

PARTS CATALOG

JACOBS AIRCRAFT ENGINE MODEL L-4MB



JACOBS AIRCRAFT ENGINE COMPANY

POTTSTOWN, PENNSYLVANIA, U. S. A.

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WARRANTY

The Jacobs Aircraft Engine Company warrants all engines manufactured by it to be free from defects in material or workmanship. The obligation of the Jacobs Aircraft Engine Company under this warranty is limited to the replacement of parts returned to it for inspection and examination at the factory, transportation charges prepaid, within three months (90 days) or one hundred hours flying time—whichever is the shorter—after delivery of the engine to the initial purchaser. Should parts prove upon examination to be defective they will be replaced free of charge.

This warranty shall not apply to any engine or part that has been repaired or altered outside the factory in any way so as, in the manufacturer's judgment, to affect its operation, or which has been subjected to accident, neglect or misuse.

The Jacobs Aircraft Engine Company further guarantees that each engine has been block tested and developed its full rated horse-power.

The Jacobs Aircraft Engine Company reserves the right to change engine or parts specifications or prices without incurring any responsibility as to engines or parts previously sold.

The Jacobs Aircraft Engine Company shall not be held responsible for guarantees in addition to the above, verbal or written, made by any representative. Neither does it make any warranty with regard to equipment not a product of the Jacobs Aircraft Engine Company, such as magnetos, ignition parts, carburetors, or any other standard accessories, as they are usually guaranteed by their respective manufacturers.

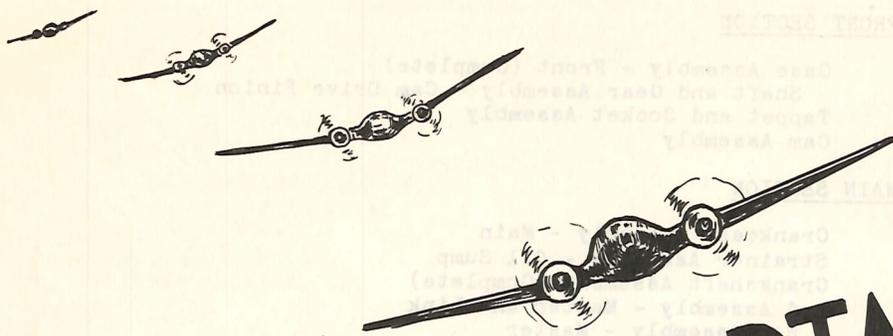
The above constitutes the sole guarantee of the Jacobs Aircraft Engine Company.

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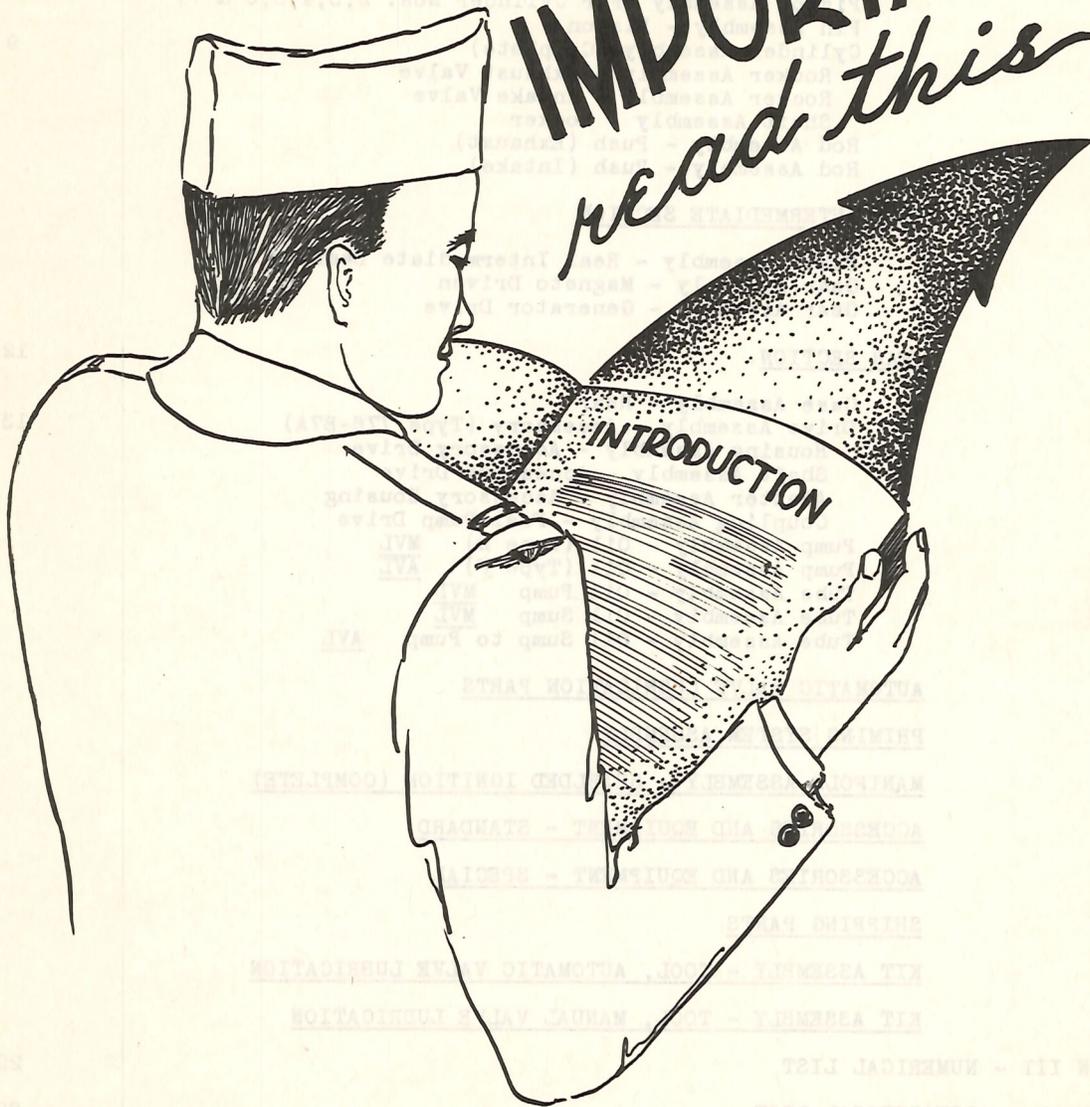
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ENGINE ASSEMBLY DRAWINGS
DRAWING NO. 50100 MODEL L-4MS MANUAL VALVE LUBRICATION
DRAWING NO. 50000 MODEL L-4MS AUTOMATIC VALVE LUBRICATION

1-10-40

SECTION I
INTRODUCTION

1. General.

a. This Parts Catalog lists and describes parts used in the manufacture of Jacobs Model L-4MB Aircraft Engines.

b. As originally manufactured, these engines were equipped with Manual or Automatic Valve Lubrication as follows:

* MANUAL VALVE LUBRICATION

Engine Assembly Drawing No. 90100

Mfgr.'s Serial Nos.	840 - 841
	851 - 886
	889 - 920
	922 - 999
	4000 - 4571
	4932 - 4999
	8000 - 8021

* AUTOMATIC VALVE LUBRICATION

Engine Assembly Drawing No. 90099

Mfgr.'s Serial Nos.	4572 - 4931
	8022 - 8453

c. In compiling the data contained in this Parts Catalog, the aim has been to have it serve as a handy reference in selecting the proper items when ordering spare parts for replacement during major or minor overhaul of the engines covered by this issue.

d. Explanation Of The Various Sections.

SECTION II - ASSEMBLY BREAKDOWN

This section consists of a Breakdown of the complete engine into sub-assemblies and detail parts. The assemblies and their component parts are arranged insofar as possible in the order in which they are assembled, beginning with the front and continuing to the rear of the engine.

The part names are indented in different columns in accordance with the standard indenture system to show their relation to the assemblies in which they are included. The complete engine assembly appears in the heading of each page. In Column 1 are entered the main assemblies together with the detail parts used in the complete engine assembly but which are not component parts of main or sub-assemblies. In Column 2 are entered the component parts of main assemblies including sub-assemblies and detail parts. In turn, the parts and sub-assemblies required to make up any assembly will thus be found listed immediately after the assembly in question, but entered in the next column to the right.

Example:

1	2	3	4
Main assembly			
1st sub-assembly			
2nd sub-assembly			
	Detail parts of 2nd sub-assembly		
	Detail parts of 1st sub-assembly		
	Detail parts of main assembly		
Parts not included in main or sub-assemblies			

The Breakdown shows parts of the latest design. Parts used only on Manual Valve Lubrication or Automatic Valve Lubrication Engines are so indicated after the part name by MVL ONLY or AVL ONLY respectively. All parts not so indicated are common to both engines. However, for information relative to interchangeability between new and old parts, refer to Section III - Numerical List.

The quantities specified are those used at the location shown and are not the total number used per engine. Refer to the Numerical or Alphabetical Parts List for the total quantity used per engine.

The "R" or reference numbers appearing in the left-hand margin of the Assembly Breakdown are arranged in numerical sequence, and are used only to assist in locating a part in the Breakdown after it has been found in the Numerical or Alphabetical Lists.

REFERENCE NUMBERS MUST NOT BE USED IN PLACE OF PART NUMBERS WHEN ORDERING PARTS.

SECTION III - NUMERICAL PARTS LIST

This section lists all the detail parts and assemblies of the engine arranged in numerical sequence according to part number and shows the following:

- (1) Quantity used per engine.
- (2) Part No. of the next assembly in which used.
- (3) Page No. and Reference No. where they appear in Section II - Assembly Breakdown.

The Numerical List shows all parts as originally installed in the engines, as well as parts of latest design, with notes indicating interchangeability.

SECTION IV - ALPHABETICAL PARTS LIST

This section lists all the detail parts and assemblies of the engine arranged alphabetically according to the noun of the descriptive name, and shows the quantity used per engine as well as the part number of the

* This parts catalog is also applicable to Commercial L-4MB Engines between Serial Nos. 842 and 7056.

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next assembly on which used. It also shows the Page No. and Reference No. where they appear in Section II - Assembly Breakdown.

2. Engine Numbers.

a. In listing engine serial numbers throughout this catalog, the word "inclusive" has not been used. It will be understood that all groups of engine numbers such as 851 to 886 include both the first and last engine numbers. When serial numbers such as 840 - 4711 are shown, it is understood that the engines affected include only those having serial numbers within the smaller groups referred to in paragraph 1 b.

3. Cylinder Numbers.

a. Viewing the engine from the rear when installed in the airplane, the cylinders are numbered 1 to 7 in clockwise rotation, the top cylinder being No. 1.

4. Oversize Parts.

a. Parts available in oversize are indicated in the Assembly Breakdown and Alphabetical Parts Lists with a plus sign preceding the standard size part number.

b. When ordering oversize parts, the part number should be followed by a plus (+) sign and the figure indicating the amount of oversize desired. When ordering step size parts, the part number should be followed by an S.

Examples:

<u>Part No.</u>	<u>Size</u>
954	Standard
954+3	.003 Oversize
954+6	.006 Oversize
954+9	.009 Oversize
954-S	Step

c. The Numerical Parts List shows all oversize parts available immediately following the standard size part number they replace.

5. How To Order Parts.

a. Refer, whenever possible, to the proper assembly drawing for the model engine concerned, and identify the part by means of the arrow indicating it. Verify the part number by consulting this parts catalog.

Parts orders should specify:

- (1) The model and serial number of the engine for which required.
- (2) The part number of the part or assembly, and the part name.
- (3) The quantity required.
- (4) Shipping instructions.

b. Where a portion of the part name shown in this Parts Catalog is contained in (parentheses), that information is inserted only to identify usage and need not be included with the name in ordering the part.

c. Parts marked with an asterisk (*) are not furnished as replacement parts due to special machining or assembling operations. When such parts require replacement, the assembly which includes the part should be ordered.

6. Part Numbers.

a. Part numbers are used exclusively to identify parts. It must be noted that in case of Jacobs Part Nos., the suffix letters are a significant portion of the part number, and must be included for proper identification.

7. Abbreviations.

a. The abbreviations used throughout this catalog are as follows:

- Amp. - ampere
- D. - diameter
- Dia. - Diameter
- Hex. - Hexagon
- I.D. - inside diameter
- O.D. - outside diameter
- NPT - National Pipe Thread
- No. - number
- Nos. - numbers
- W - width

SECTION II - ASSEMBLY BREAKDOWN

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

REFERENCE NO.						DESCRIPTION OF PART	PART NO.	QTY. USEC
	1	2	3	4	5			
<u>FRONT SECTION</u>								
R-5000						Case Assembly - Front (complete)	90101	1
R-5001						Case Assembly - Front (studding)	90057	1
R-5002						Case Assembly - Front (machining)	90058	1
R-5003						Case - Front	*302-G	1
R-5004						Tube - Front case oil feed	*302-D1	1
R-5005						Liner - Front case thrust bearing	+303	1
R-5006						Pin - Stake, bearing liner	+446-B	2
R-5007						Stud - 3/8" x 1-13/16" (thrust bearing plate)	+973	6
R-5008						Stud - 5/16" x 1-1/4" (ignition manifold mounting)	+765	4
R-5009						Stud - 5/16" x 1-1/2" (oil sump mounting)	+593	4
R-5010						Stud - 1/4" x 63/64" (cam drive pinion bearing clamp)	+950	5
R-5011						Stud - 3/8" x 1-13/16", drilled (nose cowl)	+10000	4
R-5012						Guide - Tappet, exhaust	644-D	7
R-5013						Guide - Tappet, intake	645-D	7
R-5014						Band - Rubber (tappet guide seal)	767	14
R-5015						Screw - Fillister head, 1/4"-20 x 5/8" (tappet guides)	370	28
R-5016						Gasket - Governor oil fitting	540	1
R-5017						Fitting - Governor oil (front case)	790	1
R-5018						Screw - Fillister head, 1/4"-20 x 5/8" (governor oil fitting)	370	2
						Plug - Hollow head, 1/4" NPT	508-C	2
R-5019						front case governor oil fitting boss-----1		
R-5020						front case sump pad flange-----1 <u>MVL ONLY</u> For AVL, see Ref. No. R-5489		
R-5020A						Plug - Square head, drilled, 1/4" NPT (governor oil fitting) <u>MVL ONLY</u>	508-B	1
R-5021						Gasket - Oil sump to front case	788	1
R-5022						Flange - Front case sump pad	30286	1
R-5023						Plate - Name	681-D	1
R-5024						Screw - Drive, name plate	509	4
R-5025						Gasket - 1-13/32" x 1-3/4" x 1/16" (copper asbestos) (timing cap 906 or plug 1016)	907	1
R-5026						Plug - Square head, 1-3/8"-16, special (timing)	1016	1
R-5027						Shaft and Gear Assembly - Cam drive pinion	90005	1
R-5028						Shaft - Cam drive pinion	30295	1
R-5029						Bearing - Ball (cam drive pinion shaft, rear)	378-4	1
R-5030						Spacer - Cam drive pinion shaft bearing	379-B	1
R-5031						Bearing - Ball (cam drive pinion shaft, front)	378	1
R-5032						Washer - Cam drive pinion shaft bearing, lock	378-1	1
R-5033						Nut - Lock (tab) 31/32"-32 (cam drive pinion shaft bearing)	378-2	1
R-5034						Key - 1/4" x 1/2", special (cam drive pinion shaft)	380	1
R-5035						Gear - Cam drive	376-B	1
R-5036						Washer - 41/64" x 1-5/32" x 1/8", special (cam drive pinion shaft)	381-A	1
R-5037						Nut - 5/8"-18, special (cam drive pinion shaft)	382-A	1
R-5038						Pin - Cotter, 1/8" x 1" (cam drive pinion shaft)	689	1
R-5039						Washer - Cam drive pinion clamp	686-B	1
R-5040						Nut - Castle, 1/4"-28 (cam drive pinion bearing clamp stud)	374-1	5
R-5041						Lockwire (8-1/2") (cam drive pinion bearing clamp stud nut)	979	1
R-5042						Sleeve - Oil seal, outer	30061	1
R-5043						Screw - Fillister head, 1/4"-20 x 5/8" (outer oil seal sleeve)	370	5

+ Available in oversize

* Not to be stocked or requisitioned as detail parts

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SECTION II - ASSEMBLY BREAKDOWN

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

REFERENCE NO.						DESCRIPTION OF PART	PART NO.	QTY. USED
	1	2	3	4	5			
<u>FRONT SECTION Continued</u>								
R-5044						<u>Tappet and Socket Assembly</u>	90006	14
R-5045						Tappet	*389-B	14
R-5046						Socket - Tappet	*390-B	14
R-5047						Roller - Tappet	387	14
R-5048						Pin - Tappet roller	388	14
R-5049						<u>Cam Assembly</u>	90007	1
R-5050						Ring - Cam	*30101	1
R-5051						Hub - Cam	*385	1
R-5052						Rivet - Cam hub	*386	16
R-5053						Bearing - Cam	30028	1
R-5054						Spacer - Timing gear	355	1
R-5055						Key - Timing gear	+354	1
R-5056						Gear - Timing	353-C	1
R-5057						Sleeve - Oil seal, inner	30060	1
R-5058						Ring - Oil seal (bronze)	+589-2	4
R-5059						Ring - Oil seal (cast iron)	+589-1	4
R-5060						Bearing - Ball, crankshaft thrust	351-B	1
R-5061						Slinger - Crankshaft, oil	350	1
R-5062						Spacer - Front case thrust bearing plate	656	1
R-5063						Pin - Dowel, .156" x 3/8" (thrust bearing plate)	536	2
R-5064						Shim - Front case thrust bearing plate (laminated)	834-B	1
R-5065						Plate - Front case thrust bearing	301-F	1
R-5066						Nut - Crankshaft thrust bearing	348-B	1
R-5067						Elbow - 90° x 3/4" hose (front case sump flange to attach oil sump drain hose)	633	1
R-5068						Hose - Oil, 3/4" x 10" (oil sump drain)	10023	1
R-5069						Clamp - Hose, 1-1/8" (oil sump drain hose)	20004	2
R-5070						Washer - 3/8" (thrust bearing plate stud)	595	6
R-5071						Nut - Elastic stop, 3/8"-24 (thrust bearing plate stud)	466-B	6
						Washer - 5/16"	488	8
R-5072						oil sump mounting stud-----4		
R-5073						ignition manifold mounting stud-----4		
						Nut - Elastic stop, 5/16"-24	684	8
R-5074						oil sump mounting stud-----4		
R-5075						ignition manifold mounting stud-----4		

+ Available in oversize

* Not to be stocked or requisitioned as detail parts

SECTION II - ASSEMBLY BREAKDOWN

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

REFERENCE NO.						DESCRIPTION OF PART	PART NO.	QTY. USED
	1	2	3	4	5			
<u>MAIN SECTION</u>								
R-5076						<u>Crankcase Assembly - Main</u>	90113	1
R-5077						Crankcase Assembly - Main, front and rear (machining)	90114	1
R-5078						Crankcase Assembly - Main, front	*90115	1
R-5079						Crankcase - Main, front	*706-1D	1
R-5080						Liner - Main crankcase bearing	+305	1
R-5081						Pin - Stake, bearing liner	+446-B	2
R-5082						Crankcase Assembly - Main, rear	*90116	1
R-5083						Crankcase - Main, rear	*706	1
R-5084						Liner - Main crankcase bearing	+305	1
R-5085						Pin - Stake, bearing liner	+446-B	2
R-5086						Stud - 3/8" x 3-13/16" (main crankcase clamp)	+718-B	1
R-5087						Bolt - Main crankcase clamp (3/8" x 4-29/32")	717-B	6
						Washer - 3/8"	595	13
R-5088						crankcase clamp stud-----1		
R-5089						crankcase clamp bolt-----12		
						Nut - Elastic stop, 3/8"-24	466-B	7
R-5090						crankcase clamp stud-----1		
R-5091						crankcase clamp bolt-----6		
R-5092						Stud - 5/16" x 1-3/8"	+593-B	7
						(rear intermediate bearing plate to main crankcase)		
						Stud - 5/16" x 1-1/2"	+593	
							AVL -	11
							MVL -	10
R-5093						rear case to main crankcase-----10		
R-5093A						carburetor mounting-----1	<u>AVL ONLY</u>	
R-5094						Stud - 5/16" x 1-3/8" (carburetor mounting)	+460-3	
							MVL -	4
							AVL -	3
R-5095						Stud - 3/8" x 2-1/8" (front case to main crankcase)	+594-D	14
R-5096						Stud - 3/8" x 1-11/16" (cylinder mounting)	+954	84
R-5097						Stud - 1/4" x 1-1/8" (primer tube clip)	+941	2
R-5098						Eye - Lifting	542	2
R-5099						Bushing - Reducing, 1/2" x 1/4" NPT (breather boss)	10014	1
R-5100						Plug - Hollow head, 1/4", dural (breather boss bushing)	508	1
						<u>MVL ONLY</u>		
						For AVL, see Ref. No. R-5478		
R-5101						Elbow - 45°, 3/4" hose (bronze) (crankcase breather)	10020	1
R-5102						Elbow - 90°, 3/4" hose (rear main crankcase oil sump drain)	633	1
R-5103						Gasket - 5/8" I.D. x 1/8" wide (copper asbestos) (fuel, air mixture thermometer boss plug)	10007	1
R-5104						Plug - Hex head, drilled, 5/8"-18 (fuel, air mixture thermometer boss)	807-B	1
R-5105						Plug - Square head, drilled, 1/8" NPT (rear main crankcase)	500-B	1
R-5106						<u>Strainer Assembly - Oil sump</u>	90028	1
R-5107						Screen - Oil sump strainer	*708	1
R-5108						Adapter - Oil sump strainer	*708-1	1
R-5109						Disc - Oil sump strainer	*708-2	1
						Gasket - 1-1/4" x 1-5/8" x 1/16" (copper asbestos)	710	2
R-5110						oil sump drain plug-----1		
R-5111						oil sump strainer assembly-----1		

+ Available in oversize

* Not to be stocked or requisitioned as detail parts

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SECTION II - ASSEMBLY BREAKDOWN

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

REFERENCE NO.						DESCRIPTION OF PART	PART NO.	QTY. USED
	1	2	3	4	5			
<u>MAIN SECTION Continued</u>								
R-5112						Plug - Hex head, 1-1/4"-20, special (oil sump drain)	709	1
R-5113						Plug - Square head, drilled, 1/4" NPT (oil sump drain plug)	508-B	1
R-5114						Fitting - Oil pump to sump (main crankcase)	554-2	1
R-5123						Bearing - Roller, crankshaft main	357-R	2
R-5124						Washer - Crankshaft rear main bearing, lock	358-B	1
R-5125						Nut - Lock (tab) 2-3/4"-18 (crankshaft rear main bearing)	359	1
R-5126						Gasket - Carburetor mounting	440	1
						Washer - 5/16"	448	14
R-5127						rear case to main crankcase stud-----10		
R-5128						carburetor mounting stud-----4		
						Nut - Elastic stop, 5/16"-24	684	14
R-5129						rear case to main crankcase stud-----10		
R-5130						carburetor mounting stud-----4		
R-5131						Washer - 3/8" (front case to main crankcase stud)	595	14
						Nut - Elastic stop, 3/8"-24	466-B	98
R-5132						front case to main crankcase stud-----14		
R-5133						cylinder mounting stud-----84		
R-5134						Washer - 1/4" (primer tube clip stud)	447	2
R-5135						Nut - Elastic stop, 1/4"-28 (primer tube clip stud)	683	2
R-5136						Washer - Lock, 5/16" (rear intermediate bearing plate to main crankcase stud)	692	7
R-5137						Nut - Plain hex, 5/16"-24 (rear intermediate bearing plate to main crankcase stud)	461	7

SECTION II - ASSEMBLY BREAKDOWN

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

REFERENCE NO.						DESCRIPTION OF PART	PART NO.	QTY. USED
	1	2	3	4	5			
<u>MAIN SECTION Continued</u>								
R-5138						<u>Crankshaft Assembly (complete)</u>	90311	1
R-5139						Crankshaft Assembly (machining and balancing)	90312	1
R-5140						Crankshaft - Front	*30118	1
R-5141						Crankshaft - Rear	*30007	1
R-5142						Plug - Front crankshaft, center	506-B	1
R-5143						Weight - Front crankshaft balance	364-B	1
R-5144						Weight - Rear crankshaft balance	364-B1	1
R-5145						Bolt - Front crankshaft balance weight	*365-1	3
R-5146						Bolt - Rear crankshaft balance weight	*365	3
R-5147						Nut - Crankshaft balance weight bolt	366	6
R-5148						Plug - Crankpin	804-B	1
R-5149						Bolt - Crankpin	805-B	1
R-5150						Nut - Castle, 5/16"-24 (crankpin bolt)	803	1
R-5151						Bolt - Crankshaft clamp	30100	1
R-5152						Nut - 5/8"-18 (crankshaft clamp bolt)	10017	1
R-5153						Plug - Front crankshaft, front	806	1
R-5154						Gasket - 5/8" x 7/8" x 1/8" (soft copper) (front crankshaft plug 807-B)	844	1
R-5155						Plug - Hex head, drilled, 5/8"-18 (front crankshaft)	807-B	1
R-5156						Plug - Hollow head, 1/4"-28 x 3/8" (front crankshaft)	30033	1
R-5157						Plug - Front crankshaft, rear	345-B	1
R-5158						Plug - Rear crankshaft, front	345-C	1
						Lock - Crankshaft plug	30083	2
R-5159						front crankshaft, rear plug 345-B-----1		
R-5160						rear crankshaft, front plug 345-C-----1		
R-5161						Screw - Fillister head, 1/4"-28 x 5/16" (crankshaft plug lock)	10012	2
R-5162						Plug - Crankshaft (rear crankshaft, rear)	+511	1
R-5163						Pin - Cotter, 1/16" x 3/4" (crankpin bolt)	688	1
						Pin - Cotter, 1/8" x 1"	689	7
R-5164						crankshaft balance weight bolt-----6		
R-5165						crankshaft clamp bolt-----1		
R-5166						Pin - Crankshaft spline (optional with purchaser)	970	1
R-5167						<u>Rod Assembly - Master and link</u>	90117	1
R-5168						Rod Assembly - Master (complete)	90118	1
R-5168A						Rod Assembly - Master (machining)	90254	1
R-5169						Rod - Master	*367-B	1
R-5170						Bearing - Master rod	+368-B	1
R-5171						Dowel - Master rod bearing	370-B	1
R-5172						Bushing - Master rod piston pin	371	1
R-5173						Plate - Master rod bearing, lock	369-B	1
R-5174						Screw - Fillister head, 1/4"-20 x 5/8" (master rod bearing lock plate)	370	2
R-5175						Rod - Link	375-F	6
R-5176						Pin - Knuckle	+372-B	6
R-5177						Bolt - Knuckle pin	374	6
R-5178						Washer - Knuckle pin bolt	373-B	12
R-5179						Nut - Castle, 1/4"-28 (knuckle pin bolt)	374-1	6
R-5180						Pin - Cotter, 1/16" x 3/4" (knuckle pin bolt)	688	6

+ Available in oversize
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Issued 4-1-43

SECTION II - ASSEMBLY BREAKDOWN

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

REFERENCE NO.						DESCRIPTION OF PART	PART NO.	QTY. USED
	1	2	3	4	5			
<u>MAIN SECTION Continued</u>								
R-5181						<u>Piston Assembly (for cylinder No. 1)</u>	90119	1
R-5182						Piston	+392	1
R-5183						Ring - Piston, compression	+798-B	3
R-5184						Ring - Piston, compression, taper	+798	3
R-5185						Ring - Piston, oil	+794	1
R-5186						<u>Piston Assembly (for cylinder Nos. 2, 3, 4, 5, 6 & 7)</u>	90120	6
R-5187						Piston	+392	6
R-5188						Ring - Piston, compression	+798-B	6
R-5189						Ring - Piston, compression, taper	+798	18
R-5190						Ring - Piston, oil	+794	18
R-5191						<u>Pin Assembly - Piston</u>	90228	7
R-5192						Pin - Piston	*30031	7
R-5193						Plug - Piston pin (for replacement use 713-CS)	+713-C	14
R-5194						<u>Cylinder Assembly (complete)</u>	MVL ONLY 90266	7
R-5195						<u>Cylinder Assembly (complete)</u>	AVL ONLY 90267	7
R-5196						Cylinder Assembly (studding)	90381	7
R-5197						Cylinder Assembly (machining)	*90258	7
R-5198						Head - Cylinder	*399-D	7
R-5199						Seat - Exhaust valve	+402	7
R-5200						Seat - Intake valve	+401-B	7
R-5202						Bushing - Spark plug	+400-A	14
R-5203						Pin - Stake, .156" x 1/4" (spark plug bushing)	450	14
R-5204						Insert - Rocker box (push rod cover tube)	+639-B	14
R-5205						Insert - Intake port screw	+859-1	21
R-5207						Barrel - Cylinder	*30135	7
R-5208						Guide - Exhaust valve	+406	7
R-5209						Guide - Intake valve	+405	7
R-5210						Stud - 5/16" x 1-1/2" (exhaust port)	+593	28
R-5211						Stud - 5/16" x 7/8", drilled (cylinder head baffle)	+457-2	14
R-5212						Stud - 1/4" x 1-3/8" (rocker cover)	+940	56
R-5214						Plug - Square head, drilled, 1/8" NPT (cylinder head) (remove from cylinders primed)	500-B	7
R-5215						Valve - Exhaust	404	7
R-5216						Valve - Intake	403-B	7
R-5217						Washer - Exhaust valve spring, lower	408	7
R-5218						Washer - Intake valve spring, lower	407	7
R-5219						Spring - Valve, inner	410-L	14
R-5220						Spring - Valve, outer	409-L	14
R-5221						Washer - Valve spring, upper	30277	14
R-5222						Lock - Exhaust valve spring washer	413	14
R-5223						Lock - Intake valve spring washer	412	14
R-5224						Rocker Assembly - Exhaust valve	90065	7
R-5225						Rocker - Exhaust valve	415-C	7
R-5226						Roller - Rocker	420	7
R-5227						Rivet - Rocker roller	421	7
R-5228						Bearing - Roller, rocker	416-B	7
R-5229						Screw - Valve clearance adjusting	422-B	7
R-5230						Nut - Valve clearance adjusting screw, lock	786	7

