

IO-360-M1B Series Illustrated Parts Catalog

January 2011

PC-306-16

LYCOMING © 2011

652 Oliver Street
Williamsport, PA 17701

IO-360-M1B Series Illustrated Parts Catalog

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SERVICE DOCUMENT LIST

NOTE: The “Incorporation Date” column indicates the latest revision date of this report, due to a Service Document or Service Document revision. The words “No Effect” indicate that the Service Document caused no changes within this report.

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INTRODUCTION

 CAUTION: DO NOT USE THIS CATALOG AS AN ASSEMBLY OR INSTALLATION DOCUMENT. THIS CATALOG MUST ONLY BE USED TO IDENTIFY PARTS IN CONJUNCTION WITH THE APPLICABLE OVERHAUL MANUAL.

Purpose of this Catalog

This Illustrated Parts Catalog (IPC) contains a complete list of spare parts for the Lycoming IO-360-M1B wide cylinder flange model engine.

How to use this Catalog

This catalog uses the Air Transport Association (ATA) Spec100 two-element numeric format to identify component groups. The ATA numbering system put at the bottom of each page (beyond the frontal section) is a two-element number (##-##): the first two digits are for the chapter, and the next two digits further divide the parts information into a more specific section. For example:

72 (Reciprocating Engine), 73 (Engine and Fuel Control), 74 (Ignition), and 76 (Engine Controls).

EXAMPLE: **74** **—** **20**
Chapter Section
Ignition **Distribution**

NOTE: See the IPC Table of Contents for the sub-systems listed in each section.

Occasionally applicable Service Bulletins (SB) and Service Instructions (SI) include updated information which eventually will be included in subsequent revisions of this IPC.

Numerical Index

The Numerical Index is a single list of part numbers, names and their locations within the IPC. It can be used to find parts when you only know the number or name of the part.

Description column

Indentation of a part name is an indication of a lower level of assembly. Attached parts have the same indentation level and are shown below the parts grouping or assembly where they attach.

Units per Assembly Column

Where more than one assembly exists, this column contains the quantity of a specific part necessary in the build sequence of the next higher assembly. The “AR” designation is necessary for “as required” for bulk items or non-illustrated select-from-range-parts. The “RF” designation is for items listed for reference purposes only.

Vendor Accessories

Parts coverage of Vendor Accessories used on Lycoming engines are in the applicable Vendor's Parts Catalog. A list of vendor's addresses is included in the latest revision of Lycoming Service Letter No. L114.

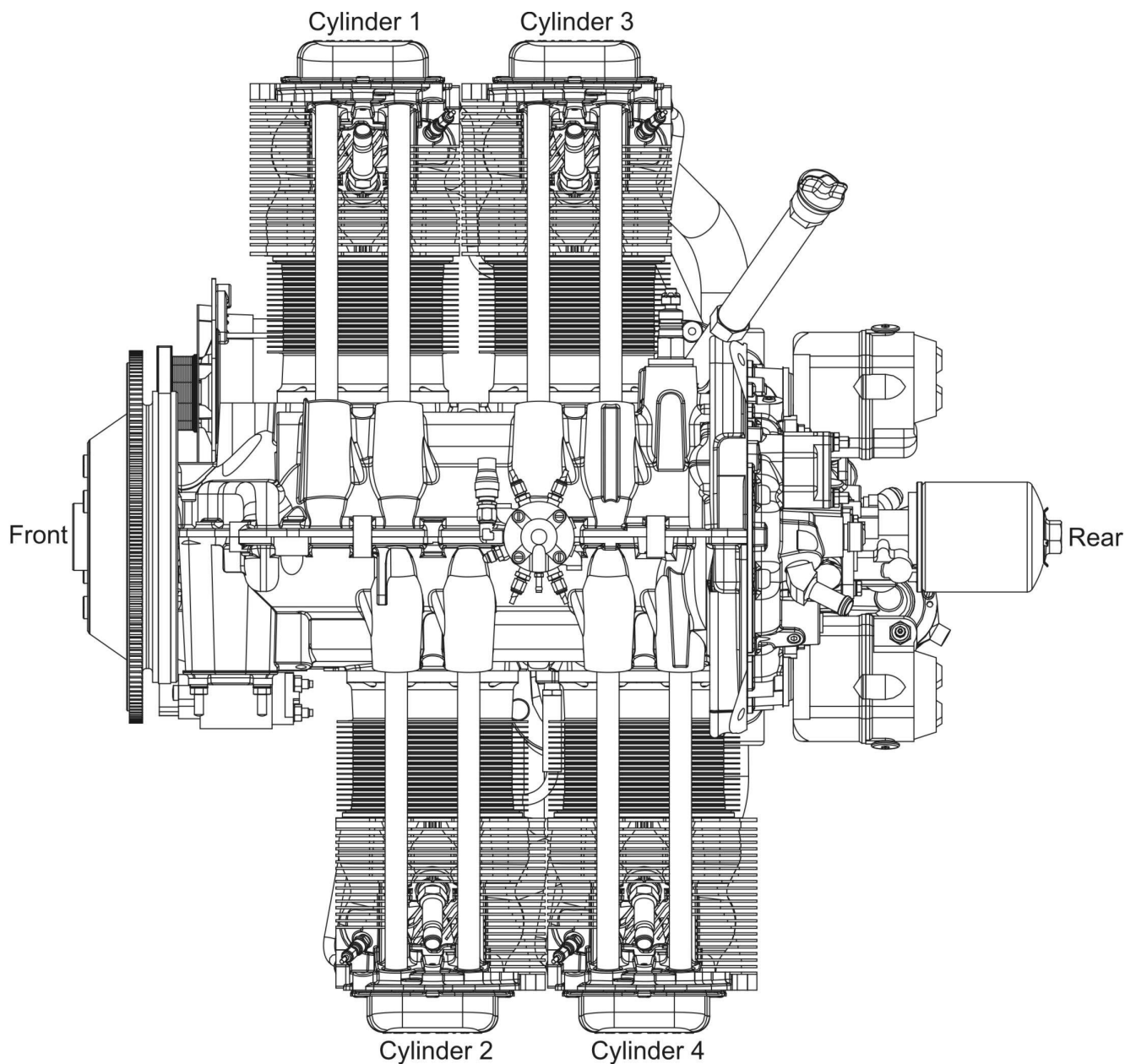
Any reference in this IPC to the suppliers/part manufacturer's product, by name, trademark, part number or other description is solely for the purpose of identification. Lycoming cannot accept responsibility for quality control and/or airworthiness of parts which do not pass through Lycoming's quality control system.

Environmental Compliance

Out of commitment to a clean earth, clean water, and especially clean air for succeeding generations of flyers, engine owners and repair/overhaul personnel must obey all federal, state, and local environmental regulations when solvents, paint, fuel, oil, chemicals, or other consumables are used for operation, maintenance or overhaul of engine components.

Perspective of References

In this manual, all references to locations of various components are from a rear view of the engine. The front of the engine is the propeller end and the oil sump the bottom of the engine. Cylinders have numbering indications from front to rear with the odd-numbered cylinders on the right-hand side. The firing order for this four-cylinder engine is 1-3-2-4.

**Top View of Engine**

How to Order Parts and Publications

An Oversize and Undersize Parts List is included in the front section of this catalog for parts ordering.

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

1. For correct, expedited part shipments without delay:
 - a. Always give the model and serial number of your engine.
 - b. Always give the part number, nomenclature, and quantity.

The SB and SI documents are available from Lycoming distributors, the factory, or by subscription.

Full Revisions of the Illustrated Parts Catalog are available from Lycoming distributors or the factory.

Every effort has been made to make this manual as accurate as possible. Send any comments, suggestions, or corrections to this manual in writing to:

Technical Publications Coordinator**Lycoming Engines****652 Oliver Street****Williamsport, PA 17701**

NOTE: The owner of the manual must give notification to the factory for a change of address.

Additionally, Lycoming has a Customer Service Hot Line for information and assistance to owners, operators, and maintenance personnel which are servicing Lycoming engines.

Call **(570) 323-6181**

8:00 A.M. – 5:00 P.M. EST (-5GMT)

Monday – Friday.

ABBREVIATIONS AND ACRONYMS

A	
Adj.	Adjustable
C	
Cyl.	Cylinder
F	
Fill.	Fillister
H	
Hex.	Hexagon
I	
I.D.	Inside Diameter
N	
No.	Number
O	
O.D.	Outside Diameter
S	
Scav.	Scavenge
T	
Temp.	Temperature
V	
Vac.	Vacuum

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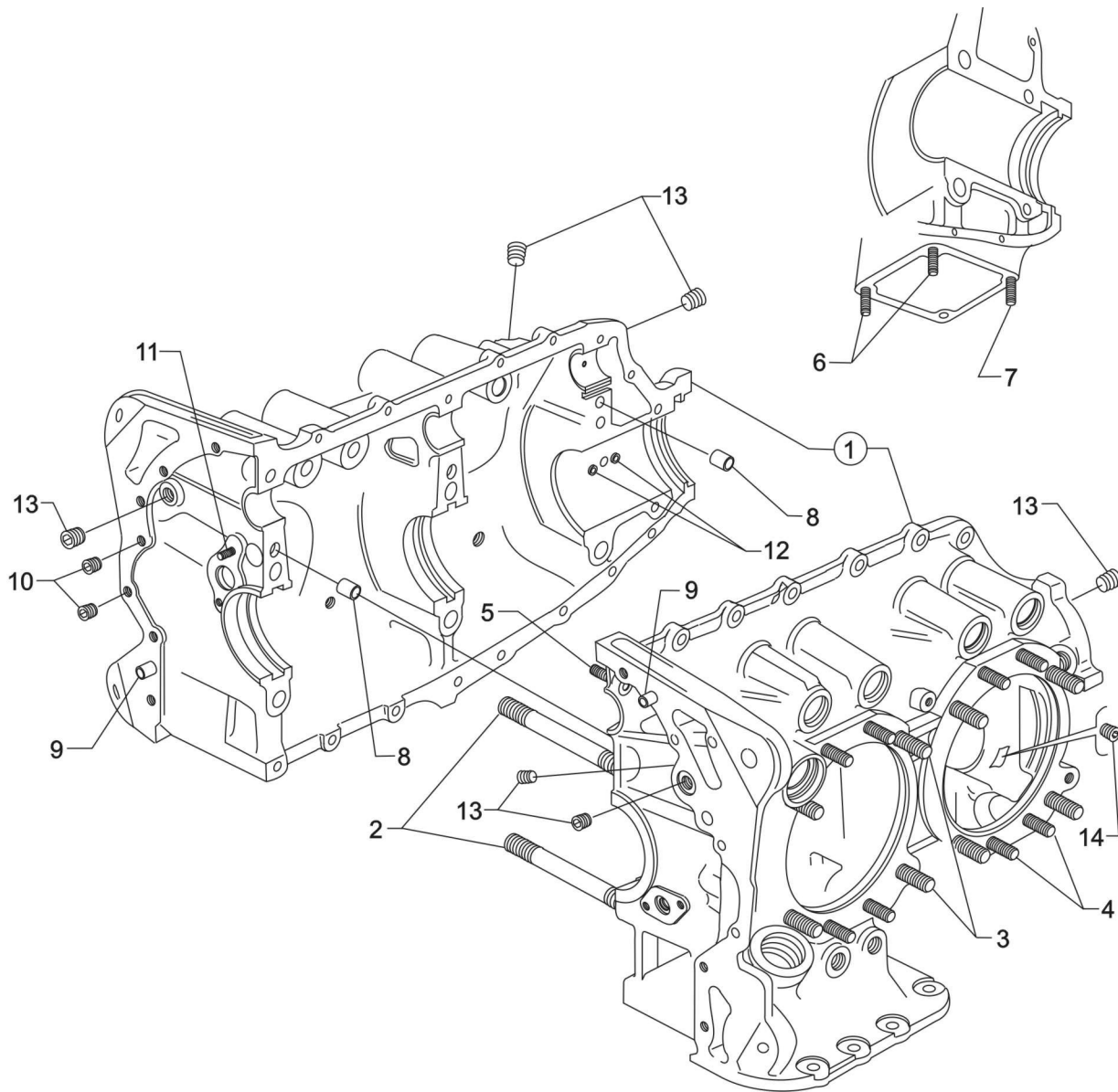
OVERSIZE AND UNDERSIZE PARTS LISTING

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
18D26098	BEARING				X					X	X	X
18A26093	BEARING				X					X	X	X
18M26105	BEARING			X						X	X	X
LW-13792	SEAL								X			
75656-S	BUSHING		X	X	X	X						
72155-S	BUSHING		X	X	X	X						
75657-S	BUSHING		X	X	X	X						
STD-1065	DOWEL	X	X	X	X							
74241	RING			X								
72057	SEAT		X	X		X	X					
72058	SEAT		X	X		X	X					
76943	GUIDE		X*									
16R22126	GUIDE		X*									
66610	BUSHING		X	X								

* - Also available in P03 (.003 in.) oversize.

NOTE

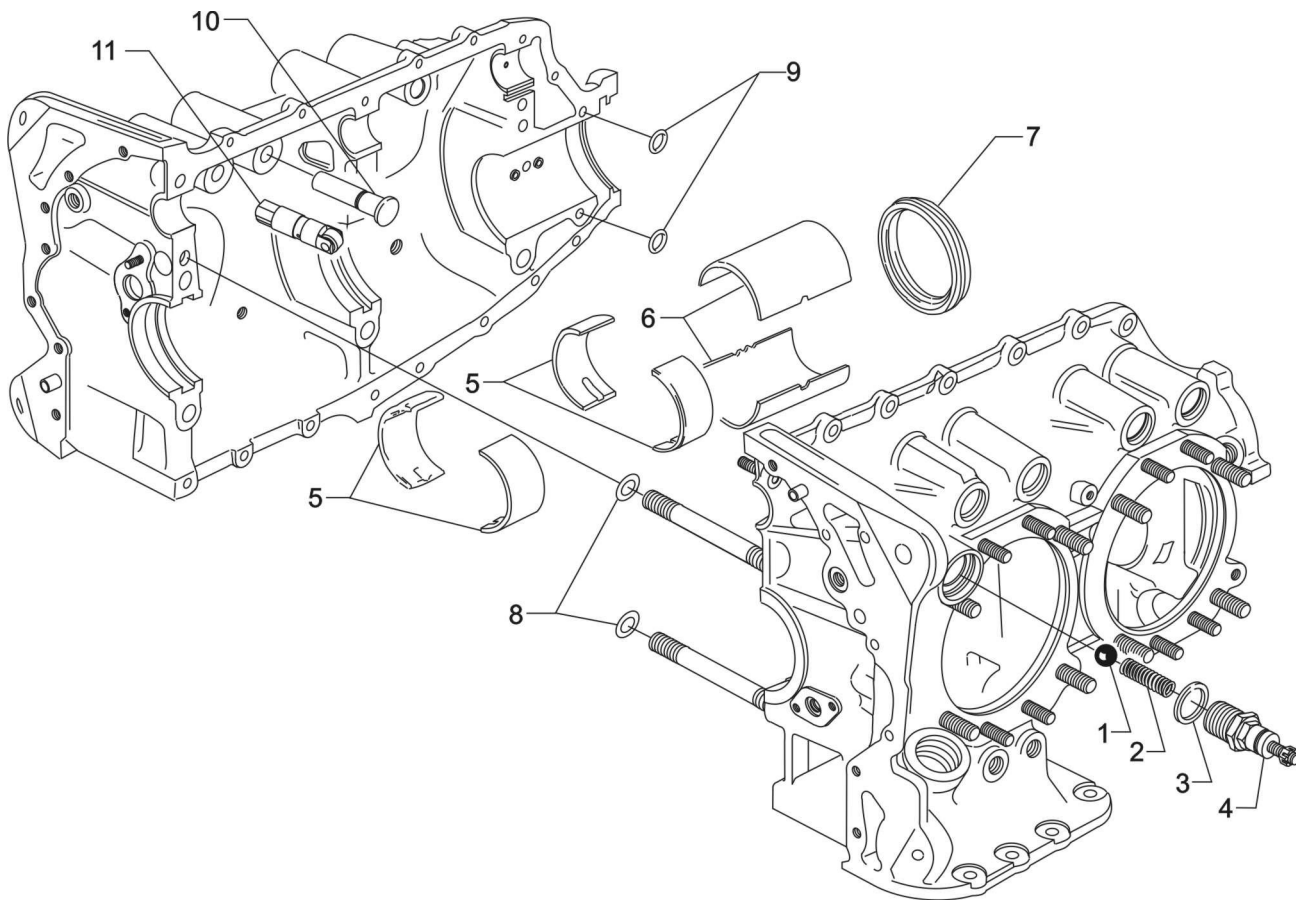
When ordering oversize and undersize parts, be sure to specify the required oversize and undersize dimension along with the proper part number. For example, to order bearing P/N 18D26098 bearing in .003 in. undersize, order P/N 18D26098-M03. Oversize code letter is "P" while undersize code letter is "M". These letters are then followed by the number designating the size in thousandths of an inch.



