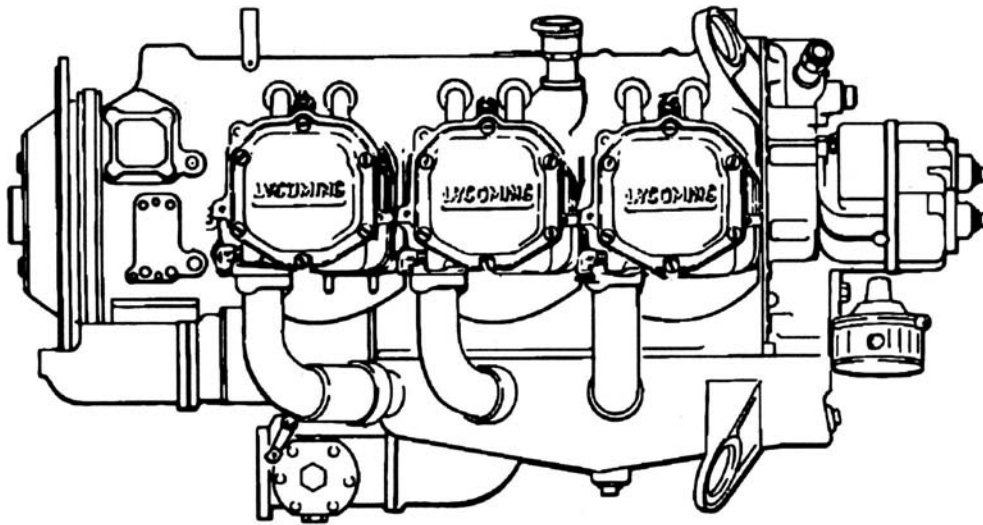


LYCOMING

Engine Parts Catalog



IO-540-W Series

Wide Cylinder Flange Crankcase Model Engine

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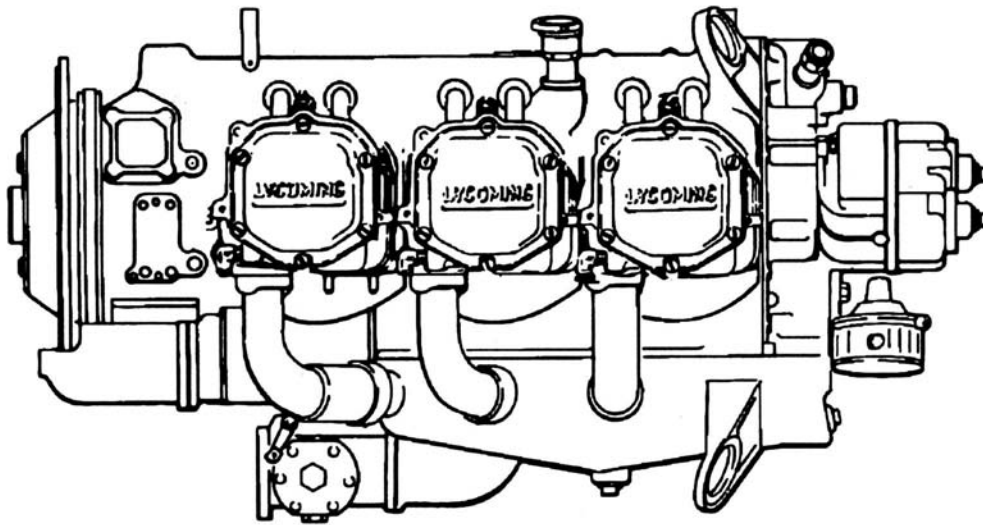
October 1993

Part No. PC-615-4

652 Oliver Street
Williamsport, PA 17701

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Engine Parts Catalog



IO-540-W Series

Wide Cylinder Flange Crankcase Model Engine

LYCOMING

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Part No. PC-615-4

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INTRODUCTION

This illustrated parts catalog contains a complete parts listing for the Lycoming IO-540-W1A5, -W1A5D and -W3A5D wide cylinder flange crankcase model aircraft engines.

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

A Service Kits Section and an Oversize and Undersize Parts List are included to aid in ordering parts as necessary during overhaul.

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

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

NOTE

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

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

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

SERVICE BULLETINS, INSTRUCTIONS AND LETTERS

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

HOW TO ORDER PARTS

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

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

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OVERSIZE AND UNDERSIZE PARTS LISTING

PART NO.	DESCRIPTION	OVERSIZE								UNDERSIZE		
		P02 .002	P05 .005	P10 .010	P15 .015	P20 .020	P30 .030	P40 .040	P50 .050	M03 .003	M06 .006	M10 .010
61681	GUIDE	See Latest Revision of Service Instruction No. 1256.										
66610	BUSHING		X	X								
66796	INSERT			X								
69796	DOWEL		X									
71903-A,-B	BUSHING	See Latest Revision of Service Instruction No. 1143.										
72057	SEAT			X		X	X					
72058	SEAT			X		X	X					
72155-S	BUSHING		X	X	X	X						
73810	BUSHING	See Latest Revision of Service Instruction No. 1142.										
73857	RING			X		X						
74230	GUIDE	See Latest Revision of Service Instruction No. 1256.										
74241	RING			X								
75656-S	BUSHING		X	X	X	X						
75657-S	BUSHING		X	X	X	X						
LW-13521	BEARING			X						X*	X*	X*
LW-13792	SEAL	See Latest Revision of Service Instruction No. 1324.										
LW-13884	BEARING				X					X	X	X
LW-15278	BEARING				X					X	X	X
STD-2078	DOWEL	X	X	X	X							
18A19441	BEARING				X					X	X	X

* - Also available in P10 oversize.

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

NOTE

When ordering oversize and undersize parts, be sure to specify the required oversize and undersize dimension along with the proper part number. For example, to order bearing P/N LW-13884 in .003 undersize, order P/N LW-13884-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, CRANKSHAFT AND CAMSHAFT GROUP CRANKCASE ASSEMBLY

FIG. REF. 1	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	11E20000-D1	CRANKCASE ASSEMBLY (See Note)			1	1
	11E20000-S1	CRANKCASE ASSEMBLY (See Note)		1		
2	LW-13794	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 11/26 long, hollow	2			
13	72158	BUSHING, Governor drive idler shaft	1			
14	STD-1339*	PLUG, 1/16-27 NPT, Allen head	7			
15	1102	PLUG, 1/8-27 NPT, Allen head	4			
16	31C-14	STUD, 5/16-18 x 1-3/4 long				4
17	31C-16	STUD, 5/16-18 x 2.00 long		4	4	

* - One at governor pad, six at piston squirt holes.

NOTE

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

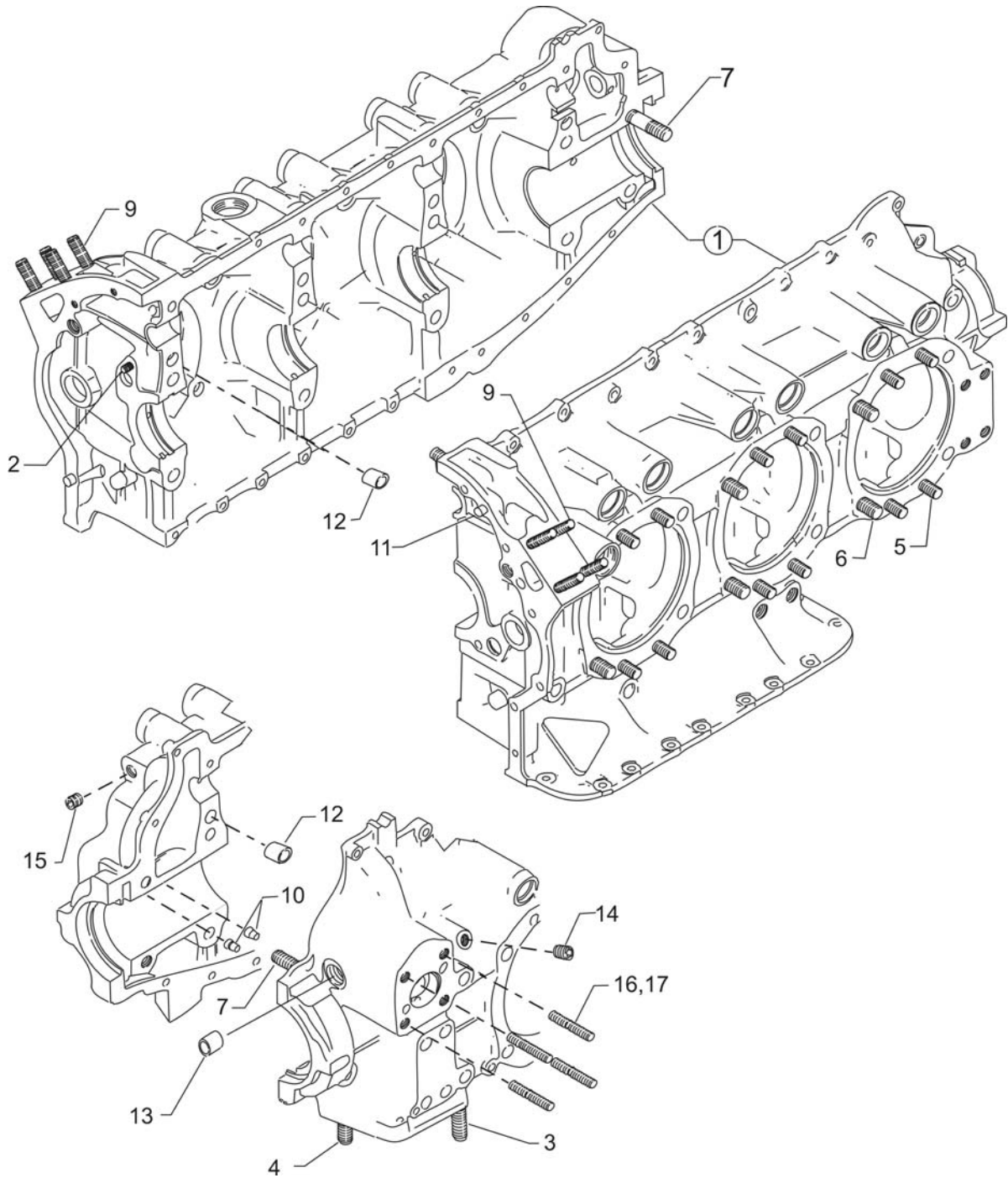


FIGURE 1. CRANKCASE ASSEMBLY

CRANKCASE, CRANKSHAFT AND CAMSHAFT GROUP
OIL LEVEL GAGE AND ENGINE MOUNTING BRACKETS

FIG. REF. 2	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	70457	GASKET, Oil filler extension	1			
2	75675	EXTENSION, Oil filler, short	1			
3	74065	RING, Oil level gage seal	1			
4	LW-14800	GAGE ASSEMBLY, Oil level	1			
5	12A19770	BRACKET, Engine mounting (dynafocal)	4			
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			

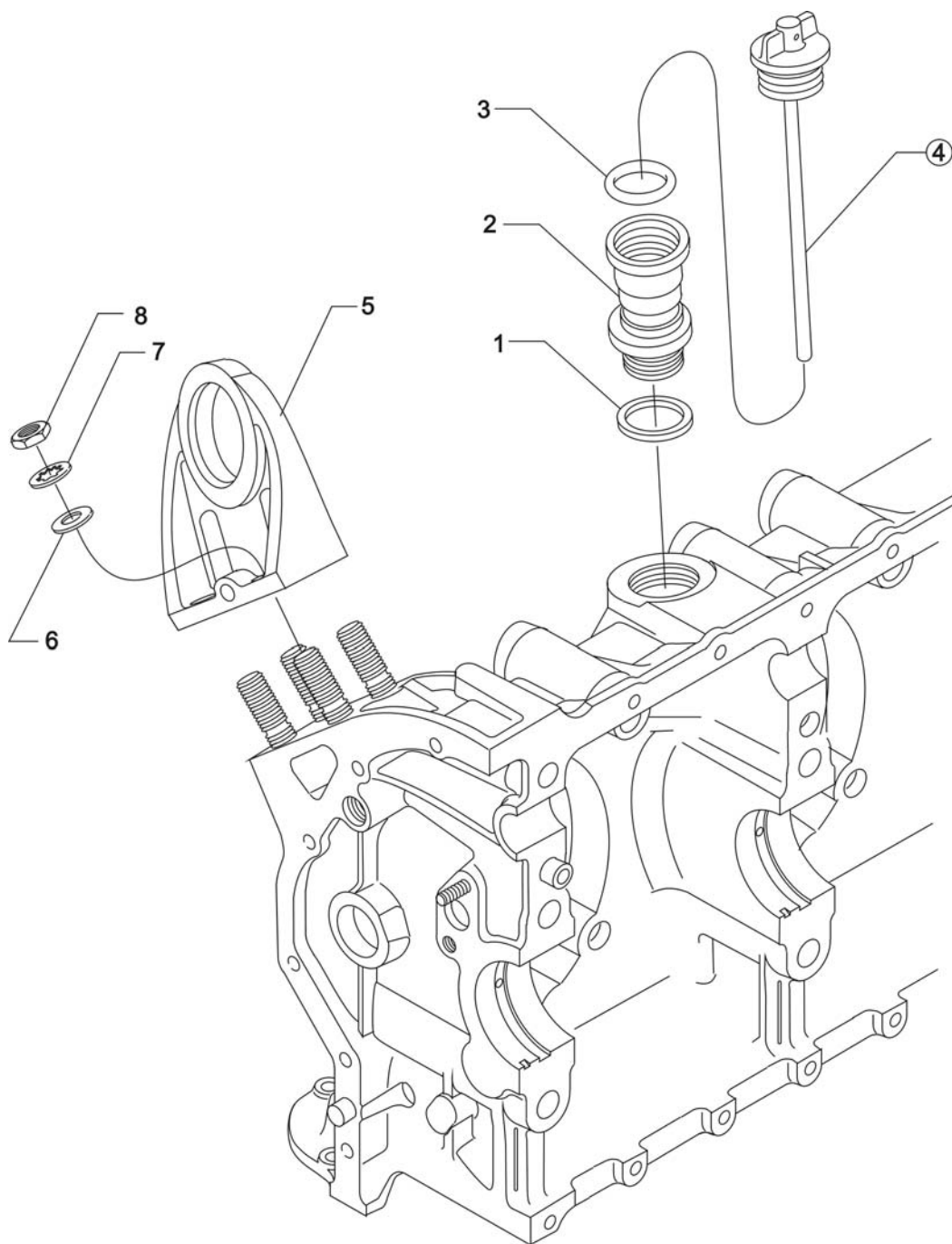


FIGURE 2. OIL LEVEL GAGE AND ENGINE MOUNTING BRACKETS

CRANKCASE, CRANKSHAFT AND CAMSHAFT GROUP CRANKCASE RELATED PARTS

FIG. REF. 3	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	1028-B	BALL, 11/16 diameter	1			
2	68668*	SPRING, Oil pressure relief valve	1			
	61084*	SPRING, Oil pressure relief valve	1			
	77467*	SPRING, Oil pressure relief valve	1			
	LW-11713*	SPRING, Oil pressure relief valve	1			
	LW-18085*	SPRING, Oil pressure relief valve	1			
3	06E19769-1.25	GASKET, 1-1/4 I.D. x 1-1/2 O.D. x 3/32 annular	1			
4	77808	VALVE ASSEMBLY, Oil pressure relief, adjustable	1			
5	76159	PLUG, Oil relief valve	1			
6	LW-15278	BEARING, Crankshaft	6			
7	LW-13884	BEARING, Crankshaft, front	2			
	18A19441	BEARING, Crankshaft, front (alternate)	2			
8	LW-13792**	SEAL, Crankshaft oil	1			
9	72091	RING, Oil seal	2			
10	72877	BODY, Hydraulic tappet	12			

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

** - Refer to the latest revision of Service Instruction No. 1324 for installation.

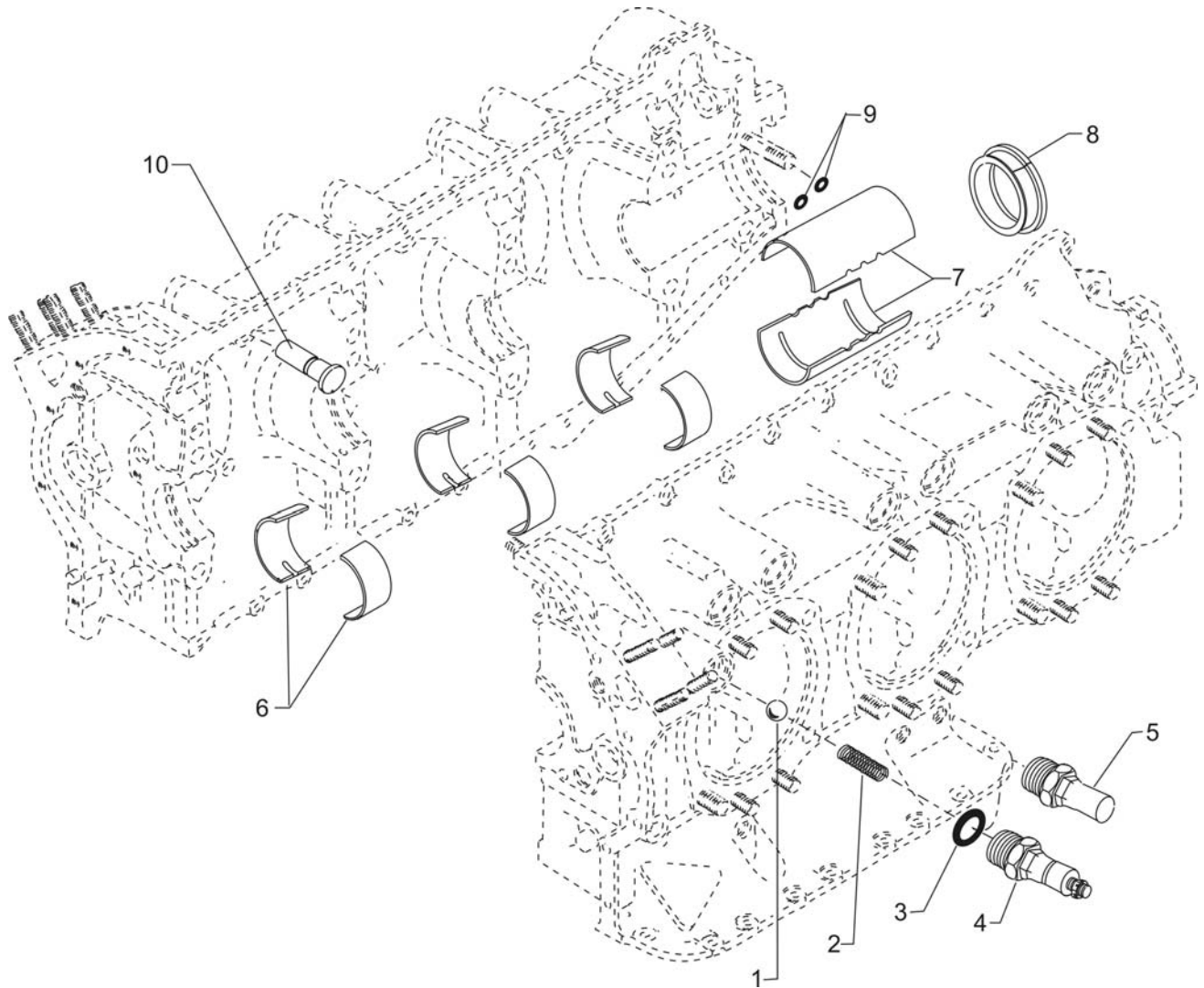


FIGURE 3. CRANKCASE RELATED PARTS

CRANKCASE, CRANKSHAFT AND CAMSHAFT GROUP CRANKSHAFT AND COUNTERWEIGHT ASSEMBLY AND RELATED PARTS

FIG. REF. 4	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	05K27684	CRANKSHAFT AND COUNTERWEIGHT ASSEMBLY		1	1	
	05K27685	CRANKSHAFT AND COUNTERWEIGHT ASSEMBLY				1
	05K27687	CRANKSHAFT AND COUNTERWEIGHT ASSEMBLY		1		
2	13E27627	CRANKSHAFT AND BUSHING ASSEMBLY			1	1
	13E27628	CRANKSHAFT AND BUSHING ASSEMBLY		1		
3	STD-1211	PLUG, 2.00 diameter expansion	1			
4	73810*	BUSHING, Crankshaft, dynamic counterweight	4			
5	61510	PLUG, 1-3/4 O.D.	1			
6	75656-S	BUSHING, Propeller flange, long	4			
7	72155-S	BUSHING, Propeller flange, short	1			
8	75657-S	BUSHING, Propeller flange, indexing	1			
9	STD-2078	DOWEL, 3/8 O.D. x 1/2 long			1	1
10	STD-1065	DOWEL, Stepped, 5/16 and 1/4 diameter x 35/64 long		1		
11	LW-19227**	COUNTERWEIGHT ASSEMBLY		2	2	
	LW-19210**	COUNTERWEIGHT ASSEMBLY				2
12	71903♦	BUSHING, Dynamic counterweight	4			
13	72797**	ROLLER, Dynamic counterweight, 6.3 order		2	2	
	76788**	ROLLER, Dynamic counterweight, 6.3 order				2
14	72965**	ROLLER, Dynamic counterweight, 5.1 order		2	2	
	LW-15558**	ROLLER, Dynamic counterweight, 5.1 order				2
15	LW-14820	RING, Internal retaining	8			
16	71907	WASHER, Dynamic counterweight	8			
17	13S19649†	GEAR, Crankshaft			1	1
18	13S19647†	GEAR, Crankshaft		1		
19	LW-10332	LOCKPLATE, Crankshaft gear			1	1
20	LW-18638	LOCKPLATE, Crankshaft gear		1		
21	AN8-14A	BOLT, 1/2-20 UNF x 1-19/32 long			1	1
22	STD-2209	BOLT, 5/16-24 x 1-3/4 long		1		

* - See latest revision of Service Instruction No. 1142 for application.