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SECTION II - ASSEMBLY BREAKDOWN

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ----- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

REFERENCE NO.	1	2	3	4	5	DESCRIPTION OF PART	PART NO.	QTY. USED
<u>MAIN SECTION Continued</u>								
						<u>Cylinder Assembly (complete) continued</u>	<u>MVL ONLY</u>	90266
						<u>Cylinder Assembly (complete) continued</u>	<u>AVL ONLY</u>	90267
R-5231						Rocker Assembly - Intake valve		90066 7
R-5232						Rocker - Intake valve	414-C	7
R-5233						Roller - Rocker	420	7
R-5234						Rivet - Rocker roller	421	7
R-5235						Bearing - Roller, rocker	416-B	7
R-5236						Screw - Valve clearance adjusting	422-B	7
R-5237						Nut - Valve clearance adjusting screw, lock	786	7
R-5238						Shaft Assembly - Rocker	<u>MVL ONLY</u>	90136 14
R-5239						Shaft - Rocker	<u>MVL ONLY</u>	707 14
R-5240						Fitting - Alemite (rocker shaft)	<u>MVL ONLY</u>	498 14
R-5241						Shaft - Rocker	<u>AVL ONLY</u>	707-D 14
R-5242						Nut - Elastic stop, 7/16"-20 (rocker shaft)	<u>AVL ONLY</u>	419-B 14
R-5243						Washer - Rocker shaft	<u>MVL ONLY</u>	418 14
R-5244						Nut - Rocker shaft	<u>MVL ONLY</u>	419 14
R-5245						Pin - Cotter, 3/32" x 3/4" (rocker shaft)	<u>MVL ONLY</u>	690 14
R-5246						Gasket - Rocker cover		30105 14
R-5247						Cover - Rocker		30081
							MVL -	14
							AVL -	11
R-5248						Washer - 1/4" (rocker cover stud)		447 56
R-5249						Nut - Elastic stop, 1/4"-28 (rocker cover stud)		683 56
R-5250						Ring - Cylinder to crankcase seal (rubber)	544-C	7
R-5251						<u>Rod Assembly - Push (exhaust)</u>		90112 7
R-5252						Rod - Push (exhaust)	613-E	7
R-5253						Ball End - Push rod	30013	14
R-5254						<u>Rod Assembly - Push (intake)</u>		90111 7
R-5255						Rod - Push (intake)	30012	7
R-5256						Ball End - Push rod	30013	14
R-5257						Tube - Push rod cover	640	14
R-5258						Packing - Push rod cover tube (rubber)	643	28
R-5259						Washer - Push rod cover tube upper packing	654	14
R-5260						Nut - Push rod cover tube packing (upper and lower)	642	28
R-5261						Gasket - Intake port	436	7
R-5262						Pipe - Intake	437-D	7
R-5263						Flange - Intake port	30148	7
R-5264						Packing - Intake pipe (rubber)	439	7
R-5265						Nut - Intake pipe packing	438-B	7
R-5266						Washer - 5/16" (intake port flange screw)	448	21
R-5267						Screw - Intake port flange	904	21
R-5268						Gasket - Exhaust port flange	436-B	7
R-5269						Flange - Exhaust port	435-C	7
R-5270						Washer - Lock, 5/16" (exhaust port stud)	692	28
R-5271						Nut - Exhaust port stud (brass)	937	28
R-5271A						Plug - Square head, drilled, 1/4" NPT (cylinder Head)		508-B
							MVL -	28
							AVL -	2

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SECTION II - ASSEMBLY BREAKDOWN

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

REFERENCE NO.						DESCRIPTION OF PART	PART NO.	QTY. USED
	1	2	3	4	5			
<u>REAR INTERMEDIATE SECTION</u>								
R-5272						Plate Assembly - Rear intermediate bearing (complete)	90012	1
R-5272A						Plate Assembly - Rear intermediate bearing (machining)	90257	1
R-5273						Plate - Rear intermediate bearing	604-C	1
R-5274						Liner - Rear intermediate bearing plate	+738	1
R-5275						Pin - Stake, bearing liner (rear intermediate bearing plate liner)	+446-B	2
R-5276						Bearing - Oil feed	309-B	1
R-5277						Screw - Oil feed bearing, lock	609	1
R-5278						Bushing - Accessory drive, 1-15/32" I.D. (starter drive gear)	337	1
R-5279						Pin - Stake, .156" x 1/4" (starter drive gear bushing)	450	1
R-5280						Bushing - Accessory drive, 1-7/32" I.D. (generator and magneto gears)	335	3
R-5281						Bushing - Oil pump drive gear	330	1
R-5282						Tube - Oil feed	611	1
R-5283						Plug - Hollow head, 1/8" NPT (rear intermediate bearing plate)	500-C	2
R-5284						Gear - Starter	336-B	1
R-5285						Bolt - Starter gear	557	1
R-5286						Washer - Starter gear bolt	338	1
R-5287						Nut - Castle, 1/4"-28 (starter gear bolt)	374-1	1
R-5288						Pin - Cotter, 1/16" x 3/4" (starter gear bolt)	688	1
R-5289						<u>Gear Assembly - Magneto driven</u>	90030	2
R-5290						Gear - Magneto driven	518-B	2
R-5291						Cork - 1-1/4" x 1-1/16" x 1" long (magneto driven gear)	10018	2
R-5292						<u>Gear Assembly - Generator drive</u>	90313	1
R-5293						Gear - Generator drive	30117	1
R-5294						Cork - 1-1/4" x 1-1/16" x 1" long (generator drive gear)	10018	1
R-5295						Bearing - Ball, crankshaft, rear	739	1
R-5296						Key - Crankshaft cluster gear	513	2
R-5297						Gear - Magneto drive	601	1
R-5298						Gear - Oil pump drive	329	1
R-5299						Gear - Crankshaft cluster	30098	1
R-5300						Washer - Crankshaft cluster gear, lock	362-B	1
R-5301						Nut - Lock (tab) 1-9/16"-18 (crankshaft cluster gear)	363	1

+ Available in oversize

SECTION II - ASSEMBLY BREAKDOWN

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

REFERENCE NO.						DESCRIPTION OF PART	PART NO.	QTY. USED
	1	2	3	4	5			
<u>REAR SECTION</u>								
R-5302						Case Assembly - Rear	MVL ONLY 90069	1
R-5303						Case Assembly - Rear	AVL ONLY 90094	1
R-5304						Case - Rear	*605-E	1
						Stud - 3/8" x 1-7/8"	+935	7
R-5305						starter mounting-----	6	
R-5306						accessory housing mounting-----	1	
						Stud - 3/8" x 2"	+548-B	4
R-5307						magneto mounting-----	2	
R-5308						accessory housing mounting-----	2	
R-5309						Stud - 5/16" x 1-1/4" (fuel pump mounting, rear case)	+458-B	4
R-5310						Stud - 5/16" x 1-21/32" (generator mounting)	+753	4
R-5311						Stud - 5/16" x 4" (oil pump mounting)	MVL ONLY +455-H	4
R-5312						Stud - 5/16" x 5-5/16" (oil pump mounting)	AVL ONLY +455-F	4
R-5313						Plug - Square head, drilled, 1/8" NPT (rear case drain)	500-B	1
R-5314						Plug - Square head, drilled, 1/4" NPT (rear case)	508-B	3
						For AVL replace 1 ea. with Ref. No. R-5490		
R-5315						Plug - Hollow head, 1/4" NPT (rear case)	508-C	1
R-5316						Plug - Square head, drilled, 3/8" NPT (oil tank vent connection boss)	746-B	2
R-5317						Nipple - 3/4" hose (oil inlet from tank to rear case)	634	1
R-5318						Bearing - Ball, generator gear	824	1
R-5319						Seal - Magneto and generator gears, oil	20005	2
R-5320						Spline - Magneto	519	1
R-5321						Gasket - Magneto mounting	638	1
R-5322						Gasket - Starter mounting	441	1
R-5323						Cover - Starter drive	311-B	1
R-5324						Gasket - Fuel pump mounting (rear case)	881	1
R-5325						Cover - Fuel pump drive (rear case)	880	1
R-5326						Gasket - Oil pump mounting	443	1
R-5327						Gasket - Accessory drive housing to rear case	784	1
R-5328						Gasket - Generator mounting	442-B	1
R-5329						Cover - Generator drive	30074	1
R-5330						Spacer - 5/16" long for 5/16" stud (generator drive cover)	30095	4
						Washer - 5/16"	448	12
R-5331						fuel pump mounting stud (rear case)-----	4	
R-5332						generator mounting stud-----	4	
R-5333						oil pump mounting stud-----	4	
						Nut - Elastic stop, 5/16"-24	684	12
R-5334						fuel pump mounting stud (rear case)-----	4	
R-5335						generator mounting stud-----	4	
R-5336						oil pump mounting stud-----	4	
						Washer - 3/8"	595	9
R-5337						starter mounting stud-----	6	
R-5338						accessory housing mounting stud-935-----	1	
R-5339						accessory housing mounting stud 548-B-----	2	
R-5340						Washer - 25/64" x 3/4" x 3/32" (magneto mounting Stud)	687	2
						Nut - Elastic stop, 3/8"-24	466-B	11
R-5341						starter mounting stud-----	6	
R-5342						magneto mounting stud-----	2	
R-5343						accessory housing mounting stud 935-----	1	
R-5344						accessory housing mounting stud 548-B-----	2	

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SECTION II - ASSEMBLY BREAKDOWN

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

REFERENCE NO.	1	2	3	4	5	DESCRIPTION OF PART	PART NO.	QTY. USED
<u>REAR SECTION Continued</u>								
R-5345						Drive Assembly - Accessory (type 776-B7A)	90122	1
R-5346						Housing Assembly - Accessory drive	90123	1
R-5347						Housing - Accessory drive	*776-B	1
R-5348						Stud - 5/16" x 1-3/8" (distributor mounting)	+460-3	2
						Stud - 1/4" x 1-1/4"	+627-B	8
R-5349						propeller governor mounting-----4		
R-5350						accessory housing adapter mounting-----4		
R-5351						Shaft Assembly - Accessory drive	90071	1
R-5352						Shaft - Accessory drive	782-C	1
R-5353						Bearing - Ball, accessory drive shaft, front	754	1
R-5354						Key - Woodruff #3 (accessory drive shaft)	325	2
R-5355						Gear - Accessory shaft, distributor drive	747	1
R-5356						Spacer - Accessory shaft, distributor drive gear	783-1	1
R-5357						Gear - Accessory shaft (propeller governor drive)	780	1
R-5358						Spacer - Accessory shaft (propeller governor drive gear)	783-2	1
R-5359						Bearing - Ball (MRC-202-S) (accessory drive shaft, rear)	755	1
R-5360						Washer - Accessory drive shaft, lock	757	1
R-5361						Nut - Lock (tab) .586"-32 (accessory drive shaft)	756	1
R-5362						Gasket - Accessory housing adapter	758-B	1
R-5363						Adapter Assembly - Accessory housing (fuel pump mounting)	90232	1
R-5364						Adapter - Accessory housing (fuel pump mounting)	*730	1
R-5365						Stud - 5/16" x 1-3/8"	+593-B	4
						(fuel pump mounting, accessory housing adapter)		
R-5366						Plug - Square head, 1/8" NPT (accessory housing adapter)	500-B	1
R-5367						Gear - Propeller governor drive	781-1	1
R-5368						Bearing - Ball (propeller governor drive gear)	673	1
R-5369						Sleeve - Propeller governor drive gear bearing	672-2	1
R-5370						Coupling Assembly - Fuel pump drive	90137	1
R-5371						Coupling - Fuel pump drive, outer	*996	1
R-5372						Coupling - Fuel pump drive, inner	*996-1	1
R-5373						Rivet - Fuel pump drive coupling	*996-2	1
R-5374						Gasket - Fuel pump mounting (accessory housing adapter)	764	1
R-5375						Cover - Fuel pump drive (accessory housing adapter)	30078	1
R-5376						Spacer - 3/16" long for 5/16" stud	30093	4
						(fuel pump drive cover on accessory housing adapter)		
R-5377						Washer - 5/16"	448	4
						(fuel pump mounting on accessory housing adapter stud)		
R-5378						Nut - Elastic stop, 5/16"-24	684	4
						(fuel pump mounting on accessory housing adapter stud)		
R-5379						Gasket - Accessory drive, 4 bolt, small	763	1
						(propeller governor mounting)		
R-5380						Cover - Accessory drive, 4 bolt, small	760-D	1
						(propeller governor drive)		
R-5381						Spacer - 3/16" long for 1/4" stud	30094	4
						(propeller governor drive cover)		
						Washer - 1/4"	447	8
R-5382						propeller governor mounting stud-----4		
R-5383						accessory housing adapter mounting stud--4		
						Nut - Elastic stop, 1/4"-28	683	8
R-5384						propeller governor mounting stud-----4		
R-5385						accessory housing adapter mounting stud--4		

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SECTION II - ASSEMBLY BREAKDOWN

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

REFERENCE NO.						DESCRIPTION OF PART	PART NO.	QTY. USED	
	1	2	3	4	5				
<u>REAR SECTION Continued</u>									
R-5386						Gear - Distributor drive	745	1	
R-5387						Slinger - Distributor drive gear, oil	723	1	
R-5388						Pin - Distributor drive gear	445	1	
R-5389						Gasket - Distributor mounting	553	1	
R-5390						Washer - 5/16" (distributor mounting stud)	448	2	
R-5391						Nut - Elastic stop, 5/16"-24 (distributor mounting stud)	684	2	
R-5392						<u>Pump Assembly - Oil (type B)</u>	<u>MVL ONLY</u>	90035	1
R-5393						Body Assembly - Oil pump, pressure section	<u>MVL ONLY</u>	90036	1
R-5394						Body - Oil pump, pressure section	*314-C	1	
R-5395						Bushing - 9/16" I.D. x 3/4" O.D. x 17/32" (oil pump pressure section)	315	1	
R-5396						Stud - 1/4" x 2-13/16" (oil pump body)	<u>MVL ONLY</u>	+451-B	3
R-5397						Body - Oil check valve	835	1	
R-5398						Ball - 1/2", steel (oil check valve)	815	1	
R-5399						Spring - Oil check valve	838-B	1	
R-5400						Gasket - Oil check valve (soft copper)	837	1	
R-5401						Cap - Oil check valve	836	1	
R-5402						Shaft - Oil pump drive	<u>MVL ONLY</u>	320-B	1
R-5403						Shaft - Oil pump idler	<u>MVL ONLY</u>	321-B	1
R-5404						Gear - Oil pump idler, pressure section	322-D	1	
R-5405						Body - Oil pressure relief valve	326-B	1	
R-5406						Plate - Oil pump body, intermediate	316-B	1	
R-5407						Key - Woodruff #3 (oil pump drive shaft)	325	2	
R-5408						Gear - Oil pump drive, scavenger section	324-D	1	
R-5409						Gear - Oil pump idler, scavenger section	323-D	1	
R-5410						Body - Oil pump, scavenger section	317-B	1	
R-5411						Packing - Oil pump drive shaft (leather)	318-B	1	
R-5412						Bushing - 13/32" I.D. x 21/32" O.D. x 1-21/32" (oil pump scavenger section)	319	1	
R-5413						Ball - 1/2", steel (oil pressure relief valve)	815	1	
R-5414						Spring - Oil pressure relief valve	327	1	
R-5415						Spacer - Oil pressure relief valve spring	819	1	
R-5416						Guide - Oil pressure relief valve spring	<u>MVL ONLY</u>	766-B	1
R-5417						Gasket - Oil pressure relief valve cap	30029	1	
R-5418						Cap - Oil pressure relief valve	328	1	
R-5419						Washer - 1/4" (oil pump body stud)	447	3	
R-5420						Nut - Elastic stop, 1/4"-28 (oil pump body stud)	683	3	
R-5421						Elbow - 90°, 3/4" hose (oil pump outlet to tank)	633	1	
R-5422						Fitting - Oil pump to sump (oil pump)	<u>MVL ONLY</u>	554-2	1

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SECTION II - ASSEMBLY BREAKDOWN

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

REFERENCE NO.	1	2	3	4	5	DESCRIPTION OF PART	PART NO.	QTY. USED
<u>REAR SECTION Continued</u>								
R-5423						<u>Pump Assembly - Oil (type F)</u>	<u>AVL ONLY</u>	90290 1
R-5424						Body Assembly - Oil pump, pressure section	<u>AVL ONLY</u>	90091 1
R-5425						Body - Oil pump, pressure section	*314-C	1
R-5426						Bushing - 9/16" I.D. x 3/4" O.D. x 17/32" (oil pump pressure section)	315	1
R-5427						Stud - 1/4" x 4-5/32" (oil pump body)	<u>AVL ONLY</u>	+451-G 3
R-5428						Body - Oil check valve	835	1
R-5429						Ball - 1/2" steel (oil check valve)	815	1
R-5430						Spring - Oil check valve	838-B	1
R-5431						Gasket - Oil check valve (soft copper)	837	1
R-5432						Cap - Oil check valve	836	1
R-5433						Shaft - Oil pump drive	<u>AVL ONLY</u>	320-F 1
R-5434						Shaft - Oil pump idler	<u>AVL ONLY</u>	321-F 1
R-5435						Gear - Oil pump idler, pressure section	322-D	1
R-5436						Plate - Oil pump body, intermediate	316-B	1
R-5436A						Adapter - Oil pressure relief valve	<u>AVL ONLY</u>	30132 1
R-5438						Key - Woodruff #3 (oil pump drive shaft)	325	1
R-5439						Gear - Oil pump drive, rocker scavenger section	<u>AVL ONLY</u>	324-1D 1
R-5440						Gear - Oil pump idler, rocker scavenger section	<u>AVL ONLY</u>	323-1D 1
R-5441						Body - Oil pump, rocker scavenger section	<u>AVL ONLY</u>	317-1B 1
R-5437						Body - Oil pressure relief valve	326-B	1
R-5442						Key - Woodruff #3 (oil pump drive shaft)	325	2
R-5443						Gear - Oil pump drive, scavenger section	324-D	1
R-5444						Gear - Oil pump idler, scavenger section	323-D	1
R-5445						Body - Oil pump, scavenger section	317-B	1
R-5446						Packing - Oil pump drive shaft (leather)	318-B	1
R-5447						Bushing - 13/32" I.D. x 21/32" O.D. x 1-21/32" (oil pump scavenger section)	319	1
R-5448						Ball - 1/2", steel (oil pressure relief valve)	815	1
R-5449						Spring - Oil pressure relief valve	327	1
R-5450						Spacer - Oil pressure relief valve spring	819	1
R-5450A						Guide - Oil pressure relief valve spring	766-B	1
R-5451						Gasket - Oil pressure relief valve cap	30029	1
R-5452						Cap - Oil pressure relief valve	<u>AVL ONLY</u>	30134 1
R-5453						Washer - 1/4" (oil pump body stud)	447	3
R-5454						Nut - Elastic stop, 1/4"-28 (oil pump body stud)	683	3
R-5455						Elbow - 90°, 3/4" hose (oil pump outlet to tank)	633	1
R-5456						Nipple - 3/4" hose (oil pump)	<u>AVL ONLY</u>	634 1
R-5457						<u>Tube Assembly - Oil pump</u>	<u>MVL ONLY</u>	90092 1
R-5458						Tube - Oil pump	<u>MVL ONLY</u>	*30018 1
R-5459						Nut (Parker B-12-D)	*555-1	1
R-5460						<u>Tube Assembly - Oil sump</u>	<u>MVL ONLY</u>	90087 1
R-5461						Tube - Oil sump	<u>MVL ONLY</u>	*30019 1
R-5462						Nut (Parker B-12-D)	*555-1	1
R-5463						<u>Tube Assembly - Oil sump to pump</u>	<u>AVL ONLY</u>	90124 1
R-5464						Tube - Oil sump to pump	<u>AVL ONLY</u>	*30131 1
R-5465						Nut (Parker B-12-D)	*555-1	1
R-5466						Hose - Oil, 3/4" x 2-3/4" (oil sump to pump tube)	10022	1
R-5467						Clamp - Hose, 1-1/8" (oil sump to pump tube hose)	20004	2

+ Available in oversize

* Not to be stocked or requisitioned as detail parts

SECTION II - ASSEMBLY BREAKDOWN

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

REFERENCE NO.	1	2	3	4	5	DESCRIPTION OF PART	PART NO.	QTY. USED
<u>AUTOMATIC VALVE LUBRICATION PARTS</u>								
R-5468						Cover - Rocker, exhaust, cylinder No. 5	853	1
R-5469						Cover - Rocker, intake, cylinder Nos. 1 & 4	854	2
						Elbow - 90°, 3/8" hose	933	2
R-5470						intake rocker cover, cylinder No. 1-----1		
R-5471						rocker scavenger tube to oil pump-----1		
R-5472						Hose - Oil, 3/8" x 5-1/2" (inter cylinder)	10024	7
						Hose - Oil, 3/8" x 3-3/4"	10026	8
R-5473						rocker box drain-----7		
R-5473A						rocker vent tube-----1		
						Nipple - 3/8" hose	945	14
R-5474						intake rocker cover, cylinder No. 4-----1		
R-5475						exhaust rocker cover, cylinder No. 5-----1		
R-5476						inter cylinder-----12		
						Elbow - 45°, 3/8" hose	946	16
R-5477						rocker box drain-----14		
R-5478						rocker vent tube, cylinder No. 1 to main crankcase-----1		
R-5479						exhaust rocker cover, cylinder No. 5-----1		
R-5480						Sleeve - Rubber, 1-1/2" long for 3/8" tube (rocker scavenger and oil supply tubes)	30129	2
R-5481						Liner - Hose, 3/8" (rocker scavenger tube)	976	2
						Hose - Oil, 3/8" x 2-1/4"	10027	6
R-5484						rocker scavenger tube-----2		
R-5485						rocker vent tube-----1		
R-5486						oil supply tube-----2		
R-5486A						baffle protection sleeve-----1		
R-5487						Tube - Rocker vent (from cylinder No. 1 to rear main crankcase)	30128	1
R-5488						Tube - Oil supply, valve lubrication	30165	1
R-5489						Elbow - 15°, 3/8" hose (front case sump pad flange to attach oil supply tube)	1030	1
						Tee Assembly - 3/8" hose and union (rear case to attach propeller governor and oil supply tubes)	90386	1
						AVL ONLY		
R-5490						Tube Assembly - 3/8" hose and union	90393	1
						Tube - 3/8" hose	*30167	1
						Sleeve - 3/8"	*10033	1
						Nut - 3/8" union	*10034	1
R-5490A						Tee - 3/8" union	10032	1
R-5490B						Cap - 3/8" union	10031	1
R-5491						Clip - Oil tubes (oil supply and rocker scavenger)	30002	1
R-5492						Tube - Rocker scavenger (from cylinder No. 5 to oil pump)	30166	1
						Clamp - Hose, 3.4" O.D. (pressure)	20000	40
R-5493						oil supply tube-----4		
R-5494						rocker vent tube-----4		
R-5495						rocker scavenger tube-----4		
R-5496						rocker box drain-----14		
R-5497						inter cylinder-----14		

* Not to be stocked or requisitioned as detail parts

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JACOBS AIRCRAFT ENGINE COMPANY

SECTION II - ASSEMBLY BREAKDOWN

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

REFERENCE NO.						DESCRIPTION OF PART	PART NO.	QTY. USED
	1	2	3	4	5			
R-5498						<u>Priming System Assembly</u>	90084	1
R-5499						Distributor Assembly - Primer	90040	1
R-5500						Distributor - Primer	923-B	1
R-5501						Strap - Primer distributor	923-B1	1
R-5502						Nut - Elastic stop, #10-32 (primer distributor strap screw)	826-B	2
R-5503						Screw - #10-32 x 7/8" (primer distributor strap)	923-B3	2
R-5504						Nipple - Primer distributor (to intake manifold)	931	1
R-5505						Nipple - Primer discharge (intake manifold)	30006	1
R-5506						Elbow - Primer distributor (to cylinder Nos. 1, 2 & 7)	928	3
R-5507						Elbow - Primer discharge (for cylinder Nos. 1, 2 & 7)	927	3
R-5508						Tube Assembly - Primer, intake manifold	90085	1
R-5509						Tube - Primer, intake manifold (6-1/4" long)	*30005	1
R-5510						Nut - Primer tube	*929	2
R-5511						Cone - Primer tube	*930-B	2
R-5512						Tube Assembly - Primer #7 cylinder	90133	1
R-5513						Tube - Primer #7 cylinder (19-1/4" long)	*926-C1	1
R-5514						Sleeve - Primer tube clip (rubber)	909	3
R-5515						Nut - Primer tube	*929	2
R-5516						Cone - Primer tube	*930-B	2
R-5517						Tube Assembly - Primer #1 cylinder	90134	1
R-5518						Tube - Primer #1 cylinder (9" long)	*926-C2	1
R-5519						Sleeve - Primer tube clip (rubber)	909	1
R-5520						Nut - Primer tube	*929	2
R-5521						Cone - Primer tube	*930-B	2
R-5522						Tube Assembly - Primer #2 cylinder	90135	1
R-5523						Tube - Primer #2 cylinder (21-1/2" long)	*926-C3	1
R-5524						Sleeve - Primer tube clip (rubber)	909	3
R-5525						Nut - Primer tube	*929	2
R-5526						Cone - Primer tube	*930-B	2
R-5527						Clip Assembly - Primer tube, intake pipe	90045	5
R-5528						Clip - Primer tube, intake pipe	925	5
R-5529						Screw - Primer tube clip	925-1	5
R-5530						Nut - Primer tube clip	925-2	5
R-5531						Clip - Primer tube, crankcase	924	2
R-5532						Plug - Square head, drilled, 1/8" NPT (primer distributor)	500-B	1

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SECTION II - ASSEMBLY BREAKDOWN

