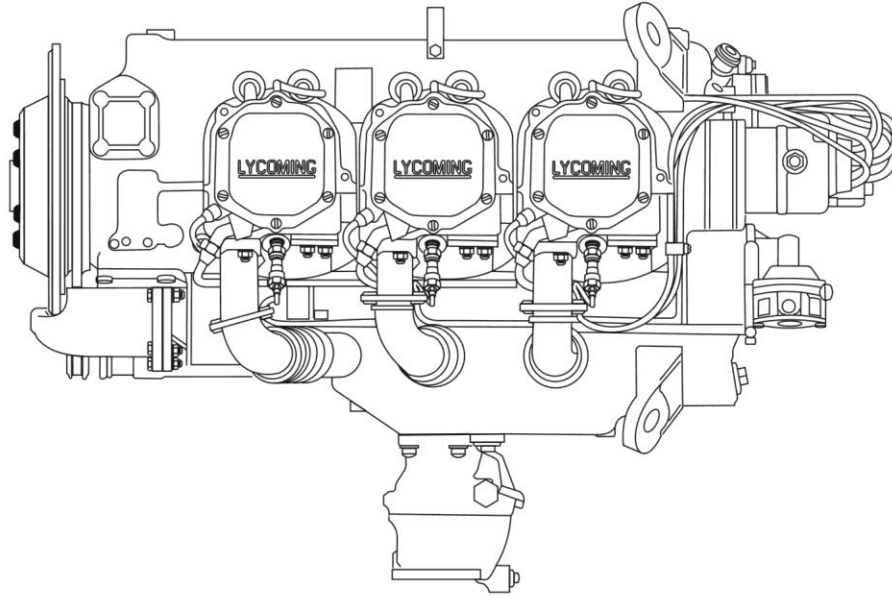


LYCOMING

Engine Parts Catalog



O-540-F1B5

Wide Cylinder Flange Crankcase Model Engine

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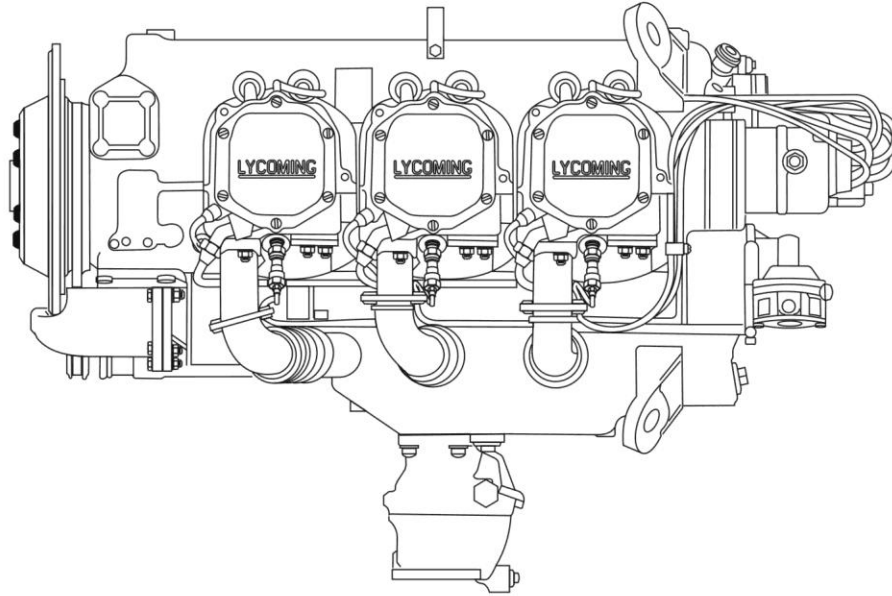
October 2009

Part No. PC-515-2

652 Oliver Street
Williamsport, PA 17701

LYCOMING

Engine Parts Catalog



O-540-F1B5

Wide Cylinder Flange Crankcase Model Engine

LYCOMING

October 2009

Part No. PC-515-2

652 Oliver Street
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INTRODUCTION

This illustrated parts catalog contains a complete parts listing for the Lycoming O-540-F1B5 series wide cylinder flange crankcase model aircraft engines.

Major assembly and sub-assembly parts of the engine are listed in the Group Assembly sections in the general sequence of engine build-up.

An Oversize and Undersize Parts List are included to aid in ordering parts as necessary during overhaul.

The Numerical Index is provided for convenience in finding parts when only the part number is known.

Parts coverage of Vendor Accessories used on Lycoming engines may be found in the appropriate Vendor's Parts Catalog. A list of addresses of where to obtain these publications appears in the latest revision of Service Letter No. L114.

NOTE

This catalog when used in conjunction with the appropriate overhaul manual, is only to be used for parts identification.

Do not use this catalog as an assembly or installation document.

Any reference in this document to the suppliers/parts manufacturer's product, by name, trademark, part number or other description is solely for the purposes of identification and does not indicate or infer that Lycoming accepts responsibility for quality control and/or airworthiness of parts which do not pass through the Lycoming quality control system.

SERVICE BULLETINS, INSTRUCTIONS AND LETTERS

Although the information contained in this parts catalog is up-to-date at time of publication, users are advised to procure current information through all Lycoming distributors or from the factory by subscription. Consult the latest revision of Service Letter No. L114 for subscription information.

HOW TO ORDER PARTS

In ordering parts for your engine, observe the following instructions which will expedite shipment of correct parts required without delay.

- a. Always specify the model and serial number of your engine.
- b. Always specify part number, nomenclature and quantity required.

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OVERSIZE AND UNDERSIZE PARTS LISTING

PART NO.	DESCRIPTION	OVERSIZE (IN.)								UNDERSIZE (IN.)		
		P02 .002	P05 .005	P10 .010	P15 .015	P20 .020	P30 .030	P40 .040	P50 .050	M03 .003	M06 .006	M10 .010
76943	GUIDE	See latest revision of Service Instruction No. 1256.										
66610	BUSHING		X	X								
66796	INSERT			X								
69796	DOWEL		X									
71903-A	BUSHING	See latest revision of Service Instruction No. 1143.										
72057	SEAT		X	X		X	X					
72058	SEAT			X		X	X					
72155-S	BUSHING		X	X	X	X						
73810	BUSHING	See latest revision of Service Instruction No. 1142.										
16R22126	GUIDE	See latest revision of Service Instruction No. 1256										
75656-S	BUSHING		X	X	X	X						
75657-S	BUSHING		X	X		X						
LW-13792	SEAL	See latest revision of Service Instruction No. 1324.										
18D23135	BEARING				X					X	X	X
STD-1065	DOWEL	X	X	X	X							
18A19441	BEARING				X					X	X	X

In addition to the above, studs are available in P03, P07 & P12.

NOTE

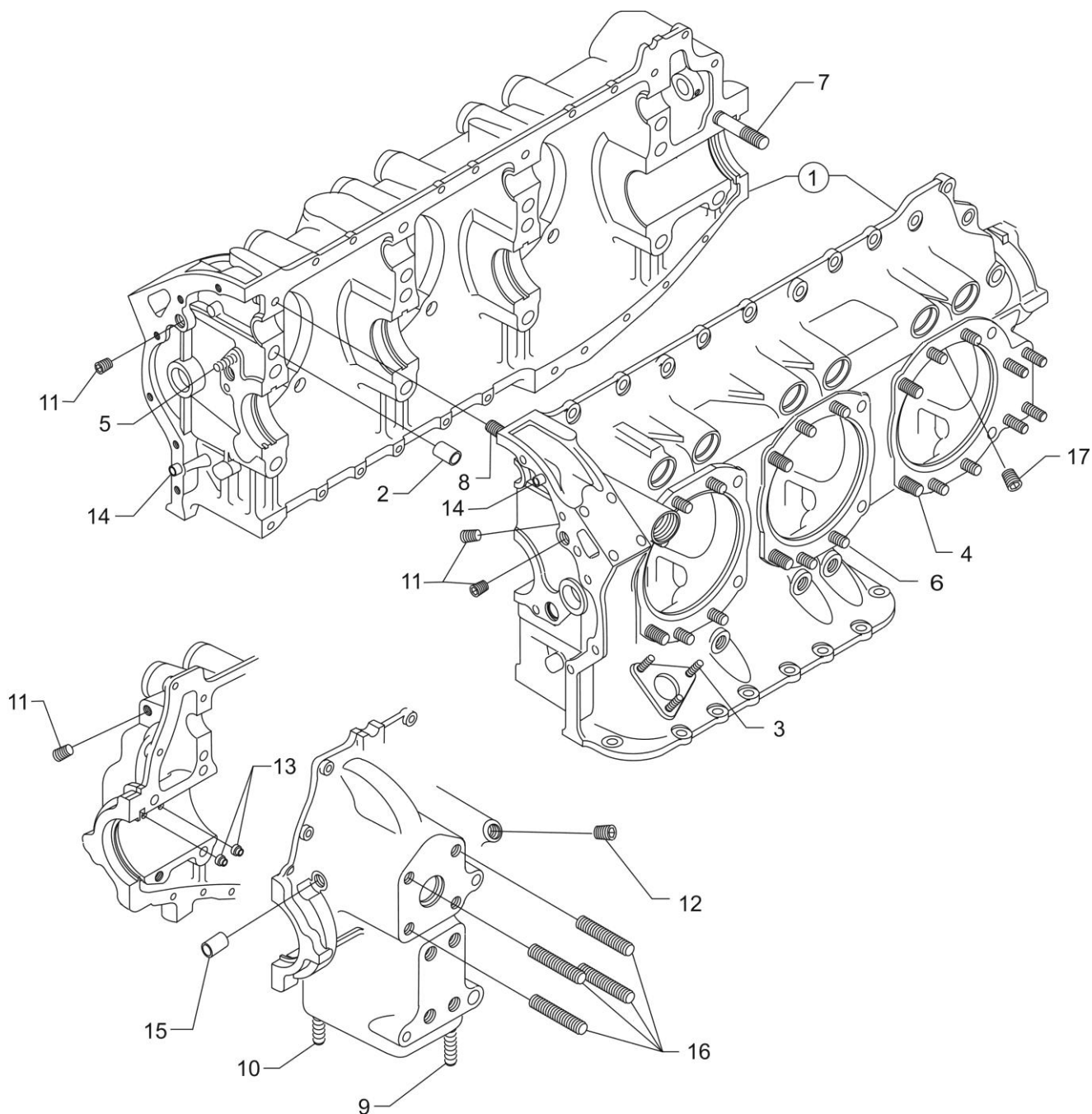
When ordering oversize and undersize parts, be sure to specify the required oversize and undersize dimension along with the proper part number. For example, to order bearing P/N 18D23135 in .003 undersize, order P/N 18D23135-M3. Oversize code letter is "P" while undersize code letter is "M". These letters are then followed by the number designating the size in thousandths of an inch.

CRANKCASE, CRANKSHAFT AND CAMSHAFT GROUP
CRANKCASE ASSEMBLY

FIG. REF. 1	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	11E24004-S1*	CRANKCASE ASSEMBLY	1
	11E24104-S1*	CRANKCASE ASSEMBLY (Roller tappet engines)	1
2	STD-557	DOWEL, 1/2 diameter x 11/16 long, hollow	2
3	10-8	STUD, No. 10-32 x 1.00 long	3
4	50-15	STUD, 1/2-13 x 1-7/8 long	12
5	01A23354	STUD, 5/16-18 x 1.00 long, drilled	1
6	38-13	STUD, 3/8-16 x 1-5/8 long	24
7	38-22	STUD, 3/8-16 x 2-3/4 long	1
8	38D-17	STUD, 3/8-16 x 2-1/8 long, drilled	1
9	31C-12	STUD, 5/16-18 x 1-1/2 long	2
10	31C-13	STUD, 5/16-18 x 1-5/8 long	1
11	1102	PLUG, 1/8-17 NPT, Allen head	4
12	STD-1339	PLUG, 1/16-27 NPT, Allen head	1
13	69796	DOWEL, Crankshaft bearing	2
14	STD-514	DOWEL, 5/16 diameter x 1/2 long	2
15	72158	BUSHING, Governor drive idler shaft	1
16	31C-14	STUD, 5/16-18 x 1-3/4 long	4
17	STD-1339**	PLUG, 1/16-27 NPT, Allen head	6

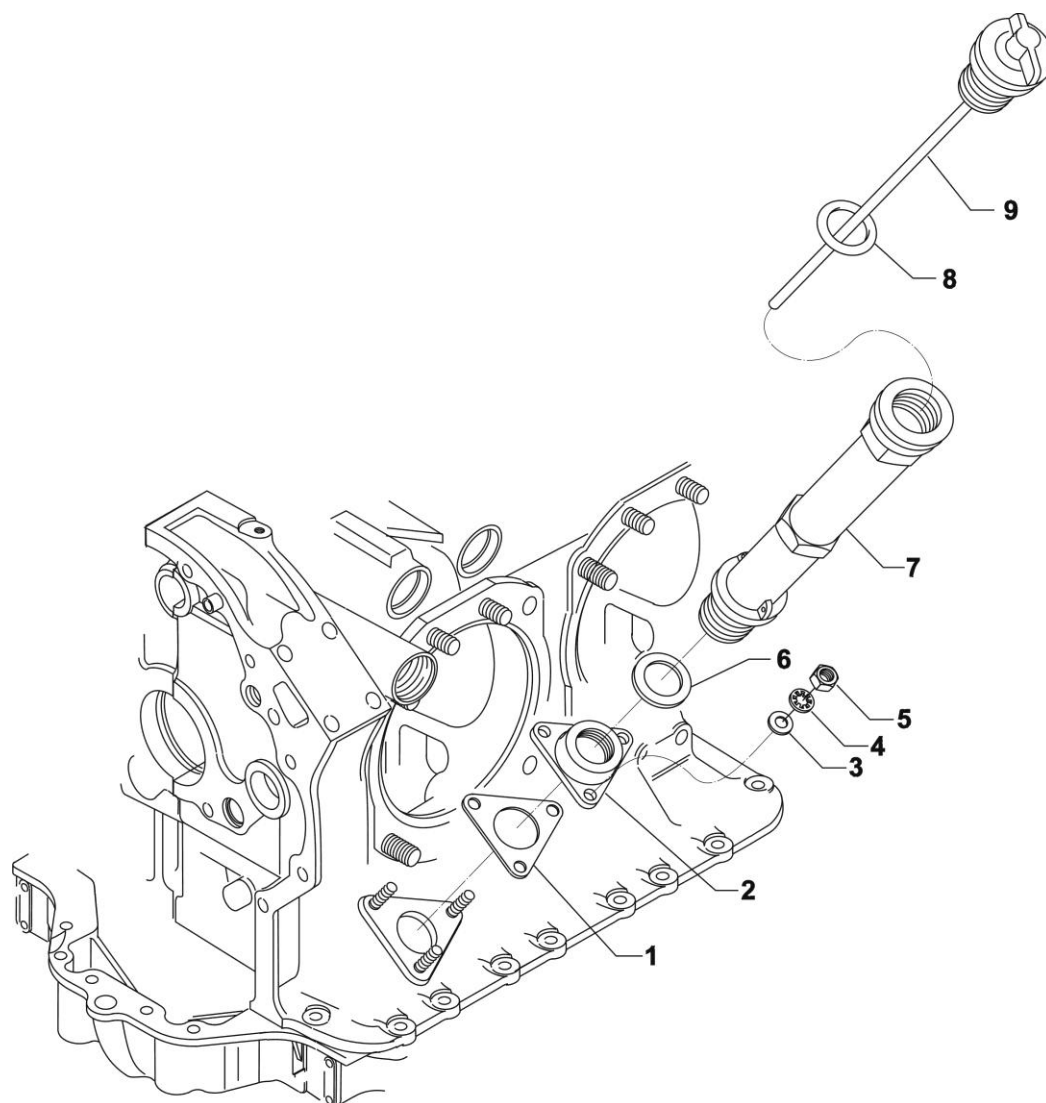
* - This part is not available as a service item. Refer to Service Kits, Section 7 for applicable Crankcase Assembly and Governor Stud Kit Part Number.

