

HIO-390-A1A

Illustrated Parts Catalog

May 2018

PC-HIO-390-A1A



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652 Oliver Street
Williamsport, PA 17701

HIO-390-A1A Illustrated Parts Catalog

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NOTE: Service Documents override parts information in this document.

Record of Revisions

Rev No.	Issue Date	Initials	Insertion Date

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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 HIO-390-A1A 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 HIO-390-A1A Illustrated Parts Catalog:

24 (Electrical Power), 72 (Reciprocating Engine), 73 (Engine and Fuel Control), 74 (Ignition), and 80 (Starting).

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

NOTICE: 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.

Roller Tappets

As a product improvement, Lycoming is installing roller tappets on its aircraft engines. Wide deck engines with roller tappets are identified with an “E” suffix after the serial number dash number (Example – L-*****-48E.) On rebuilt and Lycoming overhauled wide deck engines with roller tappets, the letter “A” suffix is replaced with the letter “E” suffix on the engine serial number.

The new parts include roller tappet body assembly, crankcase, camshaft, shorter push rods, shroud tubes and shroud tube seal. The engines use the same hydraulic units and the dry tappet clearance does not change. Refer to Reference 618 in the Table of Limits (SSP-1776) for dry tappet clearance values.

At this time, roller tappets are not installed in narrow deck engines.

ROLLER TAPPET PARTS ARE NOT INTERCHANGEABLE WITH CURRENT FLAT FACED TAPPETS.

If it is necessary to remove the roller tappet bodies prior to overhaul, they **must be reinstalled in the same location in the crankcase**. The roller tappets are indexed with flats in the new crankcase. It is possible to assemble the roller tappet bodies in two different orientations 180 degrees apart. Either orientation is acceptable while reinstalling. Lubricate all tappet bores, cam lobes and roller tappets with engine oil mixture only. (Refer to the latest revision of Service Instruction No. 1059.) Install the shroud tube seal in the crankcase, then install the shroud tube.

THE ROLLER TAPPETS ARE NOT FIELD REPAIRABLE AND NO DISASSEMBLY IS ALLOWED. THEREFORE, MAGNAFLUX OR ZYGLO INSPECTIONS ARE NOT ALLOWED. A VISUAL INSPECTION FOR INTEGRITY AND FREE ROTATION OF THE ROLLER ACTION IS ACCEPTABLE TO RETURN AN IN-USE ROLLER TAPPET TO SERVICE; HOWEVER, IT IS MANDATORY TO REPLACE ROLLER TAPPETS AT OVERHAUL.

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.

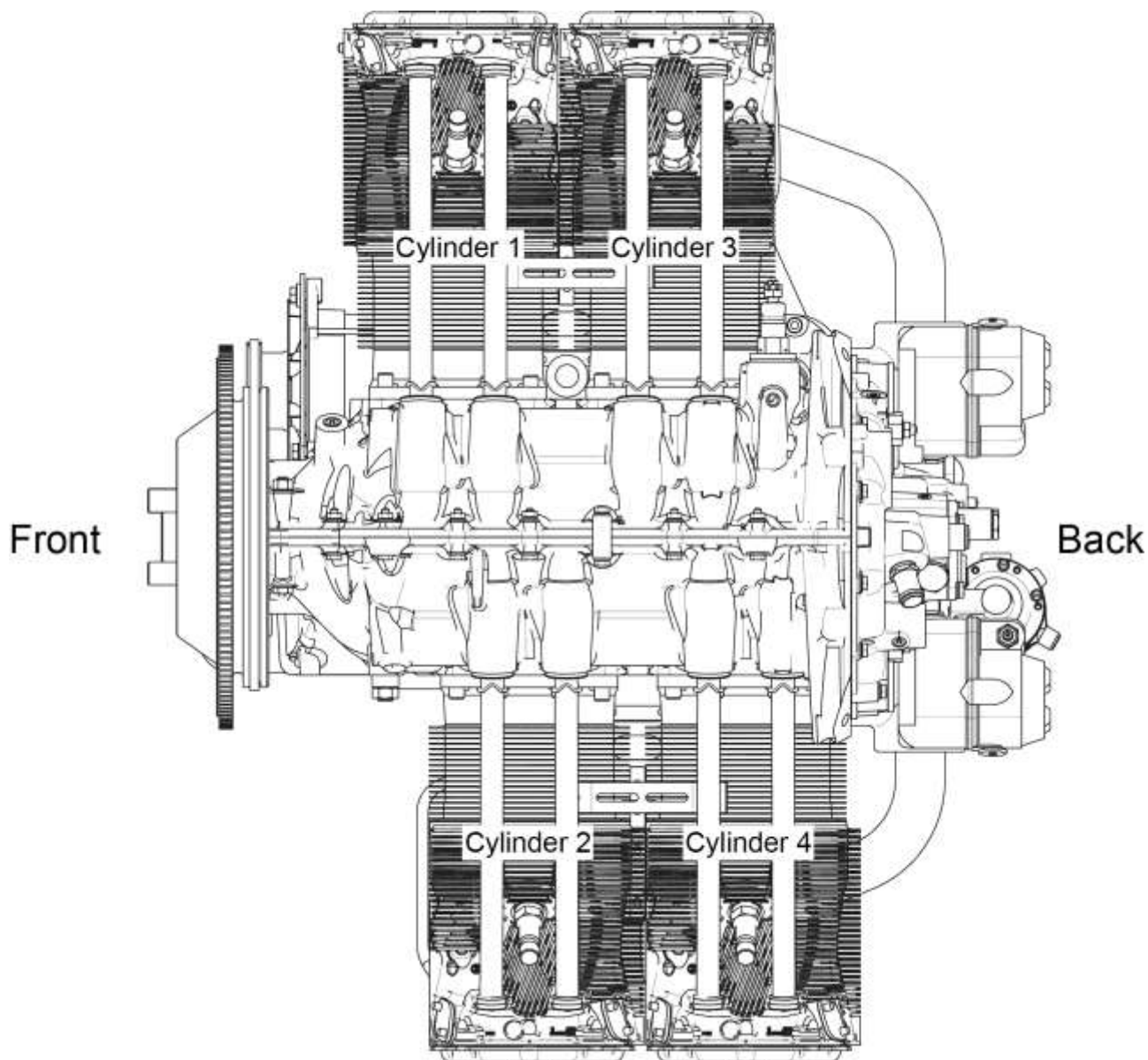
Any reference in this document to the supplier’s/part manufacturer’s product, by name, trademark, part number or other description is solely for the purpose of identification and does not indicate or infer that Lycoming accepts responsibility for quality control and/or airworthiness of parts, which do 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 1-3-2-4.



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 to aid in ordering parts as necessary during overhaul.

To order parts:

1. Contact the applicable Customer Service Hot Lines:
U.S. and Canada toll free - +1-800-258-3279
International Customers - +1-570-323-6181
8:00 A.M. – 5:00 P.M. EST (-5GMT) Monday through Friday
2. Give the model and serial number of your engine.
3. Give the part number, nomenclature, and quantity.

This publication eventually will be available for viewing and download on the Lycoming.com website.

To supply any comments, suggestions, or corrections to this parts catalog, go online to the Lycoming.com website on the internet.

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

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Abbreviations and Acronyms

A	
Adj.	Adjustable
amp.	Ampere
Assy	Assembly
F	
Fill.	Fillister
H	
Hex.	Hexagon
I	
I.D.	Inside Diameter
M	
mm	Millimeter
N	
No.	Number
NPT	National Pipe Taper (thread)
O	
O.D.	Outside Diameter
P	
P/N	Part Number
psi	Pounds per square inch

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Oversize and Undersize Parts Listing

PART NO.	DESCRIPTION	OVERSIZE (IN.)					UNDERSIZE (IN.)	
		P05 .005	P10 .010	P20 .020	P30 .030	P50 .050	M03 .003	M06 .006
18B23885	BEARING, Front Crankshaft						X	X
18E23886	BEARING, Crankshaft						X	X
18M23887	BEARING, Connecting Rod						X	X
72061-S	BUSHING, Prop Flange short	X						
75561-S	BUSHING, Prop Flange short	X						
75560-S	BUSHING, Prop Flange long	X						
STD-1065	DOWEL, Crankshaft		X					
66713	GUIDE, Intake				X			
75838	GUIDE, Exhaust				X			
69260	INSERT, Spark Plug		X					
LW-15628	SEAL, Crankshaft Oil					X		
72212	SEAT, Intake			X				
16T19468	SEAT, Exhaust			X				

NOTICE: 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 18B23885 bearing in .003 in. undersize, order P/N 18B23885-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.

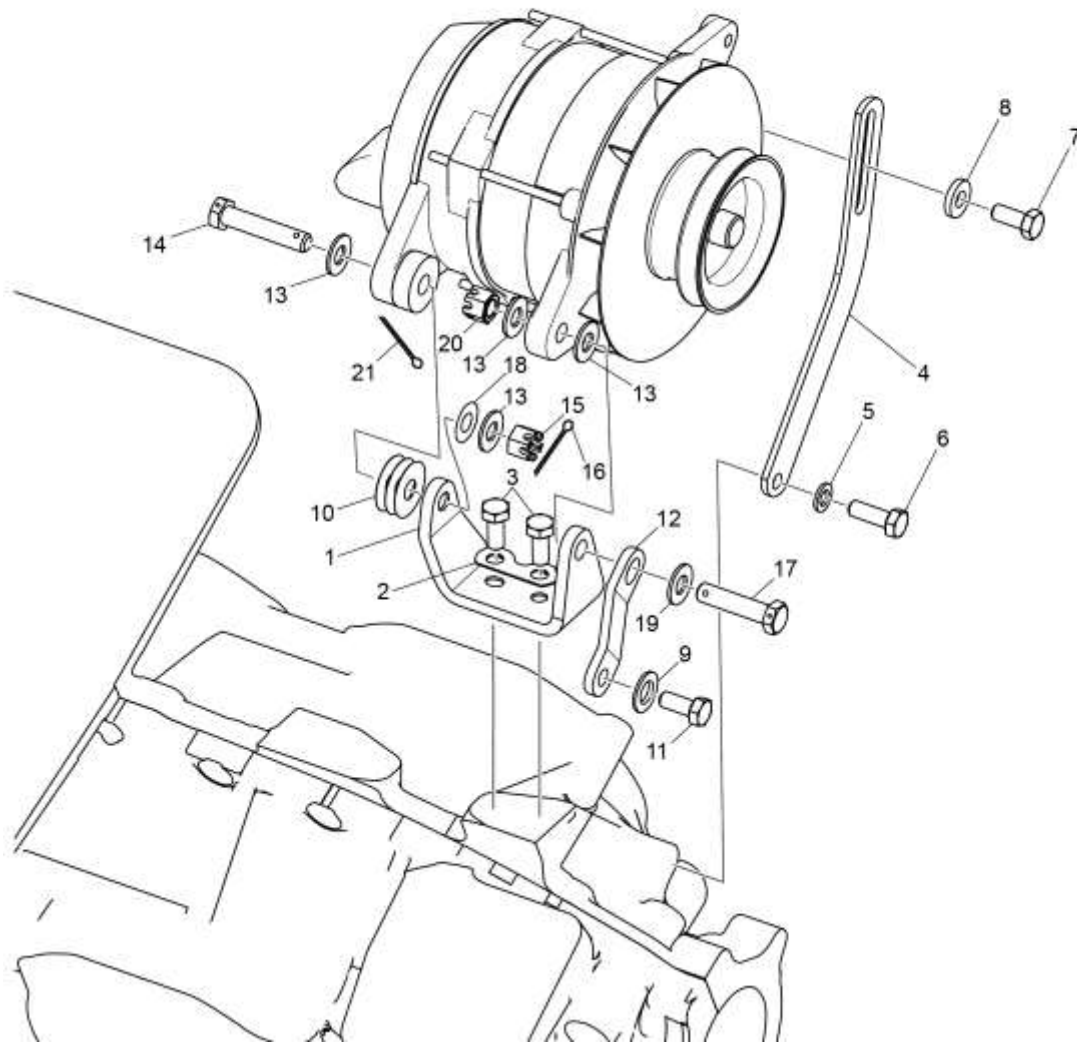


Figure 1
Alternator Mounting and Attaching Parts

AC GENERATION
Figure 1 - Alternator Mounting and Attaching Parts

Figure Item	Code	Part Number	Description	Units 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		LW-31H0.75	BOLT, 5/16-18 x 3/4 long, hex. head, drilled	1
8		STD-1727	WASHER, Plain, 3/4 O.D. x 11/32 I.D. x 1/8 thick	1
9		STD-2197	WASHER, 13/16 O.D. x 21/64 I.D. x 41/64 thick	1
10		LW-14649	SHIM, 13/16 O.D. x 11/32 I.D. x 1/64 thick	2
11		LW-31H0.88	BOLT, 5/16-18 x 7/8 long, hex. head, drilled	1
12		07F23268	STRUT, Alternator support, 1/64 thick	1
13		STD-690	WASHER, 13/16 O.D. x 25/64 I.D. x 1/16 thick	5
14		AN6-16	BOLT, 3/8-24 x 1-53/64 long, hex. head, drilled	1
15		STD-872	NUT, 3/8-24 slotted	1
16		STD-713	COTTER PIN, 3/32 diameter x 3/4 long	1
17		AN6-17	BOLT, 3/8-24 x 1-61/64 long, hex. head., drilled	1
18	AR	76534	SHIM, 1-1/8 O.D. x 13/32 I.D. x 1/64 thick	AR
19		STD-690	WASHER, 13/16 O.D. x 25/64 I.D. x 1/16 thick	3
20		STD-872	NUT, 3/8-24 slotted	1
21		STD-713	COTTER PIN, 3/32 diameter x 3/4 long	1

