

# Service Parts

## Residential/Commercial Generator Sets



Model:  
**6VSG**



# Table of Contents

Table of Contents .....	3
Introduction .....	5
Numbering System Significance .....	5
Illustrations .....	5
How to Find Part Numbers .....	5
Hardware References .....	6
Specification Number Index .....	7
<b>Engine Groups</b>	
Group 1: Crankshaft .....	9
Group 2: Crankcase .....	10
Group 3: Oil Pan/Lubrication .....	11
Group 4: Cylinder Head/Valve/Breather .....	12
Group 5: Ignition/Electrical .....	13
Group 6: Blower Housing and Baffles .....	14
Group 7: Starter .....	15
Group 8: Carburetor .....	16
Group 9: Engine Controls .....	17
Group 10: Air Intake/Filtration .....	18
Group 11: Engine Exhaust .....	19
Group 12: Engine Decals .....	19
<b>Generator Groups</b>	
Fuel System .....	20
Engine .....	22
Nameplate and Decals .....	23
Skid and Mounting .....	24
Alternator .....	25
Control and Harness .....	26
Bulkhead .....	35
Enclosure .....	37
Literature .....	38
Kit Parts List .....	39
Appendix A. Abbreviations .....	41
Appendix B. Common Hardware Application Guidelines .....	43
Appendix C. General Torque Specifications .....	44
Appendix D. Common Hardware Identification .....	45
Appendix E. Common Hardware List .....	46

# Common Replacement Parts

Figure 1 identifies 2000-hour common replacement parts for your generator set. Refer to the groups on the following pages for a complete list of maintenance and service parts.

Description	Part Number	Quantity
Sensor, oil temperature	GM28823	1
Filter, oil (before engine S/N 5107900011)	12 050 01- S	1
Oil, quart, 5W30 (for filter 12 050 01-S)	GM103963	
Filter, oil extended life (after S/N 5107900001)	25 050 53- S	1
Oil, quart, 10W50 (for filter 25 050 53-S)	25 357 72- S	
Switch, oil pressure	52 099 08- S	1
Spark plug	25 132 14- S	2
Kit, starter solenoid	25 435 06- S	1
Element, air filter	24 083 09- S	1
Bushing, linkage retaining	25 158 08- S	1
Coupling, stepper motor	358359	1

**Figure 1** 2000-Hour Replacement Parts

# Introduction

This manual lists service replacement parts for 6VSG generator sets.

Information in this publication represents data available at the time of print. Kohler Co. reserves the right to change this publication and the products represented without notice and without any obligation or liability whatsoever.

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.

**Specification Number 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.

## Numbering System Significance

This manual uses the following numbering systems:

**Specification Number.** The product identification number located on the generator set nameplate. Specification 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 a 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.

## 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.

## 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.

## 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.

# Specification Number Index

<b>Group Title</b>	<i>Crankshaft</i>	<i>Crankcase</i>	<i>Oil Pan/Lubrication</i>	<i>Cylinder Head/Valve/Breather</i>	<i>Ignition/Electrical</i>	<i>Blower Housing &amp; Baffles</i>	<i>Starting System</i>	<i>Carburetor</i>	<i>Engine Controls</i>	<i>Air Intake/Filtration</i>	<i>Engine Exhaust</i>	<i>Engine Decals</i>
<b>Group No.</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>
<b>Spec No.</b>	<b>Variation Number</b>											

<b>6VSG</b>												
GM80536-GA1 (48V)	67	851	763	938	1277	478	5	855	513	371	3	1217
GM80536-GA2 (36V)	67	851	763	938	1277	478	5	855	513	371	3	1217
GM80536-GA3 (24V)	67	851	763	938	1277	478	5	855	513	371	3	1217
GM95516-GA1 (48V)	67	851	763	938	1277	478	5	855	513	371	3	1217
GM95516-GA2 (36V)	67	851	763	938	1277	478	5	855	513	371	3	1217
GM95516-GA3 (24V)	67	851	763	938	1277	478	5	855	513	371	3	1217
GM114240-GA1 (48V)	67	851	763	938	1277	478	5	855	513	371	3	1217
GM114240-GA2 (36V)	67	851	763	938	1277	478	5	855	513	371	3	1217
GM114240-GA3 (24V)	67	851	763	938	1277	478	5	855	513	371	3	1217

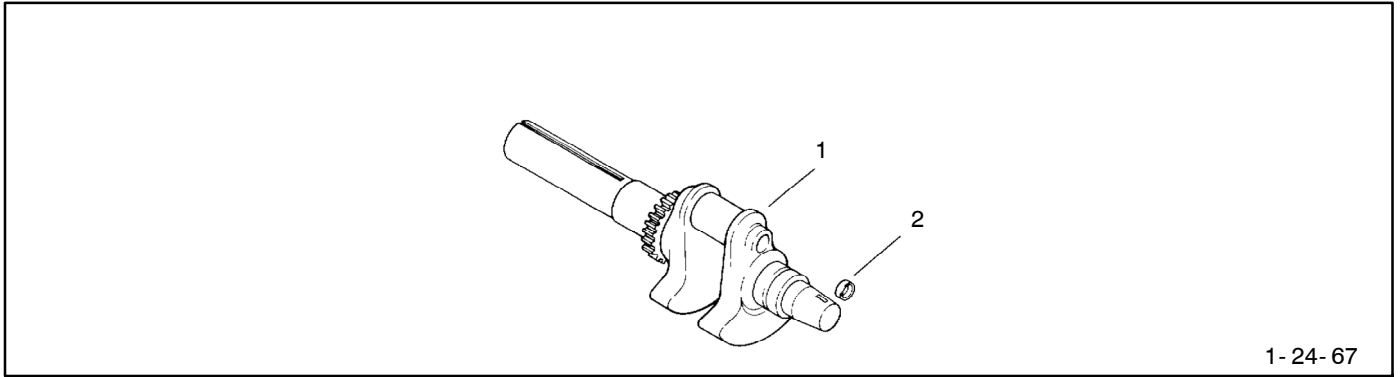
# Specification Number Index

<b>Group Title</b>		<i>Fuel System</i>	<i>Engine</i>	<i>Nameplate and Decals</i>	<i>Skid</i>	<i>Alternator</i>	<i>Controller</i>	<i>Bulkhead</i>	<i>Enclosure</i>	<i>Literature</i>	
<b>Spec No.</b>	<b>Variation Number</b>										

<b>6VSG</b>											
GM80536-GA1 (48V)	1	1	1	1	2	1	1	1	67		
GM80536-GA2 (36V)	1	1	1	1	3	2	1	1	67		
GM80536-GA3 (24V)	1	1	1	1	1	3	1	1	67		
GM95516-GA1 (48V)	1	1	1	1	2	4	1	1	67		
GM95516-GA2 (36V)	1	1	1	1	3	5	1	1	67		
GM95516-GA3 (24V)	1	1	1	1	1	6	1	1	67		
GM114240-GA1 (48V)	2	1	1	1	2	7	2	1	67		
GM114240-GA2 (36V)	2	1	1	1	3	8	2	1	67		
GM114240-GA3 (24V)	2	1	1	1	1	9	2	1	67		



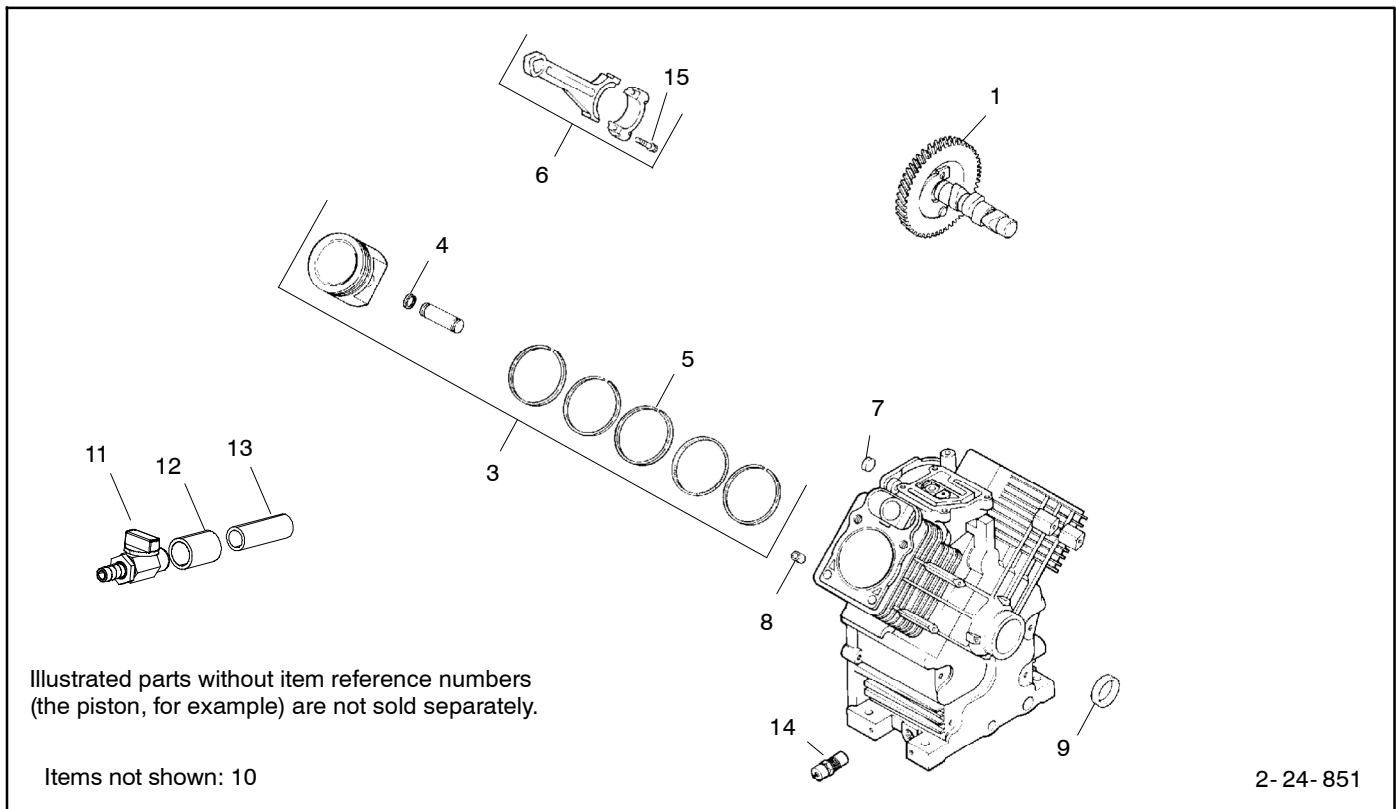
# Group 1: Crankshaft



1-24-67

Item	Part Number	Description	Quantity
			Variation
1	24 014 183-S	Crankshaft assembly	1
2	52 139 09-S	Plug, cap	1

## Group 2: Crankcase



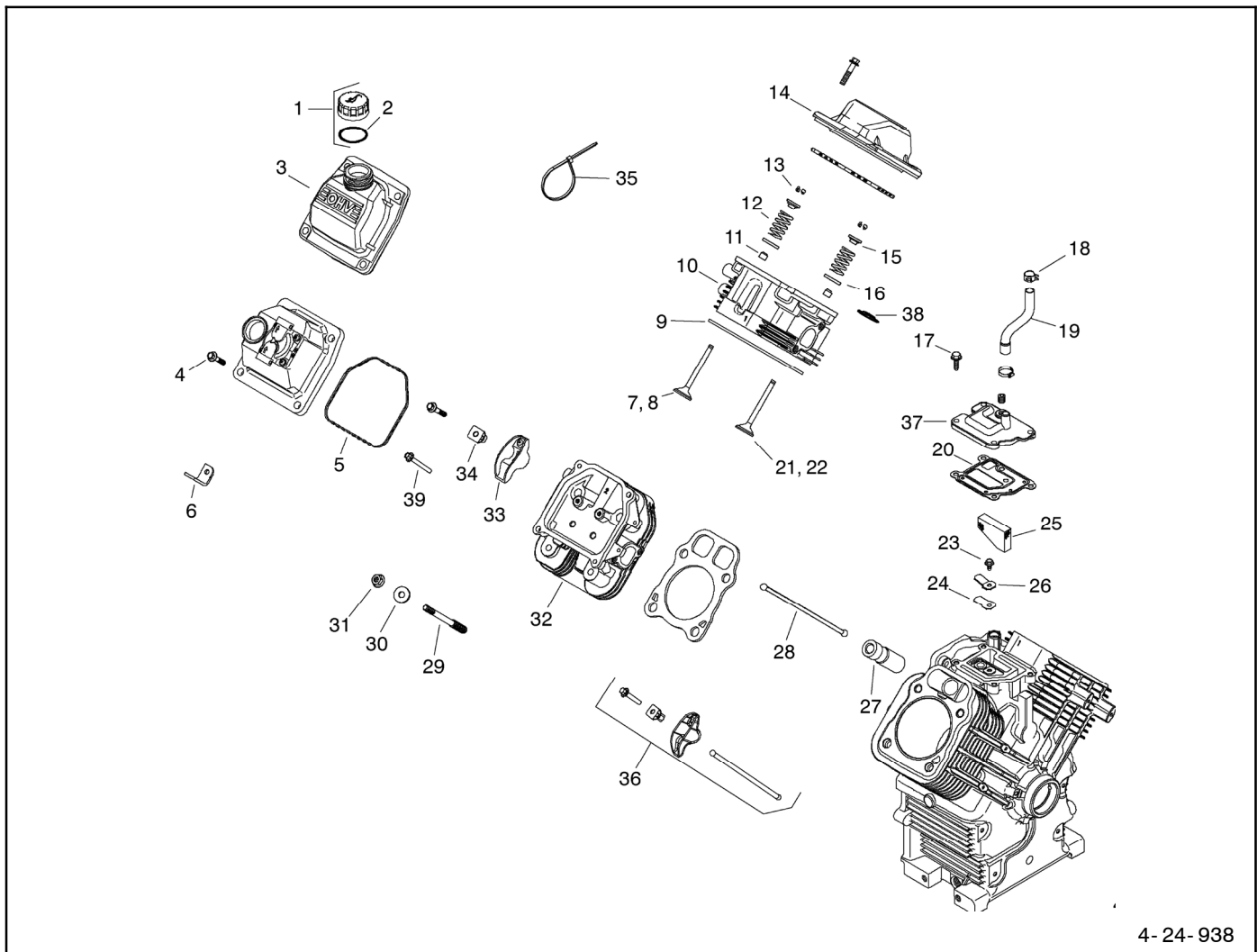
Item	Part Number	Description	Quantity
			Variation 851
1	24 012 18-S	Kit, Camshaft- (#2401226s)	1
3	25 874 13-S	Kit, Piston 725cc (Std) Style B	2
3	25 874 15-S	Kit, Piston 725cc (.08) Style B	2
3	25 874 16-S	Kit, Piston 725cc (.25) Style B	2
3	25 874 17-S	Kit, Piston 725cc (.50) Style B	2
4	24 018 01-S	Retainer, Piston Pin	4
5	25 108 01-S	Ring Set (Std) Style B-1.2mm TP Ring Thick	2
5	25 108 02-S	Ring Set (.08) Style B-1.2mm Ring Thick	2
5	25 108 03-S	Ring Set (.25) Style B-1.2mm TP Ring Thick	2
5	25 108 04-S	Ring Set (.50) Style B-1.2mm TP Ring Thick	2
6	25 067 04-S	Rod, Assembly Connecting	2
7	52 139 09-S	Plug, Cup	1
8	24 380 16-S	Pin, Locating	6
9	24 032 19-S	Seal, Oil (Helix Lip)	1
10	25 139 28-S	Plug, Cup	1
11	359653	Valve, oil drain (3/8- 18 npt)	1
12	X-216-23	Coupling, pipe (3/8 in. npsc)	1
13	X-204-6	Pipe, Nipple (3/8 in. npt x 2.00")	1
14	GM28823	Sensor, oil temperature	1
15	25 086 677-S	Kit, Rod Bolts	2
-	25 158 18-S	Bushing, Reducing (Not Shown)	1

