

Service Parts

Marine Generator Sets



Models:

5EKD/4EFKD
7.5EKD/6EFKD
10EKD/8EFKD

KOHLER[®]
Power Systems _____

9001
S **KOHLER**
POWER SYSTEMS
NATIONALLY REGISTERED

TP-6594 2/14a

Table of Contents

Description	Page	Description	Page
Introduction	3	Group 103: Fuel System	19
Number Significance	3	Group 104: Cooling System	20
How to Find Part Numbers	3	Group 105: Engine	22
Hardware References	3	Group 107: Nameplate and Decals	23
Specification Number Index	4	Group 109: Skid and Mounting	24
Group 1: Crankshaft	5	Group 116: Exhaust	25
Group 2: Crankcase	6	Group 201: Generator and Mounting	26
Group 3: Lubrication	8	Group 701: Literature	28
Group 4: Valve Covers	10	Paint and Miscellaneous	28
Group 5: Ignition	12	Accessories	29
Group 7: Starting	12	Appendix A Glossary of Abbreviations	33
Group 11: Long Block	14	Appendix B Common Hardware Application Guidelines	35
Group 12: Engine Nameplate and Decals	16	Appendix C General Torque Specifications	36
Group 13: Engine Cooling System	17	Appendix D Common Hardware Identification	37
Group 101: Air Intake	18	Appendix E Common Hardware List	38

Introduction

This manual lists service replacement parts for 5EKD/4EFKD-10EKD/8EFKD generator sets.

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This manual includes the following main sections:

Table of Contents. Lists the sections of the manual.

Introduction (and other information sections). Contains introductory material about part numbers, illustrations, and hardware.

Index. Lists the generator set specs and groups.

Group Parts Lists. List the part numbers of parts in the groups.

Kit Sections. List modules and accessories and their parts.

Appendices. Include Abbreviations, Common Hardware Application Guidelines, General Torque Specifications, Common Hardware Identification, and Common Hardware List.

x:in:004:002

Numbering System Significance

This manual uses the following numbering systems:

Specification Number. A six-digit number with a PA-prefix. The Specification Number Index does not show the prefix. Spec numbers break down into groups.

Group Number. A unique number representing a parts group needed to assemble a generator set function. For example, Group 101 is the Air Intake group.

Variation or Module Number. A group might have several variations. Each variation performs the same function with different parts lists. For example, a 50 Hz generator alternator and 60 Hz generator alternator both perform the same function, however, with different parts. Each difference requires a group variation or module number.

Part Number. The part number identifies an individual assembly, subassembly, component, or accessory kit.

x:in:004:003

Illustrations

Illustrations (or exploded-view drawings) best representing the widest range of variations accompany most groups in this manual. Illustrations do not depict all details and may not show all parts. Do not use illustrations for assembly or disassembly.

x:in:004:004a

How to Find Part Numbers

Use the following steps to locate a service replacement part.

1. Locate the generator set nameplate to **identify the generator set spec number**.
2. Locate a second generator set nameplate listing accessories to **identify installed modules**. On some models the accessory nameplate is mounted inside the generator junction box.
3. **Turn to the Specification Number Index**. The first column lists the generator set spec numbers. The headings identify the groups of parts that make up the generator set.
4. **Identify the group** most likely to include the service part number.
5. **Find the group variation number** at the intersection of the spec number row and the group column. Note the variation number.
6. **Page forward to locate the group** identified in step 4 or find the appropriate page in the Table of Contents.
7. **Find the part on the illustration** and note the item number of the part or **find the part description in the parts list**.
8. Select **the part number that corresponds to your group variation**. The first column lists the illustration item number. Find the variation identified in the Specification Number Index or the module number found on the generator set nameplate in the appropriate column on the right side of the parts list table. Find the quantity used at the intersection of the item number row and the variation column. A blank space at the intersection means the variation/module does not use that part number.

x:in:004:005

Hardware References

Many common hardware items do not appear in parts manuals or will appear as common hardware entries. A common hardware entry lists the size of the hardware. For example, an item that appears as "Hardware, 3/8-16" in the text means that the piece is 3/8-16 size. Obtain common hardware locally or, if contacting the factory, use the Common Hardware List in the appendix to identify the common hardware part number and specifications. See Common Hardware Application Guidelines in the appendix for mating hardware instructions.

Some hardware items require a specific size or some other characteristic. In that case, use the part number listed in the text.

When replacing hardware, do not substitute inferior grade hardware. Replacement hardware grade should be equal to or better than the grade of the manufacturer's original hardware. Use the Common Hardware List in the appendix to identify the common hardware hardness.

x:in:004:006

Specification Number Index

Group Title		<i>Crankshaft</i>	<i>Crankcase</i>	<i>Lubrication</i>	<i>Cylinder Head/Valve</i>	<i>Ignition</i>	<i>Starting</i>	<i>Engine Decals</i>	<i>Engine Cooling</i>	<i>Long Block</i>
Group No.	1	2	3	4	5	7	12	13	66	
Spec No.	Variation Number									

5EKD/4EFKD										
GM47636-GA1	25*	39* or 32‡ or 28§	50* or 43†	41* or 34†	33	4	22	16	1†	
7.5EKD/6EFKD										
GM47636-GA2	25*	39* or 32‡ or 28§	50* or 43†	41* or 34†	33	4	22	16	1†	
10EKD/8EFKD										
GM47636-GA3	25*	39* or 32‡ or 28§	50* or 43†	41* or 34†	33	4	22	16	1†	

* After engine serial number 4112200001
 † Before engine serial number 4112200011

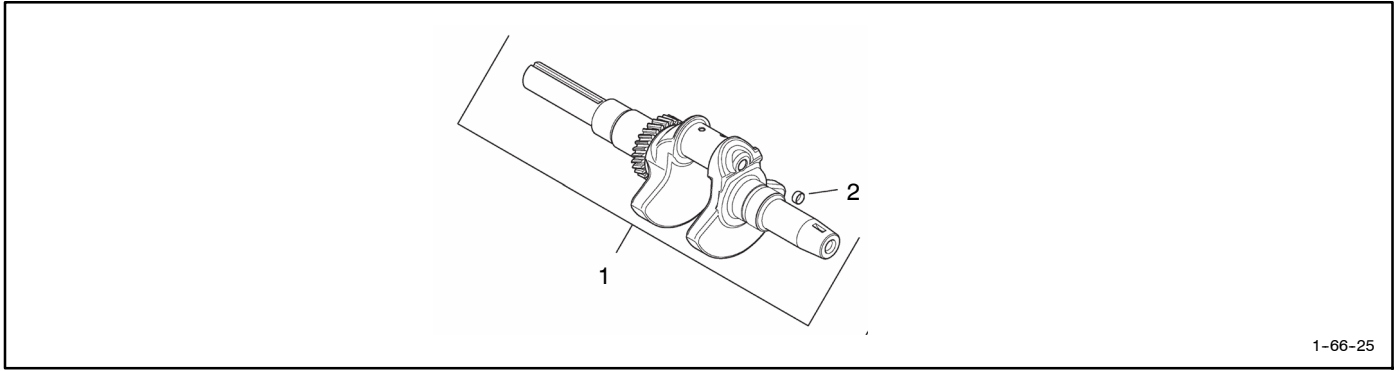
‡ Before engine S/N 4112200011 & After S/N 3932200001
 § Before engine serial number 3832100011

Group Title		<i>Air Intake</i>	<i>Fuel System</i>	<i>Cooling System</i>	<i>Engine</i>	<i>Nameplates and Decals</i>	<i>Skid and Plant Mounting</i>	<i>Exhaust System</i>	<i>Generator and Mounting</i>	<i>Literature</i>
Group No.	101	103	104	105	107	109	116	201	701	
Spec No.	Variation Number									

5EKD/4EFKD										
GM47636-GA1	1	1	1	1	1	1	1	1	21	
7.5EKD/6EFKD										
GM47636-GA2	1	1	1	1	1	1	1	2	22	
10EKD/8EFKD										
GM47636-GA3	1	1	1	1	1	1	1	3	23	

Group 1: Crankshaft

After engine serial number 411220001



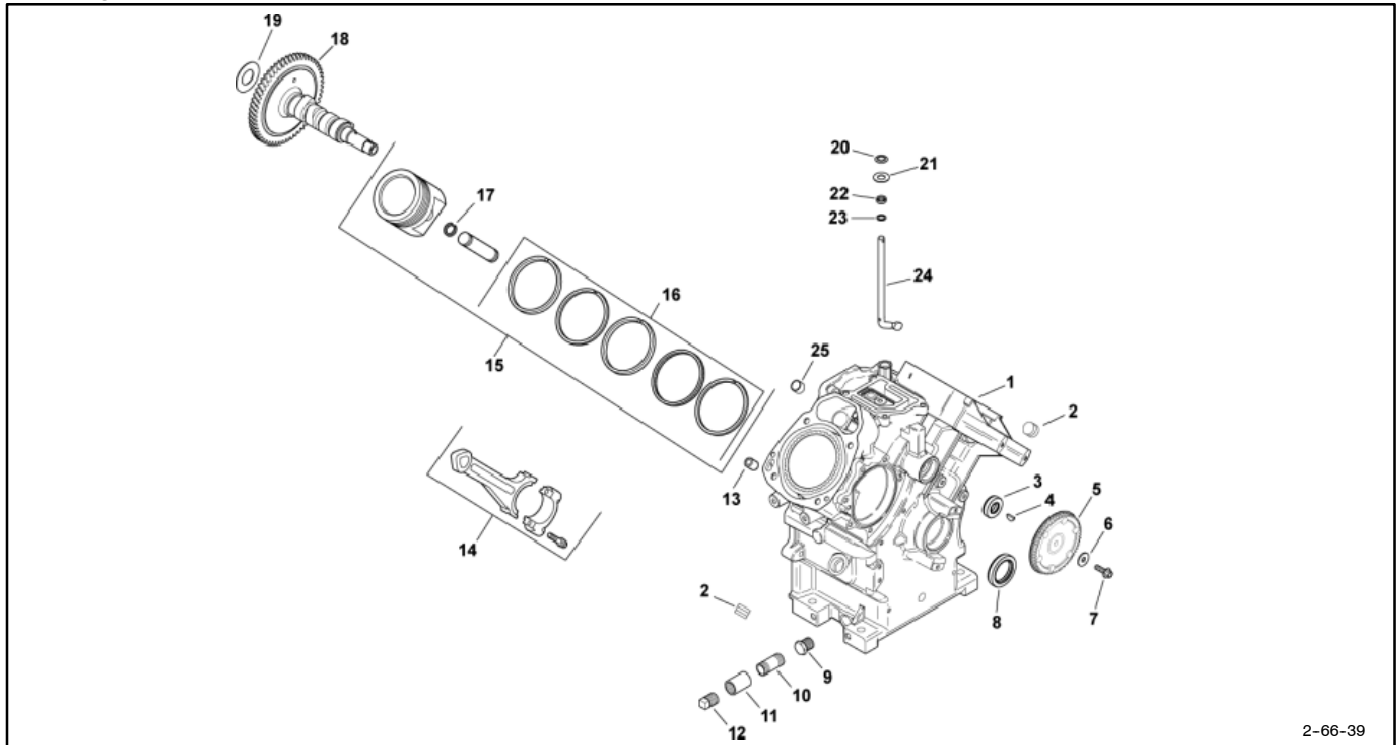
1-66-25

Item	Part No.	Description	Qty.
			Var.
1	66 014 318-S	Crankshaft, Non-thrust Style	1
2	52 139 09-S	Plug, Cup	1

Before engine serial number 4112200011
See Group 11

Group 2: Crankcase

After engine serial number 4112200001

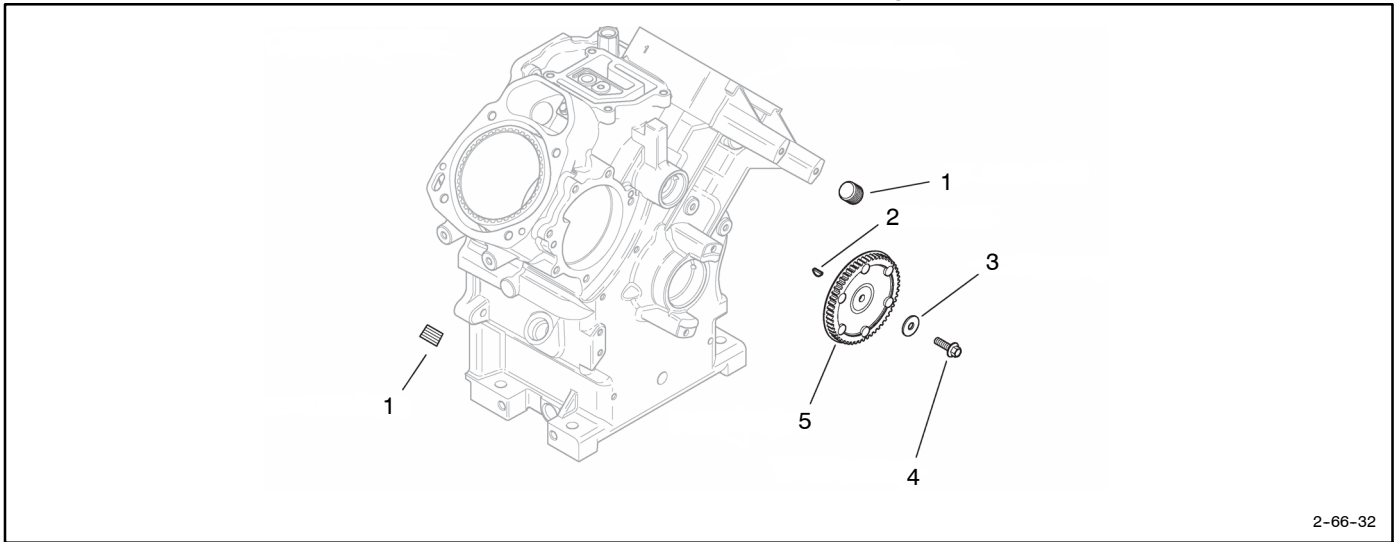


2-66-39

Item	Part No.	Description	Qty.
1	-	Crankcase not serviced	
2	25 139 62-S	Plug, Pipe Ctsk 3/8"	2
3	66 032 07-S	Seal, Camshaft	1
4	X-42-2-S	Key, 3/32" X 3/8"	1
5	66 093 01-S	Sprocket, Camshaft	1
6	X-25-52-S	Washer, Flat 1/4"	1
7	M-651020-S	Screw, Flg M6x1.0x20	1
8	24 032 19-S	Seal, Oil (Helix Lip)	1
9	52 139 02-S	Plug, Hd Pipe 3/8"	2
13	24 380 16-S	Pin, Locating	2
14	24 067 30-S	Rod Assy, Connecting (Std)	2
15	24 874 43-S	Kit, Piston Assy W/Ring Set (.08)	1
15	24 874 44-S	Kit, Piston Assy W/Ring Set (.25)	1
15	24 874 45-S	Kit, Piston Assy W/Ring Set (.5)	1
16	24 108 18-S	Ring Set, Piston (Std)	2
17	24 018 01-S	Retainer, Piston Pin	4
18	66 012 01-S	Kit, Camshaft	1
19	12 422 07-S	Shim, Camshaft (White .028")	1
19	12 422 08-S	Shim, Camshaft (Blue .03")	1
19	12 422 09-S	Shim, Camshaft (Red .032")	1
19	12 422 10-S	Shim, Camshaft (Yellow .034")	1
19	12 422 11-S	Shim, Camshaft (Green .036")	1
19	12 422 12-S	Shim, Camshaft (Gray .038")	1
19	12 422 13-S	Shim, Camshaft (Black .04")	1
25	52 139 09-S	Plug, Cup	1
	66 431 03-S	Sleeve (Not Shown)	1
	66 100 01-S	Nut (Not Shown)	1

Group 2: Crankcase

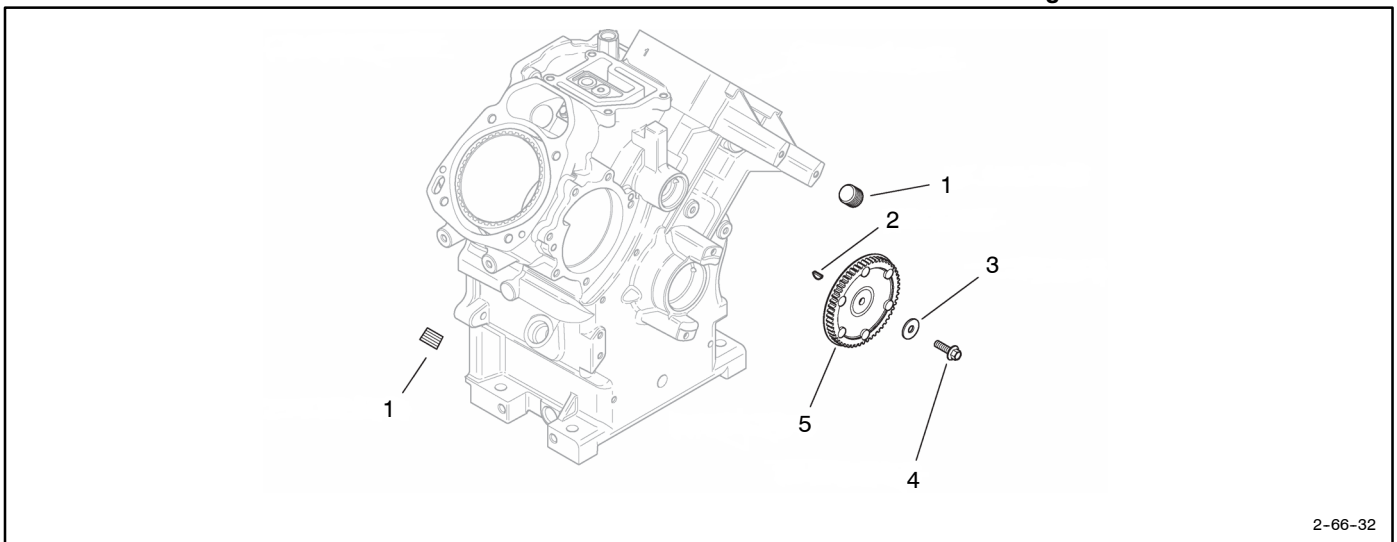
Before engine S/N 411220011 & After S/N 393220001



