

IO-540-V Series Engines Illustrated Parts Catalog

March 2011

PC-615-3

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652 Oliver Street
Williamsport, PA 17701

IO-540-V Series Engines Illustrated Parts Catalog

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RECORD OF REVISIONS

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SERVICE BULLETIN LIST

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

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INTRODUCTION

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

Purpose of this Catalog

This Illustrated Parts Catalog contains a complete parts listing for the Lycoming IO-540-V series wide cylinder flange model engines.

How to Use this Catalog

This catalog is based on the Air Transport Association (ATA) Spec100 format. In order to clarify illustrations, Lycoming has taken discretion to classify non-system related assemblies and components in the same chapters, because they are physically connected.

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

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

The ATA 100 format specifies the subject matter for each chapter-section. According to the ATA Standards, the following chapters apply to the IO-540-V Series Illustrated Parts Catalog:

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

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

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

Numerical Index

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

Description column

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

Units per Assembly column

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

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

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

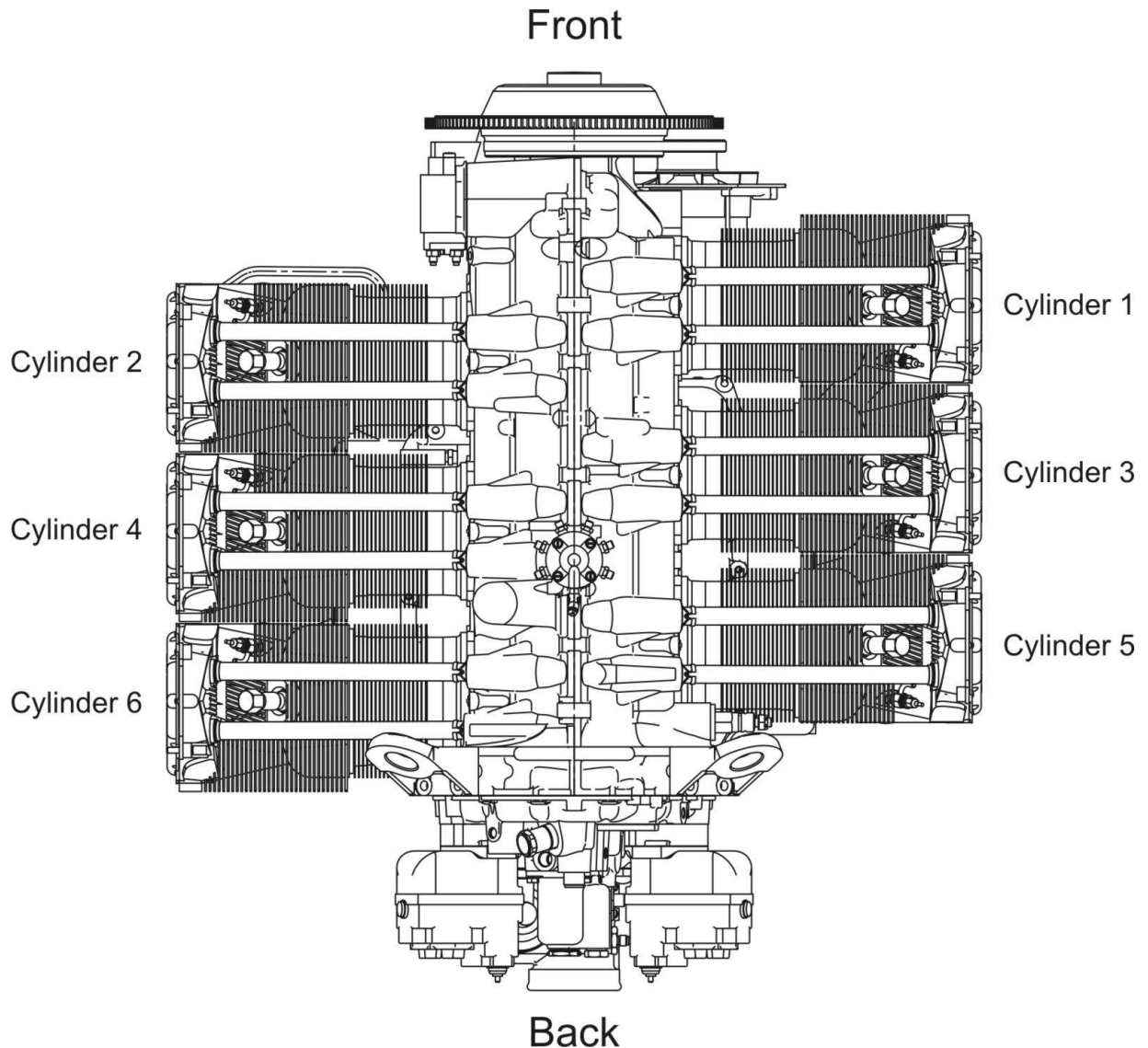
Any reference in this document to the suppliers/part manufacturer’s product, by name, trademark, part number or other description is solely for the purpose of identification and does not indicate or infer that Lycoming accepts responsibility for quality control and/or airworthiness of parts, which do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

Environmental Compliance

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

Perspective of References

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

**Top View of Engine**

How to Order Parts and Publications

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

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

1. In order to expedite correct part shipments without delay:
 - a. Always specify the model and serial number of your engine.
 - b. Always specify part number, nomenclature and quantity required.

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

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

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

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

NOTE: The owner of the manual is responsible for notifying the factory of a change of address.

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

Call **(570) 323-6181**

8:00 A.M. – 5:00 P.M. EST (-5GMT)

Monday – Friday.

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ABBREVIATIONS AND ACRONYMS

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

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OVERSIZE AND UNDERSIZE PARTS LISTING

Part No.	Description	Oversize (In.)								Undersize (In.)		
		P02 .002	P05 .005	P10 .010	P15 .015	P20 .020	P30 .030	P40 .040	P50 .050	M03 .003	M06 .006	M10 .010
76943*	GUIDE		X									
66610*	BUSHING		X	X								
66796*	INSERT		X	X								
69796	DOWEL		X									
71903-A†	BUSHING	See latest revision of Service Instruction No. 1143 for application.										
75657-S	BUSHING		X	X	X	X						
72155-S	BUSHING		X	X	X	X						
75656-S	BUSHING		X	X	X	X						
72057	SEAT		X	X		X	X					
72058	SEAT		X	X		X	X					
73810♦	BUSHING		X	X	X							
14H21950	RING		X	X	X	X						
16R22126*	GUIDE		X									
74241	RING			X								
18M26105	BEARING			X						X	X	X
LW-13792	SEAL								X			
18A26093	BEARING				X					X	X	X
18D23135	BEARING									X	X	X
STD-1065	DOWEL	X	X	X	X							

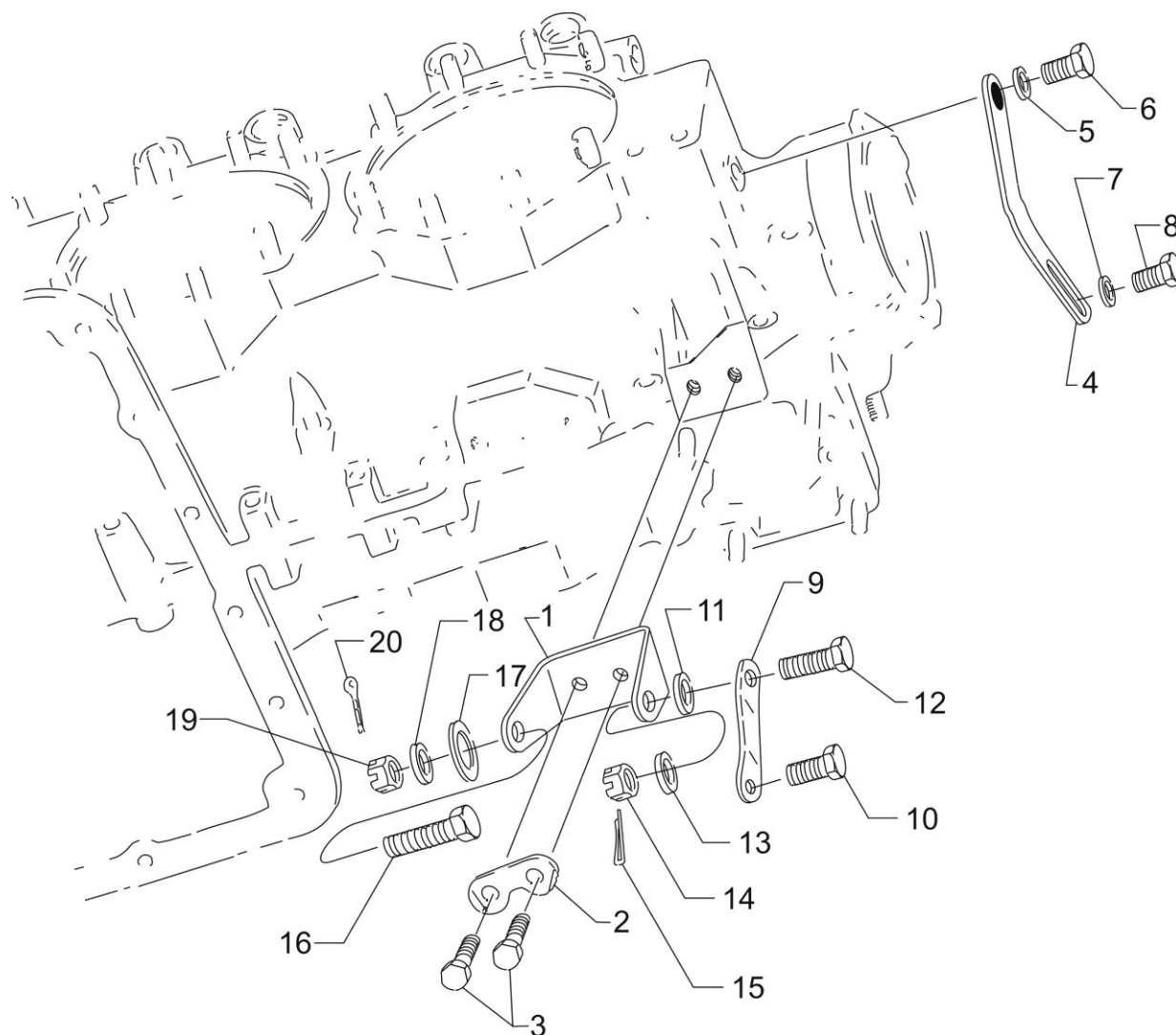
* - Also available in P03 (.003 in.) oversize.

♦ - Also available in P75 (.075 in.) and P125 (.0125 in.) oversize.

† - 71903-A is the undersize part number. When ordering, do not specify the undersize code letter.

NOTE

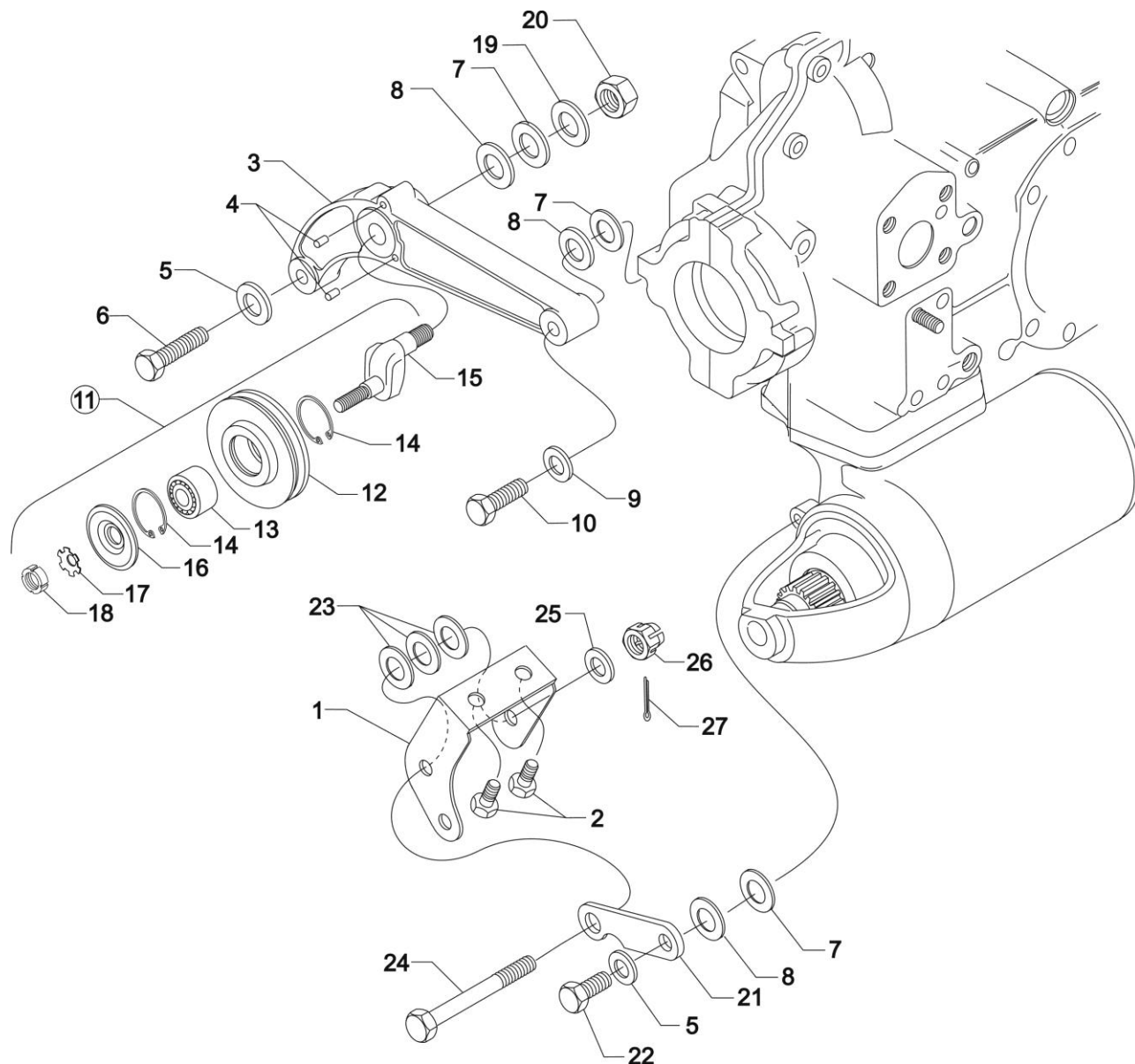
When ordering oversize and undersize parts, be sure to specify the required oversize and undersize dimension along with the proper part number. For example, to order bearing P/N 18E23886 in .003 in. undersize, order P/N 18E23886-M03. Oversize code letter is "P" while undersize code letter is "M". These letters are then followed by the number designating the size in thousandths of an inch.



Alternator Mounting and Attaching Parts
Figure 1

ELECTRICAL POWER**FIGURE 1 –ALTERNATOR MOUNTING AND ATTACHING PARTS**

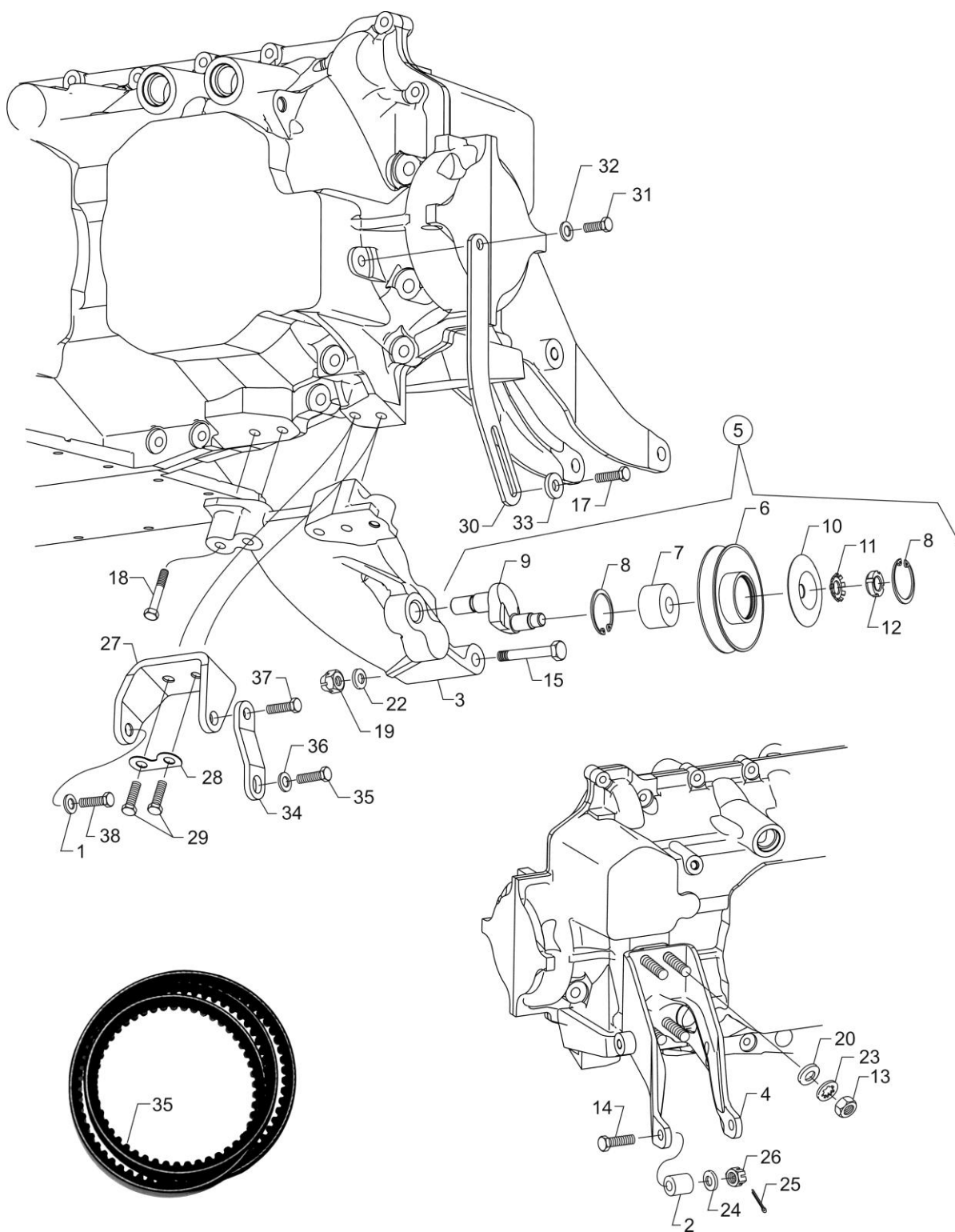
Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		07A19474	BRACKET, Alternator	1	1
2		73383	LOCKPLATE, 5/16 bolt x 1.00 spacing	1	1
3		LW-31-0.94	BOLT, 5/16-18 x 15/16 long, hex. head	2	2
4		75380	LINK, Alternator adjusting	1	1
5		STD-35	WASHER, 5/16 plain	1	1
6		LW-31H0.75	BOLT, 5/16-18 x 3/4 long, hex. head, drilled	1	1
7		STD-1727	WASHER, Plain, 3/4 O.D. x 11/32 I.D. x 1/8 thick	1	1
8		LW-31H0.75	BOLT, 5/16-18 x 3/4 long, hex. head, drilled	1	1
9		07F23268	STRUT, Alternator support	1	1
10		LW-31H0.75	BOLT, 5/16-18 x 3/4 long, hex. head, drilled	1	1
11		STD-690	WASHER, 13/16 O.D. x 25/64 I.D. x 1/16 thick	1	1
12		AN6-17	BOLT, 3/8-24 x 1-61/64 long, hex. head, drilled end	1	1
13		STD-690	WASHER, 13/16 O.D. x 25/64 I.D. x 1/16 thick	3	3
14		STD-872	NUT, 3/8-24 slotted	1	1
15		STD-713	COTTER PIN, 3/32 diameter x 3/4 long	1	1
16		AN6-16	BOLT, 3/8-24 x 1-53/64 long, hex. head, drilled end	1	1
17		76534	SHIM, 1-1/8 O.D. x 13/32 I.D. x .005 thick	5	5
18		STD-690	WASHER, 13/16 O.D. x 25/64 I.D. x 1/16 thick	3	3
19		STD-872	NUT, 3/8-24 slotted	1	1
20		STD-713	COTTER PIN, 3/32 diameter x 3/4 long	1	1



Alternator Mounting and Attaching Parts (-V4A5)
Figure 2

ELECTRICAL POWER**FIGURE 2 - ALTERNATOR MOUNTING AND ATTACHING PARTS (-V4A5)**

Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		07A22348	BRACKET, Alternator	1	
2		LW-31H0.88	BOLT, 5/16-18 x 7/8 long, hex. head, drilled	2	
3		07A22356	BRACKET ASSEMBLY, Alternator belt, adj.	1	
4		STD-1021	DOWEL, 3/16 diameter x 5/8 long	2	
5		STD-1727	WASHER, Plain, 3/4 O.D. x 11/32 I.D. x 1/8 thick	1	
6		LW-31H1.22	BOLT, 5/16-18 x 1-7/32 long, hex. head, drilled	1	
7		LW-14637	SHIM, 13/16 O.D. x 11/32 I.D. x .005 thick	3	
8		LW-14649	SHIM, 13/16 O.D. x 11/32 I.D. x .010 thick	3	
9		STD-33	WASHER, 3/8 plain	1	
10		LW-38H1.19	BOLT, 3/8-16 x 1-3/16 long, hex. head	1	
11		36A22374	PULLEY AND SHAFT ASSEMBLY	1	
12		LW-12233	PULLEY, Alternator belt, adjustable	1	
13		78629	BALL BEARING, Double row, alternator	1	
14		MS16625-1125	RING, Internal retaining, 1-1/4 diameter	2	
15		LW-19238	SHAFT, Alternator dual belt idler	1	
16		LW-11635	SHIELD, Alternator idler bearing	1	
17		76768	LOCKWASHER, Alternator idler pulley bearing	1	
18		76769	LOCKNUT, Alternator idler pulley bearing	1	
19		STD-669	WASHER, 33/64 I.D. x 1.00 O.D. x 1/8 thick	1	
20		STD-2221	NUT, 1/2-20 self-locking	1	
21		07F21160	STRUT, Alternator support	1	
22		LW-31H0.88	BOLT, 5/16-18 x 7/8 long, hex. head, drilled	1	
23		LW-14650	SHIM, 7/8 O.D. x 15/32 I.D. x .005 thick	3	
24		AN7-43	BOLT, 7/16 -20 x 4-15/32 long, hex. head	1	
25		STD-632	WASHER, 7/16 plain	2	
26		AN310-7	NUT, 7/16-20 plain, slotted	1	
27		STD-713	COTTER PIN, 3/32 diameter x 3/4 long	1	



