

Service Parts

RV/Mobile Generator Sets



Models:

4/5CKM-RV
4/5CFKM-RV
4/5CKMR
4CFKM

KOHLER[®]
POWER SYSTEMS

ISO 9001
KOHLER
GENERATORS
INTERNATIONALLY REGISTERED
U.S.A. Plant ISO Registered

Specification Series 101

TP-5395 4/97a

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Introduction

This manual contains a list of generator and engine service replacement parts for Kohler RV/Mobile generator sets. Refer to the Specification Number Index for models and specifications covered.

This manual includes the following main sections:

- **Table of Contents:** Lists the sections of this catalog.
- **Introduction (and other information sections):** Contains introductory material followed by sections on specification numbers, part numbers, and hardware.
- **Index:** Indexes generator set specifications and their groups.
- **Group Parts Lists:** Lists part numbers of parts in the groups.
- **Kit List and kit sections:** Lists kits and their parts.
- **Appendices:** Includes Glossary of Abbreviations, Common Hardware Application Guidelines, Common Hardware Identification, General Torque Specifications, and Common Hardware List.

Number Significance

This catalog uses a variety of numbering systems. A description of these follows:

- **Specification Number:** The generator specification number (spec number) is six digits with a PA-, PB-, or PE- prefix (Specification Number Index does not show prefixes). The first three digits designate generator size and engine model (specification series). The remaining digits are in sequence and identify a particular spec in a series. Spec numbers break down into groups.
- **Group Number:** A group consists of parts needed to perform one or more related functions. For example, the 101 group is the generator set Air Intake group.
- **Variation Number:** A group might have several variations. Parts comprising each variation perform the same function, but parts lists vary. For example, a 50 Hz generator alternator and 60 Hz generator alternator both perform the same function. However, they are constructed of different parts. Each of these differences necessitates the assignment of a group variation number.
- **Part Number:** The part number identifies an individual assembly, subassembly, component, or accessory kit.

How to Find Part Numbers

FOLLOW THESE STEPS to identify a part:

STEP 1: Turn to the Specification Number Index. The first column lists generator set specification numbers grouped by model. The headings across the top identify the groups of parts

that make up the generator set. The intersection of the specification number and the group numbers is the variation number corresponding to the components of that specification number. Note the variation number.

STEP 2: Find the page number of the group in the Table of Contents and turn to that page or page forward until you find the group. Use the drawings and itemized text to locate the part and its part number.

Hardware Grades

When replacing hardware do not substitute inferior grade hardware. All hex. head screws are hardness grade 5, except where noted. Socket head screws are similar to grade 8. All replacement hardware should be at least equal to original manufacturer's hardware quality. Refer to Common Hardware Application Guidelines and Common Hardware Identification in the back of the manual.

Hardware References

Many common hardware items will appear in parts catalogs as common hardware entries or hardware references. A common hardware entry refers to the size of common hardware to apply in accordance with hardware guidelines. For example, an item may appear as "3/8-16 hardware" in the text. It indicates that the piece is 3/8-16 size. See Common Hardware Application Guidelines.

A hardware reference has the abbreviation "ref." in the part's description. Hardware references specify common hardware items; however, size or some other characteristic requires specification in that application. For example, item 1 in Figure 1 below might appear in the text as follows:

Screw, 3/8-16 x 1, ref. X-6021-1

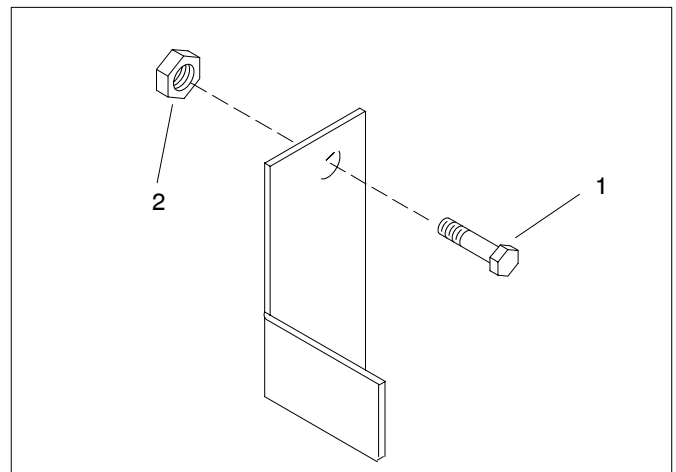


Figure 1. Hardware References

Specification Number Index

GROUP TITLE & NUMBER	<i>Low Oil Press. Switch</i>	<i>Air Intake</i>	<i>Fuel System</i>	<i>Coolant System</i>	<i>Engine</i>	<i>Nameplate and Decals</i>	<i>Skid and Plant Mounting</i>	<i>Starter</i>	<i>Exhaust</i>	<i>Generator and Mounting</i>	<i>Controller and Mounting</i>	<i>Literature</i>	<i>Gasket Set</i>
	32	101	103	104	105	107	109	112	116	201	301	701	
SPEC NO.	VARIATION NUMBER												
4 kW													
101302	13	15	11	2	12	55	22	7	10	26	31	5	1
101304	13	15	11	2	12	25	22	7	10	49	32	5	1
101305	13	16	20	2	12	37	22	7	10	29	76	5	1
101308	13	16	11	2	12	35	22	7	10	30	79	5	1
101310	13	16	11	2	12	56	22	7	10	32	80	5	1
101312	13	14	13	2	12	32	22	7	10	29	81	5	1
101313	13	14	14	2	13	35	22	7	10	30	84	5	1
101314	13	12	14	2	13	35	22	7	10	49	43	5	1
101315	13	12	15	2	13	35	22	7	10	49	43	5	1
101316	13	14	15	2	13	35	22	7	10	30	84	5	1
101317	13	14	19	2	13	32	22	7	10	29	81	5	1
101318	13	16	11	2	12	39	22	7	10	33	86	5	1
101319	13	16	20	2	12	37	22	7	10	34	86	5	1
101320	13	15	11	2	12	41	22	7	10	26	88	5	1
101321	13	15	11	2	12	41	22	7	10	49	87	5	1
101322	13	21	21	4	17	45	25	9	13	46	66	5	1
101323	13	21	21	4	17	50	25	9	13	44	63	5	1
101324	13	21	21	4	17	42	25	9	13	48	71	51	1
101325	13	21	25	4	17	53	25	9	13	42	63	5	1
101326	13	21	25	4	17	53	25	9	13	43	71	5	1
101327	13	21	21	4	17	60	25	9	13	47	73	5	1
101328	13	21	21	4	17	61	25	9	13	45	104	5	1
101329	13	21	21	4	17	42	25	9	13	47	74	5	1
101330	13	21	21	4	17	41	25	9	13	46	73	5	1
101331	13	20	22	4	17	47	25	9	13	46	67	5	1
101332	13	19	22	4	17	47	25	9	13	44	62	5	1

Specification Number Index

GROUP TITLE & NUMBER	<i>Breather and Vent</i>	<i>Camshaft and Valves</i>	<i>Carburetor</i>	<i>Crankcase</i>	<i>Crankshaft</i>	<i>Cylinder Head</i>	<i>Dipstick</i>	<i>Starter</i>	<i>Flywheel</i>	<i>Fuel Pump</i>	<i>Ignition</i>	<i>Piston and Rod</i>	<i>Oil Pump</i>	<i>Oil Filter</i>
	3	4	5	7	8	9	10	11	13	14	18	22	25	29
SPEC NO.	VARIATION NUMBER													
4 kW														
101333	13	34	91	214	87	31	25	1	87	2	136	14	4	18
101334	13	34	91	214	87	31	25	1	87	2	136	14	4	18
101335	13	34	91	214	87	31	25	1	87	2	136	14	4	18
101336	13	34	91	214	87	31	25	1	87	2	136	14	4	18
101337	13	34	91	214	87	31	25	1	87	2	136	14	4	18
101338	13	34	91	214	87	31	25	1	87	2	136	14	4	18
101339	13	34	91	214	87	31	25	1	87	2	136	14	4	18
101340	13	34	91	214	87	31	25	1	87	2	136	14	4	18
101341	13	34	91	214	87	31	25	1	87	2	136	14	4	18
101342	13	34	91	214	87	31	25	1	87	2	136	14	4	18
101343	13	34	91	214	87	31	25	1	87	2	136	14	4	18
101344	13	34	91	214	87	31	25	1	87	2	136	14	4	18
101345	13	34	91	214	87	31	25	1	87	2	136	14	4	18
101346	13	34	91	214	87	31	25	1	87	2	136	14	4	18
101347	13	34	91	214	87	31	25	1	87	2	136	14	4	18
101348	13	34	91	214	87	31	25	1	87	2	136	14	4	18
101349	13	34	91	214	87	31	25	1	87	2	136	14	4	18
101350	13	34	91	214	87	31	25	1	87	2	136	14	4	18
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101354	13	34	92	214	87	31	25	1	87	2	136	14	4	18
101355	13	34	92	214	87	31	25	1	87	2	136	14	4	18
101356	13	34	92	214	87	31	25	1	87	2	136	14	4	18
101357	13	34	92	214	87	31	25	1	87	2	136	14	4	18
101358	13	34	92	214	87	31	25	1	87	2	136	14	4	18
101359	13	34	92	214	87	31	25	1	87	2	136	14	4	18
101360	13	34	92	214	87	31	25	1	87	2	136	14	4	18

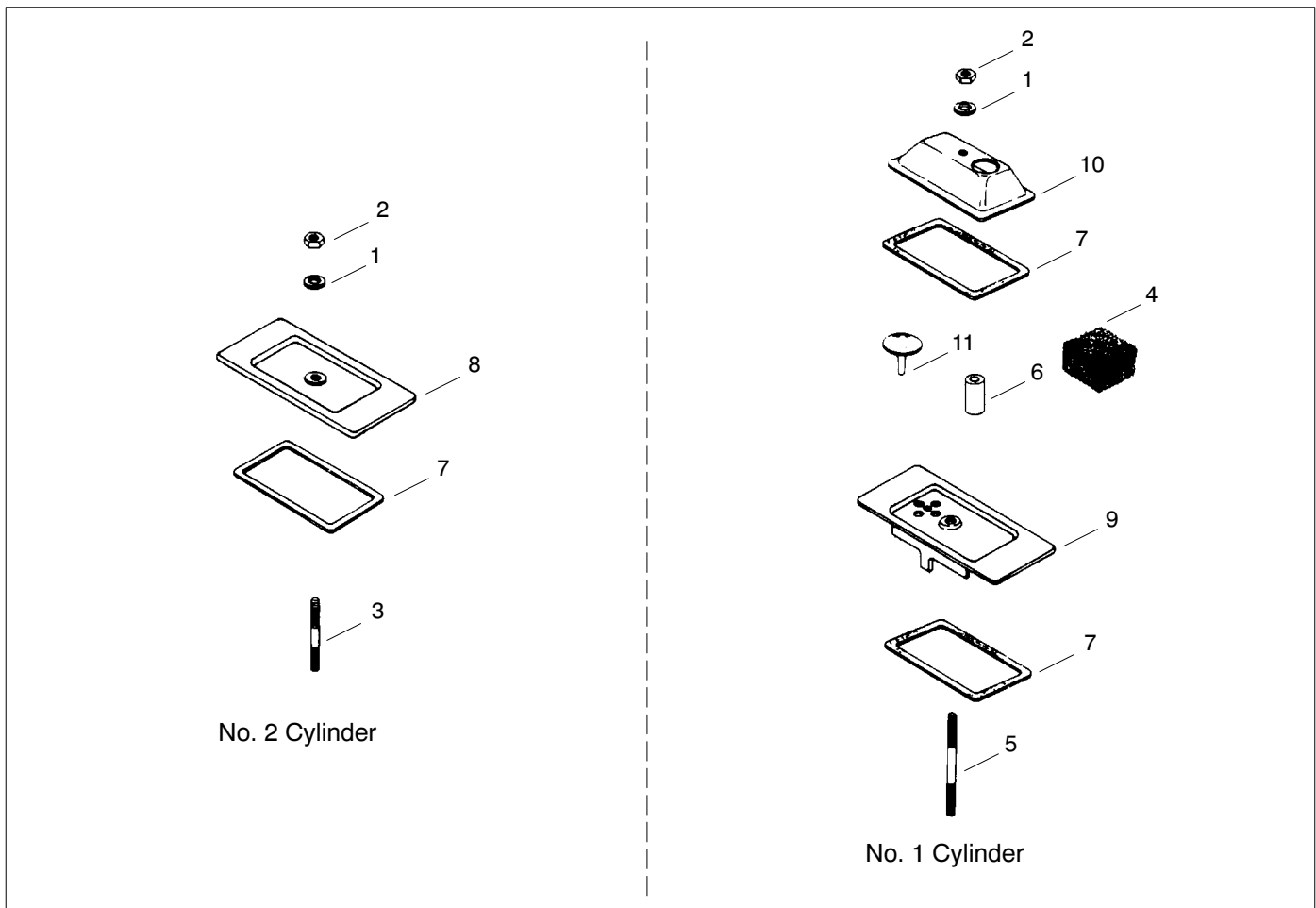
Specification Number Index

GROUP TITLE & NUMBER	<i>Low Oil Press. Switch</i>	<i>Air Intake</i>	<i>Fuel System</i>	<i>Coolant System</i>	<i>Engine</i>	<i>Nameplate and Decals</i>	<i>Skid and Plant Mounting</i>	<i>Starter</i>	<i>Exhaust</i>	<i>Generator and Mounting</i>	<i>Controller and Mounting</i>	<i>Literature</i>	<i>Gasket Set</i>
	32	101	103	104	105	107	109	112	116	201	301	701	
SPEC NO.	VARIATION NUMBER												
4 kW													
101333	13	19	22	4	17	49	25	9	13	42	62	5	1
101334	13	20	23	4	17	47	25	9	13	46	67	5	1
101335	13	19	23	4	17	47	25	9	13	44	62	5	1
101336	13	19	24	4	17	49	25	9	13	42	62	5	1
101337	13	16	11	2	13	56	22	7	10	47	95	5	1
101338	13	16	11	2	13	55	22	7	10	46	94	5	1
101339	13	14	27	2	13	35	22	7	10	46	67	5	1
101340	13	14	28	2	13	35	22	7	10	46	67	5	1
101341	13	16	20	2	13	37	22	7	10	42	93	5	1
101342	13	16	11	2	13	34	22	7	10	44	93	5	1
101343	13	16	11	2	13	56	22	7	10	45	97	5	1
101344	13	14	27	2	13	32	22	7	10	42	90	5	1
101345	13	14	27	2	13	58	22	7	10	44	90	5	1
101346	13	14	28	2	13	58	22	7	10	44	90	5	1
101347	13	14	26	2	13	32	22	7	10	42	90	5	1
101348	13	16	11	2	13	39	22	7	10	48	98	5	1
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101350	13	16	11	2	13	39	22	7	10	47	100	5	1
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101354	13	21	25	4	17	53	25	9	13	50	102	5	1
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101357	13	19	29	4	17	49	26	9	13	42	62	5	1
101358	13	19	30	4	17	42	26	9	13	45	101	5	1
101359	13	21	21	4	17	45	25	9	13	46	66	5	1
101360	13	21	25	4	17	53	25	9	13	42	63	5	1

Group 3: Breather and Vent

Item	Qty.	Description Variation	Part No.
1	2	Washer, 17/64 x 15/32 x .032 12, 13	X-25-12
2	2	Nut, hex, 1/4-20 12, 13	X-81-1
3	1	Stud 12, 13	X-352-39
4	1	Filter, breather 12, 13	231419
5	1	Stud, valve cover 12, 13	275220
6	1	Seal, breather 12, 13	52 032 04

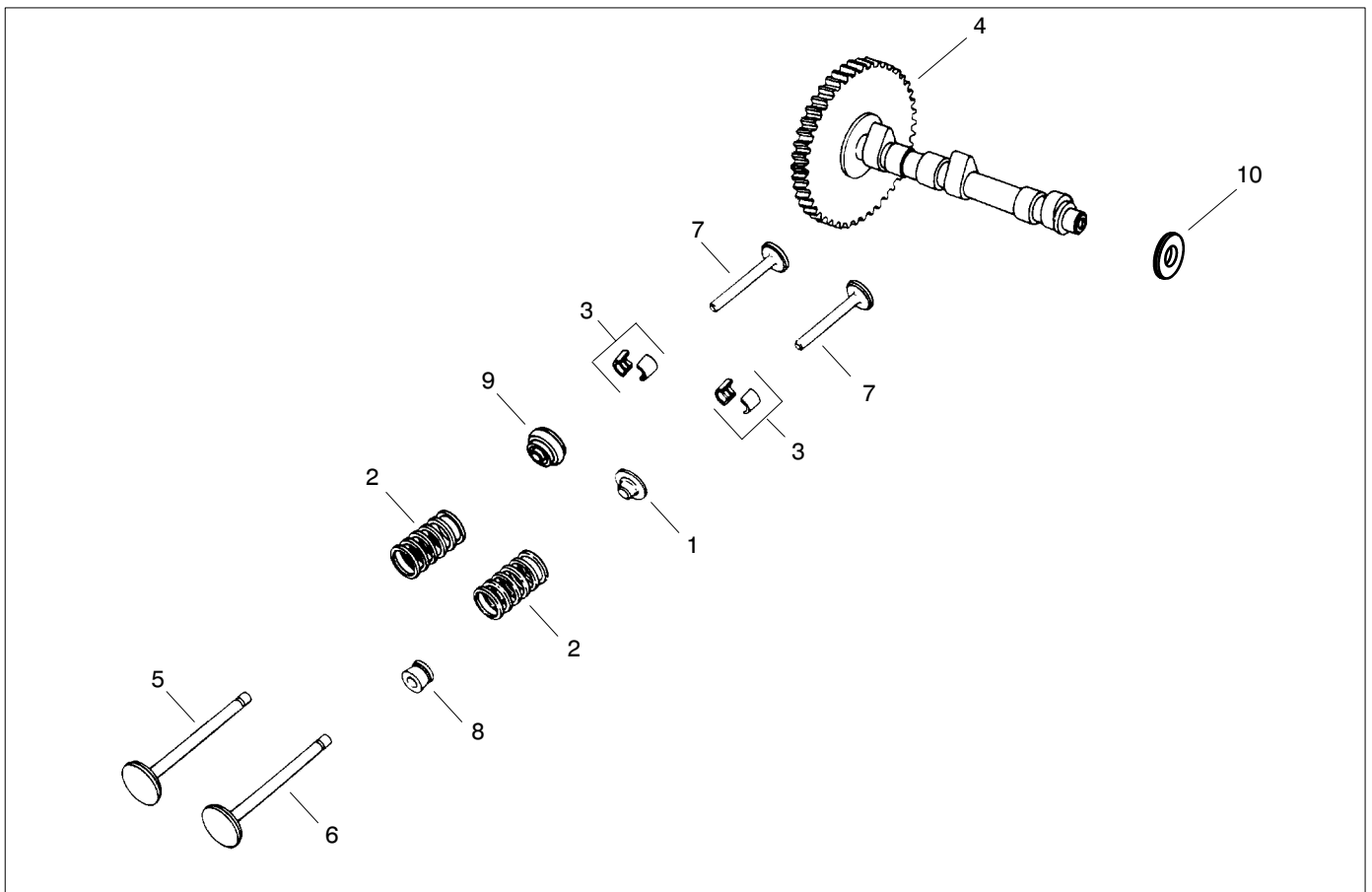
Item	Qty.	Description Variation	Part No.
7	3	Gasket, valve cover 12, 13	52 055 01
8	1	Cover, valve #2 side 12, 13	52 096 40
9	1	Cover, valve #1 side 12, 13	52 096 41
10	1	Cover assembly, valve 12	52 096 43
1	1	Cover assembly, valve 13	52 033 03
11	1	Valve umbrella 12, 13	52 462 01



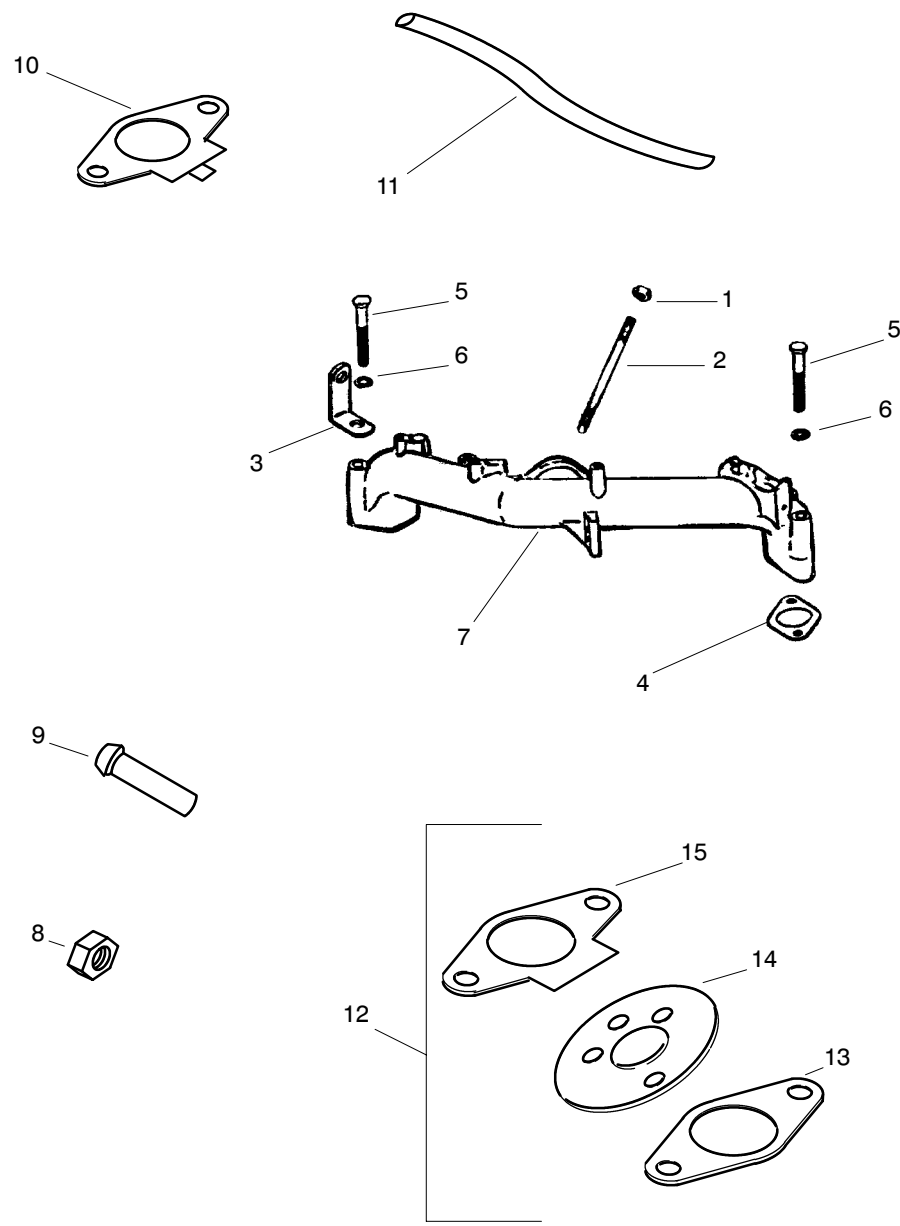
Group 4: Camshaft and Valves

Item	Qty.	Description Variation	Part No.
1	2	Retainer, valve spring 33, 34	230011
2	4	Spring, valve 33, 34	25 089 01
3	4	Kit retainer 33, 34	41 755 10
4	1	Camshaft assembly 33, 34	52 010 04
5	2	Valve, faced exhaust 33	52 016 06
	2	Valve, faced exhaust 34	52 016 05