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

REFERENCE NO.						DESCRIPTION OF PART	PART NO.	QTY. USED
	1	2	3	4	5			
R-5533						Manifold Assembly - Shielded ignition (complete)	90210	1
R-5534						Connector - Spark plug	30085	14
R-5535						Terminal - Wire, coil	660	1
R-5536						Terminal - Wire, distributor	660-1	1
R-5537						Sleeve - Coil connection (rubber)	30108	1
R-5538						Sleeve - Distributor connection (rubber)	30109	1
R-5539						Cable - Shielded, coil to distributor (2 ft.)	775-S	1
R-5540						Conduit Assembly - Coil to distributor elbow (15-1/2" long)	30070	1
R-5541						Elbow Assembly - Shielded spark plug	90225	14
R-5542						Elbow - Shielded spark plug	*30008	14
R-5543						Nipple - Shielded spark plug elbow	*30009	14
R-5544						Ferrule - Shielded spark plug elbow	*30010	14
R-5545						Nut - Shielded spark plug elbow	*30011	14
R-5546						Manifold Assembly - Shielded ignition (Titeflex)	90315	1
R-5547						Manifold Assembly - Shielded ignition, left and right	90221	1
R-5548						Manifold Assembly - Shielded ignition, left	30034	1
R-5549						Manifold Assembly - Shielded ignition, right	30035	1
R-5550						Gasket - 1" x 1-1/8" x 1/16" (copper asbestos) (ignition manifold connection)	30036	1
R-5551						Conduit Assembly - Spark plug, front (6-1/4" long)	30111	7
R-5551A						Conduit Assembly - Spark plug, rear, #1 & 2 cylinders (17" long)	30188	2
R-5552						Conduit Assembly - Spark plug, rear, #3, 4, 6 & 7 cylinders (17" long)	30038	4
R-5553						Conduit Assembly - Spark plug, rear, #5 cylinder (17" long)	30113	1
R-5554						Conduit and Guard Assembly - Magneto	90212	1
R-5555						Conduit Assembly - Magneto (20-1/2" long)	30058	1
R-5556						Guard - Magneto and distributor conduit, leather	30043	1
R-5557						Lacing - Magneto and distributor conduit guard, leather	30044	1
R-5558						Conduit and Guard Assembly - Distributor	90213	1
R-5559						Conduit Assembly - Distributor, male end (3-5/8" long)	30041	1
R-5560						Conduit Assembly - Distributor, female end (12-11/16" long)	30059	1
R-5561						Guard - Magneto and distributor conduit, leather	30043	1
R-5562						Lacing - Magneto and distributor conduit guard, leather	30044	1
R-5563						Elbow Assembly - Magneto conduit (complete)	90224	1
R-5564						Elbow Assembly - Magneto conduit	30045	1
R-5565						Grommet (magneto conduit to elbow)	30047	1
R-5566						Cap - Knurl, 11/16"-24 (magneto conduit elbow opening)	30049	1
R-5567						Elbow Assembly - Distributor conduit (complete)	90226	1
R-5568						Elbow Assembly - Distributor conduit	30046	1
R-5569						Grommet (distributor conduit to elbow)	30047	1
R-5570						Nut - Knurl, 11/16"-24 NEF-3 (distributor conduit elbow outlet)	30050	1
R-5571						Cable - High tension ignition (70'-2")	20002	1
R-5572						Grommet (manifold to spark plug conduit)	30047	14
R-5573						Grommet (spark plug conduit to elbow)	30048	14
R-5574						Ferrule - Terminal	30051	16
R-5575						Gasket - 1-1/4" x 1-11/32" x 3/64" (copper) (magneto and distributor conduit to manifold and elbow)	30052	4
R-5576						Bracket - Ignition manifold mounting	30053	4

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Issued 4-1-43

SECTION II - ASSEMBLY BREAKDOWN

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

REFERENCE NO.						DESCRIPTION OF PART	PART NO.	QTY. USED
	1	2	3	4	5			
R-5578						<u>Accessories and Equipment - Standard</u>	90128	1
R-5579						Strainer Assembly - Oil	90072	1
R-5580						Body Assembly - Oil strainer	90073	1
R-5581						Body - Oil strainer	*493-B	1
R-5582						Stud - 5/16" x 1-1/4" (oil strainer body)	+458-B	4
R-5583						Screen - Oil strainer	496	1
R-5584						Gasket - Oil strainer	495	1
R-5585						Cover - Oil strainer	494	1
R-5586						Washer - 5/16" (oil strainer body stud)	448	4
R-5587						Washer - Lock, 5/16" (oil strainer body stud)	692	4
R-5588						Nut - Plain hex, 5/16"-24 (oil strainer body stud)	461	4
R-5589						Plug - Square head, drilled, 3/4" NPT (oil strainer)	497	1
R-5590						Elbow - 90°, 3/4" hose (oil strainer assembly)	633	2
R-5591						Carburetor - Stromberg NA-R7A	482-6	1
R-5592						Magneto - Scintilla VMN-7 DF5 (Scintilla No. 10-21819-2)	550	1
R-5593						Shield - Magneto	637	1
R-5594						Generator - Eclipse type 309 (25 amp.)	668	1
R-5595						Box - Control, Eclipse type 1035 (25 amp.)	668-1	1
R-5596						Distributor - Timer, Scintilla WL-7A (15°) (Scintilla No. 10-13810-2)	583-1	1
R-5597						Coil - Timer (Scintilla No. 10-16144-1)	584	1
R-5598						Clamp - Coil	624	4
R-5599						Bolt - Hex head, 1/4"-28 x 3/4" (coil clamp)	10008	4
R-5600						Ring - Coil clamp (rubber)	676	2
R-5601						Nut - Elastic stop, 1/4"-28 (coil clamp bolt)	683	4
R-5602						Plug - Spark, shielded, Bendix 9BS2	489-G	14
R-5603						Or - Plug - Spark, shielded BG 417-S	99006	
R-5604						Plug - Spark, shielded Champion M3-1S	99005	
R-5607						<u>Accessories and Equipment - Special</u>	90129	1
R-5608						Starter - Eclipse type 397	622	1
R-5609						Pump - Fuel, Pesco model 2P-R-400 BLY	816-B	1
R-5610						Or - Pump - Fuel, Romec model RD-4140	99000	
R-5611						Pump - Fuel, Pesco model M-400-A	816-C	1
R-5612						Or - Pump - Fuel, Romec model RD-4700	99013	
R-5613						Pump - Vacuum, Pesco model 194-B	810-B	1
R-5614						Or - Pump, Vacuum, Romec model RD-4500	99003	
R-5615						Cone - Propeller hub, rear	525-B	1
R-5616						Spacer - Rear cone (1.105)	30091	1
R-5617						Hub Assembly - Propeller (for wood propeller)	90205	1
R-5618						Nut - 5/8"-18, special (propeller hub bolt)	382-A	8
R-5619						Cone - Propeller hub, front	526	1
R-5620						Nut - Wood propeller hub	527	1
R-5621						Bolt - Propeller hub	528-B	8
R-5622						Pin - Cotter, 1/16" x 3/4" (propeller hub nut clevis pin)	688	1
R-5623						Pin - Cotter, 1/8" x 1" (propeller hub bolt)	689	8
R-5624						Pin - Clevis, propeller hub nut	1002	1
R-5625						Hub - Propeller	30026	1
R-5626						Plate - Propeller hub	30027	1

+ Available in oversize

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SECTION II - ASSEMBLY BREAKDOWN

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

REFERENCE NO.						DESCRIPTION OF PART	PART NO	QTY. USED
	1	2	3	4	5			
R-5627						<u>Shipping Parts</u>	90310	1
R-5628						Box - Engine (shipping)	748	1
R-5629						Plate - Engine box (shipping)	748-2	1
R-5630						Cuff - Propeller shaft (shipping)	998	1
R-5631						Plug - Dummy spark (shipping)	10001	14
R-5632						Cap - Propeller shaft thread (shipping)	10006	1
R-5633						Cover - Exhaust port (shipping)	30084	7
R-5634						Spacer - 5/16" long for 5/16" stud (exhaust port cover)	30095	28
R-5635						<u>Kit Assembly - Tool, automatic valve lubrication</u>	90054	1
R-5636						<u>Kit Assembly - Tool, manual valve lubrication</u>	90096	1
R-5637						Screw Driver - Tappet adjusting screw (Bonney No. W-015)	T-422-B	1
R-5638						Wrench - 9/16" open end, 5/8" open end (Bonney No. 1727)	569-2	1
R-5639						Handle and Cross Rod - Use with 569-7 (Bonney No. X-1600)	569-5	1
R-5640						Wrench - Intake manifold nut (Bonney No. 7034-C special)	569-7	1
R-5641						Wrench - Thrust nut (Bonney No. 7305)	569-8	1
R-5642						Pliers (Bonney No. B-15)	569-11	1
R-5643						Screw Driver 4" (Bonney No. W04)	569-12	1
R-5644						Gauge - Thickness	569-13	1
R-5645						Wrench - 7/16" open end, 1/2" open end (Bonney No. 1725)	569-14	1
R-5646						Wrench - Cylinder hold down nut	569-16	1
R-5647						Wrench - Spark plug	569-17	1
R-5648						Roll - Leatherette	569-18	1
R-5649						Gun - Alemite (Model No. 6550)	570	1
R-5650						Wrench - Tappet adjusting nut	T-786	1
R-5651						Wrench - Timing cap (required only for engines with front case using 906 Timing Cap and is not considered a part of Assembly 90054 or 90096)	T-906-1	1

MVL ONLY

SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
301-F	Plate - Front case thrust bearing		1	90100 90099	5 5	R-5065 R-5065
*302-D1	Tube - Front case oil feed		1	90058	4	R-5004
*302-G	Case - Front		1	90058	4	R-5003
303	Liner - Front case thrust bearing		1	90058	4	R-5005
303+25	Liner - Front case thrust bearing					
305	Liner - Main crankcase bearing		2			
	front main crankcase-----1			90115	6	R-5080
	rear main crankcase-----1			90116	6	R-5084
305+25	Liner - Main crankcase bearing					
309-B	Bearing - Oil feed		1	90257	11	R-5276
311-B	Cover - Starter drive		1	90100 90099	12 12	R-5323 R-5323
*314-C	Body - Oil pump, pressure section		1	90036 90091	14 15	R-5394 R-5425
315	Bushing - 9/16" I.D. x 3/4" O.D. x 17/32" (oil pump pressure section)		1	90036 90091	14 15	R-5395 R-5426
316-B	Plate - Oil pump body, intermediate		1	90035 90090 90290	14 -- 15	R-5406 ----- R-5436
317-1B	Body - Oil pump, rocker scavenger section	AVL ONLY	1	90090 90290	-- 15	----- R-5441
317-B	Body - Oil pump, scavenger section Supersedes 317-C.	840 - 999 4000 - 4571 4932 - 4999 8000 - 8021 8362 - 8453	1	90035 90290	14 15	R-5410 R-5445
317-C	Body - Oil pump, scavenger section Superseded by 317-B.	4572 - 4931 7026 - 7033 8022 - 8361	1	90090	--	-----
318-B	Packing - Oil pump drive shaft (leather)		1	90035 90090 90290	14 -- 15	R-5411 ----- R-5446
319	Bushing - 13/32" I.D. x 21/32" O.D. x 1-21/32" (oil pump scavenger section)		1	90035 90090 90290	14 -- 15	R-5412 ----- R-5447
320-B	Shaft - Oil pump drive	MVL ONLY	1	90035	14	R-5402
320-F	Shaft - Oil pump drive	AVL ONLY	1	90090 90290	-- 15	----- R-5433
321-B	Shaft - Oil pump idler	MVL ONLY	1	90035	14	R-5403
321-F	Shaft - Oil pump idler	AVL ONLY	1	90090 90290	-- 15	----- R-5434
322-D	Gear - Oil pump idler, pressure section		1	90035 90090 90290	14 -- 15	R-5404 ----- R-5435
323-1D	Gear - Oil pump idler, rocker scavenger section	AVL ONLY	1	90090 90290	-- 15	----- R-5440
323-D	Gear - Oil pump idler, scavenger section		1	90035 90090 90290	14 -- 15	R-5409 ----- R-5444
324-1D	Gear - Oil pump drive, rocker scavenger section	AVL ONLY	1	90090 90290	-- 15	----- R-5439

* Not to be stocked or requisitioned as detail parts

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SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
324-D	Gear - Oil pump drive, scavenger section		1	90035 90090 90290	14 -- 15	R-5408 ----- R-5443
325	Key - Woodruff #3	MVL---- AVL----	4 5			
	accessory drive shaft-----2			90071	13	R-5354
	oil pump drive shaft-----MVL---2			90035	14	R-5407
	AVL---1			90090	--	-----
	oil pump drive shaft-----AVL---2			90290	15	R-5438
				90090	--	-----
				90290	15	R-5442
326-B	Body - Oil pressure relief valve		1	90035 90090 90290	14 -- 15	R-5405 ----- R-5437
327	Spring - Oil pressure relief valve		1	90035 90090 90290	14 -- 15	R-5414 ----- R-5449
328	Cap - Oil pressure relief valve Used temporarily on Oil Pump Assembly 90290 on engines 8362 to 8453, pending availability of Cap 30134.	840 - 999 4000 - 4571 4932 - 4999 8000 - 8021 8362 - 8453	1	90035 90290	14 --	R-5418 -----
328-D	Cap - Oil pressure relief valve Superseded by 30134.	AVL ONLY 4572 - 4931 7026 - 7033 8022 - 8361	1	90090	--	-----
329	Gear - Oil pump drive		1	90100 90099	11 11	R-5298 R-5298
330	Bushing - Oil pump drive gear		1	90257	11	R-5281
335	Bushing - Accessory drive, 1-7/32" I.D. generator drive gear-----1 magneto driven gear-----2		3	90257 90257	11 11	R-5280 R-5280
336-B	Gear - Starter		1	90100 90099	11 11	R-5284 R-5284
337	Bushing - Accessory drive, 1-15/32" I.D. (starter drive gear)		1	90257	11	R-5278
338	Washer - Starter gear bolt		1	90100 90099	11 11	R-5286 R-5286
*340-H	Crankshaft - Front Superseded by 30118. For replacement use Crankshaft Assembly (Complete) 90311.	840 - 4317	1	90105	--	-----
342-C	Bolt - Crankshaft clamp Superseded by 30100. For replacement use Bolt 30100 with Nut 10017, or Bolt 342-C with Nut 344-C and Washer 343-C.	840 - 999 4000 - 4472	1	90104	--	-----
343-C	Washer - Crankshaft clamp bolt Service only with Bolt 342-C and Nut 344-C. Not required with Bolt 30100 and Nut 10017.	840 - 999 4000 - 4472	1	90104 90304	-- --	----- -----
* Not to be stocked or requisitioned as detail parts						

SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
344-C	Nut - Crankshaft clamp bolt Superseded by 10017 For replacement see Part No. 342-C.	840 - 999 4000 - 4472	1	90104 90304	-- --	----- -----
345-B	Plug - Front crankshaft, rear		1	90105 90308 90311	-- -- 8	----- ----- R-5157
345-C	Plug - Rear crankshaft, front		1	90106 90308 90311	-- -- 8	----- ----- R-5158
347	Plug - Headless, 1/4"-28 x 3/8" Superseded by 30033 for all replacements.	840 - 997	1	90105	--	-----
348-B	Nut - Crankshaft thrust bearing		1	90100 90099	5 5	R-5066 R-5066
350	Slinger - Crankshaft, oil		1	90100 90099	5 5	R-5061 R-5061
351-B	Bearing - Ball, crankshaft thrust		1	90100 90099	5 5	R-5060 R-5060
353-C	Gear - Timing		1	90100 90099	5 5	R-5056 R-5056
354	Key - Timing gear		1	90100 90099	5 5	R-5055 R-5055
355	Spacer - Timing gear		1	90100 90099	5 5	R-5054 R-5054
356-C	Bearing - Cam Superseded by and interchangeable with 30028.	840 - 999 4000 - 4851 4932 - 4999 8000 - 8015	1	90100 90099	-- --	----- -----
357-R	Bearing - Roller, crankshaft main Part No. changed from 357-MR.		2	90100 90099	7 7	R-5123 R-5123
357-MR	Bearing - Roller, crankshaft main Part No. changed to 357-R.		2	-----	--	-----
358-B	Washer - Crankshaft rear main bearing, lock		1	90100 90099	7 7	R-5124 R-5124
359	Nut - Lock (tab) 2-3/4"-18 (crankshaft rear main bearing)		1	90100 90099	7 7	R-5125 R-5125
362-B	Washer - Crankshaft cluster gear, lock		1	90100 90099	11 11	R-5300 R-5300
363	Nut - Lock (tab) 1-9/16"-18 (crankshaft cluster gear)		1	90100 90099	11 11	R-5301 R-5301
364-B	Weight - Front crankshaft balance		1	90105 90304 90312	-- -- 8	----- ----- R-5143
364-B1	Weight - Rear crankshaft balance		1	90106 90304 90312	-- -- 8	----- ----- R-5144

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SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
365	Bolt - Rear crankshaft balance weight		3	90106 90304 90312	-- -- 8	----- ----- R-5146
365-1	Bolt - Front crankshaft balance weight		3	90105 90304 90312	-- -- 8	----- ----- R-5145
366	Nut - Crankshaft balance weight bolt front bolt 365-1-----3 rear bolt 365-----3		6	90105 90304 90312 90106 90304 90312	-- -- 8 -- -- 8	----- ----- R-5147 ----- ----- R-5147
*367-B	Rod - Master		1	90254	8	R-5169
368-B	Bearing - Master rod		1	90254	8	R-5170
368-B+5	Bearing - Master rod					
369-B	Plate - Master rod bearing, lock		1	90118	8	R-5173
370	Screw - Fillister head, 1/4"-20 x 5/8" tappet guides-----28 governor oil fitting-----2 outer oil seal sleeve-----5 master rod bearing lock plate-----2		37	90101 90101 90101 90118	4 4 4 8	R-5015 R-5018 R-5043 R-5174
370-B	Dowel - Master rod bearing		1	90254	8	R-5171
371	Bushing - Master rod piston pin		1	90254	8	R-5172
372	Pin - Knuckle Superseded by and interchangeable with 372-B.	840 - 890 4184 - 4368	6	90117	--	-----
372-B	Pin - Knuckle Supersedes and interchangeable with 372.	891 - 999 4000 - 4183 4369 - 8453	6	90117	8	R-5176
372-B+10	Pin - Knuckle					
373-B	Washer - Knuckle pin bolt		12	90117	8	R-5178
374	Bolt - Knuckle pin		6	90117	8	R-5177
374-1	Nut - Castle, 1/4"-28 cam drive pinion bearing clamp stud-----5 knuckle pin bolt-----6 starter gear bolt-----1		12	90101 90117 90100 90099	4 8 11 11	R-5040 R-5179 R-5287 R-5287
375-F	Rod - Link		6	90117	8	R-5175
376-B	Gear - Cam drive		1	90005	4	R-5035
377-B	Shaft - Cam drive pinion Superseded by and interchangeable with 30295.	840 - 8453	1	90005	--	-----
378	Bearing - Ball (cam drive pinion shaft, front)		1	90005	4	R-5031
378-1	Washer - Cam drive pinion shaft bearing, lock		1	90005	4	R-5032
378-2	Nut - Lock (tab) 31/32"-32 (cam drive pinion shaft bearing)		1	90005	4	R-5033
378-4	Bearing - Ball (cam drive pinion shaft, rear)		1	90005	4	R-5029
379-B	Spacer - Cam drive pinion shaft bearing		1	90005	4	R-5030
380	Key - 1/4" x 1/2", special (cam drive pinion shaft)		1	90005	4	R-5034
381-A	Washer - 41/64" x 1-5/32" x 1/8", special (cam drive pinion shaft)		1	90005	4	R-5036

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SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
382-A	Nut - 5/8", special cam drive pinion shaft-----1 propeller hub bolt-----8		9	90005 90205	4 19	R-5037 R-5618
*384-B	Ring - Cam Superseded by and interchangeable with 30101. For replacement use Cam Assembly 90007.	840 - 4699	1	90007	--	-----
*385	Hub - Cam		1	90007	5	R-5051
*386	Rivet - Cam hub		16	90007	5	R-5052
387	Roller - Tappet		14	90100 90099	5 5	R-5047 R-5047
388	Pin - Tappet roller		14	90100 90099	5 5	R-5048 R-5048
*389-B	Tappet		14	90006	5	R-5045
*390-B	Socket - Tappet		14	90006	5	R-5046
392	Piston cylinder No. 1-----1 cylinder Nos. 2,3,4,5,6 & 7-----6		7	90119 90120	9 9	R-5182 R-5187
392+15	Piston					
*396-C	Pin - Piston Superseded by and interchangeable with 30031.	840 - 4608	7	90164	--	-----
*399-D	Head - Cylinder		7	90109 90261 90258	-- -- 9	----- ----- R-5198
400-A	Bushing - Spark plug		14	90109 90261 90258	-- -- 9	----- ----- R-5202
400-A+15	Bushing - Spark plug					
401-B	Seat - Intake valve		7	90109 90261 90258	-- -- 9	----- ----- R-5200
401-B+25	Seat - Intake valve					
402	Seat - Exhaust valve		7	90109 90261 90258	-- -- 9	----- ----- R-5199
402+25	Seat - Exhaust valve					
403-B	Valve - Intake		7	90107 90266 90095 90267	-- 9 -- 9	----- R-5216 ----- R-5216
404	Valve - Exhaust		7	90107 90266 90095 90267	-- 9 -- 9	----- R-5215 ----- R-5215
405	Guide - Intake valve		7	90108 90381	-- 9	----- R-5209
405+10	Guide - Intake valve					
406	Guide - Exhaust valve		7	90108 90381	-- 9	----- R-5208
406+10	Guide - Exhaust valve					
407	Washer - Intake valve spring, lower		7	90107 90266 90095 90267	-- 9 -- 9	----- R-5218 ----- R-5218

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SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
408	Washer - Exhaust valve spring, lower		7	90107	--	-----
				90266	9	R-5217
				90095	--	-----
				90267	9	R-5217
409-L	Spring - Valve, outer		14	90107	--	-----
				90266	9	R-5220
				90095	--	-----
				90267	9	R-5220
410-L	Spring - Valve, inner		14	90107	--	-----
				90266	9	R-5219
				90095	--	-----
				90267	9	R-5219
411	Washer - Valve spring, upper Superseded by and interchangeable with 30277.	840 - 8453	14	90107	--	-----
				90266	--	-----
				90095	--	-----
				90267	--	-----
412	Lock - Intake valve spring washer		14	90107	--	-----
				90266	9	R-5223
				90095	--	-----
				90267	9	R-5223
413	Lock - Exhaust valve spring washer		14	90107	--	-----
				90266	9	R-5222
				90095	--	-----
				90267	9	R-5222
414-B	Rocker - Intake valve Superseded by and interchangeable with 414-C.	840 - 864	7	90066	--	-----
414-C	Rocker - Intake valve Supersedes and interchangeable with 414-B.	865 - 8453	7	90066	10	R-5232
415-B	Rocker - Exhaust valve Superseded by and interchangeable with 415-C.	840 - 860	7	90065	--	-----
415-C	Rocker - Exhaust valve Supersedes and interchangeable with 415-B.	861 - 8453	7	90065	9	R-5225
416-B	Bearing - Roller, rocker exhaust valve rocker-----7 intake valve rocker-----7		14	90065	9	R-5228
				90066	10	R-5235
418	Washer - Rocker shaft	MVL ONLY	14	90107	--	-----
419	Nut - Rocker shaft	MVL ONLY	14	90107	--	-----
				90266	10	R-5244
419-B	Nut - Elastic stop, 7/16"-20 (rocker shaft)	AVL ONLY	14	90095	--	-----
				90267	10	R-5242
420	Roller - Rocker exhaust valve rocker-----7 intake valve rocker-----7		14	90065	9	R-5226
				90066	10	R-5233
421	Rivet - Rocker roller exhaust valve rocker-----7 intake valve rocker-----7		14	90065	9	R-5227
				90066	10	R-5234

SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
422-B	Screw - Valve clearance adjusting exhaust valve rocker-----7 intake valve rocker-----7		14	90065 90066	9 10	R-5229 R-5236
424-D	Cover - Rocker Superseded by and interchangeable with 30081. For replacement use Gasket 30105 with Cover 30081.	840 - 4594	14	90107	--	-----
428-B	Ball End - Push rod intake push rod-----14 exhaust push rod-----14 Superseded by and interchangeable with 30013.	840 - 4827	28	90111 90112	-- --	----- -----
435	Flange - Intake port Superseded by and interchangeable with 30148.	840 - 8256	7	90100 90099	-- --	----- -----
435-C	Flange - Exhaust port		7	90100 90099	10 10	R-5269 R-5269
436	Gasket - Intake port		7	90100 90099	10 10	R-5261 R-5261
436-B	Gasket - Exhaust port flange		7	90100 90099	10 10	R-5268 R-5268
437-D	Pipe - Intake		7	90100 90099	10 10	R-5262 R-5262
438-B	Nut - Intake pipe packing		7	90100 90099	10 10	R-5265 R-5265
439	Packing - Intake pipe (rubber)		7	90100 90099	10 10	R-5264 R-5264
440	Gasket - Carburetor mounting		1	90100 90099	7 7	R-5126 R-5126
441	Gasket - Starter mounting		1	90100 90099	12 12	R-5322 R-5322
442-B	Gasket - Generator mounting		1	90100 90099	12 12	R-5328 R-5328
443	Gasket - Oil pump mounting		1	90100 90099	12 12	R-5326 R-5326
445	Pin - Distributor drive gear		1	90100 90099	14 14	R-5388 R-5388
446-B	Pin - Stake, bearing liner front case thrust bearing liner----2 front main crankcase bearing liner-----2 rear main crankcase bearing liner--2 rear intermediate bearing plate liner-----2		8	90058 90115 90116 90257	4 6 6 11	R-5006 R-5081 R-5085 R-5275
446-B+25	Pin - Stake, bearing liner					

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SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
447	Washer - 1/4" primer tube clip stud-----0 " " " " -----3 " " " " -----2 rocker cover stud-----56 propeller governor mounting stud--4 accessory housing adapter mounting stud-----4 oil pump body stud-----3	840 - 841 851 - 886 889 - 8453	69	90100 90100 90100 90099 90107 90266 90095 90267 90122 90122 90035 90090 90290	-- -- 7 7 -- 10 -- 10 13 13 14 -- 15	----- ----- R-5134 R-5134 ----- R-5248 ----- R-5248 R-5382 R-5383 R-5419 ----- R-5453
448	Washer - 5/16" oil sump mounting stud-----4 ignition manifold mounting stud---4 rear case to main crankcase stud-10 carburetor mounting stud-----4 intake port flange screw-----21 fuel pump mounting stud-----4 (rear case) generator mounting stud-----4 oil pump mounting stud-----4 fuel pump mounting stud-----4 (accessory housing adapter) distributor mounting stud-----2 oil strainer body stud-----4		65	90100 90099 90100 90099 90100 90099 90100 90099 90100 90099 90100 90099 90100 90099 90122 90100 90099 90100 90099 90122 90100 90099 90048 90072	5 5 5 5 7 7 7 7 10 10 12 12 12 12 13 12 12 12 12 13 14 14 -- 19	R-5072 R-5072 R-5073 R-5073 R-5127 R-5127 R-5128 R-5128 R-5266 R-5266 R-5331 R-5331 R-5332 R-5332 R-5333 R-5333 R-5377 R-5390 R-5390 ----- R-5586
449-C	Gasket - Rocker cover Obsolete. Superseded by 30105. For replacement use 2 ea. Gaskets 30105 with Cover 424-D, or 1 ea. Gasket 30105 with Cover 30081.	840 - 4591	14	90107	--	-----
450	Pin - Stake, .156" x 1/4" spark plug bushing-----14 starter drive gear bushing-----1		15	90109 90258 90261 90257	-- -- 9 11	----- ----- R-5203 R-5279
451-B	Stud - 1/4" x 2-13/16" (oil pump body)	MVL ONLY	3	90036	14	R-5396
451-B+3	Stud - 1/4" x 2-13/16"					
451-B+6	Stud - 1/4" x 2-13/16"					
451-B+9	Stud - 1/4" x 2-13/16"					
451-BS	Stud - 1/4" x 2-13/16"					
451-G	Stud - 1/4" x 4-5/32" (oil pump body)	AVL ONLY	3	90091	15	R-5427
451-G+3	Stud - 1/4" x 4-5/32"					
451-G+6	Stud - 1/4" x 4-5/32"					
451-G+9	Stud - 1/4" x 4-5/32"					
451-GS	Stud - 1/4" x 4-5/32"					

SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
454	Stud - 5/16" x 1-1/4" (carburetor air heater) Deleted.	840 - 8296	4	90128	--	-----
455-B	Stud - 5/16" x 3-7/8" (oil pump mounting) Used temporarily, pending availability of Stud 455-H.	4223 - 4313 4959 - 4973	4	-----	--	-----
455-F	Stud - 5/16" x 5-5/16" (oil pump mounting)	AVL ONLY	4	90094	12	R-5312
455-F+3	Stud - 5/16" x 5-5/16"					
455-F+6	Stud - 5/16" x 5-5/16"					
455-F+9	Stud - 5/16" x 5-5/16"					
455-FS	Stud - 5/16" x 5-5/16"					
455-H	Stud - 5/16" x 4" (oil pump mounting) Stud 455-B used temporarily on engines 4223 to 4313, and 4959 to 4973, pending availability of 455-H.	MVL ONLY	4	90069	12	R-5311
455-H+3	Stud - 5/16" x 4"					
455-H+6	Stud - 5/16" x 4"					
455-H+9	Stud - 5/16" x 4"					
455-HS	Stud - 5/16" x 4"					
457-2	Stud - 5/16" x 7/8", drilled (cylinder head baffle)		14	90108 90381	-- 9	----- R-5211
457-2+3	Stud - 5/16" x 7/8", drilled					
457-2+6	Stud - 5/16" x 7/8", drilled					
457-2+9	Stud - 5/16" x 7/8", drilled					
457-2S	Stud - 5/16" x 7/8", drilled					
458-B	Stud - 5/16" x 1-1/4" fuel pump mounting on rear case----4 (Supersedes 460-1) oil strainer body-----4	851 - 8453	8	90069 90094 90049 90073	12 12 -- 19	R-5309 R-5309 ----- R-5582
458-B+3	Stud - 5/16" x 1-1/4"					
458-B+6	Stud - 5/16" x 1-1/4"					
458-B+9	Stud - 5/16" x 1-1/4"					
458-BS	Stud - 5/16" x 1-1/4"					
460-1	Stud - 1/4" x 1" (fuel pump mounting on rear case) Superseded by 458-B on engines with Rear Case 605-E.	840 - 841	3	-----	--	-----
460-3	Stud - 5/16" x 1-3/8" carburetor mounting-----MVL--4 AVL--3 (1 ea. replaced by Stud 593 for AVL) distributor mounting-----2	AVL----- MVL-----	5 6	90113 90113 90123	6 6 13	R-5094 R-5094 R-5348
460-3+3	Stud - 5/16" x 1-3/8"					
460-3+6	Stud - 5/16" x 1-3/8"					
460-3+9	Stud - 5/16" x 1-3/8"					
460-3S	Stud - 5/16" x 1-3/8"					
460-D	Stud - 5/16" x 1-5/8" oil sump mounting-----4 exhaust port-----28 Superseded by 593		32	90057 90108	-- --	----- -----
461	Nut - Plain hex, 5/16"-24 rear intermediate bearing plate to main crankcase stud-----7 oil strainer body stud-----4		11	90100 90099 90048 90072	7 7 -- 19	R-5137 R-5137 ----- R-5588

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SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
466-B	Nut - Elastic stop, 3/8"-24 thrust bearing plate stud-----6 main crankcase clamp stud-----1 main crankcase clamp bolt-----6 front case to main crankcase stud-14 cylinder mounting stud-----84 starter mounting stud-----6 magneto mounting stud-----2 accessory housing mounting stud 935-----1 accessory housing mounting stud 548-B-----2		122	90100 90099 90114 90114 90100 90099 90100 90099 90100 90099 90100 90099 90100 90099 90100 90099	5 5 6 6 7 7 7 7 12 12 12 12 12 12 12 12	R-5071 R-5071 R-5090 R-5091 R-5132 R-5132 R-5133 R-5133 R-5341 R-5341 R-5342 R-5342 R-5343 R-5343 R-5344 R-5344
480-C	Hose - 3/4" x 3" (oil pump to sump fittings) Superseded by 10022.	840 - 8398	1	90100 90099	-- --	----- -----
481	Clamp - Hose, 3/4" I.D. oil sump drain hose-----2 oil sump to pump tube hose-----2 Superseded by 20004.	840 - 8424	4	90100 90099 90100 90099	-- -- -- --	----- ----- ----- -----
482-6	Carburetor - Stromberg NA-R7A		1	90128	19	R-5591
487	Cable - High tension ignition (69'-8") (Alternate Cable, Part No. 20002)		1	90211	--	-----
*489-1	Nut - Shielded spark plug elbow Superseded by 30011. For replacement use Elbow Assembly 90225.		14	489-D		
*489-2	Nipple - Shielded spark plug elbow Superseded by 30009. For replacement use Elbow Assembly 90225.		14	489-D		
*489-3	Elbow - Shielded spark plug Superseded by 30008. For replacement use Elbow Assembly 90225.		14	489-D		
*489-4	Ferrule - Shielded spark plug elbow Superseded by 30010. For replacement use Elbow Assembly 90225.		14	489-D		
489-D	Elbow Assembly - Shielded spark plug Obsolete. Superseded by 90225.		14			
489-E	Terminal - Shielded spark plug Superseded by and interchangeable with 30085.		14	90210	--	-----
489-G	Plug - Spark, shielded, Bendix 9BS2 For alternates see 99005 and 99006.		14	90128	19	R-5602
*493	Body - Oil strainer Superseded by 493-B.	840 - 841	1	90049	--	-----
*493-B	Body - Oil strainer Supersedes 493. For replacement use Body Assembly 90073 or Strainer Assembly 90072.	851 - 8453	1	90073	19	R-5581
494	Cover - Oil strainer		1	90048 90072	-- 19	----- R-5585

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SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
511	Plug - Crankshaft		1	90106 90308 90311	-- -- 8	----- ----- R-5162
511+25	Plug - Crankshaft		2	90100 90099	11	R-5296
513	Key - Crankshaft cluster gear				11	R-5296
518-B	Gear - Magneto driven		2	90030	11	R-5290
519	Spline - Magneto		1	90100 90099	12 12	R-5320 R-5320
525-B	Cone - Propeller hub, rear		1	90129	19	R-5615
526	Cone - Propeller hub, front		1	90205	19	R-5619
527	Nut - Propeller hub		1	90205	19	R-5620
528-B	Bolt - Propeller hub		8	90205	19	R-5621
536	Pin - Dowel, .156" x 3/8" (thrust bearing plate)		2	90100 90099	5 5	R-5063 R-5063
540	Gasket - Governor oil fitting		1	90101	4	R-5016
542	Eye - Lifting		2	90113	6	R-5098
544-C	Ring - Cylinder to crankcase seal (rubber)		7	90100 90099	10 10	R-5250 R-5250
548-B	Stud - 3/8" x 2" magneto mounting-----2 accessory housing mounting-----2		4	90069 90094 90069 90094	12 12 12 12	R-5307 R-5307 R-5308 R-5308
548-B+3	Stud - 3/8" x 2"		1	90128	19	R-5592
548-B+6	Stud - 3/8" x 2"					
548-B+9	Stud - 3/8" x 2"					
548-B+5	Stud - 3/8" x 2"					
550	Magneto - Scintilla VMN 7-DF5 (Scintilla Part No. 10-21819-2)		1	90128	19	R-5592
552	Gasket - Fuel pump mounting Superseded by 881 for use with Rear Case 605-E. For replacement use 552 with Rear Case 605-D, 881 for Rear Case 605-E.	840 - 841	1	90100	--	-----
553	Gasket - Distributor mounting		1	90100 90099	14 14	R-5389 R-5389
554-1	Gasket - Breather boss plug Used for service only with Plug 1001.	922 - 4194	1	90100	--	-----
554-2	Fitting - Oil pump to sump main crankcase-----1 oil pump-----MVL-1	MVL---- AVL----	2 1	90100 90099 90100	7 7 14	R-5114 R-5114 R-5422
*555-1	Nut - (Parker B-12-D) oil pump tube-----MVL-1 oil sump tube-----MVL-1 oil sump to pump tube-----AVL-1	MVL---- AVL----	2 1	90126 90092 90125 90087 90093 90124	-- 15 -- 15 -- 15	----- R-5459 ----- R-5462 ----- R-5465

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SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
*555-D	Tube - Oil sump Superseded by 30019. For replacement use 90087 for MVL, 90124 for AVL.	840 - 999 4000 - 4571	1	90125	--	-----
*556-D	Tube - Oil pump Superseded by 30018. For replacement use 90092 for MVL, 90124 for AVL.	840 - 999 4000 - 4571	1	90126	--	-----
557	Bolt - Starter gear		1	90100 90099	11 11	R-5285 R-5285
583-1	Distributor - Timer, Scintilla WL-7A (15°) (Scintilla Part No. 10-13810-2)		1	90128	19	R-5596
584	Coil - Timer (Scintilla Part No. 10-16144-1)		1	90128	19	R-5597
586-E	Sleeve - Oil seal, outer Superseded by 30061. For replacement use 586-E with 591-D, and 30061 (or alternate 30063) with 30060 (or alternate 30062).	840 - 999 4000 - 4791 4932 - 4999 8000 - 8001	1	90101	--	-----
589-1	Ring - Oil seal (cast iron)		4	90100 90099	5 5	R-5059 R-5059
589-1+10 589-2	Ring - Oil seal (cast iron) Ring - Oil seal (bronze)		4	90100 90099	5 5	R-5058 R-5058
589-2+10 591-D	Ring - Oil seal (bronze) Sleeve - Oil seal, inner Superseded by 30060. For replacement use 591-D with 586-E, and 30060 (or alternate 30062) with 30061 (or alternate 30063).	840 - 999 4000 - 4791 4932 - 4999 8000 - 8001	1	90100 90099	-- --	----- -----
593	Stud - 5/16" x 1-1/2" oil sump mounting-----4 (Supersedes 460-D) rear case to main crankcase-----10 carburetor mounting-----AVL--1 (Supersedes 460-3) exhaust port-----28 (Supersedes 460-D)	AVL----- MVL-----	43 42	90057 90113 90113 90381	4 6 6 9	R-5009 R-5093 R-5093A R-5210
593+3 593+6 593+9 593-S 593-B	Stud - 5/16" x 1-1/2" Stud - 5/16" x 1-1/2" Stud - 5/16" x 1-1/2" Stud - 5/16" x 1-1/2" Stud - 5/16" x 1-3/8" rear intermediate bearing plate to main crankcase-----7 fuel pump mounting on accessory housing adapter-----4		11	90113 90232	6 13	R-5092 R-5365
593-B+3 593-B+6 593-B+9 593-BS 594-D 594-D+3 594-D+6 594-D+9 594-DS	Stud - 5/16" x 1-3/8" Stud - 5/16" x 1-3/8" Stud - 5/16" x 1-3/8" Stud - 5/16" x 1-3/8" Stud - 3/8" x 2-1/8" (front case to main crankcase) Stud - 3/8" x 2-1/8" Stud - 3/8" x 2-1/8" Stud - 3/8" x 2-1/8" Stud - 3/8" x 2-1/8"		14	90113	6	R-5095

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SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
595	Washer - 3/8" thrust bearing plate stud-----6		42	90100	5	R-5070
				90099	5	R-5070
	crankcase clamp stud-----1			90114	6	R-5088
	crankcase clamp bolt-----12			90114	6	R-5089
	front case to main crankcase stud-14			90100	7	R-5131
				90099	7	R-5131
	starter mounting stud-----6			90100	12	R-5337
				90099	12	R-5337
	accessory housing mounting stud 935-----1			90100	12	R-5338
				90099	12	R-5338
	accessory housing mounting stud 548-B-----2			90100	12	R-5339
				90099	12	R-5339
601	Gear - Magneto drive		1	90100	11	R-5297
				90099	11	R-5297
602	Gear - Crankshaft cluster Superseded by and interchangeable with 30098.	840 - 999	1	90100	--	-----
		4000 - 4507				
		4932 - 4973				
603-C	Gear - Generator drive Superseded by and interchangeable with 30117.	840 - 4746	1	90031	--	-----
604-C *605-D	Plate - Rear intermediate bearing Case - Rear Engines 840 and 841 incorporated Rear Case 605-D with 3 ea. Studs 460-1 to mount Fuel Pump 816. All later engines incorporated Rear Case 605-E with 4 ea. Studs 458-B to mount Fuel Pump 816-B. For replacement use Rear Case Assembly 90069, which includes Rear Case 605-E. When replacing 605-D with 605-E the following replacements are necessary:		1	90257	11	R-5273
			1			
<u>PARTS REPLACED</u>		<u>REPLACED BY</u>				
<u>Qty.</u>	<u>Part No.</u>	<u>Noun</u>	<u>Qty.</u>	<u>Part No.</u>		
1	605-D	Rear Case	1	90069		
1	552	Gasket	1	881		
3	447	Washer	4	448		
3	683	Nut	4	684		
1	816	Pump	1	816-B		
*605-E	Case - Rear Supersedes 605-D. See Note under 605-D.	851 - 8453	1	90069	12	R-5304
				90094	12	R-5304
606-B	Cover - Generator drive Superseded by and interchangeable with 30074. With Cover 30074 use 4 ea. Spacers 30095.		1	90127	--	-----
607	Seal - Magneto and generator gears, oil Superseded by 20005.	840 - 8316	2	90100	--	-----
		8429 - 8453		90099	--	-----
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SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
608	Plug - Accessory gear magneto driven gear-----2 generator drive gear-----1 Superseded by and interchangeable with 10018.	840 - 4512 840 - 4973	3	90030 90031 90313	-- -- --	----- ----- -----
609	Screw - Oil feed bearing, lock		1	90257	11	R-5277
611	Tube - Oil feed		1	90012	11	R-5282
*613-E	Rod - Push (exhaust) Superseded by 30012 for intake only beginning engine 4040. For replacement use Rod Assembly 90112 for Exhaust and Rod Assembly 90111 for Intake.		7	90112	10	R-5252
622	Starter - Eclipse, type 397		1	90129	19	R-5608
624	Clamp - Coil		4	90128	19	R-5598
627-B	Stud - 1/4" x 1-1/4" propeller governor mounting-----4 accessory housing adapter mounting--4		8	90123 90123	13 13	R-5349 R-5350
627-B+3	Stud - 1/4" x 1-1/4"					
627-B+6	Stud - 1/4" x 1-1/4"					
627-B+9	Stud - 1/4" x 1-1/4"					
627-BS	Stud - 1/4" x 1-1/4"					
633	Elbow - 90°, 3/4" hose front case sump flange to attach oil sump drain hose-----1 rear main crankcase oil sump drain--1 oil pump outlet to tank-----1 oil strainer assembly-----2		5	90100 90099 90100 90099 90100 90099 90128	5 5 6 6 14 15 19	R-5067 R-5067 R-5102 R-5102 R-5421 R-5455 R-5590
634	Nipple - 3/4" hose oil inlet from tank to rear case----1 oil pump-----AVL--1 (to attach oil sump to pump tube)	MVL----- AVL-----	1 2	90100 90099 90099	12 12 15	R-5317 R-5317 R-5456
635	Breather - Crankcase Obsolete. (For replacement see Note under Part No. 10020.)	840 - 921 922 - 4194	2 1	90209 90209	-- --	----- -----
636	Nut - Crankcase breather Obsolete. (For replacement see Note under Part No. 10020.)	840 - 921 922 - 4194	2 1	90209 90209	-- --	----- -----
637	Shield - Magneto		1	90128	19	R-5593
638	Gasket - Magneto mounting		1	90100 90099	12 12	R-5321 R-5321
639-B	Insert - Rocker box		14	90109 90261 90258	-- -- 9	----- ----- R-5204
639-B+3	Insert - Rocker box					
640	Tube - Push rod cover		14	90100 90099	10 10	R-5257 R-5257
642	Nut - Push rod cover tube packing (upper and lower)		28	90100 90099	10 10	R-5260 R-5260

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JACOBS AIRCRAFT ENGINE COMPANY

SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY PER ENG	ASSEMBLY NO	ASSEM BREAKDOWN	
					PAGE NO	REFERENCE NO
643	Packing - Push rod cover tube (rubber)		28	90100 90099	10 10	R-5258 R-5258
644-D	Guide - Tappet, exhaust		7	90101	4	R-5012
645-D	Guide - Tappet, intake		7	90101	4	R-5013
654	Washer - Push rod cover tube upper packing		14	90100 90099	10 10	R-5259 R-5259
656	Spacer - Front case thrust bearing plate		1	90100 90099	5 5	R-5062 R-5062
660	Terminal - Wire, coil		1	90210	18	R-5535
660-1	Terminal - Wire, distributor		1	90210	18	R-5536
661	Bolt - Coil clamp	840 - 999	4	90128	--	-----
	Superseded by and interchangeable with 10008.	4000 - 4843 4932 - 4999 8000 - 8015				
*664-D	Barrel - Cylinder	840 - 999	7	90261	--	-----
	Superseded by 30135.	4000 - 4999				
	For replacement use Cylinder Assembly (Studding) 90381.	7026 - 7033 8000 - 8282				
668	Generator - Eclipse type 309 (25 amp.)		1	90128	19	R-5594
668-1	Box - Control, Eclipse type 1035 (25 amp.)		1	90128	19	R-5595
672-2	Sleeve - Propeller governor drive gear bearing		1	90122	13	R-5369
673	Bearing - Ball (propeller governor drive gear)		1	90122	13	R-5368
676	Ring - Coil clamp (rubber)		2	90128	19	R-5600
681-D	Plate - Name		1	90101	4	R-5023
683	Nut - Elastic stop, 1/4"-28		73			
	primer tube clip stud-----0	840 - 841				
	" " " " -----3	851 - 886				
	" " " " -----2	889 - 8453				
	rocker cover stud-----56			90100	7	R-5135
				90099	7	R-5135
				90107	--	-----
				90266	10	R-5249
				90095	--	-----
				90267	10	R-5249
	propeller governor mounting stud----4			90122	13	R-5384
	accessory housing adapter					
	mounting stud-----4			90122	13	R-5385
	oil pump body stud-----3			90035	14	R-5420
				90090	--	-----
				90290	15	R-5454
	coil clamp bolt-----4			90128	19	R-5601
684	Nut - Elastic stop, 5/16"-24		40			
	oil sump mounting stud-----4			90100	5	R-5074
				90099	5	R-5074
	ignition manifold mounting stud----4			90100	5	R-5075
				90099	5	R-5075
	rear case to main crankcase stud---10			90100	7	R-5129
				90099	7	R-5129
	carburetor mounting stud-----4			90100	7	R-5130
				90099	7	R-5130
	fuel pump mounting stud 458-B-----4			90100	12	R-5334
				90099	12	R-5334
	generator mounting stud-----4			90100	12	R-5335
				90099	12	R-5335
	oil pump mounting stud-----4			90100	12	R-5336
				90099	12	R-5336
	fuel pump mounting stud 593-B-----4			90122	13	R-5378
	distributor mounting stud-----2			90100	14	R-5391
				90099	14	R-5391
	Note: 4 ea. cancelled for use with Carburetor Air Heater Stud 454 beginning engine 8297.					
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SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
686-B	Washer - Cam drive pinion clamp		1	90101	4	R-5039
687	Washer - 25/64" x 3/4" x 3/32" (magneto mounting stud)		2	90100 90099	12 12	R-5340 R-5340
688	Pin - Cotter, 1/16" x 3/4" crankpin bolt-----1		9	90104 90308 90311 90117 90100 90099 90205	-- -- 8 8 11 11 19	----- ----- R-5163 R-5180 R-5288 R-5288 R-5622
	knuckle pin bolt-----6			90117	8	R-5180
	starter gear bolt-----1			90100	11	R-5288
	propeller hub nut clevis pin-----1			90099 90205	11 19	R-5288 R-5622
689	Pin - Cotter, 1/8" x 1" cam drive pinion shaft-----1 front crankshaft balance weight bolt-----3		16	90005 90105 90308 90311 90106 90308 90311 90104 90308 90311 90205	4 -- -- 8 -- -- 8 -- -- 8 19	R-5038 ----- ----- R-5164 ----- ----- R-5164 ----- ----- R-5165 R-5263
	rear crankshaft balance weight bolt-3			90106	--	-----
	crankshaft clamp bolt-----1			90311 90104 90308	8 -- --	R-5164 ----- -----
	propeller hub bolt-----8			90311 90205	8 19	R-5165 R-5263
690	Pin - Cotter - 3/32" x 3/4" (rocker shaft)	MVL ONLY	14	90107 90266	-- 10	----- R-5245
692	Washer - Lock, 5/16" rear intermediate bearing plate to main crankcase stud-----7		39	90100 90099 90100 90099 90048 90072	7 7 10 10 -- 19	R-5136 R-5136 R-5270 R-5270 ----- R-5587
	exhaust port stud-----28			90100	10	R-5270
	oil strainer body stud-----4			90099 90048 90072	10 -- 19	R-5270 ----- R-5587
*706	Crankcase - Main, rear		1	90116	6	R-5083
*706-1D	Crankcase - Main, front		1	90115	6	R-5079
707	Shaft - Rocker	MVL ONLY	14	90136	10	R-5239
707-D	Shaft - Rocker	AVL ONLY	14	90095 90267	10 10	R-5241 R-5241
*708	Screen - Oil sump strainer		1	90028	6	R-5107
*708-1	Adapter - Oil sump strainer		1	90028	6	R-5108
*708-2	Disc - Oil sump strainer		1	90028	6	R-5109
709	Plug - Hex head, 1-1/4"-12, special (oil sump drain)		1	90100 90099	7 7	R-5112 R-5112
710	Gasket - 1-1/4" x 1-5/8" x 1/16" (copper asbestos) oil sump drain plug-----1		2	90100 90099 90100 90099	6 6 6 6	R-5110 R-5110 R-5111 R-5111
	oil sump strainer assembly-----1			90099	6	R-5111
713-C	Plug - Piston pin (For replacement use 713-CS)		14	90164 90228	-- 9	----- R-5193
713-CS	Plug - Piston pin (Used for replacement of 713-C)		14	-----	--	-----
717-B	Bolt - Main crankcase clamp (3/8" x 4-29/32")		6	90114	6	R-5087

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SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
718-B	Stud - 3/8" x 3-13/16" (main crankcase clamp)		1	90114	6	R-5086
718-B+3	Stud - 3/8" x 3-13/16"					
718-B+6	Stud - 3/8" x 3-13/16"					
718-B+9	Stud - 3/8" x 3-13/16"					
718-B5	Stud - 3/8" x 3-13/16"					
723	Slinger - Distributor drive gear, oil		1	90100 90099	14 14	R-5387 R-5387
*730	Adapter - Accessory housing (fuel pump mounting)		1	90232	13	R-5364
738	Liner - Rear intermediate bearing plate		1	90257	11	R-5274
738+25	Liner - Rear intermediate bearing plate					
739	Bearing - Ball, crankshaft, rear		1	90100 90099	11 11	R-5295 R-5295
740-1	Conduit Assembly - Coil to distributor elbow Superseded by 30070.	840 - 4216	1	90210	--	-----
745	Gear - Distributor drive		1	90100 90099	14 14	R-5386 R-5386
746-B	Plug - Square head, drilled, 3/8" NPT (oil tank vent connection boss)		2	90069 90094	12 12	R-5316 R-5316
747	Gear - Accessory shaft, distributor drive		1	90071	13	R-5355
748	Box - Engine (shipping)		1	90310	20	R-5628
748-2	Plate - Engine box (shipping)		1	90310	20	R-5629
753	Stud - 5/16" x 1-21/32" (generator mounting)		4	90069 90094	12 12	R-5310 R-5310
753+3	Stud - 5/16" x 1-21/32"					
753+6	Stud - 5/16" x 1-21/32"					
753+9	Stud - 5/16" x 1-21/32"					
753-S	Stud - 5/16" x 1-21/32"					
754	Bearing - Ball, accessory drive shaft, front		1	90071	13	R-5353
755	Bearing - Ball, accessory drive shaft, rear		1	90071	13	R-5359
756	Nut - Lock (tab) .586"-32 (accessory drive shaft)		1	90071	13	R-5361
757	Washer - Accessory drive shaft, lock		1	90071	13	R-5360
758-B	Gasket - Accessory housing adapter		1	90122	13	R-5362
759	Cover - Fuel pump drive Superseded by and interchangeable with 30078. Use 4 ea. Spacers 30093 with Cover 30078.	840 - 4255	1	90122	--	-----
760-D	Cover - Accessory drive, 4 bolt, small (propeller governor drive)		1	90122	13	R-5380
763	Gasket - Accessory drive, 4 bolt, small (propeller governor mounting)		1	90122	13	R-5379
764	Gasket - Fuel pump mounting (accessory housing adapter)		1	90122	13	R-5374
765	Stud - 5/16" x 1-1/4" (ignition manifold mounting)		4	90057	4	R-5008
765+3	Stud - 5/16" x 1-1/4"					
765+6	Stud - 5/16" x 1-1/4"					
765+9	Stud - 5/16" x 1-1/4"					
765-S	Stud - 5/16" x 1-1/4"					
766	Guide - Oil pressure relief valve spring Superseded by and interchangeable with 766-B.	840 - 912 915 - 920 922 - 925	1	90035	--	-----

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SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
766-B	Guide - Oil pressure relief valve spring Supersedes and interchangeable with 766.	913 - 914 926 - 999 4000 - 4571 4932 - 4999 8000 - 8021 8362 - 8453	1	90035 90290	14 15	R-5416 R-5450A
767	Band - Rubber (tappet guide seal) Redesigned bushing eliminates use of 28 ea. 767 for spark plug bushing seal.		14	90101	4	R-5014
775-S	Cable - Shielded, coil to distributor		2 ft.	90210	18	R-5539
*776-B	Housing - Accessory drive		1	90123	13	R-5347
780	Gear - Accessory shaft (propeller governor drive)		1	90071	13	R-5357
781-1	Gear - Propeller governor drive		1	90122	13	R-5367
782-C	Shaft - Accessory drive		1	90071	13	R-5352
783-1	Spacer - Accessory shaft, distributor drive gear		1	90071	13	R-5356
783-2	Spacer - Accessory shaft, propeller governor drive gear		1	90071	13	R-5358
784	Gasket - Accessory drive housing to rear case		1	90100 90099	12 12	R-5327 R-5327
786	Nut - Valve clearance adjusting screw, lock exhaust valve rocker-----7 intake valve rocker-----7		14	90065 90066	9 10	R-5230 R-5237
787	Plug - Rocker exhaust valve rocker-----7 intake valve rocker-----7 Obsolete. Not required as drilled hole in rocker is spotwelded.	840 - 926	14	90065 90066	-- --	----- -----
788	Gasket - Oil sump to front case		1	90101	4	R-5021
790	Fitting - Governor oil (front case)		1	90101	4	R-5017
794	Ring - Piston, oil cylinder No. 1-----1 cylinder Nos. 2,3,4,5,6 & 7-----18		19	90119 90120	9 9	R-5185 R-5190
794+5W	Ring - Piston, oil					
794+15D	Ring - Piston, oil					
794+15D+5W	Ring - Piston, oil					
798	Ring - Piston, compression, taper cylinder No. 1-----3 cylinder Nos. 2,3,4,5,6 & 7-----18		21	90119 90120	9 9	R-5184 R-5189
798+5W	Ring - Piston, compression, taper					
798+10W	Ring - Piston, compression, taper					
798+15D	Ring - Piston, compression, taper					
798+15D+5W	Ring - Piston, compression, taper					
798+15D+10W	Ring - Piston, compression, taper					
798-B	Ring - Piston, compression cylinder No. 1-----3 cylinder Nos. 2,3,4,5,6 & 7-----6		9	90119 90120	9 9	R-5183 R-5188
798-B+5W	Ring - Piston, compression					
798-B+10W	Ring - Piston, compression					
798-B+15D	Ring - Piston, compression					
798-B+15D+5W	Ring - Piston, compression					
798-B+15D+10W	Ring - Piston, compression					

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SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
803	Nut - Castle, 5/16"-24		1	90104	--	-----
				90304	--	-----
				90312	8	R-5150
804-B	Plug - Crankpin		1	90104	--	-----
				90304	--	-----
				90312	8	R-5148
805-B	Bolt - Crankpin		1	90104	--	-----
				90304	--	-----
				90312	8	R-5149
806	Plug - Front crankshaft, front		1	90105	--	-----
				90308	--	-----
				90311	8	R-5153
807-B	Plug - Hex head, drilled, 5/8"-18 fuel, air mixture thermometer boss--1 front crankshaft-----1		2	90100	6	R-5104
				90099	6	R-5104
				90105	--	-----
				90308	--	-----
				90311	8	R-5155
810-B 815	Pump - Vacuum, Pesco model 194-B Ball - 1/2" steel oil check valve-----1 oil pressure relief valve-----1		1 2	90129	19	R-5613
				90035	14	R-5398
				90090	--	-----
				90290	15	R-5429
				90035	14	R-5413
				90090	--	-----
				90290	15	R-5448
816	Pump - Fuel, Pesco model R-400-BLH Superseded by 816-B. See Note under Part No. 605-D.	840 - 841	1	-----	--	-----
816-B	Pump - Fuel, Pesco model 2P-R400 BLY Supersedes 816. See Note under Part No. 605-D. Interchangeable with 99000.	851 - 8453	1	90129	19	R-5609
816-C	Pump - Fuel, Pesco model M-400-A Interchangeable with 99013.		1	90129	19	R-5611
819	Spacer - Oil pressure relief valve spring One or more may be used to obtain required pressure.		1	90035	14	R-5415
				90090	--	-----
				90290	15	R-5450
824	Bearing - Ball, generator gear		1	90100	12	R-5318
				90099	12	R-5318
826-B	Nut - Elastic stop, #10-32 (primer distributor strap screw)	851 - 8453	2	90040	17	R-5502
834-B	Shim - Front case thrust bearing plate (laminated)		1	90100	5	R-5064
				90099	5	R-5064
835	Body - Oil check valve		1	90035	14	R-5397
				90090	--	-----
				90290	15	R-5428
836	Cap - Oil check valve		1	90035	14	R-5401
				90090	--	-----
				90290	15	R-5432

SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
837	Gasket - Oil check valve (soft copper)		1	90035 90090 90290	14 -- 15	R-5400 ----- R-5431
838	Spring - Oil check valve Superseded by and interchangeable with 838-B.	840 - 4711	1	90035 90090	-- --	----- -----
838-B	Spring - Oil check valve Supersedes and interchangeable with 838.	4712 - 8453	1	90035 90090 90290	14 -- 15	R-5399 ----- R-5430
844	Gasket - 5/8" x 7/8" x 1/8" (soft copper)	840 - 4127 4128 - 8453	2 1			
	front crankshaft plug-----1			90105 90308 90311	-- -- 8	----- ----- R-5154
	fuel, air mixture thermometer boss plug-----1	840 - 4127		90100	--	-----
	(Superseded by 10007 at this location only.)					
853	Cover - Rocker, exhaust, cylinder No. 5	AVL ONLY	1	90099	16	R-5468
854	Cover - Rocker, intake, cylinder Nos. 1 & 4	AVL ONLY	2	90099	16	R-5469
859-1	Insert - Intake port screw		21	90109 90261 90258	-- -- 9	----- ----- R-5205
859-1+3	Insert - Intake port screw					
861	Flange - Front case sump pad Superseded by and interchangeable with 30286 for future replacements.	840 - 8453	1	90101	--	-----
880	Cover - Fuel pump drive		1	90100 90099	12 12	R-5325 R-5325
881	Gasket - Fuel pump mounting (rear case)	851 - 8453	1	90100 90099	12 12	R-5324 R-5324
904	Screw - Intake port flange		21	90100 90099	10 10	R-5267 R-5267
906	Cap - 1-3/8"-16, special (timing) Superseded by and interchangeable with Plug 1016.	840 - 4791	1	90101	--	-----
907	Gasket - 1-13/32" x 1-3/4" x 1/16" (copper asbestos) (timing plug 1016)		1	90101	4	R-5025
909	Sleeve - Primer tube clip (rubber)	851 - 886 889 - 8453	11 7			
	cylinder #6-----4	851 - 886		90132	--	-----
	cylinder #7-----3			90133	17	R-5514
	cylinder #1-----1			90134	17	R-5519
	cylinder #2-----3			90135	17	R-5524
923-B	Distributor - Primer	851 - 8453	1	90040	17	R-5500
923-B1	Strap - Primer distributor	851 - 8453	1	90040	17	R-5501
923-B3	Screw - #10-32 x 7/8" (primer distributor strap)	851 - 8453	2	90040	17	R-5503
924	Clip - Primer tube, crankcase	851 - 886 889 - 8453	4 2	90131 90084	-- 17	----- R-5531
925	Clip - Primer tube, intake pipe	851 - 886 889 - 8453	7 5	90045 90045	-- 17	----- R-5528

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SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
925-1	Screw - Primer tube clip	851 - 886 889 - 8453	7 5	90045 90045	-- 17	----- R-5529
925-2	Nut - Primer tube clip	851 - 886 889 - 8453	7 5	90045 90045	-- 17	----- R-5530
*926-C	Tube - Primer #6 cylinder (28" long) Superseded by 30005. For replacement use Tube Assembly 90132 when priming #6 Cylinder, and Tube Assembly 90085 when priming Intake Manifold.	851 - 886	1	90132	--	-----
*926-C1	Tube - Primer #7 cylinder (19-1/4" long)	851 - 8453	1	90133	17	R-5513
*926-C2	Tube - Primer #1 cylinder (9" long)	851 - 8453	1	90134	17	R-5518
*926-C3	Tube - Primer #2 cylinder (21-1/2" long)	851 - 8453	1	90135	17	R-5523
927	Elbow - Primer discharge for cylinder Nos. 1,2,6 & 7 for cylinder Nos. 1,2 & 7	851 - 886 889 - 8453	4 3	90131 90084	-- 17	----- R-5507
928	Elbow - Primer distributor (to cylinder Nos. 1,2 & 7)	851 - 8453	3	90131 90084	-- 17	----- R-5506
*929	Nut - Primer tube #6 cylinder-----2 intake manifold-----2 #7 cylinder-----2 #1 cylinder-----2 #2 cylinder-----2	851 - 886 889 - 8453	8	90132 90085 90133 90134 90135	-- 17 17 17 17	----- R-5510 R-5515 R-5520 R-5525
*930	Cone - Primer tube #6 cylinder-----2 intake manifold-----2 #7 cylinder-----2 #1 cylinder-----2 #2 cylinder-----2 Superseded by and interchangeable with 930-B.	851 - 886 889 - 912 851 - 912 851 - 912 851 - 912	8	90132 90085 90133 90134 90135	-- -- -- -- --	----- ----- ----- ----- -----
*930-B	Cone - Primer tube intake manifold-----2 #7 cylinder-----2 #1 cylinder-----2 #2 cylinder-----2 Supersedes and interchangeable with 930.	913 - 8453	8	90085 90133 90134 90135	17 17 17 17	R-5511 R-5516 R-5521 R-5526
931	Nipple - Primer distributor To cylinder No. 6 To intake manifold	851 - 886 889 - 8453	1	90131 90084	-- 17	----- R-5504
933	Elbow - 90°, 3/8" hose intake rocker cover, cyl. No. 1----1 rocker scavenger tube to oil pump--1	AVL ONLY	2	90099 90099	16 16	R-5470 R-5471
935	Stud - 3/8" x 1-7/8" starter mounting-----6 accessory housing mounting-----1		7	90069 90094 90069 90094	12 12 12 12	R-5305 R-5305 R-5306 R-5306
935+3	Stud - 3/8" x 1-7/8"					
935+6	Stud - 3/8" x 1-7/8"					
935+9	Stud - 3/8" x 1-7/8"					
935-S	Stud - 3/8" x 1-7/8"					
937	Nut - Exhaust port stud (brass)		28	90100 90099	10 10	R-5271 R-5271

* Not to be stocked or requisitioned as detail parts

SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
940	Stud - 1/4" x 1-3/8" (rocker cover)		56	90108 90381	-- 9	----- R-5212
940+3	Stud - 1/4" x 1-3/8"					
940+6	Stud - 1/4" x 1-3/8"					
940+9	Stud - 1/4" x 1-3/8"					
940-S	Stud - 1/4" x 1-3/8"					
941	Stud - 1/4" x 1-1/8" (primer tube clip)	851 - 886	3	90113	--	-----
		889 - 8453	2	90113	6	R-5097
941+3	Stud - 1/4" x 1-1/8"					
941+6	Stud - 1/4" x 1-1/8"					
941+9	Stud - 1/4" x 1-1/8"					
941-S	Stud - 1/4" x 1-1/8"					
943	Hose - 3/8" x 5-1/2" (inter cylinder) Superseded by 10024.	AVL ONLY 4572 - 4931 7026 - 7033 8022 - 8453	7	90099	--	-----
944	Hose - 3/8" x 3-5/8" (rocker box drain) Superseded by 10026.	AVL ONLY 4572 - 4931 7026 - 7033 8022 - 8398	7	90099	--	-----
945	Nipple - 3/8" hose intake rocker cover, cylinder No. 4-----1 exhaust rocker cover, cylinder No. 5-----1 inter cylinder-----12	AVL ONLY	14	90099 90099 90099	16 16 16	R-5474 R-5475 R-5476
946	Elbow - 45°, 3/8" hose rocker box drain-----14 rocker vent tube, cyl. No. 1 to main crankcase-----1 (Supersedes 945 at this location) exhaust rocker cover, cyl. No. 5--1	AVL ONLY	16	90099 90099 90099	16 16 16	R-5477 R-5478 R-5479
950	Stud - 1/4" x 63/64" (cam drive pinion bearing clamp)		5	90057	4	R-5010
950+3	Stud - 1/4" x 63/64"					
950+6	Stud - 1/4" x 63/64"					
950+9	Stud - 1/4" x 63/64"					
950-S	Stud - 1/4" x 63/64"					
952	Sleeve - Rubber, 5/8" long for 3/8" tube Superseded by 30129, for rocker scavenger and oil supply tubes.	AVL ONLY 4572 - 4931 7026 - 7033 8022 - 8384	2	90099	--	-----
954	Stud - 3/8" x 1-11/16" (cylinder mounting)		84	90113	6	R-5096
954+3	Stud - 3/8" x 1-11/16"					
954+6	Stud - 3/8" x 1-11/16"					
954+9	Stud - 3/8" x 1-11/16"					
954-S	Stud - 3/8" x 1-11/16"					
970	Pin - Crankshaft spline (Optional with purchaser)		1	90308 90311	-- 8	----- R-5166
971	Hose - 3/4" x 9-3/8" (oil sump drain) Superseded by 971-1, pending availability of 10023.	840 - 8390	1	90100 90099	-- --	----- -----
971-1	Hose - 3/4" x 9-15/16" (oil sump drain) Superseded by 10023 for future replacements.	8391 - 8453	1	90099	--	-----
973	Stud - 3/8" x 1-13/16" (thrust bearing plate)		6	90057	4	R-5007

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SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
973+3 973+6 973+9 973-S 974	Stud - 3/8" x 1-13/16" Stud - 3/8" x 1-13/16" Stud - 3/8" x 1-13/16" Stud - 3/8" x 1-13/16" Cap - Propeller shaft thread (shipping) Superseded by and interchangeable with 10006.	840 - 4774	1	90127	--	-----
976	Liner - Hose, 3/8" (rocker scavenger tube) Use of 4 ea. Liners 976 discontinued for rocker vent and oil supply tubes.	AVL ONLY	2	90099	16	R-5481
978	Plug - Dummy spark (shipping) Superseded by and interchangeable with 10001.	840 - 8043 8057 - 8231	14	90127	--	-----
979	Lockwire (8-1/2") (cam drive pinion bearing clamp stud nut)		1	90101	4	R-5041
984	Hose - 3/8" x 2-1/8" rocker scavenger tube-----2 rocker vent tube-----2 oil supply tube-----2 Superseded by 1 ea. 10026 for rocker vent tube and 5 ea. 10027 at other locations.	AVL ONLY 4572 - 4931 7026 - 7033 8022 - 8398	6	90099 90099 90099	-- -- --	----- ----- -----
986	Tube - Rocker vent Superseded by 30128 for future replacements.	AVL ONLY 840 - 8453	1	90099	--	-----
*996 *996-1 *996-2 998 1001	Coupling - Fuel pump drive, outer Coupling - Fuel pump drive, inner Rivet - Fuel pump drive coupling Cuff - Propeller shaft (shipping) Plug - Breather boss (1-14 thd.) Supersedes 1 ea. Breather Assembly 90209. Superseded by 10011 or 10014 For replacement see Note under Part No. 10014.	922 - 4194	1 1 1 1 1	90137 90137 90137 90310 90100	13 13 13 20 --	R-5371 R-5372 R-5373 R-5630 -----
1002 1003	Pin - Clevis, propeller hub nut Tube - Oil supply, valve lubrication Superseded by 30165.	AVL ONLY 4572 - 4931 7026 - 7033 8022 - 8453	1 1	90205 90099	19 --	R-5624 -----
1008	Sleeve - Coil cable connection (rubber) Superseded by and interchangeable with 1 ea. 30108 and 1 ea. 30109.		2	90210	--	-----
1016	Plug - Square head, 1-3/8"-16, special (timing) Supersedes and interchangeable with Cap 906.	4792 - 8453	1	90101	4	R-5026
1030	Elbow - 15°, 3/8" hose (front case sump pad flange to attach oil supply tube)	AVL ONLY	1	90099	16	R-5489
10000	Stud - 3/8" x 1-13/16", drilled Drilled beginning engine 8344. Optional with purchaser.		4	90057	4	R-5011
* Not to be stocked or requisitioned as detail parts						

SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
10000+3 10000+6 10000+9 10000-S 10001	Stud - 3/8" x 1-13/16", drilled Stud - 3/8" x 1-13/16", drilled Stud - 3/8" x 1-13/16", drilled Stud - 3/8" x 1-13/16", drilled Plug - Dummy spark (shipping) Supersedes and interchangeable with 978.	8044 - 8056 8232 - 8453	14	90310	20	R-5631
10004	Tee - 3/8" hose, double ell Superseded by Tee Assembly 90386 for future replacements.	AVL ONLY 4572 - 4931 7026 - 7033 8022 - 8453	1	90099	--	-----
10006	Cap - Propeller shaft thread (shipping) Superseded by and interchangeable with 974.	4775 - 8453	1	90310	20	R-5632
10007	Gasket - 5/8" I.D. x 1/8" wide (copper asbestos) (fuel, air mixture thermometer boss plug) Supersedes 844 at this location only.	4128 - 8453	1	90100 90099	6 6	R-5103 R-5103
10008	Bolt - Hex head, 1/4"-28 x 3/4" (coil clamp) Supersedes and interchangeable with 661.	4844 - 4931 7026 - 7033 8016 - 8453	4	90128	19	R-5599
10009	Elbow - 45°, 3/4" hose (Dural) (crankcase breather) Supersedes 1 ea. Breather Assembly 90209. Superseded by and interchangeable with 10020. See Note under Part No. 10020.	4195 - 8453	1	90100 90099	-- --	----- -----
10011	Bushing - Reducing, 3/4" x 1/4" NPT Supersedes Plug 1001. Superseded by Bushing 10014. For replacement see Note under Part No. 10014.	4195 - 4571	1	90100	--	-----
10012	Screw - Fillister head, 1/4"-28 x 5/16" (crankshaft plug lock)	4318 - 8453	2	90308 90311	-- 8	----- R-5161
*10013	Band - Rubber (cylinder head seal) Redesigned cylinder head eliminates use of 10013.	840 - 8453	7	90108 90261 90258	-- -- --	----- ----- -----
10014	Bushing - Reducing, 1/2" x 1/4" NPT (breather boss) Supersedes Bushing 10011 on crankcases with breather boss tapped 1/2" NPT. For all replacements at breather boss use: Plug 1001 for breather boss tapped 1-14 thd. Bushing 10011 for breather boss tapped 3/4" NPT. Bushing 10014 for breather boss tapped 1/2" NPT.	4572 - 8453	1	90100 90099	6 6	R-5099 R-5099
10017	Nut - 5/8"-18 (crankshaft clamp bolt) Supersedes 344-C. Used only with Bolt 30100.	4473 - 8453	1	90304 90312	-- 8	----- R-5152
10018	Cork - 1-1/4" x 1-1/16" x 1" long magneto driven gear-----2 generator drive gear-----1 Supersedes and interchangeable with Plug 608.	4513 - 8453 4974 - 8453	3	90030 90313	11 11	R-5291 R-5294
* Not to be stocked or requisitioned as detail parts						

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SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
10020	Elbow - 45°, 3/4" hose (bronze)(crankcase breather) Supersedes and interchangeable with 10009. For all replacements use: Elbow 10020 for breather on all engines Bushing 10011 for breather boss tapped 3/4" NPT. Bushing 10014 for breather boss tapped 1/2" NPT. Plug 1001 for breather boss on engines prior to 4195.		1	90100 90099	6 6	R-5101 R-5101
10022	Hose - Oil, 3/4" x 2-3/4" (oil sump to pump tube) Supersedes and interchangeable with 480-C.	8399 - 8453	1	90100 90099	15 15	R-5466 R-5466
10023	Hose - Oil, 3/4" x 10" (oil sump drain) Supersedes and interchangeable with 971 and 971-1.		1	90100 90099	5 5	R-5068 R-5068
10024	Hose - Oil, 3/8" x 5-1/2" (inter cylinder) Supersedes 943.	AVL ONLY	7	90099	16	R-5472
10026	Hose - Oil, 3/8" x 3-3/4" rocker box drain-----7 rocker vent tube-----1 Supersedes 7 ea. 944 and 1 ea. 984.	AVL ONLY 8399 - 8453	8	90099 90099	16 16	R-5473 R-5473A
10027	Hose - Oil, 3/8" x 2-1/4" rocker scavenger tube-----2 rocker vent tube-----1 oil supply tube-----2 baffle protection sleeve-----1 Supersedes 984 except for baffle protection sleeve.	AVL ONLY 8399 - 8453	6	90099 90099 90099 90099	16 16 16 16	R-5484 R-5485 R-5486 R-5486A
*10031	Cap - 3/8" union		1	90386	16	R-5490B
*10032	Tee - 3/8" union (to attach propeller governor connection)		1	90386	16	R-5490A
*10033	Sleeve - 3/8"		1	90393	16	-----
*10034	Nut - 3/8" union		1	90393	16	-----
20000	Clamp - Hose, 3/4" O.D. (pressure) oil supply tube-----4 rocker vent tube-----4 rocker scavenger tube-----4 rocker box drain-----14 inter cylinder-----14 Supersedes 90170 for all replacements.	AVL ONLY	40	90099 90099 90099 90099 90099	16 16 16 16 16	R-5493 R-5494 R-5495 R-5496 R-5497
20002	Cable - High tension ignition (70'-2") (Alternate Cable, Part No. 487)		1	90315	18	R-5571
20003	Seal - Magneto and generator gears, oil Superseded by 607, pending availability of 20005.	8317 - 8428	2	90100	--	-----
20004	Clamp - Hose, 1-1/8" oil sump drain hose-----2 oil sump to pump tube hose-----2 Supersedes 481.	8425 - 8453	4	90100 90099 90100 90099	5 5 15 15	R-5069 R-5069 R-5467 R-5467

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SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
20005	Seal - Magneto and generator gears, oil Supersedes 20003 and 607 for all re- placements.		2	90100 90099	12 12	R-5319 R-5319
30002	Clip - Oil tubes (oil supply and rocker scavenger)	AVL ONLY	1	90099	16	R-5491
*30005	Tube - Primer, intake manifold (6-1/4" long) Supersedes 926-C. For replacement use Tube Assembly 90085.	889 - 8453	1	90085	17	R-5509
30006	Nipple - Primer discharge (intake manifold)	889 - 8453	1	90084	17	R-5505
*30007	Crankshaft - Rear Supersedes 510-E. For replacement use Crankshaft Assembly (Complete) 90311.	4501 - 8453	1	90312	8	R-5141
*30008	Elbow - Shielded spark plug Supersedes 489-3. For replacement use Elbow Assembly 90225.		14	90225	18	R-5542
*30009	Nipple - Shielded spark plug elbow Supersedes 489-2. For replacement use Elbow Assembly 90225.		14	90225	18	R-5543
*30010	Ferrule - Shielded spark plug elbow Supersedes 489-4. For replacement use Elbow Assembly 90225.		14	90225	18	R-5544
*30011	Nut - Shielded spark plug elbow Supersedes 489-1. For replacement use Elbow Assembly 90225.		14	90225	18	R-5545
*30012	Rod - Push (intake) Supersedes 613-E for intake only. For replacement use Rod Assembly 90111.	4040 - 8453	7	90111	10	R-5255
*30013	Ball End - Push rod intake push rod-----14 exhaust push rod-----14 Supersedes and interchangeable with 428-B. For replacement use 90111 for Intake and 90112 for Exhaust.	4828 - 8453	28	90111 90112	10 10	R-5256 R-5253
30015	Tube - Rocker scavenger (from cylinder No. 5 to oil pump) Superseded by and interchangeable with 30166 for replacements.	AVL ONLY 4572 - 4931 7026 - 7033 8022 - 8453	1	90099	--	-----
*30018	Tube - Oil pump Supersedes 556-D. For replacement use Tube Assembly 90092.	MVL ONLY	1	90092	15	R-5458
*30019	Tube - Oil sump Supersedes 555-D. For replacement use Tube Assembly 90087.	MVL ONLY	1	90087	15	R-5461
*30020	Tube - Oil sump Superseded by 30131.	AVL ONLY	1	90093	--	-----
30026	Hub - Propeller		1	90205	19	R-5625
30027	Plate - Propeller hub		1	90205	19	R-5626

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SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
30028	Bearing - Cam Supersedes and interchangeable with 356-C. Bearing 30064 used temporarily, pending availability of 30028.	8327 - 8453	1	90100 90099	5 5	R-5053 R-5053
30029	Gasket - Oil pressure relief valve cap Used with Cap 328 or 30134. Supersedes 30072.	840 - 999 4000 - 4571 4932 - 4999 8000 - 8021 8362 - 8453	1	90035 90290	14 15	R-5417 R-5451
*30031	Pin - Piston Supersedes 396-C. For replacement use Pin Assembly 90228.	4609 - 8453	7	90228	9	R-5192
30033	Plug - Hollow head, 1/4"-28 x 3/8" (front crankshaft) Supersedes 347.	998 - 8453	1	90105 90308 90311	-- -- 8	----- ----- R-5156
30034	Manifold Assembly - Shielded ignition, left		1	90221	18	R-5548
30035	Manifold Assembly - Shielded ignition, right		1	90221	18	R-5549
30036	Gasket - 1" x 1-1/8" x 1/16" (copper asbestos) (ignition manifold connection)		1	90221	18	R-5550
30038	Conduit Assembly - Spark plug, rear, #3,4,6 & 7 cylinders (17" long) Supersedes and interchangeable with 30056 for future replacements.		4	90315	18	R-5552
30041	Conduit Assembly - Distributor, male end (3-5/8" long)		1	90213	18	R-5559
30043	Guard - Magneto and distributor conduit, leather magneto-----1 distributor-----1		2	90212 90213	18 18	R-5556 R-5561
30044	Lacing - Magneto and distributor conduit guard, leather magneto-----1 distributor-----1		2	90212 90213	18 18	R-5557 R-5562
30045	Elbow Assembly - Magneto conduit		1	90224	18	R-5564
30046	Elbow Assembly - Distributor conduit		1	90226	18	R-5568
30047	Grommet magneto conduit to elbow-----1 distributor conduit to elbow-----1 manifold to spark plug conduit---14		16	90224 90226 90211 90315	18 18 -- 18	R-5565 R-5569 ----- R-5572
30048	Grommet (spark plug conduit to elbow)		14	90211 90315	-- 18	----- R-5573
30049	Cap - Knurl, 11/16"-24 (magneto conduit elbow opening)		1	90224	18	R-5566
30050	Nut - Knurl, 11/16"-24 NEF-3 (distributor conduit elbow outlet)		1	90226	18	R-5570
30051	Ferrule - Terminal		16	90211 90315	-- 18	----- R-5574
30052	Gasket - 1-1/4" x 1-11/32" x 3/64" (copper) (magneto and distributor conduit to manifold and elbow)		4	90211 90315	-- 18	----- R-5575

* Not to be stocked or requisitioned as detail parts

SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
30053	Bracket - Ignition manifold mounting		4	90211 90315	-- 18	----- R-5576
30054	Clamp - Rear spark plug conduit Deleted.	840 - 8453	7	90211	--	-----
30055	Conduit Assembly - Spark plug, front (6-1/4" long) Superseded by and interchangeable with 30111 for replacement.	840 - 8453	7	90211	--	-----
30056	Conduit Assembly - Spark plug, rear, except #5 cylinder Superseded by and interchangeable with 30187 for #1 and 2 cylinders, 30038 for #3, 4, 6 & 7 cylinders for all replacements.	840 - 8453	6	90211	--	-----
30057	Conduit Assembly - Spark plug, rear, #5 cylinder (17" long) Superseded by and interchangeable with 30113 for replacements.	840 - 8453	1	90211	--	-----
30058	Conduit Assembly - Magneto (20-1/2" long)		1	90212	18	R-5555
30059	Conduit Assembly - Distributor, female end (12-11/16" long)		1	90213	18	R-5560
30060	Sleeve - Oil seal, inner Supersedes 591-D. For replacement use 591-D with 586-E, 30060 (or alternate 30062) with 30061 (or alternate 30063).	8327 - 8453	1	90100 90099	5 5	R-5057 R-5057
30061	Sleeve - Oil seal, outer Supersedes 586-E. For replacement use 586-E with 591-D, 30061 (or alternate 30063) with 30060 (or alternate 30062).	8299 - 8453	1	90101	4	R-5042
30062	Sleeve - Oil seal, inner Used as an alternate with 30060.	4792 - 4931 7026 - 7033 8002 - 8326	1	90100 90099	-- --	----- -----
30063	Sleeve - Oil seal, outer Used as an alternate with 30061.	4792 - 4931 7026 - 7033 8002 - 8298	1	90101	--	-----
30064	Bearing - Cam Used temporarily, pending availability of 30028.	4852 - 4931 7026 - 7033 8016 - 8326	1	90100 90099	-- --	----- -----
30070	Conduit Assembly - Coil to distributor elbow (15-1/2" long) Supersedes 740-1.	4217 - 8453	1	90210	18	R-5540
30072	Gasket - Oil pressure relief valve cap Used with Cap 328-D. Superseded by 30029.	4572 - 4931 7026 - 7033 8022 - 8361	1	90090	--	-----
30074	Cover - Generator drive Supersedes 606-B. Use 4 ea. Spacers 30095 with 30074.		1	90100 90099	12 12	R-5329 R-5329
30078	Cover - Fuel pump drive (accessory housing adpt.) Supersedes 759. Use 4 ea. Spacers 30093 with 30078.	4256 - 8453	1	90122	13	R-5375

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SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
30081	Cover - Rocker Supersedes 424-D. With Cover 30081 use Gasket 30105.	4595 - 8453 MVL---- AVL----	14 11	90107 90266 90095 90267	-- 10 -- 10	----- R-5247 ----- R-5247
30083	Lock - Crankshaft plug front crankshaft, rear plug 345-B-1 rear crankshaft, front plug 345-C-1	4318 - 8453	2	90308 90311 90308 90311	-- 8 -- 8	----- R-5159 ----- R-5160
30084	Cover - Exhaust port (shipping)		7	90310	20	R-5633
30085	Connector - Spark plug Supersedes and interchangeable with 489-E for replacements.		14	90210	18	R-5534
*30087	Crankshaft - Front Used temporarily, pending availability of 30118. For replacement use Crankshaft Assembly (Complete) 90311.	4318 - 4500	1	90304	--	-----
30091	Spacer - Rear cone (1.105)	4318 - 8453	1	90129	19	R-5616
30093	Spacer - 3/16" long for 5/16" stud (fuel pump drive cover)		4	90122	13	R-5376
30094	Spacer - 3/16" long for 1/4" stud (propeller governor drive cover)		4	90122	13	R-5381
30095	Spacer - 5/16 long for 5/16 stud generator drive cover-----4 exhaust port cover-----28		32	90100 90099 90310	12 12 20	R-5330 R-5330 R-5634
30098	Gear - Crankshaft cluster Supersedes and interchangeable with 602.	4508 - 4931 7026 - 7033 4974 - 4999 8000 - 8453	1	90100 90099	11 11	R-5299 R-5299
30100	Bolt - Crankshaft clamp Supersedes 342-C. Use Nut 10017 with Bolt 30100.	4473 - 8453	1	90304 90312	-- 8	----- R-5151
*30101	Ring - Cam Supersedes and interchangeable with 384-B. For replacement use Cam Assembly 90007.	4700 - 8453	1	90007	5	R-5050
30102	Gasket - Rocker cover Used temporarily, pending availability of 30105 with Cover 30081. For replacement see Note under Part No. 30105.	4592 - 4811	14	90107	--	-----
30105	Gasket - Rocker cover Supersedes 449-C. Gasket 30102 used temporarily, pending availability of 30105. For replacement use 1 ea. 30105 with Cover 30081 or 2 ea. 30105 with Cover 424-D.	4812 - 8453	14	90107 90266 90095 90267	-- 10 -- 10	----- R-5246 ----- R-5246
30108	Sleeve - Coil connection (rubber) Supersedes and interchangeable with 1008 reduced to proper length.		1	90210	18	R-5537

* Not to be stocked or requisitioned as detail parts

SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
30109	Sleeve - Distributor connection (rubber) Supersedes and interchangeable with 1008 reduced to proper length.		1	90210	18	R-5538
30111	Conduit Assembly - Spark plug, front (6-1/4" long) Supersedes and interchangeable with 30055 for replacements.		7	90315	18	R-5551
30113	Conduit Assembly - Spark plug, rear, #5 cylinder (17" long) Supersedes and interchangeable with 30057 for replacements.		1	90315	18	R-5553
30117	Gear - Generator drive Supersedes and interchangeable with 603-C.	4747 - 8453	1	90313	11	R-5293
*30118	Crankshaft - Front Supersedes 340-H. 30087 used temporarily pending availability of 30118 on engines 4318 to 4500. For replacement use Crankshaft Assembly (Complete) 90311.	4501 - 8453	1	90312	8	R-5140
30128	Tube - Rocker vent Supersedes 986.	AVL ONLY	1	90099	16	R-5487
30129	Sleeve - Rubber, 1-1/2" long for 3/8" tube Supersedes 952.	AVL ONLY 8385 - 8453	2	90099	16	R-5480
*30131	Tube - Oil sump to pump	AVL ONLY	1	90124	15	R-5464
30132	Adapter - Oil pressure relief valve	8362 - 8453	1	90290	15	R-5436A
30134	Cap - Oil pressure relief valve Supersedes 328-D. Cap 328 used temporarily, pending availability of 30134.		1	90290	15	R-5452
*30135	Barrel - Cylinder	8283 - 8453	7	90258	9	R-5207
30148	Flange - Intake port Supersedes and interchangeable with 435.	8257 - 8453	7	90100 90099	10 10	R-5263 R-5263
30165	Tube - Valve gear oil supply Supersedes 1003 for replacements.	AVL ONLY	1	90099	16	R-5488
30166	Tube - Rocker scavenger Supersedes 30015.	AVL ONLY	1	90099	16	R-5492
30167	Tube - 3/8" hose		1	90393	16	-----
30187	Conduit Assembly - Spark plug, rear, #1 & 2 cylinders (16" long) Supersedes 30056. Superseded by and interchangeable with 30188 for replacements.		2	90211	--	-----
30188	Conduit Assembly - Spark plug, rear, #1 & 2 cylinders (17" long) Supersedes and interchangeable with 30187 for replacements.		2	90315	18	R-5551A
30277	Washer - Valve spring upper Supersedes and interchangeable with 411.		14	90267	9	R-5221