** - See latest revision of Service Instruction No. 1012 for application.

♦ - See latest revision of Service Instruction No. 1143 for application.

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

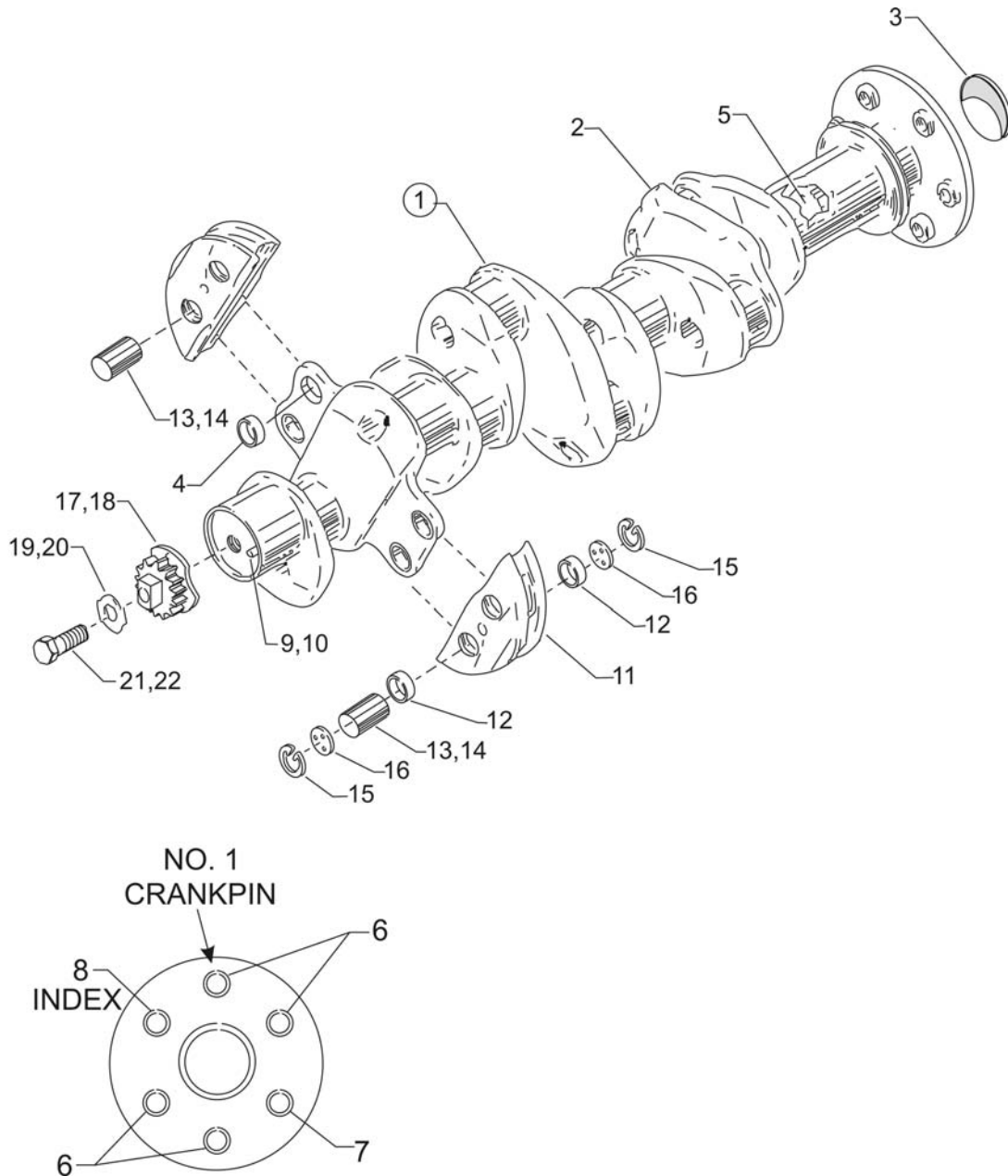


FIGURE 4. CRANKSHAFT AND COUNTERWEIGHT ASSEMBLY AND RELATED PARTS

CRANKCASE, CRANKSHAFT AND CAMSHAFT GROUP
CAMSHAFT AND RELATED PARTS

FIG. REF. 5	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
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	1			

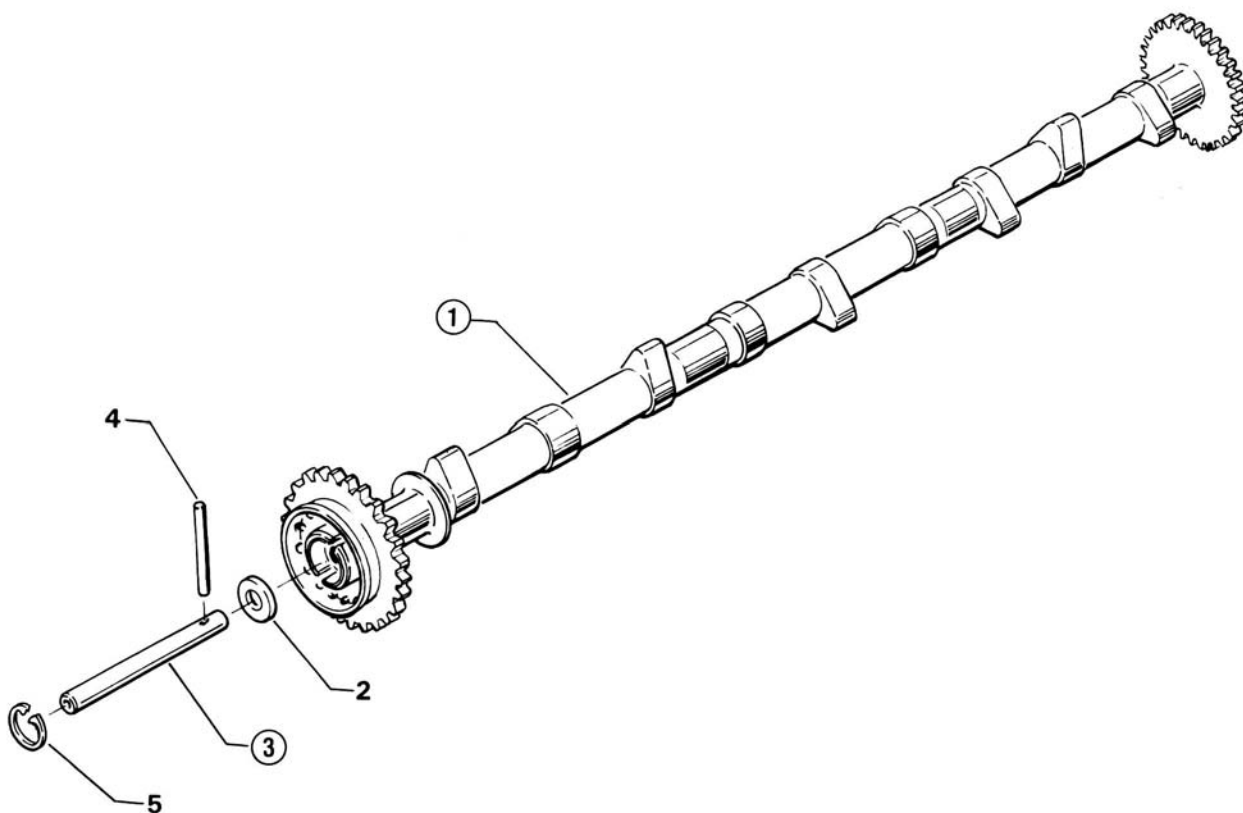


FIGURE 5. CAMSHAFT AND RELATED PARTS

CRANKCASE, CRANKSHAFT AND CAMSHAFT GROUP PROPELLER GOVERNOR DRIVE ASSEMBLY

FIG. REF. 6	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
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	73249	WASHER, Thrust (.0585 - .0595 thick)	AR			
	73250	WASHER, Thrust (.062 - .063 thick)	AR			
	73251	WASHER, Thrust (.0655 - .0665 thick)	AR			
	73252	WASHER, Thrust (.069 - .070 thick)	AR			
	01L21418	WASHER, Thrust (.055 thick)	AR			
8	AN565B1032H5*	SET SCREW, No. 10-32 x 5/16 long	1			
9	78589**	PLUG, Propeller governor idler shaft				1
	74058**	PLUG, Propeller governor drive gear				1
10	70455	GASKET, 25/32 I.D. x 1-1/8 O.D. x 1/16 thick	1			
11	LW-13896	PLUG, 3/4-16 hex. head	1			
12	72053	GASKET, Governor	1			
13	72378	COVER, Governor drive	1			
14	03D19447	COVER, Propeller governor pad				1
15	STD-35	WASHER, 5/16 plain (Woodward Governor)	20			
	STD-35	WASHER, 5/16 plain (AN Governor)				4
16	STD-475	WASHER, 5/16 lock, internal teeth	4			
17	STD-1410	NUT, 5/16-18 plain	4			
18	72377	ELBOW, 3/8 flared tube, adjustable, 90°				1
19	MS29512-06	“O” RING				1

* - For alternate set screw and installation information, see latest revision of Service Instruction No. 1343.

** - Governor plugs are used on engines not employing a front propeller governor drive.

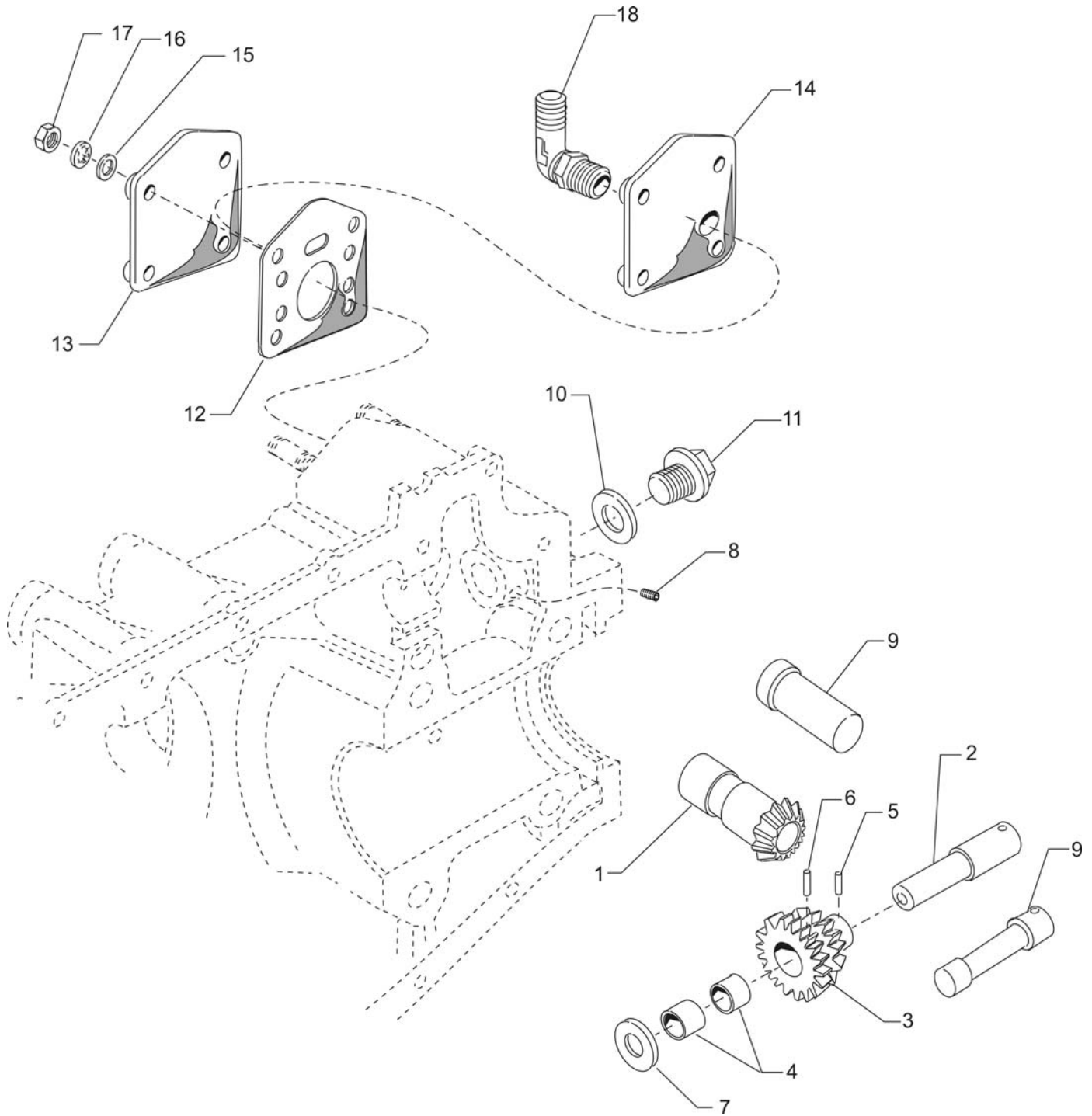


FIGURE 6. PROPELLER GOVERNOR DRIVE ASSEMBLY

CRANKCASE, CRANKSHAFT AND CAMSHAFT GROUP CRANKSHAFT IDLER GEAR

FIG. REF. 7	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	61544	PLUNGER, Fuel pump, long	1			
2	LW-10290	GEAR ASSEMBLY, Crankshaft idler			1	1
3	LW-10299	SHAFT, Crankshaft idler gear			1	1
4	LW-10659	GEAR ASSEMBLY, Crankshaft idler			1	1
5	LW-10299	SHAFT, Crankshaft idler gear			1	1
6	LW-10325	SPACER, Idler gear			1	1
7	71652	GEAR ASSEMBLY, Crankshaft idler		1		
8	67530	BUSHING, Crankshaft idler gear		1		
9	71668	GEAR ASSEMBLY, Crankshaft idler plain		1		
10	67530	BUSHING, Crankshaft idler gear		1		
11	LW-13795	SHAFT, Crankshaft idler gear		2		
12	STD-2167	SCREW, 5/16-18 x 7/8 long, hex. head, drilled		3		
13	STD-2168	NUT, 5/16-18 NC-3, slotted shear		1		
14	LW-16471	SUPPORT ASSEMBLY, Starter ring gear, 12/14 pitch		1	1	
15	72566	GEAR, Starter ring, 12/14 pitch		1	1	

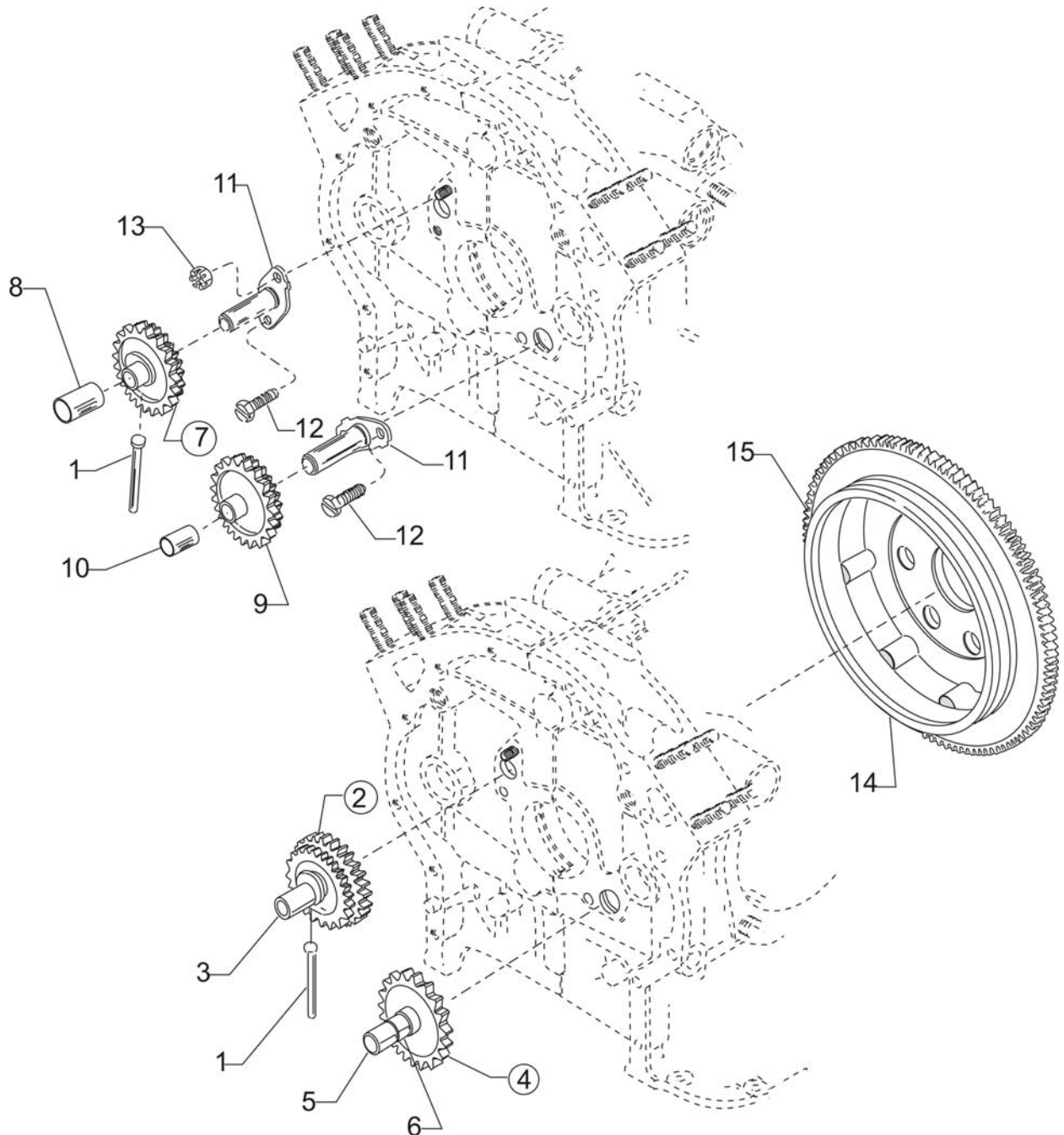


FIGURE 7. CRANKSHAFT IDLER GEARS

CRANKCASE, CRANKSHAFT AND CAMSHAFT GROUP
CRANKCASE ATTACHNG PARTS

FIG. REF. 8	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	LW-25-1.50	BOLT, 1/4-20 x 1-1/2 long, hex. head	8			
2	LW-25-1.88*	BOLT, 1/4-20 x 1-7/8 long, hex. head	1			
3	LW-25-2.00**	BOLT, 1/4-20 x 2.00 long, hex. head	2			
4	STD-8*	WASHER, 1/4 plain	25			
5	60803	STRAP, Lifting	2			
6	LW-25-1.75	BOLT, 1/4-20 x 1-3/4 long, hex. head	1			
7	LW-25-1.13	BOLT, 1/4-20 x 1-1/8 long, hex. head	4			
8	STD-160	WASHER, 1/4 lock, internal teeth	16			
9	STD-1411	NUT, 1/4-20 plain	12			
10	LW-25S1.50	BOLT, 1/4-20 x 1-1/2 long, hex. head	6			
11	STD-8	WASHER, 1/4 plain	18			
12	STD-1409	NUT, 1/4-20, slotted shear	6			
13	STD-33	WASHER, 3/8 plain	1			
14	STD-872	NUT, 3/8-24 slotted	1			
15	AN6-34A	BOLT, 3/8-24 x 3-37/64 long, hex. head	1			
16	STD-33	WASHER, 3/8 plain	3			
17	STD-678	WASHER, 3/8 lock, internal teeth	2			
18	STD-596	NUT, 3/8-24 plain	2			
19	76220	STUD, 1/2-20 x 10-45/64	8			

* - Two STD-8 washers and one LW-25-1.88 bolt assembled in rear top hole in crankcase.