** - Assemble in crankcase piston squirt holes.

**FIGURE 1. CRANKCASE ASSEMBLY**

CRANKCASE, CRANKSHAFT AND CAMSHAFT GROUP
OIL LEVEL GAGE ASSEMBLY

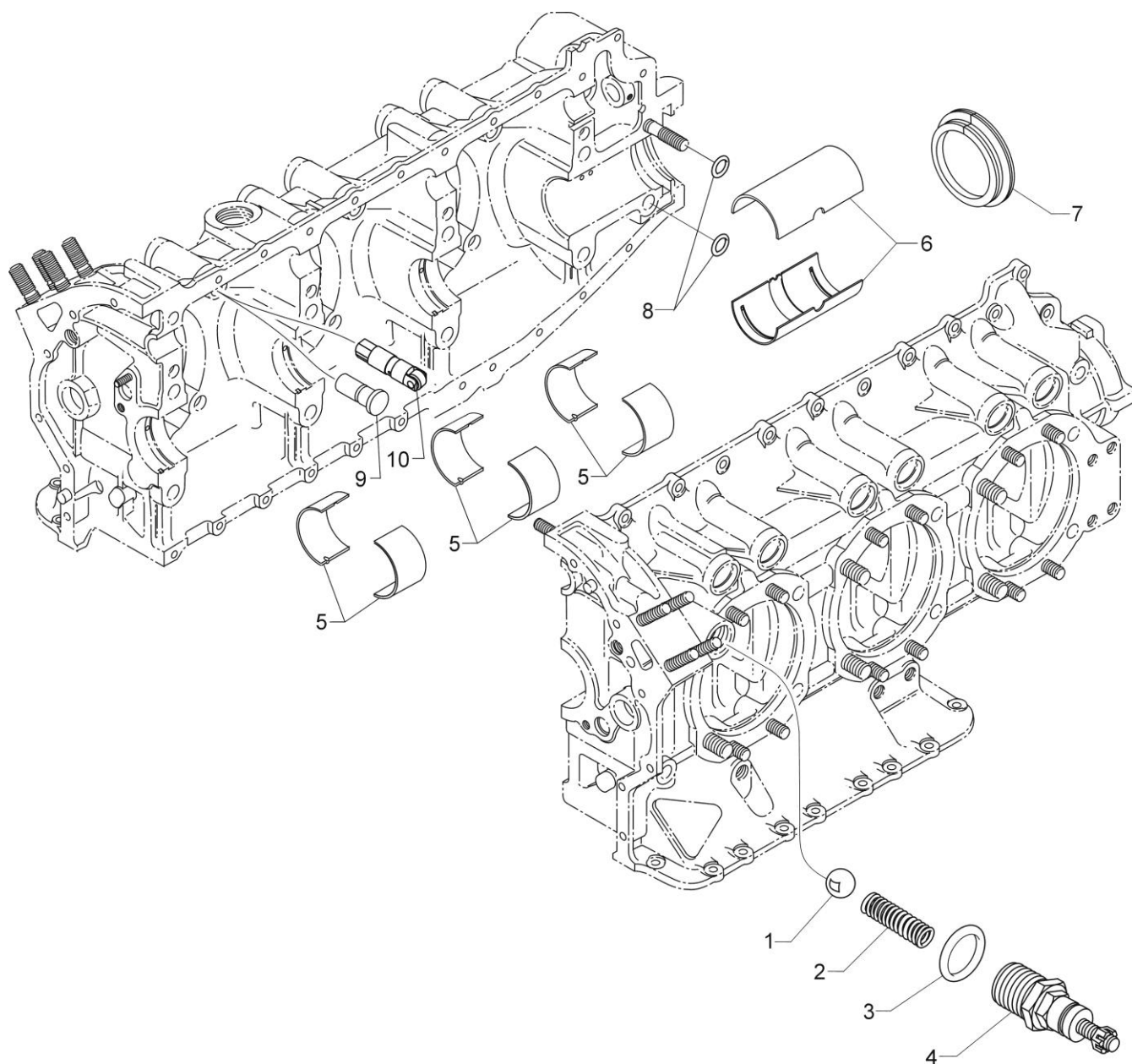
FIG. REF. 2	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	LW-18481	GASKET, Oil filler adapter	1
2	LW-18482	ADAPTER, Oil filler tube	1
3	STD-28	WASHER, No. 10 plain	3
4	STD-251	WASHER, No. 10 internal lock	3
5	STD-63	NUT, No. 10-32 plain	3
6	72059	GASKET, Oil level gage	1
7	LW-15970	TUBE, Oil level gage, short	1
8	74068	“O” RING, Oil level gage	1
9	LW-16783-17	GAGE ASSEMBLY, Oil level	1

**FIGURE 2. OIL LEVEL GAGE ASSEMBLY**

CRANKCASE, CRANKSHAFT AND CAMSHAFT GROUP
CRANKCASE RELATED PARTS

FIG. REF. 3	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	1028-B	BALL, 11/16 diameter	1
2	68668*	SPRING, Oil pressure relief valve	1
	61084*	SPRING, Oil pressure relief valve	1
	77467*	SPRING, Oil pressure relief valve	1
	LW-11713*	SPRING, Oil pressure relief valve	1
	LW-18085*	SPRING, Oil pressure relief valve	1
3	06E19769-1.25	GASKET, 1-1/4 I.D. x 1-1/2 O.D. x 3/32 annular	1
4	77808	VALVE ASSEMBLY, Oil pressure relief, adjustable	1
5	18D23135	BEARING, Crankshaft	6
6	18A19441	BEARING, Crankshaft, front	2
7	LW-13792	SEAL, Crankshaft oil, solid	1
8	72091	RING, Oil seal, 23/64 I.D. x 7/64 diameter	2
9	72877	BODY, Hydraulic tappet	12
10	LRT23381	BODY ASSEMBLY, Hydraulic tappet roller (Roller tappet engines)	12

* - Select spring to give a maximum of three threads exposed on adjusting screw to allow field adjustment. Reference latest revision of Lycoming Table of Limits, SSP-1776, Part I for spring identification.

**FIGURE 3. CRANKCASE RELATED PARTS**

CRANKCASE, CRANKSHAFT AND CAMSHAFT GROUP
CRANKSHAFT AND RELATED PARTS

FIG. REF. 4	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	13E27622	CRANKSHAFT ASSEMBLY	1
	13E47622	CRANKSHAFT ASSEMBLY	1
2	STD-1211	PLUG, 2.00 diameter expansion	1
3	73810	BUSHING, Crankshaft dynamic counterweight	4
4	71640	PLUG, 1-3/8 diameter	1
5	75656-S	BUSHING, Propeller flange, long	4
6	72155-S	BUSHING, Propeller flange, short	1
7	75657-S	BUSHING, Propeller flange, indexing	1
8	STD-1065	DOWEL, Stepped, 5/16 x 1/4 diameter x 35/64 long	1
9	14U22539	COUNTERWEIGHT ASSEMBLY	2
10	71903-A	BUSHING, Dynamic counterweight	8
11	14W22647	ROLLER, Dynamic counterweight, 4.81 order	2
12	70416	ROLLER, Dynamic counterweight, 6.3 order	2
13	LW-14820	RING, Internal retaining	8
14	71907	WASHER, Dynamic counterweight	8
15	13S19647*	GEAR, Crankshaft	1
16	LW-18638	LOCKPLATE, Crankshaft gear	1
17	STD-2247	BOLT, 5/16-24 x 1-3/4 long, hex. head	1
18	31M21951	SUPPORT ASSEMBLY, Starter ring gear, 12/14 pitch	1
	31M22972	SUPPORT ASSEMBLY, Starter ring gear	1
19	72566	GEAR, Starter ring	1

* - See latest revision of Lycoming Service Bulletin No. 475 for application.

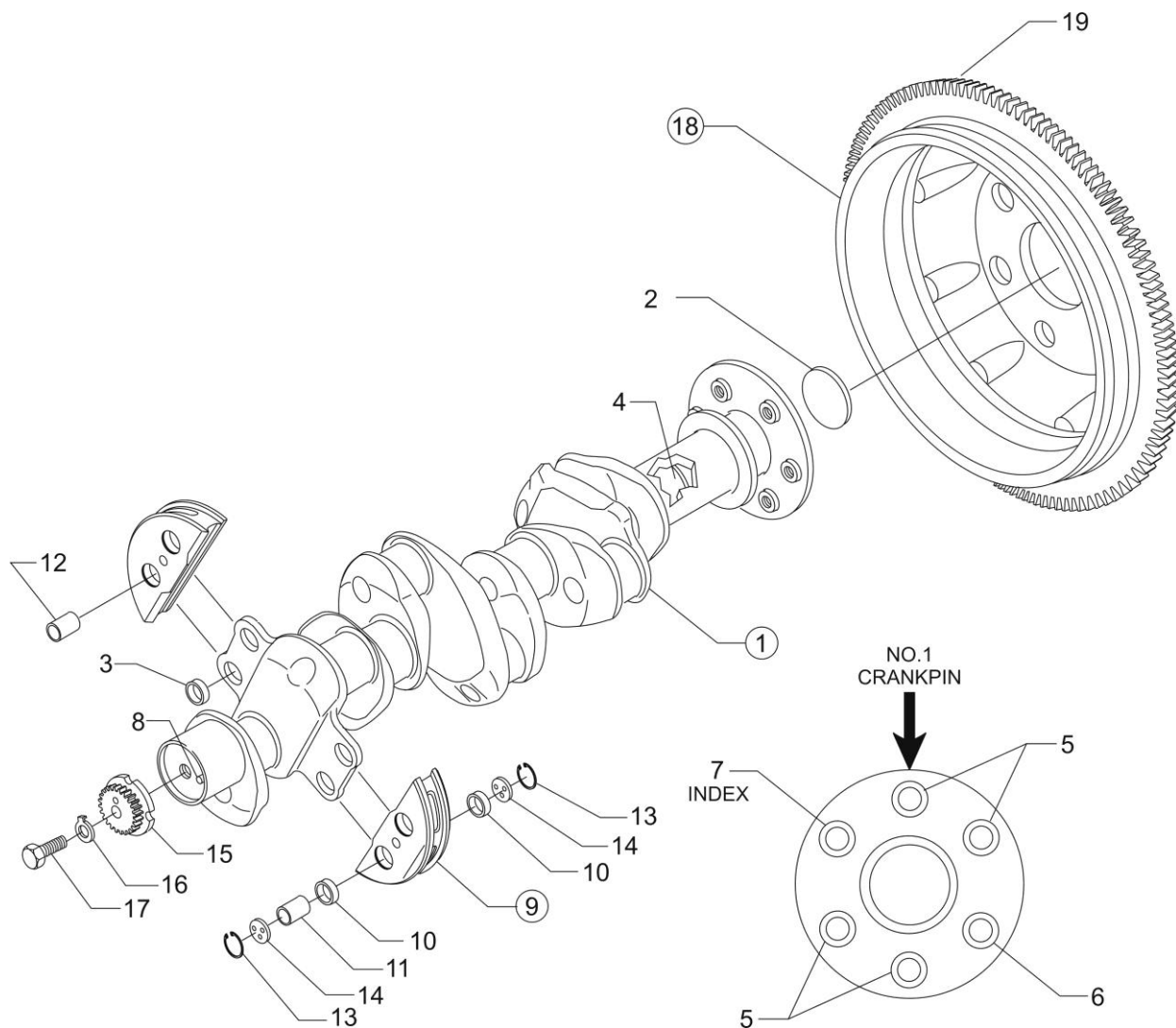
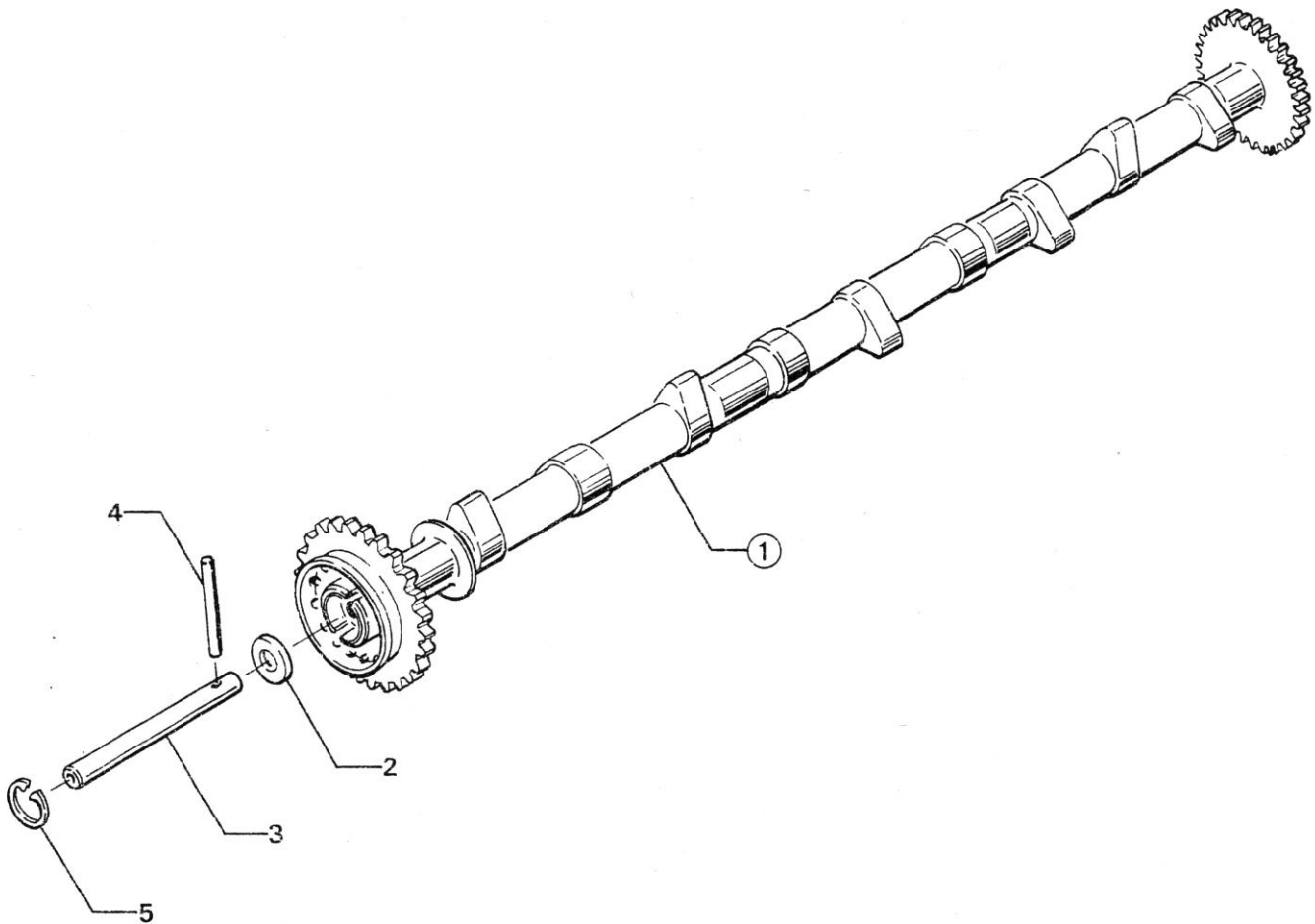


