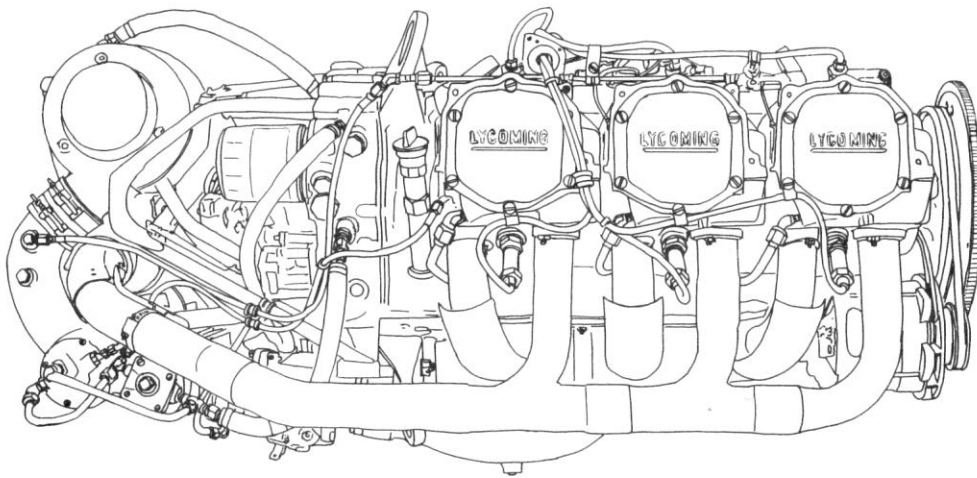


LYCOMING

Engine Parts Catalog



TIO-540-AA1AD

Wide Cylinder Flange Crankcase Model Engine

LYCOMING

January 2011
2nd Edition

Part No. PC-315-4

652 Oliver Street
Williamsport, PA 17701

INTRODUCTION

This illustrated parts catalog contains a complete parts listing for the Lycoming TIO-540-AA1AD wide cylinder flange model aircraft engines.

Major assembly and sub-assembly parts of the engines 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 these 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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TABLE OF CONTENTS

SECTION	PAGE
Introduction	i
Table of Contents.....	ii
Oversize and Undersize Parts	iii
1. CRANKCASE, CRANKSHAFT AND CAMSHAFT GROUP	
Crankcase Assembly.....	1-1
Oil Level Gage and Engine Mounting Brackets	1-3
Crankcase Related Parts	1-5
Crankshaft and Related Parts.....	1-7
Camshaft and Related Parts.....	1-9
Propeller Governor Drive Assembly	1-11
Crankshaft and Fuel Pump Idler Gears.....	1-13
Crankcase Attaching Parts.....	1-15
2. ACCESSORY HOUSING AND RELATED PARTS	
Accessory Housing Assembly	2-1
Oil Pump Assembly and Accessory Housing Attaching Parts.....	2-3
Fuel Pump Assembly.....	2-5
Oil Filter Assembly and Oil Cooler Bypass Valve	2-6
Vacuum and Hydraulic Pump Drives, Oil Cooler and Breather Fittings	2-7
3. CYLINDER, PISTON AND VALVE TRAIN	
Connecting Rods, Pistons and Ring Assemblies	3-1
Cylinder Assembly	3-3
Valve Assembly.....	3-5
Cylinder Related Parts	3-7
4. IGNITION SYSTEM	
Magneto, Magneto Drive and Spark Plugs	4-1
5. ELECTRICAL COMPONENTS	
Alternator, Belt, Starter Motor and Attaching Parts	5-1
Alternator Mounting and Attaching Parts.....	5-3
Dual Alternator Mounting and Attaching parts	5-5
6. OIL SUMP AND INDUCTION SYSTEM	
Oil Sump Assembly.....	6-1
Intake Pipes and Air Inlet Duct	6-3
Fuel Injector, Fuel Manifold and Air Bleed Nozzles.....	6-5
Injector Nozzle Vent Manifolds and Attachments.....	6-7
7. TURBOCHARGER AND EXHAUST SYSTEMS	
Exhaust Pipes and Transition Assembly.....	7-1
Turbocharger, Support Assembly and Exhaust Bypass Valve.....	7-3
Density Controller and Related Parts.....	7-5
Differential Pressure Controller and Related Parts	7-7
8. SERVICE KIT SECTION	8-1
9. NUMERICAL INDEX	9-1

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
66610	BUSHING		X	X								
69260	INSERT			X								
69796	DOWEL		X									
71903-A	BUSHING	See latest revision of Service Instruction No. 1143 for application.										
72057	SEAT			X		X						
72058	SEAT			X		X	X					
75657-S	BUSHING		X	X	X	X						
72155-S	BUSHING		X	X	X	X						
75656-S	BUSHING		X	X	X	X						
73810	BUSHING	See latest revision of Service Instruction No. 1142 for application.										
14H21950	RING			X		X						
74241	RING			X								
76943-S	GUIDE	See latest revision of Service Instruction No. 1256 for application.										
77160-S	GUIDE	See latest revision of Service Instruction No. 1256 for application.										
18M26105	BEARING									X	X	X
LW-13792	SEAL	See latest revision of Service Instruction No. 1324 for application.										
18A26093	BEARING				X					X*	X*	X*
18D26098	BEARING	See latest revision of Service Instruction No. 1377 for application.										
STD-2078	DOWEL	X	X	X	X							
STD-1065	DOWEL	X	X	X	X							

* - Also available in P10 oversize.

NOTE

When ordering oversize and undersize parts, be sure to specify the required oversize and undersize dimension along with the proper part number. For example, to order bearing 18A26093 in .003 undersize, order P/N 18A26093-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	QUANTITY PER ASSEMBLY
1	11E24002-D1*	CRANKCASE ASSEMBLY	1
	11E24002-D3*	CRANKCASE ASSEMBLY	1
2	STD-557	DOWEL, 1/4 diameter x 11/16 long, hollow	2
3	50-15	STUD, 1/2-13 x 1-7/8 long	12
4	38D-17	STUD, 3/8-24 x 2-1/8 long, drilled	1
5	38-13	STUD, 3/8-16 x 1-5/8 long	24
6	38-16	STUD, 3/8-16 x 2.00 long	8
7	38-22	STUD, 3/8-16 x 2-3/4 long	1
8	31C-12	STUD, 5/16-18 x 1-1/2 long	2
9	31C-13	STUD, 5/16-18 x 1-5/8 long	1
10	10-8	STUD, No. 10-32 x 1.00 long	3
11	1102	PLUG, 1/8-27 NPT, Allen head	8
12	STD-1339	PLUG, 1/16-27 NPT, Allen head	7
13	69796	DOWEL, Crankshaft bearing	2
14	STD-514	DOWEL, 5/16 diameter x 1/2 long	2
15	72158	BUSHING, Governor drive idler gear	1
16	31C-19	STUD, 5/16-18 x 2-3/8 long	4
17	73772	NOZZLE ASSEMBLY, Piston cooling	6
18	65007**	RETAINER, Shroud tube	12

* - These parts are not available as a service item. Refer to Service Kits, Section 8, for applicable Crankcase Assembly and Thru-Stud Kit Part Number.

** - Early crankcases used item no. 18 retainer, P/N 65007, installed in shroud tube bosses. Later crankcases are machined as a product improvement to accept shroud tubes without retainers. This part is a service item only.

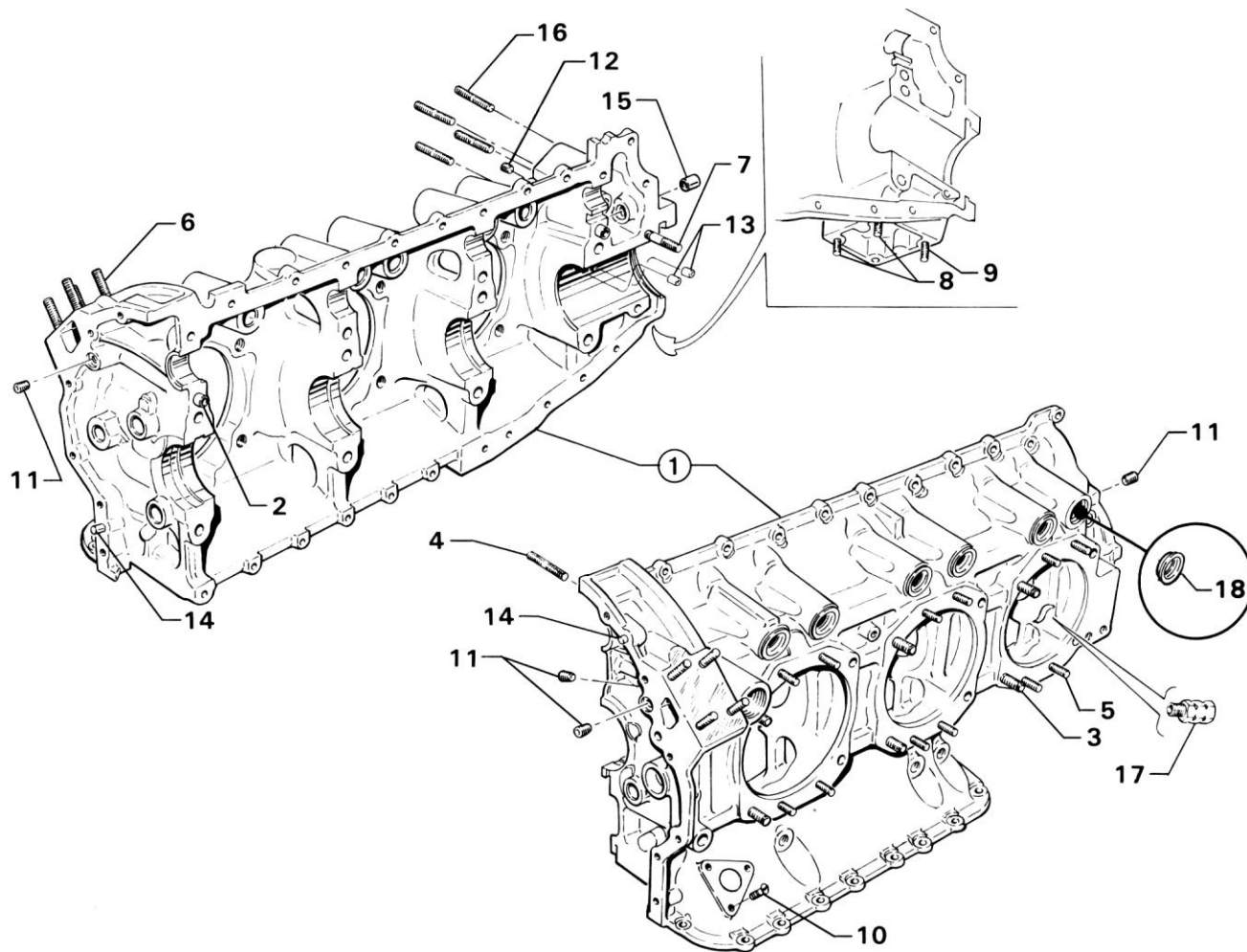


FIGURE 1. CRANKCASE ASSEMBLY

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

FIG. REF. 2	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	LW-18481	GASKET, Oil filler adapter	1
2	LW-18482	ADAPTER, Oil filler tube	1
3	STD-28	WASHER, No. 10 plain	3
4	STD-251	WASHER, No. 10 lock, internal teeth	3
5	STD-63	NUT, No. 10-32 plain	3
6	72059	GASKET, Oil filler extension	1
7	75735	TUBE, Oil level	1
8	74068	“O” RING, Oil level gage	1
9	LW-16783-10	GAGE ASSEMBLY, Oil level	1
10	12A19770	BRACKET, Engine mounting (Dynafoal)	4
11	STD-33	WASHER, 3/8 plain	16
12	STD-678	WASHER, 3/8 lock, internal teeth	16
13	STD-596	NUT, 3/8-24 plain	16

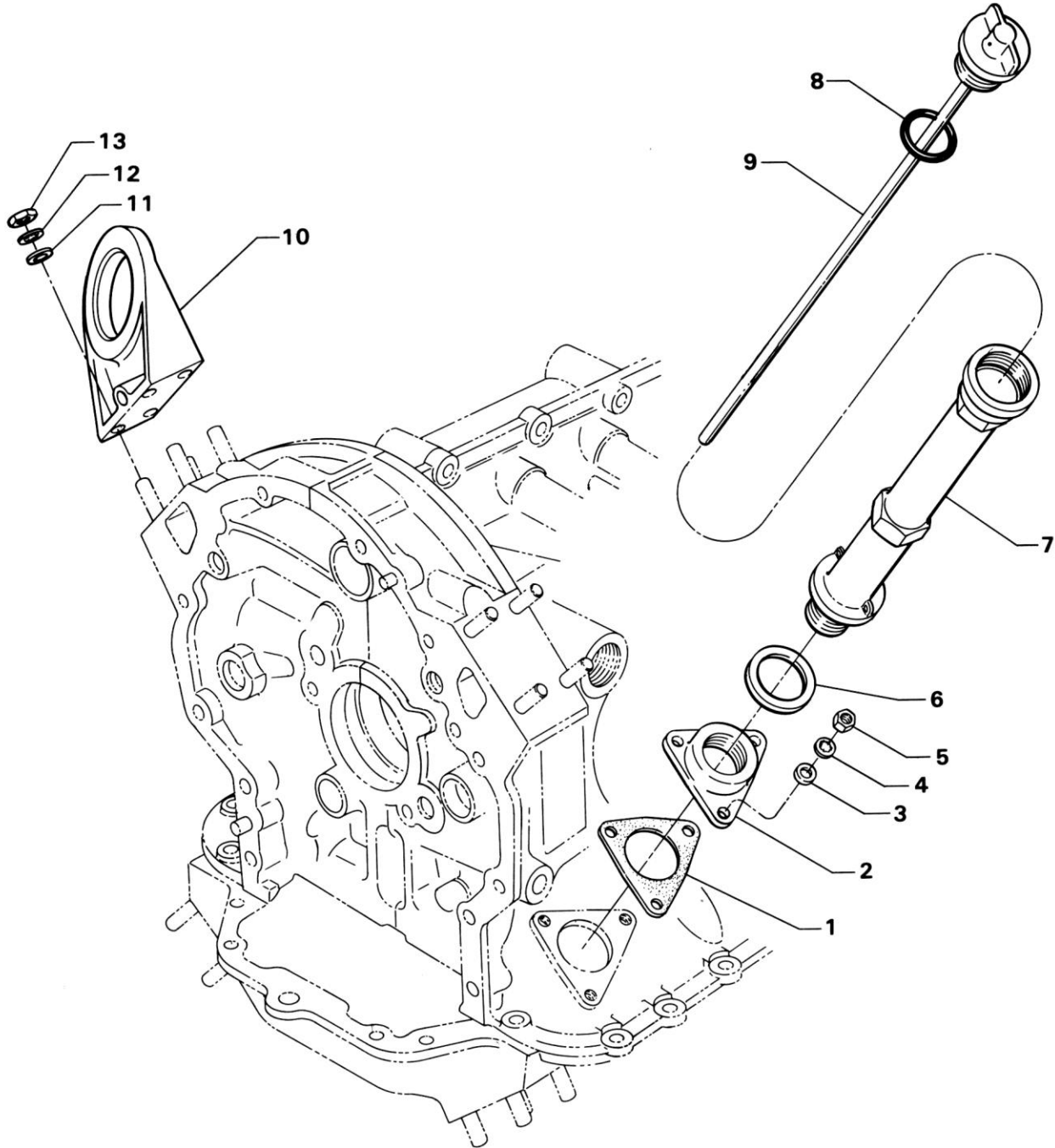


FIGURE 2. OIL LEVEL GAGE AND ENGINE MOUNTING BRACKETS

CRANKCASE, CRANKSHAFT AND CAMSHAFT GROUP
CRANKCASE RELATED PARTS

FIG. REF. 3	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	1028-B	BALL, 11/16 diameter	1
2	LW-11713*	SPRING, Oil pressure relief valve	1
	68668*	SPRING, Oil pressure relief valve	1
	61084*	SPRING, Oil pressure relief valve	1
	77467*	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, adjustable	1
5	18D26098	BEARING, Crankshaft	6
6	18A26093	BEARING, Crankshaft, front	2
7	LW-13792**	SEAL, Crankshaft oil, solid	1
8	72091	RING, Oil seal, 23/64 I.D. x 7/64 diameter section	2
9	15B26064	BODY, Hydraulic tappet	12

* - 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.

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

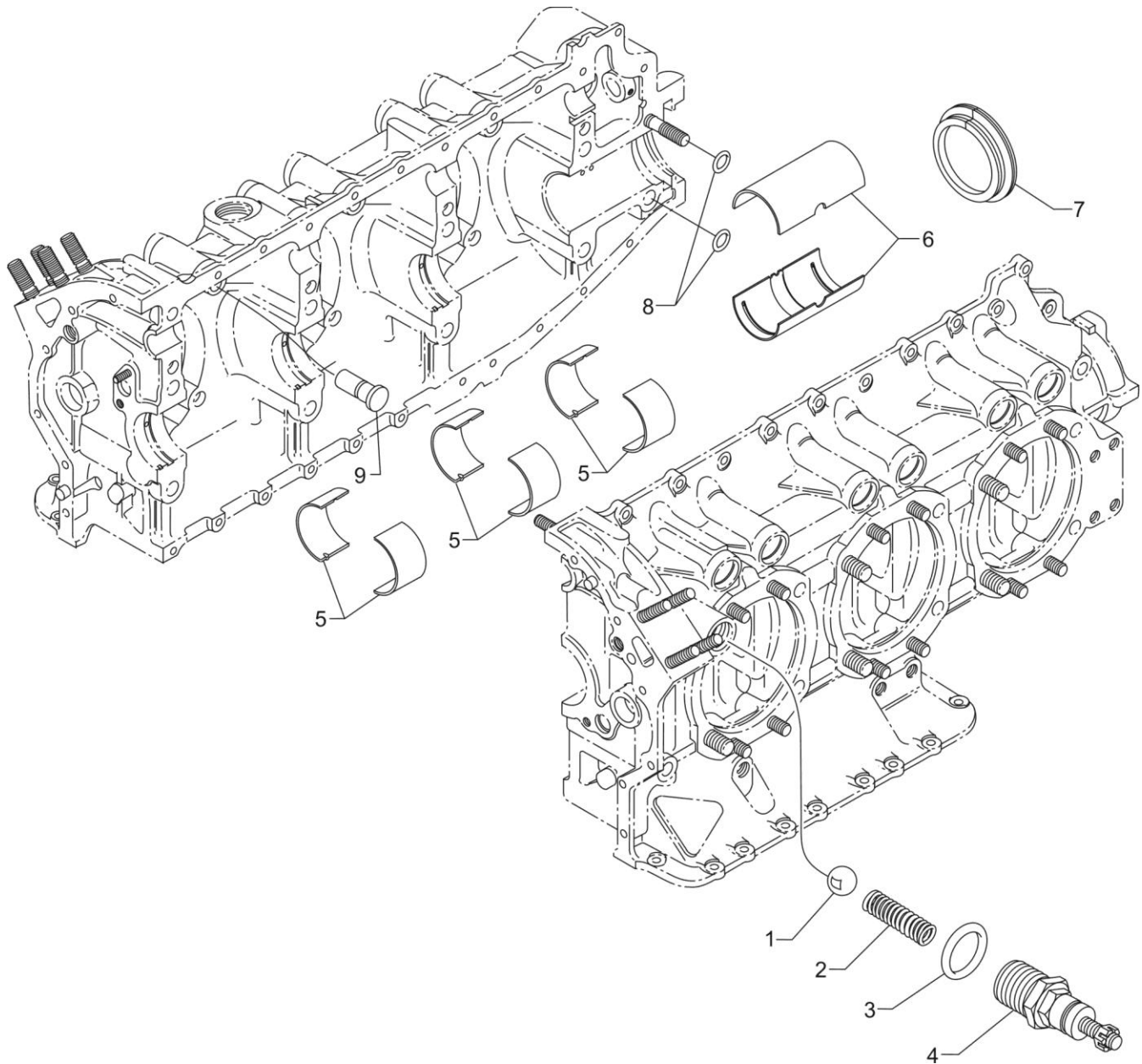


FIGURE 3. CRANKCASE RELATED PARTS

CRANKCASE, CRANKSHAFT AND CAMSHAFT GROUP
CRANKSHAFT AND RELATED PARTS

FIG. REF. 4	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	13E47625	CRANKSHAFT ASSEMBLY	1
	13E27625	CRANKSHAFT ASSEMBLY	1
2	STD-1211	PLUG, 2.00 diameter expansion	1
3	73810	BUSHING, Crankshaft dynamic counterweight	4
4	71640	PLUG, 1-3/8 diameter	1
5	75656-S	BUSHING, Propeller flange, long	4
6	72155-S	BUSHING, Propeller flange, short	1
7	75657-S	BUSHING, Propeller flange, indexing	1
8	STD-2078*	DOWEL, 3/8 O.D. x 1/2 long	1
	STD-1065**	DOWEL, 19/64-1/4 diameter	1
9	LW-19227♦	COUNTERWEIGHT ASSEMBLY	2
10	71903-A	BUSHING, Dynamic counterweight	8
11	72797♦	ROLLER, Dynamic counterweight, 6.3 order	2
12	72965♦	ROLLER, Dynamic counterweight, 5.1 order	2
13	LW-14820	RING, Internal retaining	8
14	71907	WASHER, Dynamic counterweight	8
15	13S19649†	GEAR, Crankshaft	1
16	LW-10332	LOCKPLATE, Crankshaft gear	1
17	STD-2251	BOLT, 1/2-20 UNF-3A x 1-19/32 long, hex. head	1
18	LW-10184	SUPPORT ASSEMBLY, Starter ring gear, 12/14 pitch	1
	LW-16471	SUPPORT ASSEMBLY, Starter ring gear, 12/14 pitch	1
19	72566	GEAR, Starter ring, 12/14 pitch	1

* - Use with Crankshaft Assembly P/N 13E47625.