** - Used to attach fuel manifold bracket.

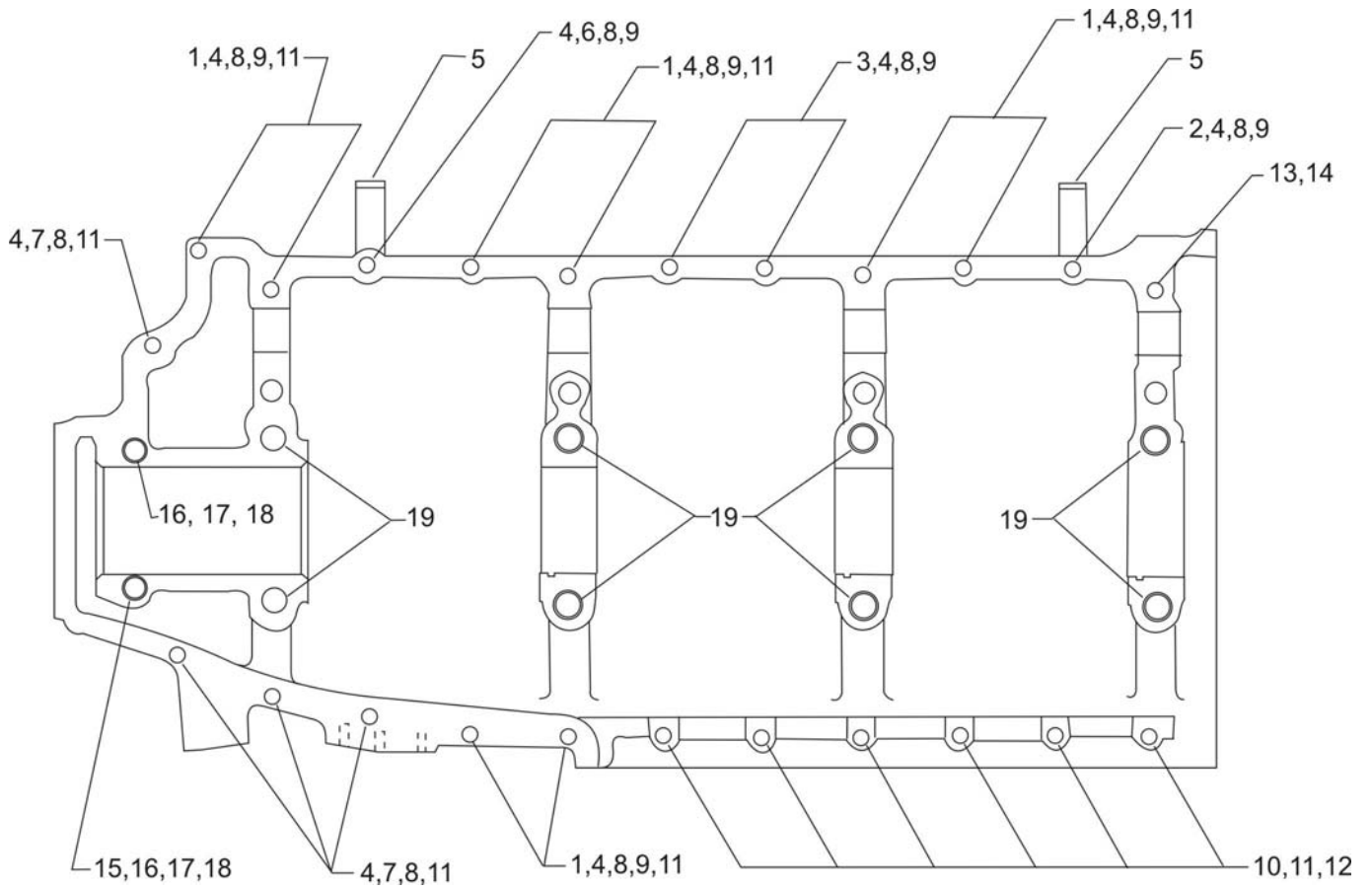


FIGURE 8. CRANKCASE ATTACHING PARTS

ACCESSORY HOUSING AND RELATED PARTS ACCESSORY HOUSING ASSEMBLY

FIG. REF. 9	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	73818	GASKET, Accessory housing	1			
2	21D21607-02	HOUSING ASSEMBLY, Accessory			1	1
	21D21612-01*	HOUSING ASSEMBLY, Accessory				1
	21C21539-02	HOUSING ASSEMBLY, Accessory		1		
3	31CD-20	STUD, 5/16-18 x 2-1/2 long, drilled			3	3
	31CD-17	STUD, 5/16-18 x 2-1/8 long, drilled		3		
4	25C-12	STUD, 1/4-20 x 1-1/2 long			8	8
	25C-12*	STUD, 1/4-20 x 1-1/2 long				4
5	25C-21	STUD, 1/4-20 x 2-5/8 long		4		
6	31C-13	STUD, 5/16-18 x 1-5/8 long			2	2
7	31C-12	STUD, 5/16-18 x 1-1/2 long		4		
8	31C-21	STUD, 5/16-18 x 2-5/8 long		4		
9	31C-17*	STUD, 5/16-18 x 2-1/8 long				4
10	LW-12589	INSERT, Heli-coil, 5/8-18 x 3/8 long			1	1
11	MS124703	INSERT, Heli-coil, 3/4-16 x 1-1/8 long			1	1
12	LW-10341	INSERT, Heli-coil, 1.00-24 x 3/8 long			1	1
13	1102	PLUG, 1/8-27 NPT, Allen head	1			
14	STD-784	PLUG, 3/8-18 NPT, Allen head		1		

* - Used on engines employing a rear propeller governor drive with Woodward or McCauley governors only.

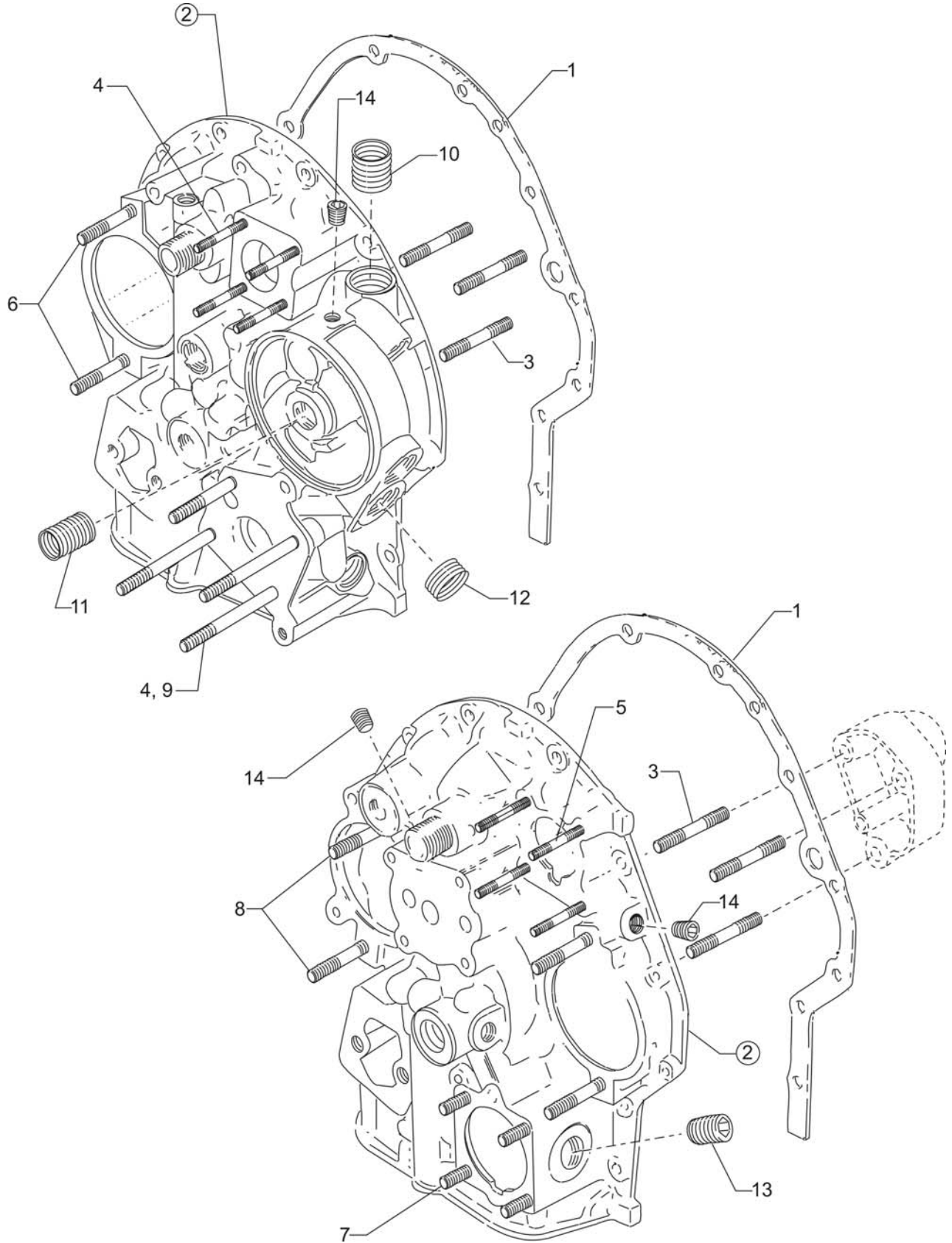


FIGURE 9. ACCESSORY HOUSING ASSEMBLY

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

FIG. REF. 10	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	LW-10344	BODY ASSEMBLY, Oil pump			1	1
	78531	BODY ASSEMBLY, Oil pump		1		
2	60329	SHAFT, Oil pump			1	1
3	STD-714	PIN, 1/8 diameter x 1.00 long, cotter			1	1
4	LW-10318	GEAR ASSEMBLY, Oil pump drive			1	1
5	61166	THRUST BUTTON, Vacuum pump gear			1	1
6	61297	IMPELLER, Oil pump driven			1	1
7	61298	IMPELLER, Oil pump driven			1	1
8	05K19423-S*	OIL PUMP IMPELLER KIT		1		
9	74641	SHAFT, Oil pump drive		1		
10	STD-35	WASHER, 5/16 plain	3			
11	STD-1420	NUT, 5/16-18, slotted	3			
12	LW-14260	SEAL, Tachometer drive, oil	1			
13	STD-8	WASHER, 1/4 plain		10	12	12
14	STD-160	WASHER, 1/4 lock, internal teeth	12			
15	LW-25-0.94	BOLT, 1/4-20 x 15/16 long, hex. head	9			
16	LW-25-1.13	BOLT, 1/4-20 x 1-1/8 long, hex. head		1		
	LW-25-1.25	BOLT, 1/4-20 x 1-1/4 long, hex. head			1	1
17	LW-25-1.50	BOLT, 1/4-20 x 1-1/2 long, hex. head		2		
	LW-25-0.81	BOLT, 1/4-20 x 13/16 long, hex. head			2	2

* - Refer to latest revision of Service Bulletin No. 524.

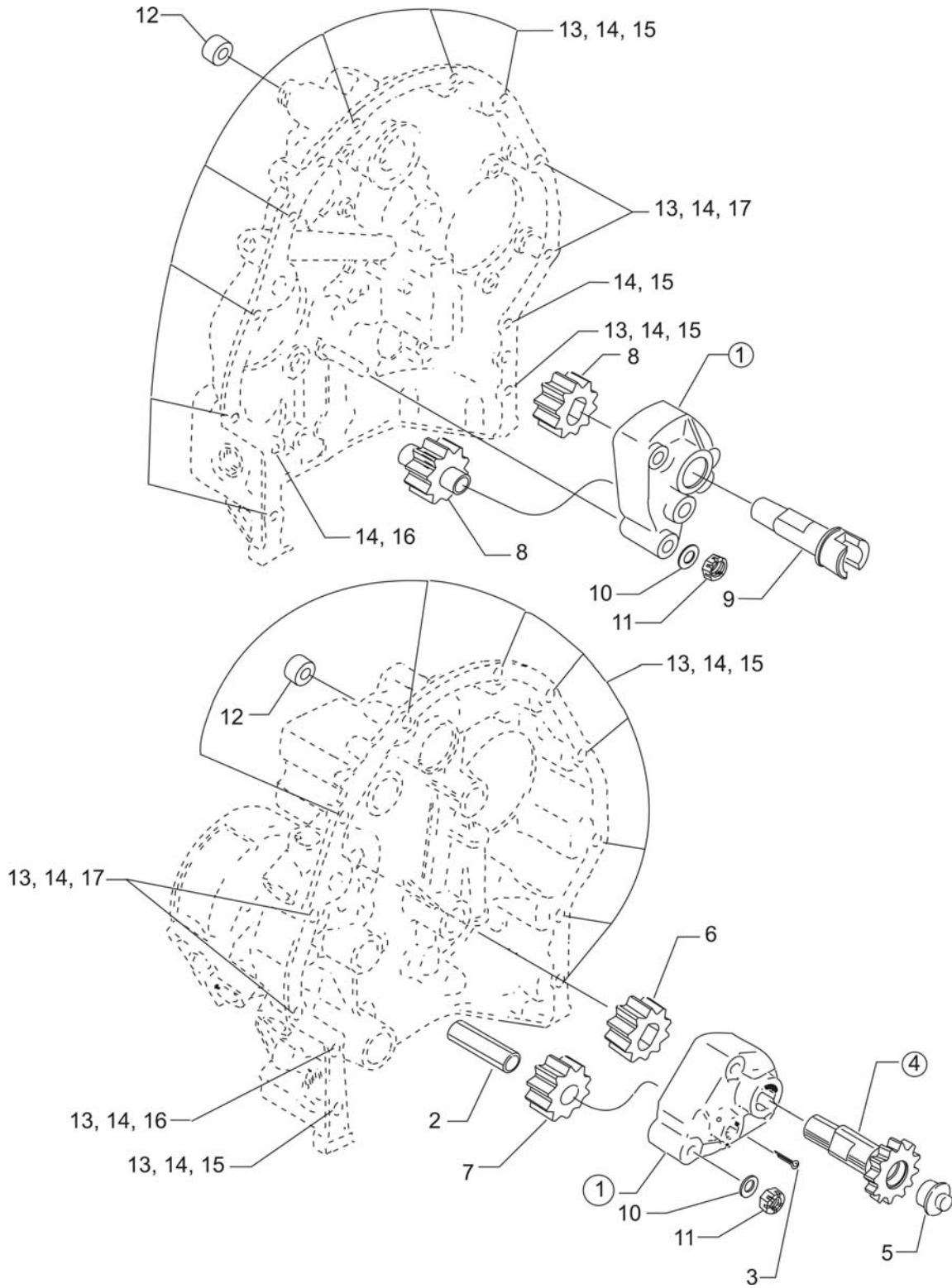


FIGURE 10. OIL PUMP ASSEMBLY AND ACCESSORY HOUSING ATTACHING PARTS

ACCESSORY HOUSING AND RELATED PARTS
FUEL PUMP ASSEMBLY

FIG. REF. 11	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	60096	GASKET, Fuel pump	1			
2	LW-15473	FUEL PUMP, Dual diaphragm (6441234)	1			
3	STD-33	WASHER, 3/8 plain	2			
4	STD-1882	SCREW, 3/8-16 x 1-9/32 long, socket head, drilled head	2			
5	72377	ELBOW, 3/8 tubing, adjustable 90° (fuel pump inlet and outlet)	2			
6	MS29512-06	“O” RING	2			

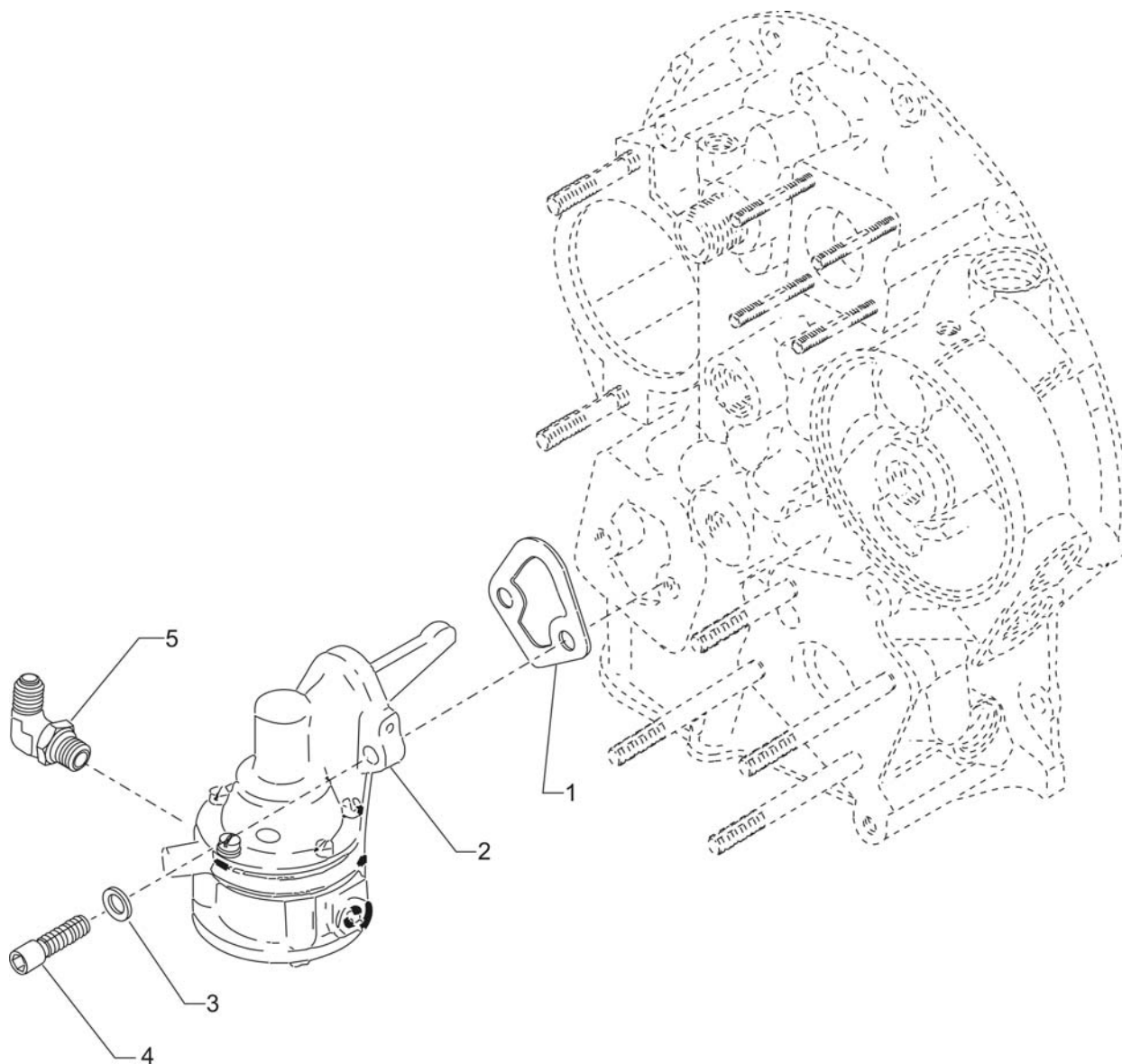


FIGURE 11. FUEL PUMP ASSEMBLY

ACCESSORY HOUSING AND RELATED PARTS
OIL FILTER ASSEMBLY AND OIL COOLER BYPASS VALVE (DUAL MAGNETOS)

FIG. REF. 12	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	05S21021	SPRING, Oil filter bypass valve			1	1
2	55K21022	SPACER, Oil pressure bypass valve			1	1
3	76539	SEAT, Oil relief valve			1	1
4	LW-10320	SLEEVE, Oil filter bypass valve			1	1
5	MS16625-1100	RING, Internal retaining			1	1
6	54D19627*	OIL FILTER, (short – no stud)			1	1
7	LW-13904**	KIT, Converter plate, oil filter			1	1
8	53E19600	VALVE ASSEMBLY, Temperature control oil cooler bypass			1	1
9	76510	GASKET, Valve assembly			1	1

* - See latest revision of SSP-885 for oil filter kits and replacement filters.