FIGURE 4. CRANKSHAFT AND RELATED PARTS

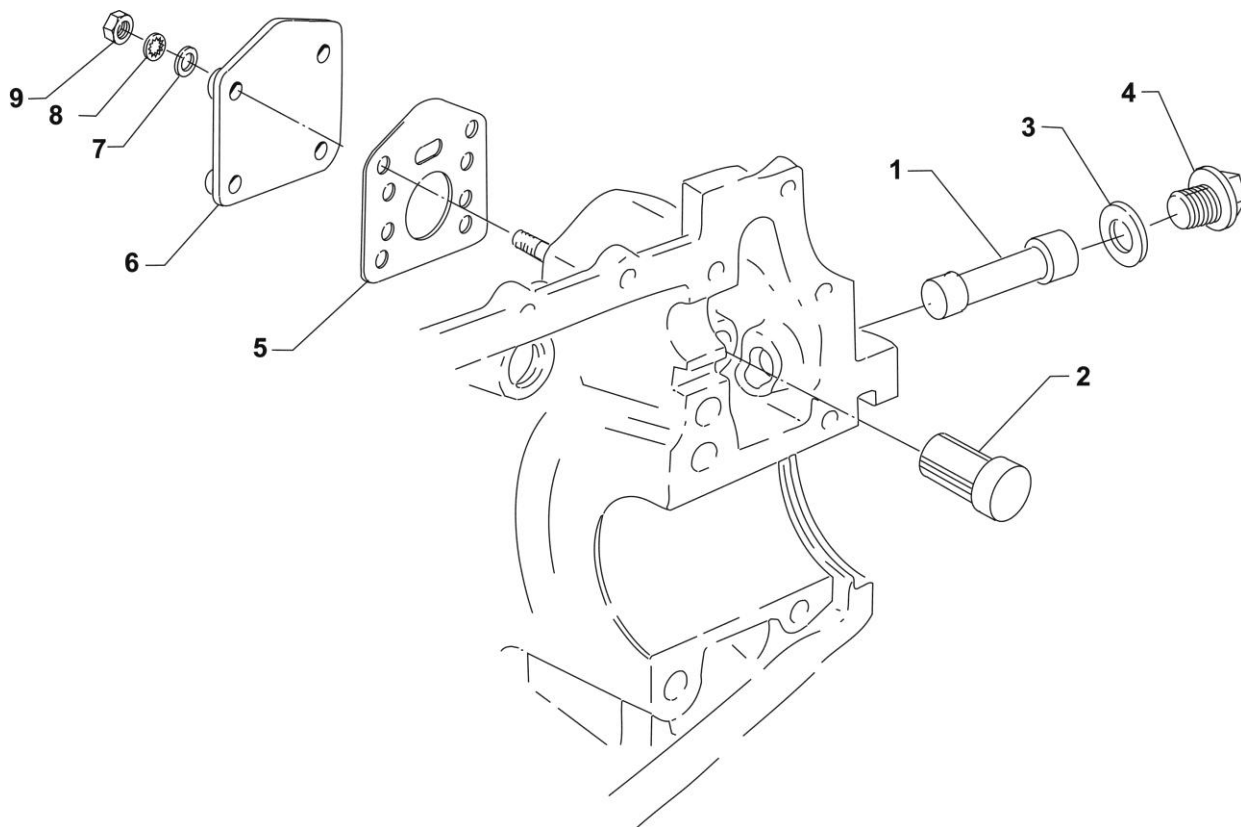
CRANKCASE, CRANKSHAFT AND CAMSHAFT GROUP
CAMSHAFT AND RELATED PARTS

FIG. REF. 5	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	LW-19340	CAMSHAFT ASSEMBLY	1
	15N23374	CAMSHAFT ASSEMBLY, Roller lifter (Roller tappet engines)	1
2	76118	SPACER, Tachometer shaft centering	1
3	76155	SHAFT ASSEMBLY, Tachometer	1
4	LW-18667	PIN, 3/16 diameter x 2-21/64 long	1
5	STD-2231	RING, Internal retaining	1


FIGURE 5. CAMSHAFT AND RELATED PARTS

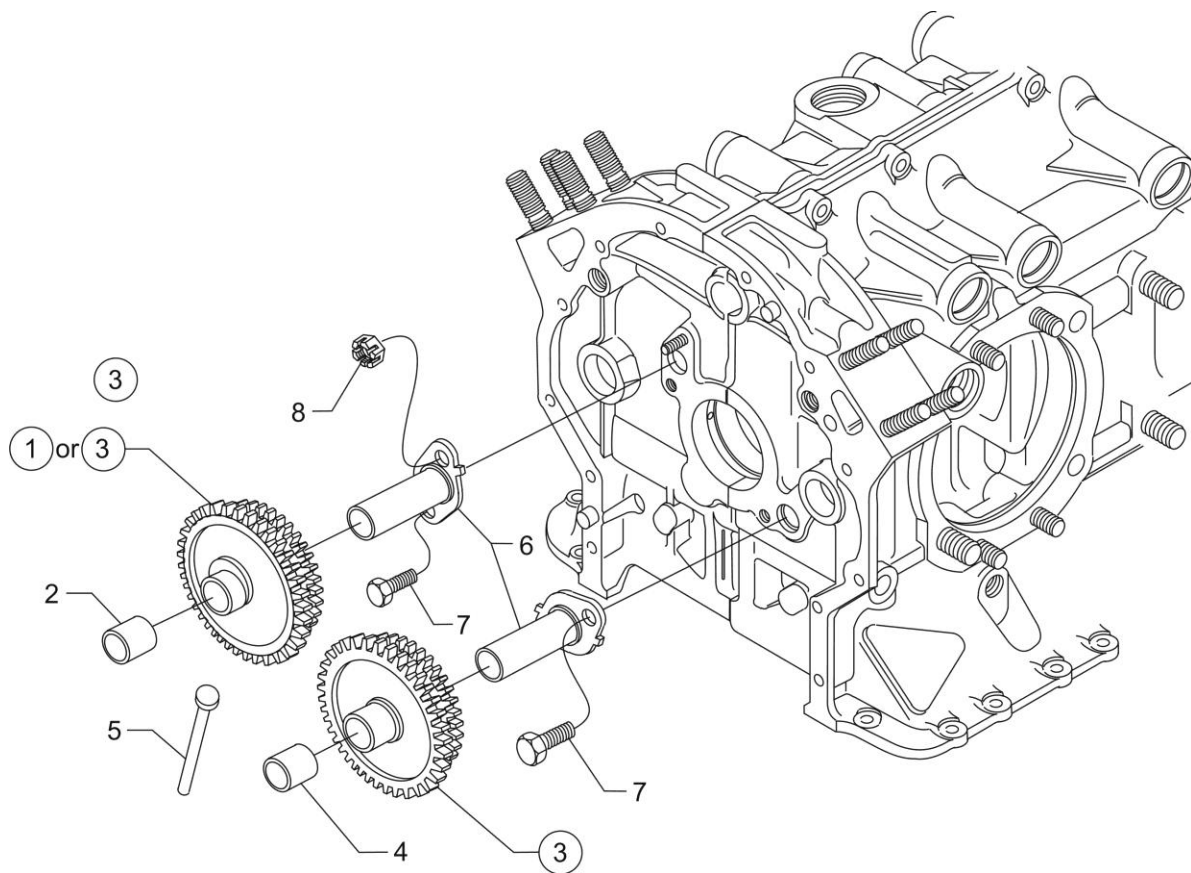
CRANKCASE, CRANKSHAFT AND CAMSHAFT GROUP
PROPELLER GOVERNOR PLUGS AND COVER

FIG. REF. 6	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	78589	PLUG, Propeller governor idler shaft	1
2	03C21721	PLUG, Propeller governor drive gear	1
3	70455	GASKET, 25/32 I.D. x 1-1/8 O.D. x 1/32 thick	1
4	LW-13896	PLUG, 3/4-16 hex. head	1
5	72053	GASKET, Governor	1
6	72378	COVER, Governor drive	1
7	STD-35	WASHER, 5/16 plain	4
8	STD-475	WASHER, 5/16 lock, internal teeth	4
9	STD-1410	NUT, 5/16-18 plain	4


FIGURE 6. PROPELLER GOVERNOR PLUGS AND COVER

CRANKCASE, CRANKSHAFT AND CAMSHAFT GROUP
CRANKSHAFT IDLER GEARS

FIG. REF. 7	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	71652	GEAR ASSEMBLY, Crankshaft idler	1
2	67530	BUSHING, Crankshaft idler gear	1
3	71668	GEAR ASSEMBLY, Crankshaft idler, plain	3
4	67530	BUSHING, Crankshaft idler gear	1
5	61544	PLUNGER, Fuel pump, long	1
6	LW-13795	SHAFT, Crankshaft idler gear	2
7	LW-31H0.88	BOLT, 5/16-18 x 7/8 long, hex. head, drilled	3
8	STD-2168	NUT, 5/16-18 NC-3 slotted shear	1

**FIGURE 7. CRANKSHAFT IDLER GEARS**

CRANKCASE, CRANKSHAFT AND CAMSHAFT GROUP
CRANKCASE ATTACHING PARTS

FIG. REF. 8	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	LW-25-1.50	BOLT, 1/4-20 x 1-1/2 long, hex. head	11
2	STD-8	WASHER, 1/4 plain	24
3	60803	STRAP, Lifting	2
4	LW-25-1.75	BOLT, 1/4-20 x 1-3/4 long, hex. head	2
5	LW-25-1.13	BOLT, 1/4-20 x 1-1/8 long, hex. head	1
6	STD-160	WASHER, 1/4 lock, internal teeth	13
7	STD-1411	NUT, 1/4-20 plain	12
8	LW-25S1.50	BOLT, 1/4-20 x 1-1/2 long, hex. head, drilled	6
9	STD-8	WASHER, 1/4 plain	18
10	STD-2249	NUT, 1/4-20 slotted shear	6
11	STD-33	WASHER, 3/8 plain	1
12	STD-872	NUT, 3/8-24 slotted	1
13	AN6-34A	BOLT, 3/8-24 x 3-37/64 long, hex. head	1
14	STD-33	WASHER, 3/8 plain	3
15	STD-678	WASHER, 3/8 lock, internal teeth	2
16	STD-596	NUT, 3/8-24 plain	2
17	76220	STUD, 1/2-20 x 10-45/64 long	8
18	LW-31-2.75	BOLT, 5/16-18 x 2-3/4 long, hex. head	1
19	LW-31-1.16	BOLT, 5/16-18 x 1-5/32 long, hex. head	3
20	STD-35	WASHER, 5/16 plain	4
21	STD-475	WASHER, 5/16 lock, internal teeth	4

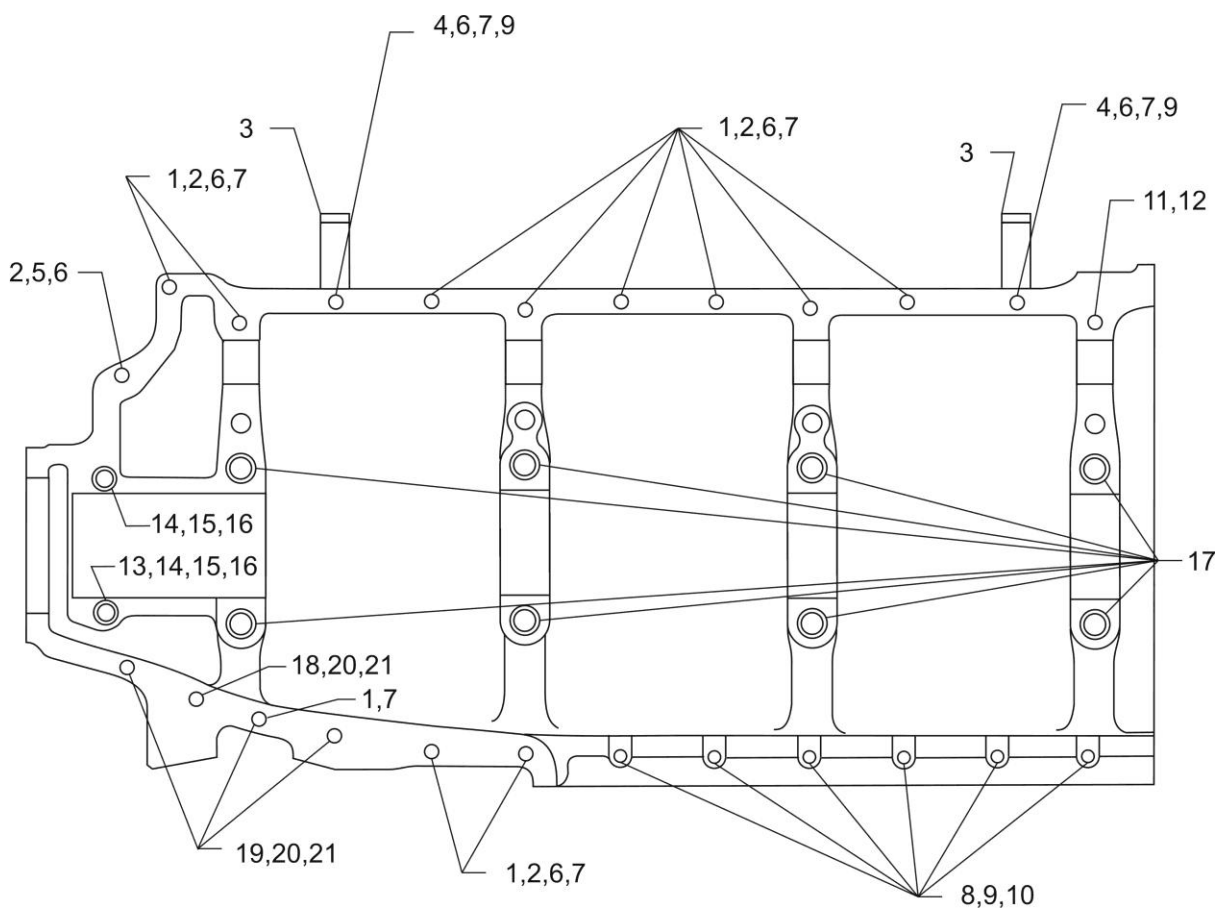
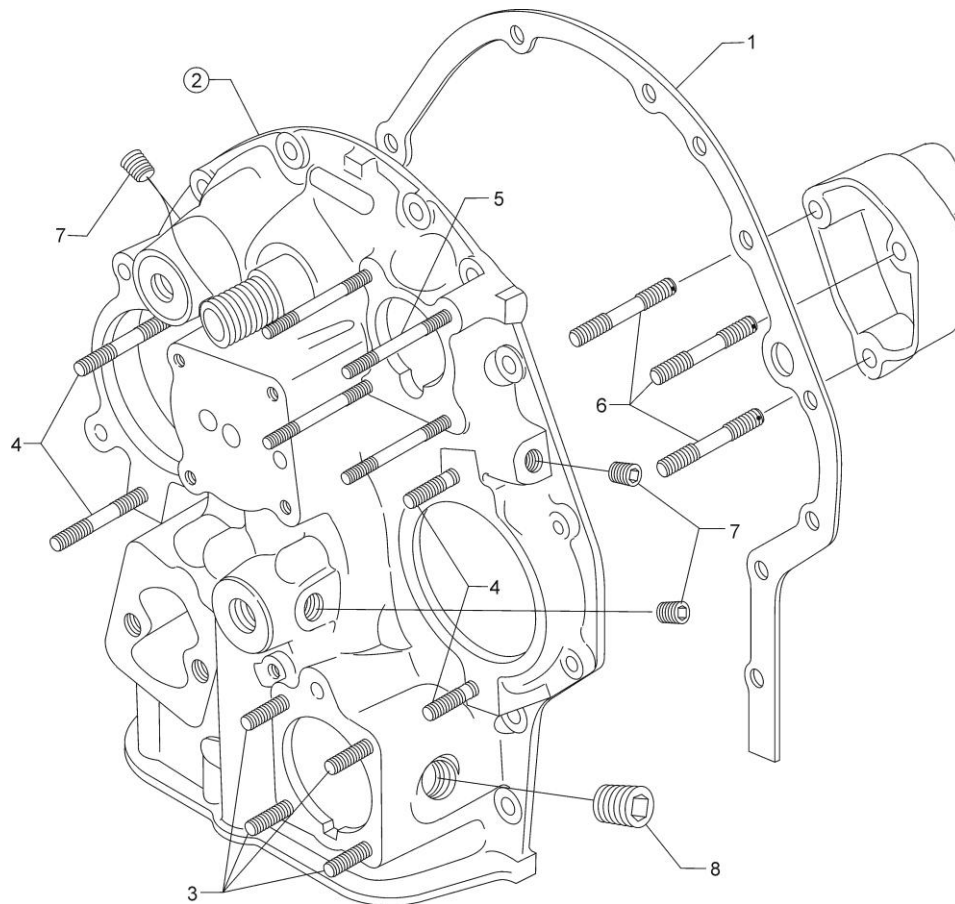