## Group 3: Oil Pan/Lubrication

3-24-763

Item	Part Number	Description	Quantity
			Variation 763
1	24 009 150-S	Kit, closure plate assembly	1
2	24 755 121-S	Kit, dipstick/dipstick tubes (includes item 3)	1
3	24 038 10-S	Dipstick	1
4	24 043 12-S	Kit, governor gear w/pin (includes item 5)	1
5	12 380 01-S	Pin, governor regulating	1
6	24 448 02-S	Tab, locking	1
7	12 144 02-S	Shaft, governor gear	1
8	25 032 06-S	Seal, oil	1
9	25 139 60-S	Plug, hex countersunk, 1/8 in.	1
10	24 153 08-S	O-ring	1
11	24 393 53-S	Kit, oil pump assembly (includes items 12, 13)	1
12	24 153 01-S	O-ring	1
13	24 381 04-S	Pickup, oil	1
14	X-25-53-S	Washer, flat	2
15	25 086 401-S	Screw, flange thread forming	2
16	24 086 12-S	Screw, hex cap, M6 x 1.7 x 18	2
17	12 050 01-S	Filter, oil (before engine S/N 5107900011)	1
-	GM103963	Oil, quart, 5W30 (for filter 12 050 01-S)	1
17	25 050 53-S	Filter, oil extended life (after S/N 5107900001)	1
-	12 357 72-S	Oil, quart, 10W50 (for filter 25 050 53-S)	1
18	54 755 21-S	Kit, alum base oil cool	1
19	24 153 21-S	O-ring, oil cooler	1
20	24 136 05-S	Nipple, oil filter	1
21	25 100 37-S	Nut, plastic	2
22	52 099 08-S	Switch, oil pressure	1
23	24 086 17-S	Screw, hex head	9
24	25 086 17-S	Screw, hex flange	1

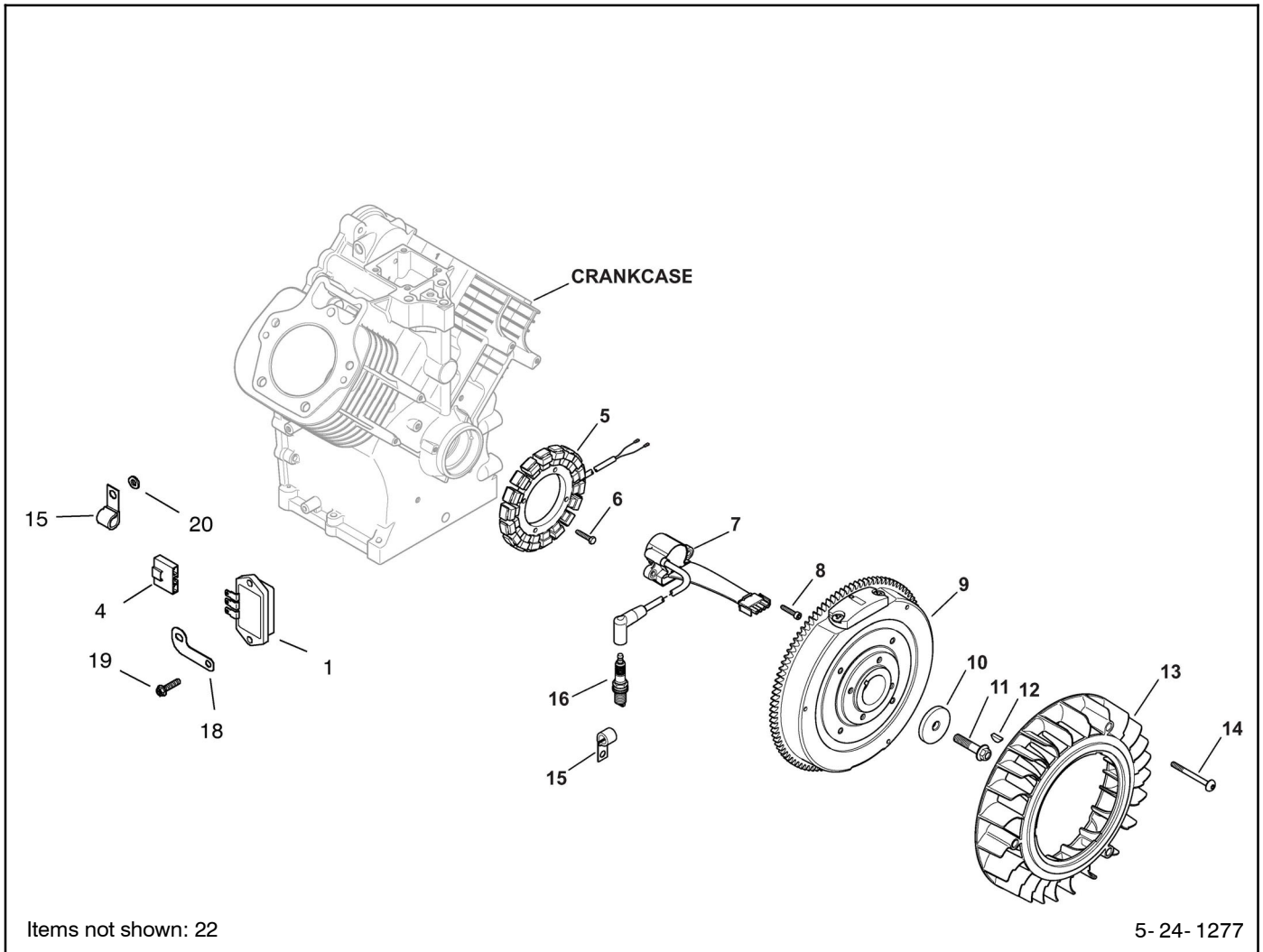
# Group 4: Cylinder Head/Valve/Breather



4-24-938

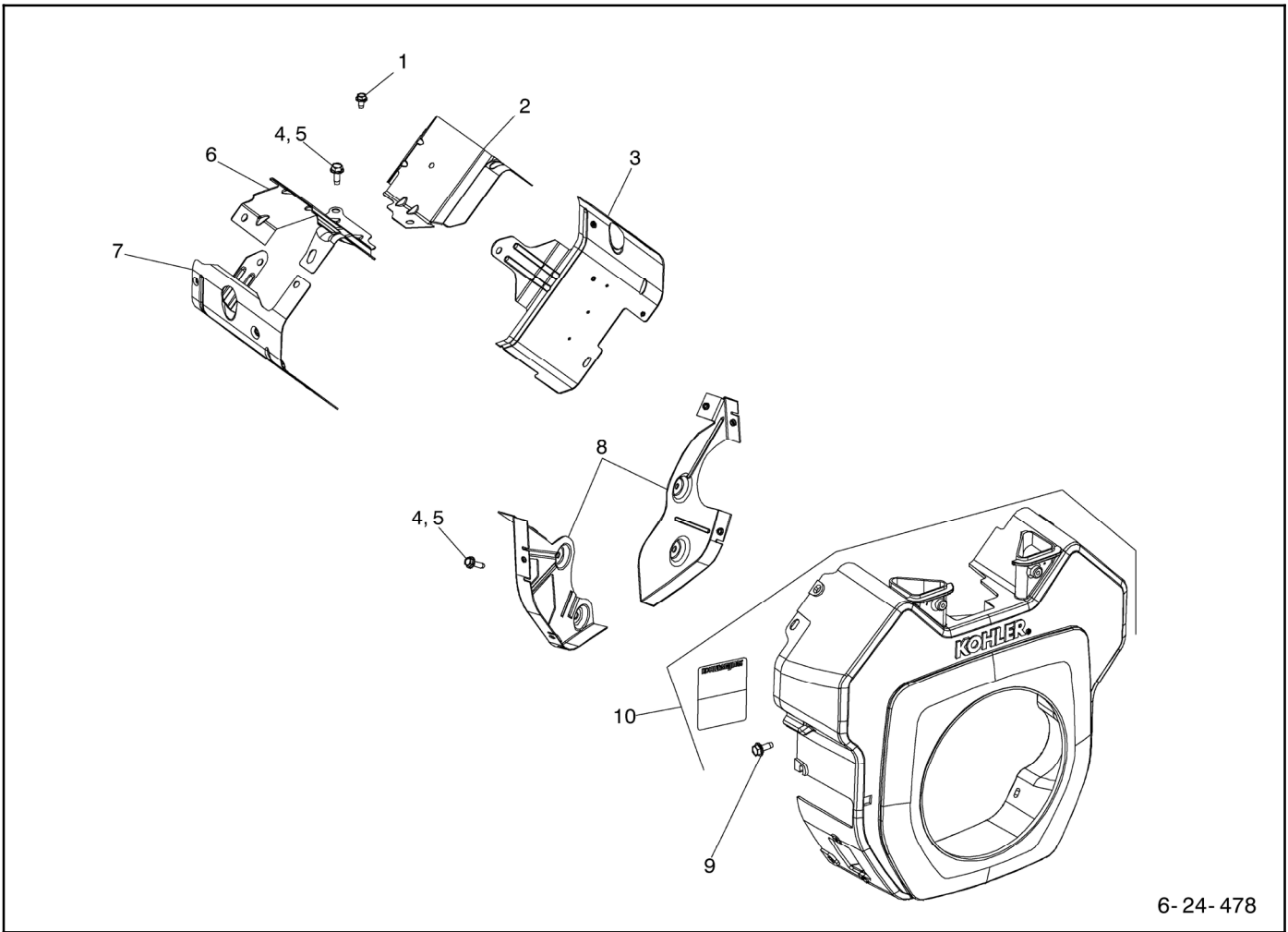
Item	Part Number	Description	Qty Var 938	Item	Part Number	Description	Qty Var 938
1	24 755 46-S	Kit, Oil Fill Cap (Yellow)	1	22	24 017 02-S	Valve, Intake (.25)	2
2	25 153 02-S	O- Ring, Dipstick	1	23	M- 545010-S	Screw, Flg Thd Frm M5x.8x10	1
3	24 755 140-S	Kit, Valve Cover- Oil Fill	1	24	24 402 06-S	Reed, Breather (After S/N 4923100001)	1
4	M- 651030-	Screw, Flg M6x1.0x30	8	25	24 050 11-S	Filter, Breather	1
5	24 153 30-S	O- Ring (Yellow), Valve Co	2	26	66 018 04-S	Retainer, Reed	1
6	25 445 02-S	Strap, Lifting	2	27	25 351 11-S	Lifter, Valve Hydraulic- Use 25 351 11-S	4
7	32 016 01-S	Valve, Exhaust	2	28	24 411 05-S	Rod, Push	4
8	32 016 02-S	Valve, Exhaust (.25)	2	29	24 072 09-S	Stud, M8x1.25	8
9	24 841 04-S	Kit, Gasket Cylinder Head	2	30	24 468 16-S	Washer, Flat 8.6 Mm	8
10	24 318 206-S	Kit, Cylinder Head #1 - (#24318206s)	1	31	24 100 10-S	Nut, Flg M8x1.25	8
11	25 032 14-S	Seal, Valve Band	2	32	24 318 207-S	Kit, Cylinder Head #2 - (#24318207s)	1
12	24 089 02-S	Spring, Valve	4	33	25 186 01-S	Arm, Rocker	4
13	12 755 03-S	Kit, Retainer	8	34	24 599 02-S	Pivot, Rocker Arm	4
14	24 755 141-S	Kit, Valve Cover- Plain (Plastic)	1	35	25 454 05-S	Tie	1
15	25 173 28-S	Cap, Valve Spring	4	36	24 755 66-S	Kit, Valve Train	4
16	235011-S	Retainer, Spring	4	37	24 096 163-S	Cover, Breather	1
17	25 086 758-S	Screw, Thread Forming	1	38	24 018 05-S	Retainer, Valve Guide	4
18	25 237 37-S	Spring Clamp, Hose	1	39	M- 640034-S	Screw, Flg (Black) M6x1.0x34	4
19	24 326 89-S	Kit, Breather Hose and Clamp	1				
20	24 041 67-S	Gasket, Breather	1				
21	24 017 01-S	Valve, Intake (Std)	2				

# Group 5: Ignition/Electrical



Item	Part Number	Description	Quantity
			Variation 1277
1	25 403 37-S	Regulator/Rect 12/15a (41 403 10-S)	1
4	25 155 41-S	Connector	1
5	237878-S	Kit, 15 / 20 Amp Stator	1
6	25 086 402-S	Screw, Thread Forming	2
7	24 584 116-S	Module Spark Advance (Dsai) Assembly	2
8	25 086 472-S	Screw, Thread Forming	4
9	24 025 58-S	Flywheel Assembly (Lw)	1
10	12 468 03-S	Washer, Flat 13/32 in.	1
11	12 086 14-S	Screw, Flg M10x1.5x45- Use 25 086 361-S	1
12	X-42-15-S	Key, 3/16 in. X 5/8 in.	1
13	24 157 11-S	Fan- Use 24 755 253-S	1
14	25 086 47-S	Bolt, Shoulder	4
15	235173-S	Clip, Cable	1
16	25 132 14-S	Spark Plug, Rfi	2
19	25 086 157-S	Screw, Hex Flange Hi- Lo	2
20	X-25-63-S	Washer, Flat ¼ in. (O.D. ½ in.)	2
22	25 454 07-S	Tie	2
-	25 237 32-S	Clamp, Hose (Not Shown)	1
-	25 518 34-S	Lead, 20/25 Amp B+ (Not Shown)	1
-	25 468 30-S	Washer, Lock (Not Shown)	1
-	24 518 43-S	Lead (Not Shown)	1
-	24 176 147-S	Harness, Wiring Assembly Atlas 13 Res (Not Shown)	1