** - Use with Crankshaft Assembly P/N 13E27625.

♦ - See latest revision of Service Instruction No. 1012 for proper counterweight and roller location.

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

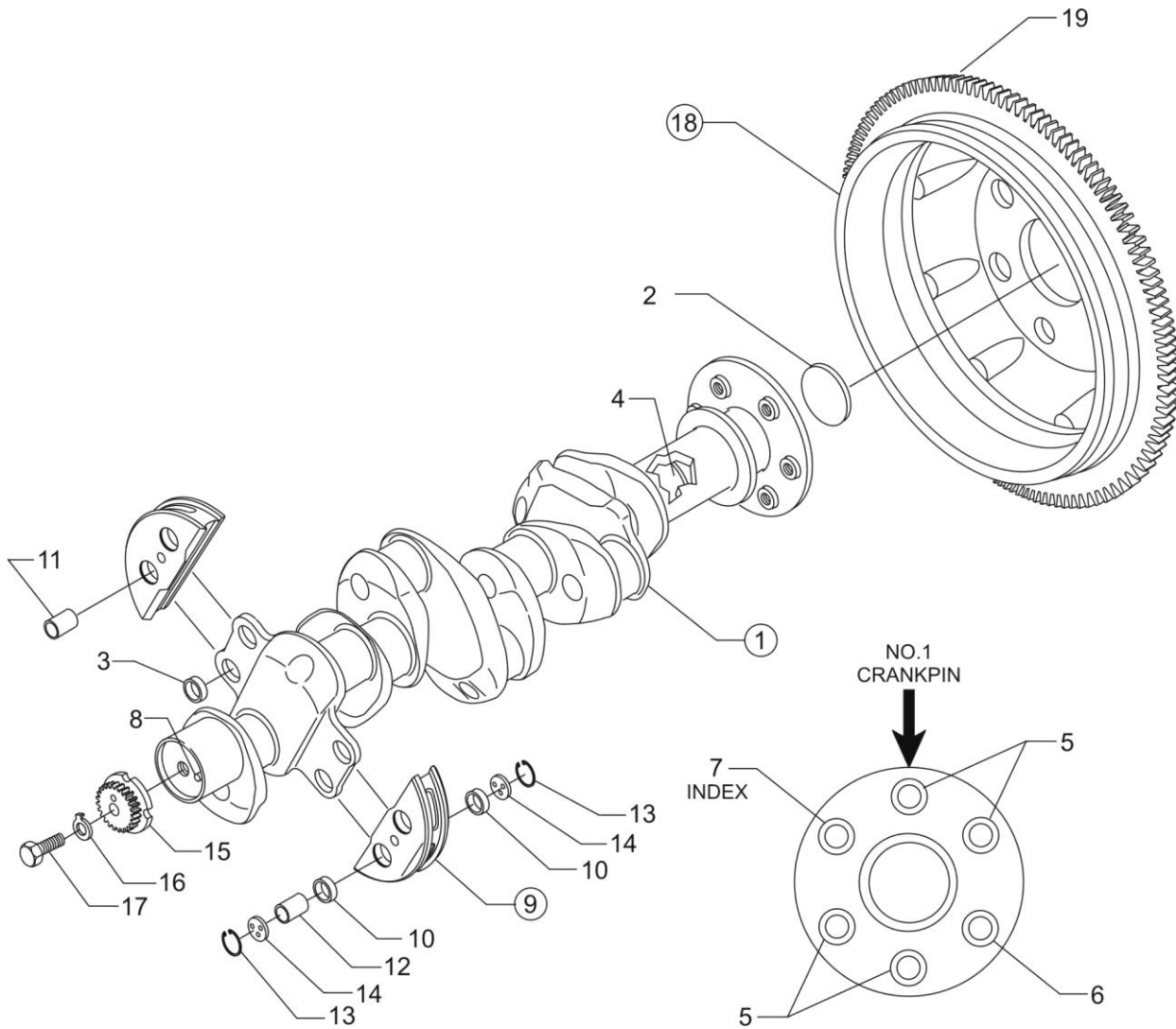


FIGURE 4. CRANKSHAFT AND RELATED PARTS

CRANKCASE, CRANKSHAFT AND CAMSHAFT GROUP
CAMSHAFT AND RELATED PARTS

FIG. REF. 5	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	LW-19340	CAMSHAFT ASSEMBLY	1
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, Retaining	1

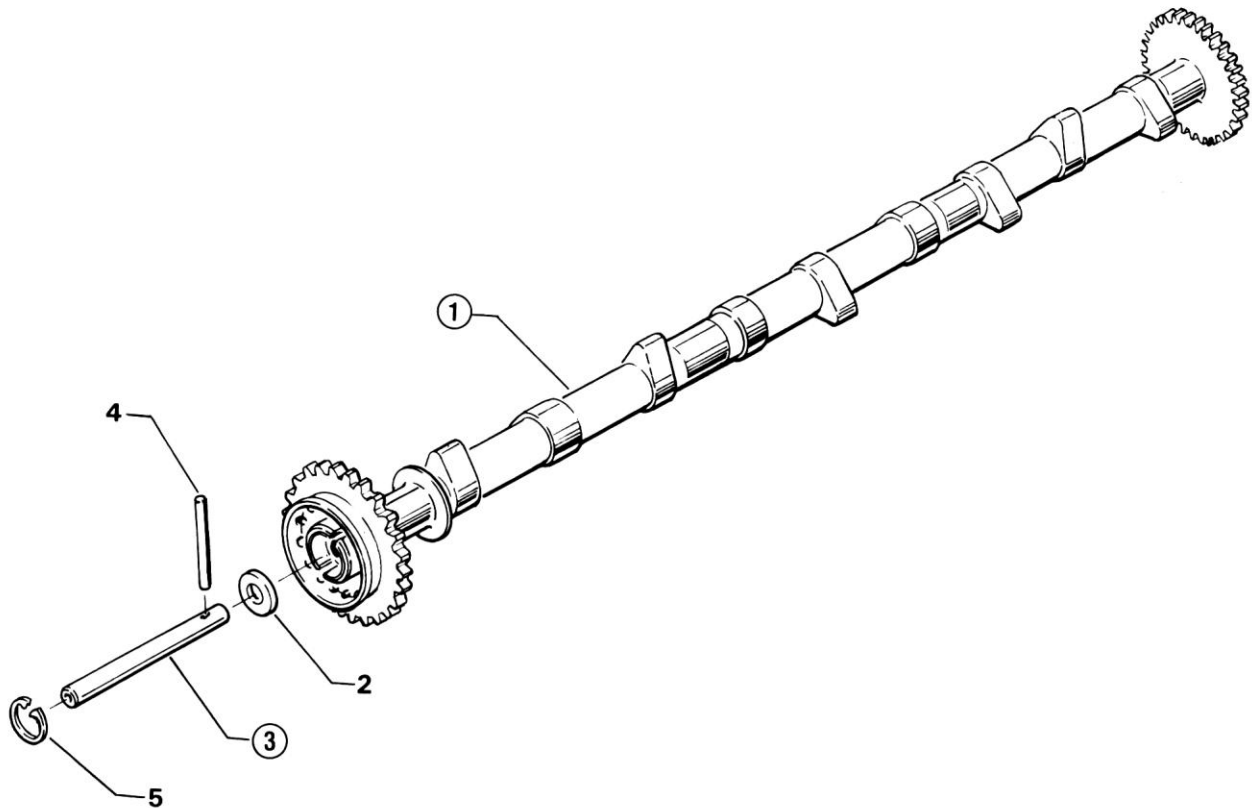


FIGURE 5. CAMSHAFT AND RELATED PARTS

CRANKCASE, CRANKSHAFT AND CAMSHAFT GROUP
PROPELLER GOVERNOR DRIVE ASSEMBLY

FIG. REF. 6	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
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-.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 (Woodward governor)	20
	STD-35	WASHER, 5/16 plain (AN governor)	4
14	STD-475	WASHER, 5/16 lock, internal teeth	4
15	STD-1410	NUT, 5/16-18 plain	4

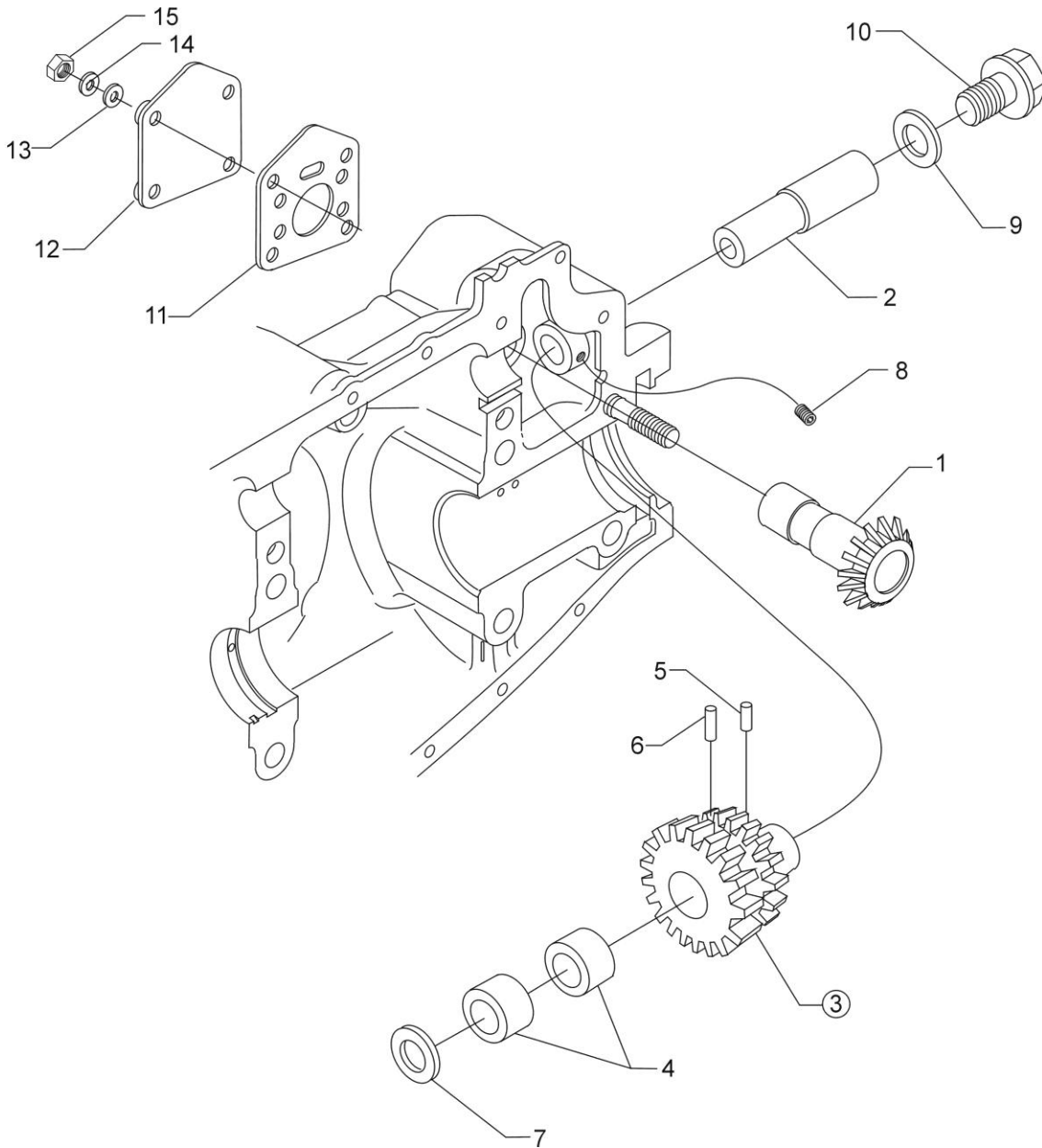


FIGURE 6. PROPELLER GOVERNOR DRIVE ASSEMBLY

CRANKCASE, CRANKSHAFT AND CAMSHAFT GROUP
CRANKSHAFT AND FUEL PUMP IDLER GEARS

FIG. REF. 7	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	LW-10292	GEAR ASSEMBLY, Crankshaft idler, plain	1
2	LW-10299	SHAFT, Crankshaft idler gear	1
3	LW-10297	GEAR ASSEMBLY, Crankshaft idler (heavy)	1
4	LW-10325	SPACER, Idler gear	1
5	LW-10324	GEAR ASSEMBLY, Fuel pump idler	1
6	LW-10299	SHAFT, Crankshaft idler gear	1
7	LW-10325	SPACER, Idler gear	1
8	LW-10329	SHAFTGEAR ASSEMBLY, Fuel pump drive	1
9	61166	THRUST BUTTON	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	SEAL, Oil, 3/4 I.D. x 1-3/8 O.D.	1

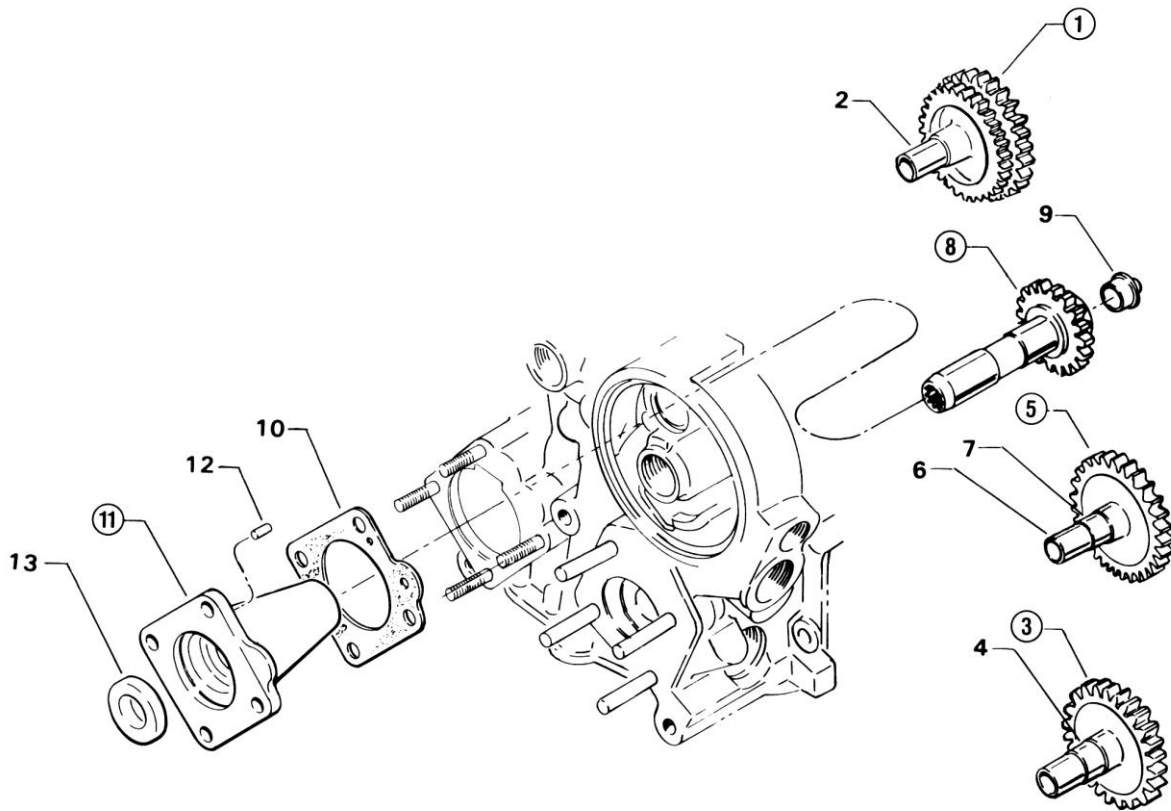


FIGURE 7. CRANKSHAFT AND FUEL PUMP IDLER GEARS

CRANKCASE, CRANKSHAFT AND CAMSHAFT GROUP
CRANKCASE ATTACHING PARTS

FIG. REF. 8	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	LW-25-1.50	BOLT, 1/4-20 x 1-1/2 long, hex. head	8
2	LW-25-2.00	BOLT, 1/4-20 x 2.00 long, hex. head	2
3	STD-8	WASHER, 1/4 plain	21
4	60803	STRAP, Lifting	2
5	LW-25-1.75	BOLT, 1/4-20 x 1-3/4 long, hex. head	2
6	LW-25-1.13	BOLT, 1/4-20 x 1-1/8 long, hex. head	1
7	STD-160	WASHER, 1/4 lock, internal teeth	13
8	STD-1411	NUT, 1/4-20 plain	12
9	LW-25S1.50	BOLT, 1/4-20 x 1-1/2 long, hex. head, drilled end	6
10	STD-8	WASHER, 1/4 plain	18
11	STD-2249	NUT, 1/4-20 slotted	6
12	STD-33	WASHER, 3/8 plain	1
13	STD-872	NUT, 3/8-24 slotted	1
14	AN6-34A	BOLT, 3/8-24 x 3-37/64 long, hex. head	1
15	STD-33	WASHER, 3/8 plain	3
16	STD-678	WASHER, 3/8 lock, internal teeth	2
17	STD-596	NUT, 3/8-24 plain	2
18	76220	STUD, 1/2-20 x 10-45/64 long	8
19	LW-31-2.75	BOLT, 5/16-18 x 2-3/4 long, hex. head	1
20	LW-31-1.16	BOLT, 5/16-18 x 1-5/32 long, hex. head	3
21	STD-35	WASHER, 5/16 plain	4
22	STD-475	WASHER, 5/16 lock, internal teeth	4

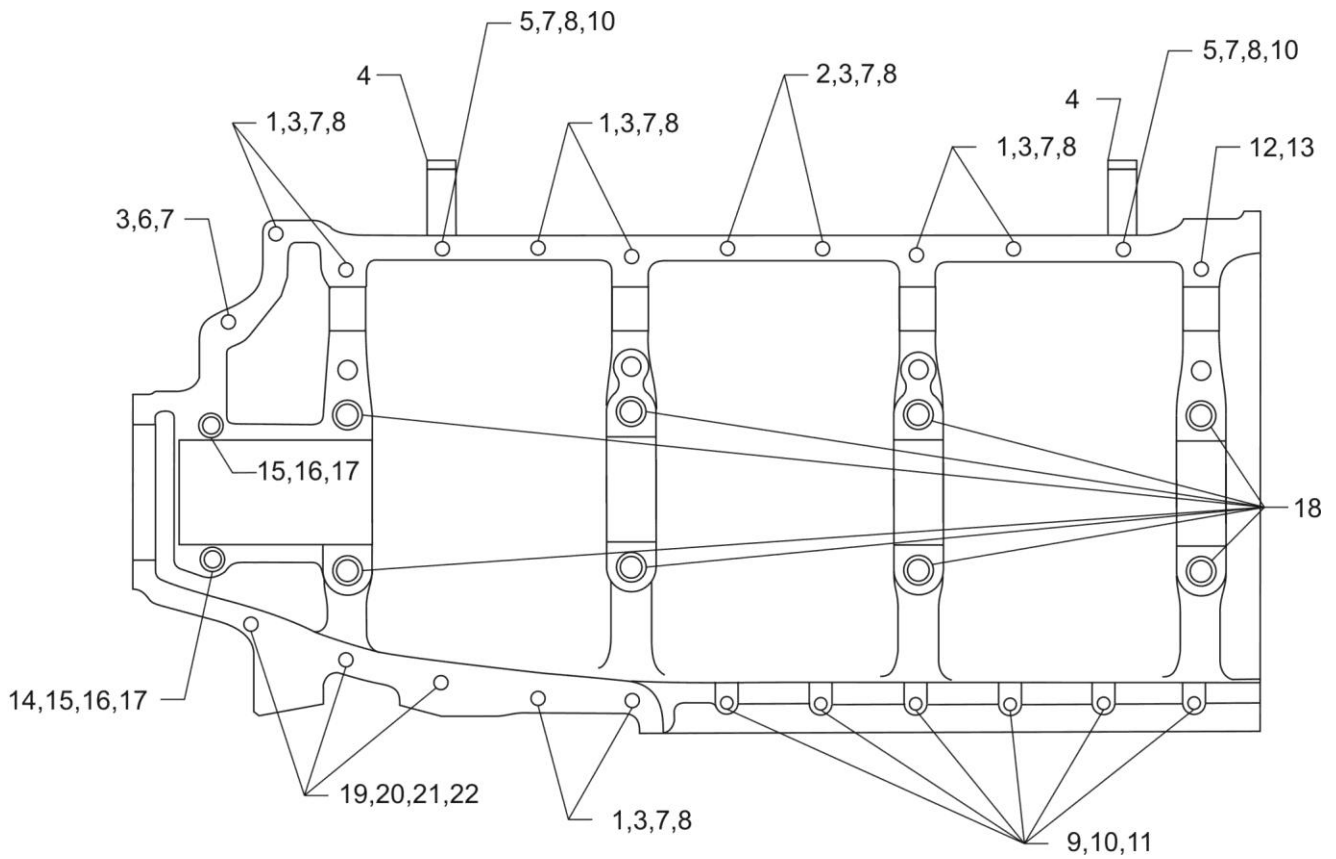


FIGURE 8. CRANKCASE ATTACHING PARTS

ACCESSORY HOUSING AND RELATED PARTS
ACCESSORY HOUSING ASSEMBLY

FIG. REF. 9	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	73818	GASKET, Accessory housing	1
2	21D21611-01	HOUSING ASSEMBLY, Accessory	1
3	25C-12	STUD, 1/4-20 x 1-1/2 long	4
4	31C-13	STUD, 5/16-18 x 1-5/8 long	2
5	31C-19	STUD, 5/16-18 x 2-3/8 long	4
6	31CD-20	STUD, 5/16-18 x 2-1/2 long, drilled	3
7	31C-26	STUD, 5/16-18 x 3-1/4 long	4
8	STD-1339	PLUG, 1/16-27 NPT, Allen head	1
9	LW-10341	INSERT, 1.00-14 Heli-coil x 3/8 long	1
10	MS124703	INSERT, 3/4-16 Heli-coil x 1-1/8 long	1
11	LW-12589	INSERT, 5/8-18 Heli-coil x 3/8 long	1
12	MS29512-10	SEAL, Oil, 3/32 section x 45/64	1
13	03C21720	PLUG, 7/8-14 thread	1
14	1102	PLUG, 1/8-27 NPT, Allen head	1