Alternator Mounting and Attaching Parts (-V4A5)
Figure 3

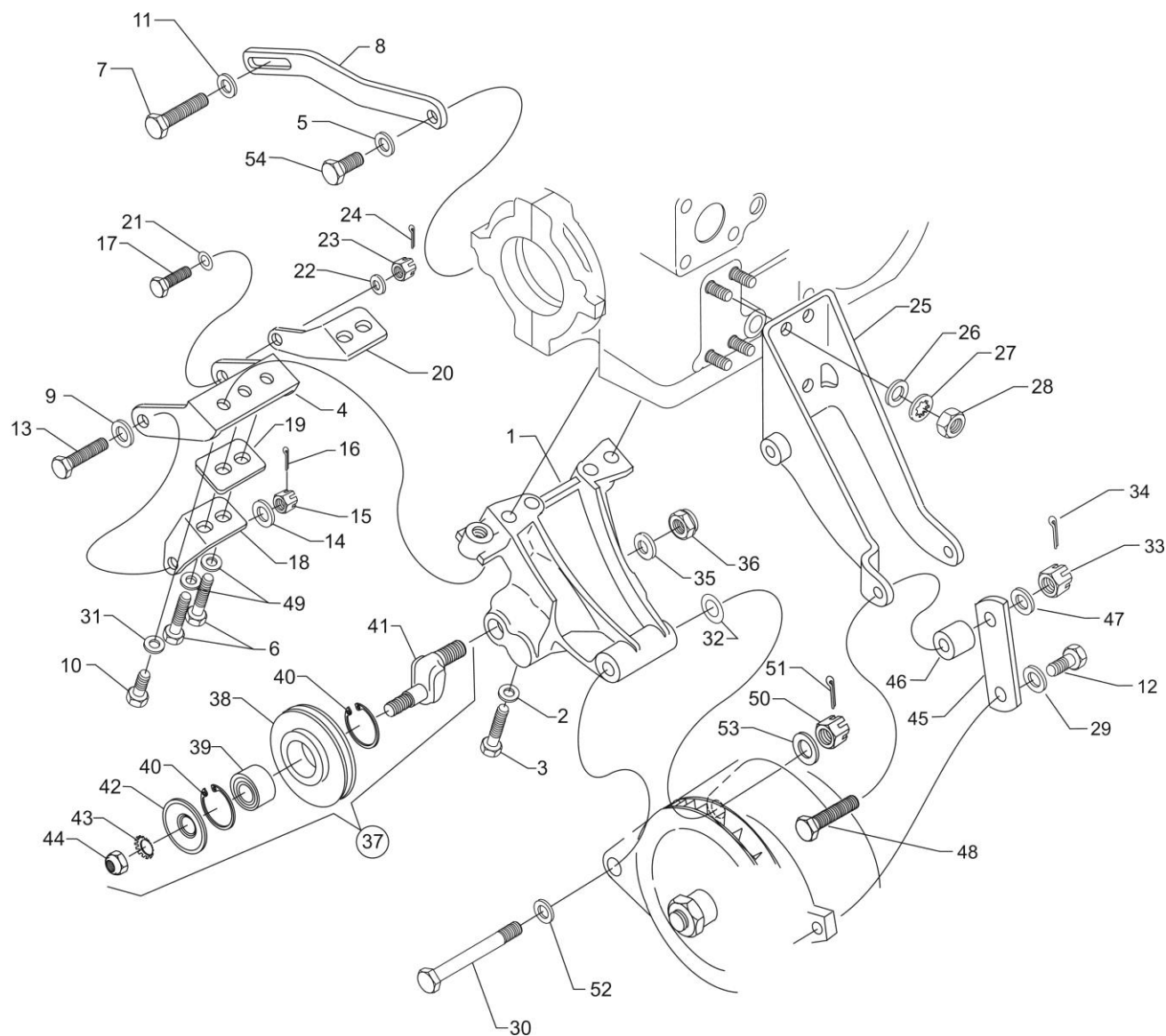
ELECTRICAL POWER**FIGURE 3 – ALTERNATOR MOUNTING AND ATTACHING PARTS (-V4A5)**

Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1	*	76534	SHIM, 1-1/8 O.D. x 13/32 I.D. x .005 thick	16	
2	*	78448	SPACER	1	
3	*	07A26688	BRACKET, Alternator	1	
4	*	07A21030	BRACKET, Compressor	1	
5	*	36A19951	PULLEY AND SHAFT ASSEMBLY, Idler	1	
6	*	78614	PULLEY, Idler	1	
7	*	78629	BALL BEARING	1	
8	*	MS16625-1125	RING, Internal retaining	2	
9	*	LW-19238	SHAFT, Idler, alternator, adjusting	1	
10	*	LW-11635	SHIELD, Alternator idler bearing	1	
11	*	76768	LOCKWASHER, Alternator idler pulley bearing	1	
12	*	76769	LOCKNUT, Alternator idler pulley bearing	1	
13	*	383-B	NUT, 3/8-24 plain	4	
14	*	AN6-21	BOLT, 3/8-24 UNF x 2-13/64 long, drilled	1	
15	*	AN6-44	BOLT, 3/8-24 x 4-37/64 long, hex. head, drilled end	1	
16	*	LW-31H0.75	BOLT, 5/16-18 x 3/4 long, hex. head, drilled	2	
17	*	LW-31H0.88	BOLT, 5/16-18 x 7/8 long, hex. head, drilled	2	
18	*	LW-31H1.75	BOLT, 5/16-18 x 1-3/4 long, hex. head, drilled	4	
19	*	STD-2221	NUT, 1/2-20 self-locking	1	
20	*	STD-33	WASHER, 3/8 plain	4	
21	*	STD-35	WASHER, 5/16 plain	9	
22	*	STD-669	WASHER, 33/64 I.D. x 1.00 O.D. x 1/8 thick	1	
23	*	STD-678	WASHER, 3/8 internal lock	4	
25	*	STD-690	WASHER, 13/16 O.D. x 25/64 I.D. x 1/16 thick	18	
25	*	STD-713	COTTER PIN, 3/32 diameter x 3/4 long	1	
26	*	STD-872	NUT, 3/8-24 slotted	4	
27	*	07A19474	BRACKET, Alternator	1	
28	*	73383	LOCKPLATE, 5/16 bolt x 1.00 spacing	1	
29	*	LW-31-0.94	BOLT, 5/16-18 x 15/16 long, hex. head	2	
30	*	75380	LINK, Alternator adjusting	1	
* These parts are shipped loose					

ELECTRICAL POWER**FIGURE 3 – ALTERNATOR MOUNTING AND ATTACHING PARTS (-V4A5) (CONT.)**

Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
31	*	LW-31H0.75	BOLT, 5/16-18 x 3/4 long, hex. head, drilled	1	
32	*	STD-35	WASHER, 5/16 plain	1	
33	*	STD-1727	WASHER, Plain, 3/4 O.D. x 11/32 I.D. x 1/8 thick	1	
34	*	07F23268	STRUT, Alternator support	1	
35	*	LW-31H0.75	BOLT, 5/16-18 x 3/4 long, hex. head, drilled	1	
36	*	STD-690	WASHER, 13/16 O.D. x 25/64 I.D. x 1/16 thick	1	
37	*	AN6-17	BOLT, 3/8-24 x 1-61/64 long, hex. head, drilled	1	
38	*	AN6-16	BOLT, 3/8-24 x 1-53/64 long, hex. head, drilled	1	
39	*	37B19774-446	BELT, Freon compressor	1	
* These parts are shipped loose.					

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Dual Alternator Mounting and Attaching Parts (-V4A5)
Figure 4

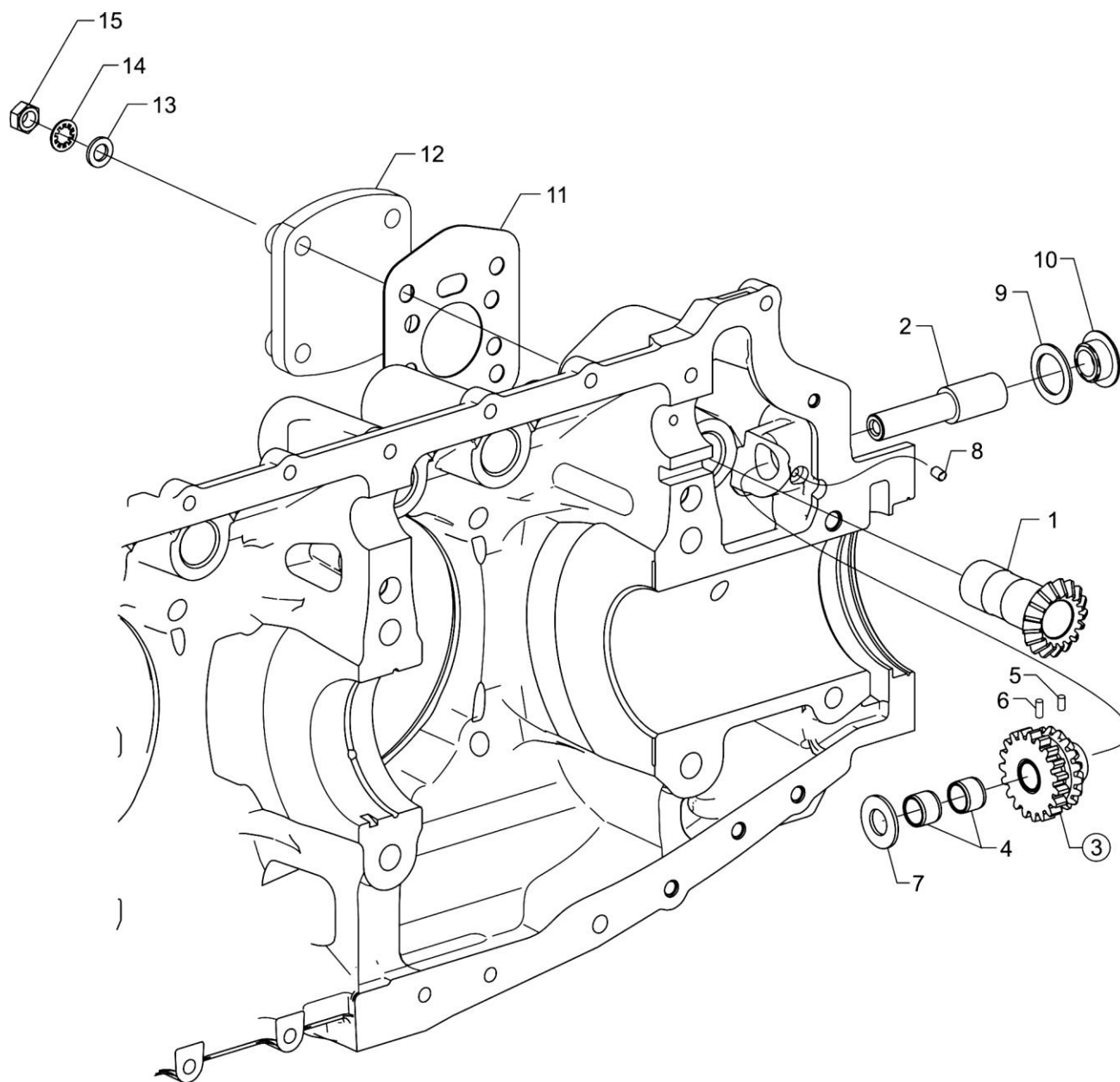
ELECTRICAL POWER**FIGURE 4 – DUAL ALTERNATOR MOUNTING AND ATTACHING PARTS (-V4A5)**

Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		07A26688	BRACKET, Alternator	1	
2		STD-35	WASHER, 5/16 plain	2	
3		LW-31H2.13	BOLT, 5/16-18 x 2-1/8 long, hex. head, drilled	2	
4		07A19880	BRACKET, Alternator, right	1	
5		STD-35	WASHER, 5/16 plain	3	
6		LW-31H2.75	BOLT, 5/16-18 x 2-3/4 long, hex. head, drilled	2	
7		LW-31H0.88	BOLT, 5/16-18 x 7/8 long, hex. head, drilled	1	
8		07F21298	LINK, Alternator, adjusting	1	
9		STD-35	WASHER, 5/16 plain	1	
10		LW-31H0.88	BOLT, 5/16-18 x 7/8 long, hex. head, drilled	1	
11		STD-1727	WASHER, Plain, 3/4 O.D. x 11/32 I.D. x 1/8 thick	1	
12		LW-31H0.88	BOLT, 5/16-18 x 7/8 long, hex. head, drilled	1	
13		AN6-15	BOLT, 3/8-24 UNF x 1-45/64 long, hex. head drilled	1	
14		STD-690	WASHER, 13/16 O.D. x 25/64 I.D. x 1/16 thick	2	
15		STD-872	NUT, 3/8-24 slotted	1	
16		STD-713	COTTER PIN, 3/32 diameter x 3/4 long	1	
17		AN6-20	BOLT, 3/8-24 UNF x 2-5/64 long, hex. head, drilled	1	
18		07A21908	BRACKET, Alternator, inner	1	
19		01L21909	SPACER, Alternator bracket inner	1	
20		07A21910	BRACKET, Alternator, aft	1	
21		76534	SHIM, 1-1/8 O.D. x 13/32 I.D. x .005 thick	3	
22		STD-690	WASHER, 13/16 O.D. x 25/64 I.D. x 1/16 thick	3	
23		STD-872	NUT, 3/8-24 slotted	1	
24		STD-713	COTTER PIN, 3/32 diameter x 3/4 long	1	
25		07A21030	BRACKET, Compressor	1	
26		STD-33	WASHER, 3/8 plain	4	
27		STD-678	WASHER, 3/8 internal lock	4	
28		383-B	NUT, 3/8-24 plain	4	
29		STD-690	WASHER, 13/16 O.D. x 25/64 I.D. x 1/16 thick	2	
30		AN6-44	BOLT, 3/8-24 x 4-37/64 long, hex. head, drilled	1	

ELECTRICAL POWER**FIGURE 4 – DUAL ALTERNATOR MOUNTING AND ATTACHING PARTS (-V4A5) (CONT.)**

Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
31		STD-690	WASHER, 13/16 O.D. x 25/64 I.D. x 1/16 thick	1	
32		76534	SHIM, 1-1/8 O.D. x 13/32 I.D. x .005 thick	3	
33		STD-872	NUT, 3/8-24 slotted	1	
34		STD-713	COTTER PIN, 3/32 diameter x 3/4 long	1	
35		STD-669	WASHER, 33/64 I.D. x 1.00 O.D. x 1/8 thick	1	
36		STD-2221	NUT, 1/2-20 self-locking	1	
37		36A19951	PULLEY AND SHAFT ASSEMBLY, Idler	1	
38		78614	PULLEY, Idler	1	
39		78629	BALL BEARING	1	
40		MS16625-1125	RING, Internal retaining	1	
41		LW-19238	SHAFT, Idler, alternator adjusting	1	
42		LW-11635	SHIELD, Alternator idler bearing	1	
43		76768	LOCKWASHER, Alternator idler pulley bearing	1	
44		76769	LOCKNUT, Alternator idler pulley bearing	1	
45		07F21903	BRACE, Alternator	1	
46		78448	SPACER	1	
47		STD-690	WASHER, 13/16 O.D. x 25/64 I.D. x 1/16 thick	2	
48		AN6-21	BOLT, 3/8-24 UNF x 2-13/64 long, drilled	1	
49		STD-690	WASHER, 13/16 O.D. x 25/64 I.D. x 1/16 thick	2	
50		STD-872	NUT, 3/8-24 slotted	1	
51		STD-713	COTTER PIN, 3/32 diameter x 3/4 long	1	
52		76534	SHIM, 1-1/8 O.D. x 13/32 I.D. x .005 thick	8	
53		STD-35	WASHER, 5/16 plain	1	
54		LW-31H0.75	BOLT, 5/16-18 x 3/4 long, hex. head, drilled	1	

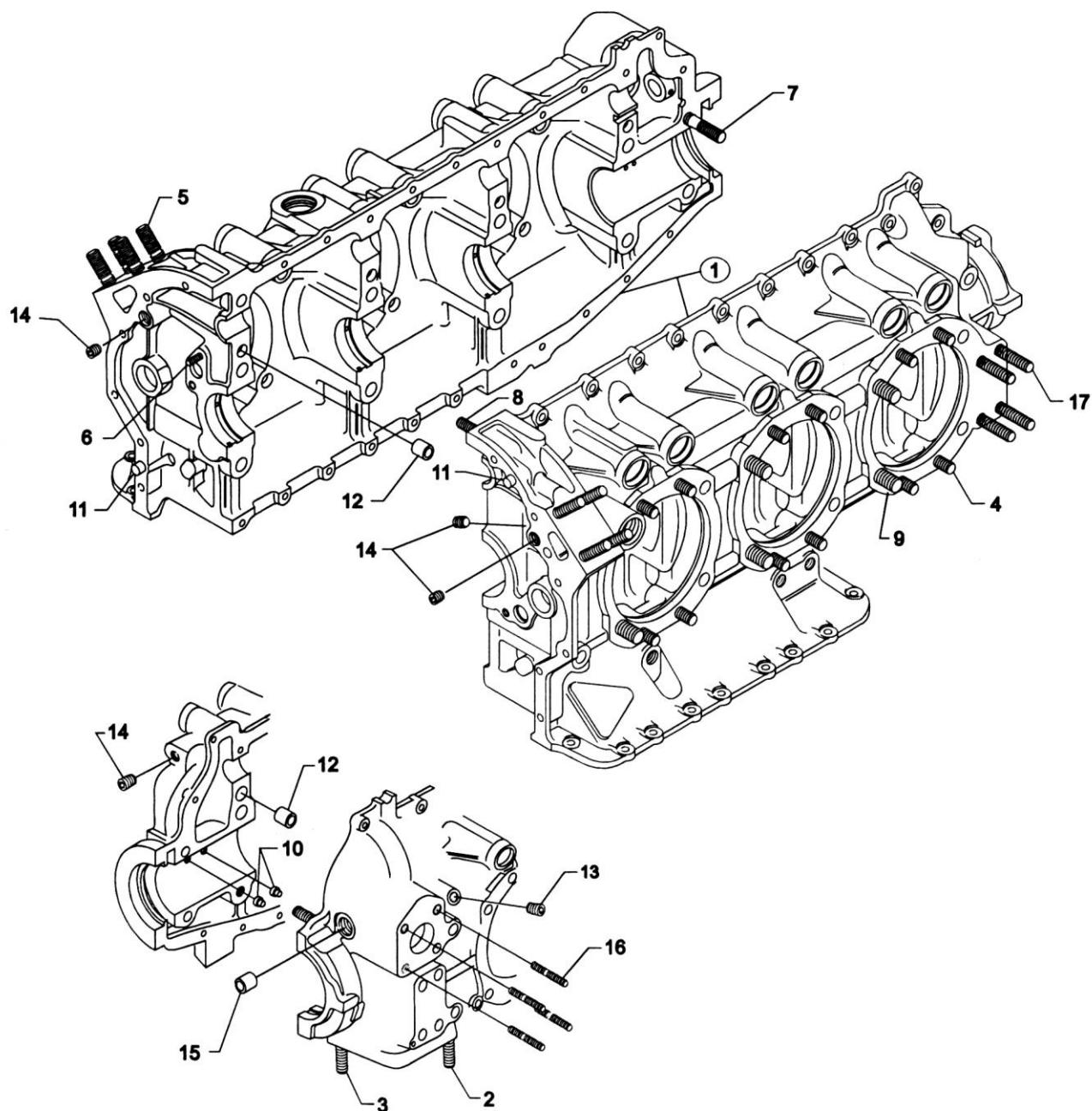
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Propeller Governor Drive Assembly
Figure 5

FRONT SECTION**FIGURE 5 - PROPELLER GOVERNOR DRIVE ASSEMBLY**

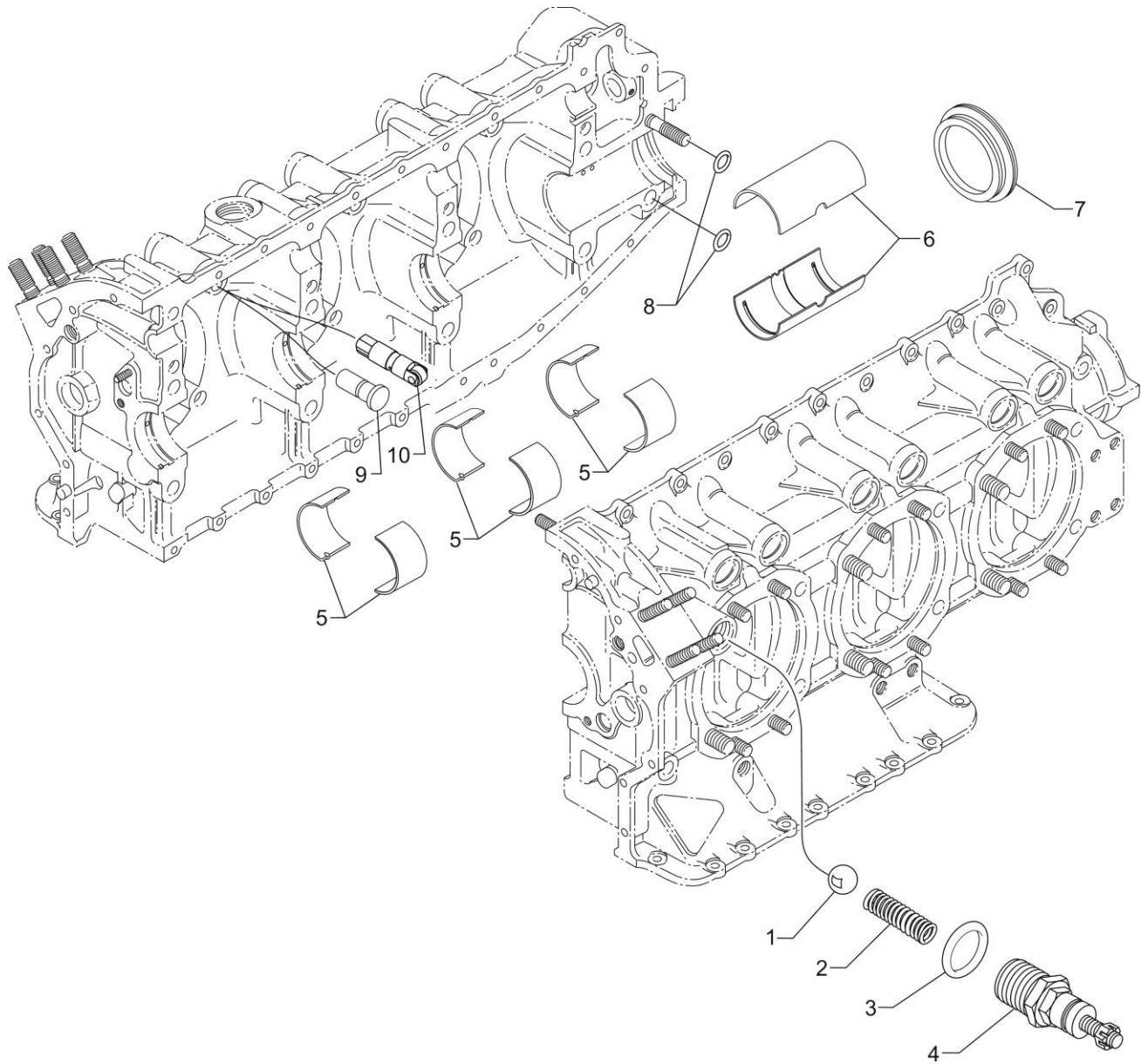
Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		LW-10442	GEAR, Propeller governor drive	1	1
2		LW-14021	SHAFT, Propeller governor idler gear	1	1
3		LW-10451	GEAR ASSEMBLY, Propeller governor idler	1	1
4		77872	BUSHING, Propeller governor idler gear	2	2
5		STD-19	DOWEL, 3/32 diameter x 7/32 long	1	1
6		STD-798	DOWEL, 3/32 diameter x 9/32 long	1	1
7	AR	73249	WASHER, Thrust (.0585 - .0595 thick)	AR	AR
	AR	73250	WASHER, Thrust (.062 - .063 thick)	AR	AR
	AR	73251	WASHER, Thrust (.0655 - .0665 thick)	AR	AR
	AR	73252	WASHER, Thrust (.069 - .070 thick)	AR	AR
	AR	01L21418	WASHER, Thrust (.055 - .056 thick)	AR	AR
8		AN565B1032H5	SET SCREW, No. 10-32 x 5/16 long	1	1
9		70455	GASKET, 25/32 I.D. x 1-1/8 O.D. x 1/16 thick	1	1
10		LW-13896	PLUG, 3/4-16 hex. head	1	1
11		72053	GASKET, Governor	1	1
12		72378	COVER, Governor drive	1	1
13		STD-35	WASHER, 5/16 plain	20	20
14		STD-475	WASHER, 5/16 lock, internal teeth	4	4
15		STD-1410	NUT, 5/16-18 plain	4	4
AR as required					



