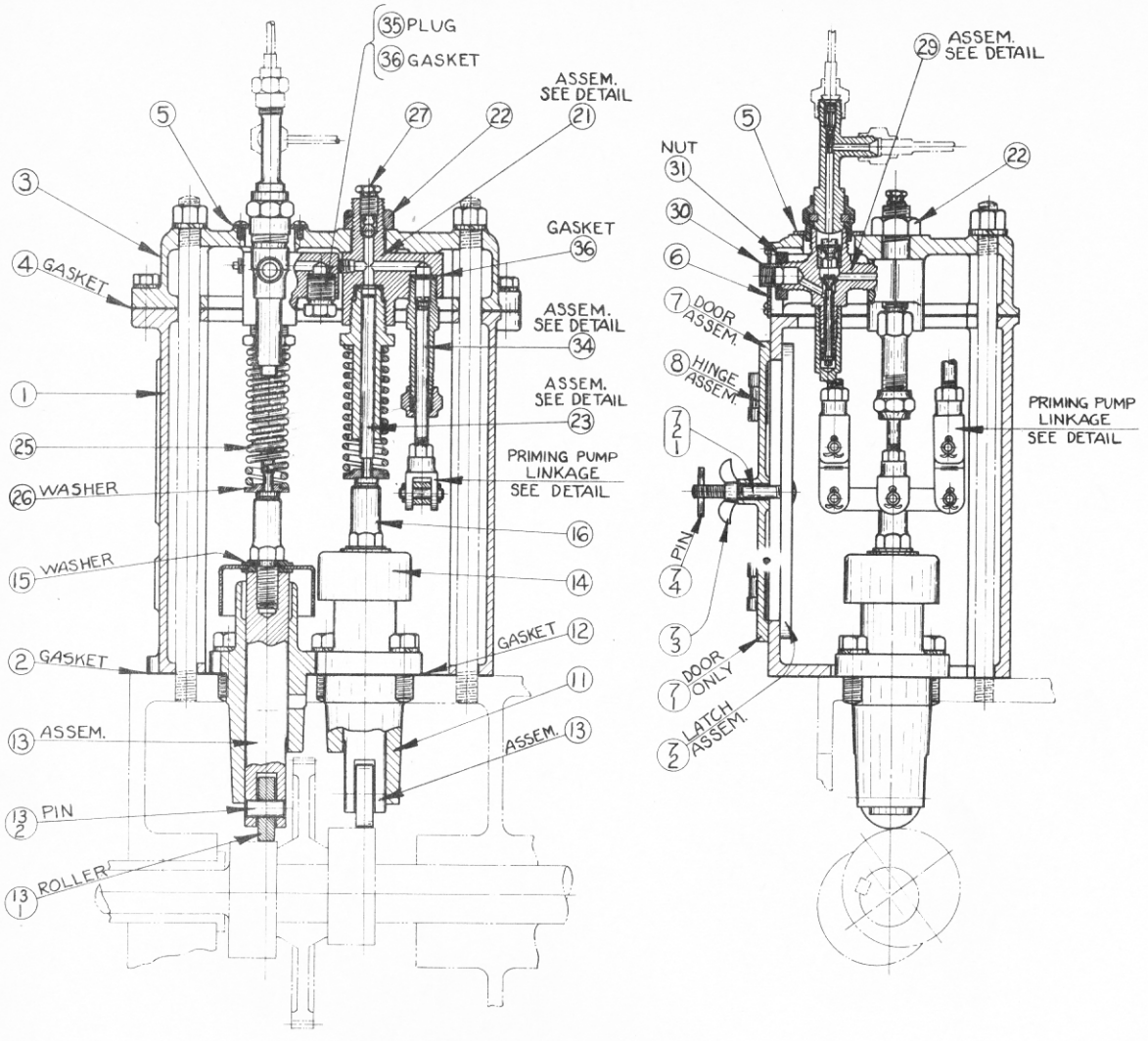
FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR THIS GROUP GIVEN ON INDEX SHEET

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

FORM NO. 240 10-39

2L748



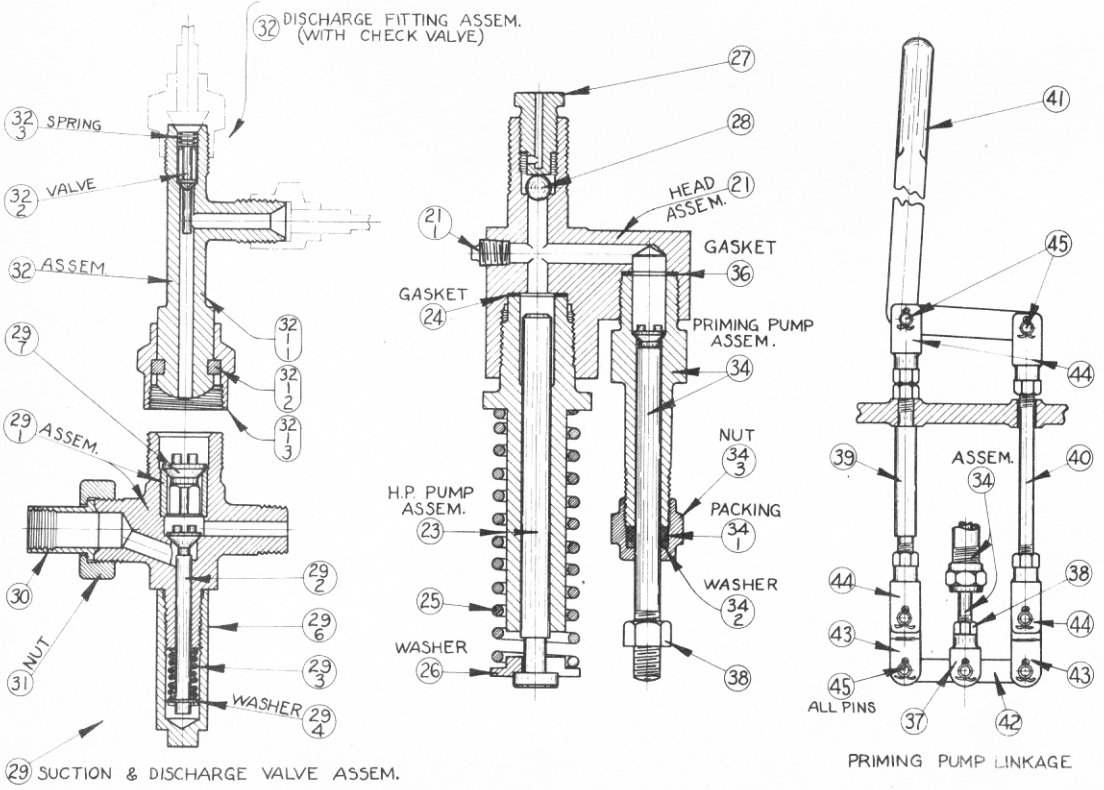


PLATE NO.
K-2241

DO NOT ORDER PARTS BY REF. NUMBERS

EXTRA COPIES TO MATTOON — TYPED BY GB — DATE 11-30-43 — CHKD. MED — DATE 12-4-43 — ISSUED BY — APRVD.

CHANGES
Retyped from 6-23-43 (no change)
#2 1-31-44 Line 34 Dia. was 5/16"
#3 5-17-44 Lines 36 & 38 Added Drg. Nos.

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
* INDICATES PART NOT SERVICED INDIVIDUALLY

2L1161 SHEET 1 OF 2
PLATE NO. K-2241

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1		1	W-2202	1	HOUSING - Fuel Pump	
2		2	2C3581	1	GASKET - Housing to Centerframe	
3	W-925	3	817-FB42	1	PLATE - Fuel Pump Mounting (Top Cover)	
4		4	2C3554	1	GASKET - Plate to Housing	
5				4	NUT -- 5/8-11-NC-Hex. - (St.)	
6				4	LOCKWASHER -- 5/8 SAE Reg. - (St.)	
7				2	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg. - (St.)	
8				2	LOCKWASHER -- 1/2 SAE Reg. - (St.)	
9		5	S-1255	2	COVER - Mounting Plate (Top)	
10		6	S-679	2	COVER - Mounting Plate (Side)	
11				10	MACHINE SCREW -- 10-24 x 3/8 Lg.-Rnd.Hd.-(St.)	
12		7	G847-FB4	1	DOOR ASSEM. - Pump Housing	
13	C-6651	8	G847C-RB3	2	HINGE ASSEM. - Pump Housing Door	
14				12	MACHINE SCREW -- 10-32 x 1/2 Lg.-Flat Hd.-(St.)	
15						
16						
17		11	F-7048	2	GUIDE - Fuel Pump Lifter	
18		12	2C3593	2	GASKET - Lifter Guide to Centerframe	
19				4	CAPSCREW -- 5/8-11-NC x 1 3/4 Lg. - (St.)	
20				4	LOCKWASHER -- 5/8 SAE Reg. - (St.)	
21	2C3537	13	X3661	2	LIFTER ASSEM. - Fuel Pump	
22	S-878	14	831D-RB31	2	GUARD- Pump Lifter Oil	
23		15	2C3521	4	WASHER - Oil Guard Adaptor	
24		16	2C3553	2	PLUG - Pump Lifter	
25						
26						
27		21	X3225	2	HEAD ASSEM. - H.P. Fuel Pump	
28		22		2	NUT -- 1-14-NF-Hex. - (St.)	
29		23	X5353	2	PUMP ASSEM - H.P. Fuel	
30		24	S-2882	2	GASKET - Pump Body to Head	
31		25	C-6222	2	SPRING - Pump Plunger	
32		26	S-2936	2	WASHER - Spring Retainer	
33		27	C-8875	2	PLUG - Fuel Pump Bleeder	
34		28		2	STEEL BALL -- 7/16 Dia. - (St.)	
35	F-5832	29	X2605	2	CAGE ASSEM.-H.P. Fuel Pump Suction & Disc.Valve	
36	2C3944	30	802B-E	2	UNION SLEEVE -- [illegible]	
37					[illegible]	
38	2C3943	31	802A-E	2	UNION NUT -- [illegible]	
39					[illegible]	
40		32	G796-EB32	1	FITTING ASSEM.-Pump Discharge(With Check Valve)	
41						
42						
43		34	X3227	1	PUMP ASSEM. - Fuel Priming	
44		35	2C2160	1	PLUG - Pump Head(Priming Pump Hole)	
45		36	2C2119	2	GASKET - Priming Pump & Plug to Head	
46	S-2592	37	1279-RB3	1	EYE - Priming Pump Plunger	
47		38		1	NUT - 7/16-20-NF-Hex. - (St.)	
48						
49						
50						

---- CONTINUED ON SHEET NO. 2 ----

FOR OPP. HAND SEE 2L1162
FOR OPP. ROT. SEE

NAME FUEL PUMP GROUP

ORIGINALLY ISSUED FOR 6 CYL. 7½-8x10½ MARINE R.H.

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

FORM 240 REV. 5-42 1R TRANS. 1M BOND

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

2L1161 SHEET 1 OF 2

EXTRA COPIES TO MATTOON — TYPED BY GB — DATE 11-30-43 — CHKD. MK — DATE 12-4-43 — ISSUED BY — APRVD.

CHANGES #1 Retyped from 6-23-43 (no change)

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
* INDICATES PART NOT SERVICED INDIVIDUALLY

2L1161 SHEET 2 OF 2

PLATE NO. K-2241

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1					---- CONTINUED FROM SHEET NO. 1 ----	
2						
3	S-3364	39	1284A-RB3	1	ROD - Handle & Link Fulcrum	
4	S-3365	40	1284-RB3	1	ROD - Link & Handle Connecting	
5	F-2274	41	1281-RB3	1	HANDLE - Priming Pump	
6	C-175	42	1280-RB3	1	LINK - Pump Plunger to Rod Connect.	
7	S-2603	43	1279A-RB3	2	LINK - Plunger Link to Rod Eye	
8	S-218	44	1279B-RB3	4	EYE - Connect. Rod & Fulcrum Rod	
9				4	NUT -- 1/2-13-NC-Hex. - (St.)	
10	S-2626	45	1280A-RB3	7	PIN - Eye to Links & Handle	
11				14	COTTER PIN - 3/32 x 3/4 Lg. - (St.)	
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FOR OPP. HAND SEE 2L1162

FOR OPP. ROT. SEE

NAME FUEL PUMP GROUP

ORIGINALLY ISSUED FOR 6 CYL. 7½-8x10½ MARINE R.H.

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

FORM 240 REV. 5-42 1M TRANS. 1M BOND

2L1161 SHEET 2 OF 2

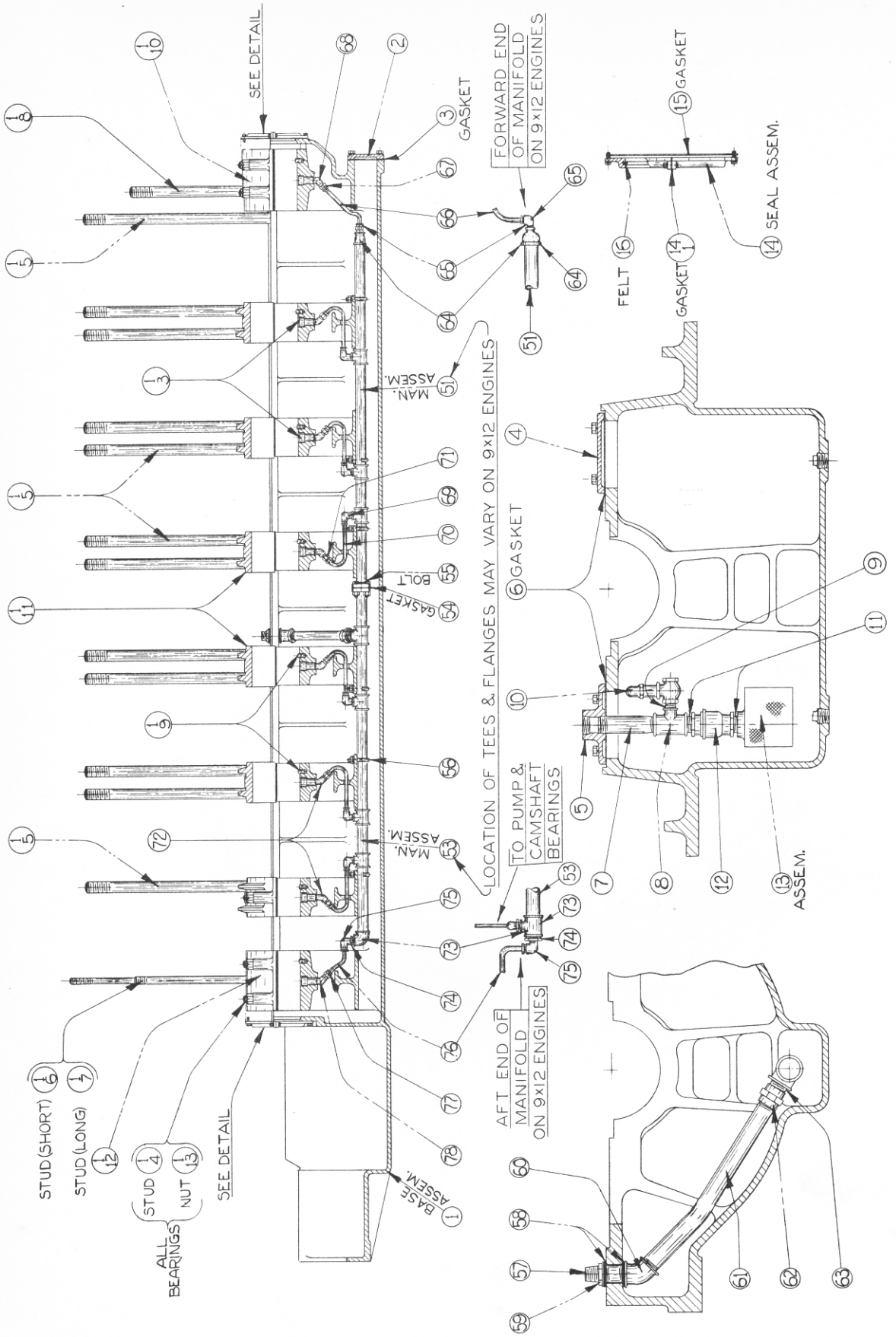

PLATE No K-2054 (ED.2) DO NOT ORDER PARTS BY REF. NUMBERS

EXTRA COPIES TO [illegible] TYPED BY ABC DATE 8-28-45 CHKD. MED DATE 8-30-45 ISSUED BY [illegible] APRVD.

CHANGES #1 11-4-49 Revised for catalogs purposes only

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
* INDICATES PART NOT SERVICED INDIVIDUALLY

2L1452

PLATE NO. K-2054 (Ed 2)

ASSEM. DRWG. NO. K-2379

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME
1		1	X3890	1	BASE ASSEMBLY
2		2	F-6680	1	COVER - Base End - (Lube Man. Hole)
3		3	2C2694	1	GASKET - Cover to Base
4				4	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg. - (St.)
5				4	LOCKWASHER -- 1/2 SAE Reg. - - (St.)
6		4	2C2678	1	COVER - Base Oil Sump Hole - (Blind)
7		5	2C2677	1	COVER - Base Oil Sump Hole - (Strainer Side)
8		6	2C2679	2	GASKET - Cover to Base
9				8	CAPSCREW -- 3/8-16-NC x 1 Lg. - (St.)
10				8	LOCKWASHER -- 3/8 SAE Reg. - - (St.)
11		7		1	NIPPLE -- 1 x 5 Lg. - (W.I.)
12		8		1	TEE -- 1 x 1 x 1/2 Std. Reducing - (M.I.)
13		9		1	CLOSE NIPPLE -- 1/2 Std. - (W.I.)
14		10	PG21L 1/2	1	VALVE - Pressure Relief - (35 Lb.)
15		11		2	CLOSE NIPPLE -- 1 Std. - (Brass)
16	C-9066	12	C-9066-P1	1	VALVE - Check
17	2C2702	13	X3390	1	STRAINER ASSEM. - Lube Oil
18	C-7958	14	X2081	2	SEAL ASSEM. - Crankshaft Oil
19		15	S-2257	2	GASKET - Oil Seal to Base
20				12	CAPSCREW -- 3/8-16-NC x 7/8 Lg. - (St.)
21				12	LOCKWASHER -- 3/8 SAE Reg. - - (St.)
22		16	C-1379	2	FELT - Oil Seal
23					
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FOR OPP. HAND SEE

FOR OPP. ROT. SEE

NAME BASE GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MARINE

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

FORM 240 REV. 8-44 IM TRANS.

2L1452

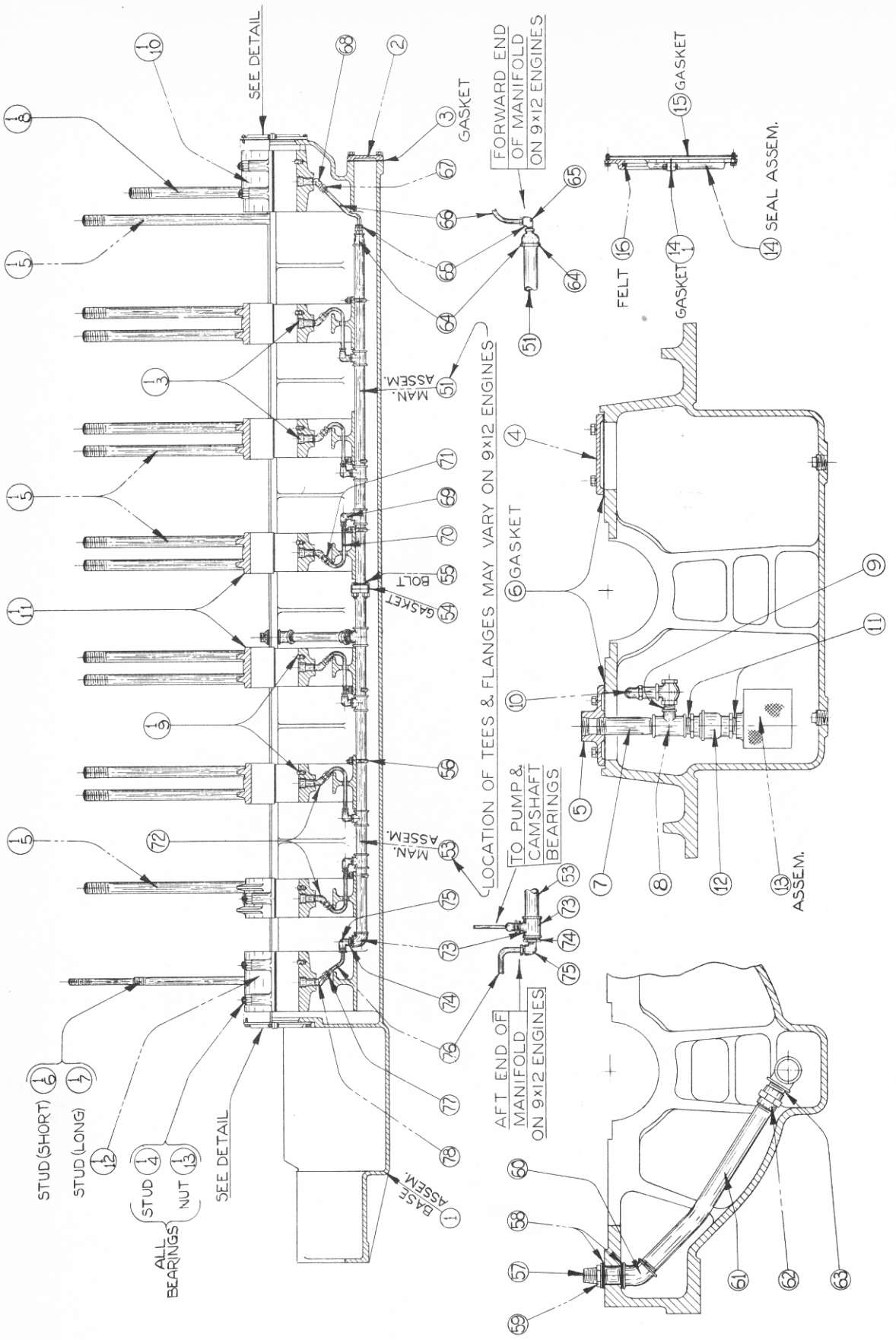


PLATE No
K-2054 (ED. 2) DO NOT ORDER PARTS BY REF. NUMBERS

EXTRA COPIES TO

TYPED BY MED DATE 8-28-45 CHKD. MED DATE 8-30-45 ISSUED BY [illegible] APRVD.

CHANGES #1 - 12-11-45 Revised
#2 6-27-46 Line 12 Part No. was 2C4146
Line 14 No. Req'd. was 2
11-4-49 Revised for catalog purposes only

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
* INDICATES PART NOT SERVICED INDIVIDUALLY

2L1454

PLATE NO. K-2054 (Ed 2)

ASSEM. DRWG. NO. K-2379

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME
1	F-7388	51	X3874	1	MANIFOLD ASSEM. - Lube Oil - (Gov. End) (Fwd.)
2	F-7389	53	X3875	1	MANIFOLD ASSEM. - Lube Oil - (Pump End) (Aft.)
3		54	2C1299	1	GASKET - Manifold Flange
4	C-2508	55	C-2508L2	4	BOLT - Manifold Flange
5				4	CASTLE NUT -- 1/2-20-NF-Hex. - (St.)
6				1	WIRE -- #16 Ga. x 10 Lg. - (St.)
7		56	2C1294	6	HOOK-BOLT - Manifold Support
8				6	NUT -- 1/2-13-NC-Hex. - (St.)
9				6	LOCKWASHER -- 1/2 SAE Reg. - (St.)
10					
11			---- Base to Manifold (Man. Inlet) ----		
12		57	2C2680	1	NIPPLE (Thru Base)
13		58	C-1056	2	WASHER - Nipple Seal
14	C-3636	59	367-6	1	LOCKNUT - Nipple
15		60		1	ELBOW -- 1 x 45° Std. - (M.I.)
16		61		1	PIPE -- 1 x 16 Lg. - (Thr'd. 2 Ends)-(W.I.)
17	2C157	62	2C157-P1	1	UNION
18		63		1	CLOSE NIPPLE -- 1 Std. - (W.I.)
19					
20			---- Manifold to Crank. Brg. - (Fwd. or Gov. End) ----		
21		64		1	REDUCER -- 1 1/4 x 3/8 Std. - (M.I.)
22	C-9804	65	C-9804-P 1/2	1	ELBOW - Tube
23		66		1	TUBE -- 1/2 O.D. x .049 x 8 Lg.-(H.D. Cop.)
24	C-9801	67	C-9801-P 1/2	1	CONNECTOR - Tube
25		68		1	STREET ELL -- 3/8 Std. - 45° - (M.I.)
26					
27			---- Manifold to Crank. Brg. - (Int.) ----		
28	C-9804	69	C-9804-P 1/2	6	ELBOW - Tube
29		70		6	TUBE -- 1/2 O.D. x .049 x 10 Lg. - (H.D. Cop.)
30	C-9801	71	C-9801-P 1/2	6	CONNECTOR - Tube
31		72		6	STREET ELL -- 3/8 Std. - 45° - (M.I.)
32					
33			---- Manifold to Crank. Brg. (Aft. or Pump End) ----		
34		73		1	TEE -- 1 1/4 x 1 1/4 x 3/8 Std. Reducing - (M.I.)
35		74		1	REDUCING BUSHING -- 1 1/4 x 3/8 Std. - (G.I.)
36					
37	C-9804	75	C-9804-P 1/2	1	ELBOW - Tube
38		76		1	TUBE -- 1/2 O.D. x .049 x 12 Lg. - -(H.D. Cop.)
39	C-9801	77	C-9801-P 1/2	1	CONNECTOR - Tube
40		78		1	STREET ELL -- 3/8 Std. - 45° - (M.I.)
41					
42			---- Tee to Camshaft (Pump End) Brgs. ----		
43					
44	C-9804		C-9804-P 1/4	1	ELBOW - Tube
45				1	TUBE--1/4 O.D. x .030 x Lg.-(S.D.Cop.)
46	C-9809		C-9809-P 1/4	1	TEE - Tube (3 Tubes)
47				1	TUBE(Aft.)-1/4OD x .030x Lg.-(S.D. Cop.)
48				1	TUBE(Fwd.)-1/4OD x .030x Lg.-(S.D. Cop.)
49	C-9804		C-9804-P 1/4	2	ELBOW - Tube
50					

FOR OPP. HAND SEE 2L1455

FOR OPP. ROT. SEE

NAME LUBE OIL MANIFOLD & BASE PIPING GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9x12 MARINE - R.H.

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

PARTS LIST

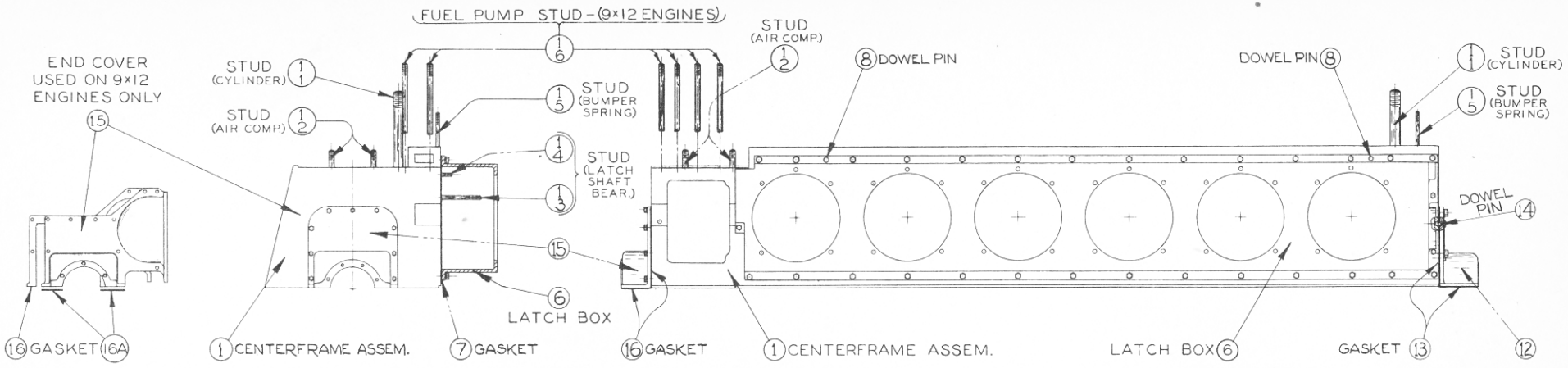
ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

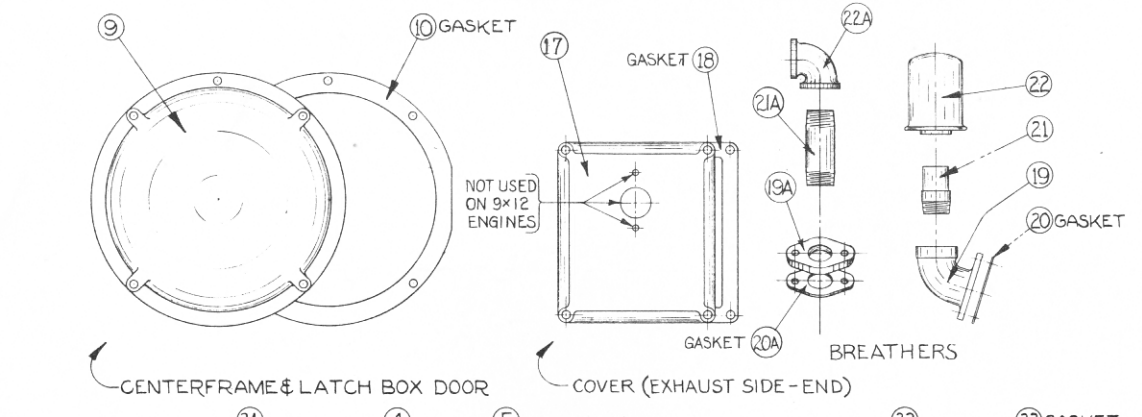
FORM 240 REV. 5-44 1M TRANS.

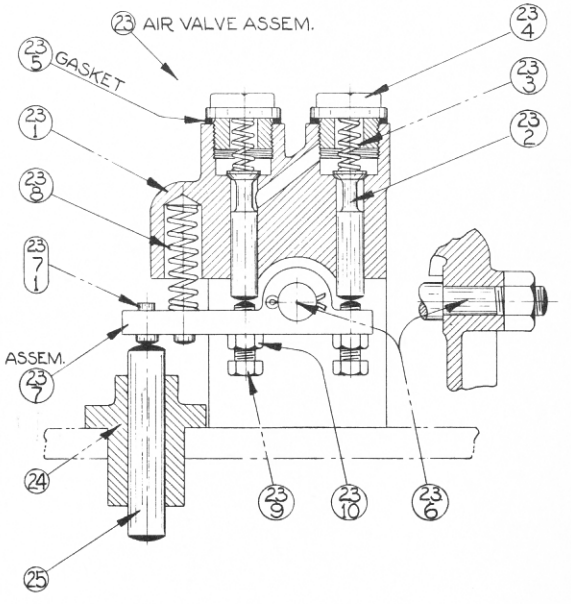
2L1454

PLATE No. K-2062 (ED. 3)

DO NOT ORDER PARTS BY REF. NUMBERS







AIR BRAKE & STARTING CYL. VALVE
(USED ON HANDWHEEL CONTROL ENGINES ONLY)

EXTRA COPIES TO

TYPED BY ABW DATE 11-8-49 CHKD

ISS'D BY [illegible] DATE 11-8-49

CHANGES

#3 Revised & Retyped from 8-28-45 for catalog purposes only

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE

2L1457

PLATE NO. K-2062 (Ed 3)

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1		1	X3892	1	CENTERFRAME ASSEMBLY	
2	S-976	2	727A-KXH	1	WASHER - Base to Centerframe Stud - (Gov. End)	
3		3		1	NUT -- 1 3/8-6-NC-Hex. - - (St.)	
4						
5		6	K-1018	1	BOX - Latch	
6		7	F-4229	1	GASKET - Latch Box to Centerframe	
7				30	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg. - - (St.)	
8				30	LOCKWASHER -- 1/2 SAE Reg. - - (St.)	
9		8	S-975	2	PIN - Dowel (Latch Box to Centerframe)	
10						
11	F-5189	9	692-E	12	DOOR - Centerframe & Latch Box - (Round)	
12	C-8430	10	692A-E3	12	GASKET - Door to Centerframe or Latch Box	
13				48	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg. - - (St.)	
14		11	S-3183	12	PIN - Round Door Dowel	
15						
16		12	W-905	1	COVER - Centerframe End & Crank Bearing (Gov.End)	
17		13	F-5242	1	GASKET - Cover to Centerframe & Base	
18				10	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg. - - (St.)	
19				10	LOCKWASHER -- 1/2 SAE Reg. - - (St.)	
20	C-7950	14	C-7950L1 1/2	1	PIN - Cover to Centerframe Dowel	
21				1	CASTLE NUT -- 3/8-24-NF-Hex. - - (St.)	
22				1	COTTER PIN -- 3/32 x 3/4 Lg. - - (St.)	
23		15	W-2395	1	COVER - Centerframe End & Crank Brg. - (Aft. End)	
24		16	F-7357	1	GASKET - Cover to Centerframe	
25		16A	2C4119	2	GASKET - Cover to Base	
26				13	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg. - - (St.)	
27				13	LOCKWASHER -- 1/2 SAE Reg. - - (St.)	
28						
29		17	C-4490	1	COVER - Centerframe -(Man. Side - Aft End)	
30		18	C-9156	1	GASKET - Cover to Centerframe	
31				4	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg. - - (St.)	
32				4	LOCKWASHER -- 1/2 SAE Reg. - - (St.)	
33						
34		21A		1	NIPPLE (Breather) -- 1 1/2 x 6 Lg. - (W.I.)	
35		22A		1	ELBOW -- 1 1/2 Std. - (M.I.)	
36						
37	F-5573	23	X2309	2	VALVE ASSEM. - Air Brake & Start. Cylinder	
38				4	CAPSCREW -- 1/2-13-NC x 1 Lg. - - (St.)	
39				4	LOCKWASHER -- 1/2 SAE Reg. - - (St.)	
40		24	S-2564	2	GUIDE - Air Valve Plunger	
41				4	CAPSCREW -- 1/2-13-NC x 1 Lg. - - (St.)	
42				4	LOCKWASHER -- 1/2 SAE Reg. - - (St.)	
43		25	S-2904	2	PLUNGER - Air Valve	
44						
45		31	C-9155	1	COVER - Centerframe End (Lift. Guide Box)	
46				2	MACHINE SCREW--5/16-18-NC x 5/8 Lg.-Flat Hd. - - (St.)	
47						
48		34	2C4208	1	POINTER - Flywheel	
49				2	TAPER PIN -- #3 x 1 1/4 Lg. - - (St.)	
50						

2L1457

FOR OPP. HAND SEE 2L1458

FOR OPP. ROT. SEE

NAME CENTERFRAME & COVERS GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MARINE - R.H.

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

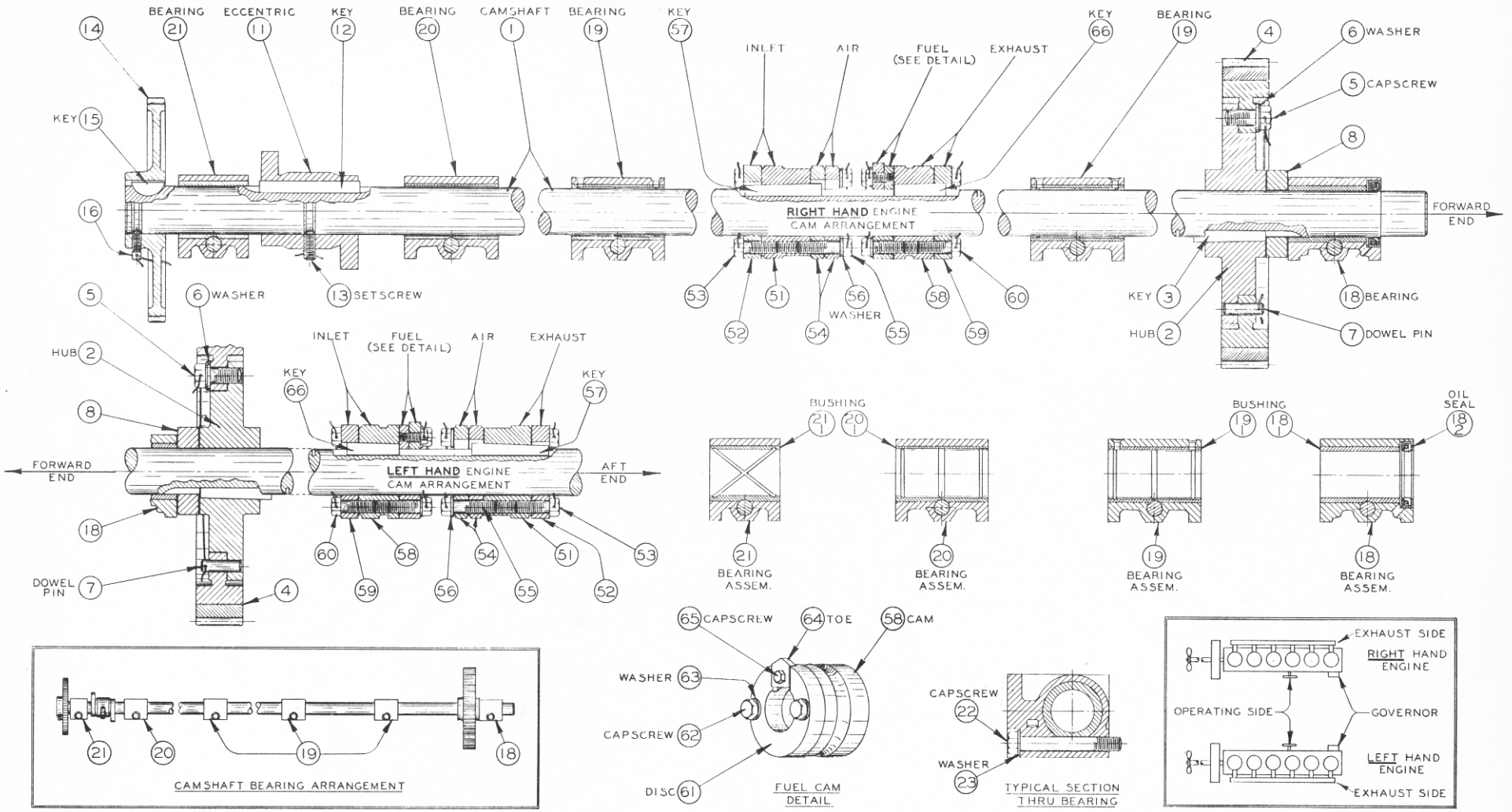
FORM 240 REV. 12-48 IM TRANS. PRINTED IN U.S.A.

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

PLATE No. 3A1961

DO NOT ORDER PARTS BY REFER. NUMBERS



EXTRA COPIES TO

TYPED BY ABC DATE 8-28-45 CHKD. MED DATE 8-30-45 ISSUED BY [illegible] APRVD.

CHANGES #1 4-16-46 Line 18 Part No. was 2C3557
#2 11-9-49 Revised for catalog purposes

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
* INDICATES PART NOT SERVICED INDIVIDUALLY

2L1459

PLATE NO. 3A1961

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1		1	F-7363	1	CAMSHAFT	
2		2	F-3365	1	HUB - Camshaft Gear	
3	C-7008	3	C-7008L4 1/2	1	KEY - Coupling to Camshaft	
4	F-3367	4	X248	1	GEAR ASSEM. - Camshaft	
5	C-2510	5	C-2510L1 1/2	4	CAPSCREW - Gear to Coupling	
6		6	S-2474	4	WASHER - Gear to Coup. Capscrew	
7		7	S-3350	1	PIN - Gear to Coupling Dowel	
8				1	WIRE -- #16 Ga. x 28 Lg. - (St.)	
9		8	C-1754	1	WASHER - Camshaft Thrust	
10						
11						
12		11	F-7362	1	ECCENTRIC - Fuel Pump	
13	C-7108	12	C-7108L4 1/4	1	KEY - Eccentric to Camshaft	
14		13	2C3557	2	SETSCREW - Eccentric	
15				1	WIRE --#16 Ga. x 14 Lg. - - (St.)	
16		14	F-7364	1	GEAR - Pump Drive	
17		15		1	WOODRUFF KEY -- 3/8 x 1 1/2 Std. - - (St.)	
18	2C4001	16	2C4001L 7/8	1	SETSCREW - Pump Gear	
19				1	WIRE -- #16 Ga. x 6 Lg. - (St.)	
20						
21	C-7919	18	X2074	1	BEARING ASSEM. - Camshaft - (Gov. End)	
22	C-1342	19	G680-C	5	BEARING ASSEM. - Camshaft - (Intermediate)	
23	C-7941	20	X2075	1	BEARING ASSEM. - Camshaft - (Pump End - Long)	
24	C-7940	21	X2076	1	BEARING ASSEM. - Camshaft - (Pump End - Short)	
25		22		8	CAPSCREW -- 5/8-11-NC x 4 1/2 Lg. - - (St.)	
26		23	C-4921	8	WASHER - Cam. Bear. Capscrew Seal	
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FOR OPP. HAND SEE 2L1460

FOR OPP. ROT. SEE

NAME CAMSHAFT & FUEL PUMP CRANK GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MAR. - R.H.

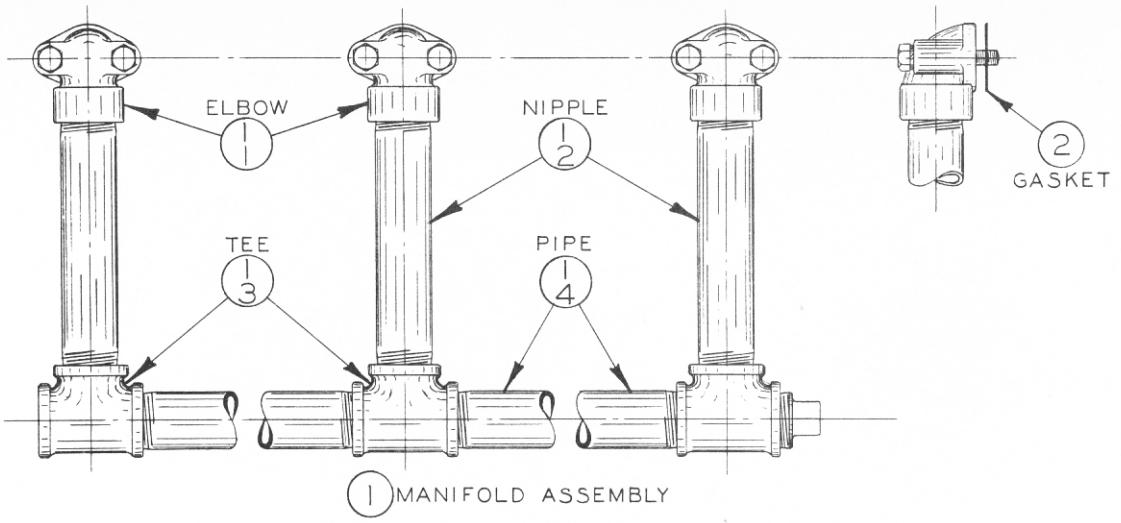
FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

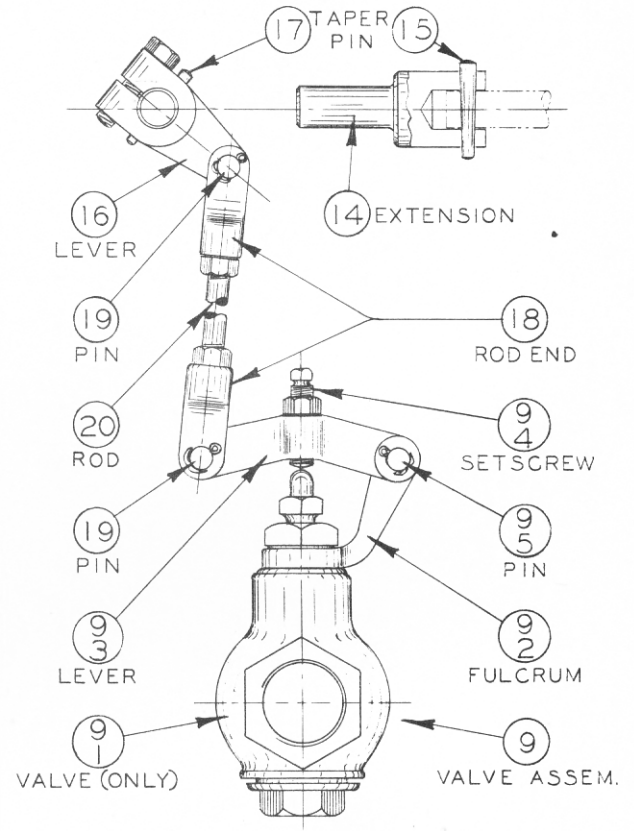
PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

FORM 240 REV 5-44 1M TRANS.