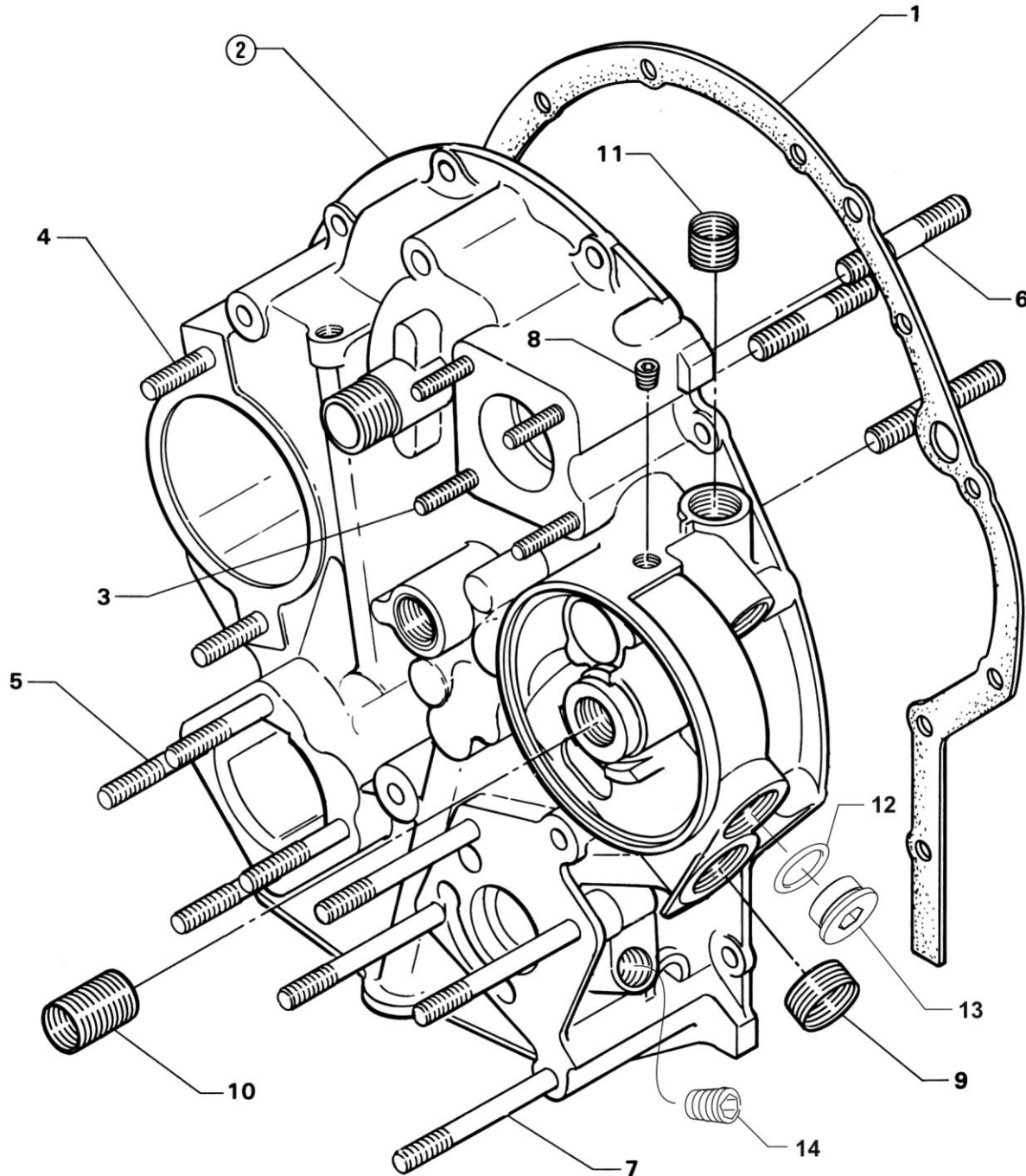


FIGURE 9. ACCESSORY HOUSING ASSEMBLY

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

FIG. REF. 10	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	LW-10344	BODY ASSEMBLY, Oil pump	1
2	60329	SHAFT, Oil pump idler	1
3	STD-714	PIN, 1/8 diameter x 1.00 long, cotter	1
4	LW-10318	GEAR ASSEMBLY, Oil pump drive	1
5	61166	THRUST BUTTON, Oil pump drive gear	1
6	51B23274	IMPELLER, Oil pump driving	1
7	51C23275	IMPELLER, Oil pump driven	1
8	STD-35	WASHER, 5/16 plain	3
9	STD-1420	NUT, 5/16-18 slotted	3
10	LW-14260	SEAL, Tachometer drive, oil	1
11	STD-8	WASHER, 1/4 plain	12
12	STD-160	WASHER, 1/4 lock, internal teeth	12
13	LW-25-0.94	BOLT, 1/4-20 x 15/16 long, hex. head	9
14	LW-25-1.25	BOLT, 1/4-20 x 1-1/4 long, hex. head	1
15	LW-25-0.81	BOLT, 1/4-20 x 13/16 long, hex. head	2

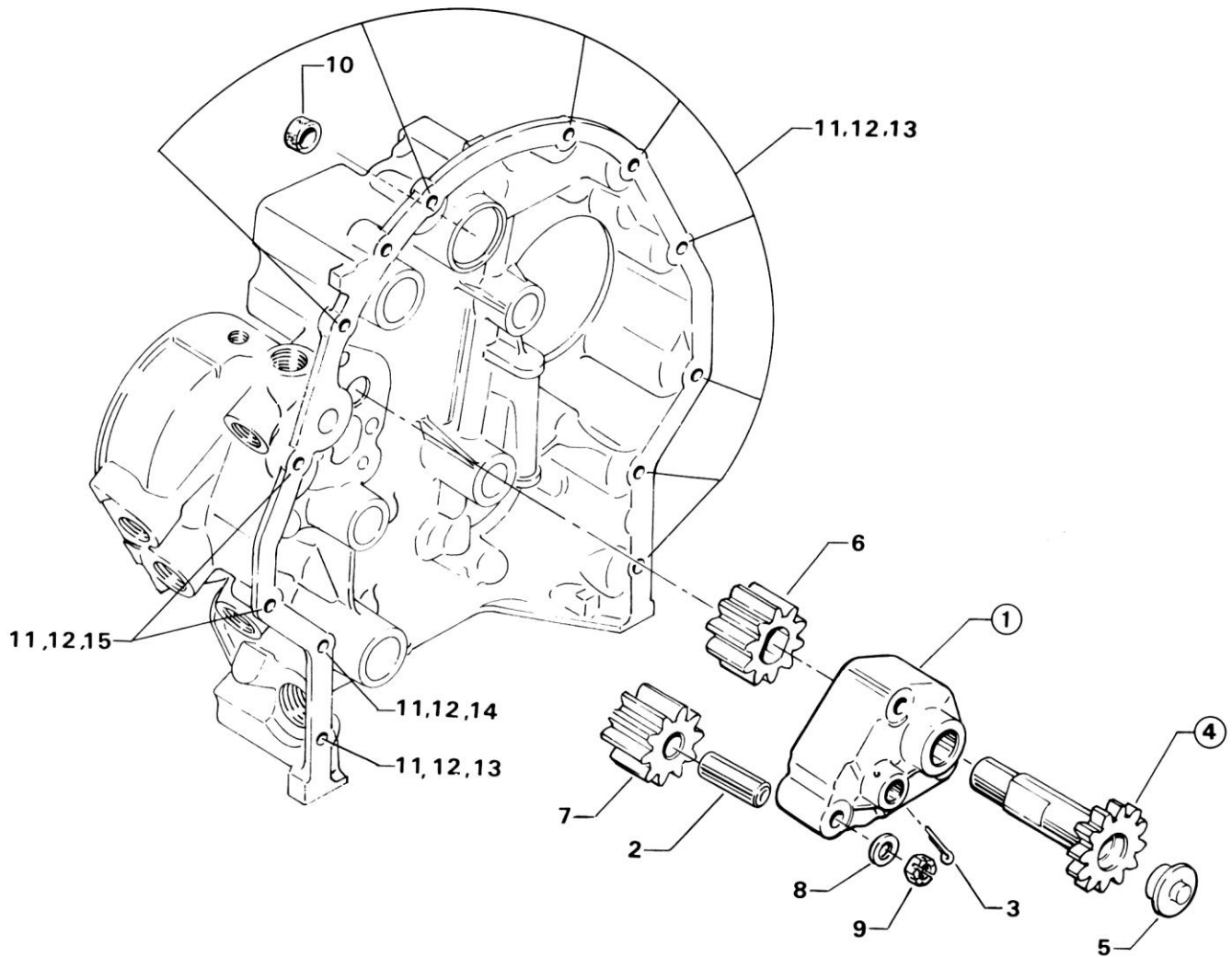


FIGURE 10. OIL PUMP ASSEMBLY AND ACCESSORY HOUSING ATTACHING PARTS

ACCESSORY HOUSING AND RELATED PARTS FUEL PUMP ASSEMBLY

FIG. REF. 11	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	LW-10799	SPACER, Fuel pump insulating	1
2	62E22583	PUMP ASSEMBLY, Fuel (RG9080-J6A/M)	1
3	62E23188	PUMP, Fuel (200F-5003)	1
4	LW-11882	ELBOW, Inlet, 90°	1
5	AN912-5	BUSHING, Reducer	1
6	MS20826-6	TEE, 1/4 ANPT to 3/8	1
7	AN929-6	CAP ASSEMBLY, 3/8 tube	1
8	02A21378	ELBOW, 1/4 tube to 1/8 NPT	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

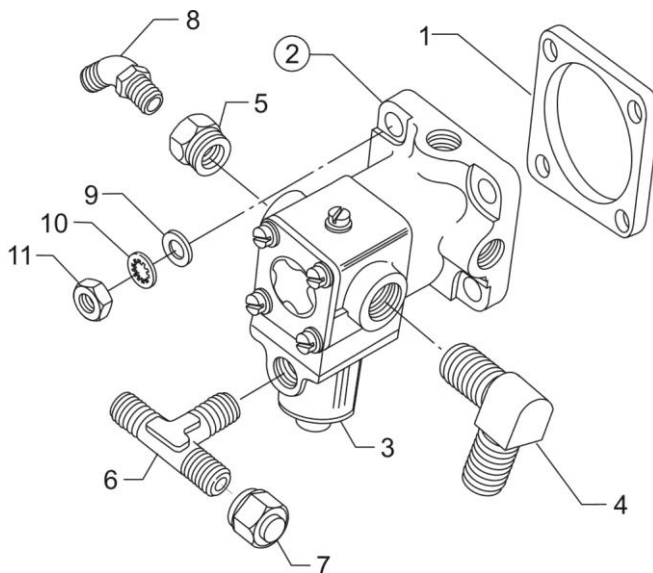


FIGURE 11. FUEL PUMP ASSEMBLY

ACCESSORY HOUSING AND RELATED PARTS OIL FILTER ASSEMBLY AND OIL COOLER BYPASS VALVE

FIG. REF. 12	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	05S21021	SPRING, Oil filter bypass valve	1
2	55K21022	SPACER, Oil pressure bypass valve	1
3	76539	SEAT, Oil relief valve	1
4	LW-10320	SLEEVE, Oil filter bypass valve	1
5	MS16625-1100	RING, Internal retaining	1
6	LW-13906*	OIL FILTER, Short	1
7	54E23093	KIT, Converted plate, oil filter	1
8	53E22144	VALVE ASSEMBLY, Temperature control oil cooler bypass	1
9	76510	GASKET, Valve assembly	1

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

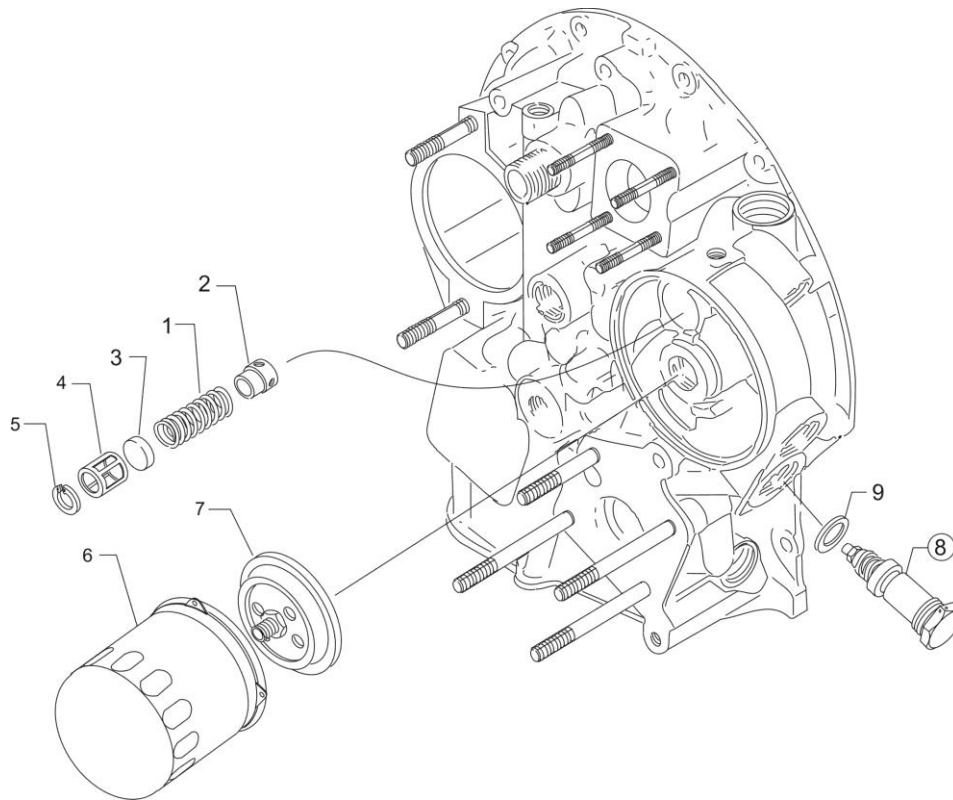


FIGURE 12. OIL FILTER ASSEMBLY AND OIL COOLER BYPASS VALVE

ACCESSORY HOUSING AND RELATED PARTS
VACUUM AND HYDRAULIC PUMP DRIVES, OIL COOLER AND BREATHER FITTINGS

FIG. REF. 13	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	LW-10307	GEAR ASSEMBLY, Accessory driven	1
2	61166	THRUST BUTTON, Vacuum pump gear	1
3	71596	WASHER, Accessory drive gear	1
4	06A19956	OIL SEAL, 7/8 I.D. x 1-1/2 O.D. x 5/16 wide	1
5	8313	GASKET, Vacuum pump	1
6	60430	COVER, Vacuum pump	1
7	STD-8	WASHER, 1/4 plain	4
8	STD-160	WASHER, 1/4 lock, internal teeth	4
9	STD-1411	NUT, 1/4-20 plain	4
10	AN919-15	REDUCER, 7/8 flared tube to 1/2 tube	2
11	AN844-12D	ELBOW, 3/4 NPT to 3/4 I.D. hose	1
12	03C21720	PLUG, 7/8-14 thread	1
13	MS29512-10	SEAL, Oil, 3/4 O.D. x 7/64 section	3
14	LW-18974*	GEAR ASSEMBLY, Accessory driven	1
15	LW-18995*	THRUST BUTTON, Accessory driven gear	1
16	71596*	WASHER, Accessory driven gear	1
17	72053*	GASKET	2
18	LW-12347*	PLATE, Propeller governor pad	1
19	72378*	COVER	1
20	LW-16583*	SPACER, 5/16 I.D. x 1/2 O.D. x 1-3/16 long	4
21	STD-35*	WASHER, 5/16 plain	8
22	STD-475*	WASHER, 5/16 lock, internal teeth	4
23	STD-1410*	NUT, 5/16-18 plain	4
24	MS29512-06	SEAL, Oil, 5/64 diameter section x 15/32 I.D.	1
25	AN814-6L	PLUG, Governor oil line	1

* - Used on engines employing a rear propeller governor drive.

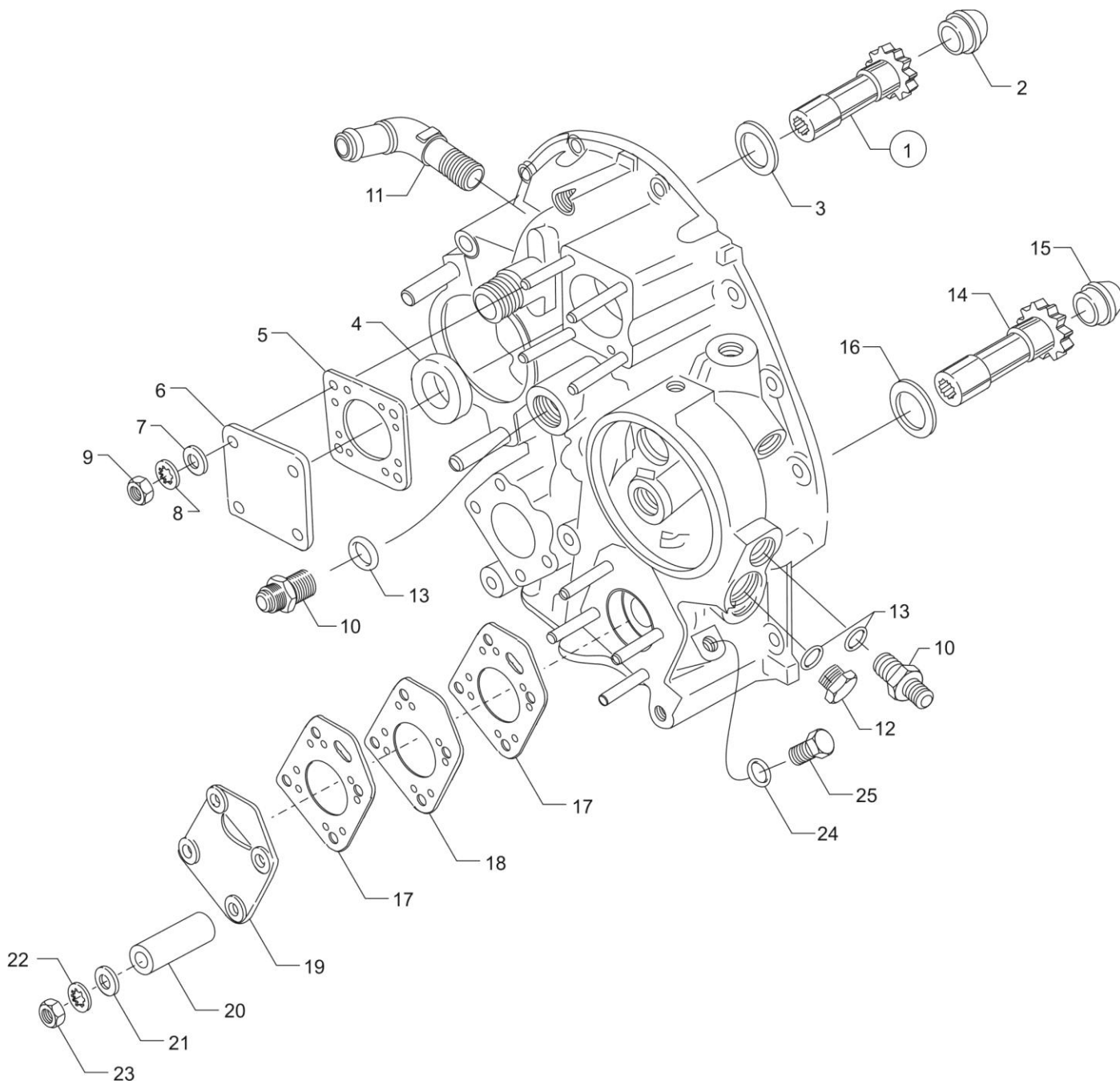


FIGURE 13. VACUUM AND HYDRAULIC PUMP DRIVES, OIL COOLER AND BREATHER FITTINGS

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

FIG. REF. 14	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	LW-11750	CONNECTING ROD ASSEMBLY	6
2	LW-13923	BUSHING, Connecting rod, upper	6
3	14S23890*	BOLT, Connecting rod	12
	75061**	BOLT, Connecting rod	12
4	LW-12186	NUT, Connecting rod bolt	12
5	18M26105	BEARING, Connecting rod	12
6	LW-12733	PISTON, Compression ratio 8.00:1	6
7	LW-14078	PIN, Piston	6
8	72198	PLUG, Piston pin	12
9	74241	RING, Piston compression	12
10	14H21950	RING, Piston, oil regulating (expander type)	6

* - Lycoming use only.