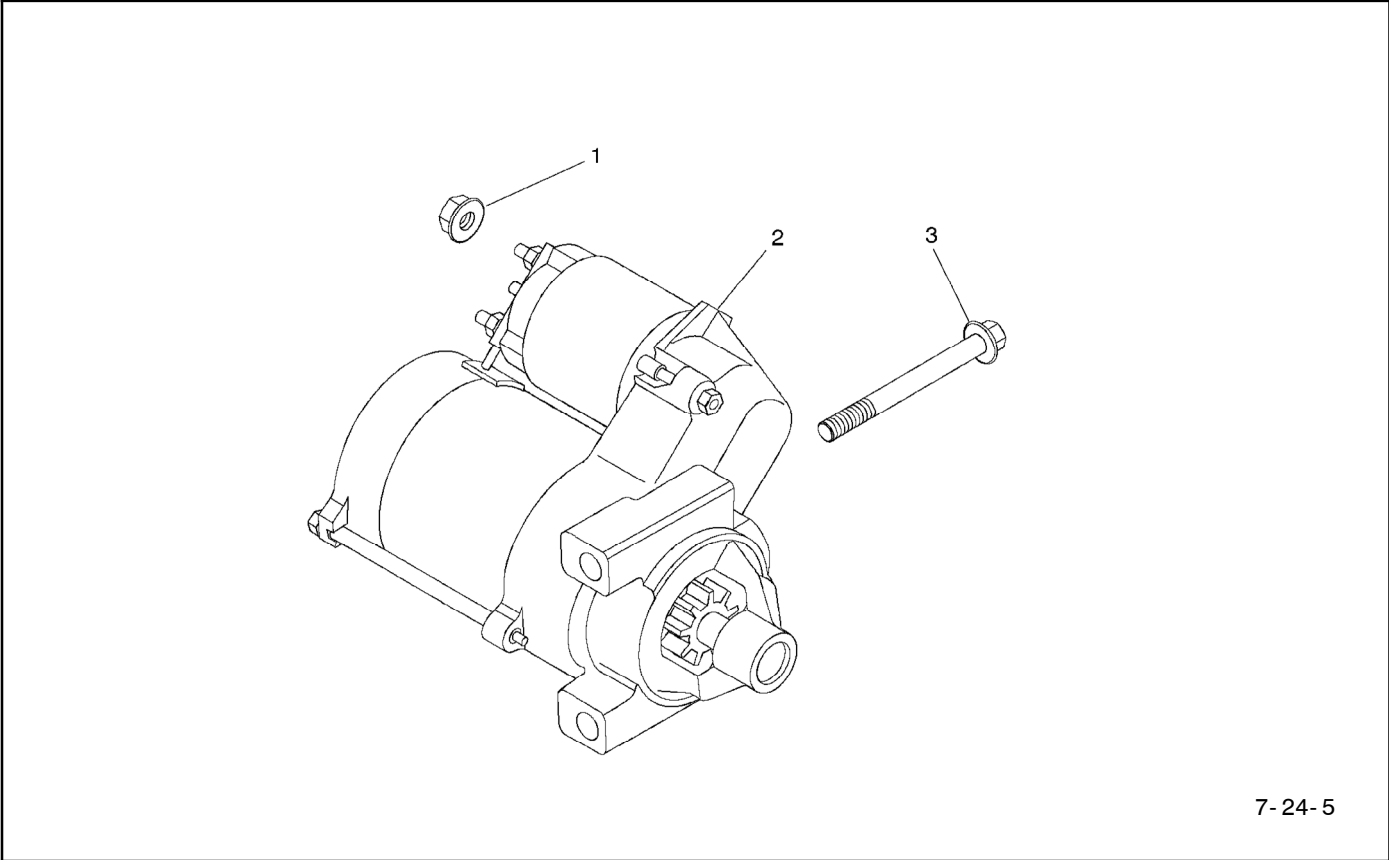
## Group 6: Blower Housing and Baffles



6-24-478

Item	Part Number	Description	Quantity
			Variation
			<b>478</b>
1	25 086 400-S	Screw, Thread Forming	2
2	24 063 114-S	Baffle, Valley #1 Cylinder	1
3	24 063 85-S	Kit, Cyl Baffle #1 Side	1
4	25 086 396-S	Screw, Thread Forming	2
5	25 086 397-S	Screw, Thread Forming	10
6	24 063 94-S	Baffle, Valley #2 Cylinder	1
7	24 063 88-S	Baffle, Left Barrel	1
8	24 146 59-S	Kit, Backing Plate	1
9	25 086 398-S	Screw, Thread Forming	3
9	25 086 426-S	Screw, Thread Forming	1
10	24 027 443-S	Kit, Blower Housing	1

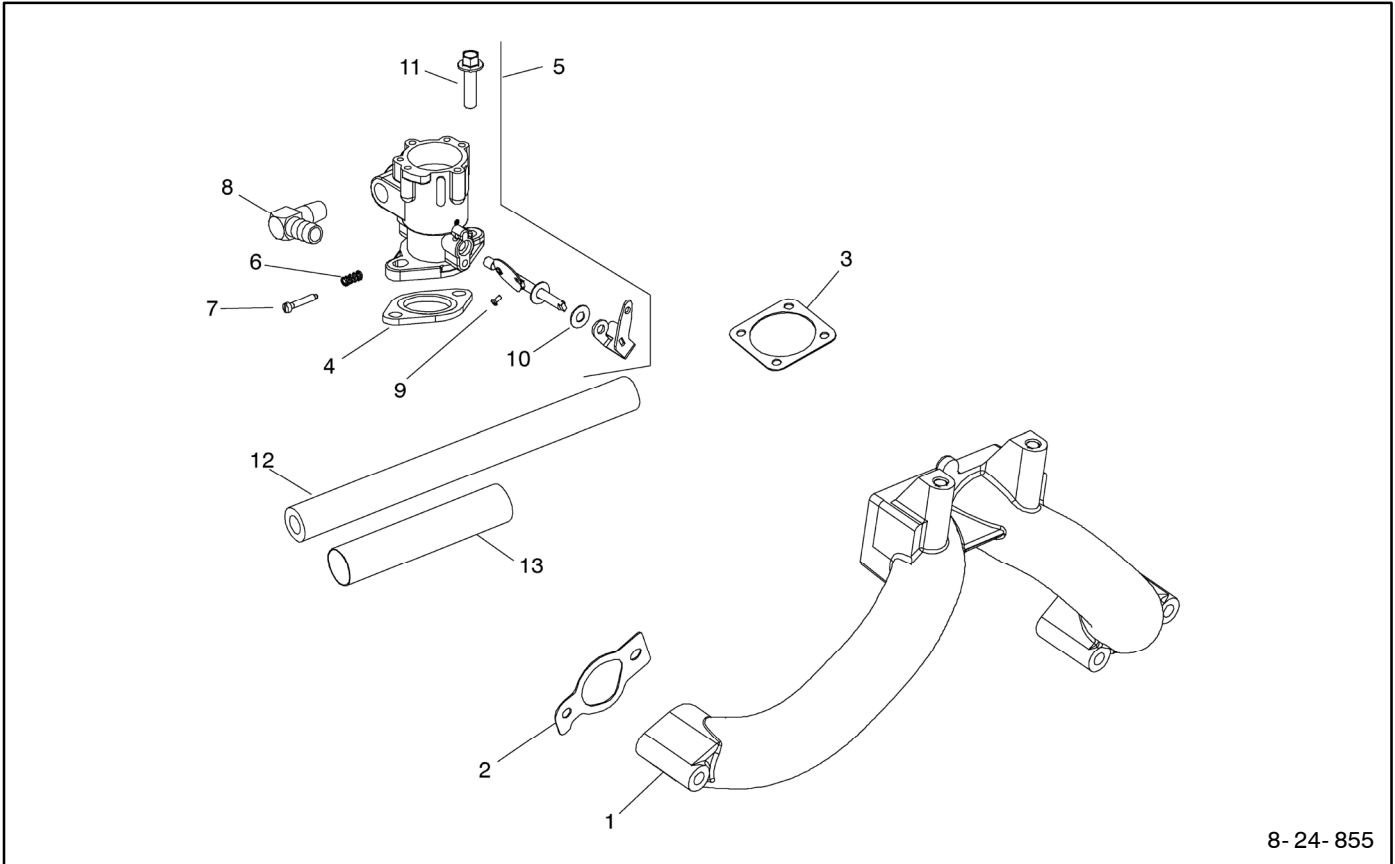
# Group 7: Starter



7-24-5

Item	Part Number	Description	Quantity
			Variation
			<b>5</b>
1	M-841080-S	Nut, Flg M8x1.25	1
2	25 098 21-S	Starter, Solenoid Shift	1
3	M-851080-S	Screw, Flg M8x1.25x80	2

# Group 8: Carburetor

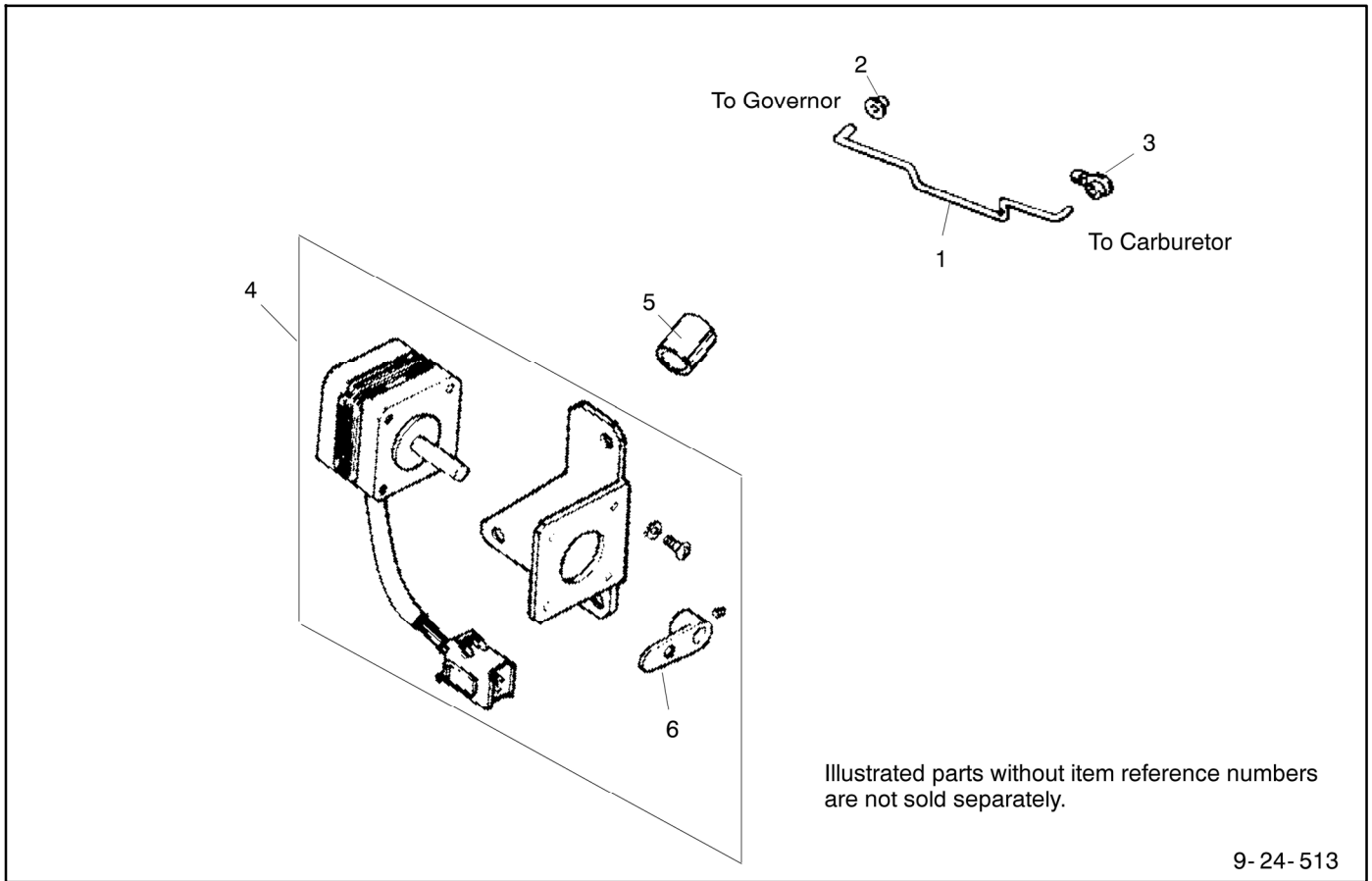


8- 24- 855

Item	Part Number	Description	Quantity
			Variation 855
1	24 164 18-S	Manifold, Intake	1
2	24 041 01-S	Gasket, Intake Manifold	2
3	277093-S	Gasket, Air Cleaner	2
4	24 041 26-S	Gasket, Carburetor	1
5	24 853 49-S	Kit, Carburetor W/Gaskets	1
6	232555-S	Spring	1
7	232556-S	Screw, Special	1
8	24 294 23-S	Fitting - Discontinued	1
9	46 086 04-S	Screw	2
10	X-25-8-S	Washer	1
11	M-851030-S	Screw, Flg M8x1.25x30	2
12	24 353 40-S	Line, Lp Fuel (29 in.)	1
13	25 431 19-S	Sleeve, Anti- Abrasion 203mm Inst.	1

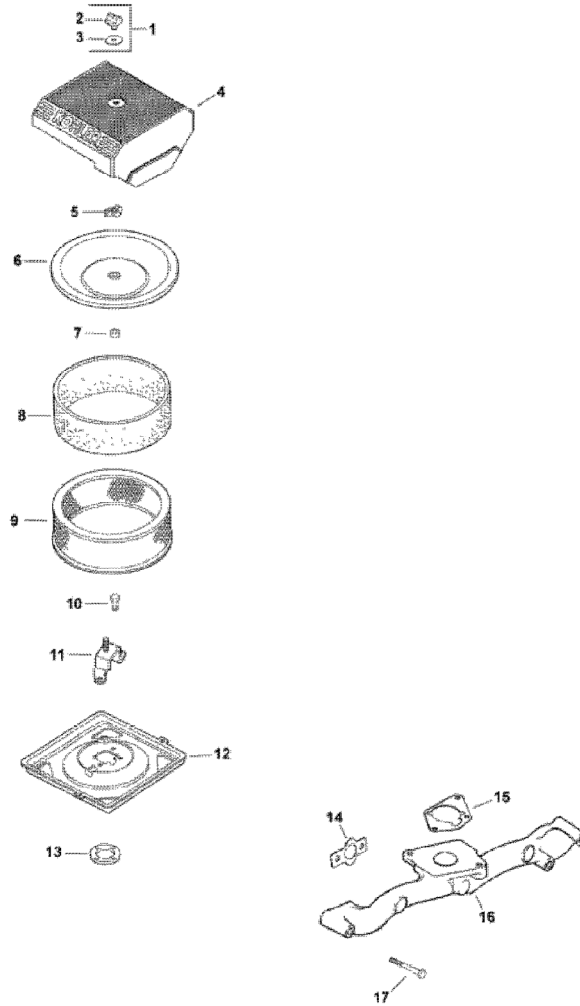


# Group 9: Engine Controls



Item	Part Number	Description	Quantity
			Variation
1	24 079 37-S	Linkage, throttle	1
2	25 158 08-S	Bushing, linkage	1
3	25 158 11-S	Bushing, throttle linkage	1
4	GM81314	Governor assembly	1
5	25 112 09-S	Spacer	3
6	358359	Coupling, stepper motor	1