AR – As Required

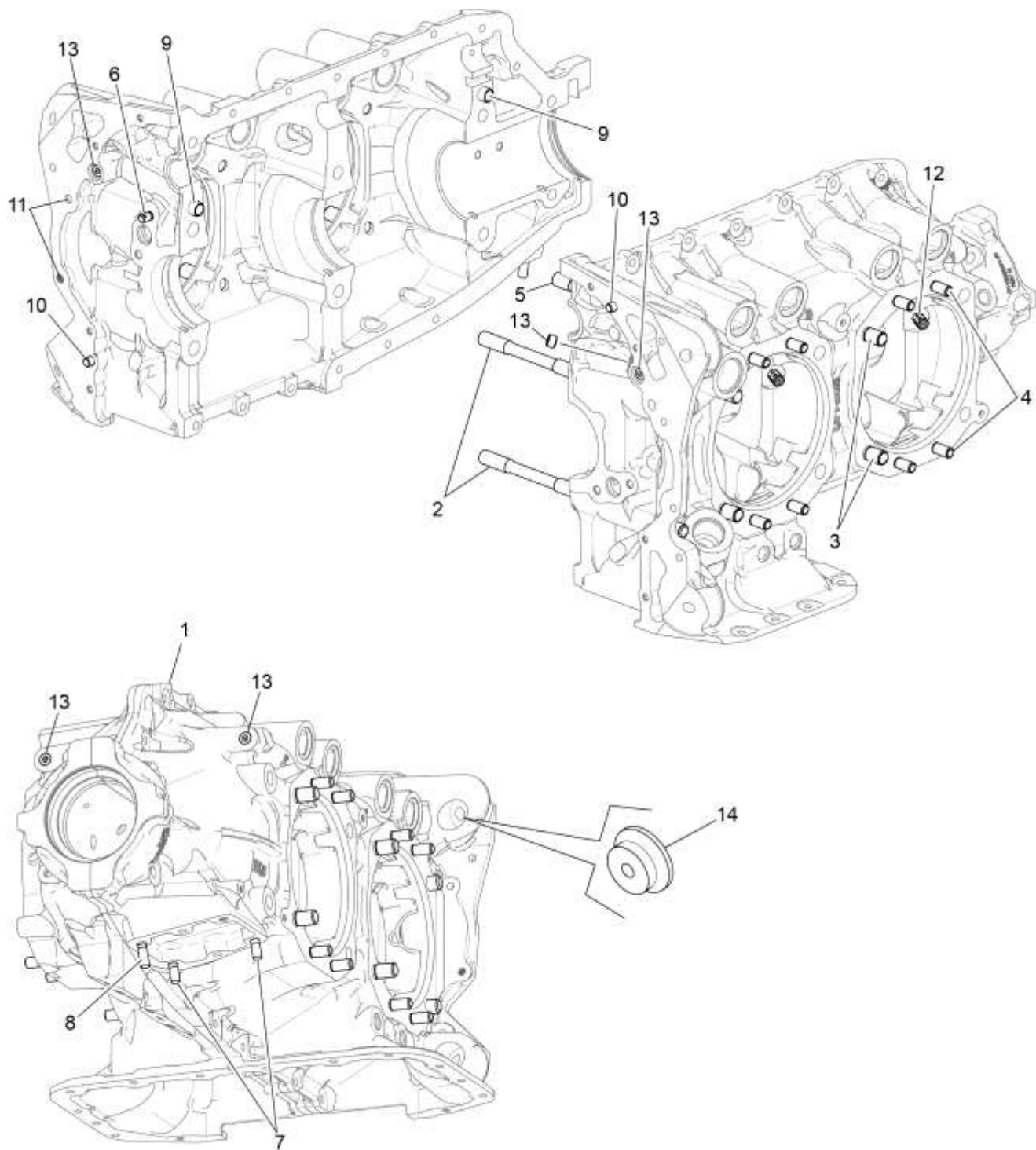


Figure 2
Crankcase Assembly

POWER SECTION
Figure 2 - Crankcase Assembly

Figure Item	Code	Part Number	Description	Units per Assembly
1		11U20391-2S	CRANKCASE ASSEMBLY, (Roller tappet engines)	1
2		01A23544	STUD, 1/2-13 x 9-27/32 long	2
3		50-15	STUD, 1/2-13 x 1-7/8 long	8
4		38-13	STUD, 3/8-16 x 1-5/8 long	13
5		38D-17	STUD, 3/8-16 x 2-1/8 long, drilled	1
6		LW-13793	STUD, 5/16-18 x 15/16 long, drilled	1
7		31C-12	STUD, 5/16-18 x 1-1/2 long	2
8		31C-13	STUD, 5/16-18 x 1-5/8 long	1
9		STD-557	DOWEL, 1/2 diameter x 11/16 long, hollow	2
10		STD-514	DOWEL, 5/16 diameter x 1/2 long	2
11		STD-1623	INSERT, 1/4-20 UNC x .3/8 long	2
12		12E23021	NOZZLE ASSEMBLY, Piston cooling	4
13		1102	PLUG, 1/8 pipe, Allen head	6
14	❖	74465	SPACER	4
❖ Shipped loose. Will go into crankcase, bolted to airframe.				

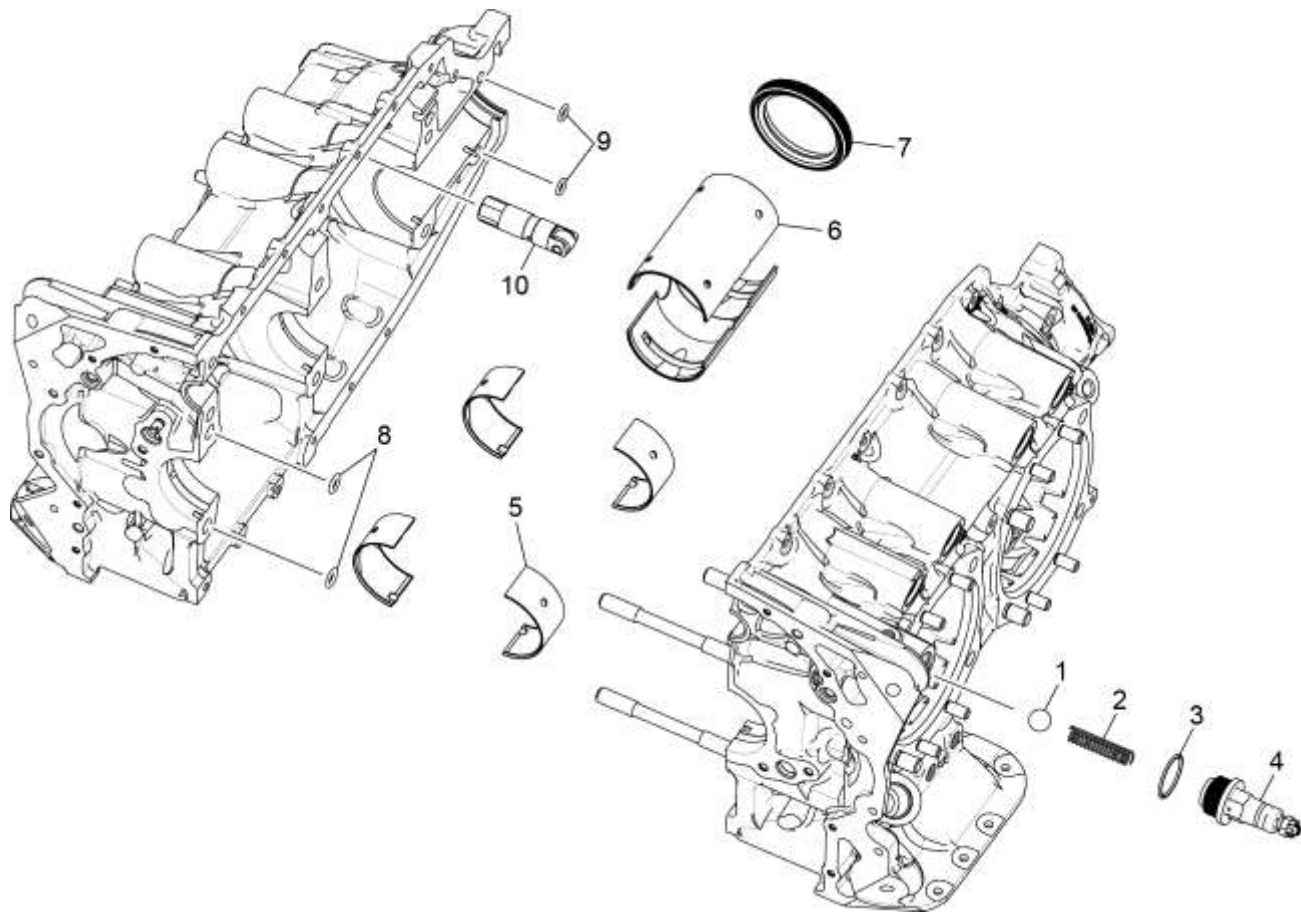


Figure 3
Crankcase Related Parts

POWER SECTION

Figure 3 - 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, adj.	1
5		18E23886	BEARING, Crankshaft, hi-crush thin wall	4
6		18B23885	BEARING, Crankshaft, Front	2
7		LW-15628	SEAL, Crankshaft oil	1
8		72075	SEAL, Oil, 3/32 section x 29/64 I.D.	2
9		72091	RING, Oil seal, 23/64 I.D. x 7/64 dia. section	2
10		LRT23381	BODY ASSEMBLY, Hydraulic roller tappet	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.				

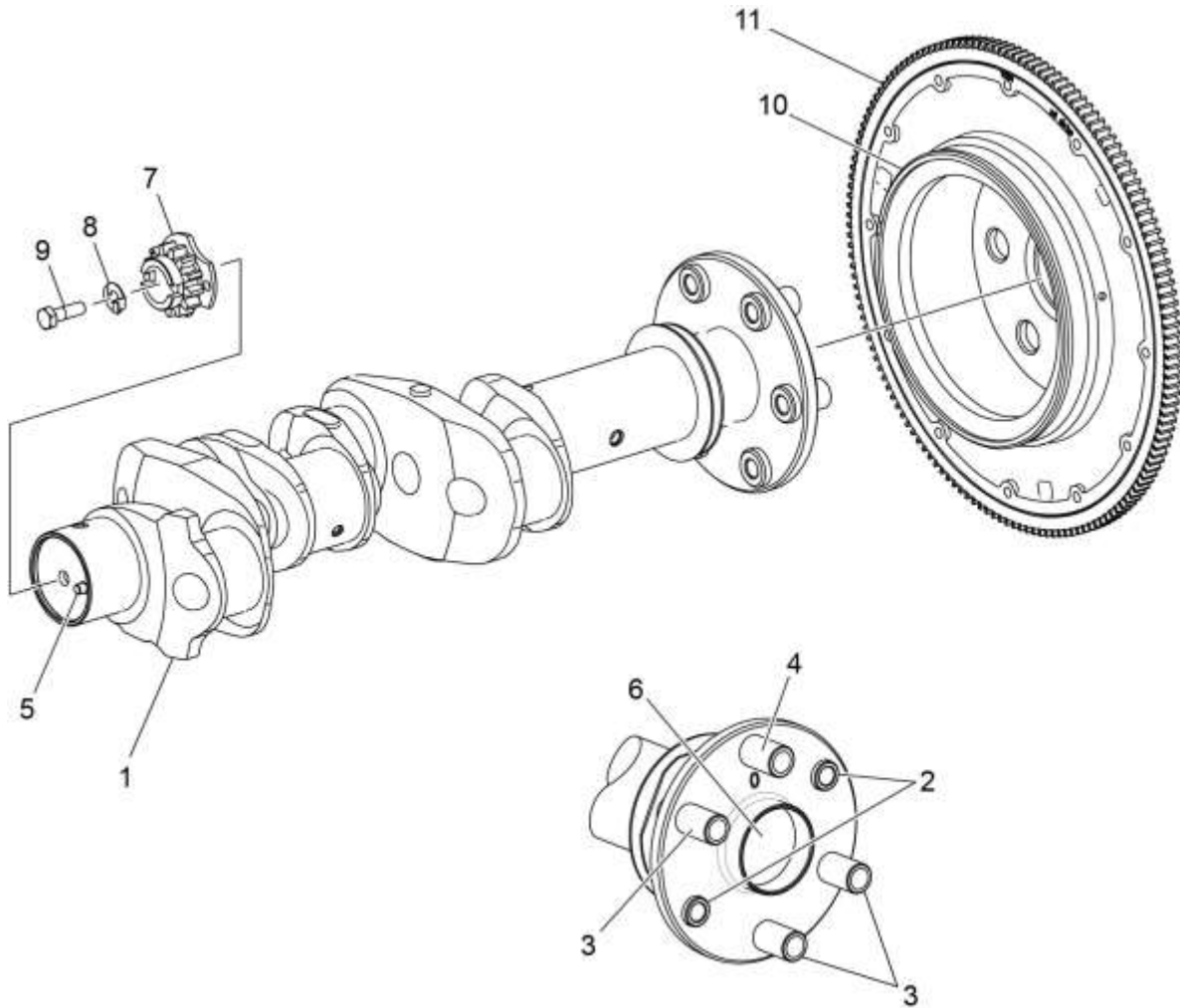


Figure 4
Crankshaft Assembly and Related Parts

POWER SECTION
Figure 4 - Crankshaft Assembly and Related Parts

Figure Item	Code	Part Number	Description	Units per Assembly
1		13C47319	CRANKSHAFT, Fixed pitch	1
2		72061-S-P05	BUSHING, Propeller flange, short	2
3		75561-S-P05	BUSHING, Propeller flange, short	3
4		75560-S-P05	BUSHING, Propeller flange, long	1
5		STD-1065	DOWEL, Stepped, 0.310 – 0.251 diameter	1
6		LW-14529	PLUG, 2-1/16 diameter expansion	1
7		13S19646	GEAR, Crankshaft	1
8		LW-18639	LOCKPLATE, Crankshaft gear	1
9		STD-2246	BOLT, 5/16-24 x 1.00 long	1
10		LW-16471	SUPPORT ASSEMBLY, Starter ring gear	1
11		72566	GEAR, Starter ring, 12/14 pitch	1