2-66-32

Item	Part No.	Description	Qty.
			Var. 32
1	25 139 62-S	Plug, pipe ctsk 3/8"	2
2	X-42-2-S	Key, 3/32" x 3/8"	1
3	X-25-52-S	Washer, flat 1/4"	1
4	M-651020-S	Screw, flg m6x1.0x20	1
5	66 093 01-S	Sprocket, camshaft	1

Before engine serial number 3832100011

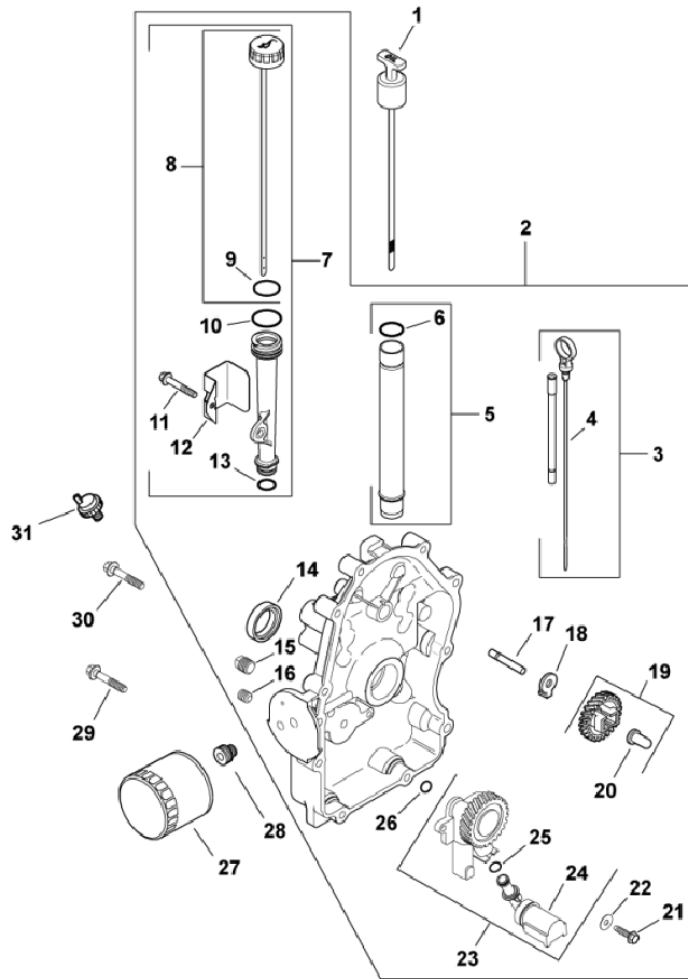


2-66-32

Item	Part No.	Description	Qty.
			Var. 28
1	25 139 62-S	Plug, pipe ctsk 3/8"	2
2	X-42-2-S	Key, 3/32" x 3/8"	1
3	X-25-52-S	Washer, flat 1/4"	1
4	M-651020-S	Screw, flg m6x1.0x20	1
5	66 093 01-S	Sprocket, camshaft	1

Group 3: Lubrication

After engine serial number 4112200001

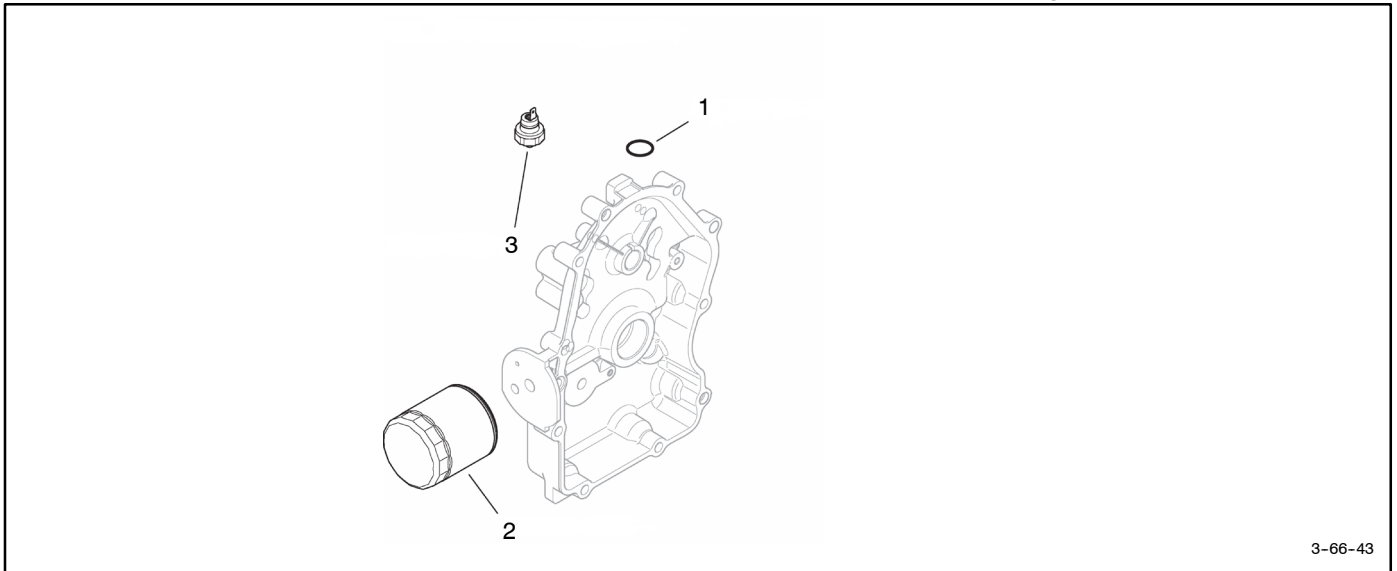


3-66-50

Item	Part No.	Description	Qty.
			Var. 50
1	25 038 07	Dipstick Assembly	1
2	24 009 213-S	Closure Plate Assembly (service)	1
5	GM79149	Tube, oil fill (service kit for 24 123 24)	1
6	41 153 01-S	O-ring	1
14	25 032 06-S	Seal, Oil	1
16	25 139 60-S	Plug, Ctsk Pipe 1/8"	1
21	25 086 401-S	Screw, Thread Forming	2
22	X-25-53-S	Washer, Flat 1/4" (O.d. 5/8")	2
23	24 393 53-S	Kit, Oil Pump Assembly	1
24	24 381 04-S	Pick-up, Oil	1
25	24 153 01-S	O-ring, Oil Pick-up	1
26	24 153 08-S	O-ring	1
27	52 050 02-S	Oil Filter	1
28	24 136 01-S	Nipple, Oil Filter	1
29	25 086 17-S	Screw	1
30	24 086 17-S	Screw, Flg M8x1.25x45	9
31	25 099 27-S	Switch, Oil Pressure	1

Group 3: Lubrication

Before engine serial number 4112200011

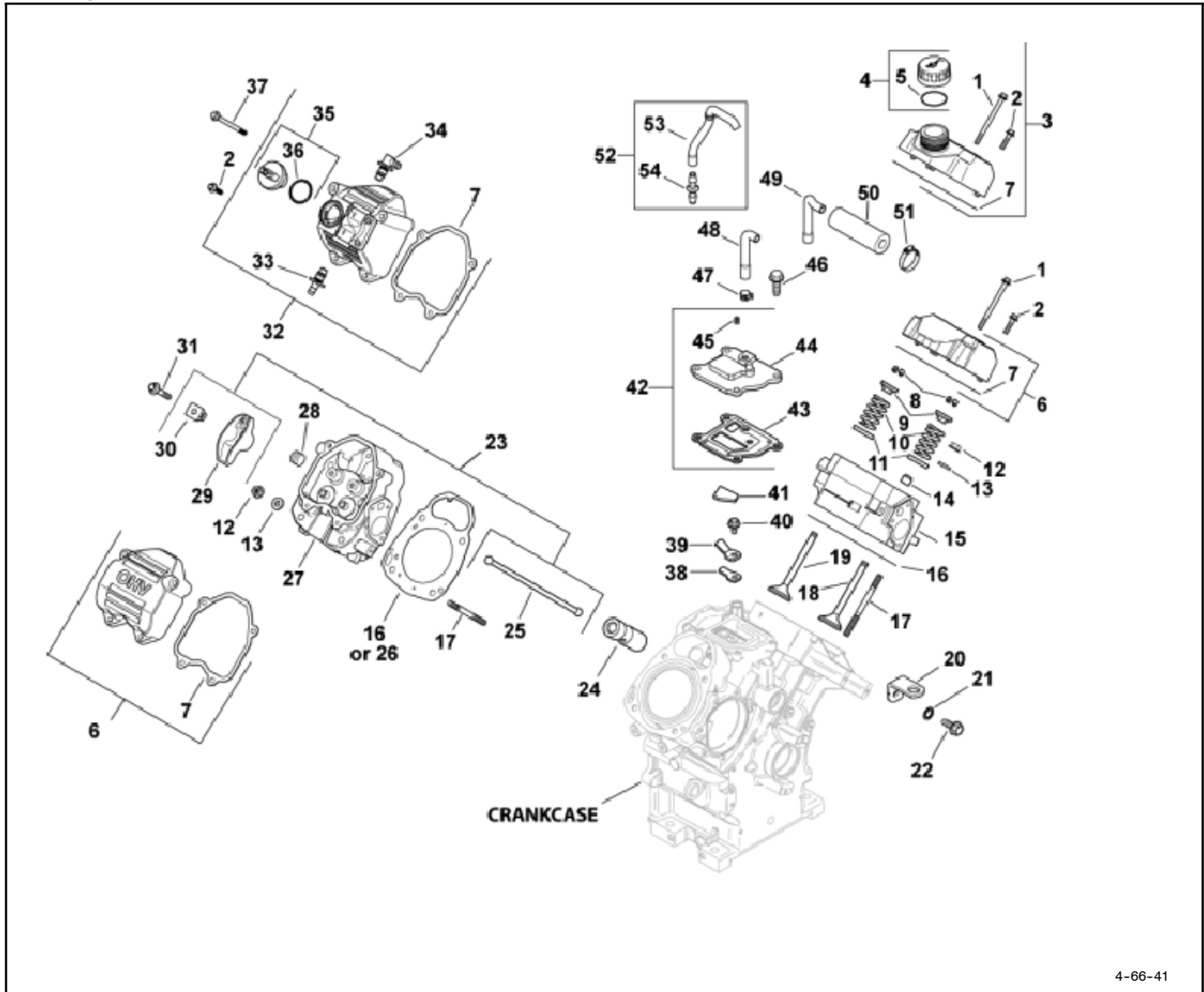


3-66-43

Item	Part No.	Description	Qty.
			Var. 43
1	41 153 01-S	O-ring	1
2	52 050 02-S	Filter, oil	1
3	25 099 27-S	Switch, oil pressure	1
	Items not shown:		
	GM79149	Tube, oil fill (service kit for 24 123 24)	1
	25 038 07	Dipstick assembly	1

Group 4: Valve Covers

After engine serial number 4112200001

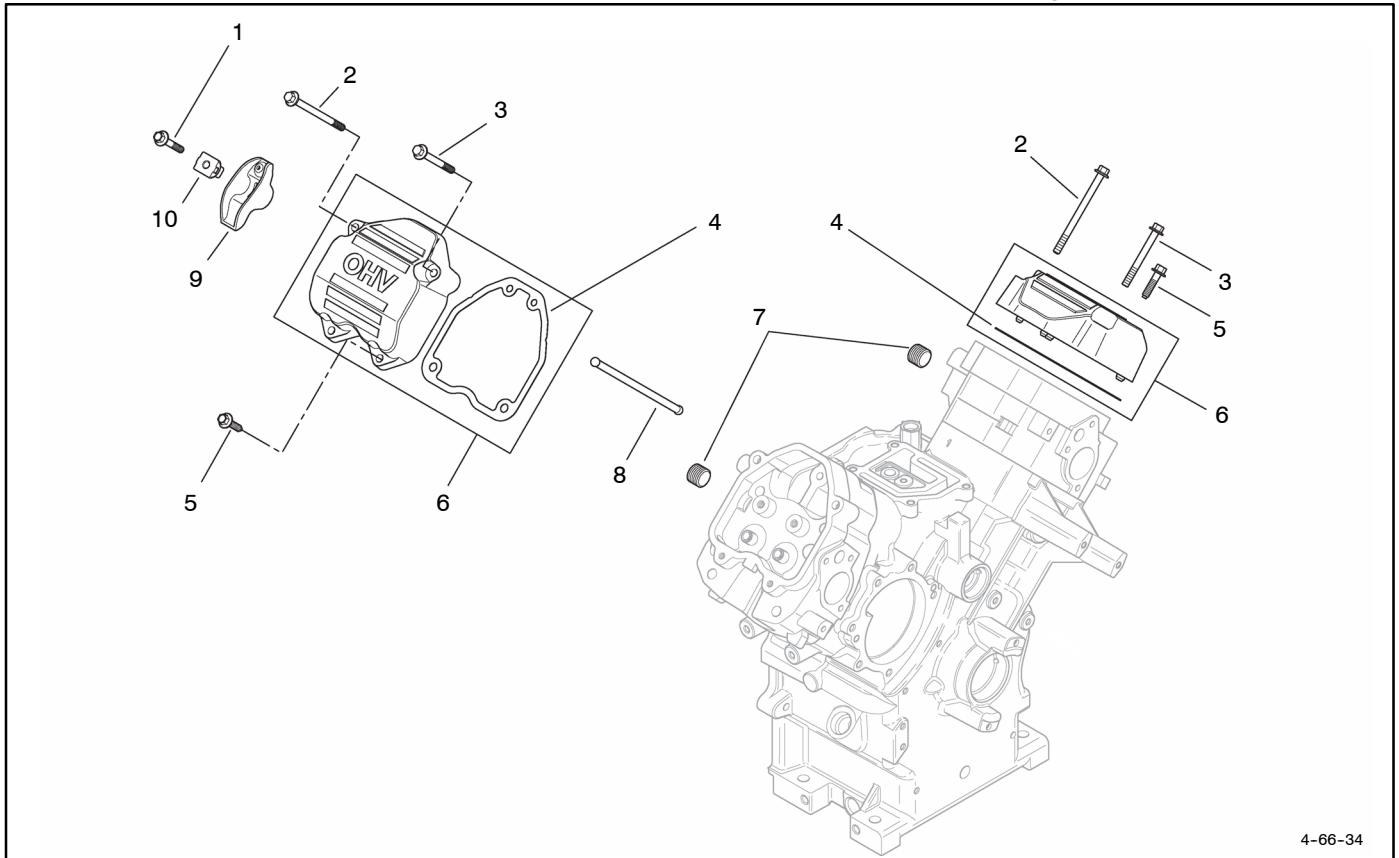


4-66-41

Item	Part No.	Description	Qty. Var. 41	Item	Part No.	Description	Qty. Var. 41
6	66 096 11-S	Kit, Rocker Cover	2	20	25 445 02-S	Strap, lifting	2
7	66 041 09-S	Gasket, Valve Cover	2	23	24 755 66-S	Kit, Valve Train	4
8	12 755 03-S	Kit, retainer	4	24	25 351 10-S	Kit, hydraulic valve lifter	4
9	25 173 28-S	Cap, valve spring	4	25	24 411 05-S	Rod, Push	4
10	24 089 02-S	Spring, valve	4	27	66 318 02-S	Kit, cylinder head #2	1
11	235011-S	Retainer, spring	4	28	66 139 01-S	Plug, pipe	2
12	24 100 10-S	Nut, flg m8x1.25	8	29	25 186 01-S	Arm, Rocker	4
13	220534-S	Washer, flat 5/16"	8	30	24 599 02-S	Pivot, Rocker Arm	4
14	66 032 05-S	Seal, valve stem	4	37	25 086 84-S	Screw, Flg M6x1.0x55	2
15	66 318 01-S	Kit, cylinder head #1	1	38	24 402 03-S	Reed, breather	1
16	66 841 02-S	Kit, cylinder head gasket (includes 220534-S, 24 041 49, 24 100 10-S, 66 041 05-S)	2	39	66 018 04-S	Retainer, reed	1
17	66 072 03-S	Stud	8	40	M-545010-S	Screw, flg thd frm M5 x .8 x 10	1
18	24 017 01-S	Valve, intake (std)	2	41	24 050 11-S	Filter, breather	1
18	24 017 02-S	Valve, intake (.25)	2	42	24 033 01-S	Kit, Breather Assembly	1
19	24 016 01-S	Valve, exhaust (std)	2	43	24 041 67-S	Gasket, breather	1
19	24 016 02-S	Valve, exhaust (.25)	2	44	24 096 130-S	Kit, breather cover	1
				45	25 139 60-S	Plug, Ctsk Pipe 1/8"	1
				46	25 086 396-S	Screw, Thread Forming	4
					M-640034-S	Screw, Flg M6x1.0x34 (not shown)	4
					25 086 124-S	Screw, Flg M6x1.0x25 (not shown)	4

