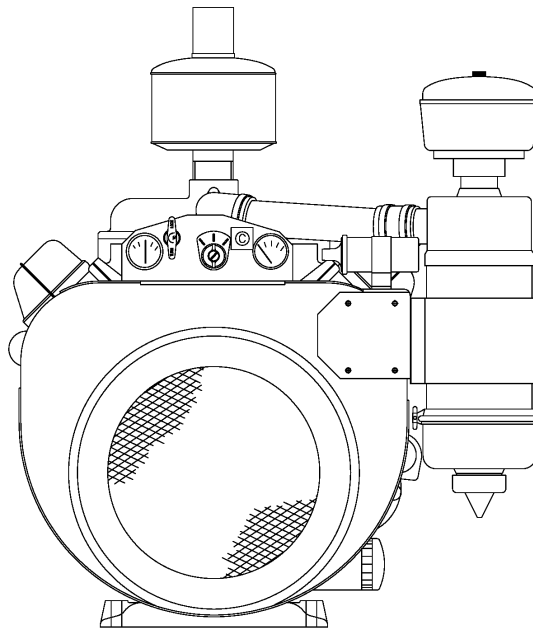

PARTS MANUAL

V460, V461 & V465



Wisconsin Motors, LLC

FACTORY AUTHORIZED DISTRIBUTOR
PITT AUTO ELECTRIC COMPANY
4085 ALPHA DRIVE - ALLISON PARK, PA 15101
PHONE: 800-245-0711 - FAX: 800-551-5908
EMAIL: INFO@PITTAUTO.COM - WEB: PITTAUTO.COM

IMPORTANT SAFETY NOTICE

Proper repair is important to the safe and reliable operation of an engine. This Repair Manual outlines basic recommended procedures, some of which require special tools, devices or work methods.

Improper repair procedures can be dangerous and could result in injury or death.

READ AND UNDERSTAND ALL SAFETY PRECAUTIONS AND WARNINGS BEFORE PERFORMING REPAIRS ON THIS ENGINE

Warning labels have also been put on the engines to provide instructions and identify specific hazards which, if not heeded, could cause bodily injury or death to you or other persons. These labels identify hazards which may not be apparent to a trained mechanic. There are many potential hazards for an untrained mechanic and there is no way to label the engine against all such hazards. These warnings in the Repair Manual and on the engine are identified by this symbol:



Operations that may result only in engine damage are identified in the Repair Manual by this symbol:



Wisconsin Motors cannot anticipate every possible circumstance that might involve a potential hazard; therefore, the warnings in this manual are not all inclusive. If a procedure, tool, device or work method not specifically recommended by Wisconsin Motors is used, you must satisfy yourself that it is safe for you and others. You should also ensure that the engine will not be damaged or made unsafe by the procedures you choose.

IMPORTANT: The information, specifications and illustrations in this manual are based on information that was available at the time it was published. The specifications, torques, pressures of operation, measurements, adjustments, illustrations and other items can change at any time. These changes can affect the service given to the product. Get the complete and most current information before starting any job. For parts, service, or information, contact Wisconsin Motors, Memphis, Tennessee.

WARNING

Most sub-systems used in conjunction with Wisconsin Engines including (but not limited to) radiators, hoses, fans, fuel tanks, fuel lines or other fuel system components, batteries, electrical connections or other electrical components, clutches, transmissions, hydraulic pumps and generators, are not supplied by Wisconsin. These items are provided by the manufacturer of the end item in which the engine is used.

Some of the dangers associated with servicing such items are generally mentioned in this manual; however, the appropriate handbooks and safety instructions provided by the manufacturer of the end item should always be consulted prior to the undertaking of any work on sub-systems attached to the engine, to avoid any hazards inherent to these sub-systems.

WARNING

Read and observe all individual safety warnings as you use this manual to operate, service or repair your engine.

Always exercise caution whenever working with an engine or any associated system.

Injuries may be caused by lack of care when working with, or near, moving parts, hot parts, pressurized systems, electrical equipment, or fuel systems.

Always wear eye and hearing protection when working on or near engines.

Improper attire such as loose clothing, ties, rings, soft shoes or bare feet could be hazardous and should be avoided when servicing engines.

Use or service of the engine (including the use of modified parts or materials) not in accordance with manufacturer's specifications could damage your engine or cause personal injury.

WARNING

Some equipment and materials used in the overhaul or maintenance of an engine such as machine tools, electrical equipment, compressed air, solvents, gasoline or other fuels may be dangerous and can cause injury. Always observe safety precautions.



SERVICE FACILITIES

WISCONSIN MOTORS, L.L.C. Distributors and Service Centers, located throughout the U.S. and foreign countries, have been carefully selected to insure complete and efficient repair and inspection services to owners of **WISCONSIN MOTORS** Engines. These service centers, equipped and staffed for complete engine repair, also stock engine parts to facilitate immediate delivery for the complete line of **WISCONSIN MOTORS** Engines.

Order parts from the **WISCONSIN MOTORS, L.L.C.** Distributor or Service Center in your locality. Contact **WISCONSIN MOTORS, L.L.C.** by phone: 1-800-932-2858, by E-mail: www.wisconsinmotors.com or write: **WISCONSIN MOTORS, L.L.C., 2020 Fletcher Creek Drive, Memphis, Tn, 38133** for assistance in locating an authorized distributor or service center in your area.

The **MODEL**, **SPECIFICATION** and **SERIAL NUMBER** of your engine must be given when ordering parts. The **MODEL** and **SPECIFICATION** number are on the name plate. The **SERIAL NUMBER** is stamped either on the crankcase or the engine name plate.

Copy the **MODEL**, **SPECIFICATION** and **SERIAL NUMBER** in the spaces provided below so that it will be available when ordering parts.

	WISCONSIN ENGINES	
MODEL	SPEC. NO.	SERIAL NO.
<input type="text"/>	<input type="text"/>	<input type="text"/>
WISCONSIN MOTORS, LLC WAUKESHA, WISCONSIN		

In some cases it will be necessary to determine the year of the engine.

The year is given by the serial number as follows:

- First 2 Digits: Year
- Second 2 Digits: Month
- Last 4 Digits: Numeric sequence of engine

Example of Engine Serial Number:

07010256
↑ ↑ ↑
YEAR MONTH 256th ENGINE of the MONTH

INTRODUCTION

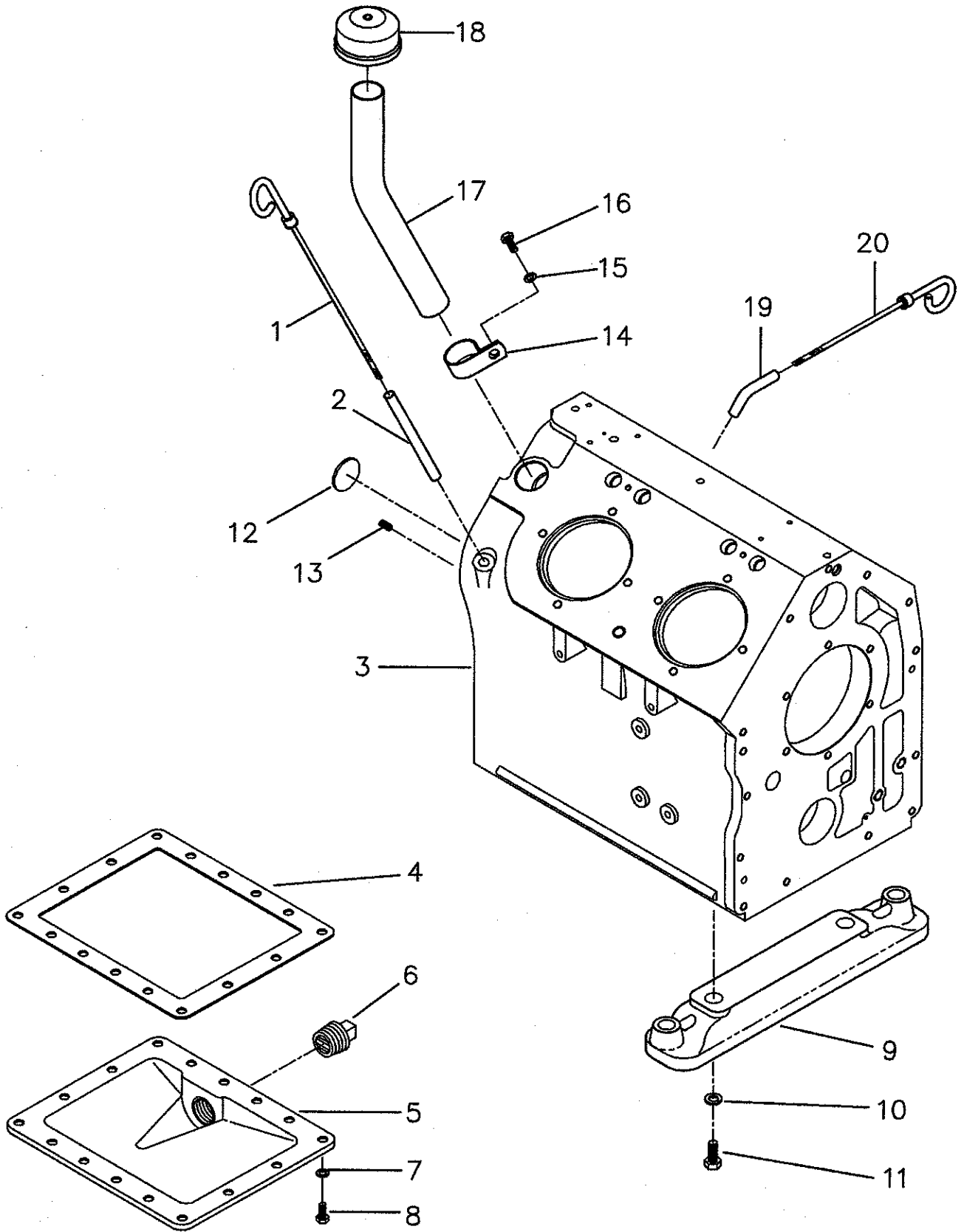
This catalog is designed to identify Wisconsin parts.

When ordering parts, it is always advisable to list the engine model, specification number and serial number. With this information, we can check your order for any incorrect part numbers. Use your Service Parts List to insure proper part number and nomenclature identification.

WISCONSIN MOTORS,L.L.C. reserves the right to modify, alter and improve engines and parts. Part numbers and the structure of parts may change from those shown in the catalog.

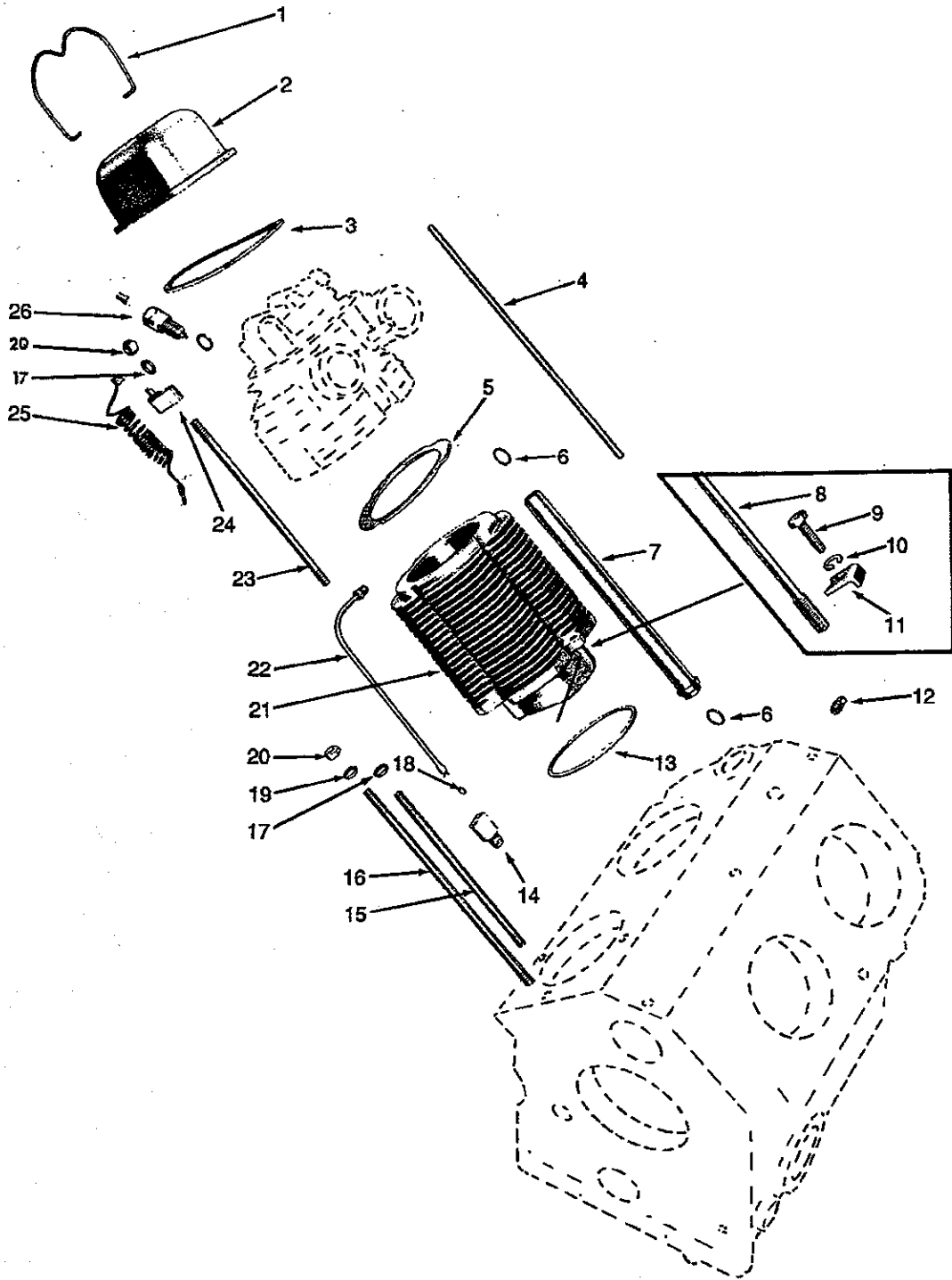
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CRANKCASE and OIL PAN

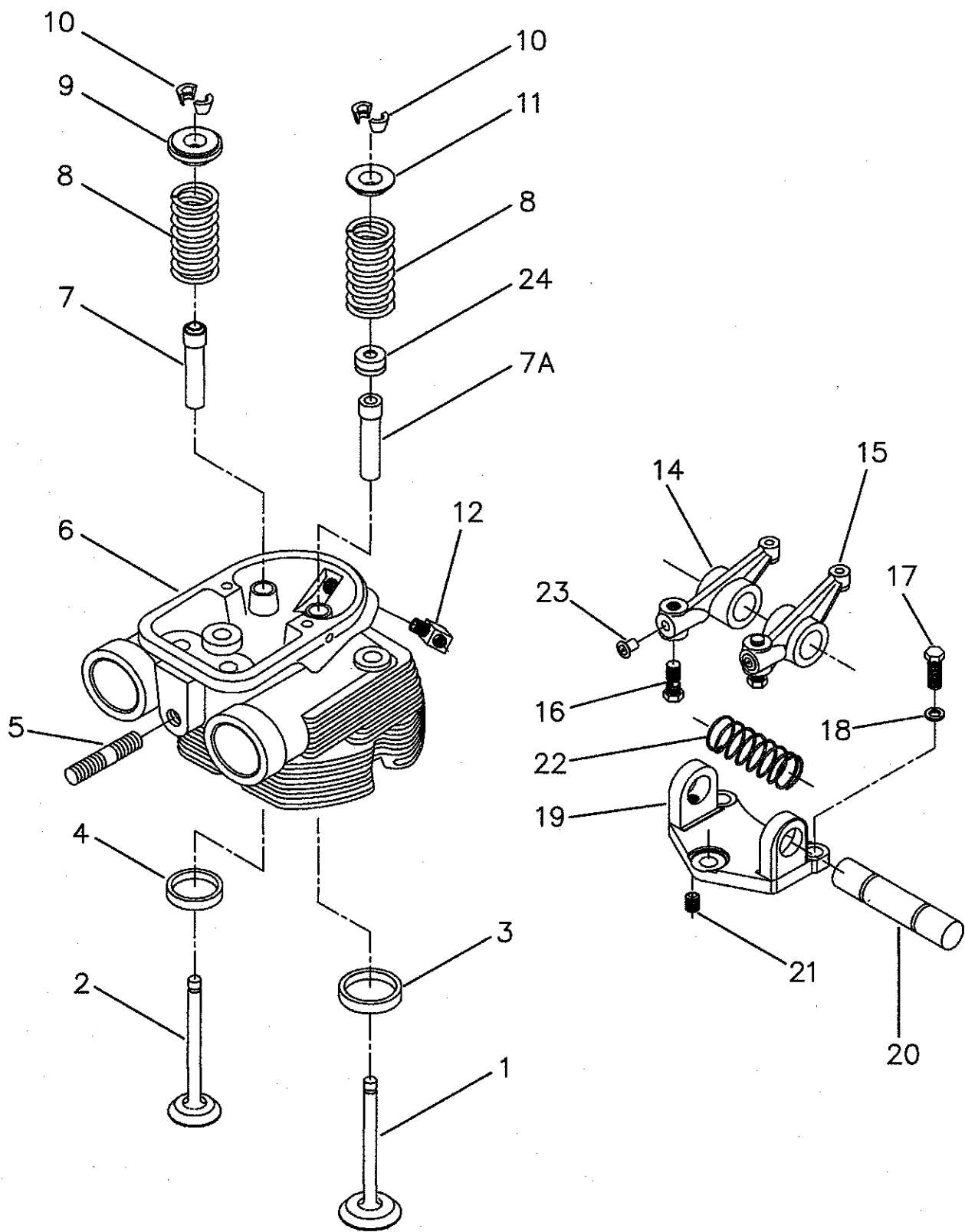
ITEM	PART NO.	DESCRIPTION	QTY.
1	RJ173	Dipstick, 10" long	1
2	RF1495B	Tube, dipstick	1
3	BA55E13S2	Crankcase assembly (includes items 12 & 13).....	1
		and the following of item 3:	
	ME137-1	Cup bearing, taper roller	1
	PA477	Dowel pin, .25" x 1-3/8" long	2
	RF1377A	Fitting, "Y", 1/4" pipe, special	2
	RF1420	Fitting, special	1
	RF1423	Nipple, oil filter stud	1
	RV34A	Relief valve assembly	1
	BG366	Center main bearing hanger assembly	1
	PA442	Roll pin, 3/16" x 1-1/4" long	2
	XD198	Screw, hex, flange head, 1/2-13	2
4	TM27T00132	RTV (Replaces QD635A Gasket)	1
5	BH155E	Oil pan	1
6	XK7A	Plug, oil drain, 3/4" pipe, square head, magnetic	1
7	PE4	Washer, 5/16" spring lock	16
8	XD14	Screw, 5/16-18 x 5/8" long	16
9	BK72A1	Engine support	2
10	PE37	Washer, 5/8" spring lock	4
11	XD52	Screw, 5/8-11 x 1-3/4" long	4
12	SA58	Plug, expansion, 1-3/8" dia	1
13	XK121	Plug, 1/8" pipe, Allen head, countersunk	8
14	PG1212	Clamp, oil filler tube	1
15	PE3	Washer, 1/4" spring lock	1
16	XA34	Screw, 1/4-20 x 1/2" long	1
17	LJ300M	Tube, oil filler (replaces LJ300AD)	1
18	LO60-1	Cap, oil filler and breather	1
19	RF1495C	Tube, dipstick (starter side-optional)	1
20	RJ173A	Dipstick (starter side-optional)	1



CYLINDER and HEAD

ITEM	PART NO.	DESCRIPTION	QTY.
1	PK138	Wire bail	4
2	AN41S1	Cover, rocker arm (includes item 3)	4
3	QD758A	Gasket, rocker arm cover	4
4	^a FX184	Push rod	8
5	QD757E	Gasket, cylinder head	4
6	JK55	O-ring, 3/4" O.D.	16
7	LJ392A	Push rod casing assembly (includes collar and casing)	8
8	PC531	Stud, 3/8" x 11-5/16" long	4
9	XD6	Screw, 1/4-20 x 1" long	4
10	PE3	Washer, 1/4" spring lock	4
11	PG1230	Clip, cylinder hold down	4
12	XK121	Plug, 1/8" pipe, Allen head, countersunk	1
13	QD839	Gasket, cylinder base	4
14	RF1377A	"Y" fitting, 1/4" pipe, special (replaces RF1377)	2
15	PC529	Stud, 8-3/8" long	3
16	PC530	Stud, 10" long	8
17	PH22A	Washer, 25/64", hardened	5
18	JK52	O-ring, 3/16" I.D. x 5/16" O.D.	5
19	PH513	Washer, 13/32", hardened	7
20	PD252	Nut, 3/8-16	16
21	AA111	Cylinder barrel	4
22	RM1351A	Oil return line (includes item 18)	4
23	PC529A	Stud, 3/8-16 x 8-11/16" long	1
24	YC66DS1	High temperature safety switch kit (includes item 25)	1
—	SD233	Decal	1
—	YC66D	Switch	1
25	YL357-44	Ignition wire assembly	1
26	YD301	Spark plug	4

^a For engines with serial number 5487817 and after. See SPB 12-76.

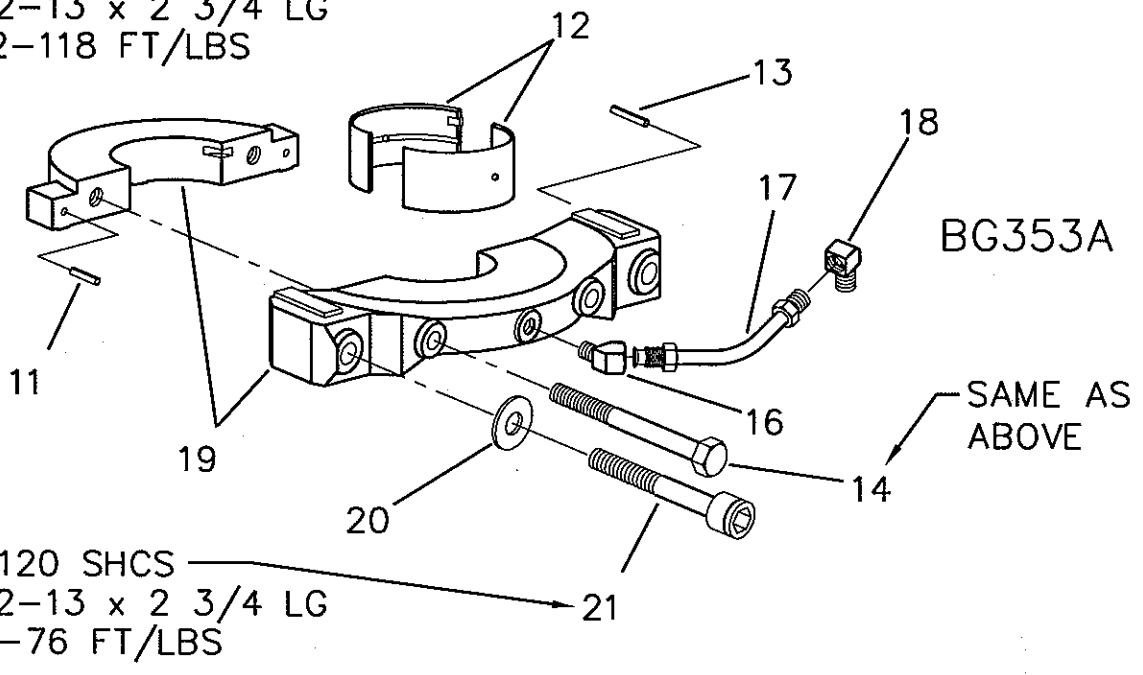
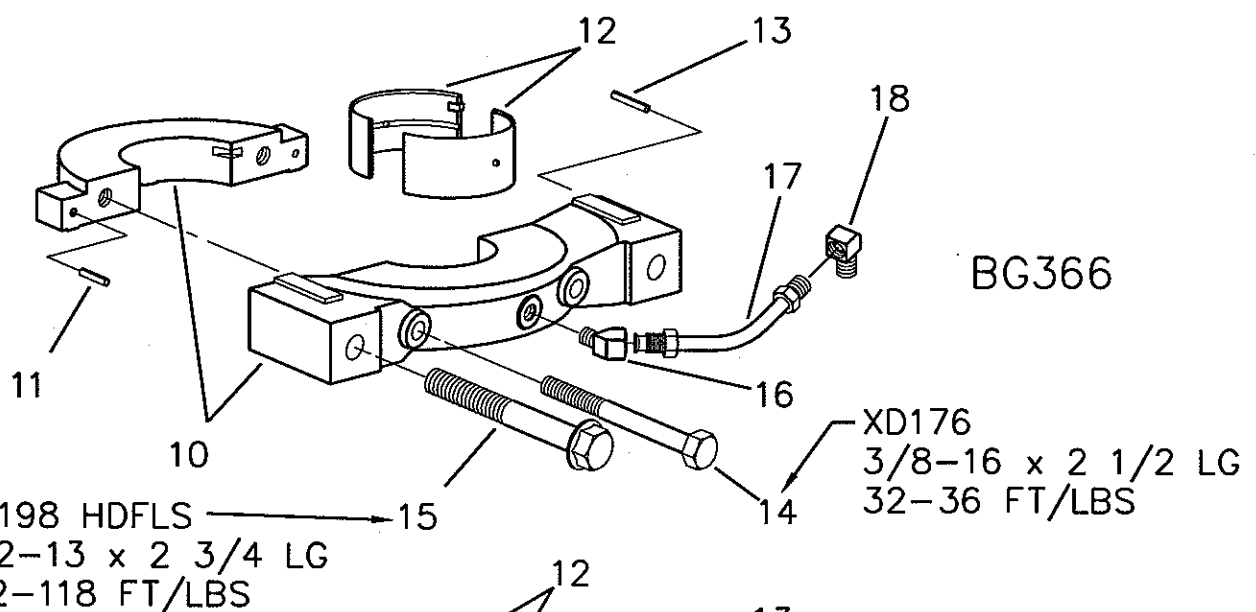
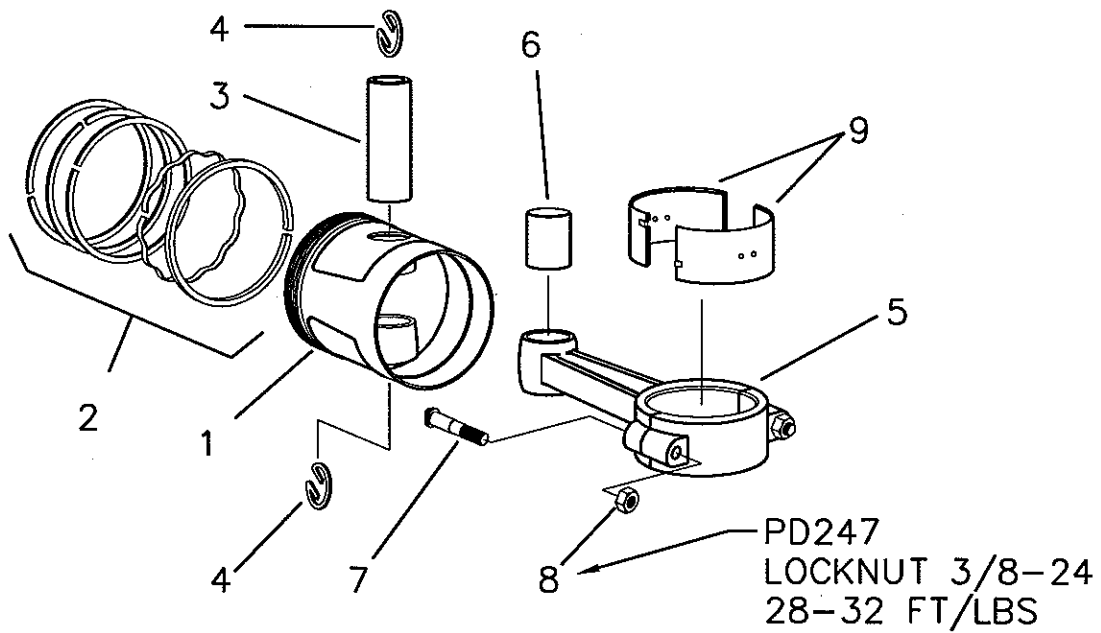


CYLINDER HEAD and ROCKER ARM

ITEM	PART NO.	DESCRIPTION	QTY.
1	AE89	Valve, inlet.....	4
2	AE88D	Valve, exhaust.....	4
3	*-----	Insert, valve seat, inlet.....	4
4	*-----	Insert, valve seat, exhaust.....	4
5	PC532	Stud, 7/16" x 2-3/8" long.....	4
6	^a AB105AS2	Cylinder head assembly (includes items 1-5, 7-12, 24 and includes head).....	4
7	^a AD44B	Guide, valve stem, exhaust.....	4
7A	^a AD44D	Guide, valve stem, inlet.....	4
8	AF51	Valve spring.....	8
9	AG41	Valve rotator, exhaust.....	4
10	AH19	Lock, valve spring seat.....	16
11	AG26A	Seat, valve spring, inlet.....	4
12	RF1319	Male elbow, 1/8" pipe x 1/4" tubing, inverted flare.....	4
13	FX183A	Rocker arm and bracket assembly.....	4
14	FX167B	Rocker arm assembly, exhaust (includes items 16 & 23).....	1
15	FX168B	Rocker arm assembly, inlet (includes items 16 & 23).....	1
16	*PI194	Screw, tappet adjusting.....	2
17	XD17	Screw, 5/16-18 x 1" long.....	8
18	PE4	Washer, 5/16" spring lock.....	8
19	*-----	Bracket.....	1
20	FX169A	Shaft, rocker arm.....	1
21	XE73	Lock screw, 1/4-20 x 5/8" long, Allen head.....	1
22	PM185	Spring, shaft.....	1
23	XJ61	Rivet, closed end.....	2
24	^a PH617	Seal, inlet valve.....	4

^a Beginning with serial no. 94050308, see SPB 05-94.

* Not serviced separately.