Crankcase Assembly
Figure 6

POWER SECTION**FIGURE 6 - CRANKCASE ASSEMBLY**

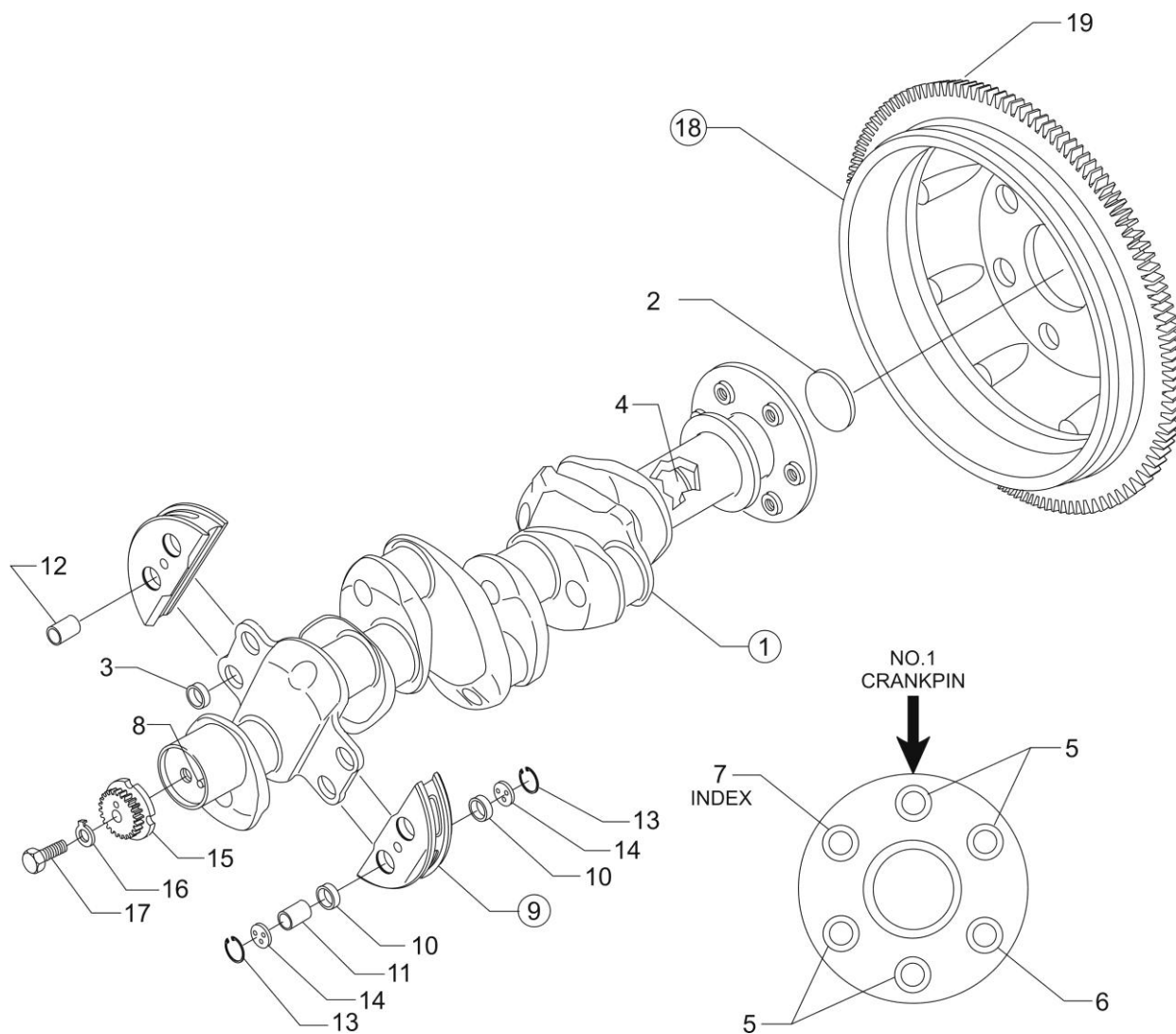
Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1	*	11E24000-S3-S	CRANKCASE ASSEMBLY KIT	1	
	P	11E24000-S3	CRANKCASE ASSEMBLY	1	
	*	11E24000-D1-S	CRANKCASE ASSEMBLY KIT		1
	P	11E24000-D1	CRANKCASE ASSEMBLY		1
	*	11E24100-S1-S	CRANKCASE ASSEMBLY KIT (Roller tappet engines)	1	
	P	11E24100-S1	CRANKCASE ASSEMBLY (Roller tappet engines)	1	
	*	11E24100-S3-S	CRANKCASE ASSEMBLY KIT (Roller tappet engines)	1	
	P	11E24100-S3	CRANKCASE ASSEMBLY (Roller tappet engines)	1	
2		31C-12	STUD, 5/16-18 x 1-1/2 long	2	2
3		31C-13	STUD, 5/16-18 x 1-5/8 long	1	1
4		38-13	STUD, 3/8-16 x 1-5/8 long	24	24
5		38-16	STUD, 3/8-16 x 2.00 long	8	8
6		01A23354	STUD, 5/16-18 x 1.00 long, drilled	1	
7		38-22	STUD, 3/8-16 x 2-3/4 long	1	1
8		38D-17	STUD, 3/8-16 x 2-1/8 long, drilled	1	1
9		50-15	STUD, 1/2-13 x 1-7/8 long	12	12
10		69796	DOWEL, Crankshaft bearing	2	2
11		STD-514	DOWEL, 5/16 x 1/2 long	2	2
12		STD-557	DOWEL, 1/2 x 11/16 long	2	2
13	**	STD-1339	PLUG, 1/16-27 NPT, allen head	7	7
14		1102	PLUG, 1/8-17 NPT, allen head	4	4
15		72158	BUSHING, Governor drive idler shaft	1	1
16		31C-16	STUD, 5/16-18 x 2.00 long	4	
		31C-14	STUD, 5/16-18 x 1-3/4 long		4
17		38-13	STUD, 3/8-16 x 1-5/8 long	4	
<p>P Lycoming proprietary part. Listed for reference purposes only, cannot be purchased.</p> <p>* Refer to Service Kits Section for applicable Crankcase Assembly and Governor Thru-Stud Kit Part Numbers.</p> <p>** One at governor pad, six at piston squirt holes.</p>					



Crankcase Related Parts
Figure 7

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

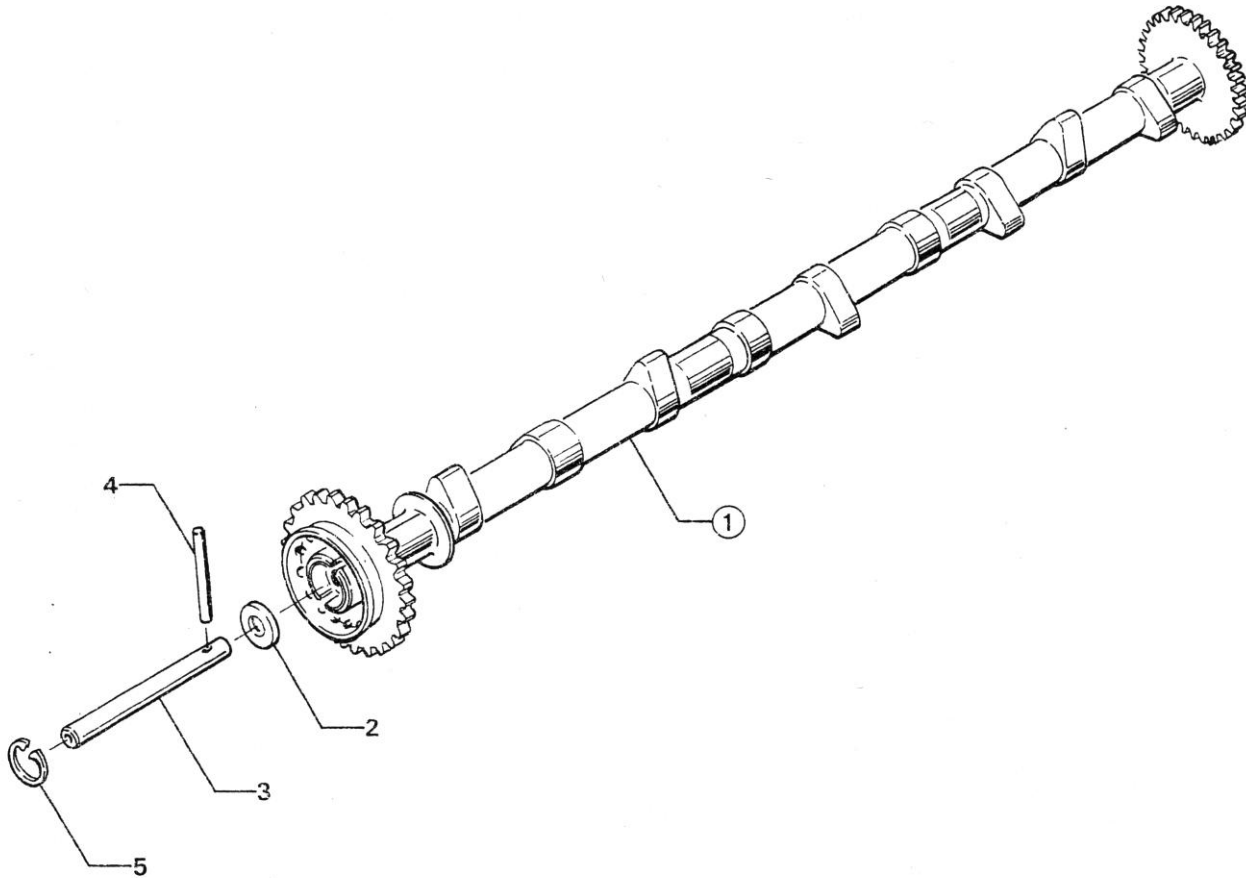
Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		1028-B	BALL, 11/16 diameter	1	1
2	*	61084	SPRING, Oil pressure relief valve	1	1
	*	68668	SPRING, Oil pressure relief valve	1	1
	*	77467	SPRING, Oil pressure relief valve	1	1
	*	LW-11713	SPRING, Oil pressure relief valve	1	1
	*	LW-18085	SPRING, Oil pressure relief valve	1	1
3		06E19769-1.25	GASKET, 1-1/4 I.D. x 1-1/2 O.D. x 3/32 annular	1	1
4		77808	VALVE ASSEMBLY, Oil pressure relief, annular	1	1
5		18D26099	BEARING, Crankshaft	6	
		18D23135	BEARING, Crankshaft		6
6		18A26093	BEARING, Crankshaft (front)	2	2
7	**	LW-13792	SEAL, Crankshaft oil, solid	1	1
8		72091	RING, Oil seal, 23/64 I.D. x 7/64 dia. section	2	2
9		72877	BODY, Hydraulic tappet	12	12
10		LRT23381	BODY ASSEMBLY, Hydraulic tappet (Roller tappet engines)	12	
* Select spring to give a minimum 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. ** See latest revision of Service Instruction No. 1324 for installation.					



Crankshaft and Related Parts
Figure 8

POWER SECTION**FIGURE 8 – CRANKSHAFT AND RELATED PARTS**

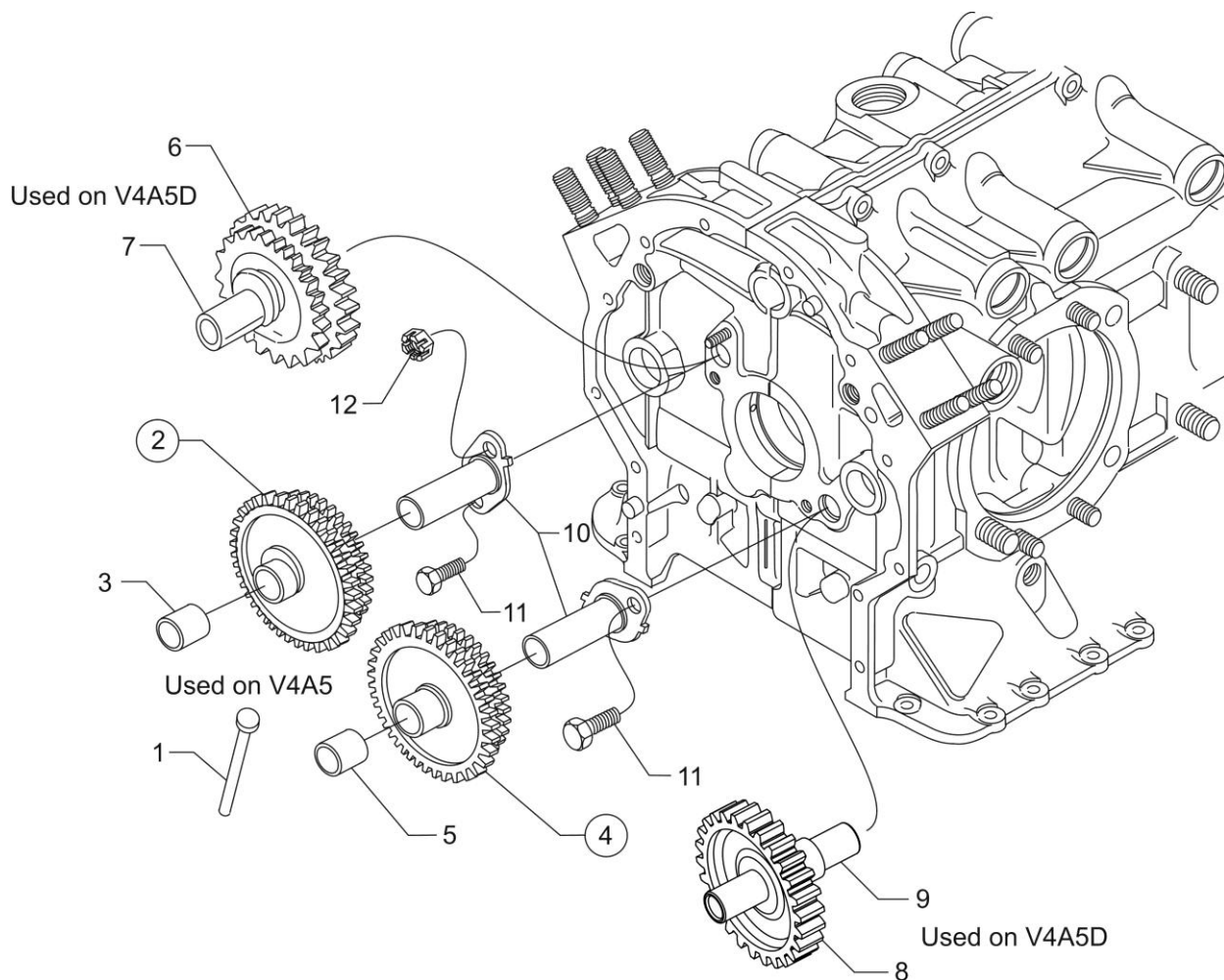
Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		13E47622	CRANKSHAFT ASSEMBLY	1	
		13E47626	CRANKSHAFT ASSEMBLY		1
2		73810	BUSHING, Crankshaft, dynamic counterweight	4	4
3		STD-1065	DOWEL, Stepped, 5/16 & 1/4 dia. x 35/64 long	1	1
4		71640	PLUG, 1-3/8 diameter	1	
5		75656-S	BUSHING, Propeller flange, long	4	4
6		72155-S	BUSHING, Propeller flange, short	1	1
7		75657-S	BUSHING, Propeller flange, indexing	1	1
8		STD-1211	PLUG, 2.00 diameter expansion	1	1
9		LW-19227	COUNTERWEIGHT ASSEMBLY	2	2
10		71903-A	BUSHING, Dynamic counterweight	4	4
11		72965	ROLLER, Dynamic counterweight	2	2
12		72797	ROLLER, Dynamic counterweight, 6.3 order	2	2
13		71907	WASHER, Dynamic counterweight	8	8
14		LW-14820	RING, Internal retaining	8	8
15		13S19647	GEAR, Crankshaft	1	
		13S19649	GEAR, Crankshaft		1
16		LW-18638	LOCKPLATE, Crankshaft gear	1	
		LW-10332	LOCKPLATE, Crankshaft gear		1
17		STD-2247	BOLT, 5/16-24 x 1-3/4 long	1	
		STD-2251	BOLT, 1/2-20 UNF-3A x 1-19/32, hex. head		1
18		31M19861	SUPPORT ASSEMBLY, Starter ring gear (3 groove, dual alternators)	1	
		31M22350	SUPPORT ASSEMBLY, Starter ring gear	1	
		LW-16471	SUPPORT ASSEMBLY, Starter ring gear	1	1
19		72566	GEAR, Starter	1	1



Camshaft and Related Parts
Figure 9

POWER SECTION**FIGURE 9 – CAMSHAFT AND RELATED PARTS**

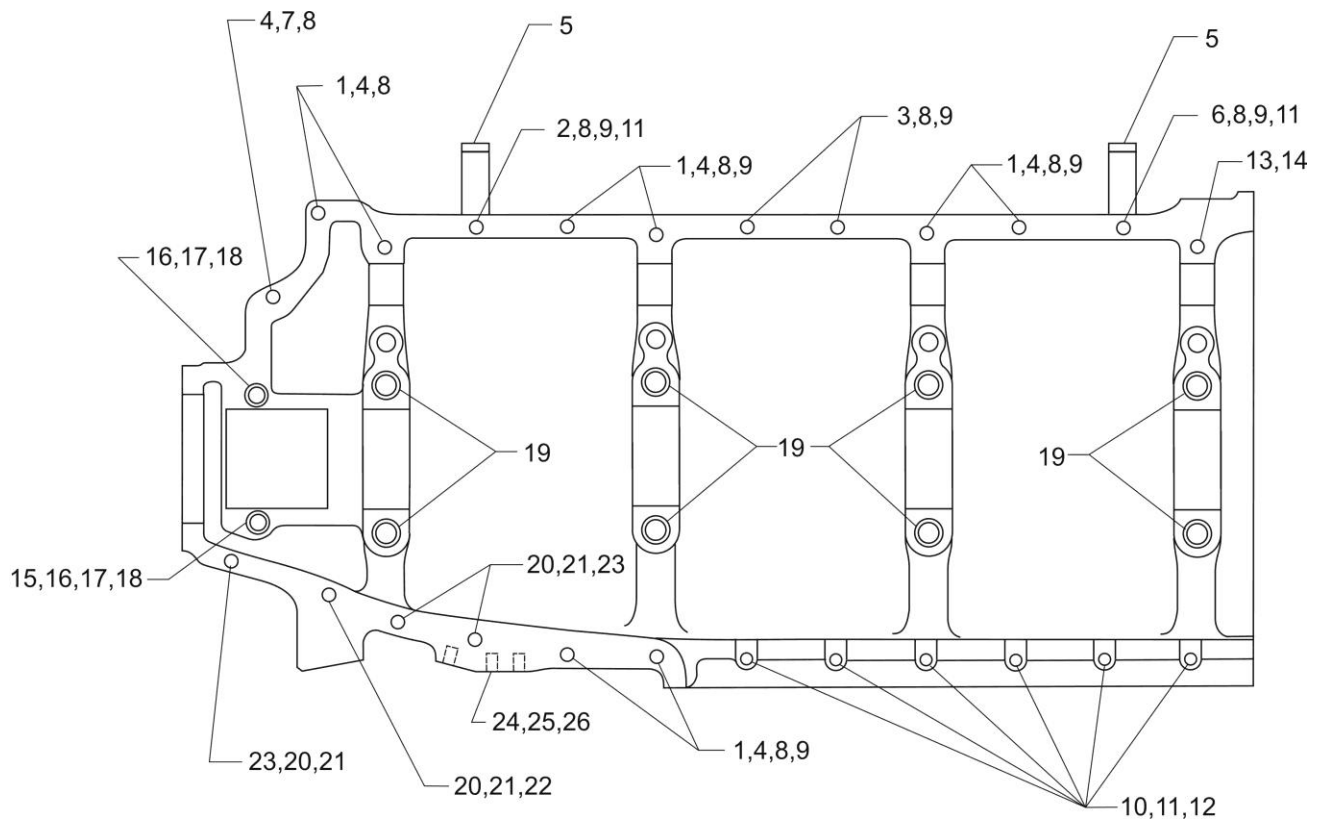
Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		LW-19340	CAMSHAFT ASSEMBLY	1	1
		15N23374	CAMSHAFT ASSEMBLY (Roller tappet engines)	1	
2		76155	SHAFT ASSEMBLY, Tachometer	1	1
3		LW-18667	PIN, 3/16 diameter x 2-21/64 long	1	1
4		76118	SPACER, Tachometer shaft centering	1	1
5		STD-2231	RING, Internal retaining	1	1



**Crankshaft Idler Gears
Figure 10**

POWER SECTION**FIGURE 10 - CRANKSHAFT IDLER GEARS**

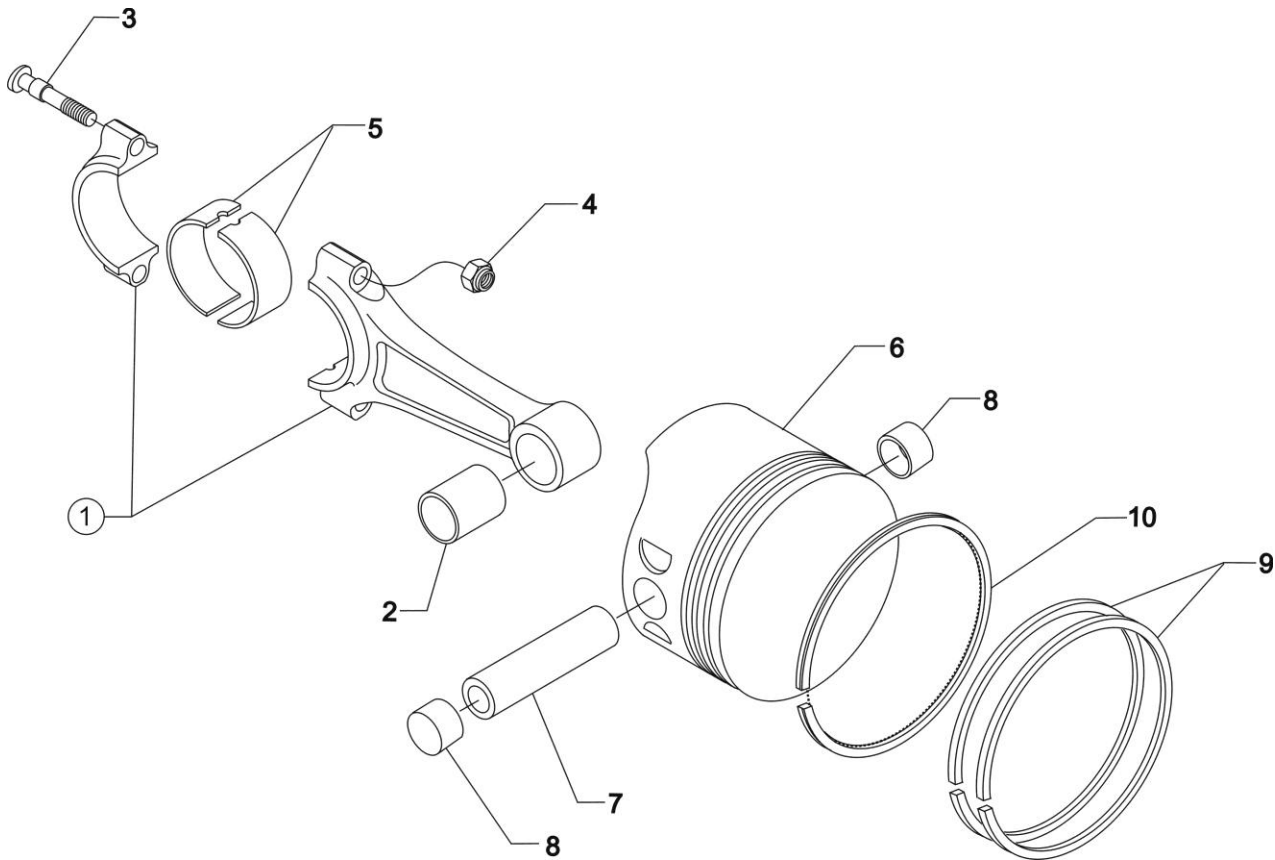
Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		61544	PLUNGER, Fuel pump	1	1
2		71652	GEAR ASSEMBLY, Crankshaft idler	1	
3		67530	BUSHING, Crankshaft idler gear	1	
4		71668	GEAR ASSEMBLY, Crankshaft idler, plain	1	
5		67530	BUSHING, Crankshaft idler gear	1	
6		LW-10290	GEAR ASSEMBLY, Crankshaft idler		1
7		LW-10299	SHAFT, Crankshaft idler		1
8		LW-10297	GEAR ASSEMBLY, Crankshaft idler (heavy idler)		1
9		LW-10325	SPACER, Idler gear		1
10		LW-13795	SHAFT, Crankshaft idler gear	2	
11		LW-31H0.88	BOLT, 5/16-18 x 7/8 long, hex. head, drilled	3	
12		STD-2168	NUT, 5/16-18 NC-3 slotted shear	1	