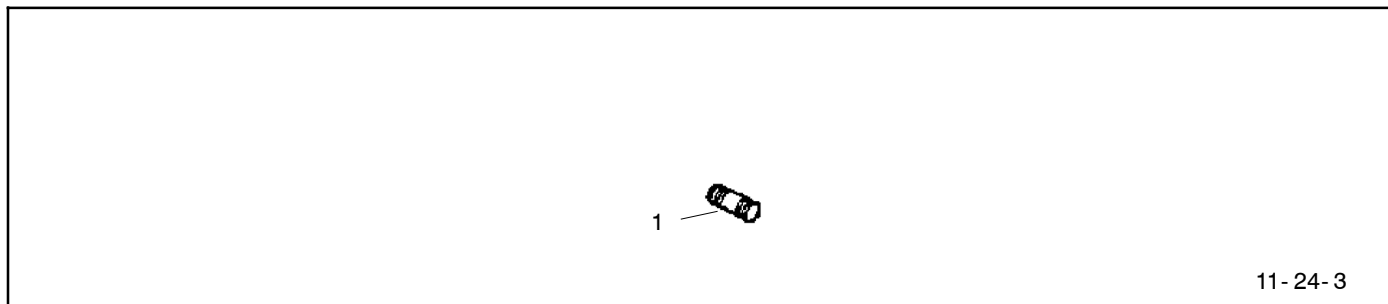
# Group 10: Air Intake/Filtration



10-24-371

Item	Part Number	Description	Quantity
			Variation
			<b>371</b>
1	54 755 01-S	Kit, knob w/seal	1
2	25 341 04-S	Knob, air cleaner cover	1
3	24 153 20-S	O-ring	1
4	24 096 67-S	Cover, air cleaner	1
5	12 100 01-S	Nut, wing	1
6	24 096 01-S	Cover, inner air cleaner	1
7	230046-S	Seal	1
9	24 083 09-S	Element, air filter UL	1
10	25 086 84-S	Screw, flange M6 x 1.0 x 55	4
11	24 126 74-S	Bracket, air cleaner	1
12	24 094 29-S	Base, air cleaner	1
13	24 112 21-S	Spacer, air cleaner	1
14	24 041 01-S	Gasket, intake manifold	2
15	277093-S	Gasket	2
16	24 164 18-S	Manifold, intake	1
17	25 086 48-S	Screw, HD 10-32 x 3/4 in.	4

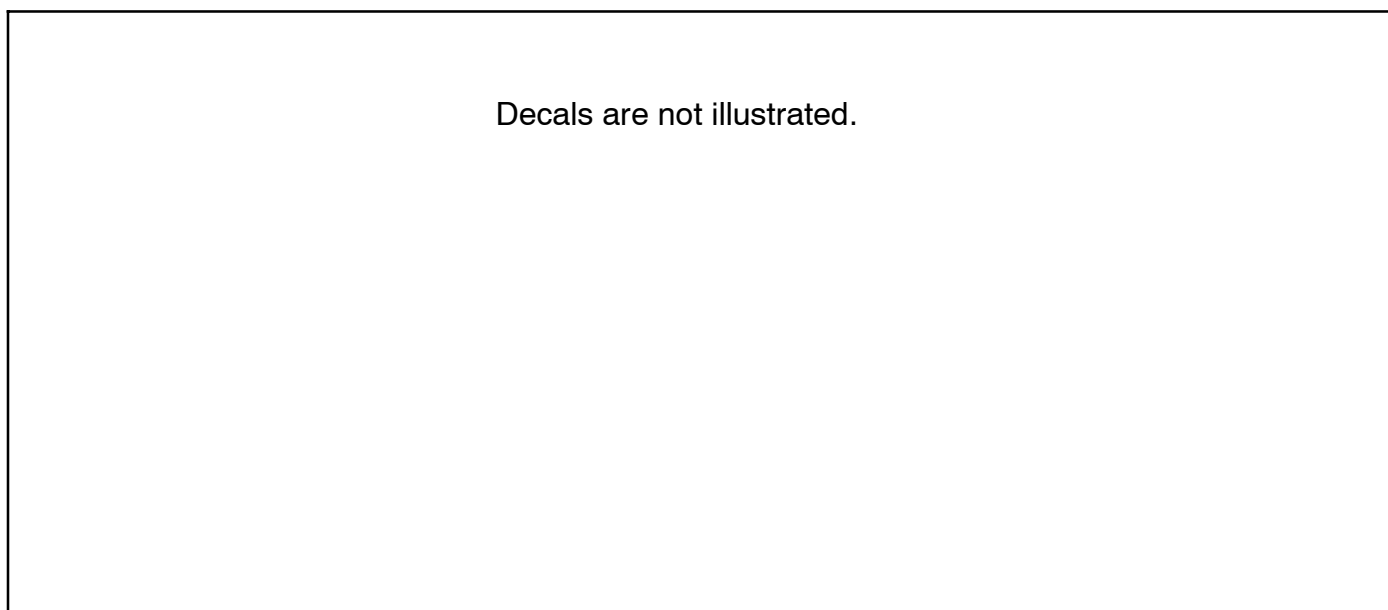
## Group 11: Engine Exhaust



11-24-3

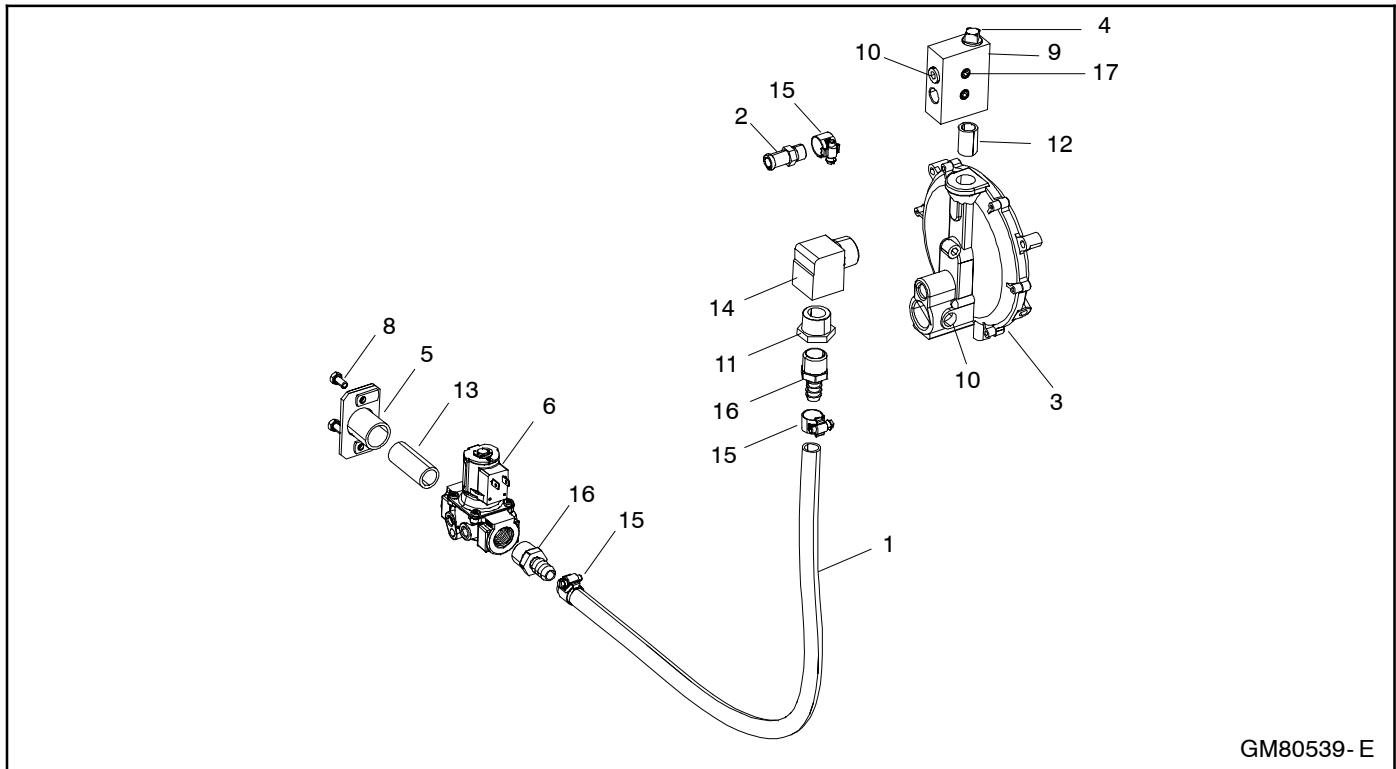
Item	Part Number	Description	Quantity
			Variation
			3
1	25 072 24-S	Stud, exhaust	4

## Group 12: Engine Decals



Item	Part Number	Description	Quantity
			Variation
			1217
1	25 113 79-S	Label, clear lamination	1

# Fuel System

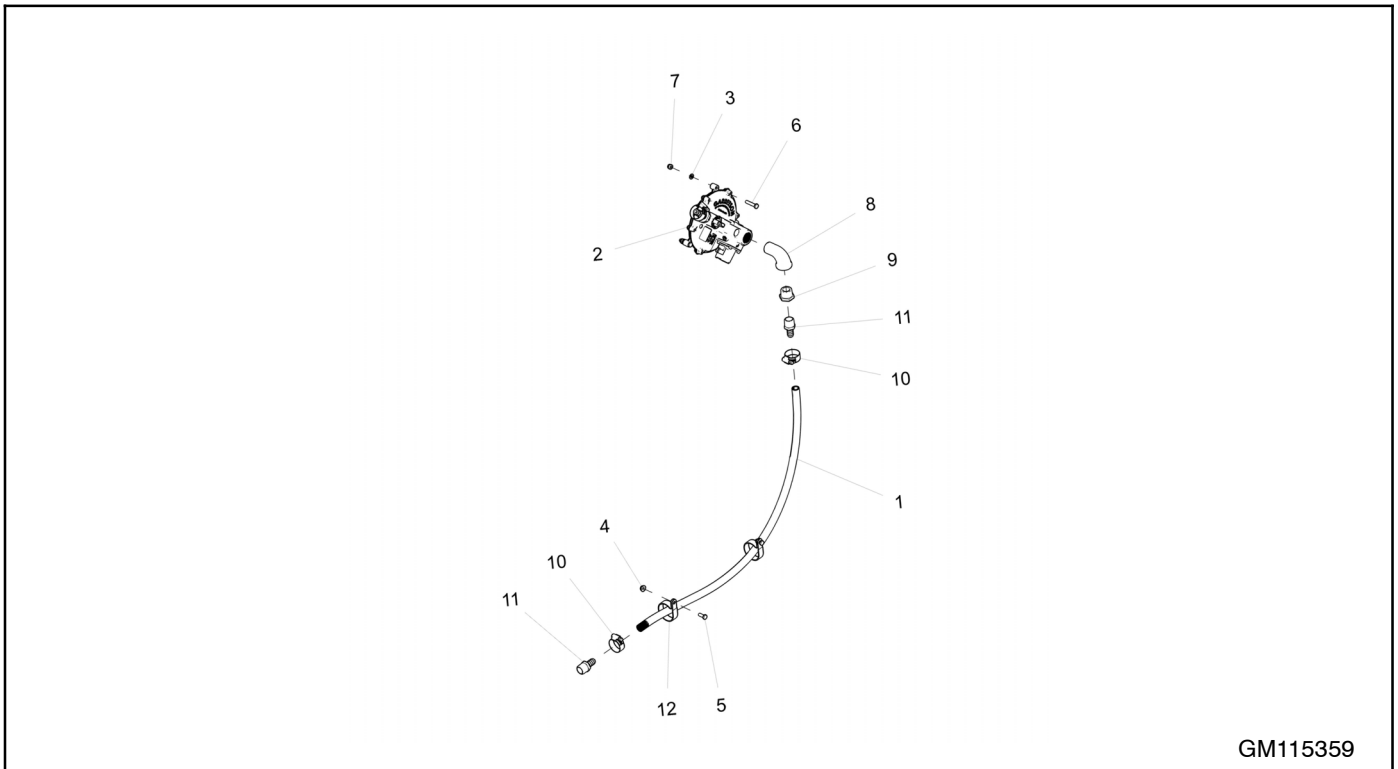


GM80539- E

## GM80539- GR1

Item	Part Number	Description	Quantity
			Variation
			<b>1</b>
1	24 353 40	Line, LP Fuel 29 in.	1
2	344508	Connector, hose + Vibra Seal	1
3	A-227531	Regulator, gas	1
4	GM16807	Valve, Fuel Metering	1
5	GM80532	Bracket, Fuel Valve Mtg	1
6	GM85084	Valve, Gas Shut-off	1
8	M933-06012-60	Screw	2
9	X-75-10	Plug, pipe (3/8 in. nptf)	1
10	X-75-51	Plug, pipe ( 1/4 in. nptf)	2
11	X-202-41	Bushing, reducing (1/2 x 3/4 in. npt)	1
12	X-204-9	Pipe (3/8 in. npt x 1.00 in.)	1
13	X-209-6	Pipe (1/2 in. npt x 2.00 in.)	1
14	SA-472	Elbow, street (90 deg x 3/4 in. nptf)	1
15	X-426-12	Clamp, hose, .69/1.25 in.	3
16	X-582-5	Connector, hose + Vibra Seal	2
17	X-6219-9	Screw, hex socket set	2