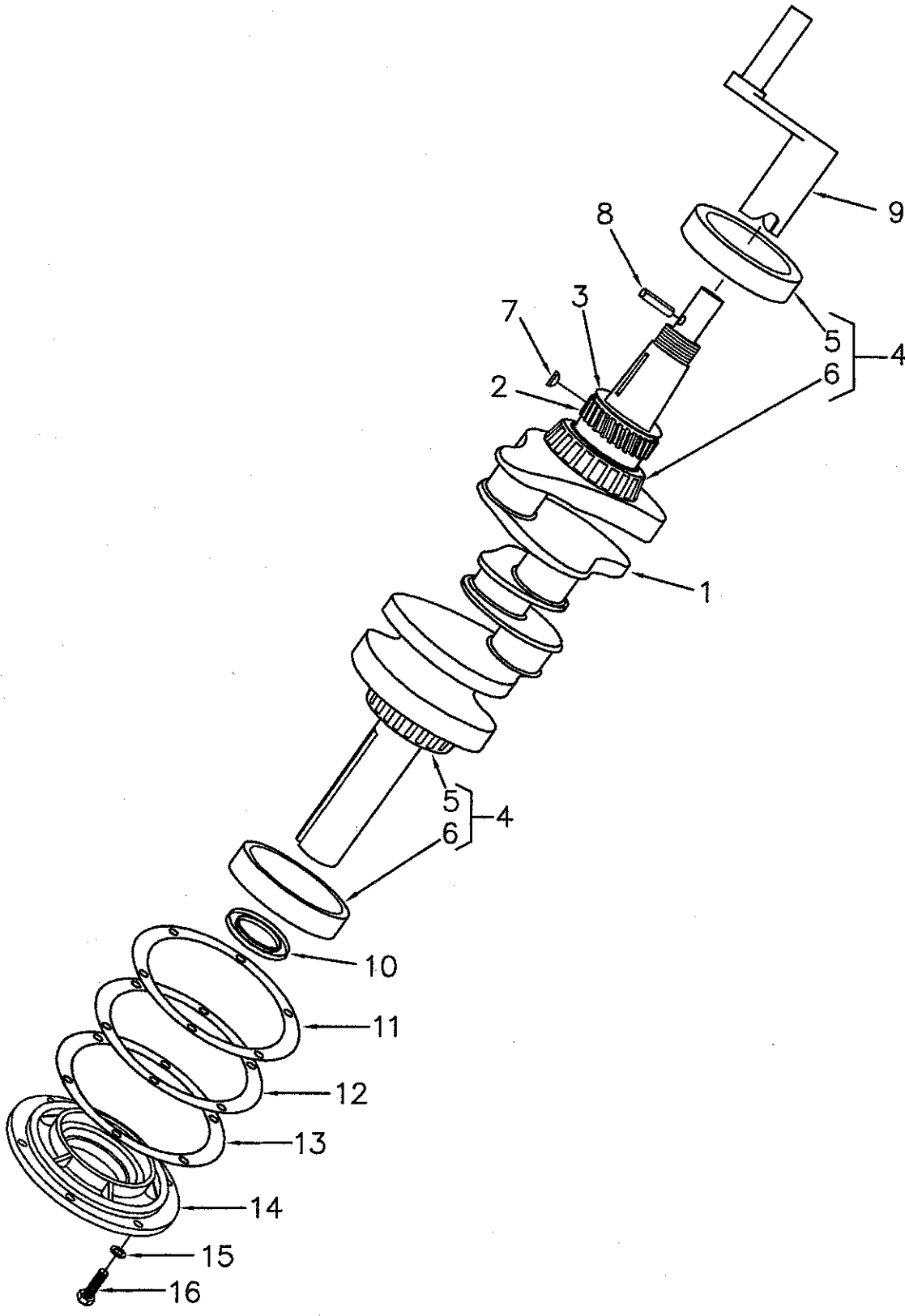


PISTON, CONNECTING ROD and CENTER MAIN BEARING

ITEM	PART NO.	DESCRIPTION	QTY.
1	^a DB232	Piston, standard, cam ground (P/N DB223 for V460D & V461D).....	4
2	^a DR60	Piston ring set, standard (P/N DR48A for V460D & V461D)...	4
3	^b DE80	Piston pin, standard (P/N DE76 for V460D & V461D).....	1
4	PK37A	Retaining ring (replaces PK37).....	1
5	HG131C	Piston pin bushing (replaces HG131B).....	1
6	DA71AS1	Connecting rod assembly (includes items 5, 7 & 8).....	1
7	PB146-2	Connecting rod bolt.....	1
8	PD247	Locknut, 3/8-24 thread (replaces PD200).....	1
9	HA120DS	Shell bearing, 2 halves, standard, connecting rod.....	4
	HA120DS1	Undersize bearing, .001".....	1
	HA120DS2	Undersize bearing, .002".....	1
	HA120DS10	Undersize bearing, .010".....	1
	HA120DS20	Undersize bearing, .020".....	1
10	BG366	Center main bearing hanger, without shell bearings (includes item 11; replaces BG353A).....	1
11	PA368	Dowel pin, between hanger halves, 3/16 x .875".....	2
12	HA137S	Shell bearing, 2 halves, standard, center main.....	1
	HA137S1	Undersize bearing, .001".....	1
	HA137S2	Undersize bearing, .002".....	1
	HA137S10	Undersize bearing, .010".....	1
	HA137S20	Undersize bearing, .020".....	1
13	PA442	Dowel pin, hanger to block, 3/16 x 1.25".....	2
14	XD176	Screw, 3/8-16 x 2-1/2" long.....	2
15	XD198	Screw, hex head flange, 1/2-13 x 2-3/4" long.....	2
16	RF1511	Elbow, 45.....	1
17	RM1513A	Oil line, 5/16" tubing with nuts.....	1
18	RF1299	Elbow.....	1
19	BG353A	Center main bearing hanger, without shell bearings (includes item 11; replaces BG353).....	1
20	X14242	Washer, 7/16" hardened.....	2
21	XB120	Screw, 7/16-14 x 2-1/2" long.....	2

^a Also available .010", .020" and .030" oversize.

^b Also available .005" and .010" oversize.



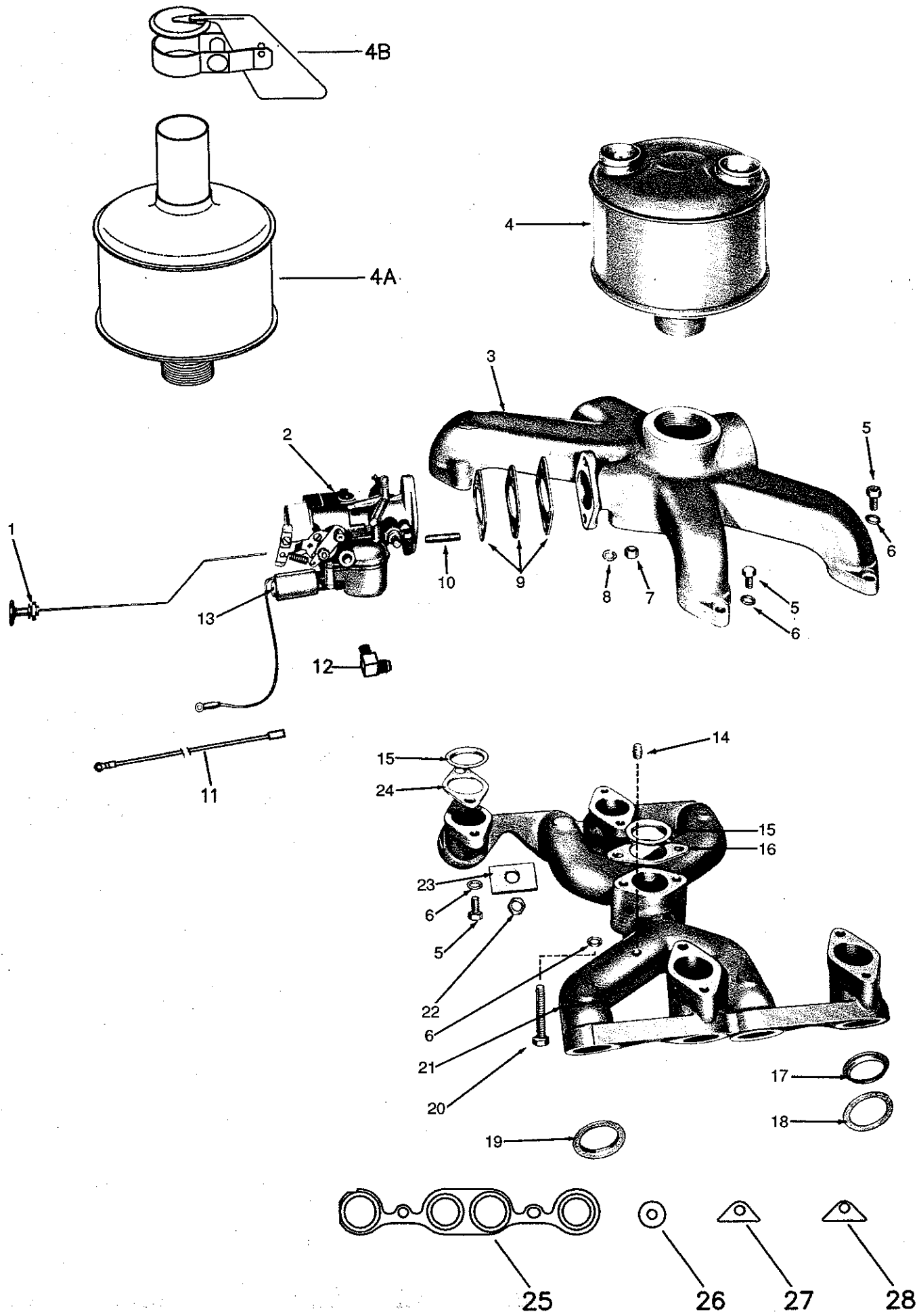
CRANKSHAFT and BEARING PLATE

ITEM	PART NO.	DESCRIPTION	QTY.
1	^a CA75C	Crankshaft assembly (includes items 2, 3, 4 & 7 and item 12, page 8).....	1
2	^b GA49	Crankshaft gear (replaces GA48)	1
3	RK179C	Oil slinger, crankshaft	1
4	ME168	Main bearing assembly (includes items 5 & 6).....	2
5	* ———	Bearing cup.....	
6	* ———	Bearing cone.....	
7	PL156	Key, crank gear-Woodruff	1
8	PA334	Pin, cranking	1
9	U226	Starting crank	1
10	PH496B	Oil seal (replaces PH496)	1
11	QD761A	Gasket, main bearing plate, .006" thick	2
12	QF93A	Shim, main bearing plate, .014" thick	1
13	QD761	Gasket, main bearing plate, .003" thick	2
14	BG308S2	Main bearing plate assembly, standard (includes items 6 & 10).....	1
15	PE5	Washer, 3/8" spring lock	6
16	XD29C	Screw, 3/8-16 x 1-1/4" long	6

^a CA75C is standard machining number. A dash number is added for any special machining (located on marking pad).

^b For engines with serial number 5075776 and after.

* Not serviced separately.



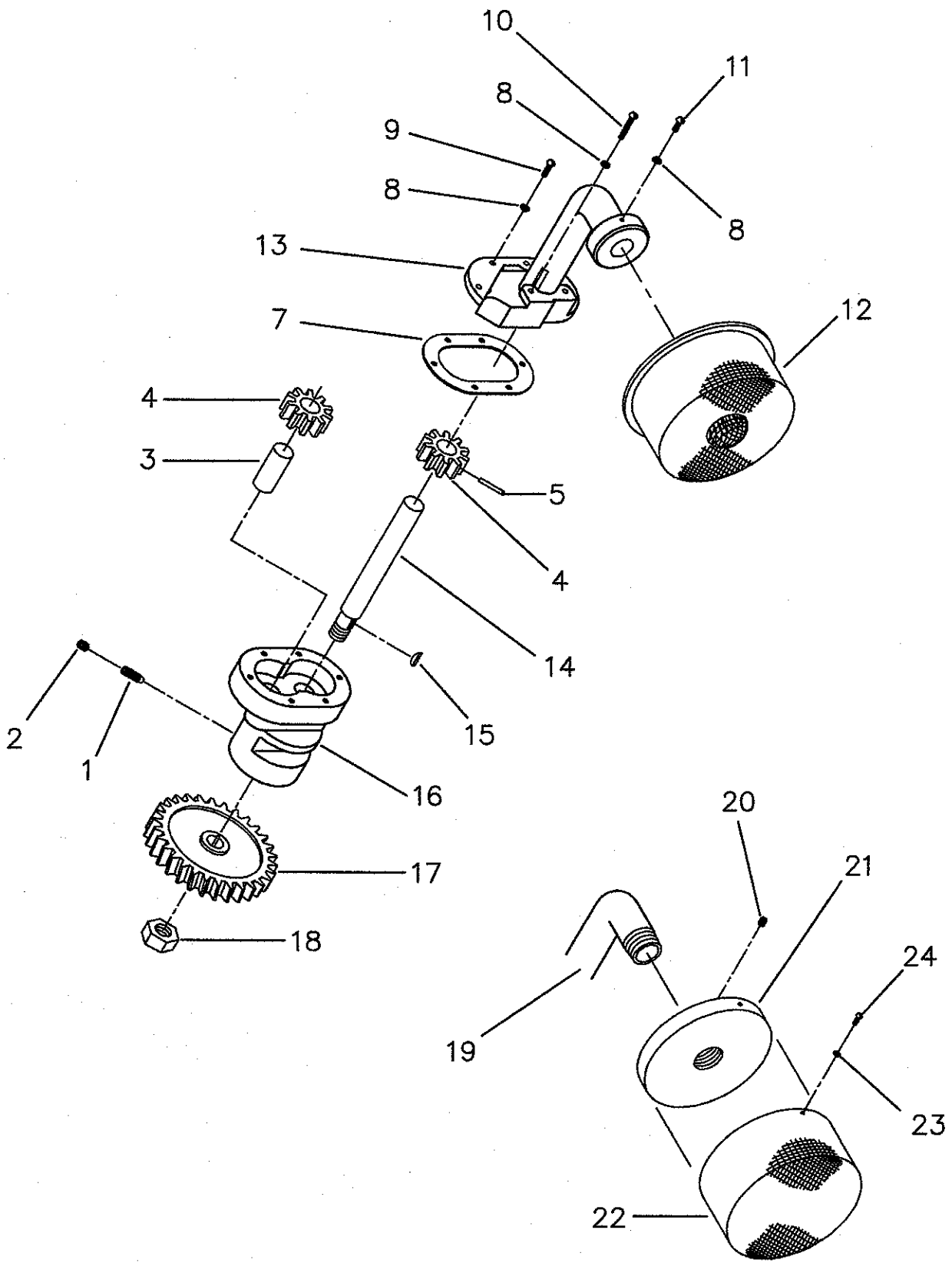
CARBURETOR and MANIFOLD

ITEM	PART NO.	DESCRIPTION	QTY.
1	VE693A	Choke control	1
2	^a LZ77LS1	Carburetor assembly, includes YC100 anti-diesel solenoid	1
	LQ37	Carburetor repair kit	1
3	LD258DS1	Manifold assembly, upper, exhaust (includes items 5 & 20; replaces LD258BS1).....	1
4	WD58A	Muffler, exhaust	1
4A	WD111A	Muffler, exhaust	1
4B	WD112	Cap, weather	1
5	XD17B	Screw, 5/16-18 thread x 7/8" long	8
6	PH501	Washer, 21/64", hardened	10
7	PD205	Nut, 5/16-24 thread	2
8	PE4	Washer, 5/16", spring lock	2
9	QC12A	Gasket, carburetor flange	3
10	PC171	Stud, 5/16" x 1-5/16" long	2
11	YL399-Length	Wire assembly, -6, -12, -19 or -28, ADS to ignition	1
12	RF1225	Elbow, carburetor inlet, 1/4" pipe x 1/4" tubing	1
13	YC100	Anti-diesel solenoid valve (replaces YC83A)	1
14	XK1	Plug, 1/8" pipe, Allen head, countersunk	1
15	QB85	Bushing, insert	5
16	QC70	Gasket, upper to lower manifold	1
17	QB83	Bushing, insert (see item 25)	4
18	QC66	Gasket, exhaust port (see item 25)	4
19	QB85B	Gasket with insert (see item 25)	4
20	XD162	Screw, 5/16-18 thread x 2-1/2" long	2
21	LD257CS1	Manifold assembly, lower, inlet (includes items 5 & 14)	1
22	PD207	Nut, 7/16-20 thread	4
23	PH484	Washer, clamp	4
24	QC67	Gasket, exhaust	4
25	^b QC74	Gasket, intake & exhaust (replaces items 17, 18 & 19)	2
26	^b PH79	Washer, 29/64", hardened	4
27	^b LF154	Spacer, manifold locating (red)	2
28	^{b,c} LF155	Spacer, manifold locating (black)	2

^a See "Carburetors" in Options and Accessories section in this manual for service parts.

^b For engines with serial number 94041066 and after. Included in gasket kit 20061001.

^c Some engines may require Qty. 2 LF155 instead of Qty. 2 LF154 - Refer to repair manual or SPB 03-94 for details.

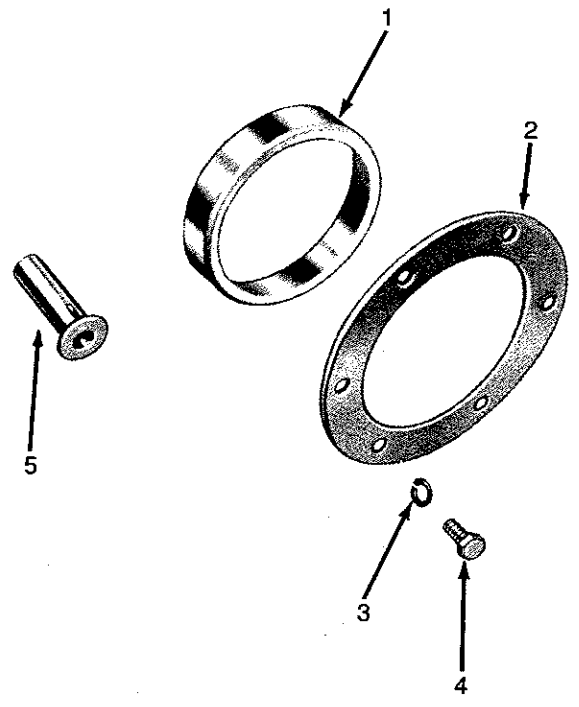
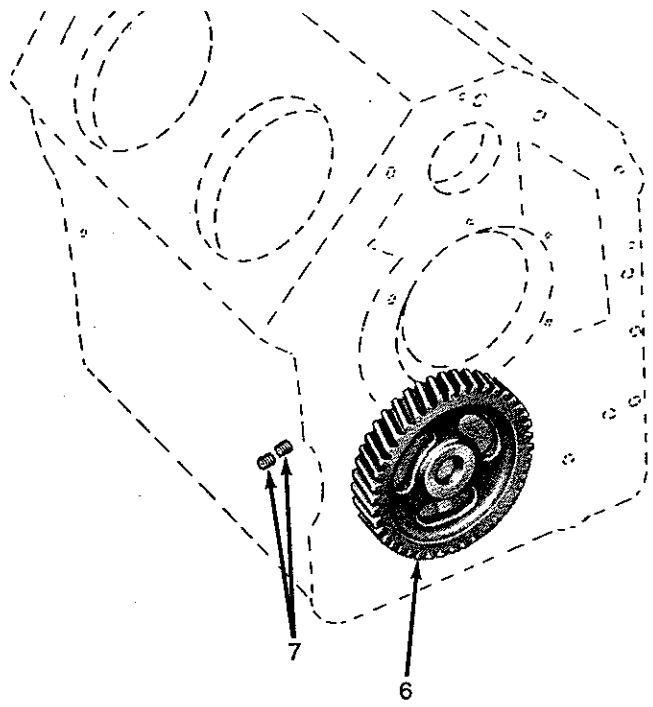


FOR ENGINES BEFORE
SERIAL NO. 6138687

OIL PUMP

ITEM	PART NO.	DESCRIPTION	QTY.
	K130S2	Oil pump assembly (includes items 3-18)	1
1	PI143B	Screw, lock	1
2	XK121	Plug, 1/8" pipe, Allen head, countersunk	1
3	*KD122A	Shaft, stub	1
4	*KC66	Gear, internal	2
5	PA64	Pin, 1/8" x 3/4" long	1
7	QD535A	Gasket, pump cover	1
8	PE14	Washer, #10 spring lock	7
9	XA8	Screw, #10-32 thread x 1/2" long	4
10	XA56	Screw, #10-32 thread x 1-1/4" long	2
11	XA7	Screw, #10-32 thread x 3/8" long	2
12	RD151	Strainer, oil	1
13	*KB53	Cover, oil pump	1
14	*KD121B	Shaft, drive	1
15	PL137	Key, Woodruff, no. 1	1
16	*KA61D2	Body, oil pump	1
17	GD94C	Gear, oil pump drive, external	1
18	PD195	Locknut, 7/16-20 thread	1
19	KB46	Cover, oil pump	1
20	XA61	Screw, set, #10-32 thread x 3/16" long	1
21	RD126A	Adapter, oil strainer	1
22	RD125A	Strainer, oil	1
23	PE14	Washer, #10 spring lock	1
24	XA7	Screw, set #10-32 thread x 3/16" long	1

- Not serviced separately - part of K130S2 oil pump assembly.

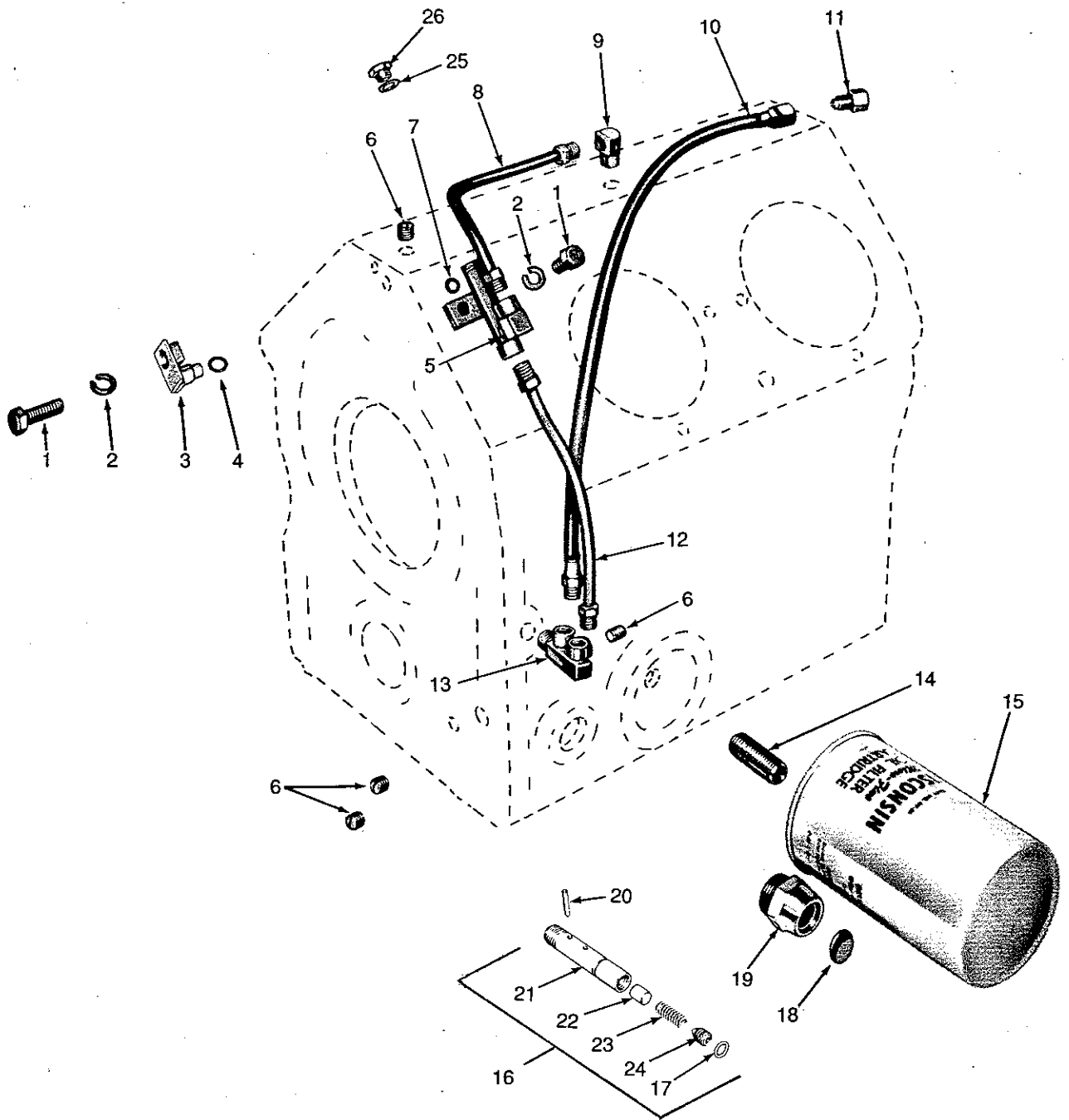


IDLER GEAR, BEARING RETAINER and OIL COLLET

ITEM	PART NO.	DESCRIPTION	QTY.
1	* ———	Bearing cup	1
2	BG352	Bearing retainer plate	1
3	PE4	Washer, 5/16" spring lock	6
4	XD15B	Screw, 5/16-18 thread x 3/4" long	6
5	^a PJ105-3	Stud, idler gear	1
6	^a GC28	Idler gear assembly (includes HG279 bushing)	1
7	XE55	Screw, set, 5/16-18 thread x 3/8" long, Allen head	2

* Not serviced separately-see item 4, page 10.

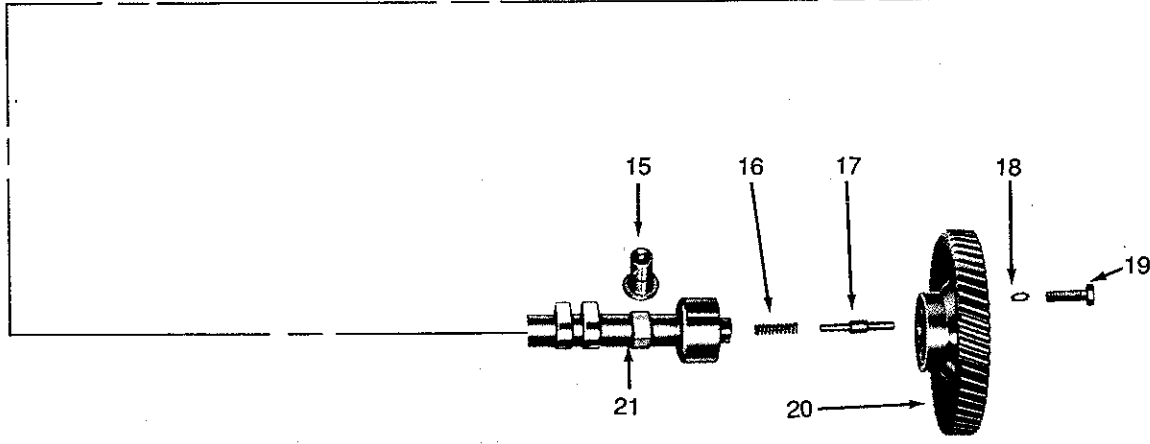
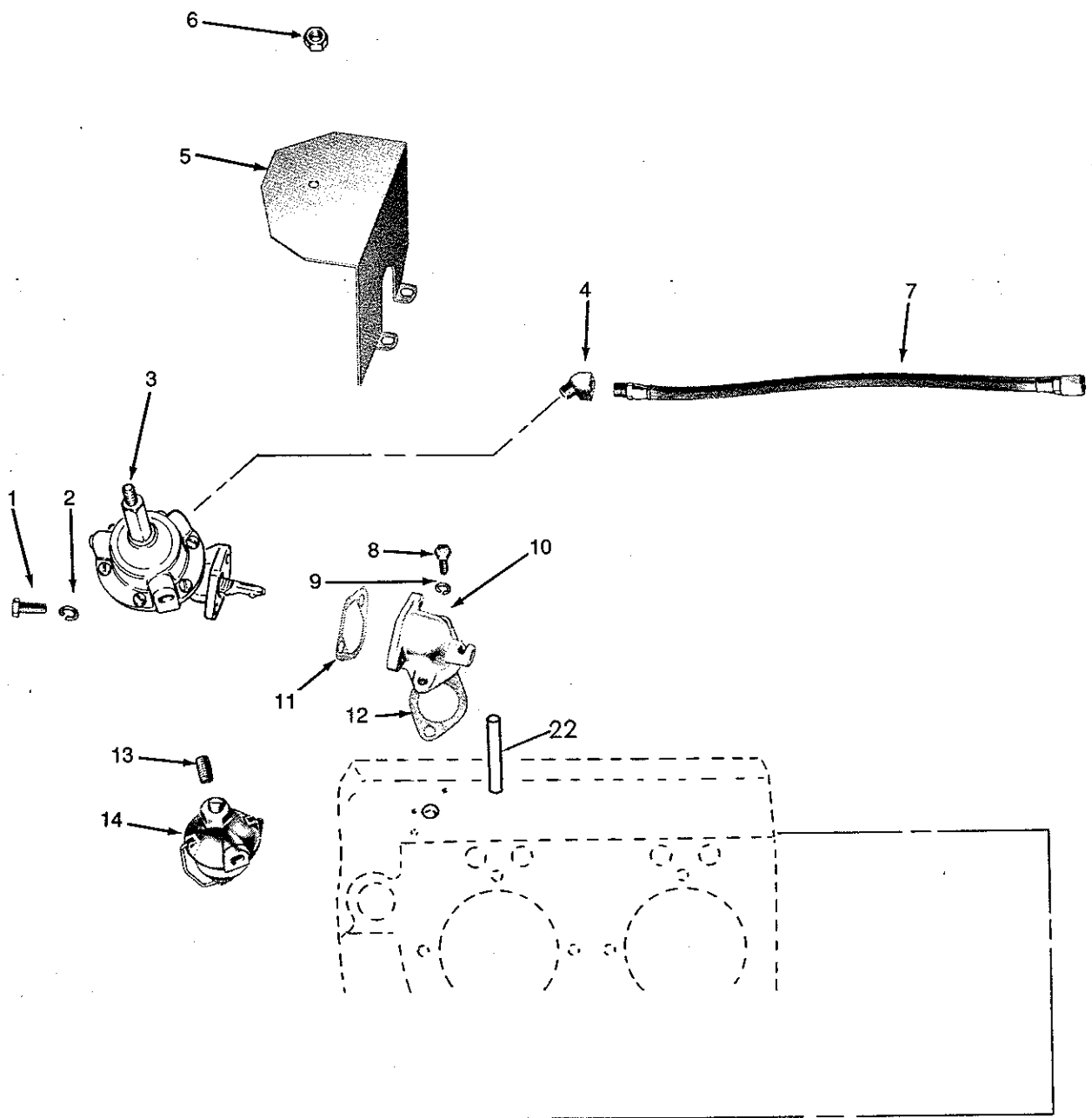
^a For engines with serial number 5075776 and after.