* Not to be stocked or requisitioned as detail parts

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SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
30285	Restrictor - Sump flange Used with 861 Flange in service only.		1	-----		
30286	Flange - Front case sump pad Supersedes and interchangeable with 861 for replacements.		1	90101	4	R-5022
30295	Shaft - Cam drive pinion Supersedes and interchangeable with 377-B for replacements.		1	90005	4	R-5028
90005	Shaft and Gear Assembly - Cam drive pinion		1	90101	4	R-5027
90006	Tappet and Socket Assembly Part No. changed from 389-B/390-B.		14	90100	5	R-5044
				90099	5	R-5044
90007	Cam Assembly Part No. changed from 384-B/385-MSA.		1	90100	5	R-5049
				90099	5	R-5049
90012	Plate Assembly - Rear intermediate bearing (complete) Part No. changed from 604-CA.		1	90100	11	R-5272
				90099	11	R-5272
90028	Strainer Assembly - Oil sump Part No. changed from 708/708-1.		1	90100	6	R-5106
				90099	6	R-5106
90030	Gear Assembly - Magneto driven Part No. changed from 518-B/608.		2	90100	11	R-5289
				90099	11	R-5289
90031	Gear Assembly - Generator drive Part No. changed from 603-C/608. Superseded by and interchangeable with 90313.	840 - 4746	1	90100	--	-----
90035	Pump Assembly - Oil (type B) Part No. changed from 314-CA (SK-513).	MVL ONLY	1	90100	14	R-5392
90036	Body Assembly - Oil pump, pressure section	MVL ONLY	1	90035	14	R-5393
90040	Distributor Assembly - Primer Part No. changed from 923-BA.	851 - 8453	1	90131	--	-----
				90084	17	R-5499
90045	Clip Assembly - Primer tube, intake pipe	851 - 8453	7	90131	--	-----
			5	90084	17	R-5527
90048	Strainer Assembly - Oil Part No. changed from 493-A. Superseded by 90072.	840 - 841	1	90128	--	-----
90049	Body Assembly - Oil strainer Superseded by 90073.	840 - 841	1	90048	--	-----
90054	Kit Assembly - Tool, automatic valve lubrication		1	90099	20	R-5635
90057	Case Assembly - Front (studding) Part No. changed from 302-GA.		1	90101	4	R-5001
90058	Case Assembly - Front (machining) Part No. changed from 302-GMSA.		1	90057	4	R-5002
90065	Rocker Assembly - Exhaust valve Part No. changed from 415-CA.		7	90107	--	-----
				90266	9	R-5224
				90095	--	-----
				90267	9	R-5224
90066	Rocker Assembly - Intake valve Part No. changed from 414-CA.		7	90107	--	-----
				90266	10	R-5231
				90095	--	-----
				90267	10	R-5231

SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
90069	Case Assembly - Rear Part No. changed from 605-EA. For engines 840 and 841, see Note under Part No. 605-D.	MVL ONLY 851 - 999 4000 - 4571 4932 - 4999 8000 - 8021	1	90100	12	R-5302
90071	Shaft Assembly - Accessory drive		1	90122	13	R-5351
90072	Strainer Assembly - Oil Part No. changed from 493-BA. Supersedes 90048.	851 - 8453	1	90128	19	R-5579
90073	Body Assembly - Oil strainer Supersedes 90049.	851 - 8453	1	90072	19	R-5580
90084	Priming System Assembly Includes priming tube to intake manifold and supersedes 90131, which included priming tube to #6 cylinder.	889 - 8453	1	90100 90099	17 17	R-5498 R-5498
90085	Tube Assembly - Primer, intake manifold Supersedes 90132. For replacement use Tube Assembly 90085 when priming intake manifold, Tube Assembly 90132 when priming #6 cylinder.	889 - 8453	1	90084	17	R-5508
90087	Tube Assembly - Oil sump Supersedes 90125. For replacement use Tube Assembly 90087.		1	90100	15	R-5460
90090	Pump Assembly - Oil (type F) Superseded by 90290.	AVL ONLY 4572 - 4931 7026 - 7033 8022 - 8361	1	90099	--	-----
90091	Body Assembly - Oil pump, pressure section	AVL ONLY	1	90090 90290	-- 15	----- R-5424
90092	Tube Assembly - Oil pump Supersedes 90126. Superseded by 90124 for AVL engines only. For replacement use Tube Assembly 90092 for MVL, Tube Assembly 90124 for AVL.		1	90100	15	R-5457
90093	Tube Assembly - Oil sump Superseded by 90124.	AVL ONLY	1	90099	--	-----
90094	Case Assembly - Rear	AVL ONLY	1	90099	12	R-5303
90095	Cylinder Assembly (complete) Superseded by 90267.	AVL ONLY 4572 - 4931 7026 - 7033 8022 - 8282	7	90099	--	-----
90096	Kit Assembly - Tool, manual valve lubrication		1	90100	20	R-5636
90099	Engine Assembly - Model L-4MB (automatic valve lubrication)	4572 - 4649 4654 - 4870 4875 - 4931 7026 - 7033 8022 - 8453				
90100	Engine Assembly - Model L-4MB (manual valve lubrication)	840 - 999 4000 - 4571 4932 - 4999 8000 - 8021				

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SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
90101	Case Assembly - Front (complete)		1	90100 90099	4 4	R-5000 R-5000
90104	Crankshaft Assembly Part No. changed from 510-HA4. Superseded by 90311.	840 - 4317	1	90100	--	-----
*90105	Crankshaft Assembly - Front Obsolete. For replacement use Crankshaft Assembly (Complete) 90311.	840 - 4317	1	90104	--	-----
*90106	Crankshaft Assembly - Rear Obsolete. For replacement use Crankshaft Assembly (Complete) 90311.	840 - 4317	1	90104	--	-----
90107	Cylinder Assembly (complete) Part No. changed from 399-DAC. Superseded by 90266.	MVL ONLY 840 - 999 4000 - 4571 4932 - 4999 8000 - 8021	7	90100	--	-----
90108	Cylinder Assembly (studding) Part No. changed from 399-DA. Superseded by 90381.	840 - 8282	7	90107 90095	-- --	----- -----
*90109	Head Assembly - Cylinder Obsolete. Component parts now included in Cylinder Assembly (Machining) 90261.		7	90108	--	-----
90111	Rod Assembly - Push (intake) Supersedes 90112 for intake only.	4040 - 8453	7	90100 90099	10 10	R-5254 R-5254
90112	Rod Assembly - Push (exhaust) Part No. changed from 613-EA. Used for intake also prior to engine 4040.		7	90100 90099	10 10	R-5251 R-5251
90113	Crankcase Assembly - Main Part No. changed from 706-BA4M.		1	90100 90099	6 6	R-5076 R-5076
90114	Crankcase Assembly - Main, front and rear (machining) Part No. changed from 706/706-1D.		1	90113	6	R-5077
*90115	Crankcase Assembly - Main, front		1	90114	6	R-5078
*90116	Crankcase Assembly - Main, rear		1	90114	6	R-5082
90117	Rod Assembly - Master and link		1	90100 90099	8 8	R-5167 R-5167
90118	Rod Assembly - Master Part No. changed from 367-BT.		1	90117	8	R-5168
90119	Piston Assembly (for cylinder No. 1)		1	90100 90099	9 9	R-5181 R-5181
90120	Piston Assembly (for cylinder Nos. 2,3,4,5,6 & 7)		6	90100 90099	9 9	R-5186 R-5186
90122	Drive Assembly - Accessory (type 776-B7A)		1	90100 90099	13 13	R-5345 R-5345
90123	Housing Assembly - Accessory drive		1	90122	13	R-5346

* Not to be stocked or requisitioned as detail parts

SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
90124	Tube Assembly - Oil sump to pump Supersedes 90092 and 90093 for AVL only.		1	90099	15	R-5463
90125	Tube Assembly - Oil sump Supersedes 90087.	840 - 4571	1	90100	--	-----
90126	Tube Assembly - Oil pump Superseded by 90092.	840 - 4571	1	90100	--	-----
90127	Shipping Parts Superseded by 90310.		1	90100	--	-----
90128	Accessories and Equipment - Standard		1	90100 90099	19 19	R-5578 R-5578
90129	Accessories and Equipment - Special		1	90100 90099	19 19	R-5607 R-5607
90131	Priming System Assembly Superseded by 90084. See Note under Part No. 90084.	851 - 886	1	90100	--	-----
90132	Tube Assembly - Primer #6 cylinder Superseded by 90085. For replacement use Tube Assembly 90132 when priming #6 cylinder, Tube Assembly 90085 when priming intake manifold.	851 - 886	1	90131	--	-----
90133	Tube Assembly - Primer #7 cylinder	851 - 8453	1	90131 90084	-- 17	----- R-5512
90134	Tube Assembly - Primer #1 cylinder	851 - 8453	1	90131 90084	-- 17	----- R-5517
90135	Tube Assembly - Primer #2 cylinder	851 - 8453	1	90131 90084	-- 17	----- R-5522
90136	Shaft Assembly - Rocker	MVL ONLY	14	90107 90266	-- 10	----- R-5238
90137	Coupling Assembly - Fuel pump drive Part No. changed from 996-A.		1	90122	13	R-5370
90164	Pin Assembly - Piston Part No. changed from 396-C/713-C. Superseded by and interchangeable with 90228.	840 - 4608	7	90100 90099	-- --	----- -----
90170	Clamp - Hose, 11/16" dia. Obsolete. Superseded by 20000 at all locations.	AVL ONLY	28	90099	--	-----
90205	Hub Assembly - Propeller (for wood propeller)		1	90129	19	R-5617
90209	Breather Assembly - Crankcase Obsolete. Superseded by 1 ea. Plug 1001 for breather boss, 1 ea. Elbow 10020 for breather. For replacement see Notes under Part Nos. 10020 and 10014.	840 - 921 922 - 4194	2 1	90100 90100	-- --	----- -----
90210	Manifold Assembly - Shielded ignition (complete)		1	90100 90099	18 18	R-5533 R-5533

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SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
90211	Manifold Assembly - Shielded ignition (Titeflex) Part No. changed from 841-1A. Superseded by and interchangeable with 90315.	840 - 8453	1	90210	--	-----
90212	Conduit and Guard Assembly - Magneto		1	90211 90315	-- 18	----- R-5554
90213	Conduit and Guard Assembly - Distributor		1	90211 90315	-- 18	----- R-5558
90221	Manifold Assembly - Shielded ignition, left and right		1	90211 90315	-- 18	----- R-5547
90224	Elbow Assembly - Magneto conduit (complete)		1	90211 90315	-- 18	----- R-5563
90225	Elbow Assembly - Shielded spark plug Supersedes 489-D.		14	90210	18	R-5541
90226	Elbow Assembly - Distributor conduit (complete)		1	90211 90315	-- 18	----- R-5567
90228	Pin Assembly - Piston Part No. changed from 396-C/713-C. Supersedes and interchangeable with 90164.	4609 - 8453	7	90100 90099	9 9	R-5191 R-5191
90232	Adapter Assembly - Accessory housing (Fuel pump mounting)		1	90122	13	R-5363
90254	Rod Assembly - Master (machining)		1	90118	8	R-5168A
90257	Plate Assembly - Rear intermediate bearing (machining)		1	90012	11	R-5272A
*90258	Cylinder Assembly (machining) Supersedes 90261. For replacement use Cylinder Assembly (Studding) 90381.	8283 - 8453	7	90381	9	R-5197
*90261	Cylinder Assembly (machining) Includes component parts of 90109. Superseded by 90258. For replacement use Cylinder Assembly (studding) 90381.	840 - 8282	7	90108	--	-----
90266	Cylinder Assembly (complete) Supersedes 90107 for future replacements.	MVL ONLY	7	90100	9	R-5194
90267	Cylinder Assembly (complete) Supersedes 90095.	AVL ONLY 8283 - 8453	7	90099	9	R-5195
90290	Pump Assembly - Oil (type F) Supersedes 90090.	AVL ONLY 8362 - 8453	1	90099	15	R-5423
90304	Crankshaft Assembly (machining and balancing) Supersedes 90105 and 90106. Superseded by and interchangeable with 90312.	4318 - 4500	1	90308	--	-----
* Not to be stocked or requisitioned as detail parts						

SECTION III - NUMERICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

PART NO	DESCRIPTION OF PART	ENGINE NUMBERS	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
					PAGE NO.	REFERENCE NO.
90308	Crankshaft Assembly (complete) Used temporarily, pending availability of 90311.	4318 - 4500	1	90100	--	-----
90310	Shipping Parts Supersedes 90127.		1	90100 90099	20 20	R-5627 R-5627
90311	Crankshaft Assembly (complete) Supersedes 90104. Assembly 90308 used temporarily, pending availability of 90311.	4501 - 8453	1	90100 90099	8 8	R-5138 R-5138
90312	Crankshaft Assembly (machining and balancing) Supersedes and interchangeable with 90304.	4501 - 8453	1	90311	8	R-5139
90313	Gear Assembly - Generator drive Supersedes and interchangeable with 90031.	4747 - 8453	1	90100 90099	11 11	R-5292 R-5292
90315	Manifold Assembly - Shielded ignition (Titeflex) Supersedes and interchangeable with 90211.		1	90210	18	R-5546
90381	Cylinder Assembly (studding) Supersedes 90108.	8282 - 8453	7	90266 90267	9 9	R-5196 R-5196
90386	Tee Assembly - 3/8" hose and union (rear case to attach propeller governor and oil supply tubes) Supersedes Tee 10004 for replacements.		1	90099	16	-----
90393	Tube Assembly - 3/8" hose and union		1	90386	16	R-5490
99000	Pump - Fuel, Romec model RD-4140 Interchangeable with 816-B.		1	90129	19	R-5610
99001	Pump - Fuel, Romec model RD-3180-2 Superseded by 99013.		1	90129	--	-----
99003	Pump - Vacuum, Romec model RD-4500 Interchangeable with 810-B.		1	90129	19	R-5614
99005	Plug - Spark, shielded, Champion M3-1S Interchangeable with 489-G or 99006.		14	90128	19	R-5604
99006	Plug - Spark, shielded, BG 417-S Interchangeable with 489-G and 99005.		14	90128	19	R-5603
99013	Pump - Fuel, Romec model RD-4700 Supersedes 99001. Interchangeable with 816-C.	8044 - 8056 8225 - 8453	1	90129	19	R-5612

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SECTION IV - ALPHABETICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

DESCRIPTION OF PART	PART NO.	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
				PAGE NO.	REFERENCE NO.
- A -					
Accessories and Equipment - Special	90129	1	90100 90099	19 19	R-5607 R-5607
Accessories and Equipment - Standard	90128	1	90100 90099	19 19	R-5578 R-5578
Adapter - Accessory housing (fuel pump mounting)	*730	1	90232	13	R-5364
Adapter Assembly - Accessory housing (fuel pump mounting)	90232	1	90122	13	R-5363
Adapter - Oil pressure relief valve	30132	1	90290	15	R-5436A
Adapter - Oil sump strainer	*708-1	1	90028	6	R-5108
- B -					
Ball - 1/2" steel	815	2			
oil check valve-----1			90035	14	R-5398
oil pressure relief valve-----1			90290	15	R-5429
			90035	14	R-5413
			90290	15	R-5448
Ball End - Push rod	*30013	28			
intake push rod-----14			90111	10	R-5256
exhaust push rod-----14			90112	10	R-5253
Band - Rubber (tappet guide seal)	767	14	90101	4	R-5014
Barrel - Cylinder	*30135	7	90258	9	R-5207
Bearing - Ball, accessory drive shaft, front	754	1	90071	13	R-5353
Bearing - Ball, accessory drive shaft, rear	755	1	90071	13	R-5359
Bearing - Ball, cam drive pinion shaft, front	378	1	90005	4	R-5031
Bearing - Ball, cam drive pinion shaft, rear	378-4	1	90005	4	R-5029
Bearing - Ball, crankshaft, rear	739	1	90100	11	R-5295
			90099	11	R-5295
Bearing - Ball, crankshaft thrust	351-B	1	90100	5	R-5060
			90099	5	R-5060
Bearing - Ball, generator gear	824	1	90100	12	R-5318
			90099	12	R-5318
Bearing - Ball, propeller governor drive gear	673	1	90122	13	R-5368
Bearing - Cam	30028	1	90100	5	R-5053
			90099	5	R-5053
Bearing - Master rod	368-B	1	90254	8	R-5170
Bearing - Oil feed	309-B	1	90257	11	R-5276
Bearing - Roller, crankshaft main	357-R	2	90100	7	R-5123
			90099	7	R-5123
Bearing - Roller, rocker	416-B	14			
exhaust valve rocker-----7			90065	9	R-5228
intake valve rocker-----7			90066	10	R-5235
Body Assembly - Oil pump, pressure section	90091	1	90290	15	R-5424
Body Assembly - Oil pump, pressure section	90036	1	90035	14	R-5393
Body Assembly - Oil strainer	90073	1	90072	19	R-5580
Body - Oil check valve	835	1	90035	14	R-5397
			90290	15	R-5428
Body - Oil pressure relief valve	326-B	1	90035	14	R-5405
			90290	15	R-5437
Body - Oil pump, pressure section	*314-C	1	90036	14	R-5394
			90091	15	R-5425
Body - Oil pump, rocker scavenger section	317-1B	1	90290	15	R-5441

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SECTION IV - ALPHABETICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

DESCRIPTION OF PART	PART NO.	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
				PAGE NO.	REFERENCE NO.
- B - (Continued)					
Body - Oil pump, scavenger section	317-B	1	90035 90290	14 15	R-5410 R-5445
Body - Oil strainer	*493-B	1	90073	19	R-5581
Bolt - Crankpin	805-B	1	90312	8	R-5149
Bolt - Crankshaft clamp	30100	1	90312	8	R-5151
Bolt - Front crankshaft balance weight	365-1	3	90312	8	R-5145
Bolt - Hex head, 1/4"-28 x 3/4" (coil clamp)	10008	4	90128	19	R-5599
Bolt - Knuckle pin	374	6	90117	8	R-5177
Bolt - Main crankcase clamp (3/8" x 4-29/32")	717-B	6	90114	6	R-5087
Bolt - Propeller hub	528-B	8	90205	19	R-5621
Bolt - Rear crankshaft balance weight	365	3	90312	8	R-5146
Bolt - Starter gear	557	1	90100 90099	11 11	R-5285 R-5285
Box - Control, Eclipse type 1035 (25 amp.)	668-1	1	90128	19	R-5595
Box - Engine (shipping)	748	1	90310	20	R-5628
Bracket - Ignition manifold mounting	30053	4	90315	18	R-5576
Bushing - 13/32" I.D. x 21/32" O.D. x 1-21/32" (oil pump scavenger section)	319	1	90035 90290	14 15	R-5412 R-5447
Bushing - 9/16" I.D. x 3/4" O.D. x 17/32" (oil pump pressure section)	315	1	90036 90091	14 15	R-5395 R-5426
Bushing - Accessory drive, 1-7/32" I.D. generator drive gear-----1 magneto driven gear-----2	335	3	90257 90257	11 11	R-5280 R-5280
Bushing - Accessory drive, 1-15/32" I.D. (starter drive gear)	337	1	90257	11	R-5278
Bushing - Master rod piston pin	371	1	90254	8	R-5172
Bushing - Oil pump drive gear	330	1	90257	11	R-5281
Bushing - Reducing, 1/2" x 1/4" NPT (breather boss)	10014	1	90100 90099	6 6	R-5099 R-5099
Bushing - Spark plug	400-A	14	90258	9	R-5202
- C -					
Cable - High tension ignition (70'-2") (alternate with Cable 487)	20002	1	90315	18	R-5571
Cable - Shielded, coil to distributor (2 ft.)	775-S	1	90210	18	R-5539
Cam Assembly	90007	1	90100 90099	5 5	R-5049 R-5049
Cap - 3/8" union	*10031	1	90386	16	R-5490B
Cap - Knurl, 11/16"-24 (magneto conduit elbow opening)	30049	1	90224	18	R-5566
Cap - Oil check valve	836	1	90035 90290	14 15	R-5401 R-5432
Cap - Oil pressure relief valve	328	1	90035	14	R-5418
Cap - Oil pressure relief valve	30134	1	90290	15	R-5452
Cap - Propeller shaft thread (shipping)	10006	1	90310	20	R-5632
Carburetor - Stromberg NA-R7A	482-6	1	90128	19	R-5591
Case Assembly - Front (complete)	90101	1	90100 90099	4 4	R-5000 R-5000
Case Assembly - Front (machining)	90058	1	90057	4	R-5002
Case Assembly - Front (studding)	90057	1	90101	4	R-5001
Case Assembly - Rear	90094	1	90099	12	R-5303
Case Assembly - Rear	90069	1	90100	12	R-5302
Case - Front	*302-G	1	90058	4	R-5003
Case - Rear	*605-E	1	90069 90094	12 12	R-5304 R-5304
Clamp - Coil	624	4	90128	19	R-5598

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SECTION IV - ALPHABETICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

DESCRIPTION OF PART	PART NO.	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
				PAGE NO.	REFERENCE NO.
- C - (Continued)					
Clamp - Hose, 3/4" O.D. (pressure)	20000	40			
oil supply tube-----4			90099	16	R-5493
rocker vent tube-----4			90099	16	R-5494
rocker scavenger tube-----4			90099	16	R-5495
rocker box drain-----14			90099	16	R-5496
inter cylinder-----14			90099	16	R-5497
Clamp - Hose, 1-1/8"	20004	4			
oil sump drain hose-----2			90100	5	R-5069
			90099	5	R-5069
oil sump to pump tube hose-----2			90100	15	R-5467
			90099	15	R-5467
Clip Assembly - Primer tube, intake pipe	90045	5	90084	17	R-5527
Clip - Oil tubes (oil supply and rocker scavenger) AVI ONLY	30002	1	90099	16	R-5491
Clip - Primer tube, crankcase	924	2	90084	17	R-5531
Clip - Primer tube, intake pipe	925	5	90045	17	R-5528
Coil - Timer (Scintilla Part No. 10-16144-1)	584	1	90128	19	R-5597
Conduit and Guard Assembly - Distributor	90213	1	90315	18	R-5558
Conduit and Guard Assembly - Magneto	90212	1	90315	18	R-5554
Conduit Assembly - Coil to distributor elbow (15-1/2" long)	30070	1	90210	18	R-5540
Conduit Assembly - Distributor, female end (12-11/16" long)	30059	1	90213	18	R-5560
Conduit Assembly - Distributor, male end (3-5/8" long)	30041	1	90213	18	R-5559
Conduit Assembly - Magneto (20-1/2" long)	30058	1	90212	18	R-5555
Conduit Assembly - Spark plug, front (6-1/4" long)	30111	7	90315	18	R-5551
Conduit Assembly - Spark plug, rear, #1 & 2 cylinders (17" long)	30188	2	90315	18	R-5551A
Conduit Assembly - Spark plug, rear, #3, 4, 6 & 7 cylinders (17" long)	30038	4	90315	18	R-5552
Conduit Assembly - Spark plug, rear #5 cylinder (17" long)	30113	1	90315	18	R-5553
Cone - Primer tube	*930-B	8			
intake manifold-----2			90085	17	R-5511
#7 cylinder-----2			90133	17	R-5516
#1 cylinder-----2			90134	17	R-5521
#2 cylinder-----2			90135	17	R-5526
Cone - Propeller hub, front	526	1	90205	19	R-5619
Cone - Propeller hub, rear	525-B	1	90129	19	R-5615
Connector - Spark plug	30085	14	90210	18	R-5534
Cork - 1-1/4" x 1-1/16" x 1" long	10018	3			
magneto driven gear-----2			90030	11	R-5291
generator drive gear-----1			90313	11	R-5294
Coupling Assembly - Fuel pump drive	90137	1	90122	13	R-5370
Coupling - Fuel pump drive, inner	*996-1	1	90137	13	R-5372
Coupling - Fuel pump drive, outer	*996	1	90137	13	R-5371
Cover - Accessory drive, 4 bolt, small (propeller governor drive)	760-D	1	90122	13	R-5380
Cover - Exhaust port (shipping)	30084	7	90310	20	R-5633
Cover - Fuel pump drive (rear case)	880	1	90100	12	R-5325
			90099	12	R-5325
Cover - Fuel pump drive (accessory housing adapter)	30078	1	90122	13	R-5375
Cover - Generator drive	30074	1	90100	12	R-5329
			90099	12	R-5329
Cover - Oil strainer	494	1	90072	19	R-5585
Cover - Rocker	30081				
	MVL---	14	90266	10	R-5247
	AVL---	11	90267	10	R-5247
Cover - Rocker, exhaust, cylinder No. 5 AVI ONLY	853	1	90099	16	R-5468
Cover - Rocker, intake, cylinder Nos. 1 & 4 AVI ONLY	854	2	90099	16	R-5469
Cover - Starter drive	311-B	1	90100	12	R-5323
			90099	12	R-5323

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SECTION IV - ALPHABETICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

DESCRIPTION OF PART	PART NO.	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
				PAGE NO.	REFERENCE NO.
- C - (Continued)					
Crankcase Assembly - Main	90113	1	90100 90099	6 6	R-5076 R-5076
Crankcase Assembly - Main, front	*90115	1	90114	6	R-5078
Crankcase Assembly - Main, front and rear (machining)	90114	1	90113	6	R-5077
Crankcase Assembly - Main, rear	*90116	1	90114	6	R-5082
Crankcase - Main, front	*706-1D	1	90115	6	R-5079
Crankcase - Main, rear	*706	1	90116	6	R-5083
Crankshaft Assembly (complete)	90311	1	90100 90099	8 8	R-5138 R-5138
Crankshaft Assembly (machining and balancing)	90312	1	90311	8	R-5139
Crankshaft - Front	*30118	1	90312	8	R-5140
Crankshaft - Rear	*30007	1	90312	8	R-5141
Cuff - Propeller shaft (shipping)	998	1	90310	20	R-5630
Cylinder Assembly (complete)	AVL ONLY 90267	7	90099	9	R-5195
Cylinder Assembly (complete)	MVL ONLY 90266	7	90100	9	R-5194
Cylinder Assembly (machining)	*90258	7	90381	9	R-5197
Cylinder Assembly (studding)	90381	7	90266 90267	9 9	R-5196 R-5196
- D -					
Disc - Oil sump strainer	*708-2	1	90028	6	R-5109
Distributor Assembly - Primer	90040	1	90084	17	R-5499
Distributor - Primer	923-B	1	90040	17	R-5500
Distributor - Timer, Scintilla WL-7A (15°) (Scintilla Part No. 10-13810-2)	583-1	1	90128	19	R-5596
Dowel - Master rod bearing	370-B	1	90254	8	R-5171
Drive Assembly - Accessory (Type 776-B7A)	90122	1	90100 90099	13 13	R-5345 R-5345
- E -					
Elbow - 15°, 3/8" hose (front case sump pad flange to attach oil supply tube)	AVL ONLY 1030	1	90099	16	R-5489
Elbow - 45°, 3/8" hose rocker box drain-----14 rocker vent tube, cylinder No. 1 to main crankcase-----1 exhaust rocker cover, cylinder No. 5--1	AVL ONLY 946	16	90099 90099 90099	16 16 16	R-5477 R-5478 R-5479
Elbow - 45°, 3/4" hose (bronze) (crankcase breather)	10020	1	90100 90099	6 6	R-5101 R-5101
Elbow - 90°, 3/8" hose intake rocker cover, cylinder No. 1---1 rocker scavenger tube to oil pump----1	AVL ONLY 933	2	90099 90099	16 16	R-5470 R-5471
Elbow - 90°, 3/4" hose front case sump flange to attach oil sump drain hose-----1 rear main crankcase oil sump drain----1 oil pump outlet to tank-----1 oil strainer assembly-----2	633	5	90100 90099 90100 90099 90100 90099 90128	5 5 6 6 14 15 19	R-5067 R-5067 R-5102 R-5102 R-5421 R-5455 R-5590
Elbow Assembly - Distributor conduit	30046	1	90226	18	R-5568
Elbow Assembly - Distributor conduit (complete)	90226	1	90315	18	R-5567
Elbow Assembly - Magneto conduit	30045	1	90224	18	R-5564
Elbow Assembly - Magneto conduit (complete)	90224	1	90315	18	R-5563
Elbow Assembly - Shielded spark plug	90225	14	90210	18	R-5541
Elbow - Primer discharge (for cylinder Nos. 1, 2 & 7)	927	3	90084	17	R-5507
Elbow - Primer distributor (to cylinder Nos. 1, 2 & 7)	928	3	90084	17	R-5506
Elbow - Shielded spark plug	*30008	14	90225	18	R-5542
Eye - Lifting	542	2	90113	6	R-5098