2L1459





END VIEW OF VALVE & LINKAGE

PLATE No.
W-2883

DO NOT ORDER PARTS BY REFER. NUMBERS

EXTRA COPIES TO

TYPED BY ABC DATE 8-28-45 CHKD. MD DATE 8-30-45 ISSUED BY [illegible] APRVD.

CHANGES #1 11-10-49 Revised for catalog purposes

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
* INDICATES PART NOT SERVICED INDIVIDUALLY

2L1461

PLATE NO. W-2883

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1		1	X3894	1	MANIFOLD ASSEM. - Air Starting	
2	S-1900	2	577A-C4	6	GASKET - Manifold to Cyl. Head	
3				12	CAPSCREW -- 1/2-13-NC x 2 1/2 Lg. - - (St.)	
4			---- Manifold to Air Starting Valve and Glove Valve ----			
5		3		1	CLOSE NIPPLE -- 1 1/4 Std. - (W.I.)	
6		4		1	TEE--1 1/4 x 3/4 x 1 1/4 Std. Reducing - (M.I.)	
7				1	REDUCING BUSHING -- 3/4 x 1/4 Std. - (C.I.)	
8		5	C-9045P 1/4	1	COCK -Bleeder	
9		6		1	CLOSE NIPPLE -- 1 1/4 Std. - (W.I.)	
10		7	2C160P1 1/4	1	UNION ELBOW	
11		8		1	CLOSE NIPPLE -- 1 1/4 Std. - (W.I.)	
12		9	X479	1	VALVE ASSEM. - Air Starting	
13	C-6311	10	X1583	1	NIPPLE ASSEM. - Start. Valve to Globe Valve	
14	C-9046	11	C-9046-P1 1/4	1	GLOBE VALVE	
15						
16						
17		14	C-1767	1	EXTENSION - Valve Rocker Shaft	
18		15		1	TAPER PIN -- #4 x 1 3/4 Lg. - - (St.)	
19	2C2830	16	4066	1	LEVER - Air Start. Valve Control (on Rocker Shaft)	
20				1	CAPSCREW -- 3/8-16-NC x 1 1/2 Lg. - - (St.)	
21		17		1	TAPER PIN-- #3 x 1 3/4 Lg. - - (St.)	
22	C-1078	18	4114	2	ROD-END - Air Start. Valve Control Rod	
23		19	S-2687	2	PIN - Rod-End	
24				4	COTTER PIN -- 1/16 x 3/4 Lg. - - (St.)	
25		20	2C4118	1	ROD - Air Start. Valve Control	
26				2	HALF NUT -- 1/2-13-NC-Hex. - - (St.)	
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FOR OPP. HAND SEE

FOR OPP. ROT. SEE

NAME AIR STARTING MANIFOLD GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MARINE

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

PARTS LIST

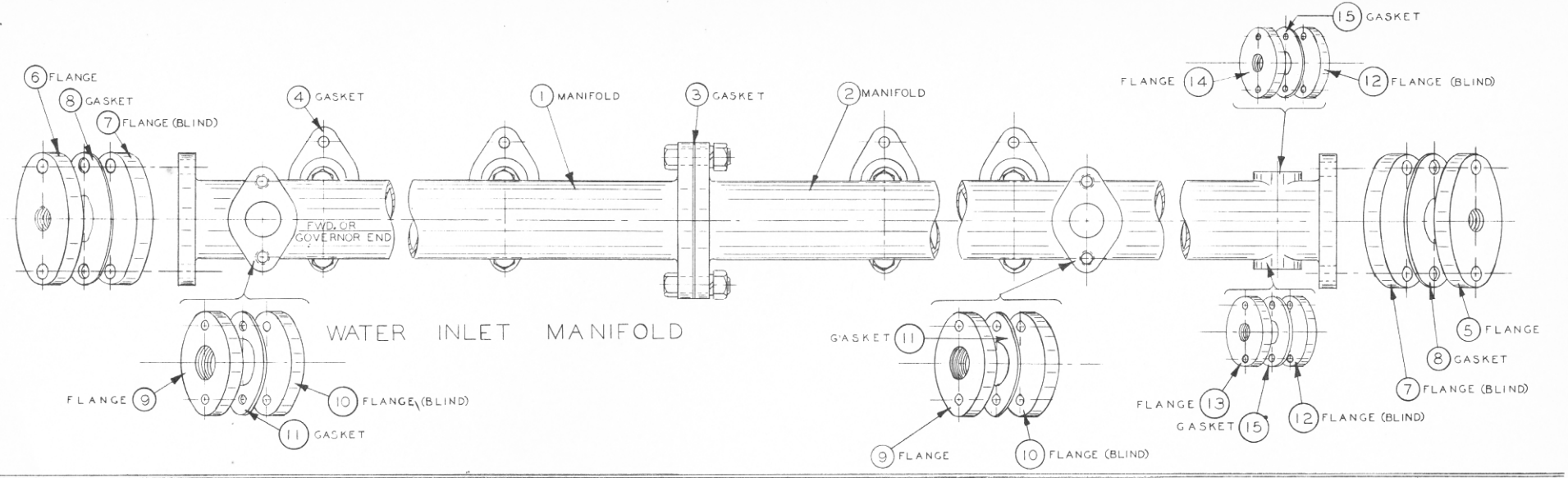
ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

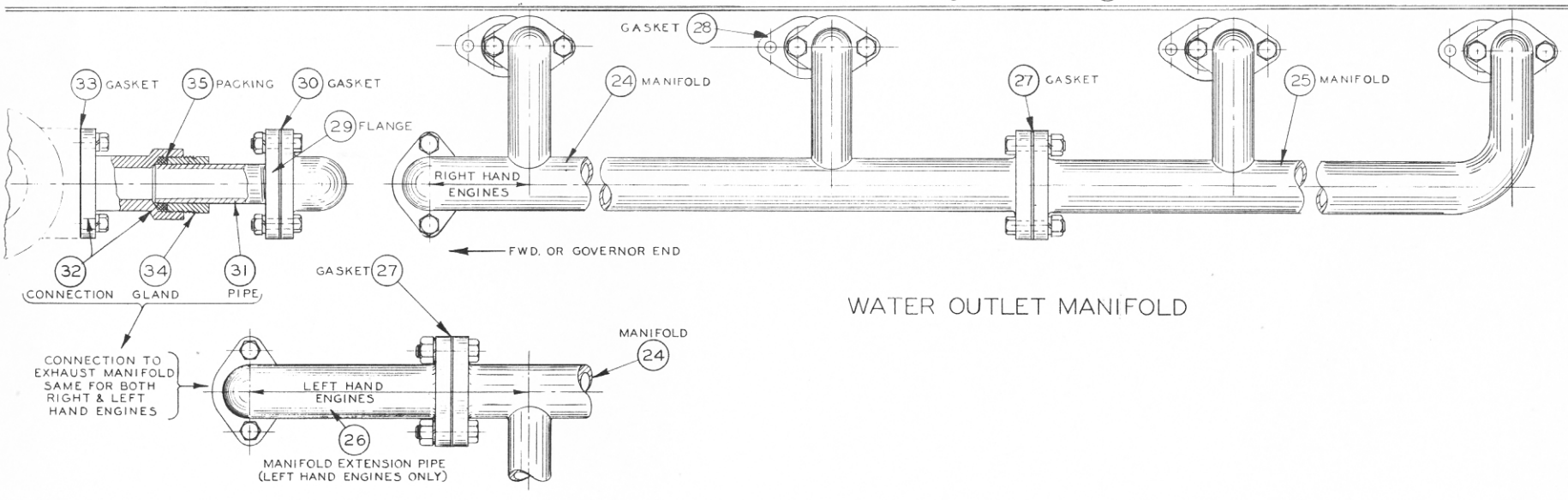
FORM 240 REV 5-44 1M TRANS.

2L1461

PLATE No. K-2716

DO NOT ORDER PARTS BY REF. NUMBER





WATER OUTLET MANIFOLD

EXTRA COPIES TO

TYPED BY MED DATE 8-28-45 CHKD. MED DATE 8-30-45 ISSUED BY JSK APRVD.

CHANGES #1 11-10-49 Revised for catalog purposes

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
* INDICATES PART NOT SERVICED INDIVIDUALLY

2L1462

PLATE NO. K-2716

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1	F-2977	1	5084	1	MANIFOLD - Water Inlet - (Fwd. Sect.)	
2		2	F-2976	1	MANIFOLD - Water Inlet - (Aft. Sect.)	
3		3	C-3498	1	GASKET - Manifold to Manifold	
4				2	CAPSCREW -- 5/8-11-NC x 2 1/4 Lg. - (St.)	
5				2	NUT -- 5/8-11-NC-Hex. - (St.)	
6				2	LOCKWASHER -- 5/8 SAE Reg. - (St.)	
7		4	S-1042	6	GASKET - Manifold to Cylinder	
8				12	CAPSCREW -- 1/2-13-NC x 1 1/2 Lg. -(St.)	
9				12	LOCKWASHER -- 1/2 SAE Reg. - (St.)	
10		5	2C2777	1	FLANGE - Manifold End (Aft. or Fuel Pump End)	
11	C-5357	7	788	1	FLANGE - Manifold End - (Blind)	
12		8	S-924	2	GASKET - Flange to Manifold	
13				4	CAPSCREW -- 5/8-11-NC x 1 1/2 Lg. - (St.)	
14				4	LOCKWASHER -- 5/8 SAE Reg. - (St.)	
15	C-5351	9	786-B	2	FLANGE - Water Inlet Pipe	
16		11	S-1042	2	GASKET - Flange to Manifold	
17				4	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg.-(St.)	
18				4	LOCKWASHER -- 1/2 SAE Reg. - (St.)	
19	C-491	12	783	1	FLANGE - Manifold End-(Blind - Lower)	
20		14	C-3306	1	FLANGE-Manifold End-(Upper - Air Comp. Pipe)	
21		15	S-2332	2	GASKET - Flange to Manifold	
22				4	CAPSCREW -- 3/8-16-NC x 1 Lg. -(St.)	
23				4	LOCKWASHER -- 3/8 SAE Reg. - (St.)	
24						
25						
26						
27	2341	24	5083	1	MANIFOLD - Water Outlet - (Fwd. End)	
28	2341	25	5082	1	MANIFOLD - Water Outlet - (Aft. or Fuel Pump End)	
29		27	S-1042	1	GASKET - Manifold to Manifold	
30				2	CAPSCREW -- 1/2-13-NC x 2 Lg. - (St.)	
31				2	NUT -- 1/2-13-NC-Hex. - (St.)	
32				2	LOCKWASHER -- 1/2 SAE Reg. - (St.)	
33		28	S-2334	6	GASKET - Manifold to Head	
34				12	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg. - (St.)	
35				12	LOCKWASHER -- 1/2 SAE Reg. - (St.)	
36		29	C-601	1	FLANGE - Manifold Outlet Pipe	
37		30	S-1042	1	GASKET - Flange to Manifold	
38				2	CAPSCREW -- 1/2-13-NC x 2 Lg. - (St.)	
39				2	NUT -- 1/2-13-NC-Hex. - (St.)	
40				2	LOCKWASHER -- 1/2 SAE Reg. - (St.)	
41		31	C-602	1	PIPE - Water Manifold to Exhaust Manifold	
42		32	F-4358	1	CONNECTION - Pipe	
43		33	S-1042	1	GASKET-Connection to Exhaust Manifold	
44				2	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg. - (St.)	
45				2	LOCKWASHER -- 1/2 SAE Reg. - (St.)	
46	C-603	34	216A-E	1	GLAND - Packing	
47		35		1	PACKING -- 1/4 Sq. x 12 Lg. - (Flax)	
48						
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2L1462

FOR OPP. HAND SEE 2L1463

FOR OPP. ROT. SEE

NAME WATER MANIFOLD GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MAR. - R.H.

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

PARTS LIST

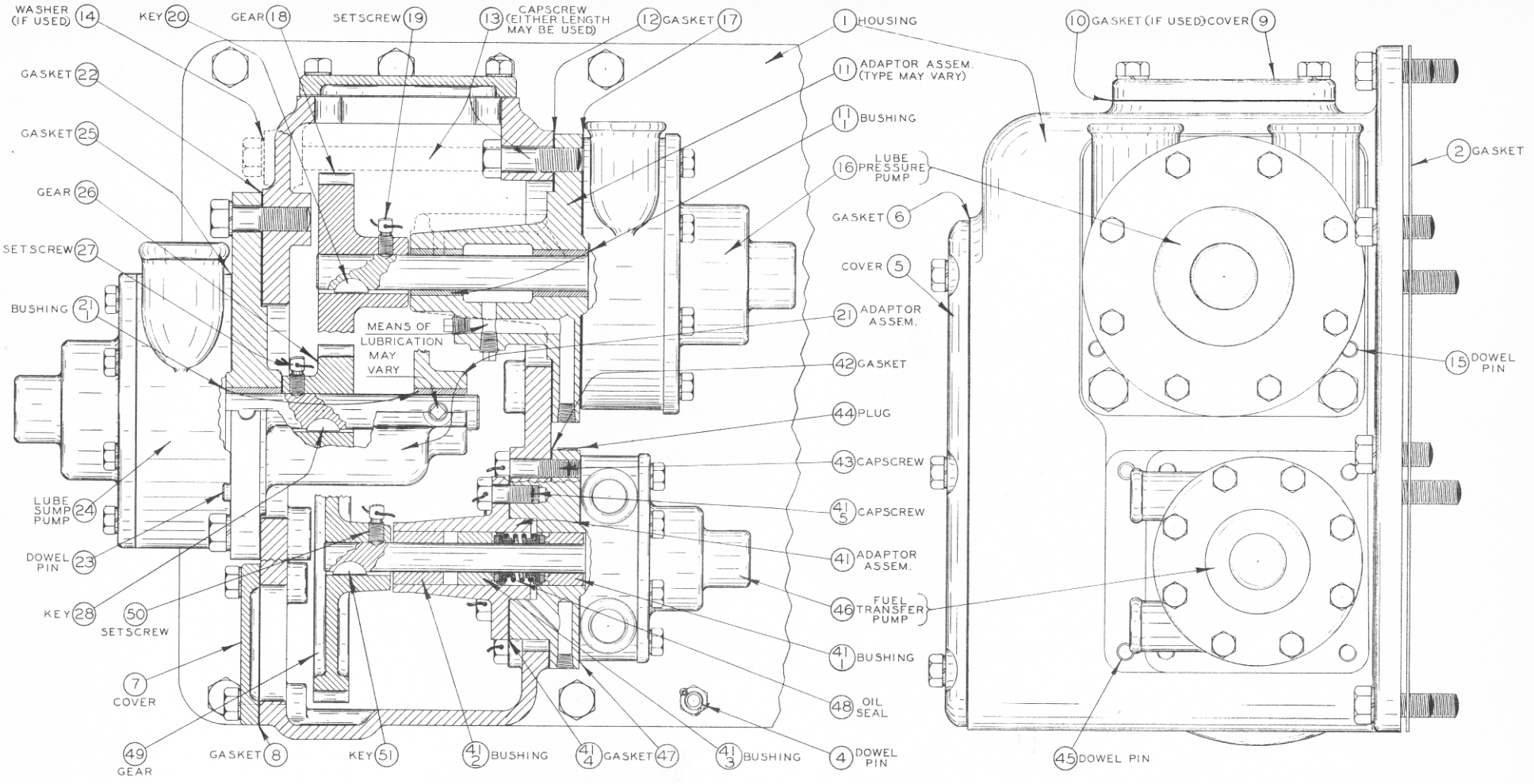
ATLAS IMPERIAL DIESEL ENGINE CO.

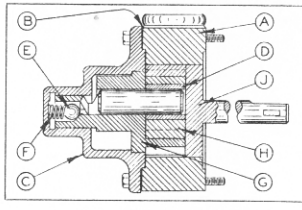
OAKLAND, CALIF. WATSON, ILL.

FORM 240 REV. 5-44 1M TRANS.

PLATE No. K-2713

DO NOT ORDER PARTS BY REFER. NUMBERS





REF. LET.	PART NAME	PUMP No. 2C4111-P	PUMP No. 2C4112-P	PUMP No. 2C4113-P
A	HOUSING	C-9290-P1	2C47-P1	2C47-P1
B	GASKET	C-8193-P	C-9849-P	C-9849-P
C	COVER	C-9290-P2	2C47-P2	2C47-P2
D	BUSHING	C-9290-P3	2C47-P3	2C47-P3
E	STEEL BALL	9/16 DIA.	9/16 DIA.	9/16 DIA.
F	SPRING	C-9290-P4	2C47-P4	2C47-P4
G	CARRIER & PIN	C-9290-P5	2C47-P5	2C47-P5
H	IDLER & BUSH.	C-9290-P6	2C47-P6	2C47-P6
J	ROTOR & SHAFT	2C4111-P7	2C4112-P7	2C4113-P7

-NOTE-

ORDER PUMP PARTS AS PER PART NUMBERS LISTED IN TABULATION. THESE PARTS ARE NOT LISTED ON GROUP SHEET. PARTS NOT LISTED ARE NOT SOLD INDIVIDUALLY.

EXTRA COPIES TO [illegible] TYPED BY ABC DATE 8-28-45 CHKD. MED DATE 8-30-45 ISSUED BY JBR APRVD.

CHANGES #1 11-10-49 Revised for catalog purposes

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
* INDICATES PART NOT SERVICED INDIVIDUALLY

2L1466

PLATE NO. K-2713

912LA72

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1		41	X3895	1	ADAPTOR ASSEM. - Fuel Transfer Pump	
2		42	2C1216	1	GASKET - Adaptor to Housing	
3	C-2406	43	C-2406L1 1/2	2	CAPSCREW - Adaptor to Housing	
4				1	WIRE -- #16 Ga. x 10 Lg. - (St.)	
5				2	CAPSCREW -- 3/8-16-NC x 1 1/4 Lg. - (St.)	
6				2	LOCKWASHER -- 3/8 SAE Reg. - (St.)	
7		44		2	PIPE PLUG -- 1/8 Std. - (C.I.)	
8	C-8265	45	C-8265L1	2	PIN - Adaptor to Housing Dowel	
9	2C4111	46	2C4111-P	1	PUMP - Fuel Transfer	
10		47	C-8193	3	GASKET - Pump to Adaptor	
11				8	CAPSCREW -- 1/4-20-NC x 2 1/4 Lg. - (St.)	
12				8	LOCKWASHER -- 1/4 SAE Reg. - (St.)	
13	2C2478	48	2C2478-P	1	OIL SEAL	
14		49	F-7365	1	GEAR - Transfer Pump Drive	
15		50	C-8217	1	SETSCREW - Gear to Pump Shaft	
16		51		1	WOODRUFF KEY -- 1/8 x 3/4 Std. - (St.)	
17				1	WIRE -- #16 Ga. x 7 Lg. - (St.)	
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FOR OPP. HAND SEE

FOR OPP. ROT. SEE

NAME FUEL TRANSFER PUMP GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MARINE

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.

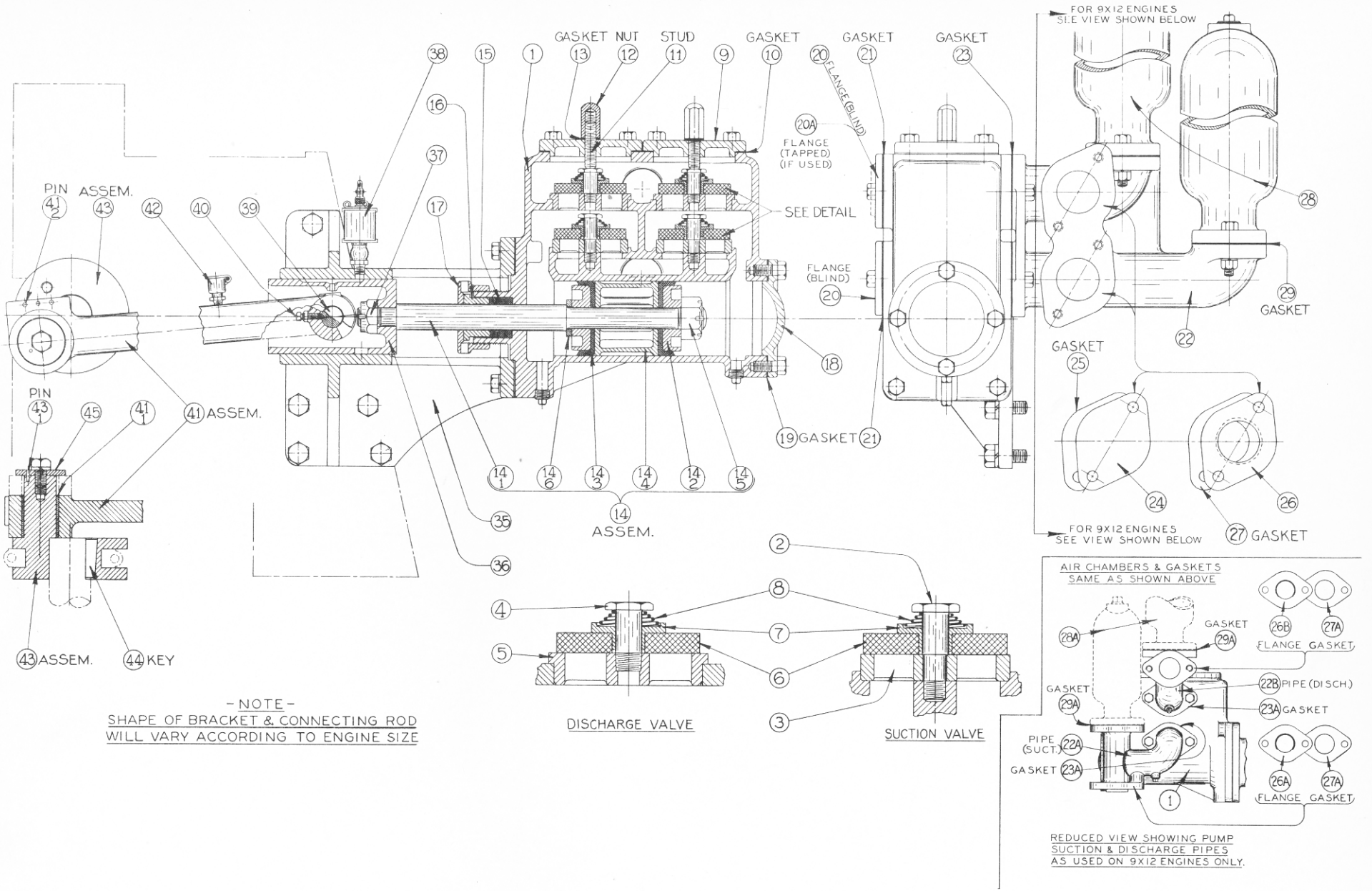
OAKLAND, CALIF. [illegible]

FORM 240 REV. 5-44 IM TRANS.

2L1466

PLATE No. K-2108 (ED. 2)

DO NOT ORDER PARTS BY REF. NUMBERS



EXTRA COPIES TO

TYPED BY ABC DATE 8-29-45 CHKD. WED DATE 8-30-45 ISSUED BY [illegible] APRVD.

CHANGES

#1 11-10-49 Line 47 No.Req'd. was 5;
Line 48 No.Req'd. was 9

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
* INDICATES PART NOT SERVICED INDIVIDUALLY

2L1467 SHEET 1 OF 2

PLATE NO. K-2108 (Ed 2)

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1		1	K-483	1	BODY - Water Pump	
2				2	PIPE PLUG -- 3/8 Std. - - (Brass)	
3		2	C-3381	2	STUD - Suction Valve	
4		3	S-3173	2	GRID - Suction Valve	
5	S-2046	4	217-7	2	STUD - Discharge Valve	
6		5	S-3071	2	GRID - Discharge Valve	
7		6	2C2652	4	VALVE - Suction & Discharge	
8	S-2289	7	219A-6	4	BUSHING - Valve	
9	C-461	8	218-E	4	SPRING - Valve	
10		9	S-3072	2	COVER - Pump Body Top	
11		10	S-3101	2	GASKET - Cover to Body	
12				8	CAPSCREW -- 1/2-13-NC x 1 Lg. - (St.)	
13		11	S-3100	2	STUD - Suction Valve Grid Hold-Down	
14		12	C-1719	2	CAP-NUT - Hold-down Stud	
15		13	C-3005	2	GASKET - Cap-nut to Cover	
16		14	X1330	1	PISTON ASSEM. - Water Pump	
17		15		4	PACKING -- 5/16 Sq. x 6 Lg. - (Flax)	
18		16	S-3067	1	GLAND - Packing	
19		17	S-3066	1	NUT - Packing Gland	
20		18	S-3070	1	COVER - Pump Body End	
21		19	S-3102	1	GASKET - Cover to Pump Body	
22				4	CAPSCREW -- 1/2-13-NC x 1 Lg. - (St.)	
23		20A	C-9079	1	FLANGE - Relief Valve Pipe	
24		20	C-6619	1	FLANGE - Pipe -- (Blind)	
25		21	S-1005	2	GASKET - Flange to Pump Body	
26				4	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg. - (St.)	
27		22A	C-9081	1	PIPE - Suction	
28		22B	C-9080	1	PIPE - Pump Discharge	
29				2	PIPE PLUG -- 1/8 Std. - (Brass)	
30		23A	S-1005	2	GASKET - Pipe to Pump Body	
31				4	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg. - (St.)	
32	C-5135	26A	787-B	1	FLANGE - Suction Pipe	
33		26B	C-9079	1	FLANGE - Discharge Pipe	
34		27A	S-1005	2	GASKET - Flange to Pipe	
35				4	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg. - (St.)	
36		28A	F-2827	2	CHAMBER - Air	
37				2	PIPE PLUG -- 1 Std. - - (C.I.)	
38		29A	S-1005	2	GASKET - Air Chamber to Pipe	
39				4	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg. - (St.)	
40				4	LOCKWASHER -- 1/2 SAE Reg. - - (St.)	
41						
42						
43		35	W-1226	1	BRACKET - Water Pump (& Crosshead Guide)	
44				2	CAPSCREW(To Pump)--5/8-11-NC x 1 1/4 Lg(St)	
45				2	CAPSCREW(To Pump)--5/8-11-NC x 2 1/4 Lg(St)	
46				2	NUT -- 5/8-11-NC-Hex. - - (St.)	
47				4	CAPSCREW(To C'frame)-5/8-11-NCx 1 1/2 Lg(St)	
48				8	LOCKWASHER -- 5/8 SAE Reg. - (St.)	
49						
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---- CONTINUED ON SHEET NO. 2 ----

FOR OPP. HAND SEE 2L1468

FOR OPP. ROT. SEE

NAME CIRCULATING WATER PUMP GROUP - - - - (DOUBLE ACTING)

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MARINE - R.H.

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.

OAKLAND, CALIF. WATSON, N.J.

FORM 240 REV 5-44 1M TRANS.

2L1467 SHEET 1 OF 2

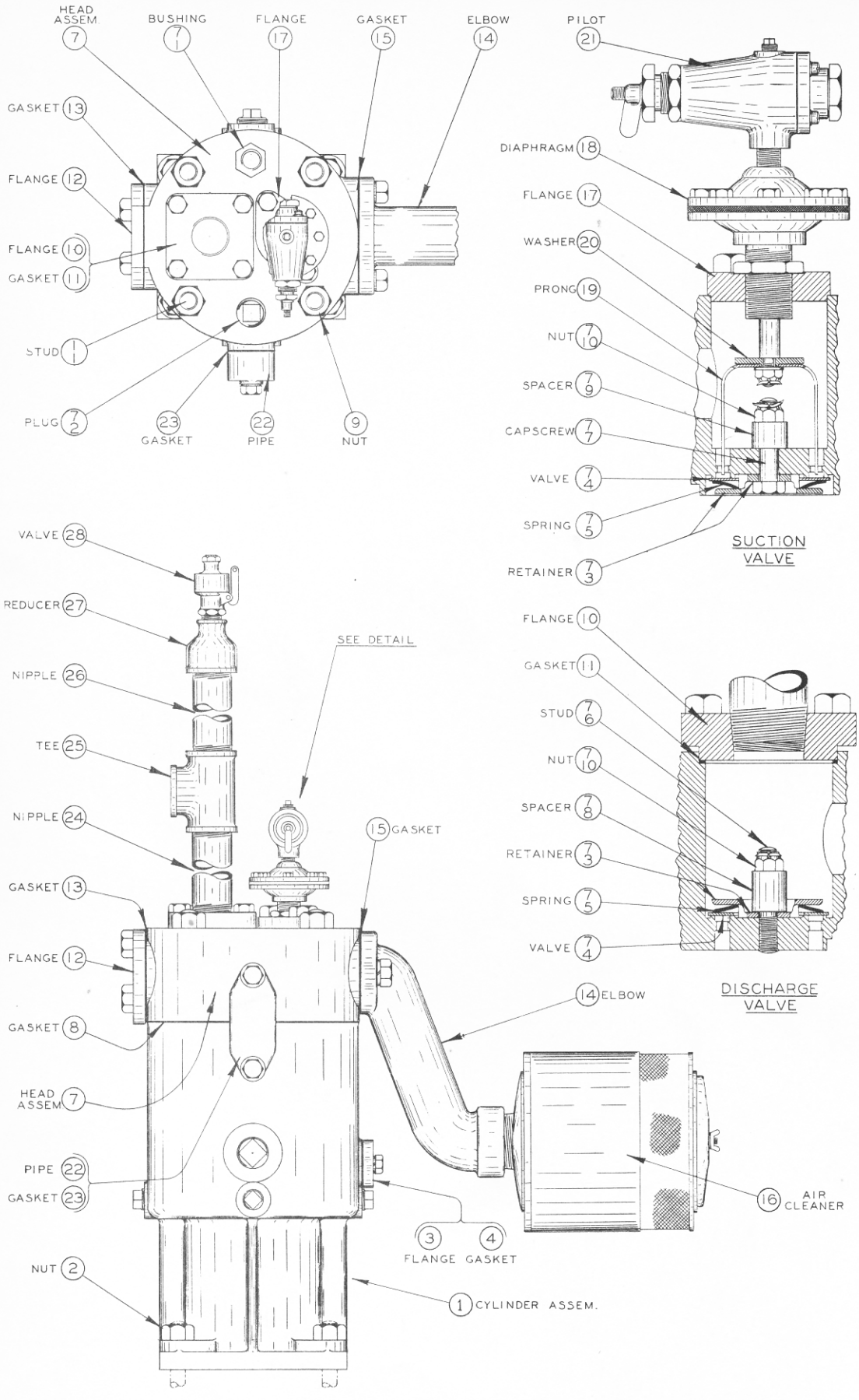

PLATE No.
K-2714

DO NOT ORDER PARTS BY REFER. NUMBERS

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CHANGES #1 11-11-49 Revised for catlog purposes

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
* INDICATES PART NOT SERVICED INDIVIDUALLY

2L1469

PLATE NO. K-2714

ASSEM. DRWG. NO. W-1235

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME
1		1	X475	1	CYLINDER ASSEM. - Air Compressor
2		2		4	NUT -- 5/8-11-NC-Hex. - - (St.)
3	C-5349	3	783-B	1	FLANGE - Water Inlet
4		4	S-2332	1	GASKET - Flange to Cylinder
5				2	CAPSCREW -- 3/8-16-NC x 1 Lg. - (St.)
6				2	LOCKWASHER --3/8 SAE Reg. - - (St.)
7					
8		7	X1117	1	HEAD ASSEM. - Cylinder
9	S-901	8	901A-J	1	GASKET - Head to Cylinder
10		9		4	NUT -- 3/4-10-NC-Hex. - - (St.)
11		10	2C2872	1	FLANGE - Air Comp. Discharge Pipe
12		11	S-1733	1	GASKET - Flange to Cyl. Head
13				4	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg. - (St.)
14		12	2C2873	1	FLANGE - Air Comp. Discharge Pipe (Blind)
15		13	C-4026	1	GASKET - Flange to Cyl. Head
16				4	CAPSCREW -- 5/8-11-NC x 1 1/4 Lg. - (St.)
17		14	2C4108	1	ELBOW - Air Cleaner Adaptor
18		15	S-2329	1	GASKET - Elbow to Cyl. Head
19				2	CAPSCREW -- 5/8-11-NC x 1 1/2 Lg. - (St.)
20				2	LOCKWASHER -- 5/8 SAE Reg. - - (St.)
21	2C2467	16	2C2467-P	1	AIR CLEANER
22		17	C-9160	1	FLANGE - Suction Valve Unloader Adaptor
23				2	CAPSCREW -- 1/2-13-NC x 1 Lg. - (St.)
24	C-9158	18	C-9158-P	1	DIAPHRAGM - Suction Valve Unloader
25		19	S-1397	1	PRONG - Suction Valve Unloader
26		20	C-8222	1	WASHER - Unloader Prong Retainer (Upper)
27				1	PLAIN WASHER -- 1/4 SAE Std. - - (St.)
28				1	CASTLE NUT -- 1/4-28-NF-Hex. - - (St.)
29				1	COTTER PIN -- 1/16 x 1/2 Lg. - (St.)
30	C-9159	21	C-9159-P	1	PILOT - Suction Valve Unloader
31	S-1710	22	34X	1	PIPE - Cylinder to Head Water By-pass
32	S-618	23	610A-X	1	GASKET - By-Pass Pipe
33				2	CAPSCREW -- 1/2-13-NC x 2 Lg. - (St.)
34				2	LOCKWASHER -- 1/2 SAE Reg. - - (St.)
35					
36			---- Air Compressor Disch. Piping ----		
37		24		1	NIPPLE -- 1 1/4 x 6 Lg. - (W.I.)
38		25		1	TEE -- 1 1/4 Std. - (M.I.)
39		26		1	NIPPLE -- 1 1/4 x 8 Lg. - (W.I.)
40		27		1	REDUCER -- 1 1/4 x 1/2 Std. (Bell)-(M.I.)
41	C-9974	28	C-9974-P1/2	1	VALVE - Safety
42					
43					
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FOR OPP. HAND SEE

FOR OPP. ROT. SEE

NAME AIR COMPRESSOR CYLINDER & HEAD GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MARINE

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

PARTS LIST

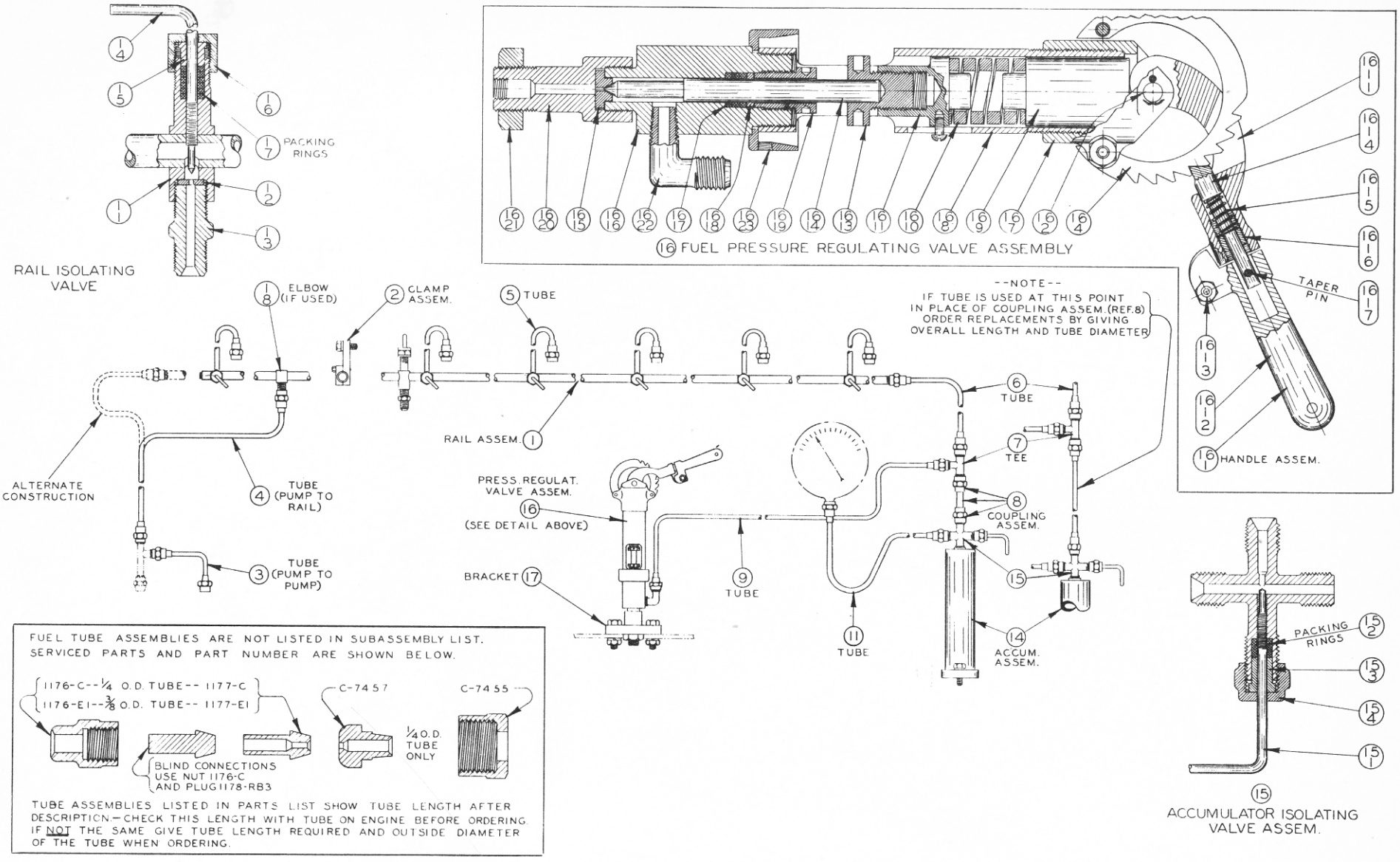
ATLAS IMPERIAL DIESEL ENGINE CO.

FORM 240 REV. 5-44 IM TRANS.

2L1469

PLATE No. K-2715

DO NOT ORDER PARTS BY REFER. NUMBERS



EXTRA COPIES TO

TYPED BY ABC DATE 8-30-45 CHKD. MD DATE 9-1-45 ISSUED BY JBR APRVD.

CHANGES #1 4-23-46 Revised
#2 2-26-47 Line 20 Part No. was G1230E
#3 11-11-49 Revised for catalog purpose

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
* INDICATES PART NOT SERVICED INDIVIDUALLY

2L1470

PLATE NO. K-2715

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1	K-583	1	X220	1	RAIL ASSEM. - Fuel	
2	S-2238	2	G1203-AX3	6	CLAMP ASSEM. - Fuel Rail	
3				6	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg.-(St.)	
4				6	LOCKWASHER -- 1/2 SAE Reg. - (St.)	
5	C-7468	3	X1884	1	TUBE ASSEM. - Pump to Pump - (12")	
6	S-3178	4	X5093	1	TUBE ASSEM. - Pump to Rail - (22")	
7	S-3178	5	X5045	6	TUBE ASSEM. - Rail to Spray Valve - (24")	
8	S-3178	6	X5101	1	TUBE ASSEM. - Rail to Tee (At Accum.) - (25")	
9		7	F-707	1	TEE - Tube	
10	C-8544	8	X2293	1	COUPLING ASSEM. - Accum. to Tee	
11	S-3178	9	X6012	1	TUBE ASSEM. - Tee to Regulat. Valve - (60")	
12						
13	S-3178	11	X5045	1	TUBE ASSEM. - Accumulator to Press. Gage -(24")	
14						
15						
16	F-6456	14	X3233	1	ACCUMULATOR ASSEM. - Fuel	
17				2	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg. - (St.)	
18				2	LOCKWASHER -- 1/2 SAE Reg. - (St.)	
19		15	G1215-E	1	VALVE ASSEM. - Accumulator Isolating	
20	W-28	16	G1230-E1	1	VALVE ASSEM. - Fuel Press. Regulating	
21		17	S-2132	1	BRACKET - Fuel Press. Reg. Valve	
22						
23						
24						
25						
26						
27			2C4206	2	BRACKET-Filter	
28				2	CAPSCREW(CLAMP) -- 1/2-13-NC x 2 3/4 Lg.--(St.)	
29				2	NUT -- 1/2-13-NC-Hex. - - (St.)	
30	F-6418		F-6418-P	1	FILTER - Fuel (See "Aux. Equip.")	
31				2	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg. -(St.)	
32				2	NUT -- 1/2-13-NC-Hex. - (St.)	
33				2	LOCKWASHER -- 1/2 SAE Reg. - (St.)	
34						
35			---- Filter to H.P. Fuel Pump ----			
36				1	REDUCING BUSHING -- 1/2 x 3/8 Std. - (C.I.)	
37				1	CLOSE NIPPLE -- 3/8 Std. - (W.I.)	
38				1	TEE -- 3/8 x 3/8 x 1/4 Std. Reducing - (M.I.)	
39	C-9804		C-9804-P 1/2	1	ELBOW - Tube	
40				1	TUBE -- 1/2 O.D. x .049 x Lg.-(H.D. Cop.)	
41	C-9804		C-9804-P 1/2	1	ELBOW - Tube	
42	2C165		2C165-P 3/8	1	UNION TEE	
43				1	NIPPLE -- 3/8 x 2 1/2 Lg. - (W.I.)	
44	2C160		2C160-P 3/8	1	UNION ELBOW	
45				2	NIPPLE -- 3/8 x 1 1/2 Lg. - (W.I.)	
46						
47			---- Press. Reg.		Valve By-Pass Line to Filter Outlet ----	
48	C-9801		C-9801-P 3/8	1	CONNECTOR - Tube	
49				1	TUBE--3/8 O.D. x .035 x Lg.-(H.D. Cop.)	
50	C-9801		C-9801-P 3/8	1	CONNECTOR - Tube	

FOR OPP. HAND SEE 2L1471
FOR OPP. ROT. SEE

NAME FUEL SYSTEM GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MARINE - R.H.

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

FORM 240 REV. 5-44 IM TRANS.

2L1470

EXTRA COPIES TO

TYPED BY MED DATE 8-29-45 CHKD. MED DATE 8-30-45 ISSUED BY [illegible] APRVD.

CHANGES

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
* INDICATES PART NOT SERVICED INDIVIDUALLY

PLATE NO. 2L1473

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1			F-7377	1	BRACKET - Oil Cooler (Gov. End - R.H. Eng --	
2					Comp. End - L.H. Eng.)	
3			F-7376	1	BRACKET - Oil Cooler	
4				8	CAPSCREW -- 3/8-16-NC x 1 Lg. - (St.)	
5				8	LOCKWASHER -- 3/8 SAE Reg. - (St.)	
6						
7						
8	2C49		2C49-P	1	OIL COOLER	
9				4	CAPSCREW -- 3/8-16-NC x 1 Lg. - (St.)	
10				4	PLAIN WASHER -- 3/8 SAE Std. - (St.)	
11						
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FOR OPP. HAND SEE

FOR OPP. ROT. SEE

NAME OIL COOLER GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MARINE

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

FORM 240 REV 5-44 1M TRANS.

2L1473

EXTRA COPIES TO

TYPED BY ABW DATE 11-16-49 CHKD ISSUED BY DATE

CHANGES #2 Revised & Retyped from 9-1-45;
Sheet No. 2 & 3 added

CHANGES

2L1474 SHEET 1 OF 3

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE

PLATE No.

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1			---- Base Sump Cover to Sump Pump Suction ----			
2						
3				1	NIPPLE -- 1 x 2 Lg. - (W.I.)	
4			2C157P1	1	UNION	
5				1	NIPPLE -- 1 x 8 Lg. - (W.I.)	
6				1	ELBOW -- 1 Std. - (M.I.)	
7				1	PIPE -- 1 x 24 Lg. (Thr'd. 2 Ends) - (W.I.)	
8			2C157P1	1	UNION	
9				1	CLOSE NIPPLE -- 1 Std. - (W.I.)	
10				1	TEE -- 1 Std. - (M.I.)	
11				1	PIPE PLUG -- 1 Std. - (C.I.)	
12				1	NIPPLE -- 1 x 2 Lg. - (W.I.)	
13						
14			---- Pressure Pump Discharge to Four-Way Cock at Cooler ----			
15						
16				1	STREET ELL -- 1 Std. - (M.I.)	
17				1	NIPPLE -- 1 x 3 1/2 Lg. - (W.I.)	
18			2C160P1	1	UNION ELBOW	
19				1	NIPPLE -- 1 x 7 Lg. - (W.I.)	
20				1	ELBOW -- 1 Std. - (M.I.)	
21				1	PIPE -- 1 x 26 Lg. (Thr'd. 2 Ends) - (W.I.)	
22				1	TEE -- 1 x 3/4 x 1 Std. Reducing - (M.I.)	
23				1	CLOSE NIPPLE (Relief Valve) -- 3/4 Std. - (W.I.)	
24			PG 21L 3/4	1	VALVE - Pressure Relief	
25				1	CLOSE NIPPLE -- 1 Std. - (W.I.)	
26			2C157P1	1	UNION	
27				1	CLOSE NIPPLE -- 1 Std. - (W.I.)	
28				1	TEE -- 1 x 1 x 1/2 Std. Reducing - (M.I.)	
29				1	PIPE -- 1 x 58 Lg. (Thr'd. 2 Ends) - (W.I.)	
30			2C160P1	1	UNION ELBOW	
31				1	CLOSE NIPPLE -- 1 Std. - (W.I.)	
32			C-9055P1 1/4	1	COCK - Four Way	
33				4	REDUCING BUSHING -- 1 1/4 x 1 Std. - (C.I.)	
34						
35			---- Four Way Cock to Cooler (Cooler Inlet) ----			
36				1	PIPE -- 1 x 18 Lg. (Thr'd. 2 Ends) - (W.I.)	
37				1	ELBOW -- 1 Std. - (M.I.)	
38				1	NIPPLE -- 1 x 2 1/2 Lg. - (W.I.)	
39			2C160P1	1	UNION ELBOW	
40				1	CLOSE NIPPLE -- 1 Std. - (W.I.)	
41				1	REDUCING BUSHING -- 1 1/2 x 1 Std. - (C.I.)	
42						
43			---- Four Way Cock to Cooler (Cooler Outlet) ----			
44				1	CLOSE NIPPLE -- 1 Std. - (W.I.)	
45			2C160P1	1	UNION ELBOW	
46				1	CLOSE NIPPLE -- 1 Std. - (W.I.)	
47				1	REDUCING BUSHING -- 1 1/2 x 1 Std. - (C.I.)	
48						
49					---- CONTINUED ON SHEET NO. 2 ----	
50						

FOR OPP. HAND SEE

FOR OPP. ROT. SEE

NAME LUBE OIL PIPING GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MARINE

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

FORM 240 REV. 12-45 M TRANS
PRINTED IN U.S.A.