OIL LINES, PRESSURE VALVE, RELIEF VALVE and OIL FILTER

ITEM	PART NO.	DESCRIPTION	QTY.
1	XD14	Screw, 5/16-18 thread x 5/8" long	2
2	PE4	Washer, 5/16", spring lock	2
3	RF1514	Elbow, oil spray (replaces RF1375A)	1
4	JK53	O-ring, 5/16" I.D. x 7/16" O.D.	3
5	RV41AS1	Valve, oil pressure reducing (includes items 7, 25 & 26)	1
6	XK121	Plug, 1/8" pipe, Allen head, countersunk	4
7	JK75	O-ring, 3/16" I.D. x 3/8" O.D.	1
8	RM845A	Oil line, 1/4" tubing x 8-1/2" long	1
9	RF1319	Elbow, 1/8" pipe x 1/4" tubing	1
	26XX12041	Tee, 1/8" pipe x 1/4" tubing x 1/8" pipe (for TMD)	1
10	RM1049E	Hose, flexible, 19" long	1
11	RF1374	Adapter, external flare x 1/8" NPT	1
12	RM850A	Oil line, 1/4" tubing x 7-1/2" long (replaces RM1122B)	1
13	RF1420	Fitting, oil line connections to crankcase	1
14	RF1423	Nipple, oil filter mounting, 5/8-18 thread	1
15	RV38S3	Oil filter cartridge, 3 pack	1
16	RV48	Oil filter relief valve assembly	1
17	JK56	O-ring, 3/8" I.D. x 1/2" O.D.	2
18	SA13	Plug, 3/4" expansion	1
19	RF1394A	Adapter, relief valve	1
20	PA259	Pin, 3/32" O.D. x 5/8" long	1
21	RF1388A	Body, relief valve	1
22	RF1389	Plunger, relief valve	1
23	PM111A	Spring	1
24	XE74	Screw, set, 3/8-24 thread	1
25	PH538	Washer, sealing	1
26	PF151	Plug, special	1

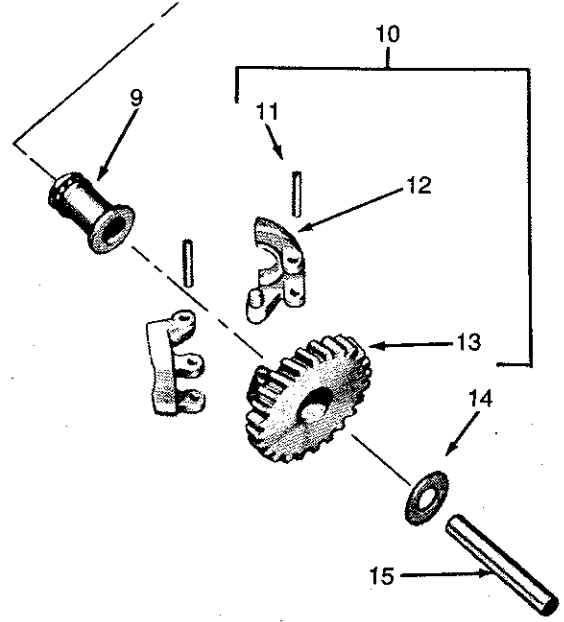
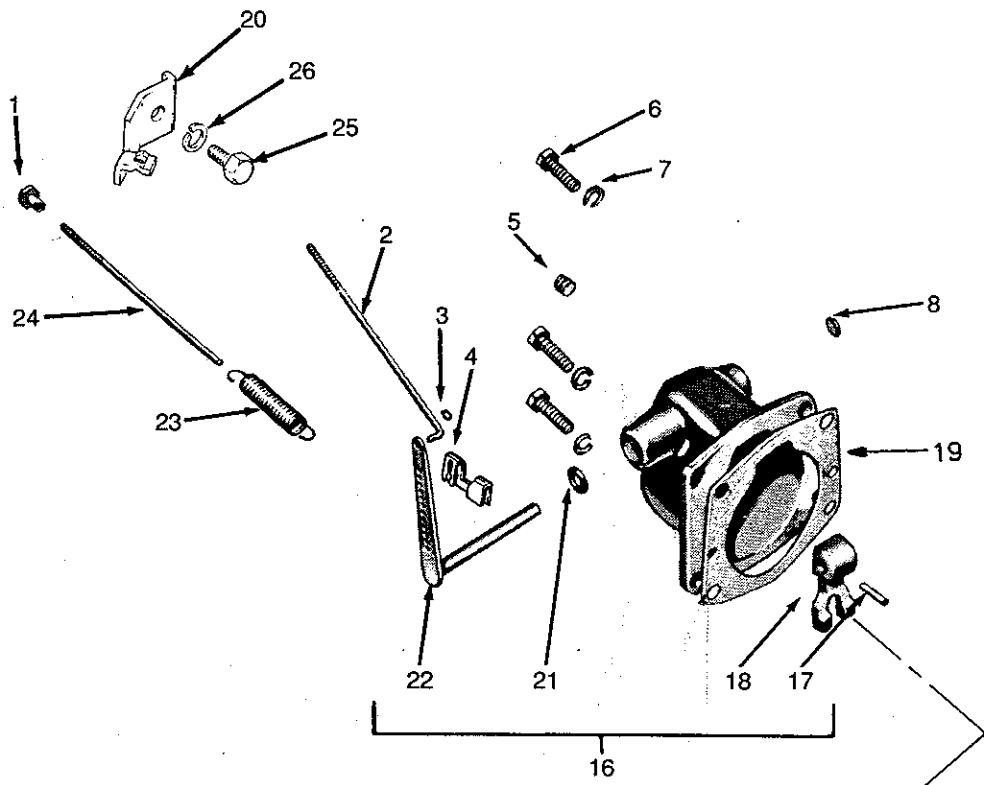
TMD-Top Mount Distributor



CAMSHAFT and FUEL PUMP MOUNTING

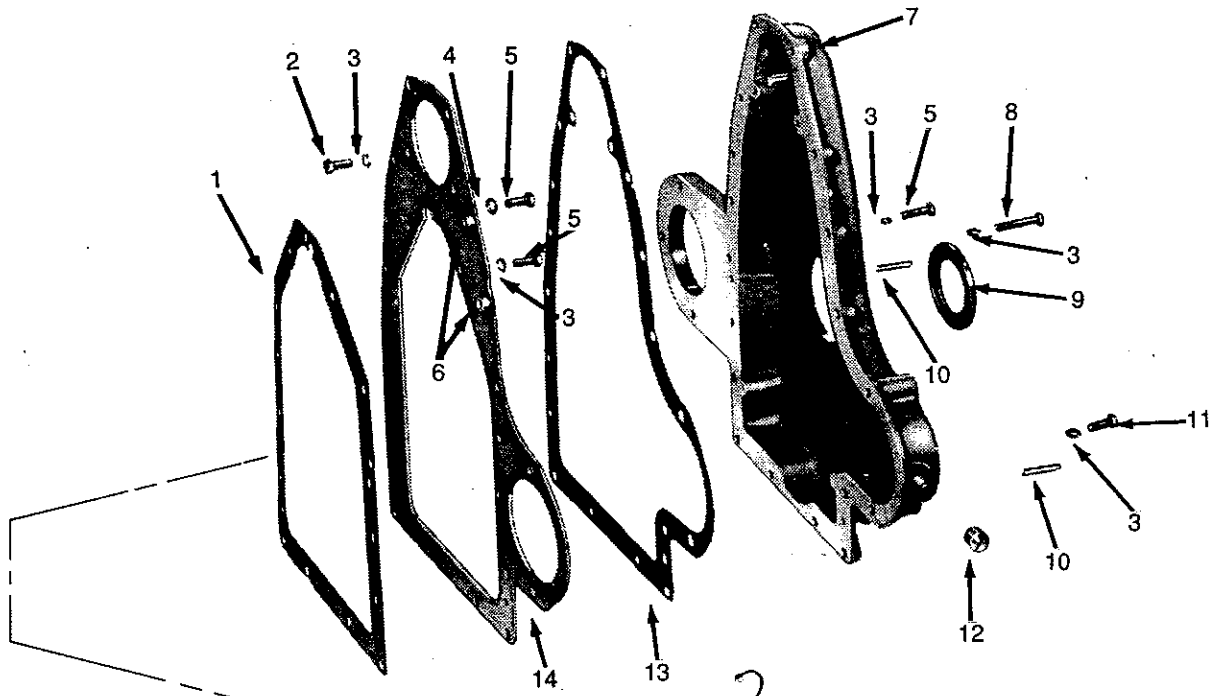
ITEM	PART NO.	DESCRIPTION	QTY.
1	XD14	Screw, 5/16-18 x 5/8" long	2
2	PE4	Washer, 5/16" spring lock	2
3	LP74KS1	Fuel pump (replaces LP38KS1 & LP38E2S1)	1
4	RF1096	Elbow, 45°	2
5	SE286	Heat shield	1
6	PD9	Nut, 1/4-28	1
7	RM1049K	Hose, flexible, 13" long	1
8	XD175	Screw, 1/4-20 x 7/8" long	2
9	PE3	Washer, 1/4" spring lock	2
10	TB105C1	Adapter, fuel pump, less primer	1
11	QD538A	Gasket, fuel pump mounting	1
12	QD67	Gasket, fuel pump adapter	1
13	RF794	Nipple, 1/8" pipe x 3/4" long	1
14	LP19B	Fuel strainer	1
—	LQ32	Repair kit	1
15	F67C	Valve tappet	8
16	PM108	Spring, camshaft thrust plunger	1
17	PF101	Thrust plunger, camshaft	1
18	PE46	Washer, 5/16", lock, external tooth	3
19	XD19	Screw, 5/16-18 x 1-1/4" long	3
20	^a GB46	Gear, camshaft (replaces GB46A)	1
21	EA132	Camshaft	1
22	TA111D1	Plunger, fuel pump	1

^a For engines with serial number 5075776 and after.

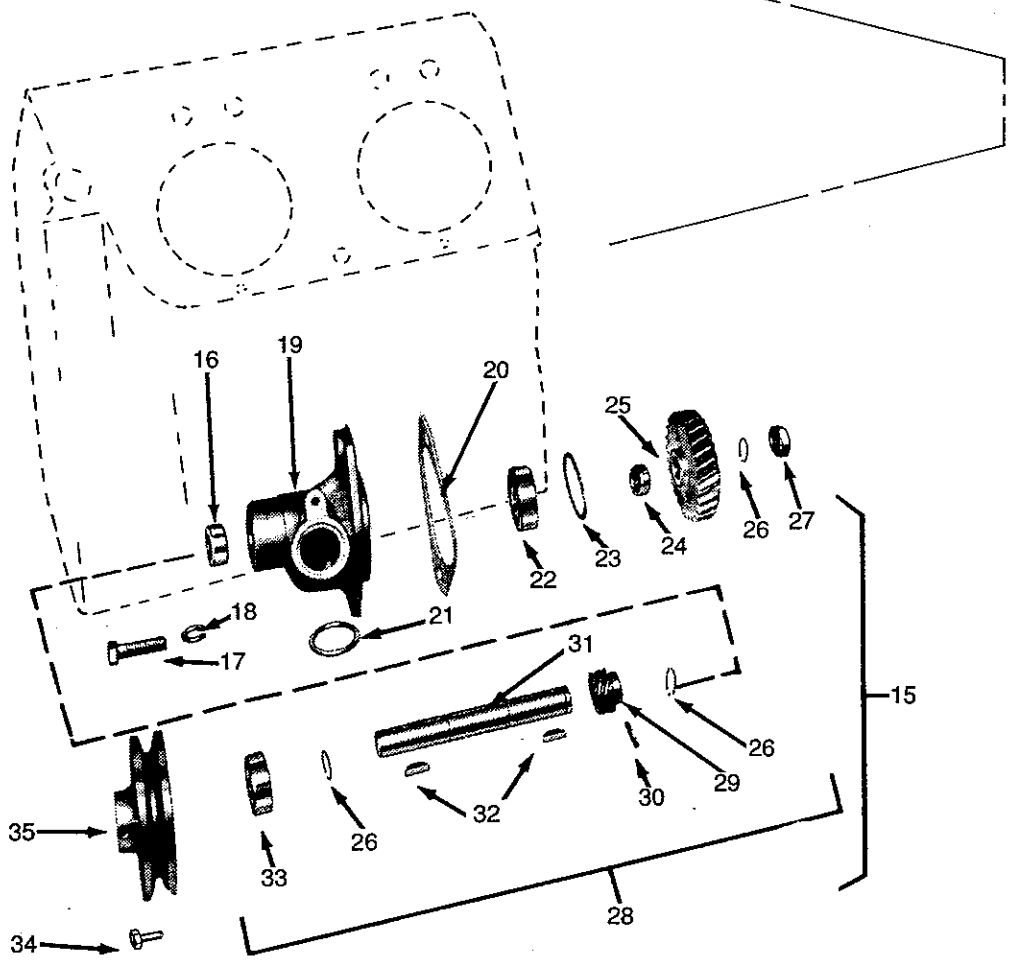


GOVERNOR

ITEM	PART NO.	DESCRIPTION	QTY.
—	T134M	Governor assembly (includes items 2-4 & 16-23)	1
1	PD173A	Nut, adjusting screw	1
2	VE876S1	Control rod, governor to carb (includes item 4)	1
3	PH332	Washer, flat, 1/8" I.D. x 5/16" O.D.	1
4	PK81	Clip, left hand	1
5	XK121	Plug, 1/8" pipe, Allen head, countersunk	2
6	XD16B	Screw, 5/16-18 x 7/8" long	4
7	PE4	Washer, 5/16", spring lock	4
8	SA52	Plug, 1/2" expansion	1
9	TC391D	Thrust sleeve and bearing	1
10	TC535S1	Gear and flyweight assembly (includes items 11-14)	1
11	PA340	Roll pin, 3/16" x 1-1/8" long	2
12	TC322DS1	Flyweight assembly	2
13	GD150	Gear	1
14	PH313A	Washer, flat, 3/8" nom, bushing	1
15	TC388-1	Governor shaft	1
16	TC395S14	Housing assembly (includes items 8, 17, 18, 21 & 22)	1
17	PA367	Roll pin, 1/8" x 3/4" long	1
18	VB151	Yoke	1
19	QD615B	Gasket, housing	1
20	PG972	Bracket, governor control	1
21	PH571	Oil seal	1
22	TC398	Cross shaft and lever	1
23	PM173	Spring, governor	1
24	PI145-1	Screw, adjusting, #10-32 x 6-3/4" long	1
25	XD4	Screw, 1/4-20 x 1-1/2" long	1
26	PE3	Washer, 1/4", spring lock	1



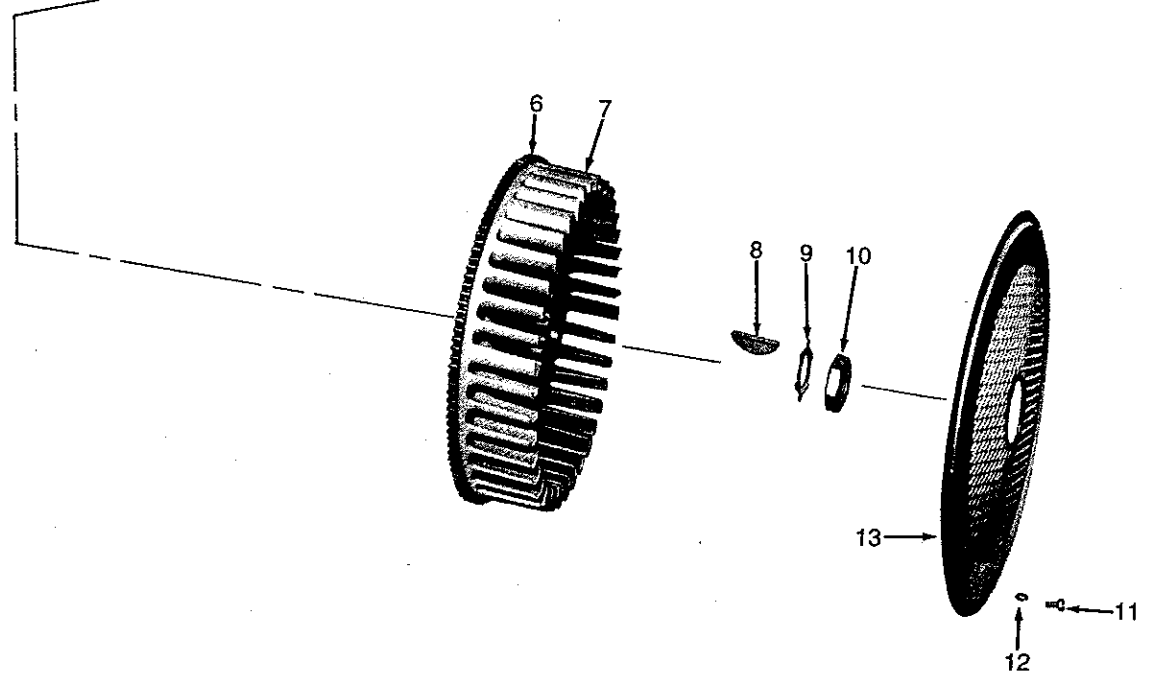
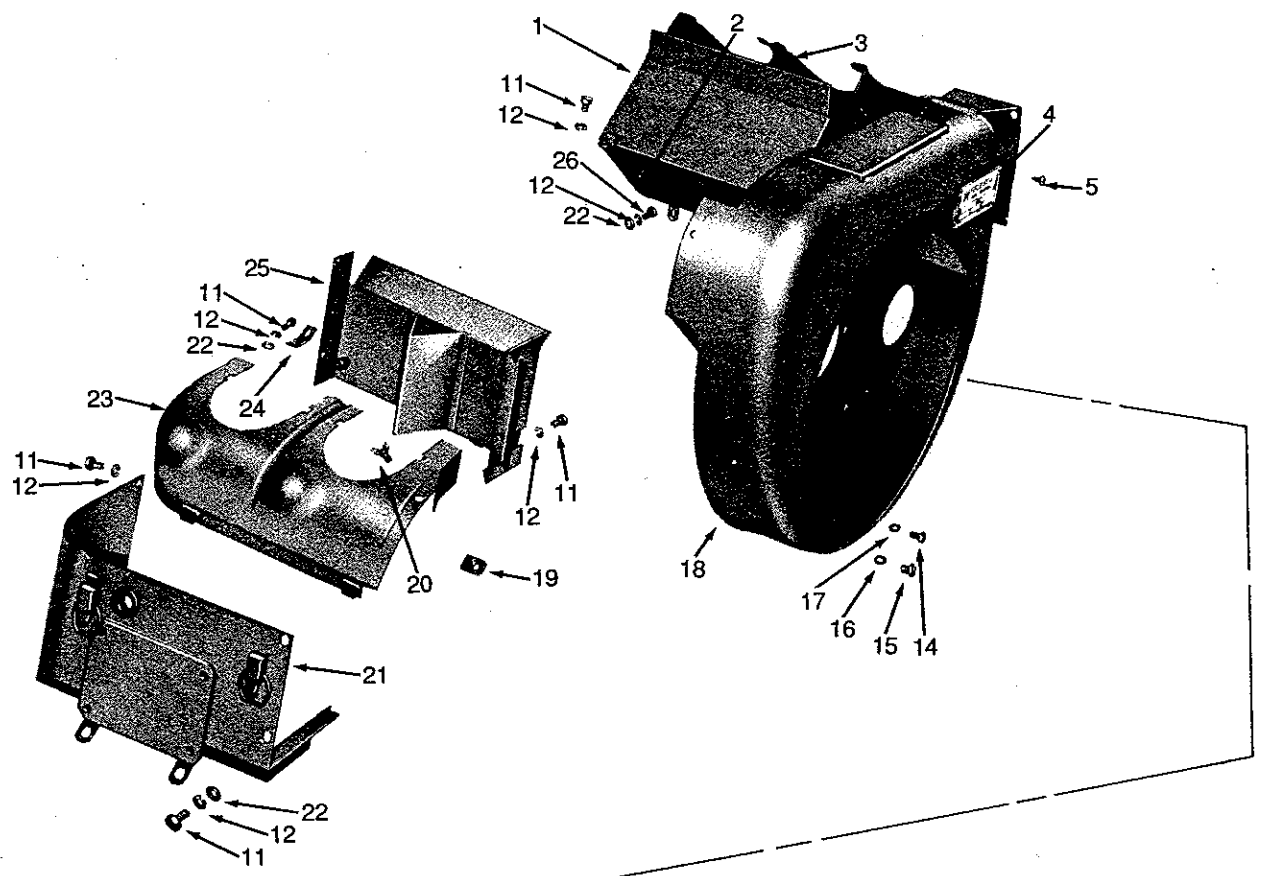
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GEAR COVER and ACCESSORY DRIVE

ITEM	PART NO.	DESCRIPTION	QTY.
1	QD633-1	Governor assembly (includes items 2-4 & 16-23)	1
2	XD15B	Screw, 5/16-18 thread x 3/4" long	2
3	PE4	Washer, 5/16", spring lock	17
4	PH14	Washer, flat, 5/16" I.D. x 19/32" O.D.	2
5	XD14B	Screw, 5/16-18 thread x 5/8" long	5
6	PD228	Fastener, spacer plate	2
7	BD120-2S2	Gear cover assembly (includes item 9; includes plug, button and shaft - for side mount distributor)	1
8	XD22	Screw, 5/16-18 thread x 1-3/4" long	2
9	PH496C	Oil seal, crankshaft	1
10	PA477	Pin, dowel, gear cover	2
11	XD19	Screw, 5/16-18 thread x 1-1/4" long	8
12	XK3	Plug, 3/8" pipe, square head	1
13	QD634	Gasket, gear cover to spacer plate	1
14	WE243-4S1	Spacer plate, gear cover	1
15	^a TF122Y2	Accessory drive assembly (includes items 16-20, 23-25, 27, 32 & 34-35)	1
16	PH541	Oil seal	1
17	XD32	Screw, 3/8-16 thread x 2" long	2
18	PE5	Washer, 3/8", spring lock	2
19	TB141CS1	Housing assembly (includes items 16 & 21)	1
20	QD616	Gasket, housing	1
21	JK59	O-ring, 1-1/16" I.D. x 1-5/16" O.D.	1
22	ME139	Bearing	1
23	PK107	Lock ring, bearing	1
24	HF470	Spacer, drive gear	1
25	GD120	Drive gear	1
26	PK108	Lock ring	3
27	PD79	Nut, 3/8-16 thread	2
28	JJ320G	Drive shaft assembly (includes items 9, 20, 22-23, 26, 29-31, 33 & 35)	1
29	GF90	Gear, distributor	1
30	PA367	Pin, distributor gear, 1/8" x 3/4" long	1
31	JD362-1	Shaft	1
32	PL55	Key, Woodruff, shaft	2
33	ME112	Bearing	1
34	XE65	Screw, #10-32 thread x 1/4" long, Allen head socket	1
35	MD363-1	Pulley, drive	1

^a For engines with serial number 5075776 and after.

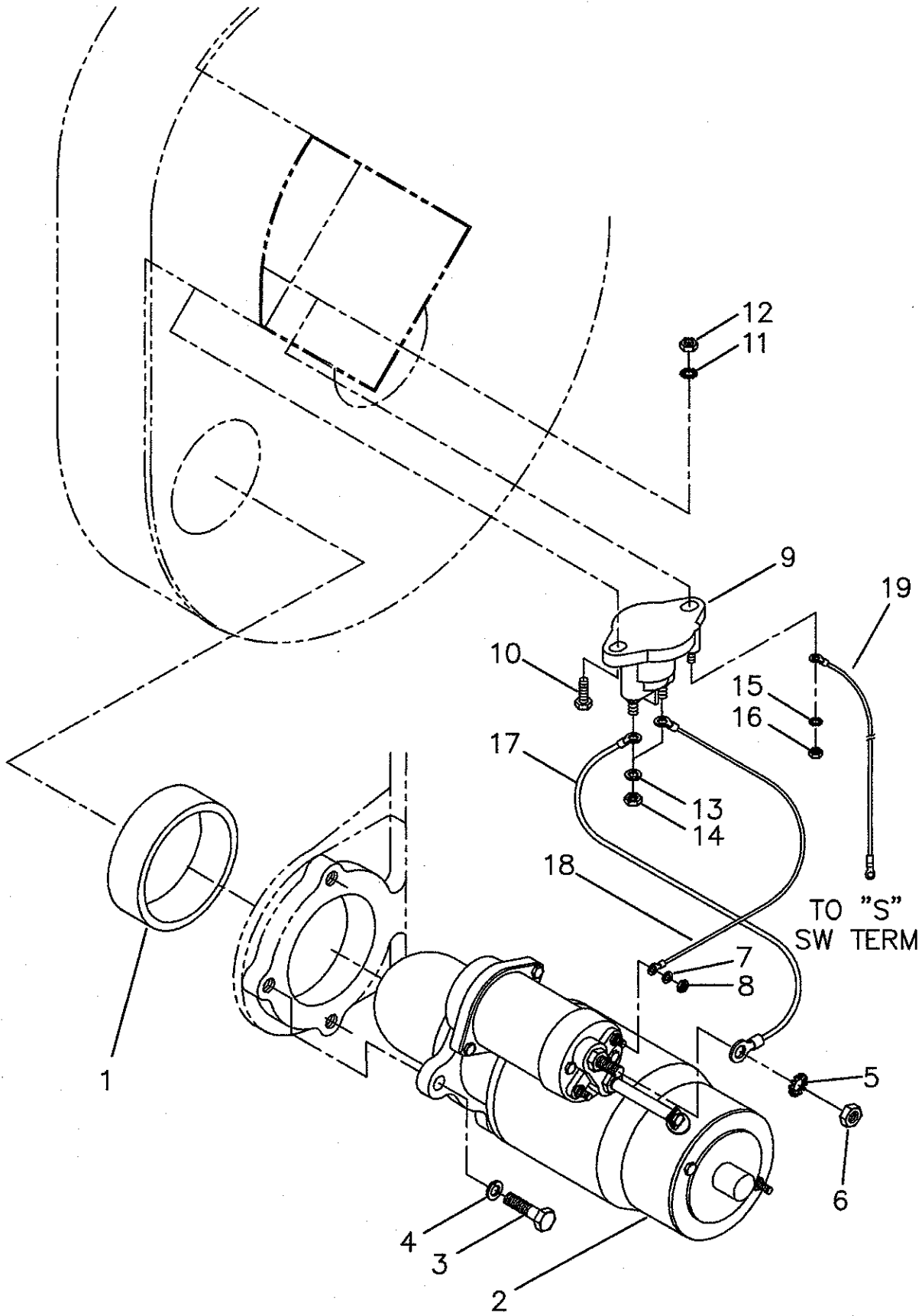


FLYWHEEL and AIR SHROUDING

ITEM	PART NO.	DESCRIPTION	QTY.
1	SE241A	Heat deflector, right side.....	1
2	SE240A	Cylinder shroud, right side	1
3	SE242A	Cylinder head cover, right side	1
4	SD350	Engine name plate (replaces SD312A).....	1
5	XA67	Screw, #4 x 1/4" long	4
6	GH43	Gear, ring	1
7	N116A1	Flywheel assembly (includes item 6; replaces NC194S1).....	1
	^b N120D1	Flywheel assembly (includes item 6 & YN5 Magnet ring).....	1
8	PL145	Key, Woodruff, special (for CA75C series crankshaft)	1
	^b PL24	Key, Woodruff, special (for CA75C100 series crankshaft)	1
9	PE85	Lock washer, flywheel nut 1-1/2-12	1
	^b PE65-1	Lock washer, flywheel nut 1-1/4-12 for Flywheel Alternator ...	1
10	PD193-1	Nut, flywheel mounting (replaces PD193-2)	1
	^b PD157-2	Nut, flywheel mounting for Flywheel Alternator	1
11	XA34	Screw, 1/4-20 thread x 1/2" long	8
12	PE3	Washer, 1/4", spring lock	8
13	^a SE48	Screen, flywheel shroud	1
14	XD172	Screw, 5/16-18 thread x 1/2" long	4
15	XD171	Screw, 3/8-16 thread x 1/2" long	2
16	PE80A	Washer, lock, 3/8" internal tooth	2
17	PE4	Washer, 5/16", spring lock.....	4
18	SE239A	Shroud, flywheel	1
19	PG1039	Speed nut.....	2
20	PI230	Thumb screw.....	2
21	SE240	Cylinder shroud, left side	1
22	PH84	Washer, 1/4" I.D. x 1/2" O.D. x 1/16" thick	6
23	SE242	Cylinder head cover, left side	1
24	PG1050	Bracket, heat deflector, left side	1
25	SE241-4	Heat deflector, left side (replaces SE241)	1
26	XA34	Screw, 1/4-20 thread x 1/2" long	2

^a Verify correct part number with the specification number BOM.

^b Part of ENA132 30 amp charging system.