** - See latest revision of Service Instruction No. 1453 for service application.

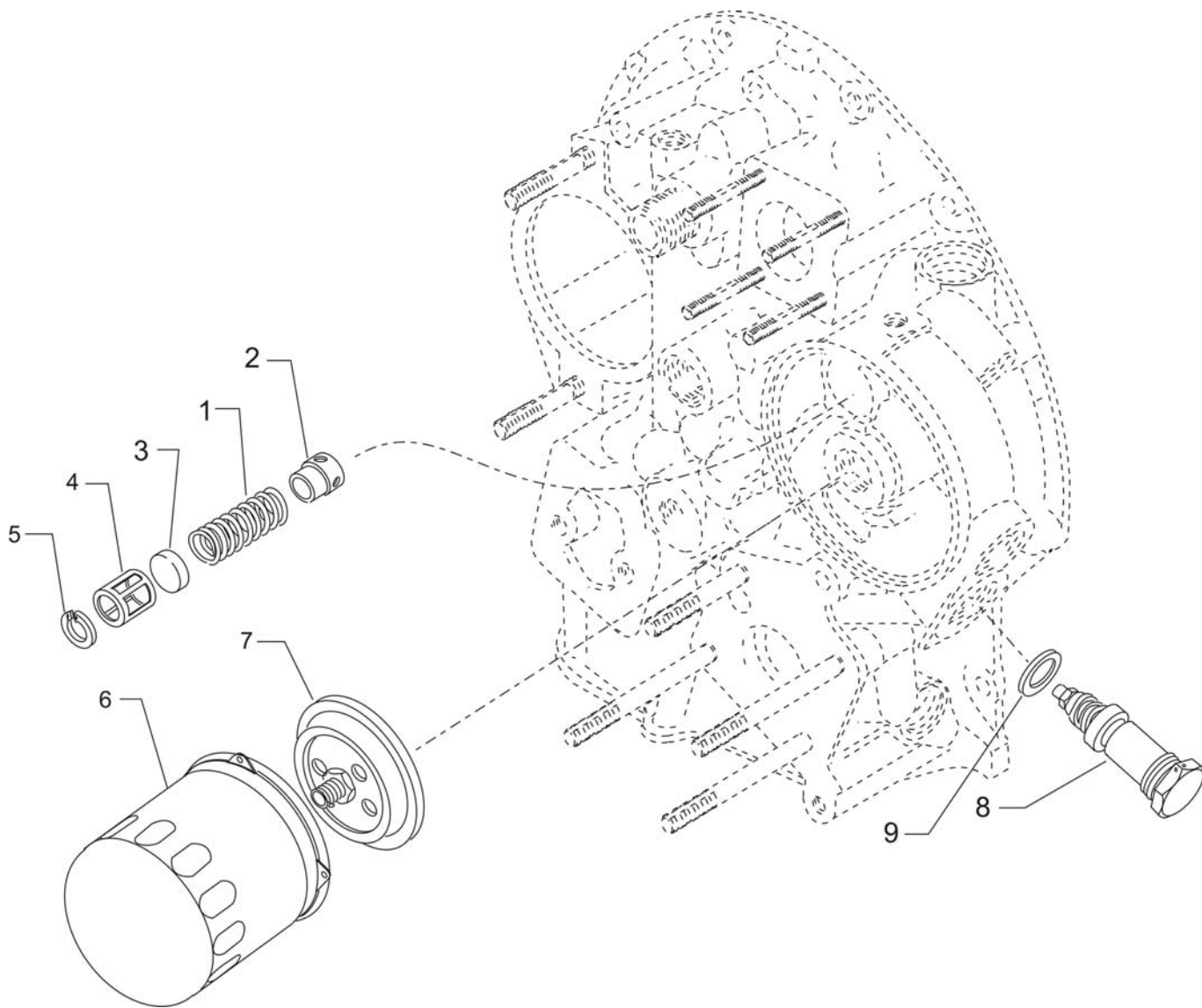


FIGURE 12. OIL FILTER ASSEMBLY AND OIL COOLER BYPASS VALVE (DUAL MAGNETOS)

ACCESSORY HOUSING AND RELATED PARTS OIL COOLER AND BREATHER FITTINGS

FIG. REF. 13	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	72996	FITTING, Breather	1			
2	MS29512-10*	SEAL, Oil, 3/32 section x 45/64 I.D.			1	1
3	AN814-10L*	PLUG, 7/8-14 thread			1	1
4	06E19769-0.63	GASKET, 7/8 O.D. x 5/8 I.D. x 3/32 annular			2	2
5	1540	PLUG, Thermometer well			2	2
6	MS29512-10**	SEAL, Oil, 3/32 section x 45/64 I.D.			2	2
7	AN919-15**	REDUCER, External, 1/8 flared tube to 1/2			2	2
8	06E19769-0.63	GASKET, 7/8 O.D. x 5/8 I.D. x 3/32 annular		1		
9	62417	PLUG, Oil cooler bypass		1		
10	MS20822-8♦	ELBOW, 1/2 flared tube, 3/8 NP		1		
11	AN816-8†	NIPPLE, 1/2 flared tube		1		

* - Accessory oil return.

** - Oil cooler inlet and outlet.

♦ - Lower oil to cooler boss.

† - Oil from cooler boss.

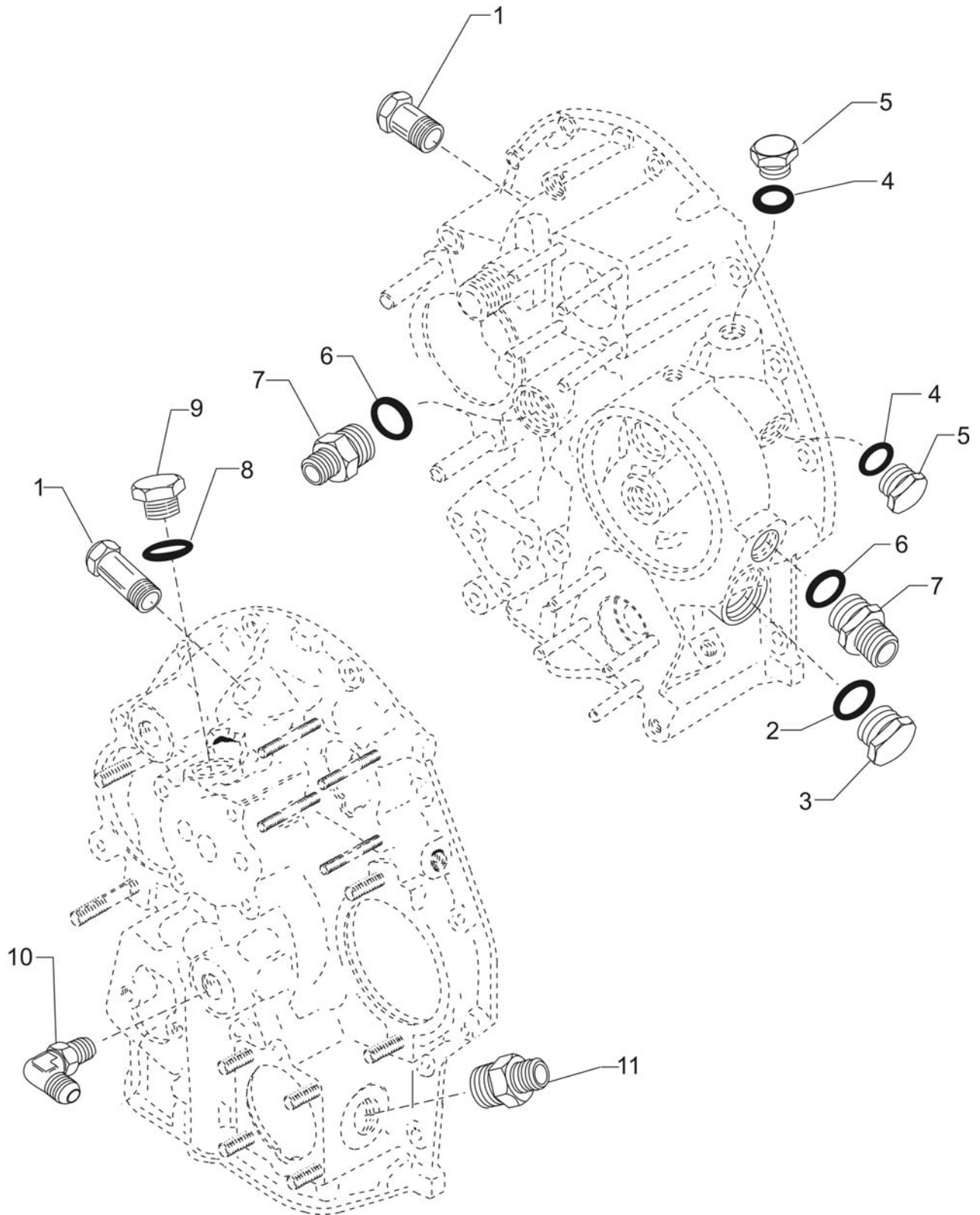


FIGURE 13. OIL COOLER AND BREATHER FITTINGS

ACCESSORY HOUSING AND RELATED PARTS
OIL FILTER ASSEMBLY AND OIL COOLER BYPASS VALVE (W1A5)

FIG. REF. 14	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	LW-12975*	GASKET, Oil filter		2		
2	77852	OIL FILTER BASE ASSEMBLY		1		
3	54D19625*	OIL FILTER		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	STD-1856	SCREW, 1/4-20 x 1.00 long, hex. head		3		
8	53E19600	VALVE ASSEMBLY, Temperature control oil cooler bypass		1		
9	76510	GASKET, Valve assembly		1		
10	25C-10	STUD, 1/4-20 x 1-1/4 long		1		

* - See latest revision of SSP-885 for oil filter kits and replacement filters.

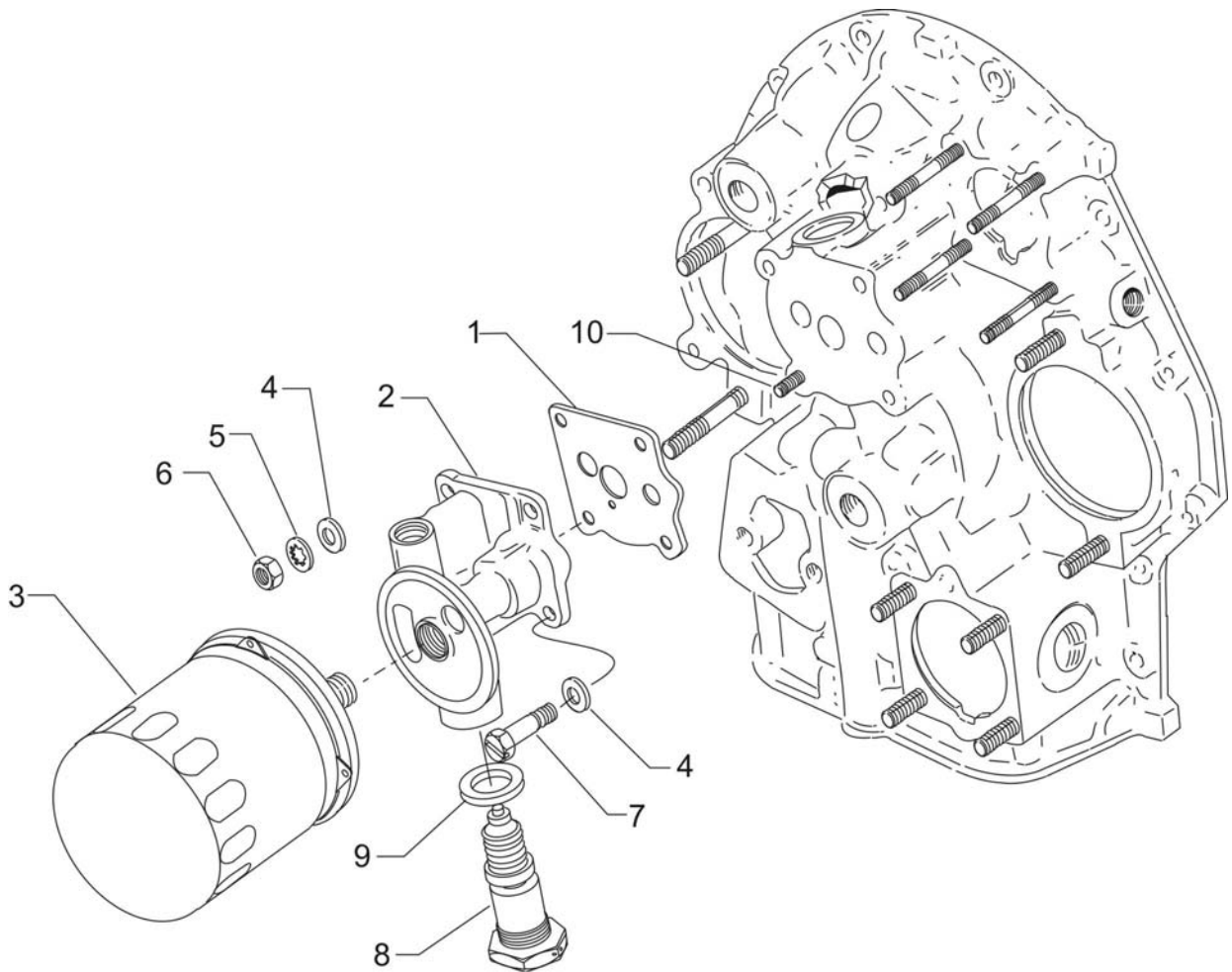


FIGURE 14. OIL FILTER ASSEMBLY AND OIL COOLER BYPASS VALVE (W1A5)

ACCESSORY HOUSING AND RELATED PARTS VACUUM PUMP DRIVES AND COVERS

FIG. REF. 15	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	LW-10307	GEAR ASSEMBLY, Accessory driven			1	1
2	61166	THRUST BUTTON, Vacuum pump gear			1	1
3	71596	WASHER, Accessory drive gear			1	1
4	06A19956	SEAL, Oil, 7/8 I.D. x 1-1/2 O.D. x 5/16 wide			1	1
5	8313	GASKET, Vacuum pump			1	1
6	60430	COVER, Vacuum pump			1	1
7	STD-8	WASHER, 1/4 plain			4	4
8	STD-160	WASHER, 1/4 lock, internal teeth			4	4
9	STD-1411	NUT, 1/4-20 plain			4	4
10	LW-10303	PLUG, Hydraulic pump drive			1	1
11	8313	GASKET, Hydraulic pump			1	1
12	60430	COVER, Hydraulic pump			1	1
13	STD-8	WASHER, 1/4 plain			4	4
14	STD-160	WASHER, 1/4 lock, internal teeth			4	4
15	STD-1411	NUT, 1/4-20 plain			4	4
16	LW-18974*	GEAR ASSEMBLY, Accessory driven				1
17	LW-18995*	THRUST BUTTON, Accessory driven				1
18	71596*	WASHER, Accessory drive gear				1
19	72053*	GASKET, Governor				2
20	LW-12347*	PLATE, Propeller governor pad				1
21	72378*	COVER, Governor drive				1
22	STD-35*	WASHER, 5/16 plain				8
23	STD-475*	WASHER, 5/16 lock, internal teeth				4
24	STD-1410*	NUT, 5/16-18 plain				4
25	74070*	ELBOW, 3/8 flared tube and 9/16-18				1
26	MS29512-06	“O” RING				1

* - Rear propeller governor drive engines for use with Woodward or McCauley governors. See latest revision of Service Instruction No. 1438

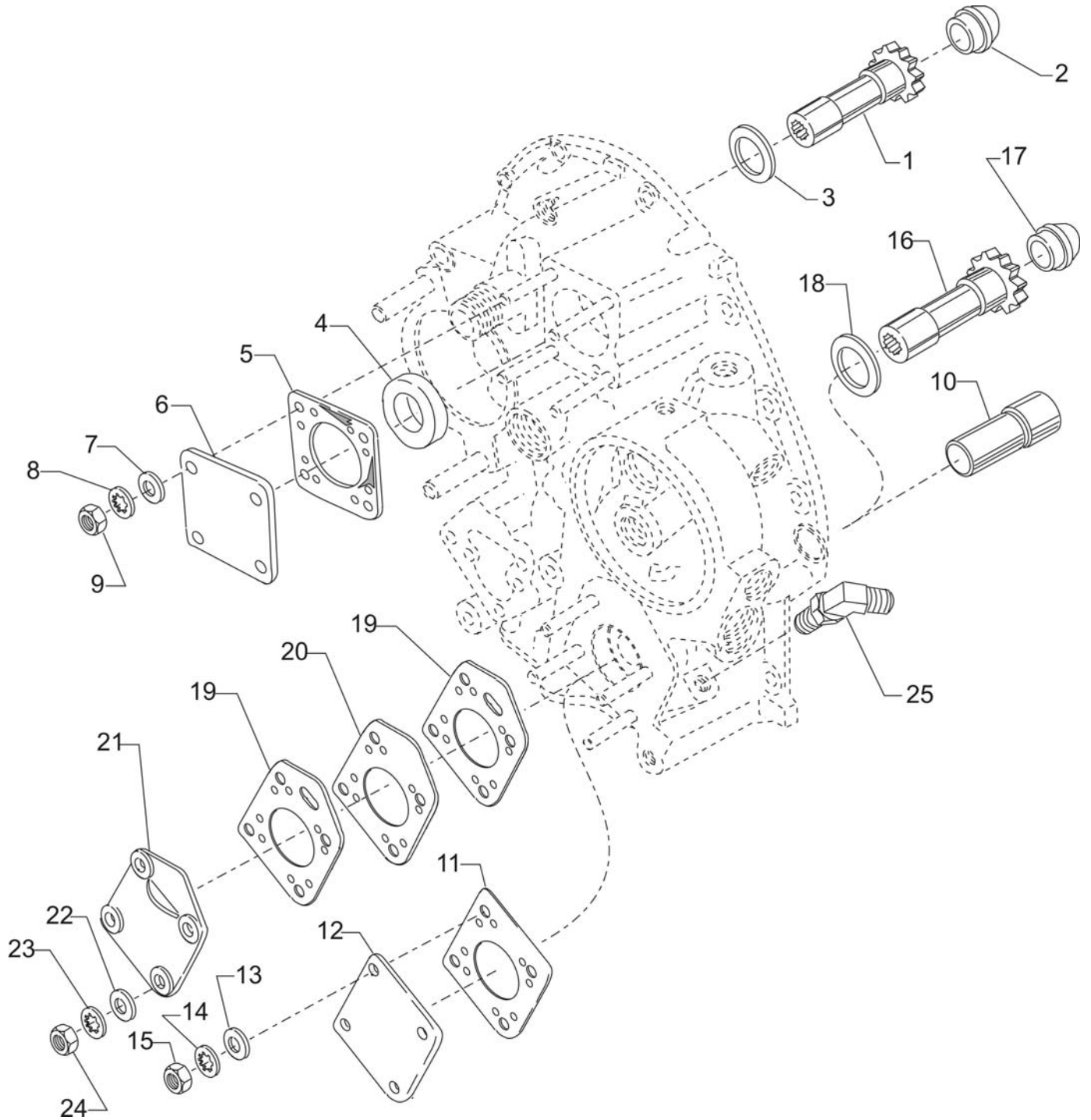


FIGURE 15. VACUUM PUMP DRIVES AND COVERS

ACCESSORY HOUSING AND RELATED PARTS VACUUM PUMP DRIVES AND COVERS (W1A5)

FIG. REF. 16	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	61183	GASKET, Accessory adapter		1		
2	67536	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 wide		1		
5	72974	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	69551	GASKET, Accessory drive adapter		1		
14	69106	COVER, Governor drive adapter pad		1		
15	STD-35	WASHER, 5/16 plain		4		
16	STD-475	WASHER, 5/16 lock, internal teeth		4		
17	STD-1410	NUT, 5/16-18 plain		4		