2L1474 SHEET 1 OF 3

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CHANGES | CHANGES

2L1474 SHEET 2 OF 3

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE

PLATE No.

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
					---- CONTINUED FROM SHEET NO. 1 ----	
					---- Four Way Cock to Manifold Connection at Base ----	
				1	CLOSE NIPPLE -- 1 Std. - (W.I.)	
			2C160P1	1	UNION ELBOW	
				1	CLOSE NIPPLE -- 1 Std. - (W.I.)	
				1	ELBOW -- 1 Std. - (M.I.)	
				1	PIPE -- 1 x 40 Lg. (Thr'd. 2 Ends) - (W.I.)	
				1	ELBOW -- 1 Std. - (M.I.)	
				1	PIPE -- 1 x 21 Lg. (Thr'd. 2 Ends) - (W.I.)	
			2C160P1	1	UNION ELBOW	
				1	CLOSE NIPPLE -- 1 Std. - (W.I.)	
				1	ELBOW -- 1 Std. - (M.I.)	
					---- Reducing Tee on Pump Disch. Line to Filter ----	
			C-9804P 5/8	1	ELBOW - Tube	
				1	TUBE -- 5/8 OD x .049 x 10 Lg. - (H.D. Cop.)	
			C-9804P 5/8	1	ELBOW - Tube	
				1	REDUCING BUSHING -- 1 x 1/2 Std. - (C.I.)	
			F-7375	1	BRACKET - Filter	
				4	CAPSCREW -- 3/8-16-NC x 1 1/4 Lg. - - (St.)	
				4	LOCKWASHER -- 3/8 SAE Reg. - - (St.)	
			3A1872	1	FILTER - Lube Oil (See Aux. Equip.)	
				2	CAPSCREW -- 1/2-13-NC x 1 3/4 Lg. - - (St.)	
				2	NUT -- 1/2-13-NC-Hex. - - (St.)	
				2	LOCKWASHER -- 1/2 SAE Reg. - - (St.)	
					---- Filter Outlet to Sump Pump Bearing ----	
				1	REDUCING BUSHING -- 1 x 3/8 Std. - (C.I.)	
			C-9804P 1/2	1	ELBOW - Tube	
				1	TUBE -- 1/2 OD x .049 x 36 Lg. - (H.D. Copper)	
			C-9801P 1/2	1	CONNECTOR - Tube	
				1	TEE -- 3/8 Std. - (M.I.)	
				1	REDUCING BUSHING -- 3/8 x 1/8 Std. - (C.I.)	
			C-9801P 1/4	1	CONNECTOR - Tube	
				1	TUBE -- 1/4 OD x .030 x 15 Lg. - (S.D. Cop.)	
			C-9804P 1/4	1	ELBOW - Tube	
					---- CONTINUED ON SHEET NO. 3 ----	

FOR OPP. HAND SEE

FOR OPP. ROT. SEE

NAME LUBE OIL PIPING GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MARINE

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

FORM 240 REV. 12 48 1M TRANS
PRINTED IN U.S.A.

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

2L1474 SHEET 2 OF 3

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
					---- CONTINUED FROM SHEET NO. 2 ----	
					---- Tee on Filter Discharge Line to Fuel Transfer Pump Bearing ----	
			C-9801P 1/4	1	CONNECTOR - Tube	
				1	TUBE -- 1/4 OD x .030 x 24 Lg. - (S.D. Cop.)	
			C-9807P 1/4	1	TEE - Tube	
				1	COUPLING -- 1/8 Std. Pipe - (W.I.)	
				1	NIPPLE -- 1/8 x 1 1/2 Lg. - (W.I.)	
					---- Tube Tee (at Fuel Trans. Pump) to Lube Pressure Pump ----	
				1	TUBE -- 1/4 OD x .030 x 12 Lg. - (S.D. Cop.)	
			C-9804P 1/4	1	ELBOW - Tube	
					---- Cooler Outlet Line to Angle Valve at Pressure Gage ----	
			C-9801P 1/4	1	CONNECTOR - Tube	
				1	TUBE -- 1/4 O.D. x .030 x 55 Lg. - (S.D. Cop.)	
			C-9801P 1/4	1	CONNECTOR - Tube	
					---- Oil Cooler Outlet Line to Intermediate Gear ----	
			C-9801P 3/8	1	CONNECTOR - Tube	
				1	TUBE -- 3/8 O.D. x .035 x 80 Lg. - (S.D. Cop.)	
			C-9801P 3/8	1	CONNECTOR - Tube	
				1	TEE -- 1/4 Std. - (M.I.)	
				1	REDUCING BUSHING -- 1/4 x 1/8 Std. - (C.I.)	
			C-9801P 1/4	1	CONNECTOR - Tube	
				1	TUBE -- 1/4 OD x .030 x 10 Lg. - (S.D. Cop.)	
			C-9801P 1/4	1	CONNECTOR - Tube	
					---- Tee on Intermediate Gear Line to Fwd. Cam Bearing ----	
				1	REDUCING BUSHING -- 1/4 x 1/8 Std. - (C.I.)	
			C-9801P 1/4	1	CONNECTOR - Tube	
				1	TUBE -- 1/4 OD x .030 x 20 Lg. - (S.D. Cop.)	
			C-9804P 1/4	1	ELBOW - Tube	

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TYPED BY ABW DATE 11-16-49 CHKD.

ISSUED BY ABW DATE 11-17-49

CHANGES #2 Revised & Retyped from 8-30-45; Adding sheet #2

CHANGES

MASTER PARTS

2L1475 SHEET 1 OF 2

PLATE NO.

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1			---- Water Pump to Cooler ----			
2				1	NIPPLE -- 1 1/2 x 4 1/2 Lg. - (Brass)	
3	C-9054		C-9054P1 1/2	1	COCK - Three Way	
4				1	NIPPLE (To Man.) -- 1 1/2 x 2 1/2 Lg. - (Brass)	
5				1	PIPE -- 1 1/2 x 14 1/2 Lg.-(Thr'd. 2 Ends)(Brass)	
6	2C159		2C159P1 1/2	1	UNION	
7				1	NIPPLE -- 1 1/2 x 2 1/2 Lg. - (Brass)	
8				1	REDUCING BUSHING -- 2 x 1 1/2 Std. - (Brass)	
9						
10						
11						
12			---- Cooler to Water Inlet Manifold ----			
13				1	REDUCING BUSHING -- 2 x 1 1/2 Std. - (Brass)	
14				1	NIPPLE -- 1 1/2 x 2 1/2 - (Brass)	
15	2C159		2C159P1 1/2	1	UNION	
16				1	PIPE -- 1 1/2 x 15 1/2 Lg.-Thr'd. 2 Ends)(Brass)	
17				1	ELBOW -- 1 1/2 Std. - (Brass)	
18				1	NIPPLE -- 1 1/2 x 2 1/2 Lg. - (Brass)	
19						
20						
21						
22			---- Water Inlet Manifold to Air Compressor ----			
23				1	NIPPLE -- 1/2 x 3 Lg. - (Brass)	
24				1	ELBOW -- 1/2 Std. - (Brass)	
25				1	NIPPLE (Bent) -- 1/2 x 10 Lg. - (Brass)	
26				1	ELBOW -- 1/2 Std. - (Brass)	
27				1	NIPPLE -- 1/2 x 3 Lg. - (Brass)	
28						
29						
30						
31			---- Water Inlet Manifold End Flange to Thrust Bearing ----			
32				1	REDUCING BUSHING -- 1/2 x 1/4 Std. - (Brass)	
33				1	NIPPLE -- 1/4 x 4 Lg. - (Brass)	
34	C-9053		C-9053P 1/4	1	COCK - Shut-Off	
35				1	NIPPLE -- 1/4 x 4 Lg. - (Brass)	
36	2C162		2C162P 1/4	1	UNION ELBOW	
37				1	PIPE -- 1/4 x 72 Lg. (Thr'd. 2 Ends) - (Brass)	
38				1	ELBOW -- 1/4 Std. - (Brass)	
39				1	NIPPLE -- 1/4 x 7 Lg. - (Brass)	
40	2C162		2C162P 1/4	1	UNION ELBOW	
41				1	NIPPLE -- 1/4 x 6 1/2 Lg. - (Brass)	
42				1	TEE -- 1/4 Std. - (Brass)	
43				1	NIPPLE (To Bear.)--1/4 x 2 Lg. - (Brass)	
44				1	REDUCING BUSHING -- 1 1/4 x 1/4 Std.-(Brass)	
45				1	NIPPLE -- 1/4 x 1 1/2 Lg. - (Brass)	
46	C-9053		C-9053P 1/4	1	COCK - Shut-Off	
47						
48						
49					---- CONTINUED ON SHEET NO. 2 ----	
50						

FOR OPP. HAND SEE

FOR OPP. ROT. SEE

NAME WATER PIPING GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MARINE

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

FORM 240 REV. 12-48 1M TRANS. PRINTED IN U.S.A.

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

2L1475 SHEET 1 OF 2

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CHANGES | CHANGES

2L1475 SHEET 2 OF 2

PLATE No.

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1					---- CONTINUED FROM SHEET NO. 1 ----	
2						
3	---- Water Press. Relief				Valve (Mounted on Pump Suct. & Disch. Pipe) ----	
4				1	REDUCING BUSHING -- 2 x 1 1/4 Std. - (Brass)	
5				1	CLOSE NIPPLE -- 1 1/4 Std. - (Brass)	
6	2C10		2C10P1 1/4	1	RELIEF VALVE	
7						
8						
9		---- Air Comp. Cyl. Head to Exh. Man. Water Outlet Pipe ----				
10				1	NIPPLE -- 1/2 x 2 Lg. - (Brass)	
11	2C159		2C159P 1/2	1	UNION	
12				1	NIPPLE -- 1/2 x 11 1/2 Lg. - (Brass)	
13	2C159		2C159P 1/2	1	UNION	
14				1	NIPPLE -- 1/2 x 2 1/2 Lg. - (Brass)	
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FOR OPP. HAND SEE

FOR OPP. ROT. SEE

NAME WATER PIPING GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MARINE

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

PARTS LIST

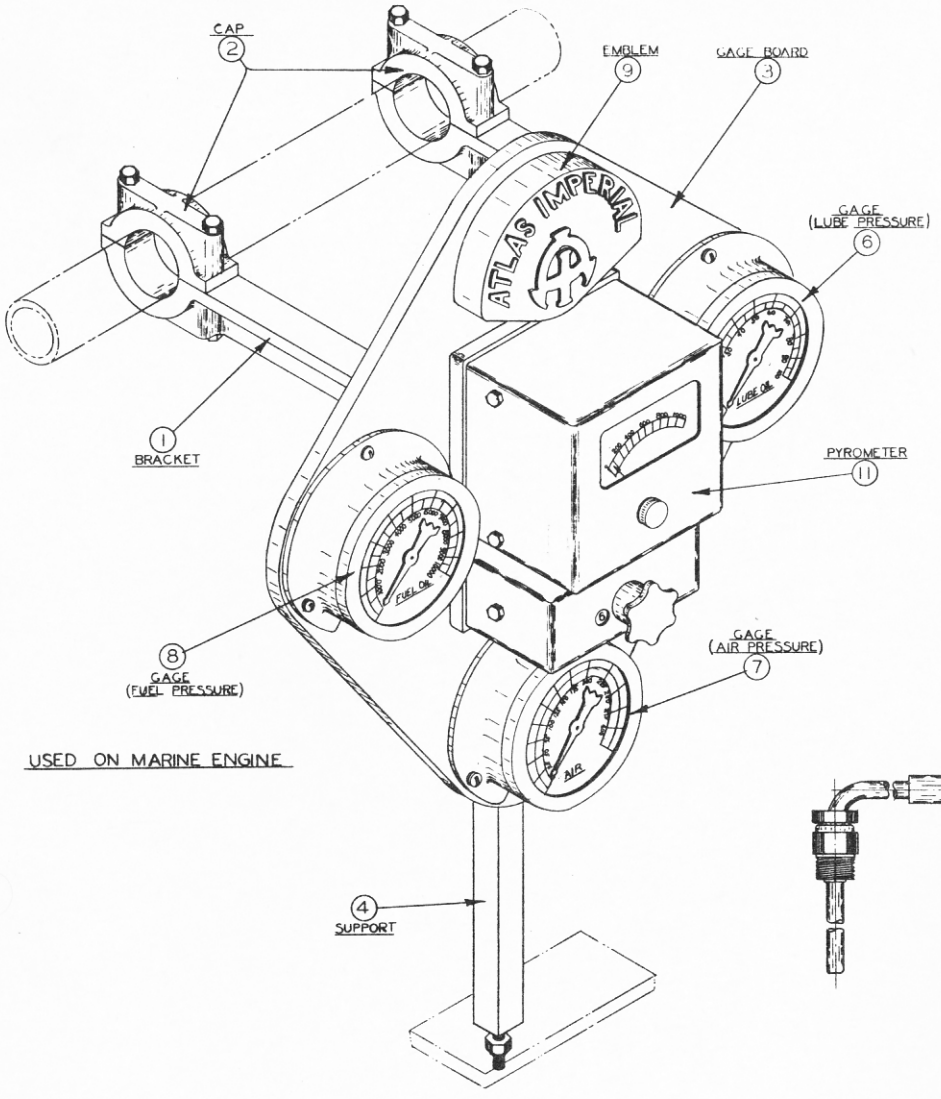
ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

FORM 240 REV. 12-48 1M TRANS.
PRINTED IN U.S.A.

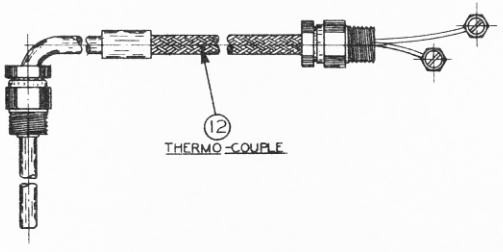
2L1475 SHEET 2 OF 2

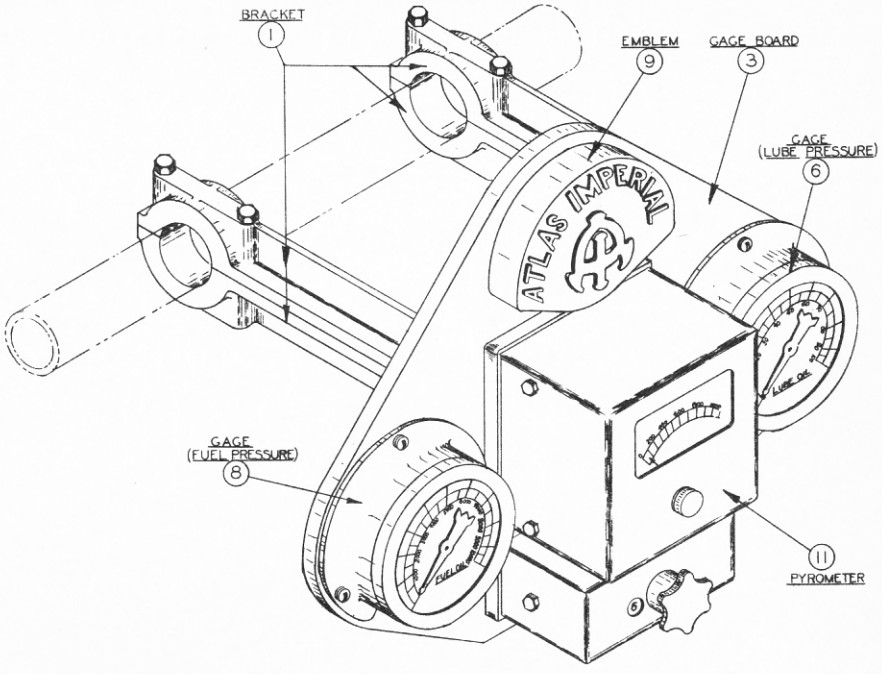
PLATE NO. K 2473

DO NOT ORDER PARTS BY REF. NUMBERS



USED ON MARINE ENGINE





USED ON STATIONARY ENGINE

EXTRA COPIES TO

TYPED BY ABC DATE 1-2-46 CHKD. MEB DATE 1-2-46 ISSUED BY [illegible] APRVD.

CHANGES

#1 2-12-46 Line 25 No. req'd. was 7
#2 5-6-46 Line 25 Part No. was 2C4470B

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
* INDICATES PART NOT SERVICED INDIVIDUALLY

2L1602

PLATE NO. K-2473

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1		1	C-497	4	BRACKET - Gage Board	
2				4	CAPSCREW -- 3/8-16-NC x 3 1/4 Lg. - - (St.)	
3				4	NUT -- 3/8-16-NC-Hex. - - (St.)	
4		3	W-2514	1	BOARD - Gage	
5				4	CAPSCREW -- 3/8-16-NC x 1 Lg. - - (St.)	
6				4	LOCKWASHER -- 3/8 SAE Reg. - - (St.)	
7			2C4551	1	BRACE - Gage Board	
8			2C4552	1	CAP - Gage Board Brace	
9				2	CAPSCREW -- 3/8-16-NC x 1 Lg. - - (St.)	
10				2	NUT -- 3/8-16-NC-Hex. - - (St.)	
11				1	CAPSCREW(Brace to Bd.)--3/8-16-NC x 3/4 Lg.-(St)	
12				1	LOCKWASHER -- 3/8 SAE Reg. - - (St.)	
13						
14		6	2C3707	1	GAGE - Lube Pressure - (100 Lb.)	
15		7	2C4471	1	GAGE - Air Pressure - (300 Lb.)	
16		8	2C4481	1	GAGE - Fuel Pressure - (10,000 Lb.)	
17				9	MACHINE SCREW -- 1/4-20 x 5/8 Lg.-Rnd.Hd.--(St)	
18				9	LOCKWASHER -- 1/4 SAE Reg. - - (St.)	
19						
20		9	F-7525	1	EMBLEM-GAGE BOARD--(Not used with Tachometer)	
21				2	CAPSCREW -- 3/8-16-NC x 7/8 Lg. - - (St.)	
22				2	LOCKWASHER -- 3/8 SAE Reg. - - (St.)	
23						
24		11	2C4469-P	1	PYROMETER	
25		12	2C4470A	6	THERMO-COUPLE	
26						
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FOR OPP. HAND SEE

FOR OPP. ROT. SEE

NAME GAGE BOARD GROUP

ORIGINALLY ISSUED FOR 6 CYL. 10 1/2 x 13 MARINE

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

PARTS LIST

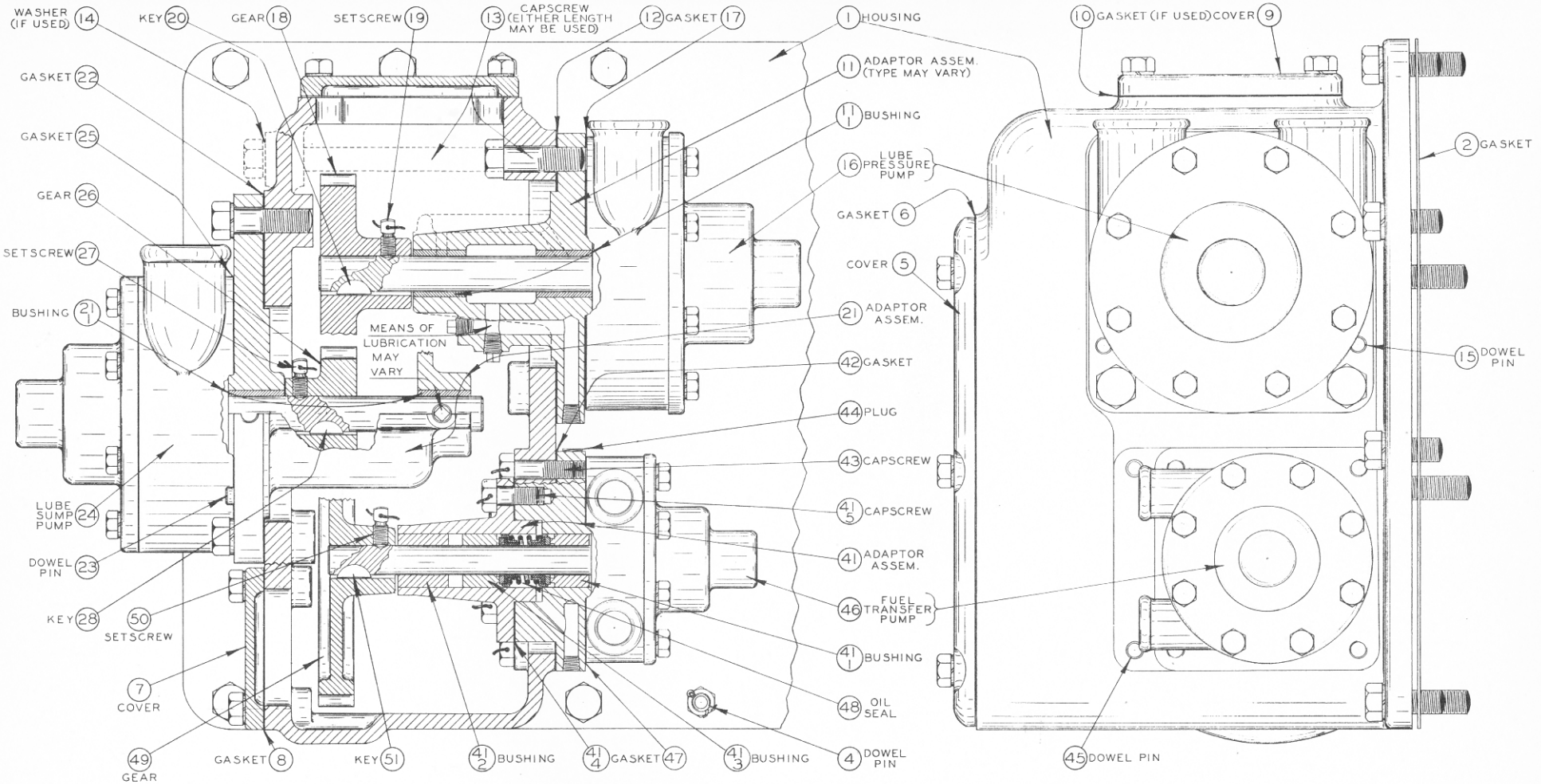
ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

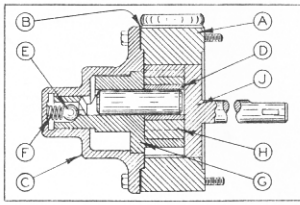
FORM 240 REV. 5-44 1M TRANS.
PRINTED IN U. S. A.

2L1602

PLATE No. K-2713

DO NOT ORDER PARTS BY REFER. NUMBERS





REF. LET.	PART NAME	PUMP No. 2C4111-P	PUMP No. 2C4112-P	PUMP No. 2C4113-P
A	HOUSING	C-9290-P1	2C47-P1	2C47-P1
B	GASKET	C-8193-P	C-9849-P	C-9849-P
C	COVER	C-9290-P2	2C47-P2	2C47-P2
D	BUSHING	C-9290-P3	2C47-P3	2C47-P3
E	STEEL BALL	9/16 DIA.	9/16 DIA.	9/16 DIA.
F	SPRING	C-9290-P4	2C47-P4	2C47-P4
G	CARRIER & PIN	C-9290-P5	2C47-P5	2C47-P5
H	IDLER & BUSH.	C-9290-P6	2C47-P6	2C47-P6
J	ROTOR & SHAFT	2C4111-P7	2C4112-P7	2C4113-P7

-NOTE-
ORDER PUMP PARTS AS PER PART NUMBERS LISTED IN TABULATION. THESE PARTS ARE NOT LISTED ON GROUP SHEET. PARTS NOT LISTED ARE NOT SOLD INDIVIDUALLY.

EXTRA COPIES TO

TYPED BY ABC DATE 6-19-46 CHKD AR ISSUED BY AEK DATE 6-24-46

CHANGES #1 11-10-49 Line 25 Part No. was C-2408 C-2408L2 3/4

CHANGES

2L1921

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE

PLATE No. K-2713

ASSEM. DRWG. NO. 912LA72

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME
1		1	K-2376	1	HOUSING - Rotary Pump Drive
2		2	2C4105	1	GASKET - Housing to Centerframe & Cover
3				7	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg. - - (St.)
4				4	CAPSCREW -- 1/2-13-NC x 1 3/4 Lg. - - (St.)
5				4	NUT -- 1/2-13-NC-Hex. - - (St.)
6					
7				11	LOCKWASHER -- 1/2 SAE Reg. - - (St.)
8	C-7950	4	C-7950L1 5/8	2	PIN - Housing to Centerframe Dowel
9				2	HALF NUT -- 3/8-24-NF-Hex. - - (St.)
10				2	COTTER PIN -- 3/32 x 3/4 Lg. - - (St.)
11		5	2C3504	1	COVER - Drive Housing (Front)
12		6	2C3506	1	GASKET - Cover to Housing
13				6	CAPSCREW -- 3/8-16-NC x 1 Lg. - - (St.)
14				6	LOCKWASHER -- 3/8 SAE Reg. - - (St.)
15		7	2C4316	1	COVER - Drive Housing (End)
16		8	2C4318	1	GASKET - Cover to Housing
17				4	CAPSCREW -- 3/8-16-NC x 1 Lg. - - (St.)
18				4	LOCKWASHER -- 3/8 SAE Reg. - - (St.)
19		9	C-8151	1	COVER - Drive Housing (Top)
20		10	C-8171	1	GASKET - Cover to Housing
21				4	CAPSCREW -- 3/8-16-NC x 1 Lg. - - (St.)
22				4	LOCKWASHER -- 3/8 SAE Reg. - - (St.)
23		11	X4083	1	ADAPTOR ASSEM. - Lube Pressure Pump
24		12	2C4878	1	GASKET - Adaptor to Housing
25	C-2408	13	C-2408L1 3/4	1	CAPSCREW - Adaptor to Housing
26				2	CAPSCREW -- 1/2-13-NC x 1 1/2 Lg. - - (St.)
27				2	LOCKWASHER -- 1/2 SAE Reg. - - (St.)
28	C-8265	15	C-8265L1	2	PIN - Adaptor to Housing Dowel
29	2C4112	16	2C4112P	1	PUMP - Lube Pressure
30	C-9849	17	C-9849P	3	GASKET - Pump to Adaptor
31				8	CAPSCREW -- 5/16-18-NC x 3 1/4 Lg. - - (St.)
32				8	LOCKWASHER -- 5/16 SAE Reg. - - (St.)
33		18	2C4109	1	GEAR - Press. Pump Drive
34		19	C-8217	1	SETSCREW - Gear to Pump Shaft
35		20		1	WOODRUFF KEY -- 3/16 x 3/4 Std. - - (St.)
36				1	WIRE -- #16 Ga. x 8 Lg. - - (St.)
37		21	X4085	1	ADAPTOR ASSEM. - Lube Sump Pump
38		22	2C1217	1	GASKET - Adaptor to Housing
39				3	CAPSCREW -- 1/2-13-NC x 1 1/2 Lg. - - (St.)
40				3	LOCKWASHER -- 1/2 SAE Reg. - - (St.)
41	C-8265	23	C-8265L1	2	PIN - Adaptor to Housing Dowel
42	2C4113	24	2C4113P	1	PUMP - Lube Sump
43	C-9849	25	C-9849P	3	GASKET - Pump to Adaptor
44				8	CAPSCREW -- 5/16-18-NC x 2 1/2 Lg. - - (St.)
45				8	LOCKWASHER -- 5/16 SAE Reg. - - (St.)
46		26	2C4110	1	GEAR - Sump Pump Drive
47		27	C-8217	1	SETSCREW - Gear to Pump Shaft
48		28		1	WOODRUFF KEY -- 3/16 x 3/4 Std. - - (St.)
49				1	WIRE -- #16 Ga. x 8 Lg. - - (St.)
50					

2L1921

FOR OPP. HAND SEE 2L1922

FOR OPP. ROT. SEE

NAME LUBE OIL PUMP & HOUSING GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MAR. - R.H.

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY No. REQ'D FOR GROUP GIVEN ON INDEX SHEET

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

FORM 240 REV. 1/46 2M TRANS.
PRINTED IN U.S.A.

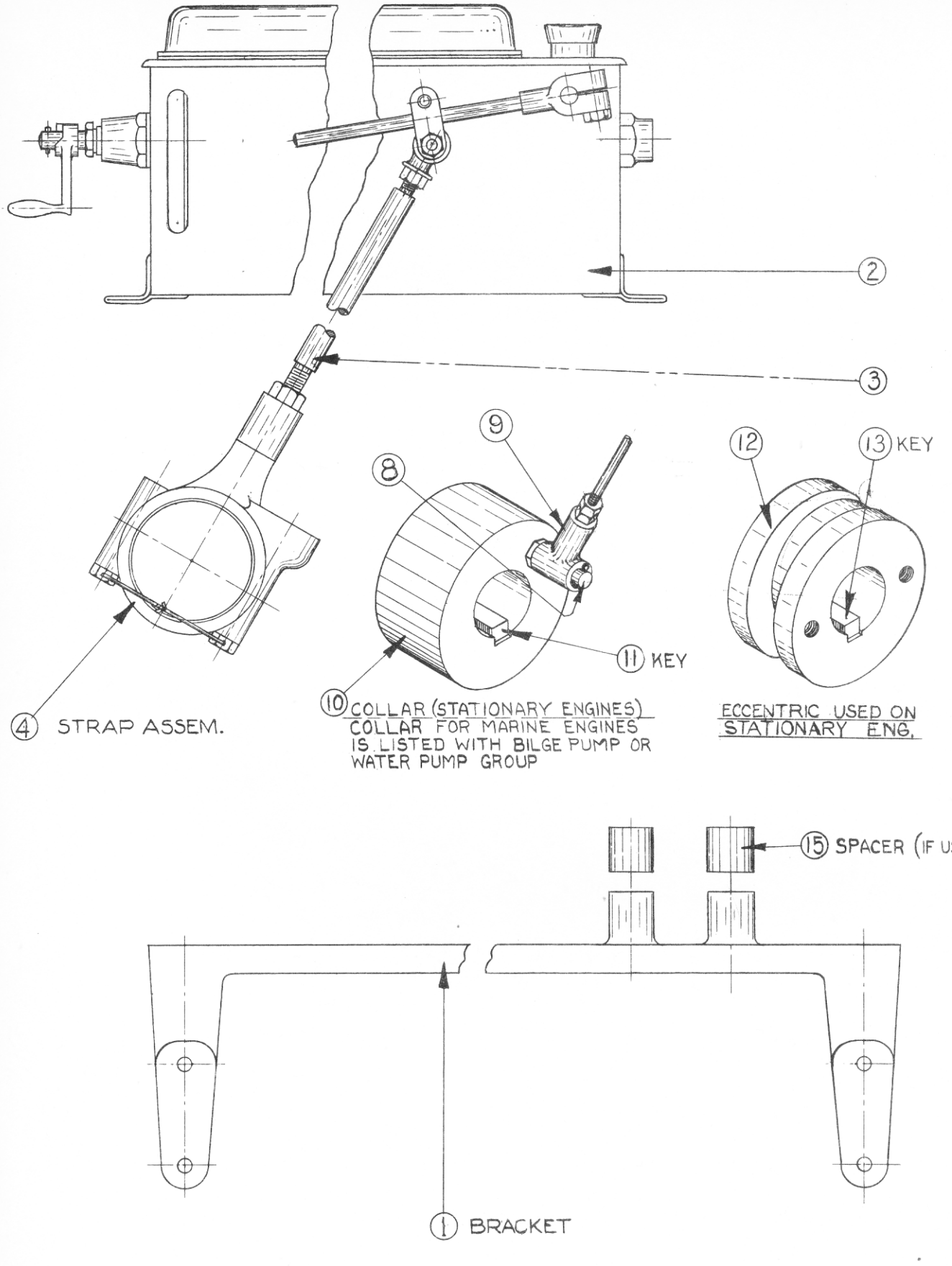


PLATE
No.W-1746 (ED 3)

DO NOT ORDER PARTS BY REF. NUMBERS

EXTRA COPIES TO

TYPED BY ABC DATE 8-20-46 CHKD. CAT ISSUED BY TM DATE 8-26-46

CHANGES

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE

2L1978

PLATE NO. W-1746

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1		1	F-7750	1	BRACKET - Lubricator	
2				4	CAPSCREW -- 1/2-13-NC x 3 1/2 Lg. - - (St.)	
3				4	LOCKWASHER -- 1/2 SAE Reg. - - (St.)	
4	-7148	2	F-7148P12	1	LUBRICATOR - (14 Feed - R.H.)	
5				4	CAPSCREW -- 3/8-16-NC x 1 1/4 Lg. - - (St.)	
6				4	NUT -- 3/8-16-NC-Hex. - - (St.)	
7				4	LOCKWASHER -- 3/8 SAE Reg. - - (St.)	
8				4	PLAIN WASHER -- 3/8 SAE Std. - - (St.)	
9		3	F-5203	1	ROD - Lubricator Drive	
10				1	NUT -- 1/2-20-NF-Hex. - - (St.)	
11				1	NUT -- 3/8-16-NC-Hex. - - (St.)	
12	F-6940	4	X498	1	STRAP ASSEM. - Lub. Drive Eccentric	
13				1	WIRE -- #16 Ga. x 9 Lg. - - (St.)	
14						
15					-- Lubricator to Cylinders (Cam Side) --	
16				1	TUBE(Cyl.1)--1/4 OD x .030 x 28 Lg. (S.D. Cop.)	
17				1	TUBE(Cyl.2)--1/4 OD x .030 x 42 Lg. (S.D. Cop.)	
18				1	TUBE(Cyl.3)--1/4 OD x .030 x 56 Lg. (S.D. Cop.)	
19				1	TUBE(Cyl.4)--1/4 OD x .030 x 70 Lg. (S.D. Cop.)	
20				1	TUBE(Cyl.5)--1/4 OD x .030 x 84 Lg. (S.D. Cop.)	
21				1	TUBE(Cyl.6)--1/4 OD x .030 x 98 Lg. (S.D. Cop.)	
22	C-9832		C-9832P 1/4	6	ELBOW - Tube	
23						
24					-- Lubricator to Cylinders (Exhaust Side) --	
25				1	TUBE(Cyl.1)--1/4 OD x .030 x 31 Lg. (S.D. Cop.)	
26				1	TUBE(Cyl.2)--1/4 OD x .030 x 45 Lg. (S.D. Cop.)	
27				1	TUBE(Cyl.3)--1/4 OD x .030 x 59 Lg. (S.D. Cop.)	
28				1	TUBE(Cyl.4)--1/4 OD x .030 x 73 Lg. (S.D. Cop.)	
29				1	TUBE(Cyl.5)--1/4 OD x .030 x 87 Lg. (S.D. Cop.)	
30				1	TUBE(Cyl.6)--1/4 OD x .030 x 101 Lg. (S.D. Cop.)	
31	C-9832		C-9832P 1/4	6	ELBOW - Tube	
32						
33			S-1492	4	CLAMP - Tube - (2 Tubes)	
34			S-1493	4	CLAMP - Tube - (3 Tubes)	
35			S-1494	4	CLAMP - Tube - (4 Tubes)	
36			S-1495	5	CLAMP - Tube - (5 Tubes)	
37			S-1496	6	CLAMP - Tube - (6 Tubes)	
38				26	MACHINE SCREW--1/4-20 x 5/8 Lg.-Rnd.Hd. - - (St.)	
39				26	NUT -- 1/4-20-NC-Hex. - - (St.)	
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2L1978

FOR OPP. HAND SEE 2L1979

FOR OPP. HOT. SEE

NAME LUBRICATOR & PIPING GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MARINE - R.H.

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

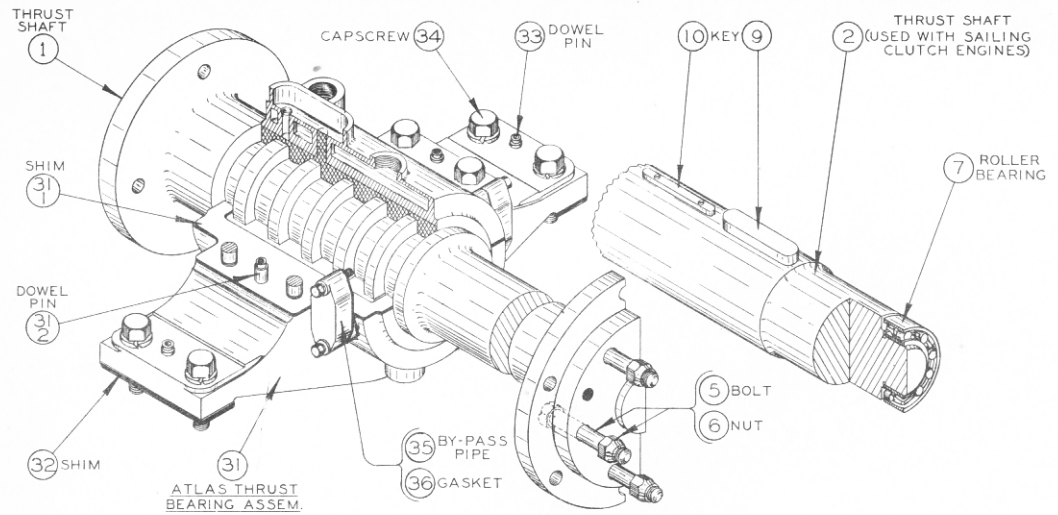
FORM 240 REV. 1/46 2M TRANS.
PRINTED IN U.S.A.

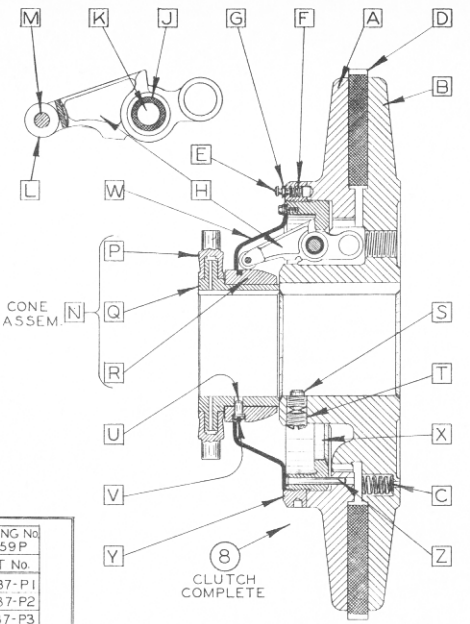
PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

PLATE NO. K-2712

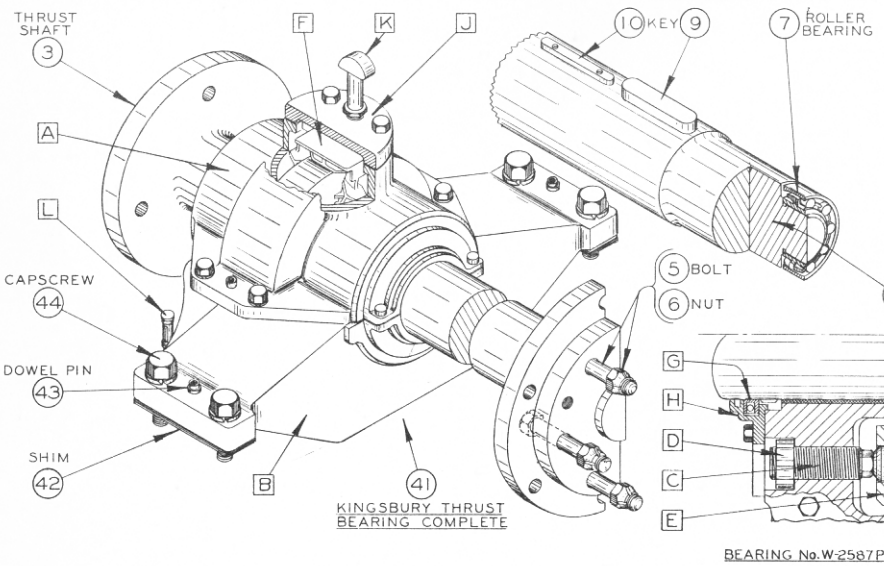
DO NOT ORDER PARTS BY REFER. NUMBERS



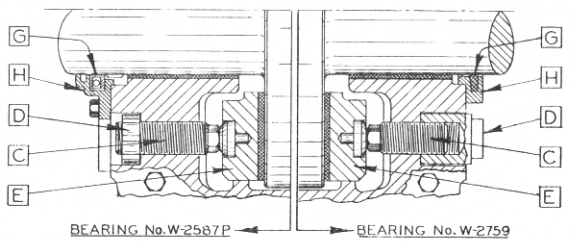


REF LET	PART NAME	PART No.
A	FLOATING PLATE	W-2461-P1
B	HUB PLATE	W-2461-P2
C	RELEASE SPRING	W-2461-P3
D	DRIVING PLATE	W-1652-P1
E	ADJ. LOCK PIN	W-1638-P3
F	SPRING (ADJ. LOCK PIN)	W-1638-P4
G	SNAP RING	W-1652-P5
H	LEVER	W-1652-P6
J	BUSHING (OIL-LITE)	W-1638-P7
K	PIN (LEVER)	W-1638-P6
L	ROLLER (LEVER)	W-1638-P8
M	PIN (ROLLER)	W-1638-P9
N	CONE ASSEM.	W-1638-P1
P	COLLAR	W-1638-P12
Q	SLEEVE	W-1638-P14
R	CONE RING	W-1638-P13
S	SETSCREW (DOG PT.)	W-1638-P15
T	LOCK SCREW	W-1638-P16
U	CONE LOCK PIN	W-1638-P17
V	SNAP RING (LOCK PIN)	W-1652-P18
W	COVER	W-1638-P11
X	PRESSURE RING	W-1638-P20
Y	ADJUSTING RING	W-1638-P21
Z	PILOT PIN	W-1638-P22

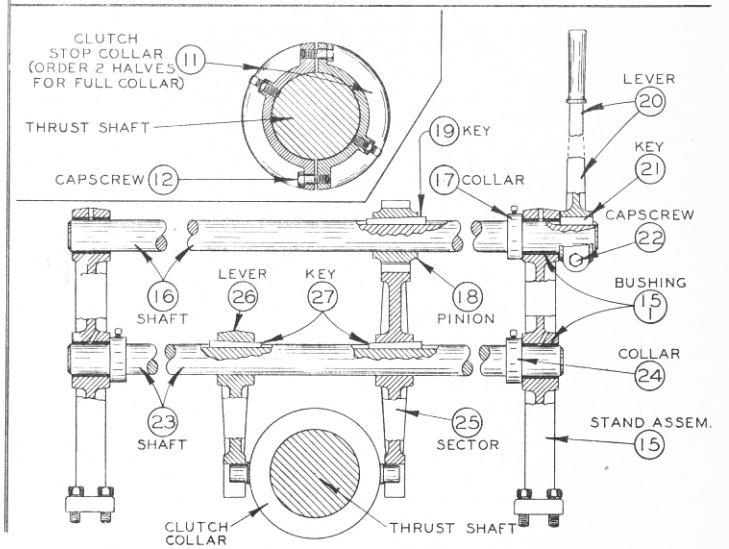
-NOTE-
ORDER CLUTCH PARTS AS PER PART NUMBERS LISTED IN THE TABULATION ABOVE. THESE PARTS ARE NOT LISTED ON GROUP SHEET.