# Fuel System

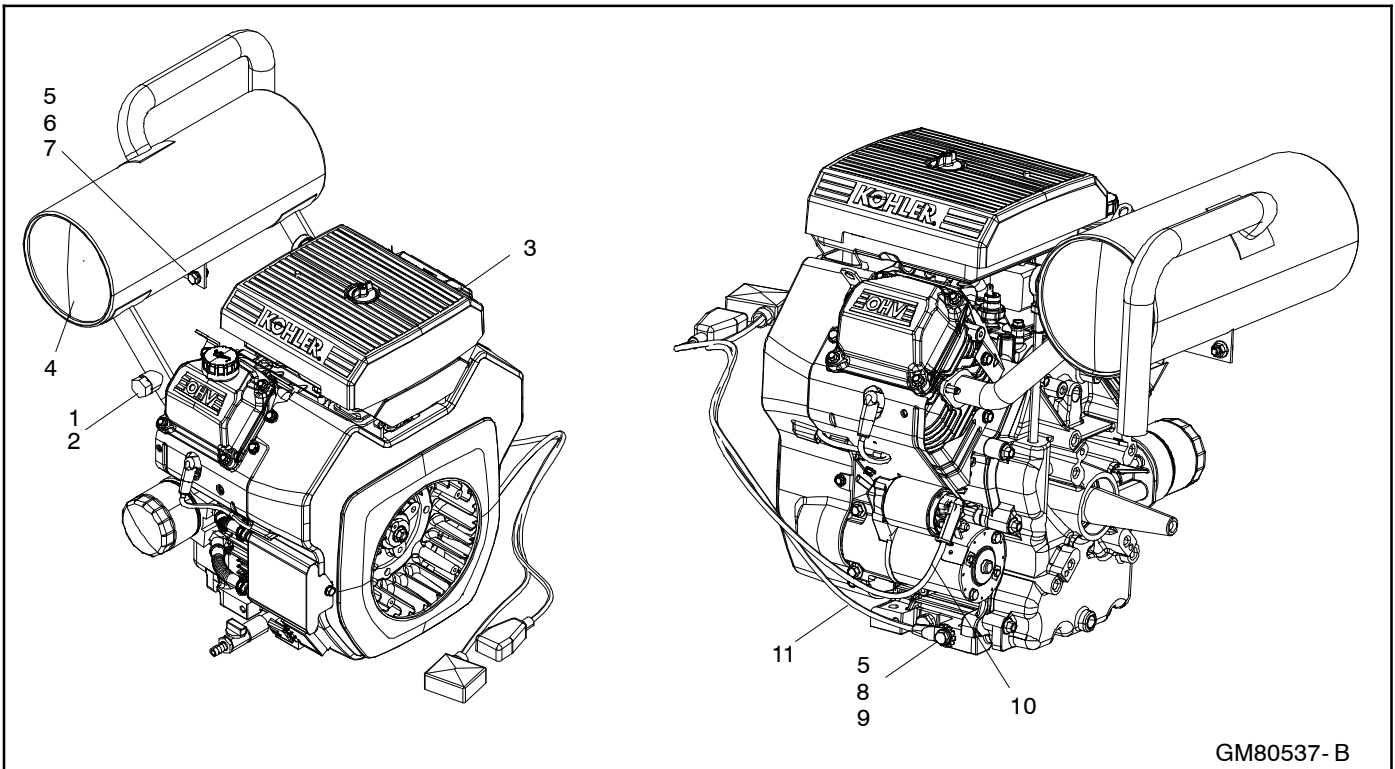


GM115359

## GM115359- GR1

Item	Part Number	Description	Quantity
			Variation
1	GM115589	Hose: F22- 08- 860	1
2	GM115590	Fuel Regulator, Gas 6kW CH740	1
3	M125A- 06- 80	Washer, Plain	2
4	M6923- 06- 80	Nut, Hex 6mm	2
5	M933- 06016- 60	Screw, Hex Cap M6 X 16	2
6	M933- 06030- 60	Screw, Hex Cap M6 X 30	2
7	M982- 06- 80	Nut, Hex Elastic Stop, 6MM	2
8	SA- 472	Elbow, Street	1
9	X- 202- 41	Bushing, Reducing	1
10	X- 426- 12	Clamp, Hose, .69/1.25 in.	3
11	X- 582- 5	Connector, hose + Vibra Seal	2
12	X- 672- 17	Clamp, Insulated, 1.75 in.	2

# Engine



GM80537- B

## GM80537- GR1

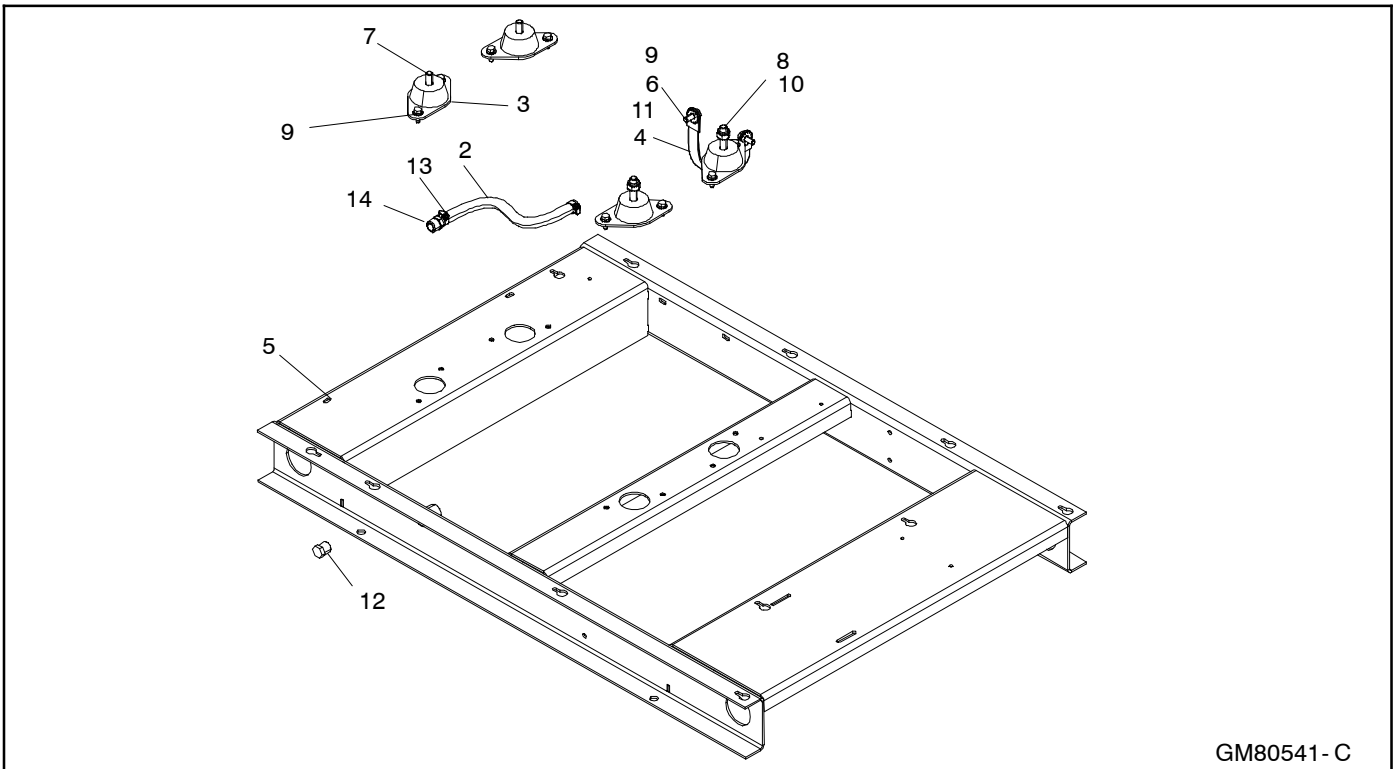
Item	Part Number	Description	Quantity
			Variation
			<b>1</b>
1	358224	Plug, water	1
2	X-6427-8	Washer, Copper	1
3	PS-CH740-3188	CH740EP E3 KPS GM77071	1
4	GM80219	Silencer, Exhaust SISO	1
5	M125A-08-80	Washer, Plain 8.4 ID x 16.0 OD	3
6	M6923-08-80	Nut, Hex 8mm	2
7	M933-08020-60	Screw, hex cap	2
8	M933-08025-60	Screw, hex cap	1
9	X-22-14	Washer, lock, .391 ID x .975 in. OD	1
10	X-545-134	Cable, Battery	1
11	GM33829	Cable, Battery Kit (Service)	1

# Nameplate and Decals

Nameplate and Decals are not illustrated.  
GM108002- GR1

Item	Part Number	Description	Quantity
			Variation
			1
1	GM106120	Decal, Warning	1
2	GM107361	Decal, Danger, High Voltage	1
3	GM107363	Decal, Danger, Rotating Parts	2
4	GM107366	Decal, Caution, Hot Surface	2
5	GM107369	Decal, Warning, Spark Explosion	1
6	GM108002	Dwg, Assy Nameplate & Decals Grp, VSG	1
7	GM13680	Nameplate, Overlay 500 per roll	1
8	GM15299	Decal, Rainproof Enclosure	1
9	GM47407	Decal, Fuel Type	2
10	GM60175	Decal, Warning Non GFCI Outlet	1
11	GM62217	Nameplate, 5 in. Tall, Blank	1
12	GM81760	Decal, Kohler-RDC2/DC2/VSC	1
13	X-6275-1	Logo, Kohler	1

# Skid and Mounting



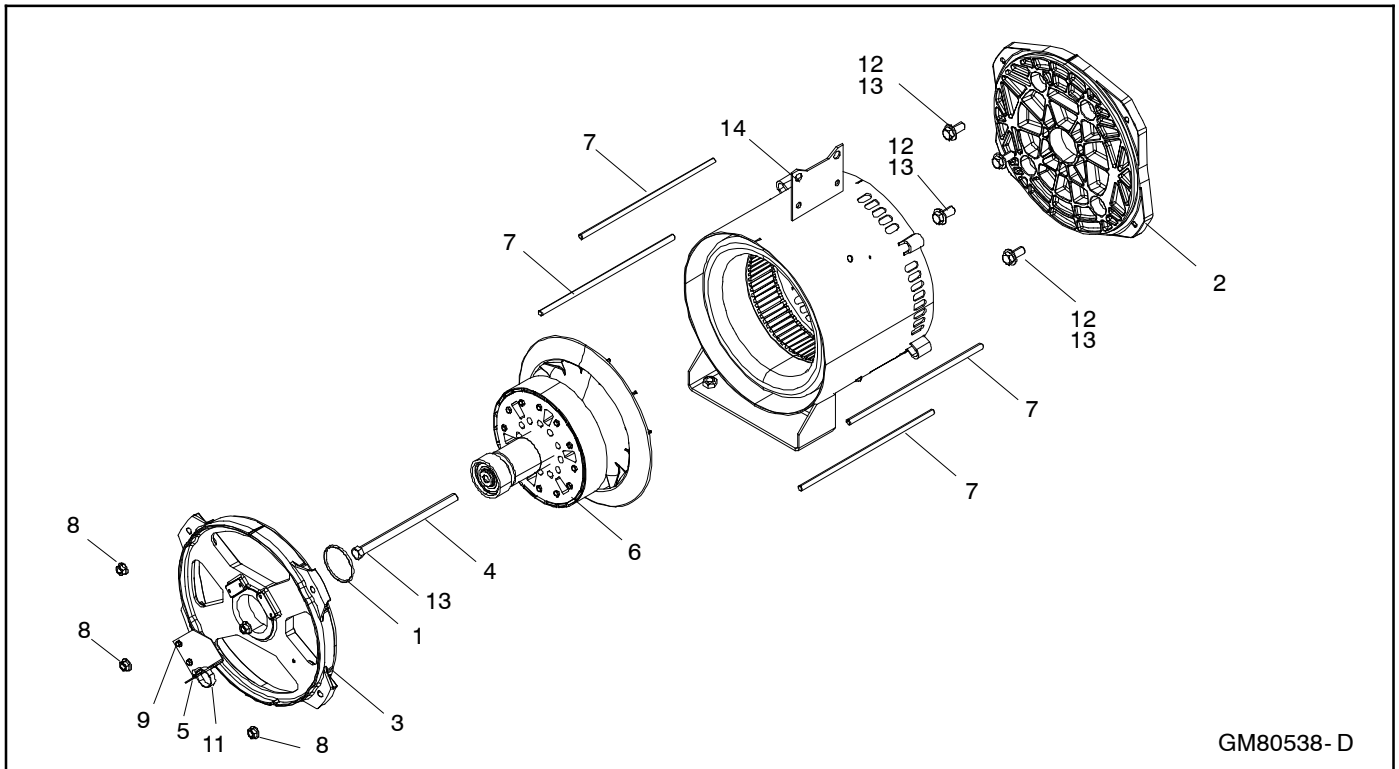
GM80541 - C

## GM80541 - GR1

Item	Part Number	Description	Quantity
			Variation
2	X-386-141	Line, Flex Fuel	1
2	X-672-24	Clamp, Insulated, .62 in. (not shown)	1
2	M933-06016-60	Screw, Hex Cap M6 X 16 (not shown)	1
2	M6923-06-80	Nut, Hex 6mm (not shown)	1
3	258659	Vibromount	4
4	245297	Strap, Ground (5 in.)	1
5	GM80518	Skid	1
6	M125A-08-80	Washer, Plain 8.4 ID x 16.0 OD	2
7	M931-10055-60	Screw, Hex Cap	2
8	M931-10070-60	Screw, Hex Cap	2
9	M933-08020-60	Screw, Hex Cap	8
10	M982-10-80	Nut, Hex Elastic Stop	2
11	X-22-16	Washer, Lock.326 IDx.883 in.OD	2
12	X-75-55	Plug, Pipe ( 3/8 in. nptf) White Nylon (early models)	1
13	X-426-9	Clamp, Hose, .25/.70 in.	2
14	X-582-9	Connector, Hose + Vibra Seal (early models)	1