** - Service use only.

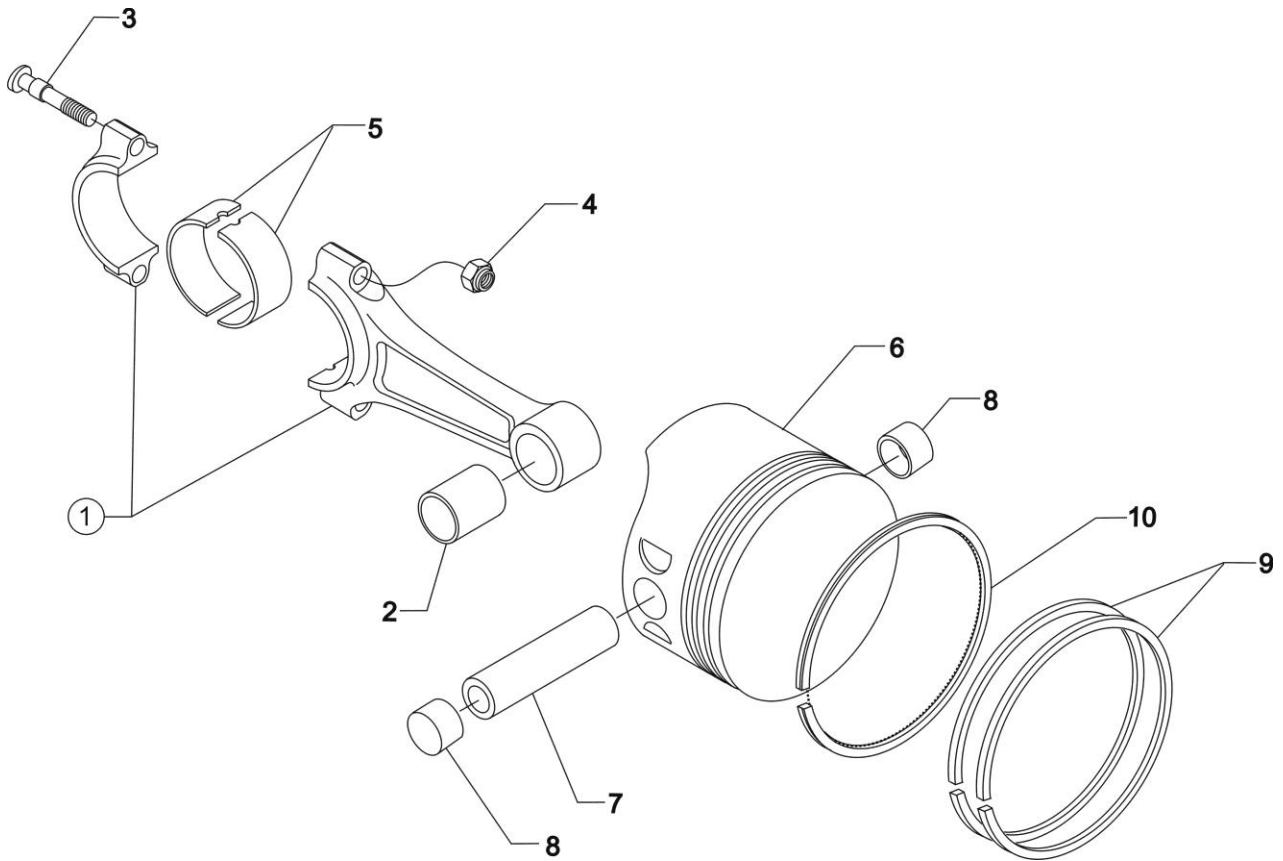


FIGURE 14. CONNECTING RODS, PISTONS AND RING ASSEMBLIES

CYLINDER, PISTON AND VALVE TRAIN
CYLINDER ASSEMBLY

FIG. REF. 15	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	16A22130	CYLINDER AND HEAD ASSEMBLY, Nitrided	6
2	72057	SEAT, Intake valve	6
3	72058	SEAT, Exhaust valve	6
4	76943	GUIDE, Valve intake, grooved (flangeless)	6
5	16R22126	GUIDE, Valve exhaust, grooved (flangeless)	6
6	69260	INSERT, Spark plug, 18-1.5 MM (long reach)	12
7	STD-1353	INSERT, No. 10-24 UNC x 3/8 long	6
8	31C-12	STUD, 5/16-18 x 1-1/2 long	12
9	25C-8	STUD, 1/4-20 x 1.00 long	6
10	MS20823-6D	ELBOW, 45°, 3/8 flared tube	6
11	66610	BUSHING, Rocker shaft	24
12	1102*	PLUG, 1/8-27 NPT, Allen head	5

* - Assemble in cylinder head nos. 1, 2, 3, 4 and 6.

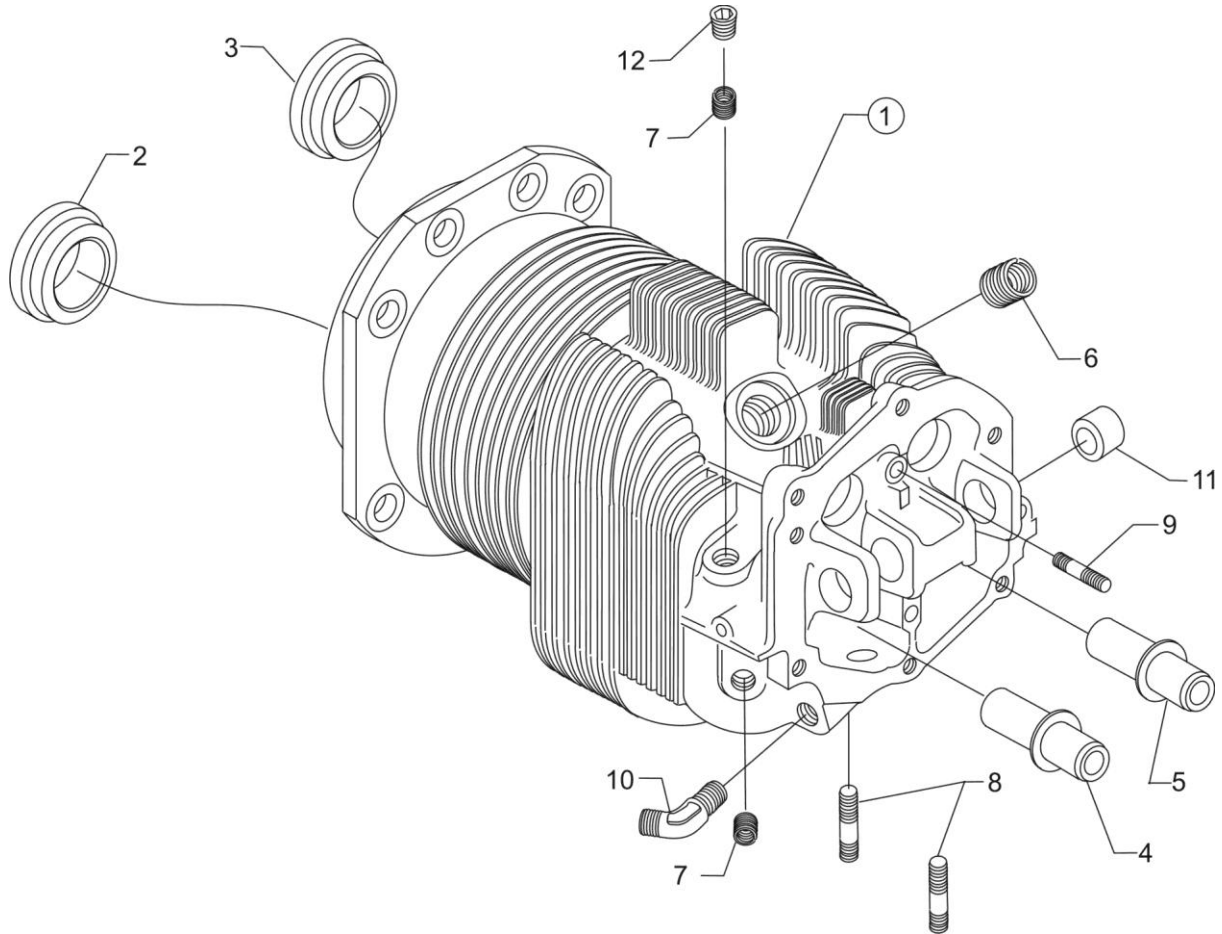


FIGURE 15. CYLINDER ASSEMBLY

CYLINDER, PISTON AND VALVE TRAIN
VALVE ASSEMBLY

FIG. REF. 16	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	17A23938	VALVE, Intake	6
2	17B23936	VALVE, Exhaust (rotator type)	6
3	LW-10077	SEAT, Valve spring, upper intake	6
4	LW-16475	SEAT, Valve spring, upper exhaust (rotator type)	6
5	65441	SEAT, Valve spring, lower intake	6
6	LW-13323	SEAT, Valve spring, lower exhaust	6
7	60009	KEY, Valve, intake	12
8	17C21191	KEY, Valve, exhaust (rotator type)	12
9	17C19386	CAP, Valve stem, exhaust (rotator type)	6
10	LW-11795	SPRING, Valve, inner	12
11	LW-11800	SPRING, Valve, outer	12
12	MS20823-3*	ELBOW, 1/8 NPT to 3/16 tube, 45°	1
13	15B26066	PLUNGER ASSEMBLY, Hydraulic tappet	12
14	15B21319	SOCKET, Push rod, hydraulic tappet	12
15	LW-11485	TUBE, Push rod shroud	12
16	LW-14995	SPRING, Shroud tube	6
17	LW-12272	LOCKPLATE, Shroud tube	6
18	STD-1411	NUT, 1/4-20 plain	6
19	LW-18661	SEAL, Shroud tube	12
20	70310	SEAL, Shroud tube	12
21	15F19957-34**	ROD ASSEMBLY, Push (A total of 12 required)	AR
	15F19957-35**	ROD ASSEMBLY, Push (A total of 12 required)	AR
	15F19957-36**	ROD ASSEMBLY, Push (A total of 12 required)	AR
	15F19957-37**	ROD ASSEMBLY, Push (A total of 12 required)	AR
22	17F19357†	ROCKER ASSEMBLY, Valve	12
23	74637	BUSHING, Valve rocker	12
24	LW-13790	SHAFT, Valve rocker	6
25	LW-12892	THRUST BUTTON, Rocker shaft	12

* - Assemble in No. 5 cylinder head.

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

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

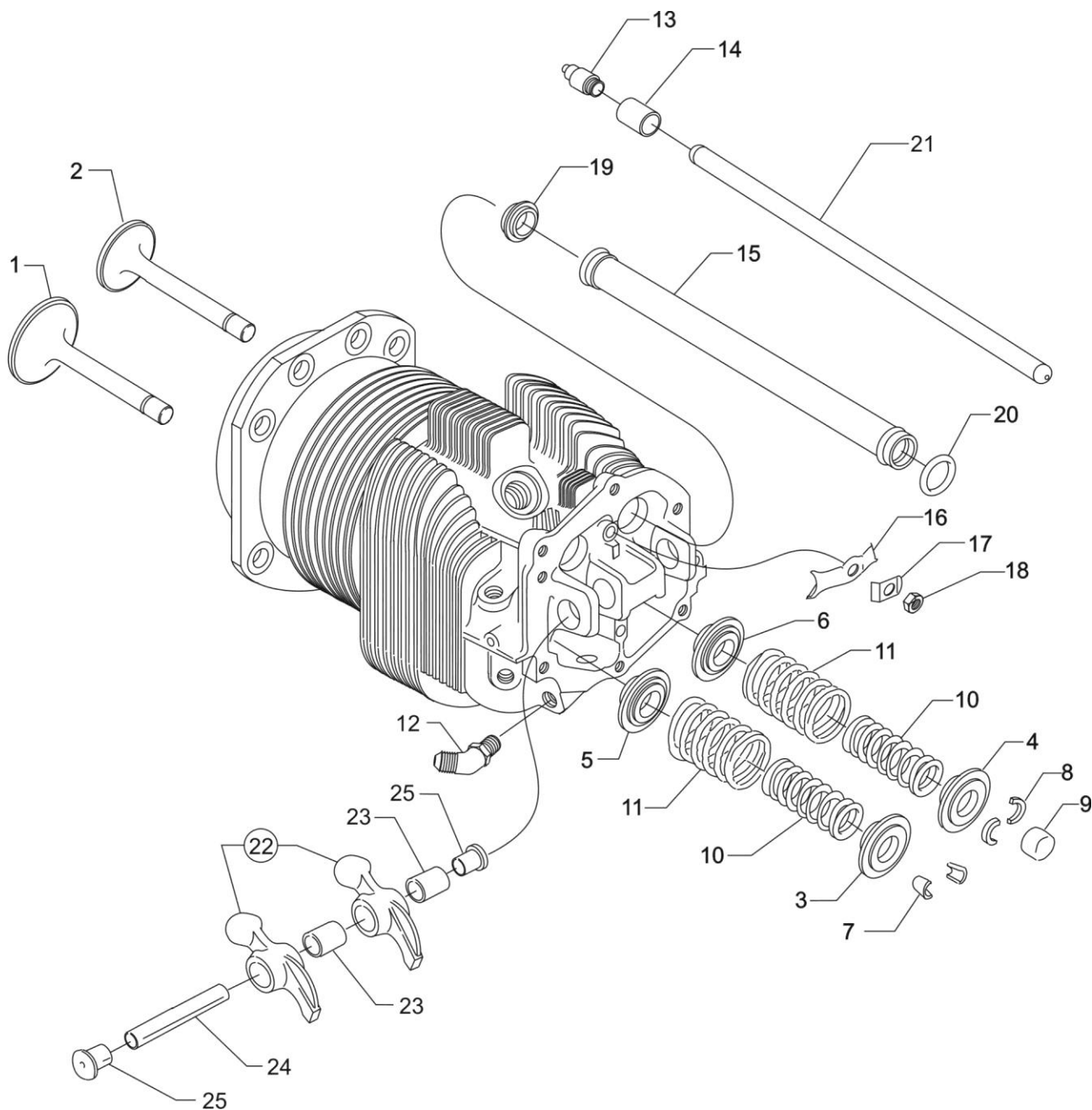


FIGURE 16. VALVE ASSEMBLY

CYLINDER, PISTON AND VALVE TRAIN
CYLINDER RELATED PARTS

FIG. REF. 17	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	75906	GASKET, Rocker box cover	6
2	61247	COVER, Rocker box	6
3	STD-1925	SCREW, 1/4-20 x 5/8 long, pan. head, self-locking	30
4	74494	PLATE, Spark plug caution	6
5	71481	RING, Oil seal, 3/32 diameter section x 4-27/32 I.D.	6
6	77906	SPACER, 33/64 I.D. x 7/8 O.D. x 1/8 thick	2
7	74887	SPACER, 33/64 I.D. x 7/8 O.D. x 3/8 thick	2
8	383-B	NUT, 3/8-24 plain	24
9	STD-2090	NUT, 1/2-20 plain	28
10	STD-684	NIPPLE, Straight, 3/8 I.D. hose	6
11	STD-1821	HOSE, 3/8 I.D. x 2-1/2 long	6
12	LW-15592-5-05	CLAMP, Hose	12
13	68759	TUBE ASSEMBLY, Cylinder head oil drain, cylinder no. 1	1
14	71737	TUBE ASSEMBLY, Cylinder head oil drain, cylinder no. 2	1
15	68761	TUBE ASSEMBLY, Cylinder head oil drain, cylinders no. 3, 4, 5, 6	4
16	75339	BAFFLE ASSEMBLY, Intercylinder	4
17	71611	RETAINER, Intercylinder baffle	4
18	71610	HOOK, Intercylinder baffle	4

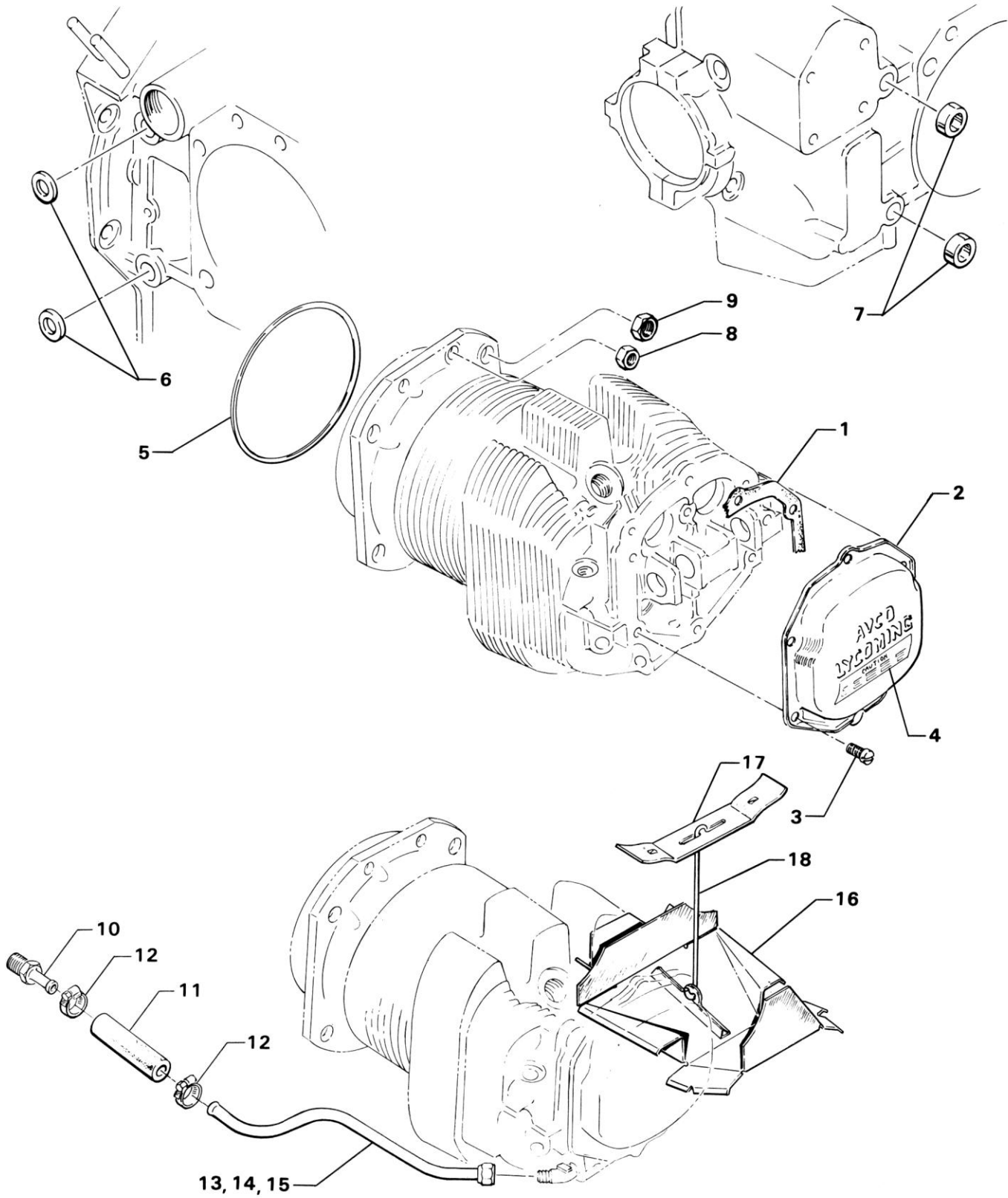


FIGURE 17. CYLINDER RELATED PARTS

IGNITION SYSTEM MAGNETO, MAGNETO DRIVE AND SPARK PLUGS

FIG. REF. 18	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	LW-13899	GEAR, Retainer, magneto drive	1
2	68H22624	CUSHION, Magneto drive	2
3	LW-12681	GASKET, Magneto	1
4	66E21557	MAGNETO IGNITION SYSTEM (D6LN-3200)	1
5	LW-682610-13	MAGNETO, Ignition	1
6	67H21476	HARNESS, Ignition	1
7	66M19385	CLAMP, Magneto	2
8	STD-475	WASHER, 5/16 lock, internal teeth	2
9	STD-1410	NUT, 5/16-18 plain	2
10	STD-8	WASHER, 1/4 plain	18
11	1182-H7*	SPARK PLUG, Champion RHB37E	12
	1182-Q4*	SPARK PLUG, Unison URHB37E	12
12	LW-382698	KIT, Magneto ground terminal	2
13	LW-382813	KIT, Magneto retard terminal	1
**	01P21501-1-29	BAG, Harness attaching	1
**	01P21641-1	BAG, Harness attaching	1

* - Item no. 7 spark plugs are used in current production only. Additional spark plugs are available for this engine. See latest revision of Service Instruction No. 1042 for complete listing of all approved spark plugs.