REF	PART NAME	BEARING No. W-2587 P PART No.	BEARING No. W-2759P PART No.
A	UPPER HOUSING	W-2587-P1	W-2587-P1
B	LOWER HOUSING	W-2587-P2	W-2587-P2
C	JACK SCREW	W-2587-P3	W-2587-P3
D	JACK SCR. NUT	W-2587-P4	W-2759 P1
E	SHOE	W-2587-P5	W-2587-P5
F	OIL SCRAPER	W-2587-P6	W-2587-P6
G	OIL SEAL	W-2587-P7	W-2759 P2
H	SEAL ADAPTOR	W-2587-P8	W-2759-P3
J	TOP COVER	W-2587-P9	W-2587-P9
K	AIR VENT	W-2587-P10	W-2587-P10
L	OIL GAUGE	W-2587-P11	W-2587-P11



NOTE - KINGSBURY THRUST BEARING PARTS WITH REFERENCE LETTERS IN ☐ ARE NOT LISTED ON GROUP SHEET. ORDER THESE PARTS AS PER PART NUMBERS LISTED IN THE TABULATION



MASTER PARTS LIST

EXTRA COPIES TO

TYPED BY ABW DATE 11-7-49 CHKD.

ISSUED BY ABW DATE 11-8-49

CHANGES

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE

2L2409

PLATE No. K-2712

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1						
2						
3		3	W-2680	1	SHAFT - Thrust	
4		5	C-2616L5 1/4	6	BOLT - Thrust Shaft to Crankshaft	
5		6		6	CASTLE NUT -- 1-14-NF-Hex. - - (St.)	
6				6	COTTER PIN -- 1/8 x 1 3/4 Lg. - - (St.)	
7						
8						
9						
10		41	W-2759P	1	BEARING - Thrust	
11		42	C-7965-B	2	SHIM - Thrust Bearing to Base - (1/32)	
12		42	C-7965-D	4	SHIM - Thrust Bearing to Base - (.010)	
13		42	C-7965-E	8	SHIM - Thrust Bearing to Base - (.003)	
14		43	C-6386L3	2	PIN - Bearing to Base Dowel	
15		44		4	CAPSCREW (Bear. to Base)--1-8-NC x 3 1/4 Lg.(St.)	
16				4	LOCKWASHER -- 1 SAE Reg. - - (St.)	
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FOR OPP. HAND SEE

FOR OPP. ROT. SEE

NAME THRUST BEARING & SHAFT GROUP (KINGSBURY THRUST)

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MARINE

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

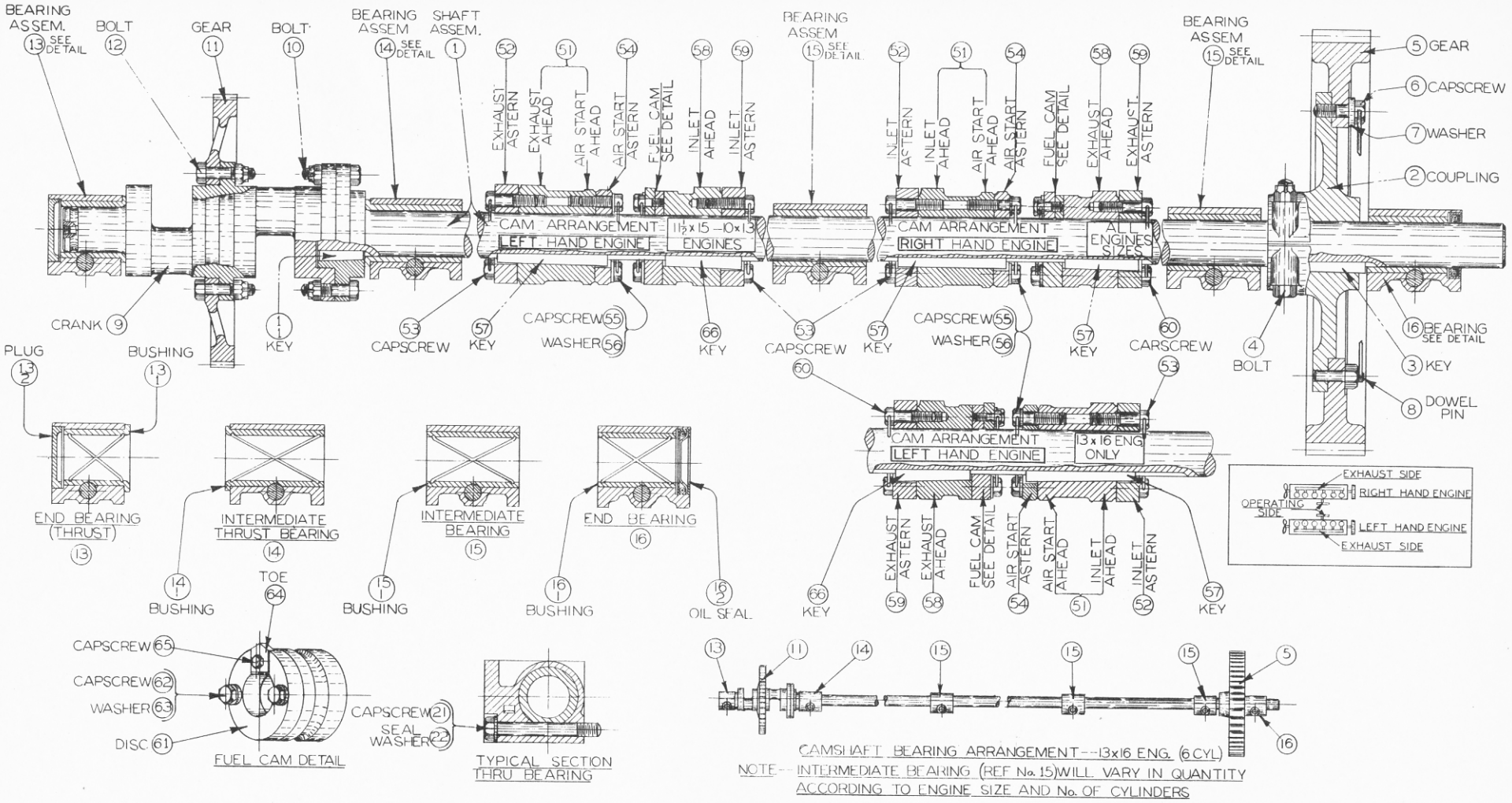
PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

FORM 240 REV. 12-48 1M TRANS.
PRINTED IN U.S.A.

2L2409

PLATE No. K-1877 (ED. 4) DO NOT ORDER PARTS BY REF. NUMBERS



EXTRA COPIES TO

TYPED BY ABW DATE 11-9-49 CHKD.

ISSUED BY [illegible] DATE 11-9-49

MASTER PARTS CATALOG

CHANGES

CHANGES

2L2412

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE

PLATE No. K-1877

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1	F-2599	51	532-E6	1	CAM - Inlet (with Hub for Air Cam)	
2	S-1859	52	532A-E6	1	CAM - Inlet (Cam only)	
3	C-2408	53	C-2408L1 1/2	2	CAPSCREW - Astern Cam to Ahead Cam	
4				1	WIRE -- #16 Ga. x 10 Lg. - - (St.)	
5	S-2979	54	597-E6	2	CAM - Air Starting - (Cam only)	
6	C-2408	55	C-2408L2	2	CAPSCREW - Air Start. Cam to Inlet Cam	
7	S-2233	56	881A-E	2	WASHER - Air Start. Cam Capscrew	
8				1	WIRE -- #16 Ga. x 10 Lg. - - (St.)	
9	2C1432	57	2C1432L4 1/2	1	KEY - Inlet & Air Starting Cam to Camshaft	
10						
11	F-2611	58	560-E6	1	CAM - Exhaust (with Hub for Fuel Cam)	
12	S-1859	59	532A-E6	1	CAM - Exhaust - (Cam only)	
13	C-2408	60	C-2408L1 1/2	2	CAPSCREW - Astern Cam to Ahead Cam	
14				1	WIRE -- #16 Ga. x 10 Lg. - - (St.)	
15	S-2978	61	881-E	1	DISC - Fuel Cam	
16	C-2408	62	C-2408L1 1/2	2	CAPSCREW - Disc to Cam Hub	
17	S-2233	63	881A-E	2	WASHER - Fuel Cam Capscrew	
18	F-1656	64	880-E	1	TOE - Fuel Cam	
19	C-2406	65	C-2406L 3/4	1	CAPSCREW - Toe to Fuel Cam Disc	
20				1	WIRE -- #16 Ga. x 12 Lg. - - (St.)	
21	2C1432	66	2C1432L5 1/2	1	KEY - Exhaust & Fuel Cam to Camshaft	
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35					---- NOTE ----	
36						
37					For "Outboard" Rotation the same parts listed above are used	
38					and the rotation is changed by switching Roller positions	
39					on the Latches.	
40						
41					To determine whether an engine is Right or Left Hand see	
42					diagram on Parts Catalog Plate.	
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FOR OPP. HAND SEE 2L2413

FOR OPP. ROT. SEE

NAME CAM GROUP - - - - - - - - (INBOARD ROTATION)

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MARINE - R.H.

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY No. REQ'D FOR GROUP GIVEN ON INDEX SHEET

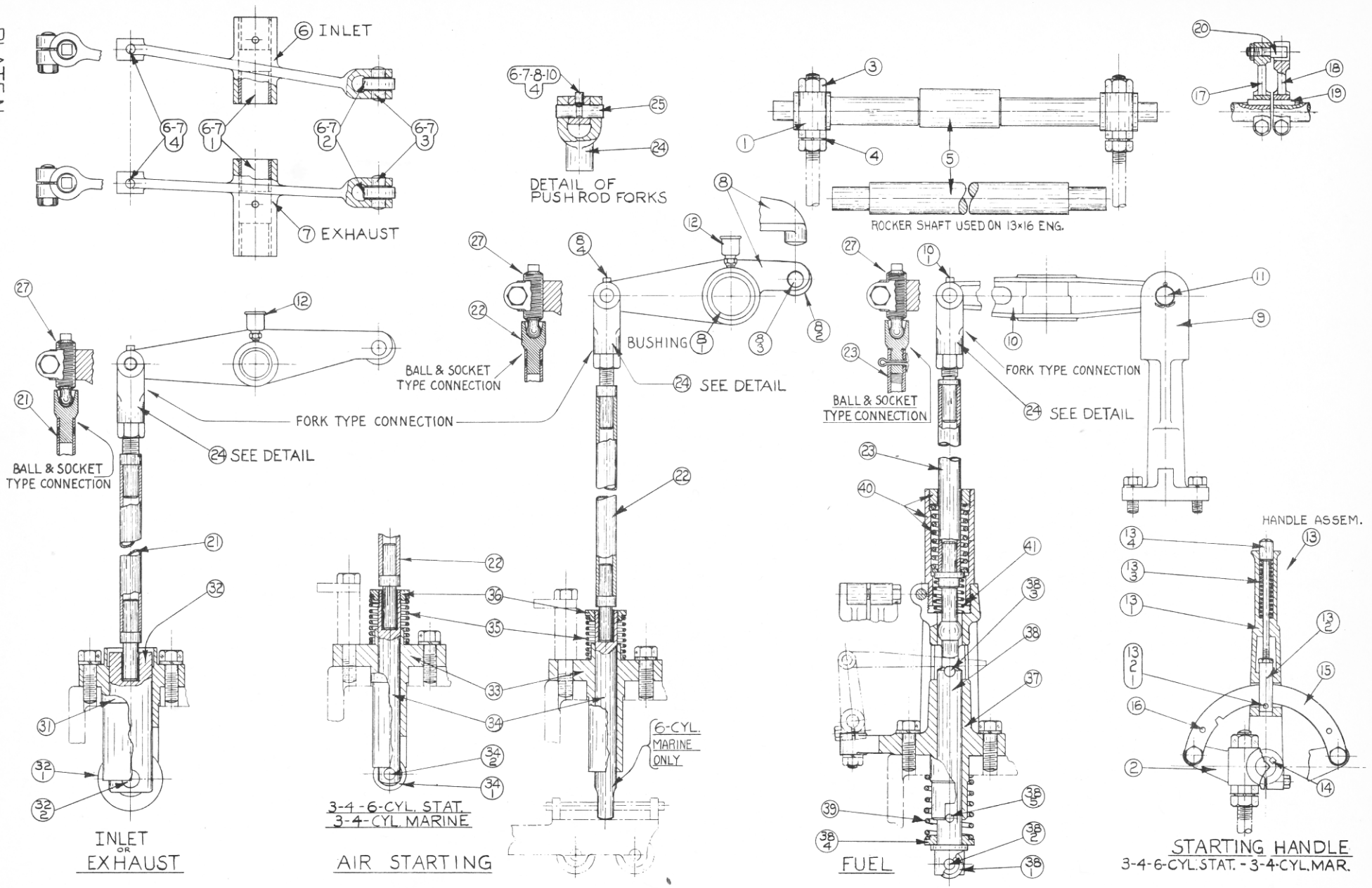
FORM 240 REV. 12-43 1M TRANS. PRINTED IN U.S.A.

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

2L2412

PLATE No. K-1926 (ED. 2)



DO NOT ORDER PARTS BY REF. NUMBERS

EXTRA COPIES NO.

TYPED BY BJR DATE 12-31-48 CHKD. JBK ISSUED BY JBK DATE 1-17-49

CHANGES #8 12-31-48 Retyped & changed 888-C3 to 3A1738.

CHANGES

L-6919

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE

PLATE No. K-1926

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1	C-7988	31	529-C	2	GUIDE - In. & Exh. Valve Lifter	
2				4	CAPSCREW -- 5/8-11-NC x 1 3/4 Lg. -- (St.)	
3				4	LOCKWASHER -- 5/8 SAE Reg. -- (St.)	
4	C-8465	32	X1211	2	LIFTER ASSEM. - In. & Exh. Valve	
5						
6	2C2536	33	599-E6	1	GUIDE - Air Start. Valve Lifter	
7				1	CAPSCREW -- 5/8-11-NC x 1 3/4 Lg. -- (St.)	
8				1	LOCKWASHER -- 5/8 SAE Reg. -- (St.)	
9	2C2535	34	594-E6	1	LIFTER - Air Start. Valve	
10		35	3A1738	1	SPRING - Air Start. Valve Lifter	
11	C-7987	36	594A-E	1	COLLAR - Valve Lifter Spring Retainer	
12						
13		37	W-140	1	GUIDE - Fuel Spray Valve Lifter	
14				2	CAPSCREW -- 5/8-11-NC x 1 3/4 Lg. -- (St.)	
15				2	LOCKWASHER -- 5/8 SAE Reg. -- (St.)	
16				1	CAPSCREW (Clamp) -- 1/2-13-NC x 2 Lg. -- (St.)	
17	F-3770	38	X553	1	LIFTER ASSEM. - Fuel Spray Valve	
18		39	C-3291	1	SPRING - Fuel Spray Valve Lifter	
19						
20	C-1932	40	X490	1	SPRING ASSEM. - Spray Valve Push-Rod Buffer	
21		41	C-1933	1	SPRING - Spray Valve Push-Rod	
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L-6919

FOR OPP. HAND SEE

FOR OPP. ROT. SEE

NAME VALVE LIFTER & GUIDE GROUP

ORIGINALLY ISSUED FOR 6 CYL. 7½x10½ to 13x16 - R.H.

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

FORM 240 REV. 1/46 2M TRANS. PRINTED IN U.S.A.

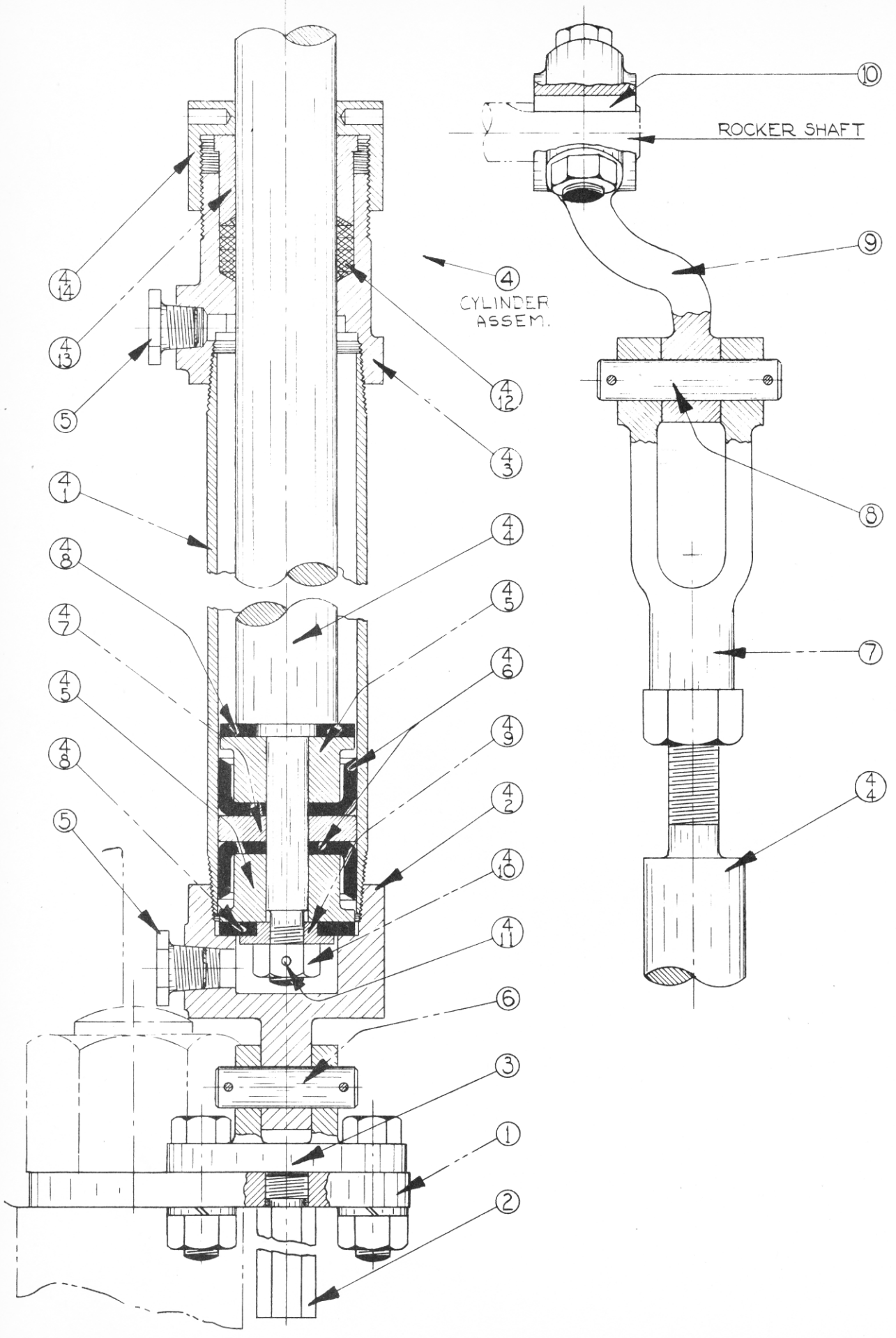

PLATE
No. W-1800

DO NOT ORDER PARTS BY REF. NUMBERS

EXTRA COPIES TO

TYPED BY MED DATE 8-29-45 CHKD. MED DATE 8-30-45 ISSUED BY JAM APRVD.

4 Retyped from 12-24-34 (No Changes)

CHANGES

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
* INDICATES PART NOT SERVICED INDIVIDUALLY

L-6950

PLATE NO. W-1800

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1	2C3683	1	4960	1	PLATE - Air Cyl. Support	
2		2	C-724	1	STUD - Support Plate	
3	2C2742	3	4179	1	BEARING - Air Cylinder	
4				2	CAPSCREW -- 1/2-13-NC x 1 3/4 Lg. - (St.)	
5				2	NUT -- 1/2-13-NC-Hex. - (St.)	
6				2	LOCKWASHER -- 1/2 SAE Reg. - (St.)	
7						
8	3715	4	X1118	1	CYLINDER ASSEM. - Air Starting	
9				2	REDUCING BUSHING -- 3/8 x 1/4 Std. - (Brass)	
10		6	C-530	1	PIN - Air Cyl. to Bearing	
11				2	COTTER PIN -- 1/8 x 1 Lg. - (St.)	
12						
13		7	C-4079	1	ROD-END - Air Cylinder	
14				1	NUT -- 3/4-16-NF-Hex. - (St.)	
15	C-426	8	1076A-BX3	1	PIN - Rod-End to Rocker Shaft Lever	
16				2	COTTER PIN -- 1/8 x 1 1/4 Lg. - (St.)	
17	C-8978	9	4557	1	LEVER - Rocker Shaft Control	
18				1	CAPSCREW -- 1/2-13-NC x 1 3/4 Lg. - (St.)	
19	S-3137	10	5125	1	KEY - Lever to Rocker Shaft	
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FOR OPP. HAND SEE L-6951

FOR OPP. ROT. SEE

NAME AIR STARTING CYLINDER GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MAR. - R.H.

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

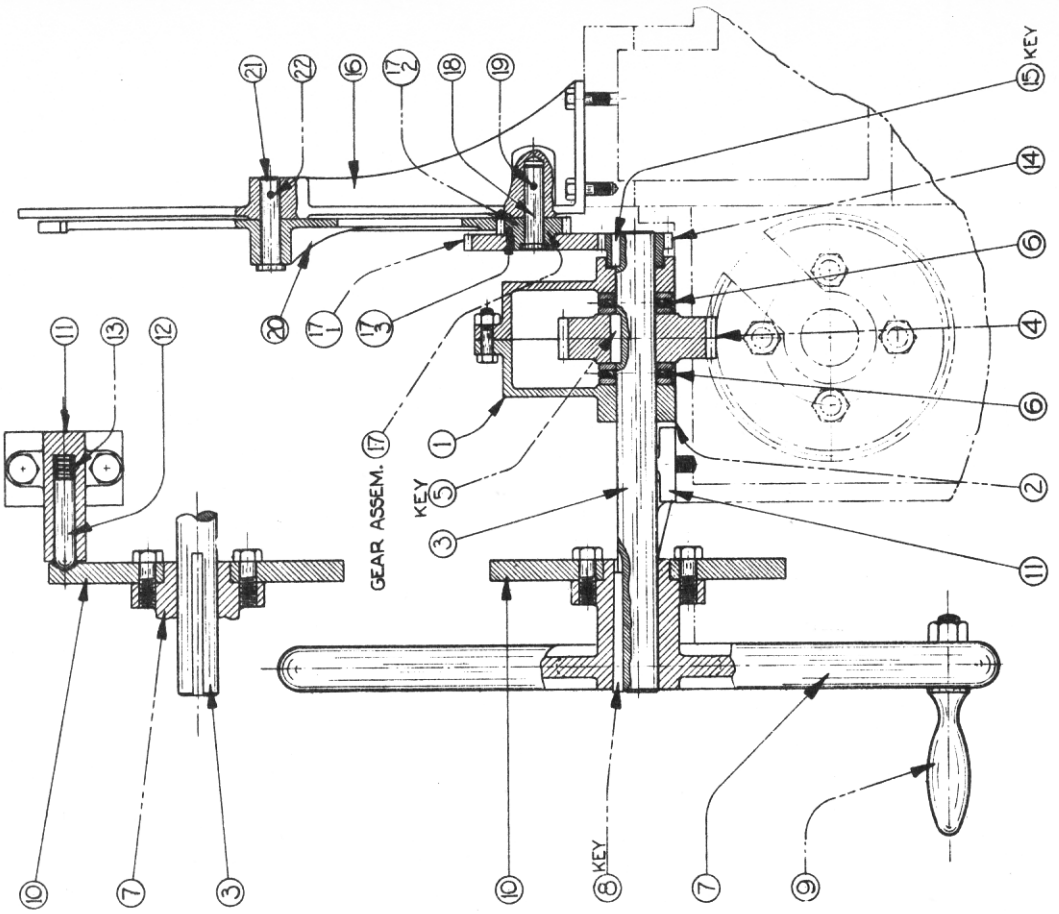
PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.

OAKLAND, CALIF. MATTOON, ILL.

FORM 240 REV. 5-44 1M TRANS.

L-6950



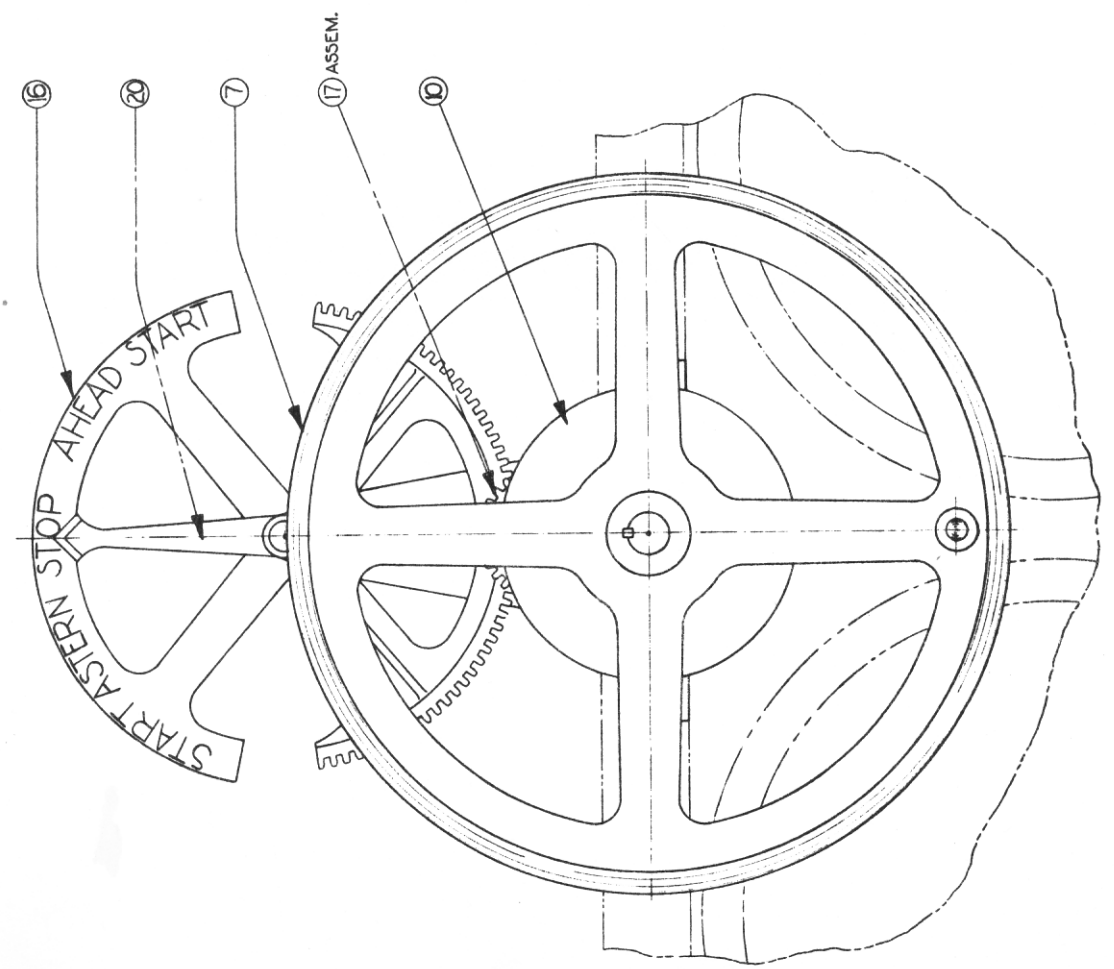


PLATE
No. K-1888

DO NOT ORDER PARTS BY REF. NUMBERS

EXTRA COPIES TO

TYPED BY ABW DATE 11-10-49 CHKD

ISSUED BY DATE

#5 Revised & Retyped from 3-5-35 for catalog purposes

CHANGES

CHANGES

L-7099

PLATE NO. K-1888

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD	PART NAME	ASSEM. DRWG. NO.
1	F-3728	1	X413	1	BEARING ASSEM. - Reversing Wheel Shaft	
2		2	C-3119	1	GASKET - Bearing to Latch Box	
3				4	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg. - - (St.)	
4				4	LOCKWASHER -- 1/2 SAE Reg. - - (St.)	
5		3	C-3118	1	SHAFT - Reversing Wheel	
6		4	S-723	1	PINION - Reversing	
7		5	C-8996L1 1/2	1	KEY - Pinion to Shaft	
8	2C193	6	5682	2	BEARING - Ball Thrust	
9						
10		7	F-1992	1	WHEEL - Reversing	
11		8	C-8937	1	KEY - Wheel to Shaft	
12		9	S-1732	1	HANDLE - Reversing Wheel	
13				1	NUT -- 5/8-11-NC-Hex. - - (St.)	
14		10	S-2804	1	DISC - Reversing Wheel Lock	
15				4	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg. - - (St.)	
16				4	LOCKWASHER -- 1/2 SAE Reg. - - (St.)	
17		11	F-1991	1	BEARING - Revers. Wheel Lock Plunger	
18				2	CAPSCREW -- 1/2-13-NC x 1 1/2 Lg. - - (St.)	
19				2	LOCKWASHER -- 1/2 SAE Reg. - - (St.)	
20	2C3397	12	X3630	1	PLUNGER ASSEM. - Reversing Wheel Lock	
21		13	S-1694	1	SPRING - Plunger	
22						
23	S-3240	14	4982	1	PINION - Telltale Drive (On handwheel Shaft)	
24		15	C-7105L1	1	KEY - Pinion	
25						
26		16	W-434	1	BEARING - Telltale	
27		16A	C-8936-B	1	SHIM - Telltale Bearing to Centerframe - (1/32)	
28		16A	C-8936-D	2	SHIM - Telltale Bearing to Centerframe - (.010)	
29		16A	C-8936-E	4	SHIM - Telltale Bearing to Centerframe - (.003)	
30				4	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg. - - (St.)	
31				4	LOCKWASHER -- 1/2 SAE Reg. - - (St.)	
32		17	X933	1	GEAR ASSEM. - Telltale Reducing	
33		18	S-3229	1	PIN - Reducing Gear	
34		19		1	TAPER PIN -- No. 3 x 1 1/2 Lg. - - (St.)	
35	F-2745	20	4211	1	SECTOR - Telltale (& Pointer)	
36		21	S-3229	1	PIN - Telltale Sector	
37		22		1	TAPER PIN -- No. 3 x 1 1/2 Lg. - - (St.)	
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FOR OPP. HAND SEE L-7100

FOR OPP. ROT. SEE

NAME LATCH SHAFT CONTROL GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MARINE - R.H.

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

FORM 240 REV. 12-50 1M TRANS. PRINTED IN U.S.A.

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

L-7099

EXTRA COPIES TO

TYPED BY FR DATE 10-17-46 CHKD. ISSUED BY DATE

Retyped from 5-19-45 (No Changes)

CHANGES #1

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE

L-8205

PLATE No. SEE WEDGE SHAFT

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1	C-43	40	1135-E-L.H.	1	SPRING - Fuel Wedge Shaft	
2	S-858	41	1136-E	1	CLAMP - Wedge Shaft Spring	
3				1	CAPSCREW -- 1/4-20-NC x 1 Lg. - (St.)	
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FOR OPP. HAND SEE L-8204

FOR OPP. ROT. SEE

NAME FUEL WEDGE SHAFT SPRING GROUP

ORIGINALLY ISSUED FOR

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

FORM 240 REV. 1/46 2M TRANS. PRINTED IN U.S.A.

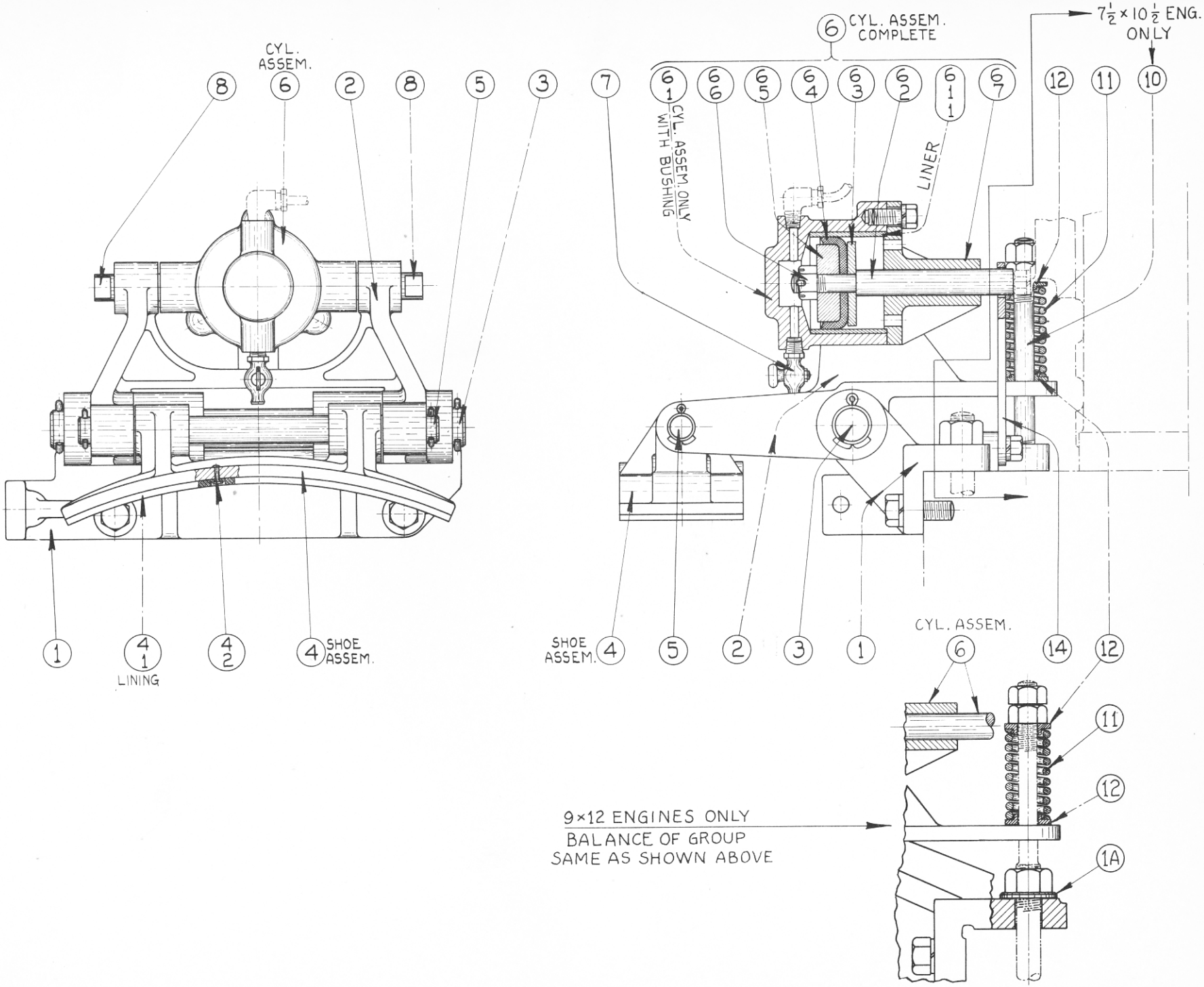
PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

L-8205

PLATE No. W-2276 (ED. 2)

DO NOT ORDER PARTS BY REF. NUMBERS



MASTER PARTS

EXTRA COPIES TO

TYPED BY ABW DATE 11-8-49 CHKD.

ISSUED BY [illegible] DATE 11-8-49

CHANGES #1 Revised & Retyped from 12-8-41 for catalog purposes only

CHANGES

L-8496

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE

PLATE NO. W-2276 (Ed 2)

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1		1	W-906	1	POST - Flywheel Brake	
2		1A	C-3238	2	WASHER - Post to Centerframe Stud	
3				2	NUT -- 3/4-10-NC-Hex. - - (St.)	
4				2	CAPSCREW -- 3/4-10-NC x 2 Lg. - - (St.)	
5				2	LOCKWASHER -- 3/4 SAE Reg. - - (St.)	
6						
7		2	W-907	1	LEVER - Brake Shoe	
8		3	C-7939	1	SHAFT - Lever to Post	
9				2	COTTER PIN -- 1/4 x 2 Lg. - - (St.)	
10		4	X2085	1	SHOE ASSEM. - Air Brake	
11		5	S-2636	1	SHAFT - Brake Shoe to Lever	
12				2	COTTER PIN -- 1/4 x 1 3/4 Lg. - - (St.)	
13						
14		6	X2083	1	CYLINDER ASSEM. - Air Brake - (& Piston)	
15		7	C-9045P 1/4	1	COCK - Air	
16		8	S-2620	2	PIN - Brake Cylinder to Lever	
17		11	C-7947	1	SPRING - Brake Shoe Lever	
18		12	C-7948	2	WASHER - Spring Retainer	
19				2	NUT -- 5/8-11-NC-Hex. - - (St.)	
20						
21		14	C-7944	1	GUIDE - Piston Rod	
22				1	CAPSCREW -- 5/8-11-NC x 2 Lg. - - (St.)	
23				1	NUT -- 5/8-11-NC-Hex. - - (St.)	
24				1	LOCKWASHER -- 5/8 SAE Reg. - - (St.)	
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FOR OPP. HAND SEE 2L798

FOR OPP. ROT. SEE

NAME FLYWHEEL AIR BRAKE GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MARINE - R.H.

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

FORM 240 REV. 12-48 1M TRANS.
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L-8496

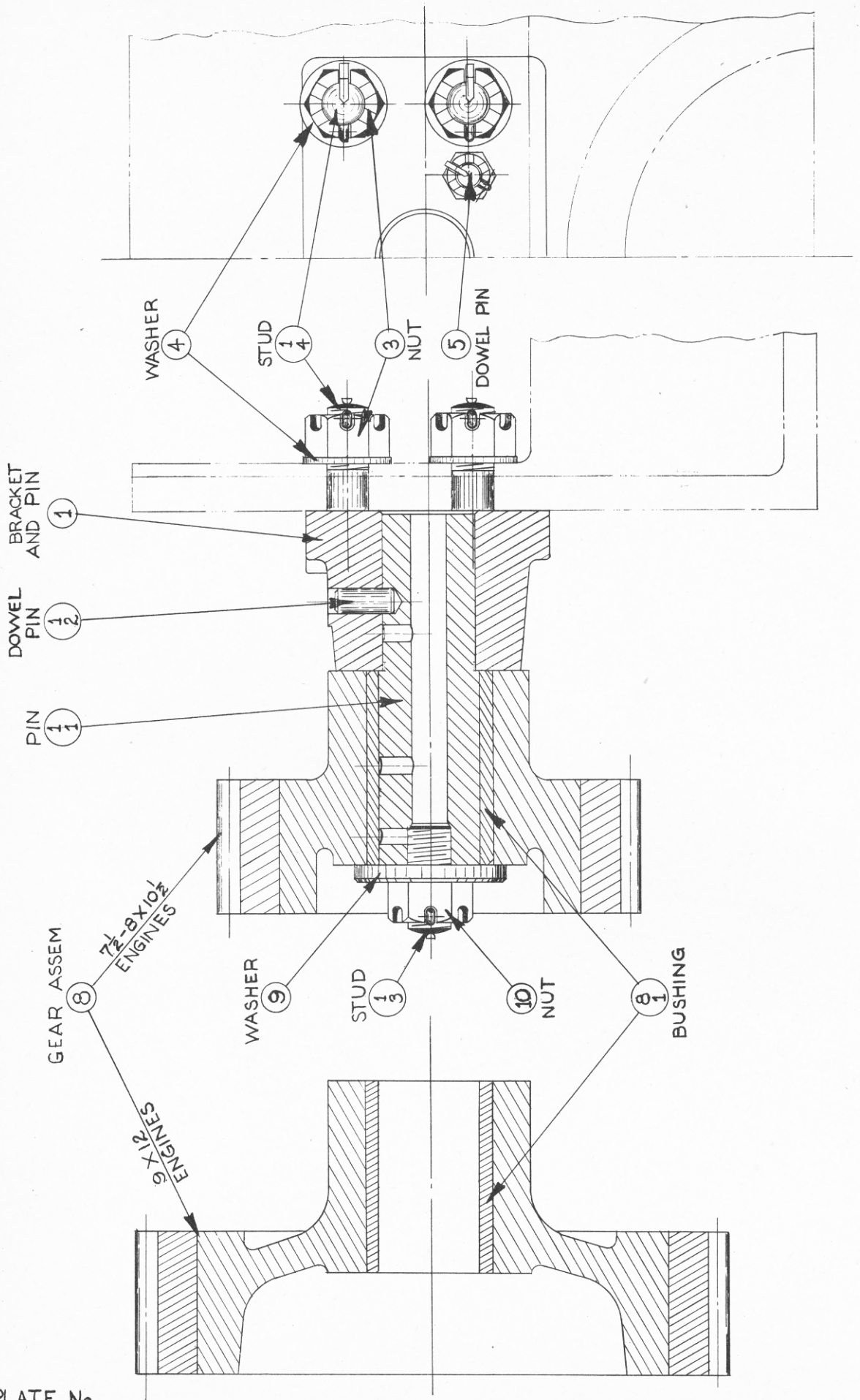

PLATE No.
W2373 DO NOT ORDER PARTS BY REF NUMBERS

EXTRA COPIES TO

TYPED BY DLB DATE 3-27-45 CHKD. MEO DATE 5-2-45 ISSUED BY [illegible] APRVD.

CHANGES #3 Retyped from 12/9/36 (no changes)

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
* INDICATES PART NOT SERVICED INDIVIDUALLY

L-8504

PLATE NO. W-2373

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1	C-7891	1	X2068	1	BRACKET ASSEM. - Intermediate Gear (& Pin)	
2						
3		3		4	SLOTTED NUT -- 5/8-11-NC-Hex. -- (St.)	
4				4	COTTER PIN -- 1/8 x 1 1/4 Lg. -- (St.)	
5		4		4	PLAIN WASHER -- 5/8 SAE Std. -- (St.)	
6	C-7950	5	C-7950L1 3/4	2	PIN - Bracket to Bearing Cover Dowel	
7				2	CASTLE NUT -- 3/8-24-NF-Hex. -- (St.)	
8				2	COTTER PIN -- 3/32 x 3/4 Lg. -- (St.)	
9						
10	F-5237	8	X2078	1	GEAR ASSEM. - Intermediate	
11		9	C-7894	1	WASHER - Intermediate Gear Retainer	
12		10		1	SLOTTED NUT -- 5/8-11-NC-Hex. -- (St.)	
13				1	COTTER PIN -- 1/8 x 1 1/4 Lg. -- (St.)	
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FOR OPP. HAND SEE

FOR OPP. ROT. SEE

NAME INTERMEDIATE GEAR GROUP

ORIGINALLY ISSUED FOR 9 x 12 MARINE - STATIONARY

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

FORM 240 REV. 5-44 IM TRANS.
PRINTED IN U.S.A.

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

L-8504

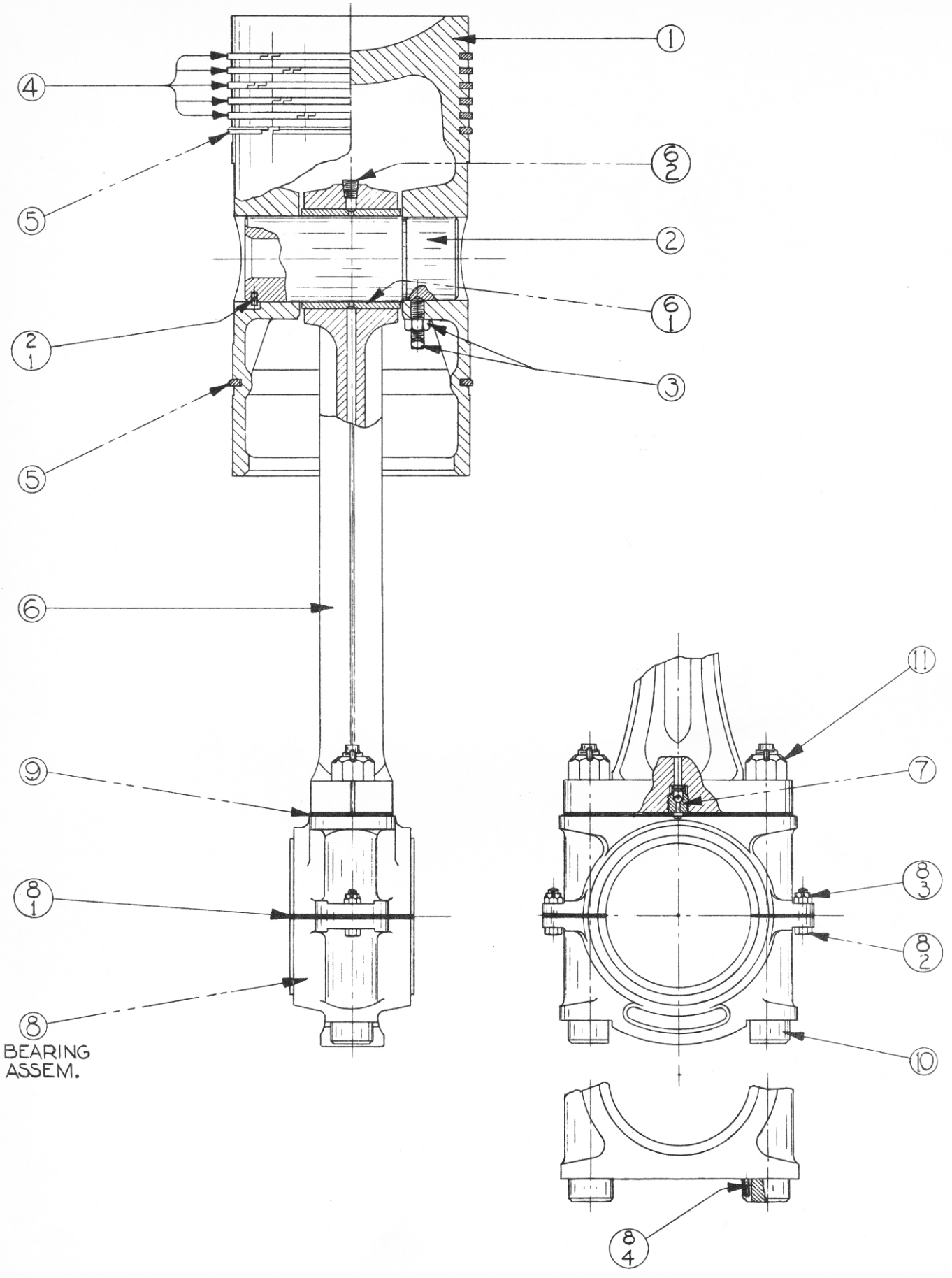


PLATE
No. W-1751

DO NOT ORDER PARTS BY REF. NUMBERS

EXTRA COPIES TO

TYPED BY DLB DATE 4-13-45 CHKD. DATE 5-2-45 ISSUED BY APRVD.