Crankcase Attaching Parts
Figure 11

POWER SECTION**FIGURE 11 - CRANKCASE ATTACHING PARTS**

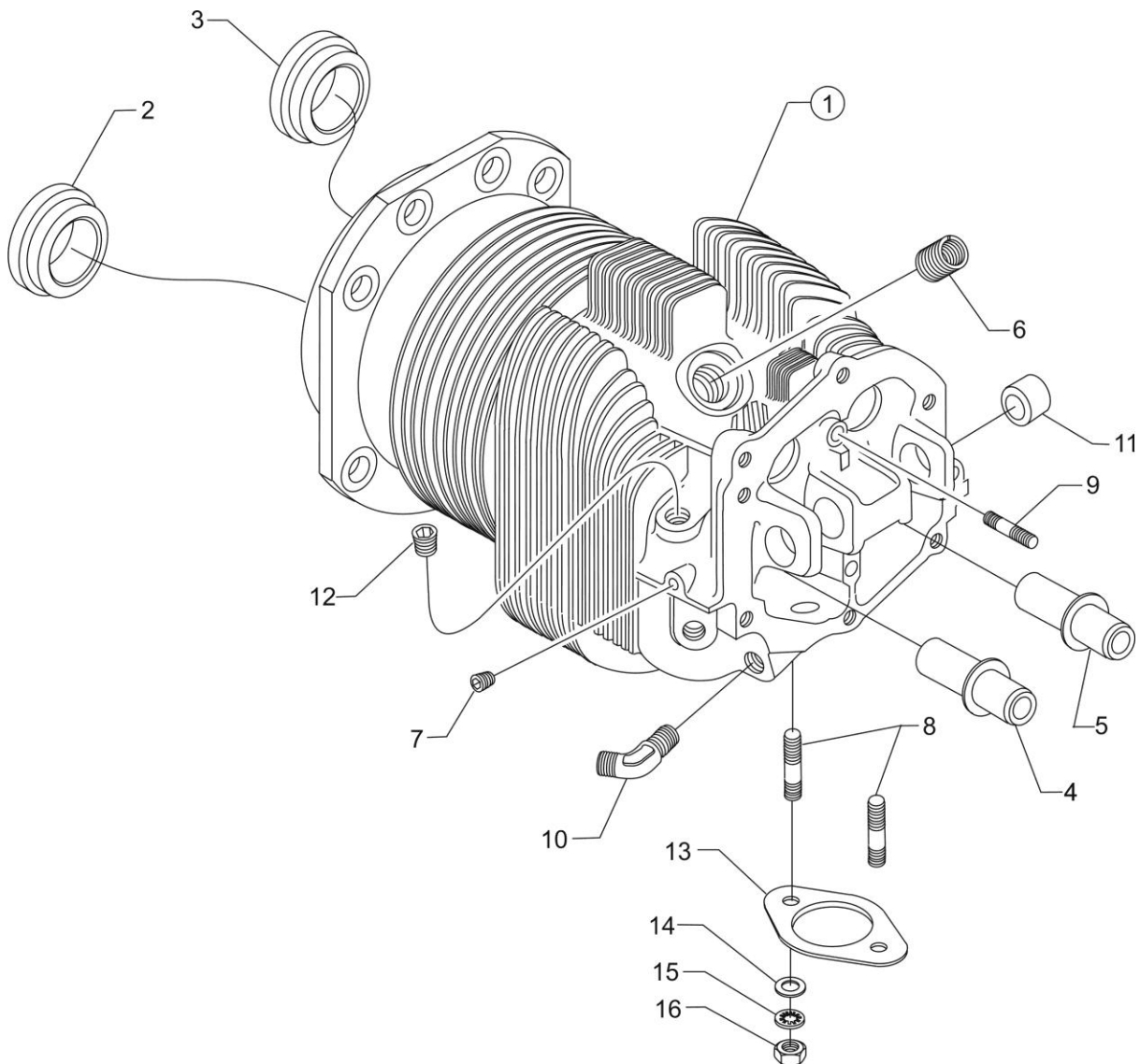
Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		LW-25-1.50	BOLT, 1/4-20 x 1-1/2 long, hex. head	8	8
2		LW-25-1.88	BOLT, 1/4-20 x 1-7/8 long, hex. head	1	1
3		LW-25-2.00	BOLT, 1/4-20 x 2.00 long, hex. head	2	2
4		STD-8	WASHER, 1/4 plain	22	22
5		60803	STRAP, Lifting	2	2
6		LW-25-1.75	BOLT, 1/4-20 x 1-3/4 long, hex. head	1	1
7		LW-25-1.13	BOLT, 1/4-20 x 1-1/8 long, hex. head	1	1
8		STD-160	WASHER, 1/4 lock, internal teeth	13	13
9		STD-1411	NUT, 1/4-20 plain	12	12
10		LW-25S1.50	BOLT, 1/4-20 x 1-1/2 long, hex. head, drilled	6	6
11		STD-8	WASHER, 1/4 plain	18	18
12		STD-2249	NUT, 1/4-20 slotted shear	6	6
13		STD-33	WASHER, 3/8 plain	1	1
14		STD-872	NUT, 3/8-24 slotted	1	1
15		AN6-34A	BOLT, 3/8-24 x 3-37/64 long, hex. head	1	1
16		STD-33	WASHER, 3/8 plain	3	3
17		STD-678	WASHER, 3/8 lock, internal teeth	2	2
18		STD-596	NUT, 3/8-24 plain	2	2
19		76220	STUD, 1/2-20 x 10-45/64 long	8	8
20		STD-35	WASHER, 5/16 plain	4	4
21		STD-475	WASHER, 5/16 lock, internal teeth	4	4
22		LW-31-2.75	BOLT, 5/16-18 x 2-3/4 long, hex. head	1	1
23		LW-31-1.16	BOLT, 5/16-18 x 1-5/32 long, hex. head	3	3
24	*	STD-35	WASHER, 5/16 plain		5
25	*	STD-475	WASHER, 5/16 lock, internal teeth		1
26	*	LW-31-0.94	BOLT, 5/16-18 x 15/16 long		1
* Install in center hole at rear alternator attaching pad.					



Connecting Rods, Pistons and Ring Assemblies
Figure 12

CYLINDER SECTION**FIGURE 12 - CONNECTING RODS, PISTONS AND RING ASSEMBLIES**

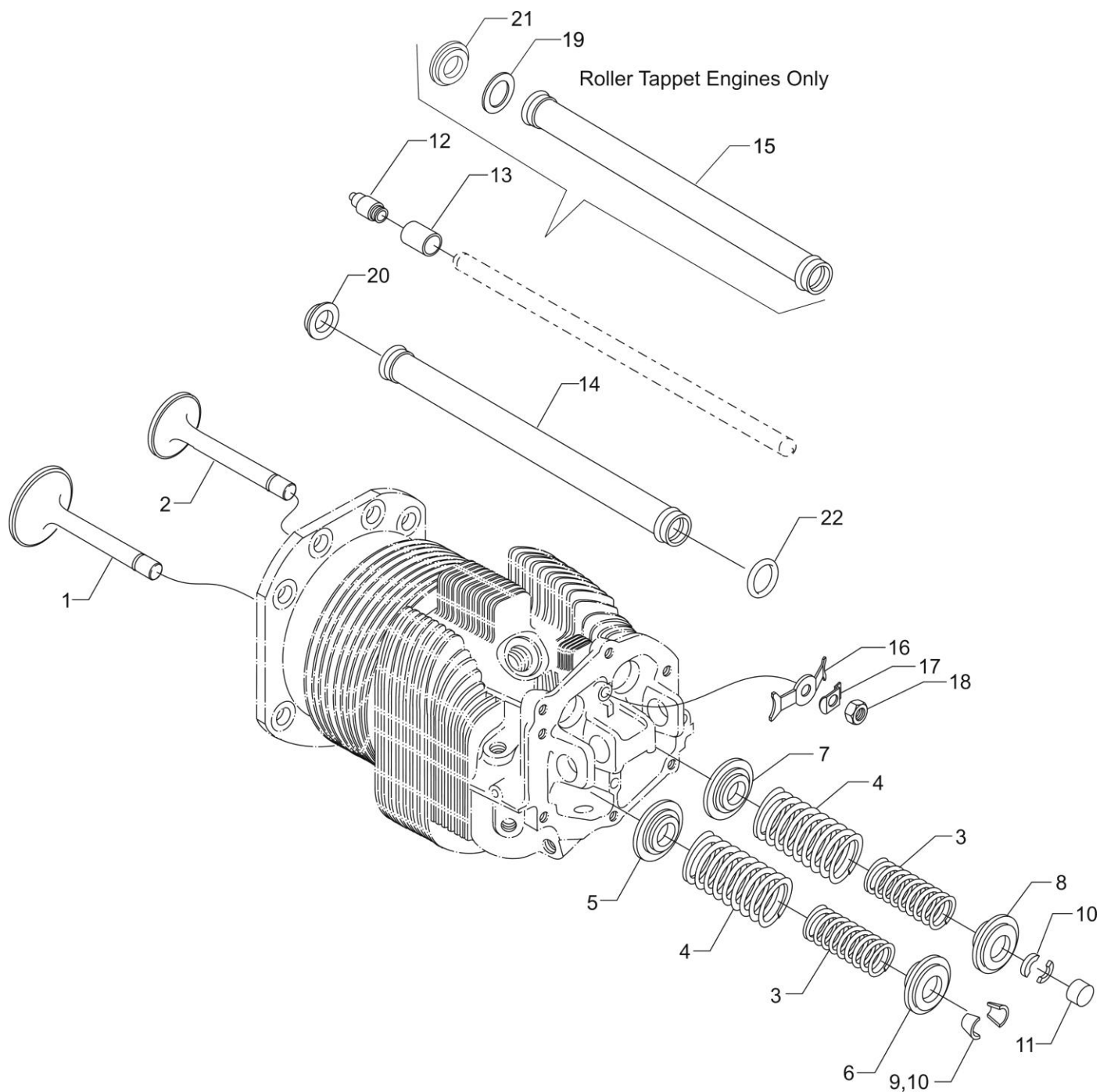
Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		LW-11750-S	CONNECTING ROD ASSEMBLY	6	6
2		LW-13923	BUSHING, Connecting rod, upper	6	6
3	* P	75061 14S23890	BOLT, Connecting rod	12	12
4		LW-12186	NUT, Connecting rod bolt	12	12
5		18M26105	BEARING, Connecting rod	12	12
6		75089	PISTON, Compression ratio 8.50:1	6	6
7		LW-14078	PIN, Piston	6	6
8		72198	PLUG, Piston pin	12	12
9		74241	RING, Piston, compression	6	6
10		14H21950	RING, Piston, oil, expander type	6	6
P Lycoming proprietary part. Listed for reference purpose only, cannot be purchased. * Service use only.					



**Cylinder Assembly
Figure 13**

CYLINDER SECTION**FIGURE 13- CYLINDER ASSEMBLY**

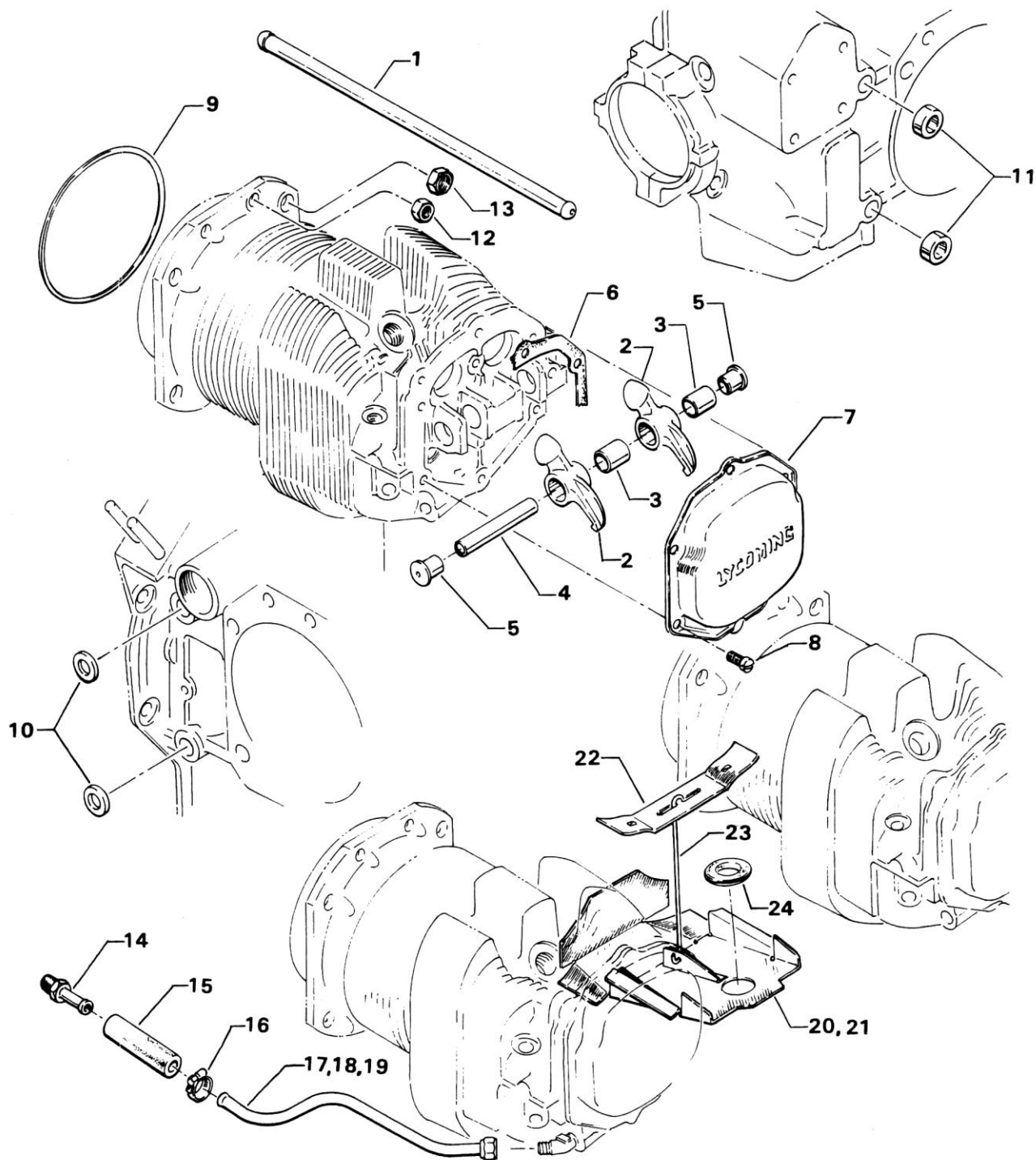
Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		LW-12427	CYLINDER ASSEMBLY	6	6
2		72057	SEAT, Intake valve	6	6
3		72058	SEAT, Exhaust valve	6	6
4	*	76943	GUIDE, Intake valve, flanged	6	6
5	*	16R22126	GUIDE, Exhaust valve, flanged	6	6
6		66796	INSERT, Spark plug, 18-1.5 MM	12	12
7		STD-1353	INSERT, No. 10-24 x 3/8 long	6	6
8		31C-12	STUD, 5/16-18 x 1-1/2 long	12	12
9		25C-8	STUD, 1/4-20 x 1.00 long	6	6
10		MS20823-6D	ELBOW, 45°, 3/8 flared tube	6	6
11		66610	BUSHING, Rocker shaft	24	24
12	**	1102	PLUG, 1/8-27 NPT, allen head	6	6
13		77611	GASKET, Exhaust	6	6
14		STD-35	WASHER, 5/16 plain	12	12
15		STD-475	WASHER, 5/16 lock, internal teeth	12	12
16		STD-1410	NUT, 5/16-18 plain	12	12
* Refer to the latest revision of Service Instruction No. 1256. ** Assemble in cylinder head when no priming lines.					



**Valve Assembly
Figure 14**

CYLINDER SECTION**FIGURE 14 – VALVE ASSEMBLY**

Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		17A23938	VALVE, Intake	6	6
2		17B23936	VALVE, Exhaust (rotator type)	6	6
3		LW-11795	SPRING, Valve, inner	12	12
4		LW-11800	SPRING, Valve, outer	12	12
5		65441	SEAT, Valve spring, lower, intake	6	6
6		LW-10077	SEAT, Valve spring, upper intake	6	6
7		LW-13323	SEAT, Valve spring, lower exhaust	6	6
8		LW-16475	SEAT, Valve spring, upper exhaust (rotator type)	6	6
9		60009	KEY, Valve, intake	12	12
10		17C21191	KEY, Valve, exhaust (rotator type)	12	12
11		17C19386	CAP, Valve stem, exhaust (rotator type)	6	6
12		15B26066	PLUNGER ASSEMBLY, Hydraulic tappet	12	12
13		15B21319	SOCKET, Push rod, hydraulic tappet	12	12
14		LW-11485	SHROUD TUBE ASSEMBLY	6	6
15		15G23461	SHROUD TUBE ASSEMBLY (Roller tappet engines)	6	
16		LW-14995	SPRING, Shroud tube	6	6
17		LW-12272	LOCKPLATE, Shroud tube	6	6
18		STD-1411	NUT, 1/4-20 plain	6	6
19		01L23459	WASHER, 25/32 I.D. x 1-3/8 O.D. x 1/32 thick (Roller tappet engines)	12	
20		LW-18661	SEAL, Shroud tube	12	12
21		06A23493	SEAL, Shroud tube (Roller tappet engines)	12	
22	*	70310	SEAL, Shroud tube	12	12
* This seal needs to be installed on both roller tappet engines and flat tappet engines.					



Cylinder Related Parts
Figure 15

CYLINDER SECTION**FIGURE 15 - CYLINDER RELATED PARTS**

Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1	*♦AR	15F19957-28	ROD ASSY., Push (A total of 12 required)	AR	
	*♦AR	15F19957-29	ROD ASSY., Push (A total of 12 required)	AR	
	*♦AR	15F19957-30	ROD ASSY., Push (A total of 12 required)	AR	
	*♦AR	15F19957-31	ROD ASSY., Push (A total of 12 required)	AR	
	*♦AR	15F19957-32	ROD ASSY., Push (A total of 12 required)	AR	
	*♦AR	15F19957-33	ROD ASSY., Push (A total of 12 required)	AR	
	**♦AR	15F19957-34	ROD ASSY., Push (A total of 12 required)	AR	AR
	♦AR	15F19957-35	ROD ASSY., Push (A total of 12 required)	AR	AR
	♦AR	15F19957-36	ROD ASSY., Push (A total of 12 required)	AR	AR
	♦AR	15F19957-37	ROD ASSY., Push (A total of 12 required)	AR	AR
2	†	17F19357	ROCKER ASSEMBLY, Valve	12	12
3		74637	BUSHING, Valve rocker	12	12
4		LW-13790	SHAFT, Valve rocker	6	6
5		LW-12892	THRUST BUTTON, Rocker Shaft	12	12
6		75906	GASKET, Rocker box cover	6	6
7		61247	COVER, Rocker box	6	6
8		STD-1925	SCREW, 1/4-20 x 5/8 long, pan. head, self-locking	36	36
9		71481	RING, Oil seal, 3/32 diameter x 4-27/32 I.D.	6	6
10		77906	SPACER, 33/64 I.D. x 7/8 O.D. x 1/8 thick	2	2
11		74887	SPACER, 33/64 I.D. x 7/8 O.D. x 3/8 thick	2	2
12		383-B	NUT, 3/8-24 plain	24	24
13		STD-2090	NUT, 1/2-20 plain	28	28
14		STD-684	NIPPLE, Straight, 3/8 I.D. hose	6	6
15		STD-1821	HOSE, 3/8 I.D. x 2-1/2 long	6	6
16		LW-15592-5-05	CLAMP, Hose	12	12
17		68759	TUBE ASSY., Cyl. head oil drain, cyl. no. 1	1	1
18		71737	TUBE ASSY., Cyl. head oil drain, cyl. no. 2	1	1

NOTE:

Various push rod lengths are used to set valve clearances.

* These parts are used on roller tappet engines only.

** This push rod can be used on both roller tappet engines and flat tappet engines.

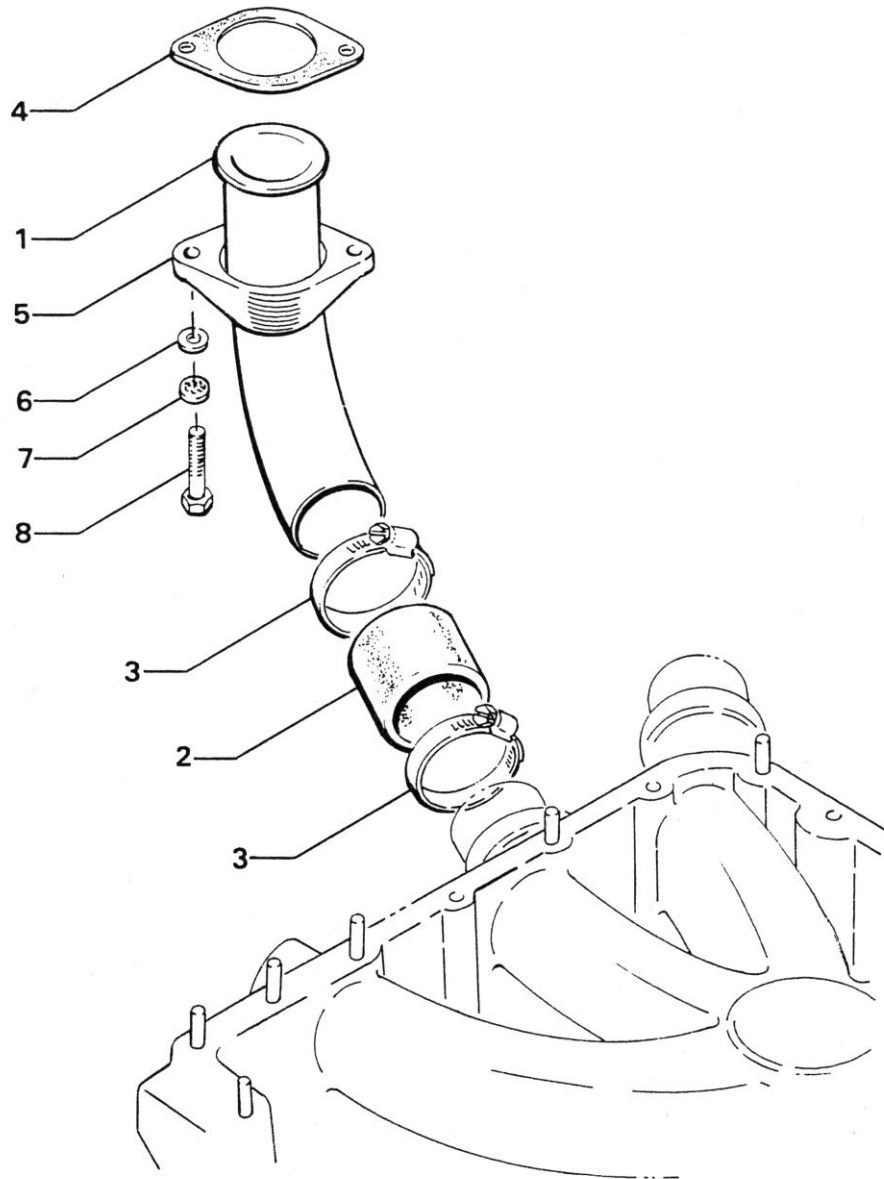
♦ Refer to latest revision of Service Instruction No. 1060 for complete push rod application.