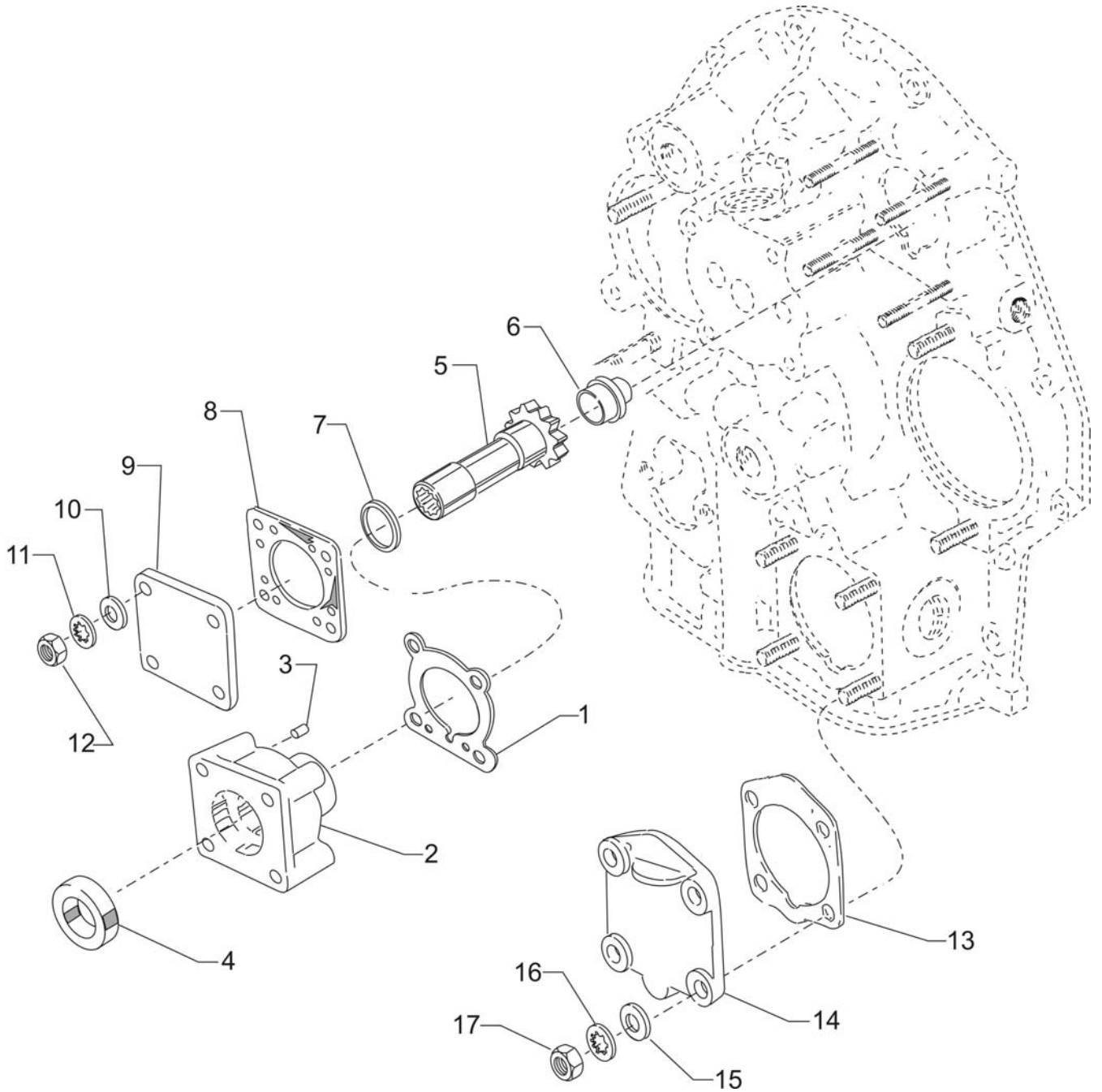


FIGURE 16. VACUUM PUMP DRIVES AND COVERS (W1A5)

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

FIG. REF. 17	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	LW-13865	CONNECTING ROD ASSEMBLY	6			
2	LW-13923	BUSHING, Connecting rod, upper	6			
3	75061	BOLT, Connecting rod	12			
4	LW-12186	NUT, Connecting rod bolt	12			
5	LW-13521	BEARING, Connecting rod	12			
6	LW-13396	PISTON, Compression ratio 8.50:1	6			
7	LW-14068	PIN, Piston	6			
8	60828	PLUG, Piston pin	12			
9	73857	RING, Piston, oil regulating	6			
10	74241	RING, Piston compression	12			

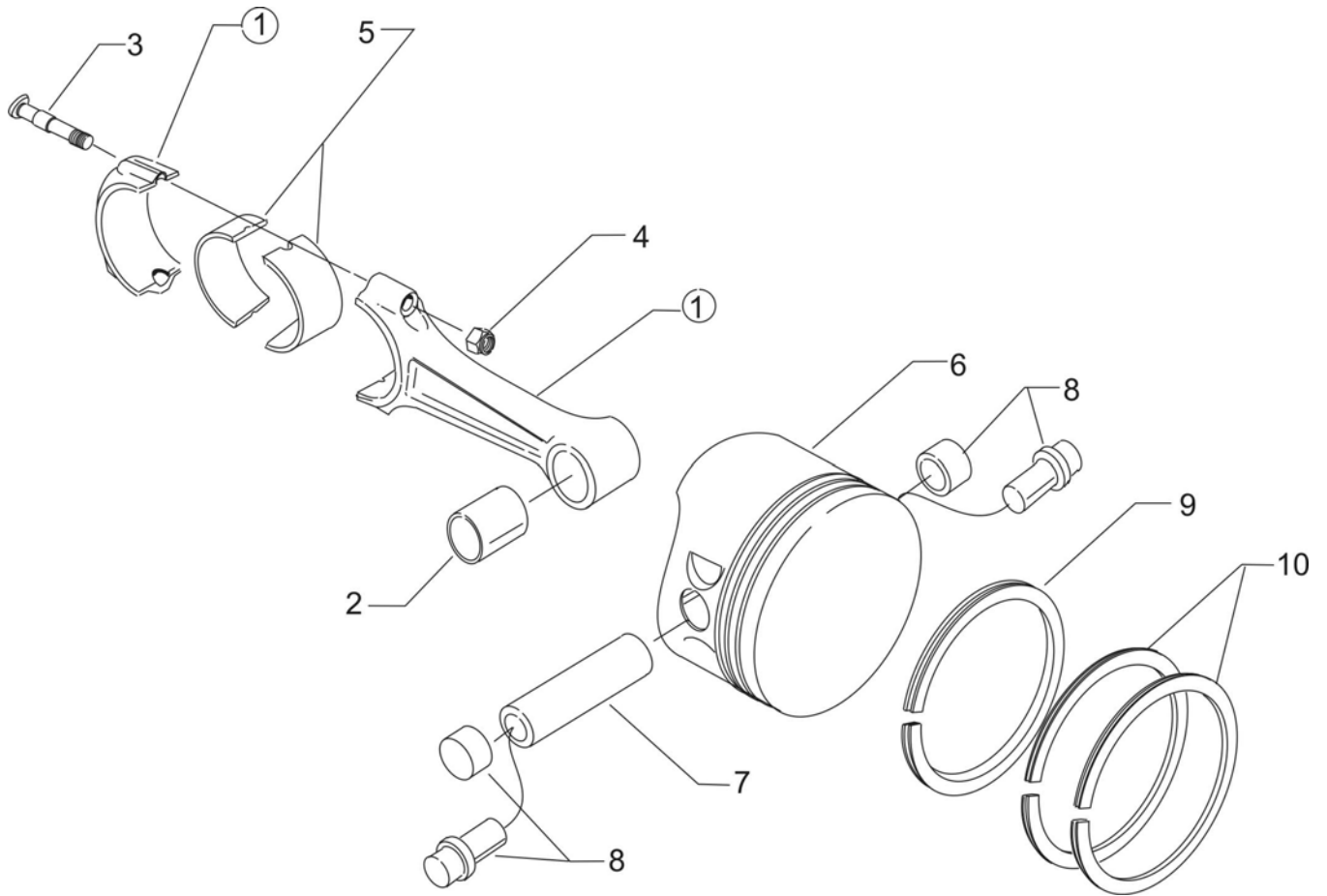


FIGURE 17. CONNECTING RODS, PISTONS AND RING ASSEMBLIES

CYLINDER, PISTON AND VALVE TRAIN CYLINDER ASSEMBLY

FIG. REF. 18	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	LW-13870	CYLINDER AND HEAD ASSEMBLY, Nitrided	6			
2	72057	SEAT, Intake valve	6			
3	72058	SEAT, Exhaust valve	6			
4	61681*	GUIDE, Valve intake	6			
5	74230*	GUIDE, Valve exhaust	6			
6	66796	INSERT, Spark plug	12			
7	STD-1353	INSERT, No. 10-24 Heli-coil x 3/8	6			
8	31C-12	STUD, 5/16-18 x 1-1/2 long	12			
9	25C-8	STUD, 1/4-20 x 2.00 long	6			
10	MS20823-6D	ELBOW, 45°, 3/8 flared tube	6			
11	66610	BUSHING, Rocker shaft	24			
12	1102**	PLUG, 1/8-27 NPT, Allen head	6			
13	LW-19296	GASKET, Exhaust flange		6	6	
14	61260	FLANGE, Exhaust		6		
15	STD-35	WASHER, 5/16 plain	12			
16	STD-475	WASHER, 5/16 lock, internal teeth	12			
17	STD-1410	NUT, 5/16-18 plain	12			

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

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

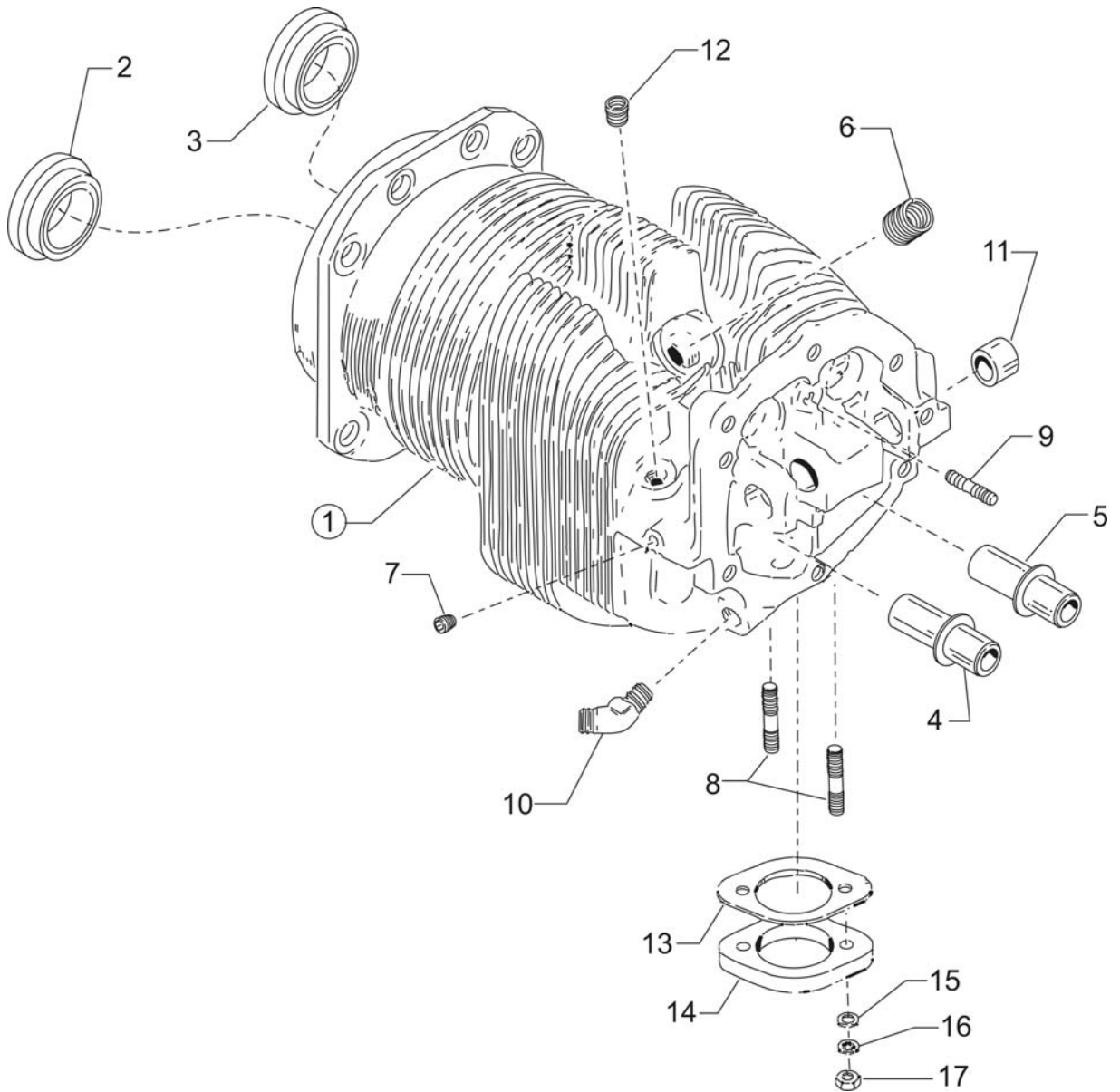


FIGURE 18. CYLINDER ASSEMBLY

CYLINDER, PISTON AND VALVE TRAIN VALVE AND ROD ASSEMBLIES

FIG. REF. 19	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	73938	VALVE, Intake	6			
2	LW-19001	VALVE, Exhaust (rotator type)	6			
3	LW-11795	SPRING, Valve, inner	12			
4	LW-11800	SPRING, Valve, outer	12			
5	LW-10077	SEAT, Valve spring, upper intake	6			
6	65441	SEAT, Valve spring, lower intake	6			
7	LW-13323	SEAT, Valve spring, lower exhaust	6			
8	LW-16475	SEAT, Valve spring, upper exhaust (rotator type)	6			
9	60009	KEY, Valve intake	12			
10	17C21191	KEY, Valve exhaust (rotator type)	12			
11	17C19386	CAP, Valve stem, exhaust (rotator type)	6			
12	78290	PLUNGER ASSEMBLY, Hydraulic tappet	12			
13	15B21319	SOCKET, Push rod, hydraulic tappet	12			
14	LW-11485	SHROUD TUBE ASSEMBLY, Push rod	12			
15	LW-14995	SPRING, Shroud tube	6			
16	LW-12272	LOCKPLATE, Shroud tube	6			
17	STD-1411	NUT, 1/4-20 plain	6			
18	LW-18661	SEAL, Shroud tube	12			
19	70310	SEAL, Shroud tube	12			
20	73434*	ROD ASSEMBLY, Push (A total of 12 required)	AR			
	15F19957-35*	ROD ASSEMBLY, Push (A total of 12 required)	AR			
	15F19957-36*	ROD ASSEMBLY, Push (A total of 12 required)	AR			
	73457*	ROD ASSEMBLY, Push (A total of 12 required)	AR			
21	17F19357**	ROCKER ASSEMBLY, Valve	12			
22	74637	BUSHING, Valve rocker	12			
23	LW-13790	SHAFT, Valve rocker	6			
24	LW-12892	THRUST BUTTON, Rocker shaft	12			

* - 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).

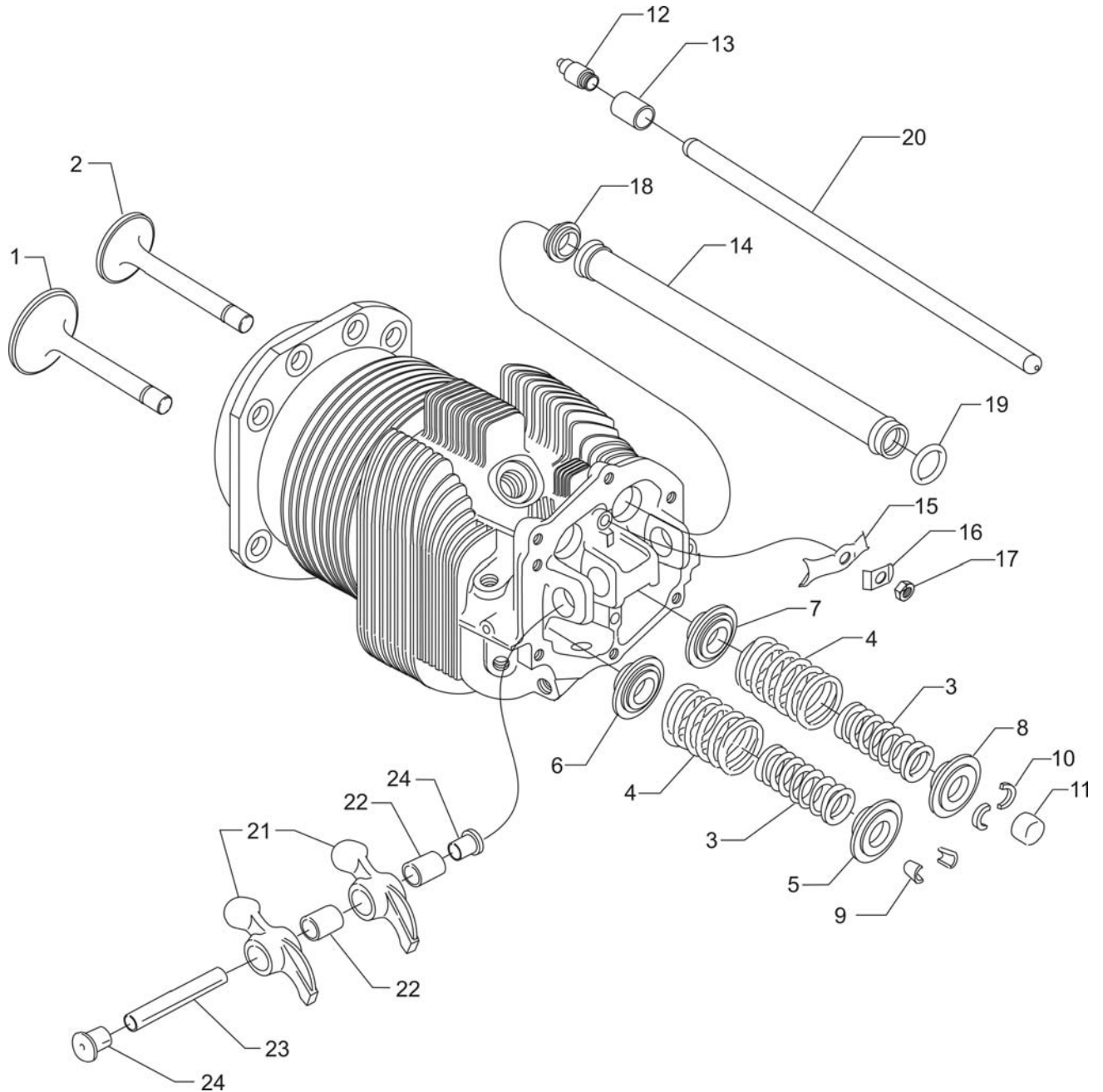


FIGURE 19. VALVE AND ROD ASSEMBLIES

CYLINDER, PISTON AND VALVE TRAIN
CYLINDER RELATED PARTS

FIG. REF. 20	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	75906	GASKET, Rocker box cover	6			
2	61247	COVER, Rocker box	6			
3	STD-1925	SCREW, 1/4-20 x 5/8 long, pan. head (self-locking)	36			
4	71481	RING, Oil seal, 3/32 diameter x 4-27/32 I.D.	6			
5	77906	SPACER, 33/64 I.D. x 7/8 O.D. x 1/8 thick	2			
6	74887	SPACER, 33/64 I.D. x 7/8 O.D. x 3/8 thick	2			
7	383-B	NUT, 3/8-24 plain	24			
8	STD-2090	NUT, 1/2-20 plain	28			
10	STD-1821	HOSE, 3/8 I.D. x 2-1/2 long	6			
11	LW-15592-5-05	CLAMP, Hose	12			
12	68759	TUBE ASSEMBLY, Cylinder head oil drain, cylinder no. 1	1			
13	71737	TUBE ASSEMBLY, Cylinder head oil drain, cylinder no. 2	1			
14	68761	TUBE ASSEMBLY, Cylinder head oil drain, cylinders no. 3, 4, 5, 6	4			
15	LW-15839	BAFFLE ASSEMBLY, Intercylinder	1			
16	LW-16838	BAFFLE ASSEMBLY, Intercylinder, cylinders no. 1 and 3	1			
17	71611	RETAINER, Intercylinder baffle	4			
18	71639	HOOK, Intercylinder baffle	4			