Group 4: Valve Covers

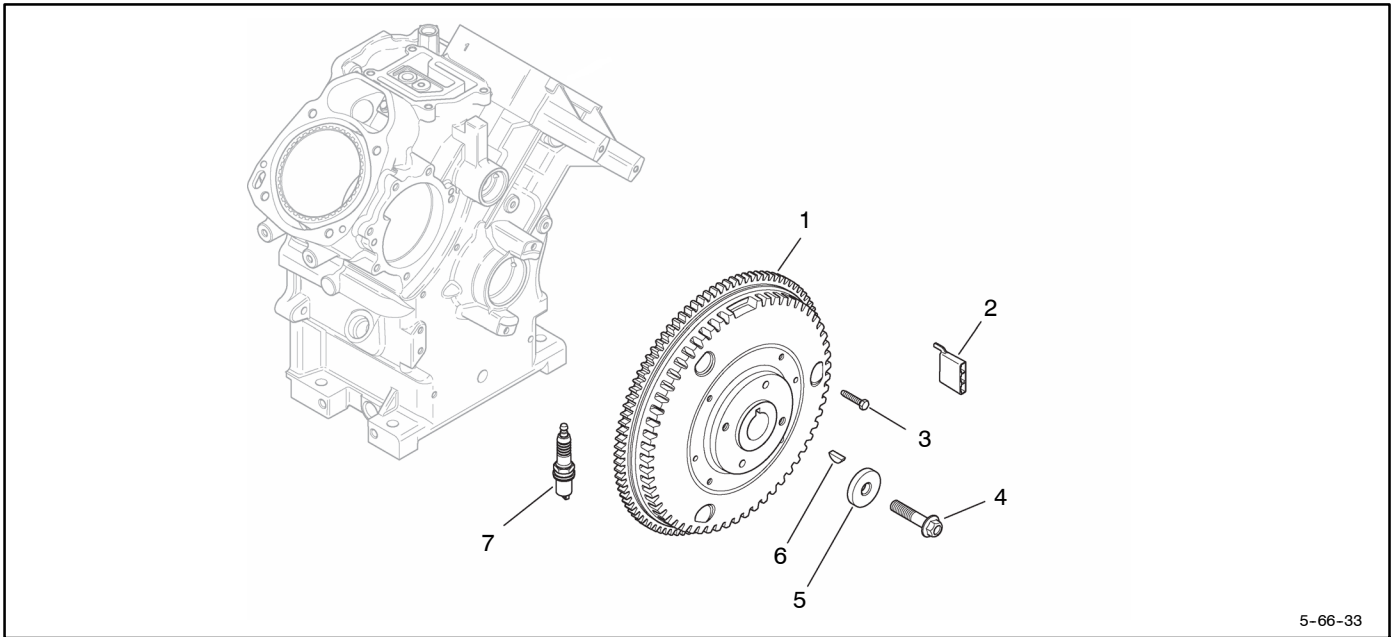
Before engine serial number 4112200011



4-66-34

Item	Part No.	Description	Qty.
			Var.
1	66 086 07-S	Screw, rocker arm pivot	4
2	M-651080-S	Screw, flg M6 x 1.0 x 80	2
3	25 086 84-S	Screw, flg M6 x 1.0 x 55	2
4	66 041 09-S	Gasket, valve cover	2
5	25 086 124-S	Screw, flg M6 x 1.0 x 25	4
6	66 096 11-S	Kit, rocker cover (includes 66 041 09-S)	2
7	66 139 01-S	Plug, pipe	2
8	24 411 05-S	Rod, push	4
9	25 186 01-S	Arm, rocker	4
10	24 599 02-S	Pivot, rocker arm	4

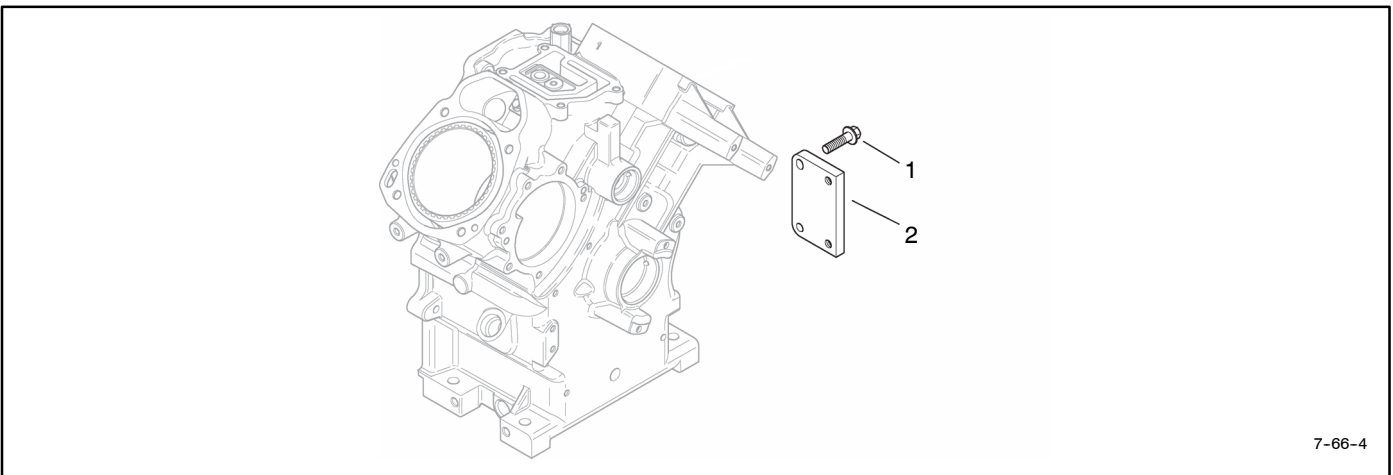
Group 5: Ignition



5-66-33

Item	Part No.	Description	Qty.
			Var.
			33
1	24 025 23-S	Flywheel	1
2	25 155 41-S	Connector	1
3	M-548025-S	Screw, thd frm M5 x 0.8 x 25	2
4	12 086 14-S	Screw, flg M10 x 1.5 x 45	1
5	12 468 03-S	Washer, flat 13/32"	1
6	X-42-15-S	Key, 3/16" x 5/8"	1
7	25 132 16-S	Plug, spark	2
	Items not shown: 47 085 11	Stator assembly	1

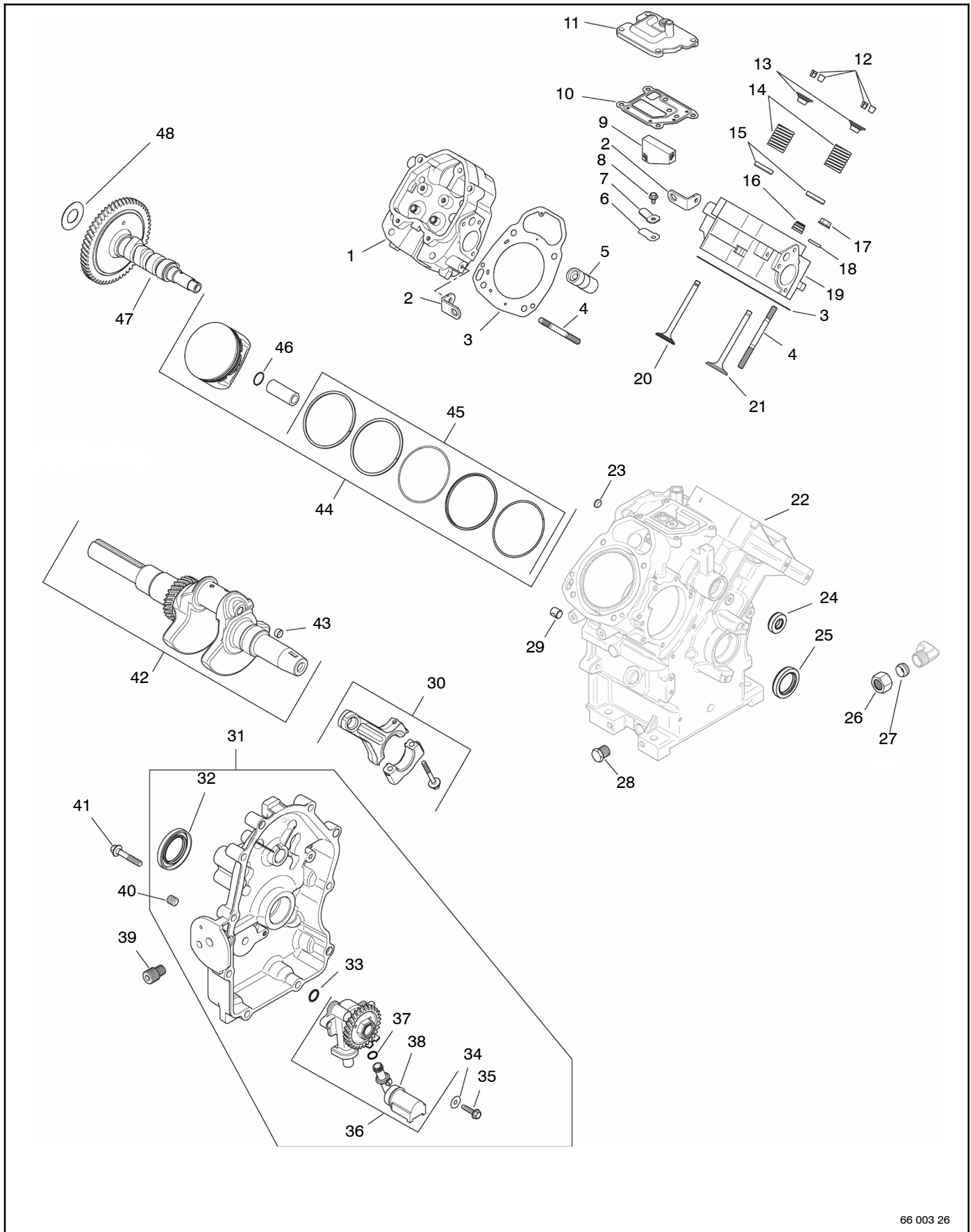
Group 7: Starting



7-66-4

Item	Part No.	Description	Qty.
			Var.
			4
1	M-851030-S	Screw, flg M8 x 1.25 x 30	1
2	66 146 54-S	Plate, starter	1
See Group 105: Engine for starter motor part number.			

Group 11: Long Block

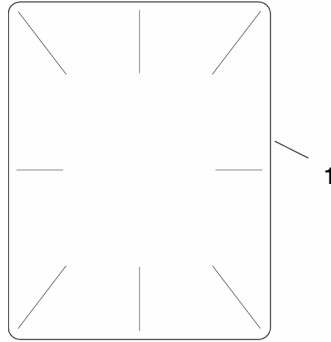


66 003 26

Group 11: Long Block

Item	Part No.	Description	Qty.
			Var. 1
1	66 318 02-S	Kit, cylinder head #2	1
2	25 445 02-S	Strap, lifting	2
3	66 841 02-S	Kit, cylinder head gasket (includes 220534-S, 24 041 49, 24 100 10-S, 66 041 05-S)	2
4	66 072 03-S	Stud	8
5	25 351 04-S	Kit, hydraulic valve lifter	4
6	24 402 03-S	Reed, breather	1
7	66 018 04-S	Retainer, reed	1
8	M-545010-S	Screw, flg thd frm M5 x .8 x 10	1
9	24 050 11-S	Filter, breather	1
10	24 041 64-S	Gasket, breather	1
11	24 096 86-S	Kit, breather cover	1
12	12 755 03-S	Kit, retainer	4
13	12 173 01-S	Cap, valve spring	4
14	24 089 02-S	Spring, valve	4
15	235011-S	Retainer, spring	4
16	66 032 05-S	Seal, valve stem	4
17	24 100 10-S	Nut, flg m8x1.25	8
18	220534-S	Washer, flat 5/16"	8
19	66 318 01-S	Kit, cylinder head #1	1
20	24 016 01-S	Valve, exhaust (std)	2
20	24 016 02-S	Valve, exhaust (.25)	2
21	24 017 01-S	Valve, intake (std)	2
21	24 017 02-S	Valve, intake (.25)	2
22	-	Crankcase (not serviced)	1
23	52 139 09-S	Plug, cup	1
24	66 032 07-S	Seal, camshaft	1
25	24 032 19-S	Seal, oil (helix lip)	1
26	66 100 01-S	Nut	1
27	66 431 03-S	Sleeve	1
28	52 139 02-S	Plug, hd pipe 3/8"	2
29	24 380 16-S	Pin, locating	2
30	24 067 24-S	Connecting rod (std)	2
30	24 067 25-S	Connecting rod (.25)	2
31	66 009 13-S	Closure plate assembly (includes 24 153 08-S, 24 393 51-S, 25 032 06-S, 25 139 60-S, M-631005-S, M-645025-S)	1
32	25 032 06-S	Seal, oil	1
33	24 153 08-S	O-ring	1
34	M-631005-S	Washer, flat 6 mm	2
35	M-645025-S	Screw, flg thd frm M6 x 1.0 x 25	2
36	24 393 51-S	Kit, oil pump assembly (includes 24 153 01-S, 24 381 04-S)	1
37	24 153 01-S	O-ring, oil pick-up	1
38	24 381 04-S	Pick-up, oil	1
39	24 136 01-S	Nipple, oil filter	1
40	25 139 60-S	Plug, ctsk pipe 1/8"	1
41	24 086 17-S	Screw, flg m8x1.25x45	10
42	66 014 50-S	Crankshaft assembly (includes 52 139 09-S)	1
43	52 139 09-S	Plug, cup	1
44	24 874 42-S	Kit, piston w/ring set (std) (includes 24 108 18-S, 24 018 01-S qty. 2)	2
44	24 874 43-S	Kit, piston w/ring set (.08) (includes 24 108 19-S, 24 018 01-S qty. 2)	2
44	24 874 44-S	Kit, piston w/ring set (.25) includes 24 108 20-S, 24 018 01-S qty. 2)	2
44	24 874 45-S	Kit, piston w/ring set (.50) (includes 24 108 21-S, 24 018 01-S qty. 2)	2
45	24 108 18-S	Ring set, piston (std)	1
45	24 108 19-S	Ring set, piston (.08)	1
45	24 108 20-S	Ring set, piston (.25)	1
45	24 108 21-S	Ring set, piston (.50)	1
46	24 018 01-S	Retainer, piston pin	4
47	66 012 01-S	Kit, camshaft	1
48	12 422 07-S	Shim, camshaft (white .028")	AR
48	12 422 08-S	Shim, camshaft (blue .03")	AR
48	12 422 09-S	Shim, camshaft (red .032")	AR
48	12 422 10-S	Shim, camshaft (yellow .034")	AR
48	12 422 11-S	Shim, camshaft (green .036")	AR
48	12 422 12-S	Shim, camshaft (gray .038")	AR
48	12 422 13-S	Shim, camshaft (black .04")	AR

Group 12: Engine Nameplate and Decals

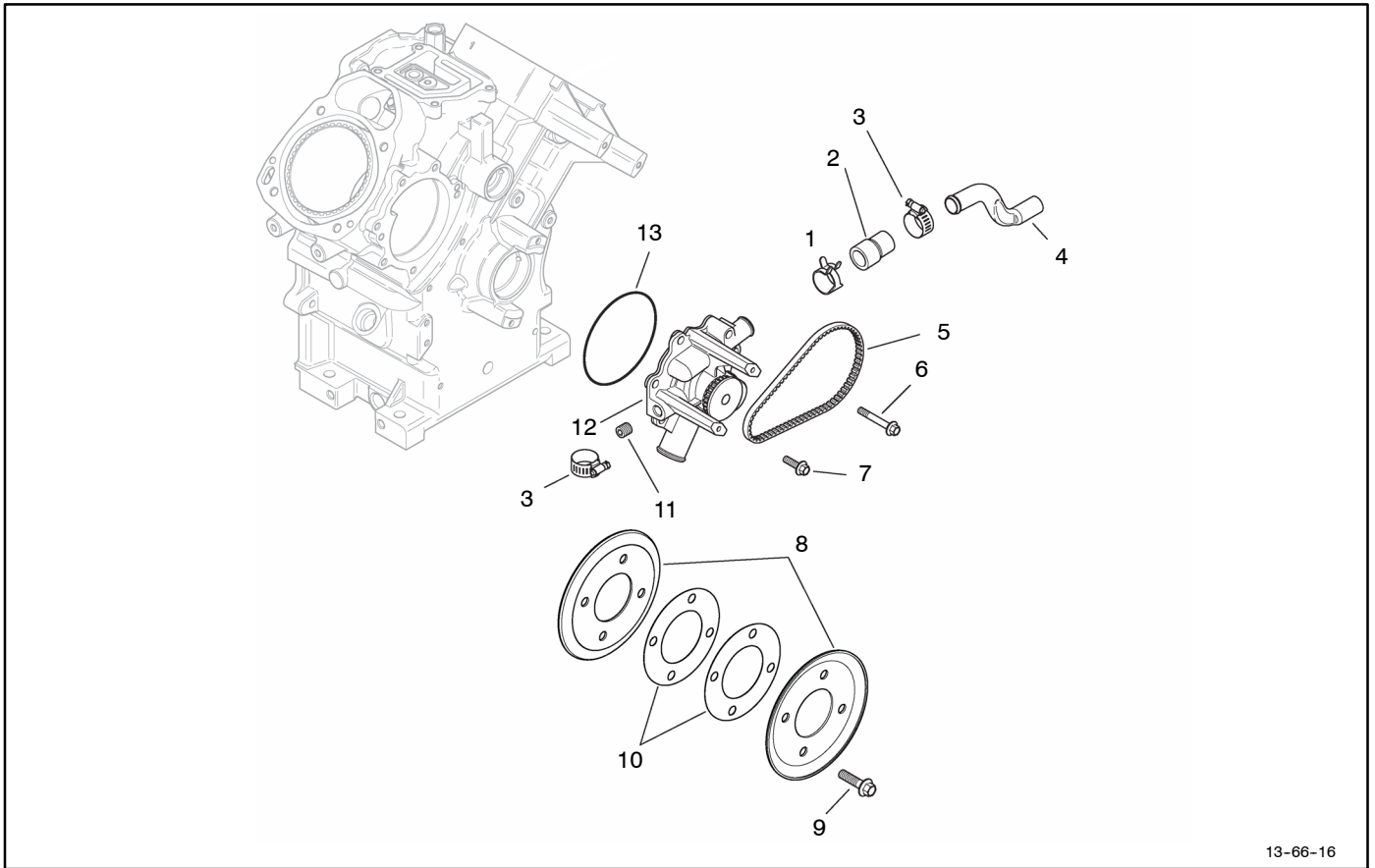


Artwork is representative.
Actual decals may differ depending
on model and specification number.