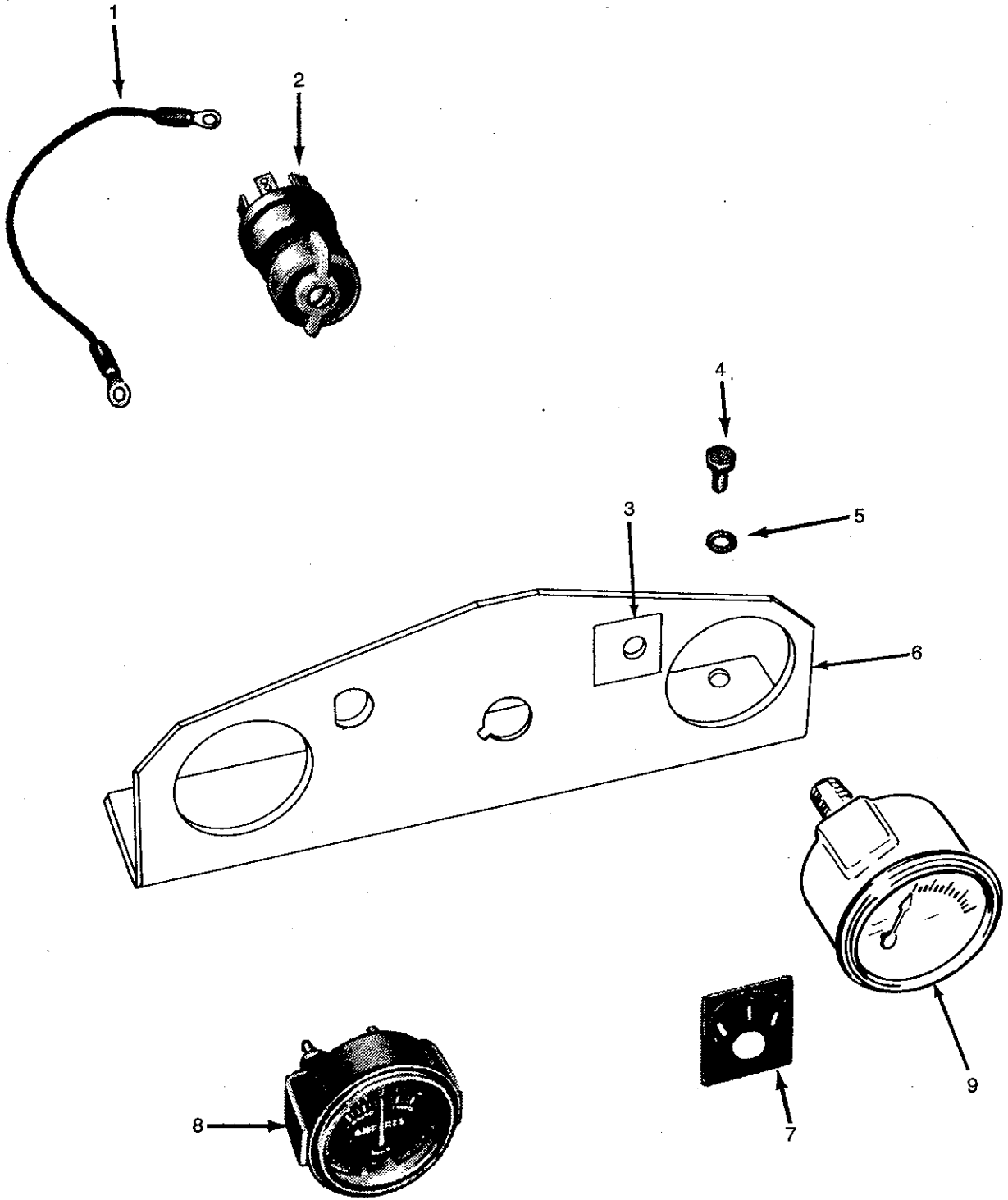


STARTER MOTOR MOUNTING

ITEM	PART NO.	DESCRIPTION	QTY.
1	LL146	Sleeve, rubber.....	1
2	^a YA60	Starting motor.....	1
3	XD29C	Screw, 3/8-16 thread x 1-1/4" long.....	3
4	PE5	Washer, 3/8", spring lock.....	3
5	PE56A	Washer, 3/8", external tooth lock.....	1
6	* _____	Nut, M10 x 1.5.....	1
7	* _____	Washer, M5, spring lock.....	1
8	* _____	Nut, M5 x 0.8.....	1
9	TMD27M00305	Relay, solenoid operated.....	1
10	XD7	Screw, 1/4-20 thread x 1" long.....	2
11	PE34A	Washer, 1/4", external tooth.....	2
12	PD77	Nut, 1/4-20 thread.....	2
13	PE3	Washer, 1/4", spring lock.....	2
14	PD77	Nut, 1/4-20 thread.....	2
15	PE45	Washer, #10, external tooth lock.....	1
	PE45	Washer, #8, internal tooth lock (optional).....	1
16	PD115	Nut, #10-32 thread.....	1
	PD153	Nut, #8-32 thread (optional).....	1
17	YL377-8	Ignition wire assembly.....	1
18	YL403-8	Ignition wire assembly.....	1
19	YL352-23	Ignition wire assembly.....	1

^a See " Starters" in Options section of the manual for service parts.

* Not serviced separately

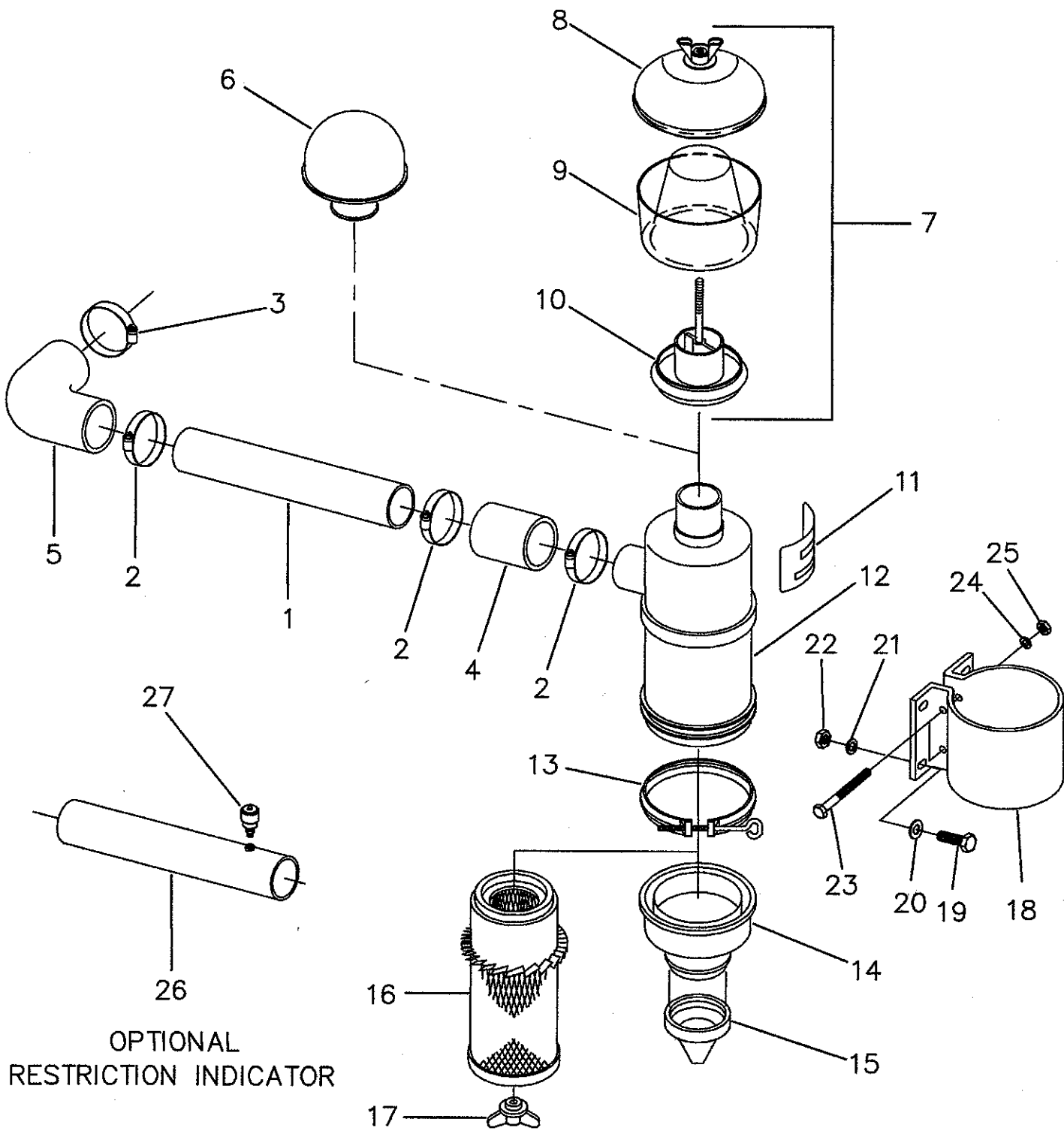


CONTROL PANEL

ITEM	PART NO.	DESCRIPTION	QTY.
1	YL352-8	Ignition wire assembly	1
2	^a YC27BS1	Ignition, starting switch (includes item 7)	1
—	^b YC9BS1	Ignition switch	1
—	^b YC19	Starting switch	1
3	SD265	Tag, choke instructions	1
4	XA33	Screw, 1/4"-20 thread x 3/8" long	4
5	PE3	Washer, 1/4" spring lock	4
6	VE731	Control panel	1
7	SD255	Tag, ignition starting switch	1
8	YE2	Ammeter	1
9	RS56	Oil pressure gauge	1

^a For engines with serial number 365572 and after.

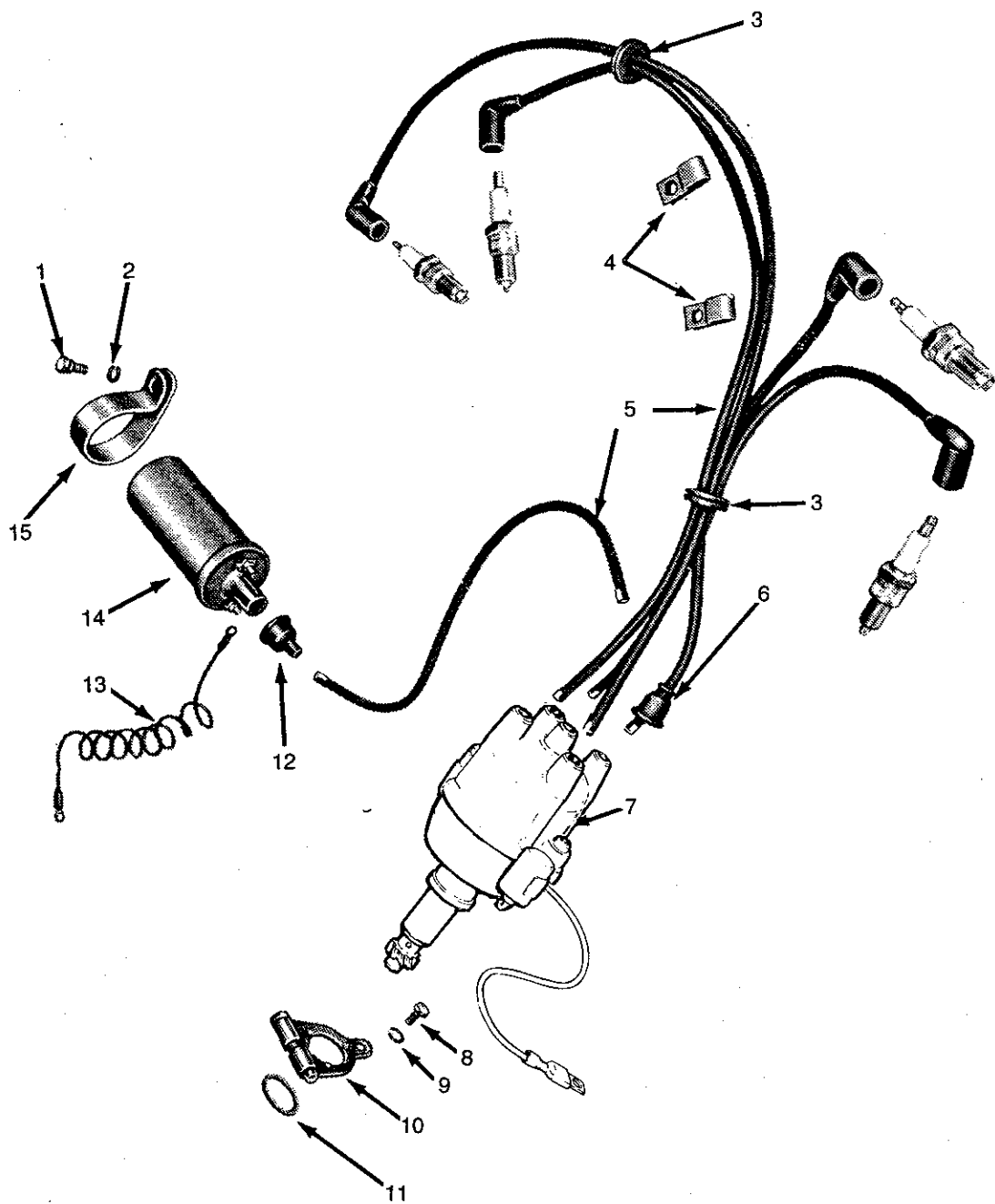
^b For engines with serial number 365571 and before.



AIR CLEANER GROUP
LAA267-DRY TYPE

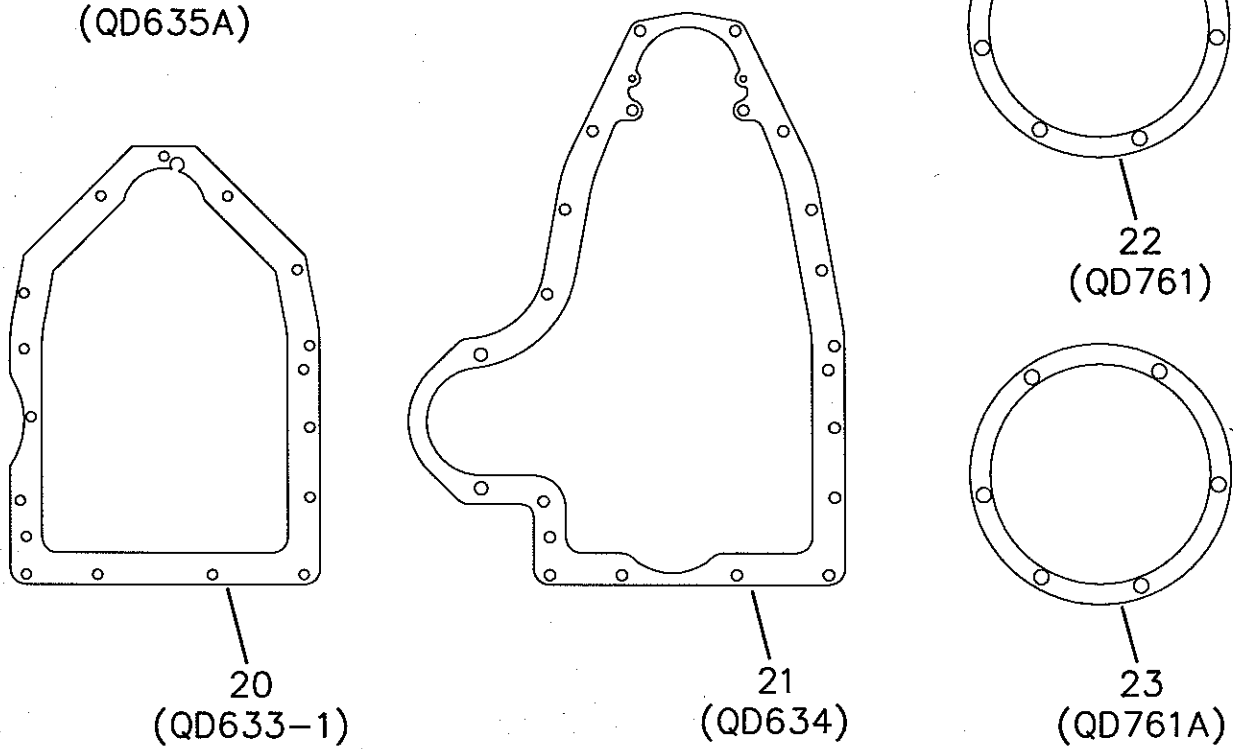
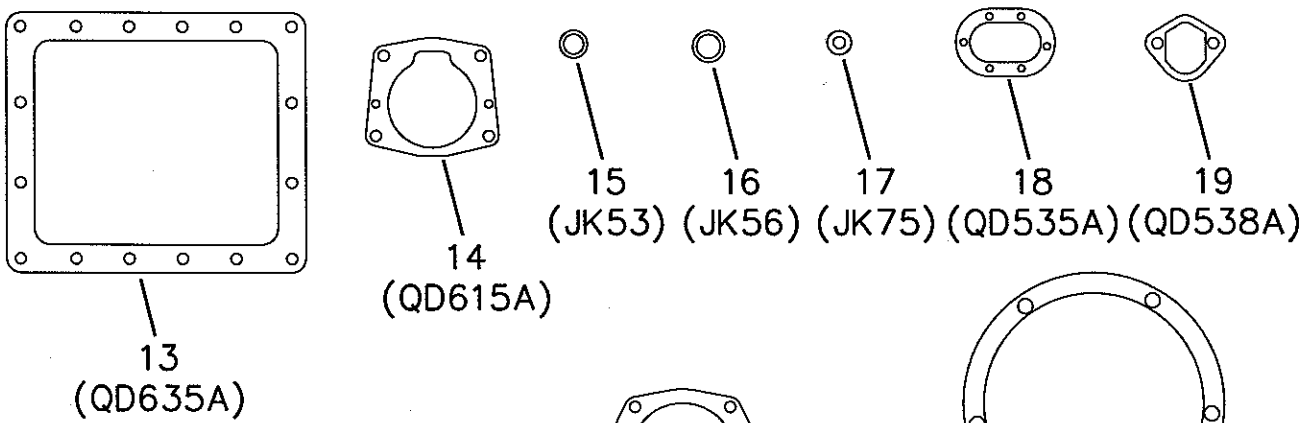
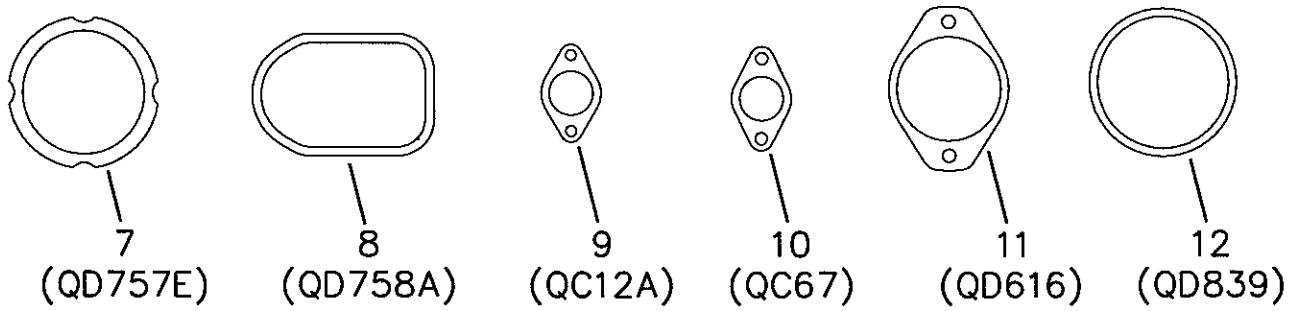
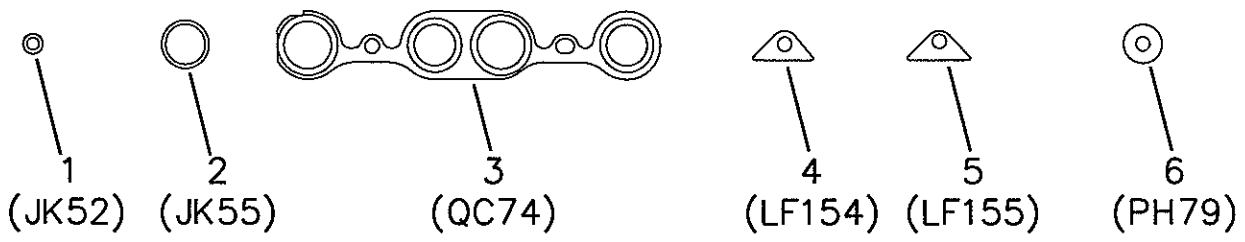
ITEM	PART NO.	DESCRIPTION	QTY.
1	LJ131	Tube, air inlet	1
2	LK9	Clamp, hose	3
3	X02355	Clamp, hose	1
4	X02679	Hose connection	1
5	LL89	Elbow, tube to carburetor	1
6	LO190	Cap, air stack	1
7	LO127B	Precleaner assembly (includes items 8-10)	1
8	22P20648	Cover assembly	1
9	22P20227	Bowl	1
10	* ———	Sleeve assembly	1
11	SD302	Decal, instruction	1
12	LO189	Air cleaner (includes items 13 thru 17)	1
13	* ———	Clamp	1
14	* ———	Cup	1
15	LL192	Dust unloader	1
16	LO191	Filter element	1
17	* ———	Wing nut	1
18	PG1241	Strap, air cleaner mounting	1
19	XD14A	Screw, 5/16-18 thread x 5/8" long	4
20	PH77A	Washer, 11/32", flat	4
21	PE4	Washer, 5/16", spring lock	4
22	PD78	Nut, 5/16-18 thread	3
23	XA74	Capscrew, indented	2
24	PH195	Washer, 17/64", flat	2
25	PD198	Locknut, 1/4-20 thread	2
26	LJ131B	Tube, air inlet with restrictor fitting (replaces item 1)	1
27	LP59A	Air restriction indicator	1

* Not serviced separately.



DISTRIBUTOR and COIL

ITEM	PART NO.	DESCRIPTION	QTY.
1	XD16	Screw, 5/16"-18 thread x 7/8" long	1
2	PE4	Washer, 5/16" spring lock	1
3	PH198	Rubber grommet	3
4	PG314A	Clamp (replaces PG1042)	2
5	YL349	Distributor ignition cable set (includes item 3)	1
—	YL358-15	Cable, coil to distributor	1
—	YL339-14	Cable, #1 cylinder	1
—	YL339-16	Cable, #3 cylinder	1
—	YL339-42	Cable, #2 cylinder	1
—	YL339-44	Cable, #4 cylinder	1
6	YD20	Rubber nipple, distributor	5
7	YF50C	Distributor, solid state ignition	1
8	XD4	Screw, 1/4"-20 thread x 1/2" long	1
9	PE3	Washer, 1/4" spring lock	1
10	PG543A1	Clamp	1
11	JK59	O-ring, 1-1/16" I.D. x 1-5/16" O.D.	1
12	YD20A	Rubber nipple, coil terminal	1
13	YL352-26	Ignition wire assembly	1
14	YF41AS1	Ignition coil assembly (includes item 15)	1
15	PG556B	Clamp, standard	1



ENGINE GASKET SET

ITEM	PART NO.	DESCRIPTION	QTY.
1	JK52	O-ring, 3/16" I.D. x 5/16" O.D., for drain line	4
2	JK55	O-ring, 9/16" I.D. x 3/4" O.D.	16
3	^c QC74	Gasket, manifold	2
4	^c LF154	Spacer, manifold locator-RED	2
5	^c LF155	Spacer, manifold locator-BLACK	2
6	^c PH79	Washer, flat, .453" hardened	4
7	QD757E	Gasket, cylinder head	4
8	QD758A	Gasket, rocker arm cover	4
9	QC12A	Gasket, carburetor flange	3
10	QD67	Gasket, fuel pump adapter	1
11	QD616	Gasket, accessory drive housing	1
12	QD839	Gasket, cylinder base	4
13	QD635A	Gasket, bottom cover	1
14	QD615A	Gasket, governor housing	1
15	JK53	O-ring, 5/16" I.D. x 7/16" O.D., oil collet coupling	2
16	JK56	O-ring, 3/8" I.D. x 1/2" O.D., oil collet adapter	1
17	JK75	O-ring, 3/16" I.D. x 3/8" O.D.	1
18	QD535A	Gasket, oil pump cover	1
19	QD538A	Gasket, fuel pump	1
20	QD633-1	Gasket, crankcase	1
21	QD634	Gasket, gear cover	1
22	QD761	Gasket, main bearing plate, .003" thick	2
23	QD761A	Gasket, main bearing plate, .006" thick	2
24	LIT20123	Instruction sheet for QC74 installation, not shown, for reference only	1
—	^a Q32E	Complete Engine Overhaul gasket set, includes items 1 thru 24	1
—	^b Q34C	Gasket set, valve grinding includes items 1 thru 8 & 24	1
—	^c 20061001	Kit, manifold gasket with spacers, includes items 3 thru 6 & 24	1

^a For "PREMIUM" Gasket set in place of Q32E, order P/N 20161017

^b For "PREMIUM" Gasket set in place of Q34C, order P/N 20161016

^c For installation instruction sheet, see LIT20123

Wisconsin Options

for the V465D

YB69, YB85 & YB87 ALTERNATOR

USE WITH MODEL V465D
SPECIFICATIONS

VOLTS-12

BRUSHES-2

CONTROL- Voltage Regulator

LUBRICATION-Bearings are pre-lubricated. No additional lubrication is necessary.

VENTILATED-Yes

CONTROL- Voltage Regulator

ROTATION-Clockwise at drive end

RATED OUTPUT-YB69-35 Amperes

YB85-37 Amperes

YB87-65 Amperes

PRECAUTIONS:

Observe proper polarity when installing battery. Negative battery terminal must be grounded. Reverse polarity will destroy the rectifier diodes in the alternator.

As a precautionary measure, disconnect ground terminal when charging battery in vehicle. Connecting charger in reverse will destroy the rectifier diodes in the alternator.

DO NOT, under any circumstances, short the field terminal of the alternator to ground, as permanent damage to the regulator will occur.

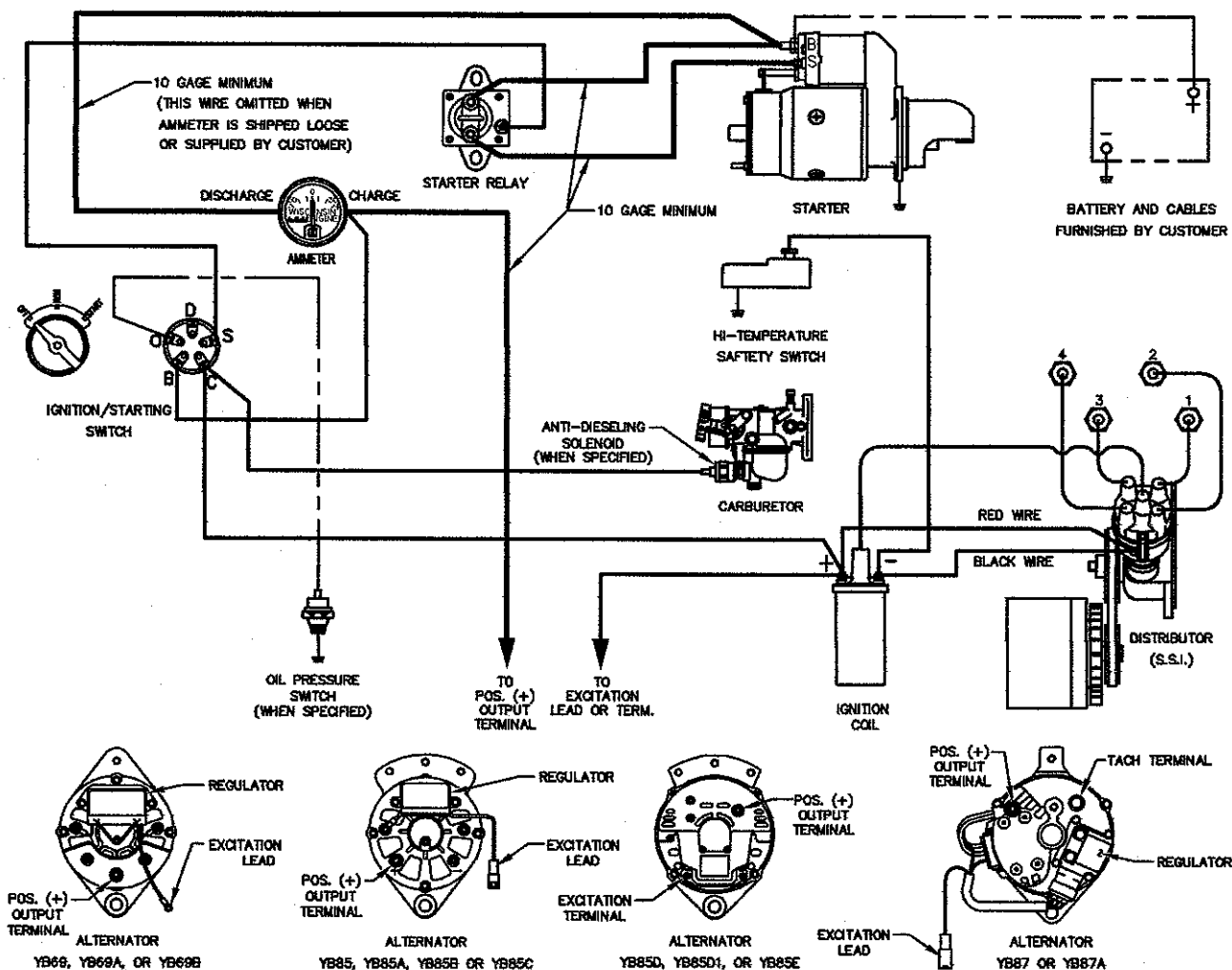
DO NOT remove the alternator from the vehicle without first disconnecting the battery ground cable.

DO NOT operate engine with battery disconnected or disconnect the alternator output lead while the alternator is operating, as damping effect of the battery will be lost. The voltage will rise to an extreme value and permanent damage to the regulator may occur.

DO NOT disconnect the voltage regulator while the alternator is operating, because the large transient voltage that occurs when disconnect takes place may damage the regulator.

CAUTION: Output wires from Alternator to Ammeter, and from Ammeter to battery terminal on starting solenoid must be of sufficient size for charging 35 to 65 amps. Use No. 10 gauge stranded wire or larger.