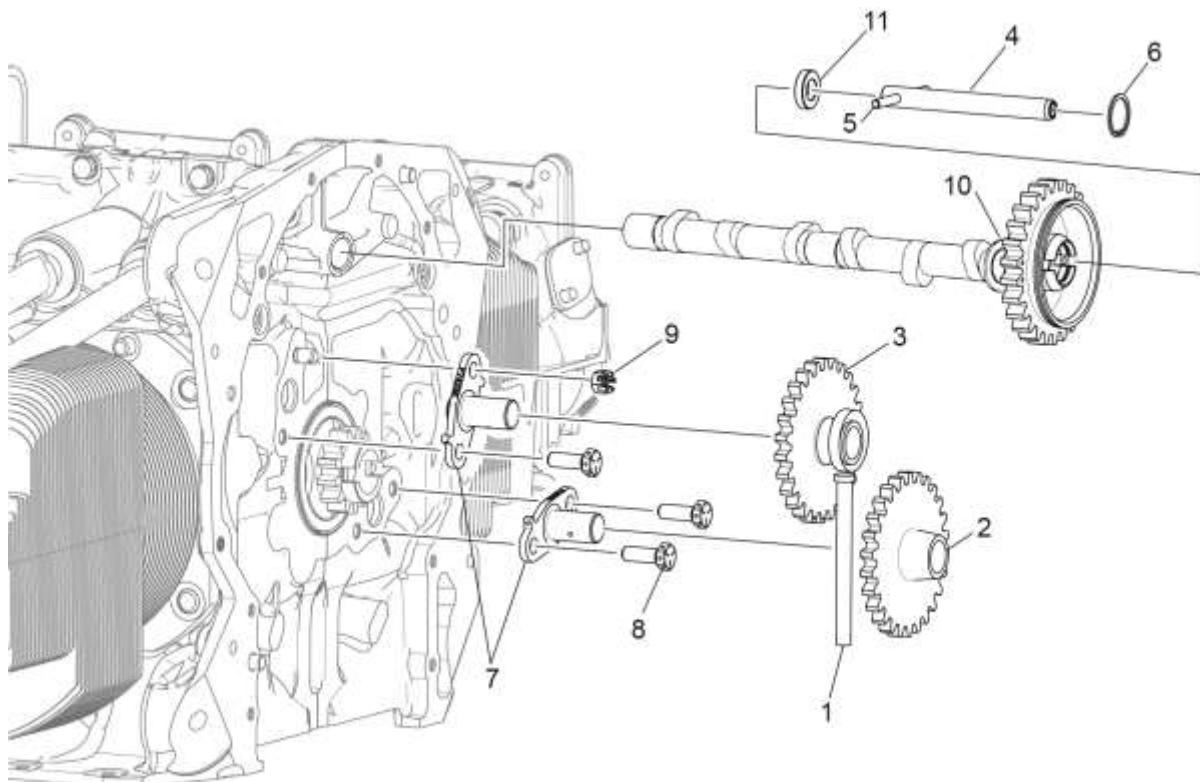


Figure 5
Crankshaft Idler Gears, Tachometer Drive, and Camshaft

POWER SECTION**Figure 5 - Crankshaft Idler Gears, Tachometer Drive, and Camshaft**

Figure Item	Code	Part Number	Description	Units per Assembly
1		23D26777	PLUNGER, Fuel pump, long	1
2		74996	GEAR ASSEMBLY, Crankshaft idler, plain	1
3		75072	GEAR ASSEMBLY, Crankshaft idler	1
4		76121	SHAFT ASSEMBLY, Tachometer	1
5		LW-18667	PIN, 3/16 diameter x 2-11/32 long	1
6		STD-2231	RING, Internal retaining (13/16)	1
7		LW-13796	SHAFT, Crankshaft idler gear	2
8		LW-31H0.88	BOLT, 5/16-18 x 7/8 long, hex. head, drilled	3
9		STD-2168	NUT, 5/16-18 NC-3 slotted shear	1
10		15M23452	CAMSHAFT ASSEMBLY, Roller lifter	1
11		76118	SPACER, Tachometer shaft centering	1

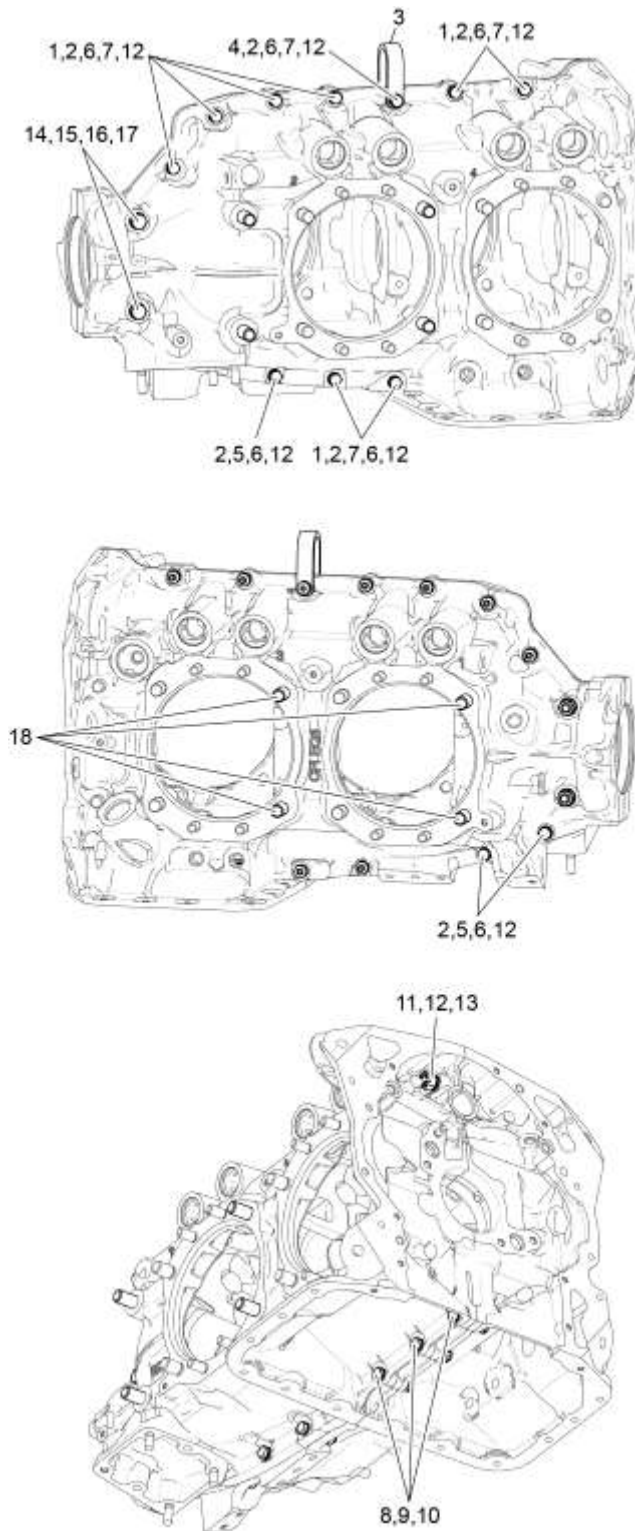


Figure 6
Crankcase Attaching Parts

POWER SECTION
Figure 6 - Crankcase Attaching Parts

Figure Item	Code	Part Number	Description	Units per Assembly
1		LW-25-1.50	BOLT-.250-20 X 1.50 LONG HEX	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	1
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 3-37/64 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		01A22453	STUD, 1/2-20 x 10-35/64 long	4

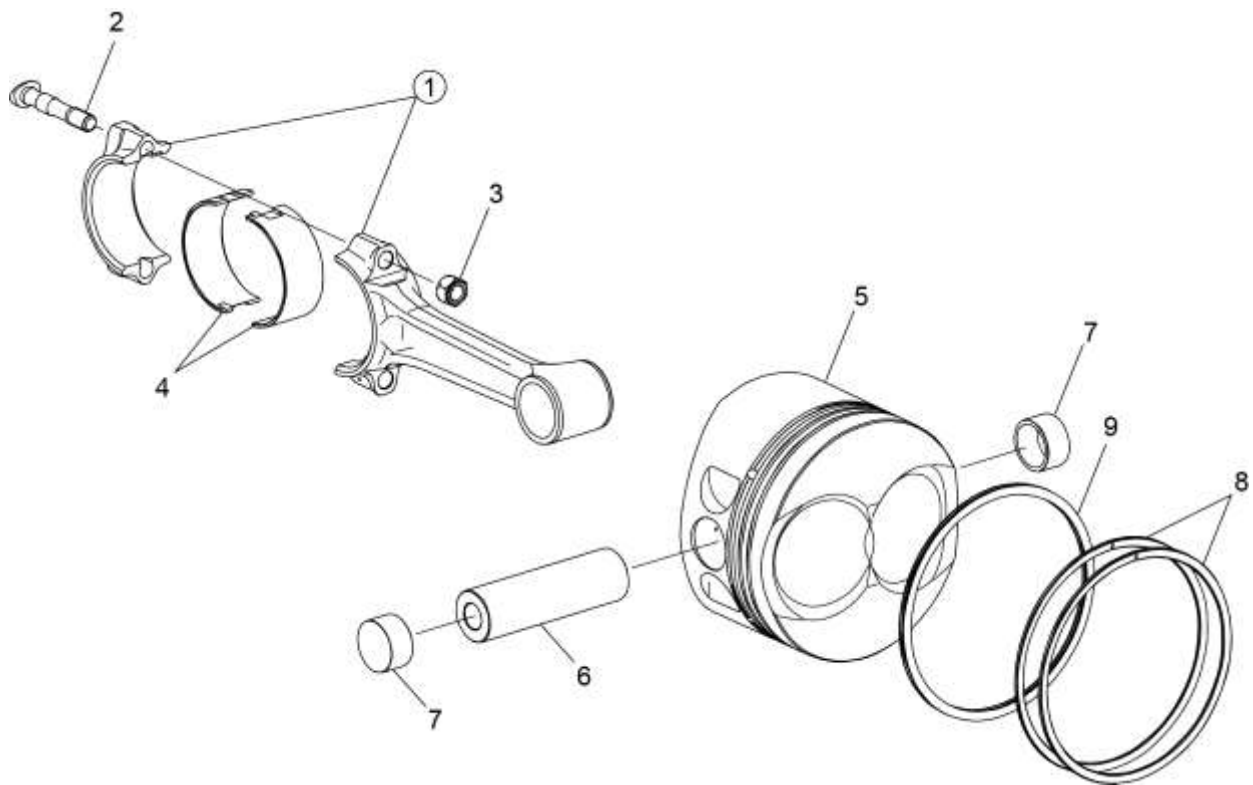


Figure 7
Connecting Rods, Pistons, and Ring Assemblies

CYLINDER SECTION
Figure 7 - Connecting Rods, Pistons, and Ring Assemblies

Figure Item	Code	Part Number	Description	Units per Assembly
1		77450-S	CONNECTING ROD ASSEMBLY	4
2	❖	75060	BOLT, Connecting rod	8
3		LW-12186	NUT, Connecting rod bolt	8
4		18M23887	BEARING, Connecting rod	8
5		14E23911	PISTON, Compression ratio, 8.90:1	4
6		14J22048	PIN, Piston	4
7		72198	PLUG, Piston pin	8
8		14G22050	RING, Piston compression	8
9		14H23148	RING, Piston, oil regulating	4

❖ Refer to the latest revision of Service Instruction No. 1458 for connecting rod bolt.

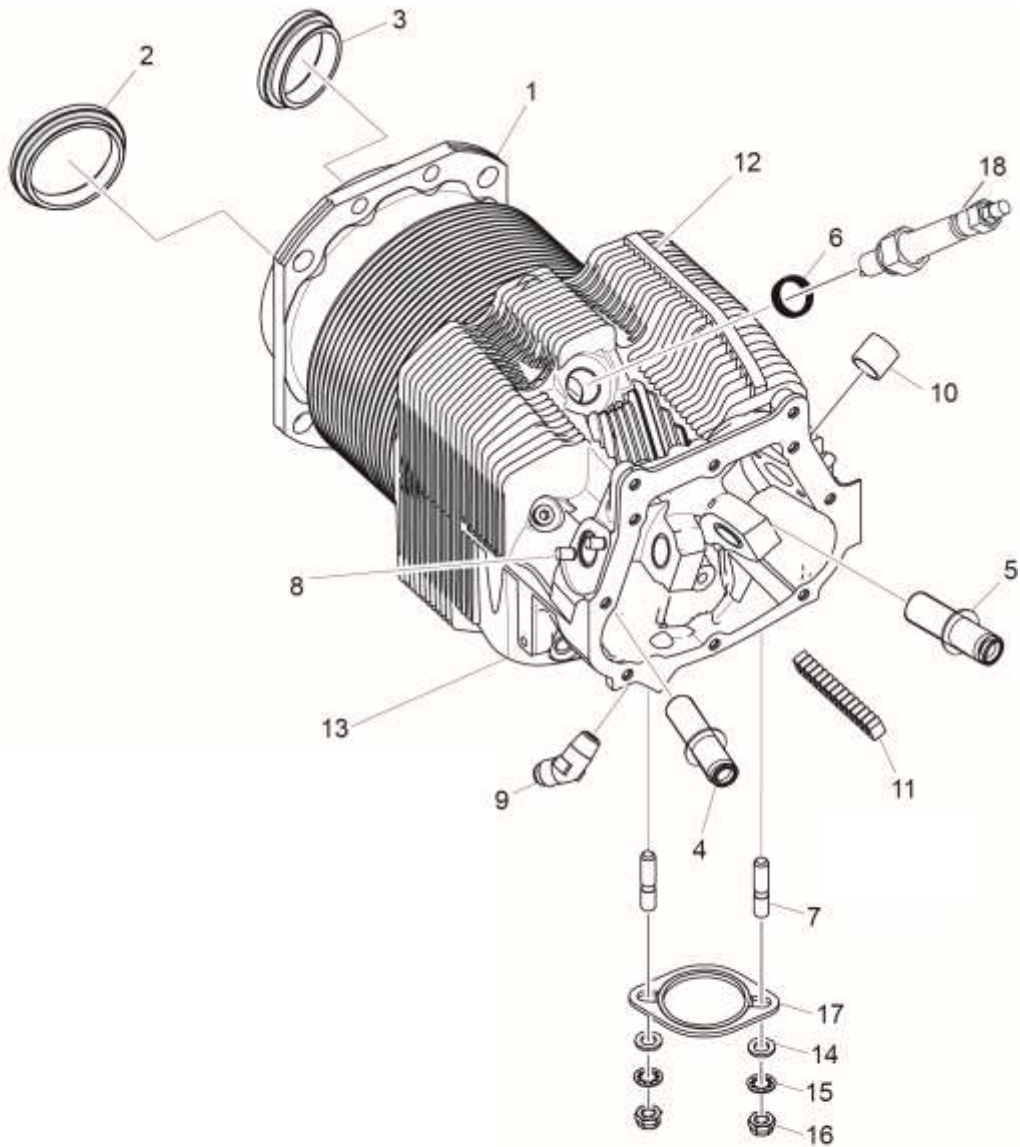


Figure 8
Cylinder Assembly and Spark Plugs

CYLINDER SECTION
Figure 8 - Cylinder Assembly and Spark Plugs

Figure Item	Code	Part Number	Description	Units per Assembly
1		16A26081	CYLINDER AND HEAD ASSEMBLY, Nitrided bore	4
2		72212-P20	SEAT, Intake valve	4
3		16T19468-P20	SEAT, Valve, exhaust	4
4		66713-P30	GUIDE, Valve, intake	4
5		75838-P30	GUIDE, Valve, exhaust	4
6		69260-P10	INSERT, Spark plug, 18-1.5 MM	8
7		31C-13	STUD, 5/16-18 x 1-5/8 long	8
8		25C-8	STUD, 1/4-20 x 1.00 long	16
9		MS20823-6D	ELBOW, 45°, 3/8 flared tube	4
10		66670	BUSHING, rocker shaft, inner	16
11		72343	STABILIZER, Cylinder head fins, 15 teeth	4
12		72344	STABILIZER, Cylinder head fins, 26 teeth	4
13		1102	PLUG, 1/8-27 NPT, Allen head	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
17		75118	GASKET, Exhaust flange	8
18	*	1182-G7	SPARK PLUG (Champion P/N REB37E)	8
* Refer to the latest revision of Lycoming Service Instruction No. 1042 for complete listing of all approved spark plugs.				