12-66-22

Item	Part No.	Description	Qty.
			Var. 22
1	25 113 39-S	Decal, clear laminate	1

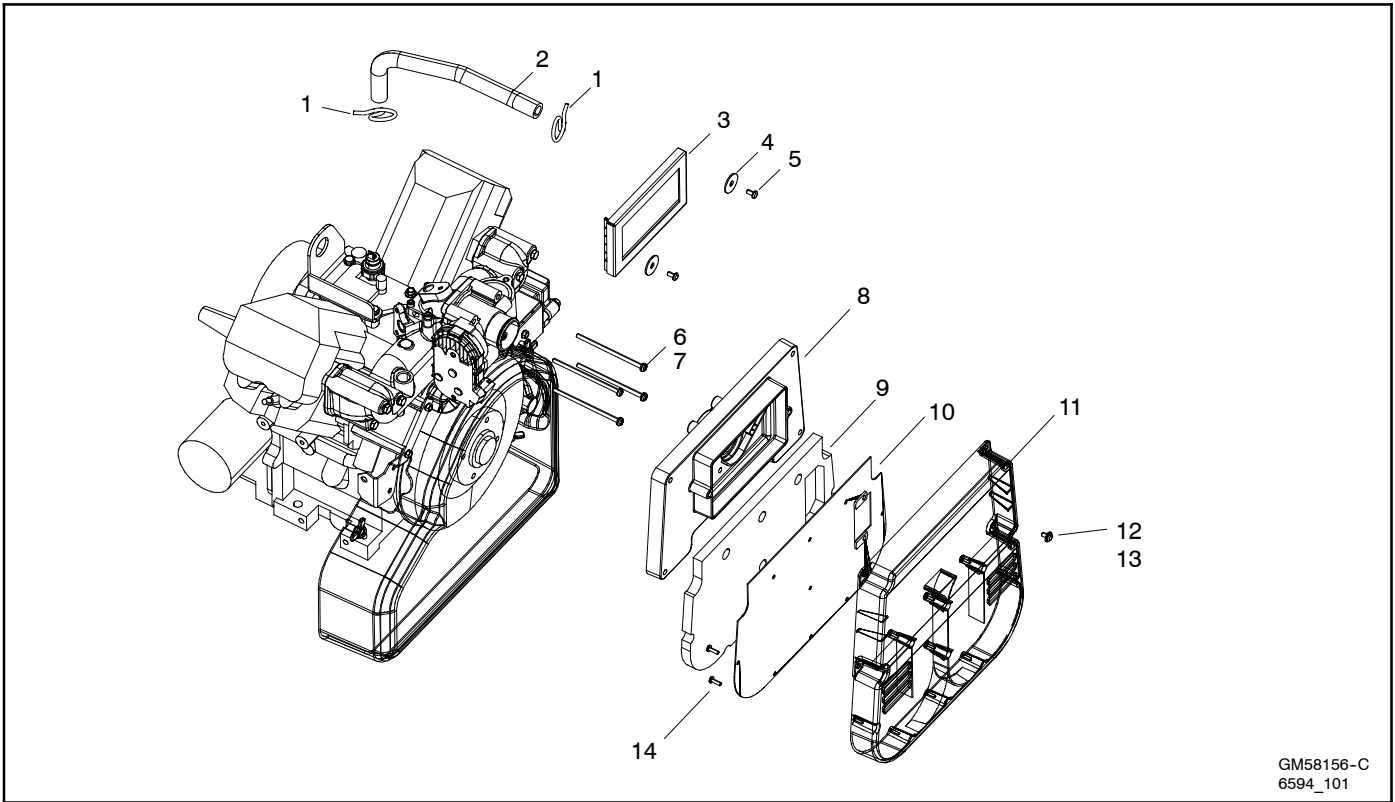
Group 13: Engine Cooling System



13-66-16

Item	Part No.	Description	Qty.
			Var. 16
1	66 237 07-S	Clamp	1
2	66 123 10-S	Tube, crossover (rubber)	1
3	25 237 12-S	Clamp, hose	3
4	66 123 09-S	Tube, crossover (metal)	1
5	66 203 01-S	Belt, water pump	1
6	M-651040-S	Screw, flg M6 x 1.0 x 40	1
7	M-651020-S	Screw, flg M6 x 1.0 x 20	5
8	66 093 04-S	Pulley, crankshaft	2
9	M-851030-S	Screw, flg M8 x 1.25 x 30	4
10	66 422 14-S	Shim, crankshaft pulley	2
11	25 139 60-S	Plug, ctsk pipe 1/8"	1
12	66 393 01-S	Pump, water	1
13	66 153 01-S	O-ring	1

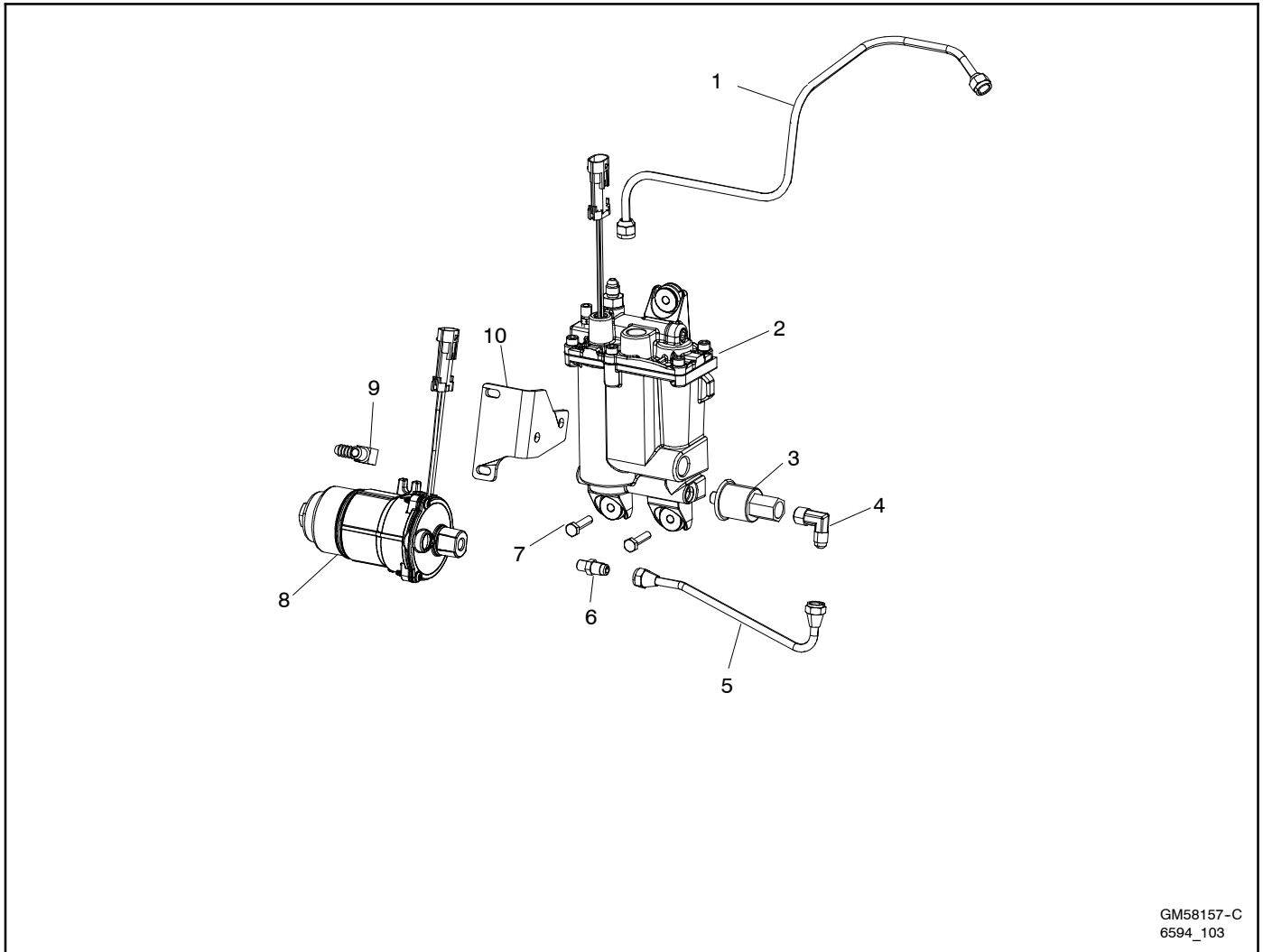
Group 101: Air Intake



GM58156-C
6594_101

Item	Part No.	Description	Qty.
			Var.
1	X-309-11	Clamp, hose 3/4	2
2	GM54739	Hose, molded breather	1
3	GM24212	Arrestor, flame	1
4	X-25-73	Washer, plain, .266 ID x 1" OD	2
5	X-50-13	Screw, machine	2
6	M7985A-05100-20	Screw, pan head machine	4
7	M125A-05-80	Washer, plain	4
8	GM53162	Duct, air intake	1
9	GM58016	Foam, accoustic	1
10	GM58015	Panel, air intake	1
11	GM53163	Cover, air intake duct	1
12	X-50-13	Screw, machine	6
13	X-25-36	Washer, plain, .219 ID x .5 in. OD	4
14	GM23496	Screw, thread forming	4

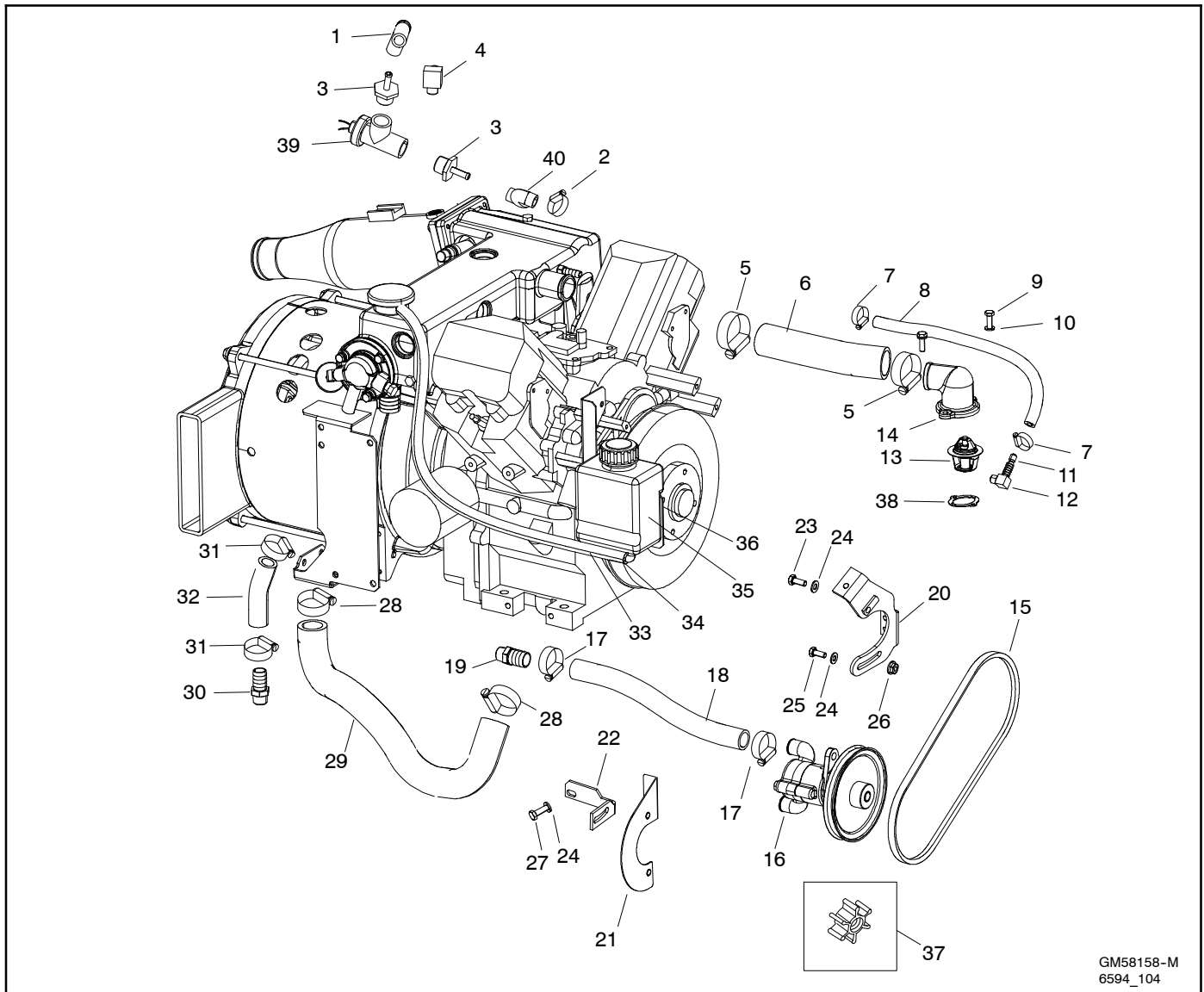
Group 103: Fuel System



GM58157-C
6594_103

Item	Part No.	Description	Qty.
			Var.
1	GM53090	Line, fuel	1
2	GM59106	Module, fuel pump	1
3	267987	Filter, fuel, 1/4 in. NPT	1
4	X-447-7	Elbow, male tube (90 deg.) + vibra seal	1
5	GM59012	Line, fuel	1
6	X-296-1	Fitting, half union	1
7	M933-06025-60	Screw, hex cap	5
8	GM59107	Pump assembly, fuel	1
9	X-211-14	Elbow, street	1
10	GM58847	Bracket, fuel pump	1

Group 104: Cooling System



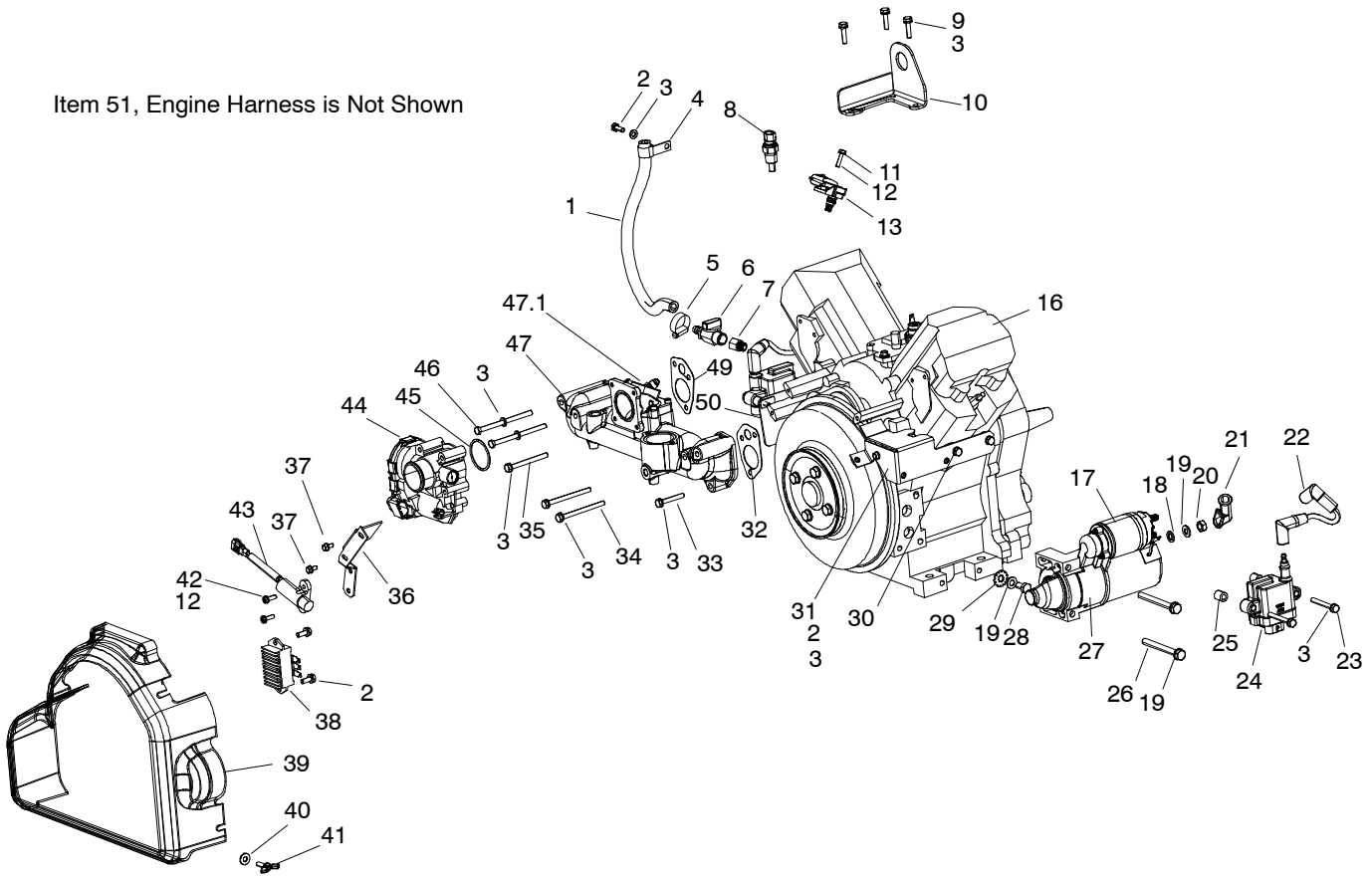
GM58158-M
6594_104

Group 104: Cooling System

Item	Part No.	Description	Qty. Var. 1
1	GM55092	Hose, molded seawater	1
2	X-426-12	Clamp, hose, .69/1.25 in.	2
3	GM90472	Connector, hose	2
4	GM81619	Connector, Hose 5/8" x 1/2" NPT Nickel	1
5	X-426-19	Clamp, hose, 1/2 in.	2
6	X-356-40	Hose, radiator	1
7	X-426-9	Clamp, hose, .25/.70 in.	2
8	X-386-79	Hose	1
9	M933-06020-60	Screw, hex cap	2
10	M125A-06-80	Washer, plain	2
11	254922	Valve	1
12	X-391-3	Connector, 90 deg. (5/16 in. ID hose)	1
13	GM64136	Thermostat assembly	1
14	GM52628	Cover, thermostat	1
15	GM53040	Belt, V	1
16	GM63535	Pump, sea water	1
17	X-426-12	Clamp, hose, .69/1.25 in.	2
18	X-691-24	Hose	1
19	X-582-11	Connector, hose + vibra seal	1
20	GM66045	Bracket, seawater pump mounting	1
21	GM55025	Guard, pump pulley	1
22	GM66046	Bracket, pump pulley guard	1
23	M933-08020-60	Screw, hex cap	1
24	M125A-08-80	Washer, plain 8.4 ID x 16.0 OD	3
25	M933-08030-60	Screw, hex cap	1
26	M6923-08-80	Nut, hex 8mm	1
27	M933-08020-60	Screw, hex cap	1
28	X-426-12	Clamp, hose, .69/1.25 in.	2
29	GM53086	Hose, molded coolant	1
30	GM81621	Connector, hose + vibra seal	1
31	X-426-12	Clamp, hose, .69/1.25 in.	2
32	X-312-43	Hose, .63 ID	1
33	X-386-113	Coolant line, flexible	1
34	X-426-9	Clamp, hose, .25/.70 in.	2
35	359037	Bottle, overflow	1
36	GM53434	Bracket, water bottle	1
37	359978	Impeller kit, seawater pump	1
38	66 041 01-S	Gasket, thermostat	1
39	GM90436	Switch, flow	1
40	X-312-42	Hose, .63 ID	1