Item	Qty.	Description Variation	Part No.
6	2	Valve, intake 33	52 017 07
	2	Valve, intake 34	52 017 08
7	4	Tappet, valve 33, 34	52 019 03
8	2	Seal, valve 33, 34	52 032 13
9	2	Valve, rotator 33, 34	52 413 01
10	3	Shim 33, 34	52 422 03



Group 5: Carburetor



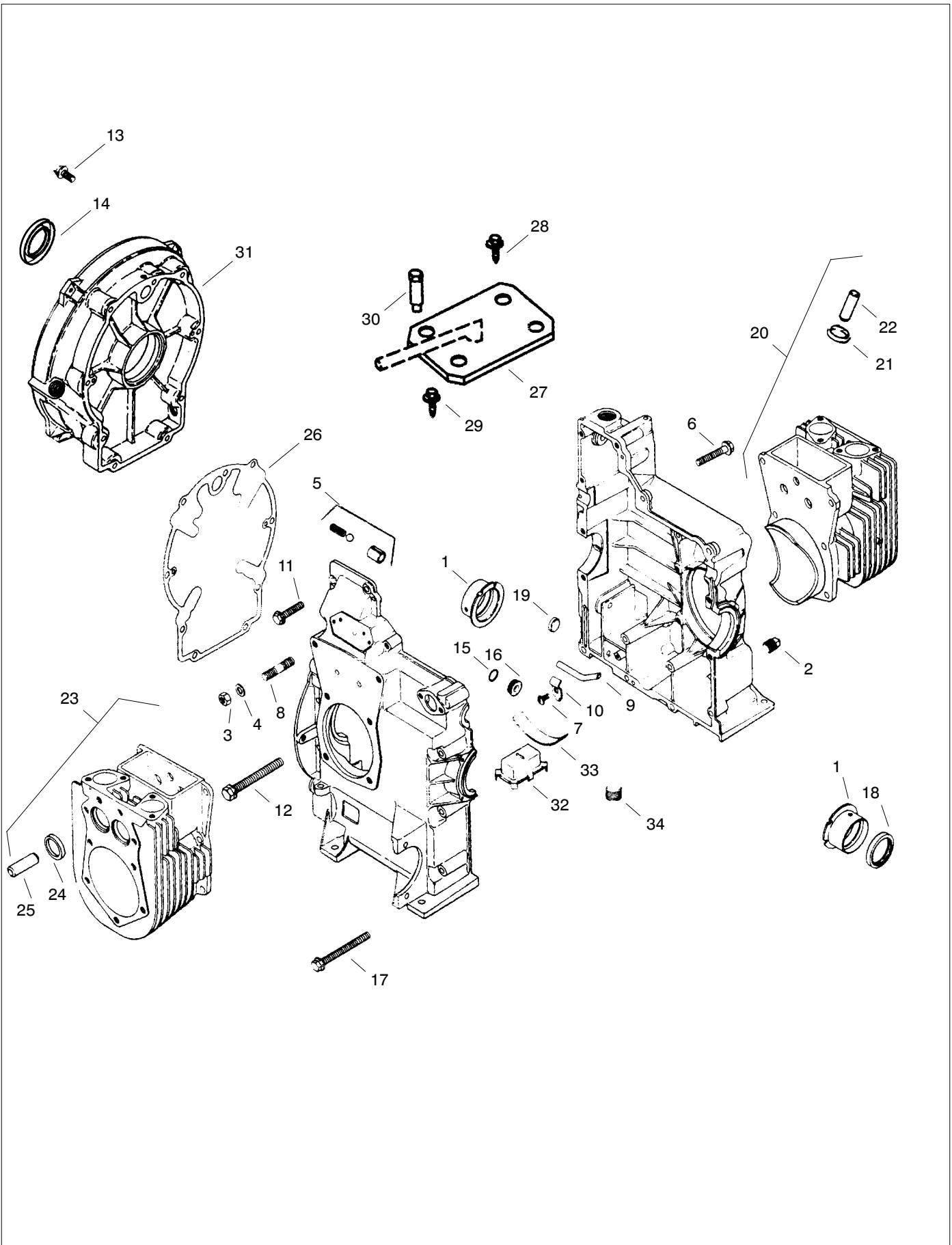
Group 5: Carburetor

Item	Qty.	Description Variation	Part No.
1	2	Nut, 5/16-18 82	X-77-2
2	2	Stud, 1/4-20 x 1 82, 91	50 072 02
	2	Stud 92	25 072 02
3	2	Strap, lifting 82, 91, 92	52 445 05
4	2	Gasket, intake 82, 91, 92	52 041 09
5	4	Screw, H.C., 5/16-18 x 2 82, 91, 92	X-6-29
6	4	Washer, lock, 5/16 82, 91, 92	X-21-1
7	1	Manifold, intake 82	52 164 20
	1	Manifold intake 91	52 164 21
	1	Manifold, intake 92	52 164 22
8	2	Nut, 1/4-20 82, 91, 92	X-76-2
9	1	Hose fitting 82, 91	X-380-1

Item	Qty.	Description Variation	Part No.
1		Connector 92	25 155 02
10	1	Heater, thermistor 82, 91, 92	52 319 02
	1	Thermostat, low temperature 92	52 453 01
11	1	Line, fuel 82, 91	25 353 06
	1	Line, fuel 92	25 353 12
12	1	Kit, carburetor (gasoline models only) (includes items 13-15, and carburetor assembly in Group 103) 82, 91, 92	52 853 32
13	1	Gasket, carburetor 82, 91, 92	210223
14	1	Gasket, air cleaner 82, 91, 92	41 041 11
15	1	Gasket, thermistor 82, 91, 92	52 041 22

NOTE: See Group 103 for carburetor component parts and LP gas PTC assembly and gasket.

Group 7: Crankcase



Group 7: Crankcase

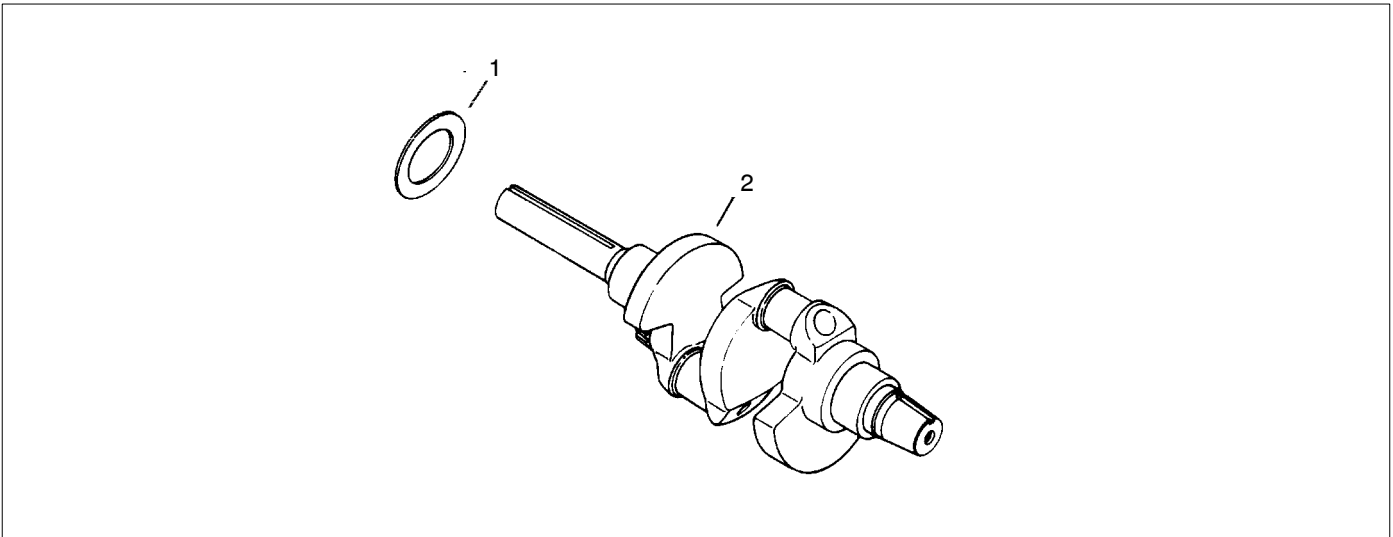
Item	Qty.	Description Variation	Part No.
1	2	Bearing, sleeve (std.) 198, 204, 205, 211, 214, 215	52 030 10
	2	Bearing, sleeve (.010) 198, 204, 205, 211, 214, 215	52 030 11
	2	Bearing, sleeve (0.20) 198, 204, 205, 211, 214, 215	52 030 12
2	1	Plug, pipe, 3/8 198, 204, 205	X-75-10
3	12	Nut, hex, 5/16-18 198, 204, 205, 211, 214, 215	X-82-2
4	12	Washer, flat, 5/16 198, 204, 205, 211, 214, 215	52 468 12
5	2	Kit, oil relief 198, 204, 205, 211, 214, 215	52 755 50
6	2	Screw, hex flange, 5/16-18 x 2 198, 204, 205	25 086 12
7	1	Screw, self-tapping 198, 204, 205, 211	X-67-64
8	12	Studs 198, 204, 205, 211	52 072 12
9	1	Tube, dipstick 198, 204, 205, 211	52 123 10
10	1	Clamp, tube 198, 204, 205, 211	52 237 05
11	3	Screw, hex flange, 5/16-18 x 1-1/2 198, 204, 205	25 086 10
12	2	Screw, hex flange, 3/8-16 x 3-5/8 198, 204, 205	25 086 13
13	9	Screw, W.H., 5/16-18 x 1 198, 204, 205, 211, 214, 215	X-802-9
14	1	Seal, rear oil 198, 204, 205, 211, 214, 215	X-583-5
15	1	O-Ring 198, 204, 205, 211, 214, 215	52 141 02
16	1	Plug 198, 204, 205, 211, 214, 215	52 139 08
17	8	Screw, hex flange, 5/16-18 x 3-1/2 198, 204, 205	25 086 11
18	1	Seal, front oil 198, 204, 205, 211, 214, 215	52 032 10
19	1	Cup, plug 198, 204, 205, 211, 214, 215	X-702-15
20	1	Kit, Barrel, #1 cylinder	52 565 81

Item	Qty.	Description Variation	Part No.
		(includes items 21-22) 198, 205, 215	
	1	Kit, Barrel, #1 cylinder (includes items 21-22) 204, 211, 214	52 565 83
21	1	Insert, valve seat 198, 204, 205, 211	52 031 01
22	2	Guide, valve 198, 204, 205, 211, 214, 215	52 316 06
23	1	Kit, Barrel, #2 cylinder (includes items 24-25) 198, 205, 215	52 565 82
	1	Kit, Barrel, #2 cylinder (includes items 24-25) 204, 211, 214	52 565 84
24	1	Insert, valve seat 198, 204, 205, 211	52 031 01
25	2	Guide, valve 198, 204, 205, 211, 214, 215	52 316 06
26	1	Gasket, closure plate 198, 204, 205, 211, 214, 215	52 041 15
27	1	Cover, crankcase 198, 215	52 096 44
	1	Cover, crankcase 204, 205, 211, 214	52 096 39
28	2	Screw, hex head 1/4-20 x 5/8 198, 204, 205, 211, 215	52 086 11
29	1	Screw, hex head 1/4-20 198, 204, 205, 211, 214, 215	X-67-96
30	1	Spacer 198, 204, 205, 214, 215	52 112 15
31	1	Adapter, generator 198, 204, 205	52 029 20
	1	Adapter, generator 211, 214, 215	52 029 22
32	1	Housing, oil pickup 198, 204, 205	52 095 03
33	1	Clip, spring 198, 204, 205	52 237 02
34	1	Screw, hex ctsl., 3/8 N.P.T.F. 204, 205, 211, 214	X-75-32
35	1	Crankcase Assembly (service with short block)	
	1	Short Block 87, 204, 214	82 522 38
	1	Short Block 198, 215	82 522 39

Group 8: Crankshaft

Item	Qty.	Description Variation	Part No.
1	1	Thrust washer 87, 135	52 468 03
	1	Thrust washer 87, 135	52 468 04
	1	Thrust washer 87, 135	52 468 05

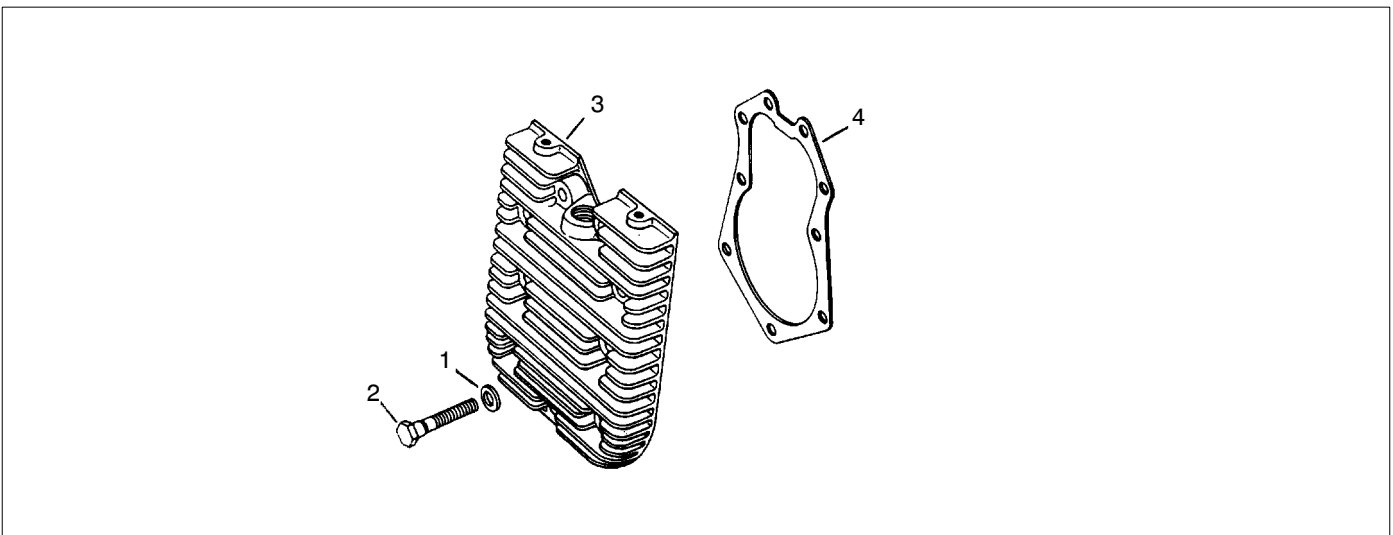
Item	Qty.	Description Variation	Part No.
2	1	Crankshaft 87	82 014 10
	1	Crankshaft, M20 135	82 014 11



Group 9: Cylinder Head

Item	Qty.	Description Variation	Part No.
1	18	Washer, 5/16 I.D. 31	220534
2	18	Screw, hex head 5/16-18 x 1 1/2 31	41 086 02

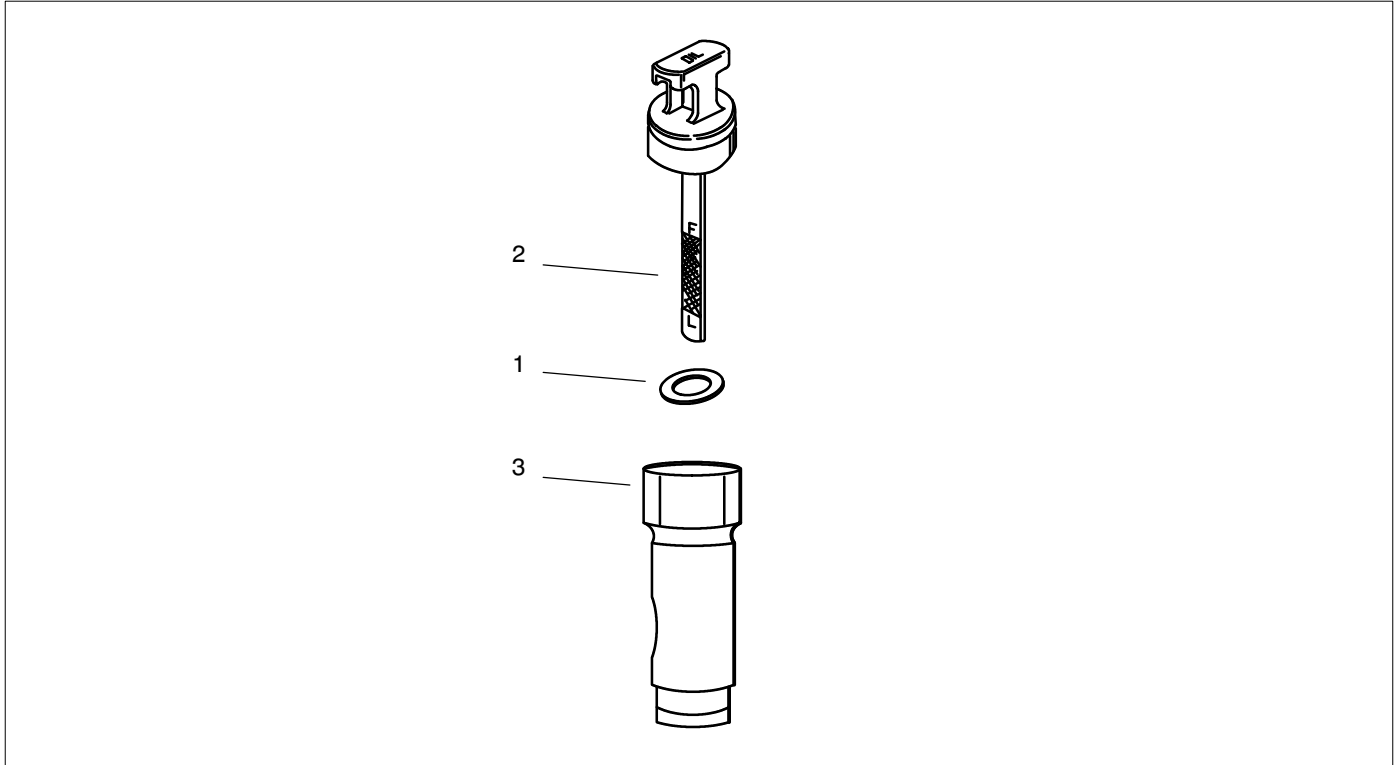
Item	Qty.	Description Variation	Part No.
3	2	Head, cylinder 31	52 015 12
4	2	Gasket 31	52 041 21



Group 10: Dipstick

Item	Qty.	Description Variation	Part No.
1	1	O-Ring 25	41 153 01
2	1	Dipstick 25	52 038 20

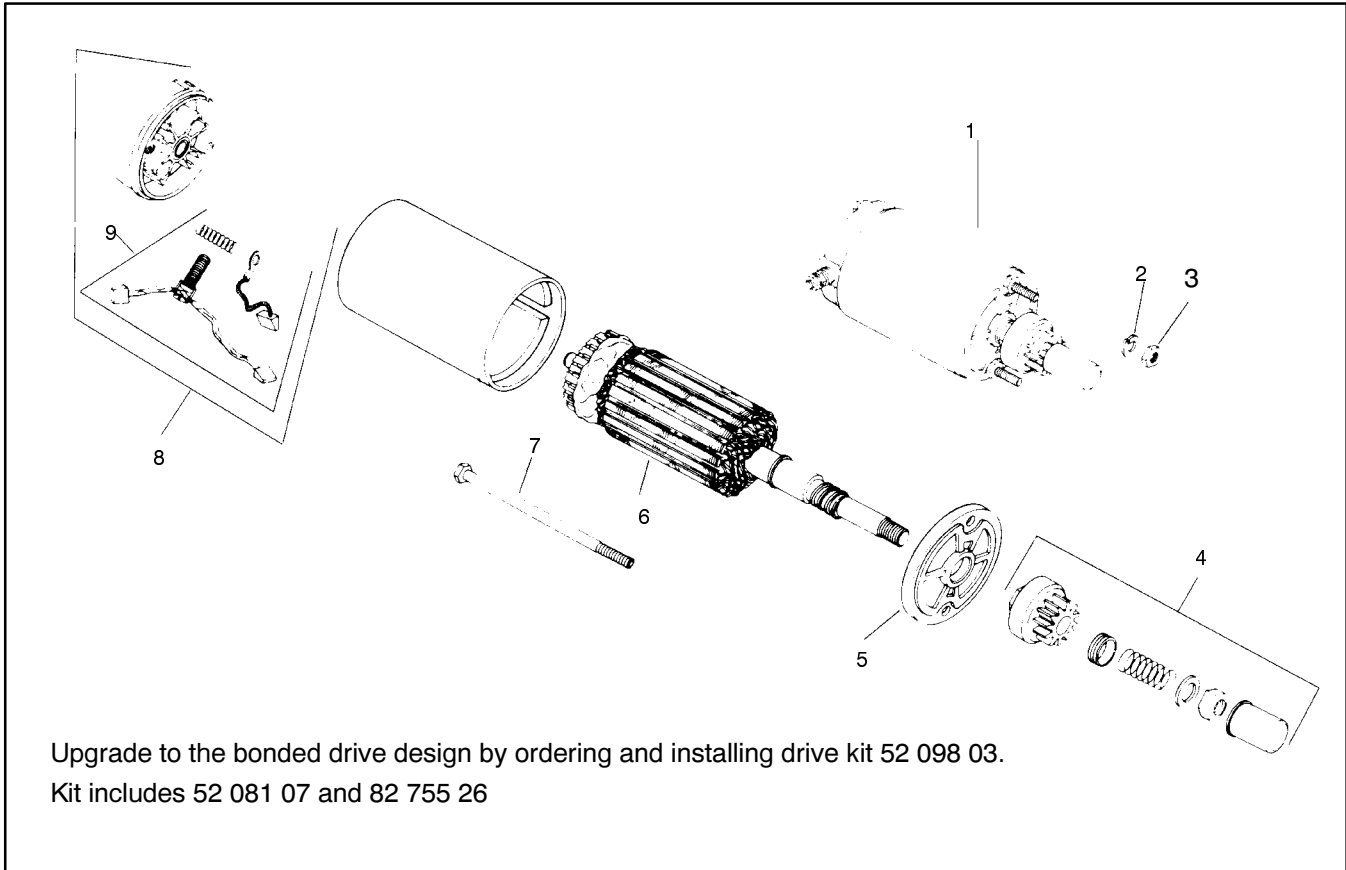
Item	Qty.	Description Variation	Part No.
3	1	Tube, oil fill 25	52 123 26



Group 11: Starter

Item	Qty.	Description Variation	Part No.
1	1	Starter assembly (older inertia drive) (Includes 4 through 10) 1, 9	52 098 03
1	1	Starter assembly (newer bonded drive) (includes 4 through 10) 1, 9	52 098 12
2	2	Washer, split lock 1/4" 1	X-20-1
3	2	Nut, hex 1/4"-20 1	x-81-1
4	1	Kit drive (older inertia drive) 1	52 755 05
4	1	Kit drive (newer bonded drive) 1	52 755 26
5	1	Cap drive end (older inertia drive) 1	52 227 01
5	1	Cap drive end (newer bonded drive) 1	52 081 07