FIGURE 8. CRANKCASE ATTACHING PARTS

ACCESSORY HOUSING AND RELATED PARTS
ACCESSORY HOUSING ASSEMBLY

FIG. REF. 9	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	73818	GASKET, Accessory housing	1
2	21C21539-03	HOUSING ASSEMBLY, Accessory	1
3	31C-12	STUD, 5/16-18 x 1-1/2 long	4
4	31C-21	STUD, 5/16-18 x 2-5/8 long	4
5	25C-12	STUD, 1/4-20 x 1-1/2 long	4
6	31CD-17	STUD, 5/16-18 x 2-1/8 long, drilled	3
7	1102	PLUG, 1/8-27 NPT, Allen head	4
8	STD-784	PLUG, 3/8-18 NPT, Allen head	1


FIGURE 9. ACCESSORY HOUSING ASSEMBLY

ACCESSORY HOUSING AND ATTACHING PARTS
OIL PUMP ASSEMBLY AND ACCESSORY HOUSING ATTACHING PARTS

FIG. REF. 10	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	78531	BODY ASSEMBLY, Oil pump	1
2	74641	SHAFT, Oil pump drive	1
3	LW-18110*	IMPELLER ASSEMBLY, Oil pump driven	1
4	LW-18108	IMPELLER, Oil pump, driven	1
5	78530	SHAFT, Oil pump drive	1
6	LW-18109*	IMPELLER, Oil pump, driven	1
7	STD-35	WASHER, 5/16 plain	3
8	STD-1420	NUT, 5/16-18 slotted	3
9	LW-14260	SEAL, Tachometer shaft, oil	1
10	STD-8	WASHER, 1/4 plain	12
11	STD-160	WASHER, 1/4 lock, internal teeth	12
12	LW-25-0.94	BOLT, 1/4-20 x 15/16 long, hex. head	9
13	LW-25-1.13	BOLT, 1/4-20 x 1-1/8 long, hex. head	1
14	LW-25-1.44	BOLT, 1/4-20 x 1-7/16 long, hex. head	2

* - Sold in complete sets only (Kit P/N 05K19423-S).

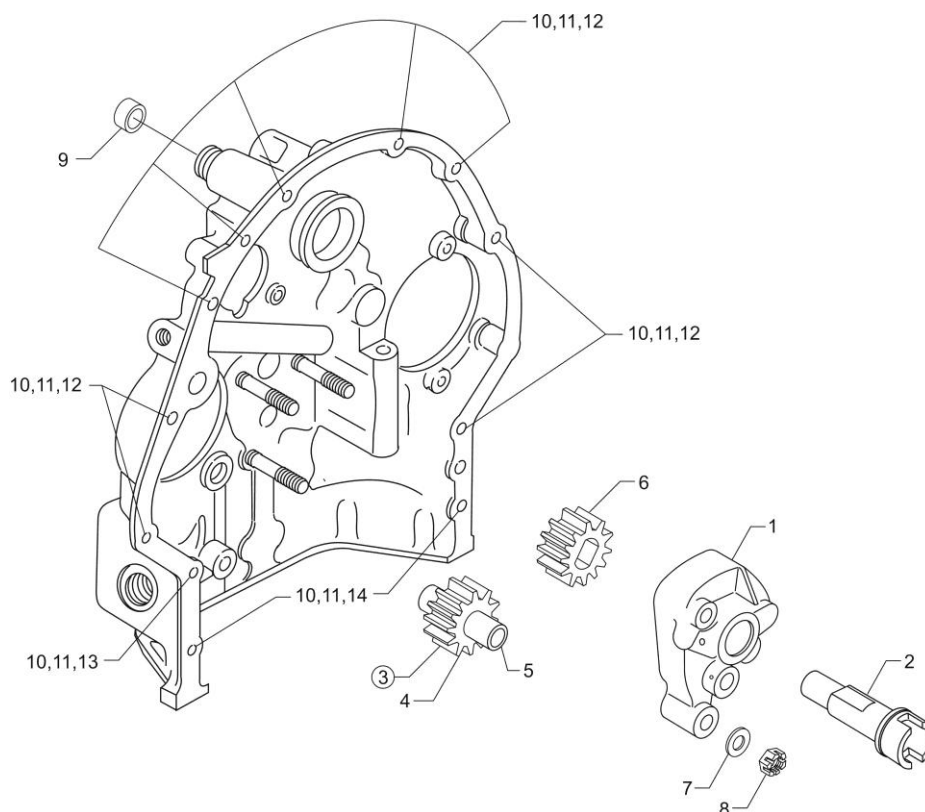


FIGURE 10. OIL PUMP ASSEMBLY AND ACCESSORY HOUSING ATTACHING PARTS

ACCESSORY HOUSING AND RELATED PARTS
FUEL PUMP COVER

FIG. REF. 11	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	60096	GASKET, Fuel pump	1
2	03D23350	COVER, Fuel pump	1
3	STD-33	WASHER, 3/8 plain	2
4	LW-38-0.75	BOLT, 3/8-16 x 3/4 long, hex. head	2
5	STD-678	WASHER, 3/8 lock, internal teeth	2

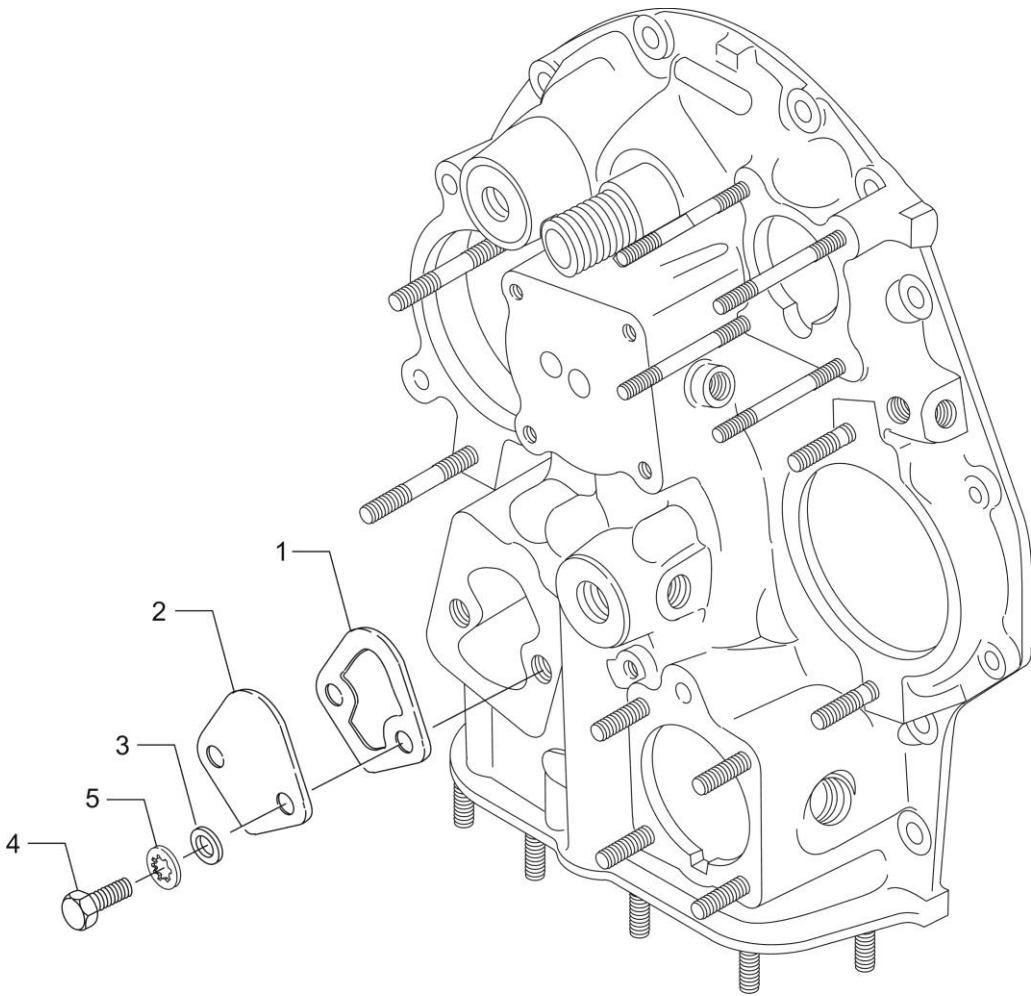
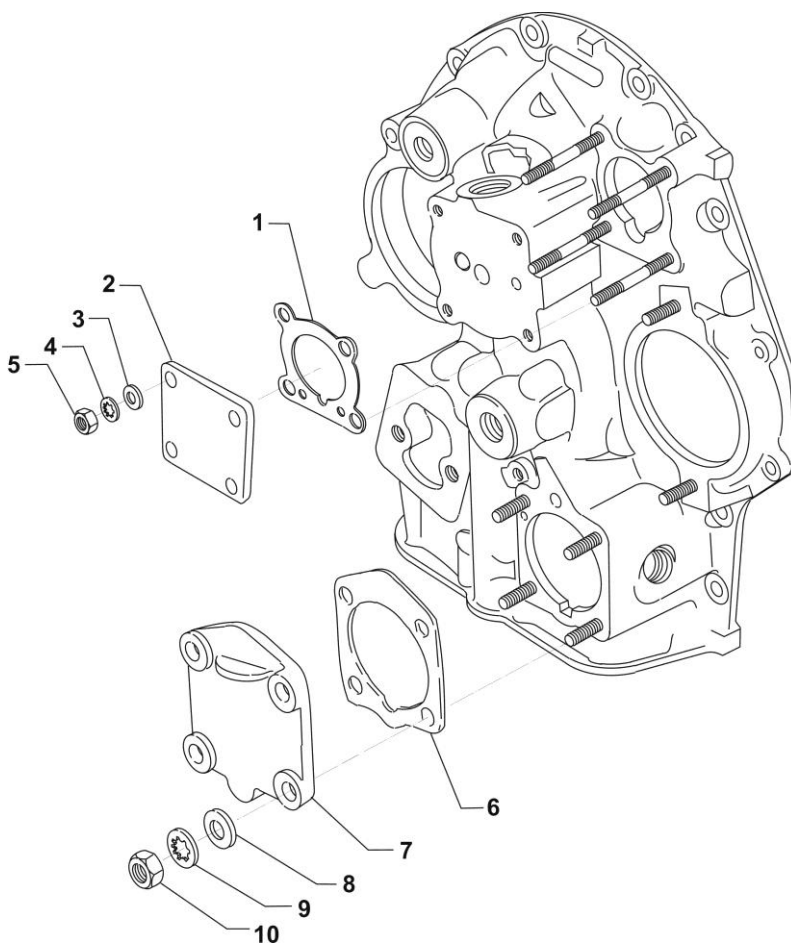


FIGURE 11. FUEL PUMP COVER

ACCESSORY HOUSING AND RELATED PARTS
VACUUM AND HYDRAULIC PUMP COVERS

FIG. REF. 12	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	61183	GASKET, Accessory adapter	1
2	60430	COVER, Vacuum pump	1
3	STD-8	WASHER, 1/4 plain	4
4	STD-160	WASHER, 1/4 lock, internal teeth	4
5	STD-1411	NUT, 1/4-20 plain	4
6	69551	GASKET, Accessory drive adapter	1
7	69106	COVER, Governor drive adapter pad	1
8	STD-35	WASHER, 5/16 plain	4
9	STD-475	WASHER, 5/16 lock, internal teeth	4
10	STD-1410	NUT, 5/16-18 plain	4


FIGURE 12. VACUUM AND HYDRAULIC PUMP COVERS

ACCESSORY HOUSING AND RELATED PARTS
OIL COOLER BYPASS VALVE AND BREATHER FITTING

FIG. REF. 13	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	STD-8	WASHER, 1/4 plain	4
2	STD-1856	SCREW, 1/4-20 x 1.00 long, hex. head	4
3	53E22144*	VALVE ASSEMBLY, Temperature control oil cooler bypass	1
4	76510*	GASKET, Valve assembly	1
5	06E19769-0.63	GASKET, 5/8 I.D. annular	1
6	62417	PLUG, Oil cooler bypass	1
7	STD-784	PLUG, 3/8-18 NPT, Allen head	2
8	72996	FITTING, Breather	1
9	61173	GASKET, Oil pressure housing	1

* - Ship loose with engine.