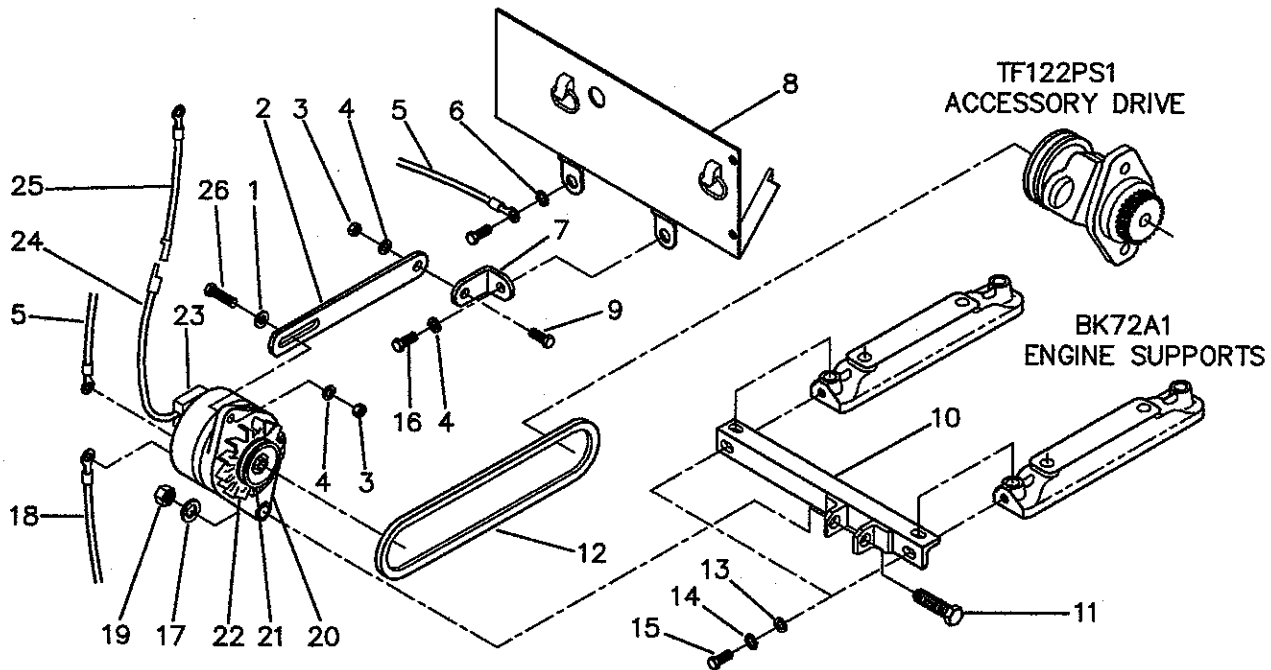
WIRING DIAGRAM



YB87AS1 BELT DRIVEN ALTERNATOR MOUNTING

Replaces YB85BS1 (Beginning with Serial No. 00060319)

USE WITH MODEL V465

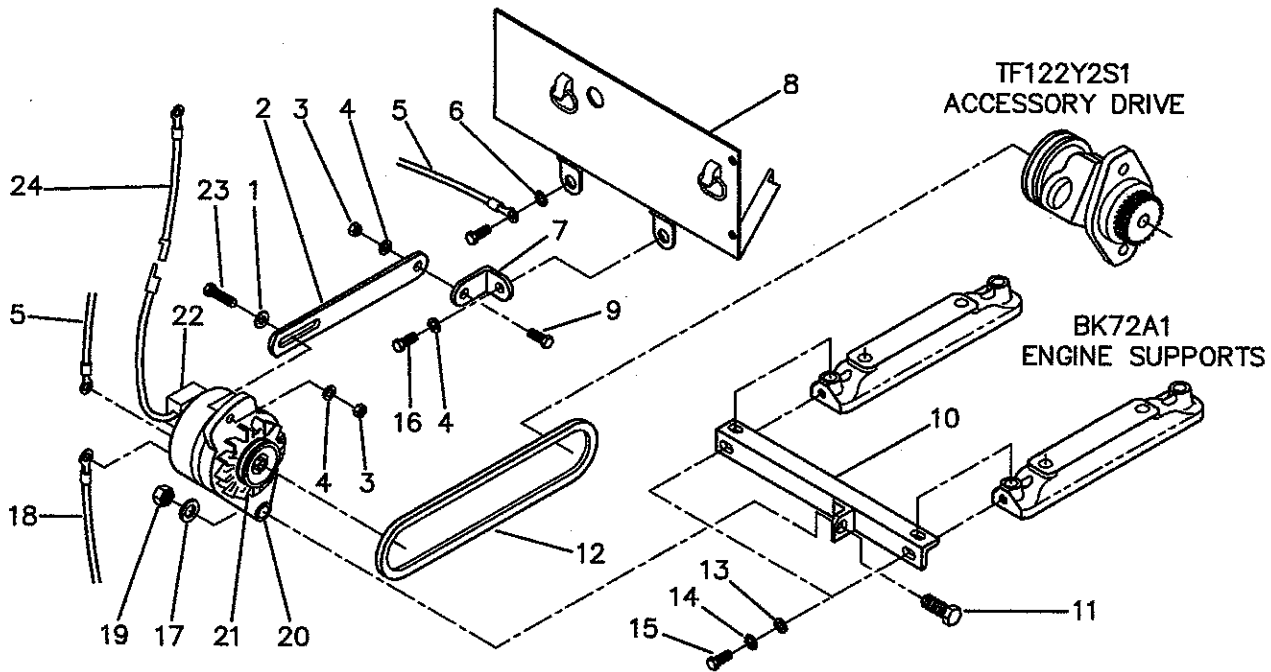


ITEM	PART NO.	DESCRIPTION	QTY.	ITEM	PART NO.	DESCRIPTION	QTY.
1	PH209B	Washer, 1/2" O.D.	1	17	PE7	Lockwasher, 1/2"	1
2	PG1182	Strap	1	18	YL377-30	Ignition wire assembly, No. 10, 30" long	1
3	PD78	Nut, 5/16"-18 thread	2	19	PD81	Nut, 1/2"-13 thread	1
4	PE4	Lockwasher, 5/16"	3	20	YB87A	Alternator assembly, (includes items 21, 22, 23, 24 & 25) (replaces YB85 Alternator and YJ71 Regulator; see Service Bulletin SPB 4-83)	1
5	YL353-12	Ground wire	1	21	MD405A	Drive pulley (replaces MD405)	1
6	PE75	Lockwasher, 3/16"	1	22	HD277M00407	Fan, alternator	1
7	PG1183	Bracket	1	23	10120164	Regulator/Brush assembly	1
8	SE240	Cylinder shroud, left	1	24	10120162	Wiring harness	1
—	YL376-27	Ignition wire assembly, No. 10, 27" long (not illustrated)	1	25	YL352C12	Wire assembly (replaces YL392-14)	1
9	XD17B	Screw, 5/16"-18 thread x 7/8" long (S.A.E. grade 5)	1	26	XD169	Screw, 5/16"-18 thread x 1 1/4" long (S.A.E. grade 5)	1
10	BI379D	Bracket (replaces BI379)	1				
11	XD170	Screw, 1/2" -13 thread x 2 1/4" long	1				
12	MH184A	Belt	1				
13	PH77A	Washer, 5/16" I.D. x 5/8" O.D.	2				
14	PE46	Lockwasher, 5/16"	2				
15	XD14A	Screw, 5/16"-18 thread x 5/8" long (S.A.E. grade 5)	2				
16	XD15	Screw, 5/16"-18 thread x 3/4" long	1				

YB85BS1 BELT DRIVEN ALTERNATOR MOUNTING

Replaces YB69 (Beginning with Serial No. 6070163)

USE WITH MODEL V465



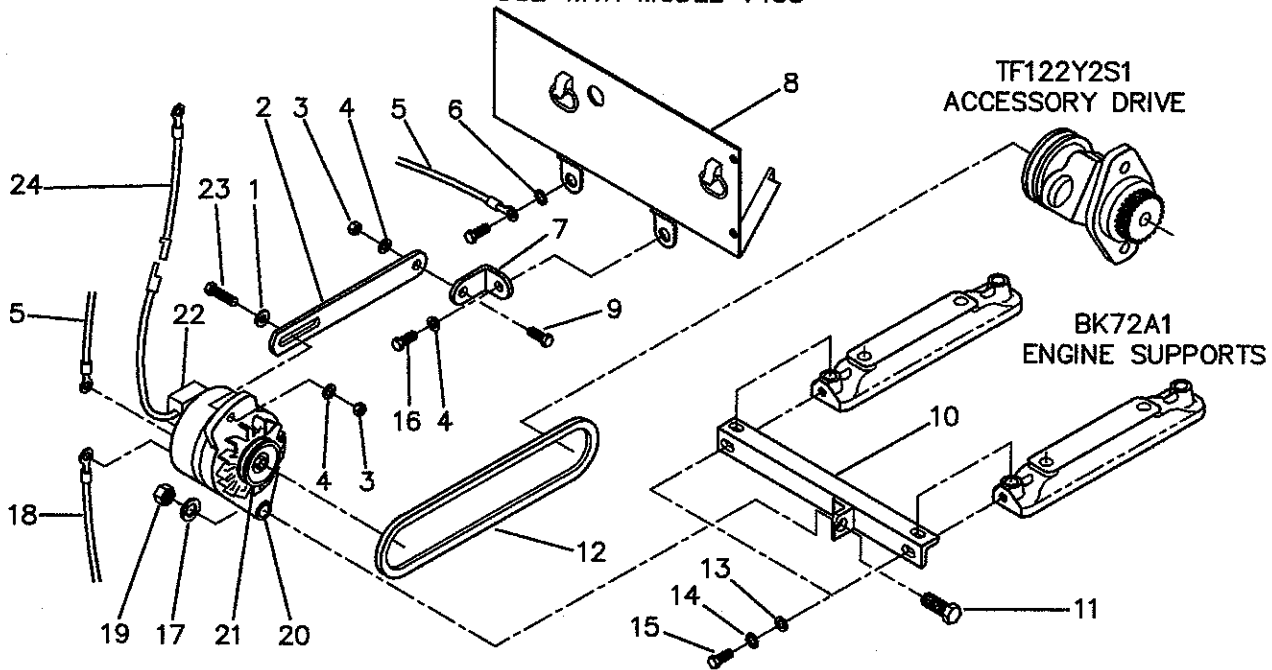
ITEM	PART NO.	DESCRIPTION	QTY.
1	PH209B	Washer, 1/2" O.D.	1
2	PG1182	Strap	1
3	PD78	Nut, 5/16"-18 thread	2
4	PE4	Lockwasher, 5/16"	3
5	YL353-12	Ground wire	1
6	PE75	Lockwasher, 3/16"	1
7	PG1183	Bracket	1
8	SE240	Cylinder shroud, left	1
—	YL376-27	Ignition wire assembly, #10 gage wire, 27" long (not illustrated)	1
9	XD17B	Screw, 5/16"-18 thread x 7/8" long (S.A.E. grade 5)	1
10	BI379	Bracket	1
11	XD170	Screw, 1/2" -13 thread x 2 1/4" long	1
12	MH184A	Belt	1
13	PH77A	Washer, 5/16" I.D. x 5/8" O.D.	2
14	PE46	Lockwasher, 5/16"	2
15	XD14A	Screw, 5/16"-18 thread x 5/8" long (S.A.E. grade 5)	2
16	XD15	Screw, 5/16"-18 thread x 3/4" long	1
17	PE7	Lockwasher, 1/2"	1
18	YL377-30	Ignition wire assembly, #10 gage wire, 30" long	1

ITEM	PART NO.	DESCRIPTION	QTY.
19	PD81	Nut, 1/2"-13 thread	1
20	YB85A	Alternator assembly with Regulator mounted externally on back cover (includes items 21, 22 & 24)	1
	YB85C	Alternator assembly with Regulator mounted internally in back cover (includes items 21, 22 & 24)	1
		(both replace YB69 Alternator and YJ53 Regulator; see Service Bulletin SPB 4-83 & 4-88)	
21	MD405	Drive pulley	1
22	YJ71	Regulator	1
23	XD169	Screw, 5/16"-18 thread x 1 1/4" long (S.A.E. grade 5)	1
24	^a YL352-14	Wire assembly for YB85A,	1
		excitation term to Coil (+) (14" long w/ 2 ring terminals)	
	^a YL393-10	Wire assembly for YB85C,	1
		indicator lite term to Resistor (10" long w/ 1 ring & 1 spade term)	

^a Both wires are supplied with YB85BS1 service assembly. See SPB 4-88.

YB69 BELT DRIVEN ALTERNATOR MOUNTING
Replaces YB60A & YB62B BELT DRIVEN GENERATOR
(Beginning with Serial No. 5734200)

USE WITH MODEL V465

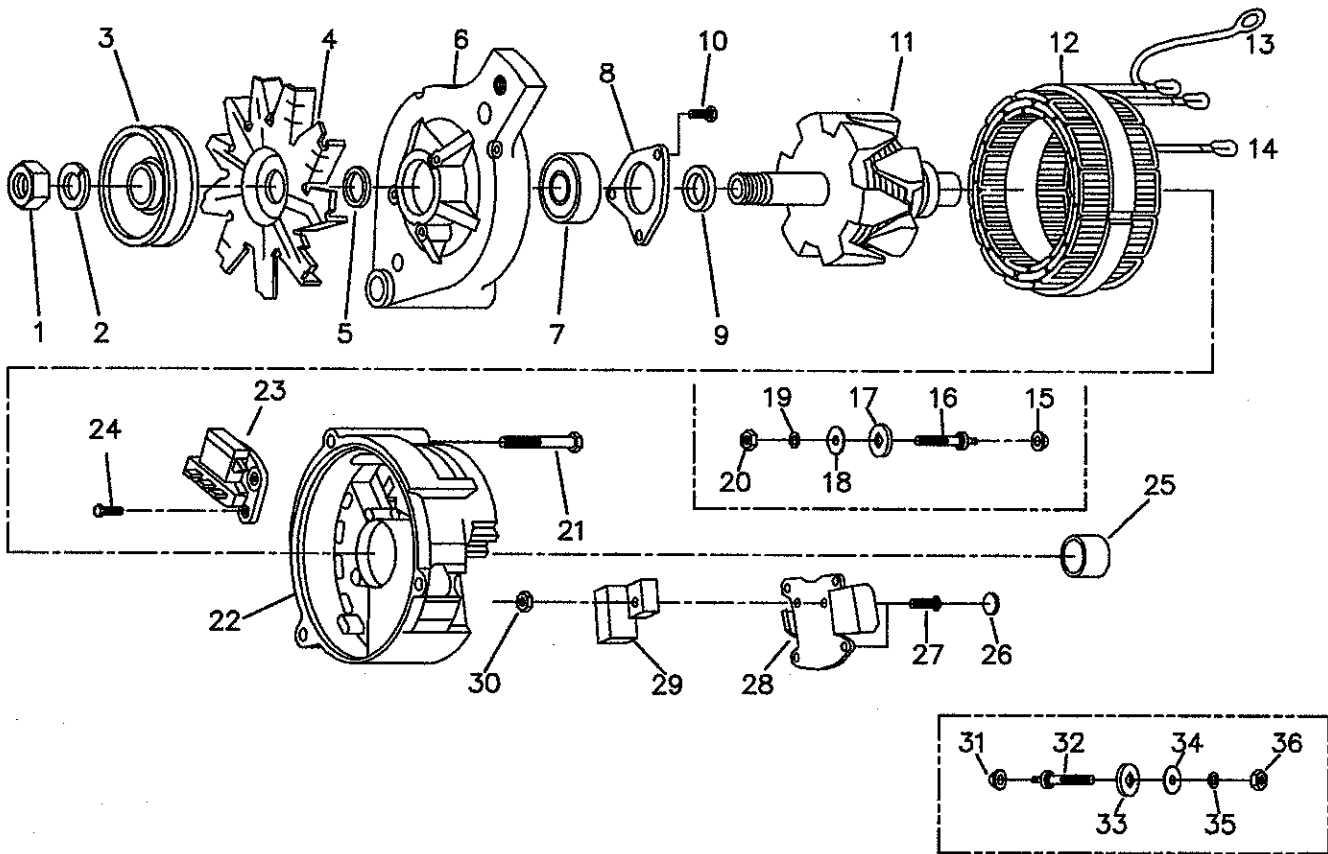


ITEM	PART NO.	DESCRIPTION	QTY.
1	PH209B	Washer, 1/2" O.D.	1
2	PG1182	Strap	1
3	PD78	Nut, 5/16"-18 thread	2
4	PE4	Lockwasher, 5/16"	3
5	YL353-12	Ground wire	1
6	PE75	Lockwasher, 3/16"	1
7	PG1183	Bracket	1
8	SE240	Cylinder shroud, left	1
—	YL376-27	Ignition wire assembly, ammeter to solenoid, #10 gage wire with terminals, 27" long (not illustrated)	1
9	XD17B	Screw, 5/16"-18 thread x 7/8" long (S.A.E. grade 5)	1
10	BI379	Bracket	1
11	XD170	Screw, 1/2" -13 thread x 2 1/4" long	1
12	MH184A	Belt	1
13	PH77A	Washer, 5/16" I.D. x 5/8" O.D.	2
14	PE46	Lockwasher, 5/16"	2
15	XD14A	Screw, 5/16"-18 thread x 5/8" long (S.A.E. grade 5)	2
16	XD15	Screw, 5/16"-18 thread x 3/4" long	1

ITEM	PART NO.	DESCRIPTION	QTY.
17	PE7	Lockwasher, 1/2"	1
18	YL377-30	Ignition wire assembly, #10 gage wire, 30" long	1
19	PD81	Nut, 1/2"-13 thread	1
20	YB69	Alternator assembly (includes items 21, 22 & 24) (replaces YB69 Alternator and YJ53 Regulator; see Service Bulletin SPB 4-83)	1
21	MD405	Drive pulley	1
22	YJ53	Regulator	1
23	XD169	Screw, 5/16"-18 thread x 1 1/4" long (S.A.E. grade 5)	1
24	YL392	Wire assembly	1

YB87A ALTERNATOR ASSEMBLY

furnished on engines beginning with serial number 00060319



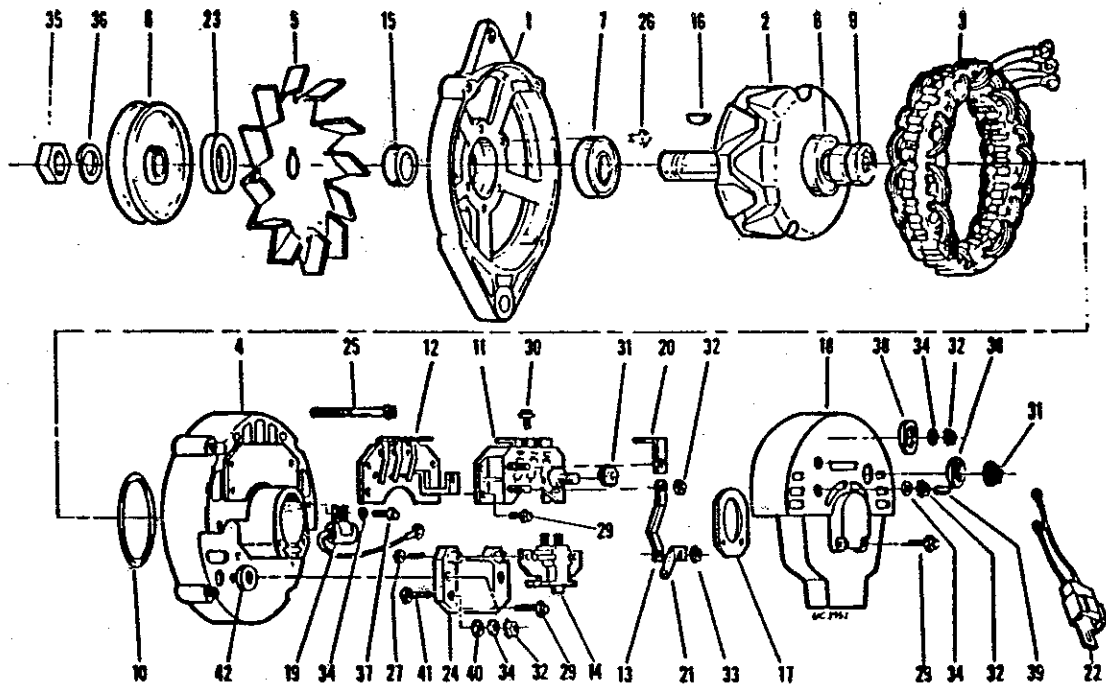
ITEM	PART NO.	DESCRIPTION	QTY.
1	0A-5500	Nut, pulley.....	1
2	0A-4500	Washer, lock.....	1
3	1A-5003T	Pulley, sq special.....	1
4	1B-5500Y	Fan, plated.....	1
5	0A-7507*	Spacer, fan.....	1
6	1B-2006	D.E.H.....	1
7	1A-7055	Bearing, D.E.....	1
8	1B-2201F	Retainer, D.E. bearing.....	1
9	0A-9200	Retainer, ring, rotor.....	1
10	0A-0339F	Screw, bearing retainer.....	3
11	1B-3075A	Rotor assembly.....	1
12	1B-4063	Stator assembly.....	1
13	1B-9112	Wiring harness.....	1
14	1B-9000	Relay lead.....	1
15	0A-5127	Nut, battery term. Metric.....	1
16	0A-2353	Terminal, battery, round.....	1
17	0A-6226	Insulator, S.R.E. CS130.....	1
18	0A-6155	Insulator, capacitor.....	1

ITEM	PART NO.	DESCRIPTION	QTY.
19	0A-3210	Washer, flat.....	1
20	0A-5136	Nut, battery term. CS130.....	1
21	0A-1329	Thru bolts.....	3
22	1B-1008NL	S.R.E.....	1
23	1B-1241	Rectifier, 75amp, Ford.....	1
24	0A-0799*	Screw, rect.....	4
25	1A-7000	Needlebearing, S.R.E.....	1
26	0A-6999*	Insulator, regulator.....	2
27	0A-0362SP	Screw, reg-brush holder.....	4
28	1B-6008	Regulator, Ford IC.....	1
29	1B-1308	Brush holder assembly, Ford IC.....	1
30	0A-5131	Nut, brush holder.....	2
31	1A-1632	Boot, relay terminal.....	1
32	0A-2206	Stud, relay terminal.....	1
33	0A-6156	Grommet, relay terminal.....	1
34	0A-6228	Battery, insulator.....	1
35	0A-3100	Washer, gm. stud.....	1
36	0A-5123	Nut, relay terminal.....	1

YB 85B S1 Alternator Assembly

Motorola Part No. 8EA2001FA

furnished on engines beginning with serial number 6200000 (approximately)



Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1	14-215	Front housing	1	28	—	(Not used)	
2	12-65	Rotor assembly	1	29	20-178	Tapping screw	8
3	13-54	Stator assembly	1	30	20-121	Tapping screw	3
4	14-213	Rear housing	1	31	20-342	Hex nut	2
5	7-8	Fan	1		20-268	Hex nut	2
6*	MD 405	Pulley	1	32	20-148	Hex locknut	4
7	11-21	Front bearing	1		20-296	Hex nut	4
8	11-21	Rear bearing	1	33	20-337	Hex locknut	2
9	12-22	Slip ring	1	34	20-120	Flat metal washer	4
10	11-64	Rear bearing retainer	1	35	20-136	Pulley mounting nut	1
11	1-206	Diode field	1	36	20-137	Split lock washer	1
12	1-207	Diode bridge	1	37	—	(Not used)	
13	20-334	D+ strap	1	38	—	(Not used)	
14	3-55	Brush assembly	1	39	—	(Not used)	
15	20-152	Fan spacer	1	40	20-341	Washer	1
16	20-7	Woodruff key	1	41	20-343	Machine screw	2
17	3-56	Felt gasket	1		20-344	Machine screw	2
18	14-214	Cover assembly	1	42	15-4	Insulator washer	2
19	—	(Not used)		—*	YL 352-14	Wire lead for YB 85A	1
20	20-335	AC tap strap	1			(not illustrated)	
21	—	(Not used)		—*	YL 392	Wire lead for YB 85C	1
22	—	(Not used)				(not illustrated)	
23	—	(Not used)		—*	PE 45	Washer (not illustrated)	1
24*	YJ 72	Voltage regulator	1	—*	PE 34A	Washer (not illustrated)	1
25	20-336	Bolt	4	—*	PD 77	Hex nut (not illustrated)	1
26	20-338	Conical washer screw	3	—*	PD 250	Hex nut (not illustrated)	1
27	20-339	Machine screw	2				

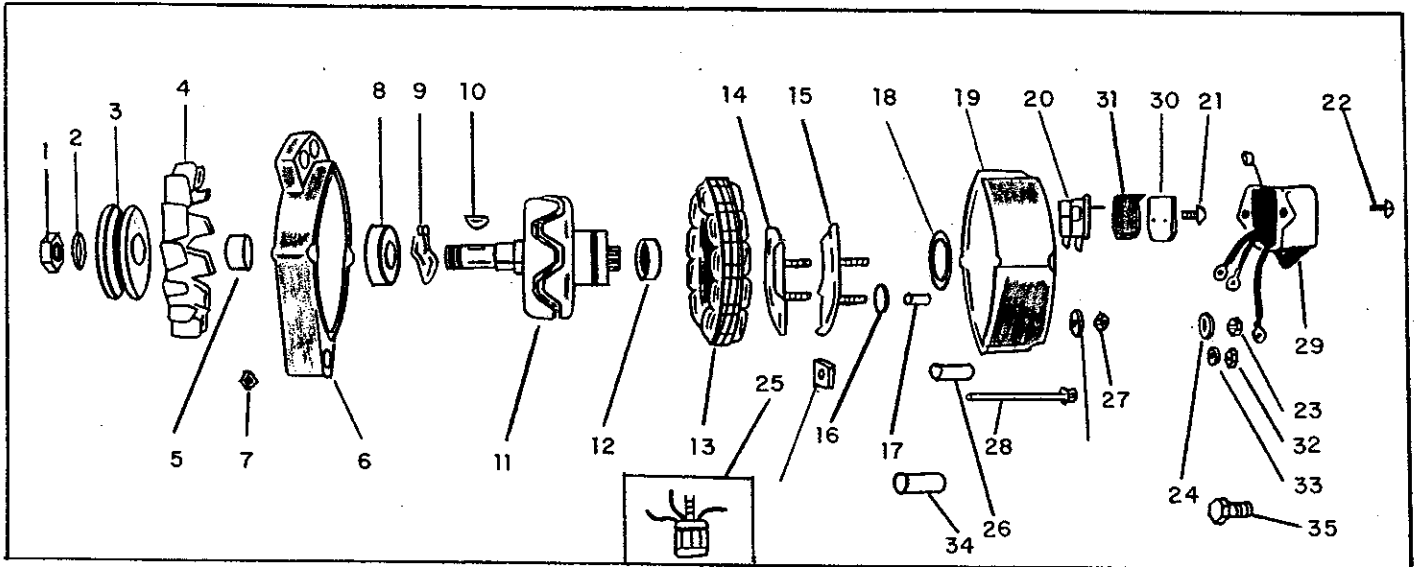
*Parts may be ordered from Wisconsin Motors, LLC. All others are Motorola parts and should be purchased through the Motorola service network.

YB 85A ALTERNATOR

MOTOROLA Part No. 8AR2069F

SERVICE INSTRUCTIONS — In Motorola Automotive Products Inc. Alternator Systems Service Manual, MOTOROLA AUTOMOTIVE PRODUCTS INC., 9401 W. GRAND AVE., FRANKLIN PARK, ILLINOIS.

SERVICE PARTS — Except for Drive Pulley, Ref. 3, and Regulator, Ref. 29, all other Alternator components should be ordered from a Motorola Automotive Products Distributor or Dealer.