Crankcase Assembly
Figure 1

POWER SECTION**FIGURE 1 - CRANKCASE ASSEMBLY**

Figure Item	Code	Part Number	Description	Units per Assembly
1	*	11B20061-1SL-S	CRANKCASE ASSEMBLY KIT	1
	P	11B20061-1SL	CRANKCASE ASSEMBLY	
	*	11B20161-1SL-S	CRANKCASE ASSEMBLY KIT (Roller tappet engines)	1
	P	11B20161-1SL	CRANKCASE ASSEMBLY (Roller tappet engines)	
2		72154	STUD, 1/2-13 x 10-1/32 long	2
3		50-15	STUD, 1/2-13 x 1-7/8 long	8
4		38-13	STUD, 3/4-16 x 1-5/8 long	16
5		38D-17	STUD, 3/4-16 x 2-1/8 long, drilled	1
6		31C-12	STUD, 5/16-18 x 1-1/2 long	2
7		31C-13	STUD, 5/16-18 x 1-5/8 long	1
8		STD-557	DOWEL, 1/2 diameter x 11/16 long, hollow	2
9		STD-514	DOWEL, 5/16 diameter x 1/2 long	2
10		STD-1623	INSERT, 1/4-20 UNC x 3/8 long	2
11		LW-13793	STUD, 5/16-18 x 15/16 long, drilled	1
12		69796	DOWEL, Crankshaft bearing	2
13		1102	PLUG, 1/8-27 NPT, Allen head	6
14		STD-1339	PLUG, 1/16-27 NPT, Allen head	4
<p>P Lycoming proprietary part. Listed for reference purposes only, cannot be purchased.</p> <p>* Refer to Service Kits Section for applicable Crankcase Assembly and Governor Thru-Stud Kit Part Numbers.</p>				



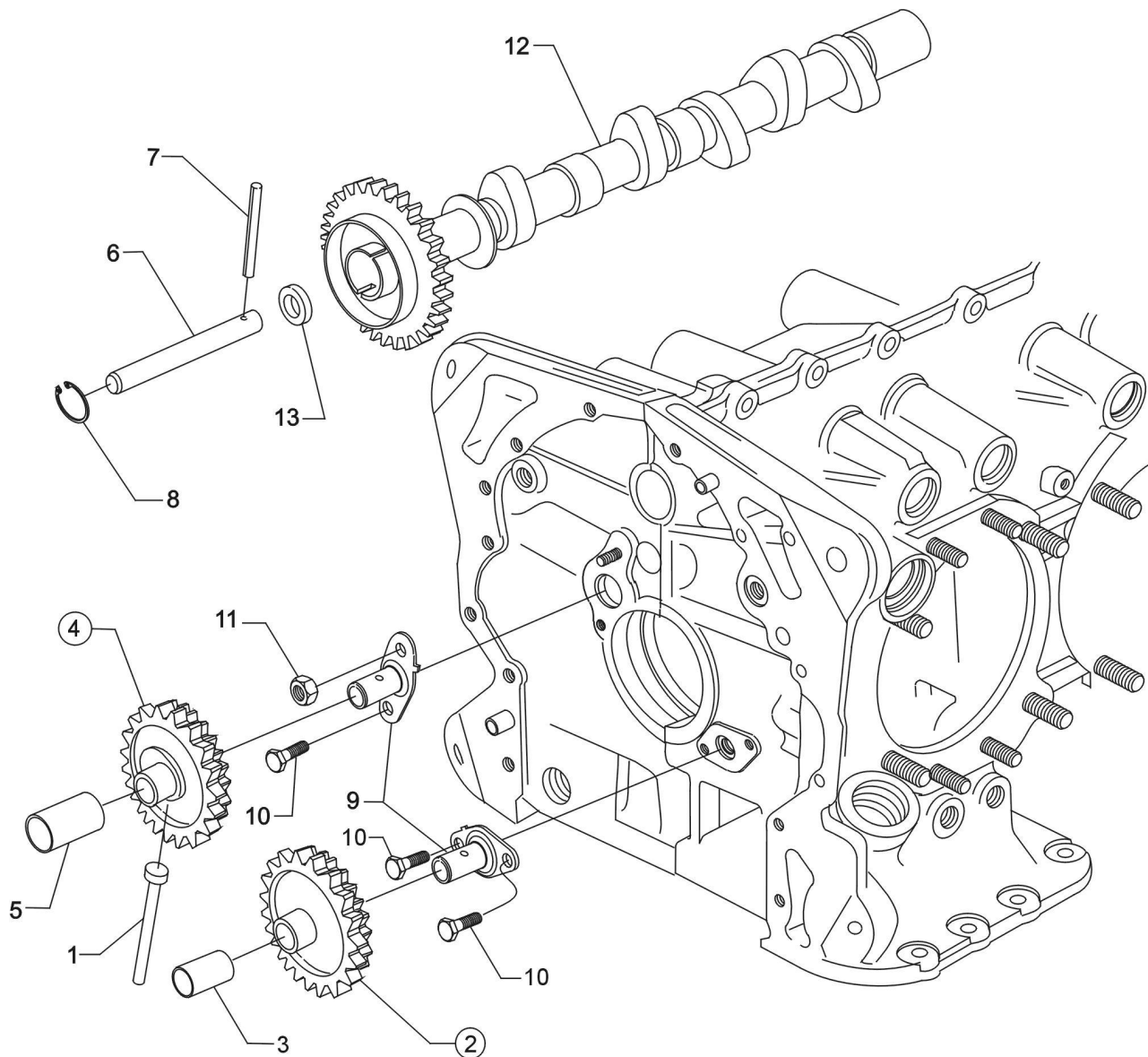
Crankcase Related Parts
Figure 2

POWER SECTION**FIGURE 2 - CRANKCASE RELATED PARTS**

Figure Item	Code	Part Number	Description	Units per Assembly
1		1028-B	BALL, 11/16 diameter	1
2	*	61084	SPRING, Oil pressure relief valve	1
	*	68668	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. annular	1
4		77808	VALVE ASSEMBLY, Oil pressure relief	1
5		18D26098	BEARING, Crankshaft	4
6		18A26093	BEARING, Crankshaft	2
7		LW-13792	SEAL, Crankshaft oil	1
8		72075	SEAL, Oil, 3/32 section x 15/32 I.D.	2
9		72091	RING, Oil seal, 23/64 I.D. x 7/64 diameter	2
10		15B26064	BODY, Hydraulic tappet	8
11		LRT23381	BODY ASSEMBLY, Hydraulic tappet (Roller tappet engines)	8
* Select spring to give a minimum of three threads exposed on adjusting screw to allow field adjustment. Reference latest revision of SSP-1776, Part I for spring identification.				

POWER SECTION**FIGURE 3 - CRANKSHAFT ASSEMBLY AND RELATED PARTS**

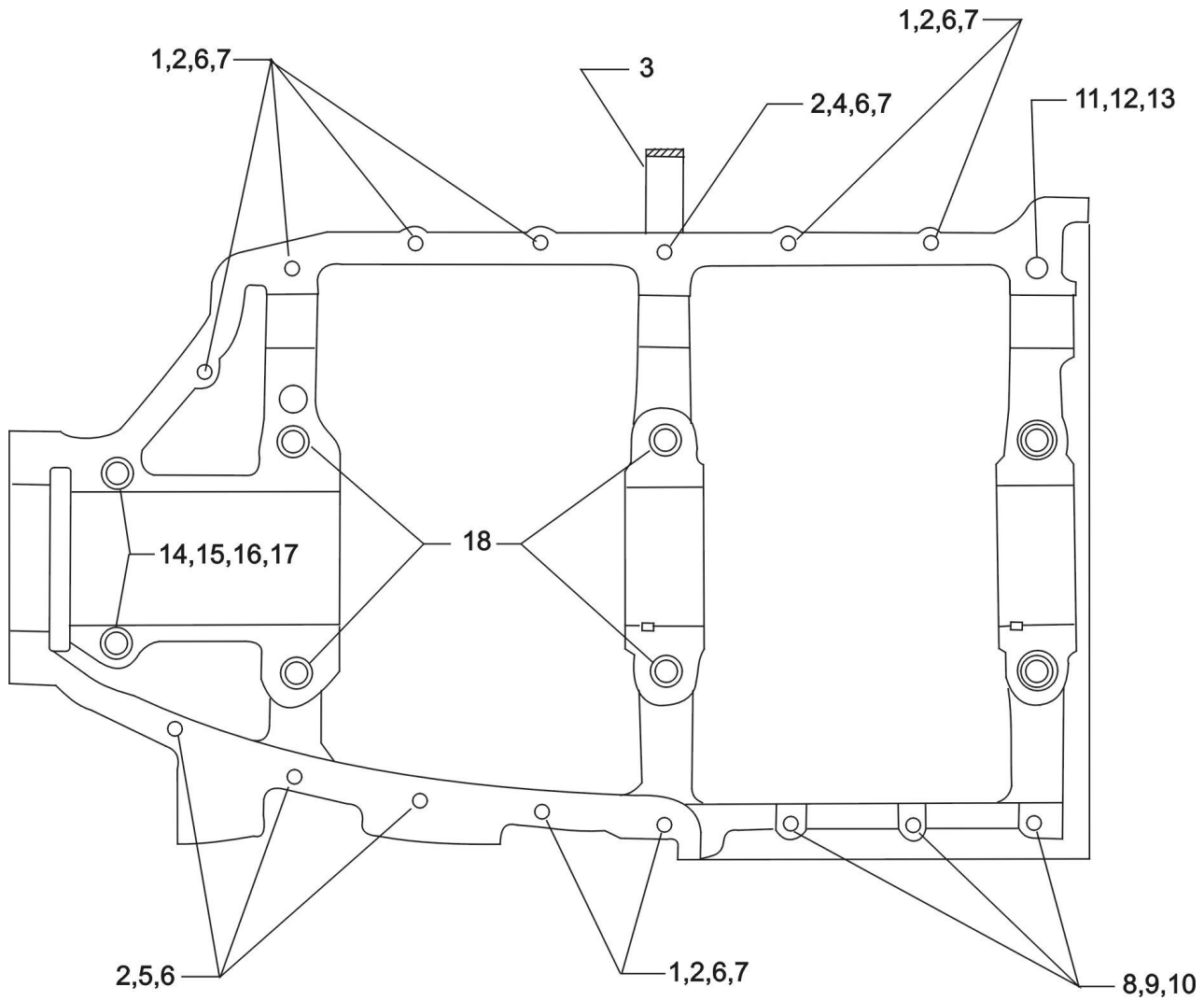
Figure Item	Code	Part Number	Description	Units per Assembly
1		13B47120	CRANKSHAFT ASSEMBLY	1
2		STD-1065	DOWEL, Stepped, 5/16-1/4 diameter	1
3		STD-1211	PLUG, 2.00 diameter expansion	1
4		61510	PLUG, 1-3/4 O.D.	1
5		75656-S	BUSHING, Propeller flange, long	4
6		72155-S	BUSHING, Propeller flange, short	1
7		75657-S	BUSHING, Propeller flange, indexing	1
8	SB*	13S19646	GEAR, Crankshaft	1
9		LW-18639	LOCKPLATE, Crankshaft gear	1
10		STD-2246	BOLT, 5/16-24 x 1.00 long	1
11		LW-16741	SUPPORT ASSEMBLY, Starter ring gear	1
12		72566	GEAR, Starter ring, 12/14 pitch	1
SB Referencing Service Bulletin * Refer to latest revision of Service Bulletin No. 475 for proper installation.				



