

# **IO-540-AG1A5 Series Illustrated Parts Catalog**

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**December 2012**

**PC-615-AG1A5**

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652 Oliver Street  
Williamsport, PA 17701

## **IO-540-AG1A5 Series Illustrated Parts Catalog**

Lycoming Part Number: PC-615-AG1A5

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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-540-AG1A5 wide cylinder flange model engine.

## How to Use this Catalog

This catalog is based on the Air Transport Association (ATA) Spec 100 format. In order to clarify illustrations, Lycoming has taken discretion to classify non-system related assemblies and components in the same chapters, because they are physically connected.

This catalog is frequently updated by Service Bulletins (SB) and Service Instructions (SI). The updated information will be incorporated into subsequent full revisions of this catalog.

The ATA two element numbering system provides consistency throughout various manuals. The bottom of each page (beyond the frontal section) contains a two element number (##-##). In the two element numbering, the first two digits represent a chapter, and the next two digits subdivide the material into a more specific section.

The ATA format specifies the subject matter for each chapter-section. According to the ATA Standards, the following chapters apply to the IO-540-AG1A5 Illustrated Parts Catalog:

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.

## Numerical Index

The Numerical Index is a single list of part numbers, names and their locations within the IPC. It is useful for locating parts when you only know the number or name of the part.

### Description column

Indentation of a part name represents a lower level of assembly. Attaching parts have the same indentation level and are listed below the parts grouping or assembly they attach to. This column is often referred to as the "Nomenclature" on other ATA Spec manuals.

**Units per Assembly Column**

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

**Cross-Reference List of Manufacturer Parts to Standard Part Number****Vendor Accessories**

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

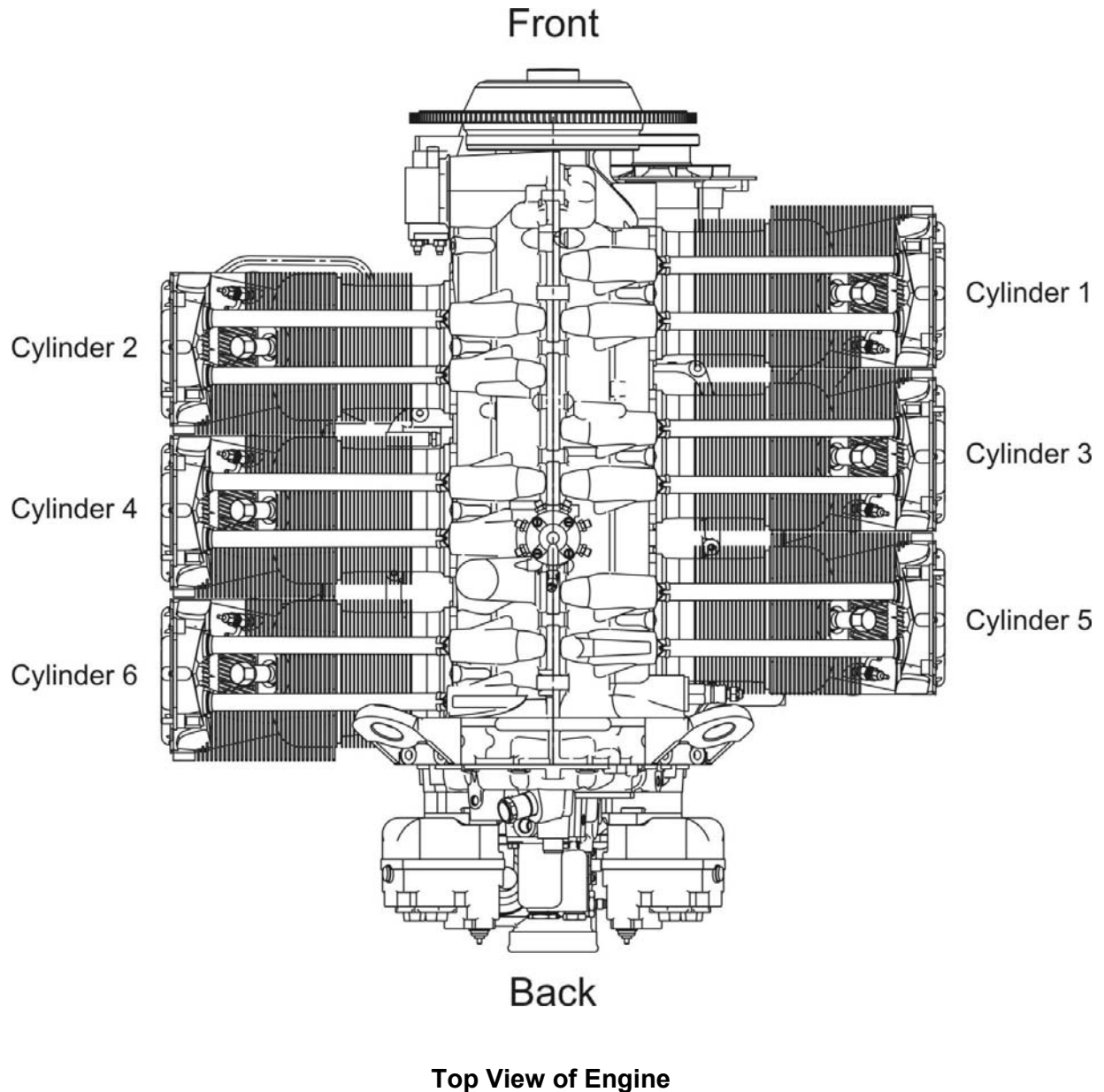
Any reference in this document to the suppliers/part manufacturer's product, by name, trademark, part number or other description is solely for the purpose of identification and does not indicate or infer that Lycoming accepts responsibility for quality control and/or airworthiness of parts, which do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

**Environmental Compliance**

Lycoming is concerned with preserving the environment. Lycoming strongly urges engine owners and repair/overhaul personnel to observe and comply with all federal, state, and local environmental regulations when solvents, paint, fuel, oil, chemicals, or other consumables are used in operating, maintaining, or overhauling an engine component. Please share our concern for, and commitment to a clean earth, clean water, and especially clean air for succeeding generations of flyers.

**Perspective of References**

In this manual, all references to locations of various components will be designated as if viewing the engine from the rear (or anti-propeller) end. The front of the engine is considered to be the propeller end and the oil sump is considered to be on the bottom of the engine. Cylinders are numbered from front to rear with the odd-numbered cylinders on the right-hand side. The firing order for this four-cylinder engine is 1-4-5-2-3-6.



**How to Order Parts and Publications**

An Oversize and Undersize Parts List is included in the front section of this catalog to aid in ordering parts as necessary during overhaul.

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. 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, or 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 in preparing this manual to ensure its accuracy. However, any comments, suggestions, or corrections to this manual are welcome and must be directed in writing to:

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**ABBREVIATIONS AND ACRONYMS**

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

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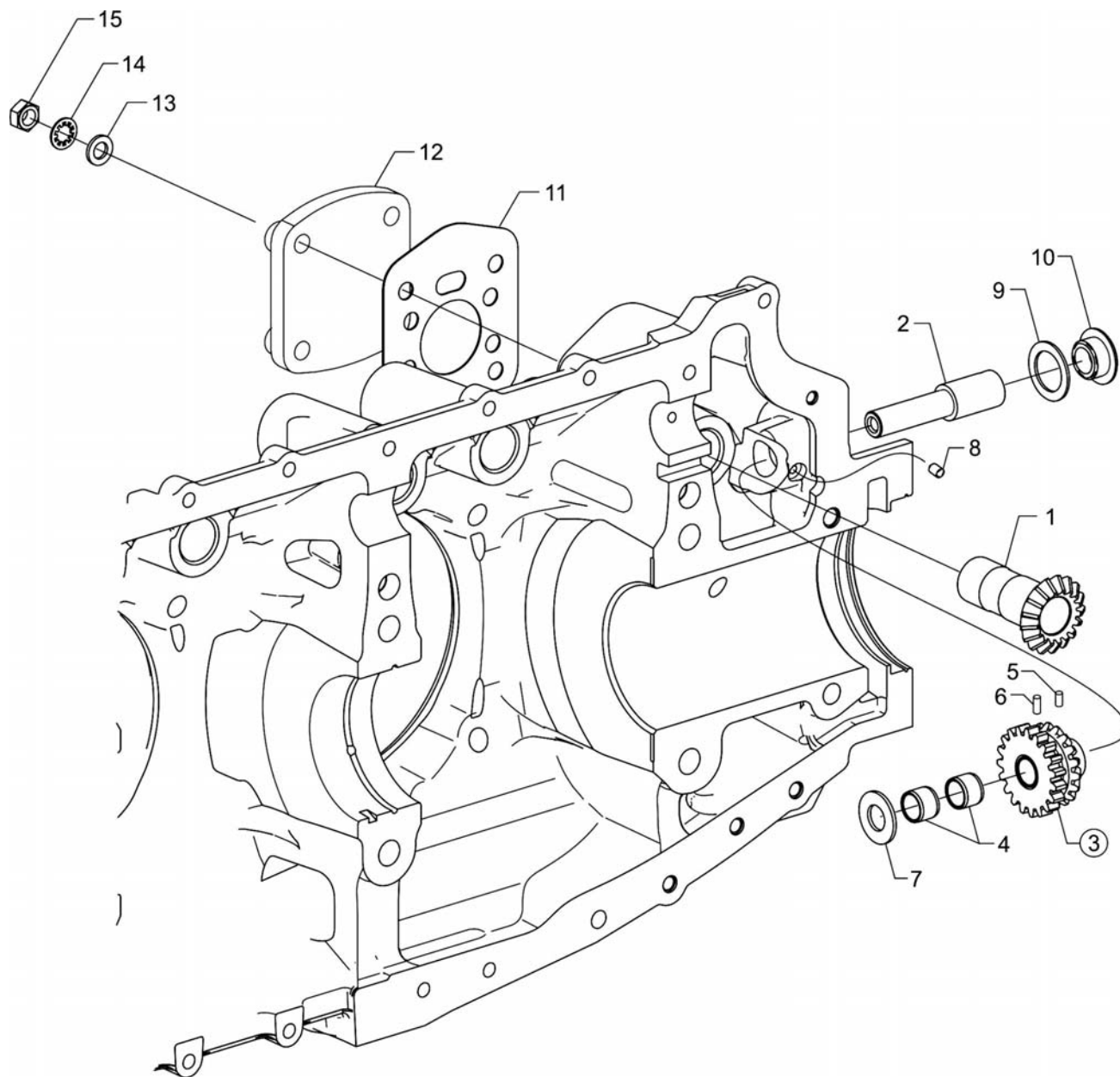
**OVERSIZE AND UNDERSIZE PARTS LISTING**

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
18E23886	BEARING									X	X	X
18B23885	BEARING									X	X	X
18N26106	BEARING									X	X	X
LW-15628	SEAL								X			
75656-S	BUSHING		X	X	X	X						
72155-S	BUSHING		X	X	X	X						
79024-S	BUSHING		X	X	X	X						
STD-1065	DOWEL	X	X	X	X							
74241	RING			X								
14H21990	RING		X	X	X	X						
LW-12688	SEAT		X	X		X	X					
16T19468	SEAT		X	X		X	X					
66713*	GUIDE		X	X	X							
75838*	GUIDE		X	X	X							
66610	BUSHING		X	X								
66670	BYSGUBG		x	x								

\* Reference Figure 9 items no. 4 and 5 for valve guides.

**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. Undersize code letter is "M" while oversize code letter is "P". These letters are then followed by the number designating the size in thousandths of an inch.

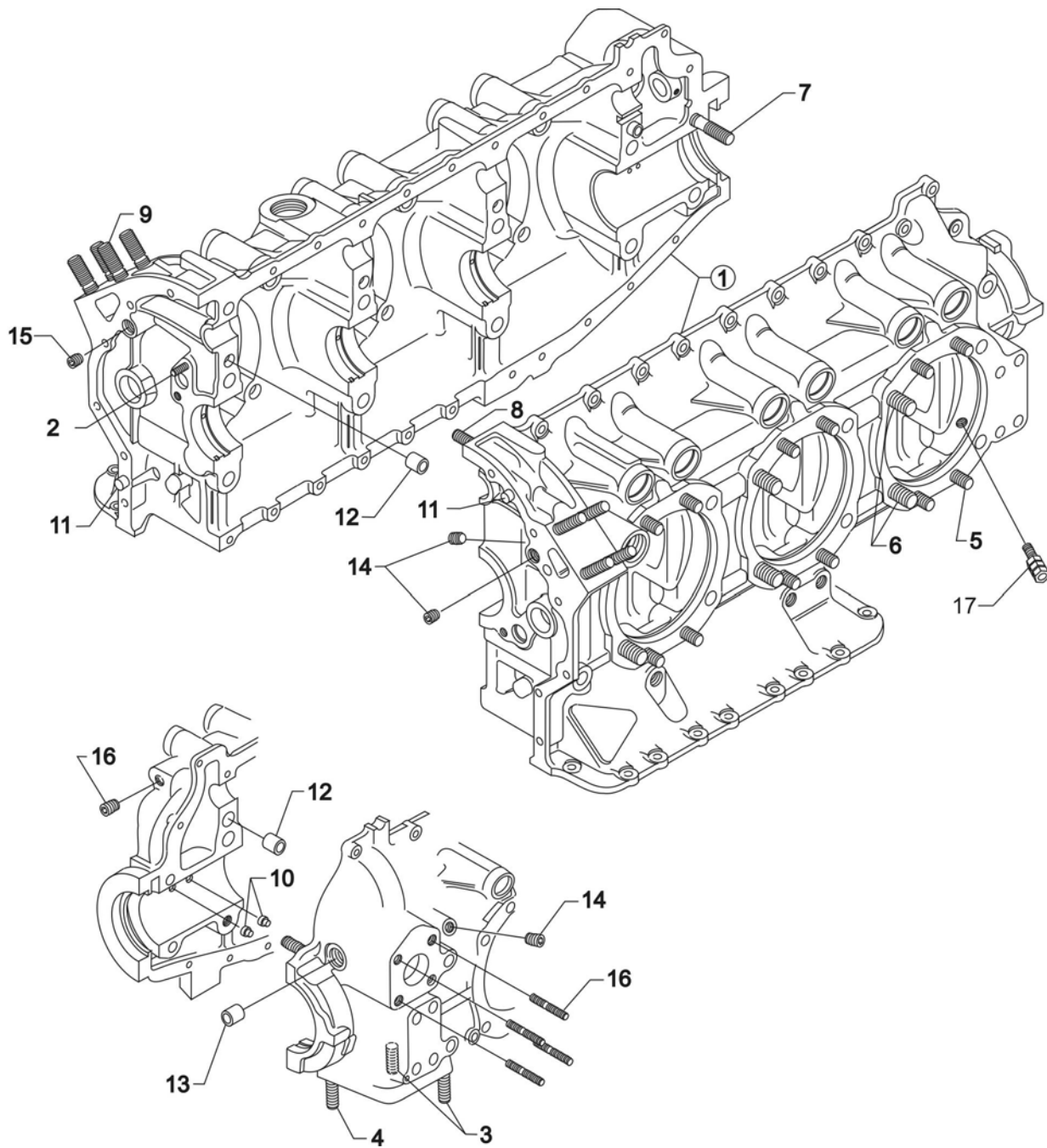


**Propeller Governor Drive**  
**Figure 1**



**FRONT SECTION****FIGURE 1 – PROPELLER GOVERNOR DRIVE**

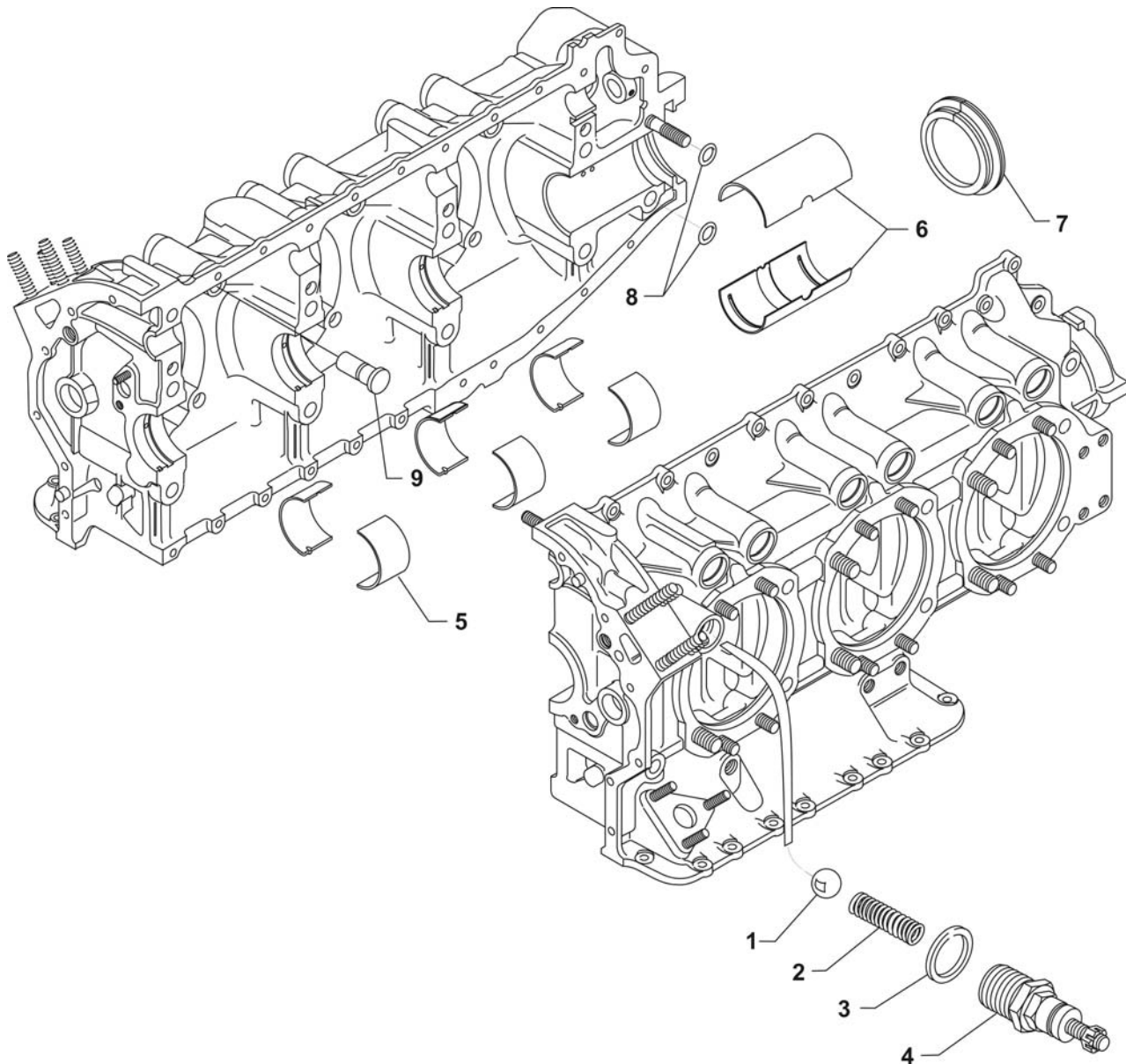
<b>Figure Item</b>	<b>Code</b>	<b>Part Number</b>	<b>Description</b>	<b>Units per Assembly</b>
1		LW-10442	GEAR, Propeller governor drive	1
2		LW-14021	SHAFT, Propeller governor idler gear	1
3		LW-10541	GEAR ASSEMBLY, Propeller governor idler	1
4		77872	BUSHING, Propeller governor idler gear	2
5		STD-19	DOWEL, 3/32 diameter x 7/32 long	1
6		STD-798	DOWEL, 3/32 diameter x 9/32 long	1
7	<b>AR</b>	73249	WASHER, Thrust (0.0585-0.0595 thick)	AR
	<b>AR</b>	73250	WASHER, Thrust (0.062-0.063 thick)	AR
	<b>AR</b>	73251	WASHER, Thrust (0.0655-0.0665 thick)	AR
	<b>AR</b>	73252	WASHER, Thrust (0.069-0.070 thick)	AR
	<b>AR</b>	01L21418	WASHER, Thrust (0.055-0.056 thick)	AR
8		AN565B1032H5	SET SCREW, No. 10-32 x 5/16 long	1
9		70455	GASKET, 25/32 I.D. x 1-1/8 O.D. x 1/16 thick	1
10		LW-13896	PLUG, 3/4-16 hex. head	1
11		72053	GASKET, Governor	1
12		72378	COVER, Governor drive	1
13		STD-35	WASHER, 5/16 plain	4
14		STD-475	WASHER, 5/16 lock, internal teeth	4
15		STD-1410	NUT, 5/16-18 plain	4
<b>AR as required</b>				