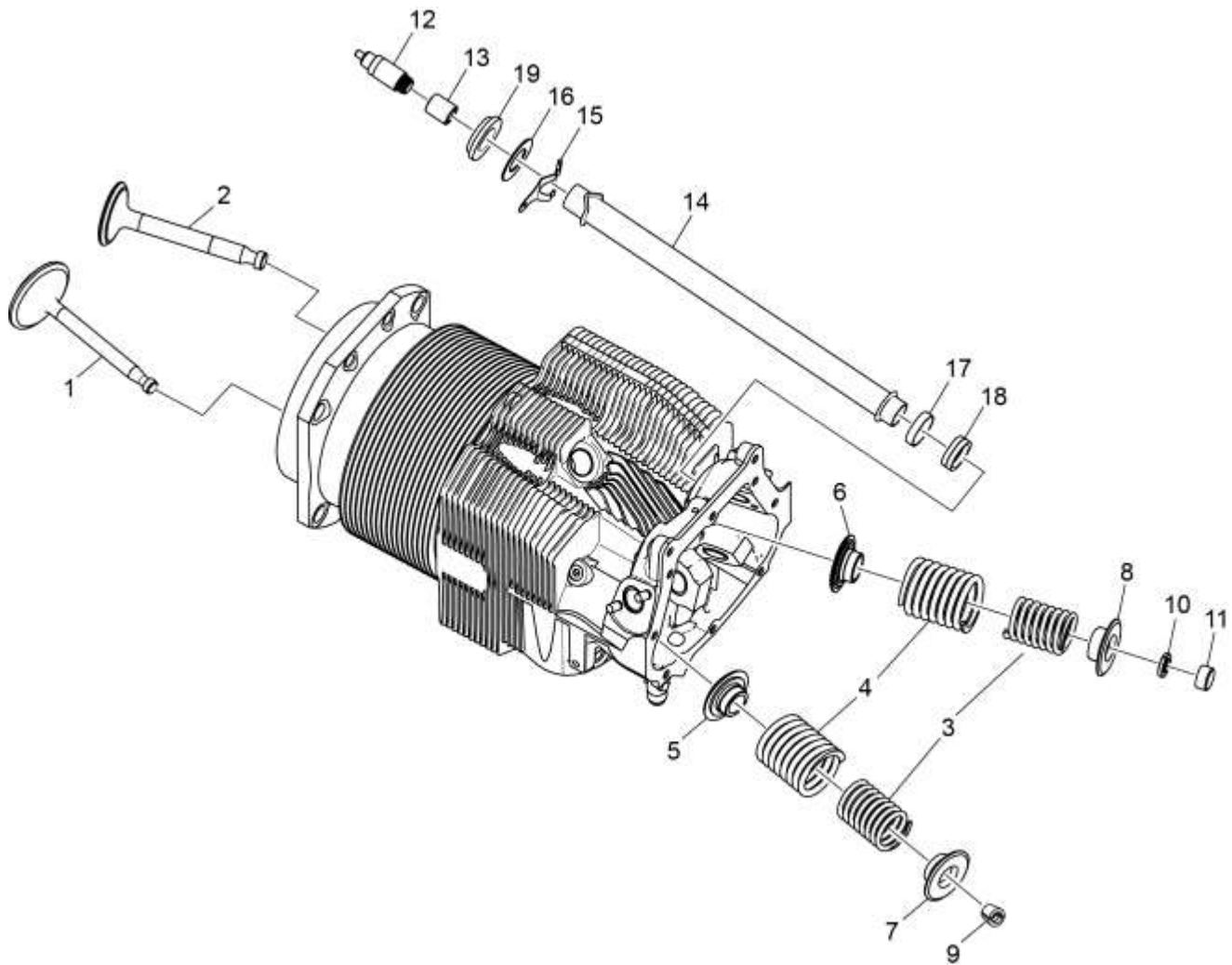


Figure 9
Valve Assembly and Related Parts

CYLINDER SECTION
Figure 9 – Valve Assembly and Related Parts

Figure Item	Code	Part Number	Description	Units per Assembly
1		17A23946	VALVE, Intake	4
2		17B23935	VALVE, Exhaust	4
3		LW-11797	SPRING, Valve, inner	8
4		LW-11796	SPRING, Valve, outer	8
5		LW-13321	SEAT, Valve spring, lower intake	4
6		LW-13322	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	4
12		15B26066	PLUNGER ASSEMBLY, Hydraulic lifter	8
13		15B21319	SOCKET, Hydraulic tappet	8
14		15G23462	SHROUD TUBE ASSEMBLY, Push rod	8
15		15H21201	SPRING, Shroud tube	16
16		01L23459	WASHER, 3/4 I.D. x 1-3/8 O.D. x 1/32	8
17		61503	SLEEVE, Shroud tube seal	8
18		LW-18661	SEAL, Shroud tube	8
19		06A23493	SEAL, Shroud tube	8

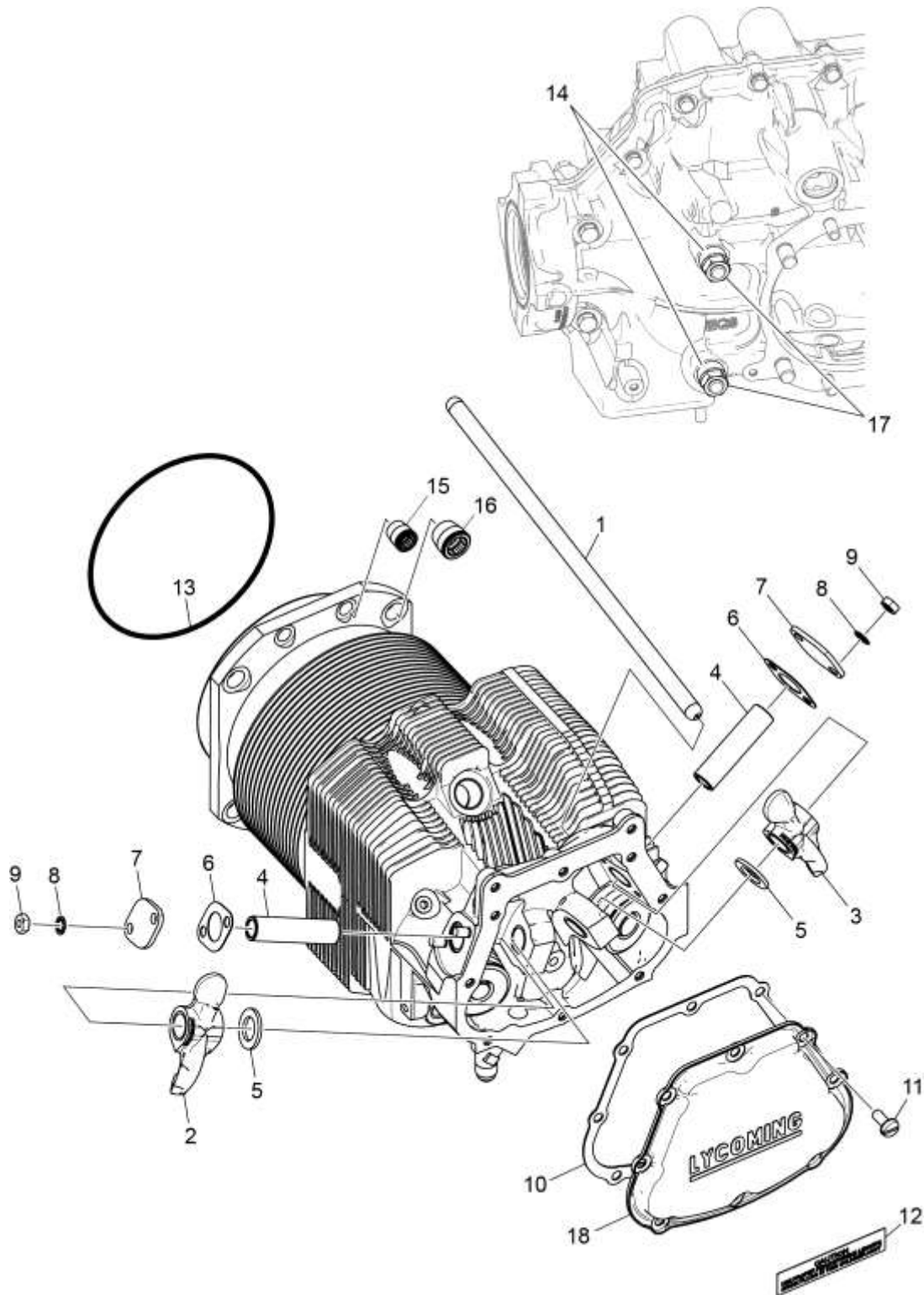


Figure 10
Cylinder Related Parts

CYLINDER SECTION
Figure 10 - Cylinder Related Parts

Figure Item	Code	Part Number	Description	Units per Assembly
1	▲	15F28835-51	ROD ASSEMBLY, Push	AR
	▲	15F28835-52	ROD ASSEMBLY, Push	AR
	▲	15F28835-53	ROD ASSEMBLY, Push	AR
	▲	15F28835-54	ROD ASSEMBLY, Push	AR
	▲	15F28835-55	ROD ASSEMBLY, Push	AR
	▲	15F28835-56	ROD ASSEMBLY, Push	AR
	▲	15F28864-17	ROD ASSEMBLY, Push	AR
	▲	15F28864-18	ROD ASSEMBLY, Push	AR
	▲	15F28864-19	ROD ASSEMBLY, Push	AR
	▲	15F28864-20	ROD ASSEMBLY, Push	AR
	▲	15F28864-21	ROD ASSEMBLY, Push	AR
	▲	15F28864-22	ROD ASSEMBLY, Push	AR
2	❖	17F21188	ROCKER ASSEMBLY, intake	4
3	❖	17F21187	ROCKER ASSEMBLY, exhaust	4
4		72626	SHAFT, Valve rocker	8
5		71549	WASHER, Valve rocker, thrust	8
6		66732	GASKET, Valve rocker shaft cover	8
7		72710	COVER, Valve rocker shaft	8
8		STD-160	WASHER, 1/4 lock, internal teeth	16
9		STD-1411	NUT, 1/4-20 plain	16
10		67193	GASKET, Rocker box cover	4
11		STD-1925	SCREW, 1/4-20 x 5/8 long, pan. head, self-locking	32
12		74494	PLATE, Spark plug reach caution	4
13		71481	RING, Oil seal, 3/32 diameter x 4-27/32 I.D.	4
14		74887	SPACER, 33/64 I.D. x 7/8 O.D. x 3/8 thick	2
15		71134	NUT, 3/8-24 NF-3	16
16		71133	NUT, 1/2-20 NF-3	16
17		STD-2090	NUT, 1/2-20 plain	2
18		17J26469	COVER ASSEMBLY, Rocker box	4

AR as required
▲ 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 (21187, 21188).

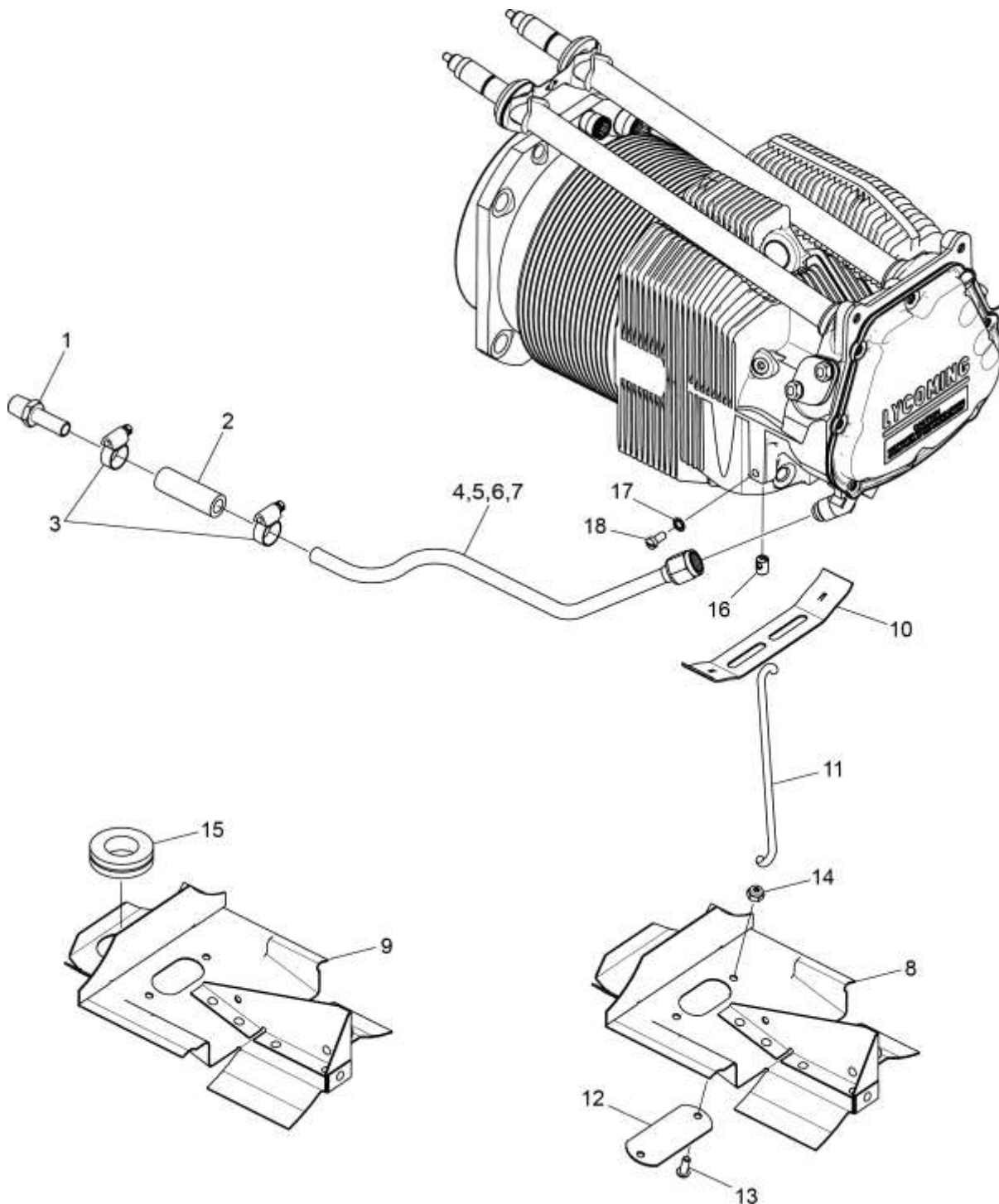


Figure 11
Cylinder Head Drain Tubes and Intercylinder Cooling Baffles

CYLINDER SECTION**Figure 11 – Cylinder Head Drain Tubes and Intercylinder Cooling Baffles**