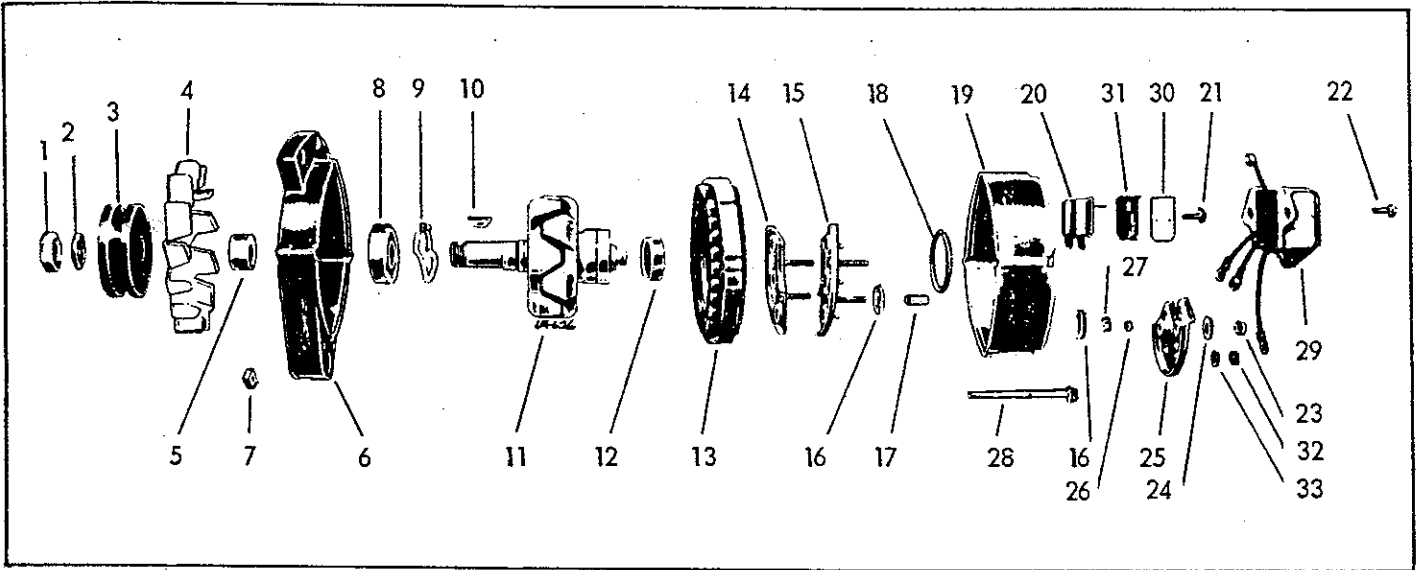
Ref No.	Motorola Part No.	Description	No Req
1	20-136	NUT, pulley mounting. 5/8-18 thread, hex	1
2	20-137	WASHER, split lock. 5/8"	1
3	MD 405 Wisconsin Part No.	PULLEY, drive	1
4	7-8	FAN, normal rotation (clockwise)	1
5	20-92	SPACER, fan and pulley, 7/16"	1
6	14-1	HOUSING, front	1
7	20-3	NUT, square. No. 10-32 thread	4
8	11-21	BEARING, front	1
9	11-3	RETAINER, front bearing	1
10	20-7	WOODRUFF KEY, No. 5	1
11	12-1	ROTOR ASSEMBLY	1
12	11-23	BEARING, (No. 202) sealed	1
13	13-22	STATOR ASSEMBLY	1
14	1-126	DIODE ASSEMBLY, rectifying, negative (black printing)	1
15	1-171	DIODE ASSEMBLY, rectifying, positive (red printing)	1
16	15-10	INSULATING WASHER, No. 10 x 3/4 O.D.	5
17	15-1	INSULATOR SLEEVE, nylon. 19/32" long	2

Ref No.	Motorola Part No.	Description	No Req
18	11-25	RETAINER, rear bearing	1
19	14-98	HOUSING, rear	1
20	3-15	BRUSH ASSEMBLY	1
21	20-102	SCREW, tapping. No. 8 x 1/2"	2
22	20-223	SCREW, tapping. No. 10 x 5/8"	3
23	20-272	LOCKNUT, hex. No. 10-24 thread	6
24	15-4	INSULATING WASHER, No. 10 x 1/2" O.D.	1
25	1-130	DIODE ASSEMBLY	1
26	15-27	INSULATOR SLEEVE, nylon, 3/32" long	1
27	20-34	NUT, hex. No. 10-24 thread	2
28	20-1	BOLT, machine. No. 10-32 x 2-7/8" long	4
29	YJ 71 Wisconsin Part No.	REGULATOR, model 8RF2012A	1
30	3-6	COVER, brush holder	1
31	3-21	SHIELD, dust	1
32	20-146	NUT, terminal. 1/4"-20 thread, hex.	1
33	20-62	WASHER, terminal. 1/4" split-lock	1
34	15-26	INSULATOR SLEEVE	1
35	20-287	CAP STUD	1
36	15-7	INSULATOR, Square	1

(OBSOLETE)
YB 69 ALTERNATOR
 REPLACED YB-85A BEGINNING WITH ENGINE S/N 6070163
 MOTOROLA Part No. RA 12N451

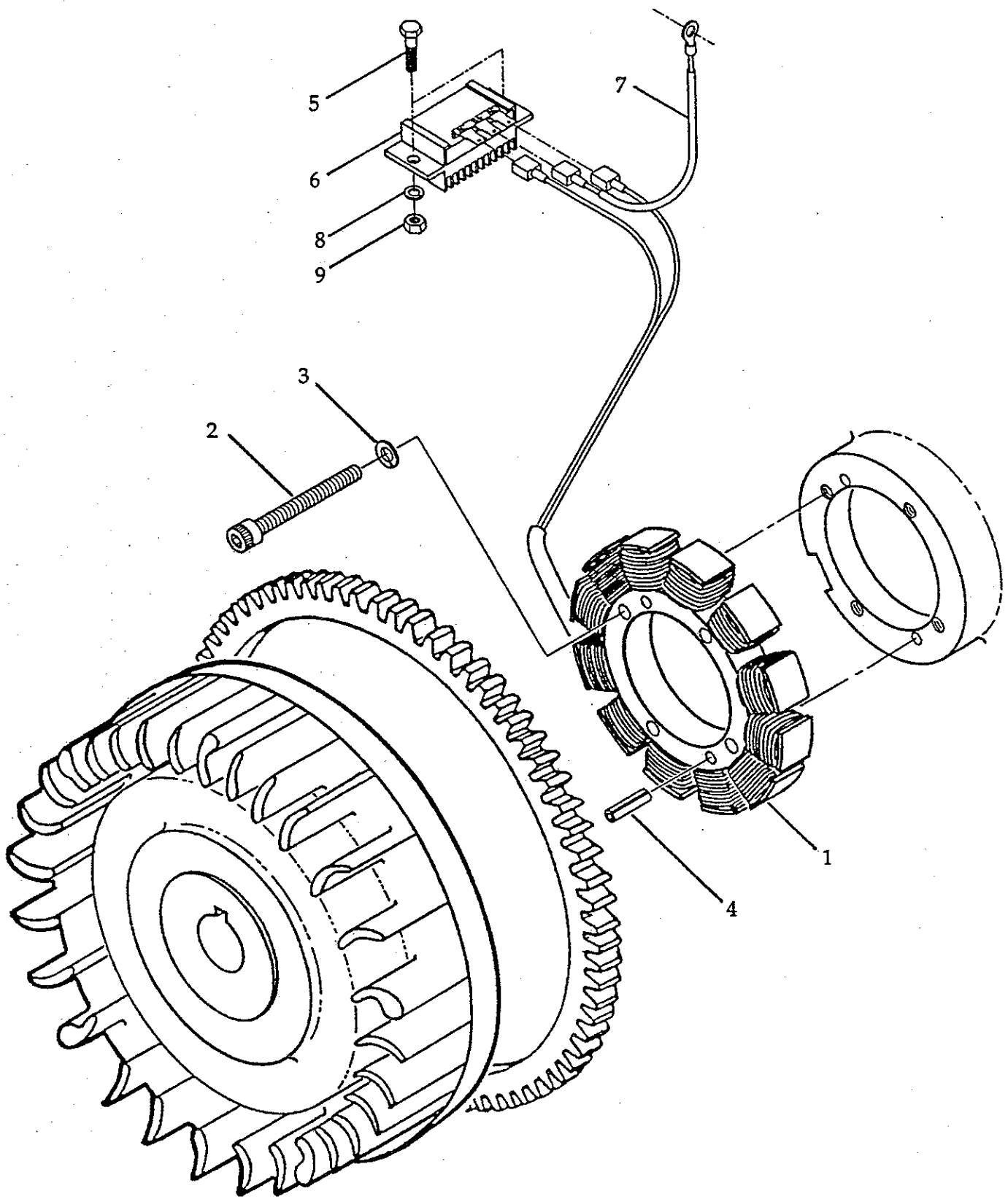
SERVICE INSTRUCTIONS – In Motorola Automotive Products Inc., RA Series Alternator Systems, 25-49 Service Manual.
 MOTOROLA AUTOMOTIVE PRODUCTS INC., 9401 W. GRAND AVE., FRANKLIN PARK, ILLINOIS.

SERVICE PARTS – Except for Drive Pulley, Ref. 3, and Regulator, Ref. 29; all other Alternator components should be ordered from a Motorola Automotive Products Distributor or Dealer.



Ref No	Motorola Part No.	Description	No Req
1	20-136	NUT, pulley mounting, 5/8-18 thread, hex.	1
2	20-5	WASHER, split lock, 5/8"	1
3	MD 405 Wisconsin Part No.	PULLEY, drive	1
4	7-8	FAN, normal rotation (clockwise)	1
5	20-92	SPACER, fan and pulley, 7/16"	1
6	14-1	HOUSING, front	1
7	20-3	NUT, square, No. 10-32 thread	4
8	11-21	BEARING, front	1
9	11-3	RETAINER, front bearing	1
10	20-7	WOODRUFF KEY, No. 5	1
11	12-1	ROTOR ASSEMBLY	1
12	11-23	BEARING, (No. 202) sealed	1
13	13-1	STATOR ASSEMBLY	1
14	1-2	DIODE ASSEMBLY, rectifying, negative (black printing)	1
15	1-1	DIODE ASSEMBLY, rectifying, positive (red printing)	1
16	15-3	INSULATING WASHER, No. 10 x 3/4 O.D.	5

Ref No	Motorola Part No.	Description	No Req
17	15-1	INSULATOR SLEEVE, nylon, 19/32" long	2
18	11-25	RETAINER, rear bearing	1
19	14-18	HOUSING, rear	1
20	3-1	BRUSH ASSEMBLY	1
21	20-32	SCREW, tapping, No. 8 x 1/2"	2
22	20-99	SCREW, tapping, No. 10 x 1/2" (with lockwasher)	3
23	20-33	LOCKNUT, hex., No. 10-24 thread	6
24	15-4	INSULATING WASHER, No. 10 x 1/2" O.D. ..	1
25	1-29	DIODE ASSEMBLY, isolation	1
26	15-2	INSULATOR SLEEVE, nylon, 3/32" long	1
27	20-34	NUT, hex., No. 10-24 thread	2
28	20-1	BOLT, machine, No. 10-32 x 2-7/8" long	4
29	YJ 53 Wisconsin Part No.	REGULATOR, Model 8 RF 20 11 A	1
30	3-6	COVER, brush holder	1
31	3-13	SHIELD, dust	1
32	20-146	NUT, terminal, 1/4"-20 thread, hex.	1
33	20-62	WASHER, terminal, 1/4" split-lock	1

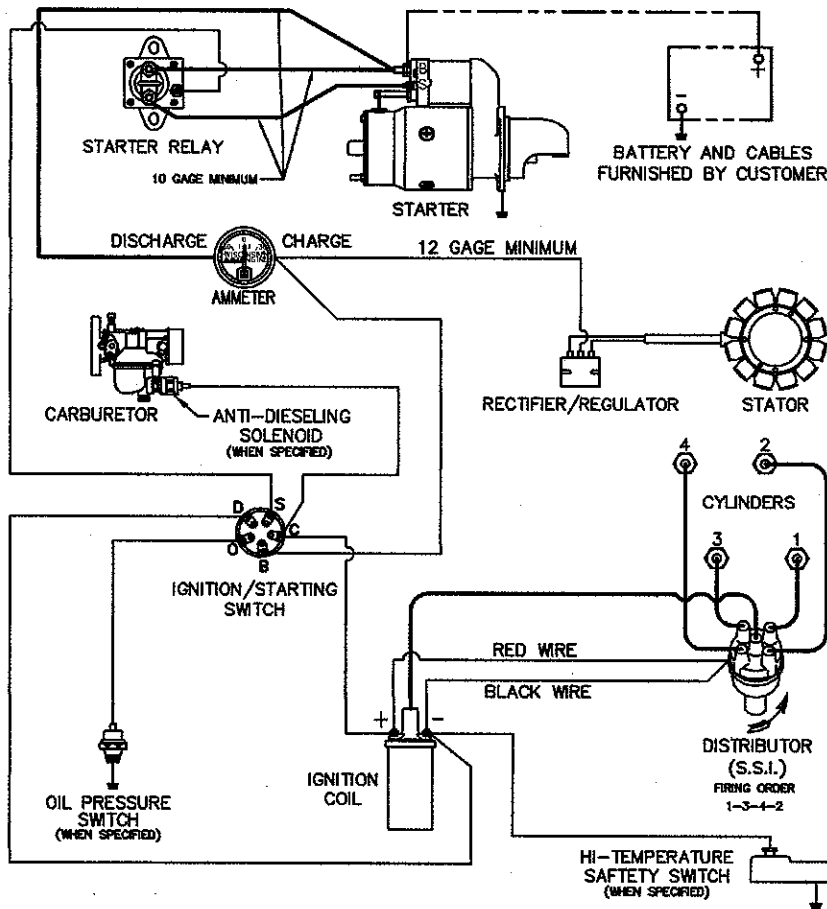


FLYWHEEL ALTERNATOR - ENA132

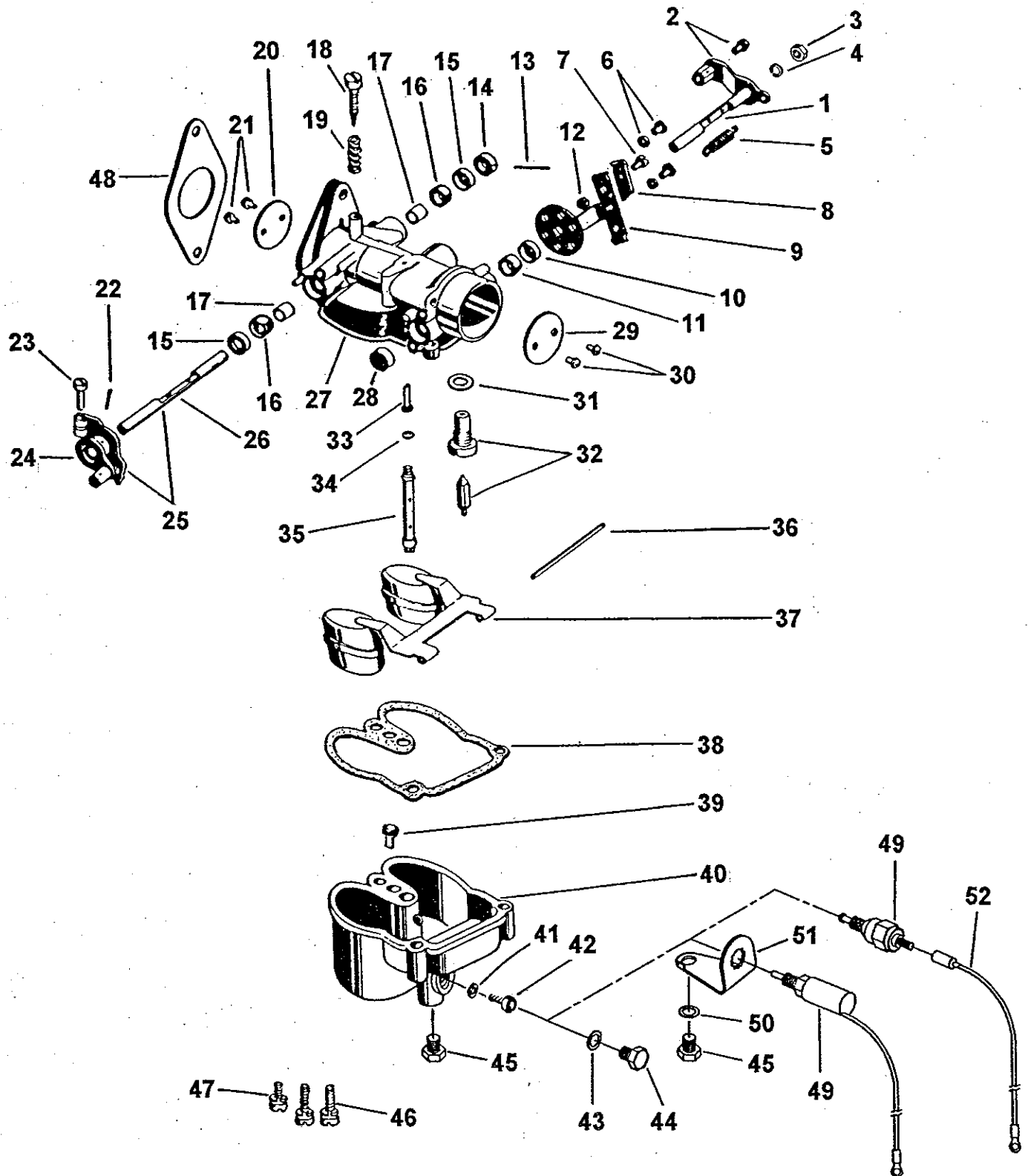
ITEM	PART NO.	DESCRIPTION	QTY.
1	^a YB84	Stator assembly, 12V, 30A	1
2	XB106	Screw, #10-32 thread x 1", socket head	4
3	PE14	Washer, spring, lock, #10	4
4	PA340	Pin, roll, 3/16" x 1-1/8" long	2
5	XA35	Screw, 1/4"-20 thread x 5/8" long	2
6	YJ70A	Module, rectifier/regulator	1
7	YL393-24	Wire assembly, 14AWG	1
8	PE3	Washer, spring, lock, 1/4"	2
9	PD77	Nut, 1/4"-20 thread	2

^a Use with N120D1 flywheel & CA75C100 series crankshaft.

WIRING DIAGRAM-FLYWHEEL ALTERNATOR



L77 SERIES CARBURETOR



L77 & LZ77 SERIES CARBURETOR

CARB REF NO.

WISCONSIN PART NO.

1
2
3
4

S1, BS1, GS1, JS1
CS1, HS1 (W/ AUTO CHOKE)
LS1, NS1
MS1 (W/ AUTO CHOKE)

ITEM	PART NO.	DESCRIPTION	QTY.
1	93C105-3	Shaft, choke (1,3)	1
	93C105-302	Shaft, choke (2,4)	1
2	93C106-2	Lever, choke (1,3)	1
	93C106-13AE	Lever, assembly, choke clamp (2,4)	1
3	93T22S8	Nut, choke lever (1,3)	1
4	*93T41-10	Lockwasher, choke lever nut	1
5	PM210	Spring, choke lever (1,3)	1
	PM236	Spring, torsional, choke lever (NS1)	1
6	93C140-58	Screw & washer, bracket (1,3)	2
7	93T8S8-8	Screw, tube clamp (1)	1
	93T8S8-6	Screw, tube clamp (3)	1
8	93C110-7	Clamp, bracket (1,3)	1
9	93C109-60	Bracket, choke (1,3)	1
10	93C131-4X2	Retainer, choke shaft packing	1
11	^a 93T57-4	Washer, choke shaft packing	1
12	^a 93T21S8	Nut, clamp screw (1,3)	1
13	93T63-9	Pin, washer retainer (1,2)	1
14	93C130-4	Washer, shaft thrust (1,2)	1
15	^a 93T52-57	Retainer, throttle shaft packing	2
16	^a 93T48-9	Seal, throttle shaft	2
17	93C9-75	Bushing, throttle shaft	2
18	^a 93C46-49	Needle, idle adjusting	1
19	93C111-155	Spring, adjusting needle	1
20	93C21-42	Plate, throttle	1
21	93T315S5-4	Screw, throttle plate	2
22	N.S.S.	Roll pin, throttle lever	1
23	93T8S8-10	Screw, lever stop	1
24	93CR27-241-1	Lever and stop, throttle (1,2)	1
		(incl. item 23)	1
	93CR27-472	Lever and stop, throttle (3,4)	1
		(incl. item 23)	1
25	93C29-1386	Shaft and lever assembly (1,2)	1
		(includes items 13, 14, 22-24)	1
	93C29-2201	Shaft and lever assembly (3,4)	1
		(includes items 22-24)	1
26	N.S.S.	Shaft, throttle	1
27	N.S.S.	Body, throttle (1,2)	1
	^a 93BR2-193J-26	Body, throttle (3,4)	1
28	^a 93CR37-1X1	Plug, choke shaft hole (1,3)	1
29	93C102-123	Plate, choke (1,3)	1
	93C102-129	Plate, choke (2,4)	1
30	^a 93T315S5-4	Screw, choke plate	2
31	93T56-20	Fiber washer, fuel valve seat	1
32	^a 93C81-66-35	Valve and seat, fuel (1,2)	1
	93C81-103-1-35	Valve and seat, fuel (viton) (3,4)	1
33	93C66-104-45	Jet, discharge (1,2)	1
	93C66-96-48	Jet, discharge (3,4)	1

ITEM	PART NO.	DESCRIPTION	QTY.
34	^{a,b} 93T56-73	Fiber washer, well	1
35	93C76-55-1	Well, metering	1
36	93C120-18	Axle, float	1
37	93C85-97	Float assembly	1
38	^b 93C142-55	Gasket, bowl to body	1
39	93C52-2-12	Jet, idle	1
40	93B3-129A	Bowl, fuel (replaces 93B3-98A) (1,2)	1
	93B3-154	Bowl, fuel, metric 8mm thread (3,4)	1
41	^b 93T56-24	Fiber washer, main jet	1
42	93C52-7-36	Jet, main (1,2)	1
	93C52-65-36	Jet, main (3,4)	1
	93C52-65-35	Jet, main, high altitude (3,4)	1
43	PH499	Fiber washer, passage plug	1
44	93C138-24	Plug, main passage (1,2)	1
	93C138-110	Plug, main passage, 8mm thread (3,4)	1
45	93T91-3	Plug, 1/8" pipe (bowl drain)	1
46	93T301S8-14	Screw, bowl to body (long)	2
47	93T301S8-9	Screw, bowl to body (short)	1
48	^a QC12A	Gasket, flange	1
49	YC83AS1	Solenoid and bracket assembly (1,2)	1
	YC100	Anti-diesel solenoid, 8mm thread (3,4)	1
50	93T52-74	Spacer (for YC83A solenoid) (1,2)	1
51	93C190-46	Bracket (1,2)	1
52	YC399-6	Wire assembly, 6" long	1
	YC399-9	Wire assembly, 9" long	
	YC399-12	Wire assembly, 12" long	
	YC399-19	Wire assembly, 19" long	
	YC399-28	Wire assembly, 28" long	1
	93C162-71	Auto choke assembly (2,4)	1
		(not illustrated)	1
	93C190-30A	Auto choke adapter assembly (2,4)	1
		(not illustrated)	1
	93C146-25	Auto choke adapter gasket (2,4)	1
		(not illustrated)	1
	93C181-296	Gasket set	1
	LQ37	Repair kit	1

^a Parts included in repair kit

^b Gasket set

N.S.S.—Not sold separately

NOTE: The idle air bleed bushing and well vent bushing are calibrated parts of the throttle body (item 27) and are not readily removable.

ZENITH MODEL 87A8 CARBURETOR

OPERATION AND SERVICE

DESCRIPTION

The Zenith 87-Series is a horizontal carburetor with a concentric fuel bowl. It is a "balanced" carburetor, because all air for fuel chamber and metering well ventilation and idling must come through the air cleaner. Air cleaner restrictions have a minimum influence on the fuel-air ratio when a carburetor is thus "balanced".

The main jet and discharge jet are centrally located. The metering well which completely surrounds the discharge jet is in the center of the fuel bowl assembly. This construction permits extremely high angle operation in any direction.

The venturi, which is part of the throttle body casting, measures the volume of air which passes through the carburetor. In selecting the venturi size, the smallest size that will permit full power development should be used.

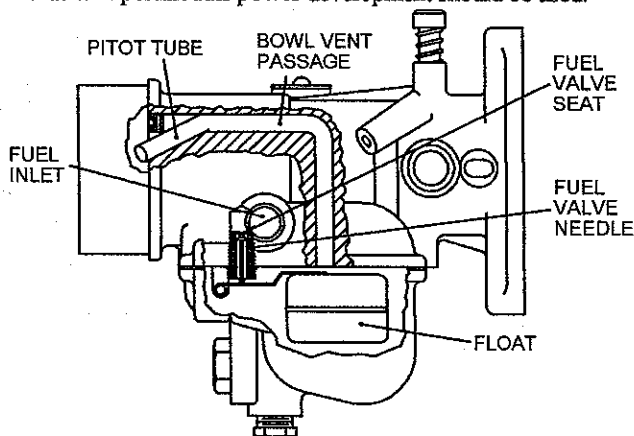


FIG. 1 FUEL SUPPLY SYSTEM

OPERATION

FUEL SUPPLY SYSTEM (Fig. 1)

Fuel under normal pressure entering the float chamber through the fuel valve seat is controlled by the twin float which, moving on its axle, closes the needle valve when the fuel reaches the proper level in the bowl.

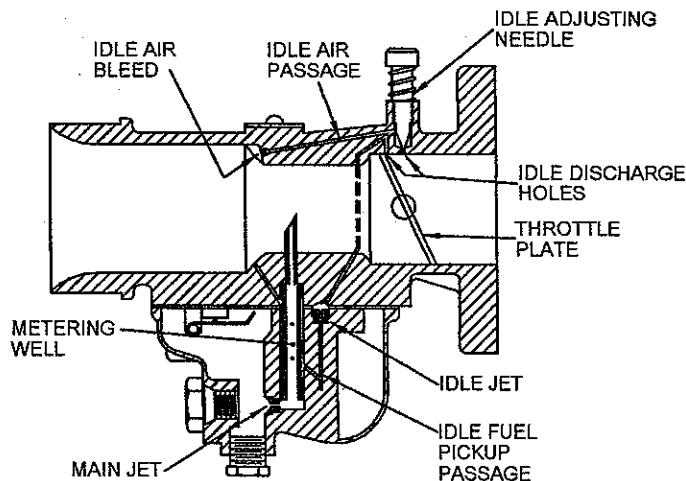


FIG. 2 IDLE SYSTEM

IDLE SYSTEM (Fig. 2)

At idling speeds the throttle plate is almost closed, thus a very high suction exists at the edge of the throttle plate where the idle discharge holes are located. All fuel for idling and part throttle operation is supplied through the main jet. Fuel from the float chamber flows through the main jet into the metering well. Fuel for idling is drawn from the well through the calibration, or metering orifice, in the center of the idling jet. As the fuel reaches the idling channel it is mixed with air which is admitted through a calibrated orifice in the channel from the inside of the air intake to form an emulsion. This emulsion is discharged into the air stream, to form the idling mixture, through two holes, one of which is controlled by the idle adjusting needle. Turning the adjusting needle counter-clockwise (out) permits more of the emulsion to reach the air stream and make the idling mixture richer while turning the needle clockwise (in) cuts off the amount of emulsion reaching the air stream and makes the mixture leaner.

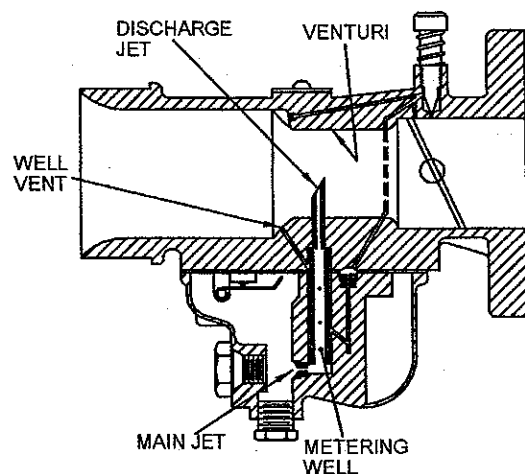


FIG. 3 HIGH SPEED SYSTEM

HIGH SPEED SYSTEM (Fig. 3)

As the throttle is opened, the suction on the idling system diminishes, but the increased volume of air entering the engine through the venturi creates sufficient vacuum (suction) on the discharge jet to draw an emulsion of fuel and air from the metering well which receives its fuel from the main jet and its air from the well vent. The flow characteristics of the discharge jet are influenced by the size, location and number of holes in the sides of that part of the jet which is in the metering well, as well as by the sizes of the discharge jet orifice, the size of the main jet and the size of the well vent. The well vent is located in the air intake and permits air to enter the top of the metering well around the the outside of the discharge jet. The flow of fuel through the main jet is controlled by the size of the main jet opening.

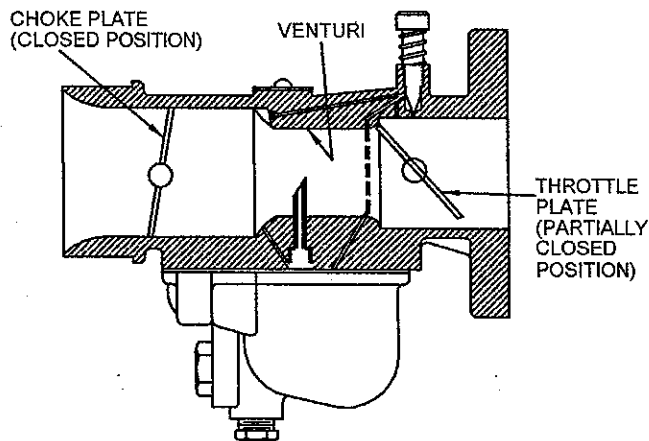


FIG. 4 CHOKE SYSTEM

CHOKE SYSTEM (Fig. 4)

Starting a cold engine requires a much richer mixture of fuel and air. Moving the choke lever to close the choke plate restricts the air entering the carburetor (except at the pitot tube, Fig. 1, to the bowl vent) and increases the suction on the idling system which makes the mixture richer.

STARTING THE ENGINE

Before cranking the engine, the carburetor throttle should be opened a little to expose both idle discharge holes to suction. The choke should be fully closed until the engine starts, then opened a little to prevent stalling from being over-choke, then when the engine is fully warmed up the choke can be returned to wide open position and the throttle closed to the idling position.

ADJUSTMENTS

Adjust the throttle stop screw to obtain the desired idling speed by turning screw clockwise (in) to increase speed and counter-clockwise (out) to decrease engine speed.

Adjust the idle adjusting needle to obtain smooth idling of the engine at idling speed. Turn the needle counter-clockwise (out) to make the mixture richer, and clockwise (in) to make it leaner.

SERVICE AND REPAIR PROCEDURE

IDENTIFY CARBURETOR

Check the numbers on the metal identification disc pinned to the top of the throttle body or indented in it. The plain number is the Zenith assembly number, the number with the letter "L" pre-fixed to it is the Wisconsin Motors part number for the complete assembly.

EXPLODED VIEW (PAGE 49)

The exploded view identifies the serviceable component parts of the carburetor and shows their relationship to the complete assembly. Use the key numbers on the exploded view to identify and locate parts when performing both the disassembly and assembly operations.

DISASSEMBLY

SEPARATE CARBURETOR BODIES

Remove the three bowl assembly screws (46,47) and separate fuel bowl (40) from throttle body (27).

DISASSEMBLE FUEL BOWL

1. Remove the main jet plug (44) and fiber washer (43), using a 9/16" open end wrench.
2. Remove the main jet (42) and fiber washer (41), using Zenith Tool No. C161-83 main jet wrench.
3. Remove the idle jet (39), using a small screwdriver.
4. Remove the bowl drain plug (45).

DISASSEMBLE THROTTLE BODY

1. Remove the float axle (36) by pressing against the end with the blade of a screwdriver.
2. Remove the float (37).
3. Remove the fuel valve needle (32), using the fingers.
4. Remove the fuel bowl to throttle body gasket (38).
5. Remove the main discharge jet (33) using a small screwdriver.
6. Remove the fuel valve seat (32) and fiber washer (31) using Zenith Tool No. C161-85.
7. Remove the idle adjusting needle (18) and sprig (19).