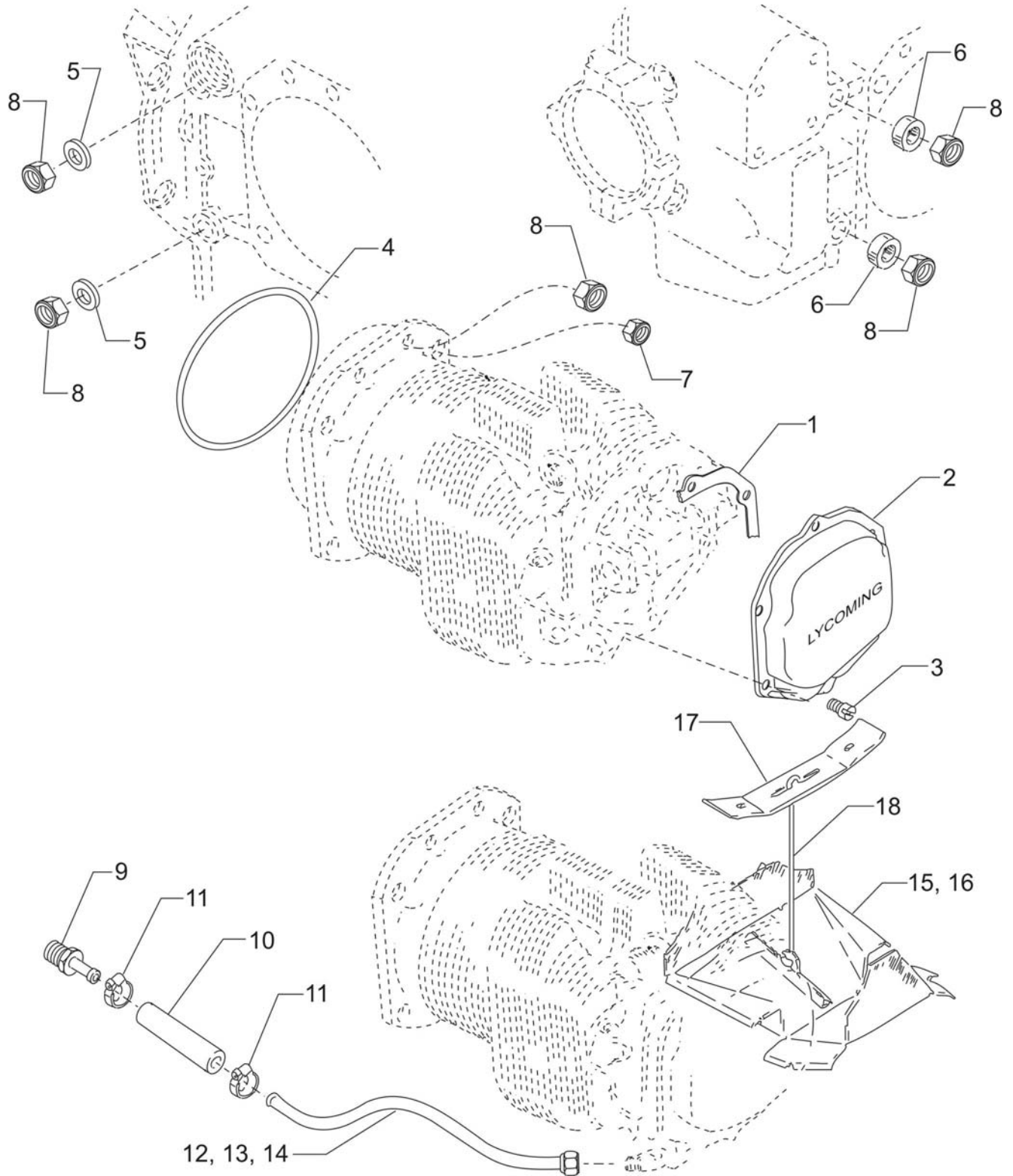


FIGURE 20. CYLINDER RELATED PARTS

IGNITION SYSTEM MAGNETOS, MAGNETO DRIVES, IGNITION HARNESSSES, SPARK PLUGS AND ATTACHING HARDWARE

FIG. REF. 21	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	LW-13641	CUSHION, Magneto drive		4		
2	62224	GASKET, Magneto adapter		2		
3	STD-713	PIN, Cotter, 3/32 x 3/4 long		2		
4	LW-12707	ADAPTER, Magneto		2		
5	LW-12681	GASKET, Magneto		2		
6	LW-19096	GEAR RETAINER ASSEMBLY		2		
7	67542	BEARING, Ball		2		
8	73000	COUPLING, Magneto drive		1		
—BENDIX—						
9	LW-349340-1	MAGNETO, S6LN-1209		1		
	LW-349370-4	MAGNETO, S6LN-1227		1		
—SLICK—						
10	66LP-0SCNN	MAGNETO, Right, 6350		1		
	66LC35SDNN	MAGNETO, Left, 6351		1		
11	66M19385	CLAMP, Magneto (Used on Bendix (TCM) Magnetos)		4		
12	66M21195	CLAMP, Magneto (Used on Slick Magnetos)		4		
13	STD-475	WASHER, 5/16-18 lock, internal teeth		4		
14	STD-1410	NUT, 5/16-18 plain		4		
15	67U20608	HARNESS ASSEMBLY, Right, Slick M-2878		1		
	67U20609	HARNESS ASSEMBLY, Left, Slick M-2877		1		
16	1187-E7*	SPARK PLUG, Champion (REM38E)		12		
**	01P19762-4-44	BAG, Magneto harness attaching		1		

* - Item No. 16 spark plugs, used in current production only. Additional spark plugs are available for these engines. See latest revision of Service Instruction No. 1042 for complete listing of all approved spark plugs.

** - See page 4-2 for breakdown of individual parts contained in the magneto and harness attaching parts bag. These parts to be attached by customer per engine line drawing included in each bag.

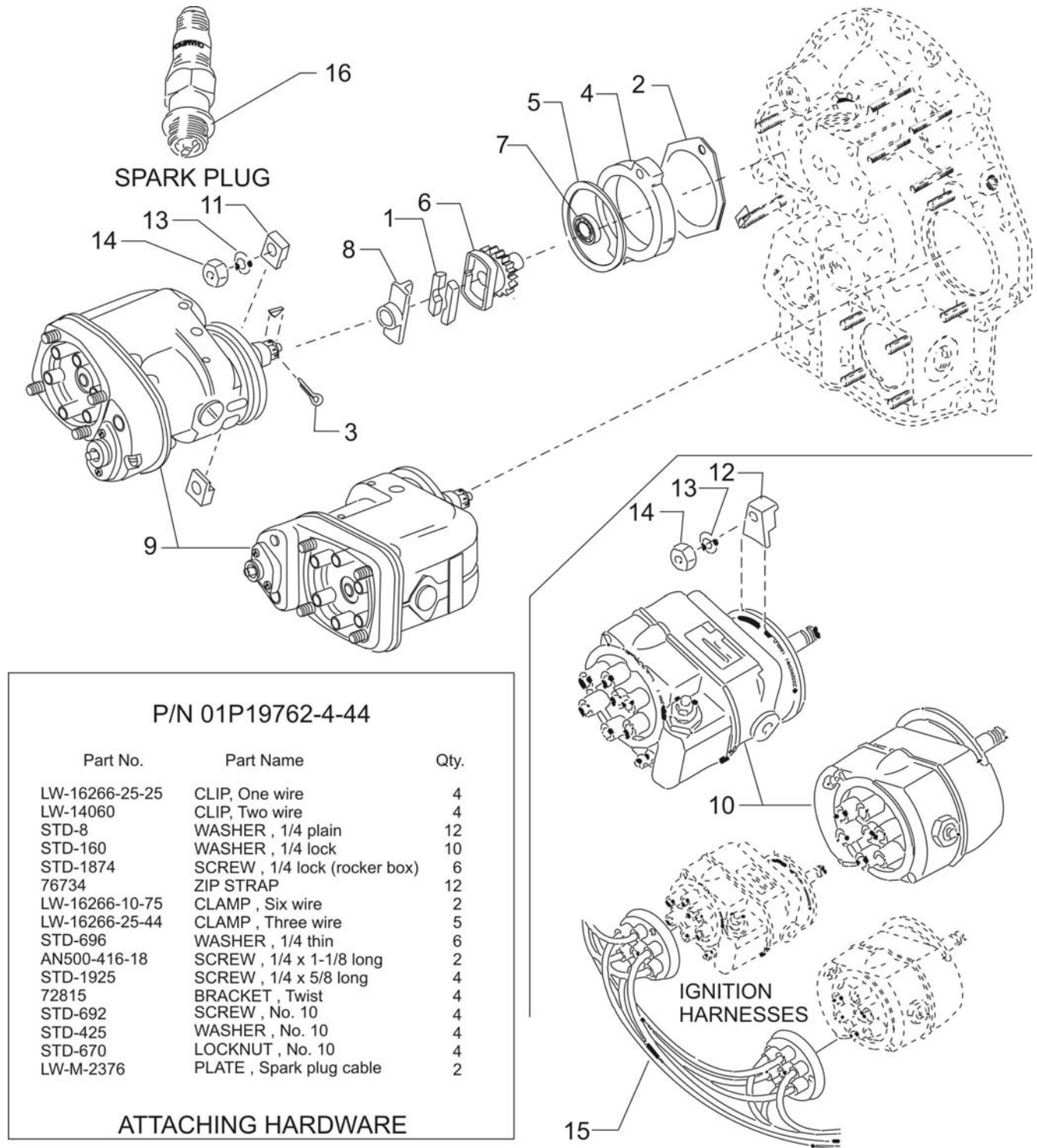


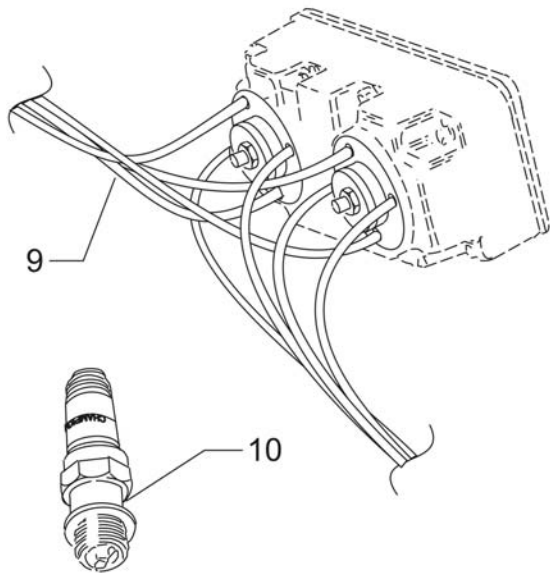
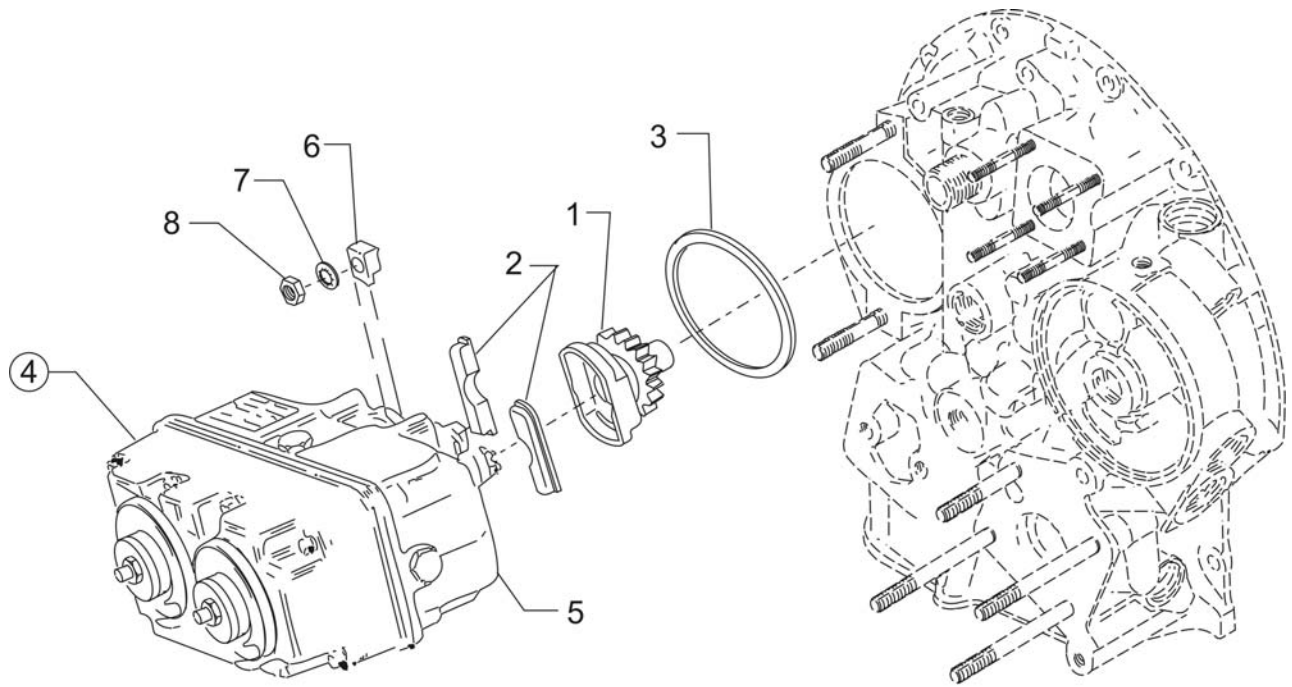
FIGURE 21. MAGNETOS, MAGNETO DRIVES, IGNITION HARNESSES, SPARK PLUGS AND ATTACHING HARDWARE

IGNITION SYSTEM DUAL MAGNETO, MAGNETO DRIVE, IGNITION HARNESSSES, SPARK PLUG AND ATTACHING HARDWARE

FIG. REF. 22	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	LW-13899	GEAR, Retainer, magneto drive			1	1
2	LW-13641	CUSHION, Magneto drive			2	2
3	LW-12681	GASKET, Magneto			1	1
4	66E21576	MAGNETO IGNITION SYSTEM (BENDIX)			1	1
5	LW-682560-11	MAGNETO, Ignition			1	1
6	66M19385	CLAMP, Magneto			2	2
7	STD-475	WASHER, 5/16 lock, internal teeth			2	2
8	STD-1410	NUT, 5/16-18 plain			2	2
9	67H21475	HARNESS, Ignition (Bendix)			1	1
10	1182-F7*	SPARK PLUG, Champion (RHM38E)			12	12
**	01P21501-1-29	BAG, Magneto harness attaching			1	1

* - Item No. 10 spark plugs are used in current production only. Additional spark plugs are available for these engines. See latest revision of Service Instruction No. 1042 for complete listing of all approved spark plugs.

** - See Page 4-4 for a breakdown of individual parts contained in the magneto and harness attaching parts bag. These parts to be attached by customer per engine line drawing included in each bag.



P/N 01P21501-1-29		
Part No.	Part Name	Qty.
LW-16266-25-25	CLIP, One wire	4
STD-8	WASHER, 1/4 plain	14
STD-1874	SCREW, 1/4-20 x 7/8 long	7
STD-696	WASHER, 1/4 plain	4
LW-14875	BRACKET, Extension	1
STD-692	SCREW, No. 10-32 x 1/2 long	6
STD-670	LOCKNUT, No. 10-32	6
LW-16266-10-50	CLAMP, 1/2 dia. for No. 10 screw	1
LW-16266-25-88	CLIP, 7/8 ID for 14 dia. screw	1
STD-28	WASHER, No. 10 plain	8
STD-1925	SCREW, 1/2-20 x 5/8 long	4
STD-2029	BOLT, 1/4-20 x 1-1/8 long	2

ATTACHING HARDWARE

FIGURE 22. DUAL MAGNETO, MAGNETO DRIVE, IGNITION HARNESSSES, SPARK PLUG AND ATTACHING HARDWARE

ELECTRICAL COMPONENTS
ALTERNATOR ASSEMBLY AND BELT

FIG. REF. 23	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	LW-14371	ALTERNATOR ASSEMBLY, 12V.-60Amp.			1	
	32C19553	ALTERNATOR ASSEMBLY, 24V.-70Amp.		1		
	32B19549	ALTERNATOR ASSEMBLY, 12V.-70Amp.		1		
2	LW-14313	ALTERNATOR, 12V.-60Amp. (ALY-8421-LS)		1		
	LW-14326	ALTERNATOR, 24V.-70Amp. (ALU-8421-LS)		1		
	LW-14318	ALTERNATOR, 12V.-70Amp. (ALX-8421-LS)		1		
3	36B19484	PULLEY, Alternator		1	1	
4	37A19773-376	BELT, Alternator drive, 3/8 wide		1	1	

NOTE

The alternator for the IO-540-W3A5D model engine shall be supplied by the airframe manufacturer.

NOTE

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

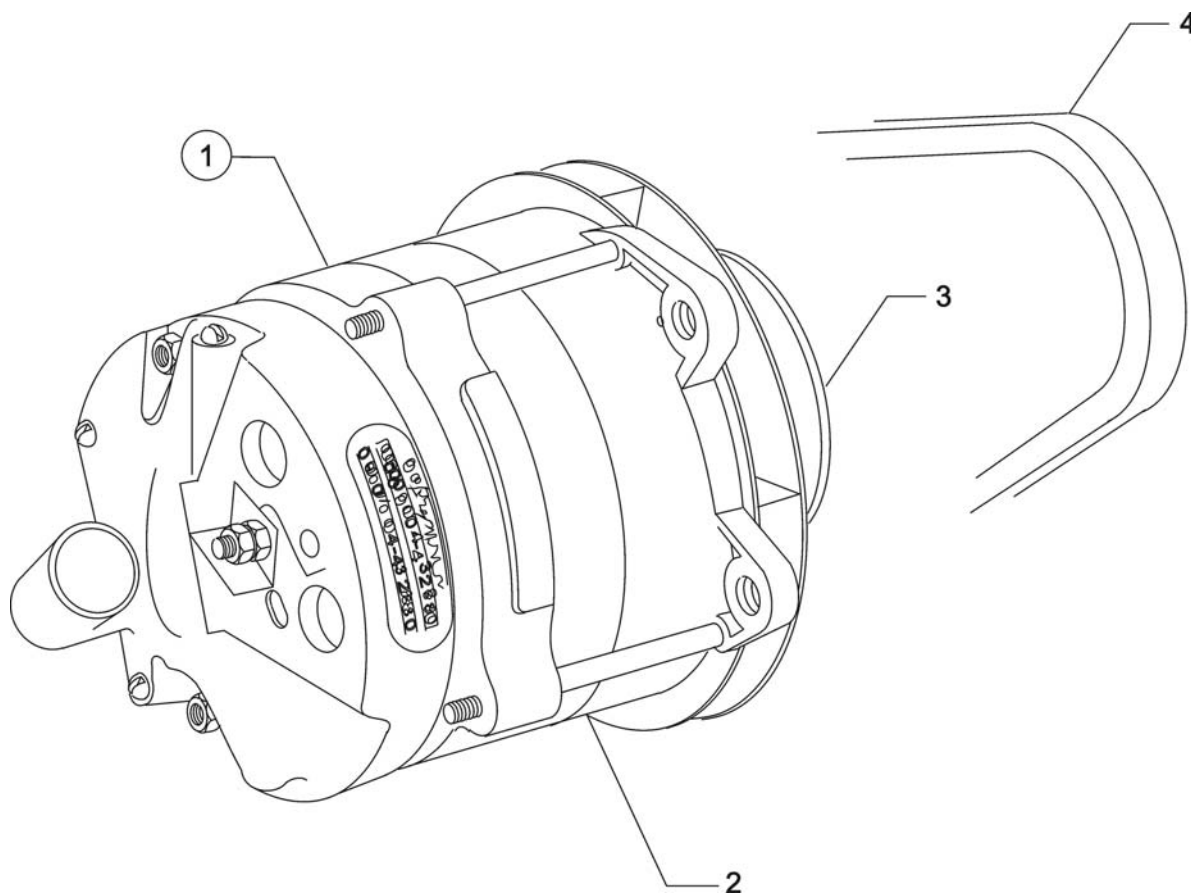


FIGURE 23. ALTERNATOR ASSEMBLY AND BELT

ELECTRICAL COMPONENTS STARTER MOTOR AND ATTACHING PARTS

FIG. REF. 24	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	LW-15571	STARTER, 12V. (3.38:1 reduction, 12/14 pinion) (MZ-4222)			1	
	LW-15572	STARTER, 24V. (3.38:1 reduction, 12/14 pinion) (MHB-4016)				1
2	05K21302-1*	KIT, Lightweight starter, 12/14 pitch, 12V.		1	1	
	05K21302-2*	KIT, Lightweight starter, 12/14 pitch, 24V.		1		
3	LW-16152	SPACER, Starter/crankcase		1	1	
4	05K21194**	KIT, Shim, lightweight starter			1	
5	STD-35	WASHER, 5/16 plain	4			
6	STD-475	WASHER, 5/16 lock, internal teeth	4			
7	LW-31-1.16	BOLT, 5/16-18 x 1-5/32 long, hex. head	1			
8	STD-1410	NUT, 5/16-18 plain	3			

* - Refer to the latest revision of SSP-490, Starter Maintenance Manual for complete parts breakdown.