**Crankcase Assembly**  
**Figure 2**

**POWER SECTION****FIGURE 2 - CRANKCASE ASSEMBLY**

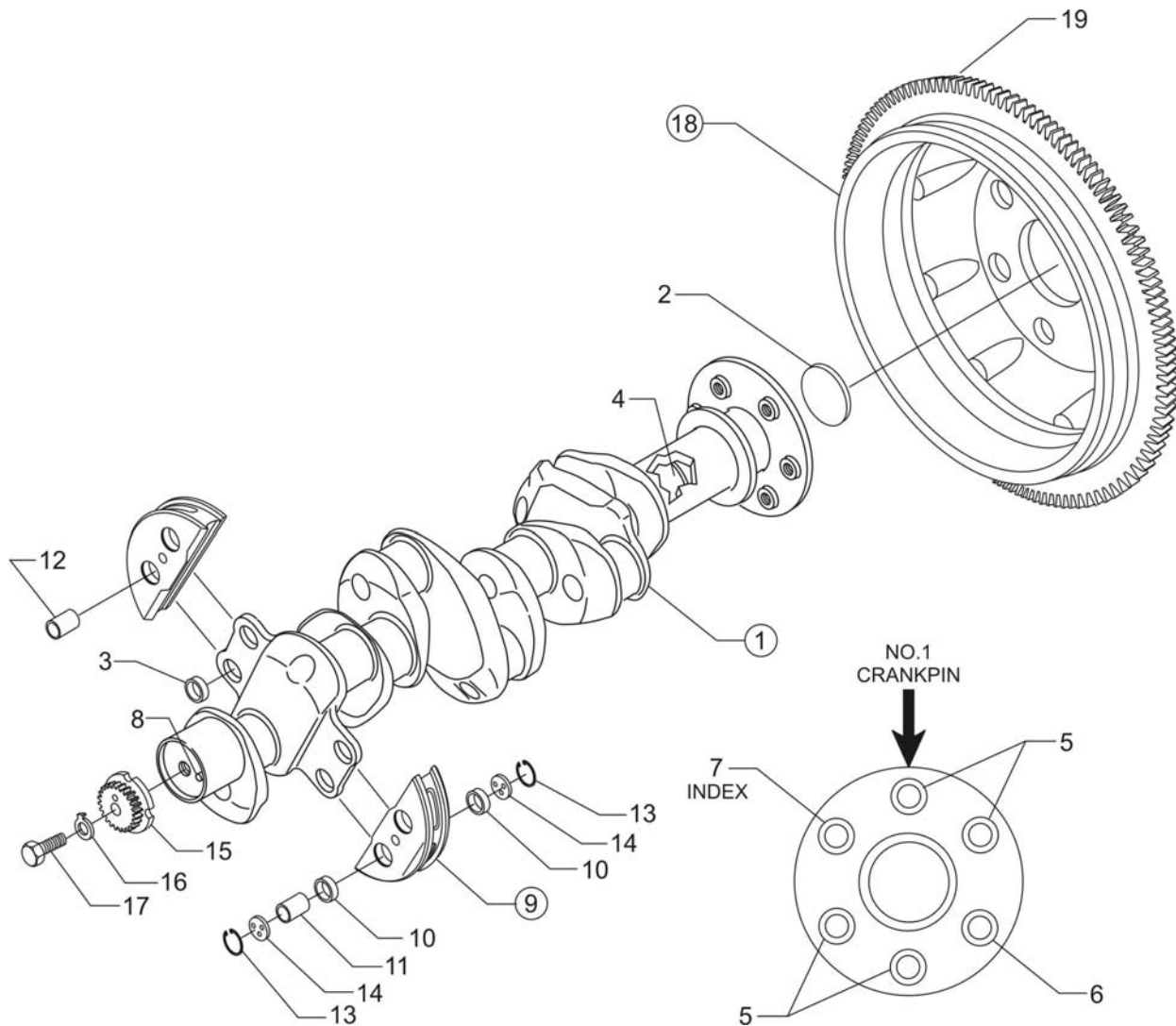
Figure Item	Code	Part Number	Description	Units per Assembly
1	*	11F24022-S3-S	CRANKCASE ASSEMBLY KIT	1
	<b>P</b>	11F24022-S3	CRANKCASE ASSEMBLY	1
2		01A23354	STUD, 5/16-18 x 1.00 long, drilled	1
3		31C-12	STUD, 5/16-18 x 1-1/2 long	2
4		31C-13	STUD, 5/16-18 x 1-5/8 long	1
5		38-13	STUD, 3/8-16 x 1-5/8 long	24
6		50-15	STUD, 1/2-13 x 1-7/8 long	12
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		38-16	STUD, 3/8-16 x 2.00 long	8
10		69796	DOWEL, Crankshaft bearing	2
11		STD-514	DOWEL, 5/16 diameter x 1/2 long	2
12		STD-557	DOWEL, 1/2 diameter x 11/16 long	2
13		72158	BUSHING, Governor drive idler shaft	1
14		STD-1339	PLUG, 1/16-27 NPT, allen head	1
15		1102	PLUG, 1/8-27 NPT, allen head	4
16		31C-16	STUD, 5/16-18 x 2.00 long	4
17		73772	NOZZLE ASSEMBLY, Piston cooling	6
<p><b>P</b> Lycoming proprietary part. Listed for reference purposes only, cannot be purchased.</p> <p><b>*</b> Refer to Service Kits Section for applicable Crankcase Assembly and Governor Thru-Stud Kit Part Numbers.</p>				



**Crankcase Related Parts**  
**Figure 3**

**POWER SECTION****FIGURE 3 - CRANKCASE RELATED PARTS**

<b>Figure Item</b>	<b>Code</b>	<b>Part Number</b>	<b>Description</b>	<b>Units per Assembly</b>
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, Annular, 1-1/4 I.D.	1
4		77808	VALVE ASSEMBLY, Oil pressure relief valve, adj.	1
5		18E23886	BEARING, Crankshaft	6
6		18B23885	BEARING, Crankshaft	2
7	**	LW-15628	SEAL, Crankshaft oil	1
8		72091	RING, Oil seal, 23/64 I.D. x 7/64 diameter	2
9		15B26262	BODY, Hydraulic tappet	12
<p>* 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.</p> <p>** Refer to the latest revision of Service Instruction No. 1324 for installation.</p>				



**Crankshaft Assembly and Related Parts**  
**Figure 4**



**POWER SECTION****FIGURE 4 - CRANKSHAFT ASSEMBLY AND RELATED PARTS**

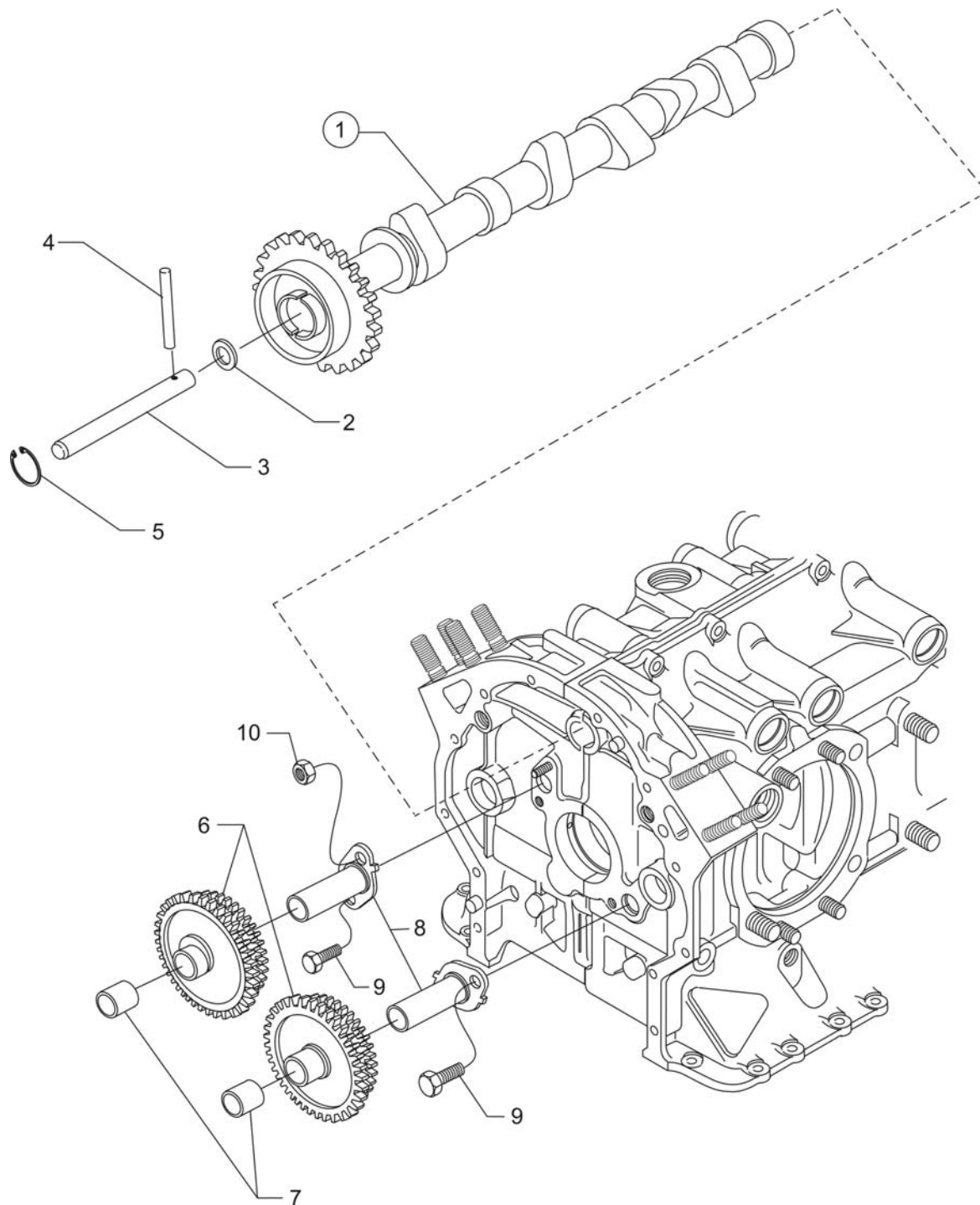
Figure Item	Code	Part Number	Description	Units per Assembly
1		13F47726	CRANKSHAFT ASSEMBLY	1
2		STD-1211	PLUG, 2.00 diameter expansion	1
3		73810	BUSHING, Crankshaft counterweight	4
4		60945	PLUG, 1-1/4 diameter	1
5		75656-S	BUSHING, Propeller flange, long	4
6		72155-S	BUSHING, Propeller flange, short	1
7		79024-S	BUSHING, Propeller flange, indexing	1
8		STD-1065	DOWEL, Stepped, 5/16 x 1/4 diameter	1
9	*	LW-19210	COUNTERWEIGHT ASSEMBLY	2
10		71903-A	BUSHING, Dynamic counterweight	8
11	*	76788	ROLLER, Dynamic counterweight, 6.3 order	2
12	*	73648	ROLLER, Dynamic counterweight, 5.1 order	2
13		LW-14820	RING, Internal retaining	8
14		71907	WASHER, Counterweight	8
15	<b>SB**</b>	13S19648	GEAR, Crankshaft	1
16		LW-18638	LOCKPLATE, Crankshaft	1
17		STD-2247	BOLT, 5/16-24 x 1-3/4 long	1
18		LW-16471	SUPPORT ASSEMBLY, Starter ring gear	1
19		72566	GEAR, Starter ring, 12/14 pitch	1

**SB** Referencing Service Bulletin

\* Refer to the latest revision of Service Instruction No. 1012 for proper counterweight and roller location.

\*\* Refer to the latest revision of Service Bulletin No. 475 for proper installation.

**NOTE:** Refer to Service Kit Section for Crankshaft and Counterweight Assembly kit.

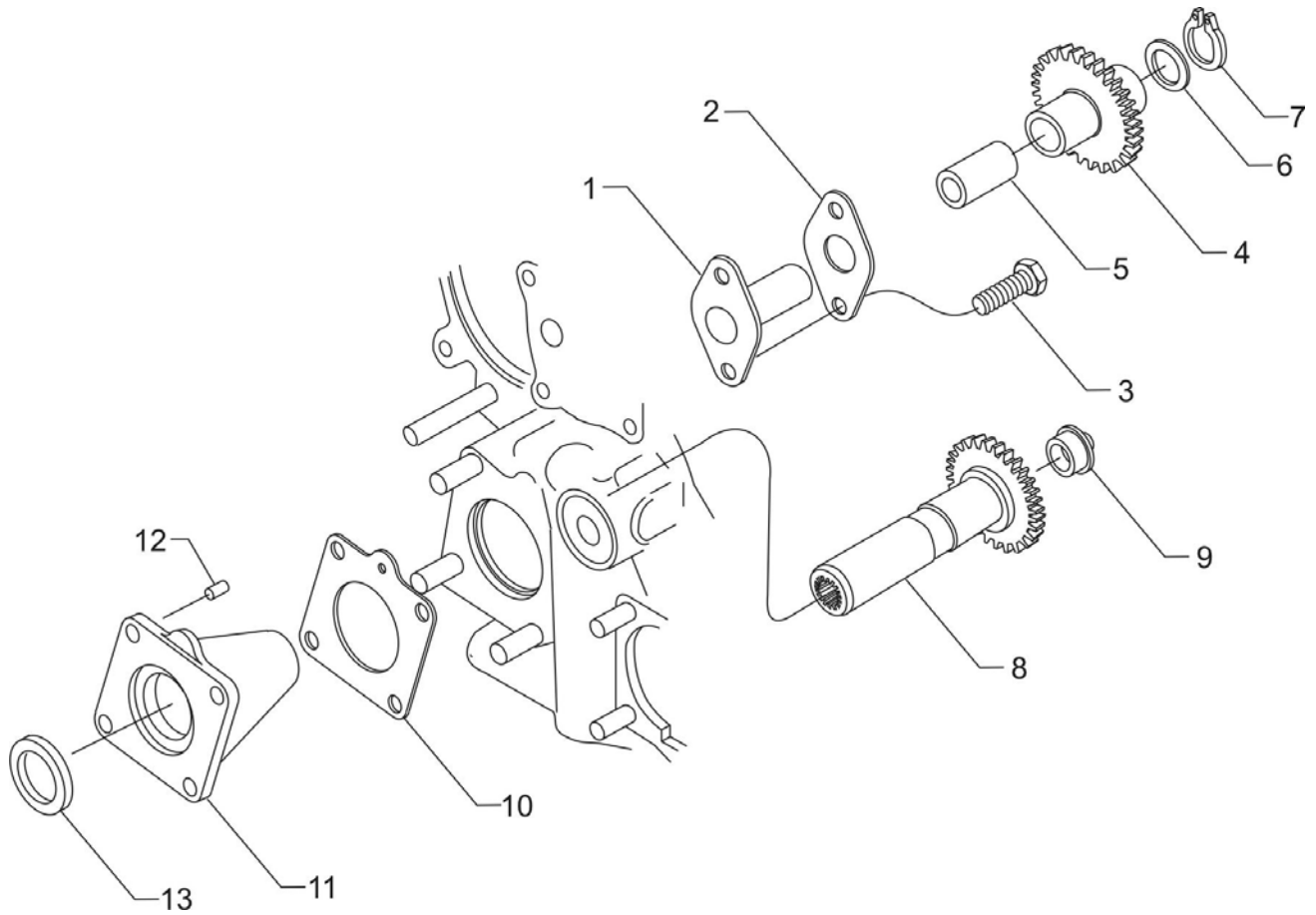


**Crankshaft Idler Gears, Tachometer Drive and Camshaft  
Figure 5**



**POWER SECTION****FIGURE 5 - CRANKSHAFT IDLER GEARS, TACHOMETER DRIVE AND CAMSHAFT**

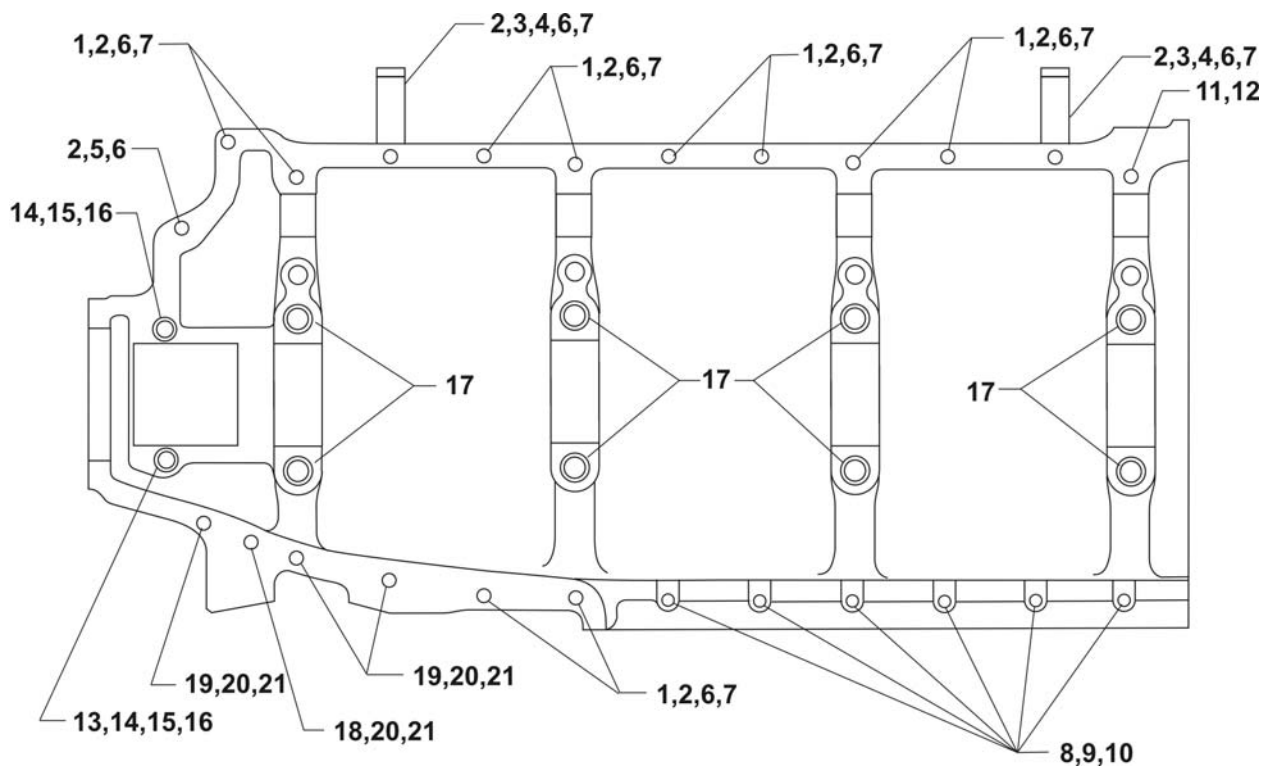
<b>Figure Item</b>	<b>Code</b>	<b>Part Number</b>	<b>Description</b>	<b>Units per Assembly</b>
1		LW-19340	CAMSHAFT ASSEMBLY	1
2		76118	SPACER, Tachometer shaft centering	1
3		76155	SHAFT ASSEMBLY, Tachometer	1
4		LW-18667	PIN, 3/16 diameter x 2-21/64 long	1
5		STD-2231	RING, Internal retaining (13/16)	1
6		71668	GEAR ASSEMBLY, Crankshaft idler, plain	2
7		67530	BUSHING, Crankshaft idler gear	2
8		LW-13795	SHAFT, Crankshaft idler gear	2
9		LW-31H0.88	BOLT, 5/16-18 x 7/8 long, hex. head, drilled	3
10		STD-2168	NUT, 5/16-18 NC-3 slotted shear	1