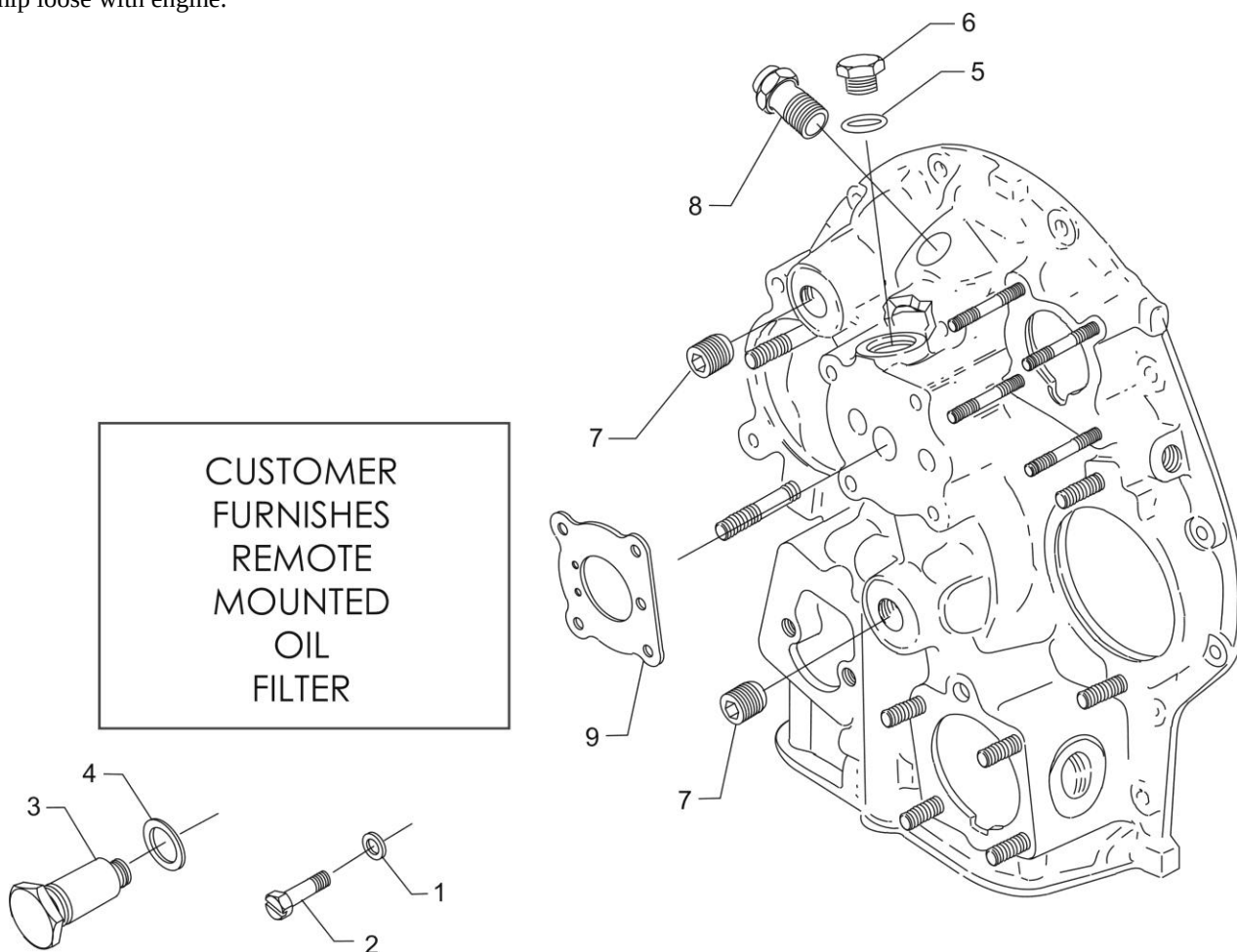
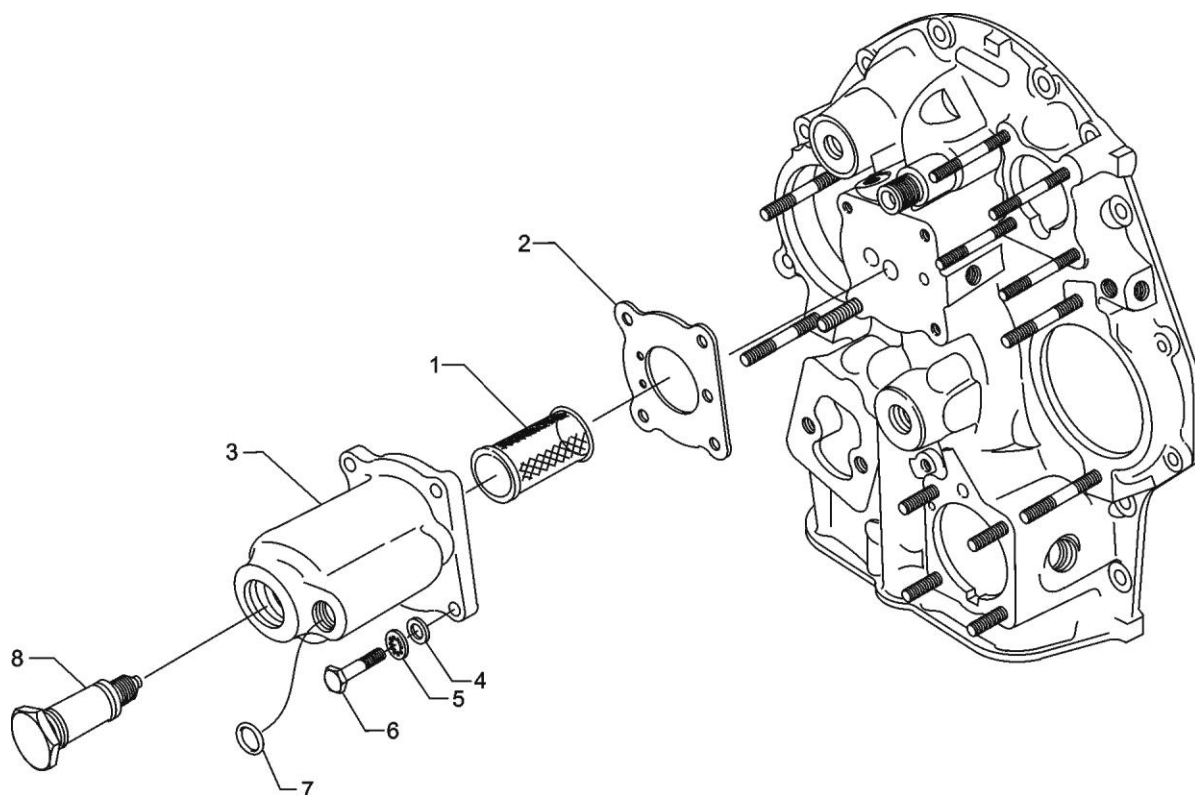


FIGURE 13. OIL COOLER BYPASS VALVE AND BREATHER FITTING

ACCESSORY HOUSING AND RELATED PARTS
OIL PRESSURE SCREEN ASSEMBLY AND OIL COOLER BYPASS VALVE

FIG. REF. 14	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	62817	SCREEN ASSEMBLY, Oil pressure	1
2	61173	GASKET, Oil pressure housing	1
3	69510	HOUSING, Thermostatic valve and oil pressure screen	1
4	STD-8	WASHER, 1/4 plain	4
5	STD-160	WASHER, 1/4 lock, internal teeth	4
6	LW-25-1.00	BOLT, 1/4-20 x 1.00 long	4
7	06E19769-0.63	GASKET, 7/8 O.D. x 5/8 I.D. x 3/32 annular	1
8	53E22144	VALVE ASSEMBLY, Temperature control oil cooler bypass	1

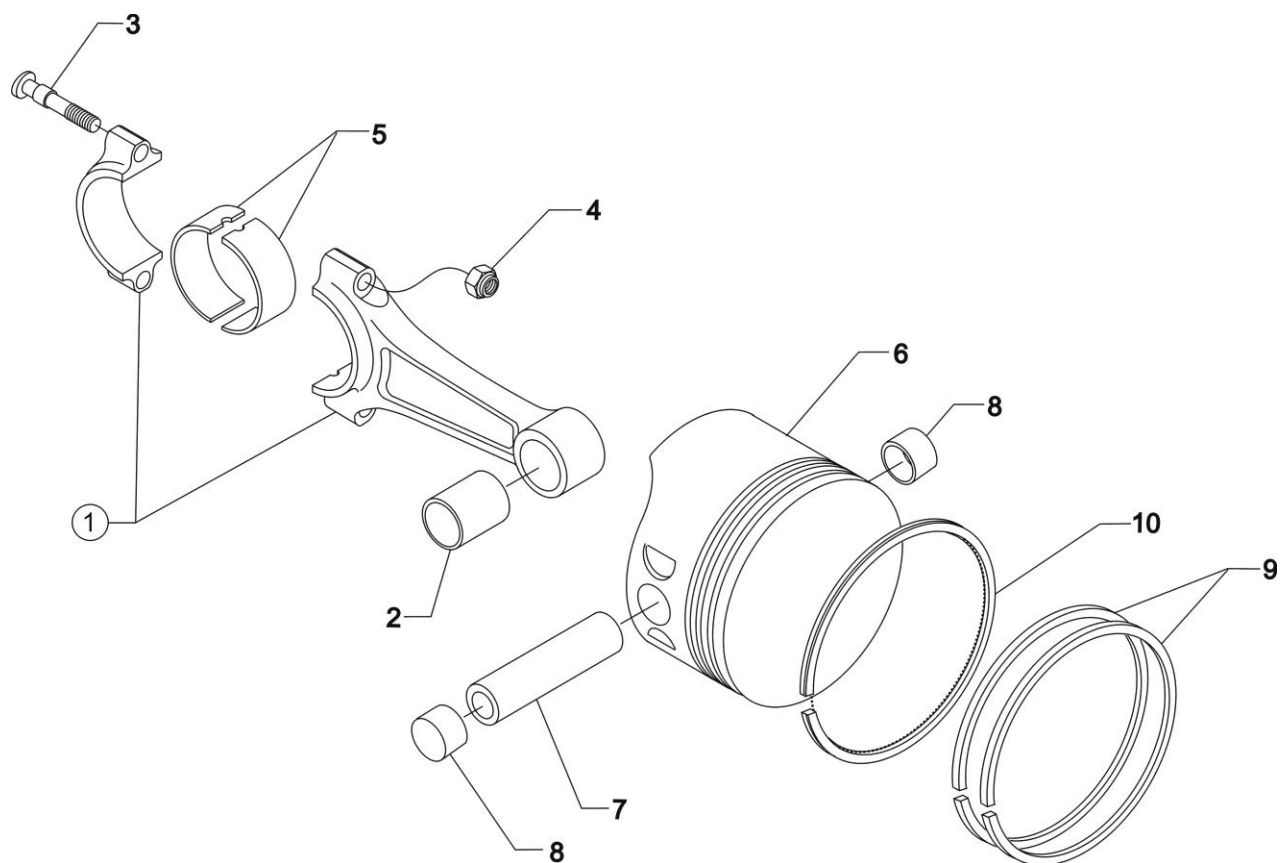

FIGURE 14. OIL PRESSURE SCREEN ASSEMBLY AND OIL COOLER BYPASS VALVE

CYLINDER, PISTON AND VALVE TRAIN
CONNECTING RODS, PISTONS AND RING ASSEMBLIES

FIG. REF. 15	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	LW-11750	CONNECTING ROD ASSEMBLY	6
2	LW-13923	BUSHING, Connecting rod, upper	6
3	14S23890*	BOLT, Connecting rod	12
	75061**	BOLT, Connecting rod	12
4	LW-12186	NUT, Connecting rod bolt	12
5	18M19389	BEARING, Connecting rod	12
6	75089	PISTON, Compression ratio 8.50:1	6
7	LW-14078	PIN, Piston	6
8	72198	PLUG, Piston pin	12
9	74241	RING, Piston, top compression	12
10	14H21950	RING, Piston, oil regulating (expander type)	6

* - Lycoming use only.

** - Service use only.

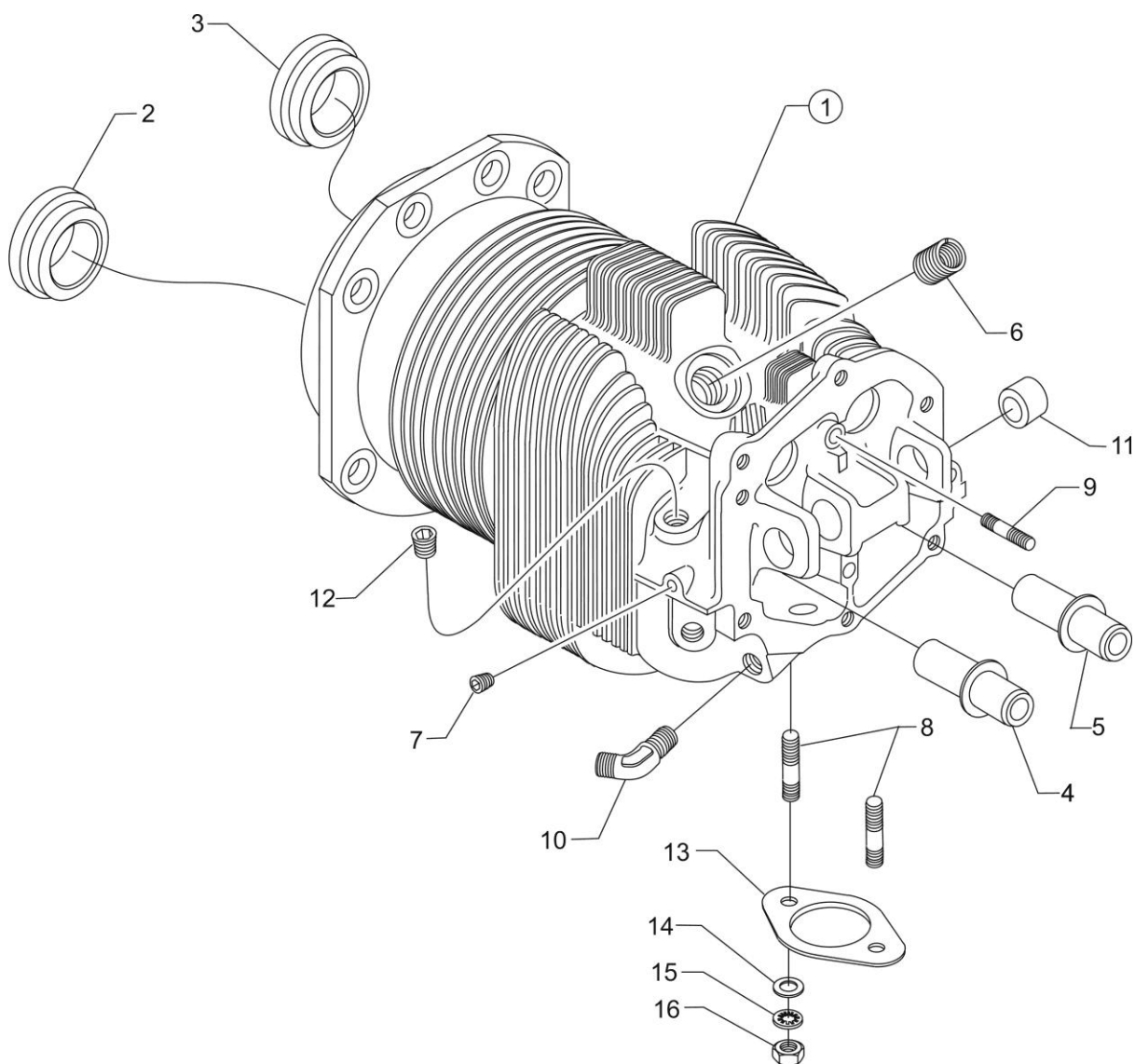
**FIGURE 15. CONNECTING RODS, PISTONS AND RING ASSEMBLIES**

CYLINDER, PISTON AND VALVE TRAIN
CYLINDER ASSEMBLY

FIG. REF. 16	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	LW-13870	CYLINDER ASSEMBLY	6
2	72057	SEAT, Intake valve	6
3	72058	SEAT, Exhaust valve	6
4	76943*	GUIDE, Intake valve, flanged	6
5	16R22126*	GUIDE, Exhaust valve, flanged	6
6	66796	INSERT, Spark plug, 18-1.5 MM	12
7	STD-1353	INSERT, No. 10-24 Heli-coil, taper pipe thread	6
8	31C-12	STUD, 5/16-18 x 1-1/2 long	12
9	25C-8	STUD, 1/4-20 x 1.00 long	6
10	MS20823-6D	ELBOW, 3/8 flared tube, 45°	6
11	66610	BUSHING, Rocker shaft	24
12	1102**	PLUG, 1/8-27 NPT, Allen head	6
13	77611	GASKET, Exhaust flange	6
14	STD-35	WASHER, 5/16 plain	12
15	STD-475	WASHER, 5/16 lock, internal teeth	12
16	STD-1410	NUT, 5/16-18 plain	12

* - Refer to the latest revision of Service Instruction No. 1256.

** - Assemble in cylinder head when no priming lines.

**FIGURE 16. CYLINDER ASSEMBLY**

CYLINDER, PISTON AND VALVE TRAIN
VALVE ASSEMBLY AND CYLINDER RELATED PARTS

FIG. REF. 17	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	17A23938	VALVE, Intake	6
2	17B23936	VALVE, Exhaust	6
3	65441	SEAT, Valve spring, lower intake	6
4	LW-13323	SEAT, Valve spring, lower exhaust	6
5	LW-10077	SEAT, Valve spring, upper intake	6
6	LW-16475	SEAT, Valve spring, upper exhaust	6
7	60009	KEY, Valve, intake	12
8	17C21191	KEY, Valve, exhaust	12
9	17C19386	CAP, Valve stem, exhaust	6
10	LW-11795	SPRING, Valve, auxiliary	12
11	LW-11800	SPRING, Valve, outer	12
12	15B26066	PLUNGER ASSEMBLY, Hydraulic tappet	12
13	15B21319	SOCKET, Push rod, hydraulic tappet	12
14	LW-11485	SHROUD TUBE ASSEMBLY	12
15	15G23461♦	SHROUD TUBE ASSEMBLY	12
16	LW-14995	SPRING, Shroud tube	6
17	LW-12272	LOCKPLATE, Shroud tube	6
18	STD-1411	NUT, 1/4-20 plain	6
19	01L23459♦	WASHER, 25/32 I.D. x 1-3/8 O.D. x 1/32 thick	12
20	LW-18661	SEAL, Shroud tube	12
21	06A23493♦	SEAL, Shroud tube	12
22	70310■	SEAL, Shroud tube	12
23	15F19957-28*♦	ROD ASSEMBLY, Push (A total of 12 required)	AR
	15F19957-29*♦	ROD ASSEMBLY, Push (A total of 12 required)	AR
	15F19957-30*♦	ROD ASSEMBLY, Push (A total of 12 required)	AR
	15F19957-31*♦	ROD ASSEMBLY, Push (A total of 12 required)	AR
	15F19957-32*♦	ROD ASSEMBLY, Push (A total of 12 required)	AR
	15F19957-33*♦	ROD ASSEMBLY, Push (A total of 12 required)	AR
	15F19957-34*†	ROD ASSEMBLY, Push (A total of 12 required)	AR
	15F19957-35*	ROD ASSEMBLY, Push (A total of 12 required)	AR
	15F19957-36*	ROD ASSEMBLY, Push (A total of 12 required)	AR
	15F19957-37*	ROD ASSEMBLY, Push (A total of 12 required)	AR
24	17F19357**	ROCKER ASSEMBLY, Valve	12
25	74637	BUSHING, Valve rocker	12
26	LW-13790	SHAFT, Valve rocker	6
27	LW-12892	THRUST BUTTON, Rocker shaft	12

* - Refer to the latest revision of Service Instruction No. 1060 for complete push rod application.