CLEANING

Thoroughly clean all metal parts in Carburetor Cleaning Fluid and rinse in cleaning solvent. Blow out all passages in throttle body and fuel bowl with reduced air pressure. Be sure all carbon deposits have been removed from throttle bore and idle discharge holes. Reverse the flow of compressed air through all passages to insure the removal of all dirt. **NEVER USE A DRILL OR WIRE TO CLEAN OUT JETS OR IDLE HOLES.**

INSPECTION OF PARTS

1. Float Assembly- Replace if loaded with gasoline, damaged or if float axle bearing is worn excessively. Inspect float lever for wear at point of contact with fuel valve needle. Replace if wear is excessive.
2. Float Axle- Replace if any wear has occurred on the bearing surface.
3. Fuel Valve (Needle & Seat) Assembly- Replace as a complete unit. Wear on any of these parts can seriously affect the operation of the float.
4. Idle Adjusting Needle- Inspect tapered end of the needle to make sure it is smooth and free of grooves. Replace if pitted or grooved.
5. Gaskets, Seal and Retainer- Replace all gaskets, throttle shaft seal and retainer each time the carburetor is overhauled.
6. Check Specifications. Verify the correctness of the following parts. Numbers will be found on the parts. Main Jet, Idling Jet and Fuel Valve.

REASSEMBLY

ASSEMBLY OF THROTTLE BODY

1. Install the fuel valve (32) and fibre washer (31) using Zenith Tool No. C161-85.
2. Install the main discharge jet (33) using a small screwdriver
3. Install fuel valve needle in seat (32), followed by float (37) and float axle (36). NOTE: Insert tapered end of float (36) into float bracket on side opposite slot and push through the other side. Press float axle (36) into slotted side until the axle is centered in bracket.

4. FLOAT SETTING

- a. Fuel Level. Check position of float assembly (37) for correct measurement to obtain proper fuel level by using a depth gage. NOTE: Do not bend, twist, or apply pressure on the float body.
 - b. With bowl cover assembly (27) in the inverted position, viewed from free end of float (37), the float body must be centered and at right angle to the machined surface. The float setting is measured from the machined surface (no gasket of float bowl cover to top side of float body at highest point. This measurement should be $31/32"$, plus or minus $1/32"$.
SEE FIG. 5 FLOAT SETTING
 - c. Bending Float Lever. To increase or decrease distance between float body (37) and machined surface (27) use long nosed pliers and bend lever close to float body. NOTE: Replace with new float if position is off more than $1/16"$.
5. Install throttle body to fuel bowl assembly gasket (38) on machined surface of throttle body (27).
 6. Install idle adjusting needle (18) and spring (19). Screw needle clockwise (in) until it seats lightly against the idle discharge hole, then back it out $1\ 1/2$ turns as a preliminary idle adjustment.

REASSEMBLE FUEL BOWL

1. Install main jet (42) and fibre washer (41) using Zenith Tool No. C161-83 main jet wrench.
2. Install the main jet hex plug (44) and fibre washer (43) using a $1/2"$ open end wrench.
3. Install the idle jet (39) using a small screwdriver.
4. Install the bowl drain plug (45).

REASSEMBLE CARBURETOR BODIES

Install the three bowl assembly screws (46,47) through the fuel bowl and into the throttle body and draw down firmly and evenly.

SPECIAL TOOLS

The special tools recommended are:

1. C161-83 Main Jet Wrench
2. C161-85 Fuel Valve Seat Wrench

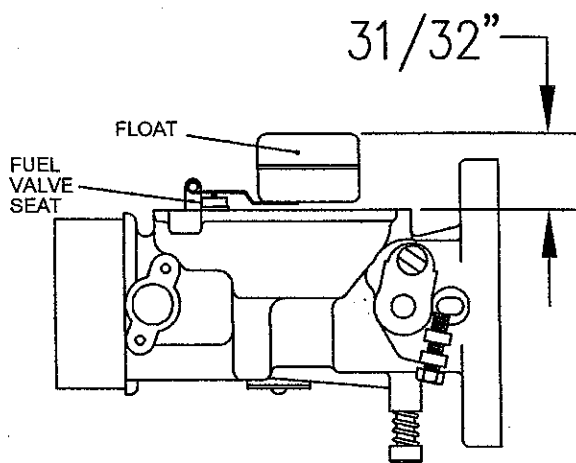
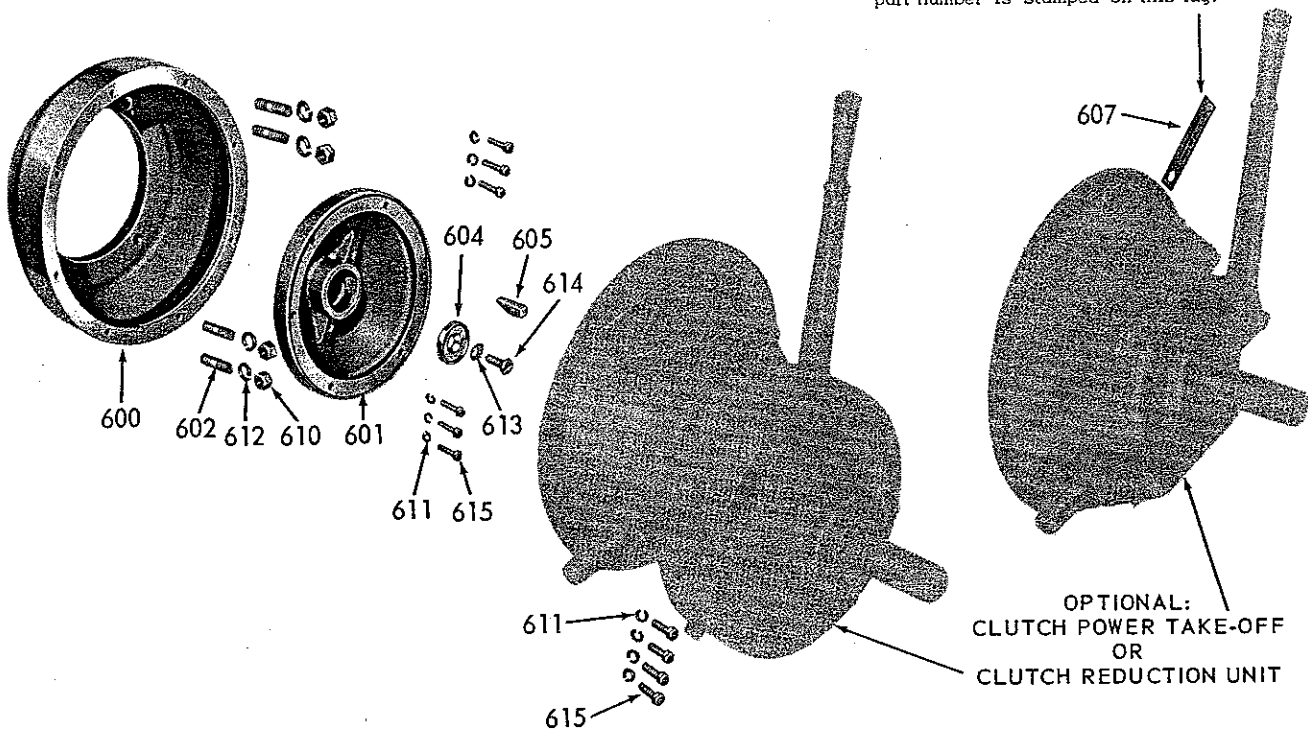


FIG. 5 FLOAT SETTING

WW-165 DRIVE HUB AND HOUSING ASSEMBLY FOR CLUTCH POWER TAKE-OFF AND CLUTCH REDUCTION UNITS

NOTE: The drive hub and housing assembly part number is stamped on this tag.



The above assembly is suitable for mounting the following Clutch Power Take-Off and Clutch Reduction Units.

WISCONSIN MOTOR PART NUMBER	MANUFACTURER'S PART NUMBER	DESCRIPTION	REDUCTION RATIO	ROTATION AT TAKE-OFF SHAFT
WC-328-A	ROCKFORD PTA-4856	Clutch Power Take-Off	---	Enginewise
WC-329	ROCKFORD GRA-4812	Clutch Reduction Unit	2.77 to 1	Counter-Enginewise
WC-330	ROCKFORD GRA-4813	Clutch Reduction Unit	2.00 to 1	Counter-Enginewise
WC-360	TWIN DISC C108-E3.6-RG4	Clutch Reduction Unit	3.60 to 1	Enginewise

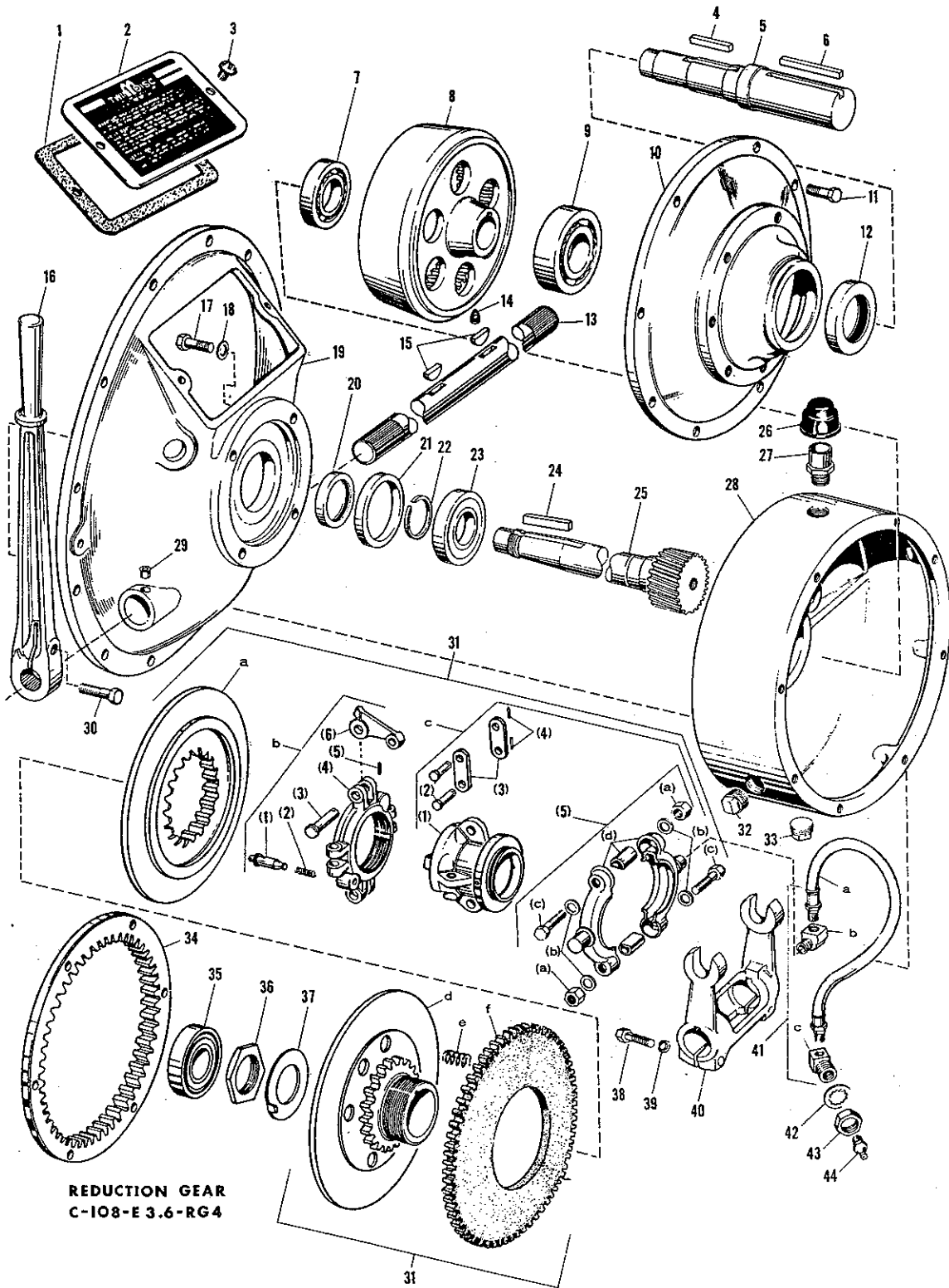
REFER TO ROCKFORD OR TWIN DISC ILLUSTRATIONS FOR PARTS LIST OF CLUTCH POWER TAKE-OFF AND CLUTCH REDUCTION UNITS.

NOTE: Engines equipped with a Clutch Power Take-Off or Clutch Reduction Unit require a special crankshaft, CA-75-1-S1.

Ref. No.	Part Number	Description	No. Req.	Net Wt.		Ref. No.	Part Number	Description	No. Req.	Net Wt.	
				Lb	Oz					Lb	Oz
	WW-165	DRIVE HUB and HOUSING ASSEMBLY Consisting of the following parts:				611	PE-5	LOCKWASHER, 3/8" Positive..... 6-for mounting clutch to drive hub. 12-for mounting unit to housing. (Not part of WW-165 Assembly.)	18		1
600	BO-205	HOUSING for drive hub (No. 4 S.A.E.) ..	1	40		612	PE-37	LOCKWASHER, 5/8" Positive	4		1
601	NC-163-2	DRIVE HUB	1	15		613	PE-86	LOCKWASHER, 1/2" Countersunk..... For mounting hub retainer.	1		1
602	PC-464	STUD for housing to crankcase mounting	4	3		614	XC-59	SCREW, 1/2"-13 thread x 1-1/4" long, socket flat head	1		1
604	PH-489	RETAINER for drive hub	1	2		615	XD-29	SCREW, 3/8"-16 thread x 1-1/4" long, hexagon head.....	18		1
605	PL-150-1	KEY for drive hub	1	1				12-for mounting unit to housing. 6-for mounting clutch to drive hub. (Not part of WW-165 Assembly.)			
607	SD-79-B	ASSEMBLY NUMBER TAG	1	1		RF-1096		ELBOW for checking oil press. (not illustrated) in oil header, upper crank- case face.			
		STANDARD HARDWARE									
610	PD-15	NUT, 5/8"-18 thread, hexagon steel For mounting housing to crankcase.	4	1							

Order parts from nearest **WISCONSIN DISTRIBUTOR** or **SERVICE CENTER**.
IMPORTANT: Always give Model, Specification and Serial Numbers as shown on name plate.

CLUTCH REDUCTION UNIT ASSEMBLY
WISCONSIN No. WC-360 – TWIN DISC No. C108-E3.6-RG4
 Adaptable to WW-165 Drive Hub and Housing Assembly



Parts are identified by reference number. See parts list for correct part number.

TWIN DISC CLUTCH REDUCTION UNIT ASSEMBLY

TWIN DISC PART NO.
C-108-E3.6-RG4

WISCONSIN PART NO.
WC-360

REDUCTION RATIO
3.6 to 1

ROTATION
Enginewise

PARTS LIST

NOTE: Code number 78, prefixed to the part number, is a vendor identification. When ordering parts, please use number with code as shown.

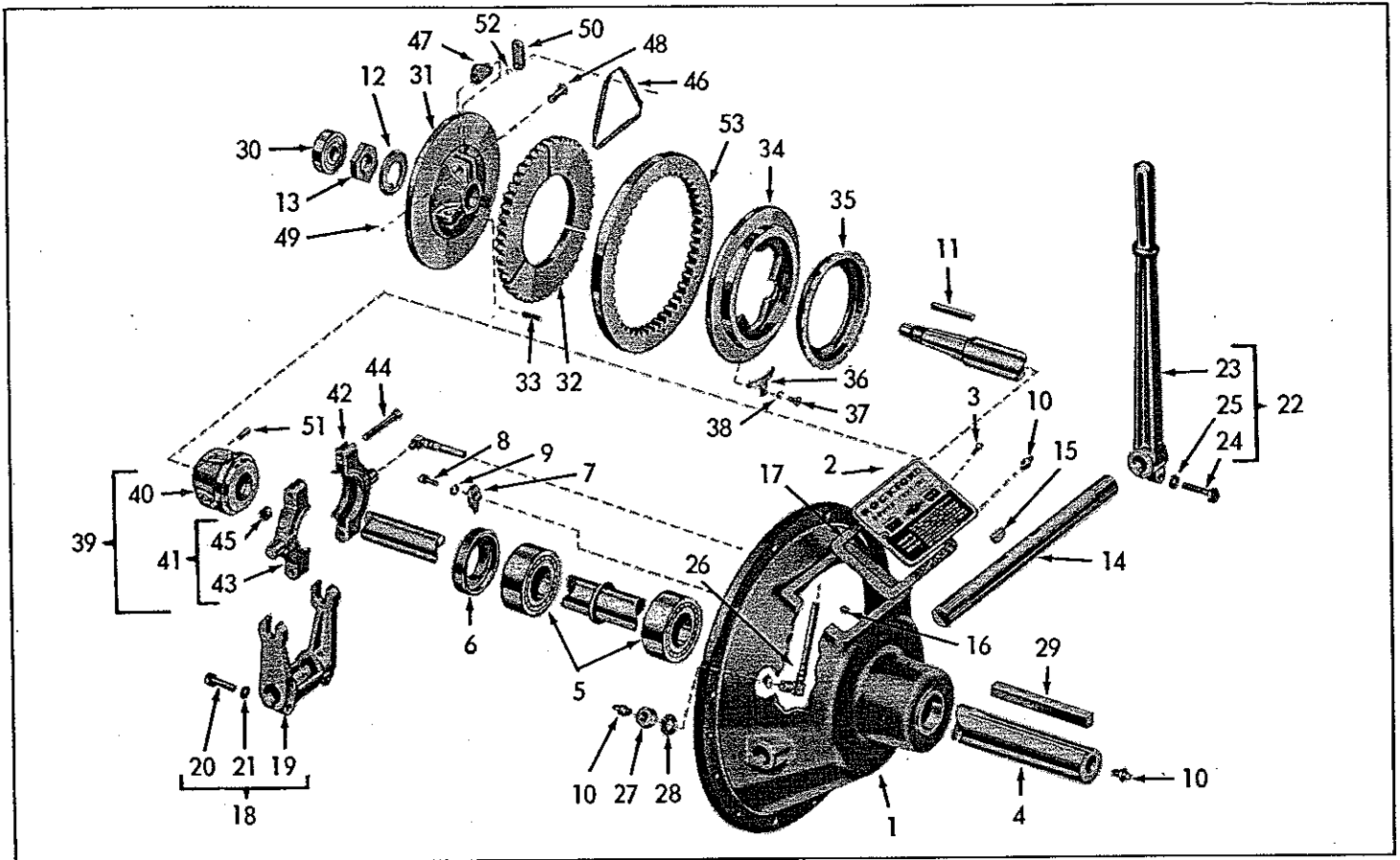
Ref. No.	Part Number	Description	No. Req.	Ref. No.	Part Number	Description	No. Req.
1	78-A1339	GASKET, plate, specification	1	29	78-M503	FITTING, operating shaft (was M102 oil cup)	2
2	78-1965R	PLATE, specification	1	30	78-M2004R	SCREW, cap, hex-head, 1/2-13 x 3/4	1
3	78-M2023F	SCREW, cap, button-head, 1/4-20 x 1/2	2	31	78-XA5079	CLUTCH, C-108, assembly	1
4	78-M2032AZ	KEY, 3/8 x 3/8 x 1-5/8	1	a	78-A3169	PLATE, floating	1
5	78-A3115	SHAFT, counter	1	b	78-A-60	YOKE, adjusting	1
6	78-M2033T	KEY, 1/2 x 1/2 x 2-7/8	1	(1)	78-2245	PIN, lock, adjusting	1
7	78-M166	BALL BEARING	1	(2)	78-115	SPRING, pin, lock, adjusting	1
8	78-A5001	GEAR, internal, shaft, counter	1	(3)	78-B1538D	PIN, lever, finger (was B1621D)	4
9	78-M178	BALL BEARING	1	(4)	78-1990	YOKE, adjusting	1
10	78-8533	PLATE, cover	1	(5)	78-B1535C	PIN, cotter (was M1927AD roll pin)	4
11	78-M2002U	SCREW, cap, hex-head, 3/8-16 x 1	8	(6)	78-103F	LEVER, finger	4
12	78-M510	SEAL, oil, shaft, counter	1	c	78-5-385	SLEEVE, sliding, assembly	1
13	78-2757	SHAFT, operating	1	(1)	78-2137A	SLEEVE, sliding	1
14	78-M2039J	SETSCREW, half-dog-point, 1/2-13 x 3/4	1	(2)	78-B1537D	PIN, link, lever (was B1527D)	8
15	78-M2022Z	KEY, Woodruff #15	2	(3)	78-119B2	LINK, lever	8
16	78-3799	LEVER, hand	1	(4)	78-B1535B	PIN, cotter (was M1927AS roll pin)	8
17	78-M2006H	SCREW, cap, hex-head, 5/8-11 x 1-1/2	4	(5)	78-X117C8	COLLAR, split, assembly	1
18	78-M2046AF	WASHER, lock, 5/8-inch	4	(a)	78-M1930F	NUT, hex., 3/8-24	2
19	78-7583	HOUSING, clutch	1		78-120C8	SHIM	2
20	78-M105B	SEAL, oil, shaft, clutch	1	(c)	78-M2002BB	SCREW, cap, 3/8-24 (was M2002AS)	2
21	78-2510	SPACER	1	(d)	78-117C8	COLLAR, split (not serviced separately)	1
22	78-2923	RING, snap	1	d	78-A3177	PLATE, hub-and-back	1
23	78-M171	BALL BEARING	1	e	78-1473	SPRING, release	6
24	78-M2032X	KEY, 1/4 x 1/4 x 1-7/8	1	f	78-6479	PLATE, driving	1
25	78-A3113	SHAFT, clutch (and pinion)	1	32	78-M2051AD	PLUG, pipe, square-head, 3/4-inch	1
26	78-M639B	BREATHER, oil	1	33	78-M2051AD	PLUG, pipe, square-head, 3/4-inch	1
27	78-2830A	PIPE, breather, oil	1	34	78-5805	RING, driving	1
28	78-8531	HOUSING, gear	1	35	78-M163	BALL BEARING, pilot	1
				36	78-2727	NUT, hub	1
				37	78-A1587	WASHER, lock	1
				38	78-M2002AG	SCREW, cap, hex-head, 3/8-16 x 1-1/2	2
				39	78-M2046S	WASHER, lock, 3/8-inch	2
				40	78-1037	FORK, throwout	1
				41	78-A1663	HOSE, flexible, assembly	1
				a	78-M1292A	HOSE, flexible	1
				b	78-M1284	FITTING, 90-degree	1
				c	78-M1283	FITTING, straight	1
				42	78-M2046AF	WASHER, lock, 5/8-inch	1
				43	78-M2027AN	NUT, jam, 5/8-18	1
				44	78-M268	FITTING, hydraulic, 1/8-inch	1

Order parts from nearest **WISCONSIN DISTRIBUTOR** or **SERVICE CENTER**.
IMPORTANT: Always give Model, Specification and Serial Numbers as shown on name plate.

WISCONSIN No. WC-328-A POWER TAKE-OFF ASSEMBLY

Rockford No. PTA-4856

Replaces PTA-4819, Wisconsin No. WC-328. Sealed pilot bearing in PTA-4856 eliminates grease fitting as used at end of drive shaft in PTA-4819. Parts are identical for both units, except where indicated by unit Part No.



NOTE: Code number 63, prefixed to the part number, is a vendor identification. When ordering parts, please use number with code as shown.

Ref. No.	Part Number	Description	No. Req.	Ref. No.	Part Number	Description	No. Req.	
1	63-PTA-4M141	HOUSING ASSEM. less clutch (PTA-4856)	1	28	63-PT-359	LOCKWASHER, for jam nut	1	
		63-PTA-4M56 (PTA-4819). Consisting of:		29	63-PT-1001	KEY for take-off shaft, 1/2" x 1/2" x 4-7/8"	1	
		HOUSING, No. 4 S.A.E. (PTA-4856).....	1	30	ME-203	PILOT BEARING, sealed (PTA-4856).....	1	
		63-PT-300-30	63-PT-300-19 (PTA-4819).			ME-192 (PTA-4819)		
	2	63-PT-1593	INSTRUCTION PLATE	1		63-CLA-2175-35	CLUTCH ASSEMBLY, 8" Model HE	1
	3	63-PT-347	SCREW, 1/4"-20 x 3/8" rd. hd. Instr. plate	2			Consisting of:	
	4	63-PT-1068	DRIVE SHAFT	1	31	63-CL-8512-10	CLUTCH BODY	1
	5	ME-188	MAIN BEARING	2	32	63-CL-7039-1	FACING, Amco No. 796 (Set of 3 seq.)	1
	6	63-PT-1059	BEARING RETAINER	1	33	63-CL-8575	SEPARATOR SPRING	3
	7	63-PT-44	LOCK PLATE	1	34	63-CL-8513-1	PRESSURE PLATE	1
	8	63-PT-349	SCREW, 5/16"-18 x 1/2", hex. lock plate	1	35	63-CL-8515-1	ADJUSTMENT NUT	1
	9	63-PT-350	LOCKWASHER, 5/16", for lock plate	1		63-CL-11905	ADJUSTMENT NUT PLATE (not illust.)	1
	10	63-PT-1012	GREASE FITT. (1 in shaft of PTA-4819)	2	36	63-CL-9216	ADJUSTMENT LOCK	1
		63-PT-989	PIPE PLUG, 1/8" (in shaft of PTA-4856)	1	37	63-CL-8807-1	SCREW for adjustment lock	1
	11	63-PT-808-1	DRIVE KEY	1	38	63-CL-3468	LOCKWASHER for adjustment lock.	1
	12	63-PT-718-1	LOCKWASHER for clutch body	1	39	63-UCL-4-8611-1	RELEASE SLEEVE and BEARING ASSEM.	1
13	63-PT-706	NUT for clutch body	1			Consisting of:		
14	63-PT-200	YOKE SHAFT	1	40	63-CL-8611-1	RELEASE SLEEVE	1	
15	63-PT-351	KEY for yoke, No. 15 Woodruff	2	41	63-UCL-7-7392	RELEASE BEARING ASSEMBLY	1	
16	63-PT-744	SET SCREW, 5/16"-18 x 1/4" flat point..	1			Consisting of:		
		For grease hole plug.		42		BEARING HALF (not serviced sep.)	1	
17	63-PT-770	GASKET for instruction plate	1	43		BEARING HALF (not serviced sep.)	1	
18	63-UPT-811	CLUTCH YOKE ASSEM. Consisting of:	1	44	63-CL-3335-1	SCREW, 5/16"-24 x 1 1/2" hexagon head	2	
19		CLUTCH YOKE	1	45	63-CL-7356	ELASTIC STOP NUT, 5/16"-24 thread	2	
20	63-PT-352	SCREW, 3/8"-16 x 1 1/4" hexagon head	2	46	63-CL-9464	LEVER SPRING SET	1	
21	63-PT-353	LOCKWASHER, 3/8"	2	47	63-CL-8556-1	LEVER	3	
22	63-UPT-769	SHIFTER LEVER ASSEM. Consisting of:	1	48	63-CL-8484	CLEVIS PIN for lever to body	3	
23		SHIFTING LEVER	1	49	63-CL-7107	RETAINING RING for lever clevis pin	3	
24	63-PT-604	SCREW, 3/8"-16 x 1 1/2" hexagon head	1	50	63-CL-8557	CONNECTING LINK	6	
25	63-PT-353	LOCKWASHER, 3/8"	1	51	63-CL-8400	CLEVIS PIN for connecting link	6	
26	63-PT-1026-3	GREASE TUBE ASSEMBLY	1	52	63-CL-7130	RETAINING RING for link clevis pin	6	
27	63-CL-4355	JAM NUT, 5/8"-18, for grease tube	1	53	63-CL-6965	DRIVING RING	1	

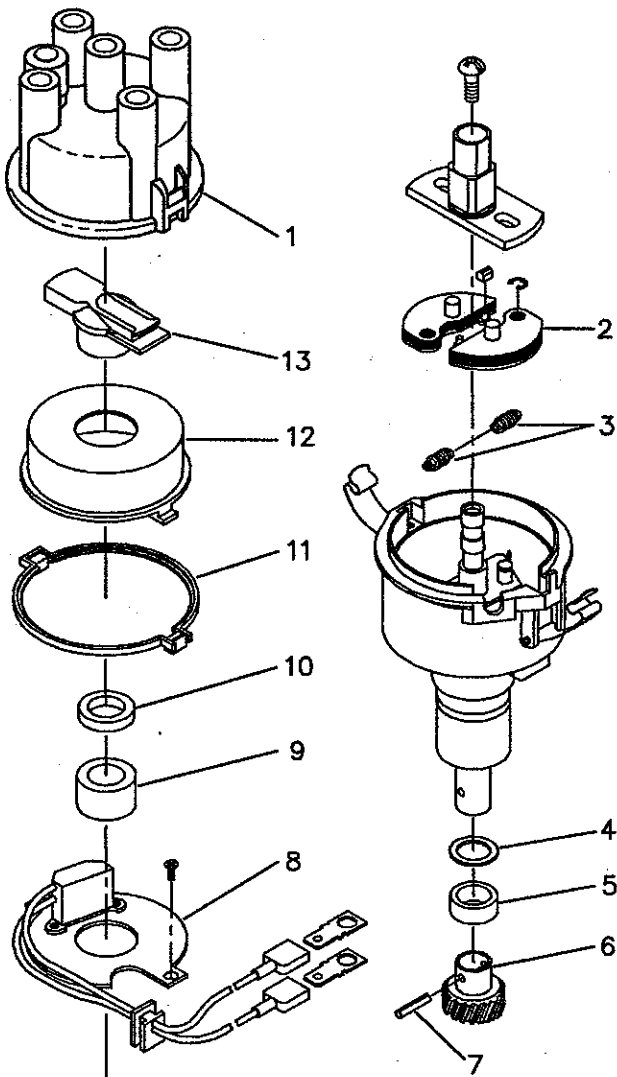
YF50S1, YF50AS1, YF50BS1, YF50CS1, YF50DS1 & YF50ES1 IGNITION DISTRIBUTOR

USE WITH MODEL VH4D, VG4D, W4-1770 & V465D

DISTRIBUTOR

APPLICATION

YF50S1 S/S	YF50CS1	VH4D, VG4D, W4-1770 & V465D (SIDE MOUNT)
YF50AS1 S/S	YF50DS1	VH4D, W4-1770 (TOP MOUNT)
YF50BS1 S/S	YF50ES1	VG4D, V465D (TOP MOUNT)



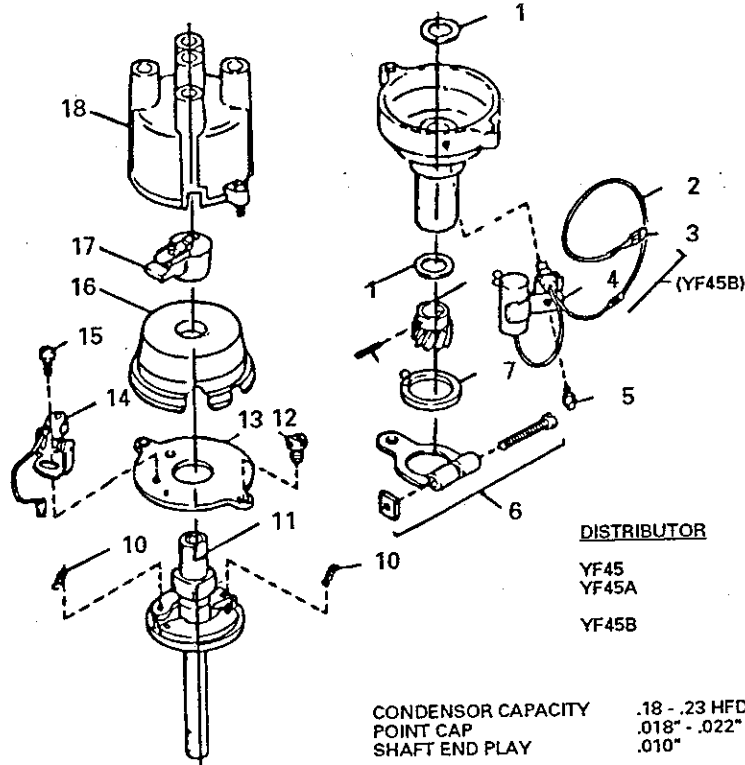
ITEM	PART NO.	DESCRIPTION	QTY.
	20121016	Distributor cap & gasket (replaces 20121003) includes items 1 & 11	.1
1	* _____	Vented distributor cap	.1
2	20120015	Advance weight set	.1
3	20120012	Advance spring set	.1
—	20121001	Gear kit for YF50, YF50A, YF50C & YF50D, includes items 4 - 7	.1
—	GF99S1	Gear kit for YF50B & YF50E includes items 4, 6 & 7	.1
4	* _____	Thrust washer set	.1
5	* _____	Spacer	.1
6	* _____	Gear	.1
7	PA367	Roll pin	.1
8	20120005	Electronic module (includes screws)	.1
9	20120004	Magnet assembly	.1
—	20121020	Rotor and spacer (replaces 20121006) includes items 10-13	.1
10	^a 20120011	Rotor spacer	.1
11	^a 20120010	Distributor cap gasket	.1
12	20120003	Dust cover	.1
13	* _____	Rotor	.1
—	YL394-18	Wire, extension (not illustrated)	.1
—	YL396A18	Wire, extension (not illustrated)	.1

* Not serviced separately.
a Also sold separately.