** - See below for a breakdown of 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.

01P21501-1-29 – Bag, Magneto Attaching Harness			01P21641-1 - Bag, Magneto Attaching Harness		
Part No.	Part Name	Qty.	Part No.	Part Name	Qty.
LW-16266-25-25	CLIP, One wire	10	10-40051-2	CLIP	6
STD-8	WASHER, 1/4 plain	14	10-40053-2	CLIP	3
STD-1874	SCREW, 1/4-20 x 13/16 long	7	10-620013	BAND	26
STD-696	WASHER, 1/4 plain (thin)	4	10-40056-1	CLIP	3
LW-14875	BRACKET, Extension	1	10-620039-1	PLATE, Spark plug	2
STD-692	SCREW, No. 10-32	6	10-620039-3	PLATE, Spark plug	2
STD-670	NUT, Self-locking	6			
LW-16266-10-50	CLAMP	1			
LW-16266-25-88	CLAMP	1			
STD-28	WASHER, No. 10 plain	8			
STD-1925	SCREW, 1/4-20 x 5/8 long	4			
STD-2029	BOLT, 1/4-20 x 1-1/8 long	2			

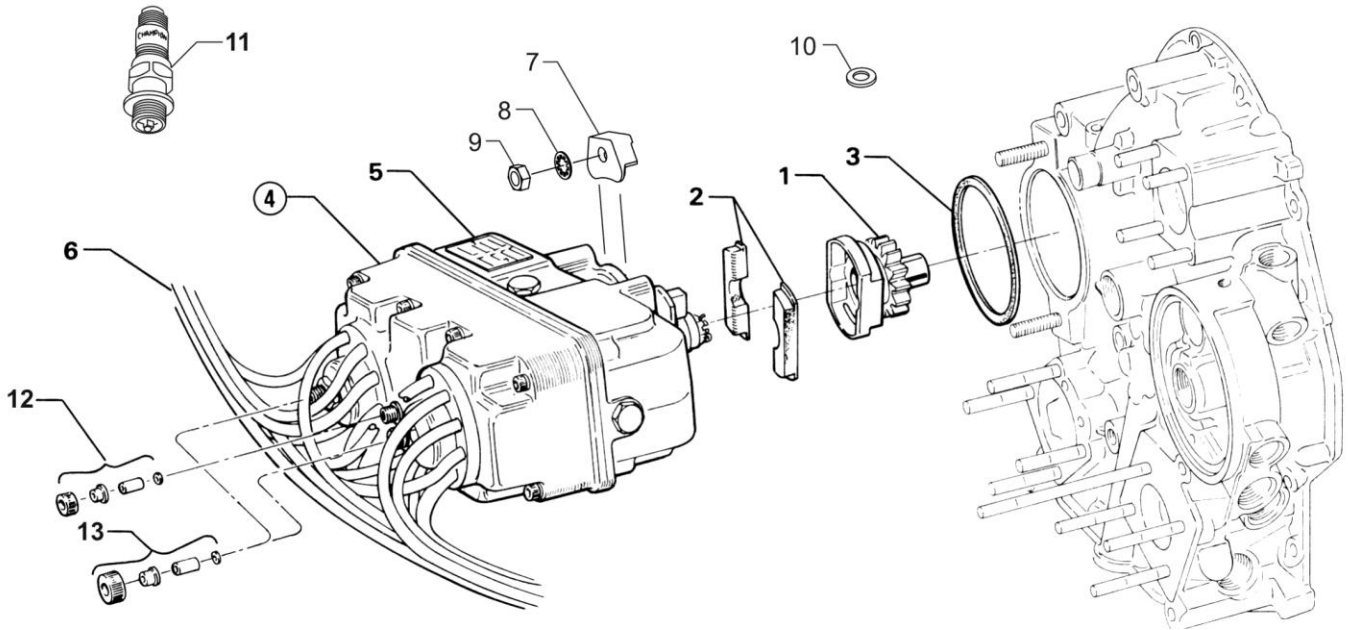


FIGURE 18. MAGNETO, MAGNETO DRIVE AND SPARK PLUGS

ELECTRICAL COMPONENTS
ALTERNATOR, BELT, STARTER MOTOR AND ATTACHING PARTS

FIG. REF. 19	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	32C19553	ALTERNATOR ASSEMBLY, 24V.-70Amp.	1
	LW-14326	ALTERNATOR, 24V.-70Amp. (ALT-85210-LS)	1
	32C19553	ALTERNATOR ASSEMBLY, 24V.-70Amp. (dual alternator engines) (right side)	1
	32C19565	ALTERNATOR ASSEMBLY, 24V.-70Amp. (dual alternator engines) (left side)	1
	LW-14326	ALTERNATOR, 24V.-70Amp (ALT-8521-LS) (dual alt. engines)	2
2	36B19484	PULLEY, Alternator	1
	36B19484	PULLEY, Alternator (dual alternator engines) (right side)	1
	36B19475	PULLEY, Alternator (dual alternator engines) (left side)	1
3	37A19773-376	BELT, Alternator drive, 3/8 wide	1
	37A19773-376	BELT, Alternator drive, 3/8 wide (dual alternator engines) (right side)	1
	37A19773-464	BELT, Alternator drive, 3/8 wide (dual alternator engines) (left side)	1
4	31B26040	STARTER, 24 volt, 12/14 pitch (Kelly ERB-8011)	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
9	07F23268	STRUT, Alternator strut	1
10	AN6-17	BOLT, 3/8-24 x 1-61/64 long, hex. head, drilled	1
11	LW-31H0.75	BOLT, 5/16-18 x 3/4 long, hex. head, drilled	1
12	STD-2197	WASHER, 13/16 O.D. x 5/16 I.D. x 1/16	1

NOTE

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

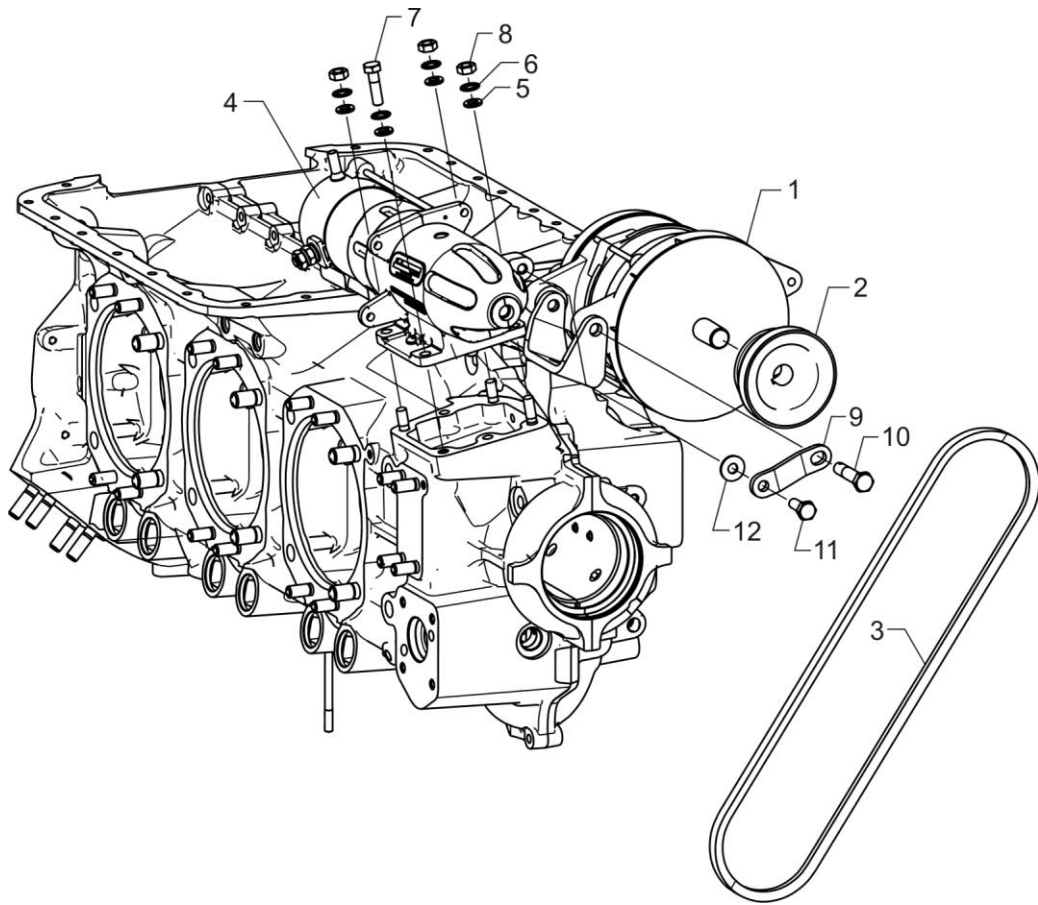


FIGURE 19. ALTERNATOR, BELT, STARTER MOTOR AND ATTACHING PARTS

ELECTRICAL COMPONENTS
ALTERNATOR MOUNTING AND ATTACHING PARTS

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

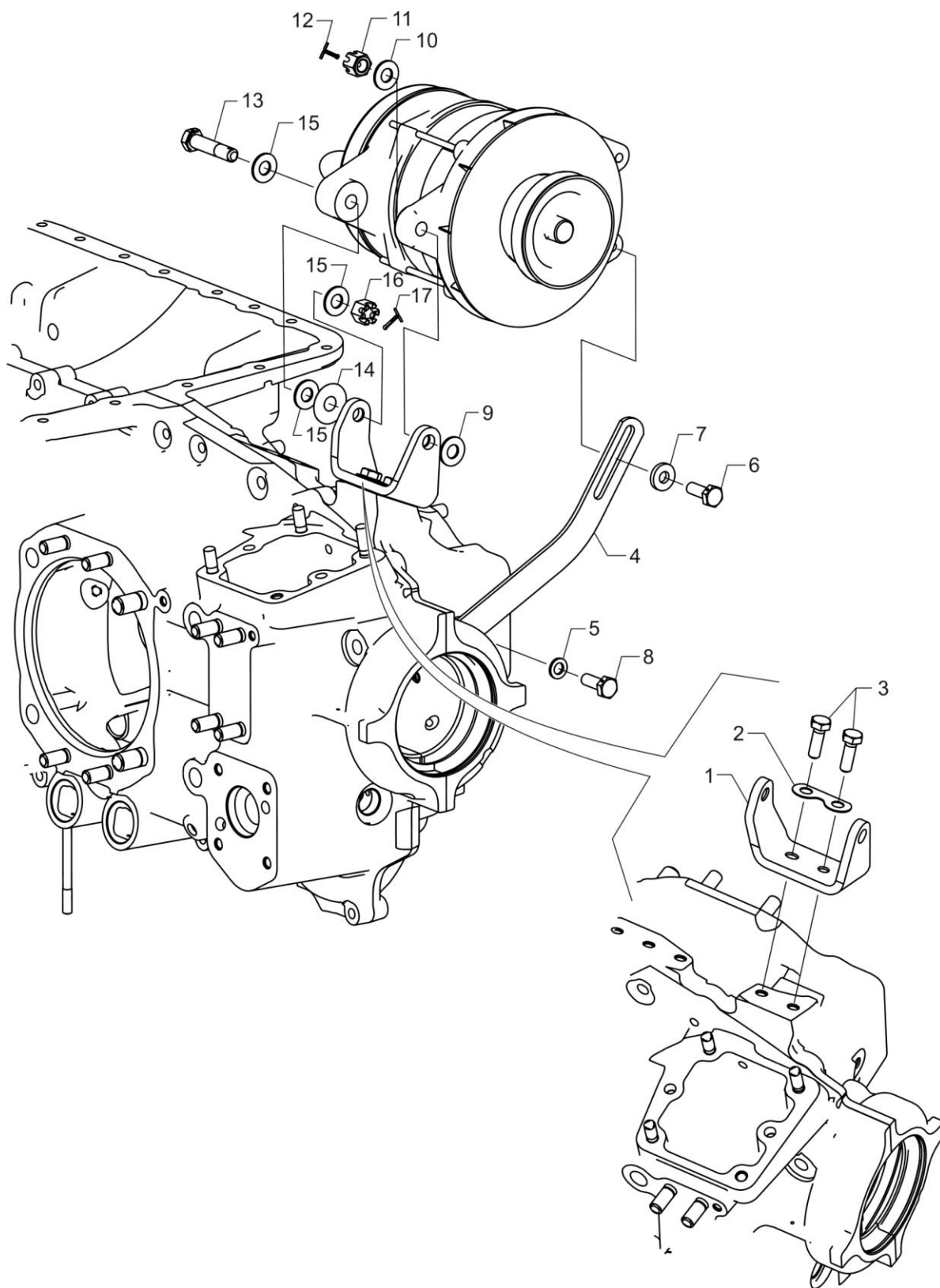


FIGURE 20. ALTERNATOR MOUNTING AND ATTACHING PARTS

ELECTRICAL COMPONENTS
DUAL ALTERNATOR MOUNTING AND ATTACHING PARTS

FIG. REF. 21	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	07A19474	BRACKET, Alternator	1
2	73383	LOCKPLATE, 5/16 bolt x 1.00 spacing	1
3	LW-31-0.94	BOLT, 5/16-18 x 15/16 long, hex. head	2
4	75380	LINK, Alternator adjusting	1
5	STD-35	WASHER, 5/16 plain	1
6	LW-31H0.75	BOLT, 5/16-18 x 3/4 long, hex. head, drilled	1
7	STD-1727	WASHER, Plain, 3/4 O.D. x 11/32 I.D. x 1/8 thick	1
8	LW-16274	STRUT, Alternator support	1
9	AN6-14	BOLT, 3/8-24 x 1-37/64 long, hex. head, drilled end	1
10	STD-690	WASHER, 13/16 O.D. x 25/64 I.D. x 1/16 thick	5
11	STD-872	NUT, 3/8-24 slotted	1
12	STD-713	PIN, Cotter, 3/32 diameter x 3/4 long	1
13	AN6-17	BOLT, 3/8-24 x 1-61/64 long, hex. head	1
14	76534	SHIM, 1-1/8 O.D. x 13/32 I.D. x .005 thick	5
15	LW-13434	BRACKET, Alternator	1
16	LW-13435	SUPPORT, Alternator bracket	1
17	STD-678	WASHER, 3/8 lock, internal teeth	4
18	STD-596	NUT, 3/8-24 plain	4
19	LW-12237	BRACKET ASSEMBLY, Alternator belt	1
20	LW-14637	SHIM, 13/16 O.D. x 11/32 I.D. x .005 thick	5
21	LW-14649	SHIM, 13/16 O.D. x 11/32 I.D. x .010 thick	5
22	LW-31H1.31	BOLT, 5/16-18 x 1-5/16 long, hex. head, drilled end	1
23	LW-31H1.63	BOLT, 5/16-18 x 1-5/8 long, hex. head, drilled end	1
24	36A19492	PULLEY AND SHAFT ASSEMBLY, Alternator belt adjusting	1
25	36B19477	PULLEY, Alternator belt adjusting	1
26	68729	BEARING, Ball, alternator idler pulley	1
27	76768	LOCKWASHER, Alternator idler pulley bearing	1
28	76769	LOCKNUT, Alternator idler pulley bearing	1
29	LW-11635	SHIELD, Idler shaft	1
30	STD-2221	NUT, 1/2-20 self-locking	1
31	LW-10952	SHIM, 13/16 O.D. x 13/32 I.D. x .005 thick	5
32	AN6-12	BOLT, 3/8-24 x 1-21/64 long, hex. head, drilled end	1
33	LW-12232	SHIM, 9/16 O.D. x 9/32 I.D. x .005 thick	5
34	LW-12231	BRACE, Alternator belt adjusting bracket	1
35	STD-8	WASHER, 1/4 plain	3

ELECTRICAL COMPONENTS DUAL ALTERNATOR MOUNTING AND ATTACHING PARTS (CONT.)

FIG. REF. 21	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
36	LW-25-1.75	BOLT, 1/4-20 x 1-3/4 long, hex. head	1
37	LW-25-1.25	BOLT, 1/4-20 x 1-1/4 long, hex. head	1
38	STD-1685	NUT, 1/4-20 self-locking	1
39	LW-31H0.75	BOLT, 5/16-18 x 3/4 long, hex. head, drilled	1
40	STD-690	WASHER, 13/16 O.D. x 25/64 I.D. x 1/16 thick	5
41	STD-872	NUT, 3/8-24 slotted	1
42	STD-713	PIN, Cotter, 3/32 diameter x 3/4 long	1
43	STD-1727	WASHER, Plain, 3/4 O.D. x 11/32 I.D. x 1/8 thick	2
44	76534	SHIM, 1-1/8 O.D. x 13/32 I.D. x .005 thick	5
45	AN6-17	BOLT, 3/8-24 x 1-61/64 long, hex. head, drilled end	1
46	STD-690	WASHER, 13/16 O.D. x 25/64 I.D. x 1/16 thick	4
47	STD-872	NUT, 3/8-24 slotted	2
48	STD-713	PIN, Cotter, 3/32 diameter x 3/4 long	2
49	STD-690	WASHER, 13/16 O.D. x 25/64 I.D. x 1/16 thick	5

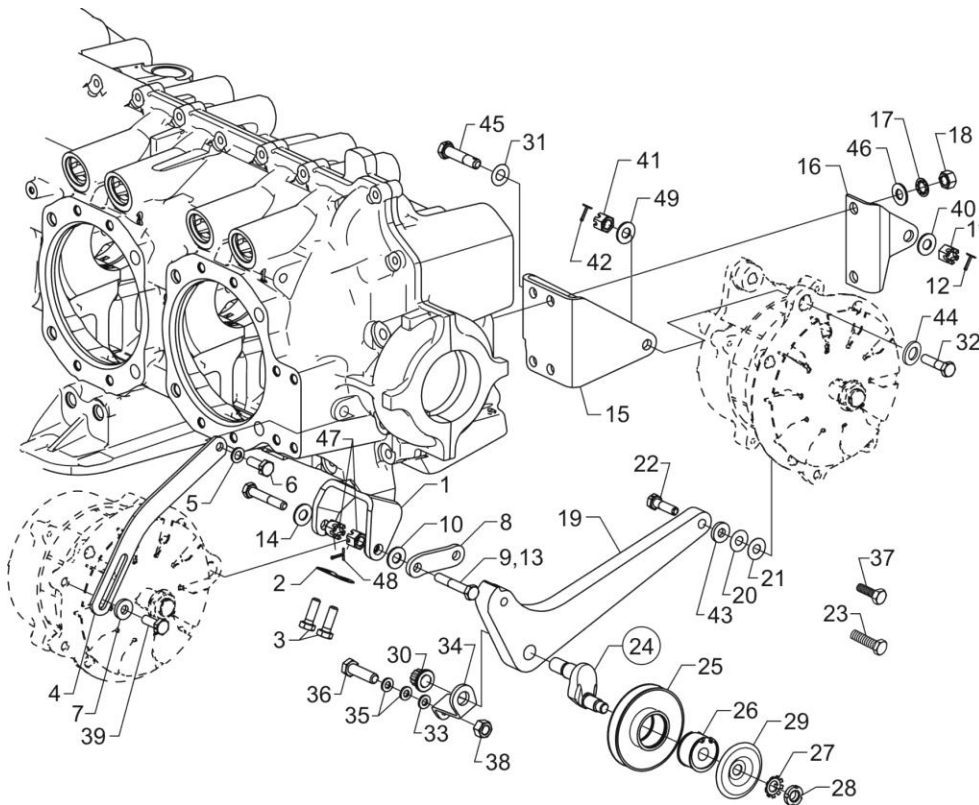


FIGURE 21. DUAL ALTERNATOR MOUNTING AND ATTACHING PARTS

OIL SUMP AND INDUCTION SYSTEM
OIL SUMP ASSEMBLY

FIG. REF. 22	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	06B21326	GASKET, Oil sump	1
2	LW-19086	SUMP ASSEMBLY, Oil	1
3	71699	CONNECTION, Intake pipe	6
4	25C-11	STUD, 1/4-20 x 1-3/8 long	14
5	38-15	STUD, 3/8-16 x 1-7/8 long	8
6	STD-1164	INSERT, 5/16-18 x 5/8 long, Heli-coil	4
7	STD-71	PLUG, 3/8-18 NPT, socket head	1
8	1102	PLUG, 1/8-27 NPT, Allen head	2
9	06E19769-1.63	GASKET, Annular, 1-5/8 I.D.	1
10	LW-18434	PLUG, Oil sump, 1-5/8 diameter	1
11	STD-8	WASHER, 1/4 plain	34
12	STD-160	WASHER, 1/4 lock, internal teeth	27
13	LW-25-1.13	BOLT, 1/4-20 x 1-1/8 long, hex. head	7
14	LW-25-1.00	BOLT, 1/4-20 x 1.00 long, hex. head	6
15	STD-1411	NUT, 1/4-20 plain	21
16	STD-551	PLUG, 1/2-14 NPT, square head, drilled	2
17	70484	SCREEN, Oil suction	1
18	06E19769-1.00	GASKET, Annular, 1.00 I.D.	1
19	LW-12545	PLUG, 5/8 x 1.00-20 thread, hex. head	1

OIL SUMP AND INDUCTION SYSTEM
INTAKE PIPES AND AIR INLET DUCT

FIG. REF. 23	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	70485	PIPE, Intake	6
2	69603	HOSE, 1-3/4 I.D. x 2-3/16 O.D. x 1-3/4 long	6
3	LW-15592-8-28	CLAMP, Hose, 1-7/8 to 2-1/4 I.D. x 9/16 wide	12
4	71973	GASKET, 2 bolt flange, 1-7/8 I.D.	6
5	73346	FLANGE, Intake pipe, upper	6
6	STD-8	WASHER, 1/4 plain	12
7	STD-160	WASHER, 1/4 lock, internal teeth	12
8	LW-25-1.25	BOLT, 1/4-20 x 1-1/4 long, hex. head	12
9	78366*	HEAT SHIELD, Intake pipes	5
10	LW-15592-8-24	CLAMP, 1-13/16 diameter x 9/16 wide	10
11	75330	HOSE, Air box, 2-1/2 I.D.	1
12	LW-15858-62-294	CLAMP	2
13	77504	GASKET, Fuel injector	1
14	LW-18975	DUCT, Air inlet	1
15	STD-8	WASHER, 1/4 plain	4
16	STD-160	WASHER, 1/4 lock, internal teeth	4
17	LW-25-1.00	BOLT, 1/4-20 x 1.00 long, hex. head	4
18	75252	ELBOW, 1/4 x 9/16-18, adjustable tube, 90°	1
19	STD-1930	HOSE, 3/8 I.D. x 1.00 long	1
20	76734	ZIP STRAP	1
21	LW-12784-4-147	HOSE ASSEMBLY, Fuel pump vent	1
22	LW-38-0.59	BOLT, 3/8-16 x 19/32 long, hex. head	1
23	STD-33	WASHER, 3/8 plain	1
24	STD-678	WASHER, 3/8 lock, internal teeth	1

* - Used on all except No. 2 intake pipe.