**Crankshaft Idler Gears, Tachometer Drive and Camshaft
Figure 4**

POWER SECTION**FIGURE 4 - CRANKSHAFT IDLER GEARS, TACHOMETER DRIVE AND CAMSHAFT**

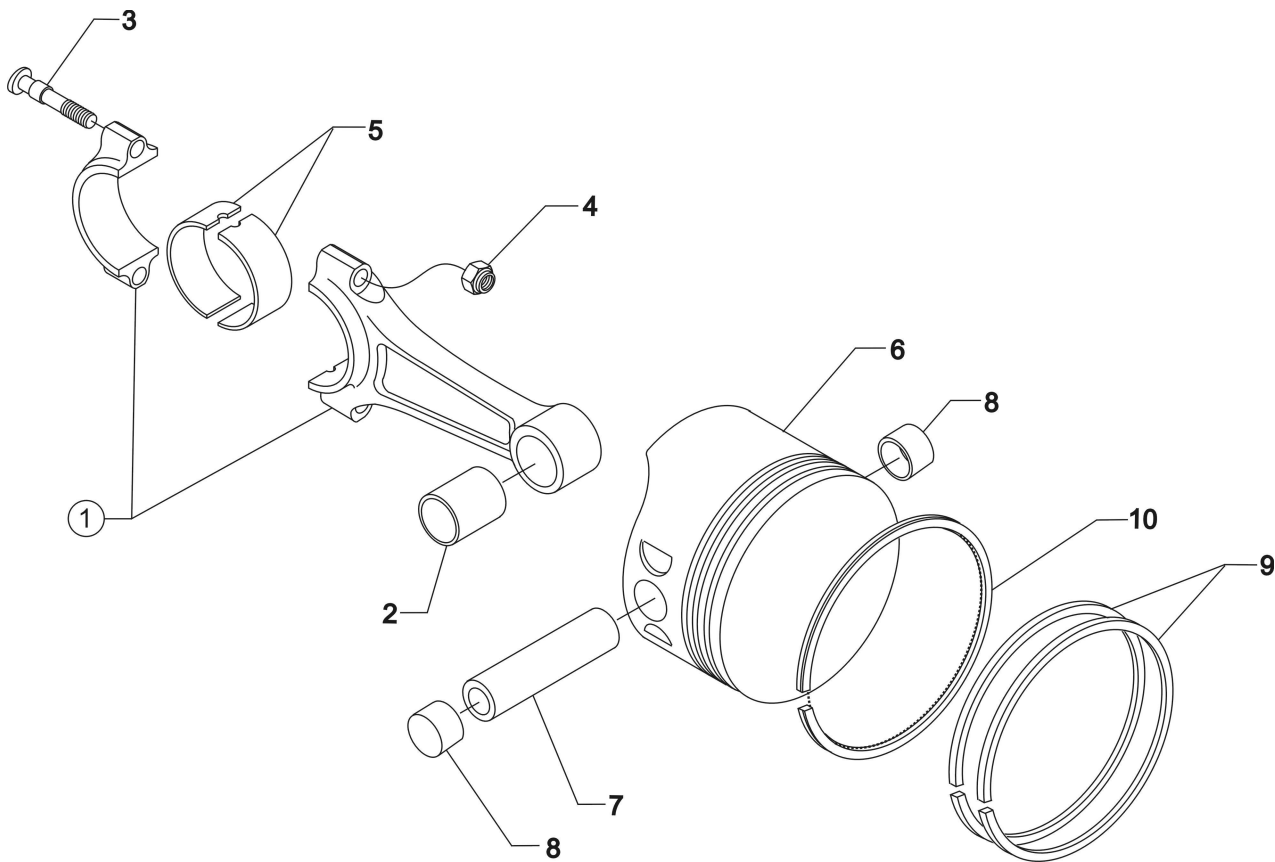
Figure Item	Code	Part Number	Description	Units per Assembly
1		61544	PLUNGER, Fuel pump, long	1
2		74996	GEAR ASSEMBLY, Crankshaft idler, plain	1
3		77309	BUSHING, Crankshaft idler gear	1
4		75072	GEAR ASSEMBLY, Crankshaft idler	1
5		77309	BUSHING, Crankshaft idler gear	1
6		76121	SHAFT ASSEMBLY, Tachometer	1
7		LW-18667	PIN, 3/16 diameter x 2-11/32 long	1
8		STD-2231	RING, Internal retaining (13/16)	1
9		LW-13796	SHAFT, Crankshaft idler gear	2
10		LW-31H0.88	BOLT, 5/16-18 x 7/8 long, hex. head, drilled	3
11		STD-2168	NUT, 5/16-18 NC-3 slotted shear	1
12		LW-18840	CAMSHAFT ASSEMBLY	1
		15M23452	CAMSHAFT ASSEMBLY (Roller tappet engines)	1
13		76118	SPACER, Tachometer shaft centering	1



Crankcase Attaching Parts
Figure 5

POWER SECTION**FIGURE 5 - CRANKCASE ATTACHING PARTS**

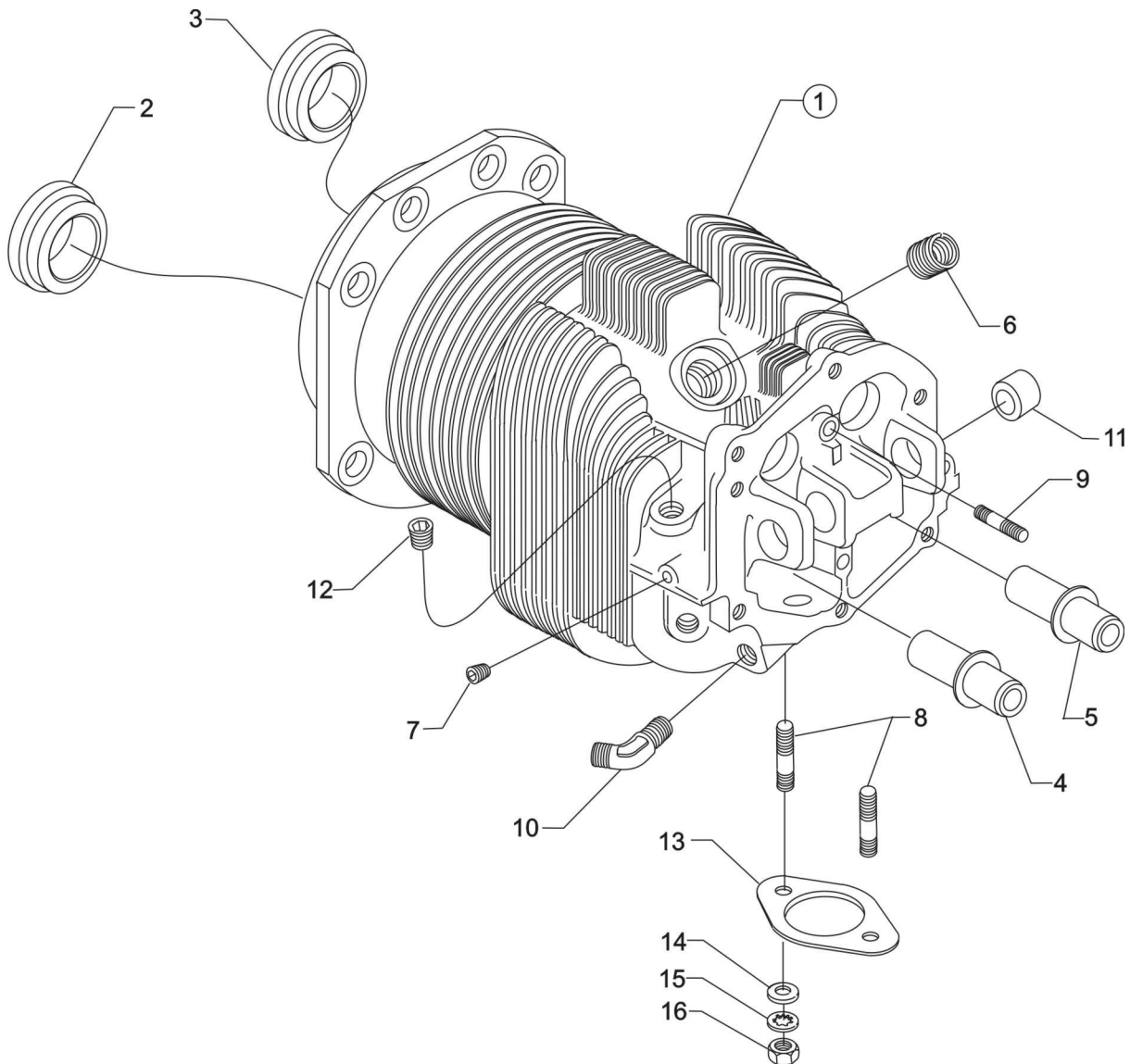
Figure Item	Code	Part Number	Description	Units per Assembly
1		LW-25-1.50	BOLT, 1/4-20 x 1-1/2 long, hex. head	8
2		STD-8	WASHER, 1/4 plain	19
3		60803	STRAP, Lifting	1
4		LW-25-1.75	BOLT, 1/4-20 x 1-3/4 long, hex. head	1
5		LW-25-1.13	BOLT, 1/4-20 x 1-1/8 long, hex. head	3
6		STD-160	WASHER, 1/4 lock, internal teeth	12
7		STD-1411	NUT, 1/4-20 plain	9
8		LW-25S1.50	BOLT, 1/4-20 x 1-1/2 long, drilled end	3
9		STD-8	WASHER, 1/4 plain	9
10		STD-2249	NUT, 1/4-20 slotted	3
11		STD-33	WASHER, 3/8 plain	3
12		AN960-616L	WASHER, 3/8 plain (thin)	1
13		STD-872	NUT, 3/8-24 slotted	1
14		AN6-34A	BOLT, 3/8-24 x 3-1/2 long, hex. head	2
15		STD-33	WASHER, 3/8 plain	4
16		STD-678	WASHER, 3/8 lock, internal teeth	2
17		STD-596	NUT, 3/8-24 plain	2
18		76220	STUD, 1/2-20 x 10-11/16 long	4



Connecting Rods, Pistons and Ring Assemblies
Figure 6

CYLINDER SECTION**FIGURE 6 - CONNECTING RODS, PISTONS AND RING ASSEMBLIES**

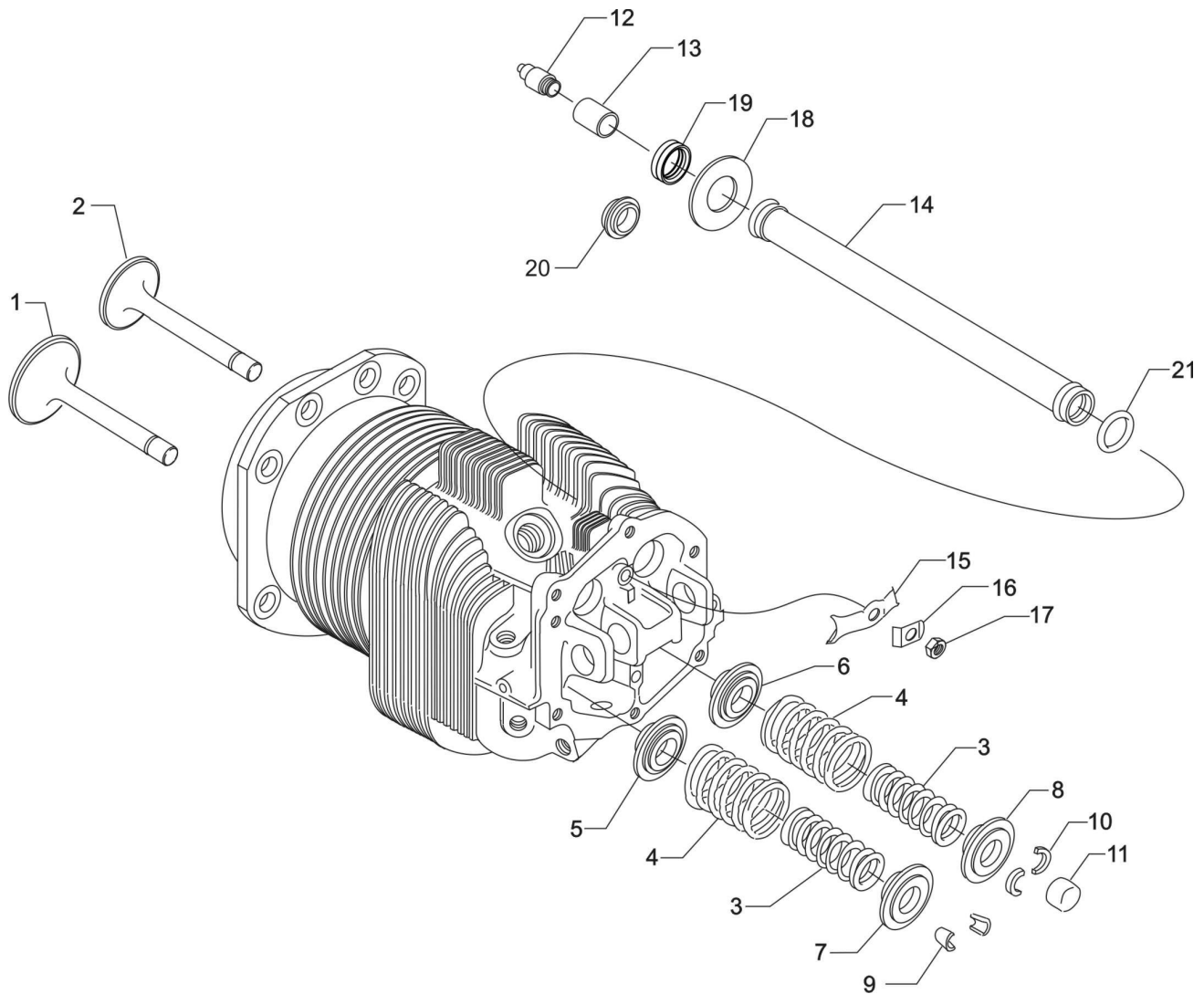
Figure Item	Code	Part Number	Description	Units per Assembly
1		LW-11750-S	CONNECTING ROD ASSEMBLY	4
2		LW-13923	BUSHING, Connecting rod, upper	4
3	* P	75061 14S23890	BOLT, Connecting rod	8
4		LW-12186	NUT, Connecting rod bolt	8
5		18M26105	BEARING, Connecting rod	8
6		14D23912	PISTON, 8.5:1 compression ratio	4
7		LW-14078	PIN, Piston	4
8		72198	PLUG, Piston pin	8
9		74241	RING, Piston, compression	8
10		14H21950	RING, Piston	4
P Lycoming proprietary part. Listed for reference purpose only, cannot be purchased. * Service use only.				