**Fuel Pump Idler Gears**  
**Figure 6**

**POWER SECTION****FIGURE 6 - FUEL PUMP IDLER GEARS**

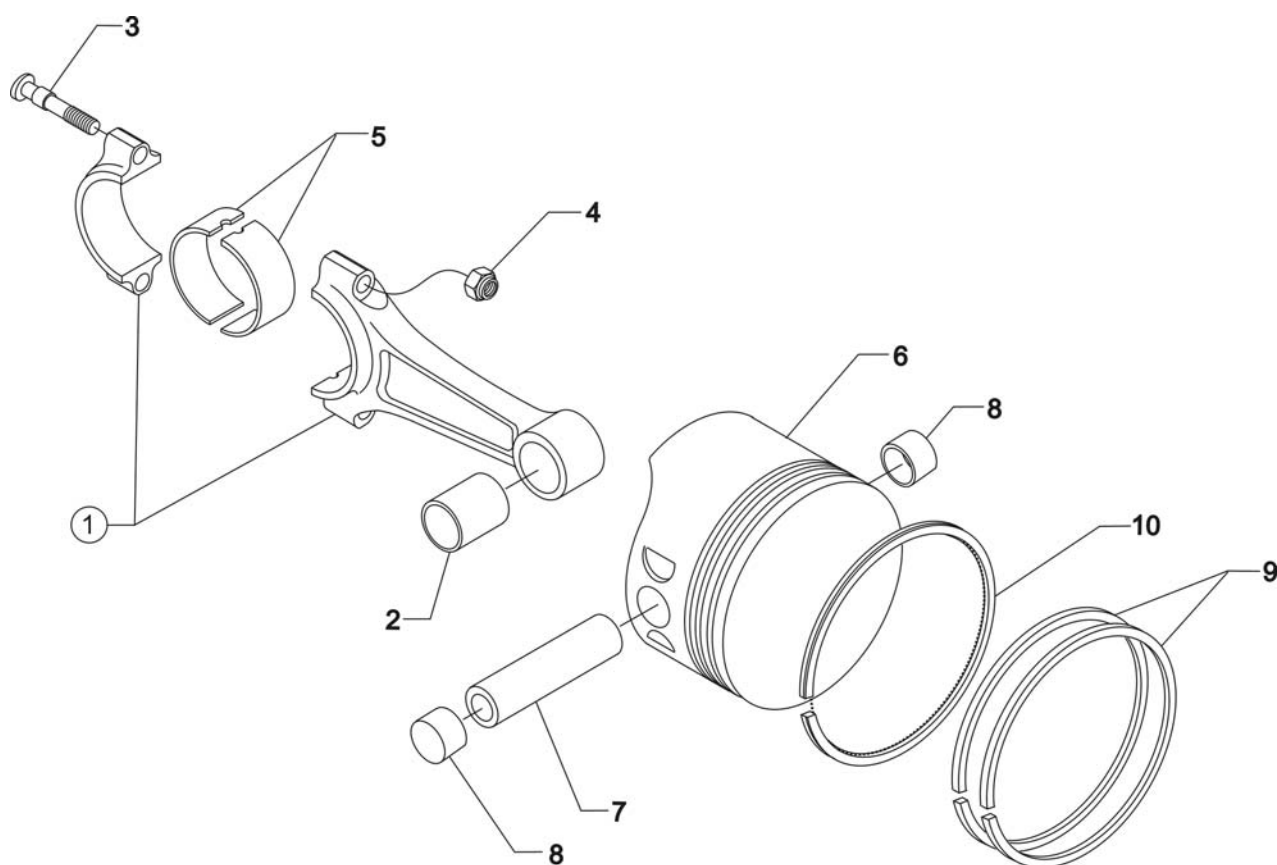
<b>Figure Item</b>	<b>Code</b>	<b>Part Number</b>	<b>Description</b>	<b>Units per Assembly</b>
1		72246	SHAFT, Fuel pump idler gear	1
2		71667	LOCKPLATE, 1/4-20 bolt x 1-3/4	2
3		LW-25-0.63	BOLT, 1/4-20 x 5/8 long, hex. head	2
4		71664	GEAR ASSEMBLY, Fuel pump idler	1
5		77309	BUSHING, Crankshaft idler gear	1
6		70474	WASHER, Fuel pump idler thrust	1
7		STD-1737	RING, External retaining, 9/16 diameter	1
8		72972	SHAFTGEAR ASSEMBLY, Fuel pump drive	1
9		72962	THRUST BUTTON, Shaftgear	1
10		69164	GASKET, Fuel pump adapter	1
11		69159	ADAPTER ASSEMBLY, Fuel pump drive	1
12		STD-1774	PIN, 1/8 diameter x 1/4 long	1
13		STD-213	OIL SEAL, 3/4 I.D. x 1-3/8 O.D.	1



**Crankcase Attaching Parts**  
**Figure 7**

**POWER SECTION****FIGURE 7 - CRANKCASE ATTACHING PARTS**

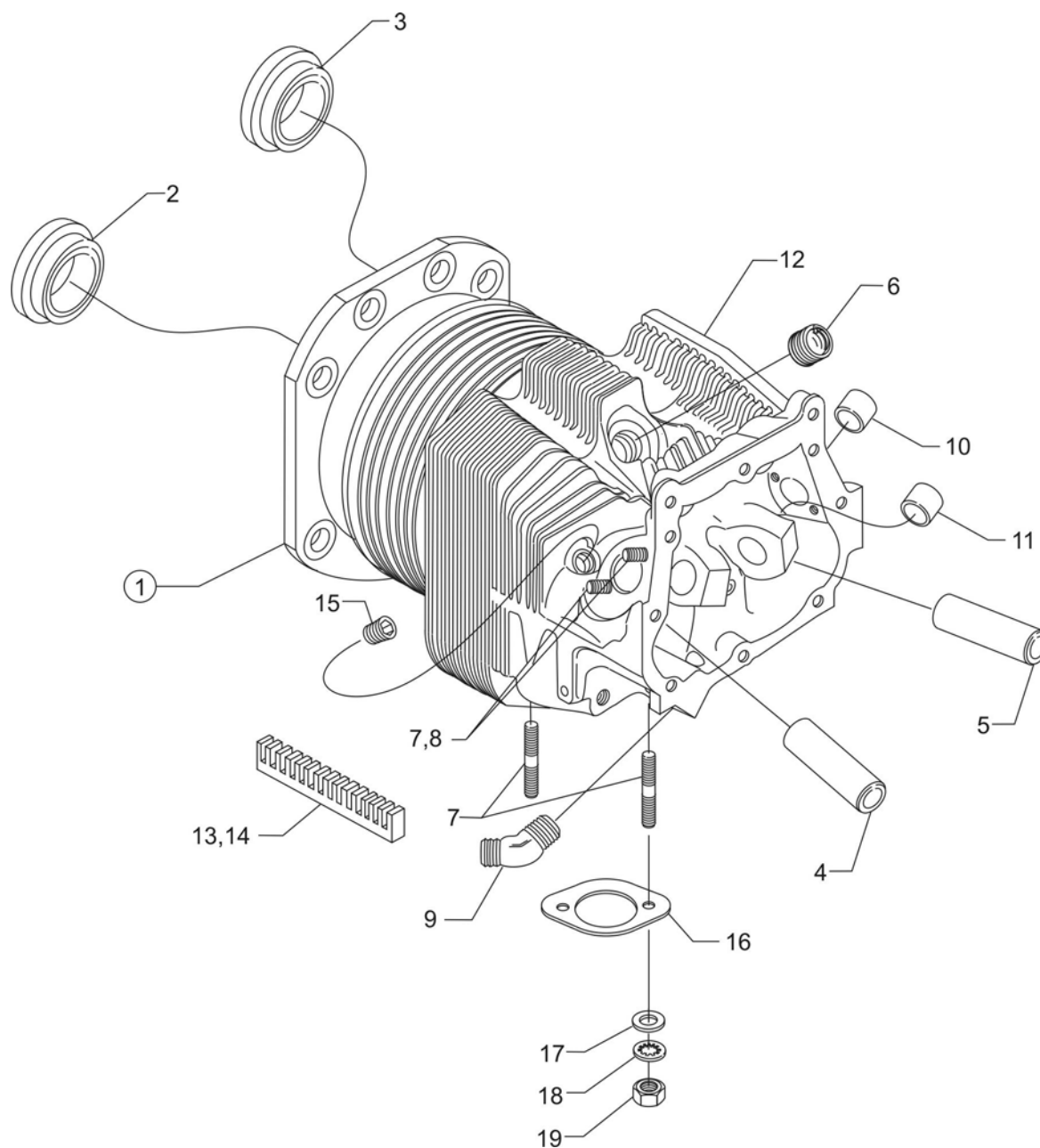
<b>Figure Item</b>	<b>Code</b>	<b>Part Number</b>	<b>Description</b>	<b>Units per Assembly</b>
1		LW-25-1.50	BOLT, 1/4-20 x 1-1/2 long, hex. head	11
2		STD-8	WASHER, 1/4 plain	24
3		60803	STRAP, Lifting	2
4		LW-25-1.75	BOLT, 1/4-20 x 1-3/4 long, hex. head	2
5		LW-25-1.13	BOLT, 1/4-20 x 1-1/8 long, hex. 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, drilled end	6
9	<b>AR</b>	STD-8	WASHER, 1/4 plain (max. 18)	AR
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
<b>AR as required</b>				



**Connecting Rods, Pistons and Ring Assemblies**  
**Figure 8**

**CYLINDER SECTION****FIGURE 8 - CONNECTING RODS, PISTONS AND RING ASSEMBLIES**

<b>Figure Item</b>	<b>Code</b>	<b>Part Number</b>	<b>Description</b>	<b>Units per Assembly</b>
1		LW-19332-S	CONNECTING ROD ASSEMBLY	6
2		LW-13923	BUSHING, Connecting rod, upper	6
3	<b>P</b>	14S23889	BOLT, Connecting rod	12
	<b>*</b>	LW-12596	BOLT, Connecting rod	12
4		LW-12186	NUT, Connecting rod bolt	12
5		18N26106	BEARING, Connecting rod	12
6		14D23907	PISTON, Compression ratio 7.30:1	6
7	<b>**</b>	LW-14078	PIN, Piston	6
8		72198	PLUG, Piston pin	12
9		74241	RING, Piston, compression	12
10		14H21990	RING, Piston, oil regulating (expander type)	6
<p><b>P</b> Lycoming proprietary part. Listed for reference purpose only, cannot be purchased.</p> <p><b>*</b> Service use only.</p> <p><b>**</b> Refer to the latest revision of Service Instruction No. 1267.</p>				