Figure Item	Code	Part Number	Description	Units per Assembly
1		STD-684	NIPPLE, Straight, 3/8 I.D. hose	4
2		STD-2180	HOSE, 3/8 I.D. x 1-7/8 long	4
3		LW-15592-5-05	CLAMP, Hose	8
4		72702	TUBE ASSEMBLY, Cyl. head oil drain, cyl. No.1	1
5		72703	TUBE ASSEMBLY, Cyl. head oil drain, cyl. No. 2	1
6		74808	TUBE ASSEMBLY, Cyl. head oil drain, cyl. No. 3	1
7		73027	TUBE ASSEMBLY, Cyl. head oil drain, cyl. No. 4	1
8		75338	BAFFLE ASSEMBLY, Intercylinder	1
9		75337	BAFFLE ASSEMBLY, Intercylinder	1
10		71611	RETAINER, Intercylinder baffle	2
11		17M23284	HOOK, Intercylinder baffle retainer	2
12		72834	COVER, Baffle, ignition cable hole	2
13		STD-692	SCREW, No. 10-32 x 1/2 long, round head	4
14		STD-670	LOCKNUT, No. 10-32	4
15		MS35489-20X	GROMMET (on baffle)	1
16		65614	PLUG, Baffle attaching	4
17		STD-251	WASHER, No. 10, internal lock	4
18		STD-1686	SCREW, No. 10-32 x 7/16 long	4

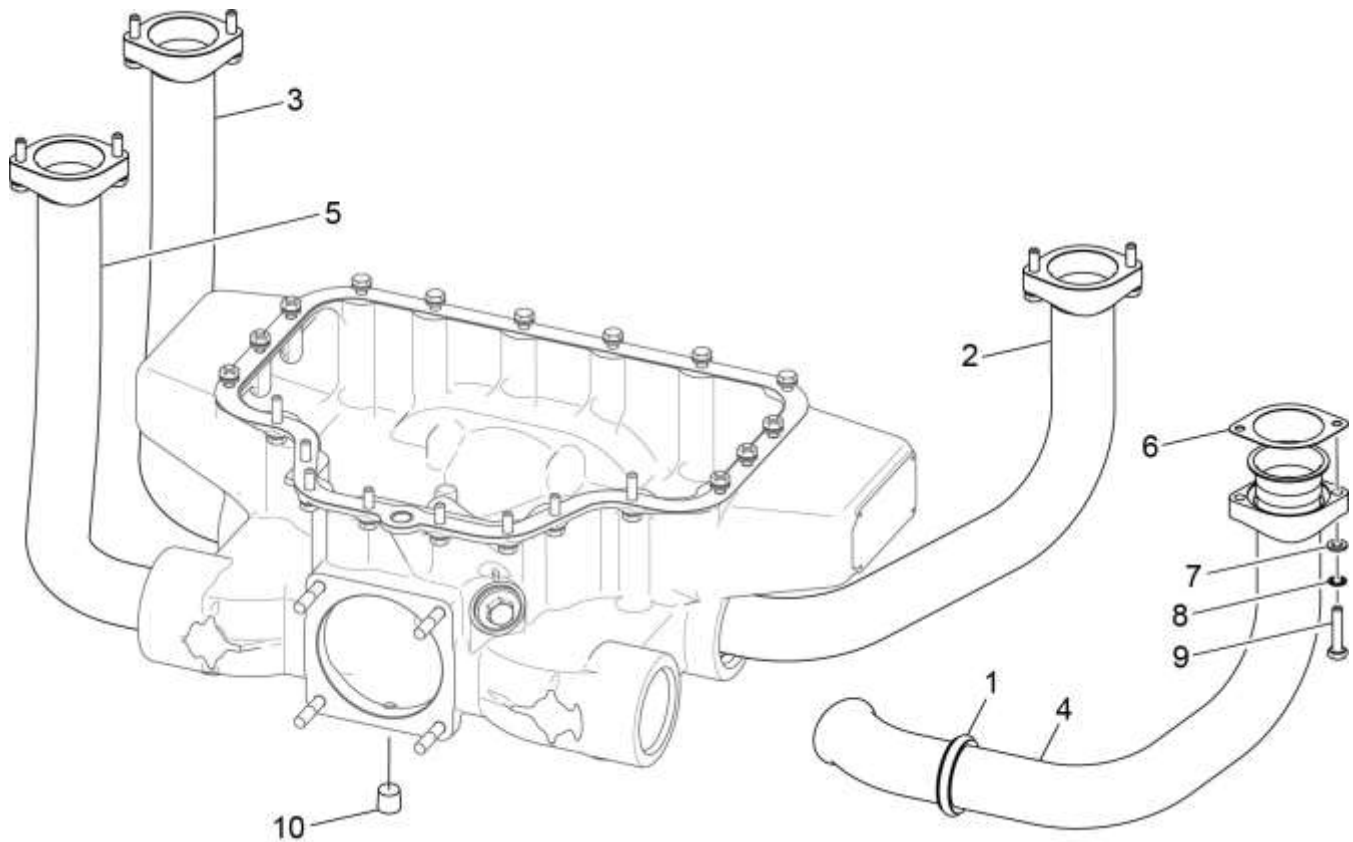


Figure 12
Intake Pipes and Attaching Parts

CYLINDER SECTION
Figure 12 – Intake Pipes and Attaching Parts

Figure Item	Code	Part Number	Description	Units per Assembly
1		77569	RING, Seal, intake pipe	4
2		LW-10481	PIPE, Intake, cylinder No. 1	1
3		79002	PIPE, Intake, cylinder No. 2	1
4		LW-10483	PIPE, Intake, cylinder No. 3	1
5		LW-10484	PIPE, Intake, cylinder No. 4	1
6		71973	GASKET, 2 bolt flange, 1-13/16 I.D.	4
7		STD-8	WASHER, 1/4 plain	8
8		STD-160	WASHER, 1/4 lock, internal teeth	8
9		LW-25-1.25	BOLT, 1/4-20 x 1-1/4 long, hex. head	8
10		1102	PLUG, 1/8 pipe	4

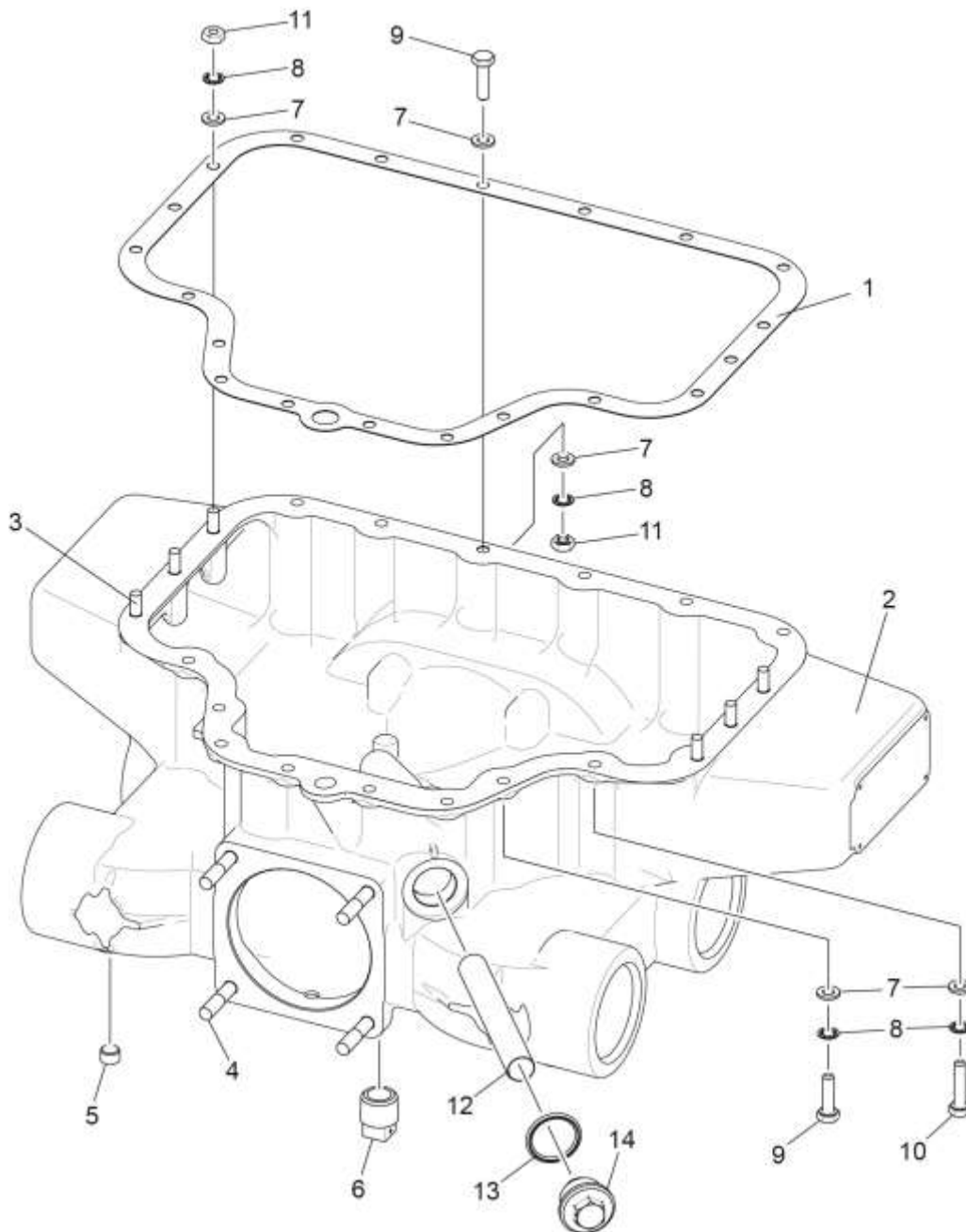


Figure 13
Oil Sump Assembly and Oil Suction Screen

LUBRICATION SYSTEM
Figure 13 – Oil Sump Assembly and Oil Suction Screen

Figure Item	Code	Part Number	Description	Units per Assembly
1		LW-13353	GASKET, Oil sump	1
2		56A28026	SUMP ASSEMBLY, Oil	1
3		61400	STUD, 1/4-20 x 1-3/16 long	6
4		31C-18	STUD, 5/16-18 x 2-1/4 long	4
5		1102	PLUG, 1/8-27 NPT, pipe	4
6		STD-551	PLUG, 1/2-14 NPT, square head, drilled	1
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		70484	SCREEN, Oil suction	1
13		06E19769-1.00	GASKET, Annular, 1.00 I.D.	1
14		LW-12545	PLUG, 5/8 hex. head x 1.00-20 thread	1

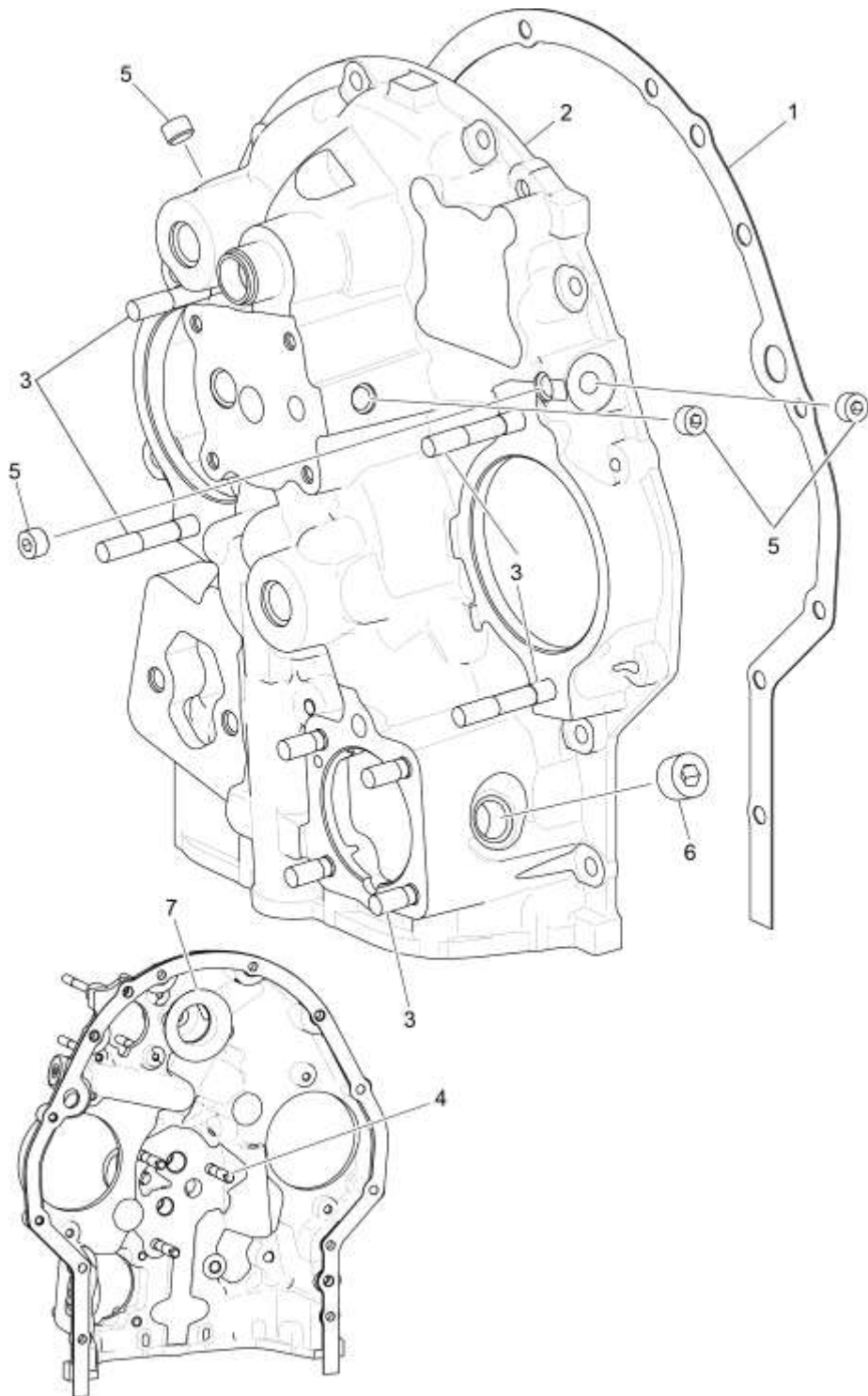


Figure 14
Accessory Housing Assembly

ACCESSORY DRIVES
Figure 14 – Accessory Housing Assembly

Figure Item	Code	Part Number	Description	Units per Assembly
1		73818	GASKET, Accessory Housing	1
2		21A21537-03	ASSEMBLY, Accessory housing	1
3		31C-12	STUD, 5/16-18 x 1-1/2 long	8
4		31CD-17	STUD, 5/16-18 x 2-1/8 long, drilled	3
5		1102	PLUG, 1/8-27 NPT, Allen head	4
6		STD-784	PLUG, 3/8-18 NPT, Allen head	1
7		76119	SHIELD, Accessory breather oil	1