** - Refer to latest revision of Service Instruction No. 1447 for shim application.

NOTE

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

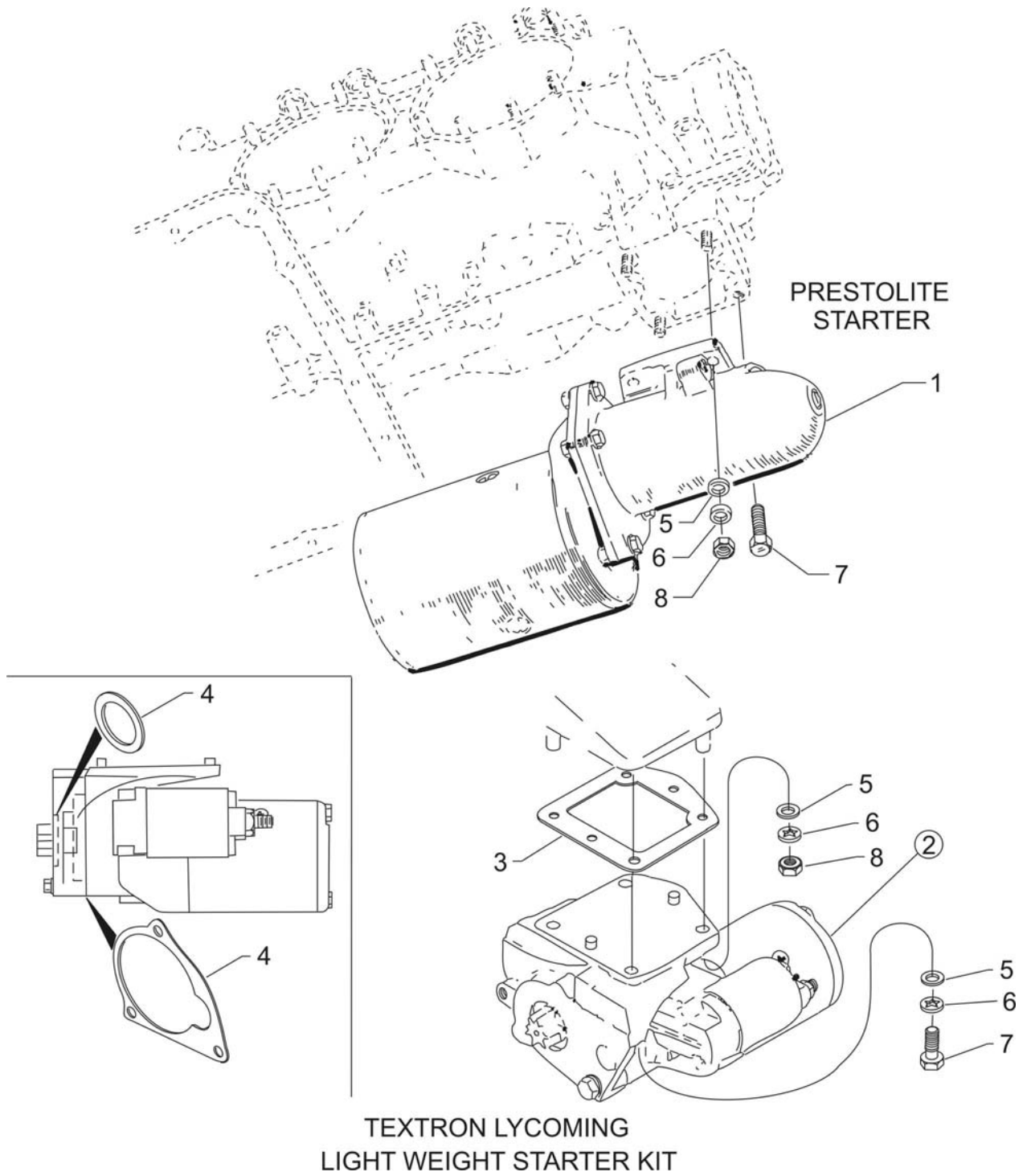


FIGURE 24. STARTER MOTOR AND ATTACHING PARTS

ELECTRICAL COMPONENTS ALTERNATOR MOUNTING AND ATTACHING PARTS

FIG. REF. 25	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	07A19474	BRACKET, Alternator		1	1	
2	73383	LOCKPLATE, 5/16 bolt x 1.00 spacing		1	1	
3	LW-31-0.94	BOLT, 5/16-18 x 15/16 long, hex. head		2	2	
4	75380	LINK, Alternator adjusting		1	1	
5	STD-35	WASHER, 5/16 plain		1	1	
6	LW-31H0.75	BOLT, 5/16-18 x 3/4 long		1	1	
7	STD-1727	WASHER, Plain, 11/32 I.D. x 3/4 O.D. x 1/8 thick		1	1	
8	LW-31H0.75	BOLT, 5/16-18 x 3/4 long		1	1	
9	STD-2197*	WASHER, 5/16 I.D. x 13/16 O.D. x 1/16 thick (2 required)		AR		
10	LW-14649*	SHIM, 13/16 O.D. x 11/32 I.D. x 1/64 thick (2 required)		AR		
11	74323	STRUT, Alternator support		1	1	
12	LW-31H0.88	BOLT, 5/16-18 x 7/8 long, hex. head		1		
13	LW-31H0.75	BOLT, 5/16-18 x 3/4 long			1	
14	STD-690	WASHER, 13/16 O.D. x 3/8 I.D. x 1/16 thick		1	1	
15	AN6-14	BOLT, 3/8-24 x 1-9/16 long, drilled			1	
16	AN6-17	BOLT, 3/8-24 x 1-61/64 long, hex. head, drilled		1		
17	STD-690	WASHER, 13/16 O.D. x 3/8 I.D. x 1/16 thick		AR	AR	
18	STD-872	NUT, 3/8-24 slotted		1	1	
19	STD-713	PIN, Cotter, 3/32 diameter x 3/4 long		1	1	
20	AN6-16	BOLT, 3/8-24 x 1-53/64 long, hex. head, drilled		1	1	
21	76534	SHIM, 1-1/8 O.D. x 13/32 I.D. x 1/16 thick		AR	AR	
22	STD-690	WASHER, 13/16 O.D. x 3/8 I.D. x 1/16 thick		AR	AR	
23	STD-872	NUT, 3/8-24 slotted		1	1	
24	STD-713	PIN, Cotter, 3/32 diameter x 3/4 long		1	1	

* - Between P/N 74323 and starter.

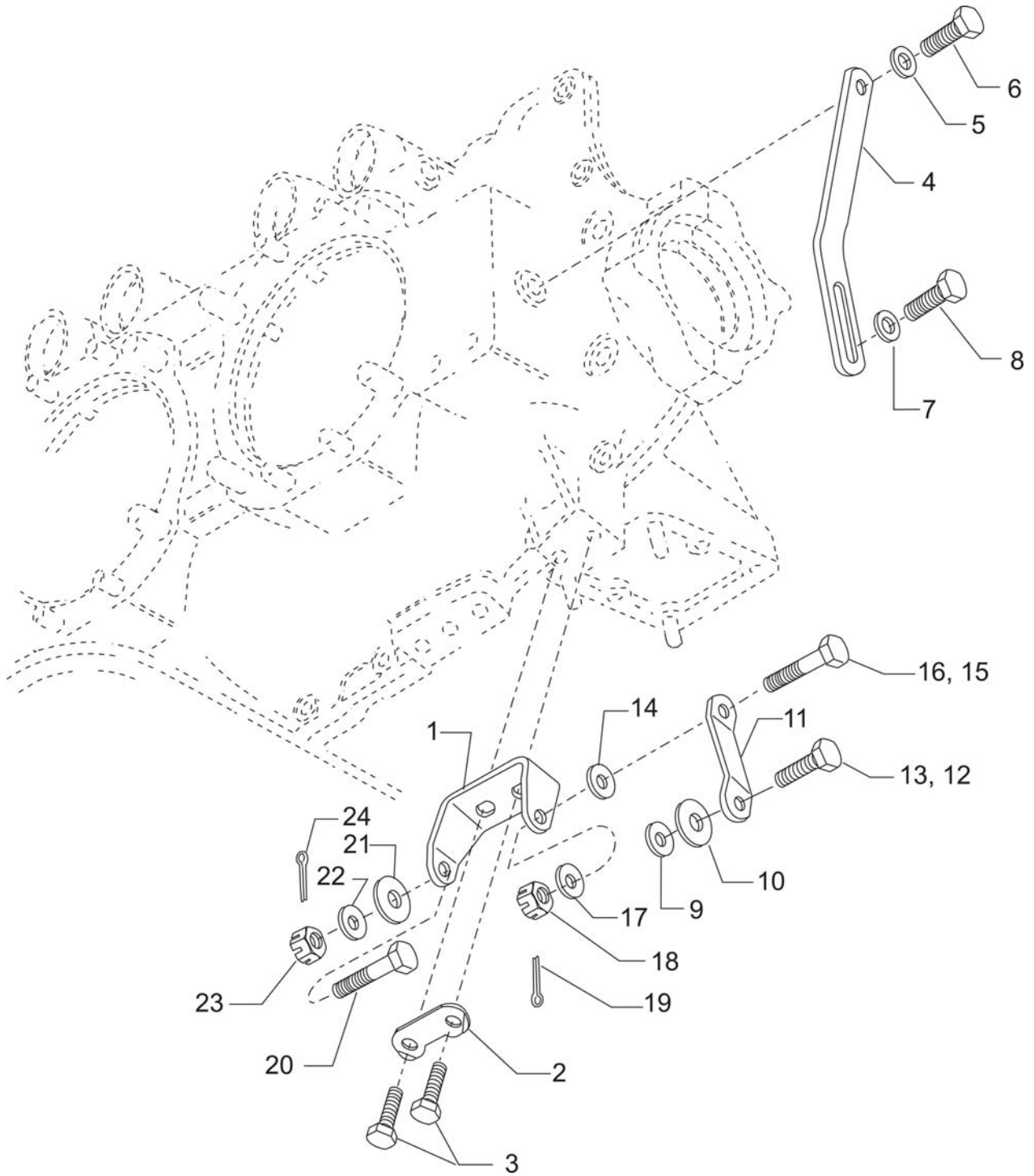


FIGURE 25. ALTERNATOR MOUNTING AND ATTACHING PARTS

OIL AND INDUCTION SYSTEM OIL SUMP ASSEMBLY

FIG. REF. 26	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	06B21326	GASKET, Oil sump	1			
2	LW-18436	SUMP ASSEMBLY, Oil	1			
3	06E19769-1.63	GASKET, 1-7/8 O.D. x 1-5/8 I.D. x 3/32 annular	1			
4	LW-18434	PLUG, Oil sump, 1-5/8 diameter	1			
5	71699	CONNECTOR, Intake pipe	6			
6	25C-11	STUD, 1/4-20 x 1-3/8 long	14			
7	38-15	STUD, 3/8-16 x 1-7/8 long	8			
8	STD-1164	INSERT, 5/16-18 x 5/8 long, Heli-coil	4			
9	1102	PLUG, 1/8-27 NPT, Allen head	1			
10	STD-8	WASHER, 1/4 plain	34			
11	STD-160	WASHER, 1/4 lock, internal teeth	27			
12	LW-25-1.13	BOLT, 1/4-20 x 1-1/8 long, hex. head	7			
13	LW-25-1.00	BOLT, 1/4-20 x 1.00 long, hex. head	6			
14	STD-1411	NUT, 1/4-20 plain	21			
15	STD-551	PLUG, 1/2-14 NPT, square head, drilled	2			

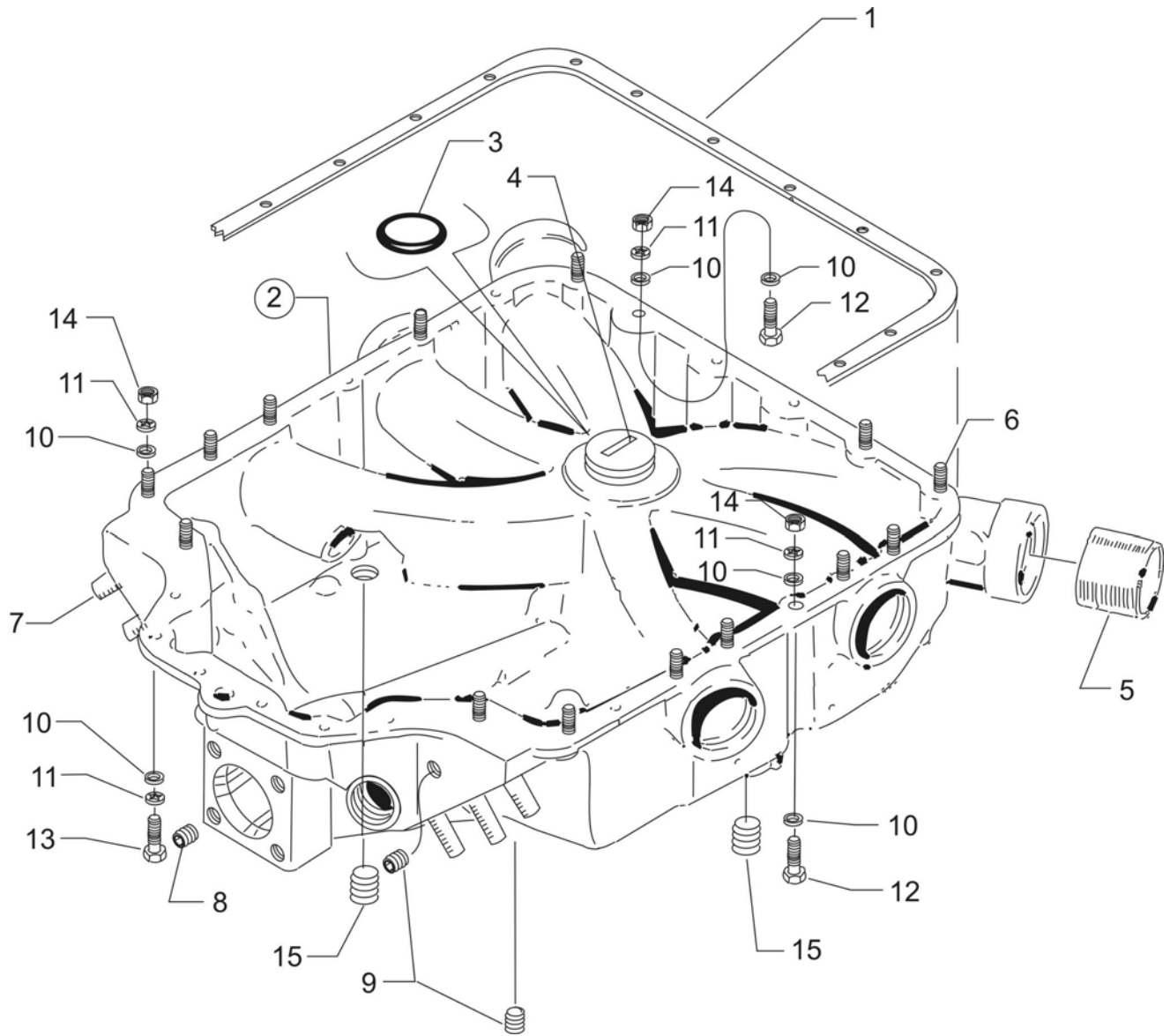


FIGURE 26. OIL SUMP ASSEMBLY

OIL SUMP AND INDUCTION SYSTEM
INTAKE PIPES AND OIL SUCTION SCREEN

FIG. REF. 27	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	70485	PIPE, Intake	6			
2	69603	HOSE, 1-3/4 I.D. x 2-3/16 O.D. x 1-3/4 long	6			
3	LW-15592-8-28	CLAMP, Hose	12			
4	71973	GASKET, 2 bolt flange, 1-3/4 I.D.	6			
5	73346	FLANGE, Intake pipe, upper	6			
6	STD-8	WASHER, 1/4 plain	12			
7	STD-160	WASHER, 1/4 lock, internal teeth	12			
8	LW-25-1.25	BOLT, 1/4-20 x 1-1/4 long, hex. head	12			
9	70484	SCREEN, Oil suction	1			
10	06E19769-1.00	GASKET, 1.00 I.D. x 1-1/4 O.D. x 3/32 annular	1			
11	LW-12545	PLUG, 5/8 hex. head x 1.00-20 thread	1			

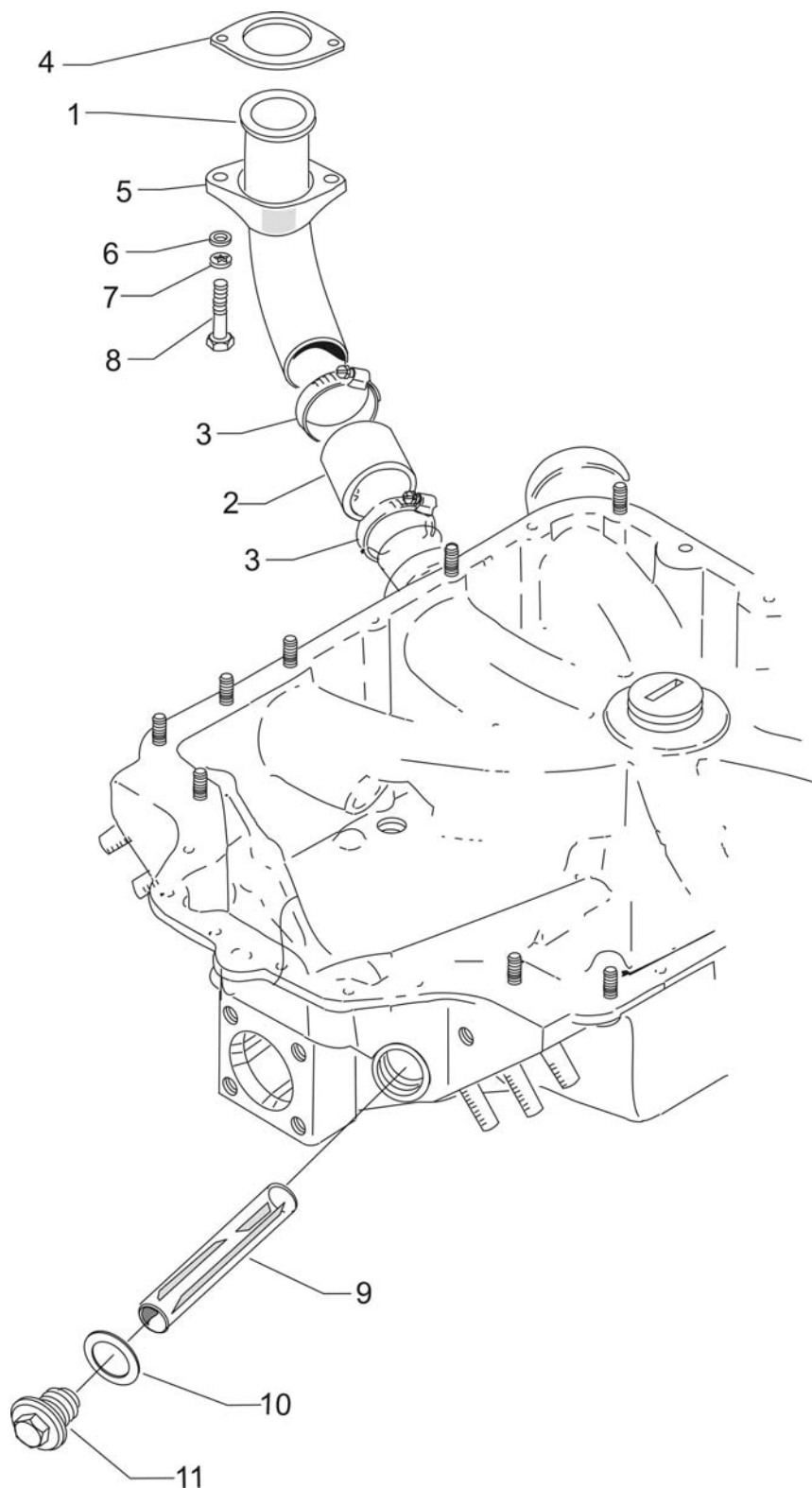


FIGURE 27. INTAKE PIPES AND OIL SUCTION SCREEN

OIL SUMP AND INDUCTION SYSTEM FUEL INJECTOR, FUEL MANIFOLD AND INJECTION NOZZLES

FIG. REF. 28	PART NUMBER	DESCRIPTION	QTY. PER ASSY.			
			O N A L L	W 1 A 5	W 1 A 5 D	W 3 A 5 D
1	66224	GASKET, Fuel injector	1			
2	73937	FUEL INJECTOR (2524054-11)	1			
3	STD-35	WASHER, 5/16 plain	4			
4	STD-475	WASHER, 5/16 lock, internal teeth	4			
5	LW-31-1.25	BOLT, 5/16-18 x 1-1/4 long, hex. head	4			
6	LW-18265	NOZZLE, Injection	6			
7	79007	MANIFOLD ASSEMBLY, Fuel	1			
8	MS20823-4	ELBOW, 1/4 tube, 1/8 NPT, 45°	1			
9	STD-148	NIPPLE, Union, 1/8 NPT	6			
10	02G21382	NIPPLE, Nozzle, pressure gauge	1			
11	73966	SPACER, Fuel manifold bracket	2			
12	73965	BRACKET, Fuel manifold	2			
13	STD-82	SCREW, No. 10-24 x 1/2 long, fill. head	4			
14	STD-251	WASHER, No. 10 internal lock	4			
15	LW-12098-0-210	TUBE ASSEMBLY, Fuel manifold to nozzle, cylinders no. 1, 2, 5, 6	4			
16	LW-12098-0-170	TUBE ASSEMBLY, Fuel manifold to nozzle, cylinders no. 3, 4	2			
17	LW-16266-10-75	CLAMP	10			
18	LW-16266-10-13	CLAMP, 1/8 diameter for no. 10 screw	12			
19	STD-860	SCREW, No. 10-32 x 5/8 long, fill. head	14			
20	STD-425	WASHER, No. 10 plain	2			
21	STD-670	NUT, No. 10-32 self-locking	14			
22	73136	BRACKET, 90°	4			
23	LW-12798-4S242	HOSE ASSEMBLY, Fuel injector to fuel manifold	1			
24	74278	BRACKET ASSEMBLY, Fuel line support	1			
25	LW-16266-25-50	CLAMP, Four wire	1			
26	STD-860	SCREW, No. 10-32 x 5/8 long, fill. head	1			
27	STD-692	SCREW, No. 10-32 x 1/2 long, round head	2			
28	STD-425	WASHER, No. 10 plain	3			
29	STD-670	NUT, No. 10-32 self-locking	1			
30	LW-12799-6S300	HOSE, Fuel pump to injector	1			
31	LW-16266-25-75	CLAMP	2			