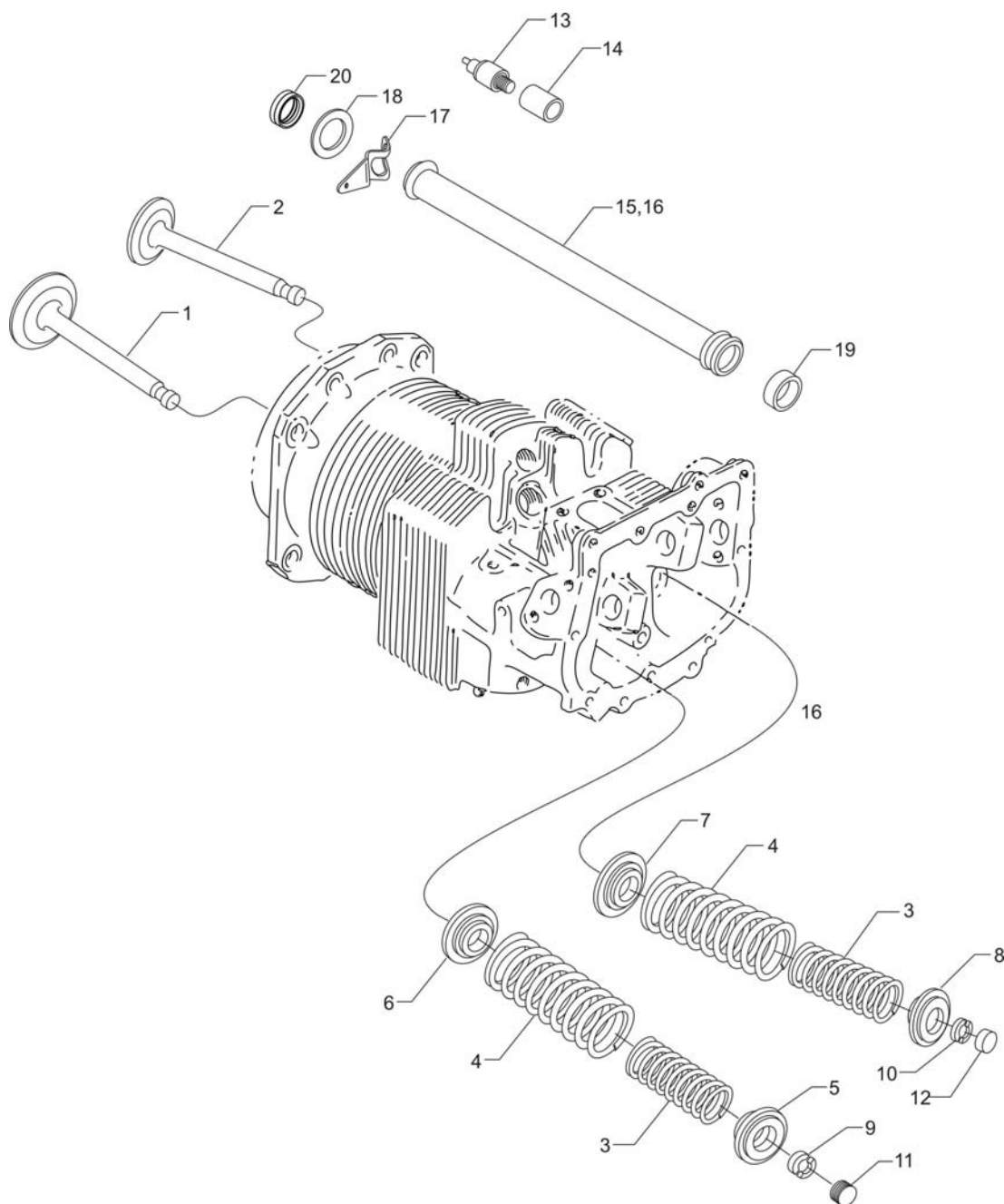


**Cylinder Assembly**  
**Figure 9**



**CYLINDER SECTION**  
**FIGURE 9 - CYLINDER ASSEMBLY**

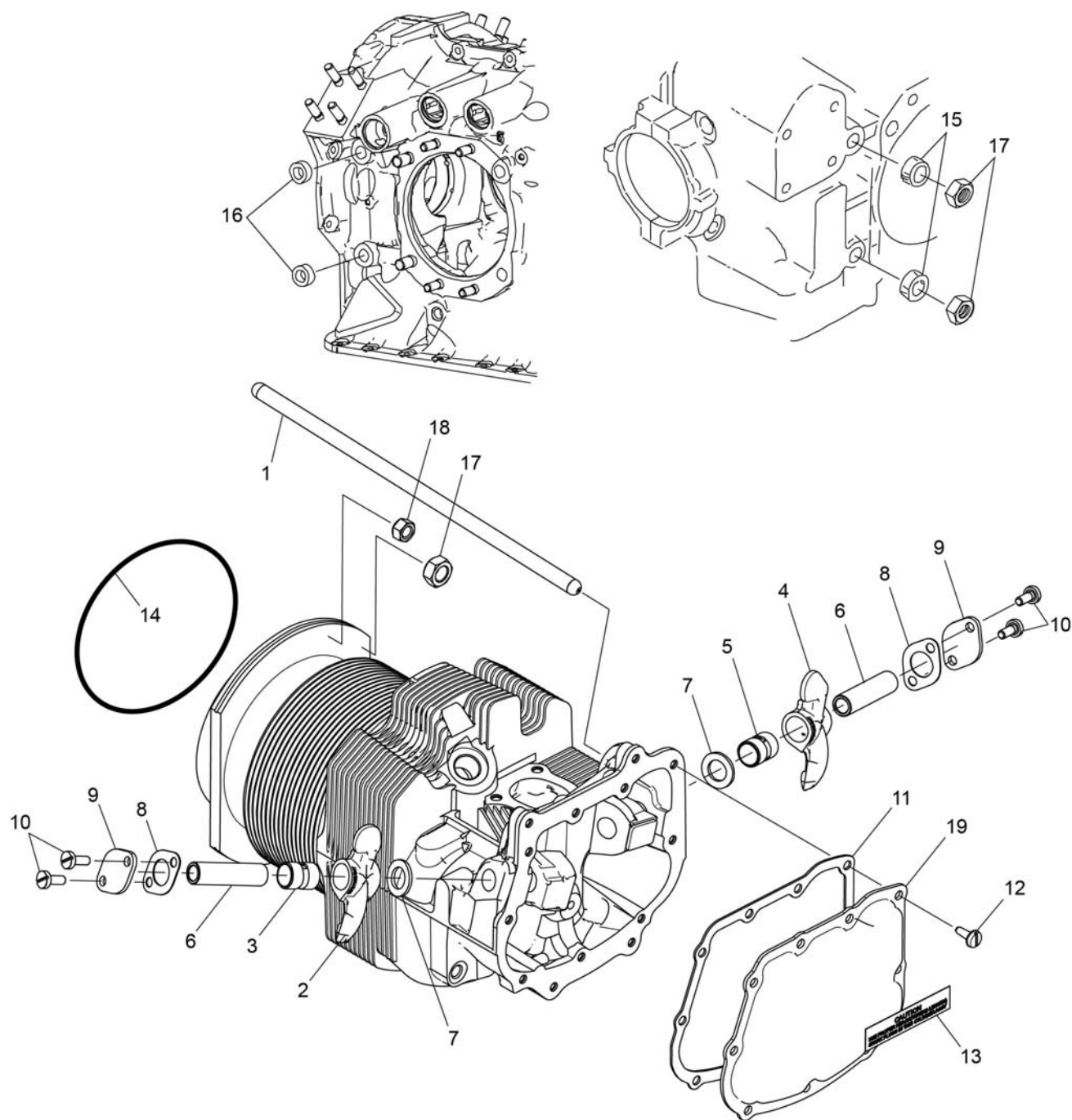
Figure Item	Code	Part Number	Description	Units per Assembly
1		LW-19048	CYLINDER ASSEMBLY, Nitrided	6
2		LW-12688	SEAT, Valve, intake	6
3		16T19468	SEAT, Valve, exhaust	6
4	<b>P*</b>	LW-11956	GUIDE, Valve, intake	6
5	<b>P*</b>	LW-11958	GUIDE, Valve, exhaust	8
6	<b>P</b>	69260	INSERT, Spark plug, 18-1.5 mm	12
7		72706	INSERT, No. 10-24 UNC x 3/8 long	6
8		31C-10	STUD, 5/16-18 x 1-1/4 long	18
9		MS20823-6D	ELBOW, 45° x 3/8 flared tube	6
10		66610	BUSHING, Rocker shaft	4
11		66670	BUSHING, Rocker shaft, inner	12
12		75151	STABILIZER, Cylinder head fins, 11 teeth	1
13		75152	STABILIZER, Cylinder head fins, 8 teeth	1
14		75164	STABILIZER, Cylinder head fins, 13 teeth	1
15	<b>**</b>	1102	PLUG, 1/8-27 NPT, allen head	6
16		LW-15619	GASKET, Exhaust flange	12
17		STD-35	WASHER, 5/16 in	18
18		STD-475	WASHER, 5/16 lock, internal teeth	18
19		STD-1410	NUT, 5/16-18 plain	18
<p><b>P</b> Lycoming proprietary part. Listed for reference purposes only, cannot be purchased.  <b>*</b> Refer to the latest revision of Service Instruction No. 1256 for service valve guides.  <b>**</b> Assemble in cylinder head.</p>				



**Valve Assembly and Related Parts**  
**Figure 10**

**CYLINDER SECTION****FIGURE 10 – VALVE ASSEMBLY AND RELATED PARTS**

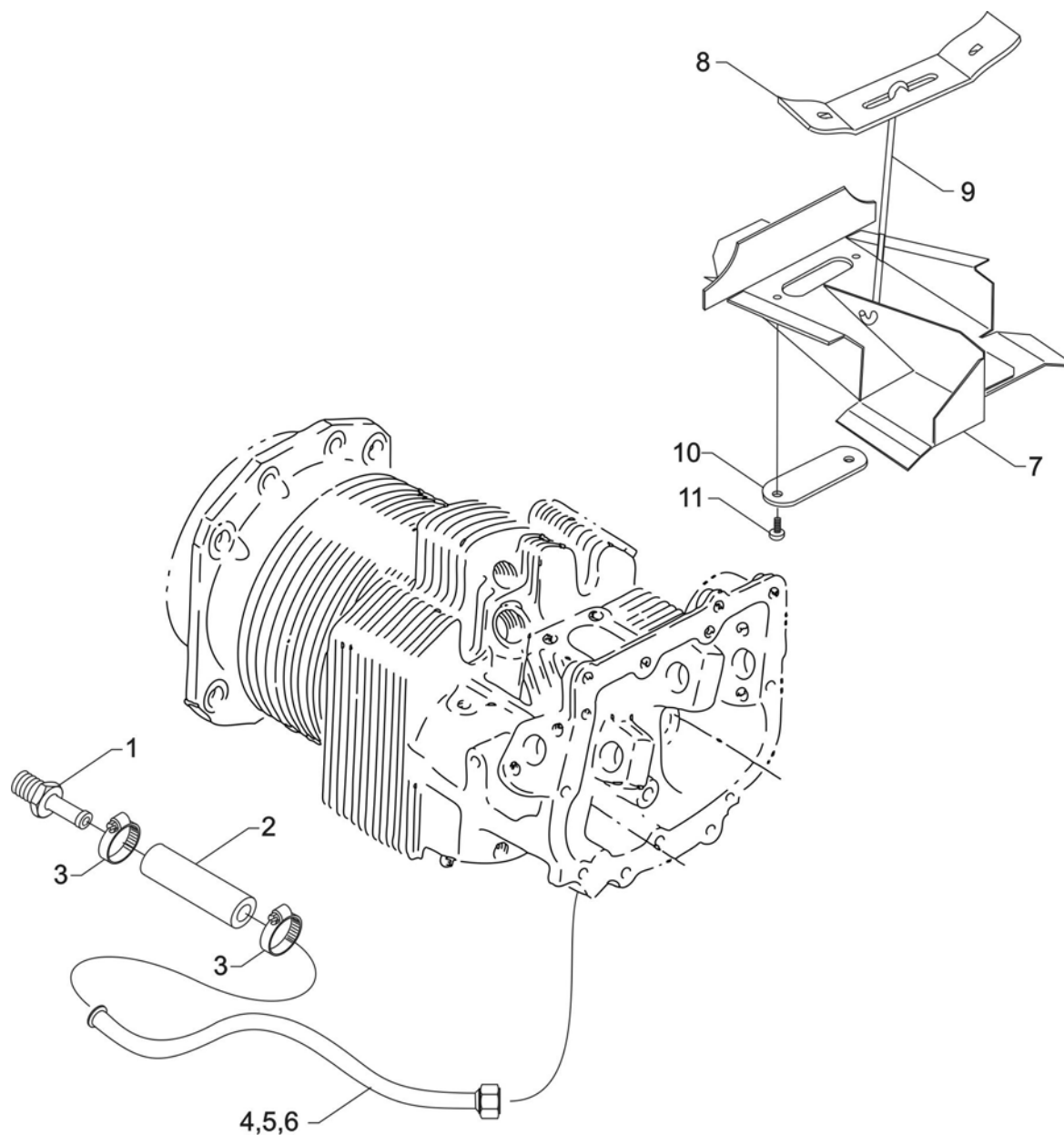
<b>Figure Item</b>	<b>Code</b>	<b>Part Number</b>	<b>Description</b>	<b>Units per Assembly</b>
1		17A23937	VALVE, Intake	6
2		17B23935	VALVE, Exhaust (rotator type)	6
3		LW-11797	SPRING, Valve, inner	12
4		LW-11796	SPRING, Valve, outer	12
5		69532	SEAT, Valve spring, upper intake	6
6		LW-13321	SEAT, Valve spring, lower intake	6
7		LW-13322	SEAT, Valve spring, lower exhaust	6
8		LW-16475	SEAT, Valve spring, upper, exhaust (rotator type)	6
9		72050	KEY, Valve, intake	12
10		17C21191	KEY, Valve, exhaust (rotator type)	12
11		62388	CAP, Valve stem	6
12		17C19386	CAP, Valve stem, exhaust (rotator type)	6
13		15B26066	PLUNGER ASSEMBLY, Hydraulic lifter	6
14		15B21319	SOCKET, Hydraulic tappet	6
15		72255	SHROUD TUBE ASSEMBLY, Push rod, intake	6
16		72257	SHROUD TUBE ASSEMBLY, Push rod, exhaust	6
17		15H21201	SPRING, Shroud tube	24
18		66728	WASHER, 25/32 I.D. x 1-1/4 O.D. x 1/32	12
19		61503	SLEEVE, Shroud tube seal	12
20		LW-18661	SEAL, Shroud tube	12



**Cylinder Related Parts**  
**Figure 11**

**CYLINDER SECTION****FIGURE 11 - CYLINDER RELATED PARTS**

Figure Item	Code	Part Number	Description	Units per Assembly
1	AR♦	15F19957-45	ROD ASSEMBLY, Push (A total of 12 required)	AR
	AR♦	15F19957-46	ROD ASSEMBLY, Push (A total of 12 required)	AR
	AR♦	15F19957-47	ROD ASSEMBLY, Push (A total of 12 required)	AR
	AR♦	15F19957-48	ROD ASSEMBLY, Push (A total of 12 required)	AR
	AR♦	15F19957-55	ROD ASSEMBLY, Push (A total of 12 required)	AR
	AR♦	15F19957-56	ROD ASSEMBLY, Push (A total of 12 required)	AR
	AR♦	15F19957-57	ROD ASSEMBLY, Push (A total of 12 required)	AR
	AR♦	15F19957-58	ROD ASSEMBLY, Push (A total of 12 required)	AR
	AR♦	15F21362-11	ROD ASSEMBLY, Push (A total of 12 required)	AR
	AR♦	15F21362-12	ROD ASSEMBLY, Push (A total of 12 required)	AR
	AR♦	15F21362-13	ROD ASSEMBLY, Push (A total of 12 required)	AR
	AR♦	15F21362-14	ROD ASSEMBLY, Push (A total of 12 required)	AR
	AR♦	15F21362-21	ROD ASSEMBLY, Push (A total of 12 required)	AR
	AR♦	15F21362-22	ROD ASSEMBLY, Push (A total of 12 required)	AR
	AR♦	15F21362-23	ROD ASSEMBLY, Push (A total of 12 required)	AR
	AR♦	15F21362-24	ROD ASSEMBLY, Push (A total of 12 required)	AR
2	*	17F21186	ROCKER ASSEMBLY, Valve, intake	6
3		74389	BUSHING, Valve rocker	6
4	*	17F21190	ROCKER ASSEMBLY, Valve, exhaust	6
5		LW-12588	BUSHING, Valve, rocker	6
6		72626	SHAFT, Valve rocker	12
7		71549	WASHER, Thrust, valve rocker	12
8		66732	GASKET, Valve rocker shaft cover	12
9		72710	COVER, Valve rocker shaft	12
10		72709	SCREW, 1/4-20 x 1/32 long, stainless	24
11		71450	GASKET, Rocker box cover	6
12		STD-1925	SCREW, 1/4-20 x 5/8 long, pan. head	54
13		74494	PLATE, Spark plug reach, caution	6
14		71481	RING, Oil seal, 3/32 dia. x 4-27/32 long	6
15		74887	SPACER, 33/64 I.D. x 7/8 O.D. x 3/8 thick	2
16		77906	SPACER, 33/64 I.D. x 7/8 O.D. x 1/8 thick	2
17		383-B	NUT, 3/8-24 plain	24
18		STD-2090	NUT, 1/4-20 NF-3	28
19		72242	COVER ASSEMBLY, Rocker box	6
<p><b>AR</b> as required</p> <p>♦ Refer to the latest revision of Service Instruction No. 1060 for complete push rod application.</p> <p>* Due to the size of the area where the part number is stamped, the last five digits may be all that is shown (21186, 21190).</p> <p><b>NOTE:</b> Various push rod lengths are used to set valve clearances.</p>				

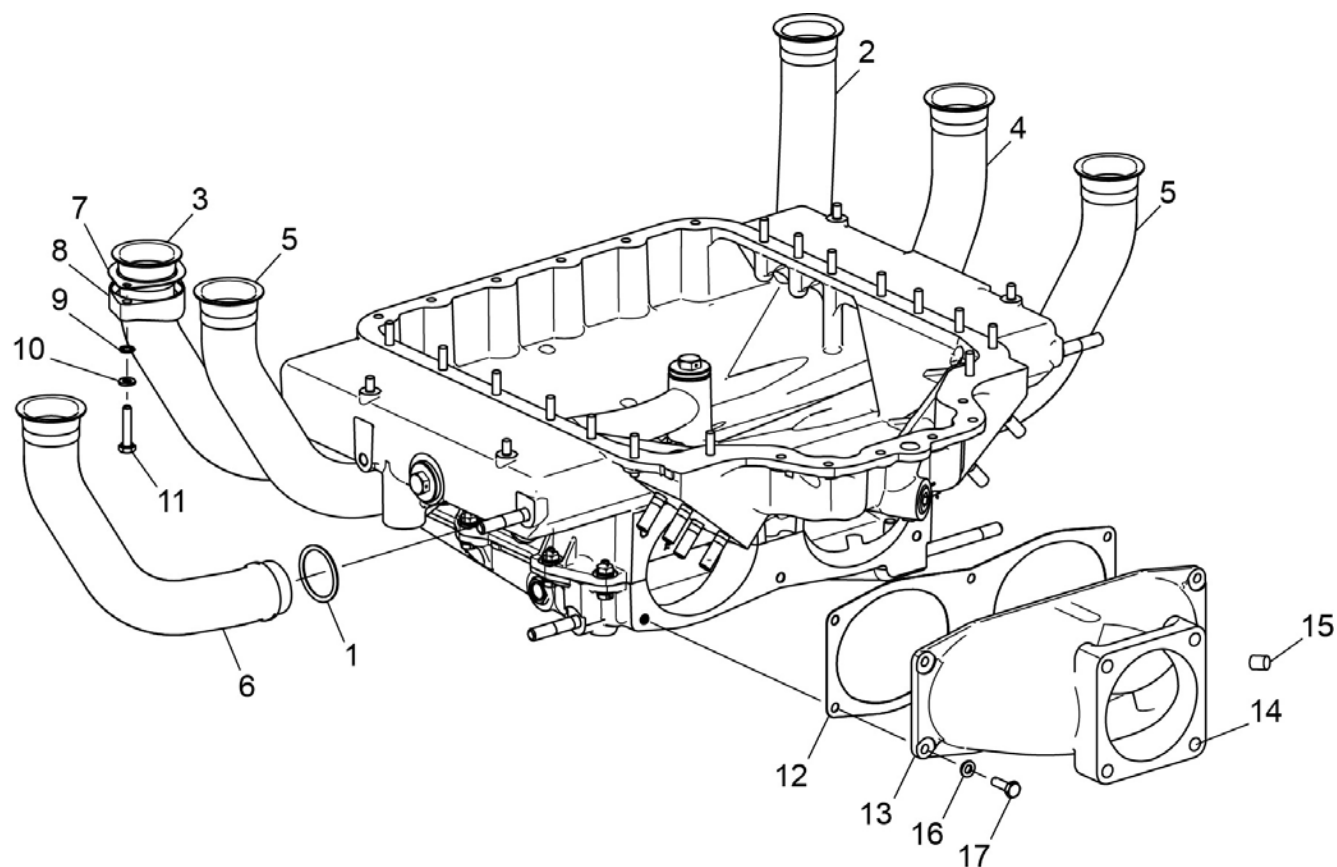


**Cylinder Head Drain Tubes and Intercylinder Cooling Baffles**  
**Figure 12**

**CYLINDER SECTION****FIGURE 12 – CYLINDER HEAD DRAIN TUBES AND INTERCYLINDER COOLING BAFFLES**

<b>Figure Item</b>	<b>Code</b>	<b>Part Number</b>	<b>Description</b>	<b>Units per Assembly</b>
1		STD-684	NIPPLE, Straight, 3/8 I.D. hose	6
2		STD-2180	HOSE, 3/8 I.D. x 1-7/8 long	6
3		LW-15592-5-05	CLAMP, Hose	12
4		72702	TUBE ASSY., Cylinder head oil drain, cyl. no. 1	1
5		72703	TUBE ASSY. Cylinder head oil drain, cyl. no. 2	1
6		73027	TUBE ASSY., Cylinder head oil drain, cyls. no. 3,4,5,6	4
7		LW-18106	BAFFLE ASSEMBLY, Intercylinder	4
8		71611	RETAINER, Intercylinder baffle	4
9		71610	HOOK, Intercylinder baffle retainer	4
10		72834	COVER, Baffle ignition cable hole	4
11		STD-692	SCREW, No. 10-32 x 1/2 long, round head	8