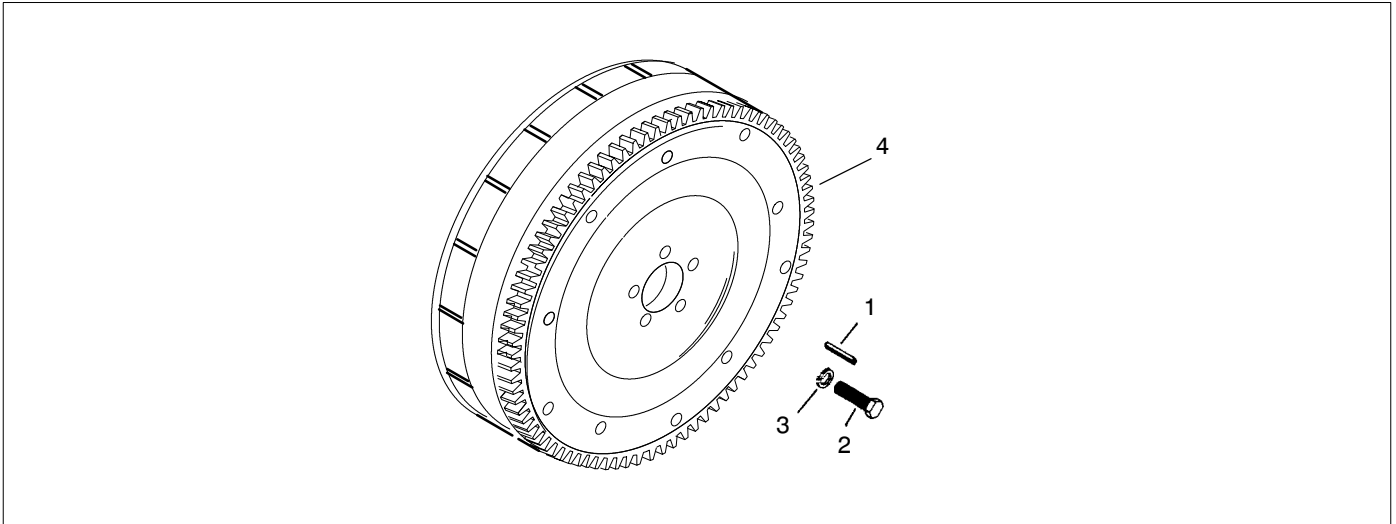
Item	Qty.	Description Variation	Part No.
6	1	Armature (older inertia drive) 1	52 170 02
6	1	Armature (newer bonded drive) 1	52 170 05
7	2	Bolt, thru 1/4-20X5-7/8" 1	52 211 01
8	1	Cap, commutator end assembly (includes 9) older inertia drive 1	277612
8	1	Cap, commutator end assembly (includes 9) newer bonded drive 1	52 227 10
9	1	Kit, brush & spring (older inertia drive) 1	52 755 15
9	1	Kit brush and spring (newer bonded drive) 1	52 755 28



Group 13: Flywheel

Item	Qty.	Description Variation	Part No.
1	1	Key, square, 7/8 x .18 81, 87	X-286-17
2	1	Screw 81, 87	25 086 24

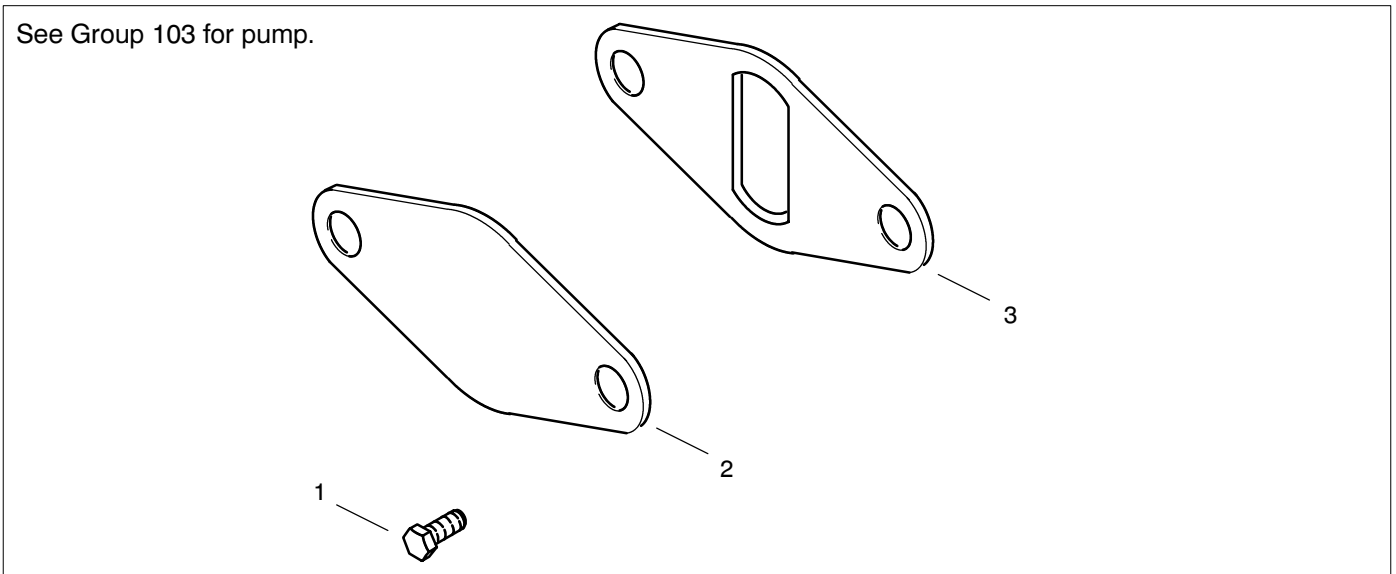
Item	Qty.	Description Variation	Part No.
3	1	Washer 81, 87	52 468 15
4	1	Flywheel 81, 87	278704



Group 14: Fuel Pump

Item	Qty.	Description Variation	Part No.
1	2	Screw, hex head, 1/4-20 x 1/2 2	X-132-6
2	1	Plate, pump pad cover 2	240282

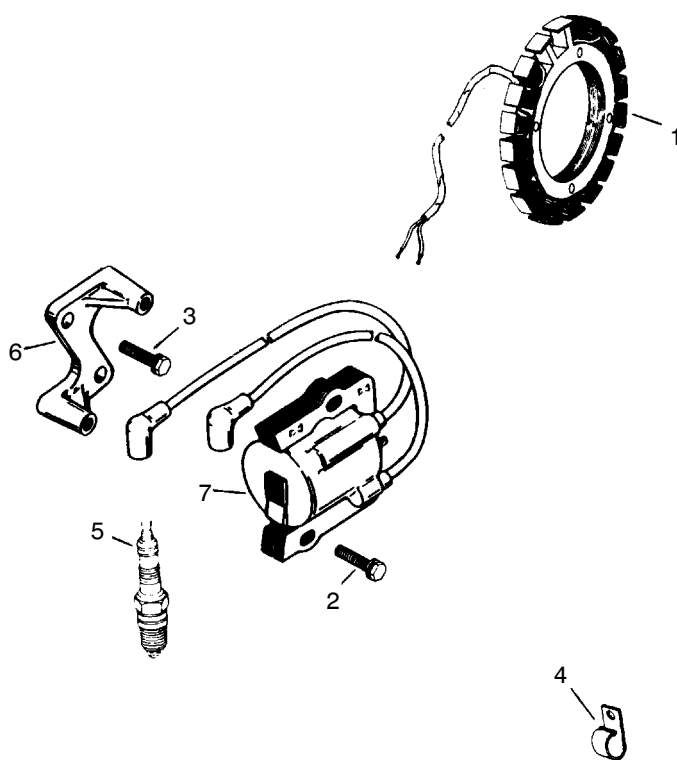
Item	Qty.	Description Variation	Part No.
3	1	Gasket, fuel pump 2	25 041 05



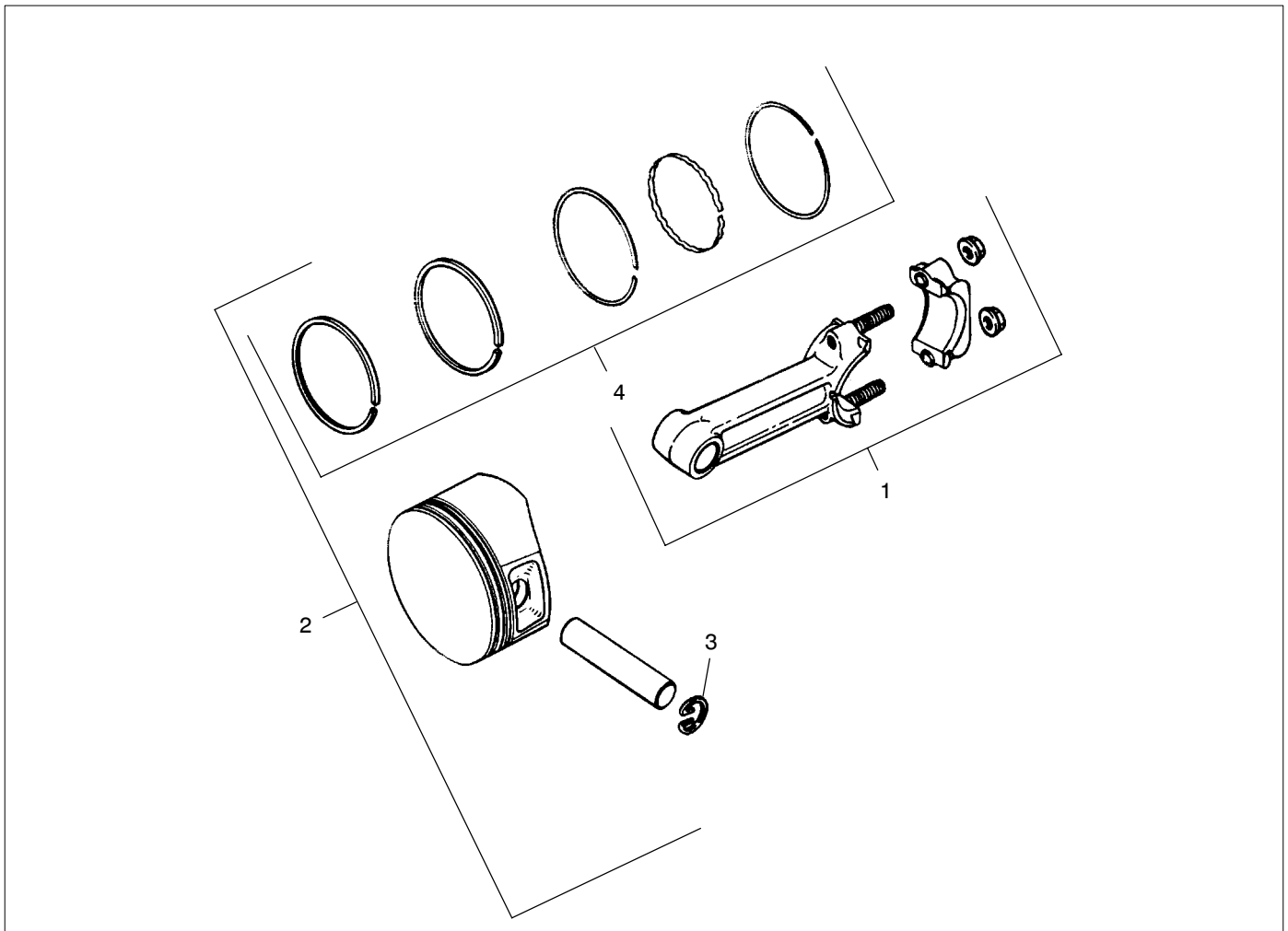
Group 18: Ignition

Item	Qty.	Description Variation	Part No.
1	1	Kit, stator 83, 136	237878
2	2	Screw, hex hd, 1/4-20 x 1 83, 136	25 086 15
3	2	Screw, hex hd, 1/4-20 x 1 83, 136	25 086 16
4	1	Clip, cable 83, 136	48 154 02

Item	Qty.	Description Variation	Part No.
5	2	Plug, spark (RV17YC) 83, 136	52 132 02
6	1	Bracket, module 83, 136	52 126 21
7	1	Module, ignition 83, 136	52 584 02
1	1	Baffle, coil 136	52 063 43



Group 22: Piston and Rod



Item	Qty.	Description Variation	Part No.
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Model M18 (4kW)

1	2	Connecting rod (Std.) 14	52 067 67
	2	Connecting rod (.010)	52 067 68
2	2	Piston w/ring set (Std.) 14	52 874 11
	2	Piston w/ring set (.003)	52 874 12
	2	Piston w/ring set (.010)	52 874 13
	2	Piston w/ring set (.020)	52 874 14
	2	Piston w/ring set (.030)	52 874 15
3	4	Retainer, piston pin 14	230004
4	2	Ring set (Std. and .003) 14	52 108 09
	2	Ring set (.010)	52 108 10
	2	Ring set (.020)	52 108 11
	2	Ring set (.030)	52 108 12

Item	Qty.	Description Variation	Part No.
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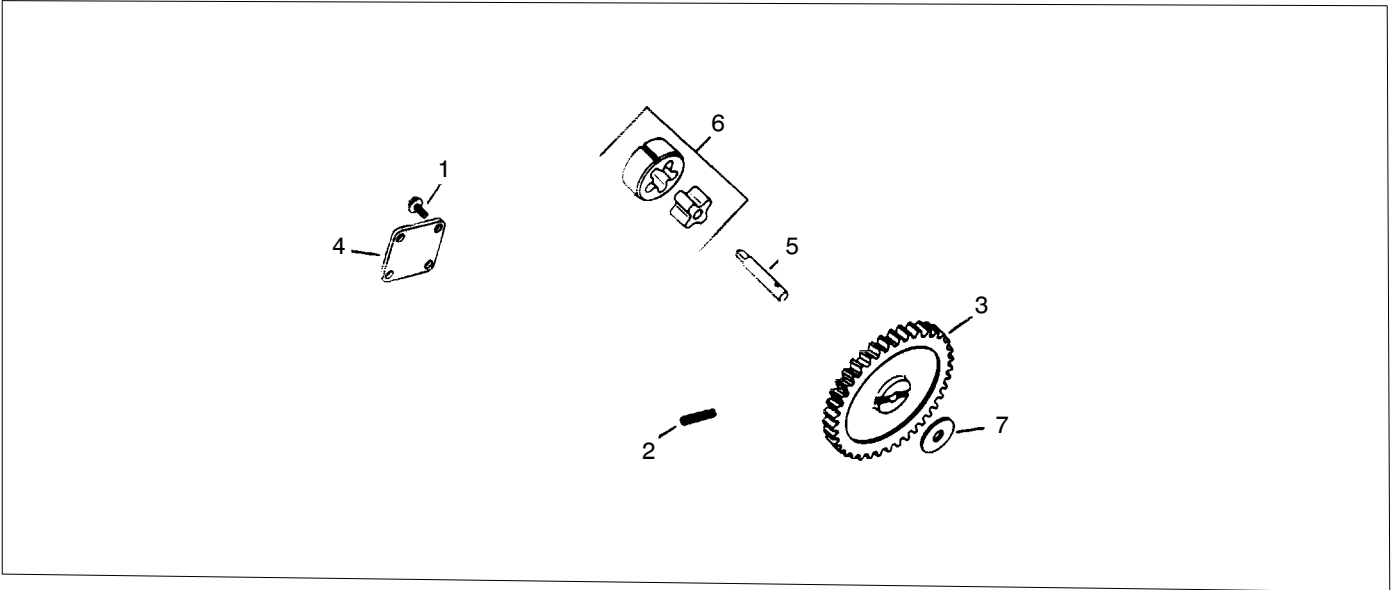
Model M20 (5kW)

1	2	Connecting rod (Std.) 15	52 067 71
	2	Connecting rod (.010)	52 067 72
2	2	Piston w/ring set (Std.) 15	52 874 16
	2	Piston w/ring set (.003)	52 874 17
	2	Piston w/ring set (.010)	52 874 18
	2	Piston w/ring set (.020)	52 874 19
	2	Piston w/ring set (.030)	52 874 20
3	4	Retainer, piston pin 15	52 141 01
4	2	Ring set (Std. and .003) 15	52 108 09
	2	Ring set (.010)	52 108 10
	2	Ring set (.020)	52 108 11
	2	Ring set (.030)	52 108 12

Group 25: Oil Pump

Item	Qty.	Description Variation	Part No.
1	4	Screw, self-tapping 4	X-67-64
2	1	Roll pin 4	X-280-25
3	1	Gear, oil pump drive 4	52 043 05
4	1	Cover 4	52 096 03

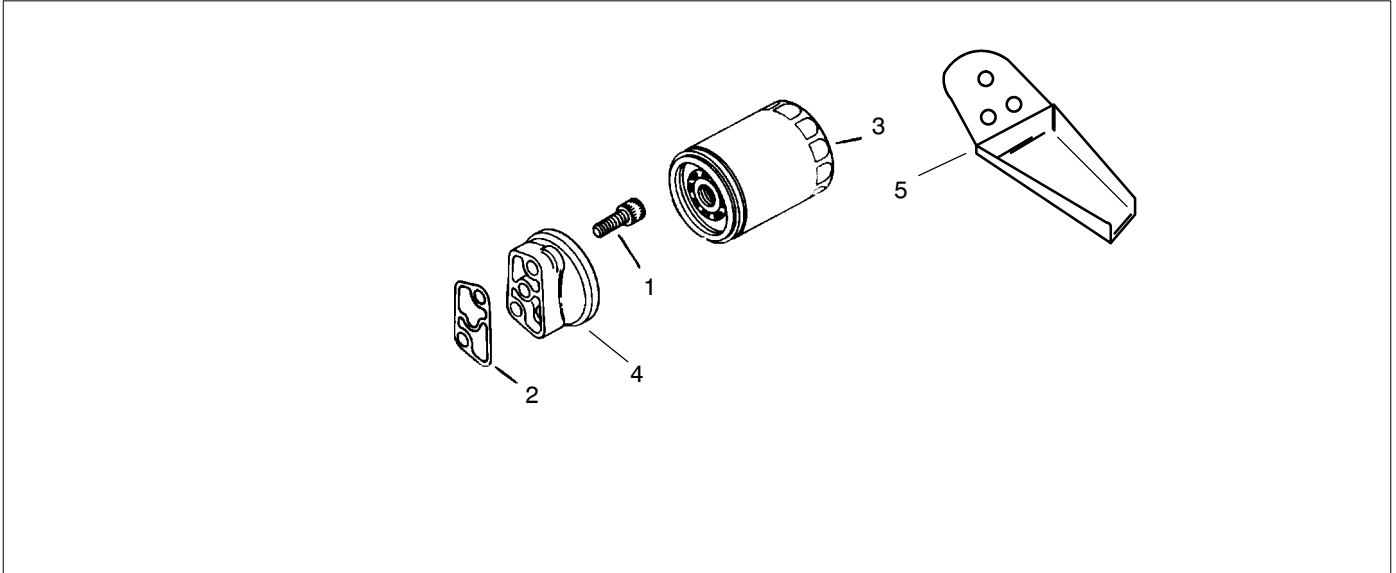
Item	Qty.	Description Variation	Part No.
5	1	Shaft, oil pump 4	52 144 05
6	1	Oil pump assembly 4	52 393 09
7	1	Shim, spacer 4	52 422 01



Group 29: Oil Filter

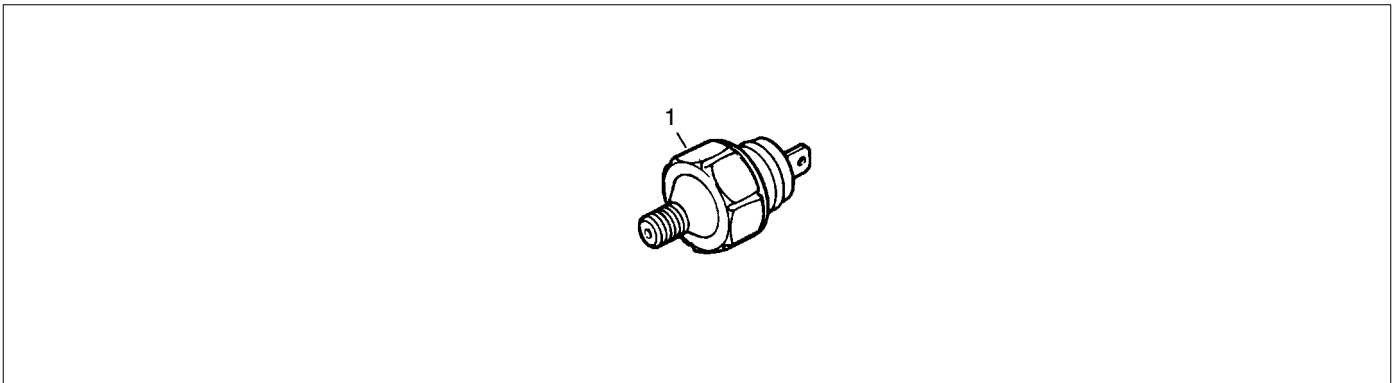
Item	Qty.	Description Variation	Part No.
1	2	Screw, socket head cap, 5/16-18 x 1-1 18	X-55-15
2	2	Gasket 18	52 041 19

Item	Qty.	Description Variation	Part No.
3	1	Filter, oil 18	52 050 02
4	1	Adapter casting 18	52 181 03
5	1	Trough, oil catch 18	52 459 01