Cylinder Assembly
Figure 7

CYLINDER SECTION
FIGURE 7 - CYLINDER ASSEMBLY

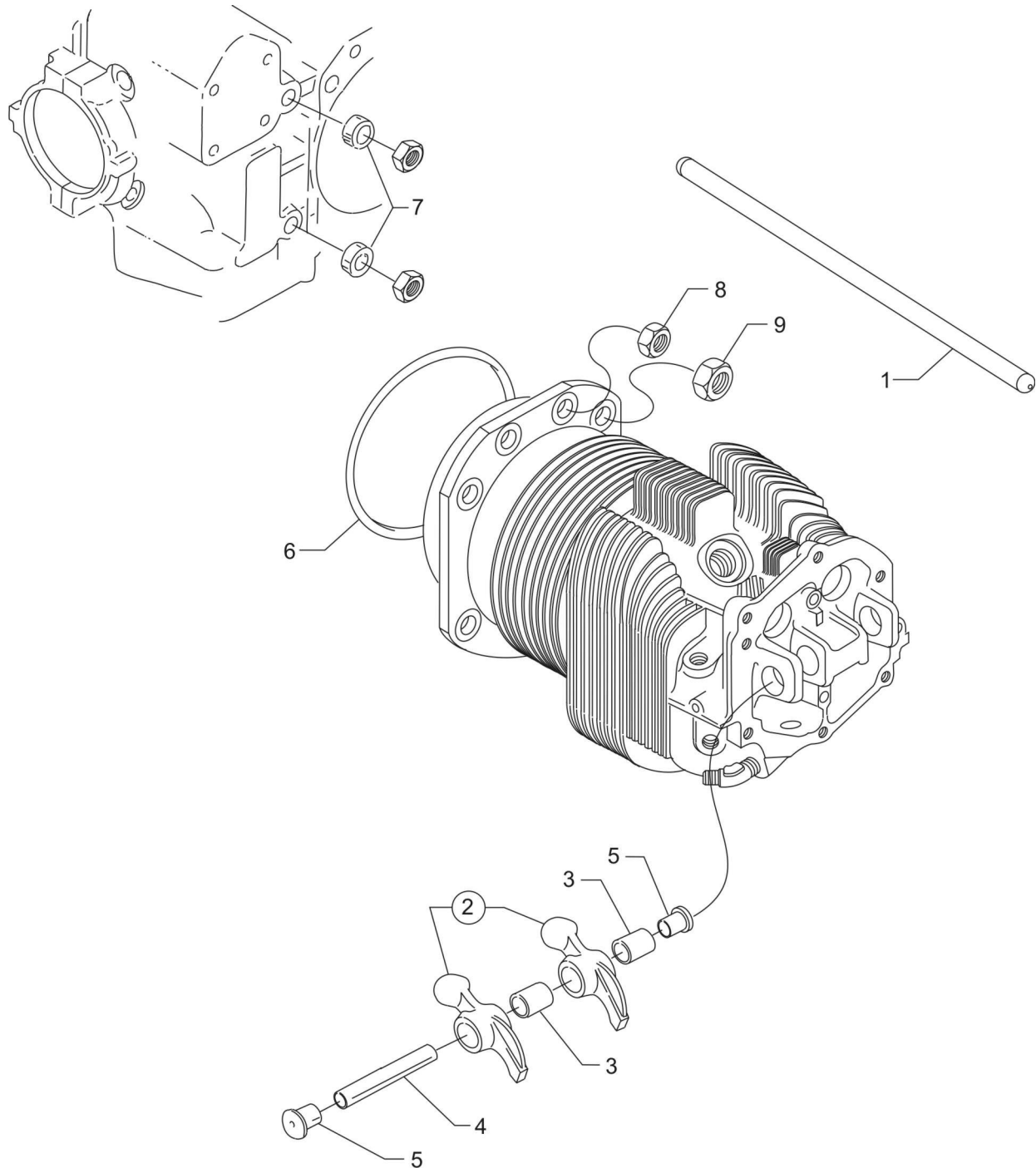
Figure Item	Code	Part Number	Description	Units per Assembly
1		LW-12427	CYLINDER ASSEMBLY, Nitrided	4
2		72057	SEAT, Valve, intake	4
3		72058	SEAT, Valve, exhaust	4
4	P*	76943	GUIDE, Valve, intake	4
5	P*	16R22126	GUIDE, Valve, exhaust	4
6	P	66796	INSERT, Spark plug, 18-1.5MM	8
7		STD-1353	INSERT, No. 10-24 UNC x 3/8 long	4
8		31C-12	STUD, 5/16-18 x 1-1/2 long	8
9		25C-8	STUD, 1/4-20 x 1.00 long	4
10		MS20823-6D	ELBOW, 45°, 3/8 flared tube	4
11		66610	BUSHING, Rocker shaft	16
12		1102	PLUG, 1/8-27 NPT, Allen head	4
13		77611	GASKET, Exhaust flange	4
14		STD-35	WASHER, 5/16 plain	8
15		STD-475	WASHER, 5/16 lock, internal teeth	8
16		STD-1410	NUT, 5/16-18 plain	8
<p>P Lycoming proprietary part. Listed for reference purposes only, cannot be purchased.</p> <p>* See latest revision of Service Instruction No. 1256 for service valve guides.</p>				



Valve Assembly and Related Parts
Figure 8

CYLINDER SECTION**FIGURE 8 – VALVE ASSEMBLY AND RELATED PARTS**

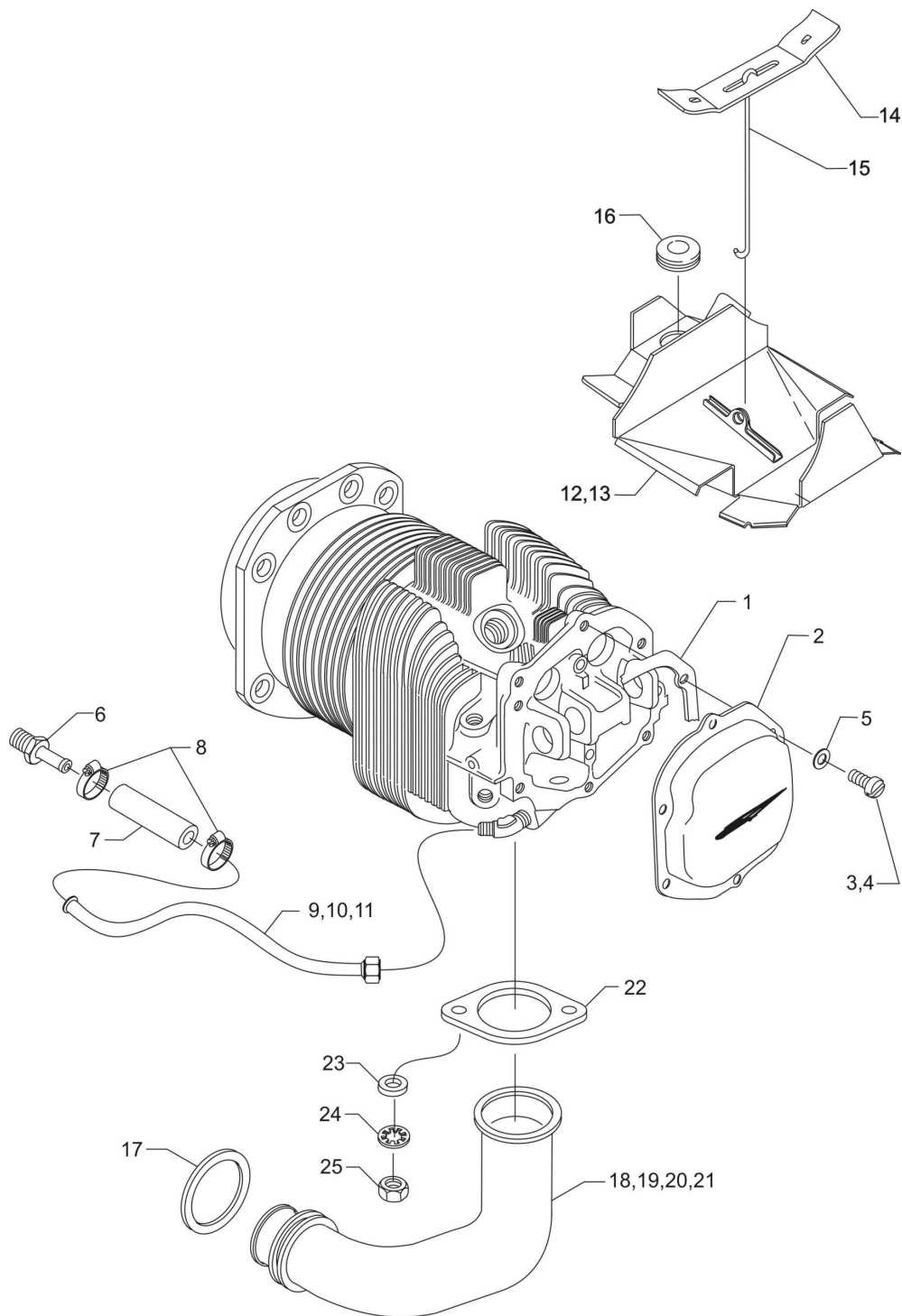
Figure Item	Code	Part Number	Description	Units per Assembly
1		17A23938	VALVE, Intake	4
2		17B23936	VALVE, Exhaust (rotator type)	4
3		LW-11795	SPRING, Valve, inner	8
4		LW-11800	SPRING, Valve, outer	8
5		65441	SEAT, Valve spring, lower intake	4
6		LW-13323	SEAT, Valve spring, lower exhaust	4
7		LW-10077	SEAT, Valve spring, upper intake	4
8		LW-16475	SEAT, Valve spring, upper exhaust	4
9		60009	KEY, Valve, intake	8
10		17C21191	KEY, Valve, exhaust	8
11		17C19386	CAP, Valve stem, exhaust (rotator type)	4
12		15B26066	PLUNGER ASSEMBLY, Hydraulic lifter	8
13		15B21319	SOCKET, Hydraulic tappet	8
14		LW-11485	SHROUD TUBE ASSEMBLY, Push rod	8
		LW11485-C	SHROUD TUBE ASSEMBLY, Push rod (chrome)	8
		15G23461	SHROUD TUBE ASSEMBLY, Push rod (Roller tappet engines)	8
15		LW-14995	SPRING, Shroud tube	4
16		LW-12272	LOCKPLATE, Shroud tube	4
17		STD-1411	NUT, 1/4-20 plain	4
18		01L23459	WASHER, 25/32 I.D. x 3/8 O.D. x 1/32 thick (Roller tappet engines)	8
19		LW-18661	SEAL, Shroud tube	8
20		06A23493	SEAL, Shroud tube (Roller tappet engines)	8
21		70310	SEAL, Shroud tube	8



Cylinder Related Parts
Figure 9

CYLINDER SECTION**FIGURE 9 – CYLINDER RELATED PARTS**

Figure Item	Code	Part Number	Description	Units per Assembly
1	*♦	15F19957-28	ROD ASSEMBLY, Push (A total of 8 required)	AR
	*♦	15F19957-29	ROD ASSEMBLY, Push (A total of 8 required)	AR
	*♦	15F19957-30	ROD ASSEMBLY, Push (A total of 8 required)	AR
	*♦	15F19957-31	ROD ASSEMBLY, Push (A total of 8 required)	AR
	*♦	15F19957-32	ROD ASSEMBLY, Push (A total of 8 required)	AR
	*♦	15F19957-33	ROD ASSEMBLY, Push (A total of 8 required)	AR
	†♦	15F19957-34	ROD ASSEMBLY, Push (A total of 8 required)	AR
	♦	15F19957-35	ROD ASSEMBLY, Push (A total of 8 required)	AR
	♦	15F19957-36	ROD ASSEMBLY, Push (A total of 8 required)	AR
	♦	15F19937-37	ROD ASSEMBLY, Push (A total of 8 required)	AR
2	**	17F19357	ROCKER ASSEMBLY, Valve	8
3		74637	BUSHING, Valve rocker	8
4		LW-13790	SHAFT, Valve rocker	4
5		LW-12892	THRUST BUTTON, Rocker shaft	8
6		71481	RING, Oil seal, 3/32 diameter x 4-27/32 long	4
7		74887	SPACER, 33/64 I.D. x 7/8 O.D. x 3/8 thick	2
8		383-B	NUT, 3/8-24 plain	16
9		STD-2090	NUT, 1/2-20 plain	18
AR as required * These push rods are not to be used on flat tappet engines. † This push rod can be used on both flat tappet and roller tappet engines. ♦ See 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).				



**Rocker Box Cover, Cylinder Head Drain Tubes,
Intercylinder Cooling Baffles, and Intake Pipes
Figure 10**

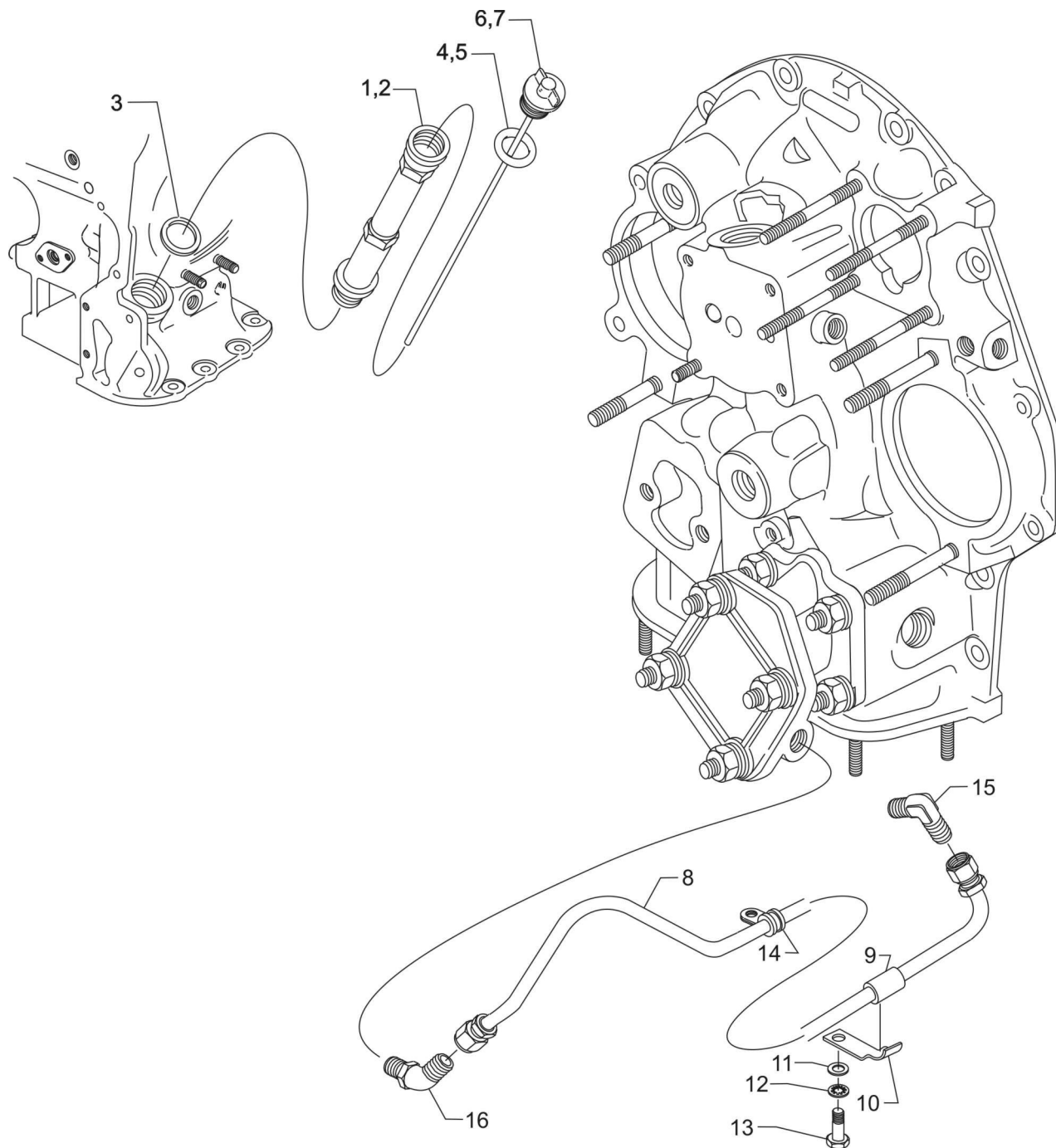
CYLINDER SECTION**FIGURE 10 – ROCKER BOX COVER, CYLINDER HEAD DRAIN TUBES,
INTERCYLINDER COOLING BAFFLES, AND INTAKE PIPES**

Figure Item	Code	Part Number	Description	Units per Assembly
1		75906	GASKET, Rocker box cover	4
2		61247	COVER, Rocker box	4
		61247-C	COVER, Rocker box (chrome)	4
3		STD-1925	SCREW, 1/4-20 x 5/8 long, pan. head	24
4	*	01F22880	SCREW, 1/4-20 x 19/32 long, stainless	24
5	*	MS35335-33	WASHER	24
6		STD-684	NIPPLE, Straight, 3/8 I.D. hose	4
7		STD-1821	HOSE, 3/8 x 2-1/2 long	4
8		LW-15592-5-05	CLAMP, Hose	8
9		68759	TUBE ASSEMBLY, Cylinder head oil drain #1	1
10		68760	TUBE ASSEMBLY, Cylinder head oil drain #2	1
11		68761	TUBE ASSEMBLY, Cylinder head oil drain #3 and #4	2
12	**	75339**	BAFFLE ASSEMBLY, Intercylinder	1
13	◆	LW-13389	BAFFLE ASSEMBLY, Intercylinder	1
14		71611	RETAINER, Intercylinder baffle	2
15		71610	HOOK, Intercylinder baffle	2
16		MS35489-20X	GROMMET	1
17		77569	RING, Seal, intake pipe	4
18		42E22611	PIPE, Intake, cylinder no. 1	1
		42E22611-C	PIPE, Intake, cylinder no. 1 (chrome)	1
19		42E22612	PIPE, Intake, cylinder no. 2	1
		42E22612-C	PIPE, Intake, cylinder no. 2 (chrome)	1
20		42E22613	PIPE, Intake, cylinder no. 3	1
		42E22613-C	PIPE, Intake, cylinder no. 3 (chrome)	1
* Use with chrome rocker box cover. ** Between #2 and #4 cylinder. ◆ Between #1 and #3 cylinder.				