# Alternator

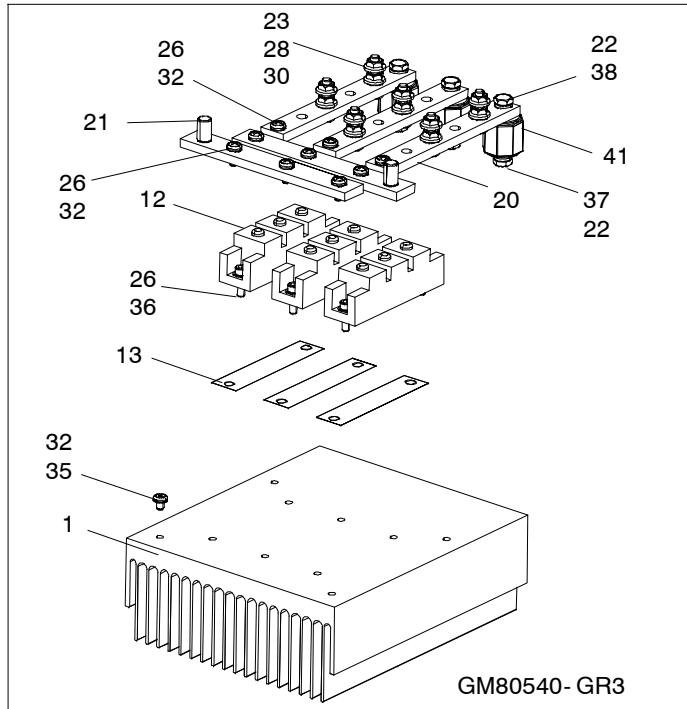
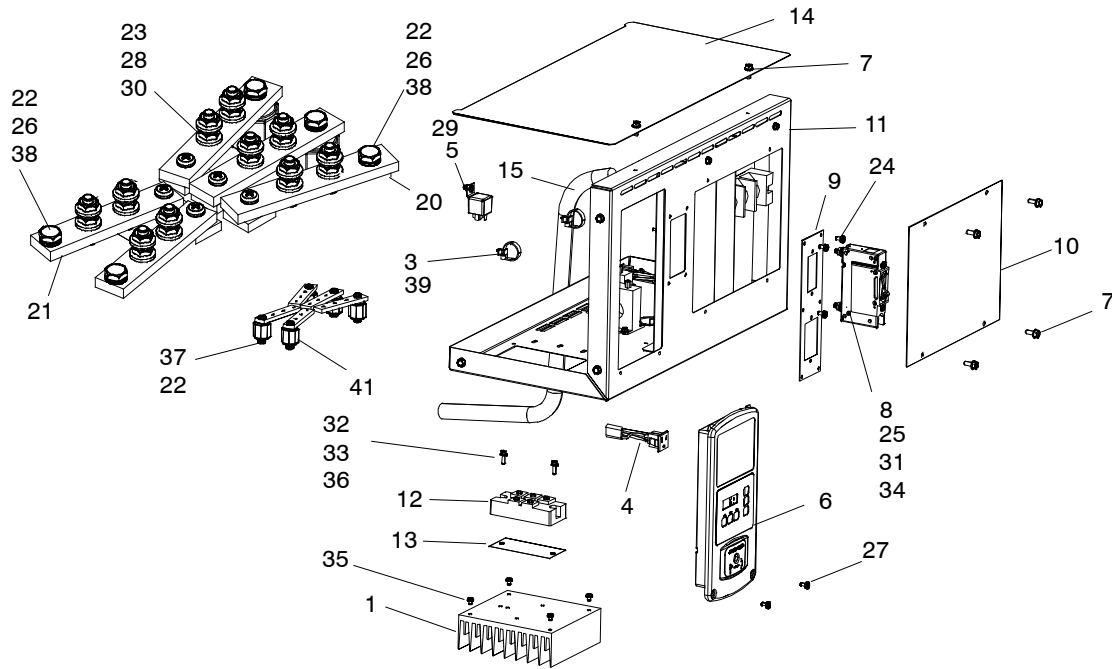


GM80538-D

## GM88227-GR1, GM88227-GR2, GM88227-GR3

Item	Part Number	Description	Quantity		
			Variation		
			1	2	3
1	256466	O-Ring (2.050 in. ID)	1	1	1
2	GM60283	Adapter, Alternator	1	1	1
3	GM66767	Bracket, End	1	1	1
4	GM76042	Bolt, Armature Thru (5/16-14x7.50 in.)	1	1	1
5	GM76064	Bracket, Wire	1	1	1
6	GC88219	Rotor Assembly	1	1	1
7	GM80883	Stud (Metric)	4	4	4
8	M6923-08-80	Nut, Hex 8mm	4	4	4
9	X-67-43	Screw, slotted hex washer, thr-cut	2	2	2
11	X-468-1	Cable Tie	1	1	1
12	X-6024-8	Bolt, Hex Cap	4	4	4
13	X-801-6	Washer,hardened, .469 ID x .922 in. OD	5	5	5
14	GC90256	Stator Assembly	1		
14	GC90257	Stator Assembly		1	
14	GC90258	Stator Assembly			1

# Control and Harness



Items not shown: 2, 16, 17, 18,  
19, 40

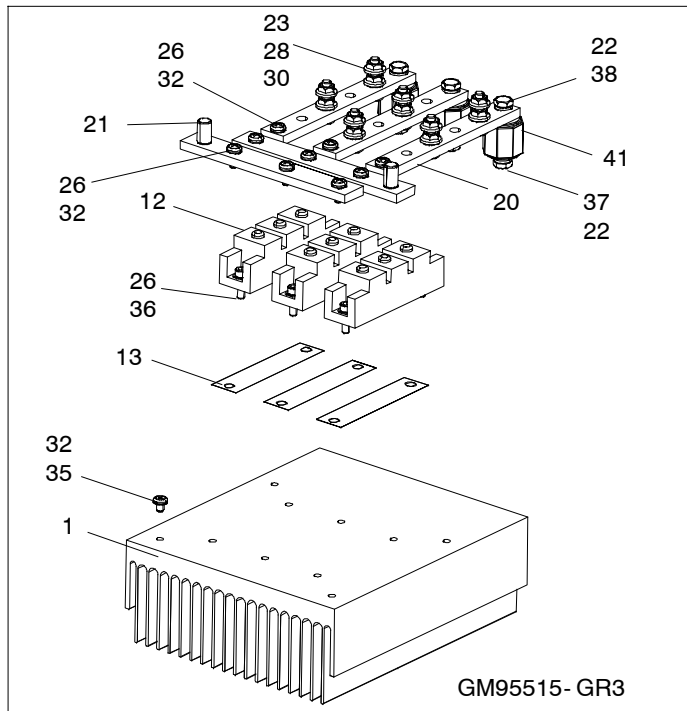
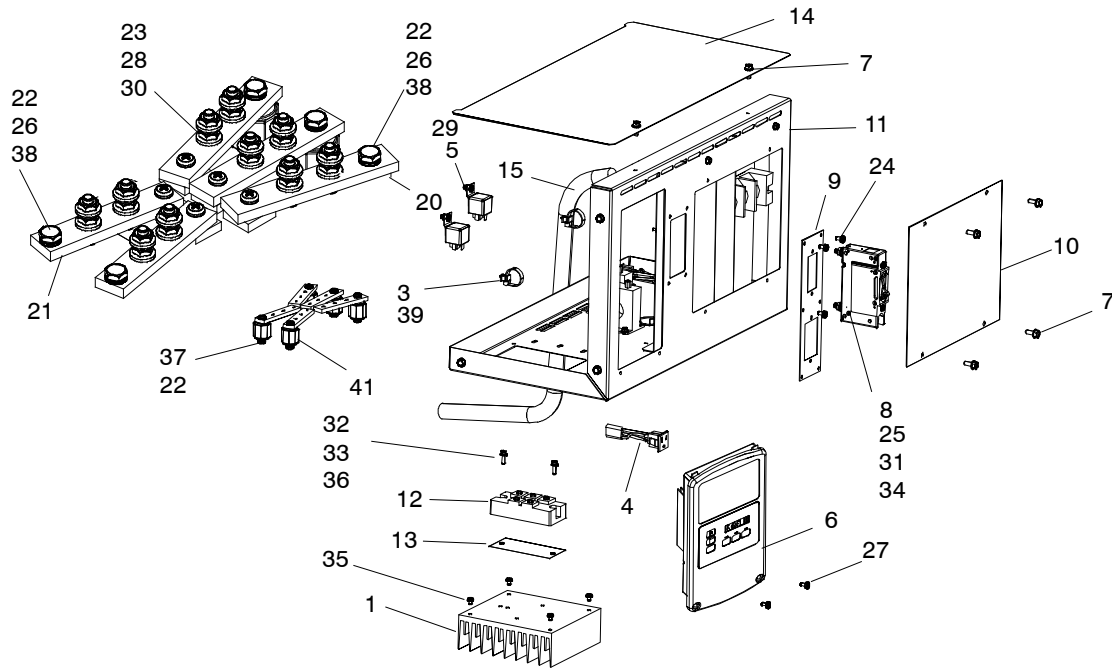
GM80540- F

# Control and Harness

GM80540- GR1, GM80540- GR2, GM80540- GR3

Item	Part Number	Description	Quantity		
			Variation		
			1	2	3
1	345317	Heatsink	1	1	
1	345236	Heatsink			1
2	357477	Cable, Patch, 3 Ft. RJ- 45	1	1	1
3	361567	Base, tie wrap snapin	2	2	2
4	GM48108	Harness, Pigtail Customer Connection	1	1	1
5	GM49746	Relay, 12 VDC	1	1	1
6	GM84964	Service Controller Assy, Variable Speed	1	1	1
7	GM78761-1	Screw, Sheetmetal	9	9	9
8	GM80525	Breaker, Circuit	1		
8	GM80523	Breaker, Circuit		1	
8	GM80530	Breaker, Circuit			1
9	GM80526	Plate, Circuit Breaker Mounting	1	1	1
10	GM80533	Cover, Controller Box	1	1	1
11	GM80535	Box, Controller Assy	1	1	1
12	GM81192	Rectifier	1	1	
12	GM81191	Rectifier			3
13	GM81193	Insulator, Power Module	1	1	
13	345239	Insulator, Power Module			3
14	GM81259	Cover, Controller Top	1	1	1
15	GM81320	Harness, Engine (6VSG)	1	1	1
16	GM81360	Lead, Ground (VSG)	1	1	1
17	GM81367	Lead, DC+, 48V (VSC)	2		
17	GM81364	Lead, DC+, 36V (VSC)		2	
17	GM81361	Lead, DC+, 24V (VSC)			2
18	GM81368	Lead, DC+, 48V (VSC)	2		
18	GM81365	Lead, DC+, 36V (VSC)		2	
18	GM81362	Lead, DC+, 24V (VSC)			2
19	GM81369	Lead, DC-, 48V (VSC)	2		
19	GM81366	Lead, DC-, 36V (VSC)		2	
19	GM81363	Lead, DC-, 24V (VSC)			2
20	GM84818	Bar, Bus	3	3	
20	GM85400	Bar, Bus			3
21	GM84819	Bar, Bus	2	2	
21	GM81267	Bar, Bus			2
22	M125A-06-80	Washer, Plain	10	10	12
23	M6923-06-80	Nut, Hex 6mm	20	20	12
24	M7500C-05010-83	Screw, Thread Forming Metric	4	4	4
25	M7985A-03008-20	Screw, Pan Head M3x8	2		
25	M7985A-05012-20	Screw, Pan Head Machine		2	2
26	M7985A-05012-20	Screw, Pan Head Machine	6	6	10
27	M7985A-05016-20	Screw, Pan Head Machine	2	2	2
28	M933-06025-60	Screw, hex cap	10	10	6
29	M934-05-50	Nut, hex elastic stop, 5mm	1	1	1
30	X-22-11	Washer, Lock .262 ID x .469 OD	21	21	13
31	X-22-20	Washer, lock, .172 ID x .373 in. OD	2		
31	X-22-22	Washer, lock		2	2
32	X-22-9	Washer, lock.20 ID x.373 in. OD	11	11	19
33	X-25-115	Washer,plain,.203 ID x .438 in. OD	3	3	
34	X-25-9	Washer, plain, .156 ID x .375 in. OD	2		
35	X-50-73	Screw, Machine	4	4	4
36	X-55-4	Screw, hex socket head machine	2	2	6
37	X-465-17	Bolt, Hex Cap	5	5	3
38	X-465-6	Bolt, Hex Cap (1/4- 20 x 1/2 in.)	5	5	
38	X-465-2	Bolt, Hex Cap			3
39	X-468-1	Cable Tie	2	2	1
40	X-634-25	Bushing, .672 x .875 in. NPT	1	1	1
41	X-6128-30	Standoff insulator, 1/4-20 x 1 in.	5	5	3