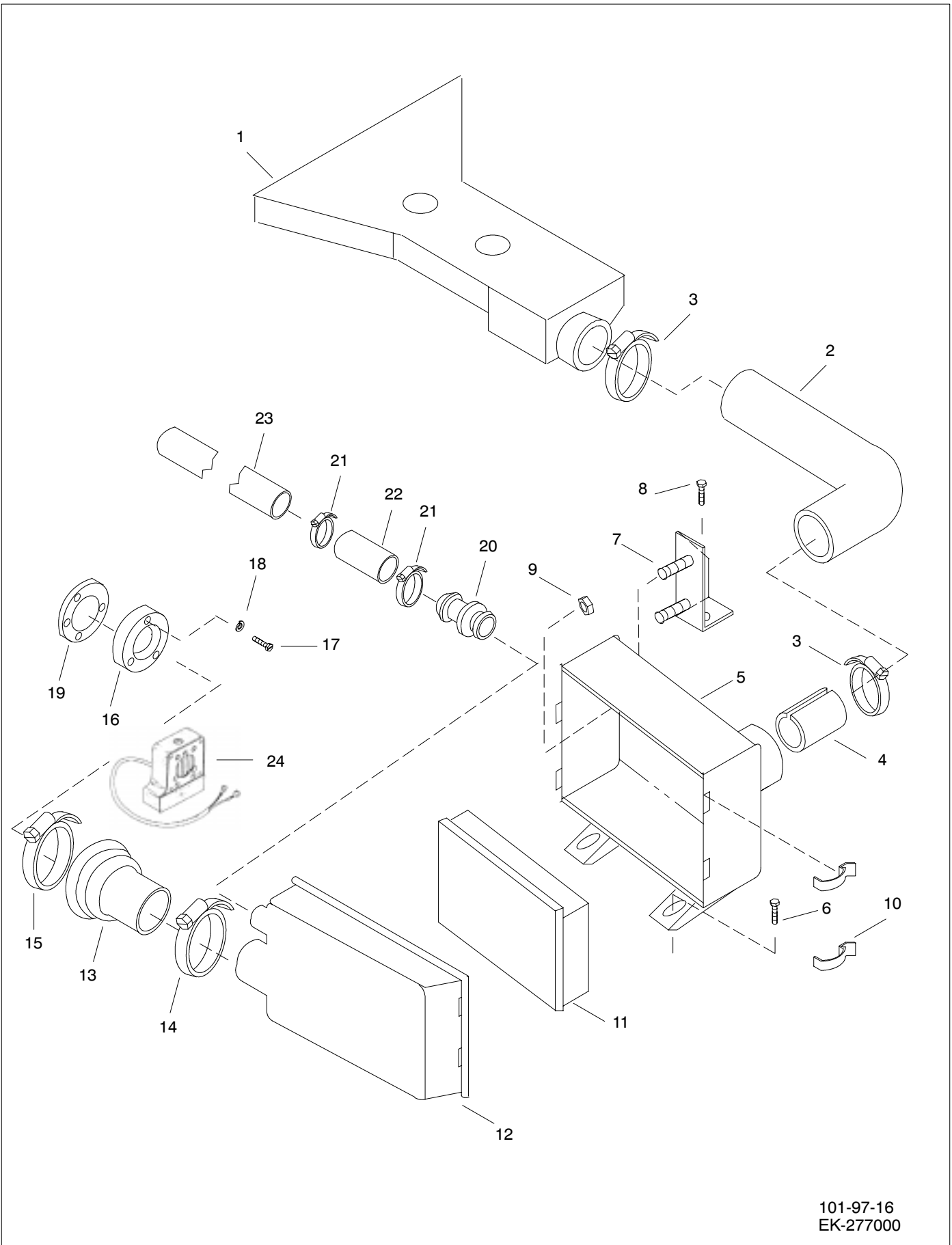


Group 32: Low Oil Pressure Switch

Item	Qty.	Description Variation	Part No.
1	1	Oil pressure switch 13	52 099 06



Group 101: Air Intake



101-97-16
EK-277000

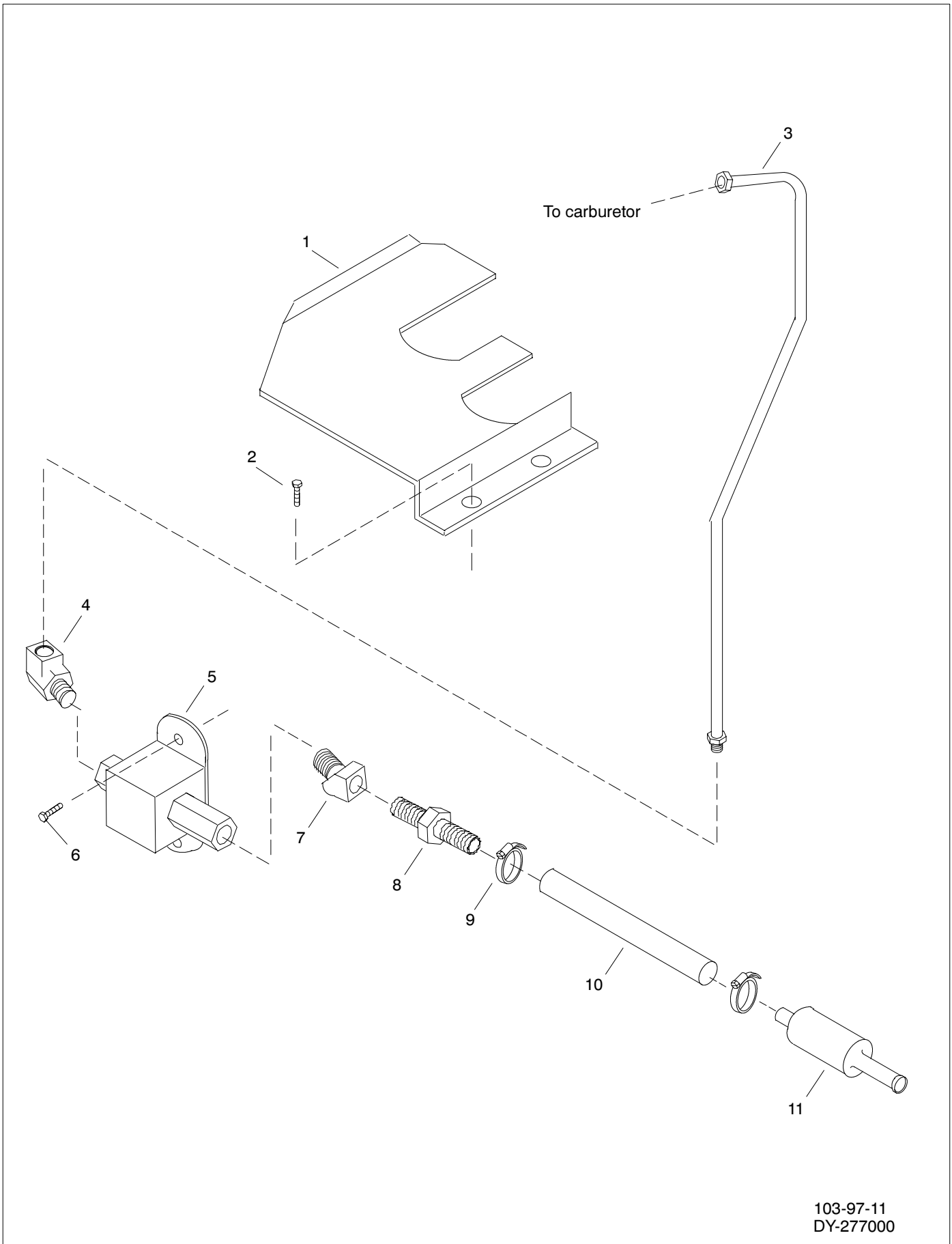
Group 101: Air Intake

Item	Qty.	Description Variation	Part No.
1	1	Duct, air cleaner 15, 16	227552
2	1	Duct, carburetor preheater 15, 16	227550
3	2	Clamp, hose 15, 16	X-426-19
4	1	Adapter, hose 15, 16	227545
5	1	Base, air cleaner 15, 16	227542
	1	Base, air cleaner, plastic 12, 14, 19, 20, 21	246495
	1	Damper, air cleaner (not shown) 15, 16	227544
	1	Washer, curved spring (not shown) 15, 16	278447
	1	Screw, r.h.m., 8-32 x 5/8 (not shown) 15, 16	X-51-9
	1	Nut, elastic stop, 8-32 (not shown) 15, 16	X-101-11
6	2	Screw, self-tapping 12, 14, 15, 16, 19-21	X-67-115
7	1	Bracket, air cleaner 14, 16, 19, 20, 21	278950
	1	Bracket, air cleaner 12, 15	278783
	2	Screw, r.h.m., 10-32 x 1/2 (not shown) 12, 15, 19-21	X-50-1
8	1	Screw, self-tapping 12, 14, 15, 16, 19-21	X-67-115
9	2	Nut, #10-32 12, 14, 15, 16	
10	4	Clip, air cleaner 12, 14, 15, 16, 19-21	278862
11	1	Element, filter 12, 14, 15, 16, 19-21	278612
12	1	Cover, plastic 12, 14, 15, 16, 19, 20	227463
	1	Cover, plastic 21	278856

Item	Qty.	Description Variation	Part No.
13	1	Hose, pleated 12, 14, 15, 16, 19, 20	278609
	1	Hose, air cleaner 21	227653
	4	Screw, tapping, 8-32 x 3/8 21	X-67-59
14	1	Clamp, hose 12, 14, 15, 16, 19, 20	X-426-20
15	1	Clamp, hose 12, 14, 15, 16, 19, 20, 21	X-426-19
16	1	Adapter, carburetor 12, 14, 15, 16	278608
17	4	Screw, r.h.m., 8-32 x 5/8 15, 16	X-51-9
18	3	Washer, #8 15, 16	
19	1	Gasket 15, 16	278583
20	1	Adapter, nylon hose 12, 14, 15, 16, 19, 20	278805
21	2	Clamp, hose 15, 16	X-426-10
	1	Clamp, hose 12, 14, 19, 20	X-426-10
22	1	Line, breather 19, 20	227573
	1	Hose, fuel line (not shown) 12, 14, 15, 16, 19, 20	X-422-28
23	1	Insulation, sleeve 12, 14, 15, 16, 19-21	227574
24	1	Thermostat, high limit 21	227660
	3	Screw, socket hd cap 21	X-55-32

Note: Order air cleaner kit 227523 for older units with problem base and cover.

Group 103: Fuel System (Gasoline)

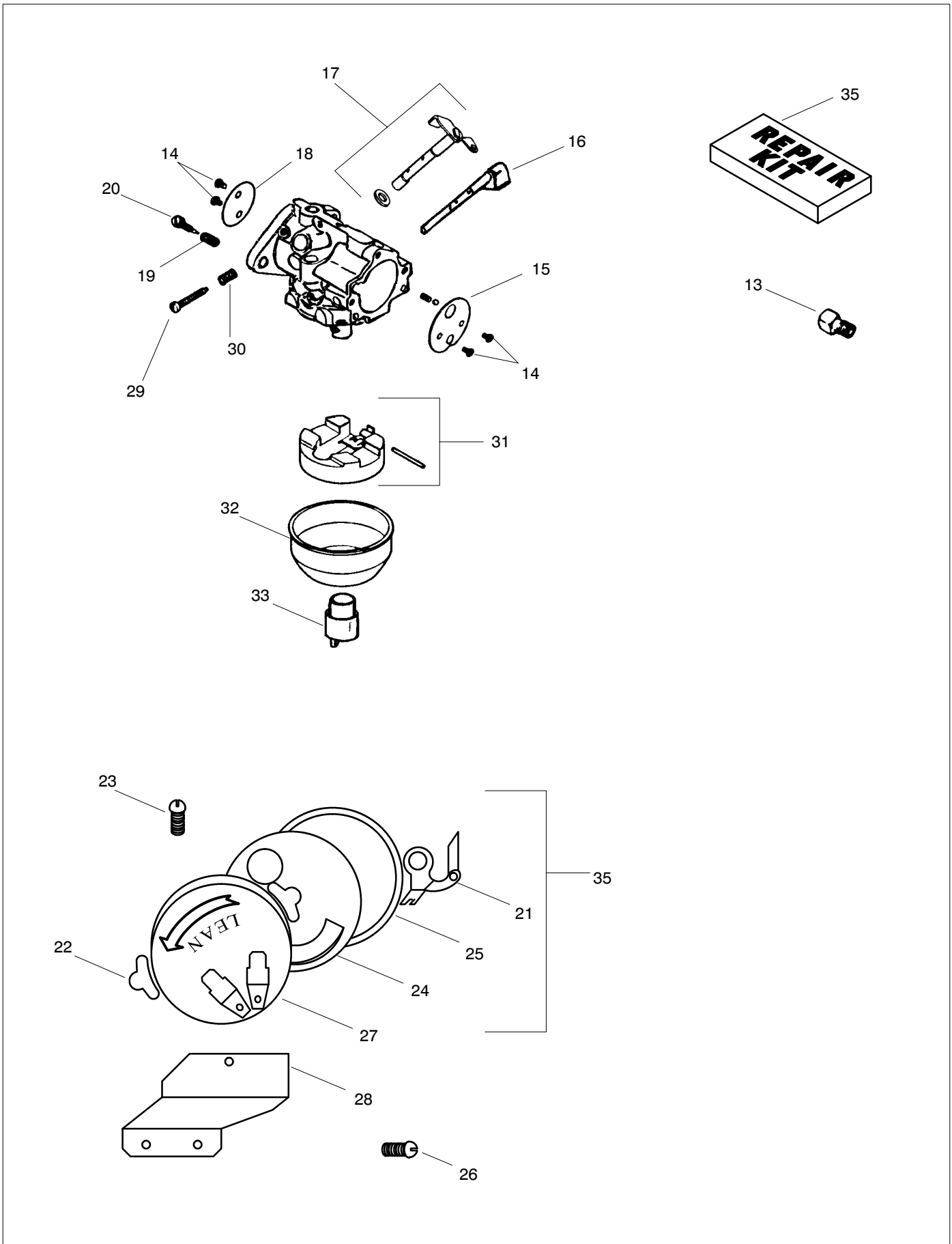


Group 103: Fuel System (Gasoline)

Item	Qty.	Description Variation	Part No.
1	1	Tray, drip 11, 20, 21, 25	227813
2	2	Screw, Phillips head 11, 20	X-6216-1
	4	Screw, Phillips head 20, 21, 25	X-6216-1
3	1	Line, fuel 11, 20	278719
	1	Line, fuel 21, 25	227752
4	1	Elbow, 45° 11, 20, 21, 25	278770
5	1	Pump assembly, fuel 11, 20, 21, 25	249862
6	2	Screw, self-tapping 11, 20, 21, 25	X-67-115
7	1	Elbow, 45° street 11, 20, 21	267428

Item	Qty.	Description Variation	Part No.
8	1	Connector, hose, 1/8 x 1/4 11, 21	X-380-1
	1	Connector, hose, 1/8 x 1/4 20, 25	X-380-5
9	1	Clamp, hose 11, 20	X-426-9
	1	Clamp, spring hose, 9/16" 11, 20	X-309-16
	2	Clamp, spring hose 21, 25	X-426-9
10	1	Line, flex fuel, 1/4 x 9" 11, 21	X-386-14
	1	Line, flex fuel, 1/4 x 9" 20, 25	X-386-83
	1	Clip, wire, 5/16 (not shown) 11, 20, 21, 25	X-339-3
11	1	Filter, fuel 11, 21	228269
	1	Filter, fuel 20, 25	227647

Group 103: Fuel System (Gasoline)

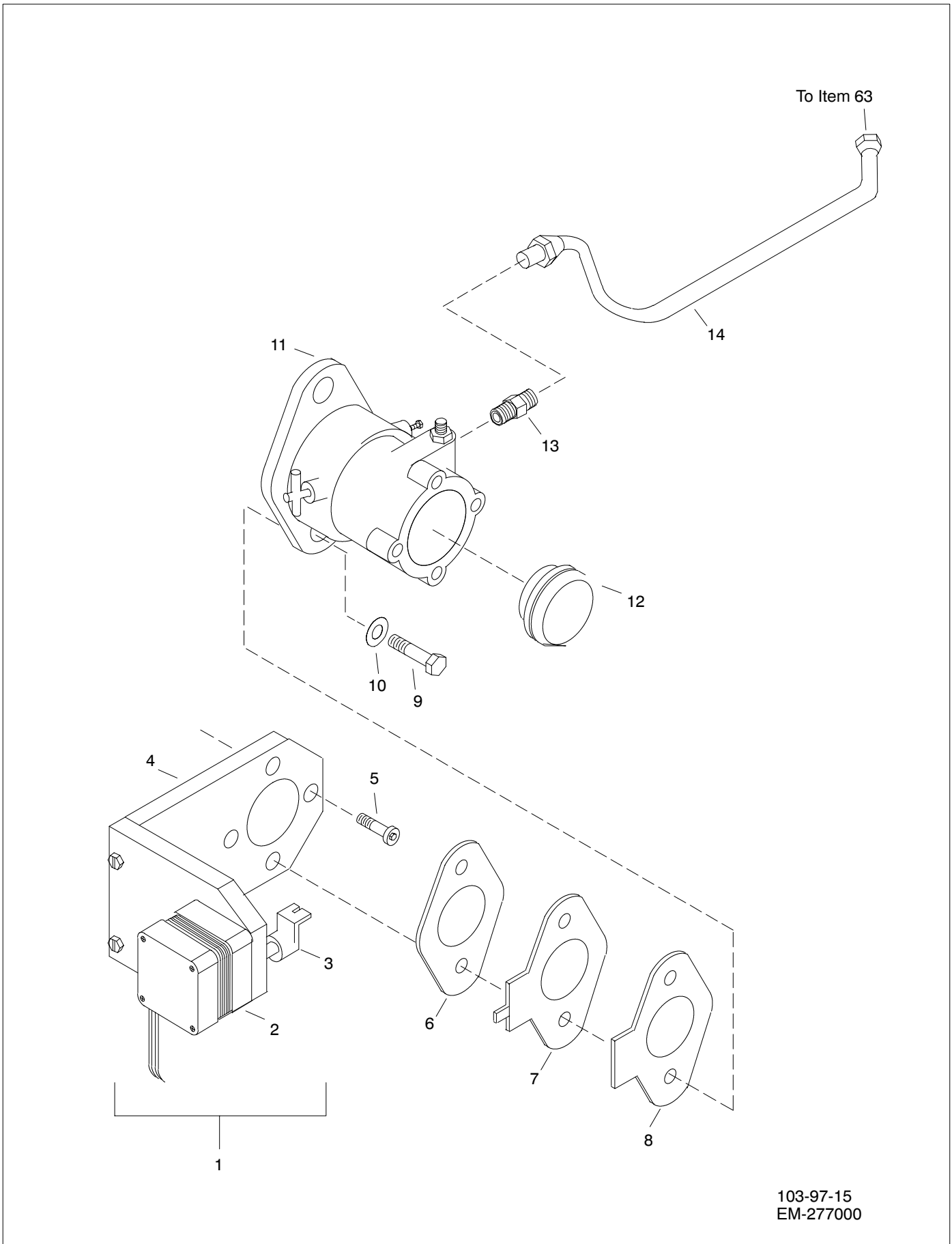


Group 103: Fuel System (Gasoline)

Item	Qty.	Description Variation	Part No.
12	1	Carburetor assembly (For information only not available separately) Includes items 13-35 11, 20, 21, 25	52 053 69
13	1	Elbow 11, 20, 21, 25	52 054 45
14	4	Screw, throttle and choke plate 11, 20, 21, 25	25 086 27
15	1	Plate, choke 11, 20, 21, 25	52 146 10
16	1	Shaft, choke assembly 11, 20, 21, 25	52 144 20
17	1	Shaft, w/lever and seal 11, 20, 21, 25	52 144 22
18	1	Plate, throttle 11, 20, 21, 25	25 146 05
19	1	Spring, idle fuel 11, 20, 21, 25	25 089 02
20	1	Needle, idle fuel adj. 11, 20, 21, 25	25 368 02
21	1	Lever, choke assembly 11, 20, 21, 25	277272
22	2	Retainer, choke heater 11, 20, 21, 25	277275
23	2	Screw, f.h.m., 8/32 x 1/4 11, 20, 21, 25	X-14-6

Item	Qty.	Description Variation	Part No.
24	1	Plate, baffle 11, 20, 21, 25	277297
25	1	Gasket, choke 11, 20, 21, 25	277281
26	2	Screw, flat head, #10 11, 20, 21, 25	52 086 18
27	1	Choke, heater 11, 20, 21, 25	52 175 03
28	1	Bracket 11, 20, 21, 25	52 126 20
29	1	Needle, main fuel 11, 20, 21, 25	52 368 03
30	1	Spring, main fuel 11, 20, 21, 25	25 089 02
31	1	Kit, float 11, 20, 21, 25	25 757 09
32	1	Bowl, fuel 11, 20, 21, 25	25 104 01
33	1	Solenoid assembly 11, 20, 21, 25	227819
34	1	Kit, carburetor repair 11, 20, 21, 25	52 757 04
35	1	Kit, choke repair (includes items 21-25 and choke housing) 11, 20, 21, 25	277469

Group 103: Fuel System (LP)

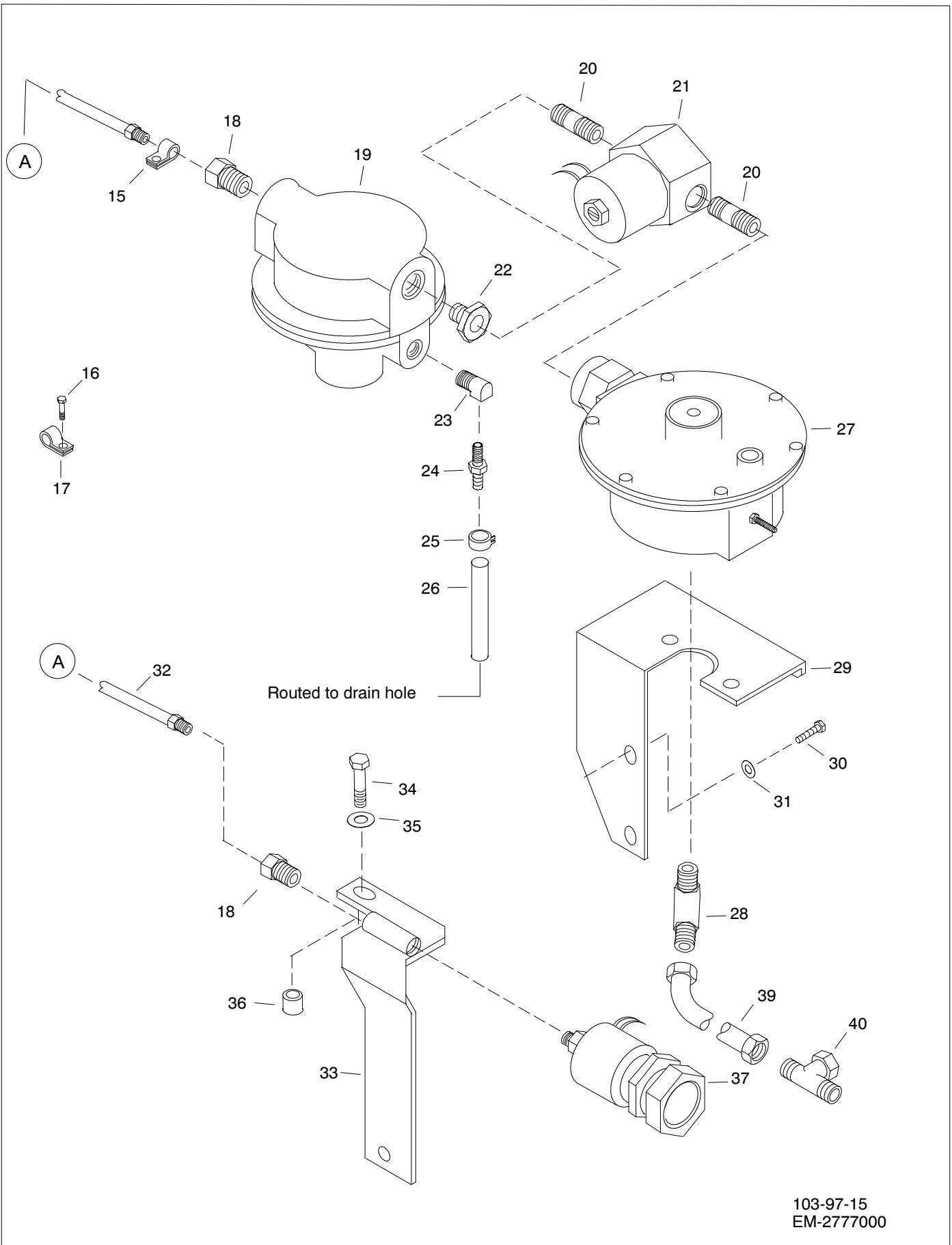


Group 103: Fuel System (LP)

Item	Qty.	Description Variation	Part No.
1	1	Actuator rotary assembly (includes items 2-4) 13-15, 19, 22, 23, 24, 26-28	A-278426
2	1	Actuator 13-15, 19, 22, 23, 24, 26-28	278672
3	1	Coupling, governor 13-15, 19, 22, 23, 24, 26-28	278671
4	1	Bracket, carburetor 13-15, 19, 22, 24, 23, 26-28	278953
5	2	Screw, socket head 13-15, 19, 22-24	X-55-30
6	1	Gasket, carburetor 13-15, 19, 22, 23, 24, 26-28	271030
7	1	PTC assembly 13-15, 19, 22, 23, 24, 26-28	278445
8	1	Gasket, PTC 13-15, 19, 22, 23, 24, 26-28	278528

Item	Qty.	Description Variation	Part No.
9	2	Screw, 5/16-18 x 1, ref. 13-15, 19, 22, 23, 24, 26-28	X-125-5
10	2	Washer, 5/16 15, 19, 22, 23, 24, 26-28	
11	1	Carburetor assembly 13, 14, 22, 27	A-278955
	1	Carburetor assembly 15, 19, 23, 24, 26, 28	A-278414
12	1	Sleeve, carburetor 13-15, 19, 22-24, 26, 27	278954
13	1	Connector, 5/8-18 x 1/4 15, 19, 22, 23, 24, 26	X-296-2
	1	Elbow, 5/8-18 x 1/4 13, 14, 19, 22, 27	X-447-1
14	1	Line, fuel 13, 14, 27	278991
	1	Line, fuel 15, 28	278434

Group 103: Fuel System (LP)