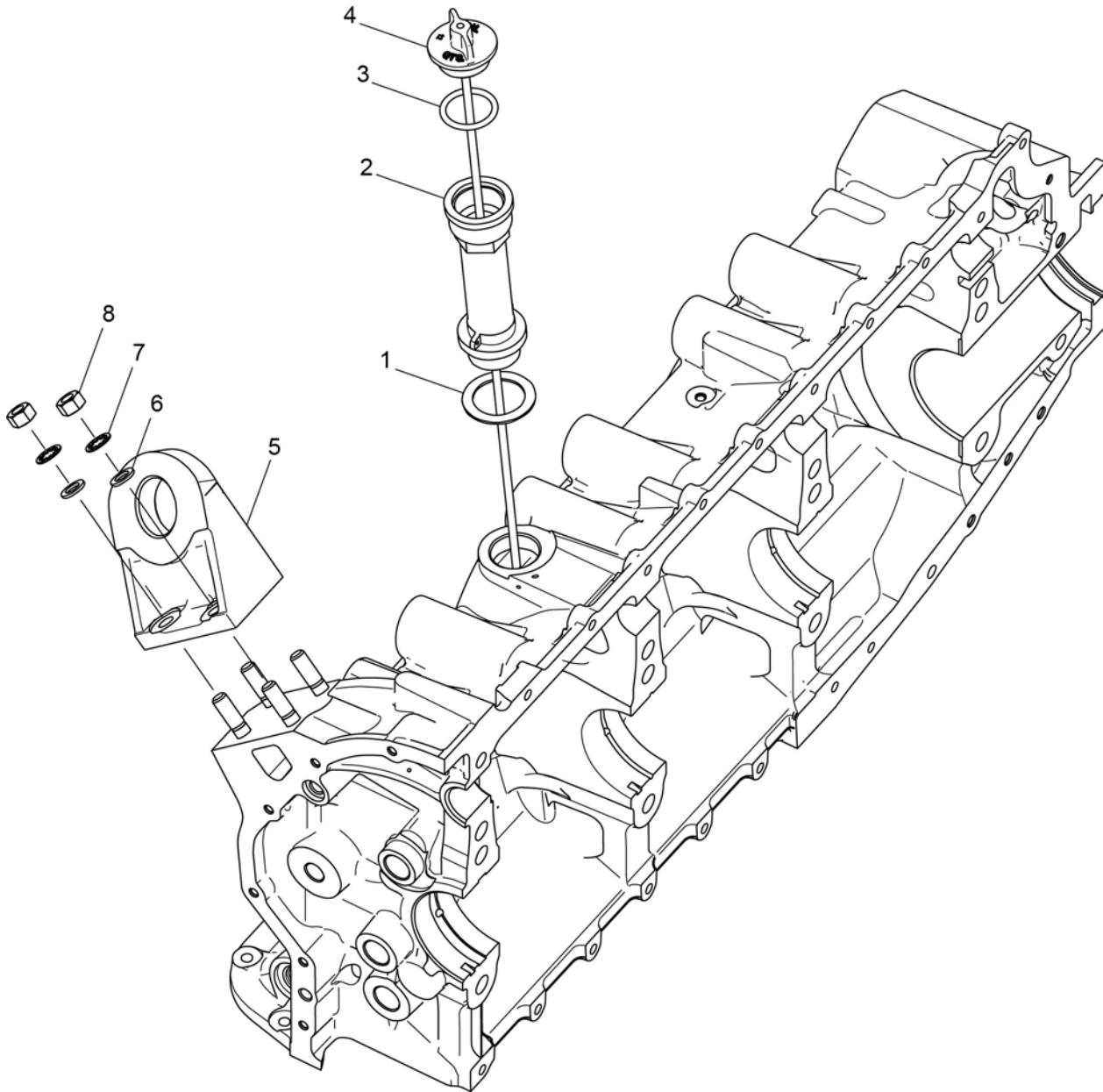


**Intake Pipes and Air Inlet Housing**  
**Figure 13**



**CYLINDER SECTION****FIGURE 13 – INTAKE PIPES AND AIR INLET HOUSING**

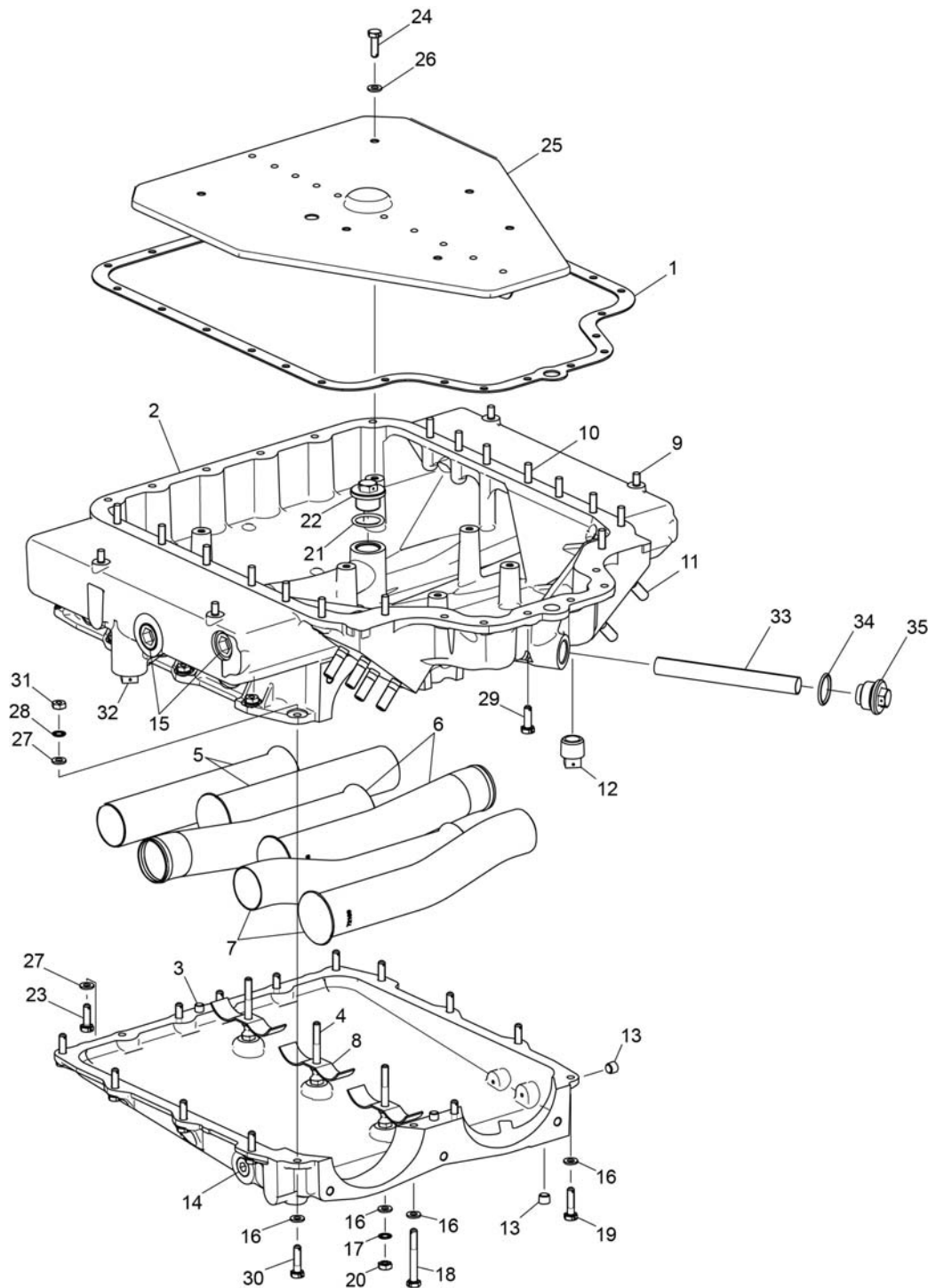
<b>Figure Item</b>	<b>Code</b>	<b>Part Number</b>	<b>Description</b>	<b>Units per Assembly</b>
1		72711	RING, Seal, intake pipes	6
2		LW-12191	PIPE, Intake, cylinder no. 1	1
3		LW-12192	PIPE, Intake, cylinder no. 2	1
4		LW-12193	PIPE, Intake, cylinder no. 3	1
5		LW-12194	PIPE, Intake, cylinders no. 4 and 5	2
6		LW-12195	PIPE, Intake, cylinder no. 6	1
7		71973	GASKET, 2 bolt flange, 1-13/16 I.D.	6
8		74360	FLANGE, Intake pipe, upper	6
9		STD-8	WASHER, 1/4 plain	12
10		STD-160	WASHER, 1/4 lock, internal teeth	12
11		LW-25-1.25	BOLT, 1/4-20 x 1-1/4 long, hex. head	12
12		72210	GASKET, Air throttle housing	1
13		LW-18981	HOUSING ASSEMBLY, Air inlet	1
14		STD-1164	INSERT, 5/16-18 x 5/8 long	4
15		1102	PLUG, 1/8-27 NPT, allen head	1
16		STD-8	WASHER, 1/4 plain	6
17		LW-25-0.81	BOLT, 1/4-20 x 13/16 long, hex. head	6



**Oil Level Gage Assembly and Engine Mounting Brackets**  
**Figure 14**

**LUBRICATION SYSTEM****FIGURE 14 – OIL LEVEL GAGE ASSEMBLY AND ENGINE MOUNTING BRACKETS**

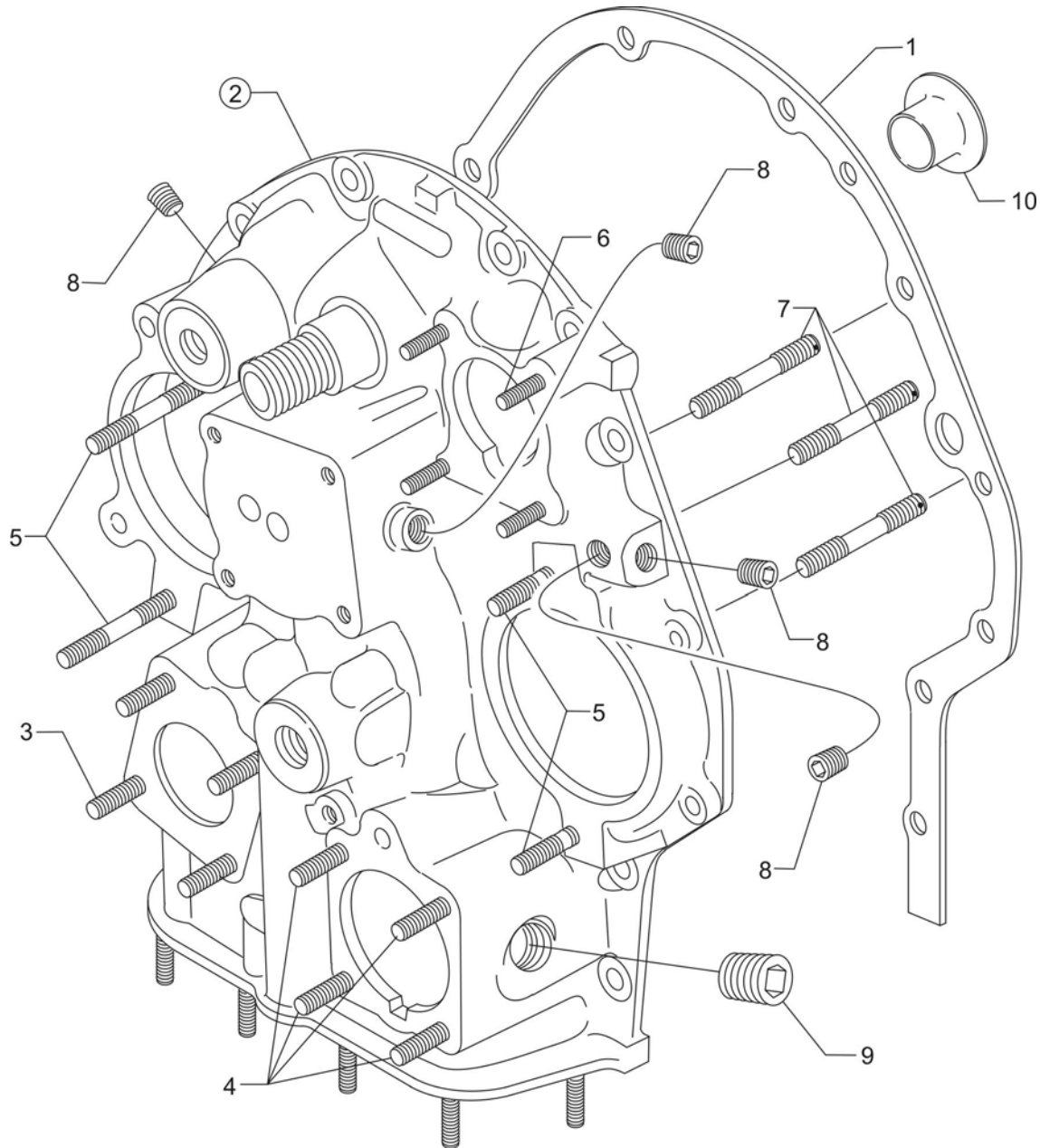
<b>Figure Item</b>	<b>Code</b>	<b>Part Number</b>	<b>Description</b>	<b>Units per Assembly</b>
1		70457	GASKET, Oil filler extension	1
2		75761	EXTENSION, Oil filler (4-15/32 long)	1
3		74065	RING, Oil level gage seal	1
4		LW-14775	GAGE ASSEMBLY, Oil level	1
5		70456	BRACKET, Engine mounting, dynafocal	3
6		STD-33	WASHER, 3/8 plain	16
7		STD-678	WASHER, 3/8 lock, internal teeth	16
8		STD-596	NUT, 3/8-24 plain	16



**Oil Sump Assembly and Induction Housing**  
**Figure 15**

**LUBRICATION SYSTEM****FIGURE 15 – OIL SUMP ASSEMBLY AND INDUCTION HOUSING**

Figure Item	Code	Part Number	Description	Units per Assembly
1		06B21326	GASKET, Oil sump	1
2		56A26071-03	HOUSING ASSEMBLY, Oil sump and induction	1
3		STD-514	DOWEL, 5/16 diameter x 1/2 long	2
4		72179	STUD, Intake pipe extension	3
5		72167	PIPE, Extension, intake cylinders 1 and 2	2
6		72168	PIPE, Extension, intake cylinders 3 and 4	2
7		72169	PIPE, Extension, intake cylinders 5 and 6	2
8		LW-11273	CLAMP, Intake pipe extension	3
9		25C-9	STUD, 1/4-20 x 1-1/8 long	4
10		25C-11	STUD, 1/4-20 x 1-3/8 long	15
11		38-15	STUD, 3/8-16 x 1-7/8 long	8
12		STD-91	PLUG, 1/2-14 NPT, allen head	1
13		1102	PLUG, 1/8-27 NPT, allen head	5
14		STD-784	PLUG, 3/8-18 NPT, allen head	1
15		STD-355	PLUG, 3/4-14 NPT	2
16		STD-8	WASHER, 1/4 plain	29
17		STD-160	WASHER, 1/4 lock, internal teeth	23
18		LW-25-2.00	BOLT, 1/4-20 x 2.00 long, hex. head	2
19		LW-25-1.00	BOLT, 1/4-20 x 1.00 long, hex. head	10
20		STD-1411	NUT, 1/4-20 plain	13
21		06E19769-0.91	GASKET, Annular, 29/32 I.D.	1
22		72960	PLUG, 7/8-14 x 5/8, hex. head	1
23		LW-25-0.81	BOLT, 1/4-20 x 13/16 long, hex. head	4
24		LW-25H0.63	BOLT, 1/4-20 x 5/8 long, drilled head	6
25		56G26069	BAFFLE, Oil sump	1
26		STD-8	WASHER, 1/4 plain	6
27		STD-8	WASHER, 1/4 plain	37
28		STD-160	WASHER, 1/4 lock, internal teeth	23
29		LW-25-1.13	BOLT, 1/4-20 x 1-1/8 long, hex. head	6
30		LW-25-1.00	BOLT, 1/4-20 x 1.00 long, hex. head	6
31		STD-1411	NUT, 1/4-20 plain	25
32		STD-551	PLUG, 1/2-14 NPT, square head, drilled	2
33		60422	SCREEN, Oil suction	1
34		06E19769-1.00	GASKET, Annular, 1.00 I.D.	1
35		LW-12545	BOLT, 1/4-20 x 13/16 long	1

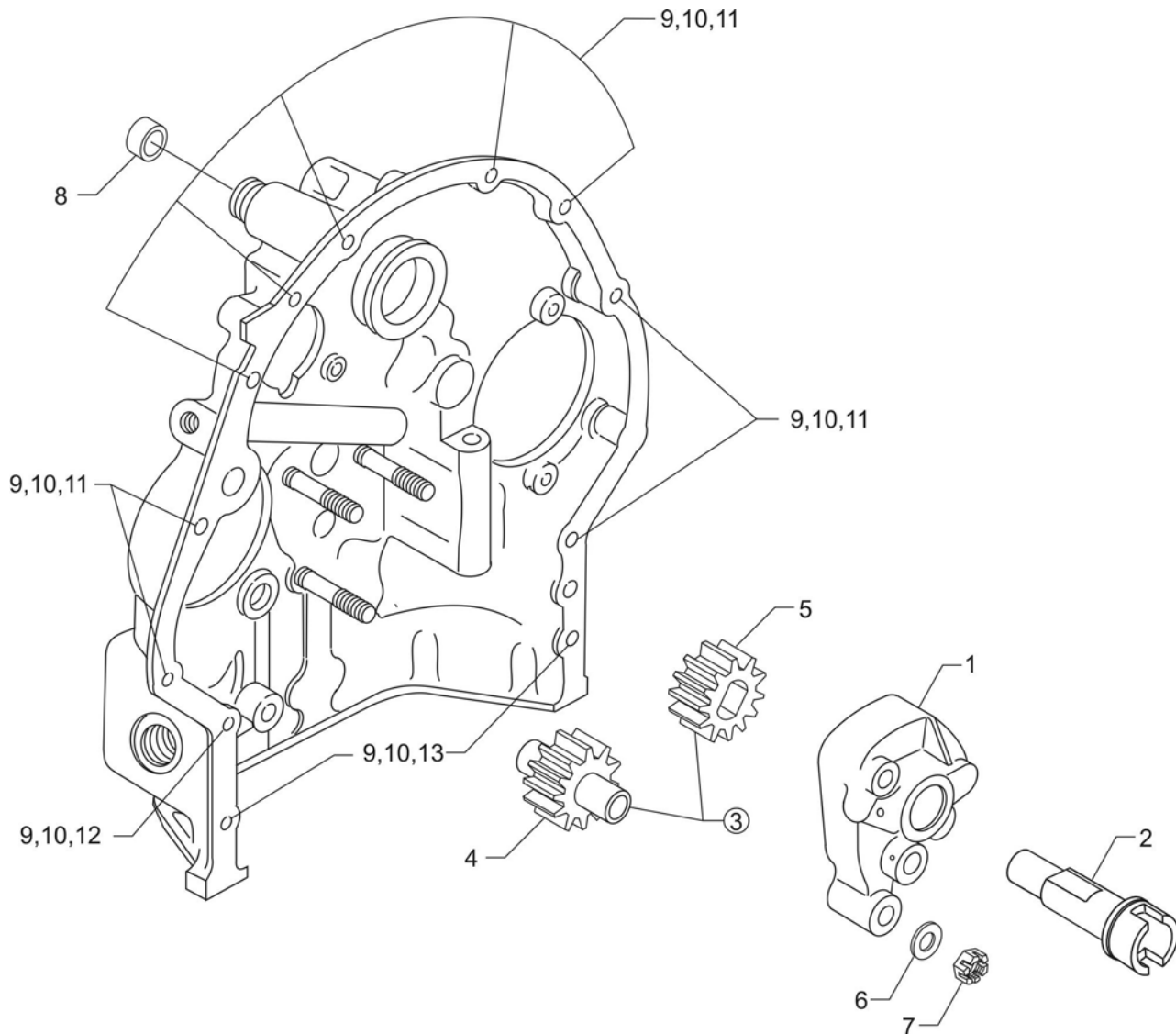


**Accessory Housing Assembly  
Figure 16**

**ACCESSORY DRIVES****FIGURE 16 – ACCESSORY HOUSING ASSEMBLY**

<b>Figure Item</b>	<b>Code</b>	<b>Part Number</b>	<b>Description</b>	<b>Units per Assembly</b>
1		73818	GASKET, Accessory housing	1
2		21C21541-05	HOUSING ASSEMBLY, Accessory	1
3		31C-19	STUD, 5/16-18 x 2-3/8 long	4
4		31C-12	STUD, 5/16-18 x 1-1/2 long	4
5		31C-21	STUD, 5/16-18 x 2-5/8 long	4
6		25C-21	STUD, 1/4-20 x 2-5/8 long	4
7		31CD-20	STUD, 5/16-18 x 2-1/2 long, drilled	3
8		1102	PLUG, 1/8-27 NPT, allen head	4
9		STD-784	PLUG, 3/8-18 NPT, allen head	1
10		76156	SHIELD, Oil accessory breather	1