Group 105: Engine

Item 51, Engine Harness is Not Shown



6594_105

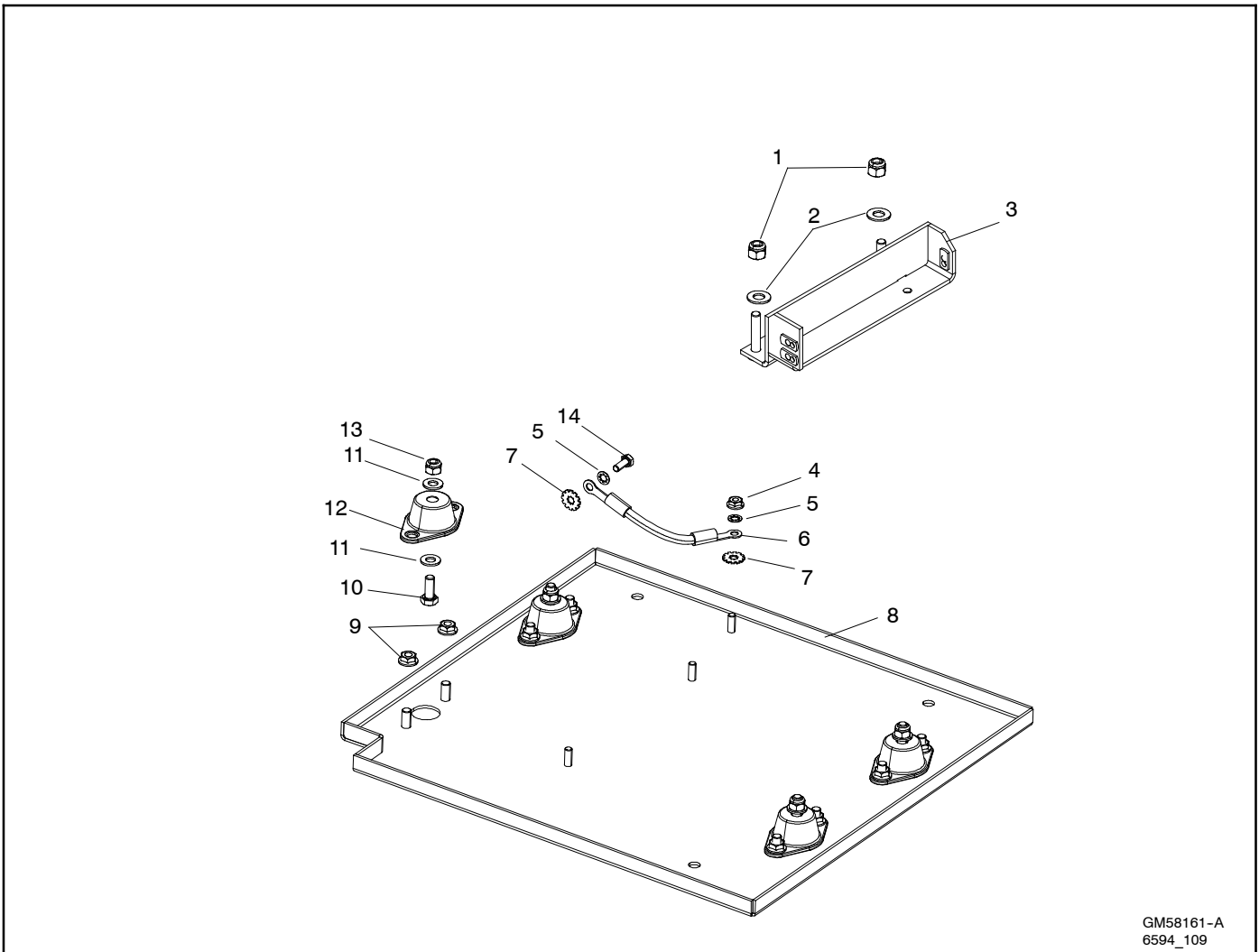
Group 105: Engine

Item	Part No.	Description	Qty.		Part No.	Description	Qty.	
			1	Var.			1	Var.
1	X-651-32	Hose, rubber, .375 in. ID	1	26	M931-08080-60	Screw, hex cap	2	
2	M933-06016-60	Screw, hex cap, M6 x 16mm	6	27	GM86399	Motor, starter 12 V	1	
3	M125A-06-80	Washer, plain	16	28	M933-08016-60	Screw, hex cap	1	
4	X-6084-1	Clip, J	1	29	X-22-16	Washer, lock, .326 ID x .883 in.	1	
5	X-426-9	Clamp, hose, .25/.70 in.	1	30	X-22-12	Washer, lock, .262 ID x .743 in.	2	
6	359653	Valve, oil drain (3/8-18 NPT)	1	31	GM53193	Bracket, ignition coil (lh)	1	
7	GM66090	Bushing, adapter	1	32	66 041 05-S	Gasket, intake manifold	1	
8	GM39601	Sensor, coolant temperature	1	33	M933-06040-60	Screw, hex cap	1	
9	M933-06025-60	Screw, hex cap	3	34	M931-06075-60	Screw, hex cap	2	
10	GM58727	Eye, lifting	1	35	M931-06060-60	Screw, hex cap	1	
11	M933-05020-60	Screw, hex cap	1	36	GM53181	Bracket, crank position sensor	1	
12	M125A-05-80	Washer, plain	3	37	M7500D-05010-85	Screw, metric thread forming	3	
13	GM39604	Sensor, TMAP	1	38	25 403 21-S	Regulator, rectifier	1	
16	PS-LH690-0018	Engine assy., Kohler LH690	1	39	GM55325	Guard, flywheel	1	
17	25 435 07	Solenoid, starter	1	40	X-25-124	Washer, plain, .266 ID x 1 in. OD	3	
18	X-22-5	Washer, lock, .326 ID x .62 OD	1	41	GM35951	Screw, wing	3	
19	M125A-08-80	Washer, plain 8.4 ID x 16.0 OD	4	42	M7985A-05016-20	Screw, pan head machine	2	
20	M934-08-60	Nut, hex	1	43	GM39600	Sensor, crankshaft position	1	
21	238915	Boot	1	44	GM39605	Governor, 32 mm electronic air	1	
22	GM39902	Wire, spark plug	2	45	GM42275	O-ring	1	
23	M931-06045-82	Screw, hex cap (metric)	4	46	M931-06090-60	Screw, hex cap	2	
24	GM39603	Coil, ignition	2	47	GM53154	Intake assembly, air	1	
25	X-400-28	Spacer, .282 ID x .5 OD x .531 in.	4	47.1	GM84052	Injector	1	
				49	66 041 05-S	Gasket, intake manifold	1	
				50	GM53192	Bracket, ignition coil (rh)	1	
				50	X-6216-1	Screw, Phillips hex crimpfitte	2	
				51	GM58614	Harness, engine 5/7.5/10 kW	1	

Group 107: Nameplate and Decals

Item	Part No.	Description	Qty.	
			1	Var.
1	224233	Decal, 1-800 number	1	
2	226917	Decal, negative battery connection	1	
3	238162	Decal, pos. battery connection	1	
4	239796	Decal, warning	1	
5	249494	Decal, warning	1	
6	249808	Decal, warning rotating parts	1	
7	249809	Decal, caution hot engine	1	
8	249810	Decal, warning hot coolant	1	
9	294520	Decal, danger, high voltage	1	
10	344282	Decal, notice	1	
11	344295	Decal, equipment grd	1	
12	359282	Tag, hang	1	
13	359446	Nameplate, model/ratings, Kohler	2	
14	GM13680	Nameplate, Overlay 500 per roll	2	
15	GM14167	Decal, drain	1	
16	GM35838	Decal, 4 wire reconnection	1	
17	GM40626	Decal, low CO emissions	1	
18	GM48037	Decal, notice	1	
19	GM58163	Decal, fuse panel	1	
20	X-6276-1	Logo, Kohler	1	
21	344486	Decal, CE	1	
22	GM66934	Decal, Emissions	1	
23	GM71479	Decal, Warning Explosion	1	

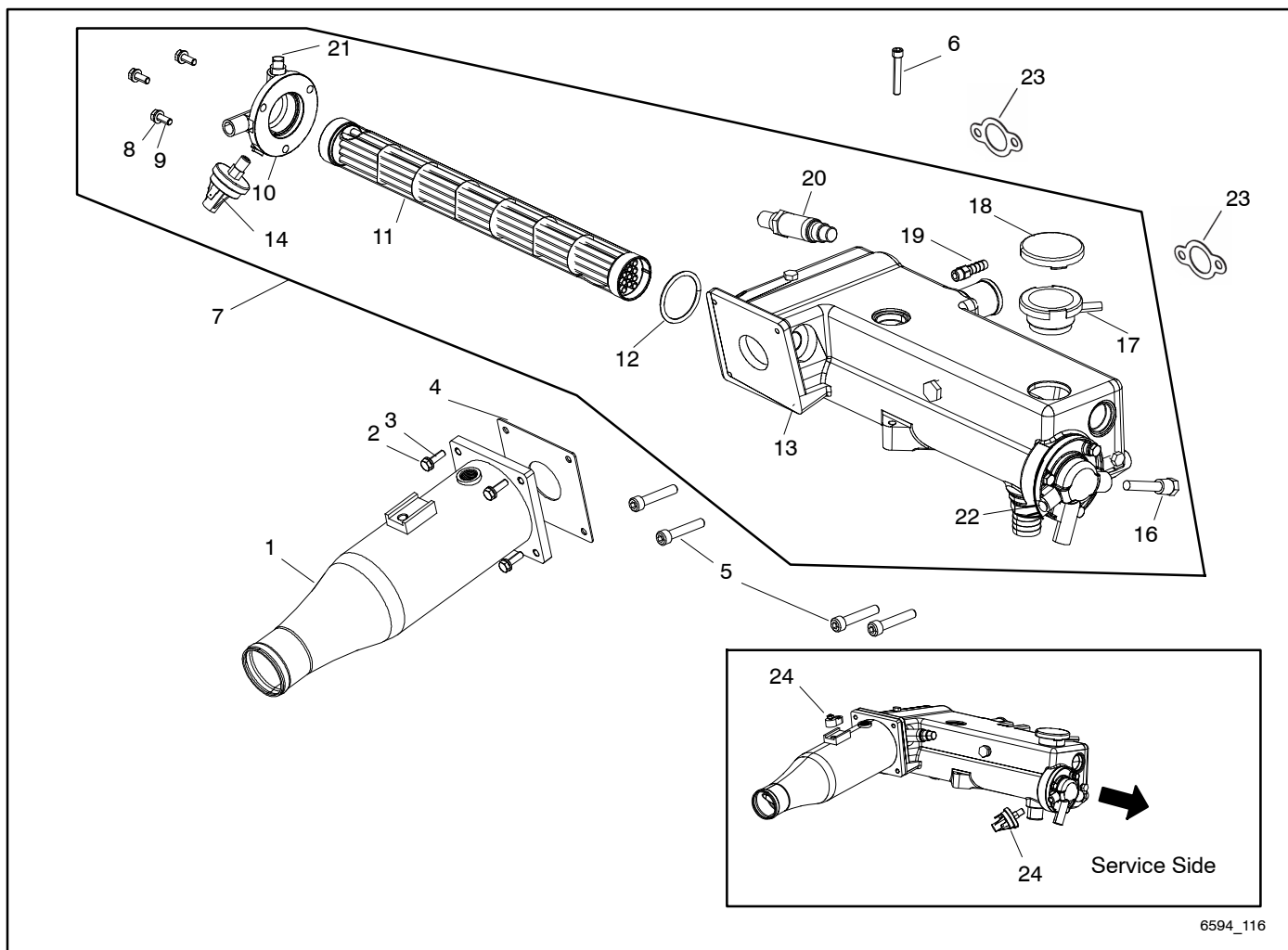
Group 109: Skid and Mounting



GM58161-A
6594_109

Item	Part No.	Description	Qty.
			Var.
1	X-101-13	Nut, hex elastic stop, 3/8-16	2
2	X-25-37	Washer, plain, .406 ID x .812 in. OD	2
3	GM40264	Support, engine	1
4	X-6210-2	Nut, flange spirallock, 1/4-20	1
5	X-22-11	Washer, lock, .262 ID x .469 OD	2
6	LK-0606-1515	Lead	1
7	X-22-12	Washer, lock, .262 ID x .743 in. OD	2
8	GM40263	Tray, drip	1
9	X-6210-7	Nut, flange spirallock, 5/16-18	8
10	M933-08020-60	Screw, hex cap	4
11	X-25-85	Washer, plain, .344 ID x .687 in. OD	8
12	GM31230	Mount, anti-vibration	4
13	M982-08-80	Nut, hex elastic stop, 8mm	4
14	M933-06016-60	Screw, hex cap, M6 x 16mm	1

Group 116: Exhaust

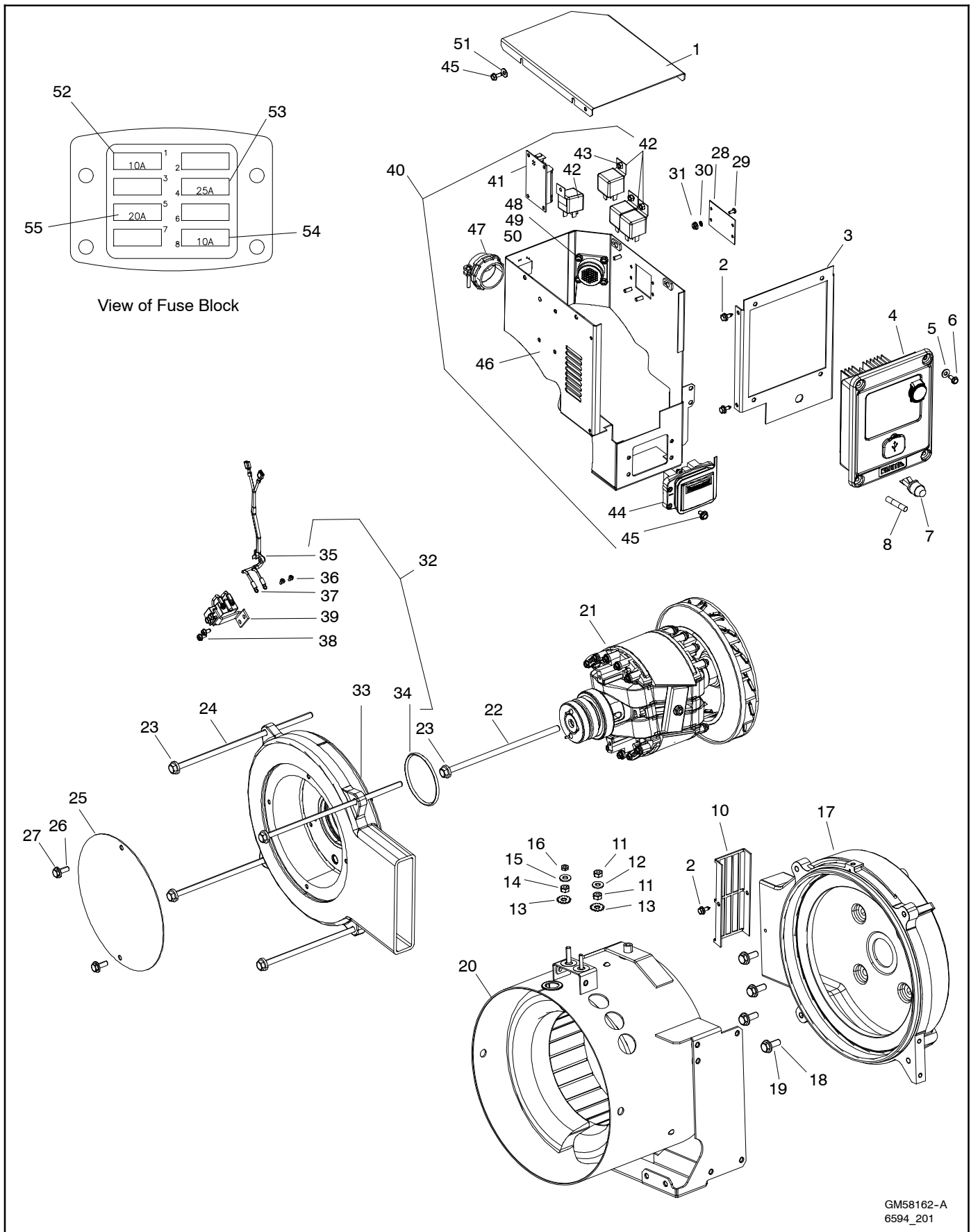


6594_116

Item 24 Note: Install Service Kit GM90489 to provide enhanced monitoring of the raw water cooling system. Installation of this kit involves removing the exhaust temperature switch, replacing/relocating the seawater pressure switch to the non-service side of the unit, and adding a seawater flow switch and relay. See TT-1617 for instructions.