CYLINDER SECTION**FIGURE 10 - ROCKER BOX COVER, CYLINDER HEAD DRAIN TUBES,
INTERCYLINDER COOLING BAFFLES, AND INTAKE PIPES (CONT.)**

Figure Item	Code	Part Number	Description	Units per Assembly
21		42E22614	PIPE, Intake, cylinder no. 4	1
		42E22614-C	PIPE, Intake, cylinder no. 4 (chrome)	1
22		71973	GASKET, 2 bolt flange, 1-13/16 I.D.	4
23		STD-8	WASHER, 1/4 plain	8
24		STD-160	WASHER, 1/4 lock, internal teeth	8
25		LW-25-1.25	BOLT, 1/4-20 x 1-1/4 long, hex. head	8

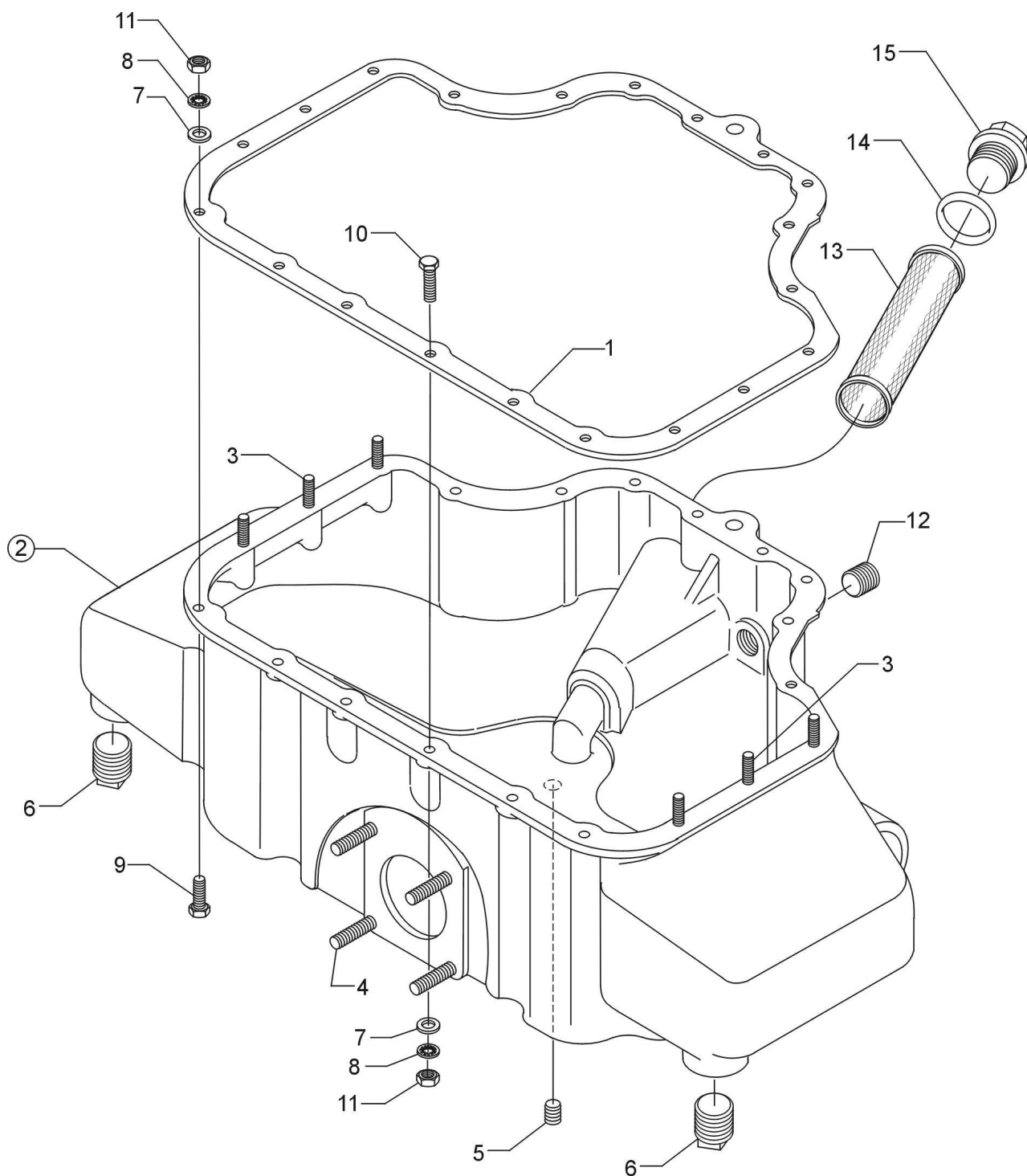
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Oil Level Gage and Propeller Governor Oil Line
Figure 11

LUBRICATION SYSTEM**FIGURE 11 – OIL LEVEL GAGE AND PROPELLER GOVERNOR OIL LINE**

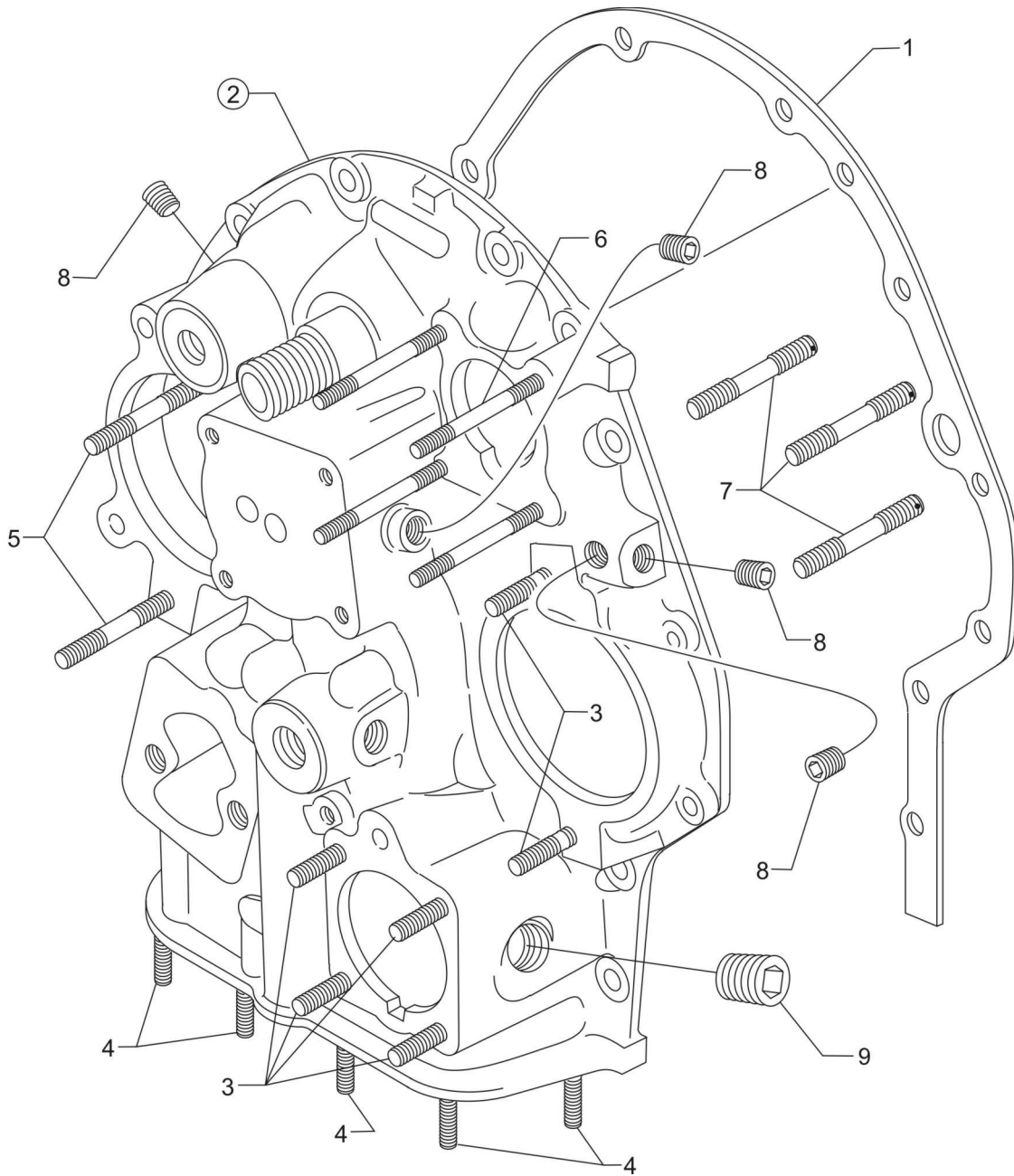
Figure Item	Code	Part Number	Description	Units per Assembly
1	*	75767	TUBE, Oil level gage (10-9/16 long)	1
2	**	75736	TUBE, Oil level gage (11-9/16 long)	1
3		72059	GASKET, Oil level gage	1
4	*	74065	RING, Oil level gage seal	1
5	**	74068	RING, Oil level gage plug	1
6		LW-14769	GAGE ASSEMBLY, Oil level, intermediate	1
7		LW-16783-18	GAGE ASSEMBLY, Oil level	1
8		75167	TUBE ASSEMBLY, Propeller governor oil line	1
9		STD-1930	HOSE, 3/8 I.D. x 1.00 long	1
10		75165	CLIP, Propeller governor oil line support	1
11		STD-35	WASHER, 5/16 plain	3
12		STD-475	WASHER, 5/16 lock, internal teeth	1
13		LW-31-0.94	BOLT, 5/16-18 x 15/16 long, hex. head	1
14		LW-16266-25-38	CLAMP, 3/8 I.D. x 1/4 diameter screw	1
15		MS20822-6	ELBOW, 1/4 NPT to 3/8 tube	1
16		74070	ELBOW, 3/8 flared tube & 9/16-18	1
* Use with P/N LW-14769 Oil Level Gage Assembly. ** Use with P/N LW-16783-18 Oil Level Gage Assembly.				



Oil Sump Assembly and Oil Suction Screen
Figure 12

LUBRICATION SYSTEM**FIGURE 12 – OIL SUMP ASSEMBLY AND OIL SUCTION SCREEN**

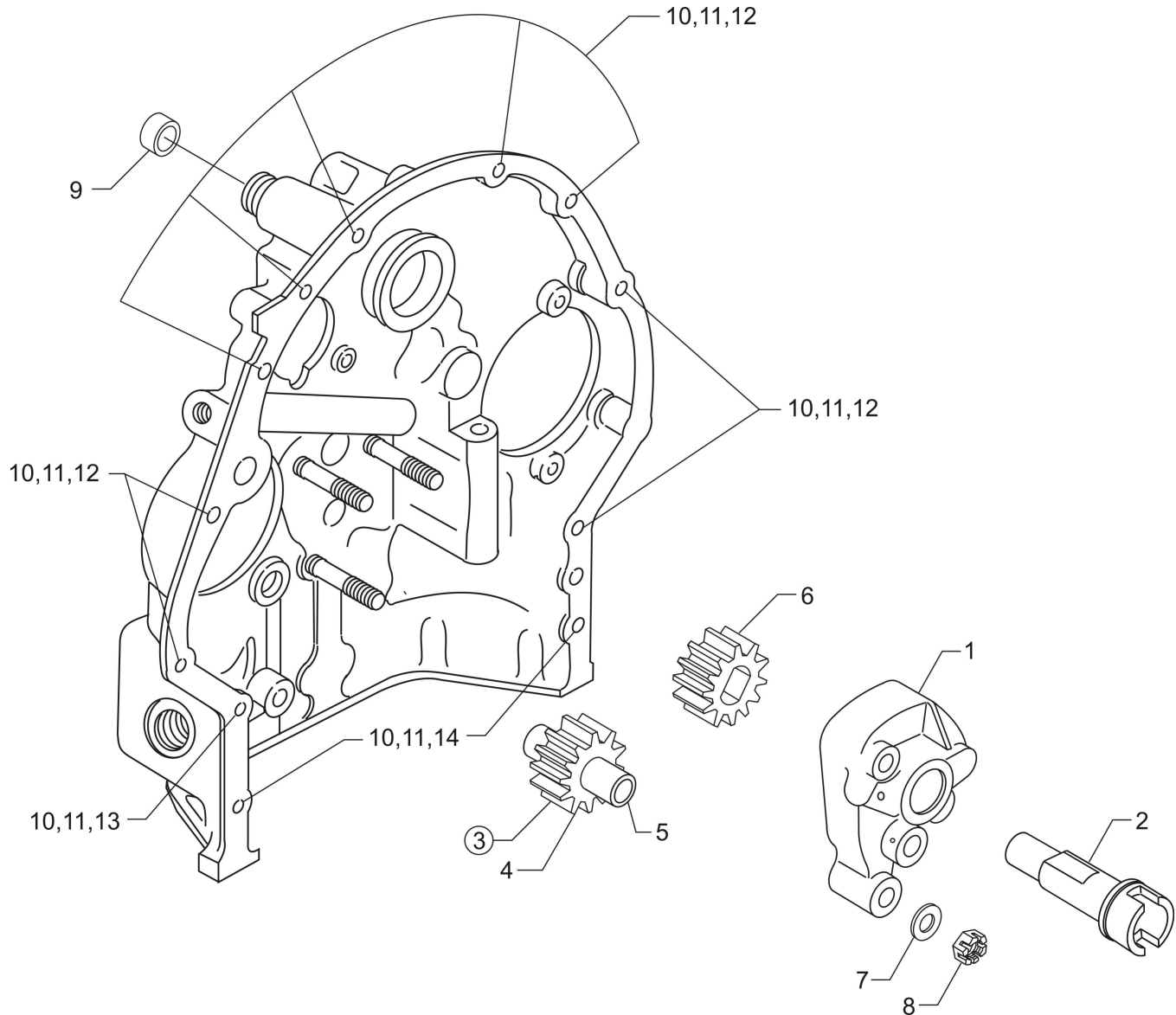
Figure Item	Code	Part Number	Description	Units per Assembly
1		LW-13353	GASKET, Oil sump	1
2		LW-13864	SUMP ASSEMBLY, Oil	1
3		61400	STUD, 1/4-20 x 1-3/16 long	6
4		31C-14	STUD, 5/16-18 x 1-3/4 long	4
5		1102	PLUG, 1/8-27 NPT, Allen head	1
6		STD-551	PLUG, 1/2-14 NPT, square head, drilled	2
7		STD-8	WASHER, 1/4 plain	26
8		STD-160	WASHER, 1/4 lock, internal teeth	20
9		LW-25-0.94	BOLT, 1/4-20 x 15/16 long, hex. head	12
10		LW-25-1.13	BOLT, 1/4-20 x 1-1/8 long, hex. head	2
11		STD-1411	NUT, 1/4-20 plain	12
12		STD-2229	PLUG, 1/2 NPT, Allen head	1
13		70484	SCREEN, Oil suction	1
14		06E19769-1.00	GASKET, Annular, 1.00 I.D.	1
15		LW-12545	PLUG, 5/8 hex. head x 1.00-20 thread	1