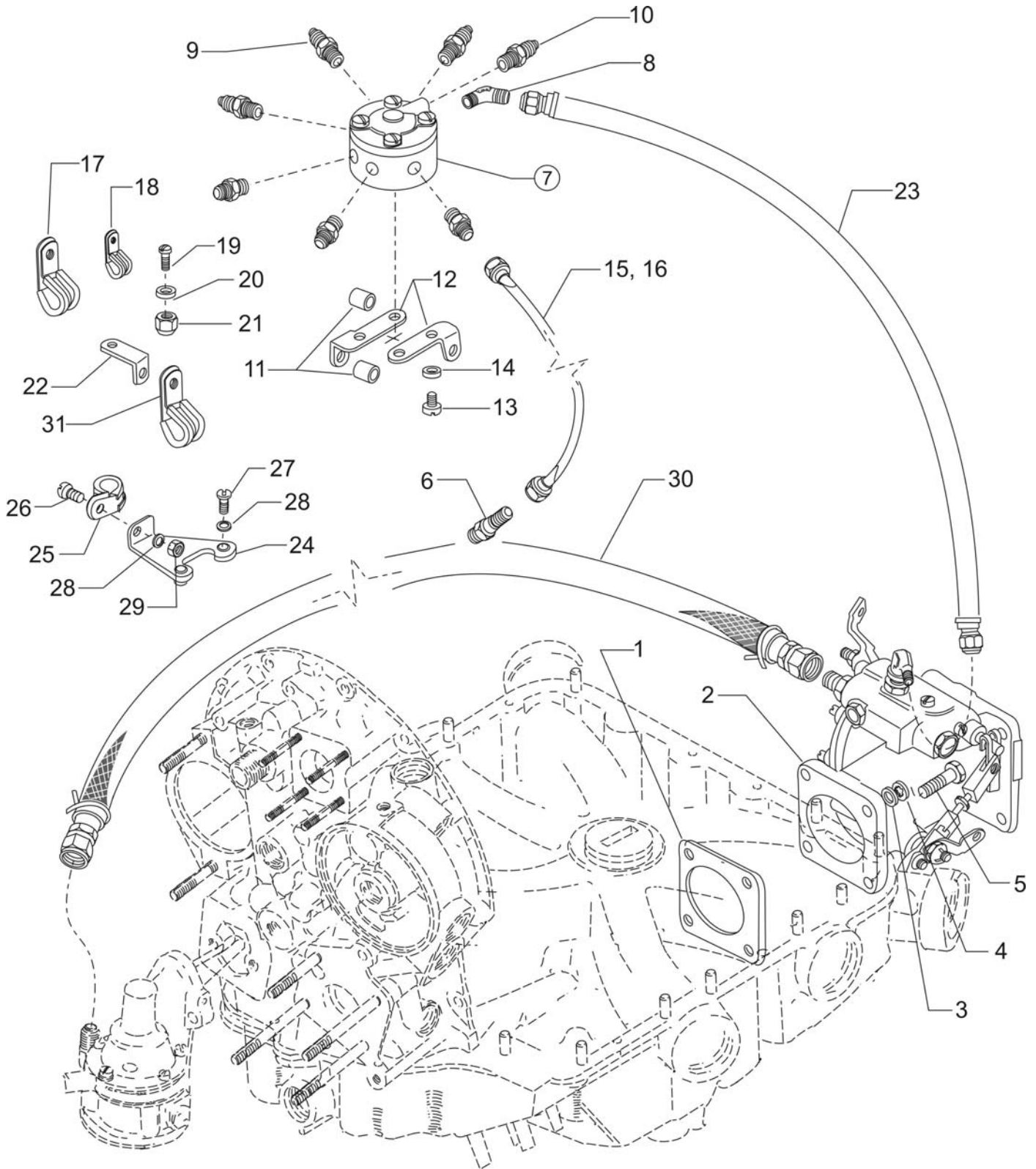


FIGURE 28. FUEL INJECTOR, FUEL MANIFOLD AND INJECTION NOZZLES

SECTION 7
SERVICE KIT SECTION**SEAL AND GASKET SET (IO-540-W1A5D, -W3A5D)**

PART NO.	PART NAME	QTY.
LW-13377	KIT - SEAL AND GASKET SET	1
LW-10322	LOCKPLATE, Crankshaft gear	1
LW-12272	LOCKPLATE, Shroud tube	6
LW-12681	GASKET, Magneto	1
06B21326	GASKET, Oil sump	1
LW-13792**	SEAL, Crankshaft oil	1
LW-14260	SEAL, Tachometer drive	1
LW-14820	RING, Internal retaining	8
LW-14995	SPRING, Shroud tube	6
LW-15628**	SEAL, Crankshaft oil	1
LW-18661	SEAL, Shroud tube	12
LW-19296*	GASKET, Exhaust flange	6
STD-2231	RING, Internal retaining	1
MS16625-1100	RING, Internal retaining	1
MS29512-10	SEAL, Oil	1
MS29512-06*	"O" RING	1
MS9068-009*	"O" RING	1
STD-1325	GASKET	1
06E19769-1.63	GASKET	1
STD-1733*	RING, Oil seal	1
06A19956	SEAL, Oil	1
06E19769-0.63*	GASKET	1
06E19769-1.00	GASKET	1
06E19769-1.25	GASKET	1
60096	GASKET, Fuel pump	1
66227	GASKET, Fuel injector	1
70310	SEAL, Shroud tube	12
70455	GASKET	1
70457	GASKET, Oil filler extension	1
71481	RING, Oil seal	6
71973	GASKET	6
72053	GASKET, Governor	3
72091	RING, Oil seal	2
72312*	RING, Oil seal	1
73383*	LOCKPLATE	1
73818	GASKET, Accessory housing	1
74065	RING, Seal, oil level gage	1
74068*	RING, Plug, oil level gage	1
75118*	GASKET, Exhaust flange	12
75906	GASKET, Rocker box cover	6
77154*	GASKET	1
8313	GASKET, Vacuum pump	3

* - This part not applicable to IO-540-W3A5D.

** - Refer to latest revision of Service Instruction No. 1324 for installation.

SERVICE KIT SECTION (CONT.)**SEAL AND GASKET SET (IO-540-W1A5)**

PART NO.	PART NAME	QTY.
71569-1	KIT - SEAL AND GASKET SET	1
LW-12272	LOCKPLATE, Shroud tube	6
LW-12681	GASKET, Magneto	2
LW-12795	GASKET, Oil filter adapter	1
06B21326	GASKET, Oil sump	1
LW-13792*	SEAL, Crankshaft oil	1
LW-14260	SEAL, Tachometer drive	1
LW-14995	SPRING, Shroud tube	6
LW-15628*	SEAL, Crankshaft oil	1
LW-18638	LOCKPLATE, Crankshaft gear	1
LW-18661	SEAL, Shroud tube	12
LW-19296	GASKET, Exhaust flange	6
STD-2231	RING, Internal retaining	1
STD-213	SEAL, Oil	1
06A19956	SEAL, Oil	2
06E19769-0.63	GASKET	2
06E19769-1.00	GASKET	1
06E19769-1.25	GASKET	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	4
68315	GASKET, Accessory drive	1
69164	GASKET, Fuel pump adapter	1
69345	SPACER	6
69551	GASKET, Accessory drive	1
70310	SEAL, Shroud tube	12
70455	GASKET	1
70457	GASKET, Oil filler extension	1
71481	RING, Oil seal	6
71667	LOCKPLATE	1
71973	GASKET	6
72053	GASKET, Governor	1
72059	GASKET, Oil level gage	1
72075	SEAL, Oil	8
72078	LOCKPLATE	2
72091	RING, Oil seal	2
72210	GASKET, Air throttle housing	1
72312	RING, Oil seal	1
73383	LOCKPLATE	2
73818	GASKET, Accessory housing	1
74065	RING, Oil level gage seal	1
74068	RING, Oil level gage plug	1
74305	SEAL	1
75906	GASKET, Rocker box cover	6
76510	GASKET, Oil cooler bypass	1
76940	SEAL, Crankshaft oil	1
8313	GASKET, Vacuum pump	2

* - Refer to latest revision of Service Instruction No. 1324 for installation.

SERVICE KIT SECTION (CONT.)

CYLINDER, PISTON AND RING ASSEMBLY

PART NO.	PART NAME	QTY.
05K21117	KIT – CYLINDER, PISTON AND RING ASSEMBLY	1
LW-13870	CYLINDER AND HEAD ASSEMBLY	1
LW-19001	VALVE, Exhaust	1
73938	VALVE, Intake	1
LW-11800	SPRING, Valve, outer	2
LW-11795	SPRING, Valve, inner	2
LW-10077	SEAT, Valve spring, upper, intake	1
LW-16475	SEAT, Valve spring, upper, exhaust	1
65441	SEAT, Valve spring, lower, intake	1
LW-13323	SEAT, Valve spring, lower, exhaust	1
60009	KEY, Valve, intake	2
17C21191	KEY, Valve, exhaust	2
17C19386	CAP, Valve stem, exhaust	1
LW-13396	PISTON	1
74241	RING, Piston, compression	2
73857	RING, Piston, oil regulating	1
LW-14068	PIN, Piston	1
60828	PLUG, Piston pin	2
71481	RING, Cylinder base seal	1
LW-18661	SEAL, Shroud tube	2
70310	SEAL, Shroud tube	2
75906	GASKET, Rocker box cover	1

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

PART NO.	PART NAME	QTY.
11E20000-D1-S	KIT – CRANKCASE ASSEMBLY AND THRU-STUD	1
11E20000-D1	CRANKCASE ASSEMBLY	1
76220	THRU-STUD	8
31C-14	STUD, AN Governor	4
31C-16	STUD, Woodward Governor	4
STD-1339	PLUG	7
AN565B1032H4	SET SCREW	1
AN565B1032H5	SET SCREW	1
SSP-272	TAG, Piston cooling nozzles	1
SSP-582	TAG, Thin wall bearings	1
SSP-1576	TAG, Governor drive idler shaft	1
SSP-1769	TAG, Governor drive pad studs	1
1102	PLUG, 1/8-27 NPT, Allen head, oil pressure	4

CRANKCASE ASSEMBLY AND THRU-STUD

PART NO.	PART NAME	QTY.
11E20000-S1-S	KIT – CRANKCASE ASSEMBLY AND THRU-STUD	1
11E20000-S1	CRANKCASE ASSEMBLY	1
76220	THRU-STUD	8
31C-14	STUD, AN Governor	4
31C-16	STUD, Woodward Governor	4
STD-1339	PLUG	7
AN565B1032H4	SET SCREW	1
AN565B1032H5	SET SCREW	1
SSP-272	TAG, Piston cooling nozzles	1
SSP-582	TAG, Thin wall bearings	1
SSP-1576	TAG, Governor drive idler shaft	1
SSP-1769	TAG, Governor drive pad studs	1
1102	PLUG, 1/8-27 NPT, Allen head, oil pressure	4

SECTION 8
NUMERICAL INDEX

PART NO.	PART NAME	PAGE NO.	PART NO.	PART NAME	PAGE NO.
AN565B1032H5	Set Screw	1-11	LW-12707	Adapter	4-1
AN6-14	Bolt	5-5	LW-12798-4S242	Hose Assy.	6-5
AN6-16	Bolt	5-5	LW-12799-6S300	Hose	6-5
AN6-17	Bolt	5-5	LW-12892	Thrust Button	3-5
AN6-34A	Bolt	1-15	LW-12975	Gasket	2-11
AN8-14A	Bolt	1-7	LW-13323	Seat	3-5
AN814-10L	Plug	2-9	LW-13396	Piston	3-1
AN816-8	Nipple	2-9	LW-13521	Bearing	3-1
AN919-15	Reducer	2-9	LW-13641	Cushion	4-1
LW-25-0.81	Bolt	2-3	LW-13641	Cushion	4-3
LW-25-0.94	Bolt	2-3	LW-13790	Shaft	3-5
LW-25-1.00	Bolt	6-1	LW-13792	Seal	1-5
LW-25-1.13	Bolt	2-3	LW-13794	Stud	1-1
LW-25-1.13	Bolt	6-1	LW-13795	Shaft	1-13
LW-25-1.25	Bolt	2-3	LW-13865	Connecting Rod Assy.	3-1
LW-25-1.25	Bolt	6-3	LW-13870	Cylinder & Head Assy.	3-3
LW-25-1.50	Bolt	1-15	LW-13884	Bearing	1-5
LW-25-1.50	Bolt	2-3	LW-13896	Plug	1-11
LW-25-1.88	Bolt	1-15	LW-13899	Gear	4-3
LW-25-2.00	Bolt	1-15	LW-13904	Kit	2-7
LW-31-0.94	Bolt	5-5	LW-13923	Bushing	3-1
LW-31-1.16	Bolt	5-3	LW-14021	Shaft	1-11
LW-31-1.25	Bolt	6-5	LW-14068	Pin	3-1
LW-31H0.75	Bolt	5-5	LW-14260	Seal	2-3
LW-31H0.88	Bolt	5-5	LW-14313	Alternator	5-1
LW-10077	Seat	3-5	LW-14318	Alternator	5-1
LW-10290	Gear Assy.	1-13	LW-14326	Alternator	5-1
LW-10299	Shaft	1-13	LW-14371	Alternator Assy.	5-1
LW-10307	Gear Assy.	2-13	LW-14649	Shim	5-5
LW-10318	Gear Assy.	2-3	LW-14800	Gage Assy.	1-3
LW-10320	Sleeve	2-7	LW-14820	Ring	1-7
LW-10325	Spacer	1-13	LW-14995	Spring	3-5
LW-10332	Lockplate	1-7	LW-15278	Bearing	1-5
LW-10341	Insert	2-1	LW-15473	Fuel Pump	2-5
LW-10344	Body Assy.	2-3	LW-15558	Roller	1-7
LW-10442	Gear	1-11	LW-15571	Starter	5-3
LW-10541	Gear Assy.	1-11	LW-15572	Starter	5-3
LW-11485	Tube	3-5	LW-15592-5-05	Clamp	3-7
LW-11713	Spring	1-5	LW-15592-8-28	Clamp	6-3
LW-11795	Spring	3-5	LW-15839	Baffle Assy.	3-7
LW-11800	Spring	3-5	LW-16152	Spacer	5-3
LW-12098-0-170	Tube Assy.	6-5	LW-16266-10-13	Clamp	6-5
LW-12098-0-210	Tube Assy.	6-5	LW-16266-10-75	Clamp	6-5
LW-12186	Nut	3-1	LW-16266-25-50	Clamp	6-5
LW-12272	Lockplate	3-5	LW-16266-25-75	Clamp	6-5
LW-12347	Plate	2-13	LW-16471	Support Assy.	1-13
LW-12545	Plug	6-3	LW-16475	Seat	3-5
LW-12589	Insert	2-1	LW-16838	Baffle Assy.	3-7
LW-12681	Gasket	4-1	LW-18085	Spring	1-5
LW-12681	Gasket	4-3	LW-18265	Nozzle	6-5

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PART NO.	PART NAME	PAGE NO.	PART NO.	PART NAME	PAGE NO.
LW-18434	Plug	6-1	STD-425	Washer	6-5
LW-18436	Sump Assy.	6-1	STD-475	Washer	1-11
LW-18638	Lockplate	1-7	STD-475	Washer	2-13
LW-18661	Seal	3-5	STD-475	Washer	2-15
LW-18667	Pin	1-9	STD-475	Washer	3-3
LW-18974	Gear Assy.	2-13	STD-475	Washer	4-1
LW-18995	Thrust Button	2-13	STD-475	Washer	4-3
LW-19001	Valve	3-5	STD-475	Washer	5-3
LW-19096	Gear Retainer Assy.	4-1	STD-475	Washer	6-5
LW-19210	Counterweight Assy.	1-7	STD-514	Dowel	1-1
LW-19227	Counterweight Assy.	1-7	STD-551	Plug	6-1
LW-19296	Gasket	3-3	STD-557	Dowel	1-1
LW-19340	Camshaft Assy.	1-9	STD-596	Nut	1-3
LW-349340-1	Magneto	4-1	STD-596	Nut	1-15
LW-349370-4	Magneto	4-1	STD-670	Nut	6-5
LW-682560-11	Magneto	4-3	STD-678	Washer	1-3
MS124703	Insert	2-1	STD-678	Washer	1-15
MS16625-1100	Ring	2-7	STD-684	Nipple	3-7
MS20822-8	Elbow	2-9	STD-690	Washer	5-5
MS20823-4	Elbow	6-5	STD-692	Screw	6-5
MS20823-6D	Elbow	3-3	STD-713	Pin	4-1
MS29512-10	Seal	2-9	STD-713	Pin	5-5
STD-8	Washer	1-15	STD-714	Pin	2-3
STD-8	Washer	2-3	STD-784	Plug	2-1
STD-8	Washer	2-11	STD-798	Dowel	1-11
STD-8	Washer	2-13	STD-860	Screw	6-5
STD-8	Washer	2-15	STD-872	Nut	1-15
STD-8	Washer	6-1	STD-872	Nut	5-5
STD-8	Washer	6-3	STD-1065	Dowel	1-7
STD-19	Dowel	1-11	STD-1164	Insert	6-1
STD-33	Washer	1-3	STD-1211	Plug	1-7
STD-33	Washer	1-15	STD-1339	Plug	1-1
STD-33	Washer	2-5	STD-1353	Insert	3-3
STD-35	Washer	1-11	STD-1409	Nut	1-15
STD-35	Washer	2-3	STD-1410	Nut	1-11
STD-35	Washer	2-13	STD-1410	Nut	2-13
STD-35	Washer	2-15	STD-1410	Nut	2-15
STD-35	Washer	3-3	STD-1410	Nut	3-3
STD-35	Washer	5-3	STD-1410	Nut	4-1
STD-35	Washer	5-5	STD-1410	Nut	4-3
STD-35	Washer	6-5	STD-1410	Nut	5-3
STD-82	Screw	6-5	STD-1411	Nut	2-11
STD-148	Nipple	6-5	STD-1411	Nut	2-13
STD-160	Washer	2-3	STD-1411	Nut	2-15
STD-160	Washer	2-11	STD-1411	Nut	3-5
STD-160	Washer	2-13	STD-1411	Nut	6-1
STD-160	Washer	2-15	STD-1420	Nut	2-3
STD-160	Washer	6-1	STD-1727	Washer	5-5
STD-160	Washer	6-3	STD-1774	Pin	2-15
STD-251	Washer	6-5	STD-1821	Hose	3-7

NUMERICAL INDEX (CONT.)

PART NO.	PART NAME	PAGE NO.	PART NO.	PART NAME	PAGE NO.
STD-1856	Screw	2-11	61166	Thrust Button	2-3
STD-1882	Screw	2-5	61166	Thrust Button	2-13
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