CHANGES #2 Retyped from 7-16-37 (No changes)

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
* INDICATES PART NOT SERVICED INDIVIDUALLY

L-8884

PLATE NO. W-1751

ASSEM. DRWG. NO. W-1156

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME
1	K-1347	1	620-F2	1	PISTON
2	C-8478	2	G621-F	1	PIN ASSEM. - Piston
3		3		1	SETSCREW--5/8-11-NC x 1 3/4 Lg.Sq.Hd.Cup Pt.(St)
4		3		1	NUT -- 5/8-11-NC-Hex. - - (St.)
5					
6	C-2155	4	C-2155L9	4	RING - Piston - (Compression)
7	C-2355	5	C-2355L9	2	RING - Piston - (Oil Control)
8					
9		6	GA630-FB4	1	ROD ASSEM. - Connecting
10	C-5307	7	G632-E	1	VALVE ASSEM. - Oil Check
11	W-931	8	GA636-E31	1	BEARING ASSEM. - Connecting Rod
12	C-8497	9	634-E31-A	1	SHIM - Bearing to Rod (1/16)
13	C-8497	9	634-E31-B	1	SHIM - Bearing to Rod (1/32)
14	C-8497	9	634-E31-C	2	SHIM - Bearing to Rod (1/64)
15		10	S-2722	2	BOLT - Connecting Rod
16		11	S-2715	2	NUT - Connecting Rod bolt
17				2	COTTER PIN -- 3/16 x 2 Lg. - - (St.)

---- PARTS CATALOG NOTE ----

The Number of Compression Rings shown on Plate W-1751 may vary according to Engine Size.

L-8884

NAME PISTON & CONNECTING ROD GROUP

ORIGINALLY ISSUED FOR 9 x 12 MARINE - STAT

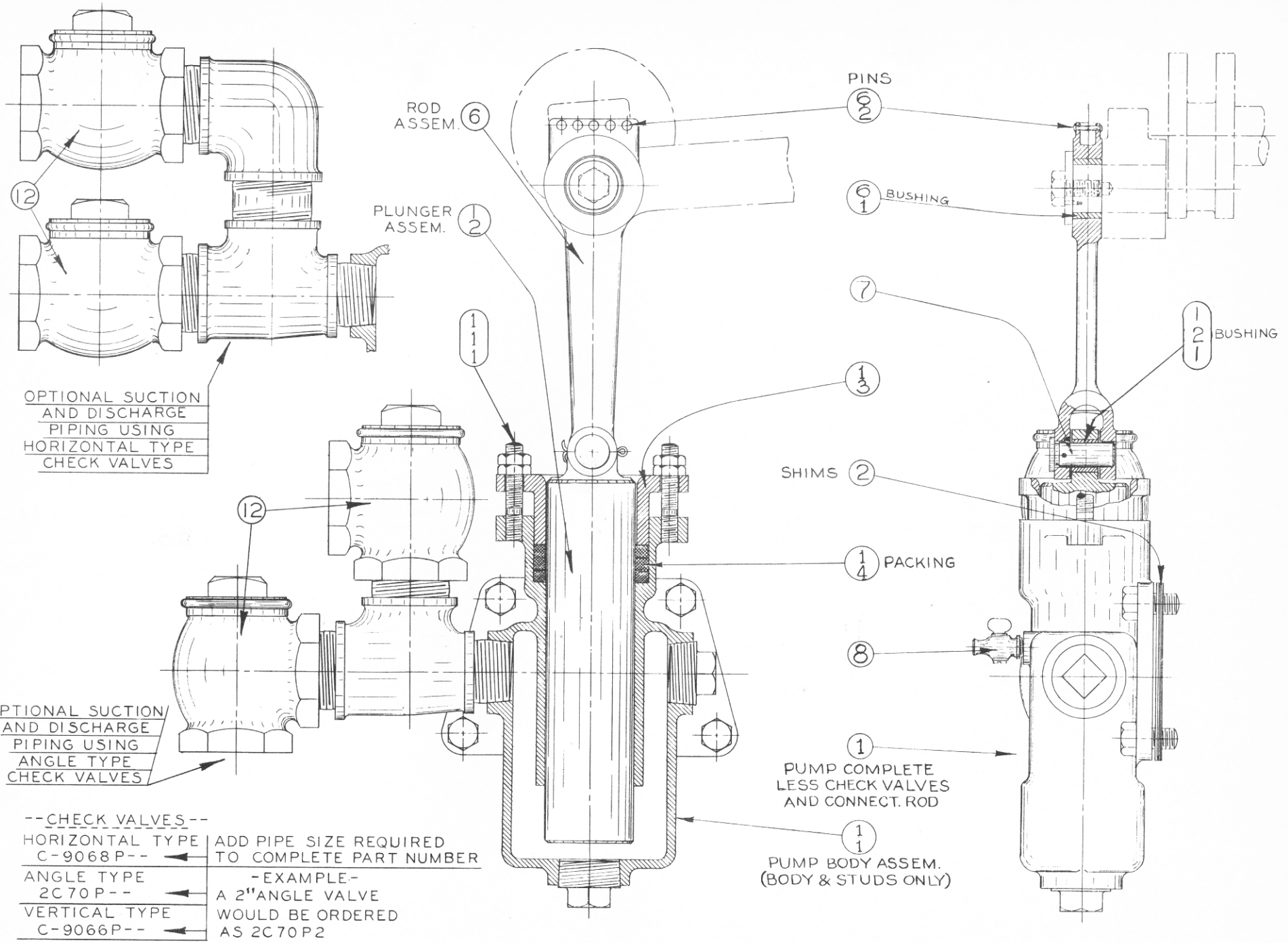
FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

PLATE No.
W-2022 ED.3

DO NOT ORDER PARTS BY REF. NUMBERS



--CHECK VALVES--

HORIZONTAL TYPE C-9068P-- ←	ADD PIPE SIZE REQUIRED TO COMPLETE PART NUMBER
ANGLE TYPE 2C70P-- ←	-EXAMPLE- A 2" ANGLE VALVE WOULD BE ORDERED AS 2C70P2
VERTICAL TYPE C-9066P-- ←	

EXTRA COPIES TO

TYPED BY ABC DATE 3-28-46 CHKD. ISSUED BY DATE

CHANGES

Retyped from 1-14-38 (no changes)
#3 3-7-47 Revised
#4 11-10-49 Revised for catalog purposes

CHANGES

L-9434

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE

PLATE NO. W-2022 (Ed 3)

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1		1	X2422	1	PUMP ASSEMBLY - Bilge	
2	C-9088	2	C-9088-B	1	SHIM - Bilge Pump to Base (1/32)	
3	C-9088	2	C-9088-D	2	SHIM - Bilge Pump to Base (.010)	
4	C-9088	2	C-9088-E	4	SHIM - Bilge Pump to Base (.003)	
5				4	CAPSCREW -- 5/8-11-NC x 1 1/4 Lg. - - (St.)	
6						
7	C-9084	6	X2309	1	ROD ASSEMBLY - Bilge Pump Connecting	
8		7	S-3082	1	PIN - Connect. Rod to Pump Plunger	
9				1	COTTER PIN -- 1/8 x 2 Lg. - - (St.)	
10	C-9045	8	C-9045-P 1/4	1	COCK - Air Bleeder	
11				1	PIPE PLUG -- 1/4 Std. -- C't's'k. Head - (Brass)	
12						
13					-- Bilge Pump Suction & Discharge --	
14				1	CLOSE NIPPLE -- 1 1/2 Std. - (Brass)	
15				1	TEE -- 2 x 1 1/2 x 2 Std. Reducing - (Brass)	
16				1	CLOSE NIPPLE -- 2 Std. - (Brass)	
17	C-9068	12	C-9068P2	1	CHECK VALVE - (Horizontal Type)	
18				1	NIPPLE -- 2 x 2 1/2 Lg. - (Brass)	
19				1	ELBOW -- 2 Std. - (Brass)	
20				1	CLOSE NIPPLE -- 2 Std. - (Brass)	
21	C-9068	12	C-9068P2	1	CHECK VALVE - (Horizontal Type)	
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FOR OPP. HAND SEE

NAME BILGE PUMP GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MARINE

FOR OPP. ROT. SEE

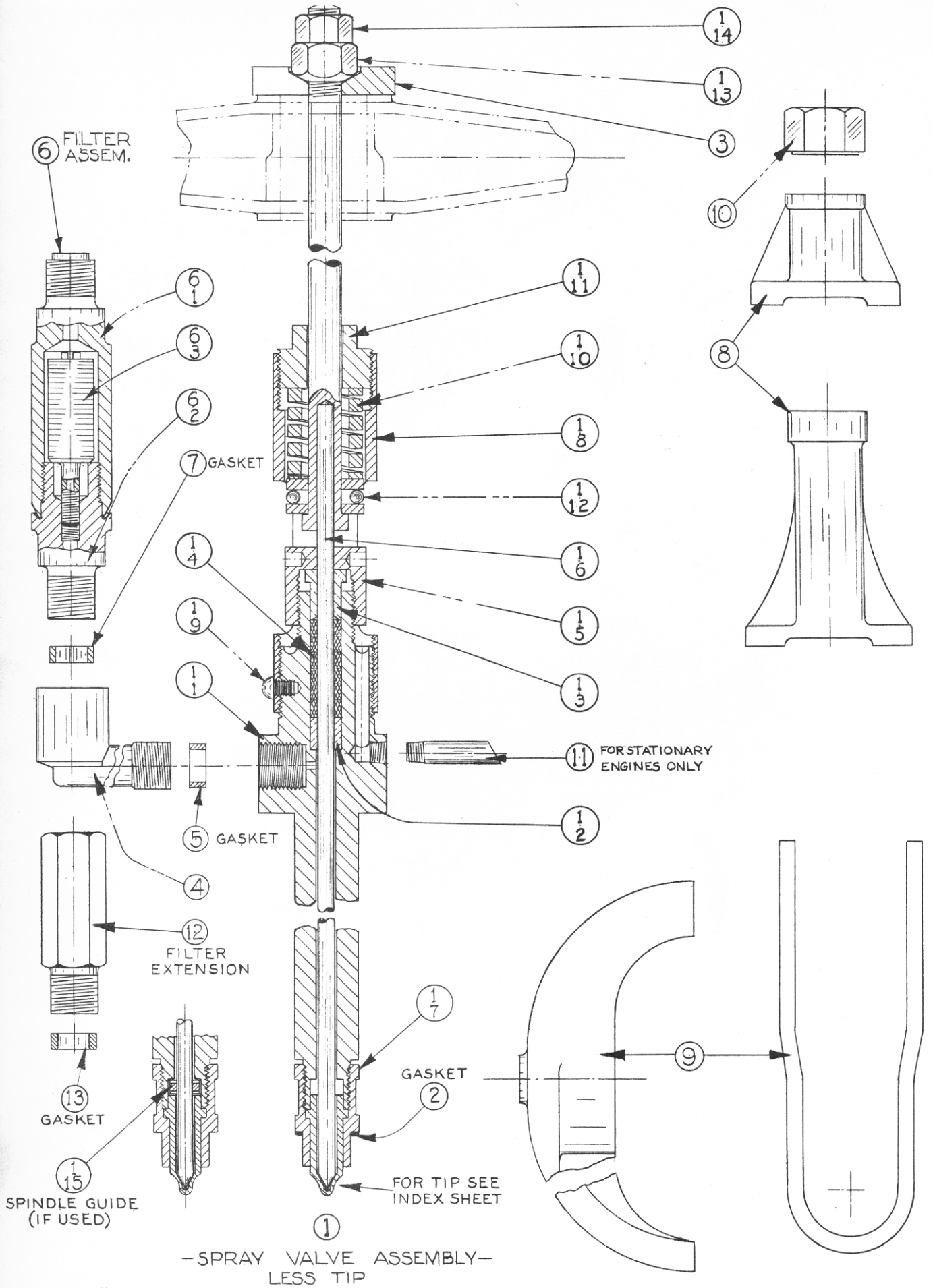
FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

FORM 240 REV. 1/46 2M TRANS.
PRINTED IN U.S.A.

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

L-9434



-SPRAY VALVE ASSEMBLY-
LESS TIP

PLATE
No.-W-1596 (ED. 2)

DO NOT ORDER PARTS BY REF. NUMBERS

EXTRA COPIES TO MATTOON TYPED BY GB DATE 9-22-43 CHKD. MB DATE 12-4-43 ISSUED BY [illegible] APRVD.

Retyped from 1/31/38 (no change)

CHANGES #1

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
* INDICATES PART NOT SERVICED INDIVIDUALLY

L-9483

PLATE NO. W-1596

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1	W-182	1	X261	1	VALVE ASSEMBLY - Fuel Spray	
2	S-923	2	860-E	1	GASKET - Spray Valve to Cyl. Head	
3	C-179	3	877-E	1	COLLAR - Spray Valve to Rocker Retainer	
4		4	S-2231	1	CONNECTION - Spray Valve Fuel Filter	
5	S-928	5	861A-E	1	GASKET - Filter Connection to Spray Valve	
6	F-1981	6	X71	1	FILTER ASSEMBLY - Spray Valve Fuel	
7	S-928	7	861A-E	1	GASKET - Filter to Connection	
8	C-159	8	855-R	1	BRIDGE - Spray Valve Retainer	
9	S-2295	9	854-E	1	CLAMP - Spray Valve Bridge	
10	C-278	10	855A-FXC4	1	NUT - Spray Valve Bridge Clamp Retainer	

FOR OPP. HAND SEE

FOR OPP. ROT. SEE

NAME FUEL SPRAY VALVE GROUP

ORIGINALLY ISSUED FOR 3-4 CYL. 7 1/2 x 10 1/2 MARINE

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR GROUP GIVEN ON INDEX SHEET

FORM 240 REV. 5-42 1M TRANS. 1M BOND

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

L-9483

EXTRA COPIES TO _____ TYPED BY MED DATE 5-5-39 ISSUED BY _____ DATE 5-8-39 CHKD. _____ APRVD. _____

CHANGES

CHANGES

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE
* INDICATES PART NOT SERVICED INDIVIDUALLY

PLATE NO. L-9872

LINE NO.	DRWG. NO.	REF. NO.	*	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1						-- Air Start. Man. to Valves on Latch Box --	
2					1	CLOSE NIPPLE -- 1/4 Std. - - (W.I.)	
3	C-9047			C-9047-P 1/4	1	ANGLE VALVE	
4					1	NIPPLE -- 1/4 x 1 1/2 Lg. - - (W.I.)	
5					1	TEE -- 1/4 x 1/8 x 1/8 Std. Reducing -(M.I.)	
6	C-9830			C-9830-P 1/4	1	CONNECTOR - Tube Fitting	
7					1	TUBE -- 1/4 O.D. x .030 x 28 Lg. -(S.D. Copper)	
8	C-9836			C-9836-P 1/4	1	TEE - Tube Fitting	
9					1	TUBE -- 1/4 O.D. x .030 x 14 Lg.-(S.D. Copper)	
10					1	TUBE -- 1/4 O.D. x .030 x 18 Lg.-(S.D. Copper)	
11	C-9832			C-9832-P 1/4	2	ELBOW - Tube Fitting	
12							
13							
14						-- Air Valve (On Latch Box) to Air Brake --	
15	C-9832			C-9832-P 1/4	1	ELBOW - Tube Fitting	
16					1	TUBE -- 1/4 O.D. x .030 x 135 Lg.-(S.D. Copper)	
17	C-9832			C-9832-P 1/4	1	ELBOW - Tube Fitting	
18					1	REDUCING BUSHING -- 1/4 x 1/8 Std. - (C.I.)	
19							
20							
21						-- Air Valve (On Latch Box) to Air Start. Cyl. -	
22	C-9832			C-9832-P 1/4	1	ELBOW - Tube Fitting	
23					1	TUBE -- 1/4 O.D. x .030 x 110 Lg.-(S.D. Copper)	
24	C-9832			C-9832-P 1/4	1	ELBOW - Tube Fitting	
25					1	REDUCING BUSHING -- 3/8 x 1/8 Std. - (Brass)	
26							
27							
28						-- Air Start. Man. to Air Start. Cyl. --	
29	C-9832			C-9832-P 1/4	1	ELBOW - Tube Fitting	
30					1	TUBE -- 1/4 O.D. x .030 x 145 Lg. -(S.D. Copper)	
31	C-9832			C-9832-P 1/4	1	ELBOW - Tube Fitting	
32					1	REDUCING BUSHING -- 3/8 x 1/8 Std. - (Brass)	
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L-9872

FOR OPP. HAND SEE

FOR OPP. ROT. SEE

NAME AIR PIPING GROUP

ORIGINALLY ISSUED FOR 6 CYL. 9 x 12 MARINE

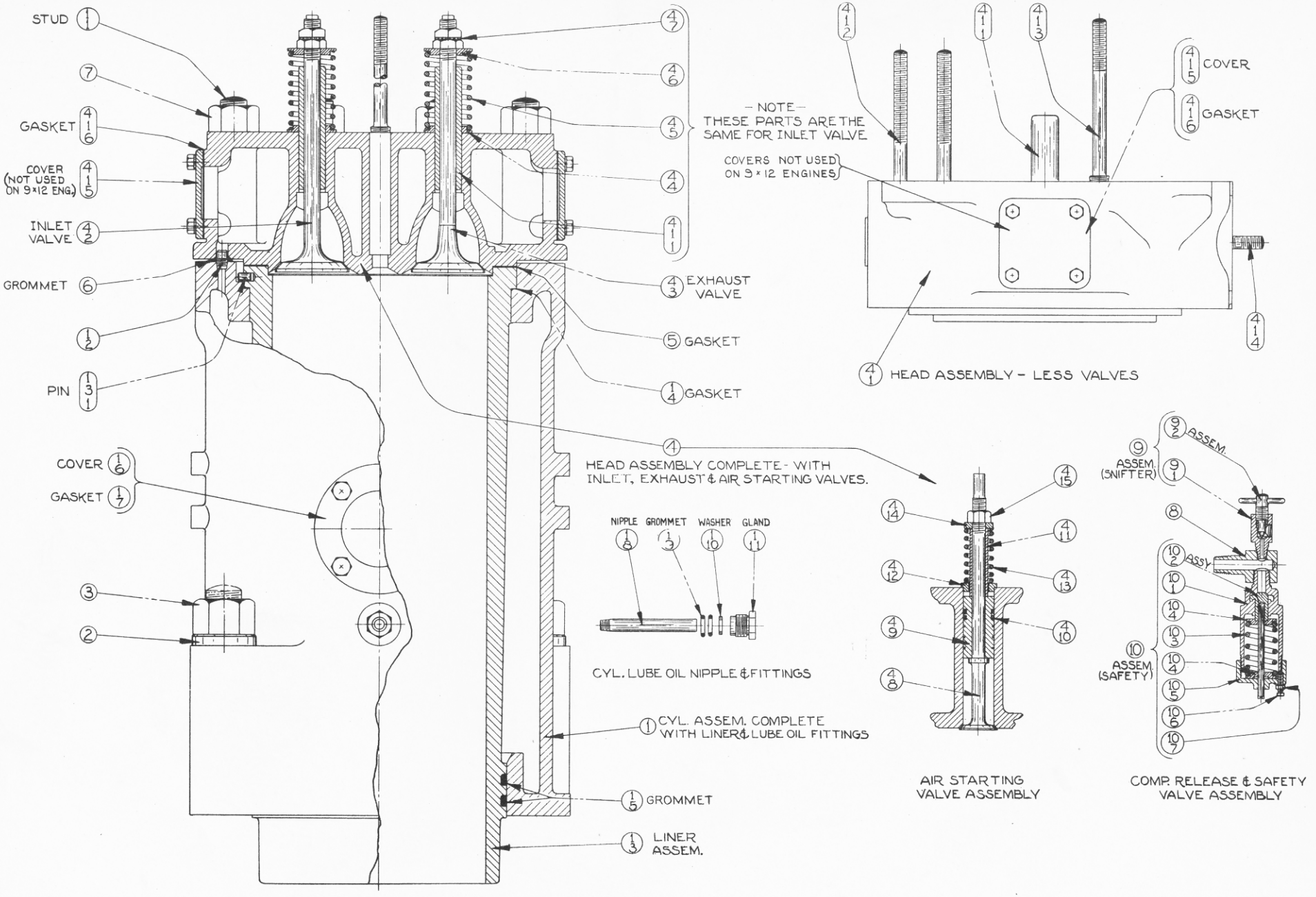
FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY NO. REQ'D FOR THIS GROUP GIVEN ON INDEX SHEET

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

FM NO. 240-3M-10-37

PLATE No. K-2077 (ED 2) DO NOT ORDER PARTS BY REF. NUMBERS



MASTER PARTS CATALOG

EXTRA COPIES TO

TYPED BY DLC DATE 4-28-49 CHKD. ISSUED BY DATE

Retyped from 4-9-45 (no changes)

CHANGES #2

CHANGES

L-9889

ALWAYS GIVE PART NUMBER—PART NAME—ENGINE NUMBER
FOR STD. HARDWARE WITHOUT PART NUMBER GIVE DESCRIPTION AND SIZE

PLATE No. K-2077 (Ed 2)

LINE NO.	DRWG. NO.	REF. NO.	PART NO.	NO. REQD.	PART NAME	ASSEM. DRWG. NO.
1	W-1140	1	G600-FB42	1	CYLINDER ASSEMBLY	
2	S-976	2	727A-KXH	4	WASHER - Cyl. to Centerframe Stud	
3		3		4	NUT -- 1 3/8-6-NC-Hex. - - (St.)	
4						
5		4	X2292	1	HEAD ASSEM. - Cylinder	
6		5	C-3831	1	GASKET - Head to Cylinder	
7	S-803	6	610A-RB3	6	GROMMET - Cyl. to Head Water By-Pass Pipe	
8		7		6	NUT - 1 1/4-7-NC-Hex. - - (St.)	
9						
10		8	C-8417	1	PLUG -Compression Release & Safety Valve Adapter	
11	C-354	9	G1197-E1	1	VALVE ASSEM. -Compression Release(Snifter)	
12	S-3340	10	X204	1	VALVE ASSEM. -Cyl. Pressure Relief Safety	
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FOR OPP. HAND SEE

FOR OPP. ROT. SEE

NAME CYLINDER & HEAD GROUP

ORIGINALLY ISSUED FOR 3-4 Cyl. 9x 12 MARINE

FOR TOTAL REQUIREMENTS PER ENGINE MULTIPLY NO. REQ'D GIVEN ABOVE BY No. REQ'D FOR GROUP GIVEN ON INDEX SHEET

FORM 240 REV. 12-40 1M TRANS. PRINTED IN U.S.A.

PARTS LIST

ATLAS IMPERIAL DIESEL ENGINE CO.
OAKLAND, CALIF. MATTOON, ILL.

L-9889

ASSEM. LIST NO. AL 171
ISSUE 4
ENGINE SIZE 7½x10½-9x12

ATLAS IMPERIAL DIESEL ENGINE CO. SUB-ASSEMBLY LIST

WHEN ORDERING PARTS ALWAYS GIVE ENGINE NUMBER-PART NUMBER-NAME-OR COMPLETE DESCRIPTION AND SIZE.
DO NOT ORDER PARTS BY REFERENCE NUMBERS
*INDICATES PARTS NOT SOLD INDIVIDUALLY

REF. No.	PART NUMBER	No. USED	DESCRIPTION	
	X56		LATCH ASSEMBLY (INLET OR EXHAUST)	Includes
1	X320	1	LATCH ASSEM. (Not Serviced)	
2	C-664	2	ROLLER	
3	S-1815	2	SPACER	
4	1654-E1	2	PIN	
	X57		LATCH ASSEMBLY (INLET OR EXHAUST)	Includes
1	X320	1	LATCH ASSEM. (Not Serviced)	
2	C-664	2	ROLLER	
3	S-1815	2	SPACER	
4	1654-E1	2	PIN	
	X68		GREASE CUP ASSEM. - BALL CHECK	Includes
1	C-1259	1	BODY	
2	C-1258	1	SPRING	
3		1	BRONZE BALL -- 3/8" Dia.	
4	C-1264	1	GREASE CUP	
	X71		FILTER ASSEM. - HIGH PRESS. FUEL	Includes
1	F-1982	1	BODY	
2	S-1686	1	CAP - Filter Body	
3	PG 25	1	ELEMENT - Filter	
	X113		LIFTER ASSEM. - FUEL SPRAY VALVE	Includes
*		1	LIFTER	
1	884-E	1	ROLLER	
2	S-3032	1	PIN - Roller to Lifter	
3	S-3026	1	PIN - Lifter Guide	
4	S-3025	1	PIN - Fuel Wedge	
	X204		VALVE ASSEM.-COMPRESSION RELIEF SAFETY	Includes
1	F-2798	1	BODY	
2	X541	1	STEM ASSEMBLY	
3	S-3339	1	SPRING	
4	S-3337	2	WASHER	
5	S-3338	1	CAP - Valve Body	
6		1	SETSCREW--#10-24 x 1 Lg.-Headless-Cup Pt.	
7		1	NUT -- #10-24-Hex.	
	X215		CLAMP ASSEM. - SPRAY VALVE TEST	Includes
			Test Clamp & Cap (No Service Parts)	
	X220		RAIL ASSEMBLY - FUEL	Includes
*		1	RAIL	
1	1205-E1	7	BODY - Isolating Valve	
2	1205C-E	7	SEAT - Isolating Valve	
3	1205D-E	7	PLUG - Isolating Valve	
4	1206-C31	7	STEM - Isolating Valve	
5	866-E	7	GLAND - Packing	
6	1208-C3	7	NUT - Packing Gland	
7		21	PACKING RING -- 1/4 I.D. x 1/2 O.D. x 1/4 Thick - Garlock #333	
8	1200B-FXC4	1	ELBOW - Fuel Inlet	
		1	PIPE PLUG -- 1/4 Std. - C't's'k. Hd.	
	X226		RAIL ASSEMBLY - FUEL	Includes
*		1	RAIL	
1	1205-E1	7	BODY - Isolating Valve	
2	1205C-E	7	SEAT - Isolating Valve	
3	1205D-E	7	PLUG - Isolating Valve	
4	1206-C31	7	STEM - Isolating Valve	
5	866-E	7	GLAND - Packing	
6	1208-C3	7	NUT - Packing Gland	
7		21	PACKING RING -- 1/4 I.D. x 1/2 O.D. x 1/4 Thick - Garlock #333	
	X228		SPRING ASSEM.-FUEL SPRAY VALVE PUSH-ROD BUFFER	Includes
			Cage, Spring, Sleeve & Washer (No Service Parts)	
	X237		PUSH-ROD ASSEM. - SPRAY VALVE	Includes
			Push-Rod Tube & Upper & Lower Plugs (No Service Parts)	
	X248		GEAR ASSEM. - CAMSHAFT	Includes
			Gear Hub & Ring (No Service Parts)	
	GA260-A		BODY ASSEM. - BILGE PUMP (2 1/2")	Includes
*		1	BODY	
1	373A-J	2	STUD - Packing Gland	
		1	PIPE PLUG -- 1 Std.	
	GA260-A-LH		BODY ASSEM. - BILGE PUMP (2 1/2")	Includes
*		1	BODY	
1	373A-J	2	STUD - Packing Gland	
		1	PIPE PLUG -- 1 Std.	
	GA260-E		BODY ASSEM. - BILGE PUMP (3")	Includes
*		1	BODY	
1	373A-J	2	STUD - Packing Gland	
		1	PIPE PLUG -- 1 Std.	
	GA260-E-LH		BODY ASSEM. - 3" BILGE PUMP	Includes
*		1	BODY	
1	373A-J	2	STUD - Packing Gland	
		1	PIPE PLUG -- 1 Std.	
	G261-A		PLUNGER ASSEM. - BILGE PUMP (2 1/2")	Includes
			Plunger & 1 1/4 Std. Pipe Plug (No Service Parts)	
	G261-E		PLUNGER ASSEM. - BILGE PUMP (3")	Includes
			Plunger & 1 1/4 Std. Pipe Plug (No Service Parts)	
	X261		VALVE ASSEM. - FUEL SPRAY	Includes
1	851-E	1	BODY	
2	S-2757	1	GLAND - Packing (Lower)	
3	866-E	1	GLAND - Packing (Upper)	
4		6	PACKING RING -- 1/4 I.D. x 1/2 O.D. x 1/4 Th. -- Garlock #333	
5	865-E	1	NUT - Gland	
6	G850-E	1	SPINDLE ASSEM.	
7	856-E	1	NUT - Valve Seat	
8	853-E	1	CASING - Valve Spring	
9		1	MACHINE SCREW--1/4-20 x 1/2 Lg.-Rnd. Hd.	
10	858-E	1	SPRING	
11	857-AX3	1	RETAINER - Spring	
12	5677	1	BALL BEARING -- Thrust	
13	878-E	1	NUT - Spindle	
14		1	NUT -- 1/2-13-Hex.	
	G264-A		ROD ASSEM. - BILGE PUMP CONNECTING	Includes
*		1	ROD	
1	264A-E	1	BUSHING	
		5	ESCUTCHEON PIN -- #10 x 1 1/4 Lg.	
	G264-A-LH		ROD ASSEM. - BILGE PUMP CONNECTING	Includes
*		1	ROD	
1	264A-E	1	BUSHING	
		5	ESCUTCHEON PIN -- #10 x 1 1/4 Lg.	
	G264-E		ROD ASSEM. - BILGE PUMP CONNECTING	Includes
*		1	ROD	
1	264A-E	1	BUSHING	
		5	ESCUTCHEON PIN -- #10 x 1 1/4 Lg.	
	G264-E-LH		ROD ASSEM. - BILGE PUMP CONNECTING	Includes
*		1	ROD	
1	264A-E	1	BUSHING	
		5	ESCUTCHEON PIN -- #10 x 1 1/4 Lg.	
	X265		WEIGHT ASSEM. - GOVERNOR	Includes
*		1	WEIGHT	
1	C-544	1	ROLLER	
2	S-2899	1	PIN - Roller	
	X266		QUILL ASSEM. - GOVERNOR THRUST	Includes
*		1	QUILL	
1	C-545	1	PLATE - Thrust	
	X270		WEIGHT ASSEM. - GOVERNOR	Includes
*		1	WEIGHT	
1	C-544	1	ROLLER	
2	S-2899	1	PIN - Roller	
	X271		BODY ASSEM. - GOVERNOR	Includes
*		1	BODY	
1	S-805	1	PINION	
2		1	WOODRUFF KEY -- 1/8 x 5/8 Std.	
3	1110-DXC4	1	COLLAR - Retainer	
4		2	TAPER PIN -- #2 x 2 1/4 Lg.	
	G306-C3		GEAR ASSEM. - REVERSE GEAR (LONG)	Includes
*		1	GEAR	
1		2	BUSHING -- Bunting #H1449	
	G306-C4		GEAR ASSEM. - REVERSE GEAR (LONG)	Includes
*		1	GEAR	
1		2	BUSHING - Bunting #H1452	
	G307-C3		GEAR ASSEM. - REVERSE GEAR (SHORT)	Includes
*		1	GEAR	
1	324-E3	1	BUSHING	
	G307-C4		GEAR ASSEM. - REVERSE GEAR (SHORT)	Includes
*		1	GEAR	
1	324-C4	1	BUSHING	

ASSEM. LIST NO. AL 172
ISSUE 3
ENGINE SIZE 7½ x 10½ - 9 x 12

ATLAS IMPERIAL DIESEL ENGINE CO. SUB-ASSEMBLY LIST

WHEN ORDERING PARTS ALWAYS GIVE ENGINE NUMBER - PART NUMBER - NAME - OR COMPLETE DESCRIPTION AND SIZE.
DO NOT ORDER PARTS BY REFERENCE NUMBERS
*INDICATES PARTS NOT SOLD INDIVIDUALLY

REF. No.	PART NUMBER	No. USED	DESCRIPTION	
	G312-C3		COLLAR ASSEM. - CROWDER ADJUSTING	Includes
*		2	COLLAR	
1	C-9556L4 1/4	2	BOLT	
		2	NUT -- 3/4-10-Hex.	
		2	HALF NUT -- 3/4-10-Hex.	
	X320		LATCH ASSEM. (INLET OR EXHAUST)	Includes
*		1	LATCH	
*		1	CAP	
1	C-2408L1 1/2	2	CAPSCREW	
	X321		LATCH ASSEM. - AIR STARTING VALVE	Includes
1	X322	1	LATCH ASSEM. (Not Serviced)	
2	S-1810	2	ROLLER	
3	S-1814	2	SPACER	
4	1684-R61	2	PIN	
5	S-2158	1	ROD - Lifter	
		2	COTTER PIN -- 1/8 x 3/4 Lg.	
	X322		LATCH ASSEM. - AIR STARTING	Includes
*		1	LATCH	
*		1	CAP	
1	C-2408L1 1/2	2	CAPSCREW	
	X323		LATCH ASSEM. - AIR STARTING VALVE	Includes
1	X324	1	LATCH ASSEM. (Not Serviced)	
2	S-1810	2	ROLLER	
3	S-1814	2	SPACER	
4	1684-R61	2	PIN	
5	S-2158	1	ROD - Lifter	
		2	COTTER PIN -- 1/8 x 3/4 Lg.	
	X324		LATCH ASSEM. - AIR STARTING VALVE	Includes
*		1	LATCH	
*		1	CAP	
1	C-2408L1 1/2	2	CAPSCREW	
	X327		LATCH ASSEM. - FUEL SPRAY VALVE	Includes
1	X328	1	LATCH ASSEM.	
2	884-E	2	ROLLER	
3	885-E	2	PIN	
	X328		LATCH ASSEM. - SPRAY VALVE	Includes
*		1	LATCH	
*		1	CAP	
1	C-2408L1 1/2	2	CAPSCREW	
	G331-C3		COLLAR ASSEM. - SHIFTER	Includes
*		2	COLLAR	
1	C-7936	2	CAPSCREW	
		2	NUT -- 5/8-11-Hex.	
		2	LOCKWASHER -- 5/8 SAE Reg.	
	G342-C4		SHOE ASSEM.-REVERSE GEAR DRUM BRAKE(21")	Includes
*		1	SHOE	
1	C-8439	1	LINING	
2		24	RIVET -- 3/16 x 7/8 Lg.-(Tubular)	
3	C-1737	1	STUD - Brake Shoe Centering	
	G342-E3		SHOE ASSEM.-REVERSE GEAR DRUM BRAKE (19")	Includes
*		1	SHOE	
1	C-7846	1	LINING	
2		20	RIVET -- 3/16 Dia. x 3/4 Lg.-(Tubular)	
3	C-1737	1	STUD - Brake Shoe Centering	
	X368		SILENCER ASSEM. - AIR SUCTION	Includes
1	F-2206	1	SILENCER	
2	F-2207	1	CONE	
3	C-3136	4	SPACER	
		4	CAPSCREW -- 3/8-16-NC x 1 1/2 Lg.	
		4	NUT -- 3/8-16-NC-Hex.	
		1	CAPSCREW -- 1/2-13-NC x 4 Lg.	
		1	NUT -- 1/2-13-NC-Hex.	
	G370-E1		PUMP ASSEM. - 1 1/4" CENTRIFUGAL	Includes
1	GA370-E1	1	BODY ASSEM.	
2	371-E	1	COVER - Suction	
3	371C-E	1	GASKET - Cover	
		12	MACHINE SCREW--1/4-20 x 3/8 Lg.-Rnd. Hd.	
4	G372-E1	1	IMPELLER & SHAFT ASSEM.	
5		1	PACKING -- 3/8 Sq. x 12 Lg. - (Flax)	
6	373-E	1	GLAND - Packing	
		4	NUT -- 7/16-14-Hex.	
7	X68	1	CUP ASSEM. - Grease	
8	381-FB4	1	BEARING - Steady	
		2	CAPSCREW -- 3/8-16 x 3/4 Lg.	
		2	CAPSCREW -- 3/8-16 x 1 Lg.	
		1	CAPSCREW -- 1/2-13 x 2 Lg.	
9	386-FB41	1	HOUSING - Ball Bearing	
10	C-9069-P	1	BALL BEARING	
11	C-9070-P	1	ADAPTOR - Ball Bearing	
12	386A-FB41	1	RETAINER - Ball Bearing	
13		1	GREASE CUP -- 1/8 - Lunkenheimer -"Guard #00"	
14	785-B	1	FLANGE - Suction Pipe	
15	S-2334	1	GASKET - Flange	
		2	CAPSCREW -- 1/2-13 x 1 Lg.	
16	785-B	1	FLANGE - Pump Discharge	
17	S-2334	1	GASKET - Flange	
		2	CAPSCREW -- 1/2-13 x 1 Lg.	

REF. No.	PART NUMBER	No. USED	DESCRIPTION	
	GA370-E1		BODY ASSEM. - 1 1/4" CENTRIFUGAL PUMP	Includes
*		1	BODY	
1	374-E	1	BUSHING	
2	373A-E	2	STUD - Packing Gland	
		2	PIPE PLUG -- 3/8 Std.	
		1	PIPE PLUG -- 1/4 Std.	
	G372-E1		IMPELLER & SHAFT ASSEM.-CENTRIFUGAL PUMP -	Includes
*		1	IMPELLER	
1	379-E1	1	SHAFT	
2	C-821	1	PIN - Impeller Lock	
	X376		BEARING ASSEM. - LATCH SHAFT	Includes
*		1	BEARING	
*		1	CAP	
1	C-3047	1	STUD	
		1	CASTLE NUT -- 5/8-18-Hex.	
	X377		BEARING ASSEM. - LATCH SHAFT (1 3/4")	Includes
*		1	BEARING	
*		1	CAP	
1	C-3047	1	STUD	
		1	CASTLE NUT -- 5/8-18-Hex.	
	X378		CYLINDER ASSEM. - FLYWHEEL AIR BRAKE	Includes
*		1	CYLINDER	
1	5079	1	LINER	
	G384-28		COUPLING ASSEM. - COMPRESSION (3/4")	Includes
1	384-28	1	SLEEVE	
2	384A-28	2	COLLAR	
3	384B-28	2	NUT	
	X413		BEARING ASSEMBLY - REVERSING WHEEL SHAFT -	Includes
*		2	BEARING - Handwheel Shaft	
		3	BOLT -- 3/8-16 x 1 1/2 Lg.	
		3	NUT -- 3/8-16-Hex.	
		3	LOCKWASHER -- 3/8 SAE Reg.	
	X475		CYLINDER ASSEM. - AIR COMPRESSOR	Includes
*		1	CYLINDER	
1	S-1671	4	STUD - Head	
		4	PIPE PLUG -- 1/2 Std.	
		2	PIPE PLUG -- 1 Std.	
		1	PIPE PLUG -- 3/4 Std.	
	X479		VALVE ASSEM. - AIR STARTING CONTROL	Includes
1	2C36P1 1/4	1	VALVE	
2	4068	1	FULCRUM - Valve Plunger Control Lever	
3	4067	1	LEVER - Valve Plunger Control	
4		1	SETSCREW -- 5/16-18 x 1 3/4 Lg. - Sq. Hd. Oval Point	
		1	HALF NUT -- 5/16-18-Hex.	
5	4599	1	PIN - Fulcrum	
		2	COTTER PIN -- 1/16 x 3/4 Lg.	
	X487		GOVERNOR ASSEMBLY	Includes
1	X931	1	BODY ASSEM.	
2	G1101-C3	2	WEIGHT ASSEM.	
3	2C1820	2	PIN - Weight	
4		4	CASTLE NUT -- 3/8-24-Hex.	
		4	COTTER PIN -- 3/32 x 3/4 Lg.	
5	G1106-C3	1	QUILL ASSEM.	
6	5684	1	BEARING - Ball Thrust	
	X489		LIFTER ASSEM. - FUEL SPRAY VALVE	Includes
*		1	LIFTER	
1	884-E	1	ROLLER	
2	S-3032	1	PIN - Roller	
3	S-2447	1	PIN - Fuel Wedge	
4	C-3292	1	WASHER - Lifter Spring	
5	S-2255	1	PIN - Lifter Guide	
	X490		SPRING ASSEM.-FUEL SPRAY VALVE BUFFER	Includes
			Spring Cage, Spacer, Buffer Spring & Retainer Plug (No Service Parts)	
	X498		STRAP ASSEM.-LUBRICATOR DRIVE ECCENTRIC	Includes
*		1	STRAP	
*		1	CAP	
1	C-2406L2 1/4	2	CAPSCREW - Cap to Strap	
		3	ESCUTCHEON PIN -- #5 x 7/8 Lg.	