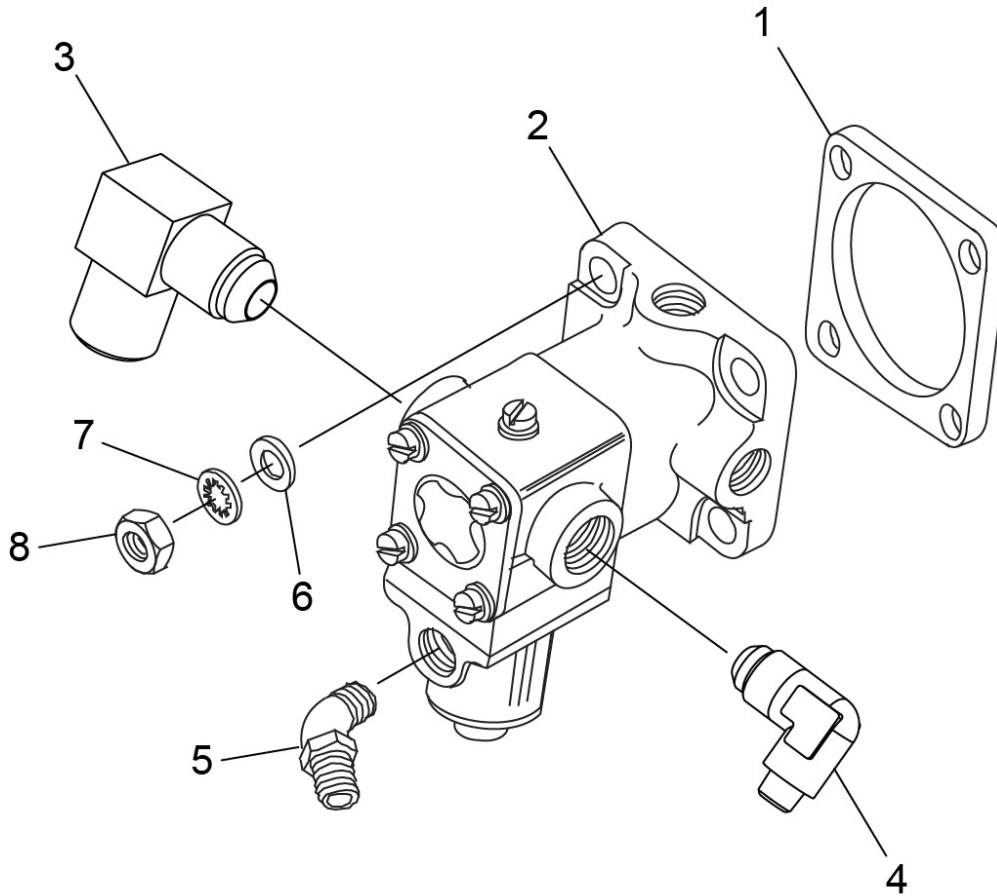


**Oil Pump Assembly and Accessory Housing Attaching Parts  
Figure 17**



**ACCESSORY DRIVES****FIGURE 17 – OIL PUMP ASSEMBLY AND ACCESSORY HOUSING ATTACHING PARTS**

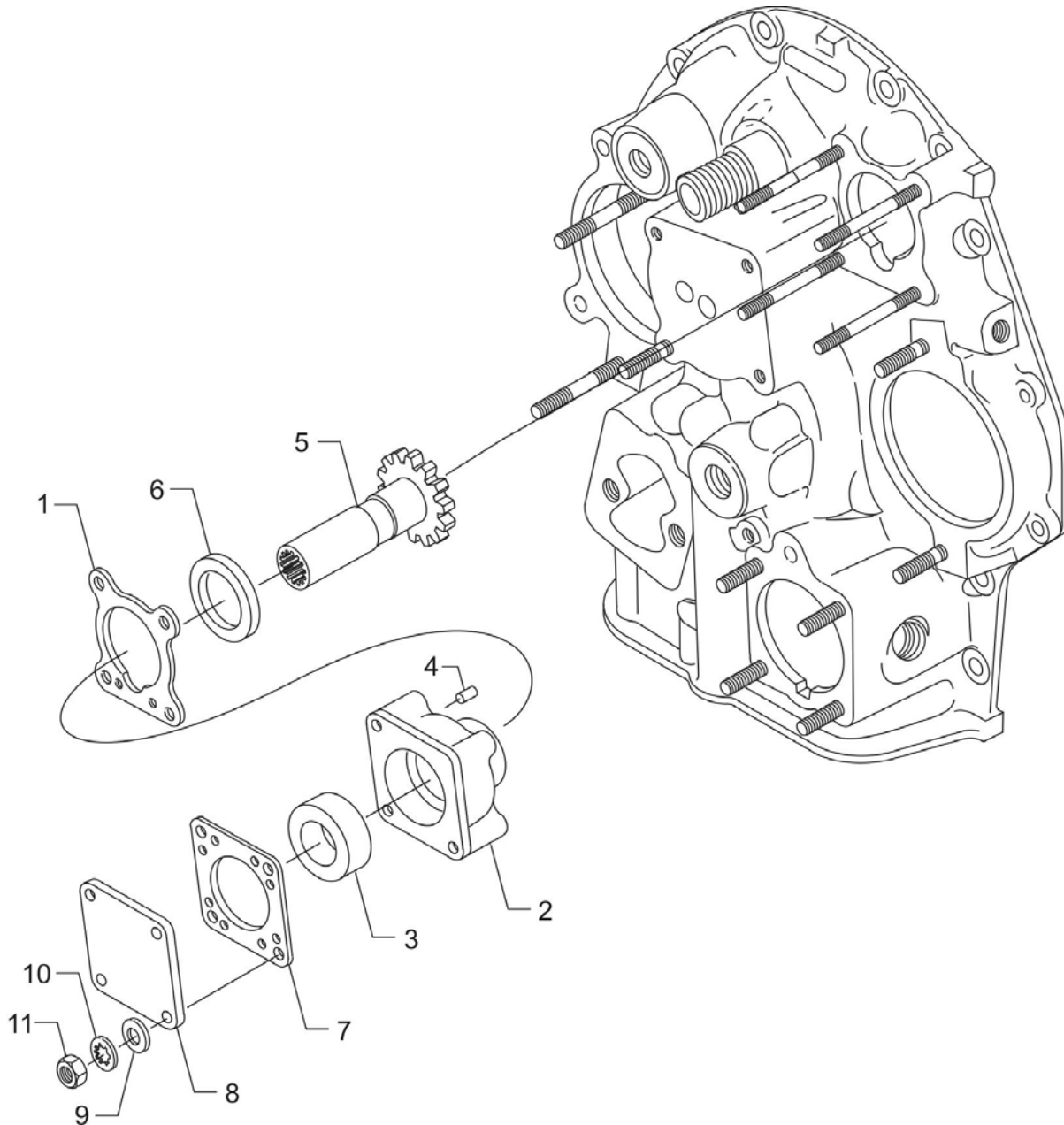
<b>Figure Item</b>	<b>Code</b>	<b>Part Number</b>	<b>Description</b>	<b>Units per Assembly</b>
1		51A22618	BODY ASSEMBLY, Oil pump	1
2		76784	SHAFT, Oil pump drive	1
3		05K23463-S	IMPELLER KIT	1
4	*	51C23290	IMPELLER ASSEMBLY, Oil pump driven	1
5	*	51C23275	IMPELLER, Oil pump driving	1
6		STD-35	WASHER, 5/16 plain	3
7		STD-1420	NUT, 5/16-18 slotted	3
8		LW-14260	SEAL, Tachometer drive, oil	1
9		STD-8	WASHER, 1/4 plain	12
10		STD-160	WASHER, 1/4 lock, internal teeth	12
11		LW-25-0.94	BOLT, 1/4-20 x 15/16 long, hex. head	9
12		LW-25-1.13	BOLT, 1/4-20 x 1-1/8 long, hex. head	1
13		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-S).				



**Fuel Pump Assembly and Attaching Parts**  
**Figure 18**

**ACCESSORY DRIVES****FIGURE 18 - FUEL PUMP ASSEMBLY AND ATTACHING PARTS**

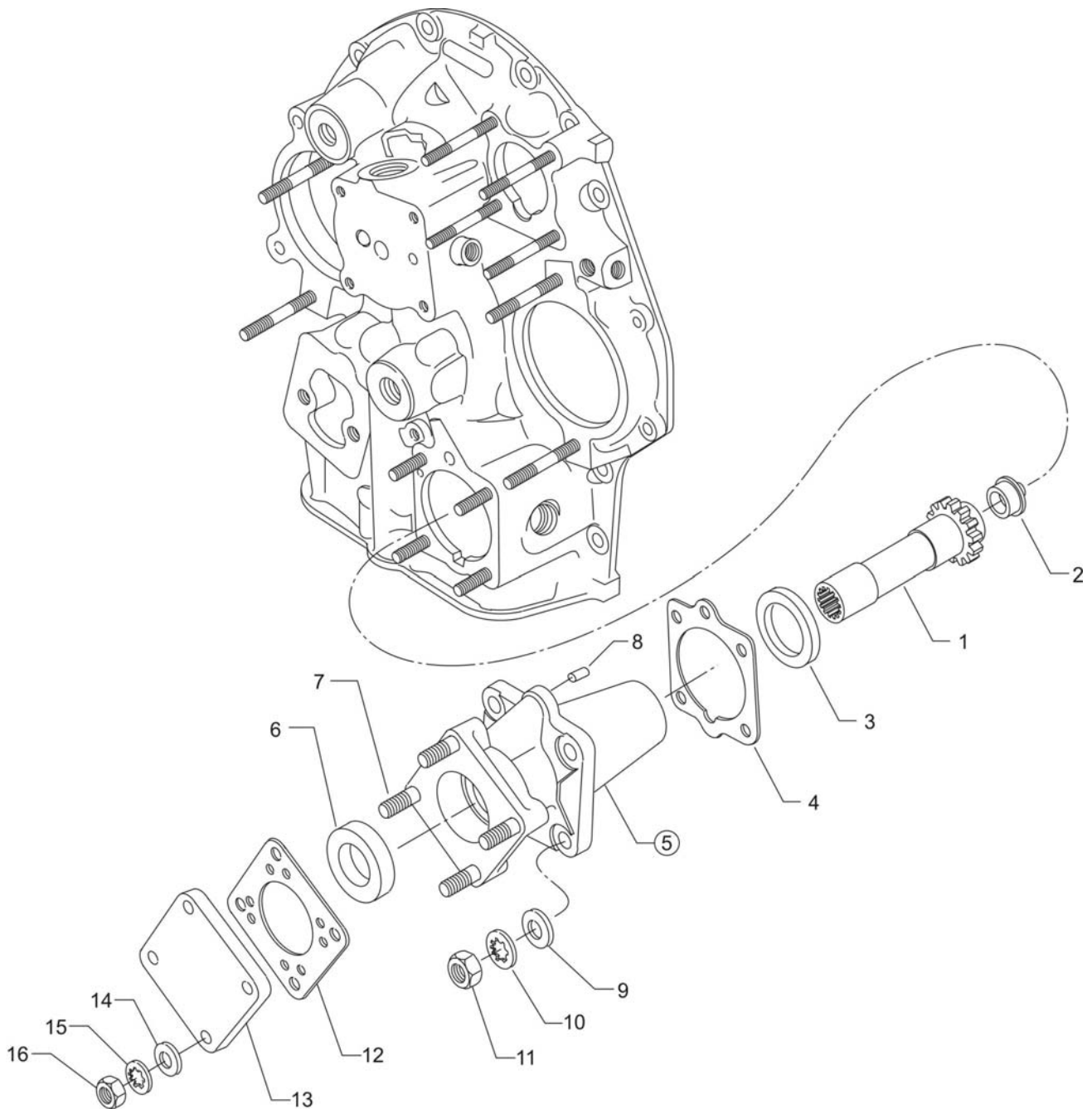
<b>Figure Item</b>	<b>Code</b>	<b>Part Number</b>	<b>Description</b>	<b>Units per Assembly</b>
1		LW-10799	SPACER, Fuel pump	1
2	<b>V</b>	62E23186	FUEL PUMP, <b>V</b> 200F-5002 (AN Drive)	1
3		76422	ELBOW, 90° tube to male	1
4		MS20822-6-8	ELBOW, 1/2 NPT to 3/8 flared tube	1
5		02A21377	ELBOW, 1/8 NPT to no. 3 tube, 45°	1
6		STD-35	WASHER, 5/16 plain	4
7		STD-475	WASHER, 5/16 lock, internal teeth	4
8		STD-1410	NUT, 5/16-18 plain	4
<b>V</b> Vendor Prime Manufacturer part				



**Vacuum Pump Drive and Cover**  
**Figure 19**

**ACCESSORY DRIVES****FIGURE 19 – VACUUM PUMP DRIVE AND COVER**

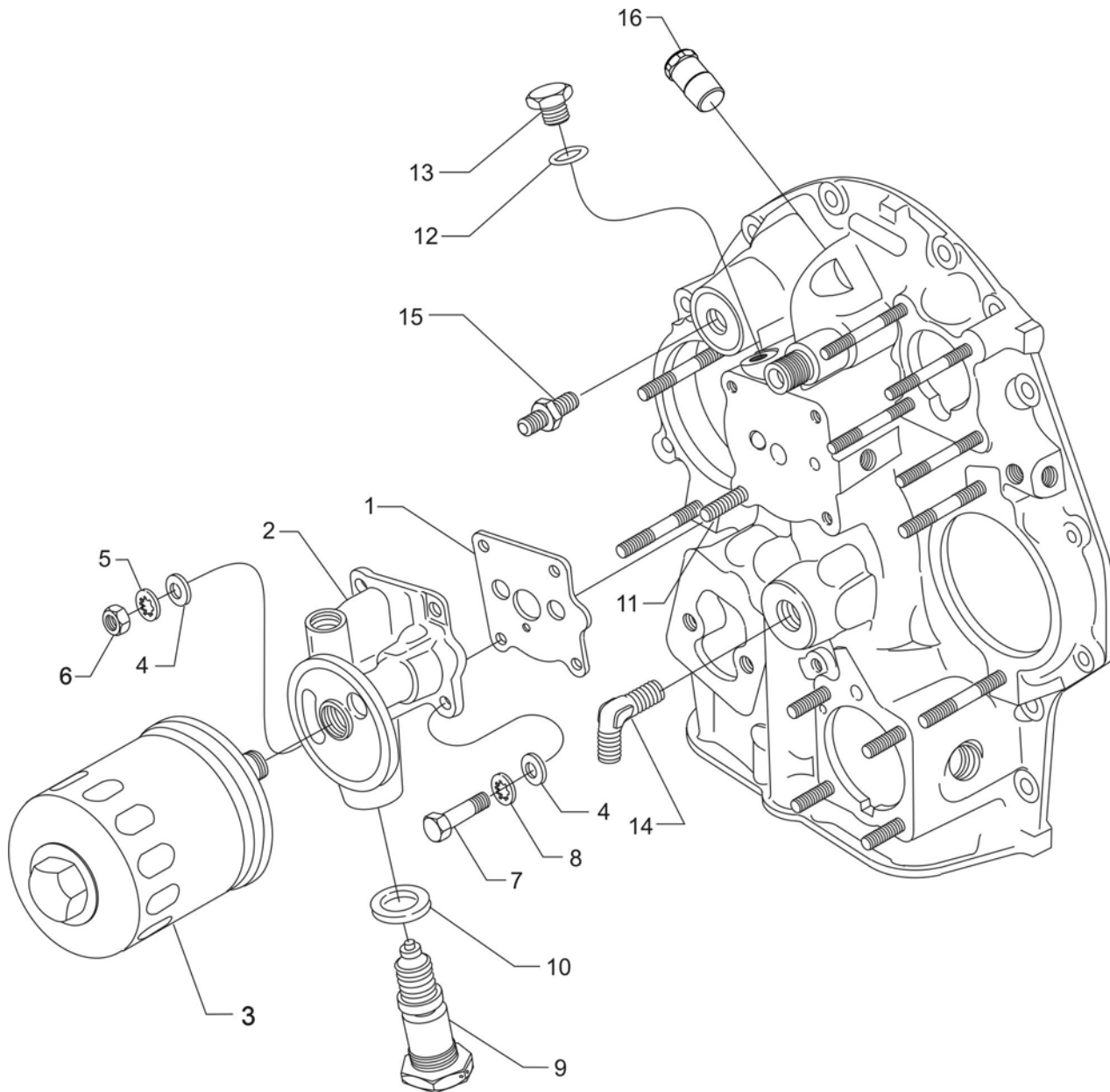
<b>Figure Item</b>	<b>Code</b>	<b>Part Number</b>	<b>Description</b>	<b>Units per Assembly</b>
1		61183	GASKET, Accessory adapter	1
2		67536	ADAPTER ASSEMBLY, Vacuum pump	1
3		06A19956	OIL SEAL, 7/8 I.D. x 1-1/2 O.D. x 5/16 wide	1
4		STD-1774	PIN, 1/8 diameter x 1/4 long	1
5		72974	GEAR ASSEMBLY, Vacuum pump driven	1
6		71596	WASHER, Accessory drive gear	1
7		8313	GASKET, Vacuum pump	1
8		60430	COVER, Vacuum pump	1
9		STD-8	WASHER, 1/4 plain	4
10		STD-160	WASHER, 1/4 lock, internal teeth	4
11		STD-1411	NUT, 1/4-20 plain	4



**Hydraulic Pump Drive and Cover**  
**Figure 20**

**ACCESSORY DRIVES****FIGURE 20 - HYDRAULIC PUMP DRIVE AND COVER**

<b>Figure Item</b>	<b>Code</b>	<b>Part Number</b>	<b>Description</b>	<b>Units per Assembly</b>
1		72964	GEAR ASSEMBLY, Hydraulic driven	1
2		72962	THRUST BUTTON, Hydraulic pump gear	1
3		71596	WASHER, Accessory drive gear	1
4		68315	GASKET, Accessory drive adapter	1
5		71675	ADAPTER ASSEMBLY, Hydraulic pump	1
6		06A19956	OIL SEAL, 7/8 I.D. x 1-1/2 O.D. x 5/16 wide	1
7		25C-12	STUD, 1/4-20 x 1-1/2 long	4
8		STD-1774	PIN, 1/8 diameter x 1/4 long	1
9		STD-35	WASHER, 5/16 plain	4
10		STD-475	WASHER, 5/16 lock, internal teeth	4
11		STD-1410	NUT, 5/16-18 plain	4
12		8313	GASKET, Hydraulic pump	1
13		60430	COVER, Hydraulic pump	1
14		STD-8	WASHER, 1/4 plain	4
15		STD-160	WASHER, 1/4 lock, internal teeth	4
16		STD-1411	NUT, 1/4-20 plain	4