** - Due to the size of the area where the part number is stamped, the last five digits may be all that is shown (19357).

♦ - These parts are used on roller tappet engines only.

† - This push rod can be used on both roller tappet engines and flat tappet engines.

■ - This seal needs to be installed on both roller tappet engines and flat tappet engines.

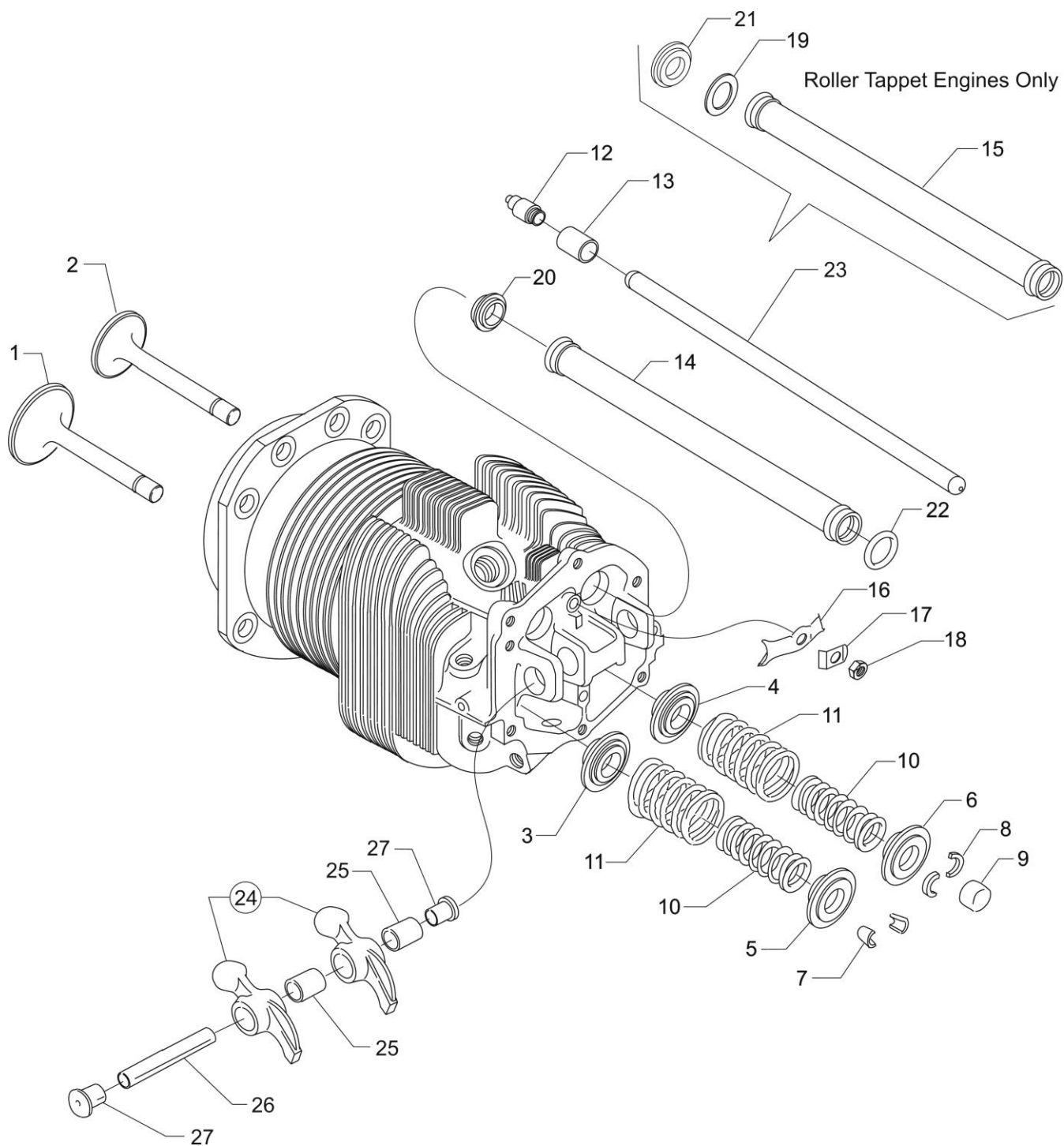
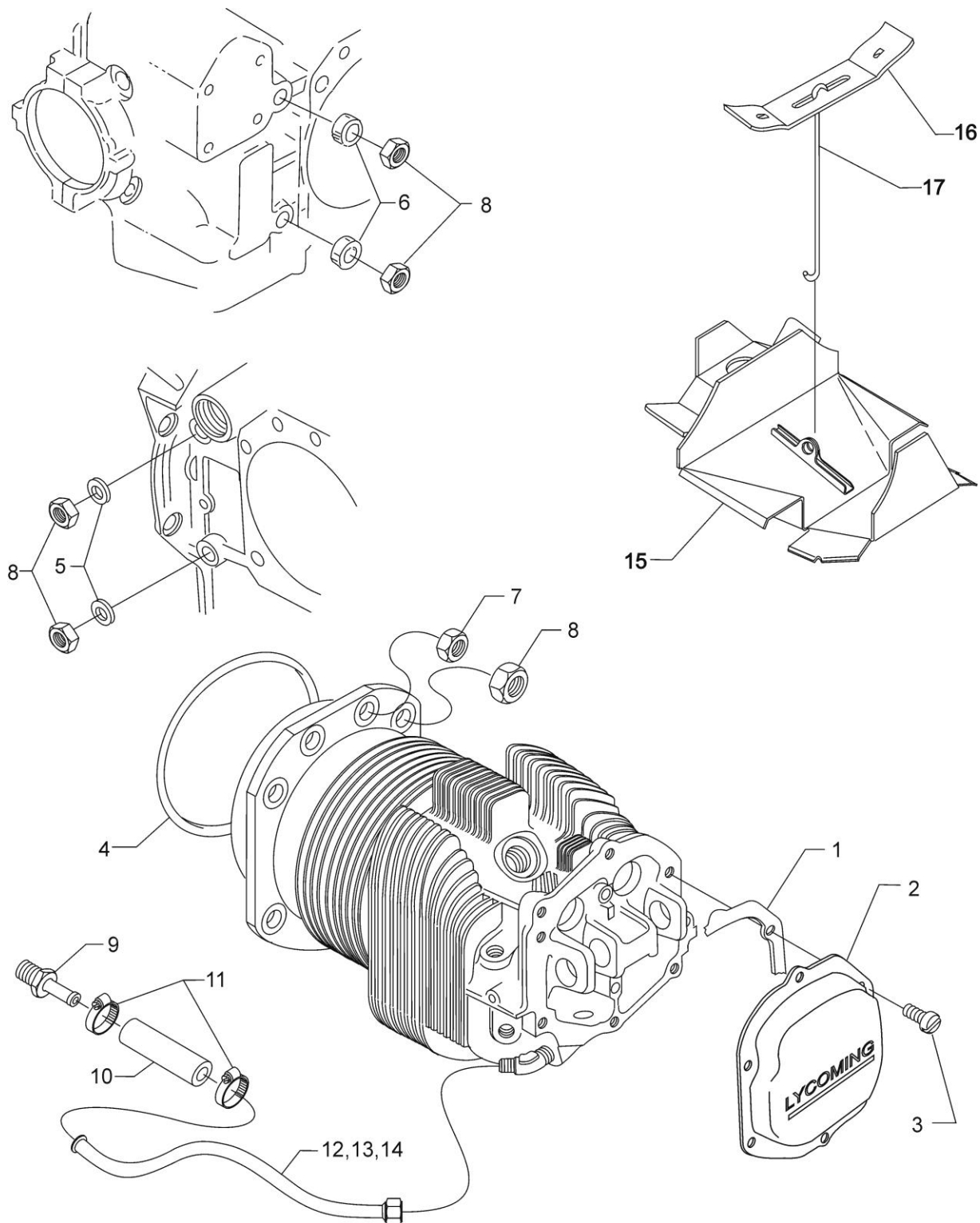


FIGURE 17. VALVE ASSEMBLY AND CYLINDER RELATED PARTS

CYLINDER, PISTON AND VALVE TRAIN
CYLINDER HEAD DRAIN TUBES,
INTER-CYLINDER COOLING BAFFLES AND RELATED PARTS

FIG. REF. 18	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	75906	GASKET, Rocker box cover	6
2	61247	COVER, Rocker box	6
3	STD-1925	SCREW, 1/4-20 x 5/8 long, pan. head	36
4	71481	RING, Oil seal, 3/32 diameter x 4-27/32 I.D.	6
5	77906	SPACER, 33/64 I.D. x 7/8 O.D. x 1/8 thick	2
6	74887	SPACER, 33/64 I.D. x 7/8 O.D. x 3/8 thick	2
7	383-B	NUT, 3/8-24 plain	24
8	STD-2090	NUT, 1/2-20 plain	28
9	STD-684	NIPPLE, Straight, 3/8 I.D. hose	6
10	STD-1821	HOSE, 3/8 I.D. x 2-1/2 long	6
11	LW-15592-5-05	CLAMP, Hose	12
12	68759	TUBE ASSEMBLY, Cylinder head oil drain, cylinder no. 1	1
13	68760	TUBE ASSEMBLY, Cylinder head oil drain, cylinder no. 2	1
14	68761	TUBE ASSEMBLY, Cylinder head oil drain, cylinders no. 3, 4, 5, 6	4
15	LW-15839	BAFFLE ASSEMBLY, Inter-cylinder	4
16	71611	RETAINER, Inter-cylinder baffle	4
17	71629	HOOK, Inter-cylinder baffle	4



**FIGURE 18. CYLINDER HEAD DRAIN TUBES,
INTER-CYLINDER COOLING BAFLES AND RELATED PARTS**

IGNITION SYSTEM
MAGNETOS, MAGNETO DRIVES, HARNESSES AND SPARK PLUGS

FIG. REF. 19	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	68H22624	CUSHION, Magneto drive	4
2	62224	GASKET, Magneto adapter and magneto	4
3	LW-12707	ADAPTER, Magneto	2
4	73000	COUPLING, Magneto drive	1
5	73013	COUPLING, Magneto drive	1
6	LW-19096	GEAR RETAINER ASSEMBLY	2
7	67542	BEARING, Ball	2
8	66B21783	MAGNETO (S6LSC-204)	1
9	66B21774	MAGNETO (S6LSC-200)	1
10	STD-1727	WASHER, 3/4 O.D. x 21/64 I.D. x 1/8 thick	4
11	STD-475	WASHER, 5/16 lock, internal teeth	4
12	STD-1410	NUT, 5/16-18 plain	4
13	1182-E7*	SPARK PLUG, Champion (REM38E)	12
	1182-S4*	SPARK PLUG, Unison (UREM38E)	12
14	LW-M-2463	HARNESS ASSEMBLY, Left magneto	1
15	LW-M-2464	HARNESS ASSEMBLY, Right magneto	1
16	LW-M-2376	PLATE, Spark plug cable	2
17	72351	SCREW, No. 10-32 self-locking	8
18	LW-18959-175-25	CLAMP, 1-3/4 I.D.	6
19	STD-553	SCREW, No. 6-32 x 1/2 long	6
20	MS21044N06	NUT, No. 6-32 self-locking	6
21	LW-16266-25-44	CLAMP (3 wire)	2

* - Refer to the latest revision of Service Instruction No. 1042 for complete listing of all approved spark plugs.

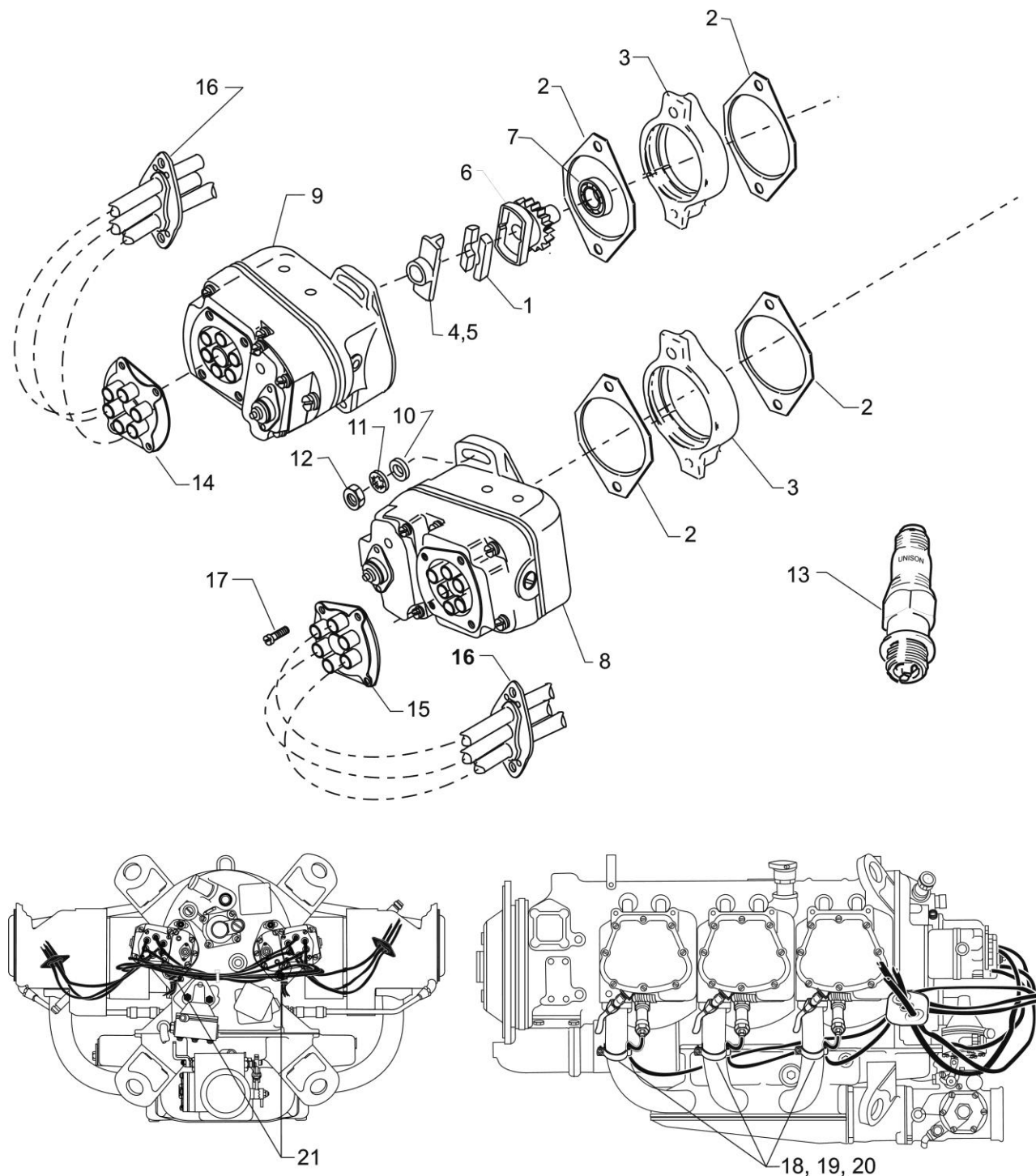


FIGURE 19. MAGNETOS, MAGNETO DRIVES, HARNESSES AND SPARK PLUGS

ELECTRICAL COMPONENTS
STARTER ATTACHING PARTS

FIG. REF. 20	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	STD-35	WASHER, 5/16 plain	4
2	STD-475	WASHER, 5/16 lock, internal teeth	4
3	LW-31-1.16	BOLT, 5/16-18 x 1-5/32 long, hex. head	1
4	STD-1410	NUT, 5/16-18 plain	3