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

CYLINDER SECTION**FIGURE 15 – CYLINDER RELATED PARTS (CONT.)**

Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
19		68761	TUBE ASSY., Cyl. head oil drain, cyls. no. 3, 4, 5, 6	4	4
20		75339	BAFFLE ASSEMBLY, Intercylinder	3	3
21		LW-13389	BAFFLE ASSEMBLY, Intercylinder, cyls. no. 1 and 3	1	1
22		71611	RETAINER, Intercylinder baffle	4	4
23		71610	HOOK, Intercylinder baffle	4	4
24		MS35489-20X	GROMMET, 3/4 I.D. x 1-3/8 O.D. x 3/8 thick	1	1

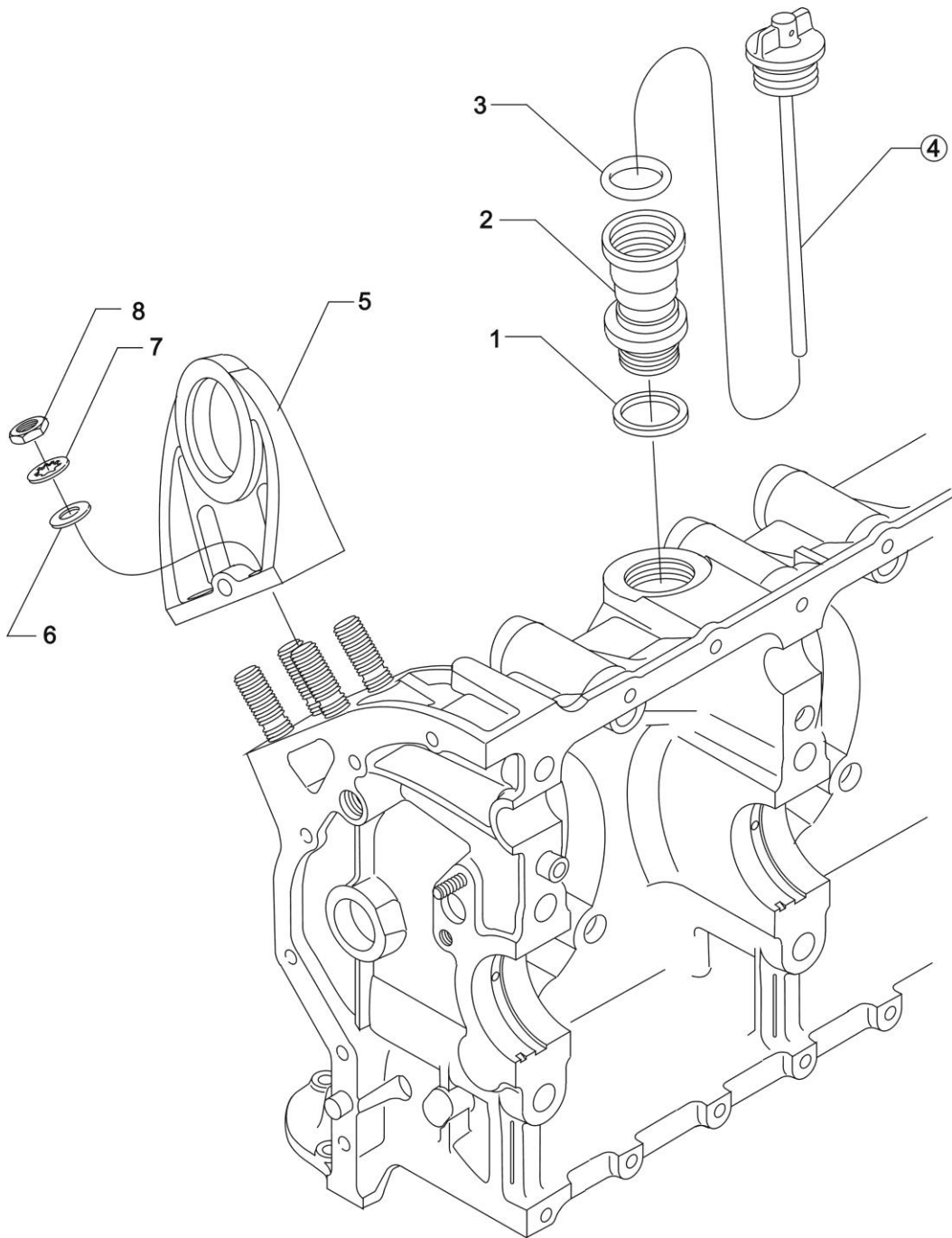
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Intake Pipe Assembly
Figure 16

CYLINDER SECTION**FIGURE 16 – INTAKE PIPE ASSEMBLY**

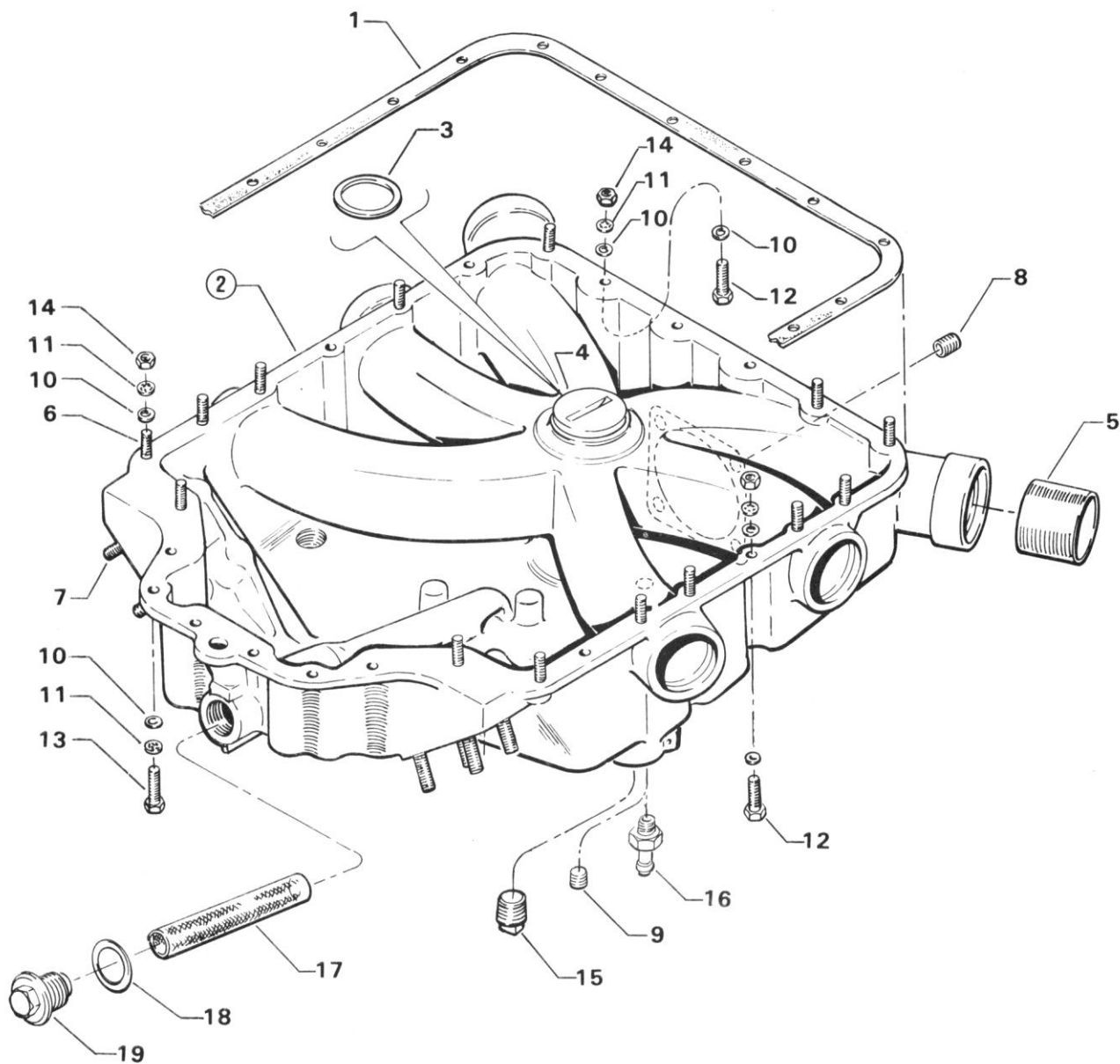
Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		70485	PIPE, Intake	6	6
2		69603	HOSE, 1-3/4 I.D. x 2-3/16 O.D. x 1-3/4 long	6	6
3		LW-15592-8-28	CLAMP, Hose	12	12
4		71973	GASKET, 2 bolt flange, 1-3/4 I.D.	6	6
5		73346	FLANGE, Intake pipe, upper	6	6
6		STD-8	WASHER, 1/4 plain	12	12
7		STD-160	WASHER, 1/4 lock, internal teeth	12	12
8		LW-25-1.25	BOLT, 1/4-20 x 1-1/4 long, hex. head	12	12



Oil Level Gage Assembly and Engine Mounting Brackets
Figure 17

LUBRICATION SYSTEM**FIGURE 17 – OIL LEVEL GAGE ASSEMBLY AND ENGINE MOUNTING BRACKETS**

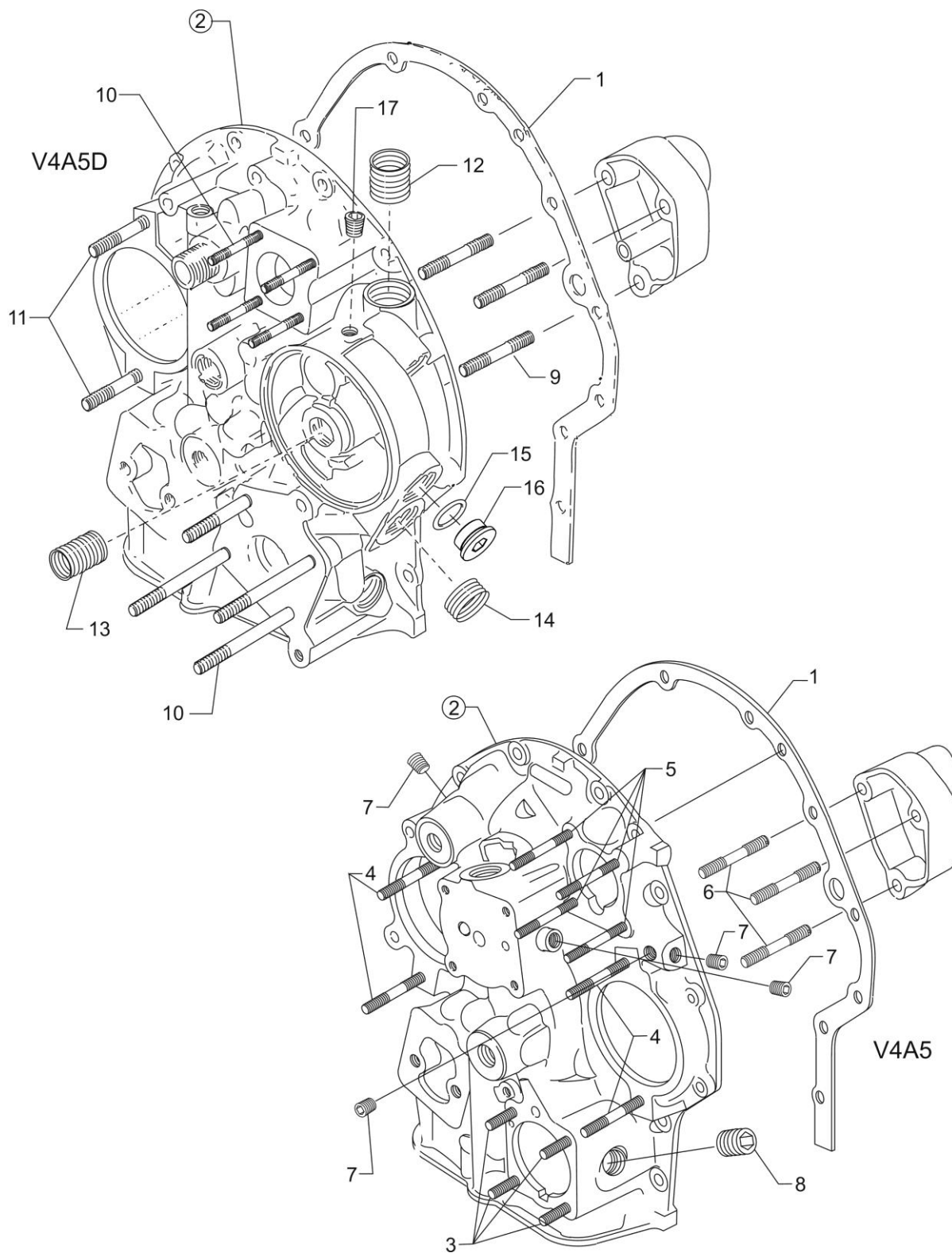
Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		70457	GASKET, Oil filler extension	1	1
2		75675	EXTENSION, Oil filter (short) 2-3/16 long	1	1
3		74065	“O” RING, Oil level gage	1	1
4		LW-14800	GAGE ASSEMBLY, Oil level (short)	1	1
5		12A19770	BRACKET, Engine mounting, dynafocal	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	



**Oil Sump and Induction Housing Assembly
Figure 18**

LUBRICATION SYSTEM**FIGURE 18 – OIL SUMP AND INDUCTION HOUSING ASSEMBLY**

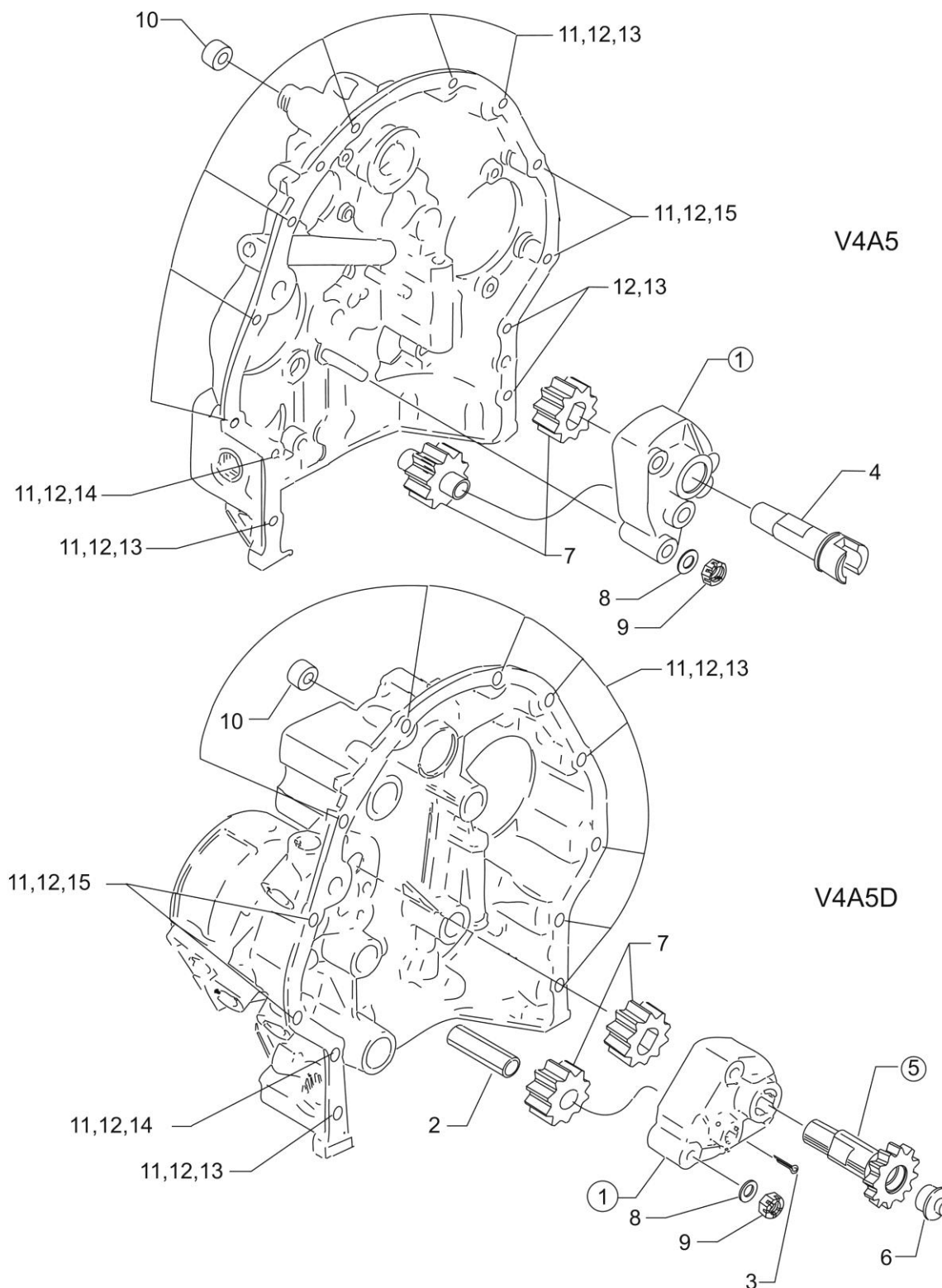
Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		06B21326	GASKET, Oil sump	1	1
2		LW-18436	SUMP ASSEMBLY, Oil	1	1
3		06E19769-1.63	GASKET, 1-7/8 O.D. x 1-5/8 I.D. x 1/32 annular	1	1
4		LW-18434	PLUG, Oil sump, 1-5/8 diameter	1	1
5		71699	CONNECTION, Intake pipe	6	6
6		25C-11	STUD, 1/4 x 1-3/8 long	14	14
7		38-15	STUD, 3/8-16 x 1-7/8 long	8	8
8		STD-1164	INSERT, 5/16-18 x 5/8 long, Heli-coil	4	4
9		1102	PLUG, 1/8-27 NPT, allen head	1	1
10		STD-8	WASHER, 1/4 plain	34	34
11		STD-160	WASHER, 1/4 lock, internal teeth	27	27
12		LW-25-1.13	BOLT, 1/4-20 x 1-1/8 long, hex. head	7	7
13		LW-25-1.00	BOLT, 1/4-20 x 1.00 long, hex. head	6	6
14		STD-1411	NUT, 1/4 plain	21	21
15		STD-551	PLUG, 1/2-14 NPT, square head, drilled	2	2
16		75444	ADAPTER ASSEMBLY, Fuel drain valve		1
17		70484	SCREEN, Oil suction	1	1
18		06E19769-1.00	GASKET, 1.00 I.D. x 1-1/4 O.D. x 3/32 annular	1	1
19		LW-12545	PLUG, 5/8 hex. head x 1.00-20 thread	1	1



Accessory Housing Assembly
Figure 19

ACCESSORY DRIVES**FIGURE 19 – ACCESSORY HOUSING ASSEMBLY**

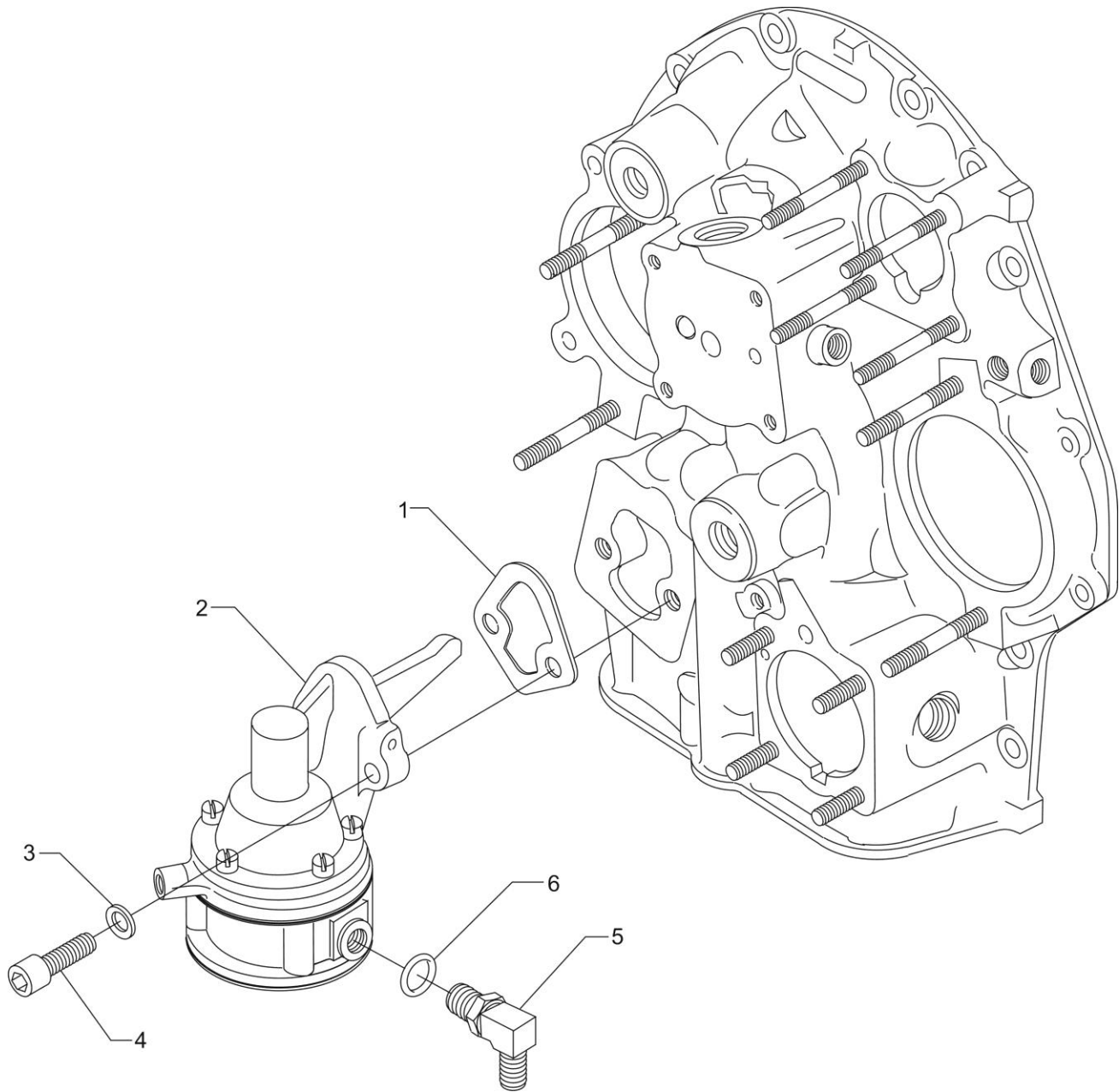
Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		73818	GASKET, Accessory housing	1	1
2		21C21539-02	HOUSING ASSEMBLY, Accessory	1	
		21D21607-02	HOUSING ASSEMBLY, Accessory		1
3		31C-12	STUD, 5/16-18 x 1-1/2 long	4	
4		31C-21	STUD, 5/16-18 x 2-5/8 long	4	
5		25C-21	STUD, 1/4-20 x 2-5/8 long	4	
6		31CD-17	STUD, 5/16-18 x 2-1/8 long	3	
7		1102	PLUG, 1/8-27 NPT, allen head	4	
8		STD-784	PLUG, 3/8-18 NPT, allen head	1	
9		31CD-20	STUD, 5/16-18 x 2-1/2 long, drilled		3
10		25C-12	STUD, 1/4-20 x 1-1/2 long		8
11		31C-13	STUD, 5/16-18 x 1-5/8 long		2
12		LW-12589	INSERT, 5/8-18 x 3/8 long, Heli-coil		1
13		MS124703	INSERT, 3/4-16 x 1-1/8 long, Heli-coil		1
14		LW-10341	INSERT, 1.00-14 x 3/8 long, Heli-coil		1
15		MS29512-10	SEAL, Oil, 3/32 section x 45/64		1
16		03C21720	PLUG, 7/8-14 thread		1
17		1102	PLUG, 1/8-27 NPT, allen head		1