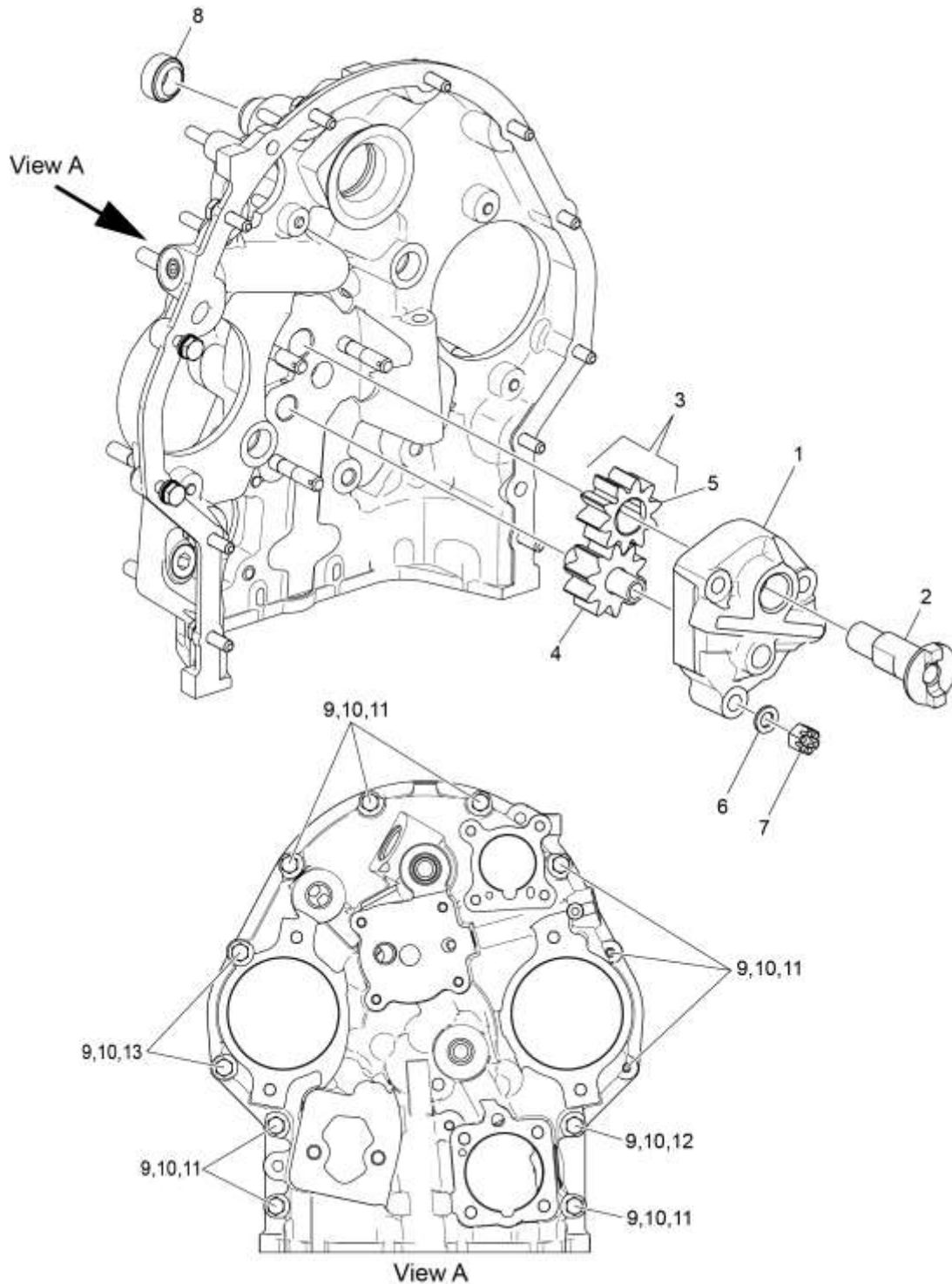


Figure 15
Oil Pump Assembly and Accessory Housing Attaching Parts

ACCESSORY DRIVES

Figure 15 – 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		05K19423-S	IMPELLER KIT	1
4	*	LW-18110	IMPELLER ASSEMBLY, Oil pump driven	1
5	*	LW-18109	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 05K19423-S).

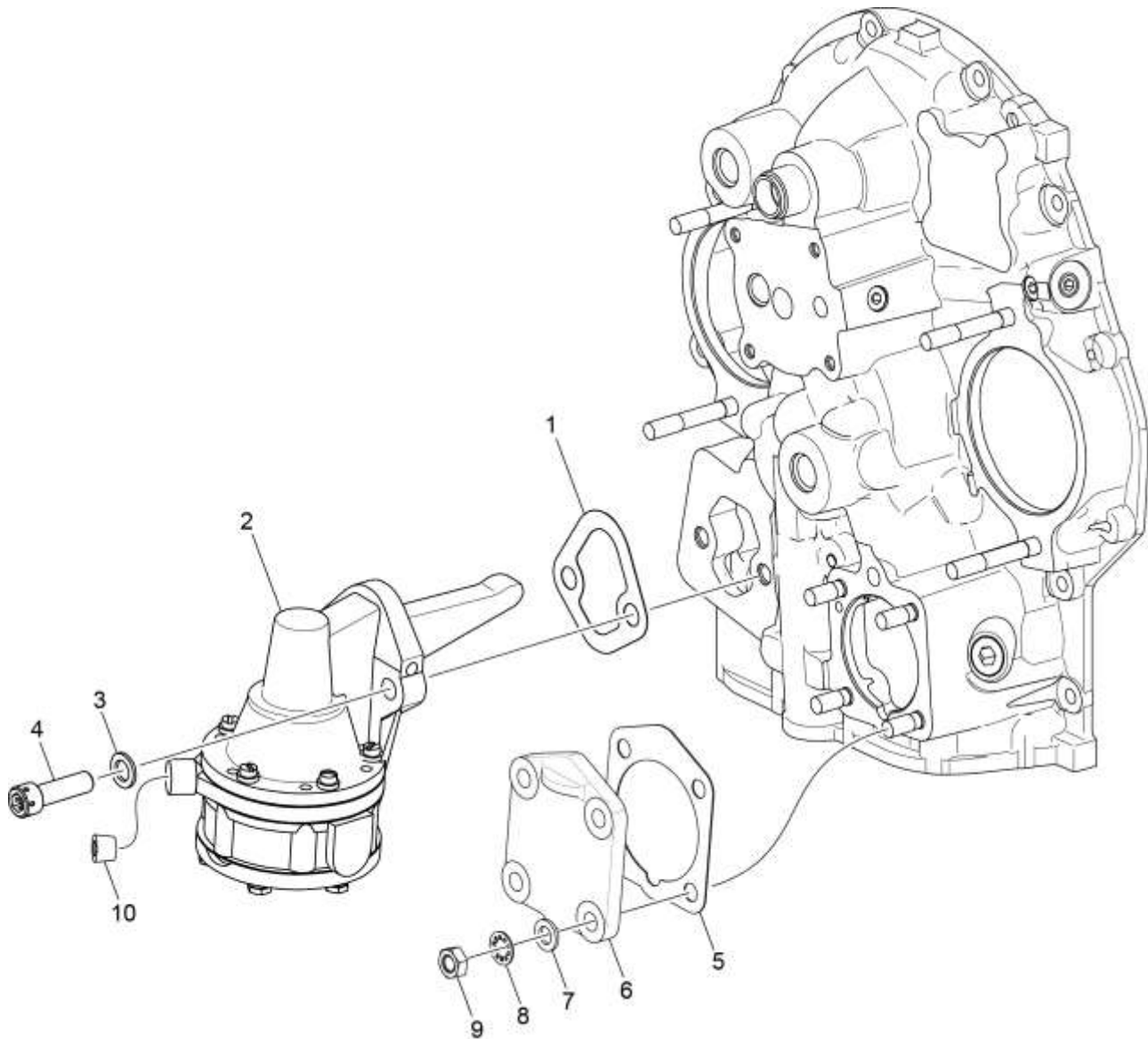


Figure 16
Fuel Pump, Governor Drive Cover, and Attaching Parts

ACCESSORY DRIVES

Figure 16 - Fuel Pump Governor Drive Cover, and Attaching Parts

Figure Item	Code	Part Number	Description	Units per Assembly
1		60096	GASKET, Fuel pump	1
2		62B26931	FUEL PUMP, High pressure	1
3		STD-33	WASHER, 3/8 plain	2
4		STD-1882	SCREW, 3/8-16 x 1-9/32 long, socket head drilled	2
5		69551	GASKET, Accessory drive adapter	1
6		69106	COVER, Governor drive adapter pad	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
10		STD-783	PLUG, 1/4-18 NPT, Allen head	1

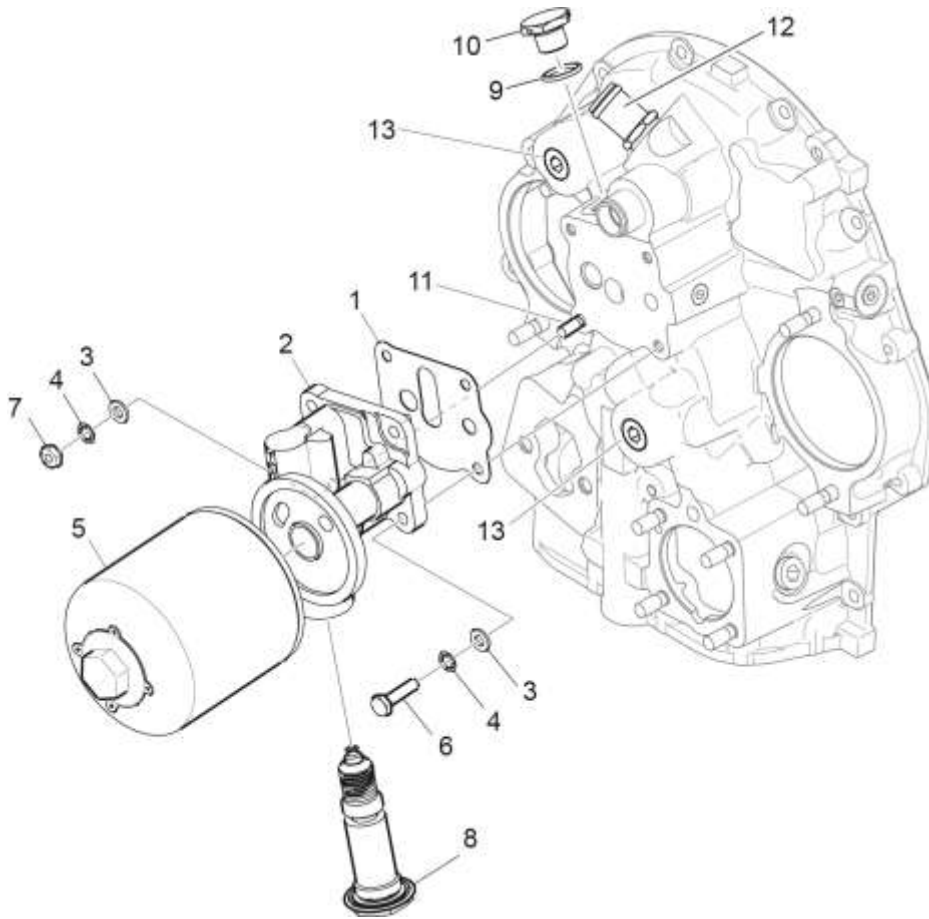


Figure 17A
Oil Filter Assembly, Oil Cooler Bypass Valve, and Breather Fitting

ACCESSORY DRIVES
**Figure 17A – Oil Filter Assembly, Oil Cooler Bypass Valve,
and Breather Fitting**

Figure Item	Code	Part Number	Description	Units per Assembly
1		06B23862	GASKET, Oil filter adapter	2
2		77852	OIL FILTER BASE ASSEMBLY	1
3		STD-8	WASHER, 1/4 plain	4
4		STD-160	WASHER, 1/4 lock, internal teeth	4
5		LW-13215	OIL FILTER, short, (ALU-CH48110-1)	1
6		LW-25-1.00	BOLT, 1/4-20 x 1.00 long, hex. head, drilled	3(1)
7		STD-1411	NUT, 1/4-20 plain	1
8	*	53E22144	VALVE ASSEMBLY, Temperature control oil cooler bypass	1
9		06E19769-0.63	GASKET, Annular, 5/8 I.D.	1
10		62417	PLUG, Oil cooler bypass	1
11		25C-10	STUD, 1/4-20 x 1-1/4 long	1
12		71140	FITTING, Breather	1
13		STD-784	PLUG, 3/8-18 NPT, Allen head	2

* Ship loose with engine.