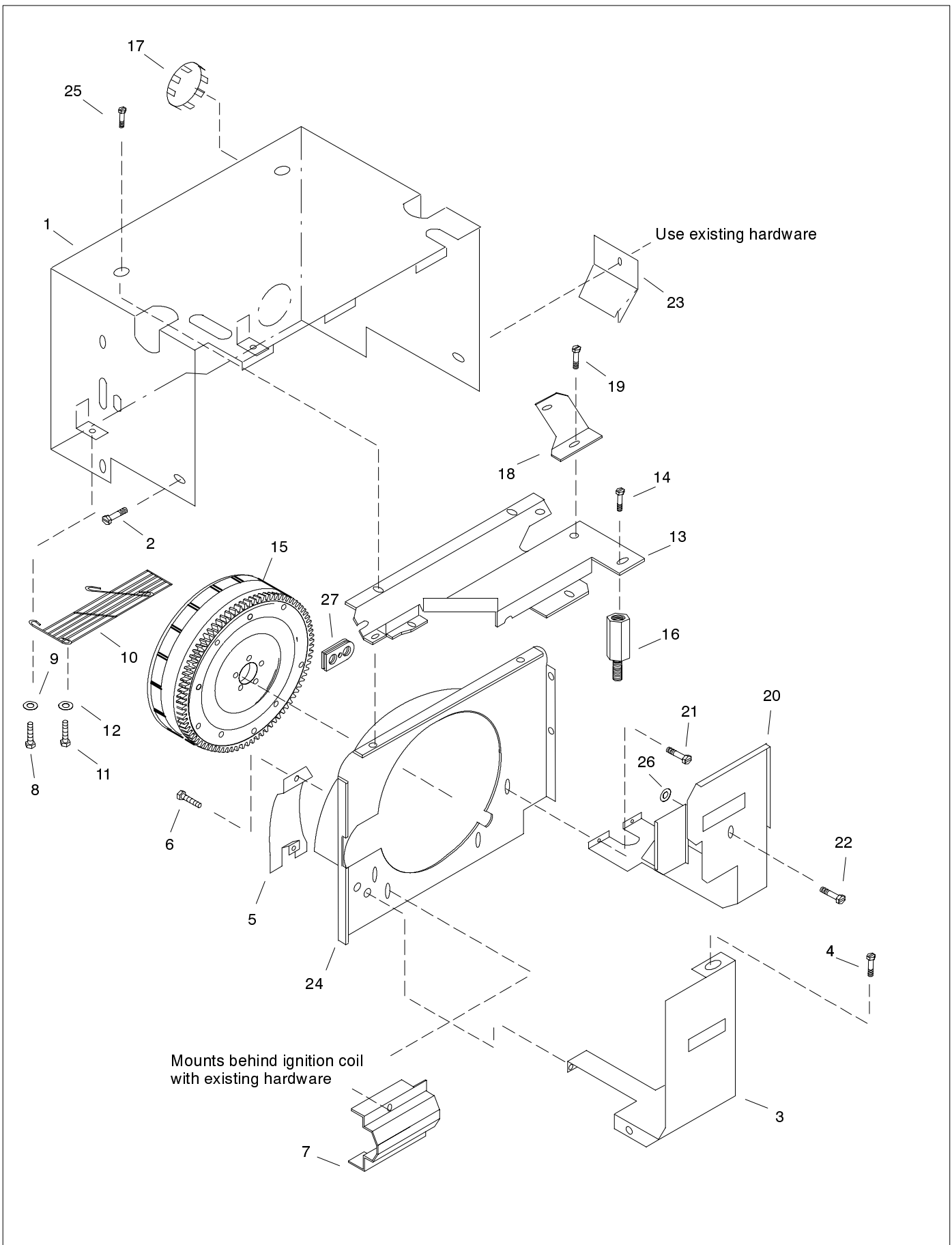


Group 103: Fuel System (LP)

Item	Qty.	Description Variation	Part No.
15	2	Clip 15, 19, 23, 24, 26, 28	X-414-5
16	4	Screw, drill 15, 19, 23, 24, 26, 28	X-794-3
17	4	Clip 15, 19, 23, 24, 26, 28	X-414-4
18	1	Fitting, fuel 15, 28	X-6290-2
	2	Fitting, fuel 19, 23, 24, 26	X-6290-2
19	1	Regulator, gas 15, 19, 23, 24, 26, 28	278889
20	1	Nipple, pipe, 1/4 x 1 1/2 13, 14, 22, 27	X-220-6
	1	Nipple, pipe, 1/4 x 7/8 15, 19	X-220-5
	2	Nipple, pipe, 1/4 x 7/8 23, 24, 26	X-220-5
21	1	Solenoid, anti-diesel 13-15, 19, 22-24, 26-28	A-278424
22	1	Bushing, reducer 15, 19, 23, 24, 26, 28	X-202-30
23	1	Elbow, street, 1/8 x 1/8 15, 19, 23, 24, 26, 28	X-555-2
24	1	Connector, hose, 1/8 x 1/4 15, 19, 21, 23, 24, 26, 28	X-380-1
25	1	Clamp, hose, 1/2 15, 19, 23, 24, 26, 28	X-309-14
26	1	Line, fuel 15, 19, 23, 24, 26, 28	X-386-97
27	1	Regulator, gas 13-15, 19, 22, 24, 26-28	239153

Item	Qty.	Description Variation	Part No.
28	1	Elbow, 5/8-18 x 1/4 13-15, 23, 24, 26-28	X-447-1
29	1	Bracket, regulator 13, 14, 22, 27	278976
	1	Bracket, regulator 15, 19, 23, 24, 26, 28	278882
30	1	Screw, self-tapping 13, 15, 27, 28	X-67-114
31	1	Washer, 1/4" 15	
32	1	Line, fuel 15, 19, 23, 24, 26, 28	278907
33	1	Bracket, fuel valve 15, 19, 23, 24, 26, 27	278879
34	1	Screw, H.C., ref. 15, 18, 23, 24, 28	X-6217-4
35	1	Washer, 1/4" 15	
36	1	Spacer 15, 19, 23, 24, 26, 28	X-400-179
37	1	Solenoid, primary fuel 15, 19, 22-24, 26, 28	A-278958
38	1	Plug, pipe (not shown) 13-15, 19, 22-24, 26-28	X-75-23
39	1	Line, fuel 22	227767
	1	Line, fuel 23	227768
	1	Line, fuel 24	227769
40	1	Tee, pipe 22-24	X-203-19

Group 104: Cooling System

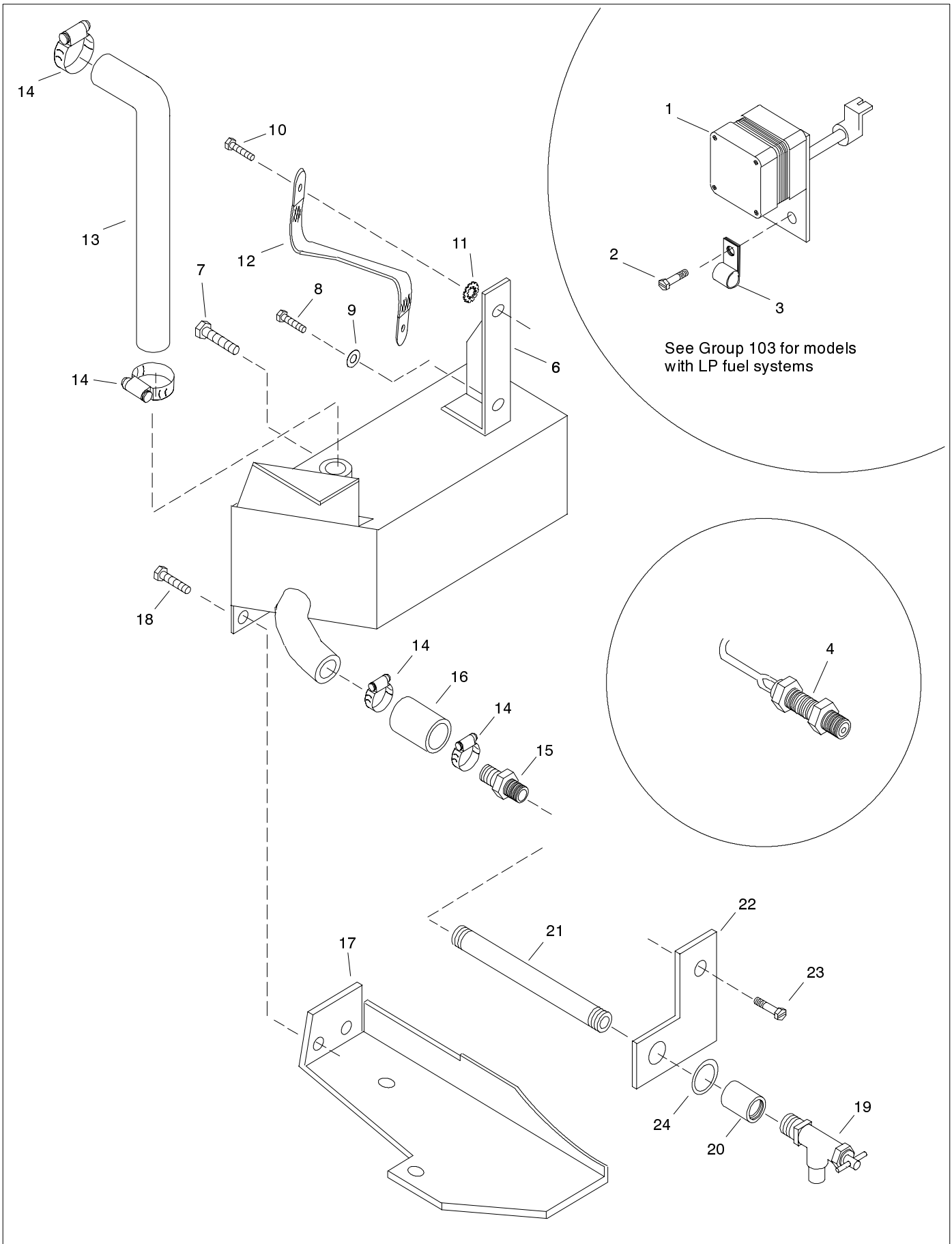


Group 104: Cooling System

Item	Qty.	Description Variation	Part No.
1	1	Hood 2	278947-BLK
	1	Hood 4	227603-BLK
	1	Liner, reflective (not shown) 2, 4	278678
2	13	Screw, self-tapping 2, 4	X-67-115
3	1	Baffle, #1 2, 4	278601
4	2	Screw, self-tapping 2	X-67-115
5	1	Cover, coil 2, 4	278667
6	2	Screw, drill 2, 4	X-794-3
7	1	Shield, coil 2	278944
	1	Shield, coil 4	227462
8	2	Screw, hex hd, 10-24 x 1/2 2, 4	X-67-52
9	2	Washer, #10 2	
10	1	Guard, fan 2, 4	278654
11	2	Screw, self-tapping 2	X-67-115
12	2	Washer, 1/4 2	
13	1	Plate, closure 2, 4	278664

Item	Qty.	Description Variation	Part No.
14	2	Screw, self-tapping 2	X-67-115
15	1	Flywheel 2	278704
16	4	Standoff 2	278707
17	1	Button, plug, 1 3/4 2, 4	X-301-9
18	1	Plate, closure 2, 4	278665
19	2	Screw, self-tapping 2	X-67-115
20	1	Baffle, #2 2, 4	278602
21	2	Screw, self-tapping 2	X-67-115
22	1	Screw, self-tapping 2	X-67-114
23	1	Baffle, air 2	278836
	1	Baffle, air 4	227611
24	1	Plate, backing 2	278666
	1	Plate, backing 4	227461
25	2	Screw, self-tapping 2	X-67-115
26	1	Spacer 4	X-400-31
27	1	Grommet 2, 4	278705

Group 105: Engine

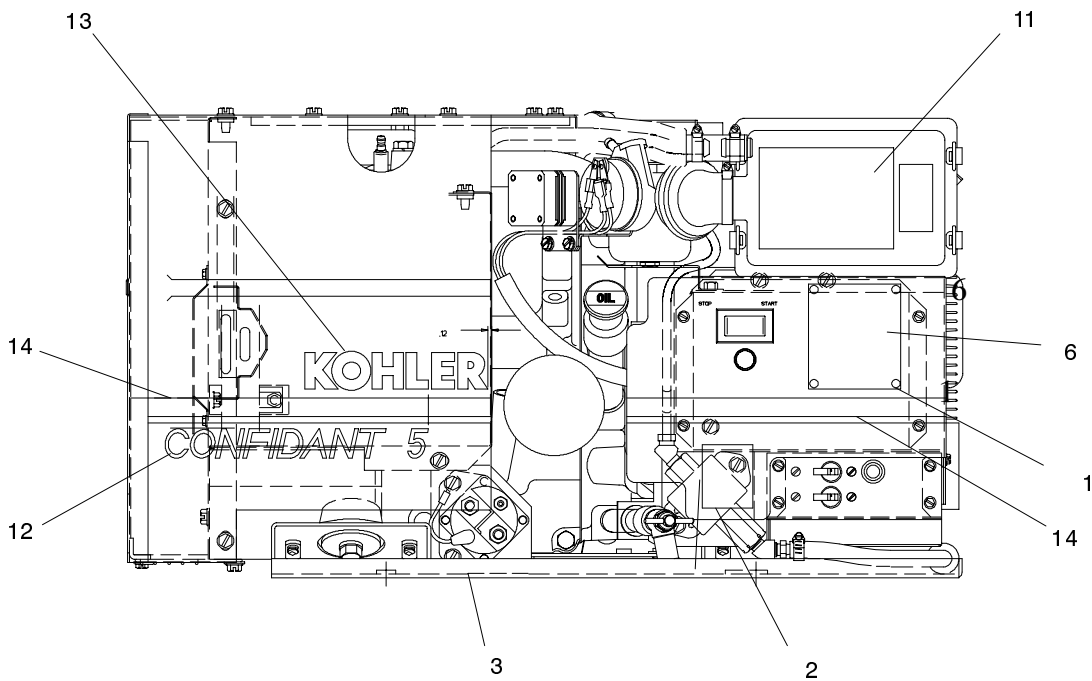
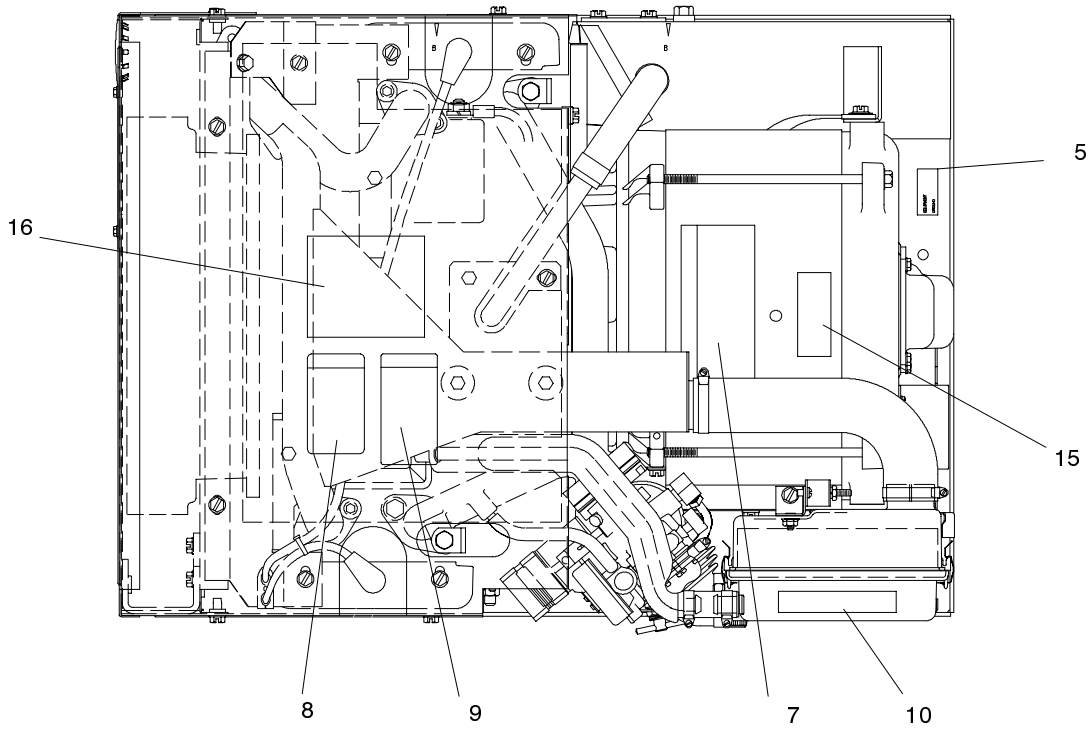


Group 105: Engine

Item	Qty.	Description Variation	Part No.
1	1	Actuator assembly, rotary 10, 12	A-278779
2	2	Screw, Phillips hex 10, 12-14	X-6216-1
3	1	Clamp, insulated 10, 12-14	X-672-14
4	1	Sensor assembly, magnetic 10, 12	A-278782
	1	Sensor, magnetic 13, 14	227736
5	1	Engine assembly (49635) (not shown) 10, 14	A-227831
	1	Engine assembly (24669) (not shown) 12, 13	A-278693
	1	Engine assembly (24698) (not shown) 17	A-227678
	1	Engine assembly (49636) (not shown) 18, 19	A-227679
6	1	Tank, oil 10, 13, 14, 18	227607
	1	Tank, oil 19	227890
	1	Grommet (not shown) 19	243319
	1	Bracket, oil tank 10, 12, 13, 17, 19	227606
7	1	Bolt, 5/16-18 10, 14, 18	
8	1	Screw, self-tapping 10, 12, 13	X-67-114
9	1	Washer, 1/4 10, 12-14	
10	1	Screw, self-tapping 10, 12-14, 18, 19	X-67-114
11	1	Washer, shakeproof 10, 12-14, 17, 18, 19	X-22-12
12	1	Lead, ground 10,14, 17, 18, 19	230857

Item	Qty.	Description Variation	Part No.
	1	Strap, ground 3, 12	X-6046-1
13	1	Hose, oil tank 10, 14, 18, 19	227608
14	4	Clamp, hose, 1/2 x 1 13/32 10, 14, 18, 19	X-426-3
15	1	Connector, adapter hose 10, 14, 18, 19	X-582-2
16	1	Hose, oil proof 10, 14, 18, 19	X-577-45
17	1	Bracket, oil tank 10, 14	278835
	1	Screw, H.C. (not shown) 10, 14	X-6238-11
	1	Washer, 3/8 (not shown) 10, 14	
18	2	Screw, self-tapping 10, 12-14, 17, 18, 19	X-67-115
19	1	Valve, shut-off 10, 12-14, 17, 18, 19	278788
20	1	Coupling, pipe, 3/8 x 1 3/16 10, 12-14, 17, 18, 19	X-216-23
21	1	Pipe 10, 12, 13	X-204-19
22	1	Bracket, oil drain 10, 12-14, 17, 18, 19	278834
23	1	Screw, self-tapping 10, 12-14, 17, 18, 19	X-67-115
24	1	Bushing 10, 12-14, 17, 18, 19	X-634-25
25	1	Lead (anti-icer to choke) (not shown) 10, 12-14	278816
26	1	Lead (ignition module) (not shown) 10, 12-14, 17, 18, 19	278817
27	1	Conduit, convoluted (not shown) 10, 12-14, 17, 18, 19	X-6003-9

Group 107: Nameplate and Decals

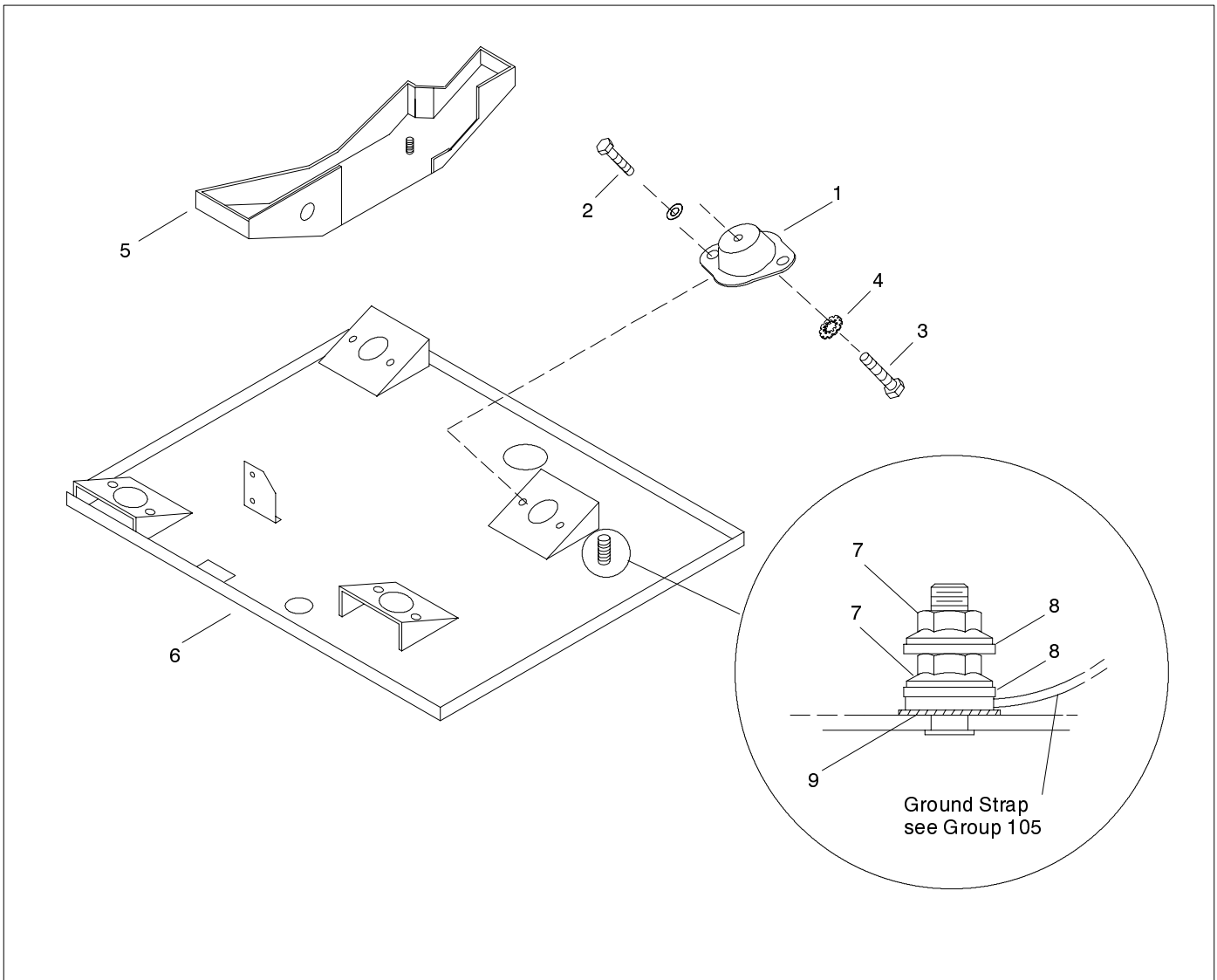


Group 107: Nameplate and Decals

Item	Qty.	Description Variation	Part No.
1	4	Rivet, pop all variations	X-793-3
2	1	Decal, 1-800 number all variations	224233
3	1	Marker, adhesive all variations	238162
4	4	Nameplate, serial number (not shown) all variations	Not Avail.
5	1	Decal, ground all variations	238575
6	1	Nameplate all variations	239573
7	1	Decal, hazardous voltage all variations	239771
8	1	Decal, fire warning all variations except 60	228489
9	1	Decal, carbon monoxide warning all	239796
10	1	Decal, instructions all	278634
11	1	Decal, service instructions 25, 32, 35, 37, 39, 41, 42, 45, 47, 49, 53, 55, 56, 58, 59, 60, 61, 62	278831
	1	Decal, service instructions 24, 28, 33, 34, 36, 38, 40, 43, 46, 48, 50, 52, 54, 57, 58	278635