Oil Pump Assembly and Accessory Housing Attaching Parts
Figure 20

ACCESSORY DRIVES**FIGURE 20 – OIL PUMP ASSEMBLY AND ACCESSORY HOUSING ATTACHING PARTS**

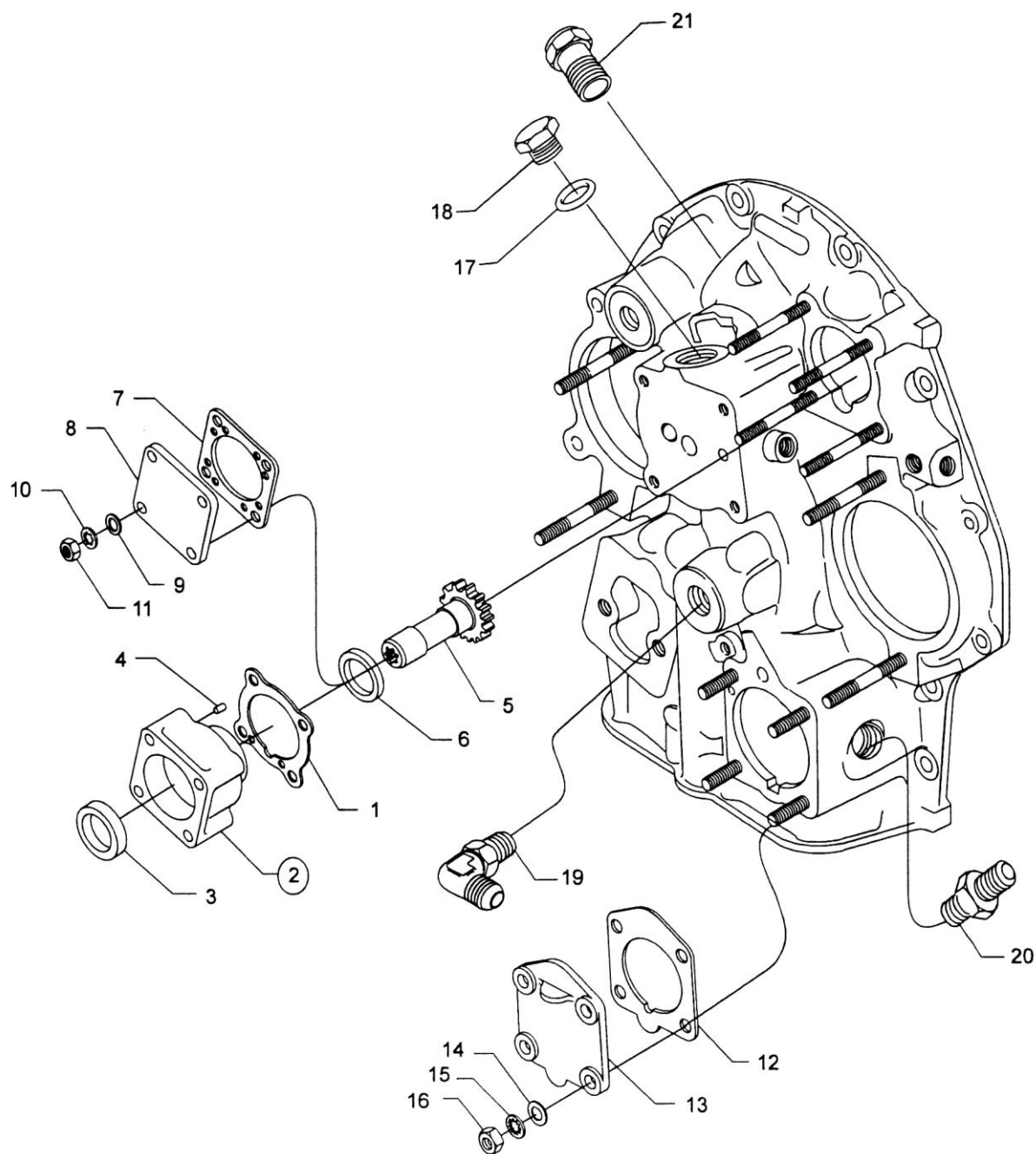
Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		78531	BODY ASSEMBLY, Oil pump	1	
		LW-10344	BODY ASSEMBLY, Oil pump		1
2		60329	SHAFT, Oil pump idler		1
3		STD-714	PIN, 1/8 diameter x 1.00 long, cotter		1
4		74641	SHAFT, Oil pump drive	1	
5		LW-10318	GEAR ASSEMBLY, Oil pump drive		1
6		61166	THRUST BUTTON, Oil pump drive gear		1
7	*SB	05K19423-S	OIL PUMP IMPELLER KIT	1	
	*SB	05K23463	OIL PUMP IMPELLER KIT		1
8		STD-35	WASHER, 5/16 plain	3	3
9		STD-1420	NUT, 5/16-18 slotted	3	3
10		LW-14260	SEAL, Tachometer drive, oil	1	1
11		STD-8	WASHER, 1/4 plain	10	12
12		STD-160	WASHER, 1/4 lock, internal teeth	12	12
13		LW-25-0.94	BOLT, 1/4-20 x 15/16 long, hex. head	9	9
14		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
15		LW-25-1.44	BOLT, 1/4-20 x 1-7/16 long, hex. head	2	
		LW-25-0.81	BOLT, 1/4-20 x 13/16 long, hex. head		2
SB Referencing Service Bulletin * See latest revision of Service Bulletin No. 524.					



Fuel Pump Assembly and Attaching Parts
Figure 21

ACCESSORY DRIVES**FIGURE 21 – FUEL PUMP ASSEMBLY AND ATTACHING PARTS**

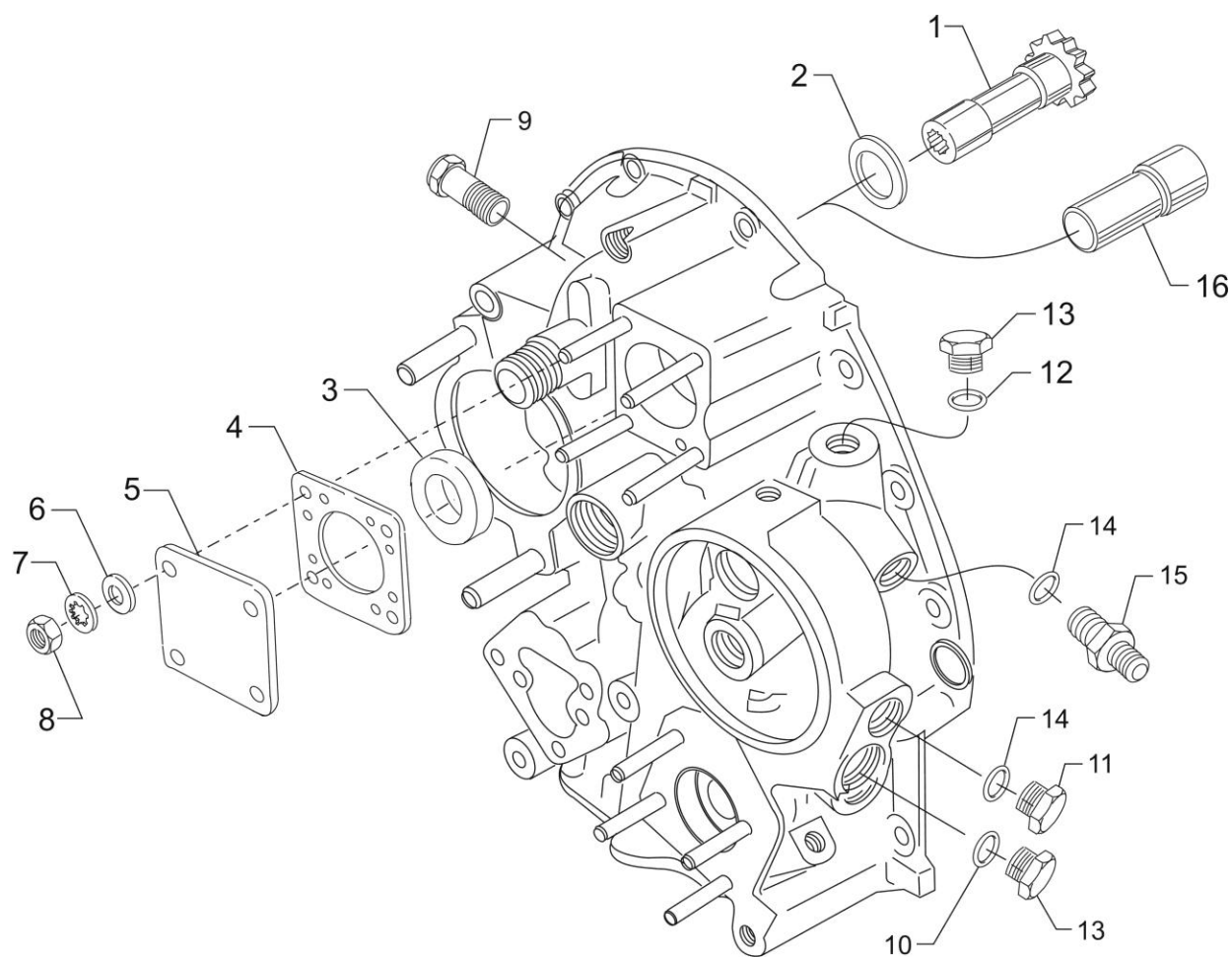
Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		60096	GASKET, Fuel pump	1	1
2		LW-15473	FUEL PUMP, Dual diaphragm	1	1
3		STD-33	WASHER, 3/8 plain	2	2
4		STD-1882	SCREW, 3/8-16 x 1-9/32 long, drilled	2	2
5		72377	ELBOW, 3/8 flared tube, adjustable	2	
6		MS29512-06	“O” RING	2	



Vacuum Pump Drive, Oil Cooler and Breather Fittings (-V4A5)
Figure 22

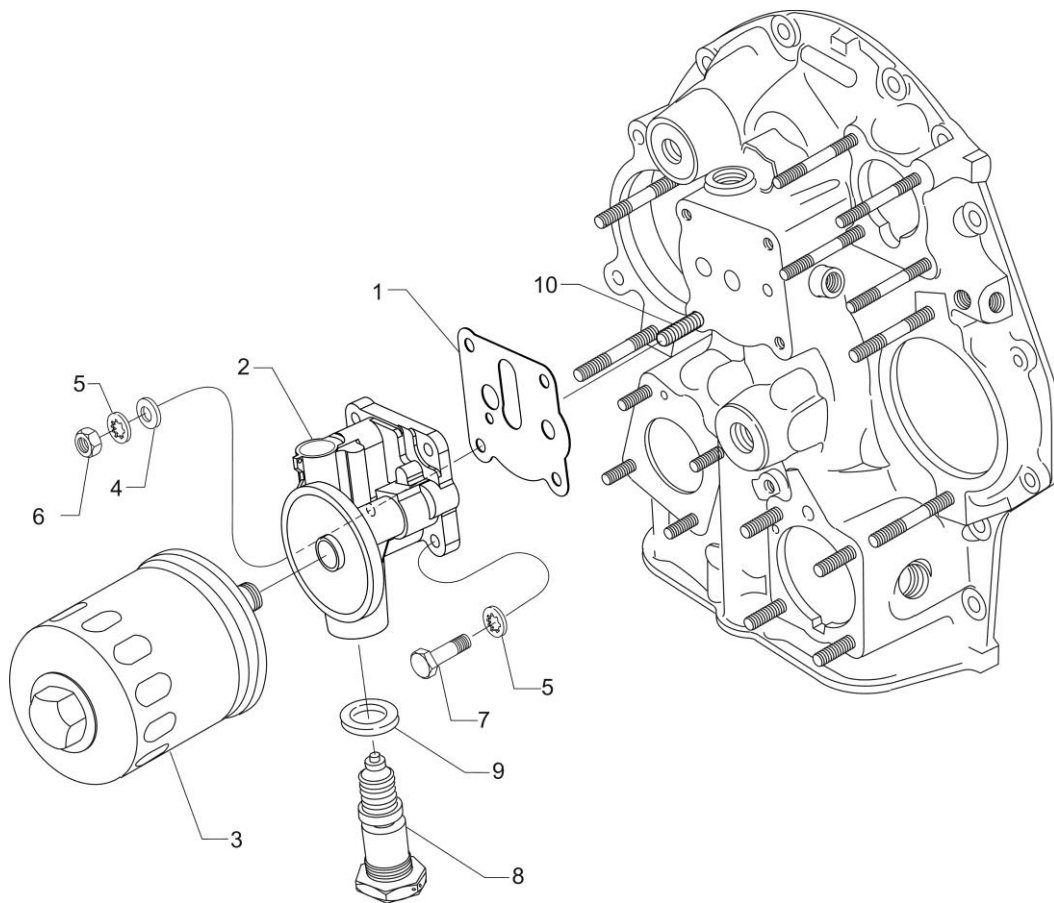
ACCESSORY DRIVES**FIGURE 22 – VACUUM PUMP DRIVE, OIL COOLER AND BREATHER FITTINGS (-V4A5)**

Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		61183	GASKET, Accessory adapter	1	
2		67536	ADAPTER ASSEMBLY, Vacuum pump	1	
3		06A19956	OIL SEAL, 7/8 I.D. x 1-1.2 O.D. x 5/16 wide	1	
4		STD-1774	PIN, 1/8 diameter x 1/4 long	1	
5		72974	GEAR ASSEMBLY, Vacuum pump driven	1	
6		71596	WASHER, Accessory drive gear	1	
7		8313	GASKET, Vacuum pump	1	
8		60430	COVER, Vacuum pump	1	
9		STD-8	WASHER, 1/4 plain	4	
10		STD-160	WASHER, 1/4 lock, internal teeth	4	
11		STD-1411	NUT, 1/4-20 plain	4	
12		69551	GASKET, Accessory drive adapter	1	
13		69106	COVER, Governor drive adapter pad	1	
14		STD-35	WASHER, 5/16 plain	4	
15		STD-475	WASHER, 5/16 lock, internal teeth	4	
16		STD-1410	NUT, 5/16-18 plain	4	
17		06E19769-0.63	GASKET, 7/8 O.D. x 5/8 I.D. x 3/32 annular	1	
18		62417	PLUG, Oil cooler bypass	1	
19		MS20822-8	ELBOW, 1/2 flared tube, 3/8 NPT	1	
20		AN816-8	NIPPLE, 1/2 flared tube	1	
21		72996	FITTING, Breather	1	

**Vacuum Pump Drive, Oil Cooler and Breather Fittings (-V4A5D)****Figure 23**

ACCESSORY DRIVES**FIGURE 23 – VACUUM PUMP DRIVE, OIL COOLER AND BREATHER FITTINGS (-V4A5D)**

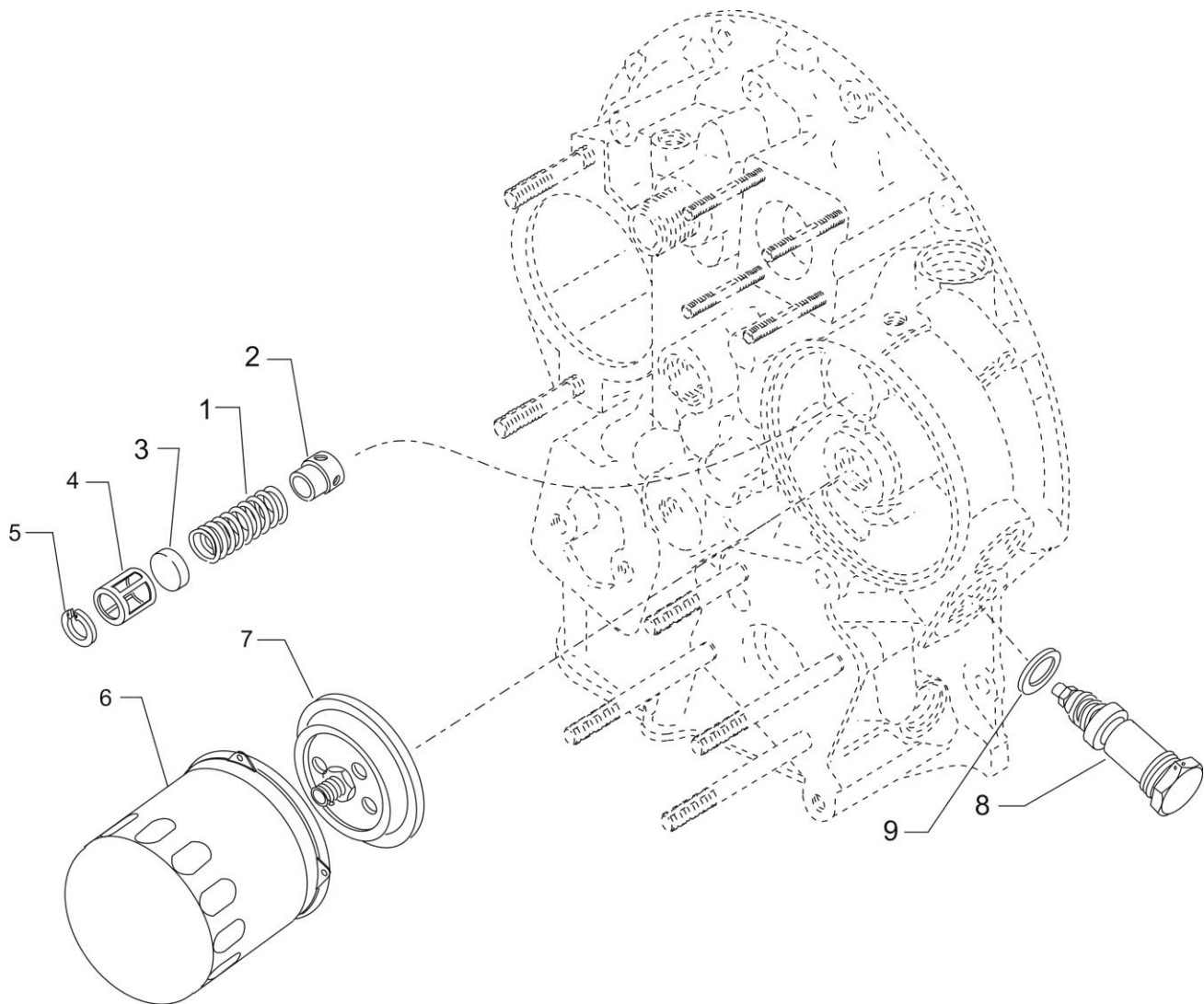
Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		LW-10307	GEAR ASSEMBLY, Accessory driven		1
2		71596	WASHER, Accessory drive gear		1
3		06A19956	OIL SEAL, 7/8 I.D. x 1-1/2 O.D. x 5/16 wide		1
4		8313	GASKET, Vacuum pump		1
5		60430	COVER, Vacuum pump		1
6		STD-8	WASHER, 1/4 plain		4
7		STD-160	WASHER, 1/4 lock, internal teeth		4
8		STD-1411	NUT, 1/4-20 plain		4
9		71651	FITTING, Breather		1
10		MS29512-10	OIL SEAL, 3/32 section x 45/64 I.D.		1
11		03C21720	PLUG, 7/8-14 thread		1
12		06E19769-0.63	GASKET, 7/8 O.D. x 5/8 I.D. x 3/32 annular		2
13		1540	PLUG, Thermometer well		2
14		MS29512-10	OIL SEAL, 3/32 section x 45/64 I.D.		2
15		AN919-5	REDUCER, 1/2 tubing to 5/8 tubing		2
16		LW-10303	PLUG, Vacuum pump drive		1



Oil Filter Assembly and Oil Cooler Bypass Valve (-V4A5)
Figure 24

ACCESSORY DRIVES**FIGURE 24 – OIL FILTER ASSEMBLY AND OIL COOLER BYPASS VALVE (-V4A5)**

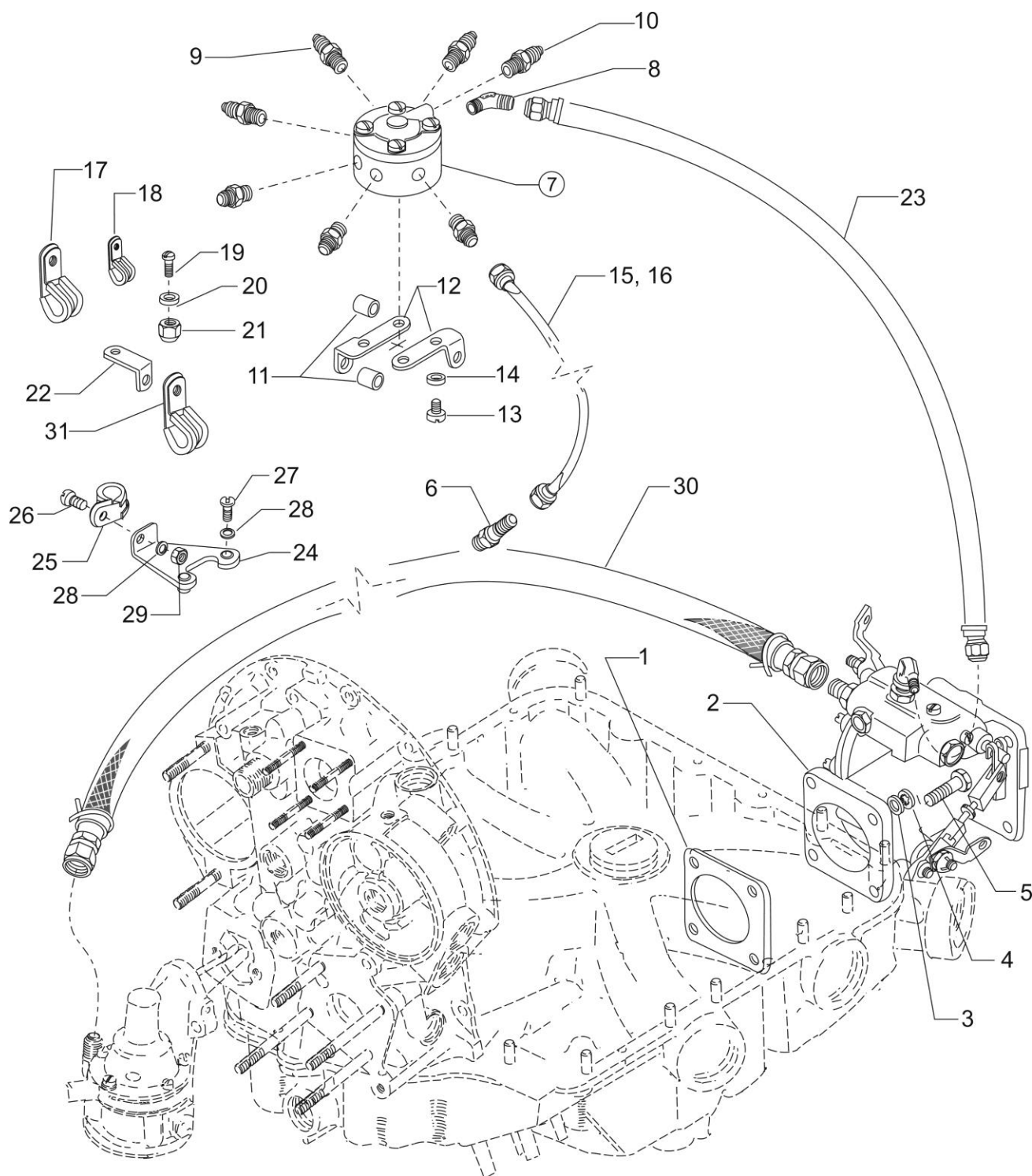
Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1	*	06B23862	GASKET, Oil filter adapter	1	
2		77852	OIL FILTER BASE ASSEMBLY	1	
3	*	LW-13215	OIL FILTER, Short, spin-on	1	
4		STD-8	WASHER, 1/4 plain	4	
5		STD-160	WASHER, 1/4 lock, internal teeth	4	
6		STD-1411	NUT, 1/4-20 plain	1	
7		LW-25-1.00	BOLT, 1/4-20 x 1.00 long, hex. head	3	
8		53E22144	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.					