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SECTION IV - ALPHABETICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

DESCRIPTION OF PART	PART NO.	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
				PAGE NO.	REFERENCE NO.
- F -					
Ferrule - Shielded spark plug elbow	*30010	14	90225	18	R-5544
Ferrule - Terminal	30051	16	90315	18	R-5574
Fitting - Alemite (rocker shaft)	498	14	90136	10	R-5240
Fitting - Governor oil (front case)	790	1	90101	4	R-5017
Fitting - Oil pump to sump	554-2				
	MVL---	2			
	AVL---	1			
main crankcase-----1			90100	7	R-5114
			90099	7	R-5114
oil pump-----1 MVL ONLY			90100	14	R-5422
Flange - Exhaust port	435-C	7	90100	10	R-5269
			90099	10	R-5269
Flange - Front case sump pad	30286	1	90101	4	R-5022
Flange - Intake port	30148	7	90100	10	R-5263
			90099	10	R-5263
- G -					
Gasket - 5/8" x 7/8" x 1/8" (soft copper)(front crankshaft plug)	844	1	90311	8	R-5154
Gasket - 5/8" I.D. x 1/8" wide (copper asbestos)	10007	1	90100	6	R-5103
(fuel, air mixture thermometer boss plug)			90099	6	R-5103
Gasket - 1" x 1-1/8" x 1/16" (copper asbestos)	30036	1	90221	18	R-5550
(ignition manifold connection)					
Gasket - 1-1/4" x 1-11/32" x 3/64" (copper)	30052	4	90315	18	R-5575
(magneto and dist. conduit to manifold and elbow)					
Gasket - 1-1/4" x 1-5/8" x 1/16" (copper asbestos)	710	2			
oil sump drain plug-----1			90100	6	R-5110
			90099	6	R-5110
oil sump strainer assembly-----1			90100	6	R-5111
			90099	6	R-5111
Gasket - 1-13/32" x 1-3/4" x 1/16" (timing plug 1016)	907	1	90101	4	R-5025
Gasket - Accessory drive, 4 bolt, small	763	1	90122	13	R-5379
(propeller governor mounting)					
Gasket - Accessory drive housing to rear case	784	1	90100	12	R-5327
			90099	12	R-5327
Gasket - Accessory housing adapter	758-B	1	90122	13	R-5362
Gasket - Carburetor mounting	440	1	90100	7	R-5126
			90099	7	R-5126
Gasket - Distributor mounting	553	1	90100	14	R-5389
			90099	14	R-5389
Gasket - Exhaust port flange	436-B	7	90100	10	R-5268
			90099	10	R-5268
Gasket - Fuel pump mounting (accessory housing adapter)	764	1	90122	13	R-5374
Gasket - Fuel pump mounting (rear case)	881	1	90100	12	R-5324
			90099	12	R-5324
Gasket - Generator mounting	442-B	1	90100	12	R-5328
			90099	12	R-5328
Gasket - Governor oil fitting	540	1	90101	4	R-5016
Gasket - Intake port	436	7	90100	10	R-5261
			90099	10	R-5261
Gasket - Magneto mounting	638	1	90100	12	R-5321
			90099	12	R-5321
Gasket - Oil check valve (soft copper)	837	1	90035	14	R-5400
			90290	15	R-5431

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SECTION IV - ALPHABETICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

DESCRIPTION OF PART	PART NO.	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
				PAGE NO.	REFERENCE NO.
- G - (Continued)					
Gasket - Oil pressure relief valve cap	30029	1	90035 90290	14 15	R-5417 R-5451
Gasket - Oil pump mounting	443	1	90100 90099	12 12	R-5326 R-5326
Gasket - Oil strainer	495	1	90072	19	R-5584
Gasket - Oil sump to front case	788	1	90101	4	R-5021
Gasket - Rocker cover	30105	14	90266 90267	10 10	R-5246 R-5246
Gasket - Starter mounting	441	1	90100 90099	12 12	R-5322 R-5322
Gear - Accessory shaft (propeller governor drive)	780	1	90071	13	R-5357
Gear - Accessory shaft, distributor drive	747	1	90071	13	R-5355
Gear Assembly - Generator drive	90313	1	90100 90099	11 11	R-5292 R-5292
Gear Assembly - Magneto driven	90030	2	90100 90099	11 11	R-5289 R-5289
Gear - Cam drive	376-B	1	90005	4	R-5035
Gear - Crankshaft cluster	30098	1	90100 90099	11 11	R-5299 R-5299
Gear - Distributor drive	745	1	90100 90099	14 14	R-5386 R-5386
Gear - Generator drive	30117	1	90313	11	R-5293
Gear - Magneto drive	601	1	90099 90100	11 11	R-5297 R-5297
Gear - Magneto driven	518-B	2	90030	11	R-5290
Gear - Oil pump drive	329	1	90100 90099	11 11	R-5298 R-5298
Gear - Oil pump drive, rocker scavenger section	324-1D	1	90290	15	R-5439
Gear - Oil pump drive, scavenger section	324-D	1	90035 90290	14 15	R-5408 R-5443
Gear - Oil pump idler, pressure section	322-D	1	90035 90290	14 15	R-5404 R-5435
Gear - Oil pump idler, rocker scavenger section	323-1D	1	90290	15	R-5440
Gear - Oil pump idler, scavenger section	323-D	1	90035 90290	14 15	R-5409 R-5444
Gear - Propeller governor drive	781-1	1	90122	13	R-5367
Gear - Starter	336-B	1	90100 90099	11 11	R-5284 R-5284
Gear - Timing	<u>353-C</u>	1	90100 90099	5 5	R-5056 R-5056
Generator - Eclipse type 309 (25 amp.)	668	1	90128	19	R-5594
Guard - Magneto and distributor conduit, leather magneto-----1 distributor-----1	30043	2	90212 90213	18 18	R-5556 R-5561
Guide - Exhaust valve	406	7	90381	9	R-5208
Guide - Intake valve	405	7	90381	9	R-5209
Guide - Oil pressure relief valve spring	766-B	1	90035 90290	14 15	R-5416 R-5450A

SECTION IV - ALPHABETICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

DESCRIPTION OF PART	PART NO.	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
				PAGE NO.	REFERENCE NO.
- L -					
Lacing - Magneto and distributor conduit guard, leather	30044	2			
magneto-----1			90212	18	R-5557
distributor-----1			90213	18	R-5562
Liner - Front case thrust bearing	303	1	90058	4	R-5005
Liner - Hose, 3/8" (rocker scavenger tube)	976	2	90099	16	R-5481
Liner - Main crankcase bearing	305	2			
front main crankcase-----1			90115	6	R-5080
rear main crankcase-----1			90116	6	R-5084
Liner - Rear intermediate bearing plate	738	1	90257	11	R-5274
Lock - Crankshaft plug	30083	2			
front crankshaft rear plug 345-B-----1			90311	8	R-5159
rear crankshaft front plug 345-C-----1			90311	8	R-5160
Lock - Exhaust valve spring washer	413	14	90266	9	R-5222
			90267	9	R-5222
Lock - Intake valve spring washer	412	14	90266	9	R-5223
			90267	9	R-5223
Lockwire (8-1/2")(cam drive pinion bearing clamp stud nut)	979	1	90101	4	R-5041
- M -					
Magneto - Scintilla VMN 7-DF5 (Scintilla Part No. 10-21819-2)	550	1	90128	19	R-5592
Manifold Assembly - Shielded ignition (complete)	90210	1	90100	18	R-5533
			90099	18	R-5533
Manifold Assembly - Shielded ignition, left	30034	1	90221	18	R-5548
Manifold Assembly - Shielded ignition, left and right	90221	1	90315	18	R-5547
Manifold Assembly - Shielded ignition, right	30035	1	90221	18	R-5549
Manifold Assembly - Shielded ignition (Titeflex)	90315	1	90210	18	R-5546
- N -					
Nipple - 3/8" hose	AVL ONLY 945	14			
intake rocker cover, cylinder No. 4--1			90099	16	R-5474
exhaust rocker cover, cyl. No. 5-----1			90099	16	R-5475
inter cylinder-----12			90099	16	R-5476
Nipple - 3/4" hose	634				
	MVL---	1			
	AVL---	2			
oil inlet from tank to rear case-----1			90100	12	R-5317
			90099	12	R-5317
oil pump-----1 <u>AVL ONLY</u>			90099	15	R-5456
Nipple - Primer discharge (intake manifold)	30006	1	90084	17	R-5505
Nipple - Primer distributor (to intake manifold)	931	1	90084	17	R-5504
Nipple - Shielded spark plug elbow	*30009	14	90225	18	R-5543
Nut - 3/8" union	*10034	1	90393	16	-----
Nut - 5/8"-18 (crankshaft clamp bolt)	10017	1	90312	8	R-5152
Nut - 5/8"-18, special	382-A	9			
cam drive pinion shaft-----1			90005	4	R-5037
propeller hub bolt-----8			90205	19	R-5618
Nut - Castle, 1/4"-28	374-1	12			
cam drive pinion bearing clamp stud--5			90101	4	R-5040
knuckle pin bolt-----6			90117	8	R-5179
starter gear bolt-----1			90100	11	R-5287
			90099	11	R-5287
Nut - Castle, 5/16"-24 (crankpin bolt)	803	1	90312	8	R-5150

* Not to be stocked or requisitioned as detail parts

SECTION IV - ALPHABETICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

DESCRIPTION OF PART	PART NO.	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
				PAGE NO.	REFERENCE NO.
- N - (Continued)					
Nut - Crankshaft balance weight bolt	366	6			
front bolt 365-1-----3			90312	8	R-5147
rear bolt 365-----3			90312	8	R-5147
Nut - Crankshaft thrust bearing	348-B	1	90100	5	R-5066
			90099	5	R-5066
Nut - Elastic stop, #10-32 (primer distributor strap screw)	826-B	2	90040	17	R-5502
Nut - Elastic stop, 1/4"-28	683	73			
primer tube clip stud-----2			90100	7	R-5135
			90099	7	R-5135
rocker cover stud-----56			90266	10	R-5249
			90267	10	R-5249
propeller governor mounting stud---4			90122	13	R-5384
accessory housing adapter mounting stud-----4					
oil pump body stud-----3			90122	13	R-5385
			90035	14	R-5420
coil clamp bolt-----4			90290	15	R-5454
			90128	19	R-5601
Nut - Elastic stop, 5/16"-24	684	40			
oil sump mounting stud-----4			90100	5	R-5074
			90099	5	R-5074
ignition manifold mounting stud---4			90100	5	R-5075
			90099	5	R-5075
rear case to main crankcase stud--10			90100	7	R-5129
			90099	7	R-5129
carburetor mounting stud-----4			90100	7	R-5130
			90099	7	R-5130
fuel pump mounting stud 458-B-----4			90100	12	R-5334
			90099	12	R-5334
generator mounting stud-----4			90100	12	R-5335
			90099	12	R-5335
oil pump mounting stud-----4			90100	12	R-5336
			90099	12	R-5336
fuel pump mounting stud 593-B-----4			90122	13	R-5378
distributor mounting stud-----2			90100	14	R-5391
			90099	14	R-5391
Nut - Elastic stop, 3/8"-24	466-B	122			
thrust bearing plate stud-----6			90100	5	R-5071
			90099	5	R-5071
main crankcase clamp stud-----1			90114	6	R-5090
main crankcase clamp bolt-----6			90114	6	R-5091
front case to main crankcase stud-14			90100	7	R-5132
			90099	7	R-5132
cylinder mounting stud-----84			90100	7	R-5133
			90099	7	R-5133
starter mounting stud-----6			90100	12	R-5341
			90099	12	R-5341
magneto mounting stud-----2			90100	12	R-5342
			90099	12	R-5342
accessory housing mtg. stud 935----1			90100	12	R-5343
			90099	12	R-5343
accessory housing mtg. stud 548-B--2			90100	12	R-5344
			90099	12	R-5344
Nut - Elastic stop, 7/16"-20 (rocker shaft)	419-B	14	90267	10	R-5242
Nut - Exhaust port stud (brass)	937	28	90100	10	R-5271
			90099	10	R-5271
Nut - Intake pipe packing	438-B	7	90100	10	R-5265
			90099	10	R-5265
Nut - Knurl, 11/16"-24 NEF-3 (distributor conduit elbow outlet)	30050	1	90226	18	R-5570

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SECTION IV - ALPHABETICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

DESCRIPTION OF PART	PART NO.	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
				PAGE NO.	REFERENCE NO.
- N - (Continued)					
Nut - Lock (tab) 31/32"-32 (cam drive pinion shaft bearing)	378-2	1	90005	4	R-5033
Nut - Lock (tab) .586"-32 (accessory drive shaft)	756	1	90071	13	R-5361
Nut - Lock (tab) 1-9/16"-18 (crankshaft cluster gear)	363	1	90100 90099	11 11	R-5301 R-5301
Nut - Lock (tab) 2-3/4"-18 (crankshaft rear main bearing)	359	1	90100 90099	7 7	R-5125 R-5125
Nut (Parker B-12-D)	*555-1				
	MVL----	2			
	AVL----	1			
oil pump tube-----1			90092	15	R-5459
oil sump tube-----1			90087	15	R-5462
oil sump to pump tube-----1 AVL ONLY			90124	15	R-5465
Nut - Plain hex, 5/16"-24 rear intermediate bearing plate to main crankcase stud-----7	461	11	90100 90099	7 7	R-5137 R-5137
oil strainer body stud-----4			90072	19	R-5588
Nut - Primer tube intake manifold-----2	*929	8	90085	17	R-5510
#7 cylinder-----2			90133	17	R-5515
#1 cylinder-----2			90134	17	R-5520
#2 cylinder-----2			90135	17	R-5525
Nut - Primer tube clip	925-2	5	90045	17	R-5530
Nut - Propeller hub	527	1	90205	19	R-5620
Nut - Push rod cover tube packing (upper and lower)	642	28	90100 90099	10 10	R-5260 R-5260
Nut - Rocker shaft	MVL ONLY 419	14	90266	10	R-5244
Nut - Shielded spark plug elbow	*30011	14	90225	18	R-5545
Nut - Valve clearance adjusting screw, lock exhaust valve rocker-----7	786	14	90065	9	R-5230
intake valve rocker-----7			90066	10	R-5237
- P -					
Packing - Intake pipe (rubber)	439	7	90100 90099	10 10	R-5264 R-5264
Packing - Oil pump drive shaft (leather)	318-B	1	90035 90290	14 15	R-5411 R-5446
Packing - Push rod cover tube (rubber)	643	28	90100 90099	10 10	R-5258 R-5258
Pin Assembly - Piston	90228	7	90100 90099	9 9	R-5191 R-5191
Pin - Clevis, propeller hub nut	1002	1	90205	19	R-5624
Pin - Cotter, 1/16" x 3/4" crankpin bolt-----1	688	9	90311	8	R-5163
knuckle pin bolt-----6			90117	8	R-5180
starter gear bolt-----1			90100	11	R-5288
propeller hub nut clevis pin-----1			90099	11	R-5288
			90205	19	R-5622
Pin - Cotter, 3/32" x 3/4" (rocker shaft)	MVL ONLY 690	14	90266	10	R-5245

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SECTION IV - ALPHABETICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

DESCRIPTION OF PART	PART NO.	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
				PAGE NO.	REFERENCE NO.
- P - (Continued)					
Pin - Cotter, 1/8" x 1"	689	16			
cam drive pinion shaft-----1			90005	4	R-5038
front crankshaft balance weight					
bolt-----3			90311	8	R-5164
rear crankshaft balance weight					
bolt-----3			90311	8	R-5164
crankshaft clamp bolt-----1			90311	8	R-5165
propeller hub bolt-----8			90205	19	R-5623
Pin - Crankshaft spline	970	1	90311	8	R-5166
Pin - Distributor drive gear	445	1	90100	14	R-5388
			90099	14	R-5388
Pin - Dowel, .156" x 3/8" (thrust bearing plate)	536	2	90100	5	R-5063
			90099	5	R-5063
Pin - Knuckle	372-B	6	90117	8	R-5176
Pin - Piston	*30031	7	90228	9	R-5192
Pin - Stake, .156" x 1/4"	450	15			
spark plug bushing-----14			90258	9	R-5203
starter drive gear bushing-----1			90257	11	R-5279
Pin - Stake, bearing liner	446-B	8			
front case thrust bearing liner---2			90058	4	R-5006
front main crankcase bearing					
liner-----2			90115	6	R-5081
rear main crankcase bearing liner-2			90116	6	R-5085
rear intermediate bearing plate					
liner-----2			90257	11	R-5275
Pin - Tappet roller	388	14	90100	5	R-5048
			90099	5	R-5048
Pipe - Intake	437-D	7	90100	10	R-5262
			90099	10	R-5262
Piston	392	7			
cylinder No. 1-----1			90119	9	R-5182
cylinder Nos. 2,3,4,5,6 & 7-----6			90120	9	R-5187
Piston Assembly (for cylinder No. 1)	90119	1	90100	9	R-5181
			90099	9	R-5181
Piston Assembly (for cylinder Nos. 2,3,4,5,6 & 7)	90120	6	90100	9	R-5186
			90099	9	R-5186
Plate Assembly - Rear intermediate bearing (complete)	90012	1	90100	11	R-5272
			90099	11	R-5272
Plate Assembly - Rear intermediate bearing (machining)	90257	1	90012	11	R-5272A
Plate - Engine box (shipping)	748-2	1	90310	20	R-5629
Plate - Front case thrust bearing	301-F	1	90100	5	R-5065
			90099	5	R-5065
Plate - Master rod bearing, lock	369-B	1	90118	8	R-5173
Plate - Name	681-D	1	90101	4	R-5023
Plate - Oil pump body, intermediate	316-B	1	90035	14	R-5406
			90290	15	R-5436
Plate - Propeller hub	30027	1	90205	19	R-5626
Plate - Rear intermediate bearing	604-C	1	90257	11	R-5273
Plug - Crankpin	804-B	1	90312	8	R-5148
Plug - Crankshaft	511	1	90311	8	R-5162
Plug - Dummy spark (shipping)	10001	14	90310	20	R-5631
Plug - Front crankshaft, center	506-B	1	90312	8	R-5142

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SECTION IV - ALPHABETICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

DESCRIPTION OF PART	PART NO.	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
				PAGE NO.	REFERENCE NO.
- P - (Continued)					
Plug - Front crankshaft, front	806	1	90311	8	R-5153
Plug - Front crankshaft, rear	345-B	1	90311	8	R-5157
Plug - Hex head, 1-1/4"-12 special (oil sump drain)	709	1	90100	7	R-5112
			90099	7	R-5112
Plug - Hex head, drilled, 5/8"-18 fuel, air mixture thermometer boss---1	807-B	2			
			90100	6	R-5104
			90099	6	R-5104
front crankshaft-----1			90311	8	R-5155
Plug - Hollow head, 1/8" NPT (rear intermediate bearing plate)	500-C	2	90012	11	R-5283
Plug - Hollow head, 1/4"-28 x 3/8" (front crankshaft)	30033	1	90311	8	R-5156
Plug - Hollow head, 1/4", Dural (breather boss bushing) MVL ONLY	508	1	90100	6	R-5100
Plug - Hollow head, 1/4" NPT	508-C				
	MVL---	3			
	AVL---	2			
front case governor oil fitting boss-1			90101	4	R-5019
front case sump pad flange-----1			90101	4	R-5020
rear case-----1			90069	12	R-5315
			90094	12	R-5315
Plug - Piston pin	713-C	14	90228	9	R-5193
Plug - Rear crankshaft, front	345-C	1	90311	8	R-5158
Plug - Spark, shielded, Bendix 9BS2	489-G	14	90128	19	R-5602
Plug - Spark, shielded, BG 417-S	99006	14	90128	19	R-5603
Plug - Spark, shielded, Champion M3-1S	99005	14	90128	19	R-5604
Plug - Square head, drilled, 1/8" NPT	500-B				
		11			
		8			
When cyls. are not primed---					
When cyls. are primed-----					
rear main crankcase-----1			90100	6	R-5105
			90099	6	R-5105
cylinder head-----7			90381	9	R-5214
(remove from cylinders primed)					
rear case drain-----1					
			90069	12	R-5313
			90094	12	R-5313
accessory housing adapter-----1			90122	13	R-5366
primer distributor-----1			90100	17	R-5532
			90099	17	R-5532
Plug - Square head, drilled, 1/4" NPT	508-B				
	MVL---	33			
	AVL---	5			
governor oil fitting-----1 MVL ONLY			90101	4	R-5020A
oil sump drain plug-----1			90100	7	R-5113
			90099	7	R-5113
cylinder head-----MVL---28			90100	10	R-5271A
	AVL---2		90099	10	R-5271A
rear case-----MVL---3			90069	12	R-5314
	AVL---2		90094	12	R-5314
Plug - Square head, drilled, 3/8" NPT (oil tank vent connection boss)	746-B	2	90069	12	R-5316
			90094	12	R-5316
Plug - Square head, drilled, 3/4" NPT (oil strainer)	497	1	90072	19	R-5589
Plug - Square head, 1-3/8"-16 special (timing)	1016	1	90101	4	R-5026
Priming System Assembly	90084	1	90100	17	R-5498
			90099	17	R-5498
Pump Assembly - Oil (type B) MVL ONLY	90035	1	90100	14	R-5392
Pump Assembly - Oil (type F) AVL ONLY	90290	1	90099	15	R-5423
Pump - Fuel, Pesco model 2P-R400 BLY	816-B	1	90129	19	R-5609
Pump - Fuel, Pesco model M-400-A	816-C	1	90129	19	R-5611
Pump - Fuel, Romec model RD-4140	99000	1	90129	19	R-5610
Pump - Fuel, Romec model RD-4700	99013	1	90129	19	R-5612
Pump - Vacuum - Pesco model 194-B	810-B	1	90129	19	R-5613
Pump - Vacuum - Romec model RD-4500	99003	1	90129	19	R-5614

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SECTION IV - ALPHABETICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

DESCRIPTION OF PART	PART NO.	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
				PAGE NO.	REFERENCE NO.
- R -					
Ring - Cam	*30101	1	90007	5	R-5050
Ring - Coil clamp (rubber)	676	2	90128	19	R-5600
Ring - Cylinder to crankcase seal (rubber)	544-C	7	90100	10	R-5250
			90099	10	R-5250
Ring - Oil seal (bronze)	589-2	4	90100	5	R-5058
			90099	5	R-5058
Ring - Oil seal (cast iron)	589-1	4	90100	5	R-5059
			90099	5	R-5059
Ring - Piston, compression	798-B	9			
cylinder No. 1-----3			90119	9	R-5183
cylinder Nos. 2,3,4,5,6 & 7-----6			90120	9	R-5188
Ring - Piston, compression, taper	798	21			
cylinder No. 1-----3			90119	9	R-5184
cylinder Nos. 2,3,4,5,6 & 7-----18			90120	9	R-5189
Ring - Piston, oil	794	19			
cylinder No. 1-----1			90119	9	R-5185
cylinder Nos. 2,3,4,5,6 & 7-----18			90120	9	R-5190
Rivet - Cam hub	*386	16	90007	5	R-5052
Rivet - Fuel pump drive coupling	*996-2	1	90137	13	R-5373
Rivet - Rocker roller	421	14			
exhaust valve rocker-----7			90065	9	R-5227
intake valve rocker-----7			90066	10	R-5234
Rocker Assembly - Exhaust valve	90065	7	90266	9	R-5224
			90267	9	R-5224
Rocker Assembly - Intake valve	90066	7	90266	10	R-5231
			90267	10	R-5231
Rocker - Exhaust valve	415-C	7	90065	9	R-5225
Rocker - Intake valve	414-C	7	90066	10	R-5232
Rod Assembly - Master	90118	1	90117	8	R-5168
Rod Assembly - Master and link	90117	1	90100	8	R-5167
			90099	8	R-5167
Rod Assembly - Master (machining)	90254	1	90118	8	R-5168A
Rod Assembly - Push (exhaust)	90112	7	90100	10	R-5251
			90099	10	R-5251
Rod Assembly - Push (intake)	90111	7	90100	10	R-5254
			90099	10	R-5254
Rod - Link	375-F	6	90117	8	R-5175
Rod - Master	*367-B	1	90254	8	R-5169
Rod - Push (exhaust)	*613-E	7	90112	10	R-5252
Rod - Push (intake)	*30012	7	90111	10	R-5255
Roller - Rocker	420	14			
exhaust valve rocker-----7			90065	9	R-5226
intake valve rocker-----7			90066	10	R-5233
Roller - Tappet	387	14	90100	5	R-5047
			90099	5	R-5047

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SECTION IV - ALPHABETICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

DESCRIPTION OF PART	PART NO.	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
				PAGE NO.	REFERENCE NO.
- S -					
Screen - Oil strainer	496	1	90072	19	R-5583
Screen - Oil sump strainer	*708	1	90028	6	R-5107
Screw - #10-32 x 7/8" (primer distributor strap)	923-B3	2	90040	17	R-5503
Screw - Drive, name plate	509	4	90101	4	R-5024
Screw - Fillister head, 1/4"-28 x 5/16" (crankshaft plug lock)	10012	2	90311	8	R-5161
Screw - Fillister head, 1/4"-20 x 5/8"	370	37			
tappet guides-----28			90101	4	R-5015
governor oil fitting-----2			90101	4	R-5018
outer oil seal sleeve-----5			90101	4	R-5043
master rod bearing lock plate-----2			90118	8	R-5174
Screw - Intake port flange	904	21	90100	10	R-5267
			90099	10	R-5267
Screw - Oil feed bearing, lock	609	1	90257	11	R-5277
Screw - Primer tube clip	925-1	5	90045	17	R-5529
Screw - Valve clearance adjusting	422-B	14			
exhaust valve rocker-----7			90065	9	R-5229
intake valve rocker-----7			90066	10	R-5236
Seal - Magneto and generator gears, oil	20005	2	90100	12	R-5319
			90099	12	R-5319
Shim - Front case thrust bearing plate (laminated)	834-B	1	90100	5	R-5064
			90099	5	R-5064
Shipping Parts	90310	1	90100	20	R-5627
			90099	20	R-5627
Starter - Eclipse, type 397	622	1	90129	19	R-5608
Seat - Exhaust valve	402	7	90258	9	R-5199
Seat - Intake valve	401-B	7	90258	9	R-5200
Shaft - Accessory drive	782-C	1	90071	13	R-5352
Shaft and Gear Assembly - Cam drive pinion	90005	1	90101	4	R-5027
Shaft Assembly - Accessory drive	90071	1	90122	13	R-5351
Shaft Assembly - Rocker	90136	14	90266	10	R-5238
Shaft - Cam drive pinion	30295	1	90005	4	R-5028
Shaft - Oil pump drive	AVL ONLY	1	90290	15	R-5433
Shaft - Oil pump drive	MVL ONLY	1	90035	14	R-5402
Shaft - Oil pump idler	AVL ONLY	1	90290	15	R-5434
Shaft - Oil pump idler	MVL ONLY	1	90035	14	R-5403
Shaft - Rocker	AVL ONLY	14	90267	10	R-5241
Shaft - Rocker	MVL ONLY	14	90136	10	R-5239
Shield - Magneto	637	1	90128	19	R-5593
Sleeve - 3/8"	*10033	1	90393	16	-----
Sleeve - Coil connection (rubber)	30108	1	90210	18	R-5537
Sleeve - Distributor connection (rubber)	30109	1	90210	18	R-5538
Sleeve - Oil seal, inner	30060	1	90100	5	R-5057
			90099	5	R-5057
Sleeve - Oil seal, outer	30061	1	90101	4	R-5042
Sleeve - Primer tube clip (rubber)	909	7			
#7 cylinder-----3			90133	17	R-5514
#1 cylinder-----1			90134	17	R-5519
#2 cylinder-----3			90135	17	R-5524
Sleeve - Propeller governor drive gear bearing	672-2	1	90122	13	R-5369
Sleeve - Rubber, 1-1/2" long for 3/8" tube (rocker scavenger and oil supply tubes)	AVL ONLY	2	90099	16	R-5480
Slinger - Crankshaft, oil	350	1	90100	5	R-5061
			90099	5	R-5061