ENGINE SIZE 7½ x 10½ - 9 x 12 | ISSUE 2 | ASSEM. LIST NO. AL 173

ATLAS IMPERIAL DIESEL ENGINE CO. SUB-ASSEMBLY LIST

WHEN ORDERING PARTS ALWAYS GIVE ENGINE NUMBER - PART NUMBER - NAME - OR COMPLETE DESCRIPTION AND SIZE.
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REF. No.	PART NUMBER	No. USED	DESCRIPTION	
	GA500-R		HEAD ASSEM. - CYLINDER	Includes
1	X822	1	HEAD ASSEM.	
2	F-5275	1	VALVE - Inlet	
3	F-5276	1	VALVE - Exhaust	
4	513-R	2	SPRING - Valve	
5	514A-FXC4	2	WASHER - Valve Spring (Bottom)	
6	514-FXC4	2	WASHER - Valve Spring (Top)	
7		4	HALF NUT -- 5/8-11-Hex.	
8		2	LOCKWASHER -- Shakeproof - Type 11 - 5/8	
9	580-R	1	VALVE - Air Starting	
10	585-R	1	BUSHING - Air Start. Valve	
11	C-2151L1 1/4	2	RING - Piston	
12	579-R	1	BUSHING - Spring	
13	582-E	1	SPRING - Air Start. Valve	
14	588-R	1	WASHER - Spring (Bottom)	
15	583-FXC4	1	WASHER - Spring (Top)	
16		1	NUT -- 5/8-18-Hex.	
	X511		VENT ASSEM. - FUEL OIL DAY TANK	Includes
*		1	BODY - Fuel Day Tank Vent	
1		1	TUBE -- 1/4 O.D. x 3 Lg. (Cop.)	
	G520-E32		ROCKER ASSEM. - VALVE	Includes
*		1	ROCKER	
1	550A-P2	2	BUSHING	
2	523-E	1	ROLLER	
3	524-E	1	PIN - Roller	
4	G527A-E	1	BALL CHECK ASSEM.	
	G520-R3		ROCKER ASSEM. - VALVE	Includes
*		1	ROCKER	
1	520A-R3	2	BUSHING	
2	523-E	1	ROLLER	
3	524-E	1	PIN - Roller	
4	G527A-E	1	BALL CHECK ASSEM.	
	G527A-E		BALL CHECK ASSEMBLY Body, Spring & Ball (No Service Parts)	Includes
	X541		STEM ASSEM.-COMPRESSION RELIEF SAFETY VALVE Safety Valve & Valve Stem (No Service Parts)	Includes
	G550-E32		ROCKER ASSEM. - VALVE	Includes
*		1	ROCKER	
1	550A-P2	2	BUSHING	
2	523-E	1	ROLLER	
3	524-E	1	PIN - Roller	
4	G527A-E	1	BALL CHECK ASSEM.	
	G550-R3		ROCKER ASSEM. - VALVE	Includes
*		1	ROCKER	
1	520A-R3	2	BUSHING	
2	523-E	1	ROLLER	
3	524-E	1	PIN - Roller	
4	G527A-E	1	BALL CHECK ASSEM.	
	X550		CYLINDER ASSEM. - FLYWHEEL AIR BRAKE	Includes
*		1	CYLINDER	
1	S-2617	1	LINER	
	X553		LIFTER ASSEMBLY - SPRAY VALVE	Includes
*		1	LIFTER	
1	884-E	1	ROLLER	
2	S-3032	1	PIN - Roller	
3	S-2447	1	PIN - Wedge	
4	C-3293	1	WASHER - Spring	
5	S-2255	1	PIN - Guide	
	G570-C31		HANDLE ASSEM. - AIR STARTING	Includes
1	570-C31	1	HANDLE	
		1	CAPSCREW -- 3/8-16 x 1 1/2 Lg.	
2	G571-C3	1	PAWL ASSEMBLY	
3	572-GX8	1	SPRING	
4	571A-C3	1	SCREW	
		1	HALF NUT -- 5/16-18-Hex.	
	G571-C3		PAWL ASSEM. - AIR STARTING HANDLE	Includes
*		1	PAWL	
1	S-2892	1	PIN	

REF. No.	PART NUMBER	No. USED	DESCRIPTION	
	G590-E32		ROCKER ASSEM. - AIR STARTING VALVE	Includes
*		1	ROCKER	
1	590A-E32	2	BUSHING	
2	523-E	1	ROLLER	
3	524-E	1	PIN - Roller	
4	G527A-E	1	BALL CHECK ASSEM.	
	G590-R3		ROCKER ASSEM. - AIR STARTING VALVE	Includes
*		1	ROCKER	
1	590A-R3	2	BUSHING	
2	523-E	1	ROLLER - Rocker	
3	524-E	1	PIN - Roller	
4	G527A-E	1	BALL CHECK ASSEM.	
	G594-E		LIFTER ASSEM. - AIR STARTING VALVE	Includes
*		1	LIFTER	
1	595-E	1	ROLLER	
2	596-E	1	PIN	
	G600-FB42		CYLINDER ASSEMBLY - (LINER TYPE)	Includes
*		1	CYLINDER	
1	C-5219	6	STUD - Cyl. Head	
2	610-RB3	6	PIPE - Water Cyl. to Head Water	
3	G601-FB41	1	LINER ASSEM. - Cylinder	
4	C-3828	1	GASKET - Liner	
5	604-FB4	2	GROMMET - Liner	
6	605-N	2	COVER - Cylinder Clean-out	
7	605A-N	2	GASKET - Cyl. Clean-out Cover	
		8	CAPSCREW -- 1/2-13 x 1 1/4 Lg.	
8	C-264	2	NIPPLE - Cyl. Lube Oil	
9	610A-RB3	2	GROMMET - Oil Nipple	
10	S-2914	4	WASHER - Grommet	
11	612-R	2	GLAND - Packing	
	G600-R		CYLINDER ASSEMBLY	Includes
*		1	CYLINDER	
		4	PIPE PLUG -- 1 1/4 Std.	
1	S-2263	6	STUD - Cyl. Head	
2	605-N	1	COVER - Clean-out	
3	605A-N	1	GASKET - Cover	
		4	CAPSCREW -- 1/2-13 x 1 1/4 Lg.	
4	C-264	2	NIPPLE - Lube Oil	
5	612-R	2	GLAND - Packing	
6	610A-RB3	2	GROMMET	
7	S-2914	4	WASHER	
	G600-RB32		CYLINDER ASSEMBLY	Includes
*		1	CYLINDER	
		5	PIPE PLUG -- 1 1/4 Std.	
1	S-2263	6	STUD - Cylinder Head	
2	605-N	1	COVER - Clean-out	
3	605A-N	1	GASKET - Cover	
		4	CAPSCREW -- 1/2-13 x 1 1/4 Lg.	
4	C-264	2	NIPPLE - Lube Oil	
5	612-R	2	GLAND - Packing	
6	610A-RB3	2	GROMMET	
7	S-2914	4	WASHER	
8	610-RB3	5	PIPE - Water By-Pass	
	G601-FB41		LINER ASSEM. - CYLINDER	Includes
*		1	LINER	
1	621A-F	1	PIN - Dowel	
	G621-F		PIN ASSEM. - PISTON	Includes
*		1	PIN	
1	621A-F	1	PIN - Dowel	
	G621-R1		PIN ASSEM. - PISTON	Includes
*		1	PIN	
1	621A-F	1	PIN - Dowel	
	G621-RB32		PIN ASSEM. - PISTON	Includes
*		1	PIN	
1	621A-F	1	PIN - Dowel	
	GA630-FB4		ROD ASSEM. - CONNECTING	Includes
*		1	ROD	
1	F-891	1	BUSHING	
2		1	PIPE PLUG -- 3/8 Std.	

ASSEM. LIST NO. AL 174
ISSUE 2
ENGINE SIZE 7½ x 10½ - 9N12

ATLAS IMPERIAL DIESEL ENGINE CO. SUB-ASSEMBLY LIST

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REF. No.	PART NUMBER	No. USED	DESCRIPTION	
	GA630-R3		ROD ASSEM. - CONNECTING	Includes
*		1	ROD	
1	F-890	1	BUSHING	
2		1	PIPE PLUG -- 3/8 Std.	
	G632-E		VALVE ASSEM. - BALL CHECK	Includes
			Valve Body, Steel Ball & Retainer Pin (No Service Parts)	
	GA636-E31		BEARING ASSEM. - CONNECTING ROD	Includes
*		2	BEARING	
1	636A-E31-A	2	SHIM - (1/16)	
1	636A-E31-B	2	SHIM - (1/32)	
1	636A-E31-D	4	SHIM - (.010)	
1	636A-E31-E	8	SHIM - (.003)	
2	C-2506L1 1/2	2	CAPSCREW	
3		2	CASTLE NUT -- 3/8-24-Hex.	
		2	COTTER PIN -- 3/32 x 1 Lg.	
4	C-7972L 3/4	2	PIN - Bolt Retainer	
	G680-C		BEARING ASSEM. - CAMSHAFT	Includes
*		1	BEARING	
1	685-C	1	BUSHING	
	G683-C4		BEARING ASSEM. - CAMSHAFT	Includes
*		1	BEARING	
1	C-308	1	BUSHING	
	X699		SILENCER ASSEM. - AIR SUCTION	Includes
1	F-2187	1	SILENCER	
2	F-2188	1	CONE	
		3	CAPSCREW -- 3/8-16 x 1 1/2 Lg.	
		3	NUT -- 3/8-16-Hex.	
		1	CAPSCREW (Clamp)--3/8-16 x 3 Lg.	
		1	NUT -- 3/8-16-Hex.	
	X704		ROCKER ASSEM. - VALVE	Includes
*		1	ROCKER	
1	550A-P2	2	BUSHING	
2	523-E	1	ROLLER	
3	524-E	1	PIN - Roller	
4	G527A-E	1	BALL CHECK ASSEM.	
	X706		ROCKER ASSEM. - VALVE	Includes
*		1	ROCKER	
1	550A-P2	2	BUSHING	
2	523-E	1	ROLLER	
3	524-E	1	PIN - Roller	
4	G527A-E	1	BALL CHECK ASSEM.	
	X708		ROCKER ASSEM. - AIR STARTING	Includes
*		1	ROCKER	
1	590A-E32	2	BUSHING	
2	523-E	1	ROLLER	
3	524-E	1	PIN - Roller	
4	G527A-E	1	BALL CHECK ASSEM.	
	X720		HEAD ASSEM. - H.P. FUEL PUMP	Includes
*		1	HEAD	
1	2C1833L 1/8	1	PIPE PLUG	
	X730		ROCKER ASSEM. - AIR VALVE	Includes
*		1	ROCKER	
1	S-356	2	BUTTON	
	X731		HEAD ASSEM. - H.P. FUEL PUMP	Includes
*		1	HEAD	
1	2C1833L 1/8	1	PIPE PLUG	
	X781		MANIFOLD ASSEM. - SPRAY VALVE DRAIN	Includes
			Pipe & Tees (No Service Parts)	
	X794		CONTROL ASSEM. - GOVERNOR SPEED	Includes
1	C-1986	1	HANDWHEEL	
2	C-3797	1	SLEEVE - Adjusting	
3		1	MACHINE SCREW--1/4-20 x 1/2 Lg.-Flat Hd.	

REF. No.	PART NUMBER	No. USED	DESCRIPTION	
	G796-E		FITTING ASSEM.-H.P. FUEL PUMP DISCHARGE	Includes
1	796-EB32	1	FITTING	
2	796A-E	2	RING	
3	797-EB3	1	NUT	
	G796-EB32		FITTING ASSEM.-H.P. FUEL PUMP DISCHARGE	Includes
1	G796-E	1	FITTING ASSEM.	
2	796C-E1	1	VALVE - Check	
3	796D-E1	1	SPRING - Check Valve	
	X822		HEAD ASSEM. - CYLINDER	Includes
*		1	HEAD	
		6	PIPE PLUG -- 3/4 Std.	
		6	PIPE PLUG -- 1 Std.	
1	512-R51	2	GUIDE - In. & Exh. Valve	
2	854A-E	1	STUD - Spray Valve Clamp	
3	567-E	4	STUD - Rocker Shaft Bearing	
4	764-E	2	STUD - Exhaust Elbow	
	G823-RB3		ROD ASSEM. - H.P. PUMP CONNECTING	Includes
*		1	ROD	
*		1	CAP	
1	C-227-D	4	SHIM - (.010)	
1	C-227-E	8	SHIM - (.003)	
2	C-222	2	BOLT	
3		2	CASTLE NUT -- 5/8-18-Hex.	
		2	COTTER PIN -- 1/8 x 1 Lg.	
	G847-FB4		DOOR ASSEM. - FUEL PUMP HOUSING	Includes
1	847-FB4	1	DOOR - Fuel Pump Housing	
2	G847A-FB4	1	LATCH ASSEM. - Door	
3		1	WING NUT -- 1/2-13 Std.	
4		1	TAPER PIN -- #2 x 1 3/4 Lg.	
	G847A-FB4		LATCH ASSEM. - FUEL PUMP HOUSING DOOR	Includes
*		1	LATCH	
1	S-2247	1	STUD	
	G847-RB3		DOOR ASSEM. - FUEL PUMP HOUSING	Includes
1	847-RB3	1	DOOR	
2	G847A-RB3	1	LATCH ASSEM.	
3		1	WING NUT -- 1/2-13 Std.	
4		1	TAPER PIN -- #2 x 1 3/4 Lg.	
	G847A-RB3		LATCH ASSEM. - FUEL PUMP HOUSING DOOR	Includes
*		1	LATCH	
1	S-2247	1	STUD	
	G847C-RB3		HINGE ASSEM. - FUEL PUMP HOUSING DOOR	Includes
			Door Hinges (No Service Parts)	
	G850-E		SPINDLE ASSEM. - SPRAY VALVE	Includes
			Spindle & Extension (No Service Parts)	
	G870-R31		ROCKER ASSEM. - SPRAY VALVE	Includes
*		1	ROCKER	
1	G527A-E	1	BALL CHECK ASSEM.	
	G870-RB3		ROCKER ASSEM. - SPRAY VALVE	Includes
*		1	ROCKER	
1	527-RB3	1	BALL	
	G901-C31		HEAD ASSEM.-4" AIR COMPRESSOR CYLINDER	Includes
1	GA901-C31	1	HEAD ASSEM.	
2	905-C3	1	VALVE - Inlet	
3	908-C3	1	SPRING - Valve	
4	908B-AX3	1	WASHER - Spring Retainer	
5	908A-C3	1	NUT - Inlet Valve	
		1	NUT -- 5/16-18-Hex.	
8	915-C4	1	VALVE - Discharge	
9	920-C4	1	GUIDE - Discharge Valve	
10	924-C4	1	COLLAR - Discharge Valve	
11	919-C4	1	SPRING - Discharge Valve	
12	923-C41	1	CAP - Discharge Valve Guide	
15	918-E3	1	FLANGE - Discharge Valve Retainer	
16	918D-E3	1	GASKET - Flange to Head	
		2	NUT -- 1/2-13-Hex.	
17	915A-C3	1	SCREW - Valve Guide Cap Retainer	
18	G922-C4	1	NUT ASSEM. - Valve Guide Retainer Screw	
19	922C-C3	1	GASKET - Nut to Flange	
20	922A-C3	1	HANDLE - Suct. Valve Unloader	
		2	HALF NUT -- 3/8-16-Hex.	

ASSEM. LIST NO. AL 175
ISSUE 2
ENGINE SIZE 7½ x 10½ - 9 x 12

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	GA901-C31		HEAD ASSEM. - 4" AIR COMPRESSOR CYLINDER -Includes
*		1	HEAD
1	907-C3	1	GUIDE - Inlet Valve
2	C-2008L2	2	STUD - Disch. Valve Retainer Flange
		3	PIPE PLUG -- 1/2 Std.
		2	PIPE PLUG -- 1/2 Std. - C't's'k. Hd.
		1	PIPE PLUG -- 1 Std. - C't's'k. Hd.
		1	REDUCING BUSHING -- 1/2 x 3/8 Std.
	G922-C4		NUT ASSEM.-VALVE GUIDE RETAINER SCREW Includes
*		1	NUT
1	918B-C3	1	STUD
	G929-C3		ROD ASSEM. - AIR COMPRESSOR CONNECTING Includes
*		1	ROD
1	232-456	1	BUSHING
	X929		BEARING ASSEM. - FUEL WEDGE SHAFT Includes
*		1	BEARING
1	S-961	1	BUSHING
	X931		BODY ASSEM. - GOVERNOR
*		1	BODY
1	1111-C3	1	PINION
2		1	WOODRUFF KEY -- 1/8 x 5/8 Std.
3	1110-E6	1	COLLAR - Body Retainer
4		2	TAPER PIN -- #3 x 2 Lg.
	X 933		GEAR ASSEM. - REVERSING WHEEL REDUCING Includes
1	4983	1	GEAR
2	4984	1	PINION
3	C-254	1	PIN - Dowel
	X1071		PIN ASSEM. - PROPELLER SHAFT BRAKE Includes
*		1	PIN
1	S-2388	1	ROLLER
2	S-2390	1	PIN - Roller
3	S-2389	1	STUD - Brake Pin
	X1074		SEAL ASSEM. - CRANKSHAFT OIL Includes
*		2	SEAL
1	C-4537	2	GASKET
		2	CAPSCREW -- 3/8-16 x 1 1/2 Lg.
		2	NUT -- 3/8-16-Hex.
		2	LOCKWASHER -- 3/8 SAE Reg.
	X1079		CORE ASSEM. - LUBE OIL COOLER Includes
			Pipe, Pipe Plugs & Wire (No Service Parts)
	X1080		COOLER ASSEM. - LUBE OIL Includes
1	F-4260	1	PIPE (Outer)
2	X1079	1	CORE ASSEM.
3	C-3682	2	PLUG - Reteiner
		2	MACHINE SCREW--1/4-20 x 3/4 Lg.-Rnd. Hd.
	X1086		PUSH-ROD ASSEM. - FUEL SPRAY VALVE Includes
			Tube & Plugs (Upper & Lower)(No Service Parts)
	G1101-C3		WEIGHT ASSEMBLY - GOVERNOR Includes
*		1	WEIGHT
1	1104-C3	1	ROLLER
2	1104-C3	1	PIN
	X1105		MANIFOLD ASSEM. - EXHAUST Includes
*		1	MANIFOLD - Exhaust
		4	PIPE PLUG -- 1 1/4 Std.
1	764-E	6	STUD
1	C-2010L2 1/2	4	STUD (End)
	G1106-C3		QUILL ASSEM. - GOVERNOR THRUST Includes
*		1	QUILL
1	1105-C3	1	PLATE - Ball Bearing
2	5679	1	BEARING - Ball Thrust
	X1110		PUMP ASSEM. - 2 1/2" BILGE Includes
1	GA260-A	1	BODY ASSEM.
2	G261-A	1	PLUNGER ASSEM.
3	262-A	1	GLAND - Packing
4		1	PACKING -- 1/2 Sq. x 43 Lg.-(Flax)
		4	NUT -- 1/2-13-Hex.

REF. No.	PART NUMBER	No. USED	DESCRIPTION
	X1111		PUMP ASSEM. - 2 1/2" BILGE Includes
1	GA260-A-LH	1	PUMP ASSEM.
2	G261-A	1	PLUNGER ASSEM.
3	262-A	1	GLAND - Packing
4		1	PACKING -- 1/2 Sq. x 43 Lg. - (Flax)
		4	NUT -- 1/2-13-Hex.
	G1117-E		HANDLE ASSEM. - GOVERNOR CONTROL Includes
1	1117-E	1	HANDLE (Upper Sect.)
2	1119-E	1	HANDLE (Lower Sect.)
3	1249-E	1	SCREW
		1	HALF NUT -- 1/4-20-Hex.
4	1118-E1	1	PAWL - Handle
5		1	TAPER PIN (Pawl Retain.)--#1 x 1 Lg.
6	1124-E	1	SPRING - Pawl
7	1125-E	1	PLUG - Spring Retainer
	X1117		HEAD ASSEM.-6" AIR COMPRESSOR CYLINDER Includes
*		1	HEAD
		1	PIPE PLUG -- 1 Std.
1		1	REDUCING BUSHING -- 3/4 x 1/2 Std.
2		1	PIPE PLUG -- 3/4 Std.
		2	PIPE PLUG -- 1/2 Std.
3	S-1389	2	RETAINER - Valve & Spring
4	S-1391	2	VALVE - Suction & Discharge
5	S-1390	3	SPRING - Valve
6	S-1727	1	STUD - Discharge Valve Retainer
7	C-2506L1 3/4	1	CAPSCREW - Suction Valve Retainer
8	S-1726	1	SPACER - Discharge Valve Nut
9	S-1725	1	SPACER - Suction Valve Nut
10		2	CASTLE NUT -- 3/8-24-Hex.
10		2	COTTER PIN -- 3/32 x 3/4 Lg.
	X1118		CYLINDER ASSEM. - AIR STARTING Includes
1	5603	1	CYLINDER
2	4921	1	BASE
3	4920	1	HEAD
4	4959	1	ROD - Piston
5	4964	2	HOLDER - Valve
6	5802	2	CUP-LEATHER
7	4961	1	SPACER - Cup-Leather
8	4963	2	WASHER - Piston Rod
9	4962	1	WASHER - Piston Rod Bumper
10		1	NUT -- 1/2-13-Hex.
11		1	TAPER PIN -- #0 x 1 Lg.
12		1	PACKING -- 1/4 Sq. x 23 Lg. - (Flax)
13	4965	1	GLAND - Packing
14	4957	1	NUT - Packing Gland
	G1122-E6		HANDLE & SOCKET ASSEM. - GOVERNOR CONTROL-Includes
1	G1117-E	1	HANDLE ASSEM.
		1	CAPSCREW -- 5/16-18 x 1 3/4 Lg.
		1	NUT -- 5/16-18-Hex.
2	1122-E6	1	SOCKET
3	1122A-E1	1	QUADRANT
		2	CAPSCREW -- 1/4-20 x 1 1/4 Lg.
		2	NUT -- 1/4-20-Hex.
4	1120-E6	1	RACK - Spring Control
5	1121-E6	1	SCREW - Spring Adjusting
		1	NUT -- 3/4-16-Hex.
	G1197-E1		VALVE ASSEM.-COMPRESSION RELEASE(SNIFTER) Includes
1	1197-E1	1	BODY
2	G1198-E	1	STEM ASSEM.
	G1198-E		STEM ASSEM.-COMPRESSION RELEASE VALVE(SNIFTER) Includes
			Valve Stem & Handle (No Service Parts)
	G1200-R3		RAIL ASSEM. - FUEL Includes
*		1	TUBE - Fuel
1	1205-E1	4	BODY - Isolating Valve
2	1205C-E	4	SEAT - Isolating Valve
3	1205D-E	4	PLUG - Isolating Valve
4	1206-C31	4	STEM - Isolating Valve
5	866-E	4	GLAND - Packing
6	1208-C3	4	NUT - Gland
7		12	RING - Packing -- 1/4 I.D. x 1/2 O.D. x 1/4 Th. - Garlock #333
	G1200-R4		RAIL ASSEM. - FUEL Includes
*		1	TUBE - Fuel
1	1205-E1	5	BODY - Isolating Valve
2	1205C-E	5	SEAT - Isolating Valve
3	1205D-E	5	PLUG - Isolating Valve
4	1206-C31	5	STEM - Isolating Valve
5	866-E	5	GLAND - Packing
6	1208-C3	5	NUT - Gland
7		15	PACKING RING -- 1/4 I.D. x 1/2 O.D. x 1/4 Th. Garlock #333
	G1203-AX3		CLAMP ASSEM. - FUEL RAIL Includes
			Clamp & Cap (No Service Parts)

ASSEM. LIST NO. AL 176
ISSUE 3
ENGINE SIZE 7½x10½-9x12

ATLAS IMPERIAL DIESEL ENGINE CO. SUB-ASSEMBLY LIST

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REF. No.	PART NUMBER	No. USED	DESCRIPTION
	G1203-E		CLAMP ASSEM. - FUEL RAIL Includes
			Clamp & Cap (No Service Parts)
	X1211		LIFTER ASSEM. - INLET OR EXHAUST VALVE Includes
*		1	LIFTER
1	530-E	1	ROLLER
2	531-E	1	PIN
	G1215-E		VALVE ASSEM. - FUEL OIL ACCUMULATOR Includes
*		1	BODY
1	1206-C31	1	STEM - Valve
2		3	PACKING -- 1/2 O.D. x 1/4 I.D. x 1/4 Wide Garlock #333
3	866-E	1	GLAND - Packing
4	1208-C3	1	NUT - Packing Gland
	X1223		BAND ASSEM. - PROPELLER SHAFT BRAKE Includes
*		1	BAND
		2	RIVETS -- 1/4 x 5/8 Lg. - R.H.
*		1	COUPLING - Brake Band
		4	RIVETS -- 1/4 x 1 Lg. - R.H.
1		1	LINING -- 1/4 x 2 x 26 Lg.
2		16	RIVETS -- 3/16 x 1/2 Lg. - Tubular
	X1229		PUMP ASSEM. - 3" BILGE Includes
1	GA260-E	1	BODY ASSEM.
2	G261-E	1	PLUNGER ASSEM.
3	262-E	1	GLAND - Packing
4		1	PACKING -- 1/2 Sq. x 33 Lg.-(Flax)
		4	NUT -- 1/2-13-Hex.
	G1230-E1		VALVE ASSEM. - FUEL PRESSURE REGULATING Includes
1	G1243-E	1	HANDLE ASSEM.
2	1238A-E	1	PIN - Handle to Bearing
		2	COTTER PIN -- 3/32 x 3/4 Lg.
4	1244-E	1	SECTOR
		2	CAPSCREW -- 5/16-18 x 1 1/4 Lg.
		2	NUT -- 5/16-18-Hex.
7	1238-E	1	BEARING - Handle
8	1237-E1	1	CAGE - Spring
9	1245-E1	1	PLUG - (Upper)
10	1236-E	1	SPRING - Regulat. Valve
11	1240-E	1	NUT - Spring Adjust. Screw
		1	MACHINE SCREW--1/4-20 x 1/2 Lg.-Rnd. Hd.
13	1239-E	1	SCREW - Spring Adjusting
14	1233-E	1	STEM - Valve
15	1234-E	1	SEAT - Valve Stem
16	1230-E1	1	BODY - Regulat. Valve
17		3	PACKING RING--13/16 O.D. x 1/2 I.D. x 3/16 Wide - Garlock #333
18	1231A-E	1	RING - Packing Retainer
19	1231-E2	1	GLAND - Packing
20	1232-E1	1	STUD - Adaptor
21		1	HALF NUT -- 1-8-Hex.
22	1242-E	1	ELBOW - Fuel Inlet
23	1237A-E	1	CUP - Drain
	X1233		ECCENTRIC ASSEM. - AIR COMPRESSOR Includes
*		1	ECCENTRIC
*		1	CAP
1	C-8265L 3/4	2	PIN - Dowel
2	C-2108L3 1/4	4	STUD
3		4	CASTLE NUT -- 1/2-20-Hex.
		4	COTTER PIN -- 3/32 x 1 Lg.
	X1235		SPROCKET ASSEM.-CENTRIFUGAL PUMP DRIVE Includes
*		2	SPROCKET
1	C-2108L3	2	STUD
2		2	CASTLE NUT -- 1/2-20-Hex.
		2	COTTER PIN -- 3/32 x 1 Lg.
	X1242		BEARING ASSEM. - THRUST Includes
*		1	BEARING
*		1	CAP
1	C-8429-A	2	SHIM - (1/16)
1	C-8429-B	2	SHIM - (1/32)
1	C-8429-C	4	SHIM - (1/64)
2	C-6386L2 1/4	2	PIN - Dowel
		4	CAPSCREW -- 1-8 x 2 3/4 Lg.
		4	LOCKWASHER -- 1 SAE Reg.
		4	PIPE PLUG -- 1 1/2 Std.
		1	REDUCING BUSHING -- 1 1/2 x 1/4 Std.
		1	REDUCING BUSHING -- 1 1/2 x 1/2 Std.
	G1243-E		HANDLE ASSEM.-FUEL PRESS. REGULAT. VALVE Includes
1	1243-E	1	CAM - Spring Control
2	1117-E	1	EXTENSION - Handle
3	1249-E	1	SCREW - Handle
4	1118-E1	1	PAWL
5	1124-E	1	SPRING - Pawl
6	1125-E	1	SCREW - Spring Adjust.
7		1	TAPER PIN -- #1 x 1 Lg.
		1	HALF NUT -- 1/4-20-Hex.

REF. No.	PART NUMBER	No. USED	DESCRIPTION
	X1247		ECCENTRIC ASSEM. - AIR COMPRESSOR Includes
*		1	ECCENTRIC
1	X1251	1	CAP ASSEM.
2		4	CASTLE NUT -- 5/8-18-Hex.
		4	COTTER PIN -- 1/8 x 1 Lg.
	X1248		STRAP ASSEM. - AIR COMPRESSOR ECCENTRIC Includes
*		1	STRAP - (Upper)
*		1	STRAP - (Lower)
1	C-5217-E	8	SHIM
1	C-5217-D	4	SHIM
1	C-5217-C	2	SHIM
1	C-5217-B	2	SHIM
1	C-5217-A	2	SHIM
2	C-2610L8	2	BOLT
3		2	CASTLE NUT -- 5/8-18-Hex.
		2	COTTER PIN -- 1/8 x 1 1/4 Lg.
	X1251		CAP ASSEM. - AIR COMPRESSOR ECCENTRIC Includes
*		1	CAP
1	C-2110L4 1/4	4	STUD
2	S-2760	2	PIN - Dowel
	X1252		ROD ASSEM. - AIR COMPRESSOR CONNECTING Includes
*		1	ROD
1	232-456	1	BUSHING
	G1275-E832		PUMP ASSEM. - PRIMING Includes
*		1	BODY
*		1	PLUNGER
1		1	PACKING -- 1/8 Rd. x 7 Lg.-(Pelro)
2	S-2065	1	WASHER - Packing
3	S-2064	1	NUT
		1	NUT -- 7/16-20-Hex.
	X1306		ROCKER ASSEM. - SPRAY VALVE Includes
*		1	ROCKER
1	G527A-E	1	BALL CHECK ASSEM.
	X1330		PISTON ASSEM.-3 1/2 x 3 1/4 DOUBLE ACTING PUMP Includes
1	F-2665	1	ROD
2	S-3069	2	FOLLOWER - Cup-Leather
3	C-6632	2	CUP-LEATHER
4	S-3068	1	BODY - Piston
5	C-9779	1	NUT - Water Pump Piston Rod
		1	COTTER PIN -- 1/8 x 1 3/4 Lg.
6	2C2710	1	SPACER - Piston Rod
	G1338-RB31		PUMP ASSEM. - FUEL TRANSFER Includes
*		1	BODY
1	1340-RB3	1	COVER - Pump Body
2		2	PIN - Cover to Body Dowel
3	1339B-RB3	4	GASKET - Cover to Body
		6	MACHINE SCREW--1/4-28 x 3/4 Lg.-Fill. Hd.
4	G1341-RB3	1	GEAR & SHAFT ASSEM. (Drive)
5	G1342-RB3	1	GEAR & SHAFT ASSEM. (Driven)
6	1343-RB3	1	GLAND - Packing
7	1344-RB3	1	NUT - Packing Gland Retainer
8	1345-RB3	1	LOCK-NUT - Packing Gland
9		1	PACKING -- 3/16 Sq. x 13 Lg. - (Pelro)
	G1341-RB3		GEAR & SHAFT ASSEM.-FUEL TRANSFER PUMP(DRIVE) Includes
			Gear & Shaft (No Service Parts)
	X1341		PUSH-ROD ASSEM. - SPRAY VALVE Includes
			Tube & Plugs (No Service Parts)
	G1342-RB3		GEAR & SHAFT ASSEM.-FUEL TRANSFER PUMP(DRIVEN) Includes
			Gear & Shaft (No Service Parts)
	X1429		MANIFOLD ASSEM. - EXHAUST Includes
*		1	MANIFOLD
		2	PIPE PLUG -- 1 1/4 Std.
1	764-E	6	STUD - Elbow
2	S-3059	4	STUD - Outlet Elbow or Blind Flange
	X1470		SEAL ASSEM. - CRANKSHAFT OIL Includes
*		2	OIL SEAL
1	C-6199	2	GASKET
		2	CAPSCREW -- 3/8-16 x 1 1/2 Lg.
		2	NUT -- 3/8-16-Hex.
		2	LOCKWASHER -- 3/8 SAE Reg.
	X1583		PIPE ASSEM. - AIR STARTING VALVE TO GLOBE VALVE Includes
			Nipple & Pipe Coupling (No Service Parts)

ASSEM. LIST NO. AL 177
ISSUE 4
ENGINE SIZE 7½ X10½-9½12

ATLAS IMPERIAL DIESEL ENGINE CO. SUB-ASSEMBLY LIST

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REF. No.	PART NUMBER	No. USED	DESCRIPTION
	X1607		HEAD ASSEM. - CYLINDER — Includes
*		1	HEAD
		6	PIPE PLUG -- 3/4 Std.
		3	PIPE PLUG -- 1 Std.
1	512-R51	2	GUIDE - In. & Exh. Valve
2	854A-E	1	STUD - Spray Valve Clamp
3	567-E	4	STUD - Rocker Shaft Bearing
4	764-E	2	STUD - Exhaust Elbow
	X1608		HEAD ASSEM. - CYLINDER — Includes
1	X1607	1	HEAD ASSEM.
2	F-5275	1	VALVE - Inlet
3	F-5276	1	VALVE - Exhaust
4	513-R	2	SPRING - Valve
5	514A-FXC4	2	WASHER - Valve Spring (Bottom)
6	514-FXC4	2	WASHER - Valve Spring (Top)
7		4	HALF NUT -- 5/8-11-Hex.
8		2	LOCKWASHER -- 5/8 Shakeproof -- Type 11
9	580-R	1	VALVE - Air Starting
10	585-R	1	BUSHING - Valve
11	C-2151L1 1/4	2	RING - Piston
12	579-R	1	BUSHING - Spring
13	582-E	1	SPRING - Air Starting Valve
14	588-R	1	WASHER - Spring (Bottom)
15	583-FXC4	1	WASHER - Spring (Top)
16		1	NUT -- 5/8-18-Hex.
	3A1702X		ROD ASSEM. - PROPELLER SHAFT BRAKE — Includes
			Rod & Cam (No Service Parts)
	X1748		VALVE ASSEM. - SPRAY (DRAIN TYPE) — Includes
1	F-4983	1	BODY
2	S-2757	1	GLAND - Packing (Lower)
3	866-E	1	GLAND - Packing (Upper)
4		6	PACKING RING -- 1/4 I.D. x 1/2 O.D. x 1/4 Th. Garlock #333
5	865-E	1	NUT - Gland
6	G850-E	1	SPINDLE ASSEM.
7	856-E	1	NUT - Valve Seat
8	853-E	1	CASING - Valve Spring
		1	MACHINE SCREW--1/4-20 x 1/2 Lg. - Rnd. Hd.
10	858-E	1	SPRING
11	857-AX3	1	PLUG - Spring
12	5677	1	BALL BEARING - Thrust
13	878-E	1	NUT - Spindle
14		1	NUT -- 1/2-13-Hex.
	X1749		BODY ASSEM. - GOVERNOR — Includes
1	X271	1	BODY ASSEM.
2	X265	2	WEIGHT ASSEM.
3	2C1820	2	PIN - Weight
4		4	CASTLE NUT -- 3/8-24-Hex.
		4	COTTER PIN -- 3/32 x 3/4 Lg.
5	X266	1	QUILL ASSEM.
6	C-548	1	KEY - Thrust Quill
7	5720	1	BALL BEARING - Thrust
	X1759		CAMSHAFT ASSEMBLY — Includes
*		1	CAMSHAFT & COUPLING
1	1353-FB4	1	GEAR - Rotary Pump Drive
2		3	CAPSCREW -- 3/8-16 x 3/4 Lg.
	X1791		PUMP ASSEM. - 3" BILGE — Includes
1	GA260-E-LH	1	BODY ASSEM.
2	G261-E	1	PLUNGER ASSEM.
3	262-E	1	GLAND - Packing
4		1	PACKING -- 1/2 Sq. x 33 Lg. - (Flax)
		4	NUT -- 1/2-13-Hex.
	X1809		DOOR ASSEM. - ROTARY PUMP — Includes
*		1	DOOR
*		1	CAP - Pump Gear & Bearing
1	C-6674	2	GASKET - Cap
		4	CAPSCREW -- 1/2-13 x 3 3/4 Lg.
*		1	CAP - Pump Clamp
		2	CAPSCREW -- 1/2-13 x 2 1/4 Lg.
	X1810		BLOCK ASSEM. - GOVERNOR SPRING — Includes
1	F-5059	1	BLOCK
2	C-543	1	PIN - Fork
3	C-549	1	ROD - Spring
4	C-4351	1	PIN - Spring Rod
	X1814		SHAFT ASSEM. - PUMP DRIVE — Includes
*		1	SHAFT
1	1356-RB3	1	SLEEVE

REF. No.	PART NUMBER	No. USED	DESCRIPTION
	X1850		GEAR ASSEM. - LUBE OIL PRESSURE PUMP DRIVEN — Includes
1	C-3024	1	GEAR
2	C-6694	1	SHAFT
	X1851		COVER ASSEM. - PUMP DRIVE SHAFT BEARING END — Includes
*		1	COVER
1		1	OIL SEAL -- Perfect #1501
	X1852		PUMP ASSEM. - LUBE OIL PRESS. & SUMP — Includes
1	X1853	1	BODY ASSEM. - Pressure Pump
2	X1854	1	GEAR ASSEM. - Pressure Pump Drive (& Shaft)
3	X1850	1	GEAR ASSEM. - Pressure Pump Driven (& Shaft)
4	C-6698	1	SPACER - Pump Body
5	C-6693	2	GASKET - Spacer to Pump Bodies
6	S-1249	1	GEAR - Sump Pump Drive
7		1	WOODRUFF KEY -- 1/8 x 3/4 Lg.
8	S-1250	1	GEAR - Sump Pump Driven
9	W-744	1	BODY - Sump Pump
		4	NUT -- /38-24-Hex.
10	C-7402	2	PIN - Spacer & Pump Body Dowel
	X1853		BODY ASSEM. - LUBE OIL PRESSURE PUMP — Includes
*		1	BODY
1	C-2106L3 1/2	4	STUD
	X1854		GEAR ASSEM. - LUBE OIL PRESS. PUMP DRIVE — Includes
1	C-6695	1	GEAR
2	C-6697	1	SHAFT
		1	WOODRUFF KEY -- 1/8 x 3/4
	X1855		DOOR ASSEM. - ROTARY PUMP — Includes
*		1	DOOR
*		1	CAP -- Pump Gear
1	C-6674	2	GASKET - Cap
		4	CAPSCREW -- 1/2-13 x 3 3/4 Lg.
*		1	CAP - Pump Clamp
		2	CAPSCREW -- 1/2-13 x 2 1/4 Lg.
	X1890		BEARING ASSEM. - CONNECTING ROD — Includes
*		1	BEARING (Cap)
*		1	BEARING (Foot)
1	C-7476-A	2	SHIM - (1/16)
1	C-7476-B	2	SHIM - (1/32)
1	C-7476-D	4	SHIM - (.010)
1	C-7476-E	8	SHIM - (.003)
2	C-2506L1 1/2	2	CAPSCREW
3		2	CASTLE NUT -- 3/8-24-Hex.
3		2	COTTER PIN -- 1/16 x 1 Lg.
	X1935		CAMSHAFT ASSEMBLY — Includes
*		1	CAMSHAFT AND COUPLING
1	1353-FB4	1	GEAR - Rotary Pump Drive
2		3	CAPSCREW -- 3/8-16 x 3/4 Lg.
	X1957		COLUMN ASSEM. - JAHN'S GOVERNOR — Includes
*		1	COLUMN
1	S-1105	2	STUD - Regulator Bracket
	X1958		DASH-POT ASSEM. - JAHN'S GOVERNOR — Includes
1	X1959	1	CYLINDER ASSEM.
2	S-562	1	PISTON
3	S-560	1	ROD-END
4		1	MACHINE SCREW -- 1/4-20 x 5/8 Lg.-Flat Hd.
5	S-626	1	ROD - Piston
6	S-561	1	PIN - Rod-End
7	S-646	1	COVER - Cylinder
8		4	CLOSE NIPPLE -- 1/8 Std.
9		1	ELBOW -- 1/8 Std.
10	C-9847-P 1/8	1	ANGLE VALVE - Needle Point
11		1	UNION -- 1/8 Std.
	X1959		CYLINDER ASSEM.-JAHN'S GOV. DASH-POT — Includes
*		1	CYLINDER
1	S-1108	1	STUD
	X1960		LOCK ASSEM.-JAHN'S GOV. REGULATOR DISC — Includes
			Lock & Lock Button (No Service Parts)
	X1967		COVER ASSEM.-JAHN'S GOV. COLUMN UPPER BEARING — Includes
*		1	COVER
1		1	OIL SEAL -- National Motor Brg. Co. #10151
	X1988		BODY ASSEM. - LUBE OIL PRESSURE PUMP — Includes
*		1	BODY
1	C-2106L1 1/2	4	STUD

ASSEM. LIST NO. AL 178
ISSUE 3
ENGINE SIZE 7½ x 10½ - 9 x 12

ATLAS IMPERIAL DIESEL ENGINE CO. SUB-ASSEMBLY LIST

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REF. No.	PART NUMBER	No. USED	DESCRIPTION
	X1989		GEAR & SHAFT ASSEM.-PRESS. PUMP(DRIVE) Includes
1	C-6695	1	GEAR
2	C-7588	1	SHAFT
3		1	WOODRUFF KEY -- 1/8 x 3/4 Std.
	X1990		GEAR & SHAFT ASSEM.-PRESS. PUMP (DRIVEN) Includes
1	C-3024	1	GEAR
2	C-7589	1	SHAFT
	X1991		PUMP ASSEM. - LUBE OIL PRESSURE Includes
1	X1988	1	BODY ASSEM.
2	X1989	1	GEAR & SHAFT ASSEM. - (Drive)
3	X1990	1	GEAR & SHAFT ASSEM. - (Driven)
4	P-5155	1	COVER - Pump Body
5	C-6693	1	GASKET - Cover to Body
		4	NUT -- 3/8-24-Hex.
6	C-7402	2	PIN - Pump Body Cover Dowel
	X1994		HOUSING ASSEM. - GOVERNOR DRIVE Includes
*		1	HOUSING
1	C-2010L2 1/4	4	STUD
	X1995		HOUSING ASSEM. - JAHN'S GOV. DRIVE Includes
*		1	HOUSING
1	C-2010L2 1/4	4	STUD
	X2027		SCREEN ASSEM. - LUBE OIL SUMP STRAINER Includes Side & Bottom (No Service Parts)
	X2037		CONE ASSEM. - CLUTCH SHIFTER Includes
*		2	CONE
1	C-2708L4	2	CAPSCREW
2		2	CAPSCREW -- 1/2-13 x 5 Lg.
		4	NUT -- 1/2-13-Hex.
		4	LOCKWASHER -- 1/2 SAE Reg.
	X2038		DRUM ASSEM. - REVERSE GEAR Includes
*		1	DRUM
1	C-7829	1	BUSHING
2		1	OIL SEAL -- National Motor Bearing Co. #55120
	X2039		COVER ASSEM. - REVERSE GEAR DRUM Includes
*		1	COVER
1	C-7830	1	BUSHING
2		1	OIL SEAL -- National Motor Bearing Co. #55053
	X2040		SHAFT ASSEM. - REVERSE GEAR PINION Includes
*		1	SHAFT
1	S-2391	1	PIN
	X2041		SHAFT ASSEM. - THRUST Includes
*		1	SHAFT
1	301A-C3	1	GEAR
		2	CAPSCREW -- 1/2-13 x 1 1/4 Lg.
	X2042		SWIVEL ASSEM. - BRAKE POST (PLAIN) Includes
*		1	SWIVEL
1	C-7848	2	STUD - Fulcrum
	X2043		SWIVEL ASSEM. - BRAKE POST CROWDER Includes
*		1	SWIVEL
1	C-7848	2	STUD - Fulcrum
	X2044		ROD ASSEM. - BRAKE POST TIE Includes
*		1	ROD
1		1	NUT -- 7/8-9-Hex.
	X2045		CROWDER ASSEM. - BRAKE POST Includes
*		1	CROWDER
1	C-7851	1	STUD - Control Link
	X2046		BOLT ASSEM. - PROPELLER BRAKE CROWDER Includes
*		1	STUD
		1	NUT -- 5/8-11-Hex.
	X2047		CROWDER ASSEM. - PROPELLER BRAKE Includes
*		1	CROWDER
1	C-7854	1	STUD - Control Link

REF. No.	PART NUMBER	No. USED	DESCRIPTION
	X2048		BAND ASSEM. - PROPELLER BRAKE Includes
*		1	BAND
		4	RIVET -- 1/4 Dia. x 1/4 Lg. - Rnd. Hd.
*		1	CLIP
		4	RIVET -- 1/4 Dia. x 1/2 Lg. - Rnd. Hd.
1	C-7842	1	LINING
2		23	RIVET -- 3/16 Dia. x 5/16 Lg. - Tubular
	X2052		MANIFOLD ASSEM. - SPRAY VALVE DRAIN Includes Pipe, End & Center Tees (No Service Parts)
	X2058		SEAL ASSEM.-CRANKSHAFT OIL (FWD. END) Includes
*		2	SEAL
1	C-7885	2	GASKET
		2	CAPSCREW -- 3/8-16 x 1 1/2 Lg.
		2	NUT -- 3/8-16-Hex.
		2	LOCKWASHER -- 3/8 SAE Reg.
	X2059		STRAINER ASSEM. - LUBE OIL SUMP Includes Collar, Screens & Suction Pipe (No Service Parts)
	X2060		MANIFOLD ASSEM. - LUBE OIL Includes Pipe & Tees (No Service Parts)
	X2061		MANIFOLD ASSEM. - LUBE OIL Includes Pipe & Tees (No Service Parts)
	X2062		CRANKSHAFT ASSEMBLY Includes
*		1	CRANKSHAFT
1	C-7482	1	GEAR
2	S-3109	1	PIN - Gear Dowel
3	C-7487	1	RING - Oil Thrower (Fwd. End)
4	C-7867	1	RING - Oil Thrower (Aft End)
5	C-5209	1	PIN - Air Comp. Eccentric Dowel
	X2063		CRANKSHAFT ASSEMBLY Includes
*		1	CRANKSHAFT
1	C-7482	1	GEAR
2	S-3109	1	PIN - Gear Dowel
3	C-7487	1	RING - Oil Thrower (Fwd. End)
4	C-7867	1	RING - Oil Thrower (Aft End)
5	C-5209	1	PIN - Air Comp. Eccentric Dowel
	X2066		DOOR ASSEM. - ROTARY PUMP Includes
*		1	DOOR
*		1	CAP - Pump Gear
1	C-6674	2	GASKET - Cap
		4	CAPSCREW -- 1/2-13 x 3 3/4 Lg.
*		1	CAP - Pump Clamp
		2	CAPSCREW -- 1/2-13 x 2 1/4 Lg.
	X2068		PIN ASSEM. - INTERMEDIATE GEAR Includes
*		1	BRACKET
1	C-7889	1	PIN - Intermed. Gear
2	S-2760	1	PIN - Gear Pin to Bracket Dowel
3	S-2920	1	STUD - Gear Retainer
4	C-7942	4	STUD - Pin Bracket
	X2069		GEAR ASSEM. - INTERMEDIATE Includes
*		1	HUB
*		1	GEAR
1	664B-AX3	1	BUSHING
	X2071		BRACKET ASSEM. - PRESSURE GAGE Includes
*		1	BRACKET
*		1	CAP
		2	CAPSCREW -- 3/8-16 x 1 1/2 Lg.
	X2072		MANIFOLD ASSEM. - AIR STARTING Includes
1	577-C4	3	ELBOW - Manifold to Cyl. Head
2		3	NIPPLE -- 1 1/4 x 4 Lg.
3		2	TEE -- 1 1/4 Std.
4		1	ELBOW -- 1 1/4 Std.
5		2	NIPPLE -- 1 1/4 x 11 3/4 Lg.
6-7		2	NIPPLE -- 1 1/4 x 4 1/2 Lg.
8		2	ELBOW -- 1 1/4 - 45° Std.
9	X1583	1	NIPPLE ASSEM. - Manifold to Globe Valve
	X2073		MANIFOLD ASSEM. - AIR STARTING Includes
1	577-C4	4	ELBOW - Manifold to Cyl. Head
2		4	NIPPLE -- 1 1/4 x 4 Lg.
3		3	TEE -- 1 1/4 Std.
4		1	ELBOW -- 1 1/4 Std.
5		3	NIPPLE -- 1 1/4 x 11 3/4 Lg.
6-7		2	NIPPLE -- 1 1/4 x 4 1/2 Lg.
8		2	ELBOW -- 1 1/4 - 45° Std.
9	X1583	1	NIPPLE ASSEM. - Manifold to Globe Valve