Oil Filter Assembly and Oil Cooler Bypass Valve (-V4A5D)
Figure 25

ACCESSORY DRIVES**FIGURE 25 – OIL FILTER ASSEMBLY AND OIL COOLER BYPASS VALVE (-V4A5D)**

Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
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	FILTER ASSEMBLY, Oil short (Champion)		1
7	**	54E23093	KIT, Converter 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. ** See latest revision of Service Instruction No. 1453 for service application.					

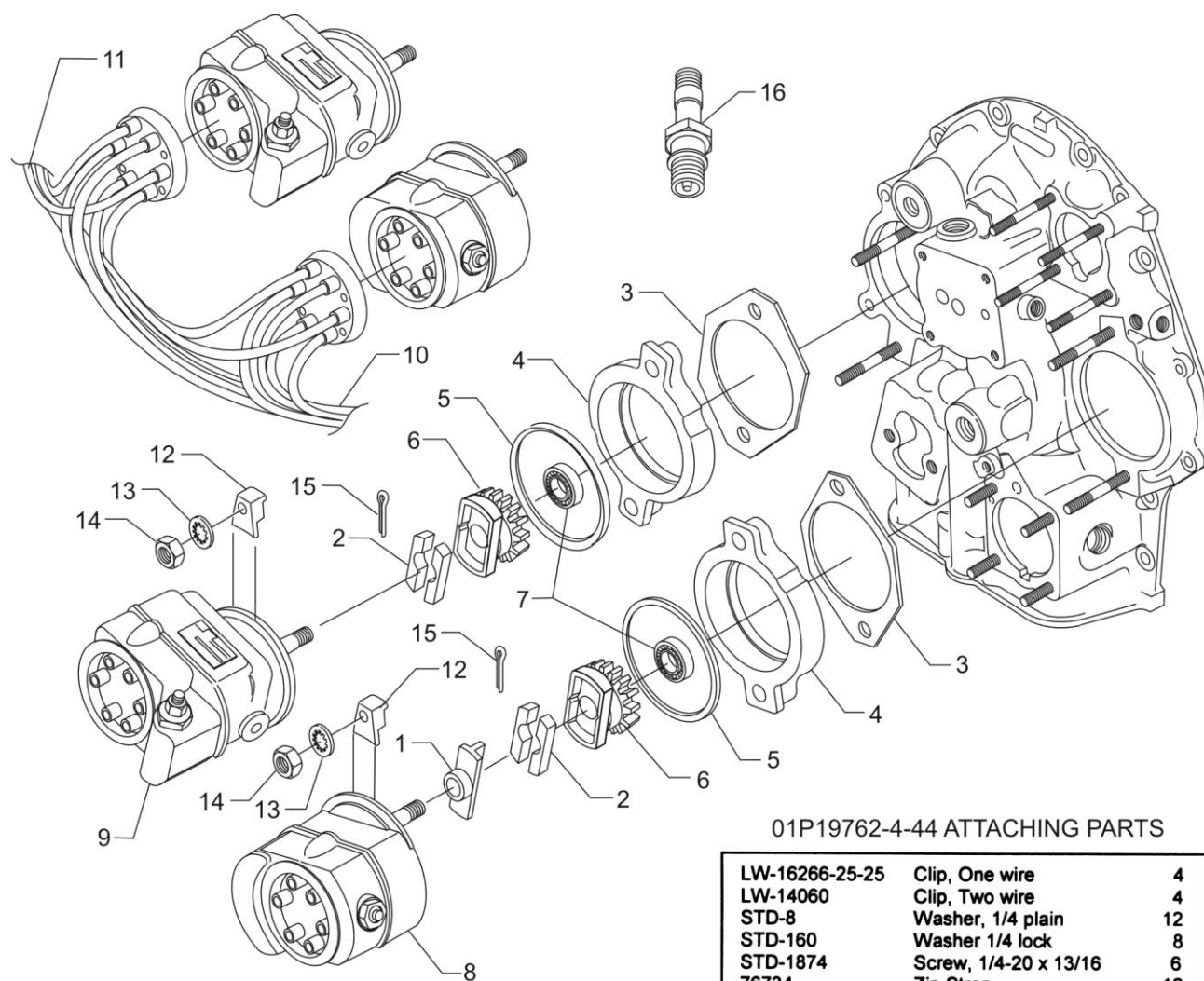


Fuel Injector, Fuel Manifold and Injection Nozzles

Figure 26

FUEL DISTRIBUTION**FIGURE 26 – FUEL INJECTOR, FUEL MANIFOLD AND INJECTION NOZZLES**

Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		66224	GASKET, Fuel injector	1	1
2	V	73937	FUEL INJECTOR (V 2524054-11)	1	1
3		STD-35	WASHER, 5/16 plain	4	4
4		STD-475	WASHER, 5/16 internal lock	4	4
5		LW-31-1.31	BOLT, 5/16-18 x 1-5/16 long, hex. head	4	4
6		LW-18265	NOZZLE, Injection	6	6
7		79007	MANIFOLD ASSEMBLY, Fuel	1	1
8		MS20823-4	ELBOW, 1/4 tube, 1/8 NPT, 45°	1	1
9		STD-148	NIPPLE, Union, 1/8 NPT	6	6
10		02G21382	NIPPLE, 3/16 tube to 1/8 NPT (restricted)	1	1
11		73966	SPACER, Fuel manifold bracket	2	2
12		07A23031	BRACKET, Fuel manifold	2	2
13		STD-82	SCREW, No. 10-24 x 1/2 long, drilled head	4	4
14		STD-251	WASHER, No. 10 lock, internal teeth	4	4
15		LW-12098-0-210	TUBE ASSEMBLY, Fuel manifold to nozzle, cylinders 1, 2, 5, 6	4	4
16		LW-12098-0-170	TUBE ASSEMBLY, Fuel manifold to nozzle, cylinders 3, 4	2	2
17		LW-16266-10-75	CLAMP	10	10
18		LW-16266-10-13	CLAMP, 1/8 diameter for no. 10 screw	12	12
19		STD-860	SCREW, No. 10-32 x 5/8 long, fill. head	14	14
20		STD-425	WASHER, No. 10 plain	2	2
21		STD-670	LOCKNUT, No. 10-32 self-locking	14	14
22		73136	BRACKET, 90°	4	4
23		LW-12798-4S242	HOSE ASSEMBLY, Fuel injector to fuel MANIFOLD	1	1
24		74278	BRACKET ASSEMBLY, Fuel line support	1	1
25		LW-16266-25-50	CLAMP	1	1
26		STD-860	SCREW, No. 10-32 x 5/8 long, fill. head	1	1
27		STD-692	SCREW, No. 10-32 x 1/2 long, round head	2	2
28		STD-425	WASHER, No. 10 plain	3	3
29		STD-670	LOCKNUT, No. 10-32 self-locking	1	1
30		LW-12799-6S300	HOSE, Fuel pump to injector	1	1
31		LW-16266-25-75	CLAMP, 3/4 diameter with 1/4 screw	2	2
V Vendor Prime Manufacturer part.					

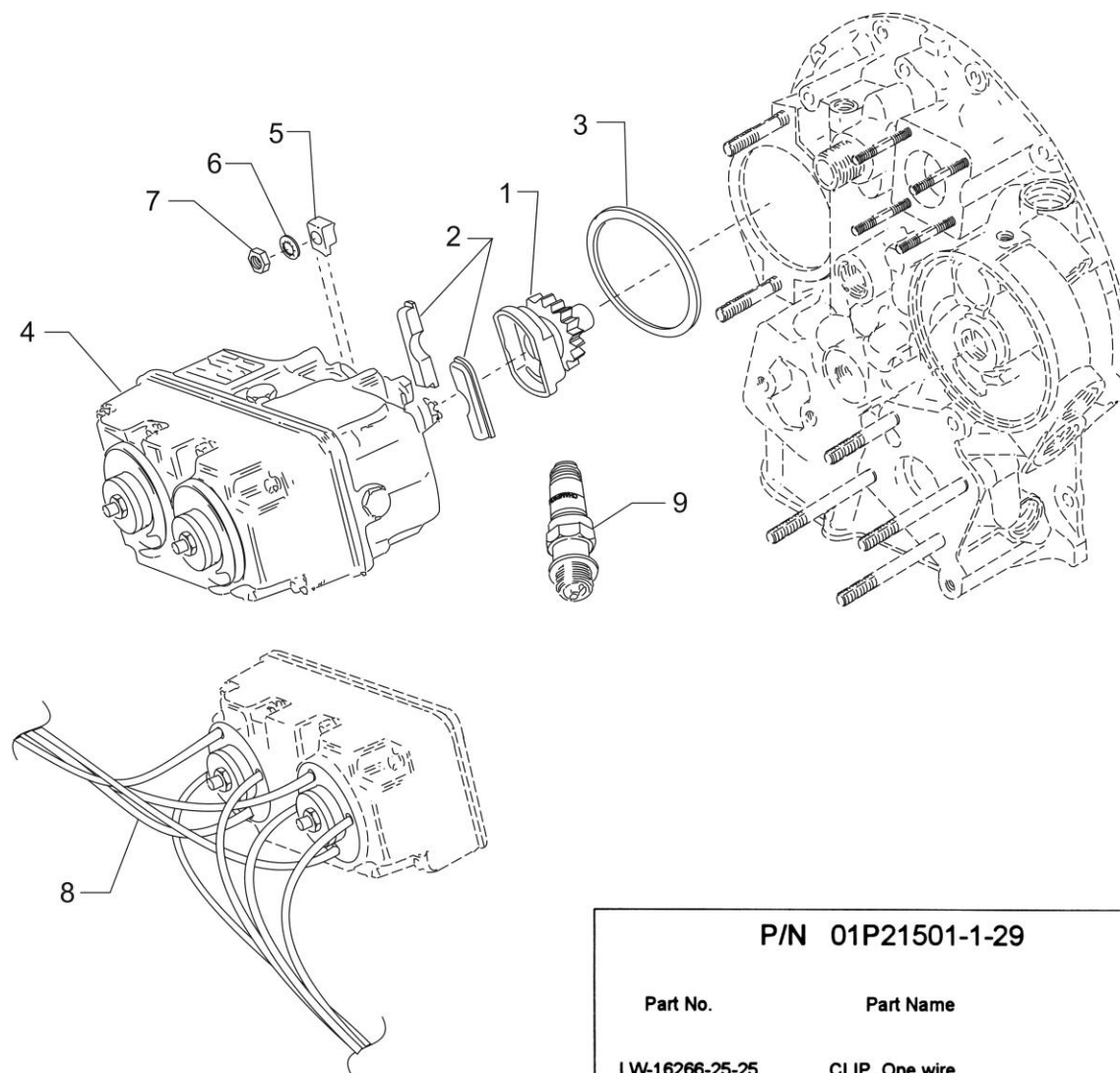

01P19762-4-44 ATTACHING PARTS

LW-16266-25-25	Clip, One wire	4
LW-14060	Clip, Two wire	4
STD-8	Washer, 1/4 plain	12
STD-160	Washer 1/4 lock	8
STD-1874	Screw, 1/4-20 x 13/16	6
76734	Zip Strap	12
LW-16266-10-75	Clamp	2
LW-16266-25-44	Clamp	2
STD-696	Washer, 1/4 plain	6
STD-1916	Screw, 1/4-20 x 1-1/8	2
STD-1925	Screw, 1/4-20 x 5/8	4
72815	Bracket, Support clamp	4
STD-692	Screw, No. 10-32 x 1/2	4
STD-425	Washer, No. 10 plain	4
STD-670	Locknut, No. 10-32	4
LW-M-2376	Plate, Spark plug cable	2

Magnetos, Magneto Drives, Harnesses and Spark Plugs (-V4A5)
Figure 27

IGNITION DISTRIBUTION SYSTEM**FIGURE 27 – MAGNETOS, MAGNETO DRIVES, HARNESSES AND SPARK PLUGS (-V4A5)**

Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		73000	COUPLING, Magneto drive	1	
2		68H22624	CUSHION, Magneto drive	4	
3		62224	GASKET, Magneto adapter	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	V	66LP-0SCNN	MAGNETO, Plain, Slick V 6350	1	
9	V	66LC35SDNN	MAGNETO, Impulse, Slick V 6351	1	
10	V	67U20608	HARNESS, Right, Slick V M-2878	1	
11	V	67U20609	HARNESS, Left, Slick V M-2877	1	
12		66M21195	CLAMP, Magneto	4	
13		STD-475	WASHER, 5/16 lock, internal teeth	4	
14		STD-1410	NUT, 5/16-18 plain	4	
15		STD-713	COTTER PIN, 3/32 diameter x 3/4 long	2	
16	*V	1182-E7	SPARK PLUG, Champion V REM38E	12	
	**	01P19762-4-44	BAG, Magneto attaching parts	1	
<p>V Vendor Prime Manufacturer part</p> <p>* Item No. 16 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.</p> <p>** See page 58 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>					


Lycoming P/N 01P21641-1

Part No.	Part Name	Qty.
10-400051-2	CLIP, One wire, 1/4 screw	6
10-400053-2	CLIP, Two/ three wire, 1/4 screw	3
10-620013	ZIP STRAP	26
10-400056-1	CLIP, Six wire, No. 10 screw	3
10-620039-1	PLATE, Three wire	2
10-620039-3	PLATE, Nine wire	2

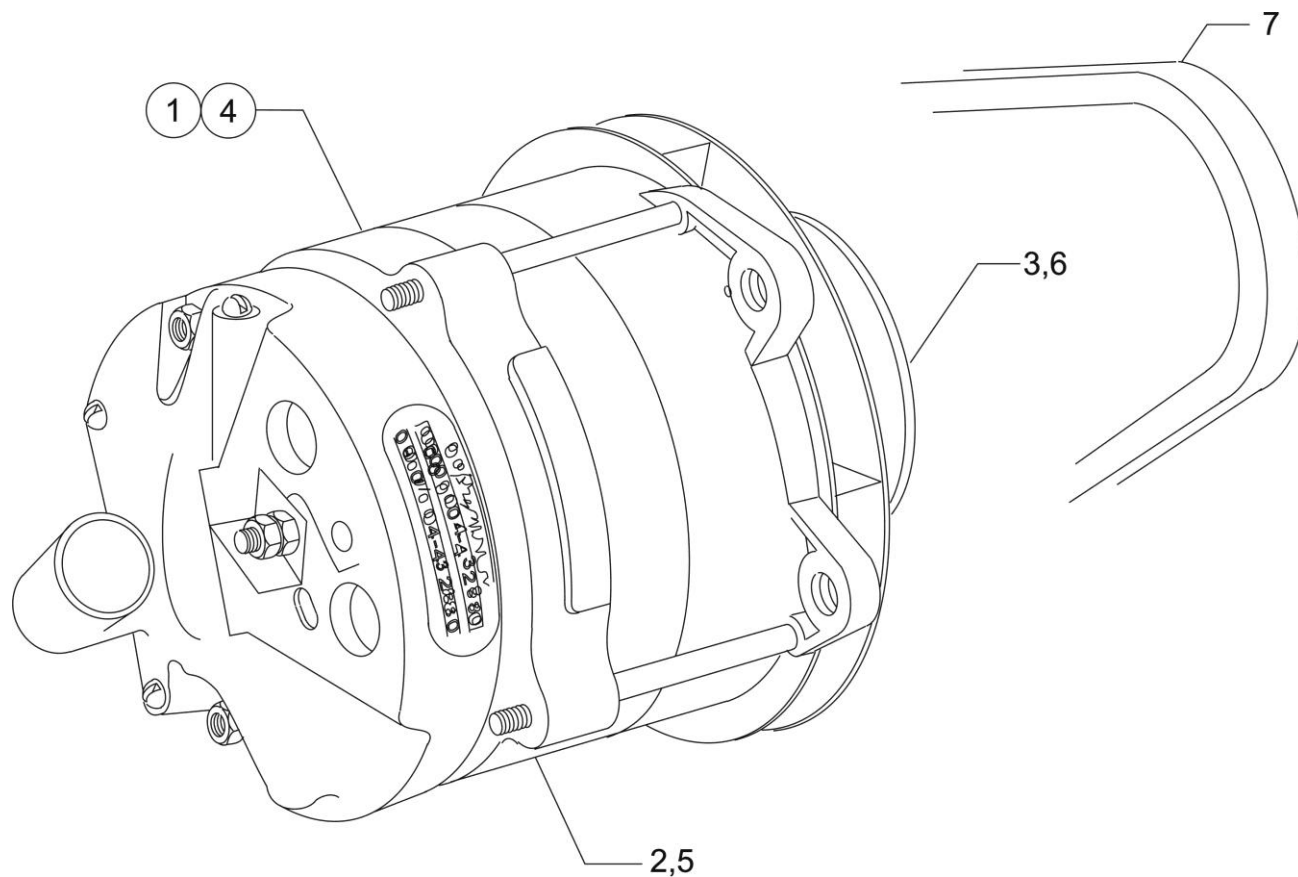
ATTACHING HARDWARE
P/N 01P21501-1-29

Part No.	Part Name	Qty.
LW-16266-25-25	CLIP, One wire	10
71824	CLIP, Two wire, 1/4 screw	3
STD-8	WASHER, 1/4 plain	14
STD-1874	SCREW, 1/4-20 x 13/16 long	7
76734	ZIP STRAP	26
LW-16266-25-50	CLIP, Three wire	2
STD-696	WASHER, 1/4 plain	AR
LW-14875	BRACKET, Extension (90°)	1
STD-692	SCREW, No. 10-32 x 1/2 long	6
STD-670	NUT, No. 10-32 self-locking	6
LW-16266-10-50	CLIP, Three wire	1
LW-16266-10-75	CLIP, Six wire	3
LW-16266-25-88	CLIP, Eight wire	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

ATTACHING HARDWARE
Magnetos, Magneto Drives, Harnesses and Spark Plugs (-V4A5D)
Figure 28

IGNITION DISTRIBUTION SYSTEM**FIGURE 28 – MAGNETOS, MAGNETO DRIVES, HARNESSSES AND SPARK PLUGS (-V4A5D)**

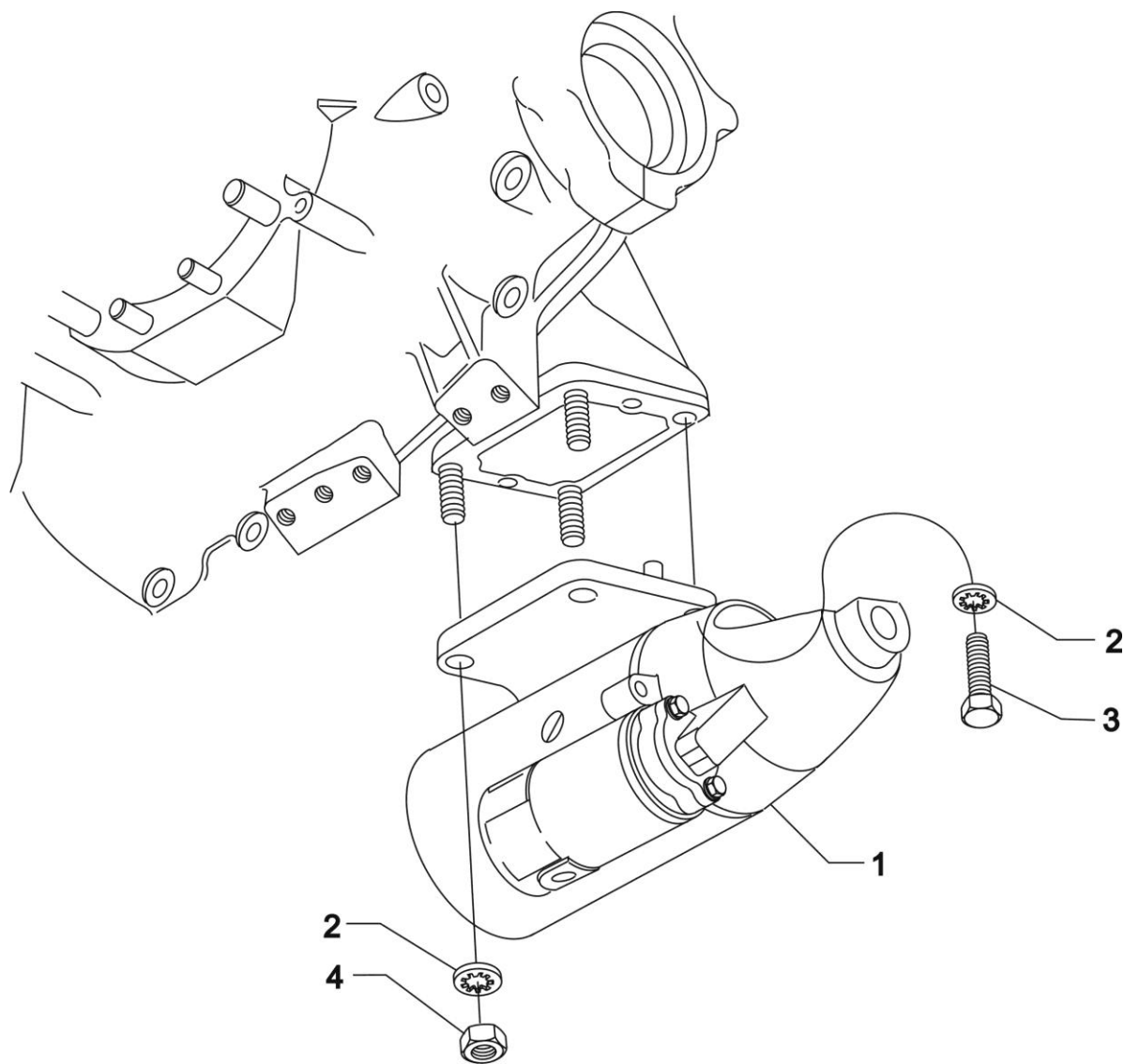
Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		LW-13899	GEAR, Retainer, magneto drive		1
2		68H22624	CUSHION, Magneto drive		2
3		LW-12681	GASKET, Magneto		1
4		66E21576	MAGNETO IGNITION SYSTEM		1
5		66M19385	CLAMP, Magneto		2
6		STD-475	WASHER, 5/16 lock, internal teeth		2
7		STD-1410	NUT, 5/16-18 plain		2
8		67H21475	HARNESS, Ignition		1
9	*V	1182-F7	SPARK PLUG, Champion V RHM38E		12
	**	01P21501-1-20	BAG, Magneto harness attaching		1
	**	01P21641-1	BAG, Magneto harness attaching		1
<p>V Vendor Prime Manufacturer part.</p> <p>* Item No. 9 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.</p> <p>** See page 60 for a breakdown of individual parts contained in the magneto and harness attaching parts bag. These parts are to be attached by customer per engine line drawing included in each bag.</p>					