# Control and Harness, continued



Items not shown: 2, 16, 17, 18,  
19, 40

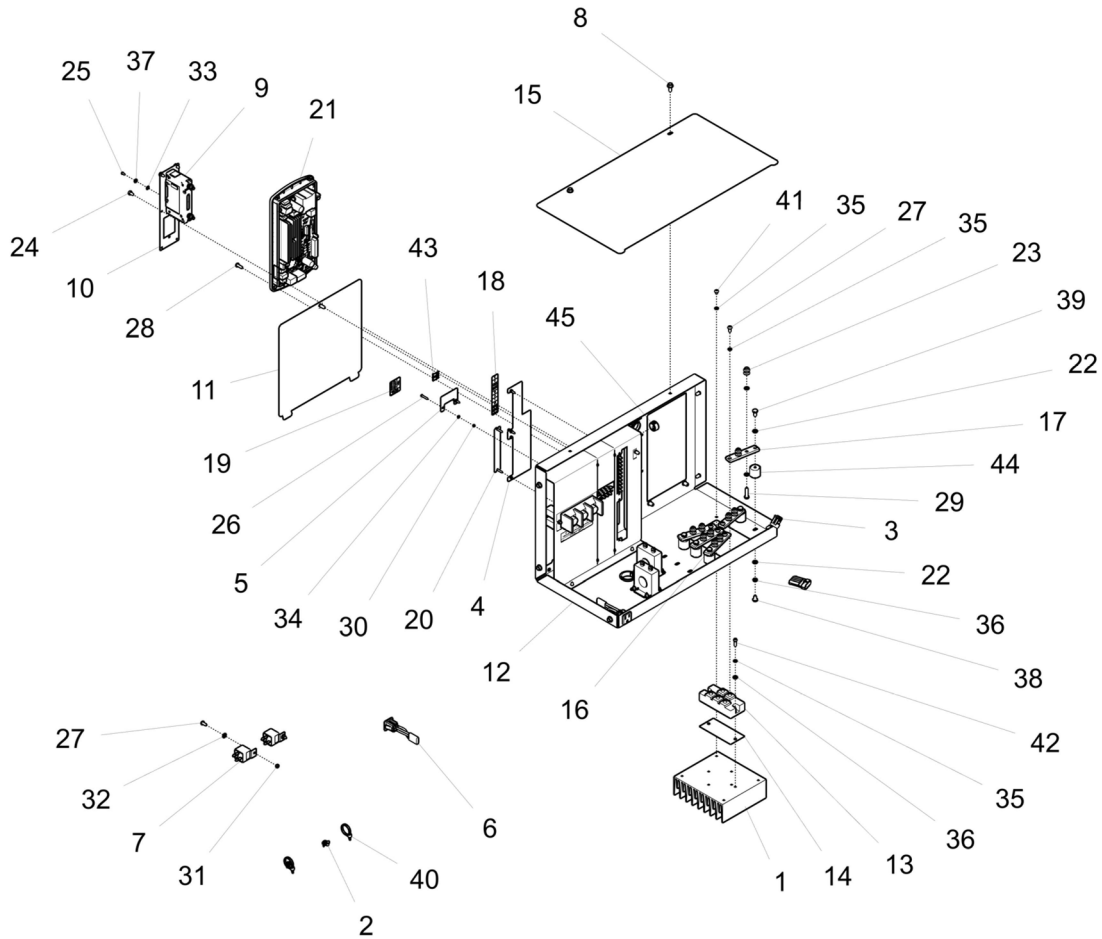
GM80540- F

# Control and Harness, continued

GM95515- GR1, GM95515- GR2, GM95515- GR3

Item	Part Number	Description	Quantity		
			Variation		
			4	5	6
1	345317	Heatsink	1	1	
1	345236	Heatsink			1
2	357477	Cable, Patch, 3 Ft. RJ- 45	1	1	1
3	361567	Base, tie wrap snapin	2	2	2
4	GM48108	Harness, Pigtail Customer Connection	1	1	1
5	GM49746	Relay, 12 VDC	2	2	2
6	GM92091	Service Controller Assy, Variable Speed	1	1	1
7	GM78761-1	Screw, Sheetmetal	9	9	9
8	GM80525	Breaker, Circuit	1		
8	GM80523	Breaker, Circuit		1	
8	GM80530	Breaker, Circuit			1
9	GM80526	Plate, Circuit Breaker Mounting	1	1	1
10	GM80533	Cover, Controller Box	1	1	1
11	GM80535	Box, Controller Assy	1	1	1
12	GM81192	Rectifier	1	1	
12	GM81191	Rectifier			3
13	GM81193	Insulator, Power Module	1	1	
13	345239	Insulator, Power Module			3
14	GM81259	Cover, Controller Top	1	1	1
15	GM93381	Harness, Engine (6VSG)	1	1	1
16	GM81360	Lead, Ground (VSG)	1	1	1
17	GM81367	Lead, DC+, 48V (VSC)	2		
17	GM81364	Lead, DC+, 36V (VSC)		2	
17	GM81361	Lead, DC+, 24V (VSC)			2
18	GM81368	Lead, DC+, 48V (VSC)	2		
18	GM81365	Lead, DC+, 36V (VSC)		2	
18	GM81362	Lead, DC+, 24V (VSC)			2
19	GM81369	Lead, DC-, 48V (VSC)	2		
19	GM81366	Lead, DC-, 36V (VSC)		2	
19	GM81363	Lead, DC-, 24V (VSC)			2
20	GM84818	Bar, Bus	3	3	
20	GM85400	Bar, Bus			3
21	GM84819	Bar, Bus	2	2	
21	GM81267	Bar, Bus			2
22	M125A-06-80	Washer, Plain	10	10	12
23	M6923-06-80	Nut, Hex 6mm	20	20	12
24	M7500C-05010-83	Screw, Thread Forming Metric	4	4	4
25	M7985A-03008-20	Screw, Pan Head M3x8	2		
25	M7985A-05012-20	Screw, Pan Head Machine		2	2
26	M7985A-05012-20	Screw, Pan Head Machine	7	9	13
27	M7985A-05016-20	Screw, Pan Head Machine	2	2	2
28	M933-06025-60	Screw, hex cap	10	10	6
29	M934-05-50	Nut, hex elastic stop, 5mm	2	2	2
30	X-22-11	Washer, Lock .262 ID x .469 OD	22	22	14
31	X-22-20	Washer, lock, .172 ID x .373 in. OD	2		
31	X-22-22	Washer, lock		2	2
32	X-22-9	Washer, lock.20 ID x.373 in. OD	11	11	19
33	X-25-115	Washer,plain,.203 ID x .438 in. OD	3	3	
34	X-25-9	Washer, plain, .156 ID x .375 in. OD	2		
35	X-50-73	Screw, Machine	4	4	4
36	X-55-4	Screw, hex socket head machine	2	2	6
37	X-465-17	Bolt, Hex Cap	5	5	3
38	X-465-6	Bolt, Hex Cap (1/4- 20 x 1/2 in.) Gr5	5	5	
38	X-465-2	Bolt, Hex Cap			3
39	X-468-1	Cable Tie	2	2	1
40	X-634-25	Bushing, .672 x .875 in. NPT	1	1	1
41	X-6128-30	Standoff insulator, 1/4-20 x 1 in.	5	5	3

# Control and Harness, continued



Items not shown: 46, 47, 48, 49, 50

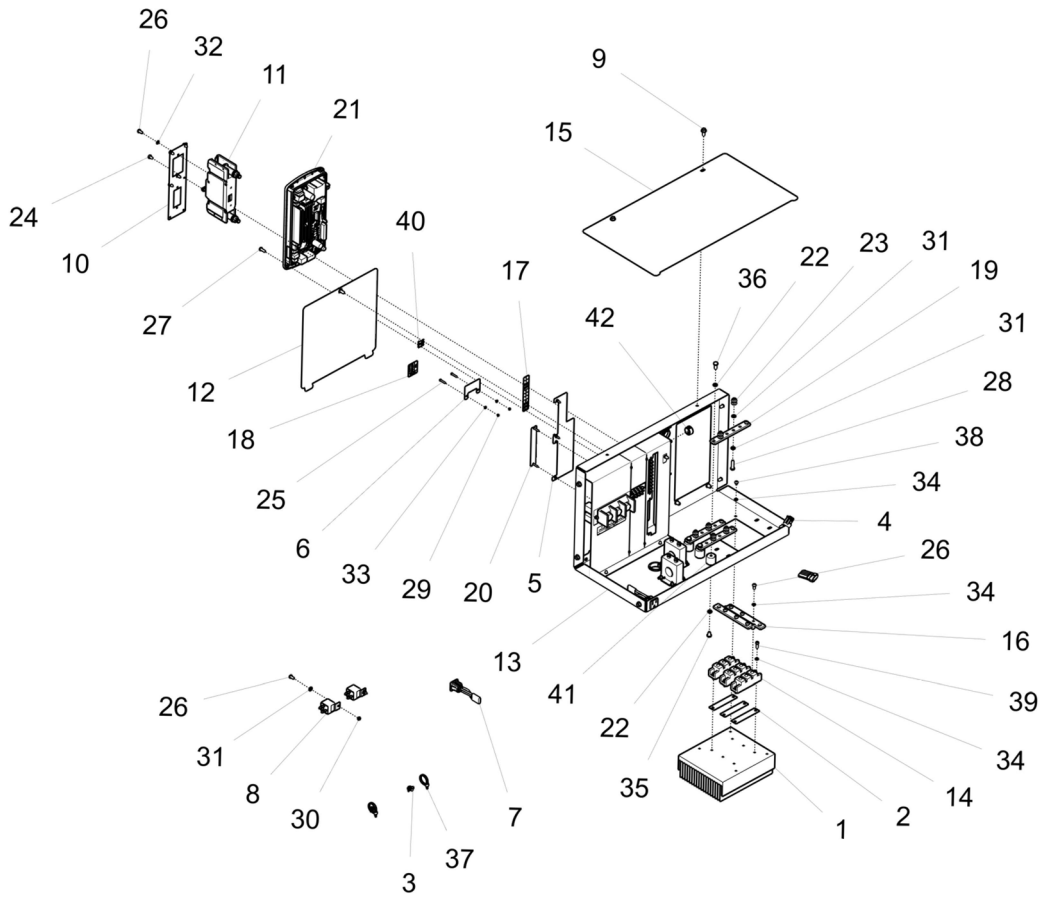
GM114241-GR1

# Control and Harness, continued

GM114241-GR1, GM114241-GR2

Item	Part Number	Description	Quantity	
			7	8
1	345317	Heatsink	1	1
2	361567	Base, Tie Wrap Snapin	2	2
3	GM116118	Harness, Engine, 6VSG	1	1
4	GM117077	Cover, Terminal Block	1	1
5	GM117078	Cover, Terminal Block, Utility	1	1
6	GM48108	Harness, Pigtail Customer Connection	1	1
7	GM49746	Relay, 12 VDC	2	2
8	GM78761-1	Screw, Sheetmetal	9	9
9	GM80525	Breaker, Circuit	1	
9	GM80523	Breaker, Circuit		1
10	GM80526	Plate, Circuit Breaker Mtg	1	1
11	GM80533	Cover, Controller Box	1	1
12	GM80535	Box, Controller Assy	1	1
13	GM81192	Rectifier	1	1
14	GM81193	Insulator, Power Module	1	1
15	GM81259	Cover, Controller Top	1	1
16	GM84818	Bar, Bus	3	3
17	GM84819	Bar, Bus	2	2
18	GM85262	Decal, Customer Connection	1	1
19	GM85263	Decal, Utility Connection	1	1
20	GM85976	Plate, Cover	1	1
21	GM89864-5	Controller Assy, Variable Speed RDC2 Ver5	1	1
22	M125A-06-80	Washer, Plain	10	10
23	M6923-06-80	Nut, Hex 6mm	20	20
24	M7500C-05010-83	Screw, Metric Thread Forming	4	4
25	M7985A-03008-20	Screw, Pan Head Machine	2	
26	M7985A-03020-20	Screw, Pan Head Machine	6	6
27	M7985A-05012-20	Screw, Pan Head Mach.	7	9
28	M7985A-05016-20	Screw, Pan Head Machine	2	2
29	M933-06025-60	Screw, Hex Cap M6 X 25	10	10
30	M934-03-50	Nut, Hex 3mm	6	6
31	M934-05-50	Nut, Hex 5mm	2	2
32	X-22-11	Washer, Lock .262 ID x .469 OD	22	22
33	X-22-20	Washer, Lock, .172 ID x .373 in. OD	2	
33	X-22-22	Washer, Lock		2
34	X-22-6	Washer, Lock .146 ID x .285 in. OD	4	4
35	X-22-9	Washer, Lock .20 ID x .373 in. OD	11	11
36	X-25-115	Washer, Plain, .203 ID x .438 in. OD	3	3
37	X-25-9	Washer, Plain, .156 ID x .375 in. OD	2	
38	X-465-17	Bolt, Hex Cap	5	5
39	X-465-6	Bolt, Hex Cap (1/4- 20 x 1/2 in.) Gr5	5	5
40	X-468-1	Cable Tie	2	2
41	X-50-73	Screw, Machine	4	4
42	X-55-4	Screw, Hex Socket Head Machine	2	2
43	X-6073-2	Jumper	1	1
44	X-6128-30	Standoff Insulator, 1/4- 20 x 1 in.	5	5
45	X-634-25	Bushing, .672 x .875 in. NPT	1	1
46	357477	Cable, Patch, 3 Ft. RJ-45	1	1
47	GM81360	Lead	1	1
48	GM81367	Lead	2	
48	GM81364	Lead		2
49	GM81368	Lead	2	
49	GM81365	Lead		2
50	GM81369	Lead	2	
50	GM81366	Lead		2

# Control and Harness, continued



Items not shown: 43, 44, 45, 46, 47

GM114241-GR3

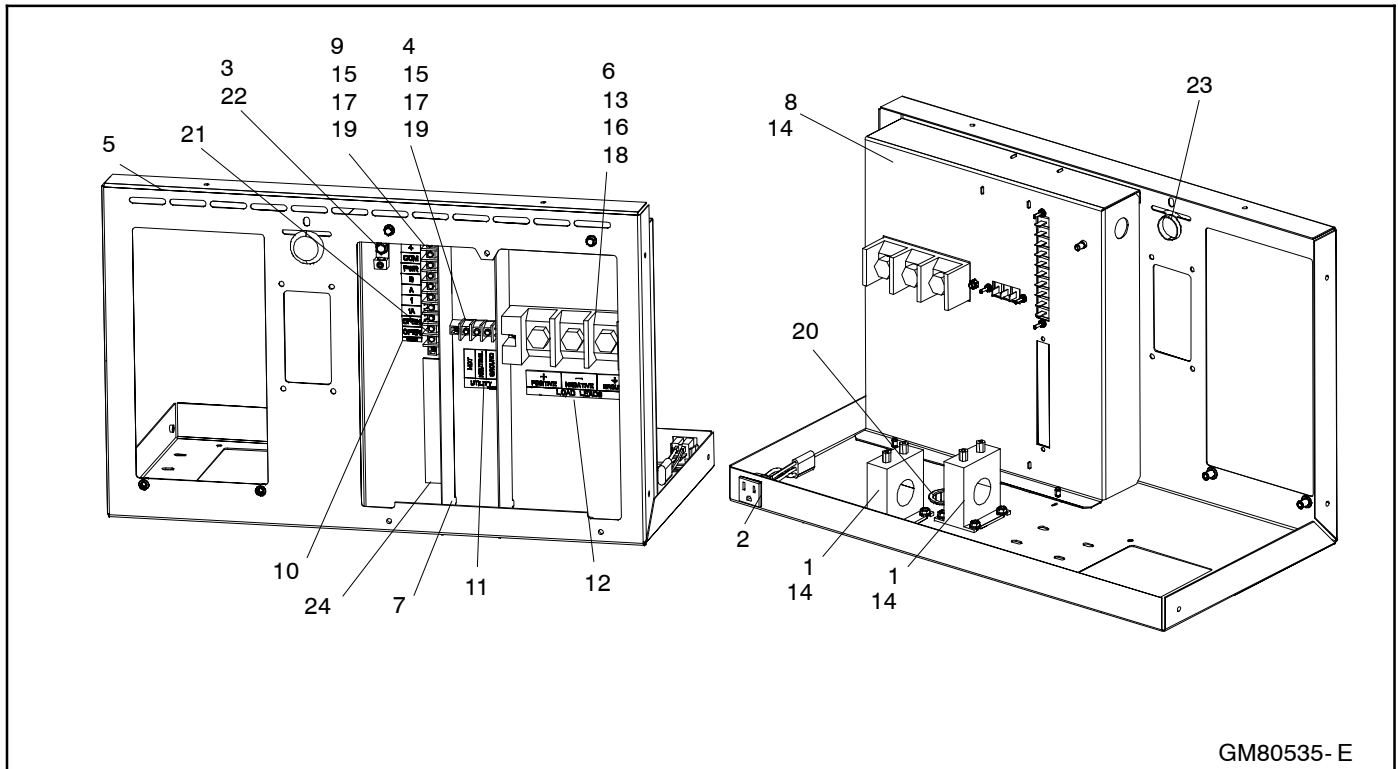


# Control and Harness, continued

GM114241-GR3

Item	Part Number	Description	Quantity
			Variation
1	345236	Heatsink	1
2	345239	Insulator, Module	3
3	361567	Base, Tie Wrap Snapin	2
4	GM116118	Harness, Engine, 6VSG	1
5	GM117077	Cover, Terminal Block	1
6	GM117078	Cover, Terminal Block, Utility	1
7	GM48108	Harness, Pigtail Customer Connection	2
8	GM49746	Relay, 12 VDC	2
9	GM78761-1	Screw, Sheetmetal	9
10	GM80526	Plate, Circuit Breaker Mtg	1
11	GM80530	Breaker, Circuit	1
12	GM80533	Cover, Controller Box	1
13	GM80535	Box, Controller Assy	1
14	GM81191	Rectifier	3
15	GM81259	Cover, Controller Top	1
16	GM81267	Bar, Bus	2
17	GM85262	Decal, Customer Connection	1
18	GM85263	Decal, Utility Connection	1
19	GM85400	Bar, Bus	3
20	GM85976	Plate, Cover	1
21	GM89864-5	Controller Assy, Variable Speed RDC2 Ver 5	1
22	M125A-06-80	Washer, Plain	12
23	M6923-06-80	Nut, Hex 6mm	12
24	M7500C-05010-83	Screw, Metric Thread Forming	4
25	M7985A-03020-20	Screw, Pan Head Machine	6
26	M7985A-05012-20	Screw, Pan Head Machine	13
27	M7985A-05016-20	Screw, Pan Head Machine	3
28	M933-06025-60	Screw, Hex Cap M6 X 25	6
29	M934-03-50	Nut, Hex 3mm	6
30	M934-05-50	Nut, Hex 5mm	2
31	X-22-11	Washer, Lock .262 ID x .469 OD	14
32	X-22-22	Washer, Lock .20 ID x.403 in. OD	2
33	X-22-6	Washer, Lock .146 ID x .285 in. OD	4
34	X-22-9	Washer, Lock .20 ID x.373 in. OD	19
35	X-465-17	Bolt, Hex Cap	3
36	X-465-2	Bolt, Hex Cap	3
37	X-468-1	Cable Tie	2
38	X-50-73	Screw, Machine	4
39	X-55-4	Screw, Hex Socket Head Machine	12
40	X-6073-2	Jumper	1
41	X-6128-30	Standoff insulator, 1/4- 20 x 1 in.	3
42	X-634-25	Bushing, .672 x .875 in. NPT	1
43	357477	Cable, Patch, 3 Ft. RJ-45	1
44	GM81360	Lead	1
45	GM81361	Lead	2
46	GM81362	Lead	2
47	GM81363	Lead	2