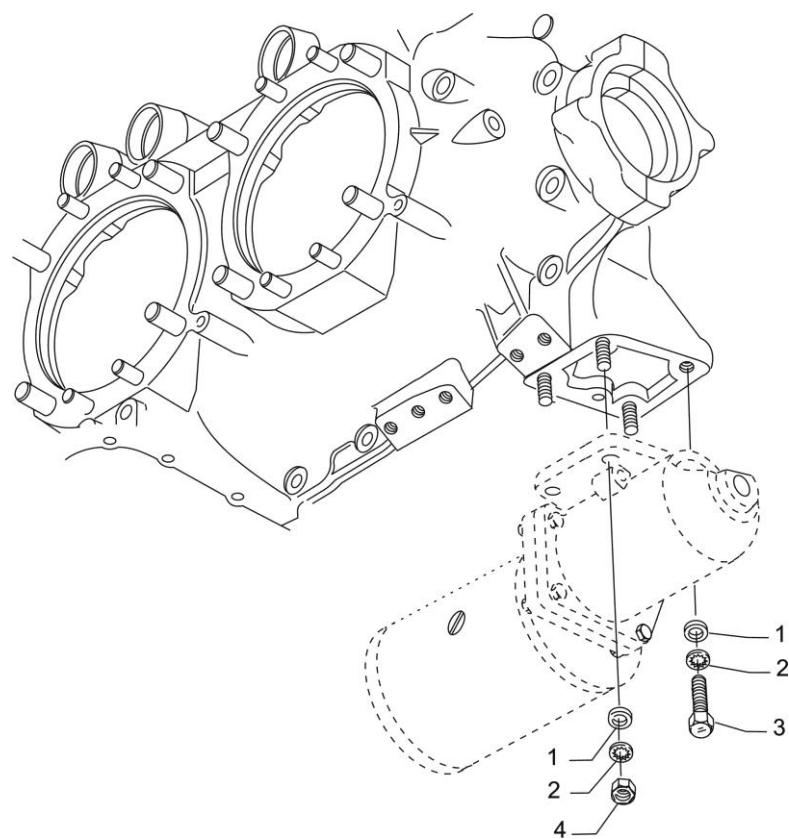


FIGURE 20. STARTER ATTACHING PARTS

ELECTRICAL COMPONENTS

ALTERNATOR ASSEMBLY

FIG. REF. 21	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	32B19549	ALTERNATOR ASSEMBLY, 12 volt, 70 amp.	1
2	LW-14318	ALTERNATOR (ALX-8421-LS)	1
3	36B19484	PULLEY, Alternator	1
4	37A19773-376	BELT, Alternator drive, 3/8 wide	1

NOTE

Refer to the latest revision of Service Instruction No. 1154 for complete listing of FAA approved starters, generators, alternators, regulators and relays.

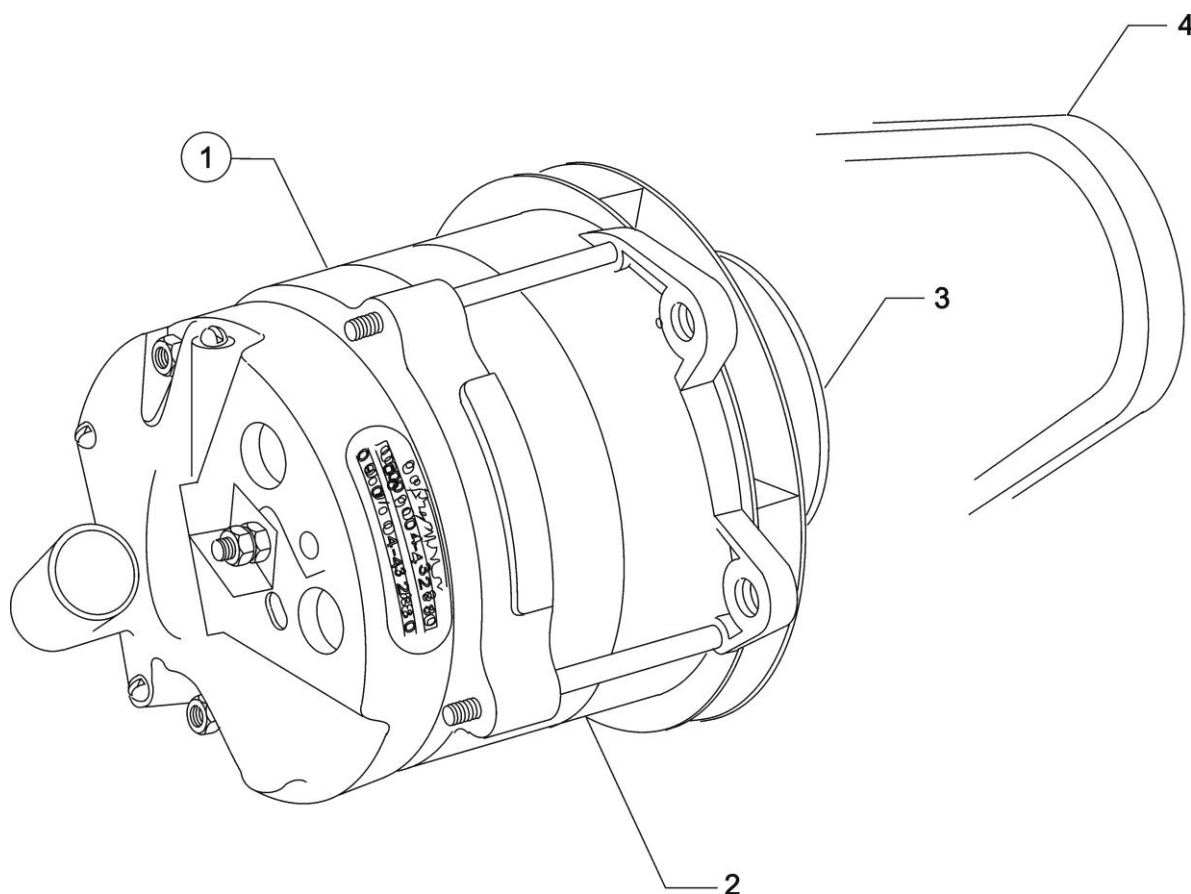
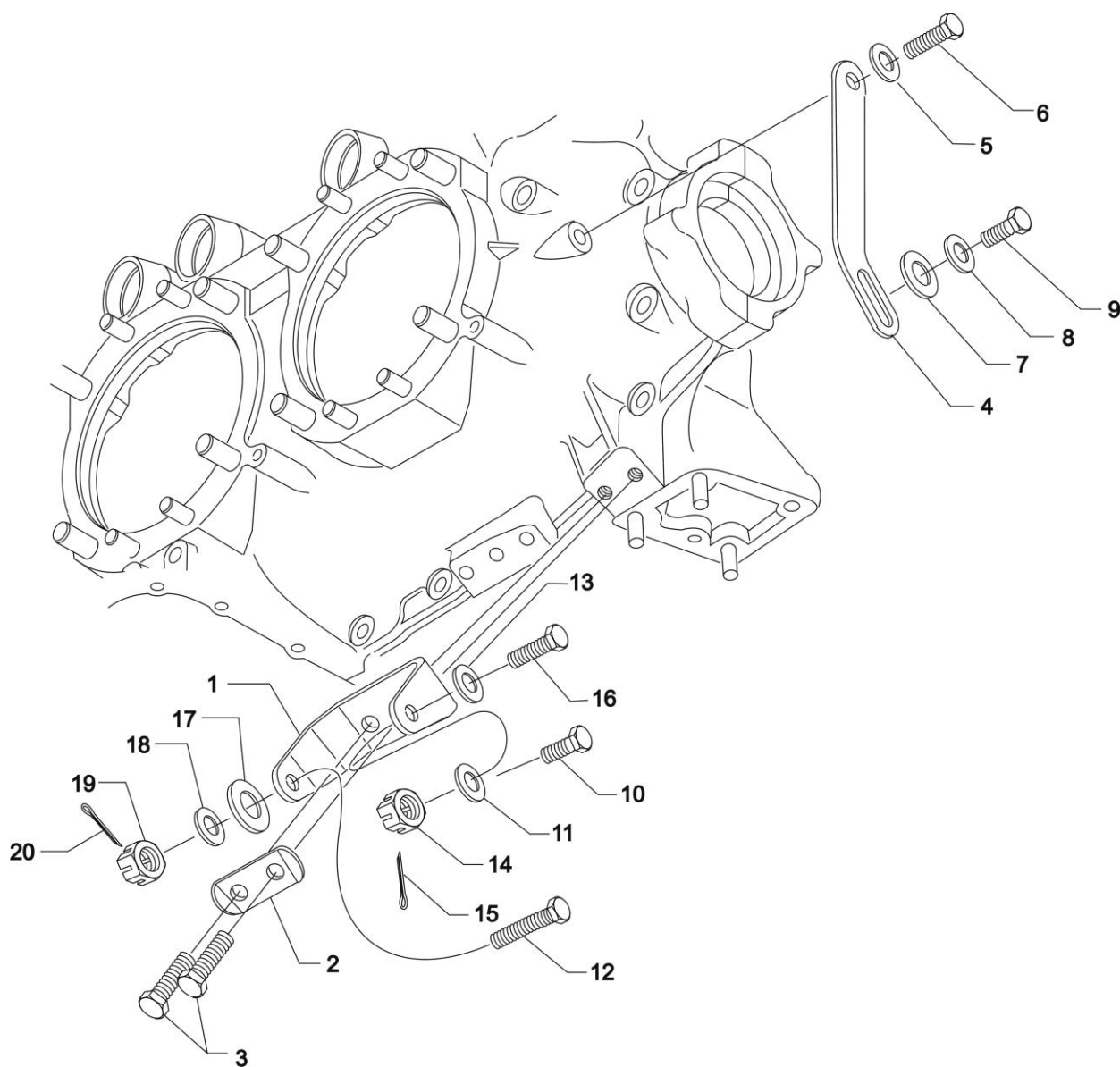


FIGURE 21. ALTERNATOR ASSEMBLY

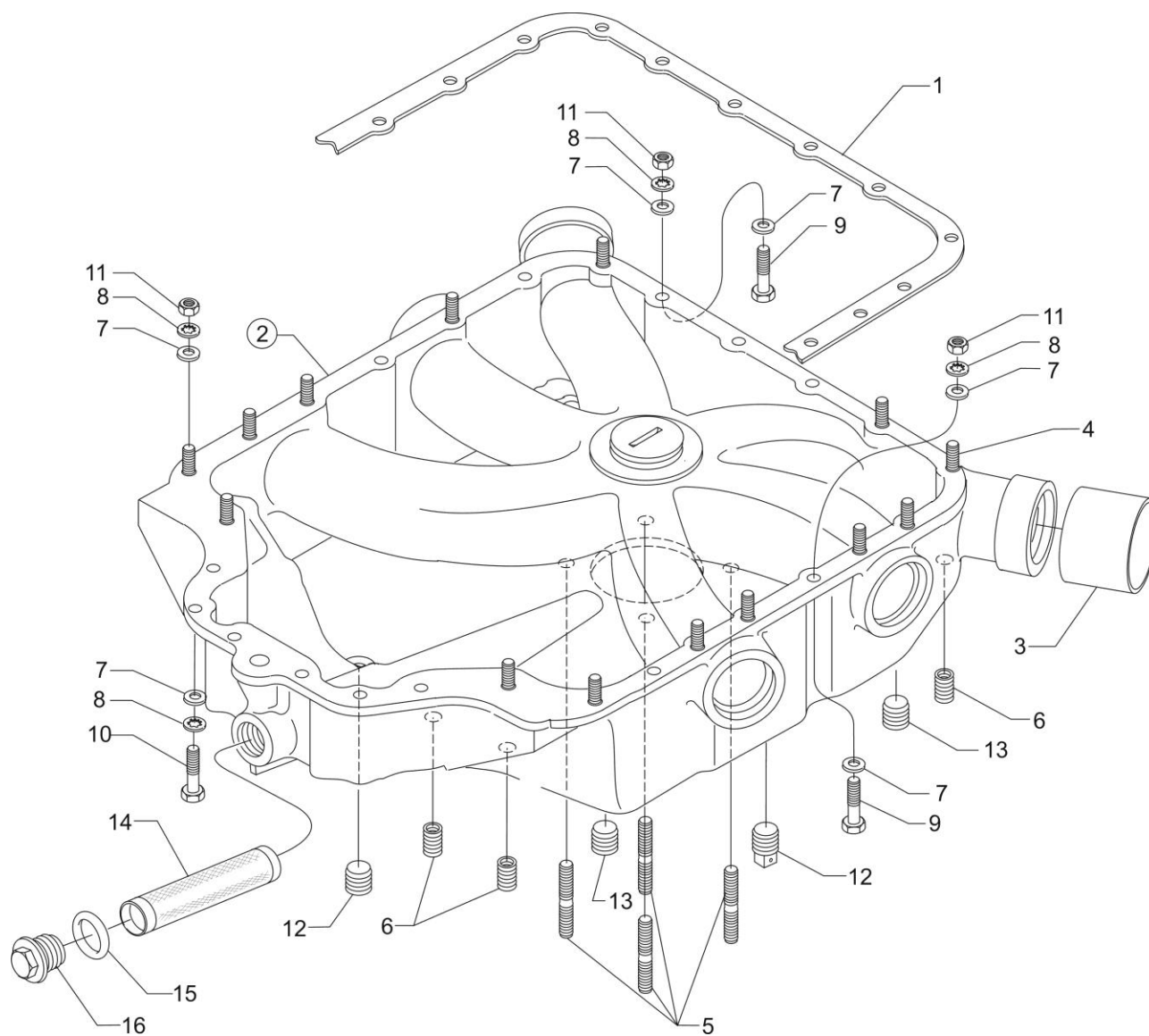
ELECTRICAL SYSTEM
ALTERNATOR MOUNTING AND ATTACHING PARTS

FIG. REF. 22	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	07A19474	BRACKET, Alternator	1
2	73383	LOCKPLATE, 5/16 bolt x 1.00 spacing	1
3	LW-31-0.94	BOLT, 5/16-18 x 15/16 long, hex. head	2
4	75380	LINK, Alternator adjusting	1
5	STD-35	WASHER, 5/16 plain	1
6	LW-31H0.75	BOLT, 5/16-18 x 3/4 long, hex. head, drilled	1
7	STD-1727	WASHER, Plain, 3/4 O.D. x 11/32 I.D. x 1/8 thick	1
8	STD-33	WASHER, 3/8 plain	3
9	LW-31H0.75	BOLT, 5/16-18 x 3/4 long, hex. head, drilled	1
10	LW-31H0.75	BOLT, 5/16-18 x 3/4 long, hex. head, drilled	1
11	STD-690	WASHER, 13/16 O.D. x 25/64 I.D. x 1/16 thick	1
12	AN6-17	BOLT, 3/8-24 x 1-61/64 long, hex. head	1
13	STD-690	WASHER, 13/16 O.D. x 25/64 I.D. x 1/16 thick	AR
14	STD-872	NUT, 3/8-24 slotted	1
15	STD-713	COTTER PIN, 3/32 diameter x 3/4 long	1
16	AN6-16	BOLT, 3/8-24 x 1-53/64 long, hex. head, drilled end	1
17	76534	SHIM, 1-1/8 O.D. x 13/32 I.D. x .005 thick	AR
18	STD-690	WASHER, 13/16 O.D. x 25/64 I.D. x 1/16 thick	AR
19	STD-872	NUT, 3/8-24 slotted	1
20	STD-713	COTTER PIN, 3/32 diameter x 3/4 long	1