**Accessory Housing Assembly
Figure 13**

ACCESSORY DRIVES**FIGURE 13 – ACCESSORY HOUSING ASSEMBLY**

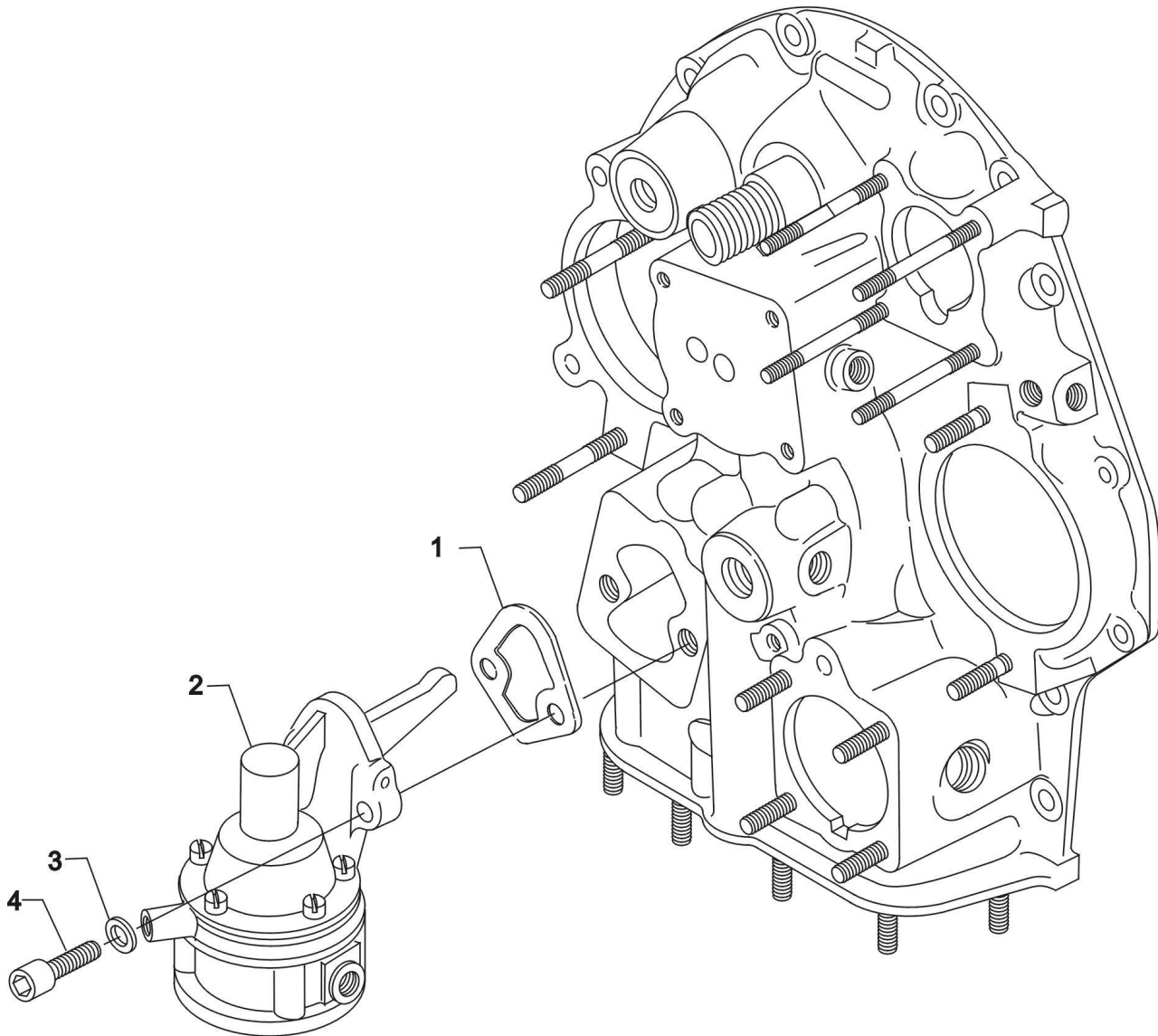
Figure Item	Code	Part Number	Description	Units per Assembly
1		73818	GASKET, Accessory housing	1
2		21A21533-02	HOUSING ASSEMBLY, Accessory	1
3		31C-12	STUD, 5/16-18 x 1-1/2 long	6
4		75888	STUD, 1/4-20 x 1-1/4 long	6
5		31C-19	STUD, 5/16-18 x 2-3/8 long	2
6		25C-22	STUD, 1/4-20 x 2-3/4 long	4
7		31CD-17	STUD, 5/16-18 x 2-1/8 long, drilled	3
8		1102	PLUG, 1/8-27 NPT, Allen head	4
9		STD-784	PLUG, 3/8-18 NPT, Allen head	1



Oil Pump Assembly and Accessory Housing Attaching Parts
Figure 14

ACCESSORY DRIVES**FIGURE 14 – OIL PUMP ASSEMBLY AND ACCESSORY HOUSING ATTACHING PARTS**

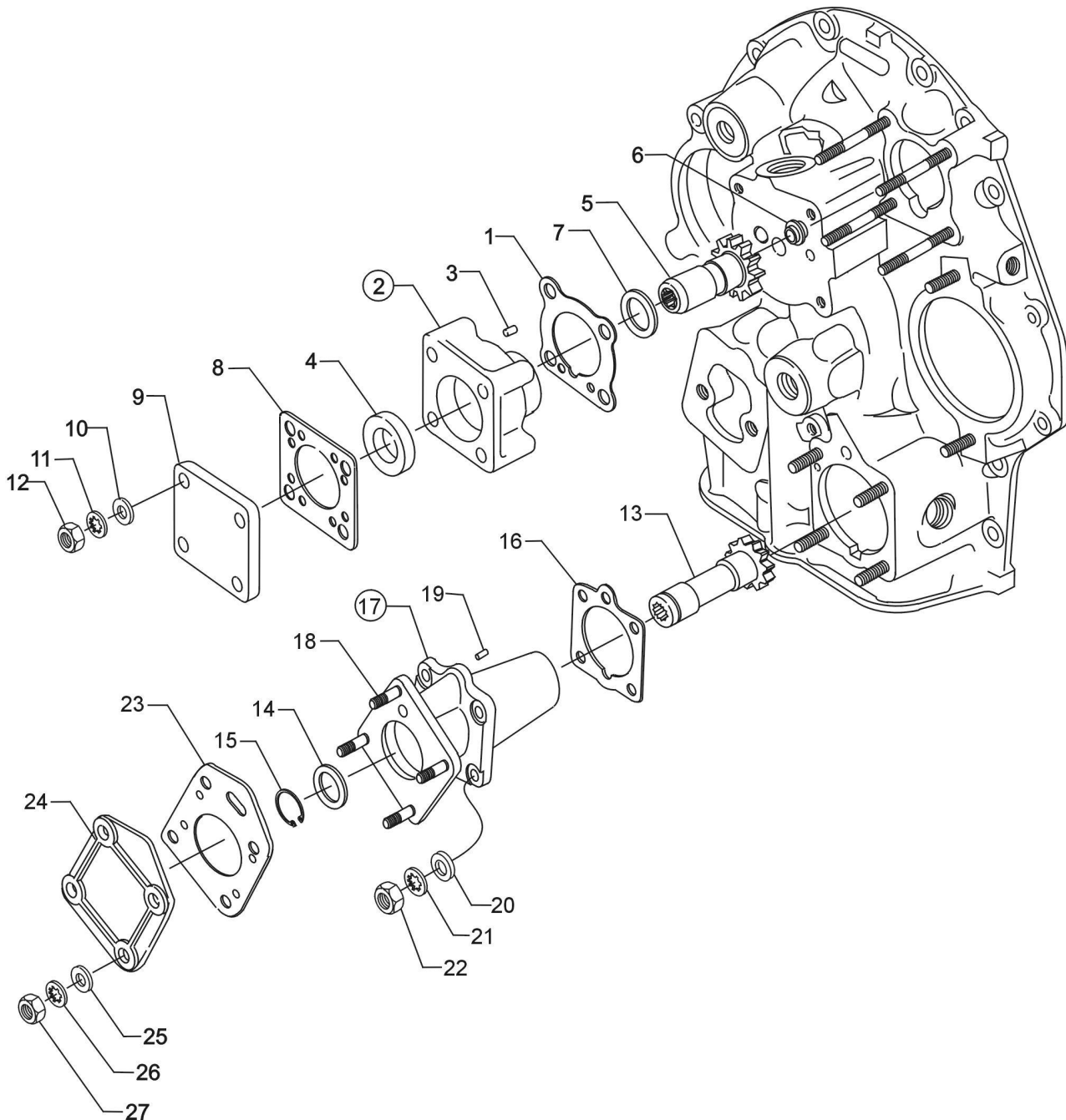
Figure Item	Code	Part Number	Description	Units per Assembly
1		78531	BODY ASSEMBLY, Oil pump	1
2		61174	SHAFT, Oil pump drive	1
3		LW-18110*	IMPELLER ASSEMBLY, Oil pump driven	1
4		LW-18108	IMPELLER, Oil pump driven	1
5		78530	SHAFT, Oil pump idler	1
6		LW-18109*	IMPELLER, Oil pump driven	1
7		STD-35	WASHER, 5/16 plain	3
8		STD-1420	NUT, 5/16-18 slotted	3
9		LW-14260	SEAL, Oil, tachometer drive	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 05K23463).				



Fuel Pump Assembly and Attaching Parts
Figure 15

ACCESSORY DRIVES**FIGURE 15 – FUEL PUMP ASSEMBLY AND ATTACHING PARTS**

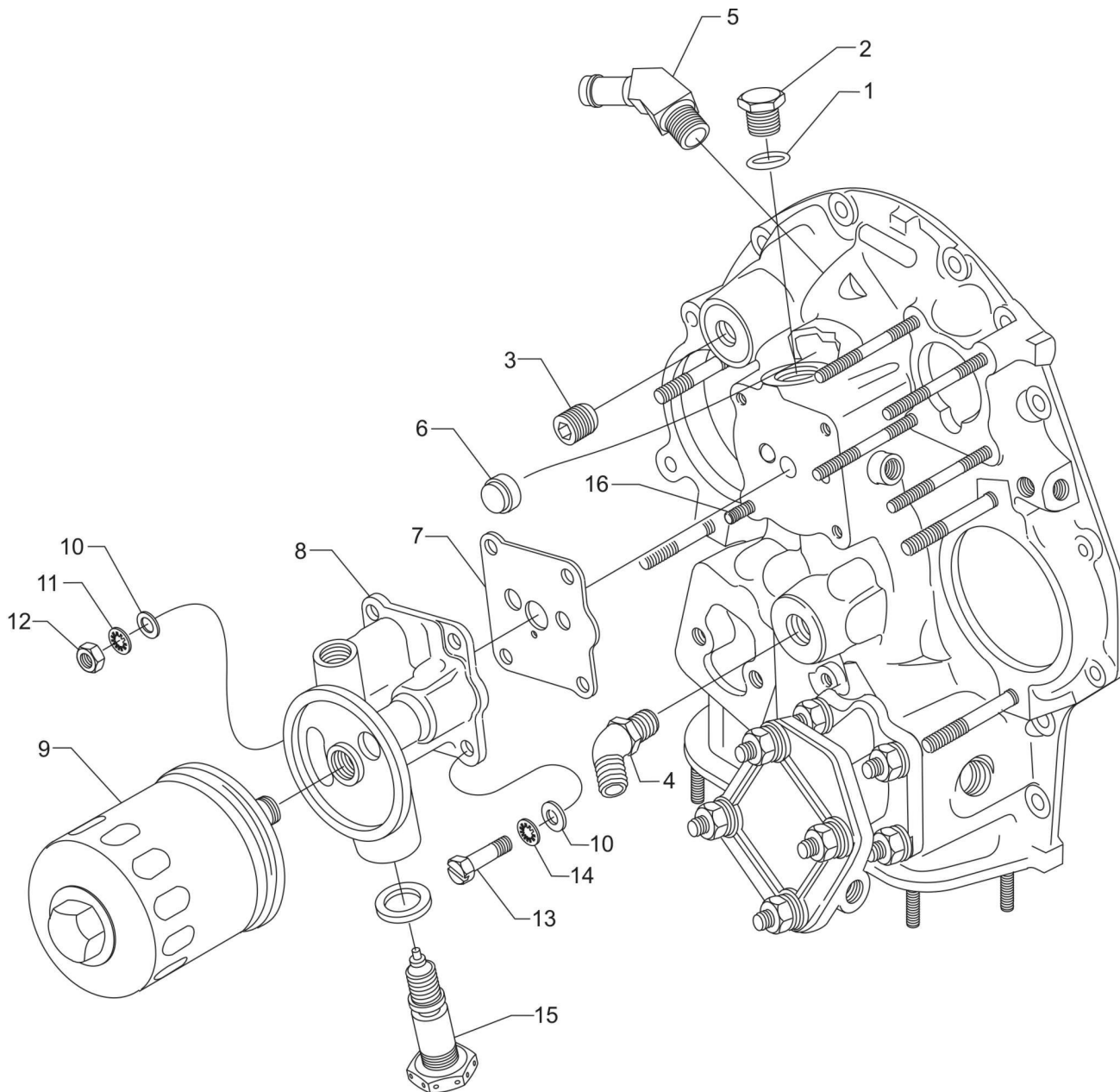
Figure Item	Code	Part Number	Description	Units per Assembly
1		60096	GASKET, Fuel pump	1
2		LW-15473	FUEL PUMP, Dual diaphragm, high pressure	1
3		STD-33	WASHER, 3/8 plain	2
4		STD-1882	SCREW, 3/8-16 x 1-9/32 long, socket, drilled	2