Item	Part No.	Description	Qty.
			Var.
1	GM53046	Catalyst assembly	1
2	M933-06025-60	Screw, hex cap	4
3	M125A-06-80	Washer, plain	4
4	GM53049	Gasket, exhaust	1
5	M912-08045-60	Screw, socket head cap	4
6	X-55-36	Screw, hex socket hd mach.	1
7	GM53065	Manifold subassy., exhaust	1
8	M125A-06-80	Washer, plain	6
9	M933-06016-60	Screw, hex cap, M6 x 16mm	6
10	GM55073	Cap, exhaust manifold end	2
11	GM52996	Exchanger, heat	1
12	GM53066	O-ring	2
13	GM52587	Manifold, exhaust	1
14	GM54744	Switch, pressure assembly	1
16	260085	Kit, zinc anode	1
17	241311	Filler neck	1
18	229980	Cap, radiator 13 - 14 psi	1
19	X-380-5	Connector, hose + vibra seal	1
20	GM39602	Sensor, heated 02	1
21	X-75-52	Plug, pipe (1/4 in. NPTF)	1
22	X-75-4	Plug, pipe (1/8 in. NPTF)	1
23	24 041 49-S	Gasket, exhaust	2
24	See Note		

Group 201: Generator and Mounting



GM58162-A
6594_201

Group 201: Generator and Mounting

Item	Part No.	Description	Quantity Variation		
			1	2	3
1	GM53151	Cover, junction box	1	1	1
2	X-6216-1	Screw, Phillips hex crimpite	6	6	6
3	GM64134	Panel, junction box	1	1	1
4	GM83744	Controller, ADCII Service Replacement	1	1	1
5	X-25-115	Washer, plain, .203 ID x .438 in. OD	4	4	4
6	X-117-5	Screw, hex head machine	4	4	4
7	238426	Fuse holder, .25 x 1.25 in.	1	1	1
8	358337	Fuse, 10 A, 250 V	1	1	1
10	359403	Guard, fan	1	1	1
11	X-6210-1	Nut, flange whiz, 10-32	2	2	2
12	X-22-9	Washer, lock, .20 ID x .373 in. OD	1	1	1
13	X-22-12	Washer, lock, .262 ID x .743 in. OD	2	2	2
14	X-6210-2	Nut, flange spiralock, 1/4-20	1	1	1
15	X-22-11	Washer, lock, .262 ID x .469 OD	1	1	1
16	X-81-8	Nut, hex, 1/4-20	1	1	1
17	GM11482	Adapter, alternator	1	1	1
18	X-125-30	Bolt, hex cap	4	4	4
19	X-25-85	Washer, plain, .344 ID x .687 in. OD	4	4	4
20	GC55024	Stator assembly, 5kw	1		
20	GC50102	Stator assembly, 7.5kw		1	
20	GC50103	Stator assembly, 10kw			1
21	GM58045	Rotor assembly	1	1	
21	GM58046	Rotor assembly			1
22	GM58617	Bolt, armature thru	1	1	
22	GM58618	Bolt, armature thru			1
23	X-801-4	Washer, hardened, .328 ID x .719 in. OD	5	5	5
24	359310	Bolt, 5/16-18 x 9.5 in.	4	4	
24	GM53164	Bolt, over			4
25	359477	Plate, end bracket	1	1	1
26	X-465-16	Bolt, hex cap	2	2	2
27	X-25-40	Washer, plain, .281 ID x .625 in. OD	2	2	2
28	245264-BLK	Plate, cover	1	1	1
29	X-49-1	Screw, machine	4	4	4
30	X-22-6	Washer, lock, .146 ID x .285 in. OD	4	4	4
31	X-6210-3	Nut, flange whiz, 6-32	4	4	4
32	GM53052	Bracket assembly, end (includes items 32-39)	1	1	1
33	GM52395	Bracket, end	1	1	1
34	229110	O-ring (2.859 in. ID)	1	1	1
35	GM45945	Harness, wiring brush connection	1	1	1
36	X-49-1	Screw, machine	2	2	2
37	X-22-6	Washer, lock, .146 ID x .285 in. OD	2	2	2
38	X-67-113	Screw, hex washer, thread-forming	2	2	2
39	GM41970	Brush holder, assy.	1	1	1
40	GM40265	Box assembly, junction	1	1	1
41	GM46362	PCB assy., CO sensor	1	1	1
42	GM49746	Relay, 12 VDC	4	4	4
43	X-70-3	Nut, hex machine screw, 10-32	4	4	4
44	GM42340	Block, fuse	1	1	1
45	X-67-64	Screw, self-tapping	8	8	8
46	GM40266	Box, junction	1	1	1
47	X-6266-1	Connector, cable	1	1	1
48	GM90654	Harness, j-box (includes items 44, 52-55)	1	1	1
49	X-49-26	Screw, machine	4	4	4
50	X-6210-3	Nut, flange whiz, 6-32	4	4	4
51	X-25-36	Washer, plain, .219 ID x .5 in. OD	4	4	4
52	GM42337	Fuse, 10 Amp	1	1	1
53	GM42339	Fuse, 25 Amp	1	1	1
54	GM42337	Fuse, 10 Amp	1	1	1
55	GM47427	Fuse, 20 Amp	1	1	1

Group 701: Literature

Item	Part No.	Description	Qty.		
			Var.		
			21	22	23
1	TP-6691	Warranty, Marine (32 kW & Below)	1	1	1
2	TP-5620	Safety Precautions, Marine	1	1	1
3	TP-6592	I/M 5-10EKD and 4-8EFKD Marine	1	1	1
4	TP-6594	P/C 5-10EKD and 4-8EFKD Marine	1	1	1
5	66 590 02	LH Aegis Owners's Manual	1	1	1
6	66 690 01	LH630-775 Engine Service Manual	1	1	1
7	TP-6591	O/M 5-10EKD and 4-8EFKD Marine	1	1	1
8	TP-6593	S/M 5-10EKD and 4-8EFKD Marine	1	1	1
9	TP-6884	Warranty, CARB/EPA Emissions, SORE	1	1	1

Paint and Miscellaneous Parts

Item	Part Number	Description
1	GM48126	White paint, spray can (Matterhorn White)

Accessories

Qty.	Description	Part No.
Circuit Breaker Kits		
Circuit Breaker, 40 A, 1P PA-225640		
1	Instructions, installation	TT-875
1	Screw, RHM	X-49-25
1	Breaker, circuit, 40 A	X-506-50
1	Plate, cover	229183
1	Decal, notice	246242
1	Guard, circuit breaker	GM48893
Circuit Breaker, 55 A, 1P PA-229185		
1	Instructions, installation	TT-875
1	Screw, RHM	X-49-25
1	Breaker, circuit, 55 A	X-506-47
1	Plate, cover	229183
1	Decal, notice	246242
1	Guard, circuit breaker	GM48893
Circuit Breaker, 18 A, 2P PA-344051		
1	Instructions, installation	TT-875
2	Screw, RHM	X-49-25
1	Breaker, circuit, 18 A	X-506-41
1	Decal, notice	246242
1	Guard, circuit breaker LH	GM48894
1	Guard, circuit breaker RH	GM48895
Circuit Breaker, 30 A, 2P PA-344052		
1	Instructions, installation	TT-875
2	Screw, RHM	X-49-25
1	Breaker, circuit, 30 A	X-506-36
1	Decal, notice	246242
1	Guard, circuit breaker LH	GM48894
1	Guard, circuit breaker RH	GM48895
Circuit Breaker, 22 A, 2P PA-344106		
1	Instructions, installation	TT-875
2	Screw, RHM	X-49-25
1	Breaker, circuit, 22 A	X-506-57
1	Decal, notice	246242
1	Terminal, jumper	249956
1	Guard, circuit breaker LH	GM48894
1	Guard, circuit breaker RH	GM48895
Circuit Breaker, 22 A, 2P PA-344309		
1	Instructions, installation	TT-875
2	Screw, RHM	X-49-25
1	Breaker, circuit, 22 A	X-506-57
1	Decal, notice	246242
1	Guard, circuit breaker LH	GM48894
1	Guard, circuit breaker RH	GM48895
Circuit Breaker, 42 A, 1P PA-359286		
1	Instructions, installation	TT-875
1	Screw, RHM	X-49-25
1	Breaker, circuit, 42 A	X-506-60
1	Plate, cover	229183
1	Decal, notice	246242
1	Guard, circuit breaker	GM48893

Qty.	Description	Part No.
Circuit Breaker, 18 A, 1P PA-359617		
1	Instructions, installation	TT-875
1	Screw, RHM	X-49-25
1	Breaker, circuit, 18 A	X-506-68
1	Plate, cover	229183
1	Decal, notice	246242
1	Guard, circuit breaker	GM48893
Circuit Breaker, 27 A, 1P PA-359618		
1	Instructions, installation	TT-875
1	Screw, RHM	X-49-25
1	Breaker, circuit, 27 A	X-506-58
1	Plate, cover	229183
1	Decal, notice	246242
1	Guard, circuit breaker	GM48893
Circuit Breaker, 85A, 1P GM59907-KP1		
1	Instructions, installation	TT-875
1	Screw, RHM	X-49-25
1	Breaker, circuit, 85 A	X-506-70
1	Plate, cover	229183
1	Decal, notice	246242
1	Guard, circuit breaker	GM48893
Circuit Breaker, 70A, 1P GM59907-KP2		
1	Instructions, installation	TT-875
1	Screw, RHM	X-49-25
1	Breaker, circuit, 85 A	X-506-48
1	Plate, cover	229183
1	Decal, notice	246242
1	Guard, circuit breaker	GM48893
Circuit Breaker, 35A, 2P GM59907-KP3		
1	Instructions, installation	TT-875
2	Screw, RHM	X-49-25
1	Breaker, circuit, 33 A	X-506-39
1	Decal, notice	246242
1	Guard, circuit breaker LH	GM48894
1	Guard, circuit breaker RH	GM48895
Circuit Breaker, 42A, 2P GM59907-KP4		
1	Instructions, installation	TT-875
2	Screw, RHM	X-49-25
1	Breaker, circuit, 42 A	X-506-43
1	Decal, notice	246242
1	Guard, circuit breaker LH	GM48894
1	Guard, circuit breaker RH	GM48895
Circuit Breaker, 35A, 1P GM59907-KP5		
1	Instructions, installation	TT-875
1	Screw, RHM	X-49-25
1	Breaker, circuit, 35 A	X-506-46
1	Plate, cover	229183
1	Decal, notice	246242
1	Guard, circuit breaker	GM48893

Accessories, continued

Qty.	Description	Part No.
Circuit Breaker, 35A, 2P GM59907-KP6		
1	Instructions, installation	TT-875
2	Screw, RHM	X-49-25
1	Breaker, circuit, 35 A	X-506-42
1	Terminal, jumper	249956
1	Decal, notice	246242
1	Guard, circuit breaker LH	GM48894
1	Guard, circuit breaker RH	GM48895

Circuit Breaker, 35A, 2P GM59907-KP7		
1	Instructions, installation	TT-875
2	Screw, RHM	X-49-25
1	Breaker, circuit, 42 A	X-506-43
1	Terminal, jumper	249956
1	Decal, notice	246242
1	Guard, circuit breaker LH	GM48894
1	Guard, circuit breaker RH	GM48895

Electrical System Kits

Harness, 12 In. Pigtail GM32332-KP1		
1	Harness, pigtail	GM32324

Harness, 15 Ft., Remote Panel GM32333-KP1		
1	Harness, extension	GM30248

Harness, 25 Ft., Remote Panel GM32333-KP2		
1	Harness, extension	GM32323

Harness, 30 Ft., Remote Panel GM32333-KP3		
1	Harness, extension	GM45889

Harness, Y Connection GM32333-KP5		
1	Harness, Y remote gauge	GM49054

Oil Pressure Sender GM62803-KP1		
1	Fitting, 45 deg. Street Elbow	267428
1	Sensor, Pressure	GM33945

Oil Pressure & Water Temp. Sender GM62803-KP2		
1	Sender, water temperature	249287
1	Fitting, 45 deg. Street Elbow	267428
1	Sender, oil pressure	343473
1	Tee, pipe (1/8 x 1/8 x 1/8 npt)	X-203-10
1	Elbow, pipe (90 deg x 1/8"npt)	X-215-19
1	Pipe, Nipple (1/8" NPT x 1.50"	X-217-2
1	Pipe (1/8"npt x .75")	X-217-6

Remote Digital Gauge GM32337-KP1		
1	Decal, waring	249494
1	Gauge, digital	GM30565
1	Harness, remote	GM32325
1	Installation Instructions	TT-1364
1	Installation Instructions	TT-1379

Remote Digital Gauge, 3" Smartcraft GM46035-KP1		
1	Decal, warning	249494
1	Gauge, Digital	GM45905
1	Harness, Smartcraft	GM46123
1	Diagram, Accessory Interconnection	GM47635
1	TT ADC 2100 Controller Replacement	TT-1364
1	TT Digital Gauge, 5/7.3ECD & 4/6EFCD	TT-1429

Qty.	Description	Part No.
Remote Digital Gauge, 2" Smartcraft GM50822-KP1		
1	Decal, warning	249494
1	Diagram, Accessory Interconnection	GM47635
1	Gauge, Digital CAN 2 Inch	GM50577
1	Harness, Remote Digital CAN Gauge	GM50821
1	TT ADC 2100 Controller Replacement	TT-1364
1	TT 2" Digital Gauge ECD/EGD/EGZD	TT-1450

Remote Start Panel, 12V GM32335-KP1		
1	TT Rmt Start Panel	TT-1378
1	Decal, warning	249494
1	Panel assy, control 12V (includes the following)	GM33848-1
2	Nut, hex, 3 mm	M934-03-50
2	Washer, lock.146 ID x .285 in. OD	X-22-6
1	Panel, control	GM33847
1	Harness, wiring panel assy, control	GM33851
1	Meter, run time, 10000 hour	238736
1	Switch, rocker, 12V	GM33849
2	Screw, pan head M3 x 12	M7985A-03012-20

Ship to Shore Switch, 2 Wire PAA-246614		
1	Switch, transfer	344490
1	Instructions, installation	TT-535

Ship to Shore Switch, 3 Wire PAA-246617		
1	Switch, transfer	A-246617
1	Instructions, installation	TT-535

Accessories, continued

Sound Shield Kits

Kits: GM55219-KP1 and GM55219-KP2				
Qty.	Description	Common Parts	Unique Parts	
			GM55219-KP1	GM55219-KP2
4	Bracket, subassembly	359435		
1	Boot, battery lug	GM20748		
1	Harness, extension (18 in.)	GM42846		
1	Foam, acoustic (6.5 x 7 in.)	GM64350		
1	Foam, acoustic (1.7 x 5.25 in.)	GM64351		
1	Foam, acoustic (0.78 x 1.4 in.)	GM64352		
1	Foam, acoustic (1.3 x 7.5 in.)	GM64353		
1	Base		GM55223 (19.7 x 30.4 in.)	GM55224 (19.7 x 31.5 in.)
1	Door, service side, RH		GM55252 (15.75 x 22 in.)	GM55253 (15.75 x 23 in.)
1	Door, engine end, front (15.8 x 17.2 in.)	GM55254		
1	Door, nonservice-side, LH		GM55255 (16 x 30.4 in.)	GM55256 (16 x 31.5 in.)
1	Panel, bulkhead connection	GM55257		
1	Panel, exhaust (5.5 x 10 in.)	GM55258		
1	Door, generator end, rear (11.5 x 12.8 in.)	GM55259		
1	Roof		GM55260 (19.7 x 30.4 in.)	GM55261 (19.7 x 31.5 in.)
1	Decal, fuse panel	GM58163		
1	Panel, controller (8.3 x 15.8 in.)	GM64073		
1	Panel, junction box (6.4 x 11.2 in.)	GM64135		
8	Screw, Hex Head Machine	X-791-13		
12	Screw, Hex Head Machine	X-791-12		
11	Washer, plain (0.203 ID x 0.438 in. OD)	X-25-115		
4	Washer, plain (0.406 ID x 0.812 in. OD)	X-25-37		
6	Washer, plain (0.281 ID x 0.625 in. OD)	X-25-40		
1	Connector, 90°	X-391-1		
2	Clamp, hose (0.69/1.25 in.)	X-426-12		
2	Clamp, hose (0.25/0.70 in.)	X-426-9		
4	Bolt, hex cap (1/4-20 x 0.5 in.)	X-465-6		
1	Cable tie	X-468-1		
1	Cable, battery, red (+) (21 in.)	X-545-214		
1	Cable, battery, black (-) (18.5 in.)	X-545-215		
1	Fitting, hose connector	X-582-42		
1	Connector, hose	X-585-45		
1	Conduit, convoluted (19 in.)	X-6003-37		
1	Conduit, convoluted (16 in.)	X-6003-5		
2	Channel, U (7.5 in.)	X-6047-27		
2	Nut, flange spirallock (1/4-20)	X-6210-2		
4	Bolt, hex cap (3/8-16 x 0.625)	X-6238-2		
1	Line, flex. fuel (6 in.)	X-6251-31		
1	Bushing (0.672 x 0.875 in. NPT)	X-634-25		
2	Clamp, insulated (1.06 in.)	X-672-30		
1	Hose (35 in.)	X-691-30		
3	Screw, Hex Head Machine	X-791-14		

Accessories, continued

Qty.	Description	Part No.
Siphon Break Hose Connection		GM60007-KP1
2	Connector, hose	344934
1	Hose, .62 in. ID	X-312-16
1	Hose, .62 in. ID	X-312-61
2	Grommet, round	X-284-7
2	Clamp, hose, .56/1.06 in.	X-426-3
1	Clamp, hose, .25/.70 in.	X-426-9
1	Tubing, clear flexible plastic	GM34883
1	Valve, siphon break (includes the following)	GM32985
1	Valve, duct	328666
1	Cap, siphon valve	GM32984
1	Loop, siphon valve vent	GM32988

Qty.	Description	Part No.
Miscellaneous Kits		
Drip Tray, Stainless		GM62738-KP1
1	Tray, Stainless Steel Dri	GM62739
Lifting Eye Tool		PA-359572
1	Eye, lifting	359572
Sea Water Strainer		PA-359579
1	Filter, water, 1/2 in.	X-661-1
Siphon Break		PA-229928
1	Clamp, hose, 0.25/0.70 in.	X-426-9
1	Installation Instructions	TT-1268
1	Tubing, clear flexible plastic	GM34883
1	Valve assy., siphon break (includes the following)	GM32985
1	Valve, duct	328666
1	Cap, siphon valve	GM32984
1	Loop, siphon valve vent	GM32988

Appendix A Abbreviations

The following list contains abbreviations that may appear in this publication.