Item	Qty.	Description Variation	Part No.
12	1	Decal, Confidant 4 25, 32, 35, 37, 39, 41, 42, 45, 47, 49, 53, 55, 56, 58, 59, 60, 63	278430
	1	Decal, Confidant 5 24, 28, 33, 34, 36, 38, 40, 43, 46, 48, 50, 52, 54, 57	278431
13	1	Logo, Kohler all variations	X-6276-3
14	2	Decal, strip all variations	278433
15	1	Decal, UL 24, 25, 34, 35, 40, 42, 45, 46, 47, 48, 52, 55, 56, 59, 60	239772
16	1	Decal, CSA 24, 25, 34, 35, 40, 41, 45-49, 52, 55, 59, 60, 61, 62, 63	278949
17	1	Key, square (not shown) 32, 33, 36, 37, 49, 50, 53, 54	X-286-6
18	1	Cap (not shown) 32, 33, 36, 37, 49, 50, 53, 54	227539

Group 109: Skid and Plant Mounting

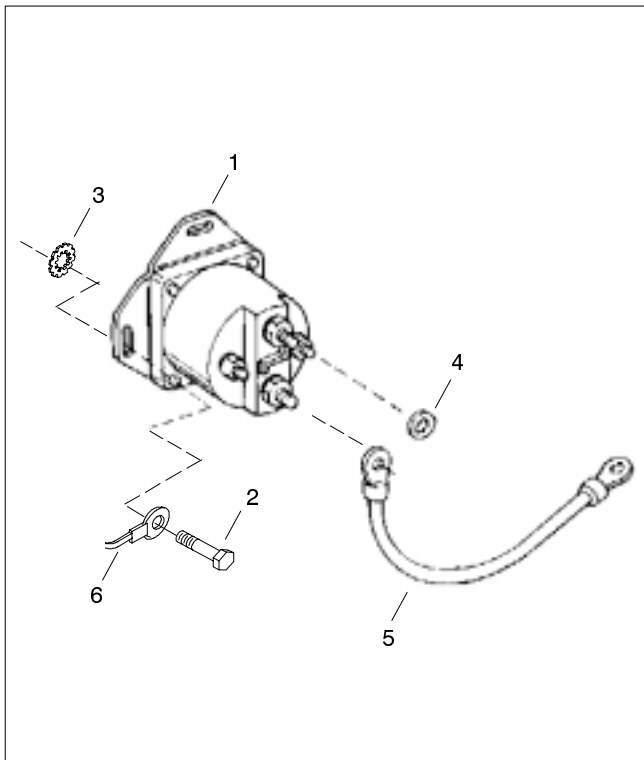


Item	Qty.	Description Variation	Part No.
1	4	Mount, vibro 22, 24, 25, 26	278271
2	8	Screw, tapping 22, 25, 26	X-67-131
	2	Screw 24	X-67-116
3	4	Bolt, 3/8-16 22, 24, 25, 26	#
4	4	Washer, lock shakeproof 22, 24, 25, 26	X-22-10
5	1	Bracket, engine mounting 22, 24	278526

Item	Qty.	Description Variation	Part No.
6	1	Tray 22, 25, 26	227949
	1	Tray 24	278937
	2	Plate, hinge 24	278924
7	1	Nut, 1/4-20 22, 24, 25, 26	#
8	1	Washer, 1/4 22, 24, 25, 26	#
9	1	Washer, shakeproof 25, 26	X-22-12
	2	Washer, shakeproof 22, 24	X-22-12

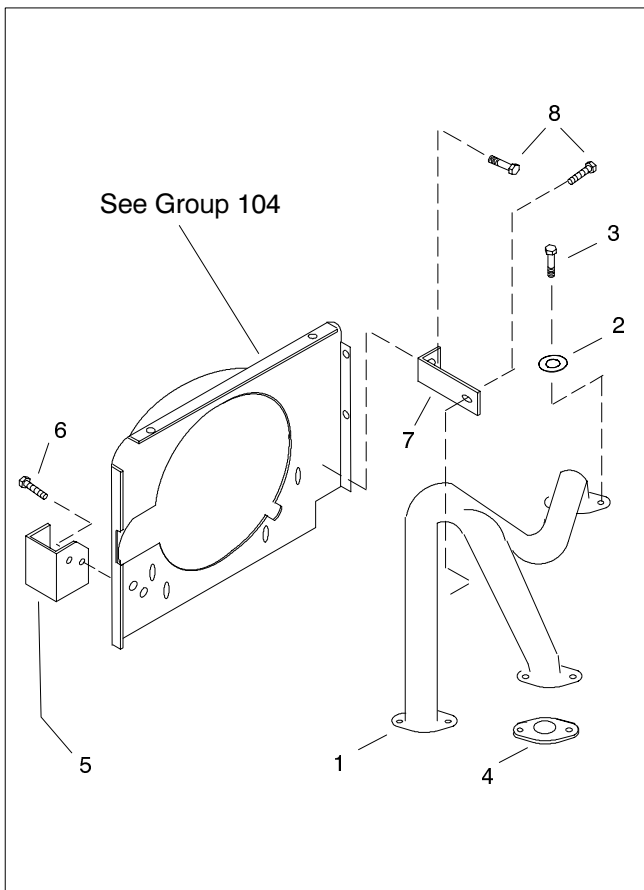
Common hardware. Procure locally.

Group 112: Starter



Item	Qty.	Description Variation	Part No.
1	1	Switch, relay 7, 9	248846
2	2	Screw, self-tapping 7, 9	X-67-115
	1	Washer, shakeproof 7, 9	X-22-10
3	2	Washer, shakeproof 7	X-22-12
	1	Washer, shakeproof 9	X-22-12
4	2	Washer, lock shakeproof 7, 9	X-22-5
5	1	Cable, battery 7, 9	X-545-25
6	1	Lead 7, 9	278628

Group 116: Exhaust System



Item	Qty.	Description Variation	Part No.
1	1	Manifold, exhaust 10, 13	278632
2	4	Washer, plain 10, 13	X-25-33
3	4	Screw, hex socket head 10, 13	X-55-6
4	2	Gasket, exhaust 10, 13	278306
5	1	Bracket, exhaust 10	278731
6	2	Screw, self-tapping 10	X-67-115
7	1	Bracket, exhaust mounting 10, 13	278969
8	2	Screw, self-tapping 13	X-67-115

100-Hour Recommended Spare Parts List

Description	Part Number			
	4CFKM61 Spec. No. 101302	4CKMR61 Spec. No. 101305	5CKM21 Spec. No. 101203	5CKMR61 Spec. No. 101205
Fuse, 5 Amp	239298	239298	239298	239298
Fuse, 15 Amp	283645	283645	283645	283645
Main Circuit Board	F-239563	F-239563	F-239563	F-239563
Battery Charger Board	N/A	B-278660	N/A	B-278660
Governor Circuit Board	D-278670	D-278670	D-278670	D-278670
Magnetic Pick Up	227641	227641	227641	227641
Voltage Regulator, PBIII3	228605	228605	228605	228605
Brush	239282	239282	239282	239282
Brush Spring	238150	238150	238150	238150
Ignition Module	5258402	5258402	5258402	5258402
Spark Plug	5213202	5213202	5213202	5213202
Fuel Pump	249862	249862	249862	249862
Starter Relay	248846	248846	248846	248846
Oil Pressure Switch	5209906	5209906	5209906	5209906
Air Filter	278612	278612	278612	278612
Fuel Filter	228269	227647	228269	227647
Oil Filter	5205002	5205002	5205002	5205002

4kW

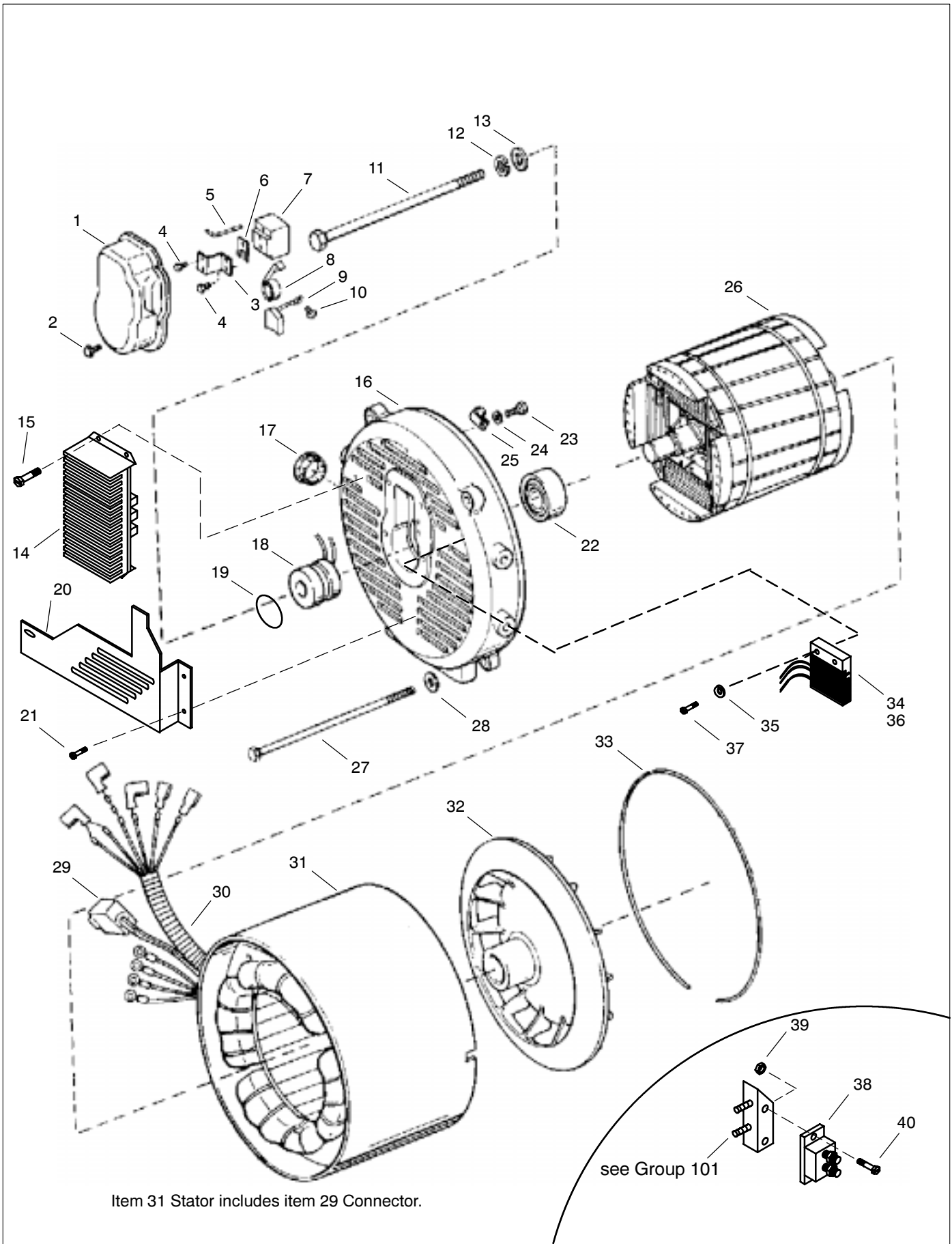
Change oil and oil filter every 100 hours. Check air cleaner every 50 hours. Replace fuel filter every 500 hours.

5kW

Change oil and oil filter every 50 hours. Check air cleaner every 50 hours. Replace fuel filter every 500 hours.

Notes

Group 201: Generator and Mounting

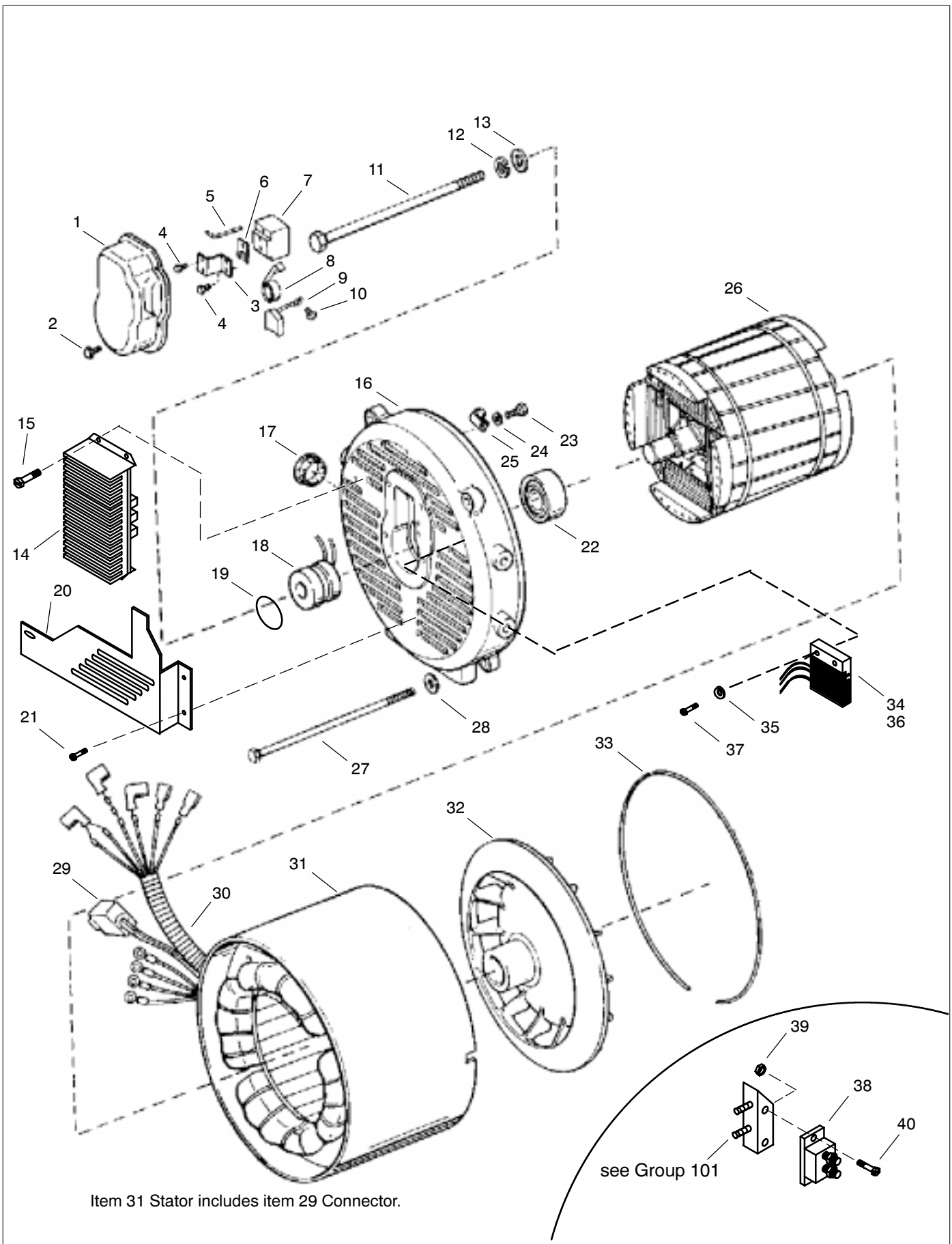


Group 201: Generator and Mounting

Item	Qty.	Description Variation	Part No.
1	1	Cover, brush holder 25, 32	278804
	1	Cover, brush holder 26, 30, 33, 44-48	278877
2	4	Screw, hex hd, 10-24 25, 26, 30, 32, 33, 49	X-67-52
3	1	Bracket, brush holder 25, 26, 30, 32, 33, 44-49	229335
	1	Bracket, brush holder 29, 34, 42, 43, 50	278943
4	4	Screw, hex head 25, 26, 30, 32, 33, 42, 43, 50	X-97-13
	2	Screw, hex head 29, 34, 44-48	X-97-13
	2	Washer, plain (not shown) 30, 33, 44, 45, 48	X-25-74
5	1	Retainer, wire all	238247
6	3	Shim, brush holder all	238248
7	1	Holder, brush all	239247
8	2	Spring all	238150
See Group 301 Controller for voltage regulator on units without the extended shaft.			
15	4	Screw, tapping 8-32 29, 34	X-67-59
	3	Screw, tapping, 10-32 x 3/8 42, 44, 45, 46, 47	X-67-113
	1	Screw, tapping, 10-32 x 5/8 42, 44, 45, 46, 47	X-67-118
	4	Screw, tapping 43, 48	X-67-43
16	1	Bracket, end 25, 26, 30, 32, 44-47, 49	227401
	1	Bracket, end 29, 42, 50	278807
	1	Bracket, end 33, 48	227622
	1	Bracket, end 34, 43	227584
	1	Grommet, nylon (not shown) 33, 48	X-6090-3
	1	Cover (not shown) 29, 34, 42, 50	278840
	1	Cover (not shown) 29, 34, 42, 43, 50	278842
	1	Cover (not shown) 43	227916
	6	Screw, tapping, 8-32 (not shown) 29, 34	X-67-59
	6	Screw, tapping 50	X-67-43
17	1	Bushing, nylon	X-634-11

Item	Qty.	Description Variation	Part No.
9	2	Brush all	239282
10	2	Screw, r.h.m., 6-32 all	X-49-1
	2	Washer, lock all	X-22-6
11	1	Bolt, thru 25, 30, 32, 33, 44-49	278158
	1	Bolt, thru 29, 34, 42, 43, 50	278841
12	1	Washer, 1/2 25, 30, 32, 33	
13	1	Washer, plain 25, 26, 30, 32, 33, 44-49	X-25-30
	1	Washer 29, 34, 42, 43, 50	X-25-97
14	1	Voltage Regulator, PBIIE (1 Phase) 29, 34, 42, 44, 45, 46, 47	228605
		Voltage Regulator, PBV (3 Phase) 43, 48	B-258296
		25, 26, 32, 49	
	1	Bushing, nylon 26, 30, 32, 33, 44-49	X-634-22
	1	Bushing 29, 34, 42	X-634-12
18	1	Ring, collector 25, 26, 30, 32, 33, 44-49	241671
	1	Ring, collector 29, 34, 42, 43, 50	238134
19	1	O-Ring all	256466
20	1	Guard, harness 25, 26, 30, 32, 33, 44-49	227541
21	2	Screw, self-tapping 25, 26, 32-34, 49	X-67-113
	11	Screw, self-tapping 30, 44-48	X-67-113
22	1	Bearing, ball all	X-758-1
23	1	Screw, H.C. sltd, 1-32 25, 26, 29, 32, 34, 49	X-97-11
24	3	Washer, lock shakeproof 25, 26, 32	X-22-9
	2	Washer, lock shakeproof 30, 33, 44-48	X-22-9

Group 201: Generator and Mounting



Group 201: Generator and Mounting

Item	Qty.	Description Variation	Part No.
25	1	Clip, wire 25, 26, 30, 32, 33, 49	X-339-3
26	1	Rotor assembly 25, 26, 30, 32, 33, 44-49	A-278420
	1	Rotor assembly 29, 34, 42, 43, 50	A-278839
27	4	Bolt, over all	X-5-44
28	4	Washer, hardened 25, 26, 29, 30, 32-34, 42, 43, 49, 60	X-801-2
	4	Washer, special 30, 44-48	229239
29	1	Connector 33, 34	239408
30	1	Harness, brush/voltage reg. 30, 32, 33, 44, 45, 48	278975
	1	Harness, brush/voltage reg. 25, 26, 46, 47, 49	278617
	1	Harness, brush/voltage reg. 29, 34, 42, 50	278843
31	1	Stator assembly 25, 49	278419
	1	Stator assembly 26	278659
	1	Stator assembly 29, 30	278764
	1	Stator assembly 32	278768
	1	Stator assembly 33, 34	227441
	1	Stator assembly 42, 44	227774
	1	Stator assembly 43, 48	227772
	1	Stator assembly 45	227775
	1	Stator assembly 47	227779
	1	Stator assembly 46, 50	227778

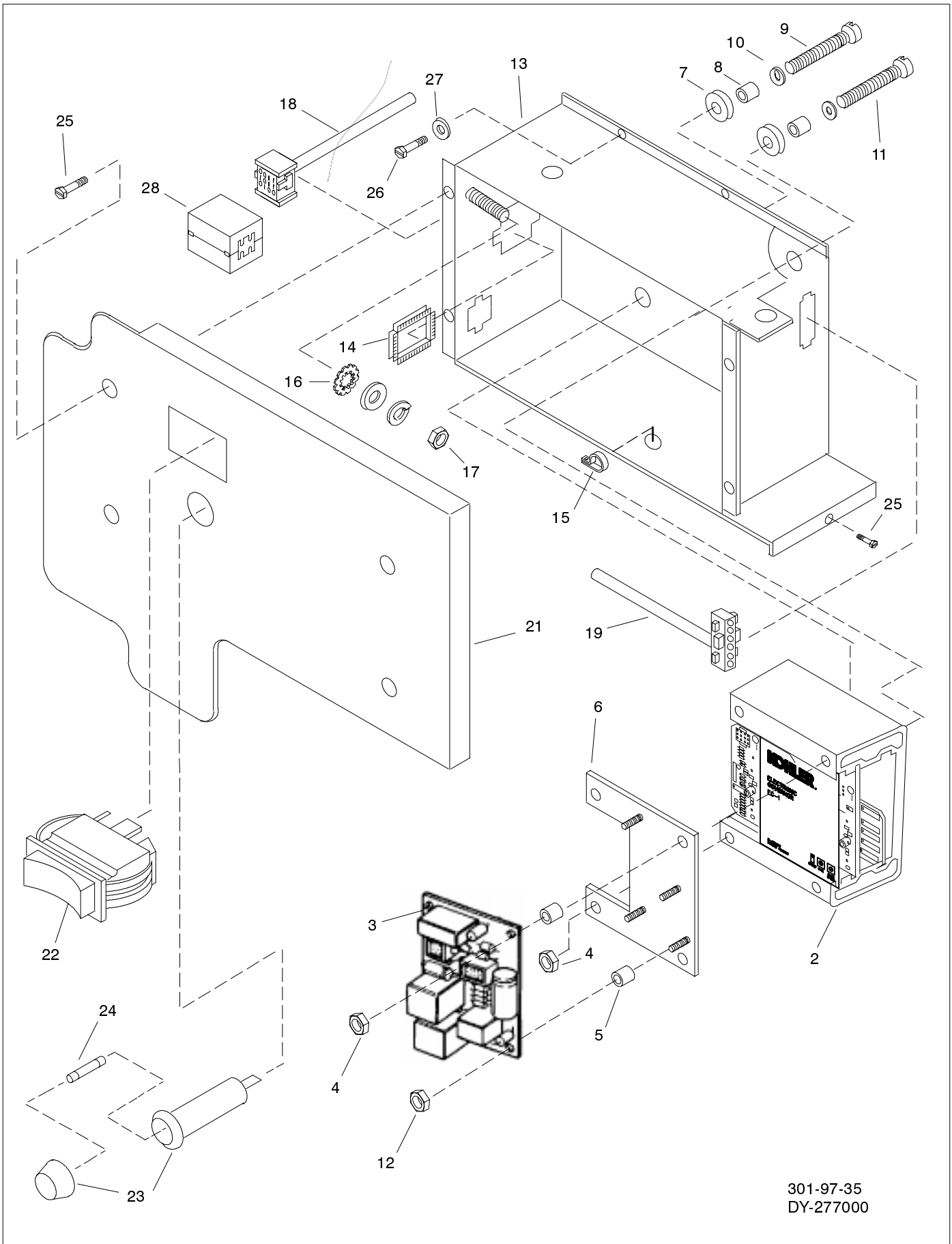
Item	Qty.	Description Variation	Part No.
32	1	Fan, generator all	278763
33	1	Guard, generator fan all	238214
34	1	Charger, battery 29, 30, 32-34, 42-45, 48	B-278660
35	2	Washer, plain 30, 33, 44, 45, 48	X-25-74
	2	Spacer, 1/20 x 9/32 x 1/4 42, 43	X-400-31
36	1	Conduit, convoluted (not shown) 30, 32, 33, 44, 45, 48	X-6003-93
	1	Conduit (not shown) 25, 26, 29, 30, 32, 42, 44-47, 49, 50	X-6003-87
37	2	Screw, self-tapping 29, 30, 32-34, 42-45, 48	X-67-125
38	1	Breaker, circuit 29, 30, 32-34, 42-45, 48	241879
39	2	Nut, #10-32 29, 30, 32-34	
40	2	Screw, f.h.m., 8-32 30, 33, 43	X-14-16

Voltage Regulator for 3-Phase Units

Replace PBIIE voltage regulator with PBV regulator on 3-phase units. New PBV regulator and box are mounted on side of generator end bracket above oil tank. Parts are listed below. Order remote voltage regulator kit for 3-Phase units with LP vapor or LP liquid fuel systems. See accessories for parts list.