Propeller Governor Drives, Vacuum Pump Drives and Covers
Figure 16

ACCESSORY DRIVES**FIGURE 16 – PROPELLER GOVERNOR DRIVE, VACUUM PUMP DRIVES AND COVERS**

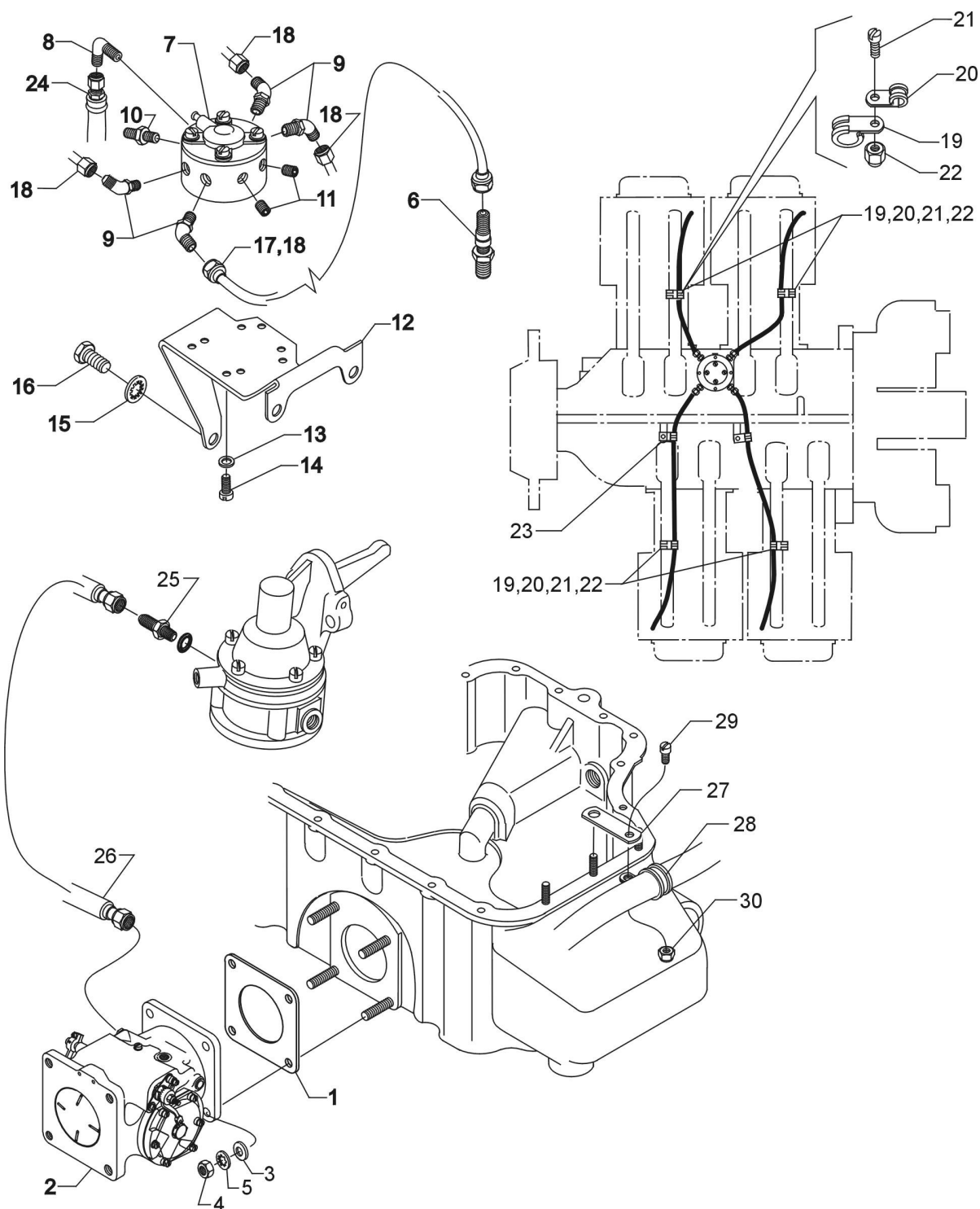
Figure Item	Code	Part Number	Description	Units per Assembly
1		61183	GASKET, Accessory adapter	1
2		61098	ADAPTER ASSEMBLY, Vacuum pump	1
3		STD-1774	PIN, 1/8 diameter x 1/4 long	1
4		06A19956	OIL SEAL, 7/8 I.D. x 1-1/2 O.D. x 5/16	1
5		72970	GEAR ASSEMBLY, Vacuum pump driven	1
6		72962	THRUST BUTTON, Vacuum pump gear	1
7		71596	WASHER, Accessory drive gear	1
8		8313	GASKET, Vacuum pump	1
9		60430	COVER, Vacuum pump	1
10		STD-8	WASHER, 1/4 plain	4
11		STD-160	WASHER, 1/4 lock, internal teeth	4
12		STD-1411	NUT, 1/4-20 plain	4
13		68317	SHAFTGEAR, Propeller governor drive	1
14		71596	WASHER, Accessory drive gear	1
15		STD-1221	RING, 13/16 diameter x 1/32 thick	1
16		68315	GASKET, Accessory drive adapter	1
17		72153	ADAPTER ASSEMBLY, Propeller governor driven	1
18		31C-16	STUD, 5/16-18 x 2.00 long	4
19		STD-1774	PIN, 1/8 diameter x 1/4 long	1
20		STD-35	WASHER, 5/16 plain	4
21		STD-475	WASHER, 5/16 lock, internal teeth	4
22		STD-1410	NUT, 5/16-18 plain	4
23		72053	GASKET, Governor	1
24		72378	COVER, Governor drive	1
25		STD-35	WASHER, 5/16 plain	4
26		STD-475	WASHER, 5/16 lock, internal teeth	4
27		STD-1410	NUT, 5/16-18 plain	4



**Oil Filter Assembly, Oil Cooler and Breather Fittings
Figure 17**

ACCESSORY DRIVES**FIGURE 17 – OIL FILTER ASSEMBLY, OIL COOLER AND BREATHER FITTINGS**

Figure Item	Code	Part Number	Description	Units per Assembly
1		06E19769-0.63	GASKET, Annular, 5/8 I.D.	1
2		62417	PLUG, Oil cooler bypass	1
3		STD-784	PLUG, 3/8-18 NPT, Allen head	1
4		MS20823-8	ELBOW, 1/2 flared tube, 3/8 NPT	1
5		AN844-10D	ELBOW, Pipe	1
6		62732	CAP, Tachometer drive	1
7		06B23862	GASKET, Oil filter adapter	1
8		77852	OIL FILTER BASE ASSEMBLY	1
9		LW-13215	OIL FILTER, Short	1
10		STD-8	WASHER, 1/4 plain	4
11		STD-160	WASHER, 1/4 lock, internal teeth	1
12		STD-1411	NUT, 1/4-20 plain	1
13		LW-25-1.00	BOLT, 1/4-20 x 1.00 long, hex. head	3
14		STD-160	WASHER, 1/4 lock, internal teeth	3
15		53E22144	VALVE ASSEMBLY, Temperature control, oil cooler bypass	1
16		25C-10	STUD, 1/4-20 x 1-1/4 long	1

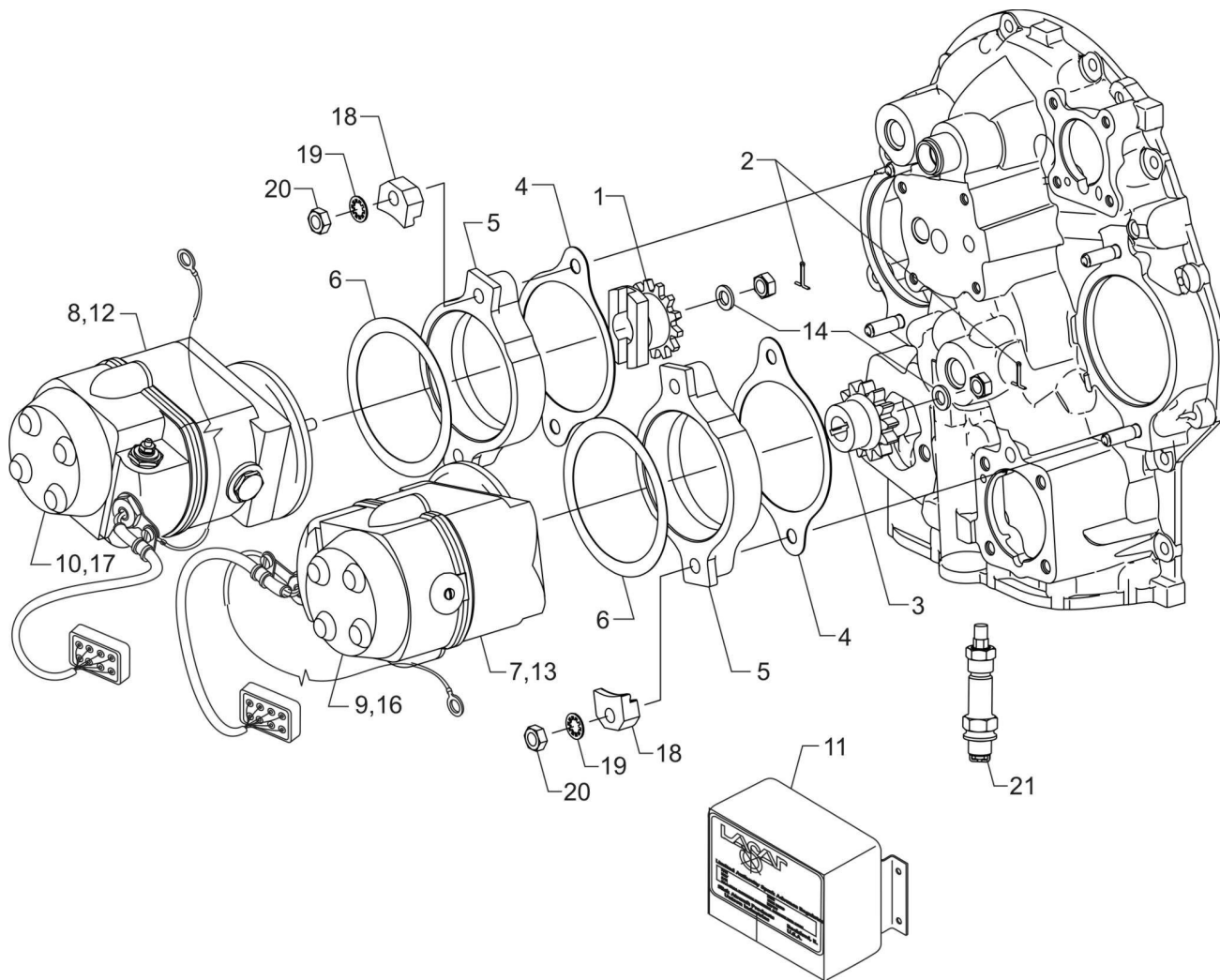


Fuel Injector, Fuel Lines, and Manifold Assembly

Figure 18

FUEL DISTRIBUTION**FIGURE 18 – FUEL INJECTOR, FUEL LINES, AND MANIFOLD ASSEMBLY**

Figure Item	Code	Part Number	Description	Units per Assembly
1		62224	GASKET, Fuel injector	2
2		61J22633	FUEL INJECTOR, V 2576568-1	1
3		STD-35	WASHER, 5/16 plain	4
4		STD-1410	NUT, 5/16-18 plain	4
5		STD-475	WASHER, 5/16 lock, internal teeth	4
6		63C26450	NOZZLE, Injection	4
7		75279	MANIFOLD ASSEMBLY, Fuel	1
8		MS20822-4	ELBOW, 1/8 NPT to 1/4 tube, 90°	1
9		AN791-2	ELBOW, Union, 45°, 1/8 tube	4
10		02G21382	NIPPLE, Nozzle pressure gage	1
11		1102	PLUG, 1/8-27 NPT, Allen head	2
12		75009	BRACKET, Fuel manifold	1
13		STD-251	WASHER, No. 10, internal lock	4
14		STD-82	SCREW, No. 10-24 x 1/2 long, fill. head	4
15		STD-160	WASHER, 1/4 lock, internal teeth	1
16		LW-25-0.50	BOLT, 1/4-20 x 1/2 long, hex. head	1
17		LW-12098-0-140	TUBE ASSEMBLY, Fuel line	2
18		LW-12098-0-210	TUBE ASSEMBLY, Fuel injector line	2
19		LW-16266-10-75	CLAMP	4
20		LW-16266-10-13	CLAMP, 1/8 diameter for no. 10 screw	6
21		STD-860	SCREW, No. 10-32 x 5/8 long, fill. head	6
22		STD-670	LOCKNUT, No. 10-32	6
23		73136	BRACKET, Extension, fuel injection lines	2
24		LW-12876-4S224	HOSE ASSEMBLY, 1/4 hose, 90° elbow	1
25		75739	NIPPLE, 3/8 flared tube	1
26		LW-12799-6S222	HOSE ASSEMBLY, 3/8 hose, straight	1
27		73152	BRACKET, Support clamp	1
28		LW-16266-10-75	CLAMP	1
29		STD-860	SCREW, No. 10-32 x 5/8 long, fill. head	1
30		STD-670	LOCKNUT, No. 10-32	1