A, amp	ampere	cfm	cubic feet per minute	ext.	external
ABDC	after bottom dead center	CG	center of gravity	F	Fahrenheit, female
AC	alternating current	CID	cubic inch displacement	fglass.	fiberglass
A/D	analog to digital	CL	centerline	FHM	flat head machine (screw)
ADC	analog to digital converter	cm	centimeter	fl. oz.	fluid ounce
adj.	adjust, adjustment	CMOS	complementary metal oxide substrate (semiconductor)	flex.	flexible
ADV	advertising dimensional drawing	cogen.	cogeneration	freq.	frequency
AHWT	anticipatory high water temperature	com	communications (port)	FS	full scale
AISI	American Iron and Steel Institute	coml	commercial	ft.	foot, feet
ALOP	anticipatory low oil pressure	Coml/Rec	Commercial/Recreational	ft. lb.	foot pounds (torque)
alt.	alternator	conn.	connection	ft./min.	feet per minute
Al	aluminum	cont.	continued	g	gram
ANSI	American National Standards Institute (formerly American Standards Association, ASA)	CPVC	chlorinated polyvinyl chloride	ga.	gauge (meters, wire size)
AO	anticipatory only	crit.	critical	gal.	gallon
API	American Petroleum Institute	CRT	cathode ray tube	gen.	generator
approx.	approximate, approximately	CSA	Canadian Standards Association	genset	generator set
AR	as required, as requested	CT	current transformer	GFI	ground fault interrupter
AS	as supplied, as stated, as suggested	Cu	copper	GND, ⊕	ground
ASE	American Society of Engineers	cu. in.	cubic inch	gov.	governor
ASME	American Society of Mechanical Engineers	cw.	clockwise	gph	gallons per hour
assy.	assembly	CWC	city water-cooled	gpm	gallons per minute
ASTM	American Society for Testing Materials	cyl.	cylinder	gr.	grade, gross
ATDC	after top dead center	D/A	digital to analog	GRD	equipment ground
ATS	automatic transfer switch	DAC	digital to analog converter	gr. wt.	gross weight
auto.	automatic	dB	decibel	H x W x D	height by width by depth
aux.	auxiliary	dBA	decibel (A weighted)	HC	hex cap
A/V	audiovisual	dB	decibel (A weighted)	HCHT	high cylinder head temperature
AVR	automatic voltage regulator	DC	direct current	HD	heavy duty
AWG	American Wire Gauge	DCR	direct current resistance	HET	high exhaust temperature, high engine temperature
AWM	appliance wiring material	deg., °	degree	hex	hexagon
bat.	battery	dept.	department	Hg	mercury (element)
BBDC	before bottom dead center	dia.	diameter	HH	hex head
BC	battery charger, battery charging	DI/EO	dual inlet/end outlet	HHC	hex head cap
BCA	battery charging alternator	DIN	Deutsches Institut für Normung e. V. (also Deutsche Industrie Normenausschuss)	HP	horsepower
BCI	Battery Council International	DIP	dual inline package	hr.	hour
BDC	before dead center	DPDT	double-pole, double-throw	HS	heat shrink
BHP	brake horsepower	DPST	double-pole, single-throw	hsg.	housing
blk.	black (paint color), block (engine)	DS	disconnect switch	HVAC	heating, ventilation, and air conditioning
blk. htr.	block heater	DVR	digital voltage regulator	HWT	high water temperature
BMEP	brake mean effective pressure	E, emer.	emergency (power source)	Hz	hertz (cycles per second)
bps	bits per second	EDI	electronic data interchange	IC	integrated circuit
br.	brass	EFR	emergency frequency relay for example (<i>exempli gratia</i>)	ID	inside diameter, identification
BTDC	before top dead center	e.g.	for example (<i>exempli gratia</i>)	IEC	International Electrotechnical Commission
Btu	British thermal unit	EG	electronic governor	IEEE	Institute of Electrical and Electronics Engineers
Btu/min.	British thermal units per minute	EGSA	Electrical Generating Systems Association	IMS	improved motor starting
C	Celsius, centigrade	EIA	Electronic Industries Association	in.	inch
cal.	calorie	EI/EO	end inlet/end outlet	in. H ₂ O	inches of water
CARB	California Air Resources Board	EMI	electromagnetic interference	in. Hg	inches of mercury
CB	circuit breaker	emiss.	emission	in. lb.	inch pounds
cc	cubic centimeter	eng.	engine	Inc.	incorporated
CCA	cold cranking amps	EPA	Environmental Protection Agency	ind.	industrial
ccw.	counterclockwise	EPS	emergency power system	int.	internal
CEC	Canadian Electrical Code	ER	emergency relay	int./ext.	internal/external
cert.	certificate, certification, certified	ES	engineering special, engineered special	I/O	input/output
cfh	cubic feet per hour	ESD	electrostatic discharge	IP	iron pipe
		est.	estimated	ISO	International Organization for Standardization
		E-Stop	emergency stop	J	joule
		etc.	et cetera (and so forth)	JIS	Japanese Industry Standard
		exh.	exhaust	k	kilo (1000)
				K	kelvin

kA	kiloampere	MTBO	mean time between overhauls	rly.	relay
KB	kilobyte (2 ¹⁰ bytes)	mtg.	mounting	rms	root mean square
kg	kilogram	MW	megawatt	rnd.	round
kg/cm ²	kilograms per square centimeter	mW	milliwatt	ROM	read only memory
kgm	kilogram-meter	μF	microfarad	rot.	rotate, rotating
kg/m ³	kilograms per cubic meter	N, norm.	normal (power source)	rpm	revolutions per minute
kHz	kilohertz	NA	not available, not applicable	RS	right side
kJ	kilojoule	nat. gas	natural gas	RTV	room temperature vulcanization
km	kilometer	NBS	National Bureau of Standards	SAE	Society of Automotive Engineers
kOhm, kΩ	kilo-ohm	NC	normally closed	scfm	standard cubic feet per minute
kPa	kilopascal	NEC	National Electrical Code	SCR	silicon controlled rectifier
kph	kilometers per hour	NEMA	National Electrical Manufacturers Association	s, sec.	second
kV	kilovolt	NFPA	National Fire Protection Association	SI	<i>Systeme international d'unites</i> , International System of Units
kVA	kilovolt ampere	Nm	newton meter	SI/EO	side in/end out
kVAR	kilovolt ampere reactive	NO	normally open	sil.	silencer
kW	kilowatt	no., nos.	number, numbers	SN	serial number
kWh	kilowatt-hour	NPS	National Pipe, Straight	SPDT	single-pole, double-throw
kWm	kilowatt mechanical	NPSC	National Pipe, Straight-coupling	SPST	single-pole, single-throw
L	liter	NPT	National Standard taper pipe thread per general use	spec, specs	specification(s)
LAN	local area network	NPTF	National Pipe, Taper-Fine	sq.	square
L x W x H	length by width by height	NR	not required, normal relay	sq. cm	square centimeter
lb.	pound, pounds	ns	nanosecond	sq. in.	square inch
lbm/ft ³	pounds mass per cubic feet	OC	overcrank	SS	stainless steel
LCB	line circuit breaker	OD	outside diameter	std.	standard
LCD	liquid crystal display	OEM	original equipment manufacturer	stl.	steel
ld. shd.	load shed	OF	overfrequency	tach.	tachometer
LED	light emitting diode	opt.	option, optional	TD	time delay
Lph	liters per hour	OS	oversize, overspeed	TDC	top dead center
Lpm	liters per minute	OSHA	Occupational Safety and Health Administration	TDEC	time delay engine cooldown
LOP	low oil pressure	OV	overvoltage	TDEN	time delay emergency to normal
LP	liquefied petroleum	oz.	ounce	TDES	time delay engine start
LPG	liquefied petroleum gas	p., pp.	page, pages	TDNE	time delay normal to emergency
LS	left side	PC	personal computer	TDOE	time delay off to emergency
L _{wa}	sound power level, A weighted	PCB	printed circuit board	TDON	time delay off to normal
LWL	low water level	pF	picofarad	temp.	temperature
LWT	low water temperature	PF	power factor	term.	terminal
m	meter, milli (1/1000)	ph., ∅	phase	TIF	telephone influence factor
M	mega (10 ⁶ when used with SI units), male	PHC	Phillips head crimplite (screw)	TIR	total indicator reading
m ³	cubic meter	PHH	Phillips hex head (screw)	tol.	tolerance
m ³ /min.	cubic meters per minute	PHM	pan head machine (screw)	turbo.	turbocharger
mA	milliampere	PLC	programmable logic control	typ.	typical (same in multiple locations)
man.	manual	PMG	permanent-magnet generator	UF	underfrequency
max.	maximum	pot	potentiometer, potential	UHF	ultrahigh frequency
MB	megabyte (2 ²⁰ bytes)	ppm	parts per million	UL	Underwriter's Laboratories, Inc.
MCM	one thousand circular mils	PROM	programmable read-only memory	UNC	unified coarse thread (was NC)
MCCB	molded-case circuit breaker	psi	pounds per square inch	UNF	unified fine thread (was NF)
meggarr	megohmmeter	pt.	pint	univ.	universal
MHz	megahertz	PTC	positive temperature coefficient	US	undersize, underspeed
mi.	mile	PTO	power takeoff	UV	ultraviolet, undervoltage
mil	one one-thousandth of an inch	PVC	polyvinyl chloride	V	volt
min.	minimum, minute	qt.	quart, quarts	VAC	volts alternating current
misc.	miscellaneous	qty.	quantity	VAR	voltampere reactive
MJ	megajoule	R	replacement (emergency) power source	VDC	volts direct current
mJ	millijoule	rad.	radiator, radius	VFD	vacuum fluorescent display
mm	millimeter	RAM	random access memory	VGA	video graphics adapter
mOhm, mΩ	milliohm	RDO	relay driver output	VHF	very high frequency
MOhm, MΩ	megohm	ref.	reference	W	watt
MOV	metal oxide varistor	rem.	remote	WCR	withstand and closing rating
MPa	megapascal	Res/Coml	Residential/Commercial	w/	with
mpg	miles per gallon	RFI	radio frequency interference	w/o	without
mph	miles per hour	RH	round head	wt.	weight
MS	military standard	RHM	round head machine (screw)	xfmr	transformer
m/sec.	meters per second				
MTBF	mean time between failure				

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 1 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 Appendix C, General Torque Specifications, and other torque specifications in the service literature.

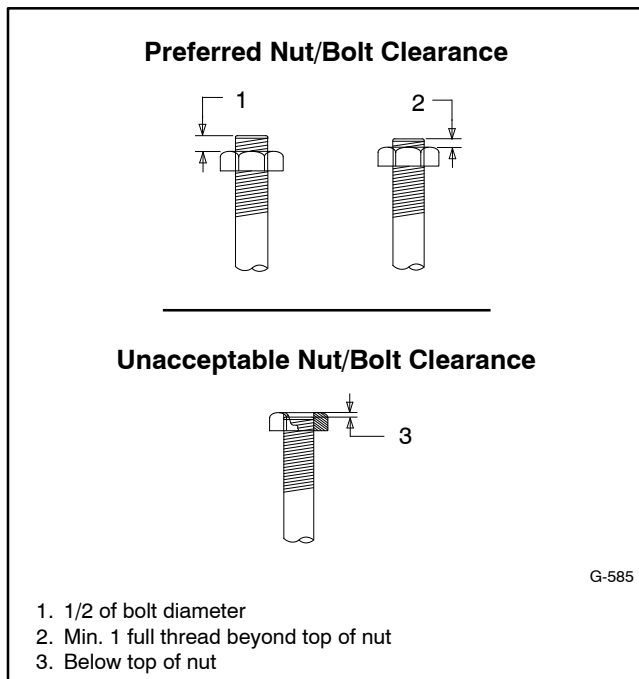


Figure 1 Acceptable Bolt Lengths

1. 1/2 of bolt diameter
2. Min. 1 full thread beyond top of nut
3. Below top of nut

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 Figure 2.

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 Figure 2, which depicts the preceding hardware configuration possibilities.

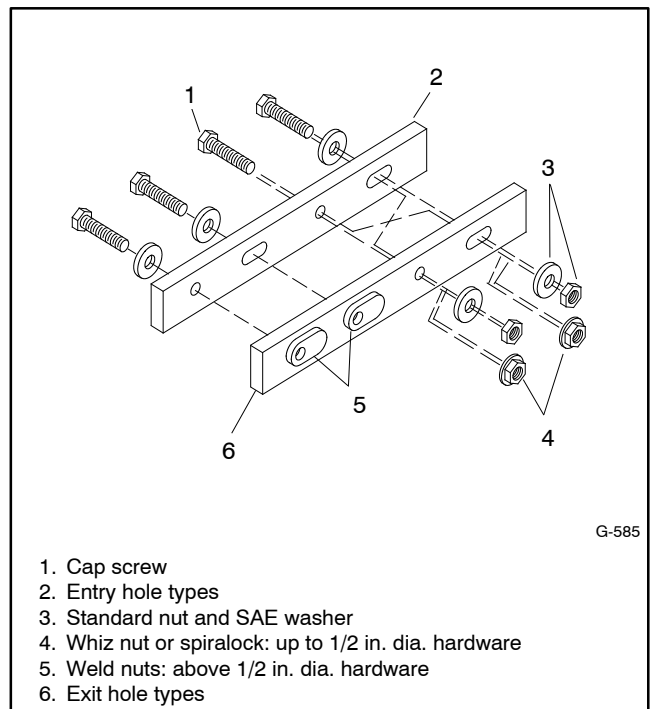


Figure 2 Acceptable Hardware Combinations

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

Appendix C General Torque Specifications















American Standard Fasteners Torque Specifications					
Size	Torque Measurement	Assembled into Cast Iron or Steel			Assembled into Aluminum Grade 2 or 5
		Grade 2	Grade 5	Grade 8	
8-32	Nm (in. lb.)	1.8 (16)	2.3 (20)	—	See Note 3
10-24	Nm (in. lb.)	2.9 (26)	3.6 (32)	—	
10-32	Nm (in. lb.)	2.9 (26)	3.6 (32)	—	
1/4-20	Nm (in. lb.)	6.8 (60)	10.8 (96)	14.9 (132)	
1/4-28	Nm (in. lb.)	8.1 (72)	12.2 (108)	16.3 (144)	
5/16-18	Nm (in. lb.)	13.6 (120)	21.7 (192)	29.8 (264)	
5/16-24	Nm (in. lb.)	14.9 (132)	23.1 (204)	32.5 (288)	
3/8-16	Nm (ft. lb.)	24.0 (18)	38.0 (28)	53.0 (39)	
3/8-24	Nm (ft. lb.)	27.0 (20)	42.0 (31)	60.0 (44)	
7/16-14	Nm (ft. lb.)	39.0 (29)	60.0 (44)	85.0 (63)	
7/16-20	Nm (ft. lb.)	43.0 (32)	68.0 (50)	95.0 (70)	
1/2-13	Nm (ft. lb.)	60.0 (44)	92.0 (68)	130.0 (96)	
1/2-20	Nm (ft. lb.)	66.0 (49)	103.0 (76)	146.0 (108)	
9/16-12	Nm (ft. lb.)	81.0 (60)	133.0 (98)	187.0 (138)	
9/16-18	Nm (ft. lb.)	91.0 (67)	148.0 (109)	209.0 (154)	
5/8-11	Nm (ft. lb.)	113.0 (83)	183.0 (135)	259.0 (191)	
5/8-18	Nm (ft. lb.)	128.0 (94)	208.0 (153)	293.0 (216)	
3/4-10	Nm (ft. lb.)	199.0 (147)	325.0 (240)	458.0 (338)	
3/4-16	Nm (ft. lb.)	222.0 (164)	363.0 (268)	513.0 (378)	
1-8	Nm (ft. lb.)	259.0 (191)	721.0 (532)	1109.0 (818)	
1-12	Nm (ft. lb.)	283.0 (209)	789.0 (582)	1214.0 (895)	












Metric Fasteners Torque Specifications, Measured in Nm (ft. lb.)				
Size (mm)	Assembled into Cast Iron or Steel			Assembled into Aluminum Grade 5.8 or 8.8
	Grade 5.8	Grade 8.8	Grade 10.9	
M6 x 1.00	6.2 (4.6)	9.5 (7)	13.6 (10)	See Note 3
M8 x 1.25	15.0 (11)	23.0 (17)	33.0 (24)	
M8 x 1.00	16.0 (11)	24.0 (18)	34.0 (25)	
M10 x 1.50	30.0 (22)	45.0 (34)	65.0 (48)	
M10 x 1.25	31.0 (23)	47.0 (35)	68.0 (50)	
M12 x 1.75	53.0 (39)	80.0 (59)	115.0 (85)	
M12 x 1.50	56.0 (41)	85.0 (63)	122.0 (90)	
M14 x 2.00	83.0 (61)	126.0 (93)	180.0 (133)	
M14 x 1.50	87.0 (64)	133.0 (98)	190.0 (140)	
M16 x 2.00	127.0 (94)	194.0 (143)	278.0 (205)	
M16 x 1.50	132.0 (97)	201.0 (148)	287.0 (212)	
M18 x 2.50	179.0 (132)	273.0 (201)	390.0 (288)	
M18 x 1.50	189.0 (140)	289.0 (213)	413.0 (305)	






Notes:

1. Do not use these values when the torque values are specified on the assembly drawing.
2. These values are based on new plates threads. Increase values by 15% if non-plated threads are used.
3. Hardware threaded into aluminum must have two diameters of thread engagement or may require 30% or more reduction in the torque.
4. Torques are calculated as equivalent stress loading to American hardware and approximately a preload of 90% of yield strength and friction coefficient of 0.125.

Appendix D Common Hardware Identification

Screw/Bolts/Studs	
Head Styles	
Hex Head or Machine Head	
Hex Head or Machine Head with Washer	
Flat Head (FHM)	
Round Head (RHM)	
Pan Head	
Hex Socket Head Cap or Allen™ Head Cap	
Hex Socket Head or Allen™ Head Shoulder Bolt	
Sheet Metal Screw	
Stud	
Drive Styles	
Hex	
Hex and Slotted	
Phillips®	
Slotted	
Hex Socket	

Nuts	
Nut Styles	
Hex Head	
Lock or Elastic	
Square	
Cap or Acorn	
Wing	
Washers	
Washer Styles	
Plain	
Split Lock or Spring	
Spring or Wave	
External Tooth Lock	
Internal Tooth Lock	
Internal-External Tooth Lock	

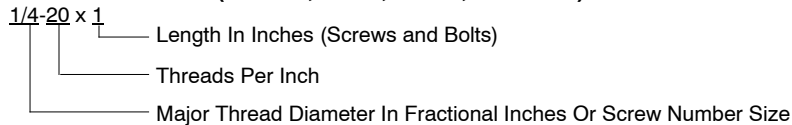
Hardness Grades	
American Standard	
Grade 2	
Grade 5	
Grade 8	
Grade 8/9 (Hex Socket Head)	
Metric	
Number stamped on hardware; 5.8 shown	

Allen™ head screw is a trademark of Holo-Krome Co.

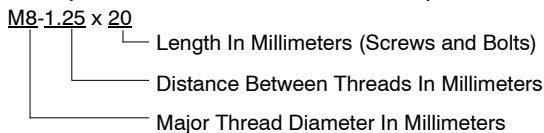
Phillips® screw is a registered trademark of Phillips Screw Company.