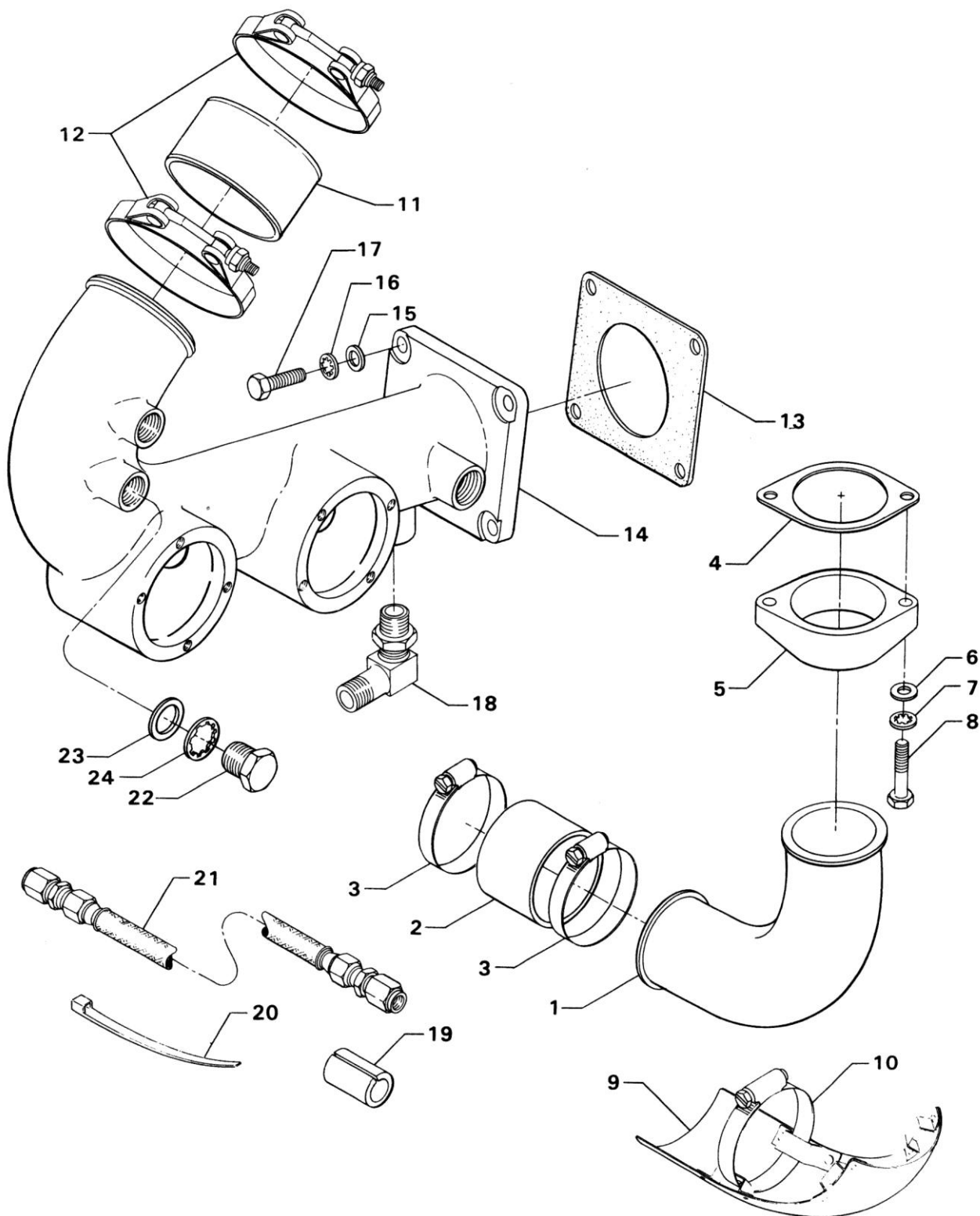


FIGURE 23. INTAKE PIPES AND AIR INLET DUCT

OIL SUMP AND INDUCTION SYSTEM
FUEL INJECTOR, FUEL MANIFOLD AND AIR BLEED NOZZLES

FIG. REF. 24	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	66224	GASKET, Fuel injector	1
2	61J19503	FUEL INJECTOR, Bendix, 2549002-1	1
3	STD-35	WASHER, 5/16 plain	4
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	LW-18854	NOZZLE ASSEMBLY, Manifold air bleed	6
7	951391	“O” RING (Bendix)	12
8	63B19965	MANIFOLD ASSEMBLY, Fuel	1
9	MS20823-4	ELBOW, 1/4 tube to 1/8 NPT, 45°	1
10	STD-148	NIPPLE, Union, 1/8 NPT	6
11	1102	PLUG, 1/8-27 NPT, Allen head	1
12	73966	SPACER, Fuel manifold bracket	2
13	07A23031	BRACKET, Fuel manifold	2
14	STD-251	WASHER, No. 10, internal teeth	4
15	STD-82	SCREW, No. 10-24 x 1/2 long, drilled head	4
16	LW-12098-0-210	TUBE ASSEMBLY, Fuel manifold to nozzle, cylinders no. 1, 2, 5, 6	4
17	LW-12098-0-170	TUBE ASSEMBLY, Fuel manifold to nozzle, cylinders no. 3, 4	2
18	LW-16266-10-75	CLIP, 3/4 I.D. for no. 10 screw	10
19	LW-16266-10-13	CLIP, 1/8 I.D. for no. 10 screw	12
20	STD-860	SCREW, No. 10-32 x 5/8 long, fill. head	14
21	STD-670	NUT, No. 10-32 self-locking	14
22	STD-425	WASHER, No. 10 plain	2
23	73136	BRACKET, Extension, fuel injector lines	4
24	LW-12798-4S274	HOSE ASSEMBLY, Fuel injector to fuel manifold	1
25	LW-16266-25-63	CLAMP, 5/8 I.D. for 1/4 screw	1
26	LW-12879-6S120	HOSE ASSEMBLY, Fuel pump to fuel injector	1
27	LW-14848-8S260	HOSE ASSEMBLY, 1/2 hose, 90° elbow	1

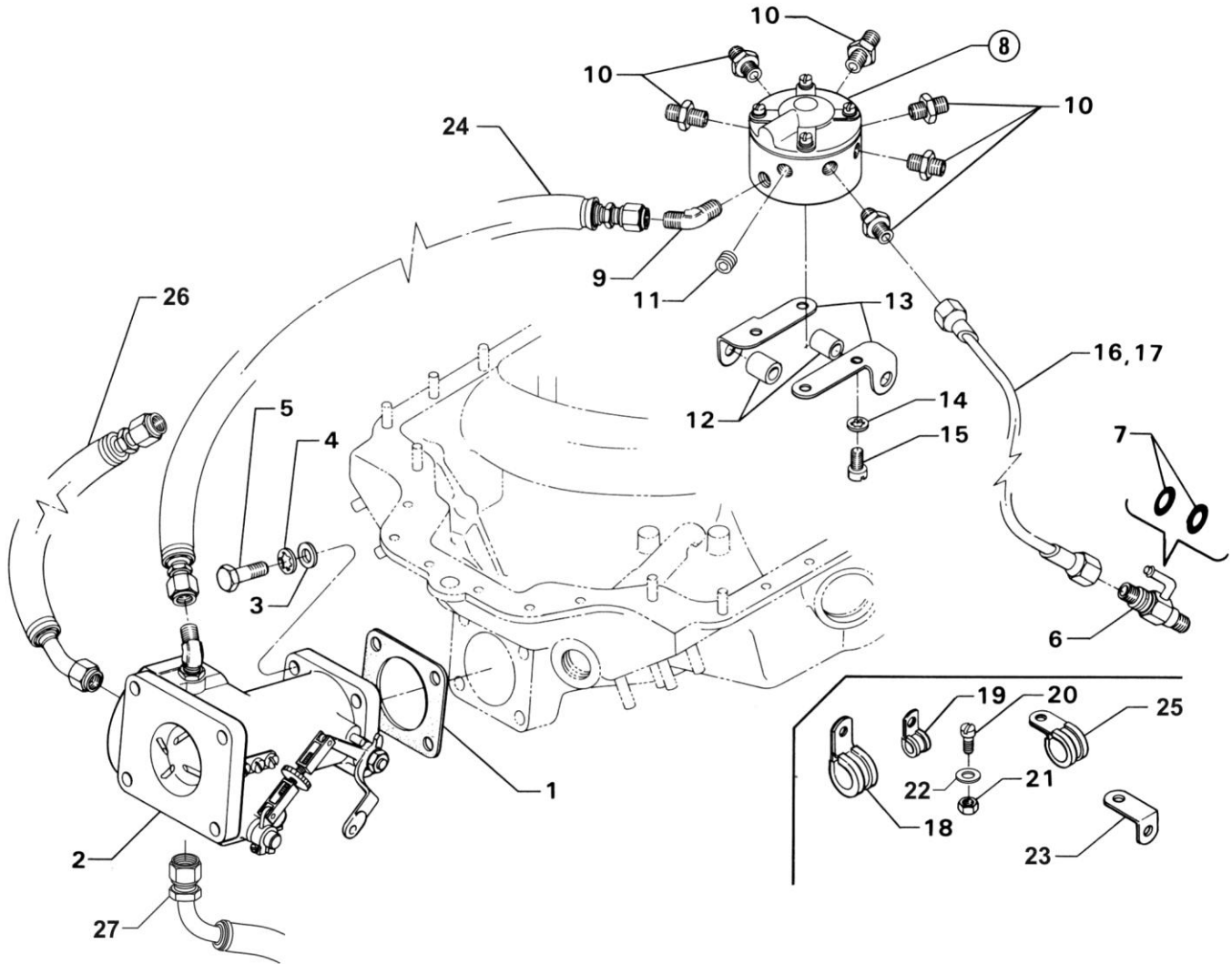


FIGURE 24. FUEL INJECTOR, FUEL MANIFOLD AND AIR BLEED NOZZLES

OIL SUMP AND INDUCTION SYSTEM
INJECTOR NOZZLE VENT MANIFOLDS AND ATTACHMENTS

FIG. REF. 25	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	LW-12751	MANIFOLD, Right	1
2	78109	MANIFOLD, Left	1
3	LW-18737	HOSE, 3/16 I.D. x 7/16 O.D. x 2.00 long	6
4	LW-15592-5-04	CLAMP, 7/16 I.D. x 5/16 wide	16
5	78127	TUBE, Crossover, injector nozzle vent manifold	1
6	STD-2048	HOSE, 1/4 I.D. x 19/32 O.D. x 2-7/16 long	2
7	LW-16266-10-25	CLIP, 1/4 diameter tube for no. 10 diameter screw	4
8	73152	BRACKET, 7/32 and 9/32 x 1-1/4 long	4
9	STD-1856	SCREW, 1/4-20 x 1.00 long, fill. head, self-locking	4
10	STD-2079	NUT, 1/4-20 self-locking	4
11	LW-16266-10-25	CLIP, 1/4 I.D. for no. 10 screw (cushion type)	1
12	78753	BRACKET, Injector nozzle vent crossover	1
13	STD-692	SCREW, No. 10-32 x 1/2 long, fill. head	5
14	STD-670	NUT, No. 10-32, self-locking	5
15	STD-1339	PLUG, 1/16-27 NPT, Allen head	3
16	AN815-4	UNION, 1/4 flared tube	1
17	LW-12798-4S274	HOSE ASSEMBLY, 1/4 hose, straight	1
18	LW-16266-25-63	CLAMP, 5/8 I.D. x 1/4 diameter screw	1
19	MS20822-4	ELBOW, 1/8 NPT to 1/4 tube, 90°	1
20	72376	ELBOW, 1/4 tube x 7/16, 90°	1

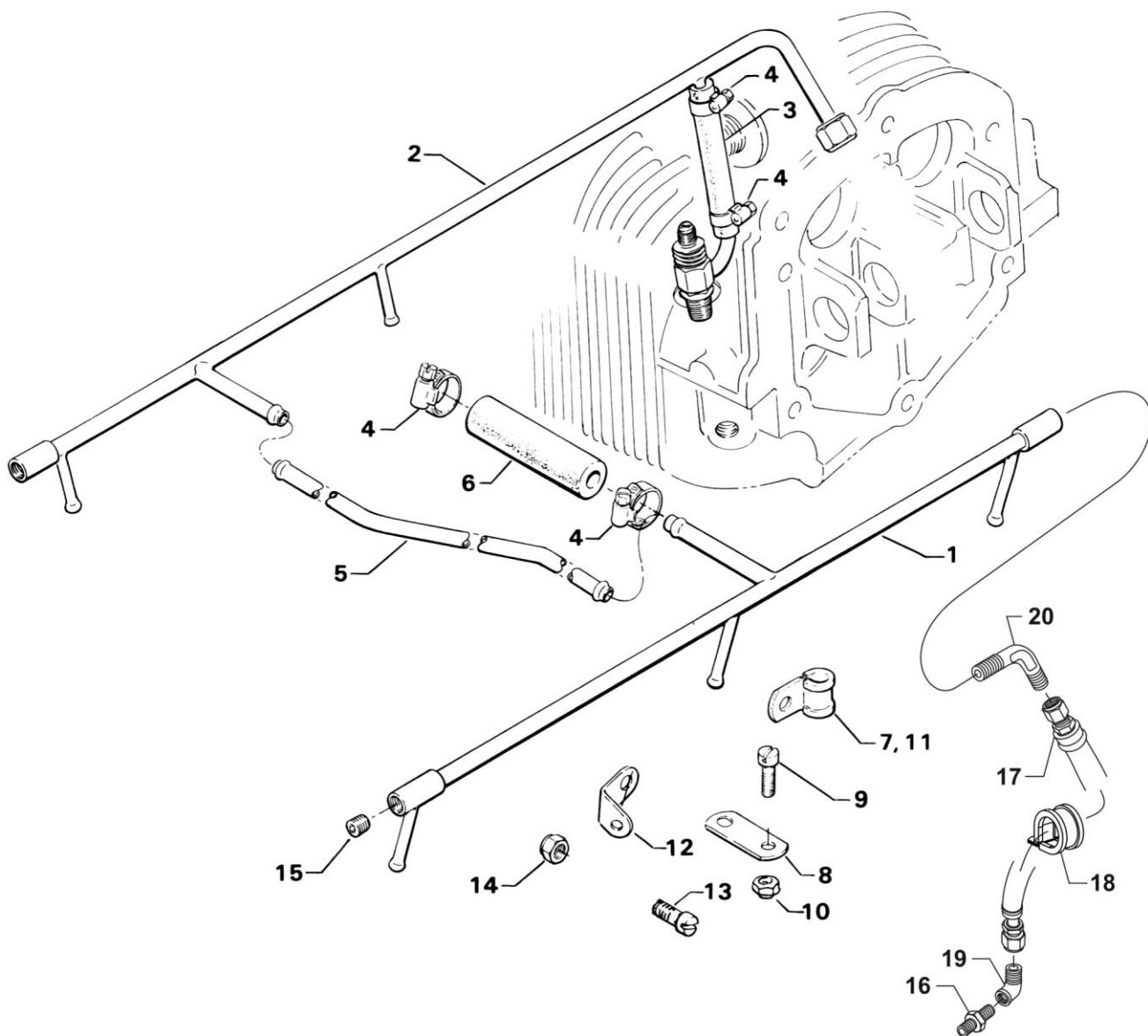


FIGURE 25. INJECTOR NOZZLE VENT MANIFOLDS AND ATTACHMENTS

TURBOCHARGER AND EXHAUST SYSTEMS
EXHAUST PIPES AND TRANSITION ASSEMBLY

FIG. REF. 26	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	77611	GASKET, Exhaust flange	6
2	LW-12726	PIPE, Exhaust, cylinders no. 1 and 2	2
3	LW-12728	ADAPTER, Exhaust pipe, cylinders no. 3 and 4	2
4	LW-12727	PIPE, Exhaust, cylinders no. 3 and 4	2
5	LW-12729	PIPE, Exhaust, cylinders no. 5 and 6	2
6	LW-18993	PIPE, Exhaust, right intermediate	1
7	40B19620	PIPE, Exhaust, right rear	1
8	LW-18994	PIPE, Exhaust, left intermediate	1
9	40B21006	PIPE, Exhaust, left rear	1
10	78189	FLANGE, Exhaust manifold	2
11	AN960C516	WASHER, 5/16 plain	12
12	STD-2233	LOCKNUT, 5/16-18 hex. head	12
13	78083	GASKET, V-band coupling, 2.00 O.D. tube	2
14	LW-12093-5	COUPLING, V-band, 2.00 O.D. tube	2
15	LW-12955	TRANSITION ASSEMBLY, Turbocharger	1
16	77823	STUD, 3/8-16 x 1-3/8 long	3
17	STD-1932	BUSHING, 1/4 to 1/8 NPT	1
18	1102	PLUG, 1/8-27 NPT, Allen head	1
19	LW-15592-8-28	CLAMP, Hose	3
20	40J19618	HEAT SHIELD, Exhaust pipe, right rear outer	1
21	40J19619	HEAT SHIELD, Exhaust pipe, right rear inner	1
22	LW-14525	CLAMP, Exhaust pipe	2
23	LW-15437	CABLE ASSEMBLY, Exhaust manifold retainer	2
24	STD-2178	WASHER, 1/4 plain	6
25	MS9490-13	BOLT	4
26	MS21043-4	NUT, 1/4-28 UNJC-3B, self-locking	4

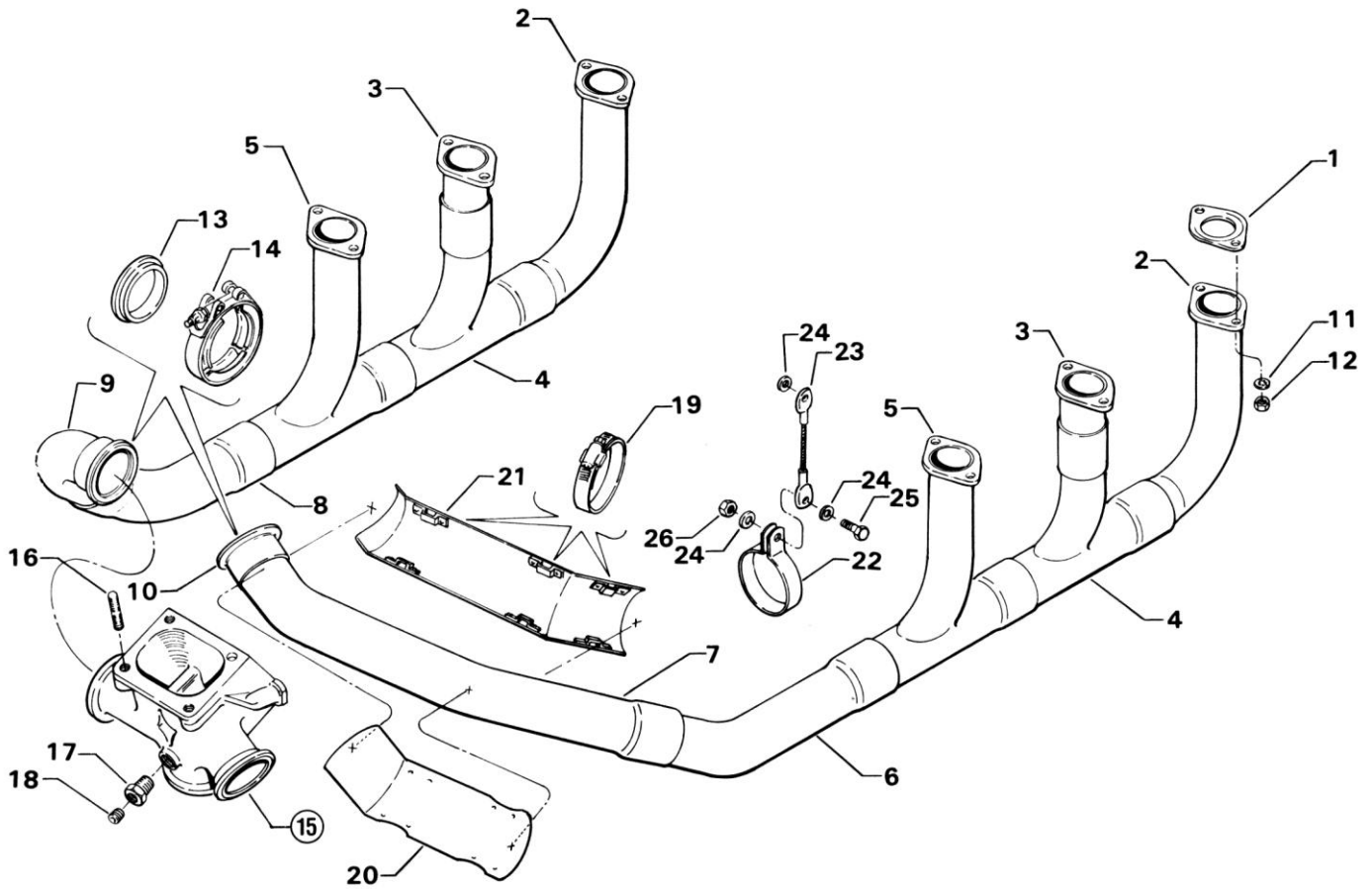


FIGURE 26. EXHAUST PIPES AND TRANSITION ASSEMBLY

TURBOCHARGER AND EXHAUST SYSTEMS
TURBOCHARGER, SUPPORT ASSEMBLY AND EXHAUST BYPASS VALVE

FIG. REF. 27	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	LW-18986	SUPPORT ASSEMBLY, Turbocharger	1
2	LW-19009	SUPPORT, Turbocharger, front	1
3	LW-19008	SUPPORT, Turbocharger, rear	1
4	LW-19011	STRUT, Turbocharger, left	1
5	LW-19010	STRUT, Turbocharger, right	1
6	LW-25S0.81	BOLT, 1/4-20 x 13/16 long, drilled end	1
7	LW-25S1.25	BOLT, 1/4-20 x 1-1/4 long, drilled end	2
8	STD-1864	NUT, 1/4-20 slotted	3
9	STD-68	PIN, Cotter, 1/16 diameter x 1/2 long	3
10	STD-8	WASHER, 1/4 plain	3
11	STD-696	WASHER, 1/4 plain (thin)	3
12	STD-160	WASHER, 1/4 lock, internal teeth	2
13	LW-25-2.00	BOLT, 1/4-20 x 2.00 long, hex. head	1
14	LW-25-1.75	BOLT, 1/4-20 x 1-3/4 long, hex. head	1
15	LW-31S4.44	BOLT, 5/16-18 x 4-7/16 long, drilled end	2
16	LW-31S5.44	BOLT, 5/16-18 x 5-7/16 long, drilled end	2
17	STD-2197	WASHER, 5/16 I.D. x 13/16 O.D. x 1/16	4
18	STD-1420	NUT, 5/16-18 slotted	4
19	STD-68	PIN, Cotter, 1/16 diameter x 1/2 long	4
20	STD-2205	WASHER, 5/16 thin	4
21	LW-19174	TURBOCHARGER (TE-0659)	1
22	STD-1339	PLUG, 1/16-27 NPT, Allen head	1
23	STD-2154	BOLT, 3/8-24 x 1-3/4 long, Allen head	1
24	MS20500-624	NUT, 3/8-24 self-locking	4
25	STD-2131	BOLT, 3/8-16 x 3/4 long, hex. head	2
26	LW-38SSH1.63	BOLT, 3/8-16 x 1-5/8 long	2
27	AN960C616	WASHER, 3/8 plain	2
28	LW-18654	VALVE, Exhaust bypass	1
29	LW-12093-6	COUPLING, V-band, 2-1/4 O.D. tube	1
30	LW-12125-3	COUPLING, V-band, 2-1/4 O.D. tube	1
31	75845	GASKET, V-band coupling, 2-1/4 tube	1
32	LW-19103	BRACE, Heat shield	1
33	LW-16266-10-63	CLAMP, 5/8 I.D. x no. 10 screw	1
34	40J21317	HEAT SHIELD, Accessory, upper	1
35	LW-19092	HEAT SHIELD, Accessory, lower	1

TURBOCHARGER AND EXHAUST SYSTEMS

TURBOCHARGER, SUPPORT ASSEMBLY AND EXHAUST BYPASS VALVE (CONT.)