Magnetos, Magneto Drives, Harnesses and Spark Plugs
Figure 19

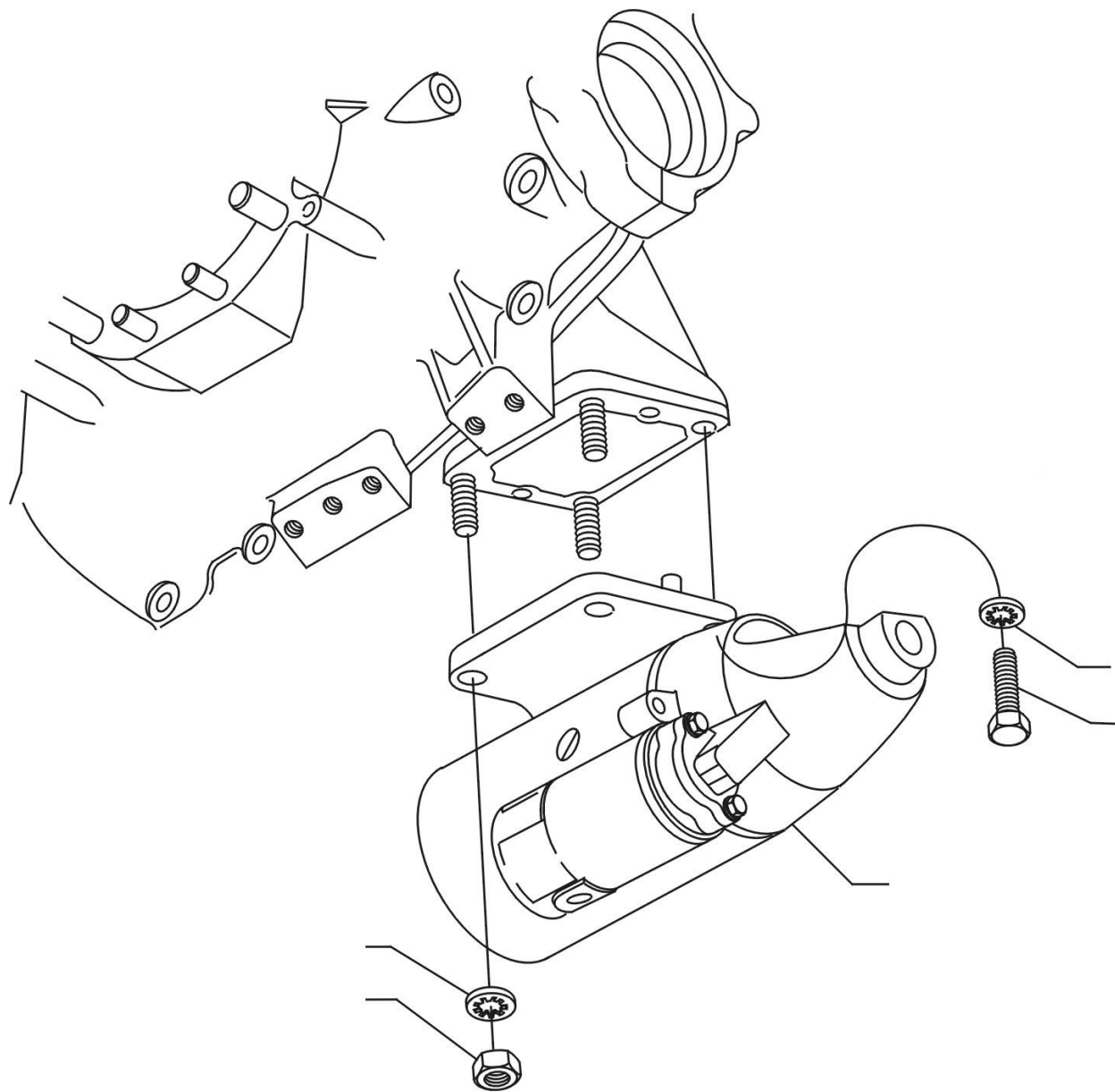
IGNITION DISTRIBUTION SYSTEM**FIGURE 19 -MAGNETOS, MAGNETO DRIVES, HARNESES AND SPARK PLUGS**

Figure Item	Code	Part Number	Description	Units per Assembly
1		61665	GEAR, Magneto, impulse coupling	1
2		STD-713	COTTER PIN, 3/32 diameter x 3/4 long	2
3		68C19622	GEAR, Magneto	1
4		62224	GASKET, Magneto adapter	1
5		LW-12706	ADAPTER, Magneto, impulse coupling	1
6		LW-12681	GASKET, Magneto	2
7	V	66GP-0SANN	MAGNETO, Plain, V 4370	1
8	V	66GC25SFNN	MAGNETO, Impulse, V 4373	1
9	V	67P20416	HARNESS ASSEMBLY, Right, Slick V M2984	1
10	V	67P20417	HARNESS ASSEMBLY, Left, Slick V M2983	1
11		66SLC-1001-03	CONT., Lasar, 12V.	1
12	V	66K22442	MAGNETO, Lasar, left, impulse, V 4771	1
13	V	66K22445	MAGNETO, Lasar, right, V 4770	1
14		STD-35	WASHER, 5/16 plain	2
15		67Y22441-43	HARNESS ASSEMBLY, Lasar ignition	1
16	V	67P20428	HARNESS ASSEMBLY, Right, V M2990 (Lasar mags.)	1
17	V	67P20429	HARNESS ASSEMBLY, Left, V M2989 (Lasar mags.)	1
18		66M21195	CLAMP, Magneto, V M3741	4
19		STD-475	WASHER, 5/16 lock, internal teeth	4
20		STD-1410	NUT, 5/16-18 plain	4
21	V*	1182-E7	SPARK PLUG, Champion V REM38E	8
		01P19762-2-9	BAG, Harness attaching (Slick Magnetos)	1
		LW-16266-25-25	CLIP, One wire	4
		LW-14060	CLIP, Two wire	4
		STD-8	WASHER, 1/4 plain	8
		STD-1874	SCREW, 1/4-20 x 13/16 long, fill head	4
<p>V Vendor Prime Manufacturer part</p> <p>* Item No. 21 spark plugs are used in production only. Additional spark plugs are available for the engine. See the latest revision of Service Instruction No. 1042 for complete listing of all approved spark plugs.</p>				

IGNITION DISTRIBUTION SYSTEM**FIGURE 19 -MAGNETOS, MAGNETO DRIVES, HARNESSES AND SPARK PLUGS (CONT).**

Figure Item	Code	Part Number	Description	Units per Assembly
		76734	ZIP STRAP	12
		LW-16266-25-50	CLAMP	3
		STD-1411	NUT, 1/4-20 plain	1
		STD-696	WASHER, 1/4 plain (thin)	4
		STD-1916	SCREW, 1/4-20 x 1-1/8 long, fill. head	1
		STD-1925	SCREW, 1/4-20 x 5/8 long, pan. head	2
		72815	BRACKET, Support clamp, 90°	3
		73152	BRACKET, Support clamp	2
		STD-692	SCREW, No. 10-32 x 1/2 long, round head	5
		STD-425	WASHER, No. 10 plain	5
		STD-670	LOCKNUT, No. 10-32	5
		LW-M-2375	PLATE, Spark plug cable, two wire	2
		01P19762-1-1	BAG, Harness attaching (Lasar Magnetos)	1
		LW-16266-25-25	CLIP, One wire	2
		LW-14060	CLIP, Two wire	3
		STD-8	WASHER, 1/4 plain	8
		STD-1874	SCREW, 1/4-20 x 13/16 long, fill. head	6
		76734	ZIP STRAP	8
		LW-16266-25-50	CLAMP	1
		STD-1411	NUT, 1/4-20 plain	2
		STD-696	WASHER, 1/4 plain (thin)	4
		STD-1916	SCREW, 1/4-20 x 1-1/8 long, fill. head	3
		LW-M-2375	PLATE, Spark plug cable, two wire	2

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Starter Motor and Attaching Parts
Figure 20

CRANKING SECTION**FIGURE 20 - STARTER MOTOR AND ATTACHING PARTS**

Figure Item	Code	Part Number	Description	Units per Assembly
1	V	31A22104	STARTER, Sky-Tec V 149-12LS	1
2		STD-475	WASHER, 5/16-18 lock, internal teeth	4
3		LW-31-0.94	BOLT, 5/16-18 x 15/16 long, hex. head	1
4		STD-1410	NUT, 5/16-18 plain	3
V Vendor Prime Manufacturer part				

SEAL AND GASKET SET

PART NO.	PART NAME	Qty.
75439-1	KIT - SEAL AND GASKET SET	1
AN901-8A	GASKET, Metal tube connect seal	1
LW-10332	LOCKPLATE, Crankshaft gear	1
LW-12272	LOCKPLATE, Shroud tube	4
LW-12681	GASKET, Magneto	2
06B23862	GASKET, Oil filter adapter	1
LW-13353	GASKET, Oil sump	1
LW-13792	SEAL, Crankshaft oil	1
LW-14260	SEAL, Tachometer drive, oil	1
LW-14995	SPRING, Shroud tube	4
LW-18639	LOCKPLATE, Crankshaft gear	1
LW-18661	SEAL, Shroud tube	8
STD-475	WASHER, 5/16 lock, internal teeth	4
STD-213	OIL SEAL, 3/4 I.D. x 1-3/8 O.D.	1
06A19956	OIL SEAL, 7/8 I.D. x 1-1/2 O.D. x 5/16	1
06E19769-0.63	GASKET, Annular, 5/8 I.D.	2
06E19769-1.00	GASKET, Annular, 1.00 I.D.	1
06E19769-1.25	GASKET, Annular, 1-1/4 I.D.	1
1691-C	GASKET, Fuel pump	1
60096	GASKET, Fuel pump	1
61173	GASKET, Oil pressure housing	1
61183	GASKET, Accessory adapter	1
62224	GASKET, Magneto adapter	3
66224	GASKET, Carburetor	2
68315	GASKET, Accessory drive adapter	1
69164	GASKET, Fuel pump adapter	1
69345	SPACER	4
69551	GASKET, Accessory drive adapter	1
70310	SEAL, Shroud tube	8
70455	GASKET, 25/32 I.D. x 1-1/8 O.D. x 1/32	1
71481	RING, Oil seal, 3/32 diameter x 4-27/32	4
71973	GASKET, 2 bolt flange, 1-13/16 I.D.	4
72053	GASKET, Governor	2
72059	GASKET, Oil level gage	1
72075	SEAL, Oil, 5/64 section x 29/64 I.D.	6
72078	LOCKPLATE, 5/16 bolt x 1-21/64	2

SEAL AND GASKET SET (CONT.)

PART NO.	PART NAME	Qty.
75439-1	KIT - SEAL AND GASKET SET	1
72091	RING, Oil seal, 23/64 I.D. x 7/64 diameter	2
72220	GASEKT, Oil level gage	1
72312	RING, Oil seal, 1.00 x 1-5/16	1
72829	LOCKPLATE, 1/4 bolt x 1-3/4	1
73383	LOCKPLATE, 5/16 bolt x 1.00	2
73817	LOCKPLATE, 1/4 bolt x 1-3/4	2
73818	GASKET, Accessory housing	1
74065	RING, Oil level gage seal	1
74068	RING, Oil level gage plug	1
75906	GASKET, Rocker box cover	4
76510	GASKET, Oil cooler bypass valve	1
76940	SEAL, Crankshaft oil	1
77154	GASKET, Carburetor	1
77611	GASKET, Exhaust flange	4
8313	GASKET, Vacuum pump	1
77569	RING, Seal, intake pipe	4
MS29512-04	"O" RING, 11/32 I.D. x 1/16 section	1
06A23493	SEAL, Shroud tube	8

CYLINDER, PISTON AND RING ASSEMBLY

PART NO.	PART NAME	Qty.
05K21104	KIT - CYLINDER, PISTON AND RING ASSEMBLY	1
LW-12427	CYLINDER ASSEMBLY	1
17A23938	VALVE, Intake	1
17B23936	VALVE, Exhaust	1
65441	SEAT, Valve spring, lower intake	1
LW-13323	SEAT, Valve spring, lower	1
LW-11800	SPRING, Valve, outer	2
LW-11795	SPRING, Valve, inner	2
LW-10077	SEAT, Valve spring, upper	1
LW-16475	SEAT, Valve spring, upper exhaust	1
60009	KEY, Valve, intake	2
17C21191	KEY, Valve, exhaust	2
MS20823-6D	ELBOW, 45°, 3/8 flared tube	1
17C19386	CAP, Valve stem, exhaust (rotator)	1

CYLINDER PISTON AND RING ASSEMBLY (CONT.)

PART NO.	PART NAME	Qty.
05K21104	KIT - CYLINDER, PISTON AND RING ASSEMBLY	1
1102	PLUG, 1/8-27 NPT, Allen head	2
75089	PISTON	1
74241	RING, Piston, compression	2
14H21950	RING, Piston, oil	1
LW-14078	PIN, Piston	1
71481	RING, Oil seal, 3/32 diameter x 4-27/43 I.D.	1
LW-18661	SEAL, Shroud tube	2
70310	SEAL, Shroud tube	2
75906	GASKET, Rocker box cover	1
SSP-299	TAG, Use of piston pin plugs	1
72198	PLUG, Piston pin	2
77611	GASKET, Exhaust flange	1
71973	GASKET, 2 bolt flange	1
LW-12272	LOCKPLATE, Shroud tube	1
06A23493	SEAL, Shroud tube	2

CRANKCASE ASSEMBLY AND THRU-STUD KITS

PART NO.	PART NAME	Qty.
11B20061-1SL-S	KIT - CRANKCASE ASSEMBLY AND THRU-STUD	1
11B20061-1SL	CRANKCASE ASSEMBLY	1
76220	THRU-STUD	4
74887	SPACER, 33/64 I.D. x 7/8 O.D. x 3/8 thick	2
STD-2090	NUT, 1/4-20 plain	2
1102	PIPE, 1/8-27 NPT, Allen head	6
STD-1339	PLUG, 1/16-27 NPT, Allen head	4
69796	DOWEL, Crankshaft bearing	1

PART NO.	PART NAME	Qty.
11B20161-1SL-S	KIT - CRANKCASE ASSEMBLY AND THRU-STUD	1
11B20161-1SL	CRANKCASE ASSEMBLY (Roller tappet engines)	1
76220	THRU-STUD	4
74887	SPACER, 33/64 I.D. x 7/8 O.D. x 3/8 thick	2
STD-2090	NUT, 1/4-20 plain	2
1102	PIPE, 1/8-27 NPT, Allen head	6
STD-1339	PLUG, 1/16-27 NPT, Allen head	4
69796	DOWEL, Crankshaft bearing	1

CRANKSHAFT ASSEMBLY KIT

PART NO.	PART NAME	Qty.
05K22800	KIT - CRANKSHAFT ASSEMBLY	1
13B47120	CRANKSHAFT ASSEMBLY	1
18A26093	BEARING, Crankshaft	2
18D26098	BEARING, Crankshaft	4
STD-2246	BOLT, 5/16-24 X 1.00 LONG	1
LW-18639	LOCKPLATE, Crankshaft gear	1
LW-13792	SEAL, Crankshaft, oil	1

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AN844-10D	Elbow	35	LW-15473	Fuel Pump	31
AN960-616L	Washer	9	LW-15592-5-05	Clamp	19
LRT23381	Body Assy.	3	LW-16166-25-38	Clamp	23
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LW-25-0.94	Bolt	25	LW-16266-10-75	Clamp	37
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LW-25-1.00	Bolt	35	LW-16475	Seat	15
LW-25-1.13	Bolt	9	LW-16783-18	Gage Assy.	23
LW-25-1.13	Bolt	25	LW-18085	Spring	3
LW-25-1.13	Bolt	29	LW-18108	Impeller	29
LW-25-1.25	Bolt	20	LW-18109	Impeller	29
LW-25-1.44	Bolt	29	LW-18110	Impeller Assy.	29
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LW-25-1.75	Bolt	9	LW-18661	Seal	15
LW-25S1.50	Bolt	9	LW-18667	Pin	7
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LW-31-0.94	Bolt	43	MS20822-4	Elbow	37
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LW-11795	Spring	15	STD-8	Washer	9
LW-11800	Spring	15	STD-8	Washer	20
LW-12098-0-140	Tube Assy.	37	STD-8	Washer	25
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