1	Box	227887
1	Cover	227788
6	Nylon Washer	239665
1	Nylon Bushing	X-634-5
6	Spacer	X-712-9
6	Nut, hex.	X-72-9
5	Screw, Crimpitite	X-6216-1

Group 301: Controller and Mounting

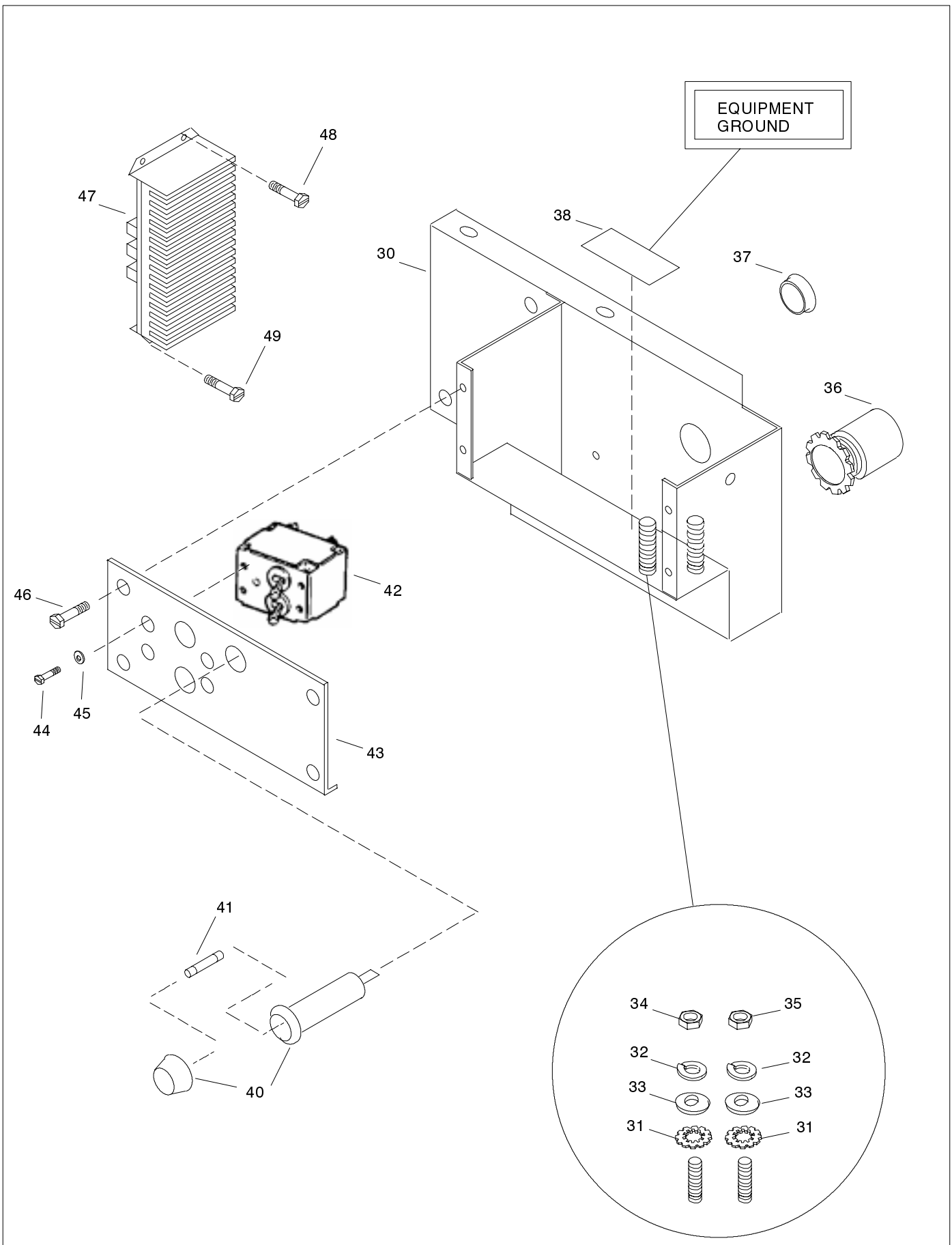


Group 301: Controller and Mounting

Item	Qty.	Description Variation	Part No.
1	1	Controller assembly (includes items 2-17, 19) 29, 31, 32, 42, 43, 76-88	A-227799
	1	Controller assembly (includes items 2-17, 19) 62-66, 68, 70-75, 89-104	A-227879
2	1	Governor assembly, electronic all	D-278670
3	1	Circuit board assembly all	F-239563
4	4	Nut all	X-101-22
5	5	Spacer, fiber all	X-712-16
6	1	Plate, circuit board all	278749
7	4	Grommet, vibro mount all	278999
8	4	Spacer all	X-400-187
9	3	Screw, pan head all	X-49-46
10	4	Washers, #6 all	
11	1	Screw, pan head all	X-49-47
12	4	Nut, hex all	X-70-12
13	1	Box, controller 29, 31, 32, 42, 43, 76-88	278972
	1	Box, controller 62-75, 89-104	227741
14	1	Grommet 62-66, 68, 70-75, 89-104	X-6033-9
15	1	Clip, wire 62-66, 68, 70-75, 89-104	X-339-6

Item	Qty.	Description Variation	Part No.
16	1	Washer, shakeproof all	X-22-18
17	1	Hardware, #8-32 all	
18	1	Harness, wiring 29, 31, 32, 42, 43, 76-88	227402
	1	Harness, wiring 62, 64, 89, 90, 101	227728
	1	Harness, wiring 63, 65, 71, 72, 75, 91, 93, 96-98, 104	227726
	1	Harness, wiring 66, 68, 70, 73, 74, 92, 94, 95, 99, 100	227727
	1	Harness, wiring 67, 69	227729
	1	Harness, wiring 102, 103	227878
19	1	Harness, remote wiring all	227403
20	1	Cover assembly (includes items 21-24) all	B-278574
21	1	Cover, silkscreen all	278751
22	1	Switch, rocker all	249406
23	1	Holder, fuse all	267996
24	1	Fuse, 15 amp. all	283645
25	4	Screw, self-tapping all	X-794-3
26	5	Screw, tapping all	X-67-115
27	5	Washer, lock, 1/4 all	X-22-11
28	1	Filter, ferrite cage 31, 76-88	227822

Group 301: Controller and Mounting

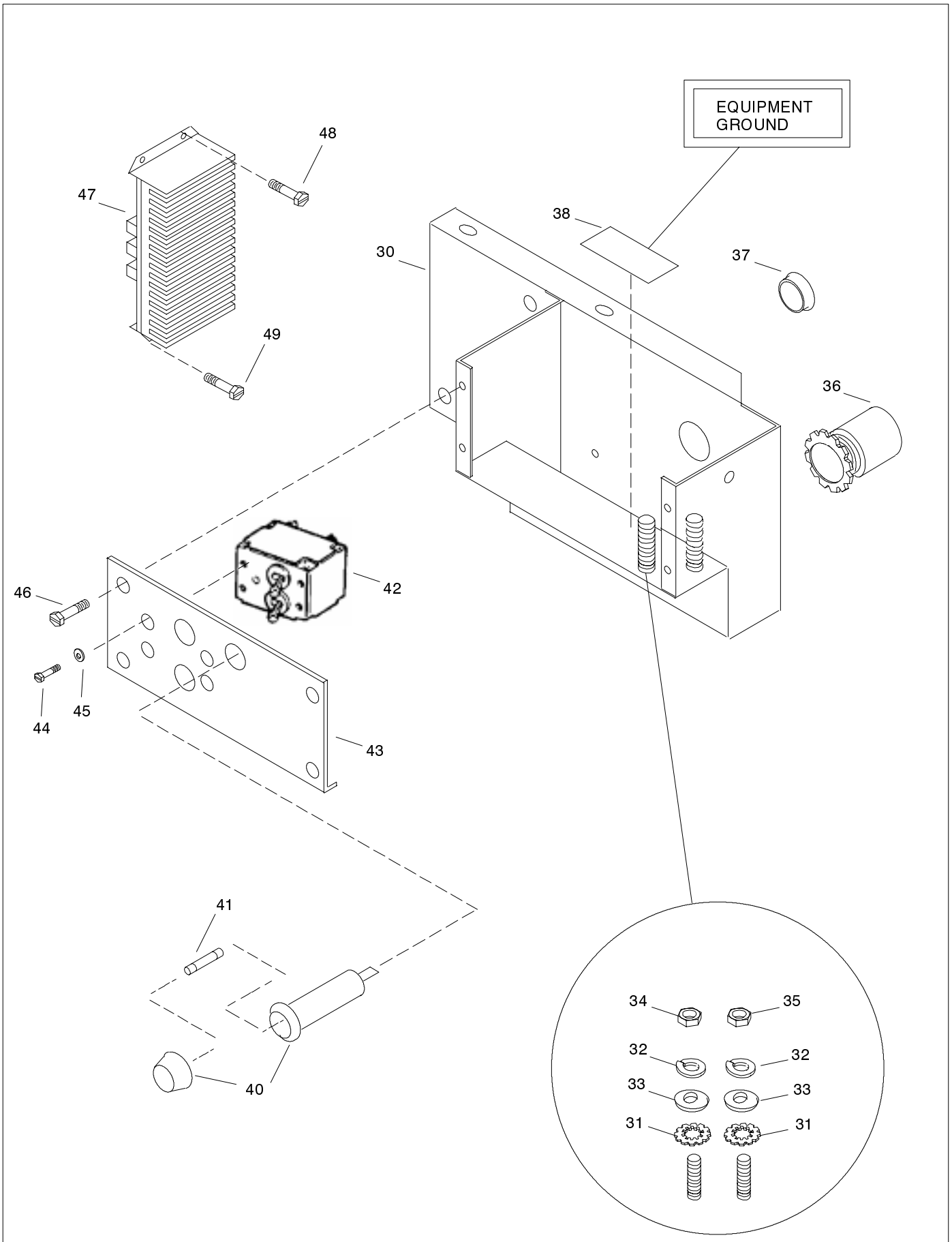


Group 301: Controller and Mounting

Item	Qty.	Description Variation	Part No.
29	1	Box assembly, junction (includes items 30-37) 31, 44	B-278577
	1	Box assembly, junction 31, 76, 79, 81, 84	A-278994
	1	Box assembly, junction 32, 43	B-278778
	1	Box assembly, junction 77, 78, 82, 83	A-278995
	1	Box assembly, junction 85	A-227452
	1	Box assembly, junction 87	A-278787
	1	Box assembly, junction 80, 88	B-278777
	1	Box assembly, junction 62, 63, 70, 90, 93, 95, 102	A-227714
	1	Box assembly, junction 64, 65, 89, 91, 103	A-227719
	1	Box assembly, junction 66, 67, 94, 101, 104	A-227712
	1	Box assembly, junction 68, 69, 92	A-227717
	1	Box assembly, junction 71, 98	A-227713
	1	Box assembly, junction 72, 96	A-227718
	1	Box assembly, junction 73, 99	A-227715
	1	Box assembly, junction 74, 75, 97, 100	A-227716
	1	Box assembly, junction 86	A-227451
30	1	Box, junction 29, 31, 32, 42, 43, 76-84, 87, 88	278970
	1	Box, junction 62-75, 85, 86, 89-103, 104	227849
31	2	Washer, shakeproof all	X-22-12
32	2	Washer, lock, 1/4 all	X-22-11
33	2	Washer, 1/4 all	
34	1	Nut, 1/4-20 all	
35	1	Nut, hex all	X-81-8

Item	Qty.	Description Variation	Part No.
36	1	Connector, conduit all	X-252-23
37	1	Bushing, nylon all	X-634-11
38	1	Decal, ground all	238575
39	1	Cover assembly (includes items 40-45) 29, 42	A-278755
	1	Cover assembly 31, 76, 79, 80, 81, 84, 99	A-278695
	1	Cover assembly 32, 43, 68, 92	A-278697
	1	Cover assembly 62, 90	A-227733
	1	Cover assembly 63, 70, 75, 93, 95, 97, 102	A-227694
	1	Cover assembly 64, 89	A-227735
	1	Cover assembly 65, 91, 103	A-227699
	1	Cover assembly 66, 94	A-227692
	1	Cover assembly 67	A-227732
	1	Cover assembly 69	A-227734
	1	Cover assembly 71, 86, 98	A-227693
	1	Cover assembly 72, 85, 96	A-227698
	1	Cover assembly 74, 100, 101	A-227696
	1	Cover assembly 77, 78, 82, 83	A-278966
	1	Cover assembly 87	A-278786
	1	Cover assembly 88	A-227526
	1	Cover assembly 73, 104	A-227930
40	1	Holder, fuse all except 29, 31, 32, 42, 43, 68, 73, 76-84, 87, 88, 92, 99, 104	267996
	1	Holder, fuse 29, 31, 32, 42, 43, 68, 73, 76-84, 87, 88, 92, 99	238426
41	1	Fuse, 5 amp. all	239298

Group 301: Controller and Mounting



Group 301: Controller and Mounting

Item	Qty.	Description Variation	Part No.
42	1	Breaker, circuit (30 Amp) 29, 32, 42, 66-69, 92, 94	278190
	1	Breaker, circuit (20 Amp) 29, 42, 68, 69, 92, 99	278257
	2	Breaker, circuit (17 Amp) 31, 62, 63, 70, 75, 76 90, 93, 95, 97, 102	227671
	2	Breaker, circuit (25 Amp) 64, 65, 89, 91, 103	278784
	3	Breaker, circuit (15 Amp, 1 pole) 72, 74, 85, 96, 100, 101	278700
	3	Breaker, circuit (10 Amp) 71, 86, 98	227673
	1	Terminal, jumper (not shown) 29, 42, 73, 104	249956
	1	Breaker, circuit 73, 104	227936
43	1	Cover, silkscreen 29, 42	278754
	1	Cover, silkscreen 31, 76, 79, 80, 81, 84, 99	278948
	1	Cover, silkscreen 32, 43, 68, 92	278698
	1	Cover, silkscreen 77, 78, 82, 83	278965
	1	Cover, silkscreen 72, 85, 96	227447
	1	Cover, silkscreen 71, 86, 98	227448
	1	Cover, silkscreen 87	278785
	1	Cover, silkscreen 88	227525
	1	Cover, silkscreen 74, 100, 101	227688
	1	Plate, cover (not shown) 74, 100, 101	227893
	1	Cover, silkscreen 63, 70, 93, 95, 97, 102	227686
	1	Cover, silkscreen 64, 65, 89, 91, 103	227691
	1	Cover, silkscreen 66, 67, 94	227684
	1	Cover, silkscreen 69	227689
	1	Cover, silkscreen 73, 104	227935
44	2	Screw, r.h.m., 6-32 32, 66, 67, 94	X-49-25
	4	Screw, r.h.m., 6-32 all variations except 32	X-49-25
	6	Screw, r.h.m., 6-32 71, 72, 85, 86, 96, 98	X-49-25

Item	Qty.	Description Variation	Part No.
45	2	Washer, #6 31, 32, 43, 62-70, 73-76, 79-81, 84, 89-95, 97, 99, 100, 104	X-22-6
	4	Washer, #6 29, 42, 77, 78, 82, 83, 87, 88	
	6	Washer, #6 71, 72, 85, 86, 96, 98	
46	4	Screw, self-tapping all variations except 85 & 86	X-794-3
47	1	Voltage regulator kit all variations except 85 & 86	228605
	1	Conduit, convoluted (not shown) 31, 32, 42, 76-88	X-6003-109
48	3	Screw, hex slotted head 43	X-67-43
	8	Screw, hex slotted head 29, 31, 32, 42, 76, 77, 82-84, 87, 88	X-67-43
	12	Screw, hex slotted head 78, 79, 80, 85, 86	X-67-43
49	1	Screw, tapping, 8-32 29, 31, 32, 42, 43, 78-80, 85-88	X-67-60
	1	Tie (not shown) 29, 31, 32, 42, 43, 78-80, 85-88	X-468-3
50	1	Harness, wiring (not shown) 29, 31, 32, 87, 88	278676
	1	Harness, wiring (not shown) 76-80, 85, 86	278952
	1	Harness, wiring (not shown) 81-84	278297
	1	Harness, wiring (not shown) 42, 43	278959
51	1	Bushing, strain relief (not shown) 63, 65, 66, 68, 70-75, 104	227665

Group 701: Literature

Item	Qty.	Description Variation	Part No.
1	1	Manual, owner's installation 5	
2	1	Service manual 5	
3	1	Parts catalog 5	

Item	Qty.	Description Variation	Part No.
4	1	Service manual, Kohler engine 5	
5	1	Guide, safety 5	TP-5251
6	1	Floor template 5	G25-1

Gasket Set

1	1	Gasket Set (include the following)	52 755 94
	1	Oil Seal	
	1	Gasket, carburetor	
	1	Gasket, air cleaner elbow	
	1	Gasket, fuel pump	
	1	Seal, breather	
	2	Seal, valve stem	
	1	Seal, oil rear	
	2	Seal oil	
	1	Gasket, closure plate	
	2	Gasket, intake	
	2	Gasket, exhaust	
	1	Gasket, oil filter cover	
	2	Gasket, cylinder head	
	3	Gasket, valve cover	
	2	Gasket, air cleaner	
	2	Gasket, exhaust	
	1	Gasket, fuel pump	

Accessories

Qty.	Description	Part No.
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Exhaust Kits

Note: Muffler system as viewed from service side of generator.

Under Set Mounted

Right Side Outlet

PA-278639

1	Screw, H.C.	X-125-24
1	Washer, plain	X-25-85
1	Nut, whiz 5/16-18	X-6210-7
3	Screw, hex flange	X-6217-1
1	Screw, drill	X-794-3
1	Clamp, muffler	X-722-8
1	Gasket, exhaust	278320
1	Arrester, spark	278621
1	Muffler	278736
1	Adapter, exhaust	278766
1	Strap, muffler mounting	278769
1	Bracket, muffler mounting	278772

Left Side Outlet

PA-278638

1	Screw, H.C.	X-125-24
1	Washer, plain	X-25-85
1	Nut, whiz, 5/16-18	X-6210-7
3	Screw, hex flange	X-6217-1
1	Clamp, U	X-722-8
1	Screw, drill	X-794-3
1	Gasket, exhaust	278320
1	Arrester, spark	278621
1	Muffler	278737
1	Adapter, exhaust	278766
1	Strap, muffler mounting	278769
1	Bracket, muffler mounting	278772

Right Side Outlet*

PA-227435

1	Screw, H.C.	X-125-24
2	Washer, plain	X-25-85
1	Nut, whiz, 5/16-18	X-6210-7
3	Screw, hex flange	X-6217-1
1	Clamp, U	X-722-8
1	Screw, drill	X-794-3
1	Bracket, muffler mounting	227433
1	Adapter, exhaust	227434
1	Gasket, exhaust	278320
1	Arrester, spark	278621
1	Muffler	278736
1	Strap, muffler mounting	278769

Qty.	Description	Part No.
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Left Side Outlet*

PA-227436

2	Screw, H.C.	X-125-23
1	Screw, H.C.	X-125-24
2	Washer, plain	X-25-40
1	Washer, plain	X-25-85
3	Screw, hex flange	X-6217-1
1	Clamp, U	X-722-8
1	Screw, drill	X-794-3
1	Bracket, muffler mounting	227433
1	Adapter, exhaust	227434
1	Gasket, exhaust	278320
1	Arrester, spark	278621
1	Muffler	278737
1	Strap, muffler mounting	278769

***Special application kit used to lower muffler additional 8"**

Set Mounted

Front Outlet

PA-278640

2	Screw, hex flange	X-6217-1
2	Screw, hex flange	X-6217-2
1	Clamp, U	X-722-8
1	Screw, drill	X-794-3
1	Gasket, exhaust	278320
1	Adapter, exhaust	278524
1	Arrester, spark	278621
1	Muffler	278734

Rear Outlet

PA-278641

2	Screw, hex flange	X-6217-1
2	Screw, hex flange	X-6217-2
1	Clamp, U	X-722-8
1	Screw, drill	X-794-3
1	Gasket, exhaust	278320
1	Adapter, exhaust	278524
1	Arrester, spark	278621
1	Muffler	278735

Side Outlet

PA-278761

2	Screw, hex flange	X-6217-1
2	Screw, hex flange	X-6217-2
1	Clamp, U	X-722-8
1	Screw, drill	X-794-3
1	Gasket, exhaust	278320
1	Adapter, exhaust	278524
1	Arrester, spark	278621
1	Muffler, above tray	278733

Accessories

Qty.	Description	Part No.
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Center Tap Bottom Outlet

PA-278964

2	Screw, hex flange	X-6217-1
2	Screw, hex flange	X-6217-2
1	Clamp, U	X-722-8
1	Screw, drill	X-794-3
1	Gasket, exhaust	278320
1	Adapter, exhaust	278524
1	Arrester, spark	278621
1	Muffler	278963

Remote Control Kits

Illuminated Rocker Switch and Mounting Plate

PAA-278727

1	Panel assembly, remote (includes the following)	A-278727
1	Connector	239408
1	Panel, remote	250796
1	Switch, rocker	269296

Illuminated Rocker Switch, Running Time, and Mounting Plate

PAA-239419

1	Screw, sheet metal	X-798-1
1	Switch assembly, remote (includes the following)	A-239419
1	Meter, hour	238736
1	Harness, wiring	239418
1	Switch, rocker	269296
1	Panel, remote	269298

15-foot Harness

PA-278730

1	Harness, wiring	278730
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30-foot Harness

PA-278728

1	Harness, wiring	278728
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40-foot Harness

PA-278729

1	Harness, wiring	278729
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Adapter Harness, 12 inch Pigtail

PA-278681

1	Harness, wiring	278681
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Adapter Harness, 36" 6 pin to 4 pin

PA-278682

1	Harness, wiring	278682
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Qty.	Description	Part No.
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Remote Voltage Regulator

PA-227892

1	Harness, wiring	227891
1	Cover, box cover	227888
1	Fuse, 10 amp	223316
5	Screw, crimpite	X-6216-1
1	Regulator Assembly (includes the following)	A-227889
1	Voltage Regulator	B-258296
1	Bushing, nylon	X-634-5
6	Spacer	X-712-9
6	Nut, hex	X-72-4
6	Washer, nylon	239665
1	Box, regulator	227887

Below Floor Mounting Kits

Below Floor Mounting

PA-227840

4	Washer, plain	X-25-37
4	Screw, H.C.	X-6238-10
1	Tray assembly (includes the following)	A-278717
1	Plate, front	278711
1	Cover, side	278712
1	Cover, back	278713
1	Base	227829

Accessories

Qty.	Description	Part No.
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Below Floor Housing and Hinge Kit

PA-278956

1	Screw, H.C.	X-125-33
1	Washer, plain	X-25-40
2	Washer, plain	X-25-85
1	Cable, battery	X-545-55
2	Nut, whiz	X-6210-2
3	Nut, whiz, 5/16-18	X-6210-7
6	Screw, hex flange	X-6217-1
6	Screw, hex flange	X-6217-5
3	Bushing	X-634-25
2	Screw, self-tapping	X-67-114
11	Screw, self-tapping	X-67-115
1	Bracket, support	227490
1	Bracket	227491
1	Decal	227492
1	Decal	227587
1	Stud, insulator	227588
1	Insulator, panel	233269
2	Boot	238915
1	Decal, warning	278850
1	Shield, heat	278866
2	Plate, hinge	278924
1	Bracket, housing	278934
1	Support, housing	278935
1	Tray	278937
1	Panel assembly	A-227487
2	Screw, hex flange	X-6217-1
5	Screw, hex flange	X-6217-5
1	Screw, self-tapping	X-67-115
1	Bracket, right corner	278922
1	Bracket, left corner	278923
2	Hinge	278925
1	Bracket, left center	278926
1	Bracket, right center	278927
1	Brace, rear	278929
1	Panel, rear	278930
1	Panel assembly	A-227488
2	Screw, self-tapping	X-67-64
1	Plate, spacer	227486
1	Brace, side	278931
1	Panel, left housing	278932
1	Panel assembly	A-227489
3	Bushing	X-634-25
6	Screw, self-tapping	X-67-64
1	Panel	227484
1	Plate, spacer	227485
1	Bracket, right support	278928
1	Panel, right housing	278933

Qty.	Description	Part No.
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Miscellaneous

Generator Paints

1	Black Spray Paint	221292
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Air Damper Kit

PA-227919

1	Spring, damper	227921
1	Decal, position	227920
1	Knob, damper	227917
1	Shaft, air damper	227914
1	Plate, air damper	227913
1	Bracket, air damper	227912
1	Screw, 6-32	X-49-1
1	Ring, retaining	X-269-49
1	Washer, lock #6	X-22-6

Anti-icing Kit

227555

1	Base Assembly, air cleaner	A-227547
1	Installation Instructions	TT-867
1	Hose, fuel line	X-422-28
1	Clamp, hose	X-426-10
2	Clamp, hose	X-426-19
1	Cover, plastic	227463
1	Adapter, hose	227545
1	Duct, carburetor preheat	227550
1	Duct, air cleaner	227552
1	Line, breather	227573
1	Insulation, sleeve	227574
1	Nameplate	278634
1	Nameplate	278635
1	Decal, service instruction	278831
4	Clip, air cleaner	278862
1	Gasket	52 055 01

Appendix A. Glossary of Abbreviations

Abbreviations are used throughout this manual. Normally in the text they will appear in complete form with the abbreviation following in parenthesis the first time they are used. After that they will appear in the abbreviated form. The commonly used abbreviations are shown below.