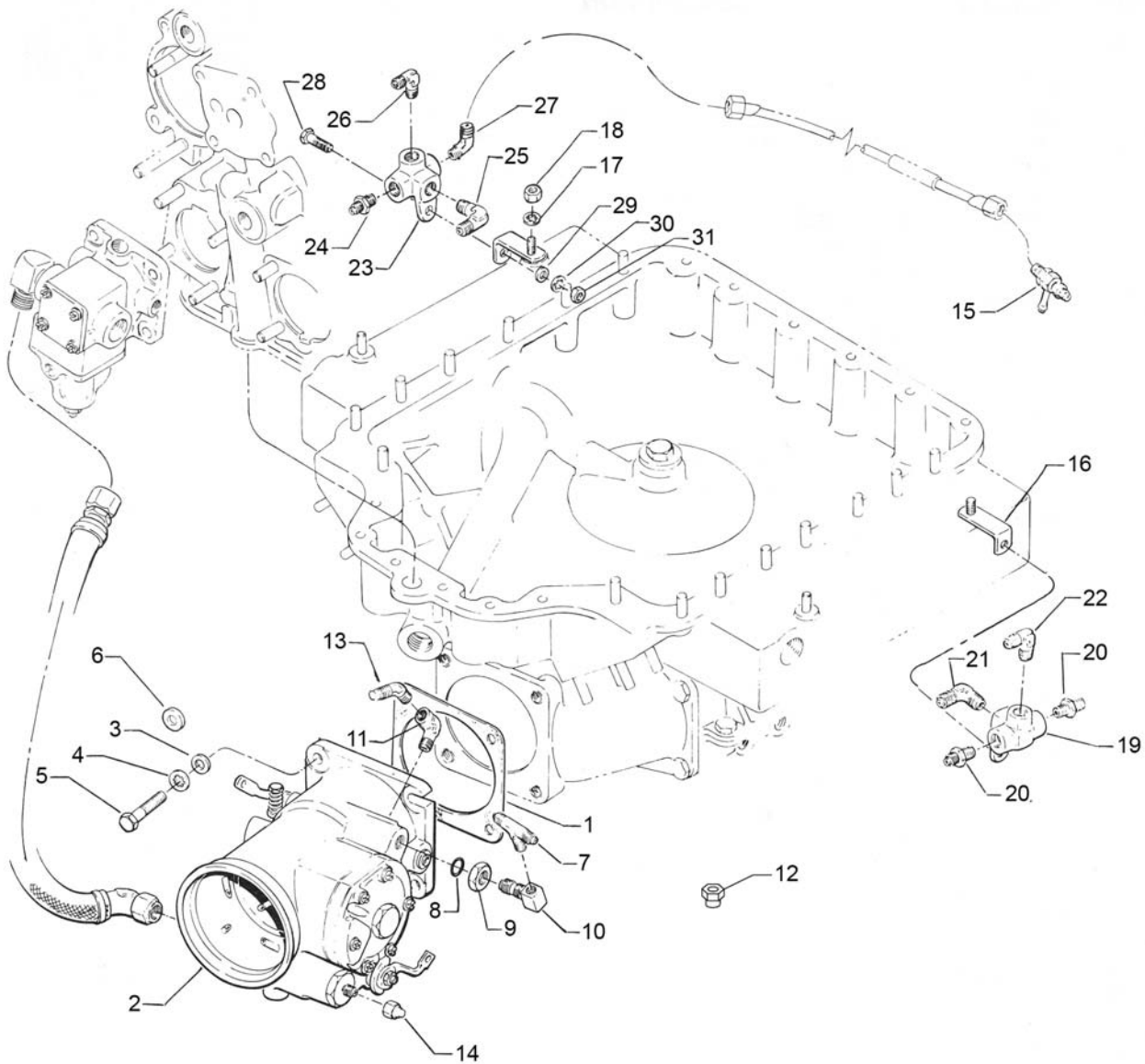


**Oil Filter Assembly and Oil Cooler Bypass Valve**  
**Figure 21**



**ACCESSORY DRIVES****FIGURE 21 – OIL FILTER ASSEMBLY AND OIL COOLER BYPASS VALVE**

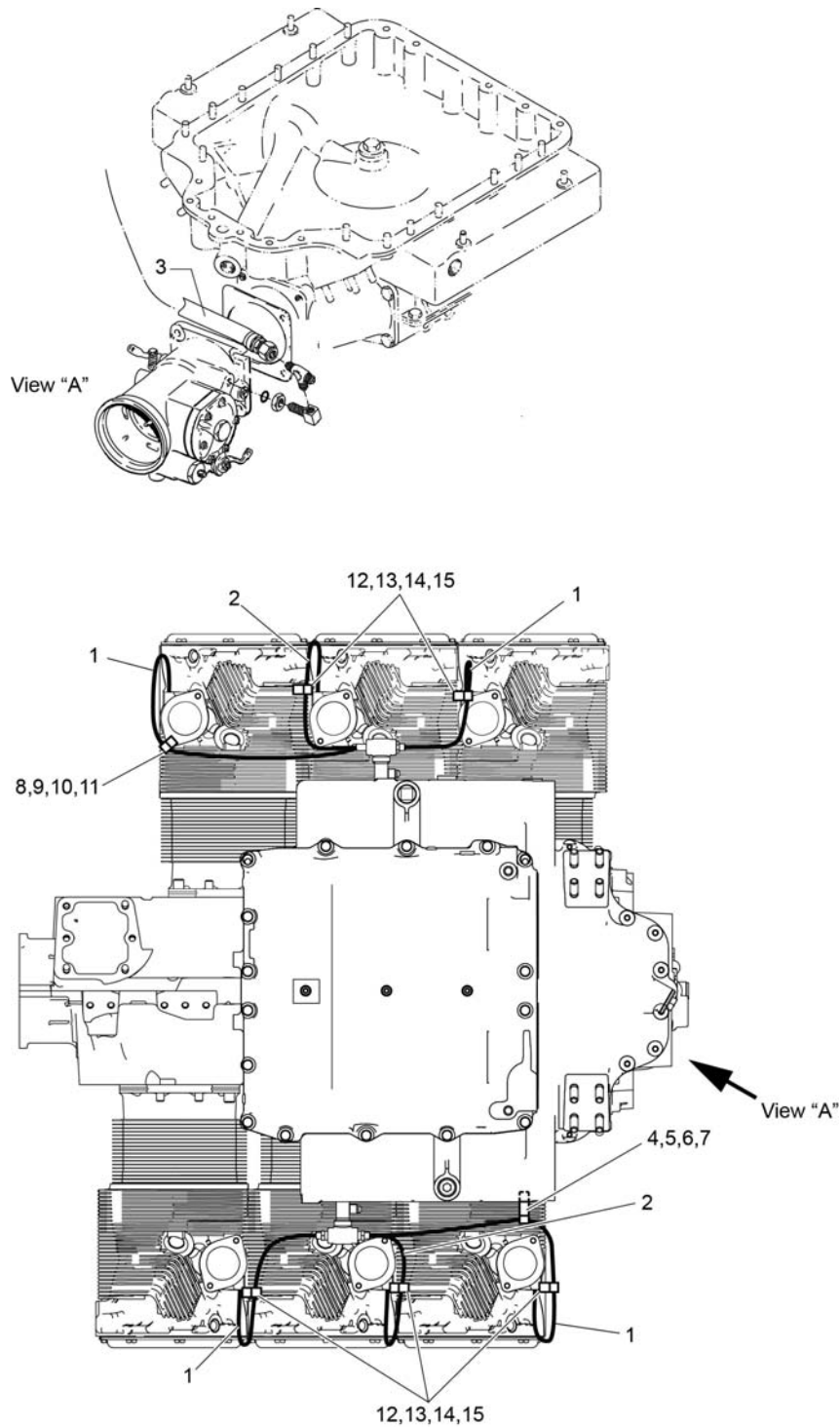
<b>Figure Item</b>	<b>Code</b>	<b>Part Number</b>	<b>Description</b>	<b>Units per Assembly</b>
1		06B23862	GASKET, Oil filter adapter	1
2		77852	OIL FILTER BASE ASSEMBLY	1
3		LW-13215	OIL FILTER, Short, spin-on	1
4		STD-8	WASHER, 1/4 plain	4
5		STD-160	WASHER, 1/4 lock, internal teeth	1
6		STD-1411	NUT, 1/4-20 plain	1
7		LW-25-1.00	BOLT, 1/4-20 x 1.00 long, hex. head	3
8		STD-160	WASHER, 1/4 lock, internal teeth	3
9		53E22144	VALVE ASSEMBLY, Temperature control oil cooler bypass	1
10		76510	GASKET, Valve assembly	1
11		25C-10	STUD, 1/4-20 x 1-1/4 long	1
12		06E19769-0.63	GASKET, Annular, 5/8 I.D.	1
13		62417	PLUG, Oil cooler bypass	1
14		MS20822-8	ELBOW, 1/2 flared tube, 3/8 NPT	1
15		AN816-8	NIPPLE, 1/2 flared tube	1
16		72996	FITTING, Breather	1



**Fuel Injector, Fuel Manifold and Injection Nozzles**  
**Figure 22**

**FUEL DISTRIBUTION****FIGURE 22 – FUEL INJECTOR, FUEL MANIFOLD AND INJECTION NOZZLES**

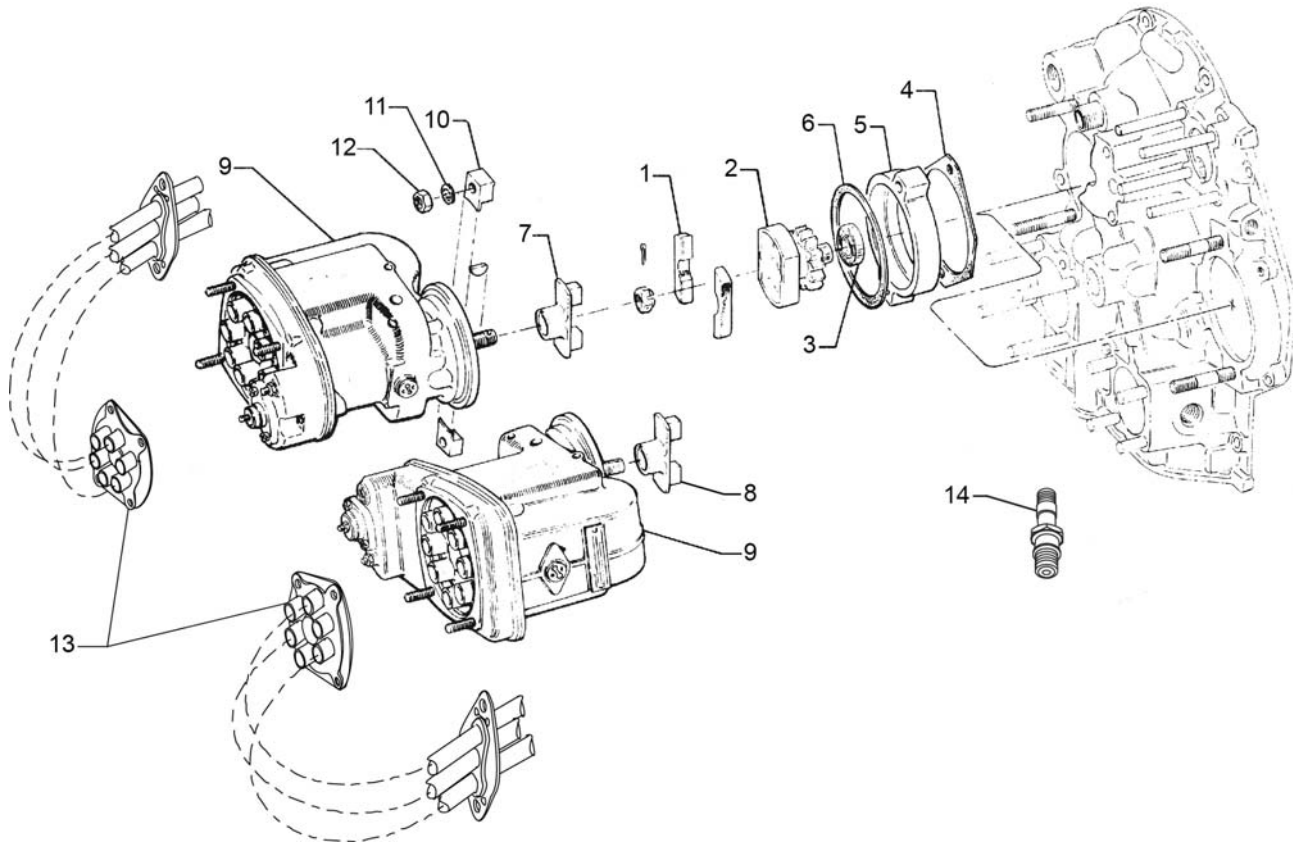
Figure Item	Code	Part Number	Description	Units per Assembly
1		73032	GASKET, Air inlet housing	1
2	<b>V</b>	61M26354	FUEL INJECTOR, <b>V</b> 2549038-4	1
3		STD-35	WASHER, 5/16 plain	3
4		STD-475	WASHER, 5/16 lock, internal teeth	4
5		LW-31-1.31	BOLT, 5/16-18 x 1-5/16 long, hex. head	4
6		STD-1727	WASHER, Plain, 11/32 I.D. x 3/4 O.D.	1
7		AN825-4	TEE, 1/4 flared tube x 1/8 NPT	1
8		MS29512-06	O-RING, 15/32 I.D. x 5/64 section	1
9		AN924-6	NUT, 3/8 tube, bulkhead	1
10		76779	ELBOW, 9/16 male to 1/8 NPT	1
11		LW-11867	ELBOW, 1/8 NPT, intake and exhaust 90°	1
12		74797	FITTING, 9/16-18 to 1/8-27 NPT	1
13		02A21377	ELBOW, 1/8 NPT to #3 tube, 45°	1
14		AN929-3	CAP ASSEMBLY, 3/16 tube, pressure seal	1
15		LW-18855	NOZZLE ASSEMBLY, High flow	6
16		75414	BRACKET, Fuel manifold	2
17		STD-160	WASHER, 1/4 lock, internal teeth	2
18		STD-1411	NUT, 1/4-20 plain	2
19		76778	MANIFOLD ASSEMBLY, Fuel, right side	1
20		STD-148	NIPPLE, Union, 1/8 NPT	2
21		MS20822-4	ELBOW, 1/8 NPT to 1/4 tube, 90°	1
22		STD-2166	ELBOW, Union, 1/8 NPT, 90°	1
23		76777	MANIFOLD ASSEMBLY, Fuel, left side	1
24		STD-148	NIPPLE, Union, 1/8 NPT	1
25		MS20822-4	ELBOW, 1/8 NPT to 1/4 tube, 90°	1
26		STD-2166	ELBOW, Union, 1/8 NPT, 90°	1
27		AN791-2	ELBOW, Union, 1/4 tube, 45°	1
28		LW-25-0.81	BOLT, 1/4-20 x 13/16 long, hex. head	2
29		STD-8	WASHER, 1/4 plain	2
30		STD-160	WASHER, 1/4 lock, internal teeth	2
31		STD-1411	NUT, 1/4-20 plain	2
<b>V</b> Vendor Prime Manufacturer part				



**Fuel Lines  
Figure 23**

**FUEL DISTRIBUTION****FIGURE 23 – FUEL LINES**

<b>Figure Item</b>	<b>Code</b>	<b>Part Number</b>	<b>Description</b>	<b>Units per Assembly</b>
1		LW-12098-0-100	TUBE ASSEMBLY, Fuel manifold to nozzle, cylinders 1,2,5,6	4
2		LW-12098-0-170	TUBE ASSEMBLY, Fuel manifold to nozzle, cylinders 3,4	2
3		LW-12879-6S120	HOSE ASSEMBLY, 3/8 hose, 45° elbow	1
4		73152	BRACKET, Support clamp	1
5		LW-16266-10-13	CLAMP, 1/8 diameter for no. 10 screw	1
6		STD-860	SCREW, No. 10-32 x 5/8 long	1
7		STD-670	LOCKNUT, No. 10-32	1
8		73136	BRACKET, Extension, fuel injector line	1
9		LW-16266-10-13	CLAMP, 1/8 diameter for no. 10 screw	1
10		STD-860	SCREW, No. 10-32 x 5/8 long	1
11		STD-670	LOCKNUT, No. 10-32	1
12		LW-16266-10-38	CLAMP, 3/8 diameter for no. 10 screw	5
13		LW-16266-10-13	CLAMP, 1/8 diameter for no. 10 screw	5
14		STD-860	SCREW, No. 10-32 x 5/8 long	5
15		STD-670	LOCKNUT, No. 10-32	5



**Magnetos, Magneto Drives, Harnesses and Spark Plugs**  
**Figure 24**

**IGNITION DISTRIBUTION SYSTEM****FIGURE 24 – MAGNETOS, MAGNETO DRIVES, HARNESSES AND SPARK PLUGS**

Figure Item	Code	Part Number	Description	Units per Assembly
1		68H22624	CUSHION, Magneto drive	4
2		LW-19096	GEAR ASSEMBLY, Retainer	2
3		67542	BALL BEARING	1
4		62224	GASKET, Magneto adapter	2
5		LW-12707	ADAPTER, Magneto	2
6		LW-12681	GASKET, Magneto	2
7		73000	COUPLING, Magneto drive	1
8		73636	COUPLING, Magneto drive, right	1
9	<b>V</b>	LW-349290-1	MAGNETO, Ignition, <b>V</b> S6LN-1208	1
	<b>V</b>	LW-349310-1	MAGNETO, Ignition, <b>V</b> S6LN-1209	1
10		66M19385	CLAMP, Magneto	4
11		STD-475	WASHER, 5/16 lock, internal teeth	4
12		STD-1410	NUT, 5/16-18 plain	4
13	<b>V</b>	67Y21893	HARNESS ASSEMBLY, TCM <b>V</b> 10-82165-12	1
14	<b>V*</b>	1182-H7	SPARK PLUG, Champion <b>V</b> RHB37E	12
	<b>**</b>	01P21501-11-52	BAG, Harness attaching	1
<p><b>V</b> Vendor Prime Manufacturer part</p> <p><b>*</b> Item No. 14 spark plugs are used in current production only. Additional spark plugs are available for this engine. Refer to the latest revision of Service Instruction No. 1042 for complete listing of all approved spark plugs.</p> <p><b>**</b> See below for breakdown of individual parts contained in the magneto and harness attaching bag. These parts to be added by customer per engine line drawing included in each bag.</p>				