ASSEM. LIST NO. AL 179
ISSUE 2
ENGINE SIZE 7½ X 10½ - 9X12

ATLAS IMPERIAL DIESEL ENGINE CO. SUB-ASSEMBLY LIST

WHEN ORDERING PARTS ALWAYS GIVE ENGINE NUMBER - PART NUMBER - NAME - OR COMPLETE DESCRIPTION AND SIZE.
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REF. No.	PART NUMBER	No. USED	DESCRIPTION
	X2074		BEARING ASSEM. - CAMSHAFT (FWD. END) Includes
*		1	BEARING
1	2C3885	1	BUSHING
2		1	OIL SEAL -- National Motor Brg. Co. #50083
		2	PIPE PLUG -- 1/8 Std.
	X2075		BEARING ASSEM. - CAMSHAFT (AFT END) Includes
*		1	BEARING
1	685-C	1	BUSHING
	X2076		BEARING ASSEM. - CAMSHAFT (AFT END) Includes
*		1	BEARING
1	C-308	1	BUSHING
	X2078		GEAR ASSEM. - INTERMEDIATE Includes
*		1	HUB
*		1	GEAR
1	664B-AX3	1	BUSHING
	X2081		SEAL ASSEM. - CRANKSHAFT OIL Includes
*		2	SEAL
1	C-7885	2	GASKET
		2	CAPSCREW -- 3/8-16 x 1 1/2 Lg.
		2	NUT -- 3/8-16-Hex.
		2	LOCKWASHER -- 3/8 SAE Reg.
	X2082		MANIFOLD ASSEM. - LUBE OIL Includes
	F-5244	1	PIPE
	C-1344	8	TEE
	C-3204	2	TEE - Manifold Inlet & Outlet
	X2083		CYLINDER ASSEM. - FLYWHEEL AIR BRAKE Includes
1	X550	1	CYLINDER ASSEM.
2	C-7943	1	ROD - Piston
3	S-2618	1	WASHER - Piston Cup-Leather
4	S-2623	1	CUP-LEATHER - Piston
5	3588	1	FOLLOWER - Piston Cup-Leather
6		1	CASTLE NUT -- 7/8-14-Hex.
		1	COTTER PIN -- 1/8 x 1 1/2 Lg.
7	3717	1	GUIDE - Piston Rod
		4	CAPSCREW -- 1/2-13 x 1 1/4 Lg.
		4	LOCKWASHER -- 1/2 SAE Reg.
	X2085		SHOE ASSEM. - FLYWHEEL AIR BRAKE Includes
*		1	SHOE
1		1	LINING -- 1/4 x 6 x 18 1/2 Lg.
2		18	RIVETS -- 3/16 Dia. x 3/4 Lg.-Tubular
2		12	RIVETS -- 3/16 Dia. x 1 Lg. - Tubular
	X2086		CRANKSHAFT ASSEMBLY Includes
*		1	CRANKSHAFT
1	660-E31	1	GEAR
2	S-3109	1	PIN - Gear Dowel
3	655-E31	1	RING - Oil Thrower
4	C-5209	1	DOWEL - Air Compressor Eccentric
	X2089		CYLINDER ASSEM. - 4" COMPRESSOR Includes
*		1	CYLINDER
1	C-5510L5 3/4	4	STUD - Cyl. Head
		1	REDUCING BUSHING -- 1 x 1/4 Std.
		1	PIPE PLUG -- 1/2 Std.
		2	PIPE PLUG -- 1 Std.
	X2090		MANIFOLD ASSEM. - EXHAUST Includes
*		1	MANIFOLD
1	C-2010L2 1/4	6	STUD - Inlet Elbow
2	C-2010L2 1/2	8	STUD - Manifold End
		3	PIPE PLUG -- 1 1/4 Std.
		1	REDUCING BUSHING -- 1 1/4 x 1/2 Std.
	X2091		MANIFOLD ASSEM. - EXHAUST Includes
*		1	MANIFOLD
1	C-2010L2 1/4	8	STUD - Inlet Elbow
2	C-2010L2 1/2	8	STUD
		5	PIPE PLUG -- 1 1/4 Std.
		1	REDUCING BUSHING -- 1 1/4 x 1/2 Std.
	X2102		MANIFOLD ASSEM. - AIR INLET Includes
			Manifold & Flanges (No Service Parts)
	X2103		MANIFOLD ASSEM. - AIR INLET Includes
			Manifold & Flanges (No Service Parts)
	X2104		CRANK ASSEM. - BILGE PUMP Includes
*		1	DISC
*		1	PIN - Pump Drive
1	C-8011L 3/8	1	PIN - Conn. Rod Retainer Washer Lock

REF. No.	PART NUMBER	No. USED	DESCRIPTION
	X2113		ECCENTRIC ASSEM. - AIR COMPRESSOR Includes
*		1	ECCENTRIC
*		1	CAP
1	S-2760	2	PIN - Dowel
2	C-2108L4	4	STUD - Cap
3		4	CASTLE NUT -- 1/2-20-Hex.
	X2137		SHAFT ASSEM. - THRUST Includes
*		1	SHAFT
1	301A-C4	1	GEAR
		2	CAPSCREW -- 1/2-13 x 1 1/2 Lg.
	X2149		BEARING ASSEM. - CHAIN IDLER SHAFT Includes
*		1	BEARING
1		1	OIL SEAL -- National Motor Brg. Co. #50049
	X2233		MANIFOLD ASSEM. - LUBE OIL Includes
			Pipe, Inlet & Outlet Tees (No Service Parts)
	X2234		MANIFOLD ASSEM. - LUBE OIL Includes
			Pipe, Inlet & Outlet Tees (No Service Parts)
	X2235		CRANKSHAFT ASSEMBLY Includes
*		1	CRANKSHAFT
1	C-7482	1	GEAR
2	S-3109	1	PIN - Gear Dowel
3	C-7487	2	RING - Oil Thrower
5	S-3135	1	PIN - Cent. Pump Drive Sprocket
		1	PIPE PLUG -- 1/4 Std. - C't's'k. Hd.
	X2236		CRANKSHAFT ASSEMBLY Includes
*		1	CRANKSHAFT
1	C-7482	1	GEAR
2	S-3109	1	PIN - Gear Dowel
3	C-7487	2	RING - Oil Thrower
5	S-3135	1	PIN - Cent. Pump Drive Sprocket
		1	PIPE PLUG -- 1/4 Std. - C't's'k. Hd.
	X2238		SHAFT ASSEM. - REVERSE GEAR PINION Includes
*		1	SHAFT
1	S-2391	1	PIN
	X2242		SPROCKET ASSEM.-CENTRIFUGAL PUMP DRIVE Includes
*		2	SPROCKET
1	C-8265L 3/4	2	PIN - Dowel
2	C-2110L3 1/4	2	STUD
3		2	CASTLE NUT -- 5/8-18-Hex.
		2	COTTER PIN -- 1/8 x 1 1/4 Lg.
	X2243		COVER ASSEM. - REVERSE GEAR DRUM Includes
*		1	COVER
1	C-8366	1	BUSHING
2		1	OIL SEAL -- National Motor Brg. Co. #55109
	X2244		DRUM ASSEM. - REVERSE GEAR Includes
*		1	DRUM
1	C-8368	1	BUSHING
2		1	OIL SEAL -- National Motor Brg. Co. #55129
	X2245		MANIFOLD ASSEM. - AIR STARTING Includes
1	577-C4	4	ELBOW - Air Start. Man.
2		4	NIPPLE -- 1 1/4 x 5 1/2 Lg.
3		3	TEE -- 1 1/4 Std.
4		1	ELBOW -- 1 1/4 Std.
5		3	NIPPLE -- 1 1/4 x 14 Lg.
6		1	NIPPLE -- 1 1/4 x 5 1/2 Lg.
7		1	NIPPLE -- 1 1/4 x 4 1/2 Lg.
8		2	ELBOW -- 1 1/4 - 45° Std.
9	X1583	1	NIPPLE ASSEM. - Manifold to Globe Valve
	X2256		CAMSHAFT ASSEMBLY Includes
*		1	CAMSHAFT & COUPLING
1	1353-FB4	1	GEAR - Rotary Pump Drive
2		3	CAPSCREW -- 3/8-16 x 3/4 Lg.
	X2257		MANIFOLD ASSEM. - LUBE OIL Includes
			Pipe & Tees (No Service Parts)
	X2266		ROD ASSEM. - BRAKE POST TIE Includes
*		1	ROD
1		1	NUT -- 7/8-9-Hex.

ASSEM. LIST NO. AL 180
ISSUE 2
ENGINE SIZE 7½ x 10½ - 9 x 12

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REF. No.	PART NUMBER	No. USED	DESCRIPTION
	X2267		STRAP ASSEM.-AIR COMPRESSOR ECCENTRIC Includes
*		1	STRAP (Upper)
*		1	STRAP (Lower)
1	C-4554-A	2	SHIM - (1/16)
1	C-4554-B	2	SHIM - (1/32)
1	C-4554-D	4	SHIM - (.010)
1	C-4554-E	8	SHIM - (.003)
2	C-7996	2	BOLT
3		2	CASTLE NUT -- 3/4-16-Hex.
		2	COTTER PIN -- 1/8 x 1 1/4 Lg.
	X2268		STRAP ASSEM. - AIR COMPRESSOR ECCENTRIC Includes
*		1	STRAP (Upper)
*		1	STRAP (Lower)
1	C-6145-A	2	SHIM - (1/16)
1	C-6145-B	2	SHIM - (1/32)
1	C-6145-D	4	SHIM - (.010)
1	C-6145-E	8	SHIM - (.003)
2	C-7996	2	BOLT
3		2	CASTLE NUT -- 3/4-16-Hex.
		2	COTTER PIN -- 1/8 x 1 1/4 Lg.
	X2269		MANIFOLD ASSEM. - AIR INLET Includes
			Manifold & Flanges (No Service Parts)
	X2270		SPROCKET ASSEM. - CENTRIFUGAL PUMP DRIVE - Includes
*		1	SPROCKET
1	C-2108L2	2	STUD
2		2	CASTLE NUT -- 1/2-20-Hex.
		2	COTTER PIN -- 3/32 x 1 Lg.
	X2276		MANIFOLD ASSEM. - AIR INLET Includes
			Manifold & Flanges (No Service Parts)
	X2277		MANIFOLD ASSEM. - LUBE OIL Includes
			Pipe, Inlet & Outlet Tees (No Service Parts)
	X2278		MANIFOLD ASSEM. - LUBE OIL Includes
			Pipe, Inlet & Outlet Tees (No Service Parts)
	X2280		CAMSHAFT ASSEMBLY Includes
*		1	CAMSHAFT & COUPLING
1	1353-FB4	1	GEAR - Rotary Pump Drive
2		3	CAPSCREW(Dowel) -- 3/8-16 x 3/4 Lg.
	X2285		MANIFOLD ASSEM. - AIR STARTING Includes
1	577-C4	3	ELBOW - Manifold to Cyl. Head
2		3	NIPPLE -- 1 1/4 x 5 1/2 Lg.
3		2	TEE -- 1 1/4 Std.
4		1	ELBOW -- 1 1/4 Std.
5		2	PIPE -- 1 1/4 x 14 Lg.(Thr'd. Both Ends)
6		1	NIPPLE -- 1 1/4 x 5 1/2 Lg.
7		1	NIPPLE -- 1 1/4 x 4 1/2 Lg.
8		2	ELBOW -- 1 1/4 - 45° Std.
9	X1583	1	NIPPLE ASSEM. - Manifold to Globe Valve
	X2287		CRANKSHAFT ASSEMBLY Includes
*		1	CRANKSHAFT
1	660-E31	1	GEAR
2	S-3109	1	PIN - Gear Dowel
3	655-E31	1	RING - Oil Thrower (Fwd. End)
4	655-E	1	RING - Oil Thrower (Aft End)
5	S-2918	1	PIN - Air Comp. Eccentric Dowel
	X2288		CRANKSHAFT ASSEMBLY Includes
*		1	CRANKSHAFT
1	660-E31	1	GEAR
2	S-3109	1	PIN - Gear Dowel
3	655-E31	1	RING - Oil Thrower (Fwd. End)
4	655-E	1	RING - Oil Thrower (Aft End)
5	S-2918	1	PIN - Air Comp. Eccentric Dowel
	X2289		SWIVEL ASSEM. - BRAKE POST (PLAIN) Includes
*		1	SWIVEL
1	346A-C3	2	STUD
	X2290		SWIVEL ASSEM. - BRAKE POST CROWDER Includes
*		1	SWIVEL
1	346A-C3	2	STUD - Fulcrum

REF. No.	PART NUMBER	No. USED	DESCRIPTION
	X2291		HEAD ASSEM. - CYLINDER Includes
*		1	HEAD
		9	PIPE PLUG - 1 Std.
1	512-E1	2	GUIDE - Inlet & Exhaust Valve
2	854A-E	1	STUD - Spray Valve Clamp
3	567-E	4	STUD - Rocker Shaft Bearing
4	764-E	2	STUD - Exhaust Elbow
	X2292		HEAD ASSEM. - CYLINDER Includes
1	X2291	1	HEAD ASSEM.
2	510-E1	1	VALVE - Inlet
3	F-3631	1	VALVE - Exhaust
4	514A-E	2	WASHER - In. & Ex. Valve Spring (Bottom)
5	513-E	2	SPRING - In. & Ex. Valve
6	514-E	2	WASHER - Spring Retainer (Top)
7		4	HALF NUT -- 3/4-10-Hex.
7		2	LOCKWASHER -- 3/4 Shakeproof - Type 11
8	580-KXH6	1	VALVE - Air Starting
9	585-E3	1	BUSHING - Air Start. Valve
10	C-2152L1 1/2	2	RING - Piston
11	579-FXC4	1	SLEEVE - Air Start. Valve Spring
12	588-KXH6	1	WASHER - Air Start. Valve Spring (Bottom)
13	582-E	1	SPRING - Air Start. Valve
14	583-FXC4	1	WASHER - Air Start. Valve Spring (Top)
15		1	NUT -- 5/8-18-Hex.
	X2293		COUPLING ASSEM. - ACCUMULATOR TO TEE Includes
			Couplings (Male & Female) & Nuts (No Service Parts)
	X2295		MANIFOLD ASSEM. - LUBE OIL Includes
			Pipe, Inlet & Outlet Tees (No Service Parts)
	X2296		MANIFOLD ASSEM. - EXHAUST Includes
*		1	MANIFOLD
		4	PIPE PLUG -- 1 1/4 Std.
		1	REDUCING BUSHING -- 1 1/4 x 1/2 Std.
1	C-2010L2 1/4	6	STUD - Inlet Elbow
2	C-2010L2 1/2	8	STUD - (End)
	X2297		MANIFOLD ASSEM. - EXHAUST Includes
*		1	MANIFOLD
		6	PIPE PLUG -- 1 1/4 Std.
		2	REDUCING BUSHING -- 1 1/4 x 1/2 Std.
1	C-2010L2 1/4	8	STUD - Inlet Elbow
2	C-2010L2 1/2	8	STUD - (End)
	X2298		SWIVEL ASSEM. - BRAKE POST CROWDER Includes
*		1	SWIVEL
1	346A-C3	2	STUD - Fulcrum
	X2299		CROWDER ASSEM. - BRAKE POST Includes
*		1	CROWDER
1	C-7851	1	STUD - Control Link
	X2301		ROCKER ASSEM. - INLET VALVE Includes
*		1	ROCKER
1	520A-R3	2	BUSHING
2	523-E	1	ROLLER
3	524-E	1	PIN - Roller
4	G527A-E	1	BALL CHECK ASSEM.
	X2302		ROCKER ASSEM. - EXHAUST VALVE Includes
*		1	ROCKER
1	520A-R3	2	BUSHING
2	523-E	1	ROLLER
3	524-E	1	PIN - Roller
4	G527A-E	1	BALL CHECK ASSEM.
	X2303		ROCKER ASSEM. - AIR STARTING VALVE Includes
*		1	ROCKER
1	590A-R3	2	BUSHING
2	523-E	1	ROLLER
3	524-E	1	PIN - Roller
4	G527A-E	1	BALL CHECK ASSEM.
	X2304		DOOR ASSEM. - ROTARY PUMP Includes
*		1	DOOR
*		1	CAP - Pump Gear
1	C-6674	2	GASKET - Cap
		4	CAPSCREW -- 1/2-13 x 3 3/4 Lg.
*		1	CAP - Pump Clamp
		2	CAPSCREW -- 1/2-13 x 2 1/4 Lg.

ASSEM. LIST NO. AL 181
ISSUE 3
ENGINE SIZE 7½ x 10½ - 9 x 12

ATLAS IMPERIAL DIESEL ENGINE CO. SUB-ASSEMBLY LIST

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	X2305		CRANKSHAFT ASSEMBLY	Includes
*		1	CRANKSHAFT	
1	660-E31	1	GEAR	
2	S-3109	1	PIN - Gear Dowel	
3	655-E31	2	RING - Oil Thrower	
5	S-2918	1	PIN - Dowel (Air Comp. Eccentric or Pump Drive Sprocket)	
		1	PIPE PLUG -- 1/4 Std. - C't's'k. Hd.	
	X2306		CRANKSHAFT ASSEMBLY	Includes
*		1	CRANKSHAFT	
1	660-E31	1	GEAR	
2	S-3109	1	PIN - Gear Dowel	
3	655-E31	2	RING - Oil Thrower	
5	S-2918	1	PIN - Dowel (Air Comp. Eccentric or Pump Drive Sprocket	
		1	PIPE PLUG -- 1/4 Std. - C't's'k. Hd.	
	X2307		BODY ASSEM. - GOVERNOR	Includes
1	X271	1	BODY ASSEM.	
2	X270	2	WEIGHT ASSEM.	
3	2C1820	2	PIN - Gov. Weight	
4		4	CASTLE NUT -- 3/8-24-Hex.	
4		4	COTTER PIN -- 3/32 x 3/4 Lg.	
5	X266	1	QUILL ASSEM. - Thrust	
6	C-548	1	KEY - Thrust Quill	
7	5720	1	BALL BEARING - Thrust	
	X2309		VALVE ASSEM.-AIR BRAKE & START. CYLINDER	Includes
1	W-1148	1	BODY	
2	S-353	2	VALVE	
3	S-357	2	SPRING - Valve	
4	4903	2	PLUG - Body	
5	S-3160	2	GASKET - Plug to Body	
6	S-355	1	PIN - Rocker	
		1	NUT -- 1/2-13-Hex.	
7	X730	1	ROCKER ASSEM.	
		1	COTTER PIN -- 1/8 x 1 Lg.	
8	S-354	1	SPRING - Rocker	
9		2	CAPSCREW -- 5/16-18 x 1 Lg.	
10		2	HALF NUT -- 5/16-18-Hex.	
	X2310		MANIFOLD ASSEM. - SPRAY VALVE DRAIN Pipe & Tees (No Service Parts)	Includes
	X2311		MANIFOLD ASSEM. - SPRAY VALVE DRAIN Pipe & Tees (No Service Parts)	Includes
	X2314		PLATFORM ASSEMBLY Platform & Angle (No Service Parts)	Includes
	X2315		PLATFORM ASSEMBLY Platform & Angle (No Service Parts)	Includes
	X2388		ROD ASSEM. - WATER PUMP CONNECTING	Includes
*		1	ROD	
1	C-9121	1	BUSHING	
2		3	ESCUTCHEON PIN -- #10 x 1 3/8 Lg.	
	X2389		ROD ASSEM. - BILGE PUMP CONNECTION	Includes
*		1	ROD	
1	C-9122	1	BUSHING	
2		5	ESCUTCHEON PIN -- #10 x 7/8 Lg.	
	X2401		PLUNGER ASSEM. - BILGE PUMP	Includes
*		1	PLUNGER	
*		1	PIPE PLUG -- 1 1/4 Std.	
1	2C4480	1	BUSHING	
	X2422		PUMP ASSEM. - BILGE	Includes
1	X2423	1	BODY ASSEM.	
		2	PIPE PLUG -- 1 1/2 Std.	
2	X2401	1	PLUNGER ASSEM.	
3	C-9119	1	GLAND - Packing	
		4	NUT -- 1/2-13-Hex.	
4		3	PACKING -- 3/8 Sq. x 11 Lg.	
	X2423		BODY ASSEM. - BILGE PUMP	Includes
*		1	BODY	
1	C-8662	2	STUD - Packing Gland	
	X2425		CRANK ASSEM. - WATER PUMP DRIVE	Includes
*	F-5693	1	CRANK	
1	C-8011L 3/8	1	PIN - Conn. Rod Retainer Washer Lock	

REF. No.	PART NUMBER	No. USED	DESCRIPTION	
	X2426		BASE ASSEMBLY	Includes
*		1	BASE	
		2	PIPE PLUG -- 1 1/2 Std.	
1	S-2918	5	PIN - Crank. Brg. Shell Dowel	
2	C-2112L5 3/4	14	STUD - Crank. Brg. Cap	
3	727-BB3	11	STUD - Base, Centerframe & Cylinder	
4	729-BB3	1	STUD - Base & Centerframe	
5	731-BB3	2	STUD - Base & Centerframe (End)	
6	X2233	1	MANIFOLD ASSEM. - Lube Oil	
		2	PIPE PLUG -- 3/8 Std.	
7	C-7865	4	CLAMP - Manifold to Base	
8	C-2406L 1/2	8	CAPSCREW - Manifold Clamp to Base	
9	2C2543	5	TUBE - Manifold to Crank. Brg. Oil	
10	C-3662	5	WASHER - Crank. Brg. Oil Tube	
11	F-5194	2	CAP - Crankshaft Bearing (End)	
12	713-R	3	CAP - Crankshaft Bearing	
13	S-2713	14	NUT - Crankshaft Bearing Cap	
		14	COTTER PIN -- 1/8 x 1 1/2 Lg.	
	X2427		BASE ASSEMBLY	Includes
*		1	BASE	
		2	PIPE PLUG -- 1 1/2 Std.	
1	S-2918	6	PIN - Crank. Brg. Shell Dowel	
2	C-2112L5 3/4	16	STUD - Crank. Brg. Cap	
3	727-BB3	15	STUD - Base, Centerframe & Cylinder	
4	729-BB3	1	STUD - Base & Centerframe	
5	731-BB3	2	STUD - Base & Centerframe (End)	
6	X2234	1	MANIFOLD ASSEM. - Lube Oil	
		2	PIPE PLUG -- 3/8 Std.	
7	C-7865	5	CLAMP - Manifold to Base	
8	C-2406L 1/2	10	CAPSCREW - Manifold Clamp to Base	
9	2C2543	6	TUBE - Manifold to Crank. Brg. Oil	
10	C-3662	6	WASHER - Crank. Brg. Oil Tube	
11	F-5194	2	CAP - Crankshaft Bearing (End)	
12	713-R	4	CAP - Crankshaft Bearing	
13	S-2713	16	NUT - Crankshaft Bearing Cap	
		16	COTTER PIN -- 1/8 x 1 1/2 Lg.	
	X2428		CENTERFRAME ASSEMBLY	Includes
*		1	CENTERFRAME	
1	C-5520L9 1/4	1	STUD - Cylinder	
2	846A-RB3	3	STUD - Fuel Pump Housing	
4	S-1983	5	PIN - Centerframe Door Dowel	
	X2429		CENTERFRAME ASSEMBLY	Includes
*		1	CENTERFRAME	
		1	PIPE PLUG -- 1/2 Std. - C't's'k. Hd.	
1	C-5520L9 1/4	1	STUD - Cylinder	
2	846A-RB3	4	STUD - Fuel Pump Housing	
4	S-1983	7	PIN - Centerframe Door Dowel	
	X2447		BEARING ASSEM. - LATCH SHAFT	Includes
*		1	BEARING	
*		1	CAP	
1	C-3047	1	STUD - Cap	
		1	CASTLE NUT -- 5/8-18-Hex.	
	X2448		BASE ASSEMBLY	Includes
*		1	BASE	
		4	PIPE PLUG -- 1 1/2 Std.	
1	S-2918	4	PIN - Crank. Brg. Shell Dowel	
2	C-2112L5 3/4	10	STUD - Crank. Brg. Cap	
3	727-BB3	11	STUD - Base, Centerframe & Cylinder	
4	729-BB3	1	STUD - Base & Centerframe	
5	731-BB3	2	STUD - Base & Centerframe (End)	
6	X2060	1	MANIFOLD ASSEM. - Lube Oil	
		2	PIPE PLUG -- 3/8 Std.	
		1	PIPE PLUG-- 1/2 Std. - C't's'k. Hd.	
7	C-7865	3	CLAMP - Manifold to Base	
8	C-2406L 1/2	6	CAPSCREW - Manifold Clamp to Base	
9	2C2543	4	TUBE - Manifold to Crank. Brg. Oil	
10	C-3662	4	WASHER - Crank. Brg. Oil Tube	
11	F-5194	1	CAP - Crankshaft Bearing (End)	
12	713-R	3	CAP - Crankshaft Bearing	
13	S-2713	10	NUT - Crankshaft Bearing Cap	
		10	COTTER PIN -- 1/8 x 1 1/2 Lg.	
	X2449		BASE ASSEMBLY	Includes
*		1	BASE	
		4	PIPE PLUG -- 1 1/2 Std.	
1	S-2918	5	PIN - Crank. Brg. Shell Dowel	
2	C-2112L5 3/4	12	STUD - Crank. Brg. Cap	
3	727-BB3	15	STUD - Base, Centerframe & Cylinder	
4	729-BB3	1	STUD - Base & Centerframe	
5	731-BB3	2	STUD - Base & Centerframe (End)	
6	X2061	1	MANIFOLD ASSEM. - Lube Oil	
		2	PIPE PLUG -- 3/8 Std.	
		1	PIPE PLUG -- 1/2 Std. - C't's'k. Hd.	
7	C-7865	4	CLAMP - Manifold to Base	
8	C-2406L 1/2	8	CAPSCREW - Manifold Clamp to Base	
9	2C2543	5	TUBE - Manifold to Crank. Brg. Oil	
10	C-3662	5	WASHER - Crank. Brg. Oil Tube	
11	F-5194	1	CAP - Crankshaft Bearing (End)	
12	713-R	4	CAP - Crankshaft Bearing	
13	S-2713	12	NUT - Crankshaft Bearing Cap	
		12	COTTER PIN -- 1/8 x 1 1/2 Lg.	

ASSEM. LIST NO. AL 182
ISSUE 2
ENGINE SIZE 7½x10½-9 x12

ATLAS IMPERIAL DIESEL ENGINE CO. SUB-ASSEMBLY LIST

WHEN ORDERING PARTS ALWAYS GIVE ENGINE NUMBER-PART NUMBER-NAME-OR COMPLETE DESCRIPTION AND SIZE.
DO NOT ORDER PARTS BY REFERENCE NUMBERS
*INDICATES PARTS NOT SOLD INDIVIDUALLY

REF. No.	PART NUMBER	No. USED	DESCRIPTION
	X2450		CENTERFRAME ASSEMBLY — Includes
*		1	CENTERFRAME
1	C-5520L9 1/4	1	STUD - Cylinder
2	846A-RB3	3	STUD - Fuel Pump Housing
3	C-5510L3	4	STUD - Air Compressor Cylinder
4	S-1983	5	PIN - Centerframe Door Dowel
	X2451		CENTERFRAME ASSEMBLY — Includes
*		1	CENTERFRAME
1	C-5520L9 1/4	1	STUD - Cylinder
2	846A-RB3	3	STUD - Fuel Pump Housing
3	C-5510L3	4	STUD - Air Compressor Cylinder
4	S-1983	5	PIN - Centerframe Door Dowel
	X2452		CENTERFRAME ASSEMBLY — Includes
*		1	CENTERFRAME
		1	PIPE PLUG -- 1/2 Std. -- C't's'k. Hd.
1	C-5520L9 1/4	1	STUD - Cylinder
2	846A-RB3	4	STUD - Fuel Pump Housing
3	C-5510L3	4	STUD - Air Compressor Cylinder
4	S-1983	7	PIN - Centerframe Door Dowel
	X2453		CENTERFRAME ASSEMBLY — Includes
*		1	CENTERFRAME
		1	PIPE PLUG -- 1/2 Std. -- C't's'k. Hd.
1	C-5520L9 1/4	1	STUD - Cylinder
2	846A-RB3	4	STUD - Fuel Pump Housing
3	C-5510L3	4	STUD - Air Compressor Cylinder
4	S-1983	7	PIN - Centerframe Door Dowel
	X2605		VALVE & CAGE ASSEM.-PUMP SUCTION & DISCHARGE — Includes
1	X2608	1	CAGE ASSEM.
2	S-579	1	VALVE - Suction
3	S-581	1	SPRING - Suction Valve
4	S-583	1	WASHER - Suction Valve Spring Retainer
		1	COTTER PIN -- 1/16 x 1/2 Lg.
6	C-9586	1	CAP - Suction Valve Stem
7	C-9534	1	VALVE - Discharge
	X2608		CAGE ASSEM.-FUEL PUMP SUCTION & DISCHARGE VALVE — Includes
			Cage & Discharge Valve Seat (No Service Parts)
	X2612		BAND ASSEM. - PROPELLER SHAFT BRAKE — Includes
*		1	BAND
		8	RIVET -- 1/4 Dia. x 1/4 Lg.-Rnd. Hd.
1	C-7842	1	LINING
2		24	RIVET -- 3/16 Dia. x 5/16 Lg. - Tubular
	X2721		BEARING ASSEM. - CAMSHAFT END — Includes
*		1	BEARING
1	2C3885	1	BUSHING
2		1	OIL SEAL -- National Motor Brg. Co. #50083
		2	PIPE PLUG -- 1/8 Std.
	X2723		STAND ASSEM. - CLUTCH SHIFTER — Includes
*		1	STAND
1	C-321	2	BUSHING - Shaft
	X2791		ADAPTOR ASSEM. - LUBE PRESS. PUMP — Includes
*		1	ADAPTOR
1	5858	2	BUSHING - Pump Shaft
	X2792		ADAPTOR ASSEM. - LUBE PRESS. PUMP — Includes
*		1	ADAPTOR
1	5858	2	BUSHING - Pump Shaft
		1	PIPE PLUG -- 1/8 Std.
	X2825		PUMP ASSEM. - LUBE OIL SUMP & PRESSURE — Includes
1	X2826	1	BODY ASSEM. - Press. Pump
2	X2827	1	GEAR & SHAFT ASSEM. - Press. Pump (Drive)
3	X2828	1	GEAR & SHAFT ASSEM. - Press. Pump (Driven)
4	C-6698	1	SPACER - Pump Body
5	C-6693	2	GASKET - Spacer
6	C-9281	1	GEAR - Sump Pump (Drive)
7		2	WOODRUFF KEY -- 1/8 x 3/4 Std.
8	C-9280	1	GEAR - Sump Pump (Driven)
9	W-1274	1	BODY - Sump Pump
		4	NUT -- 3/8-24-Hex.
		4	LOCKWASHER -- 3/8 SAE Reg.
10	C-7402	2	PIN - Dowel

REF. No.	PART NUMBER	No. USED	DESCRIPTION
	X2826		BODY ASSEM. - LUBE OIL PRESSURE PUMP — Includes
*		1	BODY
1	C-2106L4	4	STUD
	X2827		GEAR & SHAFT ASSEM. - PRESSURE PUMP (DRIVE) — Includes
1	C-6695	1	GEAR
2	C-9916	1	SHAFT
3		1	WOODRUFF KEY -- 1/8 x 3/4 Std.
	X2828		GEAR & SHAFT ASSEM. - PRESSURE PUMP (DRIVEN) — Includes
1	C-3024	1	GEAR
2	C-9914	1	SHAFT
	X2853		BASE ASSEMBLY — Includes
*		1	BASE
		4	PIPE PLUG -- 2 Std.
1	S-2918	4	PIN - Crank. Bear. Shell Dowel
2	C-2112L6 1/4	10	STUD - Crank. Bearing Cap
3	C-5522L26 1/2	11	STUD - Base, Centerframe & Cylinder
4	C-5522L21	1	STUD - Base & Centerframe
5	C-5512L19	2	STUD - Base & Centerframe (End)
6	X2277	1	MANIFOLD ASSEM. - Lube Oil
		2	PIPE PLUG -- 3/8 Std.
		1	PIPE PLUG -- 1/2 Std. - C't's'k. Hd.
7	C-9511	3	CLAMP - Manifold to Base
8	C-2406L 1/2	6	CAPSCREW - Clamp to Base
9	C-1352	4	TUBE - Man. to Crank. Bear. Oil
10	C-3662	4	WASHER - Crank. Bear. Oil Tube
11	F-5240	1	CAP - Crankshaft Bearing (End)
12	713-E32	3	CAP - Crankshaft Bearing
13	S-2713	10	NUT - Crankshaft Bearing Cap
		10	COTTER PIN -- 1/8 x 1 1/2 Lg.
	X2854		BASE ASSEMBLY — Includes
*		1	BASE
		4	PIPE PLUG -- 2 Std.
1	S-2918	5	PIN - Crank. Bear. Shell Dowel
2	C-2112L6 1/4	12	STUD - Crank. Bearing Cap
3	C-5522L26 1/2	15	STUD - Base, Centerframe & Cylinder
4	C-5522L21	1	STUD - Base & Centerframe
5	C-5512L19	2	STUD - Base & Centerframe (End)
6	X2257	1	MANIFOLD ASSEM. - Lube Oil
		2	PIPE PLUG -- 3/8 Std.
		1	PIPE PLUG -- 1/2 Std. - C't's'k. Hd.
7	C-9511	4	CLAMP - Manifold to Base
8	C-2406L 1/2	8	CAPSCREW - Clamp to Base
9	C-1352	5	TUBE - Man. to Crank. Bear. Oil
10	C-3662	5	WASHER - Crank. Bear. Oil Tube
11	F-5240	1	CAP - Crankshaft Bearing (End)
12	713-E32	4	CAP - Crankshaft Bearing
13	S-2713	12	NUT - Crankshaft Bearing Cap
		12	COTTER PIN -- 1/8 x 1 1/2 Lg.
	X2855		CENTERFRAME ASSEMBLY — Includes
*		1	CENTERFRAME
1	C-5522L9 1/2	1	STUD - Cylinder
2	846A-RB3	3	STUD - Fuel Pump Housing
3	C-5510L3	4	STUD - Air Compressor Cylinder
4	S-1983	5	PIN - Centerframe Door Dowel
	X2856		CENTERFRAME ASSEMBLY — Includes
*		1	CENTERFRAME
1	C-5522L9 1/2	1	STUD - Cylinder
2	846A-RB3	3	STUD - Fuel Pump Housing
3	C-5510L3	4	STUD - Air Compressor Cylinder
4	S-1983	5	PIN - Centerframe Door Dowel
	X2857		CENTERFRAME ASSEMBLY — Includes
*		1	CENTERFRAME
1	C-5522L9 1/2	1	STUD - Cylinder
2	846A-RB3	4	STUD - Fuel Pump Housing
3	C-5510L3	4	STUD - Air Compressor Cylinder
4	S-1983	7	PIN - Centerframe Door Dowel
5	C-9078	1	STUD - Fuel Wedge Shaft Bumper Spring
	X2858		CENTERFRAME ASSEMBLY — Includes
*		1	CENTERFRAME
1	C-5522L9 1/2	1	STUD - Cylinder
2	846A-RB3	4	STUD - Fuel Pump Housing
3	C-5510L3	4	STUD - Air Compressor Cylinder
4	S-1983	7	PIN - Centerframe Door Dowel
5	C-9078	1	STUD - Fuel Wedge Shaft Bumper Spring

ASSEM. LIST NO. AL 183
ISSUE 2
ENGINE SIZE 7½x10½-9x12

ATLAS IMPERIAL DIESEL ENGINE CO. SUB-ASSEMBLY LIST

WHEN ORDERING PARTS ALWAYS GIVE ENGINE NUMBER-PART NUMBER-NAME-OR COMPLETE DESCRIPTION AND SIZE.
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REF. No.	PART NUMBER	No. USED	DESCRIPTION
	X3068		BODY ASSEM. - GOVERNOR — Includes
*		1	BODY
1	S-805	1	PINION - Drive
2		1	WOODRUFF KEY -- 1/8 x 5/8 Std.
	X3126		LEVER ASSEM.-OVER. GOV. LATCH TRIP — Includes
*		1	LEVER
1	2C1359	1	ROLLER
2	C-3190	1	PIN
	X3177		ROD ASSEM. - PROPELLER BRAKE CONTROL — Includes Rod & Cam (No Service Parts)
	X3178		MANIFOLD ASSEM. - AIR STARTING — Includes
1	577-C4	3	ELBOW - Manifold to Cyl. Head
2		3	NIPPLE -- 1 1/4 x 5 1/2 Lg.
3		2	TEE -- 1 1/4 Std.
4		1	ELBOW -- 1 1/4 Std.
5		2	PIPE -- 1 1/4 x 14 Lg.-(Thr'd. Both Ends)
6		1	NIPPLE -- 1 1/4 x 5 1/2 Lg.
7		1	NIPPLE -- 1 1/4 x 4 1/2 Lg.
8		2	ELBOW -- 1 1/4 - 45° Std.
9	X1583	1	NIPPLE ASSEM. - Manifold to Globe Valve
	X3184		ACCUMULATOR ASSEM. - FUEL — Includes Body, Upper & Lower Plugs & Flange(No Service Parts)
	X3225		HEAD ASSEM. - H.P. FUEL PUMP — Includes
*		1	HEAD
1	2C1833L 1/8	1	PIPE PLUG
	X3226		HEAD ASSEM. - H.P. FUEL PUMP — Includes
*		1	HEAD
1	2C1833L 1/8	1	PIPE PLUG
	X3227		PUMP ASSEM. - FUEL PRIMING — Includes
*		1	BODY
*		1	PLUNGER - Pump
1		1	PACKING -- 1/8 Rd. x 7 Lg. - (Pelro)
2	S-2065	1	WASHER - Packing
3	S-2064	1	NUT - Packing
	X3233		ACCUMULATOR ASSEM. - FUEL — Includes Body, Lower & Upper Plugs & Adaptor Flange (No Service Parts)
	X3235		MANIFOLD ASSEM. - AIR INLET — Includes Manifold, Elbow & Flanges (No Service Parts)
	X3236		CRANK ASSEM. - FUEL PUMP — Includes
*		1	CRANK
1	2C2139	1	SHAFT - Tachometer Drive
		1	SETSCREW--1/4-20 x 3/8 Lg. Headless Cup Pt.
	X3237		BEARING ASSEM. - CAMSHAFT — Includes
*		1	BEARING
1	C-308	1	BUSHING
	X3288		GOVERNOR ASSEMBLY — Includes
1	X3068	1	BODY ASSEM.
2	X265	2	WEIGHT ASSEM.
3	2C1820	2	PIN - Weight to Body
4		4	CASTLE NUT -- 3/8-24-Hex.
4		4	COTTER PIN -- 3/32 x 3/4 Lg.
5	X266	1	QUILL ASSEM.- Gov. Thrust
6	C-548	1	KEY - Thrust Quill
7	5721	1	THRUST BEARING
8	2C1757	1	RETAINER - Bearing
9	2C2846L 7/8	1	SETSCREW
		1	WIRE -- #16 Ga. x 9 Lg.