FIG. REF. 27	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
36	LW-16266-10-50	CLAMP, 1/2 I.D. x no. 10 screw	1
37	STD-425	WASHER, No. 10 plain	2
38	STD-1686	SCREW, No. 10-32 x 7/16 long	6
39	STD-251	WASHER, No. 10 self-locking	6
40	STD-63	NUT, No. 10-32 plain	6

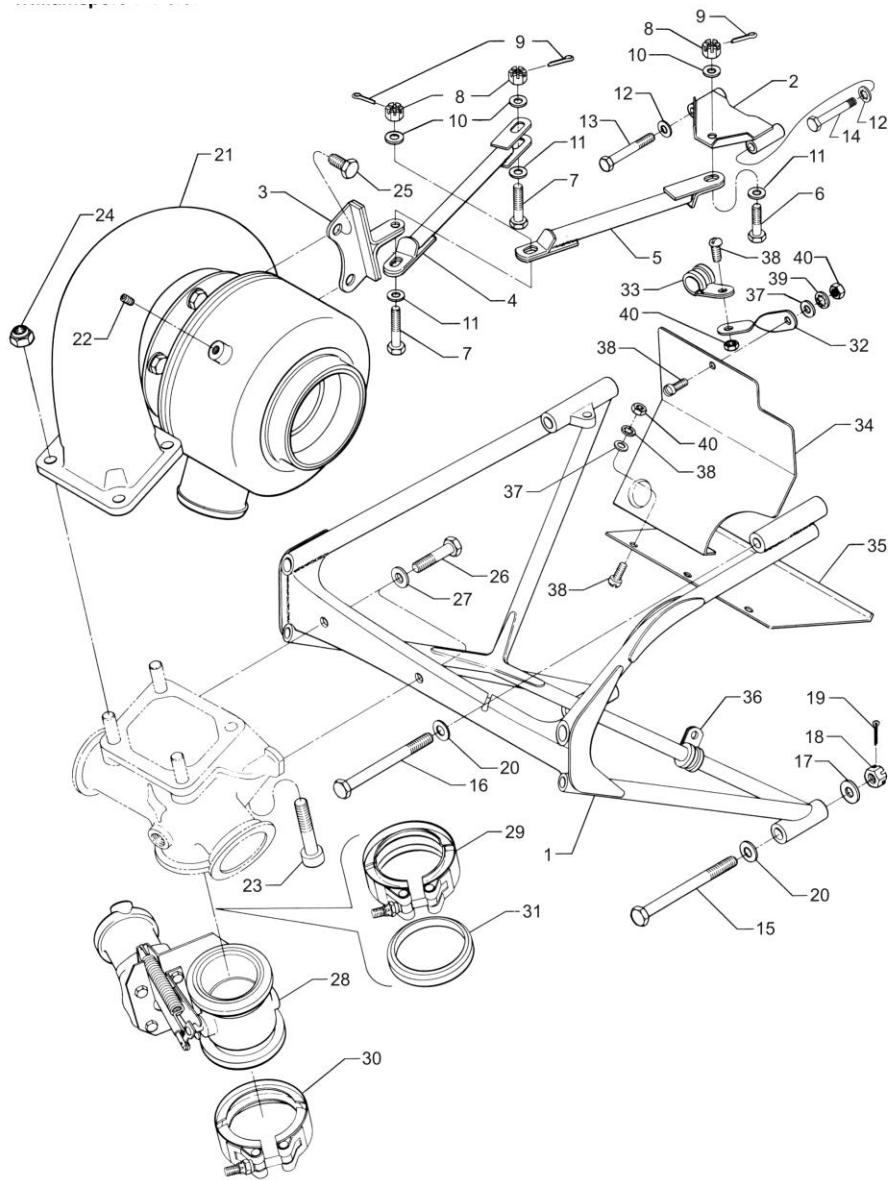


FIGURE 27. TURBOCHARGER, SUPPORT ASSEMBLY AND EXHAUST BYPASS VALVE

TURBOCHARGER AND EXHAUST SYSTEMS
DENSITY CONTROLLER AND RELATED PARTS

FIG. REF. 28	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	MS20823-4	ELBOW, 1/4 tube x 1/8 NPT, 45°	1
2	LW-12056	SPACER, Oil pressure fitting	1
3	LW-15996	BOLT, Oil pressure	1
4	AN901-8A	GASKET, 3/4 I.D. x 1.00 O.D.	1
5	MS20822-4	ELBOW, 1/4 tube, 90°	1
6	1102	PLUG, 1/8-27 NPT, Allen head	1
7	LW-12798-4S150	HOSE ASSEMBLY, Accessory housing to turbo oil inlet	1
8	LW-12690	ELBOW, 1/4 tube to 1/8 NPT, 90°	1
9	STD-1932	BUSHING, 1/8 NPT to 1/4 NPT	1
10	75371	GASKET, Turbo oil inlet adapter	1
11	LW-14465	ADAPTER, Turbo oil inlet	1
12	STD-33	WASHER, 3/8 plain	2
13	STD-678	WASHER, 3/8 lock, internal teeth	2
14	LW-38H0.75	BOLT, 3/8-16 x 3/4 long, hex. head	2
15	78903	GASKET, Turbo oil drain	1
16	STD-33	WASHER, 3/8 plain	2
17	STD-678	WASHER, 3/8 lock, internal teeth	2
18	LW-38-0.75	BOLT, 3/8-16 x 3/4 long, hex. head	2
19	73781	HOSE, Turbo oil drain	1
20	LW-15592-8-12	CLAMP, Hose	2
21	LW-19090	TUBE, Turbo oil drain	1
22	MS29512-10	SEAL, Oil, 3/4 I.D. x 3/32 diameter section	1
23	LW-13689	ADAPTER, Turbo oil drain	1
24	LW-11999	REDUCER, 7/8-14 to 9/16-18	1
25	74070	ELBOW, 3/8 tube, 45	1
26	73314	GASKET, Density controller	1
27	LW-10682	CONTROLLER, Density	1
28	STD-28	WASHER, No. 10 plain	4
29	STD-1566	SCREW, No. 10-24 x 3/4 long, fill. head, drilled	4
30	LW-12786-3-250	HOSE ASSEMBLY, 3/16 hose, straight	1
31	76734	ZIP STRAP	2
32	LW-16266-25-25	CLIP, 1/4 I.D. for 1/4 screw	1
33	LW-16266-25-63	CLIP, 5/8 I.D. for 1/4 screw	1
34	STD-471	SCREW, 1/4-20 x 1/2 long, fill. head	1
35	STD-1685	NUT, 1/4-2 self-locking	1

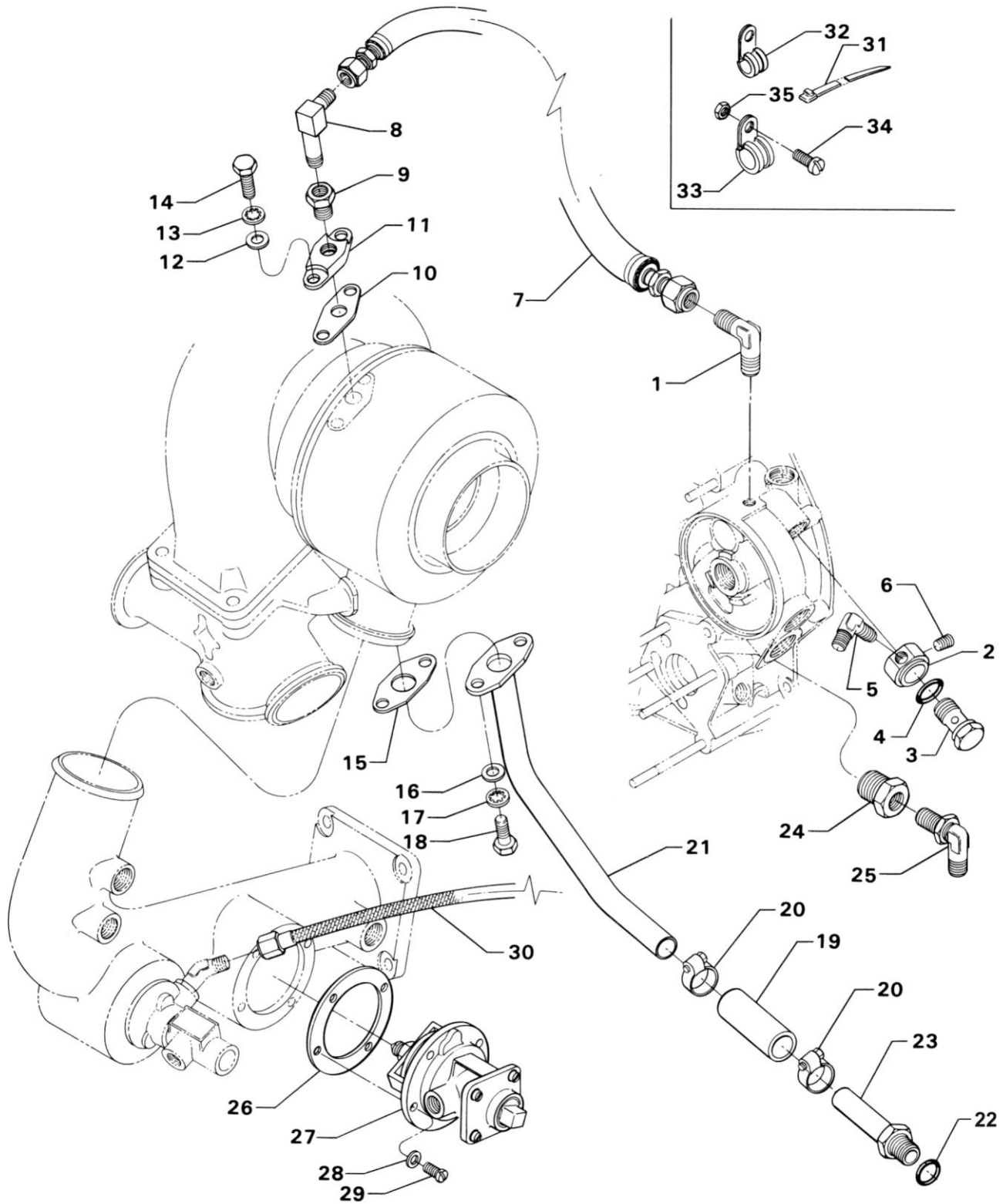


FIGURE 28. DENSITY CONTROLLER AND RELATED PARTS

TURBOCHARGER AND EXHAUST SYSTEMS
DIFFERENTIAL PRESSURE CONTROLLER AND RELATED PARTS

FIG. REF. 29	PART NUMBER	DESCRIPTION	QUANTITY PER ASSEMBLY
1	LW-12798-4S242	HOSE ASSEMBLY, 1/4 hose, straight	1
2	72376	ELBOW, 1/4 tube, 90°	1
3	72377	ELBOW, 3/8 tube	1
4	LW-12799-6S210	HOSE ASSEMBLY, 3/8 hose, straight	1
5	77461	TEE, 3/8 tube, adjustable, straight	1
6	76355	TEE, 3/8 tube, with 9/16 thread	1
7	LW-19169	TUBE ASSEMBLY	1
8	LW-11883	ELBOW, 3/8 tube, 90° (restricted)	1
9	MS291512-08	SEAL, O-ring, 41/64 I.D. x 5/64	1
10	75739	NIPPLE, 3/8 tube	1
11	AN893-12	BUSHING, Reducer	1
12	LW-19170	TUBE ASSEMBLY	1
13	LW-12799-6S130	HOSE ASSEMBLY, 3/8 hose, straight	1
14	73314	GASKET, Differential pressure controller	1
15	LW-10098	CONTROLLER, Differential pressure	1
16	STD-28	WASHER, No. 10 plain	4
17	STD-1566	SCREW, No. 10-24 x 3/4 long, fill. head	4
18	STD-1932	BUSHING, Reducer, 1/4 to 1/8 NPT	1
19	LW-10467	ELBOW, 3/16 tube x 1/8 NPT, 45° (restricted)	1

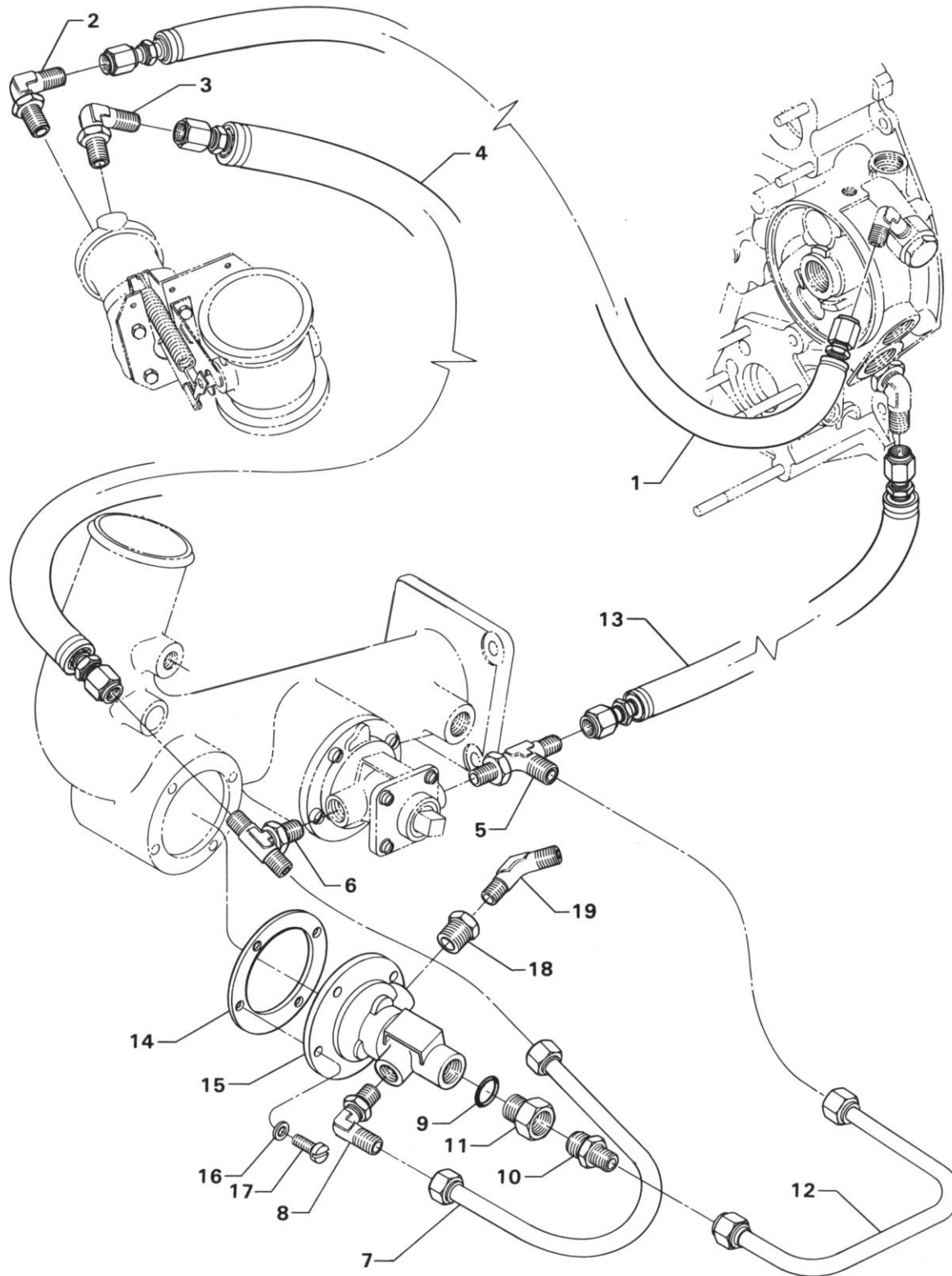


FIGURE 29. DIFFERENTIAL PRESSURE CONTROLLER AND RELATED PARTS

**SECTION 8
SERVICE KIT SECTION****SEAL AND GASKET SET KIT**

PART NO.	PART NAME	QTY.
LW-19180	KIT - SEAL AND GASKET SET	1
LW-10332	LOCKPLATE	1
LW-11105	LOCKPLATE	1
LW-12272	LOCKPLATE, Shroud tube	6
LW-12681	GASKET, Magneto	2
06B21326	GASKET, Oil sump	1
LW-13792	SEAL, Crankshaft oil, solid	1
LW-14260	SEAL, Tachometer drive	1
LW-14995	SPRING	6
LW-18481	GASKET	1
LW-18661	SEAL, Shroud tube	12
STD-2231	RING, Internal retaining	1
MS16625-1100	RING, Internal retaining	1
MS29512-03	SEAL	1
MS29512-04	SEAL	1
MS29512-08	SEAL, Oil ring	2
MS29512-10	SEAL, Oil	2
06E19769-1.00	GASKET, Oil suction screen	1
STD-213	SEAL, Fuel pump adapter	1
06E19769-1.25	GASKET, Oil pressure relief valve	1
06E19769-1.63	GASKET	1
06A19956	SEAL, Vacuum and hydraulic pump adapter	2
8313	GASKET, Vacuum and hydraulic pump	2
66224	GASKET, Fuel injector	1
69164	GASKET, Fuel pump adapter	1
70310	SEAL, Shroud tube	12
70455	GASKET, Propeller drive gear plug	1
70457	GASKET, Oil filler extension	1
71481	RING, Seal	6
71973	GASKET, Intake pipe flange	6
72053	GASKET, Governor	1
72059	GASKET	1
72091	RING, Oil seal	2
72312	RING, Oil seal, oil level gage	1
73314	GASKET, Density controller	1
73383	LOCKPLATE, Alternator bracket	1
73818	GASKET, Accessory housing	1
74068	“O” RING	1
74382	RING, Oil seal	1
75118	GASKET, Exhaust flange	12
75371	GASKET, Turbo oil inlet adapter	1
75845	GASKET, V-band coupling	2
75906	GASKET, Rocker box cover	6
77504	GASKET, Fuel injector	1
78083	GASKET, V-band coupling	2
78903	GASKET, Turbo drain	1

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

PART NO.	PART NAME	QTY.
05K22129	KIT - CYLINDER, PISTON AND RING ASSEMBLY	1
16A22130	CYLINDER ASSEMBLY	1
17A23938	VALVE, Intake	1
17B23936	VALVE, Exhaust	1
LW-11795	SPRING, Valve, inner	2
LW-11800	SPRING, Valve, outer	2
65441	SEAT, Valve spring, lower intake	1
LW-13323	SEAT, Valve spring, lower exhaust	1
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°	1
1102	PLUG, 1/8-27 NPT, Allen head	2
17C19386	CAP, Valve stem	1
LW-12733	PISTON	1
LW-14078	PIN, Piston	1
72198	PLUG, Piston pin	2
74241	RING, Piston, compression	2
14H21950	RING, Piston, oil regulating	1
71481	RING, Oil seal	1
70310	SEAL, Shroud tube	2
LW-18661	SEAL, Shroud tube	2
75906	GASKET, Rocker box	1
77611	GASKET, Exhaust	1
71973	GASKET, Intake	1
SSP-299	TAG	1

CRANKCASE ASSEMBLY AND THRU-STUD KIT

PART NO.	PART NAME	QTY.
11E24002-D1-S	KIT - CRANKCASE ASSEMBLY AND THRU-STUD	1
11E24002-D1	CRANKCASE ASSEMBLY	1
76220	THRU-STUD	8
1102	PLUG, 1/8-27 NPT, Allen head	4
31C-14	STUD, 5/16-18 x 1-3/4 long	4
31C-16	STUD, 5/16-18 x 2.00 long	4
31C-23	STUD, 5/16-18 x 2-7/8 long	4
STD-1339	PLUG, 1/16-17 NPT, Allen head	7
AN565B1032H4	SET SCREW, No. 10-32 x 1/4 long	1
AN565B1032H5	SET SCREW, No. 10-32 x 5/16 long	1
LW-31-2.75	BOLT, 5/16-18 x 2-3/4 long	1
LW-31-1.16	BOLT, 5/16-18 x 1-5/32 long	3
STD-35	WASHER, 5/16 plain	4
STD-475	WASHER, 5/16 lock, internal teeth	4