AC	alternating current	gph	gallons per hour	N.C.	normally closed
AISI	American Iron and Steel Institute	gpm	gallons per minute	NEC	National Electrical Code
Amp	ampere	gr.	grade	NEMA	National Electrical Manufacturers Association
Amps	amperes	grd.	ground	NFPA	National Fire Protection Association
ANSI	American National Standard Institute	HCHT	high cylinder head temperature	Nm	Newton meter, Newton meters
API	American Petroleum Institute	HET	high exhaust (or engine) temperature	no., nos	number, numbers
approx.	approximate, approximately	Hg	mercury (element)	NPT	National Standard taper pipe thread per general use
A/R	as required, as requested	H ₂ O	water	N/R	not required
A/S	as supplied, as stated, as suggested	HP	horsepower	OC	overcrank
ASA	American Standards Association	hr, hrs	hour	OD	outside diameter
ASME	American Society of Mechanical Engineers	Hz	hertz (cycles per second)	OEM	original equipment manufacturer
assy.	assembly	ID	inside diameter	OS	overspeed, oversize
ASTM	American Society for Testing Materials	IEEE	Institute of Electrical and Electronic Engineers	O/S	oversize
ATDC	after top dead center	in.	inch(es)	OSHA	Occupational Safety and Health Act
aux.	auxiliary	inc.	incorporated	OV	overvoltage
AWG	American Wire Gauge	in. lbs.	inch pounds	oz.	ounce, ounces
AWM	appliance wiring material	int.	internal	PF	power factor
BBDC	before bottom dead center	int.-ext.	internal-external	PMG	permanent magnet generator
BDC	before dead center	ISO	International Standards Organization	pot.	potentiometer
BHP	brake horsepower	J	joule, joules	ppm	parts per million
bmep	brake mean effective pressure	JIS	Japanese Industry Standard	psi	pounds per square inch
Btu	British thermal unit	kg	kilogram, kilograms	pt., pts.	pint, pints
°C	Celsius degree	kg/cm ²	kilograms per square centimeter	PVC	polyvinyl chloride
cc	cubic centimeter	kgm	kilogram meter(s)	qt., qts.	quart, quarts
CCA	cold cranking Amps.	kJ	kilojoules (btu cal)	qty.	quantity
CEC	Canadian Electrical Code	km	kilometer, kilometers	ref.	reference
cfh	cubic feet per hour	kPa	kiloPascal, kiloPascals	RFI	radio frequency interference
cfm	cubic feet per minute	kph	kilometers per hour	r.h.m.	round-head machine (screw)
CID	cubic inch displacement	kV	kilovolt	rms	root mean square
cm	centimeter, centimeters	kVA	kilovolt amperes	RPM	revolutions per inch
cmm	cubic meters per minute	kW	kilowatt, kilowatts	RTV	room temperature vulcanization
co.	company	kWH	kilowatt hour	SAE	Society of Automotive Engineers
cont d.	continued	L	liter, liters	SCR	silicon-controlled rectifier
CSA	Canadian Standards Association	LxWxH	length x width x height	sec.	second, seconds
CT	current transformer	LED(s)	light emitting diode	spec.	specs, specification
cu. in.	cubic inch, cubic inches	lb., lbs.	pound, pounds	sq.	square
cyl.	cylinder	L/hr.	liter per hour, liters per hour	sq. cm	square centimeters
dB	decibel	L/min.	liter(s) per minutes	sq. in.	square inch, square inches
dBA	decibels (A weighted)	LOP	low oil pressure	tach	tachometer
DC	direct current	LP	liquefied petroleum	TDC	top dead center
DCR	direct current resistance	m	meter, meters	tech. pub.	technical publications
deg.	degree	m ³	cubic meter, cubic meters	temp.	temperature
dept.	department	max.	maximum	TIF	telephone influence factor
dia.	diameter	MCM	one thousand circular mils.	TP, TPs	technical publications
e.g.	example given	megger	megohmmeter	turbo	turbocharger
EIA	Electronic Industries Association	MHz	megahertz	UHF	ultrahigh frequency
EMI	electromagnetic interference	mi.	mile, miles	UNC	Unified coarse thread (was NC)
EPA	Environmental Protection Agency	mil	one one-thousandth of an inch	UNF	Unified fine thread (was NF)
etc.	et cetera (and so forth)	min.	minimum	UL	Underwriter's Laboratories, Inc.
ext.	external	mJ	millijoule, millijoules	U/S	undersize
°F	Fahrenheit degree	MJ	mega joule, mega joules	U.S.A.	United States of America
fl. oz.	fluid ounce, fluid ounces	mm	millimeter, millimeters	v	volt, volts
FM	frequency modulation	m ³ /min	cubic meters per minute	vac	volts alternating current
ft.	foot, feet	MPa	megaPascal	vdc	volts direct current
ft. lbs.	foot pound, foot pounds	mW	milliwatt, milliwatts	VHF	very high frequency
ga.	gauge	MW	megawatt, megawatts	W	watt, watts
gal./gals.	gallon, gallons	N/A	not available or not applicable		
		NBS	National Bureau of Standards		

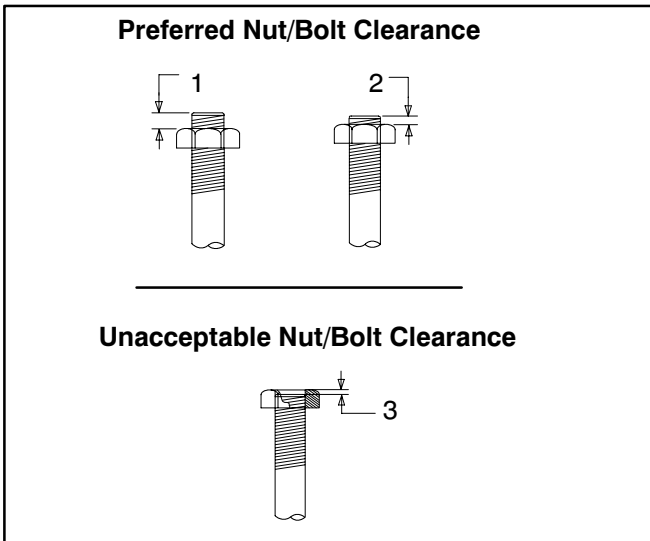
Appendix B. Common Hardware Application Guidelines

Use the information below and on the following pages to identify proper fastening techniques when no specific reference for reassembly is made.

Bolt/Screw Length: When bolt/screw length is not given, use Figure 2 as a guide. As a general rule, a minimum length of one thread beyond the nut and a maximum length of 1/2 the bolt/screw diameter beyond the nut is the preferred method.

Washers and Nuts: Use split lock washers as a bolt locking device where specified. Use SAE flat washers with whiz nuts, spirallock nuts, or standard nuts and preloading (torque) of the bolt in all other applications.

See General Torque Specifications and other torque specifications in the service literature.



1. 1/2 of Bolt Diameter
2. Min. 1 Full Thread Beyond Top of Nut
3. Below Top of Nut

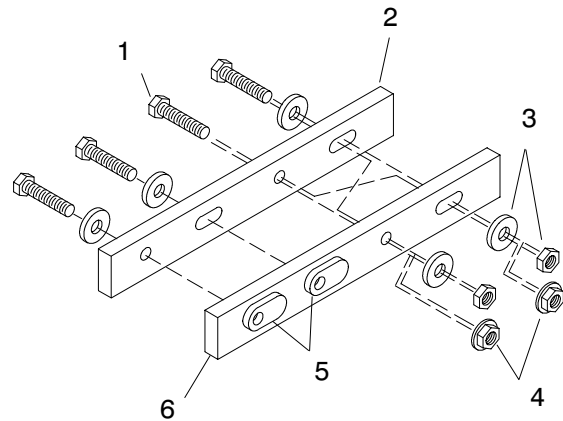
Figure 2. Acceptable Bolt Lengths

Steps for common hardware application:

1. Determine entry hole type: round or slotted.
2. Determine exit hole type: fixed female thread (weld nut), round, or slotted.

For round and slotted exit holes, determine if hardware is greater than 1/2 inch in diameter, or 1/2 inch in diameter or less. Hardware that is *greater than 1/2 inch* in diameter takes a standard nut and SAE washer. Hardware *1/2 inch or less* in diameter can take a properly torqued whiz nut or spirallock nut. See the diagram below.

3. Follow these SAE washer rules after determining exit hole type:
 - a. Always use a washer between hardware and a slot.
 - b. Always use a washer under a nut (see 2 above for exception).
 - c. Use a washer under a bolt when the female thread is fixed (weld nut).
4. Refer to the diagram below, which depicts the preceding hardware configuration possibilities.



1. Cap screw
2. Entry hole types
3. Standard nut and SAE washer
4. Whiz nut or spirallock: up to 1/2" dia. hardware
5. Weld nuts: above 1/2" dia. hardware
6. Exit hole types

Figure 3. Acceptable Hardware Combinations

Appendix C. General Torque Specifications

SAE Fasteners

Use the following specifications for SAE fasteners when no torque values are given elsewhere in this or the service manual for a specified bolt.

The values given are based on new plated threads. Increase values by 20% if nonplated threads are used.

Size	Torque Measurement	Assembled into Cast Iron or Steel			Assembled into
		Grade 2	Grade 5	Grade 8	Aluminum Grade 2 or 5
8-32	in. lbs. (Nm)	16 (1.8)	20 (2.3)	–	16 (1.8)
10-24	in. lbs. (Nm)	26 (2.9)	32 (3.6)	–	26 (2.9)
10-32	in. lbs. (Nm)	26 (2.9)	32 (3.6)	–	26 (2.9)
1/4-20	in. lbs. (Nm)	60 (6.8)	96 (10.8)	132 (14.9)	60 (6.8)
1/4-28	in. lbs. (Nm)	72 (8.1)	108 (12.2)	144 (16.3)	72 (8.1)
5/16-18	in. lbs. (Nm)	120 (13.6)	192 (21.7)	264 (29.8)	120 (13.6)
5/16-24	in. lbs. (Nm)	132 (14.9)	204 (23.1)	288 (32.5)	132 (14.9)
3/8-16	in. lbs. (Nm)	18 (24)	28 (38)	39 (53)	18 (24)
3/8-24	ft. lbs. (Nm)	20 (27)	31 (42)	44 (60)	20 (27)
7/16-14	ft. lbs. (Nm)	29 (39)	44 (60)	63 (85)	
7/16-20	ft. lbs. (Nm)	32 (43)	50 (68)	70 (95)	
1/2-13	ft. lbs. (Nm)	44 (60)	68 (92)	96 (130)	
1/2-20	ft. lbs. (Nm)	49 (66)	76 (103)	108 (146)	
9/16-12	ft. lbs. (Nm)	60 (81)	98 (133)	138 (187)	
9/16-18	ft. lbs. (Nm)	67 (91)	109 (148)	154 (209)	
5/8-11	ft. lbs. (Nm)	83 (113)	135 (183)	191 (259)	
5/8-18	ft. lbs. (Nm)	94 (128)	153 (208)	216 (293)	
3/4-10	ft. lbs. (Nm)	147 (199)	240 (325)	338 (458)	
3/4-16	ft. lbs. (Nm)	164 (222)	268 (363)	378 (513)	
1-8	ft. lbs. (Nm)	191 (259)	532 (721)	818 (1109)	
1-12	ft. lbs. (Nm)	209 (283)	582 (789)	895 (1214)	




















Metric Fasteners















Use the following specifications for metric fasteners when no torque values are given elsewhere in this manual for a specified bolt. These values are based on new plated threads.

Increase values by 20% if nonplated threads are used. Screws threaded into aluminum must have two diameters of threads engaged and may require 30% or more reduction in the torque.

Size (mm)	Torque ft-lb (Nm)				Fasteners Assembled Into Aluminum
	5.8	6.8	10.9		
6 x 1.00	5 (7)	6 (9)	9 (12)		5 (7)
8 x 1.25	14 (19)	14 (20)	20 (37)		14 (19)
8 x 1.00	16 (21)	17 (24)	23 (31)		16 (21)
10 x 1.50	25 (35)	27 (37)	38 (51)		25 (35)
10 x 1.25	29 (39)	34 (46)	45 (61)		29 (39)
12 x 1.75	42 (57)	45 (61)	65 (89)		
12 x 1.50	48 (65)	55 (75)	78 (106)		
14 x 2.00	64 (86)	69 (94)	101 (137)		
14 x 1.50	74 (100)	81 (110)	116 (157)		
16 x 2.00	98 (133)	104 (141)	150 (204)		
16 x 1.50	104 (141)	116 (157)	168 (228)		
18 x 2.50	133 (181)	145 (196)	208 (283)		
18 x 1.50	145 (196)	156 (212)	226 (306)		

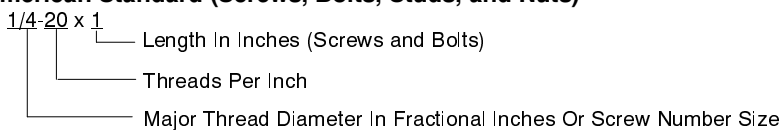
Appendix D. Common Hardware Identification

Screws/Bolts/Studs Head Styles	
Hex. Head or Machine Head	
Hex. Head or Machine Head with Washer	
Flat Head (f.h.m.)	
Round Head (r.h.m.)	
Pan Head	
Socket Head Cap or Allen Head Cap	
Socket Head or Allen Head Shoulder Bolt	
Sheet Metal Screw	
Stud	
Drive Styles	
Hex.	
Hex. and Slotted	
Phillips	
Slotted	
Hex. Socket	
Hardness Grade	
American Standard	
Grade 2	
Grade 5	
Grade 8	
Grade 8/9	
Metric	
Number stamped on hardware; 5.8 shown	

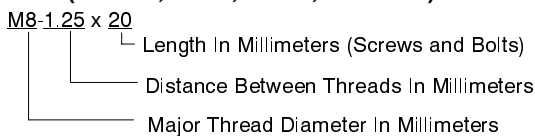
Nuts Nut Styles	
Hex. Head	
Lock Nut or Nylock Nut	
Square Nut	
Cap Nut or Acorn Nut	
Wing Nut	
Nut Hardness Grades	
American Standard	
Grade 2	
Grade 5	
Metric	
Number stamped on hardware	
Washers	
Washer Styles	
Plain	
Split Lock or Spring	
Spring or Wave	
External Tooth Lock	
Internal Tooth Lock	
Internal-External Tooth Lock	

Sample Dimensions

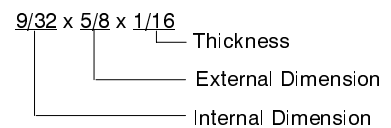
American Standard (Screws, Bolts, Studs, and Nuts)



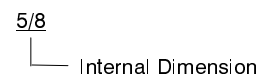
Metric (Screws, Bolts, Studs, and Nuts)



Plain Washers



Lock Washers



Appendix E. Common Hardware List

The Common Hardware List gives part numbers and dimensions for common hardware items.

HEX BOLTS (GRADE 5)

Part No.	Dimensions
X-465-17	1/4-20 x .38
X-465-6	1/4-20 x .50
X-465-2	1/4-20 x .62
X-465-16	1/4-20 x .75
X-465-18	1/4-20 x .88
X-465-7	1/4-20 x 1.00
X-465-8	1/4-20 x 1.25
X-465-9	1/4-20 x 1.50
X-465-10	1/4-20 x 1.75
X-465-11	1/4-20 x 2.00
X-465-12	1/4-20 x 2.25
X-465-14	1/4-20 x 2.75
X-465-21	1/4-20 x 5.00
X-465-25	1/4-28 x .38
X-465-20	1/4-28 x 1.00
X-125-33	5/16-18 x .50
X-125-23	5/16-18 x .62
X-125-3	5/16-18 x .75
X-125-31	5/16-18 x .88
X-125-5	5/16-18 x 1.00
X-125-24	5/16-18 x 1.25
X-125-34	5/16-18 x 1.50
X-125-25	5/16-18 x 1.75
X-125-26	5/16-18 x 2.00
230578	5/16-18 x 2.25
X-125-29	5/16-18 x 2.50
X-125-27	5/16-18 x 2.75
X-125-28	5/16-18 x 3.00
X-125-22	5/16-18 x 4.50
X-125-32	5/16-18 x 5.00
X-125-35	5/16-18 x 5.50
X-125-36	5/16-18 x 6.00
X-125-40	5/16-18 x 6.50
X-125-43	5/16-24 x 1.75
X-125-44	5/16-24 x 2.50
X-125-30	5/16-24 x .75
X-125-39	5/16-24 x 2.00
X-125-38	5/16-24 x 2.75
X-6238-2	3/8-16 x .62
X-6238-10	3/8-16 x .75
X-6238-3	3/8-16 x .88
X-6238-11	3/8-16 x 1.00
X-6238-4	3/8-16 x 1.25
X-6238-5	3/8-16 x 1.50
X-6238-1	3/8-16 x 1.75
X-6238-6	3/8-16 x 2.00
X-6238-17	3/8-16 x 2.25
X-6238-7	3/8-16 x 2.50
X-6238-8	3/8-16 x 2.75
X-6238-9	3/8-16 x 3.00
X-6238-19	3/8-16 x 3.25
X-6238-12	3/8-16 x 3.50
X-6238-20	3/8-16 x 3.75
X-6238-13	3/8-16 x 4.50
X-6238-18	3/8-16 x 5.50
X-6238-25	3/8-16 x 6.50
X-6238-14	3/8-24 x .75
X-6238-16	3/8-24 x 1.25
X-6238-21	3/8-24 x 4.00
X-6238-22	3/8-24 x 4.50
X-6024-5	7/16-14 x .75
X-6024-2	7/16-14 x 1.00
X-6024-8	7/16-14 x 1.25
X-6024-3	7/16-14 x 1.50
X-6024-4	7/16-14 x 2.00
X-6024-11	7/16-14 x 2.75
X-6024-12	7/16-14 x 6.50
X-129-15	1/2-13 x .75

HEX BOLTS (GRADE 5), continued

Part No.	Dimensions
X-129-17	1/2-13 x 1.00
X-129-18	1/2-13 x 1.25
X-129-19	1/2-13 x 1.50
X-129-20	1/2-13 x 1.75
X-129-21	1/2-13 x 2.00
X-129-22	1/2-13 x 2.25
X-129-23	1/2-13 x 2.50
X-129-24	1/2-13 x 2.75
X-129-25	1/2-13 x 3.00
X-129-27	1/2-13 x 3.50
X-129-29	1/2-13 x 4.00
X-129-30	1/2-13 x 4.50
X-463-9	1/2-13 x 5.50
X-129-44	1/2-13 x 6.00
X-129-51	1/2-20 x .75
X-129-45	1/2-20 x 1.25
X-129-52	1/2-20 x 1.50
X-6021-3	5/8-11 x 1.00
X-6021-4	5/8-11 x 1.25
X-6021-2	5/8-11 x 1.50
X-6021-1	5/8-11 x 1.75
273049	5/8-11 x 2.00
X-6021-5	5/8-11 x 2.25
X-6021-6	5/8-11 x 2.50
X-6021-7	5/8-11 x 2.75
X-6021-12	5/8-11 x 3.75
X-6021-11	5/8-11 x 4.50
X-6021-10	5/8-11 x 6.00
X-6021-9	5/8-18 x 2.50
X-6239-1	3/4-10 x 1.00
X-6239-8	3/4-10 x 1.25
X-6239-2	3/4-10 x 1.50
X-6239-3	3/4-10 x 2.00
X-6239-4	3/4-10 x 2.50
X-6239-5	3/4-10 x 3.00
X-6239-6	3/4-10 x 3.50
X-792-1	1-8 x 2.25
X-792-5	1-8 x 3.00
X-792-8	1-8 x 5.00

NUTS

Part No.	Dimensions	Type
X-6009-1	1-8	Std. Nut
X-6210-3	6-32	Whiz Nut
X-6210-4	8-32	Whiz Nut
X-6210-5	10-24	Whiz Nut
X-6210-1	10-32	Whiz Nut
X-6210-2	1/4-20	Spiralock Nut
X-6210-6	1/4-28	Spiralock Nut
X-6210-7	5/16-18	Spiralock Nut
X-6210-8	5/16-24	Spiralock Nut
X-6210-9	3/8-16	Spiralock Nut
X-6210-10	3/8-24	Spiralock Nut
X-6210-11	7/16-14	Spiralock Nut
X-6210-12	1/2-13	Spiralock Nut
X-6210-15	7/16-20	Spiralock Nut
X-6210-14		Spiralock Nut
X-85-3	5/8-11	Std. Nut
X-88-12	3/4-10	Std. Nut
X-89-2	1/2-20	Std. Nut

WASHERS

Part No.	ID	OD	Thickness	Bolt/ Screw
X-25-46	.125	.250	.022	#4
X-25-9	.156	.375	.049	#6
X-25-48	.188	.438	.049	#8
X-25-36	.219	.500	.049	#10
X-25-40	.281	.625	.065	1/4
X-25-85	.344	.687	.065	5/16
X-25-37	.406	.812	.065	3/8
X-25-34	.469	.922	.065	7/16
X-25-26	.531	1.062	.095	1/2
X-25-15	.656	1.312	.095	5/8
X-25-29	.812	1.469	.134	3/4
X-25-127	1.062	2.000	.134	1

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POWER SYSTEMS

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