SHAFT END PLAY: .001"-.015"

YF45S1, YF45AS1, YF45B Colt Distributor

USE WITH MODELS VG4D, VH4D, V465D, W4-1770



DISTRIBUTOR

YF45
YF45A
YF45B

APPLICATION

VH4D, VG4D, V465D
VH4D, W4-1770,
(TOP MOUNTED)
VG4D (TOP MOUNTED)

CONDENSOR CAPACITY
POINT CAP
SHAFT END PLAY

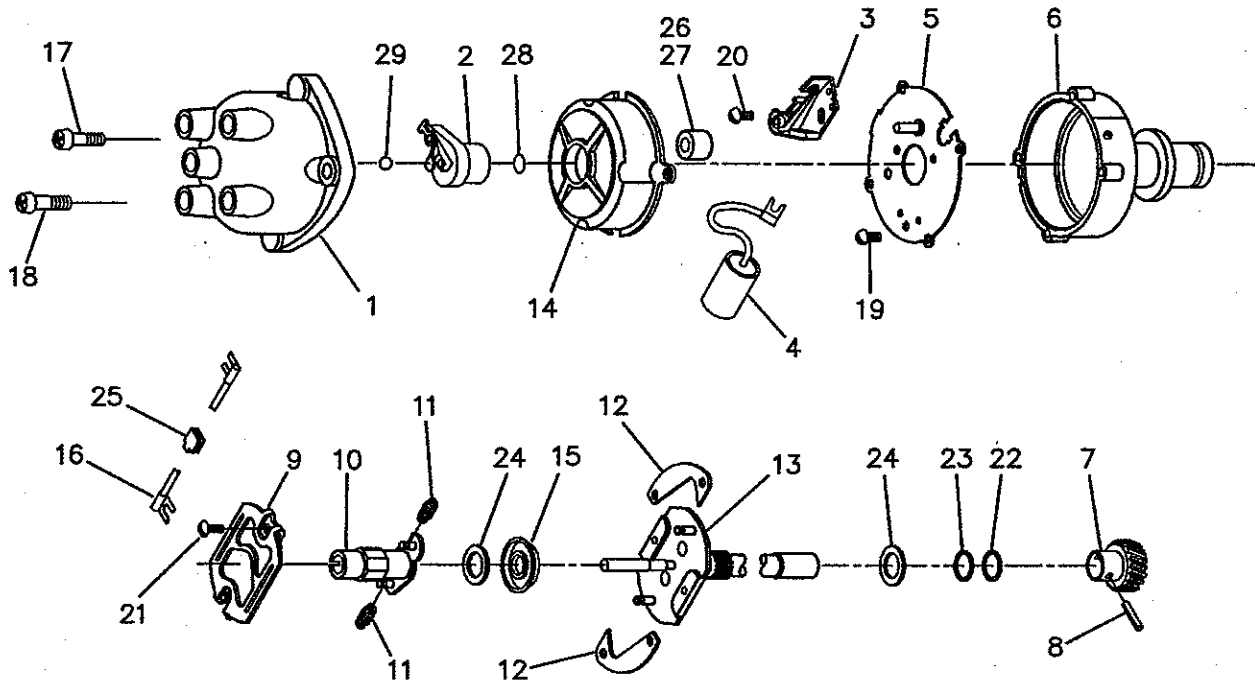
.18 - .23 HFD
.018" - .022"
.010"

ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1	* ———	Washer	2	—	†31-13001679	Gear kit (YF45B) (includes 1, 8, 9)	1
2	YL394-18	Extension wire (not used with YF453)	1	11	* ———	Shaft assembly	1
3	31-13001655 YQ26	Clip	1	12	31-13001616	Insert	2
—	—	Breaker kit (includes 4, 5, 14, 15, 19)	1	13	31-13001598	Breaker plate	1
4	* ———	Condenser assembly	1	14	* ———	Breaker set	1
5	* ———	Screw	1	15	* ———	Screw and washer assembly	1
—	PG54341	Advance arm kit (includes 6, 7)	1	16	31-13001604 YQ27	Shield Distributor cap and rotor kit (includes 17, 18)	1
6	* ———	Advance arm assembly	1	17	†31-13001607	Rotor	1
7	* ———	Washer	1	18	* ———	Cap	1
8	* ———	Gear	1	19	* ———	Lube capsule (not illustrated)	1
9	* ———	Pin	1	20	* ———	Spacer (not illustrated)	1
—	31-13001666	Shaft kit (includes 10, 11)	1				
10	†31-13001661	Spring kit	1				
—	†31-13001677	Gear kit (YF45) (includes 1, 8, 9)	1				
—	†31-13001678	Gear kit (YF45A) (includes 1, 8, 9, 20)	1				

* Not serviced separately.

† Also sold separately.

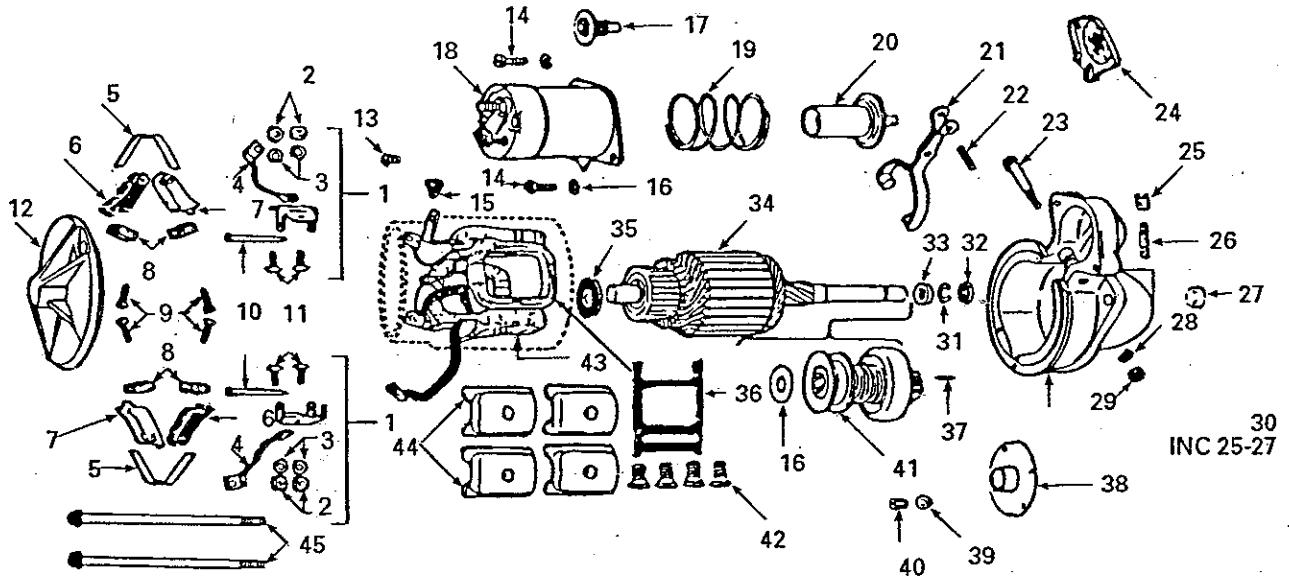
YF34 DISTRIBUTOR



ITEM	PART NO.	DESCRIPTION	QTY.	ITEM	PART NO.	DESCRIPTION	QTY.
1	18-1960833	Cap assembly, includes items 17, 18 & 29	1	17	18-1954571	Screw for securing cap (8-32)	1
2	18-1954566	Rotor	4	18	18-1957573	Screw for securing cap (10-32)	1
3	18-1954557	Contact point set	4	19	18-453461	Screw for breaker plate support	1
4	18-1928111	Condenser	1	20	18-1914916	Screw for contact adjustment	1
5	18-1960814	Breaker plate	1	21	18-453647	Screw for hold down plate mounting	1
6	18-1964208	Housing assembly, includes item 15	1	22	18-810074	Gear shim (.005) as needed	1
7	18-1970035	Gear	1	23	18-1912129	Gear shim (.010) as needed	1
8	18-9417392	Pin for gear mounting	1	24	18-811912	Spacer washer, 1-for gear & 1-for weight plate	2
9	18-1954548	Plate for flyweight hold down	1	25	18-1960824	Grommet in housing for primary wire	1
10	18-1970505	Cam automatic and breaker	1	26	18-1961088	Wick	1
11	18-1970504	Spring for flyweight	1	27	18-1963858	Retainer for wick	1
12	18-1880902	Flyweight	1	28	18-1963555	Cam felt wick	1
13	18-1970032	Main shaft and weight plate	1	29	18-1938193	Carbon button for cap	1
14	18-1960325	Housing cover	1				
15	18-1950569	Seal for housing	1				
16	18-1954563	Primary wire assembly	1				

YA60 (12 Volt) Starting Motor Assembly, Delco Remy No. 1998424 (Beginning With Engine Serial No. 6038618)

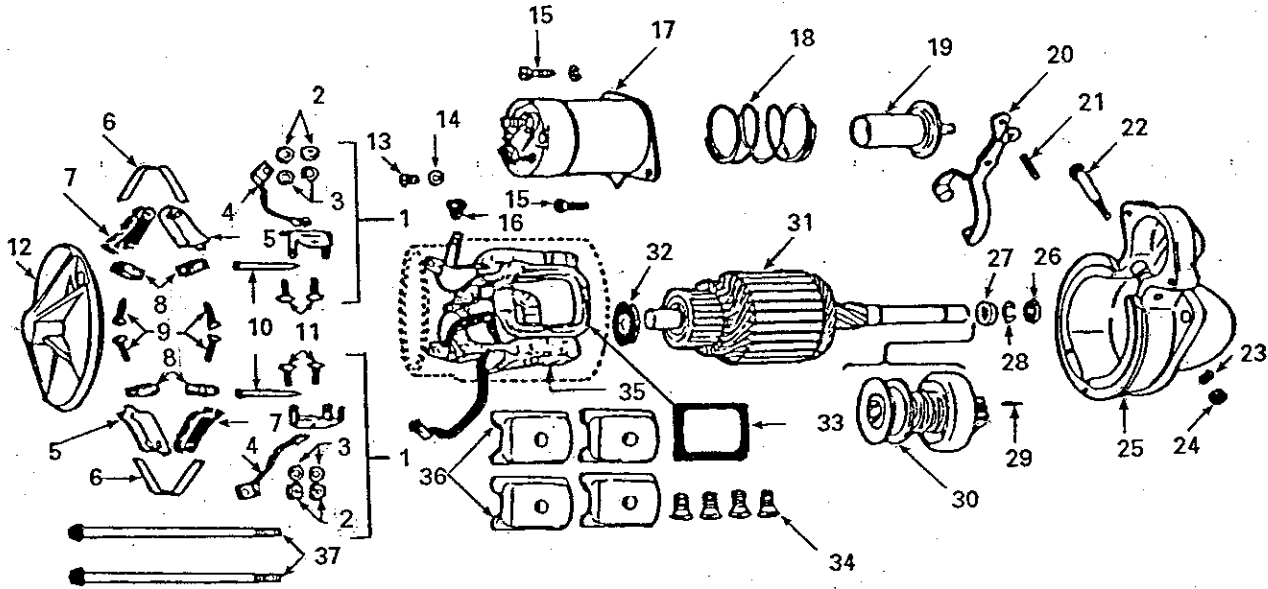
USE WITH MODEL V465D



ITEM PART NO.	DESCRIPTION	QTY	ITEM PART NO.	DESCRIPTION	QTY
1	18-1928015 Support brush holder (includes 2-4, 10, 11)	2	26	18-1916439 Wick	1
2	* Nut	4	27	18-1862383 Bushing	1
3	* Lock washer	4	28	* Lock washer	1
4	* Lead	2	29	* Nut	4
5	18-1926622 Spring	2	30	18-1965225 Drive housing (includes item 27)	1
6	* Brush holder	2	31	18-1928022 Ring	1
7	* Brush holder	2	32	18-1928023 Collar	1
8	18-1906945 Brush	4	33	18-1928021 Collar	1
9	* Screw	2	34	18-1947353 Armature	1
10	* Pin	2	35	18-1914842 Washer	1
11	* Screw	4	36	18-1976832 Insulator	1
12	18-1974157 Frame	1	37	18-809593 Dowel pin	1
13	* Screw	1	38	18-820149 Center bearing plate (includes 18-1894023)	1
14	* Screw	2	39	* Lock washer	4
15	18-1893370 Grommet	1	40	* Screw	4
16	* Washer	1	41	18-1877350 Drive assembly	1
17	18-1978337 Contact assembly	1	42	* Screw	4
18	18-1114524 Solenoid switch assembly	1	43	18-1974375 Field coil assembly	1
19	18-1978281 Spring	1	44	* Pole shoe	4
20	18-1978891 Plunger	1	45	18-1939970 Thru bolt	1
21	18-1951567 Shift lever	1	—	18-1978333 Nut, M10 x 1.5 (not illustrated)	2
22	18-1987049 Pin	1	—	18-1978336 Nut, M5 x 0.8 (not illustrated)	2
23	18-1932197 Stud	1			
24	18-1970263 Boot	1			
25	* Plug	1			

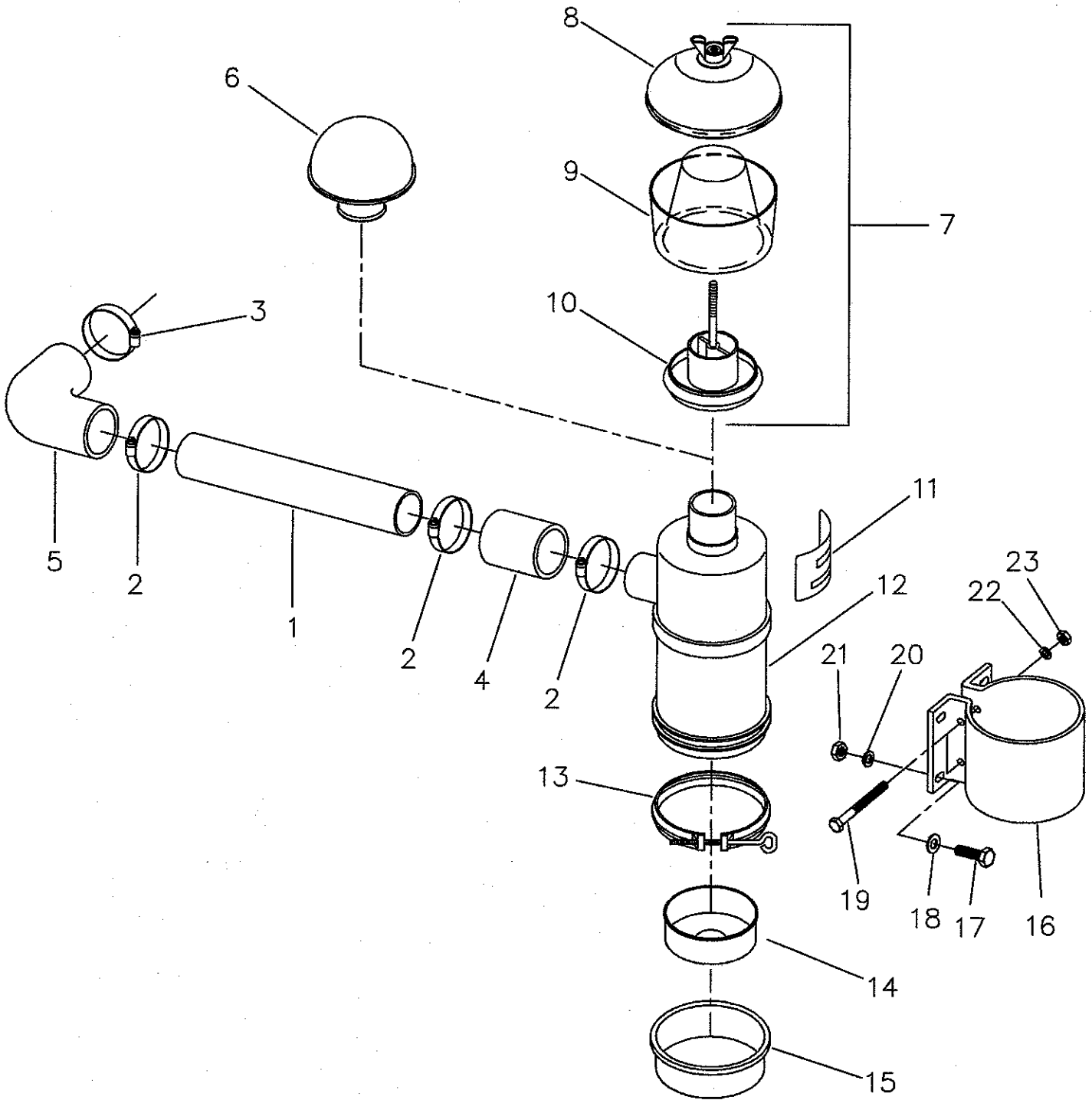
* Not serviced separately.

**YA41 (12 Volt), YA41A (12 Volt) Starting Motors,
Delco Remy No. 1109425 And 1107390**



ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1	18-1928015	Support brush holder (includes 2-4, 10, 11)	2	—	18-1862383	Bushing (not illustrated)	1
2	* —	Nut	4	26	18-1928023	Collar	1
3	* —	Lock washer	4	27	18-1928021	Collar	1
4	* —	Lead	2	28	18-1928022	Ring	1
5	* —	Brush holder	2	29	18-809593	Dowel pin	1
6	18-1926622	Spring	2	30	18-1933838	Drive assembly	1
7	* —	Brush holder	2	31	18-1947353	Armature	1
8	18-1906945	Brush	4	32	18-1914842	Washer	1
9	* —	Screw	2	33	18-1927853	Insulator	4
—	* —	Screw	2	34	* —	Screw	4
10	* —	Pin	2	35	18-1974375	Field coil assembly (YA41A)	1
11	* —	Screw	4	—	18-1974920	Field coil assembly (YA41)	1
12	18-1974157	Frame (YA41A, YA41)	1	36	* —	Pole shoe	4
13	* —	Screw	1	37	18-1939970	Thru bolt	2
14	* —	Lock washer	1	—	18-1956226	Contact assembly	1
15	* —	Screw	2	—	18-1951156	Boot	1
16	18-1893370	Grommet (YA41A)	1	—	* —	Washer	1
—	18-1966391	Grommet (YA41)	1	—	* —	Screw	4
17	18-1114458	Solenoid switch	1	—	* —	Lock washer	4
18	18-1958679	Spring	1	—	18-1949556	Center bearing plate (includes bushing, gasket and oil seal)	1
19	18-1941113	Plunger	1	—	* —	Bushing	1
20	18-1951567	Shift lever	1	—	* —	Gasket	1
21	18-1987049	Pin	1	—	* —	Oil seal	1
22	18-1932197	Stud	1	—			
23	* —	Lock washer	1				
24	* —	Nut	4				
25	18-1967208	Drive housing (includes bushing)	1				

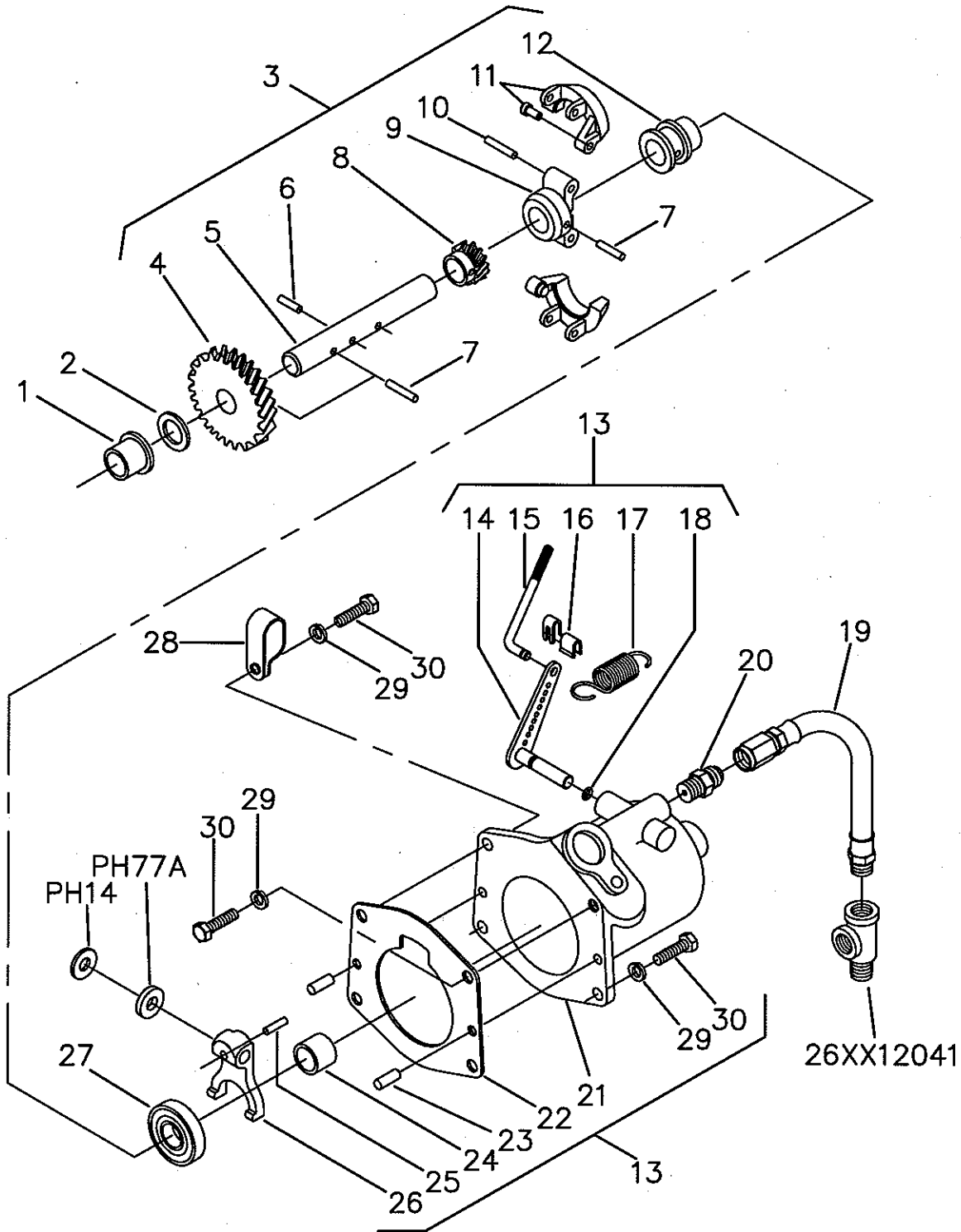
* Not serviced separately.



**AIR CLEANER GROUP
LAA211 & LAA221-OIL BATH**

ITEM	PART NO.	DESCRIPTION	QTY.
1	LJ131	Tube, air inlet	1
2	LK9	Clamp, hose	3
3	X02355	Clamp, hose	1
4	LL30A	Hose connection	1
5	LL89	Elbow, tube to carburetor	1
6	LO62	Cap, air stack	1
7	LO127A	Precleaner assembly (includes items 8 thru 10)	1
8	22P20648	Cover assembly	1
9	22P20227	Bowl	1
10	22P20650	Sleeve assembly	1
11	SD161	Decal, instruction	1
12	LO185S1	Air cleaner (includes items 13 thru 15)	1
13	22P2691	Clamp assembly	1
14	22P17702	Inner oil cup	1
15	22P17703	Outer oil cup	1
16	PG456B	Strap, air cleaner mounting	1
17	XD14A	Screw, 5/16-18 thread x 5/8" long	4
18	PH77A	Washer, 11/32", flat	4
19	XA74	Capscrew, indented	2
20	PE4	Washer, 5/16", spring lock	4
21	PD78	Nut, 5/16-18 thread	3
22	PD198	Locknut, 1/4-20 thread	2

**T89-27 GOVERNOR ASSEMBLY
FOR TOP MOUNT DISTRIBUTOR**



T89-27 GOVERNOR ASSEMBLY
USE WITH V465D1 TOP MOUNT DISTRIBUTOR

ITEM	PART NO.	DESCRIPTION	QTY.
1	HG271	Bushing (part of BD120AS1 Gear cover)	1
2	PH313B	Thrust washer	1
3	TA135	Drive shaft assembly (incl. items 4-12)	1
4	GD143	Drive gear	1
5	^b TA134	Drive shaft	1
6	PA367	Roll pin 1/8" x 3/4" long	1
7	PA359	Roll pin 1/8" x 1-1/4" long	2
8	GF98	Distributor drive gear	1
9	TC346B1	Hub, governor weights	1
10	PA340	Roll pin 3/16" x 1-1/8" long	2
11	TC322DS1	Flyweights (includes thrust pin)	2
12	TC348ES1	Thrust sleeve asm-TC348E thrust sleeve and ME100B thrust bearing (item 27)	1
13	TC507S6	Governor housing asm (incl. items 14, 18, 21, 23-26, PH14 & PH77A)	1
14	TC398E	Cross shaft and lever	1
15	VE892S1	Control rod (includes clip, item 16)	1
16	PK181	Clip	1
17	PM173	Governor spring	2
18	JK52	O-ring 3/16" ID x 5/16" OD	2
19	RM1049J	Oil line-Flex, 3/16" ID x 5"long	1
20	RF269-2	Fitting	1
21	TC507	Housing	1
22	QD615B	Gasket, housing	1
23	PA476	Dowel pin .1877" x 3/4" long	2
24	HG268	Bushing	1
25	PA367	Roll pin, 1/8" x 3/4" long	1
26	VB98A6	Yoke	1
27	ME100B	Thrust bearing	1
28	PG314A	Clip - for securing spark plug wires	2
29	PE4	Washer, 5/16" spring lock	4
30	XD17B	Screw, 5/16-18 x 1" long	4
---	^a YF50E	Distributor, S.S.I. (for top mount)	1
---	^a PG543A1	Advance arm	1
---	^a PE3	Washer, 1/4" spring lock (distributor advance arm)	1
---	^a XD5	Screw, 1/4-20 x 5/8" long (distributor advance arm)	1
---	^a YL339-18	Spark plug wire, to #2 cylinder	1
---	^a YL339-22	Spark plug wire, to #4 cylinder	1
---	^a YL339-32	Spark plug wire, to #1 cylinder	1
---	^a YL339-36	Spark plug wire, to #3 cylinder	1
---	^a YD20	Terminal protector, distributor	5
---	^a PG556B	Bracket, coil	1
---	^a YF41A	Coil, ignition 12V	1
---	^a YD20A	Terminal protector, coil	1
---	^a YL358A12	Coil wire-high tension	1
---	^a PE74	Washer, 1/4" IT/ET lock (for coil bracket hold down)	1
---	^a BH162	Cover, magneto opening	1
---	^a QD616	Gasket, magneto (for magneto cover)	1
---	^a XD27A	Screw 3/8-16 x 1" long (for magneto cover)	2
---	^a PE5	Washer, 3/8", spring lock (for magneto cover)	2

^a Not illustrated

^b Not serviced separately

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