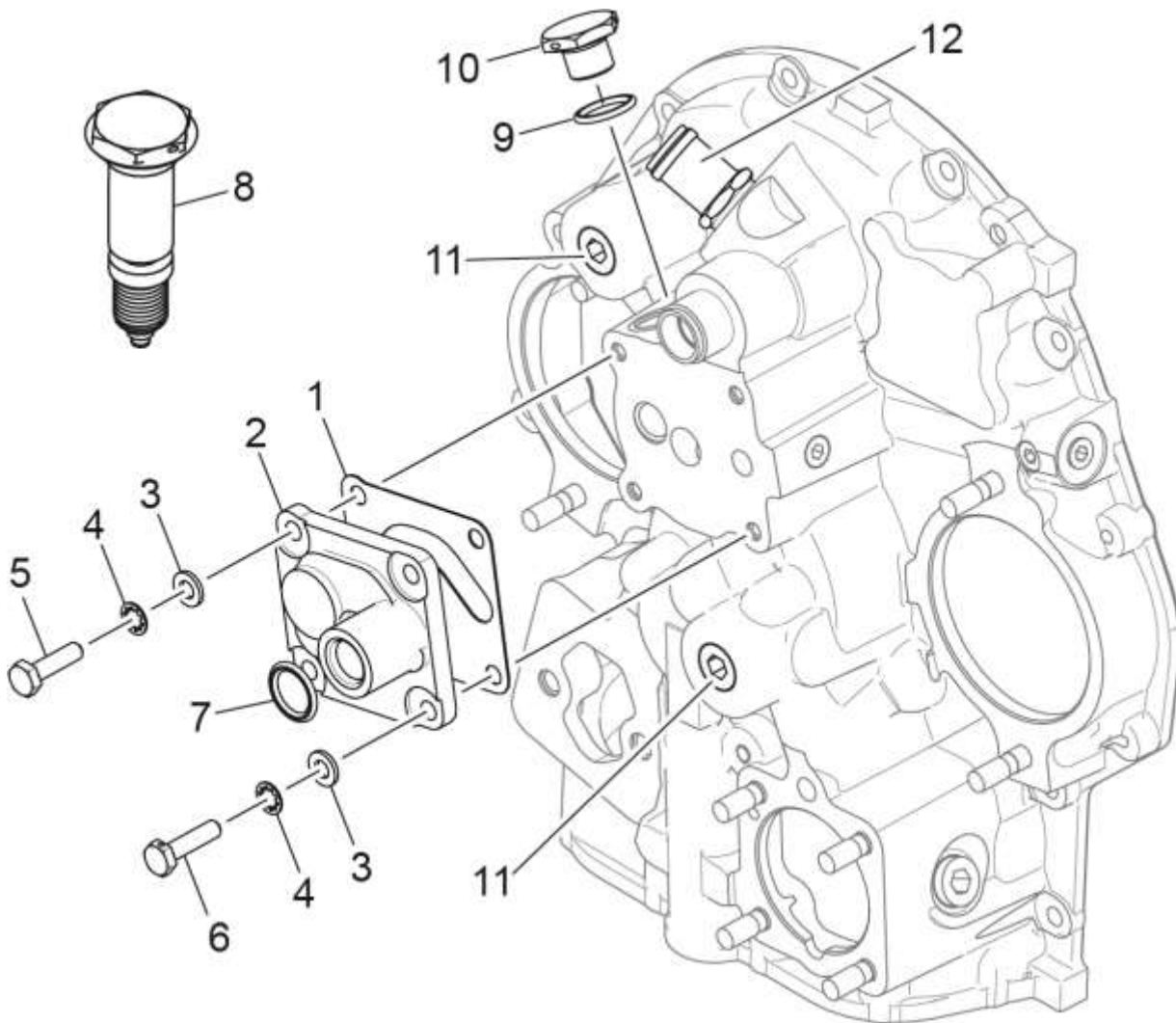


Figure 17B
Oil Filter Base Cover, Oil Cooler Bypass Valve, and Breather Fitting

ACCESSORY DRIVES
Figure 17B – Oil Filter Base Cover, Oil Cooler Bypass Valve,
and Breather Fitting

Figure Item	Code	Part Number	Description	Units per Assembly
1		06B21644	GASKET, Oil filter base cover	1
2		21M23736	COVER, Oil filter base	1
3		STD-8	WASHER, 1/4 plain	4
4		STD-160	WASHER, 1/4 lock, internal teeth	4
5		LW-25-0.94	BOLT, 1/4-20 x 15/16 long, hex. head	3
6		LW-25H1.00	BOLT, 1/4-20 x 1.00 long, hex. head, drilled	1
7		06E19769-0.63	GASKET, Annular, 5/8 I.D.	1
8	*	53E22144	VALVE ASSEMBLY, Temperature control oil cooler bypass	1
9		06E19769-0.63	GASKET, Annular, 5/8 I.D.	1
10		62417	PLUG, Oil cooler bypass	1
11		STD-784	PLUG, 3/8-18 NPT, Allen head	2
12		71140	FITTING, Breather	1

* Ship loose with engine.

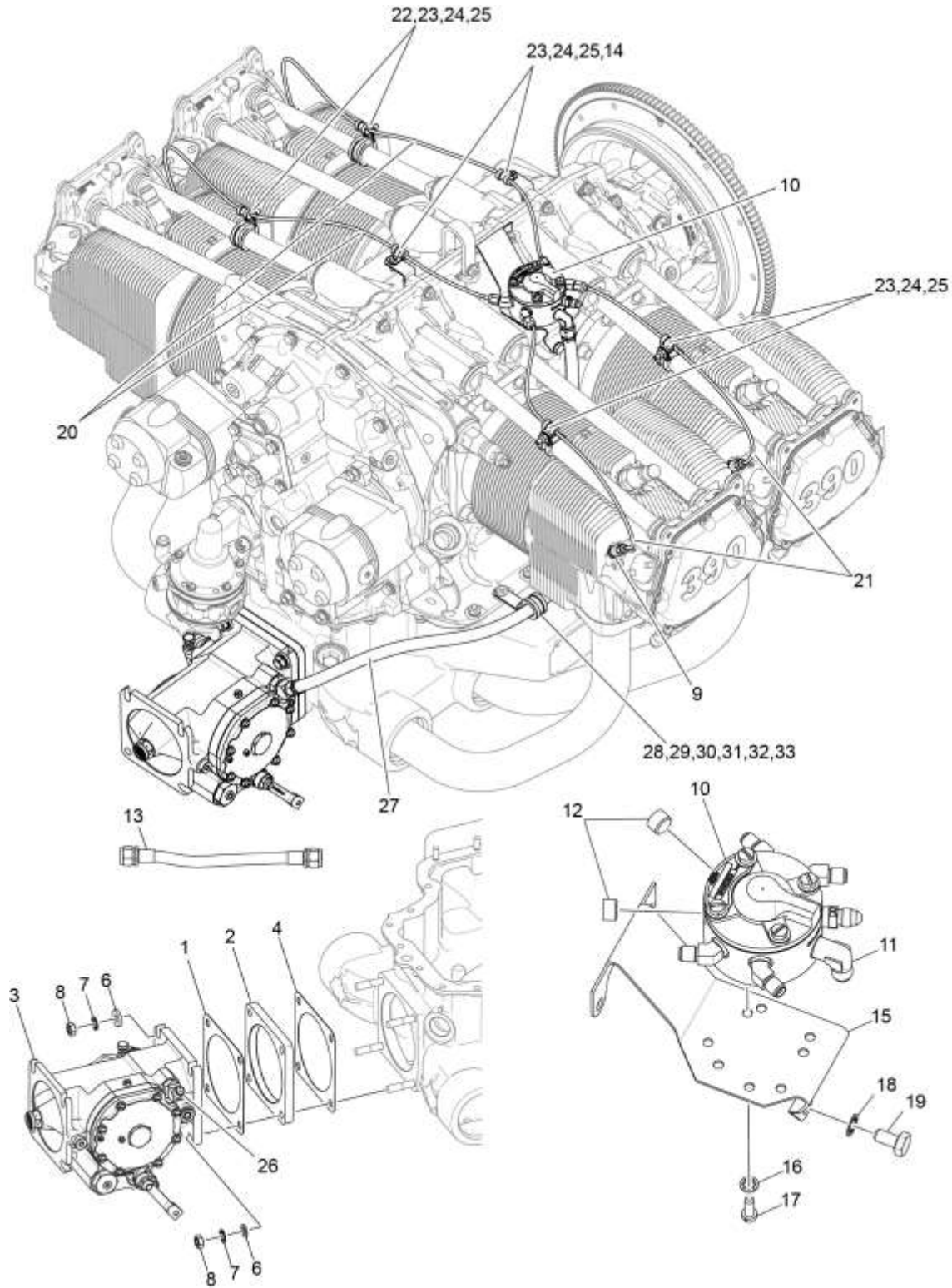


Figure 18
Fuel Injector, Fuel Lines, Manifold Assembly, and Pressure Line

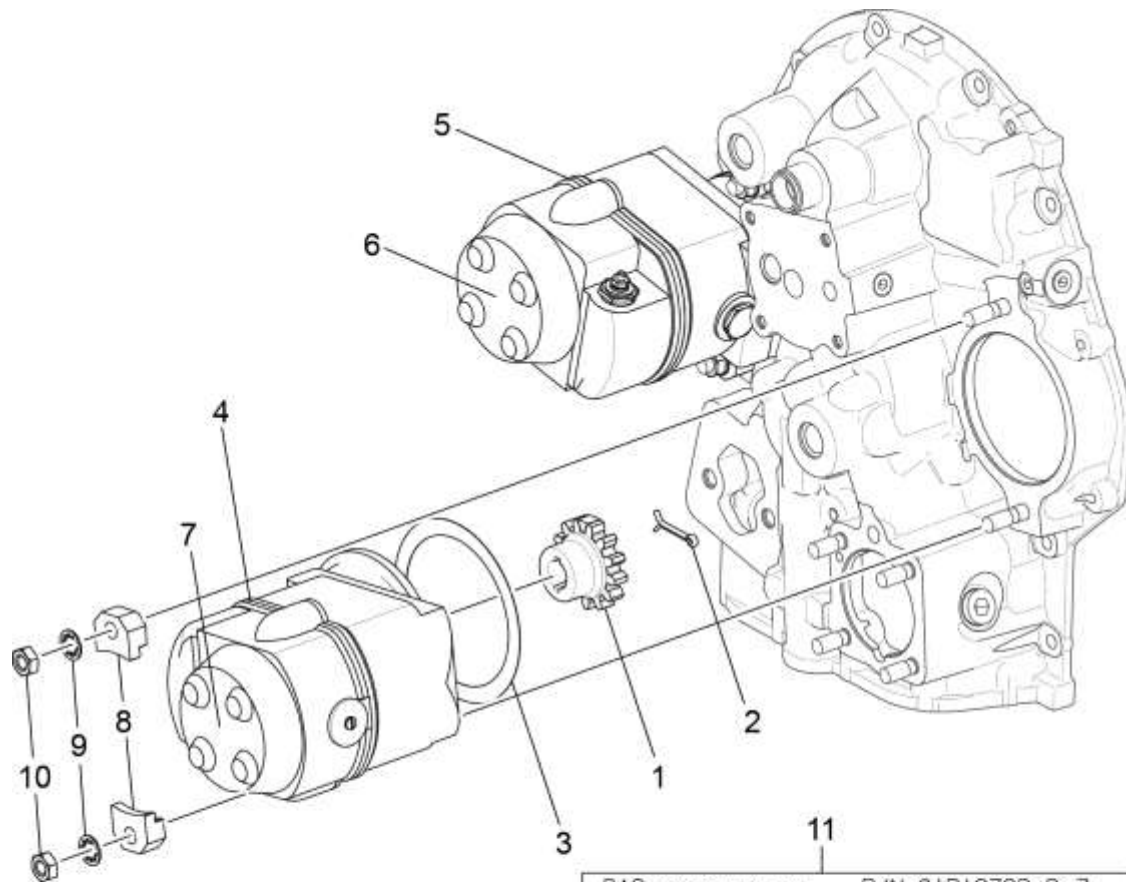
FUEL DISTRIBUTION**Figure 18 – Fuel Injector, Fuel Lines, Manifold Assembly, and Pressure Line**

Figure Item	Code	Part Number	Description	Units per Assembly
1		73032	GASKET, Air inlet housing	1
2		77654	SPACER, Fuel Injector	1
3		61M28300	INJECTOR, Fuel (RSA-10ED1) AV2581200	1
4		73032	GASKET, Air inlet housing	2
5		STD-35	WASHER, 5/16 plain	2
6		STD-1727	WASHER, Plain, 3/4 O.D. x 11/32 I.D. x 1/8 thick	2
7		STD-475	WASHER, 5/16 lock, internal teeth	4
8		STD-1410	NUT, 5/16-18, plain	4
9		72377	Elbow, 3/8 flared tube	1
10		63B26702	MANIFOLD ASSEMBLY	1
11		MS20822-4	ELBOW, 1/4 tube, 1/8 NPT, 90°	1
12		1102	PLUG, 1/8 pipe	2
13		LW-12798-4S274	HOSE ASSEMBLY, 1/4 hose, straight	1
14		73136	BRACKET, extension, fuel injector line	6
15		75009	BRACKET, Fuel manifold	1
16		STD-251	WASHER, No. 10, internal lock	4
17		STD-82	SCREW, No. 10-24 x 1/2 long, fill. head	4
18		STD-160	WASHER, 1/4 lock, internal teeth	1
19		LW-25-0.50	BOLT, 1/4-20 x 1/2 long, hex head	1
20		LW-12098-0-140	TUBE ASSEMBLY, Fuel injector line, Cyl Nos. 1 and 3	2
21		LW-12098-0-210	TUBE ASSEMBLY, Fuel injector line, Cyl Nos. 2 and 4	2
22		LW-16266-10-75	CLAMP	4
23		LW-16266-10-13	CLAMP, 1/8 diameter for No. 10 screw	6
24		STD-860	SCREW, No. 10-32 x 5/8 long, fill. head	6
25		STD-670	LOCKNUT, No. 10-32	6
26		63C26450	NOZZLE, Injection, low (AV2524864-2)	4

FUEL DISTRIBUTION**Figure 18 – Fuel Injector, Fuel Lines, Manifold Assembly, and Pressure Line (Cont.)**

Figure Item	Code	Part Number	Description	Units per Assembly
27		LW-12799-6S074	HOSE ASSEMBLY, 3/8 hose, straight	1
28		73152	BRACKET, Support clamp	1
29		LW-16266-10-63	CLAMP, 5/8 I.D. x #10 screw	1
30		STD-692	SCREW, No. 10-32 x 1/2 long, round head	1
31		STD-425	WASHER, No. 10 plain	1
32		STD-670	LOCKNUT, No. 10-32	1
33		76304	ELBOW, 45°	1

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BAG-HARNESS ATTACHING		P/N 01P19762-2-7
PART NO.	NAME	QTY
LW-16266-25-25	CLAMP-ONE WIRE	4
LW-14060	CLIP-TWO WIRE	4
STD-8	WASHER-.250 PLAIN	8
72815	BRACKET-90 DEGREES	3
STD-1874	SCREW-.250-20 X .81 LG. FILL.	4
76734	ZIP STRAP	12
LW-16266-25-50	CLAMP	3
STD-1411	NUT-.250-20 PLAIN	1
STD-698	WASHER-.250 PLAIN (THIN)	4
STD-1916	SCREW-.250-20 X 1.13 LG. FIL HD	1
STD-1925	SCREW-.250-20 X .83 LG. PAN HD	2
72815	BRACKET-SUPPORT CLAMP-90 DEGRE	3
73152	BRACKET-SUPPORT CLAMP	2
STD-692	SCREW-#10-32 X .50 LG. RD. HD.	5
STD-425	WASHER-#10 PLAIN	5
STD-670	LOCKNUT-#10-32	5
LW-M-2375	SET OF 2 PLATES-SPARK PLUG CABLE-2 WIRE	2