**FIGURE 22. ALTERNATOR MOUNTING AND ATTACHING PARTS**

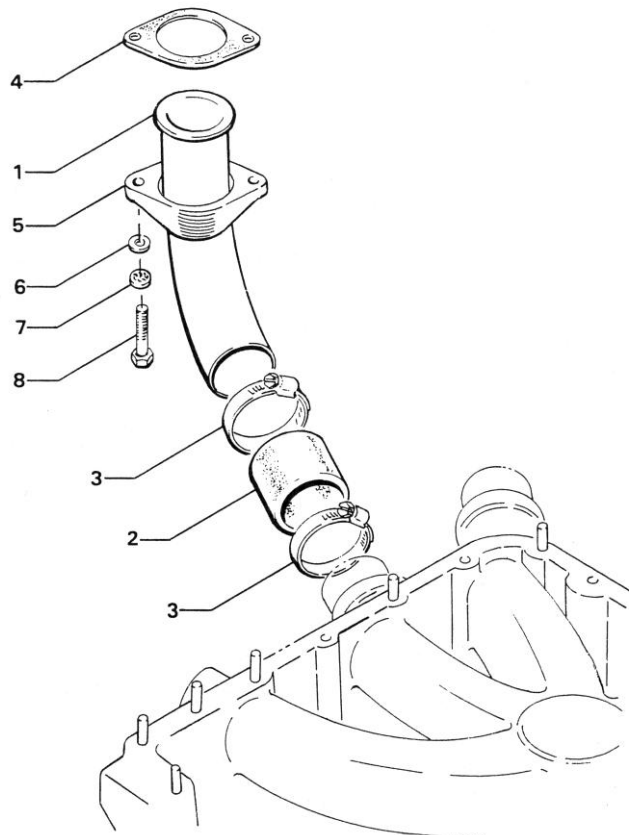
OIL SUMP AND INDUCTION SYSTEM
OIL SUMP ASSEMBLY AND OIL SUCTION SCREEN

FIG. REF. 23	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	06B21326	GASKET, Oil sump	1
2	56A21246	SUMP ASSEMBLY, Oil	1
3	71699	CONNECTION, Intake pipe	6
4	25C-11	STUD, 1/4-20 x 1-3/8 long	14
5	31C-15	STUD, 5/16-18 x 1-7/8 long	4
6	STD-1173	INSERT, 1/4-20 Heli-coil x 1/2 long	4
7	STD-8	WASHER, 1/4 plain	34
8	STD-160	WASHER, 1/4 lock, internal teeth	27
9	LW-25-1.13	BOLT, 1/4-20 x 1-1/8 long, hex. head	7
10	LW-25-1.00	BOLT, 1/4-20 x 1.00 long, hex. head	6
11	STD-1411	NUT, 1/4-20 plain	21
12	STD-551	PLUG, 1/2-14 NPT, square head, drilled	2
13	STD-2229	PLUG, 1/2-14 NPT, Allen head	2
14	70484	SCREEN, Oil suction	1
15	06E19769-1.00	GASKET, 1.00 I.D. x 1-1/4 O.D. x 3/32 thick	1
16	LW-12545	PLUG, 1.00-20 thread x 5/8 hex. head	1

**FIGURE 23. OIL SUMP ASSEMBLY AND OIL SUCTION SCREEN**

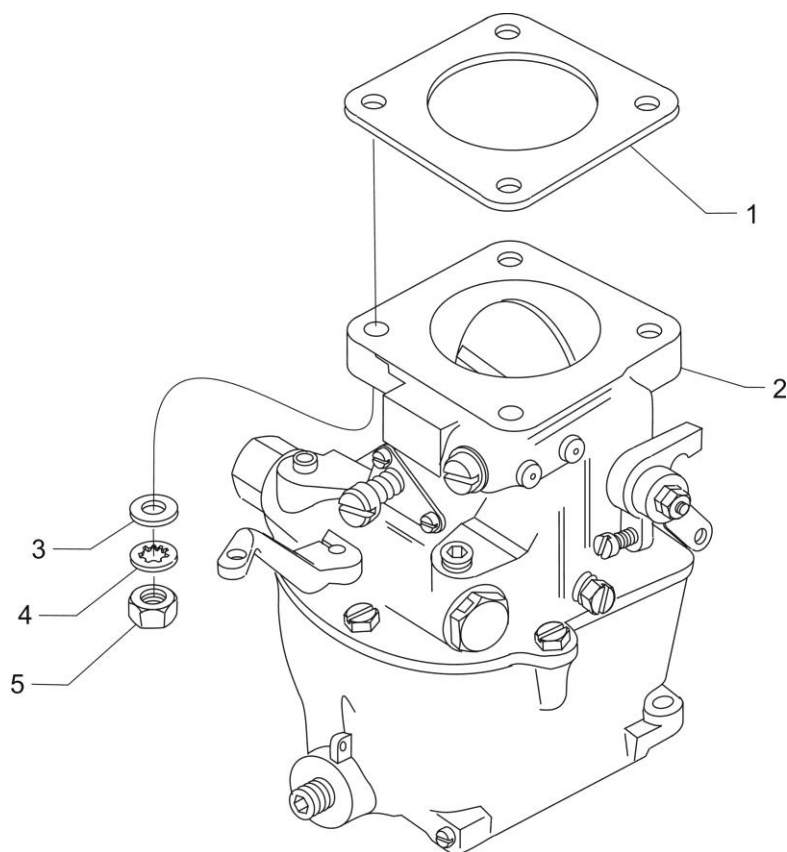
OIL SUMP AND INDUCTION SYSTEM
INTAKE PIPES AND ATTACHING PARTS

FIG. REF. 24	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	70485	PIPE, Intake	6
2	69603	HOSE, 1-3/4 I.D. x 2-3/16 O.D. x 1-3/4 long	6
3	LW-15592-8-28	CLAMP, Hose	12
4	71973	GASKET, 2 bolt flange, 1-7/8 I.D.	6
5	73346	FLANGE, Intake pipe, upper	6
6	STD-8	WASHER, 1/4 plain	12
7	STD-160	WASHER, 1/4 lock, internal teeth	12
8	LW-25-1.125	BOLT, 1/4-20 x 1-1/4 long, hex. head	12


FIGURE 24. INTAKE PIPES AND ATTACHING PARTS

OIL SUMP AND INDUCTION SYSTEM
CARBURETOR AND RELATED PARTS

FIG. REF. 25	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	66224	GASKET, Carburetor	1
2	61C22451	CARBURETOR, MA-4-5 (10-6035-11)	1
	61C26050	CARBURETOR, MA-4-5 (AV 10-6035-11)	1
3	STD-35	WASHER, 5/16 plain	4
4	STD-475	WASHER, 5/16 lock, internal teeth	4
5	STD-1410	NUT, 5/16-18 plain	4

**FIGURE 25. CARBURETOR AND RELATED PARTS**

SERVICE KIT SECTION**SEAL AND GASKET SET**

Part No.	Part Name	Qty.
71569-1	KIT - SEAL AND GASKET SET	1
LW-12272	LOCKPLATE, Shroud tube	6
LW-12681	GASKET, Magneto	2
06B23862	GASKET, Oil filter adapter	1
06B21326	GASKET, Oil sump	1
LW-13792	SEAL, Crankshaft oil	1
LW-14260	SEAL, Tachometer drive oil	1
LW-14995	SPRING, Shroud tube	6
LW-15628	SEAL, Crankshaft	1
LW-18638	LOCKPLATE, Crankshaft gear	1
LW-18661	SEAL, Shroud tube	12
06A23493	SEAL, Shroud tube	12
STD-2231	RING, Internal retaining	1
06E19769-1.00	GASKET, Oil suction screen	1
STD-213	SEAL, Oil	1
06E19769-0.63	GASKET, Annular	2
06E19769-1.25	GASKET, Annular	1
06A19956	SEAL, Oil	2
1691-C	GASKET, Fuel pump	1
8313	GASKET, Vacuum pump	2
60096	GASKET, Fuel pump	1
61173	GASKET, Oil pressure housing	1
61183	GASKET, Accessory housing	1
62224	GASKET, Magneto adapter	4
LW-19296	GASKET, Exhaust flange	6
66224	GASKET, Carburetor	1
68315	GASKET, Accessory drive adapter	1
69164	GASKET, Fuel pump adapter	1
69345	SPACER	6
69551	GASKET, Accessory drive adapter	1
70310	SEAL, Shroud tube	12
70455	GASKET	1
70457	GASKET	1
71481	RING, Oil seal	6
71667	LOCKPLATE, Fuel pump idler gear	1
71973	GASKET, 2 bolt flange	6
72053	GASKET, Governor	1
72059	GASKET, Oil filler extension	1
72075	RING, Oil seal	8
72078	LOCKPLATE, Cam gear	2
72091	RING, Oil seal	2
72210	GASKET	1
72312	RING, Oil seal	1
73383	LOCKPLATE, Generator bracket	2
73818	GASKET, Accessory housing	1
74065	"O" RING, Oil level gage	1
74068	"O" RING	1
74305	SEAL	1
75906	GASKET, Rocker box cover	6
76510	GASKET	1
76940	SEAL, Crankshaft oil	1

SERVICE KIT SECTION (CONT.)**CYLINDER, PISTON AND RING ASSEMBLY**

Part No.	Part Name	Qty.
05K21745	KIT – CYLINDER, PISTON AND RING ASSEMBLY	1
LW-13870	CYLINDER AND HEAD ASSEMBLY	1
17B23936	VALVE, Exhaust	1
17A23938	VALVE, Intake	1
LW-11800	SPRING, Valve, outer	2
LW-11795	SPRING, Valve, inner	2
LW-10077	SEAT, Valve spring, upper, intake	1
LW-16475	SEAT, Valve spring, upper, exhaust	1
65441	SEAT, Valve spring, lower, intake	1
LW-13323	SEAT, Valve spring, lower, exhaust	1
60009	KEY, Valve, intake	2
71C21191	KEY, Valve, exhaust	2
17C19386	CAP, Valve stem, exhaust	1
MS20823-6D	ELBOW, 45°, 3/8 flared tube	1
75089	PISTON	1
74241	RING, Piston, compression	2
14H21950	RING, Piston, oil regulating	1
LW-14078	PIN, Piston	1
60828	PLUG, Piston pin	2
72198	PLUG, Piston pin	2
71481	RING, Cylinder base seal	1
LW-18661	SEAL, Shroud tube	2
70310	SEAL, Shroud tube	2
06A23493	SEAL, Shroud tube	2
75906	GASKET, Rocker box cover	1
77611	GASKET, Exhaust flange	1
71973	GASKET, 2 bolt flange	1
LW-12272	LOCKPLATE, Shroud tube	1
SSP-299	TAG (Use of Piston Pin Plugs)	1

SERVICE KIT SECTION (CONT.)**CRANKCASE THRU-STUD KIT**

Part No.	Part Name	Qty.
11E24004-S1-S	KIT – CRANKCASE THRU-STUD	1
11E24004-S1	CRANKCASE ASSEMBLY	1
76220	THRU-STUD	8
31C-14	STUD (AN Governor)	4
31C-16	STUD (Woodward Governor)	4
STD-1339	PLUG	7
AN565B1032H4	SET SCREW	1
AN565B1032H5	SET SCREW	1
SSP-272	TAG (Piston Cooling Nozzles)	1
SSP-582	TAG (Thin Wall Bearing)	1
SSP-1576	TAG (Governor Idler Shaft)	1
SSP-1769	TAG (Studs, Governor Drive Pad)	1
1102	PLUG, 1/8-27 NPT, Allen head (Oil Pressure)	4
LW-31-2.75	BOLT, 5/16-18 x 2-3/4 long, hex. head	1
LW-31-1.16	BOLT, 5/16-18 x 1-5/32 long, hex. head	3
STD-35	WASHER, 5/16 plain	4
STD-475	WASHER, 5/16 lock, internal teeth	4

SECTION 8
NUMERICAL INDEX

PART NO.	PART NAME	PAGE NO.	PART NO.	PART NAME	PAGE NO.
AN6-16	Bolt	5-3	LW-15839	Baffle Assy.	3-7
AN6-17	Bolt	5-3	LW-15970	Tube	1-3
AN6-34A	Bolt	1-13	LW-16266-25-44	Clamp	4-1
LRT23381	Body Assy.	1-5	LW-16475	Seat	3-5
LW-M-2376	Plate	4-1	LW-16783-17	Gage Assy.	1-3
LW-M-2463	Harness Assy.	4-1	LW-18085	Spring	1-5
LW-M-2464	Harness Assy.	4-1	LW-18108	Impeller	2-2
LW-25-0.94	Bolt	2-2	LW-18109	Impeller	2-2
LW-25-1.00	Bolt	2-6	LW-18481	Gasket	1-3
LW-25-1.00	Bolt	6-1	LW-18482	Adapter	1-3
LW-25-1.13	Bolt	1-13	LW-18638	Lockplate	1-7
LW-25-1.13	Bolt	2-2	LW-18661	Seal	3-5
LW-25-1.13	Bolt	6-1	LW-18667	Pin	1-9
LW-25-1.25	Bolt	6-3	LW-18959-175-25	Clamp	4-1
LW-25-1.44	Bolt	2-2	LW-19096	Gear Retainer Assy.	4-1
LW-25-1.50	Bolt	1-13	LW-19340	Camshaft Assy.	1-9
LW-25-1.75	Bolt	1-13	MS20823-6D	Elbow	3-3
LW-25S1.50	Bolt	1-13	MS21044N06	Nut	4-1
LW-31-0.94	Bolt	5-3	STD-8	Washer	1-13
LW-31-1.16	Bolt	1-13	STD-8	Washer	2-2
LW-31-1.16	Bolt	5-1	STD-8	Washer	2-4
LW-31-2.75	Bolt	1-13	STD-8	Washer	2-5
LW-31H0.75	Bolt	5-3	STD-8	Washer	2-6
LW-31H0.88	Bolt	1-11	STD-8	Washer	6-1
LW-38-0.75	Bolt	2-3	STD-8	Washer	6-3
LW-10077	Seat	3-5	STD-28	Washer	1-3
LW-11485	Tube	3-5	STD-33	Washer	1-13
LW-11713	Spring	1-5	STD-33	Washer	2-3
LW-11750	Connecting Rod Assy.	3-1	STD-33	Washer	5-3
LW-11795	Spring	3-5	STD-35	Washer	1-10
LW-11800	Spring	3-5	STD-35	Washer	1-13
LW-12186	Nut	3-1	STD-35	Washer	2-2
LW-12272	Lockplate	3-5	STD-35	Washer	2-4
LW-12545	Plug	6-1	STD-35	Washer	3-3
LW-12707	Adapter	4-1	STD-35	Washer	5-1
LW-12892	Thrust Button	3-5	STD-35	Washer	5-3
LW-13323	Seat	3-5	STD-35	Washer	6-4
LW-13790	Shaft	3-5	STD-63	Nut	1-3
LW-13792	Seal	1-5	STD-160	Washer	1-13
LW-13795	Shaft	1-11	STD-160	Washer	2-2
LW-13870	Cylinder Assy.	3-3	STD-160	Washer	2-4
LW-13896	Plug	1-10	STD-160	Washer	2-6
LW-13923	Bushing	3-1	STD-160	Washer	6-1
LW-14078	Pin	3-1	STD-160	Washer	6-3
LW-14260	Seal	2-2	STD-251	Washer	1-3
LW-14318	Alternator	5-2	STD-475	Washer	1-10
LW-14820	Ring	1-7	STD-475	Washer	1-13
LW-14995	Spring	3-5	STD-475	Washer	2-4
LW-15592-5-05	Clamp	3-7	STD-475	Washer	3-3
LW-15592-8-28	Clamp	6-3	STD-475	Washer	4-1

NUMERICAL INDEX (CONT.)

PART NO.	PART NAME	PAGE NO.	PART NO.	PART NAME	PAGE NO.
STD-475	Washer	5-1	31C-14	Stud	1-1
STD-475	Washer	6-4	31C-15	Stud	6-1
STD-514	Dowel	1-1	31C-21	Stud	2-1
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