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

PART NO.	PART NAME	QTY.
11E24002-D3-S	KIT – CRANKCASE ASSEMBLY AND THRU-STUD	1
11E24002-D3	CRANKCASE ASSEMBLY	1
76220	THRU-STUD	1
31C-19	STUD, 5/16-18 x 2-7/8 long	4
STD-1339	PLUG, 1/16-27 NPT, Allen head	7
AN565B1032H4	SET SCREW, No. 10-32 x 1/4 long	1
AN565B1032H5	SET SCREW, No. 10-32 x 5/16 long	1
1102	PLUG, 1/8-27 NPT, Allen head	4
LW-31-2.75	BOLT, 5/16-18 x 2-3/4 long	1
LW-31-1.16	BOLT, 5/16-18 x 1-5/32 long	3
STD-35	WASHER, 5/16 plain	4
STD-475	WASEHR, 5/16 lock, internal teeth	4
SSP-272	TAG	1
SSP-582	TAG	1
SSP-1576	TAG	1
SSP-1769	TAG	1

CRANKSHAFT AND COUNTERWEIGHT ASSEMBLY

PART NO.	PART NAME	QTY.
05K47681	KIT – CRANKSHAFT AND COUNTERWEIGHT ASSEMBLY	1
13E47625	CRANKSHAFT ASSEMBLY	1
71640	PLUG, 1-3/8 diameter	1
68484	TUBE, Crankshaft prop. oil	1
75656-S	BUSHING, Prop. flange, long	4
72155-S	BUSHING, Prop. flange, short	1
75657-S	BUSHING, Prop. flange, indexing	1
STD-2078	DOWEL, 3/8 diameter x 1/2 long	1
LW-19227	COUNTERWEIGHT ASSEMBLY	2
71903-A	BUSHING, Dynamic counterweight	4
72965	ROLLER, Dynamic counterweight	2
72797	ROLLER, Dynamic counterweight, 6/3 or	2
71907	WASHER, Counterweight	8
LW-14820	RING, Internal retaining	8

SECTION 9
NUMERICAL INDEX

PART NO.	PART NAME	PAGE NO.	PART NO.	PART NAME	PAGE NO.
AN565B1032H5	Set Screw	1-11	LW-12098-0-170	Tube Assy.	6-5
AN6-12	Bolt	5-5	LW-12098-0-210	Tube Assy.	6-5
AN6-14	Bolt	5-5	LW-12125-3	Coupling	7-3
AN6-16	Bolt	5-3	LW-12186	Nut	3-1
AN6-17	Bolt	5-1	LW-12231	Brace	5-5
AN6-17	Bolt	5-5	LW-12232	Shim	5-5
AN6-17	Bolt	5-6	LW-12237	Bracket Assy.	5-5
AN6-34A	Bolt	1-15	LW-12272	Lockplate	3-5
AN814-6L	Plug	2-7	LW-12347	Prop. Governor Plate	2-7
AN815-4	Union	6-7	LW-12545	Plug	6-1
AN844-12D	Elbow	2-6	LW-12589	Insert	2-1
AN893-12	Bushing	7-7	LW-12681	Gasket	4-1
AN901-8A	Gasket	7-5	LW-12690	Elbow	7-5
AN912-5	Bushing	2-5	LW-12726	Pipe	7-1
AN919-15	Nipple	2-7	LW-12727	Pipe	7-1
AN929-6	Cap Assy.	2-5	LW-12728	Adapter	7-1
AN960C516	Washer	7-3	LW-12729	Pipe	7-1
AN960C616	Washer	7-3	LW-12733	Piston	3-1
LW-10077	Seat	3-5	LW-12751	Manifold	6-7
LW-10098	Diff. Press. Controller	7-7	LW-12784-4-147	Hose Assy.	6-3
LW-10184	Support Assy.	1-7	LW-12786-3-250	Hose Assy.	7-5
LW-10292	Gear Assy.	1-13	LW-12798-4S150	Hose Assy.	7-5
LW-10297	Gear Assy.	1-13	LW-12798-4S242	Hose Assy.	7-7
LW-10299	Shaft	1-13	LW-12798-4S274	Hose Assy.	6-5
LW-10307	Gear Assy.	2-7	LW-12798-4S274	Hose Assy.	6-7
LW-10318	Gear Assy.	2-3	LW-12799-6S130	Hose Assy.	7-7
LW-10320	Sleeve	2-6	LW-12799-6S210	Hose Assy.	7-7
LW-10324	Gear Assy.	1-13	LW-12879-6S120	Hose Assy.	6-5
LW-10325	Spacer	1-13	LW-12892	Thrust Button	3-5
LW-10329	Shaftgear Assy.	1-13	LW-12955	Transition Assy.	7-1
LW-10332	Lockplate	1-7	LW-13323	Seat	3-5
LW-10341	Insert	2-1	LW-13434	Bracket	5-5
LW-10344	Body Assy.	2-3	LW-13435	Support	5-5
LW-10442	Gear	1-11	LW-13689	Adapter	7-5
LW-10541	Gear Assy.	1-11	LW-13790	Shaft	3-5
LW-10682	Density Controller	7-5	LW-13792	Seal	1-5
LW-10799	Spacer	2-5	LW-13896	Plug	1-11
LW-10952	Shim	5-5	LW-13899	Gear	4-1
LW-11485	Tube	3-5	LW-13906	Oil Filter	2-6
LW-11635	Shield	5-5	LW-13923	Bushing	3-1
LW-11713	Spring	1-5	LW-14021	Shaft	1-11
LW-11750	Connecting Rod Assy.	3-1	LW-14078	Pin	3-1
LW-11795	Spring	3-5	LW-14260	Seal	2-3
LW-11800	Spring	3-5	LW-14326	Alternator	5-1
LW-11882	Elbow	2-5	LW-14465	Adapter	7-5
LW-11883	Elbow	7-7	LW-14525	Clamp	7-1
LW-11999	Reducer	7-5	LW-14637	Shim	5-5
LW-12056	Spacer	7-5	LW-14649	Shim	5-5
LW-12093-5	Coupling	7-1	LW-14820	Ring	1-7
LW-12093-6	Coupling	7-3	LW-14848-8S260	Hose Assy.	6-5

NUMERICAL INDEX (CONT.)

PART NO.	PART NAME	PAGE NO.	PART NO.	PART NAME	PAGE NO.
LW-14995	Spring	3-5	LW-19227	Counterweight Assy.	1-7
LW-15437	Cable Assy.	7-1	LW-19340	Camshaft Assy.	1-9
LW-15592-5-04	Clamp	6-7	LW-25-0.81	Bolt	2-3
LW-15592-5-05	Clamp	3-7	LW-25-0.94	Bolt	2-3
LW-15592-8-12	Clamp	7-5	LW-25-1.00	Bolt	6-1
LW-15592-8-24	Clamp	6-3	LW-25-1.00	Bolt	6-3
LW-15592-8-28	Clamp	6-3	LW-25-1.13	Bolt	1-15
LW-15592-8-28	Clamp	7-1	LW-25-1.13	Bolt	6-1
LW-15858-62-294	Clamp	6-3	LW-25-1.25	Bolt	2-3
LW-15996	Bolt	7-5	LW-25-1.25	Bolt	5-6
LW-16266-10-13	Clip	6-5	LW-25-1.25	Bolt	6-3
LW-16266-10-25	Clip	6-7	LW-25-1.50	Bolt	1-15
LW-16266-10-50	Clamp	7-4	LW-25-1.75	Bolt	1-15
LW-16266-10-63	Clamp	7-3	LW-25-1.75	Bolt	5-6
LW-16266-10-75	Clip	6-5	LW-25-1.75	Bolt	7-3
LW-16266-25-25	Clip	7-5	LW-25-2.00	Bolt	1-15
LW-16266-25-63	Clamp	6-5	LW-25-2.00	Bolt	7-3
LW-16266-25-63	Clamp	6-7	LW-25S0.81	Bolt	7-3
LW-16266-25-63	Clip	7-5	LW-25S1.25	Bolt	7-3
LW-16274	Strut	5-5	LW-25S1.50	Bolt	1-15
LW-16471	Support Assy.	1-7	LW-31-0.94	Bolt	5-3
LW-16475	Seat	3-5	LW-31-0.94	Bolt	5-5
LW-16583	Spacer	2-7	LW-31-1.16	Bolt	1-15
LW-16783-10	Gage Assy.	1-3	LW-31-1.16	Bolt	5-1
LW-18085	Spring	1-5	LW-31-1.31	Bolt	6-5
LW-18434	Plug	6-1	LW-31-2.75	Bolt	1-15
LW-18481	Gasket	1-3	LW-31H0.75	Bolt	5-1
LW-18482	Adapter	1-3	LW-31H0.75	Bolt	5-5
LW-18654	Valve	7-3	LW-31H0.75	Bolt	5-6
LW-18661	Seal	3-5	LW-31H1.31	Bolt	5-5
LW-18667	Pin	1-9	LW-31H1.63	Bolt	5-5
LW-18737	Hose	6-7	LW-31S4.44	Bolt	7-3
LW-18854	Nozzle Assy.	6-5	LW-31S5.44	Bolt	7-3
LW-18974	Gear Assy.	2-7	LW-38-0.59	Bolt	6-3
LW-18975	Duct	6-3	LW-38-0.75	Bolt	7-5
LW-18986	Support Assy.	7-3	LW-38H0.75	Bolt	7-5
LW-18993	Pipe	7-1	LW-38SSH1.63	Bolt	7-3
LW-18994	Pipe	7-1	LW-382698	Kit	4-1
LW-18995	Thrust Button	2-7	LW-382813	Kit	4-1
LW-19008	Support	7-3	LW-682610-13	Magneto	4-1
LW-19009	Support	7-3	MS124703	Insert	2-1
LW-19010	Strut	7-3	MS16625-1100	Ring	2-6
LW-19011	Strut	7-3	MS20500-624	Nut	7-3
LW-19086	Sump Assy.	6-1	MS20822-4	Elbow	6-7
LW-19090	Tube	7-5	MS20822-4	Elbow	7-5
LW-19092	Heat Shield	7-3	MS20823-3	Elbow	3-5
LW-19103	Brace	7-3	MS20823-4	Elbow	6-5
LW-19169	Tube Assy.	7-7	MS20823-4	Elbow	7-5
LW-19170	Tube Assy.	7-7	MS20823-6D	Elbow	3-3
LW-19174	Turbocharger	7-3	MS20826-6	Tee	2-5

NUMERICAL INDEX (CONT.)

PART NO.	PART NAME	PAGE NO.	PART NO.	PART NAME	PAGE NO.
MS21043-4	Nut	7-1	STD-475	Washer	1-11
MS29512-06	Seal	2-7	STD-475	Washer	1-15
MS29512-08	Seal	7-7	STD-475	Washer	2-5
MS29512-10	Seal	2-1	STD-475	Washer	2-7
MS29512-10	Seal	2-7	STD-475	Washer	5-1
MS29512-10	Seal	7-5	STD-475	Washer	6-5
MS9490-13	Bolt	7-1	STD-514	Dowel	1-1
STD-8	Washer	1-15	STD-551	Plug	6-1
STD-8	Washer	2-3	STD-557	Dowel	1-1
STD-8	Washer	2-7	STD-596	Nut	1-3
STD-8	Washer	5-5	STD-596	Nut	1-15
STD-8	Washer	6-1	STD-596	Nut	5-5
STD-8	Washer	6-3	STD-670	Nut	6-5
STD-8	Washer	7-3	STD-670	Nut	6-7
STD-19	Dowel	1-11	STD-678	Washer	1-3
STD-28	Washer	1-3	STD-678	Washer	1-15
STD-28	Washer	7-5	STD-678	Washer	5-5
STD-28	Washer	7-7	STD-678	Washer	6-3
STD-33	Washer	1-3	STD-678	Washer	7-5
STD-33	Washer	1-15	STD-684	Nipple	3-7
STD-33	Washer	6-3	STD-690	Washer	5-3
STD-33	Washer	7-5	STD-690	Washer	5-5
STD-35	Washer	1-11	STD-690	Washer	5-6
STD-35	Washer	1-15	STD-692	Screw	6-7
STD-35	Washer	2-3	STD-696	Washer	7-3
STD-35	Washer	2-5	STD-713	Pin	5-3
STD-35	Washer	2-7	STD-713	Pin	5-5
STD-35	Washer	5-1	STD-713	Pin	5-6
STD-35	Washer	5-3	STD-714	Pin	2-3
STD-35	Washer	5-5	STD-798	Dowel	1-11
STD-35	Washer	6-5	STD-860	Screw	6-5
STD-63	Nut	1-3	STD-872	Nut	1-15
STD-63	Nut	7-4	STD-872	Nut	5-3
STD-68	Pin	7-3	STD-872	Nut	5-5
STD-71	Plug	6-1	STD-872	Nut	5-6
STD-82	Screw	6-5	STD-1065	Dowel	1-7
STD-148	Nipple	6-5	STD-1164	Insert	6-1
STD-160	Washer	1-15	STD-1211	Plug	1-7
STD-160	Washer	2-3	STD-1339	Plug	1-1
STD-160	Washer	2-7	STD-1339	Plug	2-1
STD-160	Washer	6-1	STD-1339	Plug	6-7
STD-160	Washer	6-3	STD-1339	Plug	7-3
STD-160	Washer	7-3	STD-1353	Insert	3-3
STD-213	Seal	1-13	STD-1410	Nut	1-11
STD-251	Washer	1-3	STD-1410	Nut	2-5
STD-251	Washer	6-5	STD-1410	Nut	2-7
STD-251	Washer	7-4	STD-1410	Nut	5-1
STD-425	Washer	6-5	STD-1411	Nut	1-15
STD-425	Washer	7-4	STD-1411	Nut	2-7
STD-471	Screw	7-5	STD-1411	Nut	3-5

NUMERICAL INDEX (CONT.)

PART NO.	PART NAME	PAGE NO.	PART NO.	PART NAME	PAGE NO.
STD-1411	Nut	6-4	38-22	Stud	1-1
STD-1420	Nut	2-3	38D-17	Stud	1-1
STD-1420	Nut	7-3	50-15	Stud	1-1
STD-1566	Screw	7-5	383-B	Nut	3-7
STD-1566	Screw	7-7	1028-B	Ball	1-5
STD-1685	Nut	5-5	1102	Plug	1-1
STD-1685	Nut	7-5	1102	Plug	2-1
STD-1686	Screw	7-4	1102	Plug	3-3
STD-1727	Washer	5-3	1102	Plug	6-1
STD-1727	Washer	5-5	1102	Plug	6-5
STD-1727	Washer	5-6	1102	Plug	7-1
STD-1774	Pin	1-13	1102	Plug	7-5
STD-1821	Hose	3-7	1182-H7	Spark Plug	4-1
STD-1856	Screw	6-7	1182-Q4	Spark Plug	4-1
STD-1864	Nut	7-3	8313	Gasket	2-7
STD-1925	Screw	3-7	60009	Key	3-5
STD-1930	Hose	6-3	60329	Shaft	2-3
STD-1932	Bushing	7-1	60430	Cover	2-7
STD-1932	Bushing	7-5	60803	Strap	1-15
STD-1932	Bushing	7-7	61084	Spring	1-5
STD-2048	Hose	6-7	61166	Thrust Button	1-13
STD-2078	Dowel	1-7	61166	Thrust Button	2-3
STD-2079	Nut	6-7	61166	Thrust Button	2-7
STD-2090	Nut	3-7	61247	Cover	3-7
STD-2131	Bolt	7-3	65007	Retainer	1-1
STD-2154	Bolt	7-3	65441	Seat	3-5
STD-2178	Washer	7-1	66224	Gasket	6-5
STD-2197	Washer	5-1	66610	Bushing	3-3
STD-2197	Washer	7-3	68668	Spring	1-5
STD-2205	Washer	7-3	68759	Tube Assy.	3-7
STD-2221	Nut	5-5	68761	Tube Assy.	3-7
STD-2231	Ring	1-9	69159	Adapter Assy.	1-13
STD-2233	Locknut	7-1	69164	Gasket	1-13
STD-2249	Nut	1-15	69260	Insert	3-3
STD-2251	Bolt	1-7	69603	Hose	6-3
10-8	Stud	1-1	69796	Dowel	1-1
25C-8	Stud	3-3	70310	Seal	3-5
25C-11	Stud	6-1	70455	Gasket	1-11
25C-12	Stud	2-1	70484	Screen	6-1
31C-12	Stud	1-1	70485	Pipe	6-3
31C-12	Stud	3-3	71481	Ring	3-7
31C-13	Stud	1-1	71596	Washer	2-7
31C-13	Stud	2-1	71610	Hook	3-7
31C-19	Stud	1-1	71611	Retainer	3-7
31C-19	Stud	2-1	71640	Plug	1-7
31C-26	Stud	2-1	71699	Connection	6-1
31CD-20	Stud	2-1	71737	Tube Assy.	3-7
38-13	Stud	1-1	71903-A	Bushing	1-7
38-15	Stud	6-1	71907	Washer	1-7
38-16	Stud	1-1	71973	Gasket	6-3

NUMERICAL INDEX (CONT.)

PART NO.	PART NAME	PAGE NO.	PART NO.	PART NAME	PAGE NO.
72053	Gasket	1-11	75906	Gasket	3-7
72053	Gasket	2-7	76118	Spacer	1-9
72057	Seat	3-3	76155	Shaft Assy.	1-9
72058	Seat	3-3	76220	Stud	1-15
72059	Gasket	1-3	76355	Tee	7-7
72091	Ring	1-5	76510	Gasket	2-6
72155-S	Bushing	1-7	76534	Shim	5-3
72158	Bushing	1-1	76534	Shim	5-5
72198	Plug	3-1	76534	Shim	5-6
72376	Elbow	6-7	76539	Seat	2-6
72377	Elbow	7-7	76734	Zip Strap	6-3
72378	Cover	1-11	76734	Zip Strap	7-5
72378	Cover	2-7	76768	Lockwasher	5-5
72566	Gear	1-7	76769	Locknut	5-5
72797	Roller	1-7	76943	Guide	3-3
72965	Roller	1-7	77461	Tee	7-7
73136	Bracket	6-5	77467	Spring	1-5
73152	Bracket	6-7	77504	Gasket	6-3
73249	Washer	1-11	77611	Gasket	7-1
73250	Washer	1-11	77808	Valve Assy.	1-5
73251	Washer	1-11	77823	Stud	7-1
73252	Washer	1-11	77872	Bushing	1-11
73314	Gasket	7-5	77906	Spacer	3-7
73314	Gasket	7-7	78083	Gasket	7-1
73346	Flange	6-3	78109	Manifold	6-7
73383	Lockplate	5-3	78127	Tube	6-7
73383	Lockplate	5-5	78189	Flange	7-1
73772	Nozzle Assy.	1-1	78366	Heat Shield	6-3
73781	Hose	7-5	78629	Bearing	5-5
73810	Bushing	1-7	78753	Bracket	6-7
73818	Gasket	2-1	78903	Gasket	7-5
73966	Spacer	6-5	951391	"O" Ring	6-5
74068	"O" Ring	1-3	01L21418	Washer	1-11
74070	Elbow	7-5	01P21501-1-29	Bag, Harness Attaching	4-1
74241	Ring	3-1	01P21641-1	Bag, Harness Attaching	4-1
74494	Plate	3-7	02A21378	Elbow	2-5
74637	Bushing	3-5	03C21720	Plug	2-1
74887	Spacer	3-7	03C21720	Plug	2-7
75061	Bolt	3-1	05S21021	Spring	2-6
75252	Elbow	6-3	06A19956	Oil Seal	2-7
75330	Hose	6-3	06B21326	Gasket	6-1
75339	Baffle Assy.	3-7	06E19769-1.00	Gasket	6-1
75371	Gasket	7-5	06E19769-1.25	Gasket	1-5
75380	Link	5-3	06E19769-1.63	Gasket	6-1
75380	Link	5-5	07A19474	Bracket	5-3
75656-S	Bushing	1-7	06A19474	Bracket	5-5
75657-S	Bushing	1-7	07A23031	Bracket	6-5
75735	Extension	1-3	07F23268	Strut	5-1
75739	Nipple	7-7	11E24002-D1	Crankcase Assy.	1-1
75845	Gasket	7-3	11E24002-D3	Crankcase Assy.	1-1

NUMERICAL INDEX (CONT.)

PART NO.	PART NAME	PAGE NO.	PART NO.	PART NAME	PAGE NO.
12A19770	Bracket	1-3	21D21611-01	Housing Assy.	2-1
13E27625	Crankshaft Assy.	1-7	31B26040	Starter	5-1
13E47625	Crankshaft Assy.	1-7	32C19553	Alternator Assy.	5-1
13S19649	Gear	1-7	32C19565	Alternator Assy.	5-1
14H21950	Ring	3-1	36A19492	Pulley & Shaft Assy.	5-5
14S23890	Bolt	3-1	36B19475	Pulley	5-1
15B21319	Socket	3-5	36B19477	Pulley	5-5
15B23274	Impeller	2-3	36B19484	Pulley	5-1
15B26064	Body	1-5	37A19773-376	Belt	5-1
15B26066	Plunger Assy.	3-5	37A19773-464	Belt	5-1
15C23275	Impeller	2-3	40B19620	Pipe	7-1
15F19957-34	Rod Assy.	3-5	40B21006	Pipe	7-1
15F19957-35	Rod Assy.	3-5	40J19618	Heat Shield	7-1
15F19957-36	Rod Assy.	3-5	47J19619	Heat Shield	7-1
15F19957-37	Rod Assy.	3-5	40J21317	Heat Shield	7-3
16A22130	Cylinder & Head Assy.	3-3	54E22144	Valve Assy.	2-6
16R22126	Guide	3-3	54E23093	Kit	2-6
17A23938	Intake Valve	3-5	61J19503	Fuel Injector	6-5
17B23936	Exhaust Valve	3-5	62E22583	Fuel Pump Assy.	2-5
17C19386	Cap	3-5	62E23188	Fuel Pump	2-5
17C21191	Key	3-5	63B19965	Manifold Assy.	6-5
17F19357	Rocker Assy.	3-5	66E21557	Mag. Ignition System	4-1
18A26093	Bearing	1-5	67H21476	Harness	4-1
18D26098	Bearing	1-5	68H22624	Cushion	4-1
18M26105	Bearing	3-1			