Figure 19
Magnetos, Magneto Drives, and Harnesses

DISTRIBUTION
Figure 19 – Magnetos, Magneto Drives, and Harnesses

Figure Item	Code	Part Number	Description	Units per Assembly
1		68C19622	GEAR, Magneto	2
2		MS9245-44	COTTER PIN, 3/32 diameter x 5/8 long	2
3		LW-12681	GASKET, Magneto	2
4		66GP-0SANN	MAGNETO, Plain 4370	1
5		66GR15SANN	MAGNETO, Retard 4345	1
6	V	67P20413	HARNESS ASSEMBLY, Slick, Left, V M4019	1
7	V	67P20412	HARNESS ASSEMBLY, Slick, Right, V M4020	1
8		66M21195	CLAMP, Magneto	4
9		STD-475	WASHER, 5/16 lock, internal teeth	4
10		STD-1410	NUT, 5/16-18 plain	4
		01P19762-2-7	BAG, Harness attaching	1

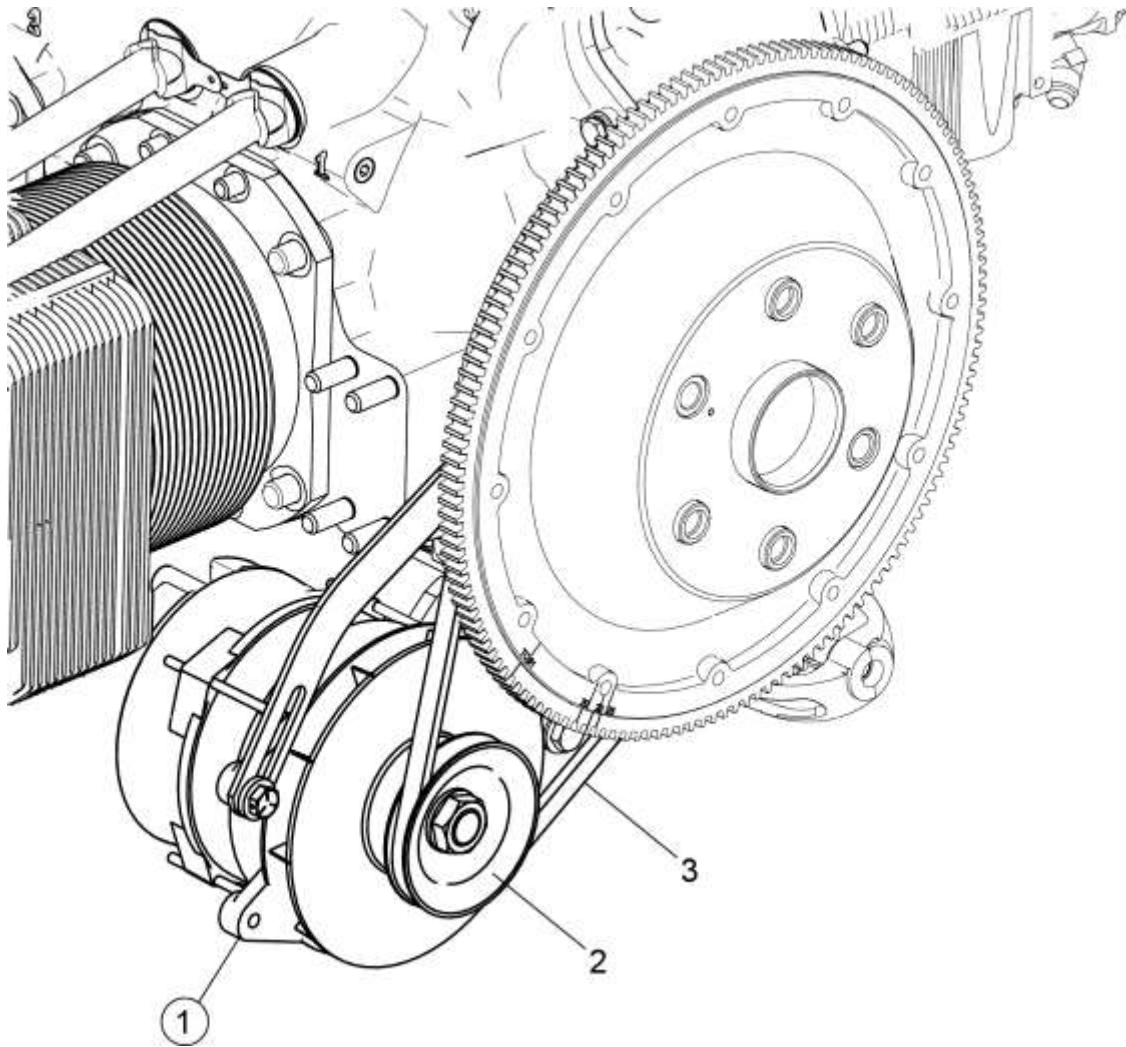


Figure 20
Alternator Assembly

DISTRIBUTION
Figure 20 - Alternator Assembly

Figure Item	Code	Part Number	Description	Units per Assembly
1	❖	32C19553	ALTERNATOR ASSEMBLY, 24 volt, 70 amp. (ALU-8521-LS)	1
		32C19568	ALTERNATOR ASSEMBLY, 24 volt, 70 amp. (K TYPE)	1
2	❖	36B19484	PULLEY, Alternator	1
3	❖	37A19773-376	BELT, Alternator drive, 3/8 wide	1
❖ Shipped loose with engine				

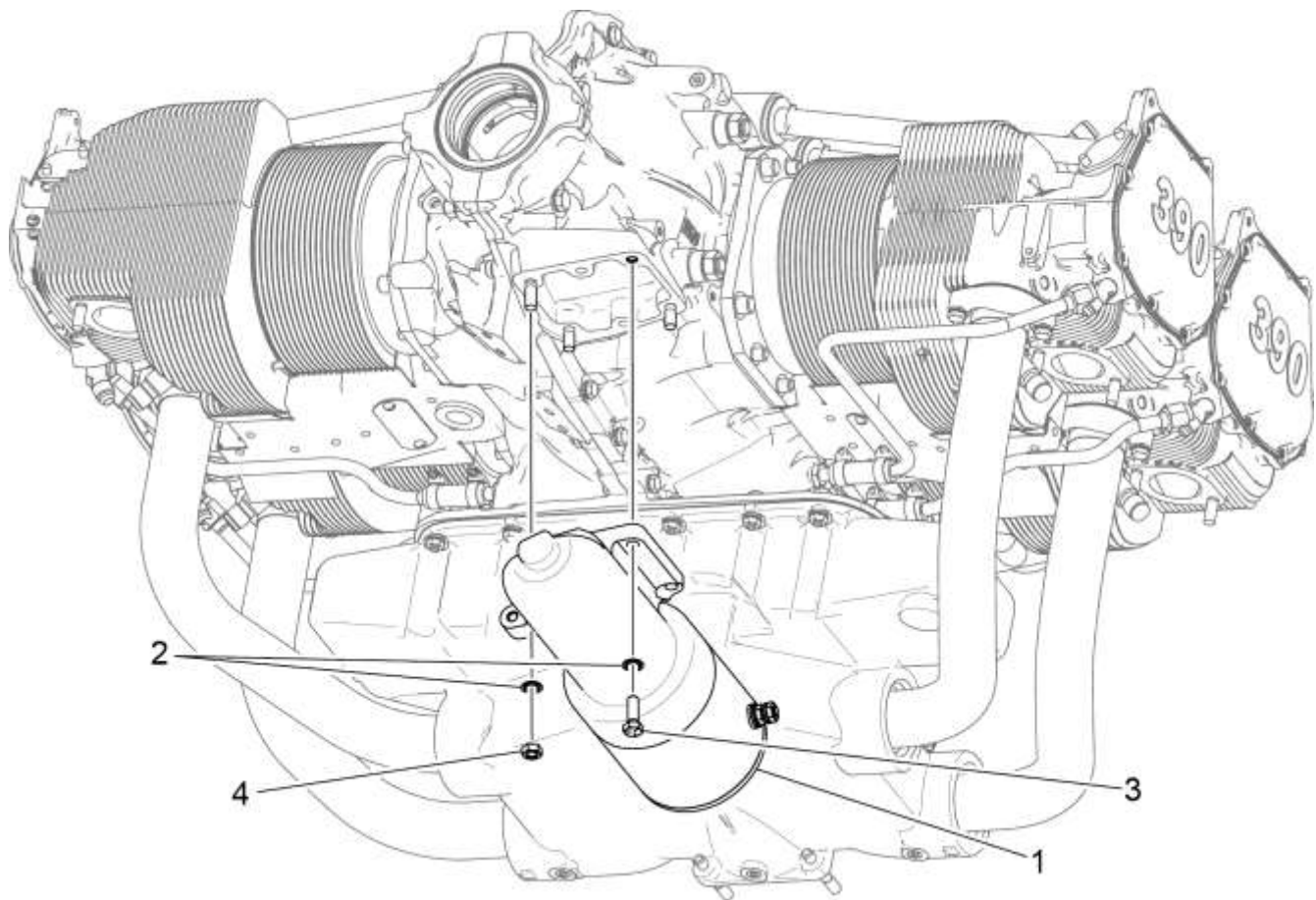


Figure 21
Starter Motor and Attaching Parts

CRANKING

Figure 21 - Starter Motor and Attaching Parts

Figure Item	Code	Part Number	Description	Units per Assembly
1		31B22111	STARTER, Sky-Tec (149-24HT)	1
2		STD-475	WASHER, 5/16 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

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

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SERVICE KIT SECTION

Seal and Gasket Set

PART NO.	PART NAME	Qty.
05K26640	KIT - SEAL AND GASKET SET	1
AN901-8A	GASKET, Metal tube connect seal	1
LW-12681	GASKET, Magneto	2
LW-13353	GASKET, Oil sump	1
LW-14260	SEAL, Oil, tachometer drive	1
LW-15628	SEAL, Oil, crankshaft	1
LW-18639	LOCKPLATE, Crankshaft gear	1
LW-18661	SEAL, Shroud tube	8
06A19956	SEAL, OIL 7/8 I.D. x 1-1/2 O.D. x 5/16	1
06A23493	SEAL, Shroud tube	8
06B23862	GASKET, Oil filter adapter	2
06E19769-0.63	GASKET, Annular, 5/8	1
06E19769-1.00	GASKET, Annular, 1.00	1
06E19769-1.25	GASKET, Annular, 1-1/4 I.D.	1
8313	GASKET, Vacuum pump	1
60096	GASKET, Fuel pump	1
61183	GASKET, Accessory adapter	1
62224	GASKET, Carburetor	1
66732	GASKET, Valve rocker shaft cover	8
67193	GASKET, Rocker box cover	4
68315	GASKET, Accessory drive adapter	1
71481	RING, Oil seal, 3/32 diameter x 4-27/32 I.D.	4
71973	GASKET, 2 bolt flange, 1-13/16 I.D.	4
72053	GASKET, Governor	1
72059	GASKET, Oil level gage	1
72075	SEAL, Oil, 3/32 section x 29/64 I.D.	2
72091	RING, Oil seal, 23/64 I.D. x 7/64 diameter	2
73818	GASKET, Accessory housing	1
74068	RING, Oil level gage plug	1
75118	GASKET, Exhaust flange	4
77569	RING, Seal, intake pipe	4
SSP-115	STICKER	1

SERVICE KIT SECTION
Cylinder, Piston and Ring Assembly

PART NO.	PART NAME	Qty.
05K26625	KIT - CYLINDER, PISTON AND RING ASSEMBLY	1
16A26081	CYLINDER AND HEAD ASSEMBLY	1
72343	STABILIZER, Cylinder head fins, 15 teeth	1
72344	STABILIZER, Cylinder head fins, 26 teeth	1
17A23946	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
LW-10077	SEAT, Valve spring, upper intake	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 type)	1
14E23911	PISTON, 8.9:1 compression ratio	1
14G22050	RING, Compression	2
14H23148	RING, Piston oil regulating (expander type)	1
71481	RING, Oil seal, 3/32 diameter x 4-27/32 I.D.	1
14J22048	PIN, Piston	1
72198	PLUG, Piston pin	2
66732	GASKET, Valve rocker shaft cover	2
67193	GASKET, Rocker box cover	1
71973	GASKET, 2 bolt flange, 1-13/16 I.D.	1
06A23493	SEAL, Shroud tube	2
75118	GASKET, Exhaust flange	2
77569	RING, Seal, intake pipe	1
LW-18661	SEAL, Shroud tube	2
1102	PLUG, 1/8-27 NPT, allen head	1
SSP-115	STICKER	1

Numerical Index

Part No.	Part Name	Page No.	Part No.	Part Name	Page No.
07A19474	BRACKET	1	72703	TUBE Assy	21
1102	PLUG	3	72710	COVER	19
1102	PLUG	15	72834	COVER	21
1102	PLUG	23	73027	TUBE Assy	21
1102	PLUG	25	73032	GASKET	37
1102	PLUG	27	73136	BRACKET	37
1102	PLUG	37	73152	BRACKET	38
60009	KEY	17	73383	LOCKPLATE	1
60096	GASKET	31	73818	GASKET	27
60803	STRAP	11	74465	SPACER	3
61084	SPRING	5	74494	PLATE	19
61174	SHAFT	29	74808	TUBE Assy	21
61400	STUD	25	74887	SPACER	19
61503	SLEEVE	17	74996	GEAR Assy	9
62417	PLUG	33	75009	BRACKET	37
62417	PLUG	35	75060	BOLT	13
65614	PLUG	21	75072	GEAR Assy	9
66670	BUSHING	15	75118	GASKET	15
66732	GASKET	19	75337	BAFFLE Assy	21
67193	GASKET	19	75338	BAFFLE Assy	21
68668	SPRING	5	75380	LINK	1
69106	COVER	31	76118	SPACER	9
69551	GASKET	31	76119	SHIELD	27
70484	SCREEN	25	76121	SHAFT Assy	9
71133	NUT	19	76304	ELBOW	38
71134	NUT	19	76534	SHIM	1
71140	FITTING	33	77467	SPRING	5
71140	FITTING	35	77569	RING	23
71481	RING	19	77654	SPACER	37
71549	WASHER	19	77808	VALVE Assy	5
71611	RETAINER	21	77852	OIL FLTER BASE Assy	33
71973	GASKET	23	78531	BODY Assy	29
72075	SEAL	5	79002	PIPE	23
72091	RING	5	01A22453	STUD	11
72198	PLUG	13	01A23544	STUD	3
72343	STABILIZER	15	01L23459	WASHER	17
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