REF. No.	PART NUMBER	No. USED	DESCRIPTION
	X3362		ADAPTOR ASSEM. - FUEL TRANSFER PUMP — Includes
*		1	ADAPTOR
1	2C2477	1	BUSHING
*		1	BEARING - Pump Shaft
2	C-9882	1	BUSHING - Bearing (Gear End)
3	2C2477	1	BUSHING - Bearing (Seal End)
		3	PIPE PLUG -- 1/8 Std.
4	C-8176	1	GASKET - Bearing to Adaptor
5	C-2406L 7/8	3	CAPSCREW - Bearing to Adaptor
		1	WIRE -- #16 Ga. x 9 Lg.
	X3363		MANIFOLD ASSEM. - AIR INLET — Includes Manifold & Flanges (No Service Parts)
	X3376		MANIFOLD ASSEM. - AIR INLET — Includes Manifold & Flanges (No Service Parts)
	X3390		STRAINER ASSEM. - LUBE OIL — Includes Body & Screens (No Service Parts)
	X3480		CENTERFRAME ASSEMBLY — Includes
*		1	CENTERFRAME
1	C-5522L9 1/2	1	STUD - Cylinder
2	846A-RB3	3	STUD - Fuel Pump Housing
4	S-1983	5	PIN - Centerframe Door Dowel
	X3481		CENTERFRAME ASSEMBLY — Includes
*		1	CENTERFRAME
1	C-5522L9 1/2	1	STUD - Cylinder
2	846A-RB3	4	STUD - Fuel Pump Housing
4	S-1983	7	PIN - Centerframe Door Dowel
5	C-9078	1	STUD - Fuel Wedge Shaft Bumper Spring
	X3482		BASE ASSEMBLY — Includes
*		1	BASE
		4	PIPE PLUG -- 2 Std.
1	S-2918	5	PIN - Crank. Bear. Shell Dowel
2	C-2112L6 1/4	14	STUD - Crank. Bearing Cap
3	C-5522L26 1/2	11	STUD - Base, Centerframe & Cylinder
4	C-5522L21	1	STUD - Base & Centerframe
5	C-5512L19	2	STUD - Base & Centerframe (End)
6	X2295	1	MANIFOLD ASSEM. - Lube Oil
		2	PIPE PLUG -- 3/8 Std.
		1	PIPE PLUG -- 1/2 Std. - C't's'k. Hd.
7	C-9511	4	CLAMP - Manifold to Base
8	C-2406L 1/2	8	CAPSCREW - Clamp to Base
9	C-1352	5	TUBE - Man. to Crank. Bear. Oil
10	C-3662	5	WASHER - Crank. Bear. Oil Tube
11	F-5240	2	CAP - Crankshaft Bearing (End)
12	713-E32	3	CAP - Crankshaft Bearing
13	S-2713	14	NUT - Crankshaft Bearing Cap
		14	COTTER PIN -- 1/8 x 1 1/2 Lg.
	X3483		BASE ASSEMBLY — Includes
*		1	BASE
		4	PIPE PLUG -- 2 Std.
1	S-2918	6	PIN - Crank. Bear. Shell Dowel
2	C-2112L6 1/4	16	STUD - Crank. Bearing Cap
3	C-5522L26 1/2	15	STUD - Base, Centerframe & Cylinder
4	C-5522L21	1	STUD - Base & Centerframe
5	C-5512L19	2	STUD - Base & Centerframe (End)
6	X2278	1	MANIFOLD ASSEM. - Lube Oil
		2	PIPE PLUG -- 3/8 Std.
		1	PIPE PLUG -- 1/2 Std. - C't's'k. Hd.
7	C-9511	5	CLAMP - Manifold to Base
8	C-2406L 1/2	10	CAPSCREW - Clamp to Base
9	C-1352	6	TUBE - Man. to Crank. Bear. Oil
10	C-3662	6	WASHER - Crank. Bear. Oil Tube
11	F-5240	2	CAP - Crankshaft Bearing (End)
12	713-E32	4	CAP - Crankshaft Bearing
13	S-2713	16	NUT - Crankshaft Bearing Cap
		16	COTTER PIN -- 1/8 x 1 1/2 Lg.
	X3484		GOVERNOR ASSEMBLY — Includes
1	X3068	1	BODY ASSEM.
2	X265	2	WEIGHT ASSEM.
3	2C1820	2	PIN - Weight to Body
4		4	CASTLE NUT -- 3/8-24-Hex.
		4	COTTER PIN -- 3/32 x 3/4 Lg.
5	X266	1	QUILL ASSEM. - Gov. Thrust
6	C-548	1	KEY - Thrust Quill
7	5721	1	THRUST BEARING
8	2C1757	1	RETAINER - Bearing
9	2C2846L 7/8	1	SETSCREW

ASSEM. LIST NO. AL 184
ISSUE 2
ENGINE SIZE 7½ x 10½ - 9 x 12

ATLAS IMPERIAL DIESEL ENGINE CO. SUB-ASSEMBLY LIST

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REF. No.	PART NUMBER	No. USED	DESCRIPTION
	X3485		GOVERNOR ASSEMBLY — Includes
1	X3068	1	BODY ASSEM.
2	X270	2	WEIGHT ASSEM.
3	2C1820	2	PIN - Weight to Body
4		4	CASTLE NUT -- 3/8-24-Hex.
		4	COTTER PIN -- 3/32 x 3/4 Lg.
5	X266	1	QUILL ASSEM. - Gov. Thrust
6	C-548	1	KEY - Thrust Quill
7	5721	1	THRUST BEARING
8	2C1757	1	RETAINER - Bearing
9	2C2846L 7/8	1	SETSCREW
	X3630		PLUNGER ASSEM. - REVERS. WHEEL LOCK — Includes
			Body & Steel Ball (No Service Parts)
	X3642		BASE ASSEMBLY — Includes
*		1	BASE
1	S-2918	8	PIN - Bear. Shell Dowel
2	C-9879	8	CONNECTOR - Oil Tube
3	C-2112L5 3/4	16	STUD - Bear. Cap
4	727-BB3	23	STUD - Base, Centerframe & Cylinder
5	729-BB3	1	STUD - Base & Centerframe(Fwd. End - Large)
6	C-2012L18 ¼	2	STUD - Base & Centerframe(Aft End - Small)
7	713-R	7	CAP - Bearing
8	2C3482	1	CAP - Bearing (Aft End)
9	S-2713	16	NUT - Bearing Cap
		16	COTTER PIN -- 1/8 x 1 1/2 Lg.
		2	PIPE PLUG -- 1 Std. - C't's'k. Hd.
		1	PIPE PLUG (Sump) -- 1/2 Std.
	X3643		SEAL ASSEM. - CRANKSHAFT OIL — Includes
*		2	SEAL
1	C-7885	2	GASKET
		2	CAPSCREW -- 3/8-16 x 1 1/2 Lg.
		2	NUT -- 3/8-16-Hex.
		2	LOCKWASHER -- 3/8 SAE Reg.
	X3644		CRANKSHAFT ASSEMBLY — Includes
*		1	CRANKSHAFT
1	2C3453	1	GEAR
2	2C2259L1	2	PIN - Eccentric & Sprocket Drive
3	C-5209	1	PIN - Eccentric Dowel
	X3645		ECCENTRIC ASSEM. - AIR COMPRESSOR — Includes
*		1	ECCENTRIC
*		1	ECCENTRIC
1	C-8265L 7/8	2	PIN - Dowel
2	C-2108L3 1/2	4	STUD
		4	CASTLE NUT -- 1/2-20-Hex.
		4	COTTER PIN -- 3/32 x 1 Lg.
	X3646		SPROCKET ASSEM. - WATER PUMP DRIVE — Includes
*		2	SPROCKET - (Halves)
1	C-2108L3	2	STUD
		2	CASTLE NUT -- 1/2-20-Hex.
		2	COTTER PIN -- 3/32 x 1 Lg.
	X3647		STRAINER ASSEM. - LUBE OIL — Includes
			Strainer Body & Screen (No Service Parts)
	X3648		MANIFOLD ASSEM. - LUBE OIL — Includes
			Pipe & Inlet & Outlet Connections (No Service Parts)
	X3649		MANIFOLD ASSEM. - LUBE OIL — Includes
			Pipe & Inlet & Outlet Connections (No Service Parts)
	X3650		CYLINDER ASSEMBLY — Includes
*		1	CYLINDER
		4	PIPE PLUG -- 1 1/4 Std.
1	S-2263	4	STUD - Cyl. Head (Short)
2	2C3538	2	STUD - Cyl. Head (Long)
3	605-N	1	COVER - Clean-out
4	605A-N	1	GASKET - Cover
		4	CAPSCREW -- 1/2-13 x 1 1/4 Lg.
5	C-264	2	NIPPLE - Lube Oil
6	612-R	2	GLAND - Packing
7	610A-RB3	2	GROMMET
8	S-2914	4	WASHER

REF. No.	PART NUMBER	No. USED	DESCRIPTION
	X3651		HEAD ASSEM. - CYLINDER — Includes
*		1	HEAD
		6	PIPE PLUG -- 3/4 Std.
		6	PIPE PLUG -- 1 Std.
1	512-R51	2	GUIDE - In. & Exh. Valve
2	854A-E	1	STUD - Spray Valve Clamp
3	2C3539	4	STUD - Rocker Shaft Bearing
	X3652		HEAD ASSEM. - CYLINDER — Includes
1	X3651	1	HEAD ASSEM.
2	F-5275	1	VALVE - Inlet
3	F-5276	1	VALVE - Exhaust
4	513-R	2	SPRING - Valve
5	514A-FXC4	2	WASHER - Valve Spring (Bottom)
6	514-FXC4	2	WASHER - Valve Spring (Top)
7		4	HALF NUT -- 5/8-11-Hex.
8		2	LOCKWASHER -- Shakeproof - Type 11 - 5/8
9	2C3542	1	GUIDE - Air Start. Check Valve
		2	CAPSCREW -- 1/2-13 x 1 1/4 Lg.
		2	LOCKWASHER -- 1/2 SAE Reg.
10	2C3540	1	VALVE - Air Start. Check
11	2C3543	1	SPRING - Air Start. Check Valve
12	2C3541	1	RETAINER - Air Start. Check Valve Spring
		1	COTTER PIN -- 3/32 x 7/8 Lg.
	X3653		CYLINDER ASSEMBLY — Includes
*		1	CYLINDER
		5	PIPE PLUG -- 1 1/4 Std.
1	S-2263	4	STUD - Cyl. Head (Short)
2	2C3538	2	STUD - Cyl. Head (Long)
3	605-N	1	COVER - Clean-out
4	605A-N	1	GASKET - Cover
		4	CAPSCREW -- 1/2-13 x 1 1/4 Lg.
5	C-264	2	NIPPLE - Lube Oil
6	612-R	2	GLAND - Packing
7	610A-RB3	2	GROMMET
8	S-2914	4	WASHER
9	610-RB3	5	NIPPLE - Water By-Pass
	X3654		HEAD ASSEM. - CYLINDER — Includes
*		1	HEAD - Cylinder
		6	PIPE PLUG -- 3/4 Std.
		3	PIPE PLUG -- 1 Std.
1	512-R51	2	GUIDE - In. & Exh. Valve
2	854A-E	1	STUD - Spray Valve Clamp
3	2C3539	4	STUD - Rocker Shaft Bearing
	X3655		HEAD ASSEM. - CYLINDER — Includes
1	X3654	1	HEAD ASSEM.
2	F-5275	1	VALVE - Inlet
3	F-5276	1	VALVE - Exhaust
4	513-R	2	SPRING - Valve
5	514A-FXC4	2	WASHER - Valve Spring (Bottom)
6	514-FXC4	2	WASHER - Valve Spring (Top)
7		4	HALF NUT -- 5/8-11-Hex.
8		2	LOCKWASHER -- 5/8 Shakeproof -- Type 11
9	2C3542	1	GUIDE - Air Start. Check Valve
		2	CAPSCREW -- 1/2-13-NC x 1 1/4 Lg.
		2	LOCKWASHER -- 1/2 SAE Reg.
10	2C3540	1	VALVE - Air Start. Check
11	2C3543	1	SPRING - Air Start. Check Valve
12	2C3541	1	RETAINER - Air Start. Check Valve Spring
		1	COTTER PIN -- 3/32 x 7/8 Lg.
	X3656		CENTERFRAME ASSEMBLY — Includes
*		1	CENTERFRAME
1	C-5520L9 1/4	1	STUD - Cylinder
2	846A-RB3	4	STUD - Fuel Pump Housing
3	C-5510L3	4	STUD - Air Comp. Cylinder
4	S-1983	11	PIN - Centerframe Door Dowel
	X3657		CENTERFRAME ASSEMBLY — Includes
*		1	CENTERFRAME
1	C-5520L9 1/4	1	STUD - Cylinder
2	846A-RB3	4	STUD - Fuel Pump Housing
3	C-5510L3	4	STUD - Air Compressor Cylinder
4	S-1983	11	PIN - Centerframe Door Dowel
	X3658		BRACKET ASSEM. - INTERMEDIATE GEAR — Includes
*		1	BRACKET
1	C-7889	1	PIN - Gear
2	S-2760	1	PIN - Dowel
3	S-2920	1	STUD - Gear Pin End
4	C-7942	4	STUD - Bracket
5	2C3552	1	BUSHING - Tachometer Drive Shaft

ASSEM. LIST NO. AL 185

ISSUE 2

ENGINE SIZE 7½x10½-9x12

ATLAS IMPERIAL DIESEL ENGINE CO. SUB-ASSEMBLY LIST

WHEN ORDERING PARTS ALWAYS GIVE ENGINE NUMBER-PART NUMBER-NAME-OR COMPLETE DESCRIPTION AND SIZE.
DO NOT ORDER PARTS BY REFERENCE NUMBERS
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REF. No.	PART NUMBER	No. USED	DESCRIPTION
X3659			BRACKET ASSEM. - INTERMEDIATE GEAR — Includes
*		1	BRACKET
1	C-7889	1	PIN - Gear
2	S-2760	1	PIN - Dowel
3	S-2920	1	STUD - Gear Pin End
4	C-7942	4	STUD - Bracket
5	2C3552	1	BUSHING - Tachometer Drive Shaft
X3660			GEAR ASSEM. - INTERMEDIATE — Includes
*		1	HUB
*		1	GEAR
1	664B-AX3	1	BUSHING
		2	CAPSCREW -- 1/2-13 x 1 Lg.
X3661			LIFTER ASSEM. - FUEL PUMP — Includes
*		1	LIFTER
1	2C3522	1	ROLLER
2	2C3523	1	PIN - Roller
X3662			PUMP ASSEM. - BILGE — Includes
1	W-2200	1	BODY
		1	PIPE PLUG -- 1 Std.
2	X3666	1	PLUNGER ASSEM.
3		5	PACKING -- 3/8 Sq. x 8 Lg. - (Flax)
4	X3710	1	GLAND ASSEM. - Packing
		4	NUT -- 1/2-13-Hex.
X3663			PUMP ASSEM. - BILGE — Includes
1	W-2201	1	BODY
		1	PIPE PLUG -- 1 Std.
2	X3666	1	PLUNGER ASSEM.
3		5	PACKING -- 3/8 Sq. x 8 Lg. - (Flax)
4	X3710	1	GLAND ASSEM. - Packing
		4	NUT -- 1/2-13-Hex.
X3666			PLUNGER ASSEM. - BILGE PUMP — Includes
*		1	PLUNGER
*		1	PIPE PLUG -- 1 Std.
X3667			ROD ASSEM. - BILGE PUMP CONNECTING — Includes
*		1	ROD
*		1	CAP
1	C-2110L4 1/4	2	STUD
2		2	CASTLE NUT -- 5/8-18-Hex.
		2	COTTER PIN -- 1/8 x 1 1/4 Lg.
		3	ESCUTCHEON PIN -- #10 x 1 1/8 Lg.
3	C-8011L1 3/8	2	PIN - Stud Retainer
X3668			GOVERNOR ASSEMBLY — Includes
1	X3669	1	BODY ASSEM.
2	X265	2	WEIGHT ASSEM.
3	2C1820	2	PIN - Weight to Body
4		4	CASTLE NUT -- 3/8-24-Hex.
4		4	COTTER PIN -- 3/32 x 3/4 Lg.
5	X266	1	QUILL ASSEM. - Thrust
6	C-548	1	KEY - Thrust Quill
7	5721	1	THRUST BEARING
8	2C1757	1	RETAINER - Bearing
9	2C2846L 7/8	1	SETSCREW
		1	WIRE -- #16 Ga. x 9 Lg.
X3669			BODY ASSEM. - GOVERNOR — Includes
*		1	BODY
1	2C3556	1	PINION
2		1	WOODRUFF KEY -- 1/8 x 5/8 Std.
X3670			CAMSHAFT ASSEMBLY — Includes
*		1	CAMSHAFT
1	C-7972L 11/16	1	PIN - Shift. Collar Retainer Washer
2	2C3550	1	ECCENTRIC - Fuel Pump
3	C-6708L3 1/2	1	KEY - Eccentric & Lube Pump Gear
4	2C3519	2	KEY - Bilge Pump Eccentric Sleeve
		4	MACHINE SCREW--1/4-20 x 3/4 Lg.-Flat Hd.
X3671			BEARING ASSEM. - CAMSHAFT (FWD. END) — Includes
*		1	BEARING
1	2C3615	1	BUSHING
X3672			BEARING ASSEM. - CAMSHAFT (FWD. END) — Includes
*		1	BEARING
1	2C3615	1	BUSHING
X3673			BEARING ASSEM. - CAMSHAFT (INTERMED.) — Includes
*		1	BEARING
1	2C3615	1	BUSHING
X3674			BEARING ASSEM.-CAMSHAFT(INTERM. - LARGE) — Includes
*		1	BEARING
1	2C3637	1	BUSHING
X3675			BEARING ASSEM.-CAMSHAFT(INTERM. - LARGE) — Includes
*		1	BEARING
1	2C3637	1	BUSHING
X3676			BEARING ASSEM.-CAMSHAFT(& BILGE PUMP ECCENT.) — Includes
1	X3678	1	BEARING ASSEM.
2	2C3517	1	SLEEVE - Bilge Pump Eccentric
3	F-7023	1	ECCENTRIC - Bilge Pump
4	C-6908L2	1	KEY - Eccentric to Sleeve
5		1	TAPER PIN -- #6 x 3 1/4 Lg.
X3677			BEARING ASSEM.-CAMSHAFT(& BILGE PUMP ECCENT.) — Includes
1	X3679	1	BEARING ASSEM.
2	2C3517	1	SLEEVE - Bilge Pump Eccentric
3	F-7023	1	ECCENTRIC - Bilge Pump
4	C-6908L2	1	KEY - Eccentric to Sleeve
5		1	TAPER PIN -- #6 x 3 1/4 Lg.
X3678			BEARING ASSEM. - CAMSHAFT (AFT END) — Includes
*		1	BEARING
1	2C3518	1	BUSHING
2		1	OIL SEAL -- National Motor Brg. #50365
X3679			BEARING ASSEM. - CAMSHAFT (AFT END) — Includes
*		1	BEARING
1	2C3518	1	BUSHING
2		1	OIL SEAL -- National Motor Brg. #50365
X3681			ADAPTOR ASSEM. - LUBE PRESS. PUMP — Includes
*		1	ADAPTOR
1	5858	2	BUSHING
X3682			ADAPTOR ASSEM. - LUBE PRESS. PUMP — Includes
*		1	ADAPTOR
1	5858	2	BUSHING
X3683			LIFTER ASSEM. - INLET & EXHAUST VALVE — Includes
*		1	LIFTER
1	2C3585	1	ROLLER
2	2C3592	1	PIN - Roller
X3684			LIFTER ASSEM. - AIR START. VALVE — Includes
*		1	LIFTER
1	595-E	1	ROLLER
2	596-E	1	PIN - Roller
X3686			ROCKER ASSEM. - INLET VALVE — Includes
*		1	ROCKER
1	2C3641	2	BUSHING
2	523-E	1	ROLLER
3	524-E	1	PIN - Roller
4	G527A-E	1	BALL CHECK ASSEM.
X3687			ROCKER ASSEM. - EXHAUST VALVE — Includes
*		1	ROCKER
1	2C3641	2	BUSHING
2	523-E	1	ROLLER
3	524-E	1	PIN - Roller
4	G527A-E	1	BALL CHECK ASSEM.
X3688			ROD ASSEM. - AIR COMPRESSOR CONNECTING — Includes
*		1	ROD
1	232-456	1	BUSHING
X3689			STRAP ASSEM. - AIR COMPRESSOR ECCENTRIC — Includes
*		1	STRAP (Upper Half)
*		1	STRAP (Lower Half)
1	C-9209-B	4	SHIM (1/32)
1	C-9209-D	10	SHIM (.010)
1	C-9209-E	8	SHIM (.003)
2	C-2612L7 3/4	2	BOLT
3	S-2713	2	NUT
		2	COTTER PIN -- 1/8 x 1 1/2 Lg.

ASSEM. LIST NO. AL 186
ISSUE 4
ENGINE SIZE 7½x10½-9x12

ATLAS IMPERIAL DIESEL ENGINE CO. SUB-ASSEMBLY LIST

WHEN ORDERING PARTS ALWAYS GIVE ENGINE NUMBER-PART NUMBER-NAME-OR COMPLETE DESCRIPTION AND SIZE.
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REF. No.	PART NUMBER	No. USED	DESCRIPTION
	X3690		SHOE ASSEM. - FLYWHEEL AIR BRAKE Includes
*		1	SHOE
1		1	LINING -- 4 Wide x 14 Lg. x 1/4 Thick - Double Stanley
2			RIVETS
	X3691		CYLINDER ASSEM. - FLYWHEEL AIR BRAKE Includes
1	X378	1	CYLINDER ASSEM.
2	2C3576	1	ROD - Piston
3	5076	1	WASHER - Cup-Leather
4	5078	1	CUP-LEATHER
5	5077	1	FOLLOWER - Cup-Leather
6		1	CASTLE NUT -- 5/8-18-Hex.
		1	COTTER PIN -- 1/8 x 1 1/4 Lg.
7	3958	1	GUIDE - Piston Rod
		3	CAPSCREW -- 1/2-13 x 1 1/4 Lg.
		3	LOCKWASHER -- 1/2 SAE Reg.
	X3692		MANIFOLD ASSEM. - AIR STARTING Includes
1	X3693	6	HOUSING ASSEM. - Pilot Valve
2	2C3569	6	VALVE - Pilot
3	X3694	6	COVER ASSEM. - Valve Housing
4	2C3571	6	GASKET - Cover to Housing
		18	CAPSCREW -- 1/2-13 x 1 1/2 Lg.
		18	LOCKWASHER -- 1/2 SAE Reg.
5		5	NIPPLE -- 1 x 10 3/8 Lg.
	X3693		HOUSING ASSEM. - PILOT VALVE Includes
*		1	HOUSING
1	2C3566	1	BUSHING
	X3694		COVER ASSEM. - PILOT VALVE HOUSING Includes
			Cover & Pin (No Service Parts)
	X3695		VALVE ASSEM. - AIR STARTING(AUTOMATIC) Includes
1	X3696	1	HOUSING ASSEM.
2	2C3564	1	VALVE
3	2C170-P2 1/2	2	RING - Piston
4	2C3580	1	SPRING - Valve
5	2C3562	1	COVER - Valve Housing Top
6	2C3563	1	GASKET - Cover to Housing
		4	CAPSCREW -- 1/2-13 x 1 1/2 Lg.
		4	LOCKWASHER -- 1/2 SAE Reg.
	X3696		HOUSING ASSEM.-AIR STARTING VALVE(AUTOMATIC) Includes
*		1	HOUSING
1	2C3560	1	SLEEVE
	X3698		CYLINDER ASSEM. - AIR STARTING Includes
1	W-2219	1	CYLINDER
2	F-7064	1	BASE - Cylinder (End Cover)
3	2C3608	1	GASKET - Base to Cylinder
		3	CAPSCREW -- 1/2-13 x 2 1/4 Lg.
		3	LOCKWASHER -- 1/2 SAE Reg.
4	2C3610	1	RING - Piston Rod Cup-Seal
5	2C172-P	1	CUP-SEAL - Piston Rod
6	F-7063	1	HEAD - Cyl. - (End Cover)
7	2C3609	1	GASKET - Head to Cyl.
		3	CAPSCREW -- 1/2-13 x 1 3/4 Lg.
		3	LOCKWASHER -- 1/2 SAE Reg.
8	F-7062	1	ROD - Piston
9	2C3612	1	PISTON
10	2C173-P	2	CUP-SEAL - Piston
11	2C3613	1	FOLLOWER - Upper Cup-Seal
12	2C3611	1	WASHER - Cup-Seal Spacer
13	4963	2	WASHER - Piston Bumper
14	4962	1	WASHER - Bumper Washer Adaptor
15		1	NUT -- 1/2-13-Hex.
16		1	TAPER PIN -- #0 x 1 Lg.
17	2C3675	1	PLUNGER - Piston Lock
18	2C3676	1	SPRING - Piston Lock Plunger
		1	PIPE PLUG -- 3/8 Std.
		2	PIPE PLUG -- 1/8 Std.
	X3699		BRACKET ASSEM. - ENGINE CONTROL Includes
*		1	BRACKET
1	2C3684	1	PIN - Wedge Shaft Latch
2	2C3685	1	PIN - Latch Spring Anchor
	X3700		BRACKET ASSEM. - ENGINE CONTROL Includes
*		1	BRACKET
1	2C3684	1	PIN - Wedge Shaft Latch
2	2C3685	1	PIN - Latch Spring Anchor
	X3701		SHAFT ASSEM. - ENGINE CONTROL LEVER Includes
1	F-7055	1	SHAFT
2	F-7077	1	HUB - Control Lever
3	C-6704L2	1	KEY - Hub to Shaft
	X3702		CAM ASSEM. - AIR PILOT VALVE CONTROL Includes
*		1	CAM
1	2C3633	1	PIN - Spring Guide

REF. No.	PART NUMBER	No. USED	DESCRIPTION
	X3703		FORK ASSEM. - CAMSHAFT SHIFTER Includes
*		1	FORK
1	C-9219L 11/16	1	PIN - Shifter Collar Guide
	X3704		COLLAR ASSEM. - CAMSHAFT SHIFTER Includes
*		1	COLLAR
1	2C3666	1	BUSHING
	X3705		LEVER ASSEM. - FUEL WEDGE THRO-OUT Includes
*		1	LEVER
1	2C3621	1	BUTTON
	X3706		LEVER ASSEM. - FUEL WEDGE THRO-OUT Includes
*		1	LEVER
1	2C3621	1	BUTTON
	X3708		RAIL ASSEM. - FUEL Includes
*		1	RAIL - Fuel
1	1205-E1	7	BODY - Isolating Valve
2	1205C-E	7	SEAT - Isolating Valve
3	1205D-E	7	PLUG - Isolating Valve
4	1206-C31	7	STEM - Isolating Valve
5	866-E	7	GLAND - Packing
6	1208-C3	7	NUT - Gland
7		21	RING - Packing -- 1/4 I.D. x 1/2 O.D. x 1/4 Th. -- Garlock #333
	X3710		GLAND ASSEM. - BILGE PUMP PACKING Includes
*		1	GLAND
1	2C3605L7	2	STUD
	X3711		RAIL ASSEM. - FUEL Includes
*		1	TUBE - Fuel
1	1205-E1	4	BODY - Isolating Valve
2	1205C-E	4	SEAT - Isolating Valve
3	1205D-E	4	PLUG - Isolating Valve
4	1206-C31	4	STEM - Isolating Valve
5	866-E	4	GLAND - Packing
6	1208-C3	4	NUT - Packing Gland
7		12	PACKING RING -- 1/4 I.D. x 1/2 O.D. x 1/4 Th. Garlock #333
	X3713		CYLINDER ASSEM. - AIR STARTING Includes
1	W-2232	1	CYLINDER
2	F-7090	1	BASE - Cylinder (End Cover)
3	2C3717	1	GASKET - Base to Cyl.
		3	CAPSCREW -- 1/2-13 x 2 1/4 Lg.
		3	LOCKWASHER -- 1/2 SAE Reg.
4	2C3610	1	RING - Piston Rod Cup-Seal
5	2C172-P	1	CUP-SEAL - Piston Rod
6	F-7063	1	HEAD - Cyl. (End Cover)
7	2C3609	1	GASKET - Head to Cyl.
		3	CAPSCREW -- 1/2-13 x 1 3/4 Lg.
		3	LOCKWASHER -- 1/2 SAE Reg.
8	F-7062	1	ROD - Piston
9	2C3699	1	PISTON
10	2C177-P	2	CUP-SEAL - Piston
11	2C3698	1	FOLLOWER - Upper Cup-Seal
12	2C3700	1	WASHER - Cup-Seal Spacer
13	4963	2	WASHER - Piston Bumper
14	4962	1	WASHER - Bumper Washer Adaptor
15		1	NUT -- 1/2-13-Hex.
16		1	TAPER PIN -- #0 x 1 Lg.
17	2C3675	1	PLUNGER - Piston Lock
18	2C3676	1	SPRING - Piston Lock Plunger
		1	PIPE PLUG -- 3/8 Std.
		2	PIPE PLUG -- 1/8 Std.
	X3714		GEAR ASSEM. - INTERMEDIATE Includes
*		1	GEAR
1	664B-AX3	1	BUSHING
	X3718		BEARING ASSEM. - THRUST Includes
*		1	BEARING
*		1	CAP - Bearing
*		2	PIPE - Oil (Cast in place)
1	2C3737	2	GASKET (Cap to Brg.)
		6	CAPSCREW -- 3/4-10 x 3 3/4 Lg.
		6	LOCKWASHER -- 3/4 SAE Reg.
2	C-6699L3	2	PIN - Dowel (Cap to Brg.)
		2	PIPE PLUG -- 1/2 Std.
3	F-7101	1	COVER - Top
4	F-7100	1	GASKET - Cover to Bearing Cap
		6	CAPSCREW -- 1/2-13 x 1 1/2 Lg.
		6	LOCKWASHER -- 1/2 SAE Reg.
5	F-7102	1	COVER - Thrust Brg. Bottom
6	2C3738	1	GASKET - Cover to Bearing
		10	CAPSCREW -- 1/2-13 x 1 1/2 Lg.
		10	LOCKWASHER -- 1/2 SAE Reg.
		1	PIPE PLUG -- 1/2 Std.
7	2656	1	PIPE - Water (Lower Brg. to Cap)
8	C-3389	1	GASKET - Water Pipe to Bearing
		2	CAPSCREW -- 1/2-13 x 2 1/4 Lg.
		2	LOCKWASHER -- 1/2 SAE Reg.
9	2C2798L2	8	STUD - Packing Gland
10	2C3718	4	RING - Packing Gland Seal (Halves)
11		4	PACKING -- 3/8 Sq. x 15 Lg.-Green Tweed Co. "PALCO" Plated Packing
12	X3719	2	GLAND ASSEM. - Packing
		8	NUT -- 3/8-16-Hex.
		8	HALF NUT -- 3/8-16-Hex.

ASSEM. LIST NO. AL 187
ISSUE 1
ENGINE SIZE 7½ x 10½ - 9 x 12

ATLAS IMPERIAL DIESEL ENGINE CO. SUB-ASSEMBLY LIST

WHEN ORDERING PARTS ALWAYS GIVE ENGINE NUMBER - PART NUMBER - NAME - OR COMPLETE DESCRIPTION AND SIZE.
DO NOT ORDER PARTS BY REFERENCE NUMBERS
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REF. No.	PART NUMBER	No. USED	DESCRIPTION
	X3719		GLAND ASSEM. - THRUST BRG. PACKING Includes Packing Gland (Halves) (No Service Parts)
	X3720		BAND ASSEM. - PROPELLER BRAKE Includes
*		1	BAND
*		2	RIVETS -- 1/4 Dia. x 1/4 Lg. - Rnd. Hd.
*		1	PLATE - Reinforcing
*		2	RIVETS -- 1/4 Dia. x 3/4 Lg. - Rnd. Hd.
1	2C3740	1	LINING - Brake Band
2		21	RIVETS -- 3/16 x 5/16 Lg. - Tubular
	X3721		PLUNGER ASSEM. - PROPELLER BRAKE Includes
*		1	PLUNGER
1	S-2388	1	ROLLER
2	S-2390	1	PIN - Roller
3	S-2389	1	STUD - Brake Band
	X3722		ROD ASSEM. - PROPELLER BRAKE CONTROL Includes Control Rod & Cam (No Service Parts)
	X3723		BASE ASSEMBLY Includes
*		1	BASE
1	S-2918	8	PIN - Crank. Bear. Shell Dowel
2	C-9879	8	CONNECTOR - Oil Tube
3	C-2112L5 3/4	16	STUD - Brg. Cap
4	727-BB3	23	STUD - Base, Centerframe & Cylinder
5	729-BB3	1	STUD - Base & Centerframe (Fwd. End - Large)
6	C-2012L18 1/4	2	STUD - Base & Centerframe (Aft End - Small)
7	713-R	7	CAP - Bearing
8	2C3482	1	CAP - Bearing (Aft End)
9	S-2713	16	NUT - Bearing Cap
		16	COTTER PIN -- 1/8 x 1 1/2 Lg.
		2	PIPE PLUG -- 1 Std. - C't's'k. Hd.
		2	PIPE PLUG -- 1/2 Std.
	X3725		CRANKSHAFT ASSEMBLY Includes
*		1	CRANKSHAFT
1	2C3453	1	GEAR
2	2C2259L1	2	PIN - Eccentric & Sprocket Drive
3	C-5209	1	PIN - Eccentric Dowel
4	2C3781	1	RING - Oil Thrower (Fwd. End)
	X3726		RAIL ASSEM. - FUEL Includes
*		1	TUBE - Fuel
1	1205-E1	5	BODY - Isolating Valve
2	1205C-E	5	SEAT - Isolating Valve
3	1205D-E	5	PLUG - Isolating Valve
4	1206-C31	5	STEM - Isolating Valve
5	866-E	5	GLAND - Packing
6	1208-C3	5	NUT - Packing Gland
7		15	PACKING RING -- 1/4 I.D. x 1/2 O.D. x 1/4 Th. Garlock #333
	X3727		PUSH-ROD ASSEM. - SPRAY VALVE Includes Tube, Upper & Lower Plug (No Service Parts)
	X3735		VALVE ASSEM. - FUEL CUT-OUT CONTROL Includes
*		1	BODY - Valve
		5	PIPE PLUG -- 1/8 Std.
*		1	PLUNGER - Valve
1	2C3845	1	SPRING - Plunger
2	2C3842	1	PLUNGER - Valve Body End (Spring End)
3	2C3841	1	PLUG - Valve Body End
4	2C3844	2	GASKET - Plug to Body
	X3739		STUD ASSEM.-ENGINE CONTROL LEVER RETAINING - Includes
*		1	STUD
1	2C3834L 5/8	1	PIN
	X3743		LATCH ASSEM. - WEDGE HOLD-OUT Includes
*		1	LATCH
1	2C3850	1	PLUNGER
2	2C3852	1	PLUG
3	C-8116	1	GASKET - Plug to Latch
		1	PIPE PLUG -- 1/8 Std.
	X3782		ADAPTOR ASSEM. - LUBE PRESS. PUMP Includes
*		1	ADAPTOR
1	5858	2	BUSHING - Shaft
	X3783		ADAPTOR ASSEM. - LUBE PRESS. PUMP Includes
*		1	ADAPTOR
1	5858	2	BUSHING - Shaft

REF. No.	PART NUMBER	No. USED	DESCRIPTION
	X3833		IMPELLER & SHAFT ASSEM.-1 1/2" CENTRIFUGAL PUMP Includes
*		1	IMPELLER
1	2C4154	1	SHAFT
1	C-821	1	PIN - Impeller to Shaft Lock
	X3834		PUMP ASSEM. - 1 1/4" CENTRIFUGAL Includes
1	GA370-E1	1	BODY ASSEM.
2	371-E	1	COVER - Suction
3	371C-E	1	GASKET - Cover
		12	MACHINE SCREW--1/4-20 x 3/8 Lg.-Rnd. Hd.
4	X3833	1	IMPELLER & SHAFT ASSEM.
5		1	PACKING -- 3/8 Sq. x 12 Lg. - (Flax)
6	373-E	1	GLAND - Packing
		4	NUT -- 7/16-14-Hex.
7	X68	1	CUP ASSEM. - Grease
8	381-FB4	1	BEARING - Steady
		2	CAPSCREW -- 3/8-16 x 3/4 Lg.
		2	CAPSCREW -- 3/8-16 x 1 Lg.
		1	CAPSCREW -- 1/2-13 x 2 Lg.
9	386-FB41	1	HOUSING - Ball Bearing
10	C-9069-P	1	BALL BEARING
11	C-9070-P	1	ADAPTOR - Ball Bearing
12	386A-FB41	1	RETAINER - Ball Bearing
13		1	GREASE CUP -- 1/8 - Lunkenheimer - "Guard #00"
14	785-B	1	FLANGE - Suction Pipe
15	S-2334	1	GASKET - Flange
		2	CAPSCREW -- 1/2-13 x 1 Lg.
16	785-B	1	FLANGE - Pump Discharge
17	S-2334	1	GASKET - Flange
		2	CAPSCREW -- 1/2-13 x 1 Lg.
	X3838		SEAL ASSEM. - CRANKSHAFT OIL Includes
*		2	OIL SEAL
		2	CAPSCREW -- 3/8-16 x 1 1/2 Lg.
		2	NUT -- 3/8-16-Hex.
		2	LOCKWASHER -- 3/8 SAE Reg.
1	2C4187	2	GASKET
	X3839		BASE ASSEMBLY Includes
*		1	BASE
		4	PIPE PLUG -- 1 1/2 Std.
1	S-2918	5	PIN - Crank. Brg. Shell Dowel
2	C-2112L5 3/4	12	STUD - Crank. Brg. Cap
3	727-BB3	15	STUD - Base, Centerframe & Cylinder
4	729-BB3	1	STUD - Base & Centerframe
5	731-BB3	2	STUD - Base & Centerframe (End)
6	X2061	1	MANIFOLD ASSEM. - Lube Oil
		2	PIPE PLUG -- 3/8 Std.
		1	PIPE PLUG -- 1/2 Std. - C't's'k. Hd.
7	C-7865	4	CLAMP - Manifold to Base
8	C-2406L 1/2	8	CAPSCREW - Manifold Clamp to Base
9	2C2543	5	TUBE - Manifold to Crank. Brg. Oil
10	C-3662	5	WASHER - Crank. Brg. Oil Tube
11	F-5194	1	CAP - Crankshaft Bearing (End)
12	713-R	4	CAP - Crankshaft Bearing
13	S-2713	12	NUT - Crankshaft Bearing Cap
		12	COTTER PIN -- 1/8 x 1 1/2 Lg.
	X3842		CRANK ASSEM. - FUEL PUMP Includes
*		1	CRANK - Fuel Pump
1	2C4132	1	SHAFT - Tachometer Drive
		1	SETSCREW -- 1/4-20 x 3/8 Lg.-Hd. Cup Pt.
	X3844		STRAINER ASSEM. - SUMP PUMP SUCTION Includes
	2C4198	1	COLLAR
	C-7954	1	SCREEN - Side
	C-7955	1	SCREEN - Bottom
		1	CLOSE NIPPLE -- 1 Std.
	C-9066P1	1	CHECK VALVE
	X3873		THRUST BEARING ASSEMBLY Includes
*		1	BEARING
*		1	CAP
		3	PIPE PLUG -- 1 1/4 Std.
		1	PIPE PLUG -- 1 1/4 Std. - C't's'k. Hd.
		2	REDUCING BUSHING -- 1 1/4 x 1/4 Std.
1	C-7816-A	2	SHIM - (1/16)
1	C-7816-B	2	SHIM - (1/32)
1	C-7816-C	4	SHIM - (1/64)
		4	CAPSCREW -- 3/4-10 x 2 Lg.
2	C-6699L2	2	PIN - Cap to Bearing Dowel
3	F-4396	2	PIPE - Cap to Bearing Water By-Pass
4	C-5287	2	GASKET - Water By-Pass Pipe
		4	CAPSCREW -- 1/2-13 x 2 Lg.

ASSEM. LIST NO. AL 183
ISSUE 1
ENGINE SIZE 7½x10½ - 9½2

ATLAS IMPERIAL DIESEL ENGINE CO. SUB-ASSEMBLY LIST

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REF. No.	PART NUMBER	No. USED	DESCRIPTION
	X3874		MANIFOLD ASSEM.-LUBE OIL (FWD. OR GOV. END) Includes
			Pipe, Tees & Flange (No Service Parts)
	X3875		MANIFOLD ASSEM.-LUBE OIL (AFT. OR PUMP END) Includes
			Pipe, Tees & Flange (No Service Parts)
	X3876		MANIFOLD ASSEM.-LUBE OIL (AFT. OR PUMP END) Includes
			Pipe, Tees & Flange (No Service Parts)
	X3890		BASE ASSEMBLY Includes
*		1	BASE
		1	PIPE PLUG -- 1 1/4 C't's'k. Hd.
3	2C2881	8	CONNECTOR - Crank. Bear. Oil Tube
4	C-2112L6 1/4	20	STUD - Crank. Brg. Cap
5	727-E	23	STUD - Base, Centerframe & Cylinder
6	C-5512L20	1	STUD - Base, Centerframe & Fly. Brake Bracket
7	C-7945	1	STUD-Base, Centerframe & Fly. Brake Bracket (Lg.
8	729-E	1	STUD - Base & Centerframe (Fwd.)
9	S-2918	8	PIN - Crank. Brg. Shell Dowel
10	F-5240	1	CAP - Crankshaft Bearing (Fwd. End)
11	713-E32	6	CAP - Crankshaft Bearing (Center)
12	F-5240	1	CAP - Crankshaft Bearing (Aft. End)
13	S-2713	20	CAP - Crankshaft Bearing Cap
		20	COTTER PIN -- 1/8 x 1 1/2 Lg.
	X3891		BASE ASSEMBLY (SAIL. CLUTCH) Includes
*		1	BASE
		1	PIPE PLUG -- 1 1/4 C't's'k. Hd.
3	2C2881	8	CONNECTOR - Crank. Bear. Oil Tube
4	C-2112L6 1/4	20	STUD - Crank. Brg. Cap
5	727-E	23	STUD - Base, Centerframe & Cylinder
6	C-5512L20	1	STUD - Base, Centerframe & Fly. Brake Bracket
7	C-7945	1	STUD-Base, Centerframe & Fly. Brake Bracket (Lg.
8	729-E	1	STUD - Base & Centerframe (Fwd.)
9	S-2918	8	PIN - Crank. Brg. Shell Dowel
10	F-5240	1	CAP - Crankshaft Bearing (Fwd. End)
11	713-E32	6	CAP - Crankshaft Bearing (Center)
12	F-5240	1	CAP - Crankshaft Bearing (Aft. End)
13	S-2713	20	NUT - Crankshaft Bearing Cap
		20	COTTER PIN -- 1/8 x 1 1/2 Lg.
	X3892		CENTERFRAME ASSEMBLY Includes
*		1	CENTERFRAME
1	730-E	1	STUD - Centerframe to Cylinder
2	S-2316	4	STUD - Air Compressor
3	C-3211	7	STUD - Latch Shaft Brg. (Long)
4	C-3212	7	STUD - Latch Shaft Brg. (Short)
5	C-9078	1	STUD - Fuel Wedge Shaft Bumper Spring
6	846A-RB3	4	STUD - Fuel Pump Housing
	X3893		CENTERFRAME ASSEMBLY Includes
*		1	CENTERFRAME
1	730-E	1	STUD - Centerframe to Cylinder
2	S-2316	4	STUD - Air Compressor
3	C-3211	7	STUD - Latch Shaft Brg. (Long)
4	C-3212	7	STUD - Latch Shaft Brg. (Short)
5	C-9078	1	STUD - Fuel Wedge Shaft Bumper Spring
6	846A-RB3	4	STUD - Fuel Pump Housing
	X3894		MANIFOLD ASSEM. - AIR STARTING Includes
1	577-C4	6	ELBOW
2		6	NIPPLE -- 1 1/4 x 5 1/2 Lg.
3		6	TEE -- 1 1/4 Std.
4		5	PIPE -- 1 1/4 x 14 Lg. (Thr'd. 2 Ends)
		1	PIPE PLUG -- 1 1/4 Std.
	X3895		ADAPTOR ASSEM. - FUEL TRANSFER PUMP Includes
*		1	ADAPTOR
1	2C2477	1	BUSHING
*		1	BEARING - Shaft
2	C-9882	1	BUSHING - Bearing - (Gear End)
3	2C2477	1	BUSHING - Bearing - (Seal End)
		3	PIPE PLUG -- 1/8 Std.
4	C-8176	1	GASKET - Bearing to Adaptor
5	C-2406L 7/8	3	CAPSCREW - Bearing to Adaptor
	X3908		MANIFOLD ASSEM. - AIR INLET Includes
			Manifold & Flanges (No Service Parts)
	X3913		BASE ASSEMBLY Includes
*		1	BASE
		4	PIPE PLUG -- 1 1/2 Std.
1	S-2918	4	PIN - Crank. Brg. Shell Dowel
2	C-2112L5 3/4	10	STUD - Crank. Brg. Cap
3	727-BB3	11	STUD - Base, Centerframe & Cylinder
4	729-BB3	1	STUD - Base & Centerframe
5	731-BB3	2	STUD - Base & Centerframe (End)
6	X2060	1	MANIFOLD ASSEM. - Lube Oil
		2	PIPE PLUG -- 3/8 Std.
		1	PIPE PLUG -- 1/2 Std. - C't's'k. Hd.
7	C-7865	3	CLAMP - Manifold to Base
8	C-2406L 1/2	6	CAPSCREW - Manifold Clamp to Base
9	2C2543	4	TUBE - Manifold to Crank. Brg. Oil
10	C-3662	4	WASHER - Crank. Brg. Oil Tube
11	F-5194	1	CAP - Crankshaft Bearing (End)
12	713-R	3	CAP - Crankshaft Bearing
13	S-2713	10	NUT - Crankshaft Bearing Cap
		10	COTTER PIN -- 1/8 x 1 1/2 Lg.

REF. No.	PART NUMBER	No. USED	DESCRIPTION
	X3920		ADAPTOR ASSEM. - LUBE PRESS. PUMP Includes
*		1	ADAPTOR
1	5858	2	BUSHING
	X3921		ADAPTOR ASSEM. - LUBE PRESS. PUMP Includes
*		1	ADAPTOR
1	5858	2	BUSHING
	X3950		PUSH-ROD ASSEM. - SPRAY VALVE Includes
			Push-Rod Tube, Socket & Button (No Service Parts)
	X3951		CENTERFRAME ASSEMBLY Includes
*		1	CENTERFRAME
		1	PIPE PLUG -- 1/2 Std. - C't's'k. Hd.
1	C-5520L9 1/4	1	STUD - Centerframe to Cylinder
2	846A-RB3	4	STUD - Fuel Pump Housing
3	C-5510L3	4	STUD - Air Compressor Cylinder
4	S-1983	7	PIN - Centerframe Door Dowel
	X4083		ADAPTOR ASSEM. - LUBE PRESS. PUMP Includes
*		1	ADAPTOR
1	5858	2	BUSHING - Shaft
		2	PIPE PLUG -- 1/8 Std.
	X4084		ADAPTOR ASSEM. - LUBE PRESS. PUMP Includes
*		1	ADAPTOR
1	5858	2	BUSHING - Shaft
		2	PIPE PLUG -- 1/8 Std.
	X4085		ADAPTOR ASSEM. - LUBE PRESS. PUMP Includes
*		1	ADAPTOR
1	5858	2	BUSHING - Shaft
		2	PIPE PLUG -- 1/8 Std.
	X4086		ADAPTOR ASSEM. - LUBE PRESS. PUMP Includes
*		1	ADAPTOR
1	5858	2	BUSHING - Shaft
		2	PIPE PLUG -- 1/8 Std.
	X4130		ADAPTOR ASSEMBLY Includes
			Adaptor & Bushing (No Service Parts)
	X4185		STRAINER ASSEM. - LUBE OIL SUMP Includes
*		1	PIPE
*		1	FLANGE
*		1	COLLAR
1	X2027	1	SCREEN ASSEMBLY
*		1	WIRE -- #16 Ga. x 9 Lg.

ASSEM. LIST NO. AL 189

ISSUE 1

ENGINE SIZE 7½x10½-9x12

ATLAS IMPERIAL DIESEL ENGINE CO. SUB-ASSEMBLY LIST

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REF. No.	PART NUMBER	No. USED	DESCRIPTION
	X5087		VALVE & CAGE ASSEM.-PUMP SUCTION & DISCHARGE Includes
1	S-577	1	CAGE
2	S-579	1	VALVE - Suction
3	S-581	1	SPRING - Suction Valve
4	S-583	1	WASHER - Suction Valve Spring Retainer
		1	COTTER PIN -- 1/16 x 1/2 Lg.
6	S-580	1	CAP - Suction Valve
7	811-E	1	VALVE - Discharge
	X5227		HANDLE ASSEM. - GOVERNOR SPEED CONTROL Includes
1	1117-E	1	HANDLE (Upper Sect.)
2	S-2910	1	HANDLE (Lower Sect.)
3	1249-E	1	SCREW - Handle
		1	HALF NUT -- 1/4-20-Hex.
4	1118-E1	1	PAWL
5		1	TAPER PIN (Pawl Retain.)--#1 x 1 Lg.
6	1124-E	1	SPRING - Pawl
7	1125-E	1	PLUG - Spring Retainer
	X5353		BODY ASSEM. - H.P. FUEL PUMP Includes
			Pump Body & Plunger (No Service Parts)

REF. No.	PART NUMBER	No. USED	DESCRIPTION