**01P21501-11-52 Harness Attaching Bag**

Part No.	Description	Qty.
STD-1874	SCREW, 1/4-20 x 13/16 long, fill. head	12
MS25082-6	NUT, 3/8-24 UNF-3	2
76734	ZIP STRAP	2
STD-8	WASHER, 1/4 plain	24



**SERVICE KIT SECTION**  
**SEAL AND GASKET SET**

<b>PART NO.</b>	<b>PART NAME</b>	<b>Qty.</b>
<b>73185-1</b>	<b>KIT - SEAL AND GASKET SET</b>	<b>1</b>
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-15628	SEAL, Crankshaft, oil	1
LW-18638	LOCKPLATE, Crankshaft gear	1
LW-18661	SEAL, Shroud tube	24
MS29512-06	O-RING, 15/32 I.D. x 5/64 section	1
MS29512-08	O-RING, 21/32 I.D. x 3/32 section	1
06E19769-0.50	GASKET, Annular, 1/2 I.D.	6
STD-1737	RING, External retaining, 9/16 diameter	1
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
06E19769-0.91	GASKET, Annular, 29/32 I.D.	1
06E19769-1.00	GASKET, Annular, 1.00 I.D.	2
06E19769-1.25	GASKET, Annular, 1-1/4 I.D.	1
1691-C	GASKET, Fuel pump	1
61173	GASKET, Oil press housing	1
61183	GASKET, Accessory adapter	1
62224	GASKET, Magneto adapter	4
66732	GASKET, Valve rocker shaft cover	12
67193	GASKET, Rocker box cover	6
68315	GASKET, Accessory drive adapter	1
69164	GASKET, Fuel pump adapter	1
69551	GASKET, Accessory drive adapter	1
70455	GASKET, 25/32 I.D. x 1-1/8 O.D. x 1/32	1
70457	GASKET, Oil filler extension	1
71450	GASKET, Rocker box cover	6
71481	RING, Oil seal, 3/32 diameter x 4-27/32 I.D.	6
71667	LOCKPLATE, 1/4 bolt x 1-3/4 spacing	2
71973	GASKET, 2 bolt flange, 1-13/16 I.D.	6
72053	GASKET, Governor	1



**SEAL AND GASKET SET (CONT.)**

<b>PART NO.</b>	<b>PART NAME</b>	<b>Qty.</b>
<b>73185-1</b>	<b>KIT - SEAL AND GASKET SET (CONT.)</b>	<b>1</b>
72075	SEAL, Oil, 3/32 section x 29/64 I.D.	8
72078	LOCKPLATE, 5/16 bolt x 1-21/64 spacing	2
72091	RING, Oil seal, 3/8 I.D. x 7/64 diameter	2
72210	GASKET, Air throttle housing	1
72312	RING, Oil seal, 1.00 x 1-5/16	1
72711	RING, Seal, intake pipes	6
73032	GASKET, Air inlet housing	1
73383	LOCKPLATE, 5/16 bolt x 1.00	2
73818	GASKET, Accessory housing	1
74065	RING, Oil level gage seal	1
74305	SEAL	1
75118	GASKET, Exhaust flange	12
75233	O-RING SEAL, Rocker shaft cover	24
76510	GASKET, Oil cooler bypass valve	1
76940	SEAL, Crankshaft oil	1
8313	GASKET, Vacuum pump	2
15H21201	SPRING, Shroud tube	24
06A23493	SEAL, Shroud tube	12

**CYLINDER, PISTON AND RING ASSEMBLY**

<b>PART NO.</b>	<b>PART NAME</b>	<b>Qty.</b>
<b>05K28094</b>	<b>KIT - CYLINDER, PISTON AND RING ASSEMBLY</b>	<b>1</b>
LW-19048	CYLINDER ASSEMBLY	1
75151	STABILIZER, Cylinder head fins, 11 teeth	1
75152	STABILIZER, Cylinder head fins, 8 teeth	1
75164	STABILIZER, Cylinder head fins, 13 teeth	1
17A23937	VALVE, Intake	1
17B23935	VALVE, Exhaust	1
LW-13321	SEAT, Intake valve spring, lower	1
LW-13322	SEAT, Exhaust valve spring, lower	1
LW-11796	SPRING, Valve, outer	2
LW-11797	SPRING, Valve, inner	2
69532	SEAT, Valve spring, upper intake	1
LW-16475	SEAT, Valve spring, upper exhaust	1
72050	KEY, Valve, intake	2
17C21191	KEY, Valve, exhaust	2

**CYLINDER, PISTON AND RING ASSEMBLY (CONT.)**

<b>PART NO.</b>	<b>PART NAME</b>	<b>Qty.</b>
<b>05K28094</b>	<b>KIT - CYLINDER, PISTON AND RING ASSEMBLY (CONT.)</b>	<b>1</b>
MS20823-6D	ELBOW, 45°, 3/8 flared tube	1
62388	CAP, Valve stem	1
17C19386	CAP, Valve stem, exhaust (rotator type)	1
14D23907	PISTON, 7.3:1	1
74241	RING, Piston ,compression	2
14H21990	RING, Piston, oil	1
LW-14078	PIN, Piston	1
72198	PLUG, Piston pin	2
66732	GASKET, Valve rocker shaft cover	2
71450	GASKET, Rocker box cover	1
LW-18661	SEAL, Shroud tube	4
71481	RING, Oil seal, 3/32 diameter x 4-27/32 I.D.	1
LW-15619	GASKET, Exhaust flange	1
71973	GASKET, 2 bolt flange, 1-13/16 I.D.	1
1102	PLUG, 1/8-27 NPT, allen head	2
SSP-299	TAG, Use of piston pin plugs	1

**CRANKSHAFT AND COUNTERWEIGHT ASSEMBLY KIT**

<b>PART NO.</b>	<b>PART NAME</b>	<b>Qty.</b>
<b>05K47776</b>	<b>KIT - CRANKSHAFT AND COUNTERWEIGHT ASSEMBLY</b>	<b>1</b>
13F47726	CRANKSHAFT ASSEMBLY	1
LW-19210	COUNTERWEIGHT ASSEMBLY	2
73648	ROLLER, Counterweight, 5.1 order	2
76788	ROLLER, Counterweight, 6.3 order	2
71907	WASHER, Dynamic counterweight	8
LW-14820	RING, Internal retaining	8

**CRANKCASE ASSEMBLY AND THRU-STUD KITS**

<b>PART NO.</b>	<b>PART NAME</b>	<b>Qty.</b>
<b>11F24022-S3-3</b>	<b>KIT - CRANKCASE ASSEMBLY AND THRU-STUD</b>	<b>1</b>
11F24022-S3	CRANKCASE ASSEMBLY	1
76220	THRU-STUD+	8
31C-14	STUD, 5/16-18 x 1-3/4 long	4
31C-16	STUD, 5/16-18 x 2.00 long	4
1102	PLUG, 1/8-27 NPT, allen head	4
AN565B1032H4	SET SCREW, No. 10-32 x 1/4 long	1
AN565B1032H5	SET SCREW, No. 10-32 x 15/16 long	1
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

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PART NO.	PART NAME	PAGE NO.	PART NO.	PART NAME	PAGE NO.
AN565B1032H5	Set Screw	1	LW-12596	Bolt	15
AN6-34A	Bolt	13	LW-12681	Gasket	47
AN791-2	Elbow	43	LW-12688	Seat	17
AN816-8	Nipple	41	LW-12707	Adapter	47
AN825-4	Tee	43	LW-12879-6S120	Hose Assy.	45
AN924-6	Nut	43	LW-13215	Oil Filter	41
AN929-3	Cap Assy.	43	LW-13321	Seat	19
LW-25-0.63	Bolt	11	LW-13322	Seat	19
LW-25-0.81	Bolt	25	LW-13795	Shaft	9
LW-25-0.81	Bolt	29	LW-13896	Plug	1
LW-25-0.81	Bolt	43	LW-13923	Bushing	15
LW-25-0.94	Bolt	33	LW-14021	Shaft	1
LW-25-1.00	Bolt	29	LW-14078	Pin	15
LW-25-1.00	Bolt	41	LW-14260	Seal	33
LW-25-1.13	Bolt	13	LW-14775	Gage Assy.	27
LW-25-1.13	Bolt	29	LW-14820	Ring	7
LW-25-1.13	Bolt	33	LW-15592-5-05	Clamp	23
LW-25-1.25	Bolt	25	LW-15619	Gasket	17
LW-25-1.44	Bolt	33	LW-15628	Seal	5
LW-25-1.50	Bolt	13	LW-16471	Support Assy.	7
LW-25-1.75	Bolt	13	LW-16475	Seat	19
LW-25-2.00	Bolt	29	LW-18085	Spring	5
LW-25H0.63	Bolt	29	LW-18106	Baffle Assy.	23
LW-25S1.50	Bolt	13	LW-18638	Lockplate	7
LW-31-1.16	Bolt	13	LW-18661	Seal	19
LW-31-1.31	Bolt	43	LW-18667	Pin	9
LW-31-2.75	Bolt	13	LW-18855	Nozzle Assy.	43
LW-31H0.88	Bolt	9	LW-18981	Housing Assy.	25
LW-10442	Gear	1	LW-19048	Cylinder Assy.	17
LW-10541	Gear Assy.	1	LW-19096	Gear Assy.	47
LW-10799	Spacer	35	LW-19210	Counterweight Assy.	7
LW-11273	Clamp	29	LW-19332-S	Connecting Rod Assy.	15
LW-11713	Spring	5	LW-19340	Camshaft Assy.	9
LW-11796	Spring	19	LW-349290-1	Magneto	47
LW-11797	Spring	19	LW-349310-1	Magneto	47
LW-11867	Elbow	43	MS20822-4	Elbow	43
LW-11956	Guide	17	MS20822-6-8	Elbow	35
LW-11958	Guide	17	MS20822-8	Elbow	41
LW-12098-0-100	Tube Assy.	45	MS20823-6D	Elbow	17
LW-12098-0-170	Tube Assy.	45	MS29512-06	O-Ring	43
LW-12186	Nut	15	STD-8	Washer	13
LW-12191	Pipe	25	STD-8	Washer	25
LW-12192	Pipe	25	STD-8	Washer	29
LW-12193	Pipe	25	STD-8	Washer	33
LW-12194	Pipe	25	STD-8	Washer	37
LW-12195	Pipe	25	STD-8	Washer	39
LW-12545	Bolt	29	STD-8	Washer	41
LW-12588	Bushing	21	STD-8	Washer	43

**NUMERICAL INDEX (CONT.)**

<b>PART NO.</b>	<b>PART NAME</b>	<b>PAGE NO.</b>	<b>PART NO.</b>	<b>PART NAME</b>	<b>PAGE NO.</b>
STD-19	Dowel	1	STD-1410	Nut	35
STD-33	Washer	13	STD-1410	Nut	39
STD-33	Washer	27	STD-1410	Nut	47
STD-35	Washer	1	STD-1411	Nut	13
STD-35	Washer	13	STD-1411	Nut	29
STD-35	Washer	17	STD-1411	Nut	37
STD-35	Washer	33	STD-1411	Nut	39
STD-35	Washer	35	STD-1411	Nut	41
STD-35	Washer	39	STD-1411	Nut	43
STD-35	Washer	43	STD-1420	Nut	33
STD-91	Plug	29	STD-1727	Washer	43
STD-148	Nipple	43	STD-1737	Ring	11
STD-160	Washer	13	STD-1774	Pin	11
STD-160	Washer	25	STD-1774	Pin	37
STD-160	Washer	29	STD-1774	Pin	39
STD-160	Washer	33	STD-1925	Screw	21
STD-160	Washer	37	STD-2090	Nut	21
STD-160	Washer	39	STD-2166	Elbow	43
STD-160	Washer	41	STD-2168	Nut	9
STD-160	Washer	43	STD-2180	Hose	23
STD-213	Oil Seal	11	STD-2231	Ring	9
STD-355	Plug	29	STD-2247	Bolt	7
STD-475	Washer	1	STD-2249	Nut	13
STD-475	Washer	13	25C-9	Stud	29
STD-475	Washer	17	25C-10	Stud	41
STD-475	Washer	35	25C-11	Stud	29
STD-475	Washer	39	25C-12	Stud	39
STD-475	Washer	43	25C-21	Stud	31
STD-475	Washer	47	31C-10	Stud	17
STD-514	Dowel	3	31C-12	Stud	3
STD-514	Dowel	29	31C-13	Stud	3
STD-551	Plug	29	31C-16	Stud	3
STD-557	Dowel	3	31C-19	Stud	31
STD-596	Nut	13	31C-21	Stud	31
STD-596	Nut	27	31CD-20	Stud	31
STD-678	Washer	13	38-13	Stud	3
STD-678	Washer	27	38-15	Stud	29
STD-684	Nipple	23	38-16	Stud	3
STD-692	Screw	23	38-22	Stud	3
STD-784	Plug	29	38D-17	Stud	3
STD-784	Plug	31	50-15	Stud	3
STD-798	Dowel	1	383-B	Nut	21
STD-872	Nut	13	1028-B	Ball	5
STD-1065	Dowel	7	1102	Plug	3
STD-1211	Plug	7	1102	Plug	17
STD-1339	Plug	3	1102	Plug	25
STD-1410	Nut	1	1102	Plug	29
STD-1410	Nut	17	1102	Plug	31

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PART NO.	PART NAME	PAGE NO.	PART NO.	PART NAME	PAGE NO.
1182-H7	Spark Plug	47	72091	Ring	5
8313	Gasket	37	72155-S	Bushing	7
8313	Gasket	39	72158	Bushing	3
60422	Screen	29	72167	Pipe	29
60430	Cover	37	72168	Pipe	29
60430	Cover	39	72169	Pipe	29
60803	Strap	13	72179	Stud	29
60945	Plug	7	72198	Plug	15
61084	Spring	5	72210	Gasket	25
61183	Gasket	37	72242	Cover Assy.	21
61503	Sleeve	19	72246	Shaft	11
62224	Gasket	47	72255	Shroud Tube Assy.	19
62388	Cap	19	72257	Shroud Tube Assy.	19
62417	Plug	41	72378	Cover	1
66610	Bushing	17	72566	Gear	7
66670	Bushing	17	72626	Shaft	21
66728	Washer	19	72702	Tube Assy.	23
66732	Gasket	21	72703	Tube Assy.	23
67530	Bushing	9	72706	Insert	17
67536	Adapter Assy.	37	72709	Screw	21
67542	Ball Bearing	47	72710	Cover	21
68315	Gasket	39	72711	Ring	25
68668	Spring	5	72834	Cover	23
69159	Adapter Assy.	11	72960	Plug	29
69164	Gasket	11	72962	Thrust Button	11
69260	Insert	17	72962	Thrust Button	39
69532	Seat	19	72964	Gear Assy.	39
69796	Dowel	3	72972	Shaftgear Assy.	11
70455	Gasket	1	72974	Gear Assy.	37
70456	Bracket	27	72996	Fitting	41
70457	Gasket	27	73000	Coupling	47
70474	Washer	11	73027	Tube Assy.	23
71450	Gasket	21	73032	Gasket	43
71481	Ring	21	73136	Bracket	45
71549	Washer	21	73152	Bracket	45
71596	Washer	37	73249	Washer	1
71596	Washer	39	73250	Washer	1
71610	Hook	23	73251	Washer	1
71611	Retainer	23	73262	Washer	1
71664	Gear Assy.	11	73636	Coupling	47
71667	Lockplate	11	73648	Roller	7
71668	Gear Assy.	9	73772	Nozzle Assy.	3
71675	Adapter Assy.	39	73810	Bushing	7
71903-A	Bushing	7	73818	Gasket	31
71907	Washer	7	74065	Ring	27
71973	Gasket	25	74241	Ring	15
72050	Key	19	74360	Flange	25
72053	Gasket	1	74389	Bushing	21

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74494	Plate	21	14D23907	Piston	15
74797	Fitting	43	14H21990	Ring	15
74887	Spacer	21	14S23889	Bolt	15
75151	Stabilizer	17	15B21319	Socket	19
75152	Stabilizer	17	15B26066	Plunger Assy.	19
75164	Stabilizer	17	15B26262	Body	5
75414	Bracket	43	15F19957-45	Rod Assy.	21
75656-S	Bushing	7	15F19957-46	Rod Assy.	21
75761	Extension	27	15F19957-47	Rod Assy.	21
76118	Spacer	9	15F19957-48	Rod Assy.	21
76155	Shaft Assy.	9	15F19957-55	Rod Assy.	21
76156	Shield	31	15F19957-56	Rod Assy.	21
76220	Stud	13	15F19957-57	Rod Assy.	21
76422	Elbow	35	15F19958-58	Rod Assy.	21
76510	Gasket	41	15F21362-11	Rod Assy.	21
76777	Manifold Assy.	43	15F21362-12	Rod Assy.	21
76778	Manifold Assy.	43	15F21362-13	Rod Assy.	21
76779	Elbow	43	15F21362-14	Rod Assy.	21
76784	Shaft	33	15F21362-21	Rod Assy.	21
76788	Roller	7	15F21362-22	Rod Assy.	21
77309	Bushing	11	15F21362-23	Rod Assy.	21
77467	Spring	5	15F21362-24	Rod Assy.	21
77808	Valve Assy.	5	15H21201	Spring	19
77852	Oil Filter Base Assy.	41	16T19468	Seat	17
77872	Bushing	1	17A23937	Valve, Intake	19
79024-S	Bushing	7	17B23935	Valve, Exhaust	19
01A23353	Stud	3	17C19386	Cap	19
01L21418	Washer	1	17C21191	Key	19
01P21501-11-52	Bag, Harness	47	17F21186	Rocker Assy.	21
02A21377	Elbow	35	17F21190	Rocker Assy.	21
02A21377	Elbow	43	18B23885	Bearing	5
05K23463-S	Impeller Kit	33	18E23886	Bearing	5
06A19956	Oil Seal	37	18N26106	Bearing	15
06A19956	Oil Seal	39	21C21541-05	Housing Assy.	31
06B21326	Gasket	29	51A22618	Body Assy.	33
06B23862	Gasket	41	51C23275	Impeller	33
06E19769-0.63	Gasket	41	51C23290	Impeller Assy.	33
06E19769-0.91	Gasket	29	53E22144	Valve Assy.	41
06E19769-1.00	Gasket	29	56A26071-03	Housing Assy.	29
06E19769-1.25	Gasket	5	56G26069	Baffle	29
11F24044-S3	Crankcase Assy.	3	61M26354	Fuel Injector	43
11F24044-S3-S	Crankcase Assy. Kit	3	62E23186	Fuel Pump	35
13F48827	Crankshaft Assy.	7	66M19385	Clamp	47
13S19648	Gear	7	67Y21893	Harness Assy.	47
			68H22624	Cushion	47