Alternator/Dual Alternator Assemblies and Belts
Figure 29

IGNITION DISTRIBUTION SYSTEM**FIGURE 29 – ALTERNATOR/DUAL ALTERNATOR ASSEMBLIES AND BELTS**

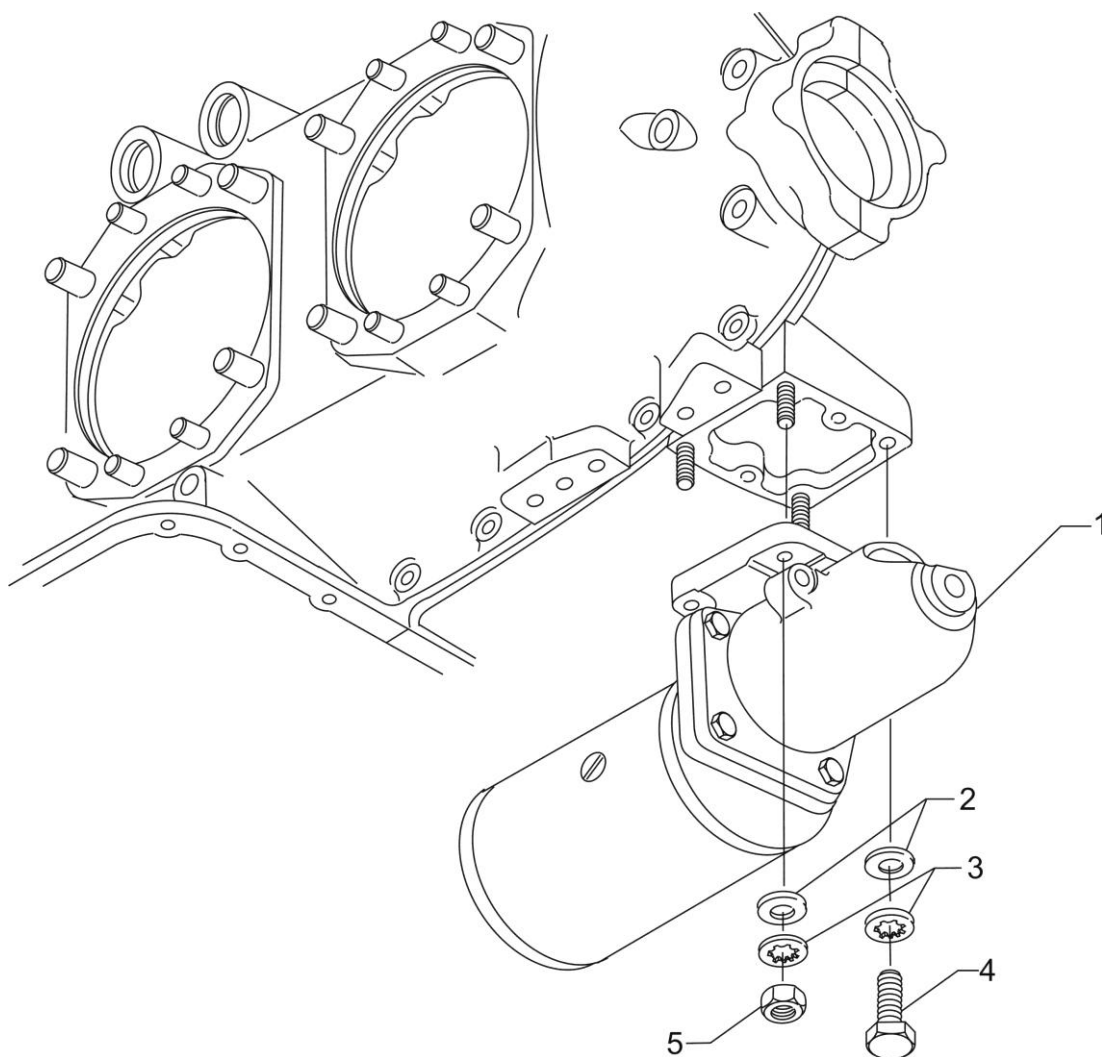
Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		32C19553	ALTERNATOR ASSEMBLY, 24V.-70Amp.	1	1
		32C19559	ALTERNATOR ASSEMBLY, 24V.-70Amp.	1	
		32C19554	ALTERNATOR ASSEMBLY, 24V.-70Amp.		1
		32B19549	ALTERNATOR ASSEMBLY, 12V.-70Amp.	1	
		32C22492	ALTERNATOR ASSEMBLY, 28V.-90Amp.	1	
2	V	LW-14326	ALTERNATOR, 24V.-70Amp. V ALU-8521-LS	1	1
		LW-14327	ALTERNATOR, 24V.-70Amp.		1
		LW-14318	ALTERNATOR, 12V.-70Amp.	1	
	V	32C22491	ALTERNATOR, 28V.-90Amp. V ES-4011-1LS	1	
3		36B19484	PULLEY, Alternator	1	1
		36B19900	PULLEY, Alternator	1	
		36B22352	PULLEY, Alternator	1	
—DUAL ALTERNATORS—					
4		32C19558	ALTERNATOR ASSEMBLY, 24V.-70Amp. (Right)	1	
		32C19559	ALTERNATOR ASSEMBLY, 24V.-70Amp. (Left)	1	
5	V	LW-14326	ALTERNATOR, 24V.-70Amp. (Right and Left) V ALU-8521-LS	2	
6		36B19889	PULLEY, Alternator (Right)	1	
		36B19900	PULLEY, Alternator (Left)	1	
7		37A19773-376	BELT, Alternator (12 volt, single alternator) (3/8 wide)	1	1
		37D22355	BELT, Alternator (28 volt, single alternator) (11mm wide)	1	
		37A19773-382	BELT, Alternator (right, dual alternator) (3/8 wide)	1	
		37A19773-464	BELT, Alternator (left, dual alternator) (3/8 wide)	1	
V Vendor Prime Manufacturer part NOTE: See latest revision of Service Instruction No. 1154 for complete listing of FAA approved starters, generators, alternator, regulators and relays.					



Starter Motor and Attaching Parts (-V4A5)
Figure 30

CRANKING SECTION**FIGURE 30 - STARTER MOTOR AND ATTACHING PARTS (-V4A5)**

Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1	V	31A22104	STARTER, 12 volt, Sky-Tec V 149-12LS	1	
	V	31B22105	STARTER, 24 volt, Sky-Tec V 149-24LS	1	
	V	31B22101	STARTER, 24 volt, Sky-Tec V 149-24PM	1	
2		STD-475	WASHER, 5/16 lock, internal teeth	4	
3		LW-31-0.94	BOLT, 5/16-18 x 15/16 long, hex. head	1	
4		STD-1410	NUT, 5/16-18 plain	3	
<p>V Vendor Prime Manufacturer part</p> <p>NOTE: See latest revision of Service Instruction No. 1154 for complete listing of FAA approved starters, generators, alternators, regulators and relays.</p>					



Starter Motor and Attaching Parts (-V4A5D)
Figure 31

CRANKING SECTION**FIGURE 31 – STARTER MOTOR AND ATTACHING PARTS (-V4A5D)**

Figure Item	Code	Part Number	Description	Units per Assembly	
				V4A5	V4A5D
1		LW-15572	STARTER, 24 volt (3.38:1 internal reduction, 12/14 pitch)		1
2		STD-35	WASHER, 5/16 plain		4
3		STD-475	WASHER, 5/16 lock, internal teeth		4
4		LW-31-1.16	BOLT, 5/16-18 x 1-5/32 long, hex. head		1
5		STD-1410	NUT, 5/16-18 plain		3
<u>NOTE:</u> See latest revision of Service Instruction No. 1154 for complete listing of FAA approved starters, generators, alternators, regulators and relays.					

SERVICE KIT SECTION
SEAL AND GASKET SET (-V4A5)

PART NO.	PART NAME	Qty.
LW-13377	KIT - SEAL AND GASKET SET	1
LW-10332	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, oil	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
77611	GASKET, Exhaust flange	6
STD-2231	RING, Internal retaining	1
MS16625-1100	RING, Internal retaining, 1.00 diameter	1
MS29512-10	OIL SEAL, 3/32 section x 45/64 I.D.	1
MS29512-06	"O" RING, 15/32 I.D. x 5/64 section	1
MS9068-009	"O" RING, 13/64 I.D. x 1/16 section	1
06E19769-1.63	GASKET, Annular 1-5/8 I.D.	1
STD-1733	RING, Oil seal, 1/4 x 1/16	1
06A19956	OIL SEAL, 7/8 I.D. x 1-1/2 O.D. x 5/16	1
06E19769-0.63	GASKET, Annular, 5/8 I.D.	1
06E19769-1.00	GASKET, Annular, 1.00 I.D.	1
06E19769-1.25	GASKET, Annular, 1-1/4 I.D.	1
60096	GASKET, Fuel pump	1
66224	GASKET, Carburetor	1
70310	SEAL, Shroud tube	12
70455	GASKET, 25/32 I.D. x 1-1/8 O.D. x 1/32	1
70457	GASKET, Oil filler extension	1
71481	RING, Oil seal, 3/32 diameter x 4-27/32 I.D.	6
71973	GASKET, 2 bolt flange, 1-13/16 I.D.	6
72053	GASKET, Governor	3
72091	RING, Oil seal, 3/8 I.D. x 3/32 diameter	2
72312	RING, Oil seal, 1.00 x 1-1/8	1
73383	LOCKPLATE, 5/16 bolt x 1.00	1
73818	GASKET, Accessory housing	1

SERVICE KIT SECTION (CONT.)
SEAL AND GASKET SET (-V4A5) (CONT.)

PART NO.	PART NAME	Qty.
LW-13377	KIT - SEAL AND GASKET SET (CONT.)	1
74065	RING, Oil level gage seal	1
74068	RING, Oil level gage plug	1
75118	GASKET, Exhaust flange	12
75906	GASKET, Rocker box cover	6
77154	GASKET, Carburetor	1
8313	GASKET, Vacuum pump	3

SERVICE KIT SECTION (CONT.)
SEAL AND GASKET SET (-V4A5D)

PART NO.	PART NAME	Qty.
LW-18786	KIT - SEAL AND GASKET SET	1
AN901-8A	GASKET, Metal tube connect seal	1
LW-10122	GASKET, Turbo oil drain adapter	1
LW-10332	LOCKPLATE, Crankshaft gear	1
LW-12272	LOCKPLATE, Shroud tube	6
LW-12681	GASKET, Magneto	1
06B21326	GASKET, Oil sump	1
LW-14192	GASKET, Sonic nozzle	2
LW-14260	SEAL, Tachometer drive, oil	1
LW-15628	SEAL, Crankshaft, oil	1
LW-18234	GASKET, Exhaust flange	12
LW-18329	GASKET, Air inlet housing	1
LW-18481	GASKET, Oil filler adapter	1
LW-18526	GASKET, V-band coupling, 2-1/2	1
LW-18661	SEAL, Shroud tube	12
STD-2231	RING, Internal retaining	1
MS16625-1125	RING, Internal retaining, 1-1/4 diameter	4
MS29512-10	OIL SEAL, 3/32 section x 45/64	1
MS29512-04	"O" RING, 11/32 I.D. x 1/16 section	1
MS29512-06	"O" RING, 15/32 I.D. x 5/64 section	1
MS29512-08	"O" RING, 41/64 I.D. x 3/32 section	1
MS9068-009	"O" RING, 13/64 x 1/16 section	1
06E19769-1.50	GASKET, 1-1/2 I.D.	1
STD-1737	RING, External retaining, 9/16 diameter	1
STD-213	OIL SEAL, 3/4 I.D. x 1-3/8 O.D.	1
06A19956	OIL SEAL, 7/8 I.D. x 1-1/2 O.D. x 5/16	2
06E19769-1.25	GASKET, Annular, 1-1/4 I.D.	1
66732	GASKET, Valve rocker shaft cover	12
69164	GASKET, Fuel pump adapter	1
70310	SEAL, Shroud tube	12
70455	GASKET, 25/32 I.D. x 1-1/8 OD x 1/32	1
71481	RING, Oil seal, 3/32 diameter x 4-27/32 I.D.	6
71973	GASKET, 2 bolt flange, 1-13/16 I.D.	6
72053	GASKET, Governor	1
72059	GASKET, Oil level gage	1

SERVICE KIT SECTION (CONT.)
SEAL AND GASKET SET (-V4A5D) (CONT.)

PART NO.	PART NAME	Qty.
LW-18786	KIT - SEAL AND GASKET SET (CONT.)	1
72091	RING, Oil seal, 23/64 I.D. x 7/64 diameter	2
72220	GASKET, Oil level gage	1
73032	GASKET, Air inlet housing	1
73314	GASKET, Density and differential	1
73383	LOCKPLATE, 5/16 bolt x 1.00	1
73818	GASKET, Accessory housing	1
74068	RING, Oil level gage plug	1
74382	RING, Oil seal, 3/32 diameter x 2.00	1
74944	GASKET, Turbocharger controller adapter	1
75371	GASKET, Turbo oil inlet adapter	1
75845	GASKET, V-band coupling, 2-1/4	1
76036	GASKET, Rocker box cover	6
77569	RING, Seal, intake pipe	6
8313	GASKET, Vacuum pump	3
LW-14995	SPRING, Shroud tube	6

SERVICE KIT SECTION (CONT.)**CYLINDER PISTON AND RING ASSEMBLY (-V4A5 AND -V4A5D)**

PART NO.	PART NAME	Qty.
05K21104	KIT – CYLINDER, PISTON AND RING ASSEMBLY	1
LW-12427	CYLINDER ASSEMBLY	1
17A23938	VALVE, Intake	1
17B23936	VALVE, Exhaust	1
65441	SEAT, Valve spring, lower intake	1
LW-13323	SEAT, Valve spring, lower	1
LW-11800	SPRING, Valve, outer	2
LW-11795	SPRING, Valve, inner	2
LW-10077	SEAT, Valve spring, upper	1
LW-16475	SEAT, Valve spring, upper exhaust	1
60009	KEY, Valve, intake	2
17C21191	KEY, Valve, exhaust	2
MS20823-6D	ELBOW, 45°, 3/8 flared tube	1
17C19386	CAP, Valve stem, exhaust (rotator)	1
1102	PLUG, 1/8-27 NPT, allen head	2
75089	PISTON	1
74241	RING, Piston, compression	2
14H21950	RING, Piston, oil	1
LW-14078	PIN, Piston	1
71481	RING, Oil seal, 3/32 diameter x 4-27/43 I.D.	1
LW-18661	SEAL, Shroud tube	2
70310	SEAL, Shroud tube	2
75906	GASKET, Rocker box cover	1
SSP-299	TAG, Use of piston pin plugs	1
72198	PLUG, Piston pin	2
77611	GASKET, Exhaust flange	1
71973	GASKET, 2 bolt flange	1
LW-12272	LOCKPLATE, Shroud tube	1
06A23493	SEAL, Shroud tube	2

SERVICE KIT SECTION (CONT.)**CHROME – PARALLEL VALVE COVER (-V4A5 AND -V4A5D)**

PART NO.	PART NAME	Qty.
05K22600	KIT – CHROME – PARALLEL VALVE COVER	1
61247-C	COVER, Rocker box, chrome	2
75906	GASKET, Rocker box cover	2
01F22880	SCREW, 1/4-20 x 19/32 long (stainless)	12
MS35335-33	WASHER	12
74494	PLATE, Spark plug reach, caution	2
SSP-102	TAG, Rocker box cover, chrome kit	1

CHROME – PARALLEL VALVE – 6 CYLINDER (-V4A5 AND -V4A5D)

PART NO.	PART NAME	Qty.
05K22604	KIT – CHROME – PARALLEL VALVE – 6 CYLINDER	1
61247-C	COVER, Rocker box, chrome	6
75906	GASKET, Rocker box cover	6
01F22880	SCREW, 1/4-20 x 19/32 long (stainless)	36
MS35335-33	WASHER	36
LW-11485-C	SHROUD TUBE ASSEMBLY, Push rod, chrome	12
70310	SEAL, Shroud tube	12
LW-18661	SEAL, Shroud tube	12
70485-C	PIPE, Intake, chrome	6
71973	GASKET, 2 bolt flange, 1-13/16 I.D.	6
74494	PLATE, Spark plug reach, caution	6
SSP-102	TAG, Rocker box cover, chrome kit	1

SERVICE KIT SECTION (CONT.)**CRANKCASE ASSEMBLY AND THRU-STUD KIT (-V4A5D)**

PART NO.	PART NAME	Qty.
11E24000-D1-S	KIT – CRANKCASE ASSEMBLY AND THRU-STUD	1
11E24000-D1	CRANKCASE ASSEMBLY	1
76220	THRU-STUD	8
31C-14	STUD, 5/16-18 x 1-3/4 long	4
31C-16	STUD, 5/16-18 x 2.00 long	4
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	WASHER, 5/16 lock, internal teeth	4

CRANKCASE ASSEMBLY AND THRU-STUD KIT (-V4A5)

PART NO.	PART NAME	Qty.
11E24000-S3-S	KIT – CRANKCASE ASSEMBLY AND THRU-STUD	1
11E24000-S3	CRANKCASE ASSEMBLY	1
76220	THRU-STUD	8
31C-14	STUD, 5/16-18 x 1-3/4 long	4
31C-16	STUD, 5/16-18 x 2.00 long	4
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	WASHER, 5/16 lock, internal teeth	4

SERVICE KIT SECTION (CONT.)**CRANKCASE ASSEMBLY AND THRU-STUD KIT (V4A5) – ROLLER TAPPETS**

PART NO.	PART NAME	Qty.
11E24100-S1-S	KIT – CRANKCASE ASSEMBLY AND THRU-STUD	1
11E24100-S1	CRANKCASE ASSEMBLY (Roller tappet engines)	1
76220	THRU-STUD	8
31C-14	STUD, 5/16-18 x 1-3/4 long	4
31C-16	STUD, 5/16-18 x 2.00 long	4
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	WASHER, 5/16 lock, internal teeth	4

CRANKCASE ASSEMBLY AND THRU-STUD KIT (-V4A5) - ROLLER TAPPETS

PART NO.	PART NAME	Qty.
11E24100-S3-S	KIT – CRANKCASE ASSEMBLY AND THRU-STUD	1
11E24100-S3	CRANKCASE ASSEMBLY (Roller tappet engines)	1
76220	THRU-STUD	8
31C-14	STUD, 5/16-18 x 1-3/4 long	4
31C-16	STUD, 5/16-18 x 2.00 long	4
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	WASHER, 5/16 lock, internal teeth	4

SERVICE KIT SECTION (CONT.)**CRANKSHAFT AND COUNTERWEIGHT ASSEMBLY (-V4A5)**

PART NO.	PART NAME	Qty.
05K47676	KIT – CRANKSHAFT AND COUNTERWEIGHT ASSEMBLY	1
13E47622	CRANKSHAFT ASSEMBLY	1
LW-19227	COUNTERWEIGHT ASSEMBLY	2
72965	ROLLER, Dynamic counterweight	2
72797	ROLLER, Dynamic counterweight	2
71907	WASHER, Counterweight	8
LW-14820	RING, Internal retaining	8

CRANKSHAFT AND COUNTERWEIGHT ASSEMBLY (-V4A5D)

PART NO.	PART NAME	Qty.
05K47681	KIT – CRANKSHAFT AND COUNTERWEIGHT ASSEMBLY	1
13E47625	CRANKSHAFT ASSEMBLY	1
LW-19227	COUNTERWEIGHT ASSEMBLY	2
72965	ROLLER, Dynamic counterweight	2
72797	ROLLER, Dynamic counterweight	2
71907	WASHER, Counterweight	8
LW-14820	RING, Internal retaining	8

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PART NO.	PART NAME	PAGE NO.	PART NO.	PART NAME	PAGE NO.
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AN6-16	Bolt	1	LW-12799-6S300	Hose	57
AN6-16	Bolt	6	LW-12892	Thrust Button	33
AN6-17	Bolt	1	LW-13215	Oil Filter	53
AN6-17	Bolt	6	LW-13323	Seat	31
AN6-20	Bolt	9	LW-13389	Baffle Assy.	34
AN6-21	Bolt	5	LW-13790	Shaft	33
AN6-21	Bolt	10	LW-13792	Seal	17
AN6-34A	Bolt	25	LW-13795	Shaft	23
AN6-44	Bolt	5	LW-13896	Plug	13
AN6-44	Bolt	9	LW-13899	Gear	61
AN7-43	Bolt	3	LW-13906	Filter Assy.	55
AN816-8	Nipple	49	LW-13923	Bushing	27
AN919-5	Reducer	51	LW-14021	Shaft	13
LRT23381	Body Assy.	17	LW-14078	Pin	27
LW-10077	Seat	31	LW-14260	Seal	45
LW-10290	Gear Assy.	23	LW-14318	Alternator	63
LW-10297	Gear Assy.	23	LW-14326	Alternator	63
LW-10299	Shaft	23	LW-14327	Alternator	63
LW-10303	Plug	51	LW-14637	Shim	3
LW-10307	Gear Assy.	51	LW-14649	Shim	3
LW-10318	Gear Assy.	45	LW-14650	Shim	3
LW-10320	Sleeve	55	LW-14800	Gear Assy.	39
LW-10325	Spacer	13	LW-14820	Ring	19
LW-10332	Lockplate	19	LW-14995	Spring	31
LW-10341	Insert	43	LW-15473	Fuel Pump	47
LW-10344	Body Assy.	45	LW-15572	Starter	67
LW-10442	Gear	13	LW-15592-5-05	Clamp	33
LW-10451	Gear Assy.	13	LW-15592-8-28	Clamp	37
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LW-11635	Shield	5	LW-16266-25-50	Clip	57
LW-11635	Shield	10	LW-16266-25-75	Clip	57
LW-11713	Spring	17	LW-16471	Support Assy.	19
LW-11750-S	Conn. Rod Assy.	27	LW-16475	Seat	31
LW-11795	Spring	31	LW-18085	Spring	17
LW-11800	Spring	31	LW-18265	Nozzle	57
LW-12098-0-170	Tube Assy.	57	LW-18434	Plug	41
LW-12098-0-210	Tube Assy.	57	LW-18436	Sump Assy.	41
LW-12186	Nut	27	LW-18638	Lockplate	19
LW-12233	Pulley	3	LW-18661	Seal	31
LW-12272	Lockplate	31	LW-18667	Pin	21
LW-12427	Cylinder Assy.	29	LW-19096	Gear Retainer Assy.	59
LW-12545	Plug	41	LW-19227	Counterweight Assy.	19
LW-12589	Insert	43	LW-19238	Shaft	3
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LW-25-0.94	Bolt	45	STD-8	Washer	37
LW-25-1.00	Bolt	41	STD-8	Washer	41
LW-25-1.00	Bolt	53	STD-8	Washer	45
LW-25-1.13	Bolt	25	STD-8	Washer	49
LW-25-1.13	Bolt	41	STD-8	Washer	51
LW-25-1.13	Bolt	45	STD-8	Washer	53
LW-25-1.25	Bolt	37	STD-19	Dowel	13
LW-25-1.25	Bolt	45	STD-33	Washer	3
LW-25-1.44	Bolt	45	STD-33	Washer	5
LW-25-1.50	Bolt	25	STD-33	Washer	9
LW-25-1.75	Bolt	25	STD-33	Washer	25
LW-25-1.88	Bolt	25	STD-33	Washer	39
LW-25-2.00	Bolt	25	STD-33	Washer	47
LW-25S1.50	Bolt	25	STD-35	Washer	1
LW-31-0.94	Bolt	1	STD-35	Washer	5
LW-31-0.94	Bolt	5	STD-35	Washer	6
LW-31-0.94	Bolt	25	STD-35	Washer	9
LW-31-0.94	Bolt	65	STD-35	Washer	10
LW-31-1.16	Bolt	25	STD-35	Washer	13
LW-31-1.16	Bolt	67	STD-35	Washer	25
LW-31-1.31	Bolt	57	STD-35	Washer	29
LW-31-2.75	Bolt	25	STD-35	Washer	45
LW-31H0.75	Bolt	1	STD-35	Washer	49
LW-31H0.75	Bolt	5	STD-35	Washer	57
LW-31H0.75	Bolt	6	STD-35	Washer	67
LW-31H0.75	Bolt	10	STD-82	Washer	57
LW-31H0.88	Bolt	3	STD-148	Washer	57
LW-31H0.88	Bolt	5	STD-160	Washer	25
LW-31H0.88	Bolt	9	STD-160	Washer	37
LW-31H0.88	Bolt	23	STD-160	Washer	41
LW-31H1.22	Bolt	3	STD-160	Washer	45
LW-31H1.75	Bolt	5	STD-160	Washer	49
LW-31H2.13	Bolt	9	STD-160	Washer	51
LW-31H2.75	Bolt	9	STD-160	Washer	53
LW-38H1.19	Bolt	3	STD-251	Washer	57
MS124703	Insert	43	STD-425	Washer	57
MS16625-1100	Ring	55	STD-475	Washer	13
MS16625-1125	Ring	3	STD-475	Washer	25
MS16625-1125	Ring	5	STD-475	Washer	29
MS16625-1125	Ring	10	STD-475	Washer	49
MS20822-8	Elbow	49	STD-475	Washer	57
MS20823-4	Elbow	57	STD-475	Washer	59
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