Sample Dimensions

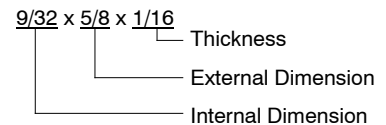
American Standard (Screws, Bolts, Studs, and Nuts)



Metric (Screws, Bolts, Studs, and Nuts)



Plain Washers



Lock Washers



Appendix E Common Hardware List

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

American Standard

Part No.	Dimensions	Part No.	Dimensions	Part No.	Dimensions	Type		
Hex Head Bolts (Grade 5)			Hex Head Bolts, cont.			Hex Nuts		
X-465-17	1/4-20 x .38	X-6238-14	3/8-24 x .75	X-6009-1	1-8	Standard		
X-465-6	1/4-20 x .50	X-6238-16	3/8-24 x 1.25	X-6210-3	6-32	Whiz		
X-465-2	1/4-20 x .62	X-6238-21	3/8-24 x 4.00	X-6210-4	8-32	Whiz		
X-465-16	1/4-20 x .75	X-6238-22	3/8-24 x 4.50	X-6210-5	10-24	Whiz		
X-465-18	1/4-20 x .88			X-6210-1	10-32	Whiz		
X-465-7	1/4-20 x 1.00	X-6024-5	7/16-14 x .75					
X-465-8	1/4-20 x 1.25	X-6024-2	7/16-14 x 1.00	X-6210-2	1/4-20	Spiralock		
X-465-9	1/4-20 x 1.50	X-6024-8	7/16-14 x 1.25	X-6210-6	1/4-28	Spiralock		
X-465-10	1/4-20 x 1.75	X-6024-3	7/16-14 x 1.50	X-6210-7	5/16-18	Spiralock		
X-465-11	1/4-20 x 2.00	X-6024-4	7/16-14 x 2.00	X-6210-8	5/16-24	Spiralock		
X-465-12	1/4-20 x 2.25	X-6024-11	7/16-14 x 2.75	X-6210-9	3/8-16	Spiralock		
X-465-14	1/4-20 x 2.75	X-6024-12	7/16-14 x 6.50	X-6210-10	3/8-24	Spiralock		
X-465-21	1/4-20 x 5.00	X-129-15	1/2-13 x .75	X-6210-11	7/16-14	Spiralock		
X-465-25	1/4-28 x .38	X-129-17	1/2-13 x 1.00	X-6210-12	1/2-13	Spiralock		
X-465-20	1/4-28 x 1.00	X-129-18	1/2-13 x 1.25	X-6210-15	7/16-20	Spiralock		
		X-129-19	1/2-13 x 1.50	X-6210-14	1/2-20	Spiralock		
X-125-33	5/16-18 x .50	X-129-20	1/2-13 x 1.75					
X-125-23	5/16-18 x .62	X-129-21	1/2-13 x 2.00	X-85-3	5/8-11	Standard		
X-125-3	5/16-18 x .75	X-129-22	1/2-13 x 2.25	X-88-12	3/4-10	Standard		
X-125-31	5/16-18 x .88	X-129-23	1/2-13 x 2.50	X-89-2	1/2-20	Standard		
X-125-5	5/16-18 x 1.00	X-129-24	1/2-13 x 2.75					
X-125-24	5/16-18 x 1.25	X-129-25	1/2-13 x 3.00	Washers				
X-125-34	5/16-18 x 1.50	X-129-27	1/2-13 x 3.50	Part No.	ID	OD	Thick.	Bolt/ Screw
X-125-25	5/16-18 x 1.75	X-129-29	1/2-13 x 4.00	X-25-46	.125	.250	.022	#4
X-125-26	5/16-18 x 2.00	X-129-30	1/2-13 x 4.50	X-25-9	.156	.375	.049	#6
230578	5/16-18 x 2.25	X-463-9	1/2-13 x 5.50	X-25-48	.188	.438	.049	#8
X-125-29	5/16-18 x 2.50	X-129-44	1/2-13 x 6.00	X-25-36	.219	.500	.049	#10
X-125-27	5/16-18 x 2.75			X-25-40	.281	.625	.065	1/4
X-125-28	5/16-18 x 3.00	X-129-51	1/2-20 x .75	X-25-85	.344	.687	.065	5/16
X-125-22	5/16-18 x 4.50	X-129-45	1/2-20 x 1.25	X-25-37	.406	.812	.065	3/8
X-125-32	5/16-18 x 5.00	X-129-52	1/2-20 x 1.50	X-25-34	.469	.922	.065	7/16
X-125-35	5/16-18 x 5.50			X-25-26	.531	1.062	.095	1/2
X-125-36	5/16-18 x 6.00	X-6021-3	5/8-11 x 1.00	X-25-15	.656	1.312	.095	5/8
X-125-40	5/16-18 x 6.50	X-6021-4	5/8-11 x 1.25	X-25-29	.812	1.469	.134	3/4
		X-6021-2	5/8-11 x 1.50	X-25-127	1.062	2.000	.134	1
X-125-43	5/16-24 x 1.75	X-6021-1	5/8-11 x 1.75					
X-125-44	5/16-24 x 2.50	273049	5/8-11 x 2.00					
X-125-30	5/16-24 x .75	X-6021-5	5/8-11 x 2.25					
X-125-39	5/16-24 x 2.00	X-6021-6	5/8-11 x 2.50					
X-125-38	5/16-24 x 2.75	X-6021-7	5/8-11 x 2.75					
		X-6021-12	5/8-11 x 3.75					
X-6238-2	3/8-16 x .62	X-6021-11	5/8-11 x 4.50					
X-6238-10	3/8-16 x .75	X-6021-10	5/8-11 x 6.00					
X-6238-3	3/8-16 x .88							
X-6238-11	3/8-16 x 1.00	X-6021-9	5/8-18 x 2.50					
X-6238-4	3/8-16 x 1.25							
X-6238-5	3/8-16 x 1.50	X-6239-1	3/4-10 x 1.00					
X-6238-1	3/8-16 x 1.75	X-6239-8	3/4-10 x 1.25					
X-6238-6	3/8-16 x 2.00	X-6239-2	3/4-10 x 1.50					
X-6238-17	3/8-16 x 2.25	X-6239-3	3/4-10 x 2.00					
X-6238-7	3/8-16 x 2.50	X-6239-4	3/4-10 x 2.50					
X-6238-8	3/8-16 x 2.75	X-6239-5	3/4-10 x 3.00					
X-6238-9	3/8-16 x 3.00	X-6239-6	3/4-10 x 3.50					
X-6238-19	3/8-16 x 3.25							
X-6238-12	3/8-16 x 3.50	X-792-1	1-8 x 2.25					
X-6238-20	3/8-16 x 3.75	X-792-5	1-8 x 3.00					
X-6238-13	3/8-16 x 4.50	X-792-8	1-8 x 5.00					
X-6238-18	3/8-16 x 5.50							
X-6238-25	3/8-16 x 6.50							

Metric

Hex head bolts are hardness grade 8.8 unless noted.

Part No.	Dimensions	Part No.	Dimensions	Part No.	Dimensions
Hex Head Bolts (Partial Thread)		Hex Head Bolts (Partial Thread), continued		Hex Head Bolts (Full Thread), continued	
M931-05055-60	M5-0.80 x 55	M960-16090-60	M16-1.50 x 90	M933-12016-60	M12-1.75 x 16
M931-06040-60	M6-1.00 x 40	M931-16090-60	M16-2.00 x 90	M933-12020-60	M12-1.75 x 20
M931-06055-60	M6-1.00 x 55	M931-16100-60	M16-2.00 x 100	M961-12020-60F	M12-1.50 x 20
M931-06060-60	M6-1.00 x 60	M931-16100-82	M16-2.00 x 100*	M933-12025-60	M12-1.75 x 25
M931-06070-60	M6-1.00 x 70	M931-16120-60	M16-2.00 x 120	M933-12025-82	M12-1.75 x 25*
M931-06070-SS	M6-1.00 x 70	M931-16150-60	M16-2.00 x 150	M961-12030-60	M12-1.25 x 30
M931-06075-60	M6-1.00 x 75			M933-12030-82	M12-1.75 x 30*
M931-06090-60	M6-1.00 x 90	M931-20065-60	M20-2.50 x 65	M961-12030-82F	M12-1.50 x 30*
M931-06145-60	M6-1.00 x 145	M931-20090-60	M20-2.50 x 90	M933-12030-60	M12-1.75 x 30
M931-06150-60	M6-1.00 x 150	M931-20100-60	M20-2.50 x 100	M933-12035-60	M12-1.75 x 35
		M931-20120-60	M20-2.50 x 120	M961-12040-82	M12-1.25 x 40*
M931-08035-60	M8-1.25 x 35	M931-20140-60	M20-2.50 x 140	M933-12040-60	M12-1.75 x 40
M931-08040-60	M8-1.25 x 40	M931-20160-60	M20-2.50 x 160	M933-12040-82	M12-1.75 x 40*
M931-08045-60	M8-1.25 x 45				
M931-08050-60	M8-1.25 x 50	M931-22090-60	M22-2.50 x 90	M961-14025-60	M14-1.50 x 25
M931-08055-60	M8-1.25 x 55	M931-22120-60	M22-2.50 x 120	M933-14025-60	M14-2.00 x 25
M931-08055-82	M8-1.25 x 55*	M931-22160-60	M22-2.50 x 160	M961-14050-82	M14-1.50 x 50*
M931-08060-60	M8-1.25 x 60				
M931-08070-60	M8-1.25 x 70	M931-24090-60	M24-3.00 x 90	M961-16025-60	M16-1.50 x 25
M931-08070-82	M8-1.25 x 70*	M931-24120-60	M24-3.00 x 120	M933-16025-60	M16-2.00 x 25
M931-08075-60	M8-1.25 x 75	M931-24160-60	M24-3.00 x 160	M961-16030-82	M16-1.50 x 30*
M931-08080-60	M8-1.25 x 80	M931-24200-60	M24-3.00 x 200	M933-16030-82	M16-2.00 x 30*
M931-08090-60	M8-1.25 x 90			M933-16035-60	M16-2.00 x 35
M931-08095-60	M8-1.25 x 95	Hex Head Bolts (Full Thread)		M961-16040-60	M16-1.50 x 40
M931-08100-60	M8-1.25 x 100	M933-04006-60	M4-0.70 x 6	M933-16040-60	M16-2.00 x 40
M931-08110-60	M8-1.25 x 110			M961-16045-82	M16-1.50 x 45*
M931-08120-60	M8-1.25 x 120	M933-05030-60	M5-0.80 x 30	M933-16045-82	M16-2.00 x 45*
M931-08130-60	M8-1.25 x 130	M933-05035-60	M5-0.80 x 35	M933-16050-60	M16-2.00 x 50
M931-08140-60	M8-1.25 x 140	M933-05050-60	M5-0.80 x 50	M933-16050-82	M16-2.00 x 50*
M931-08150-60	M8-1.25 x 150			M933-16060-60	M16-2.00 x 60
M931-08200-60	M8-1.25 x 200	M933-06010-60	M6-1.00 x 10	M933-16070-60	M16-2.00 x 70
		M933-06012-60	M6-1.00 x 12		
M931-10040-82	M10-1.25 x 40*	M933-06014-60	M6-1.00 x 14	M933-18035-60	M18-2.50 x 35
M931-10040-60	M10-1.50 x 40	M933-06016-60	M6-1.00 x 16	M933-18050-60	M18-2.50 x 50
M931-10045-60	M10-1.50 x 45	M933-06020-60	M6-1.00 x 20	M933-18060-60	M18-2.50 x 60
M931-10050-60	M10-1.50 x 50	M933-06025-60	M6-1.00 x 25		
M931-10050-82	M10-1.25 x 50*	M933-06030-60	M6-1.00 x 30	M933-20050-60	M20-2.50 x 50
M931-10055-60	M10-1.50 x 55	M933-06040-60	M6-1.00 x 40	M933-20055-60	M20-2.50 x 55
M931-10060-60	M10-1.50 x 60	M933-06050-60	M6-1.00 x 50		
M931-10065-60	M10-1.50 x 65			M933-24060-60	M24-3.00 x 60
M931-10070-60	M10-1.50 x 70	M933-07025-60	M7-1.00 x 25	M933-24065-60	M24-3.00 x 65
M931-10080-60	M10-1.50 x 80			M933-24070-60	M24-3.00 x 70
M931-10080-82	M10-1.25 x 80*	M933-08010-60	M8-1.25 x 10		
M931-10090-60	M10-1.50 x 90	M933-08012-60	M8-1.25 x 12	Pan Head Machine Screws	
M931-10090-82	M10-1.50 x 90*	M933-08016-60	M8-1.25 x 16	M7985A-03010-20	M3-0.50 x 10
M931-10100-60	M10-1.50 x 100	M933-08020-60	M8-1.25 x 20	M7985A-03012-20	M3-0.50 x 12
M931-10110-60	M10-1.50 x 110	M933-08025-60	M8-1.25 x 25		
M931-10120-60	M10-1.50 x 120	M933-08030-60	M8-1.25 x 30	M7985A-04010-20	M4-0.70 x 10
M931-10130-60	M10-1.50 x 130	M933-08030-82	M8-1.25 x 30*	M7985A-04016-20	M4-0.70 x 16
M931-10140-60	M10-1.50 x 140			M7985A-04020-20	M4-0.70 x 20
M931-10180-60	M10-1.50 x 180	M933-10012-60	M10-1.50 x 12	M7985A-04050-20	M4-0.70 x 50
M931-10235-60	M10-1.50 x 235	M961-10020-60	M10-1.25 x 20	M7985A-04100-20	M4-0.70 x 100
M931-10260-60	M10-1.50 x 260	M933-10020-60	M10-1.50 x 20		
M960-10330-60	M10-1.25 x 330	M933-10025-60	M10-1.50 x 25	M7985A-05010-20	M5-0.80 x 10
		M961-10025-60	M10-1.25 x 25	M7985A-05012-20	M5-0.80 x 12
M931-12045-60	M12-1.75 x 45	M933-10025-82	M10-1.50 x 25*	M7985A-05016-20	M5-0.80 x 16
M960-12050-60	M12-1.25 x 50	M961-10030-60	M10-1.25 x 30	M7985A-05020-20	M5-0.80 x 20
M960-12050-82	M12-1.25 x 50*	M933-10030-60	M10-1.50 x 30	M7985A-05025-20	M5-0.80 x 25
M931-12050-60	M12-1.75 x 50	M933-10030-82	M10-1.50 x 30*	M7985A-05030-20	M5-0.80 x 30
M931-12050-82	M12-1.75 x 50*	M961-10035-60	M10-1.25 x 35	M7985A-05080-20	M5-0.80 x 80
M931-12055-60	M12-1.75 x 55	M933-10035-60	M10-1.50 x 35	M7985A-05100-20	M5-0.80 x 100
M931-12060-60	M12-1.75 x 60	M933-10035-82	M10-1.50 x 35*		
M931-12060-82	M12-1.75 x 60*	M961-10040-60	M10-1.25 x 40	M7985A-06100-20	M6-1.00 x 100
M931-12065-60	M12-1.75 x 65				
M931-12075-60	M12-1.75 x 75			Flat Head Machine Screws	
M931-12080-60	M12-1.75 x 80			M965A-04012-SS	M4-0.70 x 12
M931-12090-60	M12-1.75 x 90				
M931-12100-60	M12-1.75 x 100			M965A-05012-SS	M5-0.80 x 12
M931-12110-60	M12-1.75 x 110			M965A-05016-20	M5-0.80 x 16
				M965A-06012-20	M6-1.00 x 12

* This metric hex bolt's hardness is grade 10.9.

Metric, continued

Part No.	Dimensions	Type
Hex Nuts		
M934-03-50	M3-0.50	Standard
M934-04-50	M4-0.70	Standard
M934-04-B	M4-0.70	Brass
M934-05-50	M5-0.80	Standard
M934-06-60	M6-1.00	Standard
M934-06-64	M6-1.00	Std. (green)
M6923-06-80	M6-1.00	Spirallock
M982-06-80	M6-1.00	Elastic Stop
M934-08-60	M8-1.25	Standard
M6923-08-80	M8-1.25	Spirallock
M982-08-80	M8-1.25	Elastic Stop
M934-10-60	M10-1.50	Standard
M934-10-60F	M10-1.25	Standard
M6923-10-80	M10-1.50	Spirallock
M6923-10-62	M10-1.50	Spirallock†
M982-10-80	M10-1.50	Elastic Stop
M934-12-60	M12-1.75	Standard
M934-12-60F	M12-1.25	Standard
M6923-12-80	M12-1.75	Spirallock
M982-12-80	M12-1.75	Elastic Stop
M982-14-60	M14-2.00	Elastic Stop
M6923-16-80	M16-2.00	Spirallock
M982-16-80	M16-2.00	Elastic Stop
M934-18-80	M18-2.5	Standard
M982-18-60	M18-2.50	Elastic Stop
M934-20-80	M20-2.50	Standard
M982-20-80	M20-2.50	Elastic Stop
M934-22-60	M22-2.50	Standard
M934-24-80	M24-3.00	Standard
M982-24-60	M24-3.00	Elastic Stop
M934-30-80	M30-3.50	Standard

Washers

Part No.	ID	OD	Thick.	Bolt/ Screw
M125A-03-80	3.2	7.0	0.5	M3
M125A-04-80	4.3	9.0	0.8	M4
M125A-05-80	5.3	10.0	1.0	M5
M125A-06-80	6.4	12.0	1.6	M6
M125A-08-80	8.4	16.0	1.6	M8
M125A-10-80	10.5	20.0	2.0	M10
M125A-12-80	13.0	24.0	2.5	M12
M125A-14-80	15.0	28.0	2.5	M14
M125A-16-80	17.0	30.0	3.0	M16
M125A-18-80	19.0	34.0	3.0	M18
M125A-20-80	21.0	37.0	3.0	M20
M125A-24-80	25.0	44.0	4.0	M24

† This metric hex nut's hardness is grade 8.

Notes

TP-6594 2/14a

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KOHLER CO. Kohler, Wisconsin 53044
Phone 920-565-3381, Fax 920-459-1646
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KohlerPower.com

Kohler Power Systems
Asia Pacific Headquarters
7 Jurong Pier Road
Singapore 619159
Phone (65) 6264-6422, Fax (65) 6264-6455