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SECTION IV - ALPHABETICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

DESCRIPTION OF PART	PART NO.	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
				PAGE NO.	REFERENCE NO.
- S - (Continued)					
Slinger - Distributor drive gear, oil	723	1	90100 90099	14 14	R-5387 R-5387
Socket - Tappet	*390-B	14	90006	5	R-5046
Spacer - 3/16" long for 1/4" stud (propeller governor drive cover)	30094	4	90122	13	R-5381
Spacer - 3/16" long for 5/16" stud (fuel pump drive cover 30078)	30093	4	90122	13	R-5376
Spacer - 5/16" long for 5/16" stud	30095	32			
generator drive cover-----4			90100	12	R-5330
			90099	12	R-5330
exhaust port cover-----28			90310	20	R-5634
Spacer - Accessory shaft, distributor drive gear	783-1	1	90071	13	R-5356
Spacer - Accessory shaft, propeller governor drive gear	783-2	1	90071	13	R-5358
Spacer - Cam drive pinion shaft bearing	379-B	1	90005	4	R-5030
Spacer - Front case thrust bearing plate	656	1	90100 90099	5 5	R-5062 R-5062
Spacer - Oil pressure relief valve spring	819	1	90035 90290	14 15	R-5415 R-5450
Spacer - Rear cone (1.105)	30091	1	90129	19	R-5616
Spacer - Timing gear	355	1	90100 90099	5 5	R-5054 R-5054
Spline - Magneto	519	1	90100 90099	12 12	R-5320 R-5320
Spring - Oil check valve	838-B	1	90035 90290	14 15	R-5399 R-5430
Spring - Oil pressure relief valve	327	1	90035 90290	14 15	R-5414 R-5449
Spring - Valve, inner	410-L	14	90266 90267	9 9	R-5219 R-5219
Spring - Valve, outer	409-L	14	90266 90267	9 9	R-5220 R-5220
Strainer Assembly - Oil	90072	1	90128	19	R-5579
Strainer Assembly - Oil sump	90028	1	90100 90099	6 6	R-5106 R-5106
Strap - Primer distributor	923-B1	1	90040	17	R-5501
Stud - 1/4" x 63/64" (cam drive pinion bearing clamp)	950	5	90057	4	R-5010
Stud - 1/4" x 1-1/8" (primer tube clip)	941	2	90113	6	R-5097
Stud - 1/4" x 1-1/4"	627-B	8			
propeller governor mounting-----4			90123	13	R-5349
accessory housing adapter mounting--4			90123	13	R-5350
Stud - 1/4" x 1-3/8" (rocker cover)	940	56	90381	9	R-5212
Stud - 1/4" x 2-13/16" (oil pump body)	451-B	3	90036	14	R-5396
Stud - 1/4" x 4-5/32" (oil pump body)	451-G	3	90091	15	R-5427
Stud - 5/16" x 7/8", drilled (cylinder head baffle)	457-2	14	90381	9	R-5211
Stud - 5/16" x 1-1/4" (ignition manifold mounting)	765	4	90057	4	R-5008
Stud - 5/16" x 1-1/4"	458-B	8			
fuel pump mounting on rear case-----4			90069	12	R-5309
			90094	12	R-5309
oil strainer body-----4			90073	19	R-5582
Stud - 5/16" x 1-3/8"	593-B	11			
rear intermediate bearing plate to					
main crankcase-----7			90113	6	R-5092
fuel pump mounting on accessory					
housing adapter-----4			90232	13	R-5365

* Not to be stocked or requisitioned as detail parts

Issued 4-1-43

SECTION IV - ALPHABETICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

DESCRIPTION OF PART	PART NO.	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
				PAGE NO.	REFERENCE NO.
- S - (Continued)					
Stud - 5/16" x 1-3/8"	460-3	6			
	MVL---	5			
	AVL---				
carburetor mounting-----MVL--4			90113	6	R-5094
	AVL--3		90113	6	R-5094
distributor mounting-----2			90123	13	R-5348
Stud - 5/16" x 1-1/2"	593	42			
	MVL---	43			
	AVL---				
oil sump mounting-----4			90057	4	R-5009
rear case to main crankcase-----10			90113	6	R-5093
carburetor mounting-----1	AVL ONLY		90113	6	R-5093A
exhaust port-----28			90381	9	R-5210
Stud - 5/16" x 1-21/32" (generator mounting)	753	4	90069	12	R-5310
			90094	12	R-5310
Stud - 5/16" x 4" (oil pump mounting)	MVL ONLY	4	90069	12	R-5311
Stud - 5/16" x 5-5/16" (oil pump mounting)	AVL ONLY	4	90094	12	R-5312
Stud - 3/8" x 1-7/8"	935				
starter mounting-----6			90069	12	R-5305
			90094	12	R-5305
accessory housing mounting-----1			90069	12	R-5306
			90094	12	R-5306
Stud - 3/8" x 1-11/16" (cylinder mounting)	954	84	90113	6	R-5096
Stud - 3/8" x 1-13/16" (thrust bearing plate)	973	6	90057	4	R-5007
Stud - 3/8" x 1-13/16", drilled (nose cowl)	10000	4	90057	4	R-5011
Stud - 3/8" x 2"	548-B	4			
magneto mounting-----2			90069	12	R-5307
			90094	12	R-5307
accessory housing mounting-----2			90069	12	R-5308
			90094	12	R-5308
Stud - 3/8" x 2-1/8" (front case to main crankcase)	594-D	14	90113	6	R-5095
Stud - 3/8" x 3-13/16" (main crankcase clamp)	718-B	1	90114	6	R-5086
- T -					
Tappet	*389-B	14	90006	5	R-5045
Tappet and Socket Assembly	90006	14	90100	5	R-5044
			90099	5	R-5044
Tee - 3/8" union (to attach propeller governor connection)	*10032	1	90386	16	R-5490A
Tee Assembly - 3/8" hose and union	90386	1	90099	16	-----
(rear case to attach propeller governor and oil supply tubes)					
Terminal - Wire, coil	660	1	90210	18	R-5535
Terminal - Wire, distributor	660-1	1	90210	18	R-5536
Tube - 3/8" hose	30167	1	90393	16	-----
Tube Assembly - 3/8" hose and union	90393	1	90386	16	R-5490
Tube Assembly - Primer #1 cylinder	90134	1	90084	17	R-5517
Tube Assembly - Primer #2 cylinder	90135	1	90084	17	R-5522
Tube Assembly - Primer #7 cylinder	90133	1	90084	17	R-5512
Tube Assembly - Primer, intake manifold	90085	1	90084	17	R-5508
Tube Assembly - Oil pump	90092	1	90100	15	R-5457
Tube Assembly - Oil sump	90087	1	90100	15	R-5460
Tube Assembly - Oil sump to pump	90124	1	90099	15	R-5463
Tube - Front case oil feed	AVL ONLY	1	90058	4	R-5004
	*302-D1	1			

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SECTION IV - ALPHABETICAL PARTS LIST

ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

DESCRIPTION OF PART	PART NO.	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN	
				PAGE NO.	REFERENCE NO.
- T - (Continued)					
Tube - Oil feed	611	1	90012	11	R-5282
Tube - Oil pump	*30018	1	90092	15	R-5458
Tube - Oil sump	*30019	1	90087	15	R-5461
Tube - Oil sump to pump	*30131	1	90124	15	R-5464
Tube - Primer #1 cylinder (9" long)	*926-C2	1	90134	17	R-5518
Tube - Primer #2 cylinder (21-1/2" long)	*926-C3	1	90135	17	R-5523
Tube - Primer #7 cylinder (19-1/4" long)	*926-C1	1	90133	17	R-5513
Tube - Primer, intake manifold (6-1/4" long)	*30005	1	90085	17	R-5509
Tube - Push rod cover	640	14	90100	10	R-5257
			90099	10	R-5257
Tube - Rocker scavenger	AVL ONLY 30166	1	90099	16	R-5492
Tube - Rocker vent (from cylinder No. 1 to rear main crankcase)	30128	1	90099	16	R-5487
Tube - Valve gear oil supply	AVL ONLY 30165	1	90099	16	R-5488
- V -					
Valve - Exhaust	404	7	90266	9	R-5215
			90267	9	R-5215
Valve - Intake	403-B	7	90266	9	R-5216
			90267	9	R-5216
- W -					
Washer - 1/4"	447	69			
primer tube clip stud-----2			90100	7	R-5134
			90099	7	R-5134
rocker cover stud-----56			90266	10	R-5248
			90267	10	R-5248
propeller governor mounting stud----4			90122	13	R-5382
accessory housing adapter mounting stud-----4			90122	13	R-5383
oil pump body stud-----3			90035	14	R-5419
			90290	15	R-5453
Washer - 5/16"	448	65			
oil sump mounting stud-----4			90100	5	R-5072
			90099	5	R-5072
ignition manifold mounting stud-----4			90100	5	R-5073
			90099	5	R-5073
rear case to main crankcase stud---10			90100	7	R-5127
			90099	7	R-5127
carburetor mounting stud-----4			90100	7	R-5128
			90099	7	R-5128
intake port flange screw-----21			90100	10	R-5266
			90099	10	R-5266
fuel pump mounting stud 458-B-----4			90100	12	R-5331
			90099	12	R-5331
generator mounting stud-----4			90100	12	R-5332
			90099	12	R-5332
oil pump mounting stud-----4			90100	12	R-5333
			90099	12	R-5333
fuel pump mounting stud 593-B-----4			90122	13	R-5377
distributor mounting stud-----2			90100	14	R-5390
			90099	14	R-5390
oil strainer body stud-----4			90072	19	R-5586

* Not to be stocked or requisitioned as detail parts

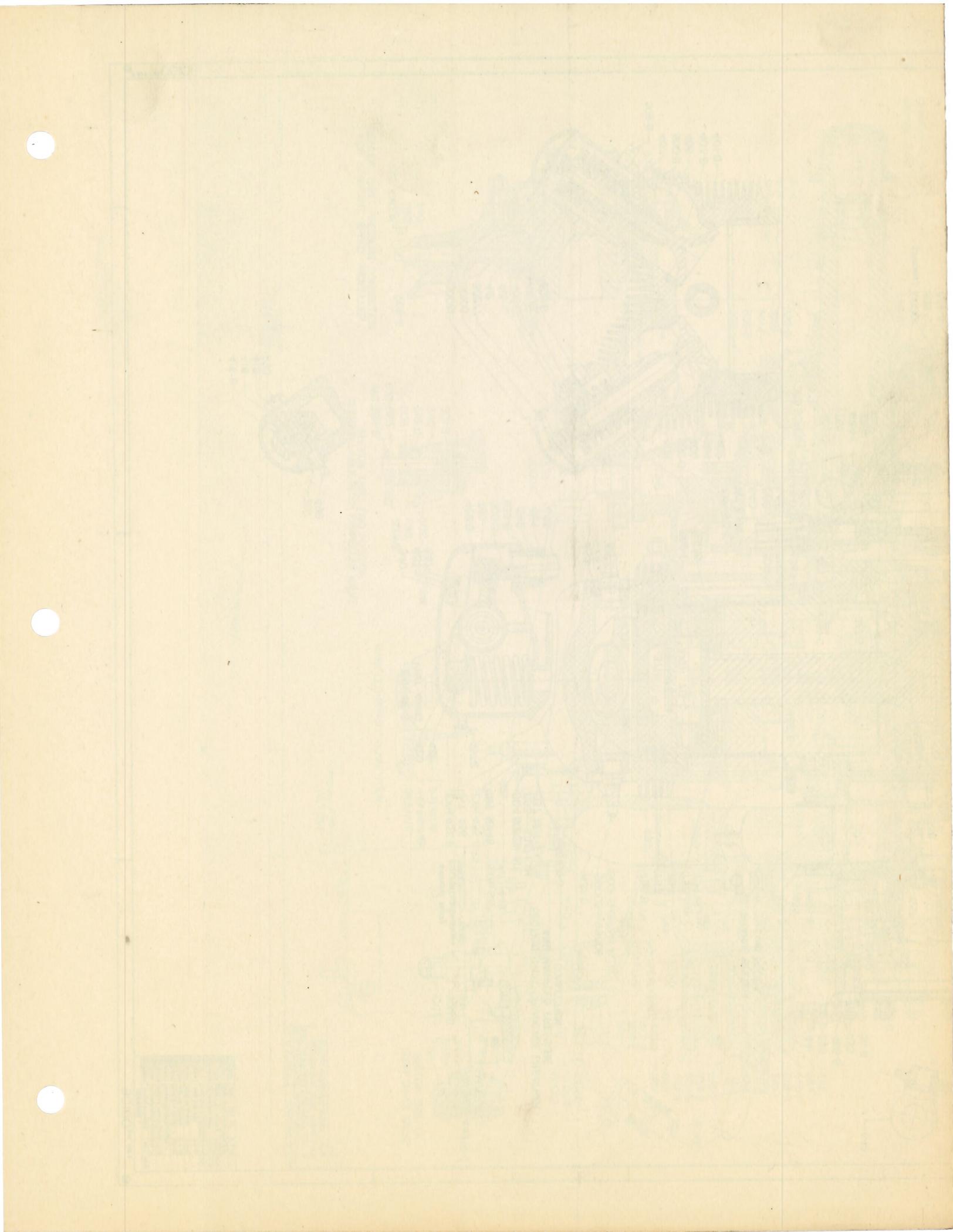
Issued 4-1-43

SECTION IV - ALPHABETICAL PARTS LIST

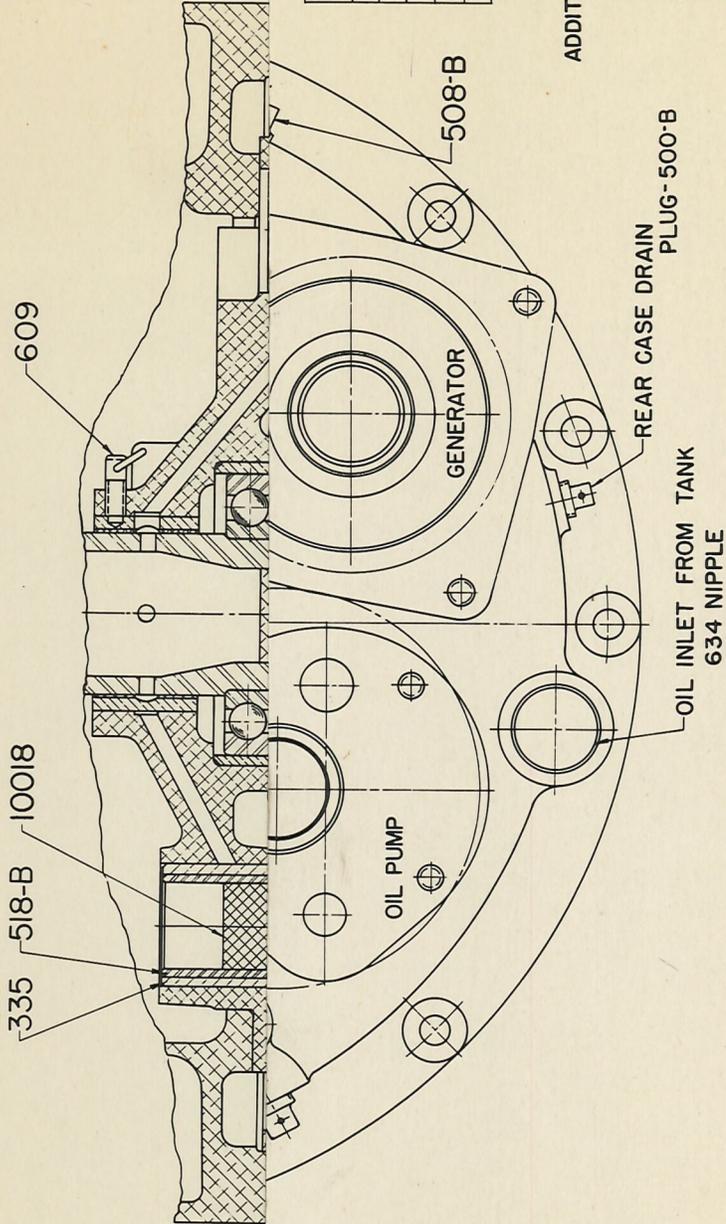
ENGINE ASSEMBLY-MODEL L-4MB MANUAL VALVE LUBRICATION ---- DRAWING NO. 90100
 AUTOMATIC VALVE LUBRICATION - DRAWING NO. 90099

DESCRIPTION OF PART	PART NO.	QTY. PER ENG.	ASSEMBLY NO.	ASSEM. BREAKDOWN		
				PAGE NO.	REFERENCE NO.	
- W - (Continued)						
Washer - 3/8" thrust bearing plate stud-----6	595	42	90100	5	R-5070	
crankcase clamp stud-----1			90099	5	R-5070	
crankcase clamp bolt-----12			90114	6	R-5088	
front case to main crankcase stud--14			90114	6	R-5089	
starter mounting stud-----6			90100	7	R-5131	
accessory housing mounting stud 935-1			90099	7	R-5131	
accessory housing mtg. stud 548-B---2			90100	12	R-5337	
			90099	12	R-5337	
			90100	12	R-5338	
			90099	12	R-5338	
			90100	12	R-5339	
Washer - 25/64" x 3/4" x 3/32" (magneto mounting stud)			687	2	90100	12
	90099	12			R-5340	
Washer - 41/64" x 1-5/32" x 1/8", special (cam drive pinion shaft)	381-A	1	90005	4	R-5036	
Washer - Accessory drive shaft, lock	757	1	90071	13	R-5360	
Washer - Cam drive pinion clamp	686-B	1	90101	4	R-5039	
Washer - Cam drive pinion shaft bearing, lock	378-1	1	90005	4	R-5032	
Washer - Crankshaft cluster gear, lock	362-B	1	90100	11	R-5300	
			90099	11	R-5300	
Washer - Crankshaft rear main bearing, lock	358-B	1	90100	7	R-5124	
			90099	7	R-5124	
Washer - Exhaust valve spring, lower	408	7	90266	9	R-5217	
			90267	9	R-5217	
Washer - Intake valve spring, lower	407	7	90266	9	R-5218	
			90267	9	R-5218	
Washer - Knuckle pin bolt	373-B	12	90117	8	R-5178	
Washer - Lock, 5/16" rear intermediate bearing plate to main crankcase stud-----7	692	39	90100	7	R-5136	
exhaust port stud-----28			90099	7	R-5136	
oil strainer body stud-----4			90100	10	R-5270	
			90099	10	R-5270	
			90072	19	R-5587	
Washer - Push rod cover tube upper packing	654	14	90100	10	R-5259	
			90099	10	R-5259	
Washer - Rocker shaft	MVL ONLY	418	14	90266	10	R-5243
Washer - Starter gear bolt	338	1	90100	11	R-5286	
			90099	11	R-5286	
Washer - Valve spring upper	30277	14	90267	9	R-5221	
Weight - Front crankshaft balance	364-B	1	90312	8	R-5143	
Weight - Rear crankshaft balance	364-B1	1	90312	8	R-5144	

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REVISIONS		
NO.	NOTICE NO.	DATE
①	0915	607 TO 20003
②	1190	20003 TO 20005
		2.5-42
		7-10-42



SEE DWG. 50122

- DISTRIBUTOR SEE DWG. 583-1
- GASKET 553
- WASHER 448
- NUT 684
- GEAR 745
- SLINGER 723
- PIN 445

ADDITIONAL PARTS NOT SHOWN

- 584 IGNITION COIL
- 624 COIL CLAMP
- 676 RING
- 683 NUT
- 10008 BOLT
- 90072 OIL STRAINER ASS'Y.

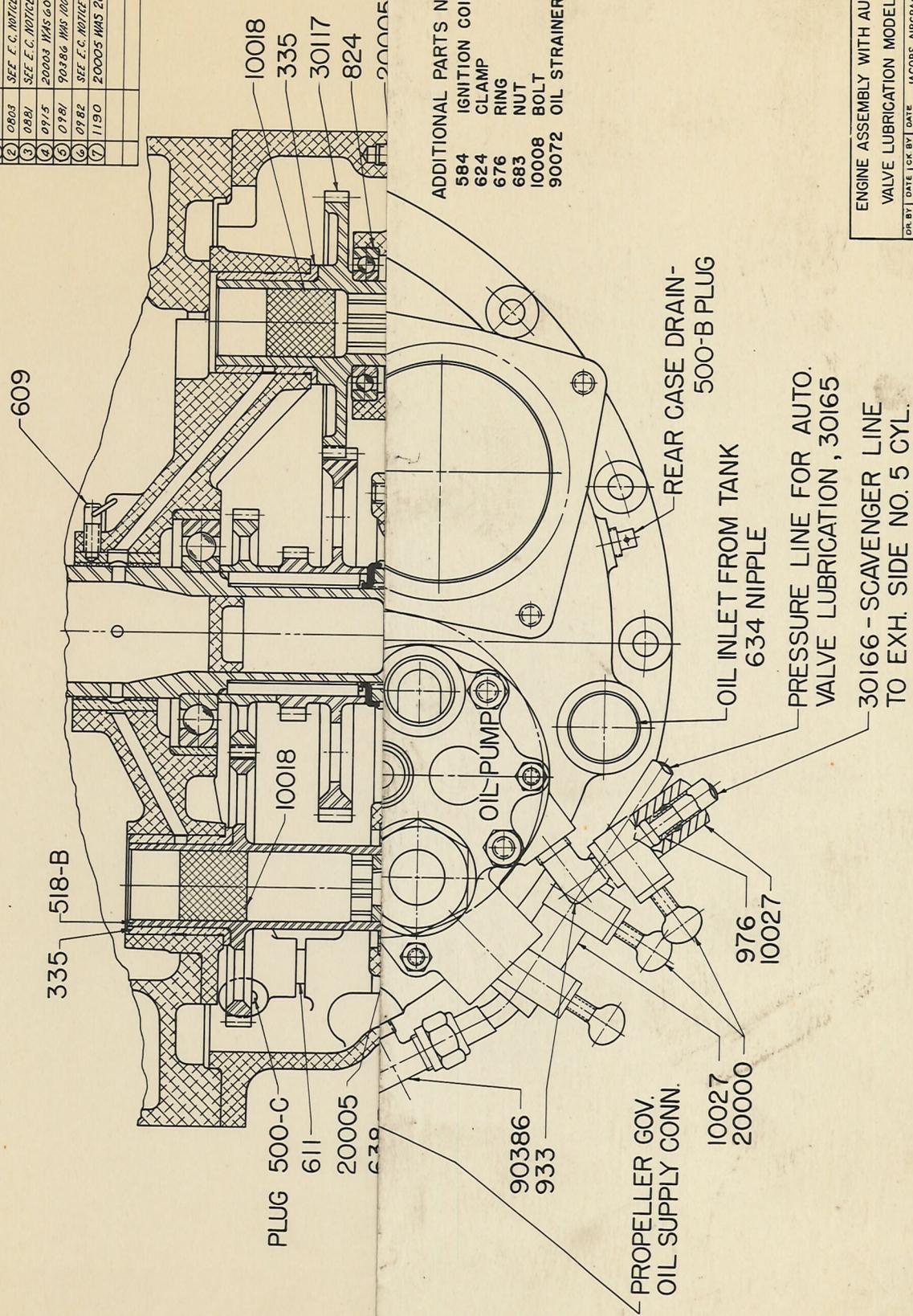
ENGINE ASSEMBLY - MODEL L-4MB
MANUAL VALVE LUBRICATION

DES. BY	DATE	CHK. BY	DATE
W.S.	11-20-42	W.E.	7-14-44

JACOBS AIRCRAFT ENGINE CO.
PHILADELPHIA, PENN., U.S.A.

APP. *C.S. Hines* 90100 © SHEET 2 OF 2

REVISIONS		
NO.	NOTICE (N)	DATE
(1)	0731 20000 WAS 9070	2-29-42
(2)	0803 SEE E.C. NOTICE	
(3)	0881 SEE E.C. NOTICE	
(4)	0915 20003 WAS 607	
(5)	0981 90386 WAS 10004	
(6)	0982 SEE E.C. NOTICE	2-24-42
(7)	1190 20005 WAS 20003	7-6-42



ADDITIONAL PARTS NOT SHOWN

584 IGNITION COIL

624 CLAMP

676 RING

683 NUT

10008 BOLT

90072 OIL STRAINER ASS'Y.

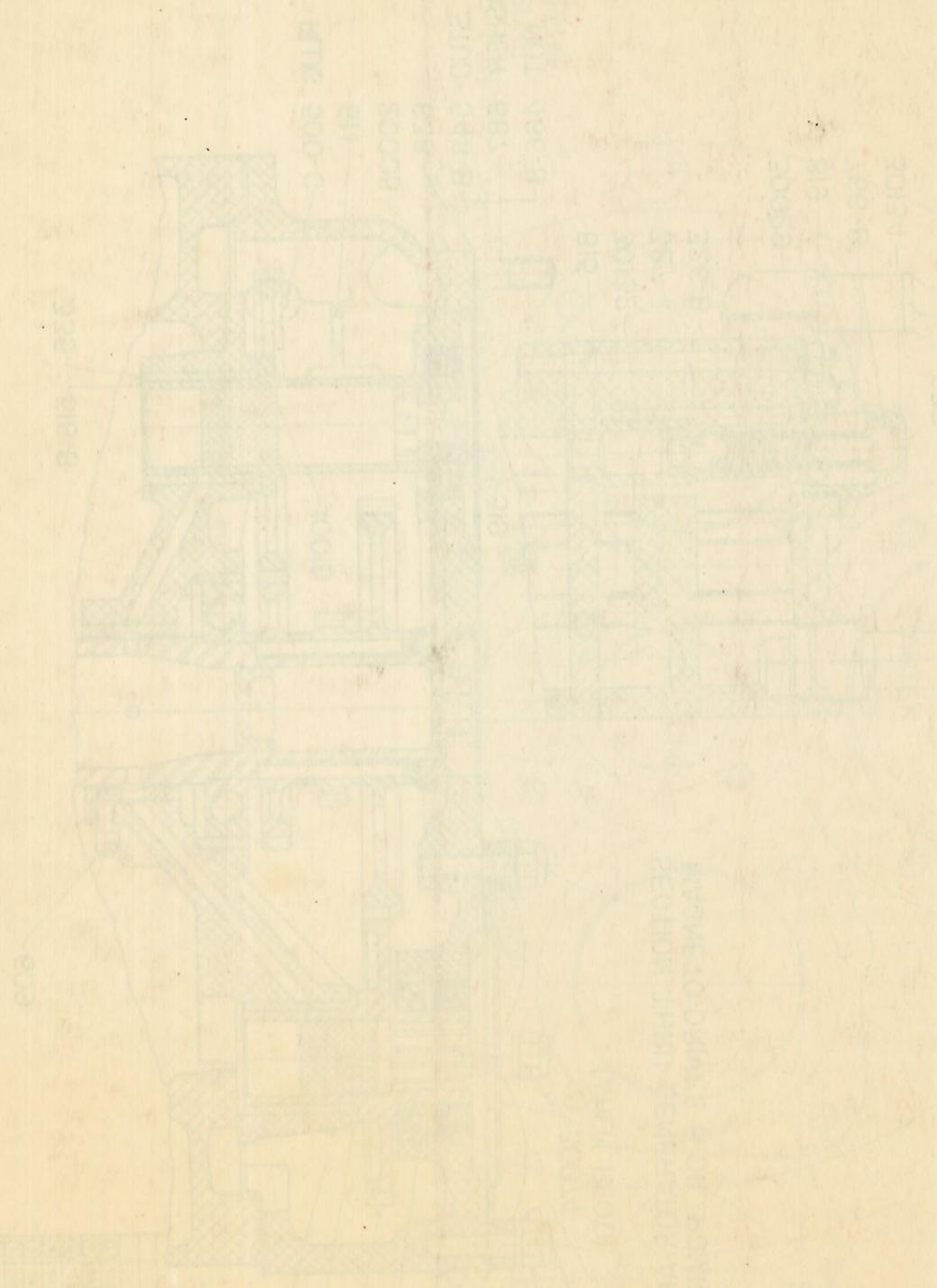
ENGINE ASSEMBLY WITH AUTOMATIC VALVE LUBRICATION MODEL L-4MB

DR. BY DATE CHK BY DATE JACOBS AIRCRAFT ENGINE CO. PCTTSTOWN, PENNA. U. S. A.

W. S. 2-27-41 R. F. 10-20-41

APP. C. S. Miles

90099 SHEET 2 OF 2



NO.	DESCRIPTION	QTY.	UNIT
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