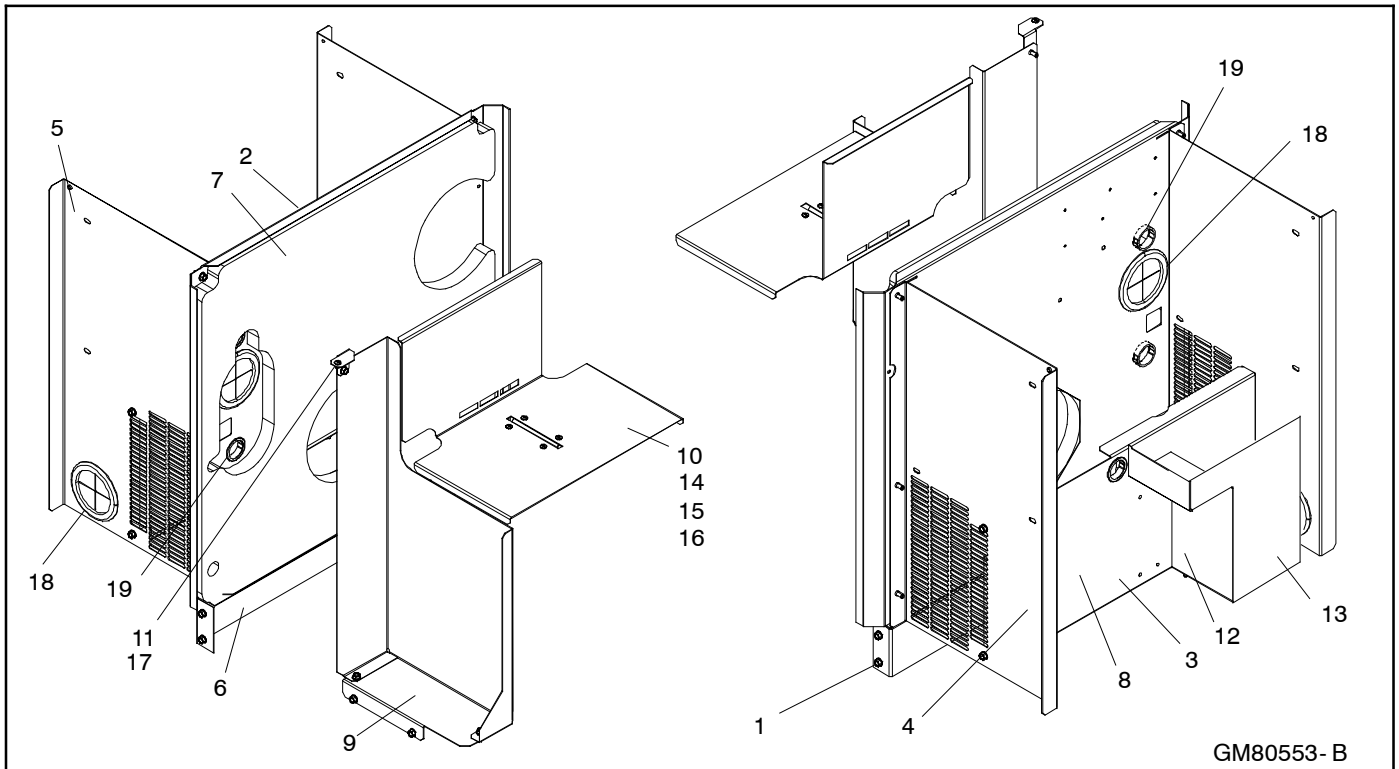
# Control and Harness, continued



## GM80535

Item	Part Number	Description	Quantity
			Variation
			1
1	GM16255	Transformer, Current 300A:3 VAC	2
2	GM48108	Harness, Pigtail Customer Connection	1
3	GM78761-1	Screw, Sheet Metal M6 x 1.0 x 16 mm	1
4	GM80520	Block, Terminal	1
5	GM80522	Box, Controller	1
6	GM80524	Block, Terminal	1
7	GM80527	Panel, Circuit Divider	2
8	GM80528	Panel, Customer Connection	1
9	GM85261	Block, Terminal	1
10	GM85262	Decal, Customer Connection	1
11	GM85263	Decal, Utility Connection	1
12	GM85264	Decal, Load Leads	1
13	M125A-05-80	Washer, Plain	2
14	M7500D-05010-85	Screw, Metric Thread Forming	12
15	M7985A-03020-20	Screw, pan head M3X12	4
16	M7985A-05020-20	Screw, Pan Head Machine	2
17	M934-03-50	Nut, Hex 3mm	4
18	M934-05-50	Nut, Hex 5mm	2
19	X-22-6	Washer, lock.146 ID x .285 in. OD	4
20	X-634-28	Bushing	4
21	X-6073-2	Jumper	1
22	X-6207-1	Lug, terminal, aluminum	1
23	X-301-43	Plug, button	1
24	GM85973	Plate, Cover	1

# Bulkhead

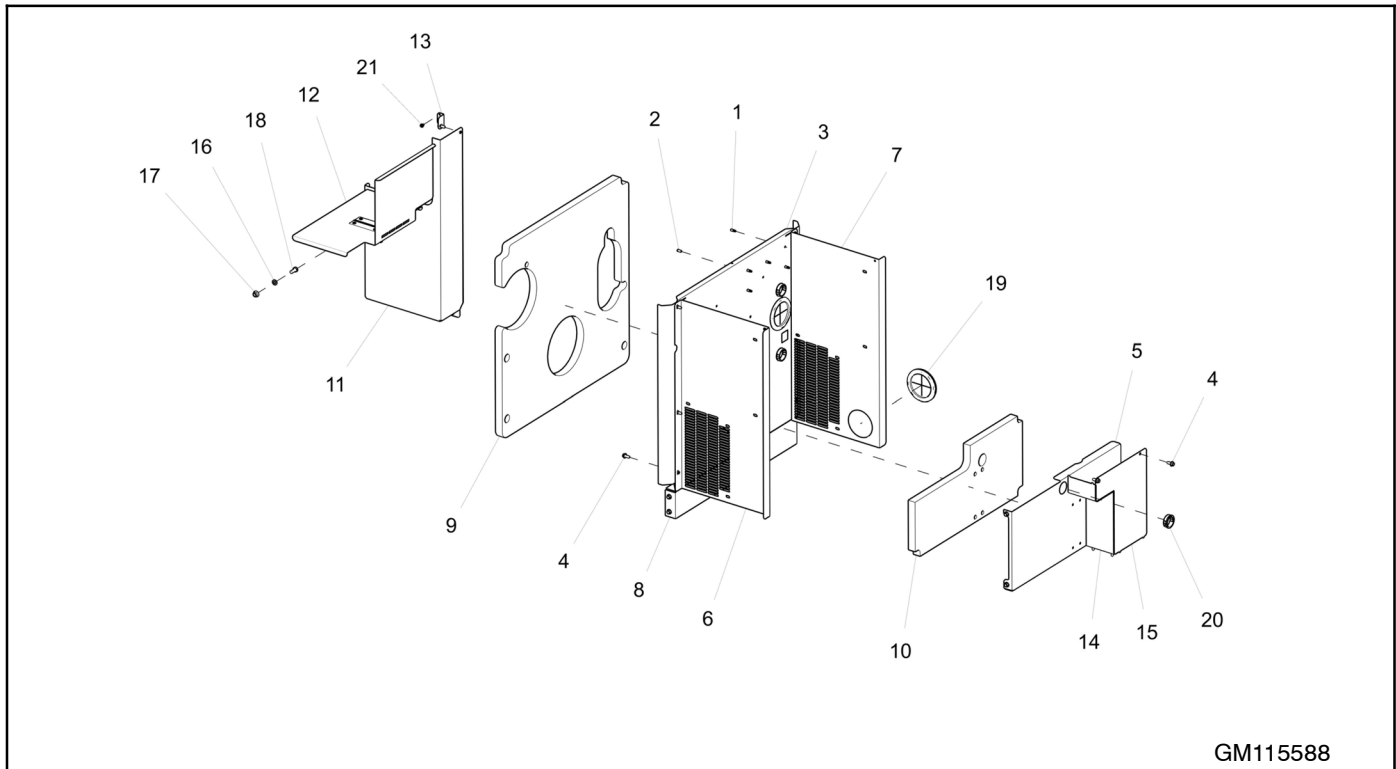


GM80553-B

## GM80553-GR1

Item	Part Number	Description	Quantity
			Variation
1	GM78761-1	Screw, Sheetmetal	29
2	GM93312	Panel, Bulkhead	1
3	GM80509	Panel, Divider	1
4	GM80513	Panel, Air Intake (RH)	1
5	GM80514	Panel, Air Intake (LH)	1
6	GM80516	Bracket, Bulkhead Mounting	1
7	GM80545-1	Insulation, Acoustic (Bulkhead)	1
8	GM80545-2	Insulation, Acoustic (Air Intake)	1
9	GM81108	Duct, Exhaust	1
10	GM81110	Shield, Heat	1
11	GM83742	Bracket, Exhaust Duct Support	1
12	GM83743	Bracket, Compartment Separating	1
13	GM85355	Cover, Compartment Separating	1
14	M125A-08-80	Washer, Plain 8.4 ID x 16.0 OD	2
15	M6923-08-80	Nut, Hex 8mm	2
16	M933-08020-60	Screw, hex cap	2
17	X-67-155	Screw, tapping	1
18	X-284-31	Grommet, round	2
19	X-634-28	Bushing	3

# Bulkhead

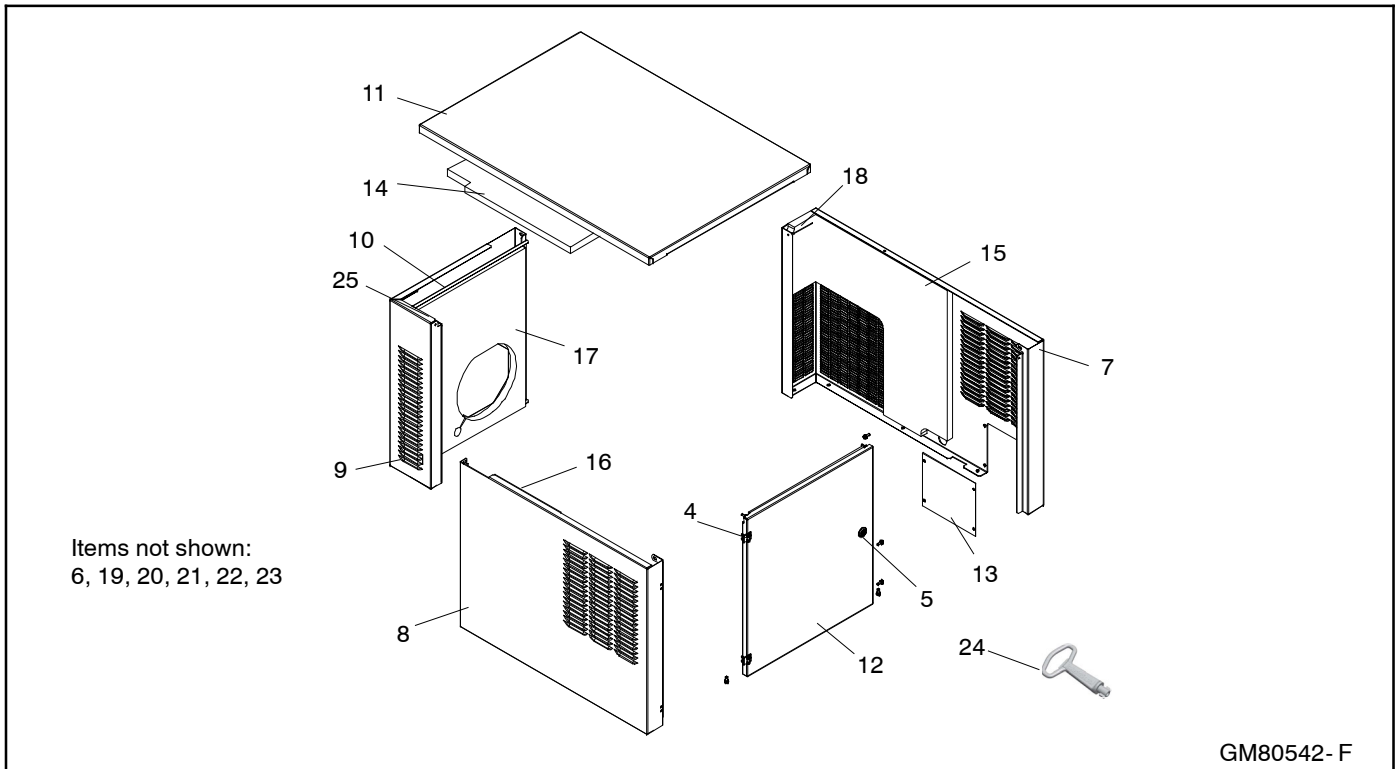


GM115588

## GM115588-GR1

Item	Part Number	Description	Quantity
			Variation
			<b>2</b>
1	337441	Standoff, PCB - .156 Dia., .5 Tall	5
2	353619	Fastener, Standoff	1
3	GM115587	Panel, Bulkhead	1
4	GM78761-1	Screw, Sheetmetal	29
5	GM80509	Panel, Divider	1
6	GM80513	Panel, Air Intake (RH)	1
7	GM80514	Panel, Air Intake (LH)	1
8	GM80516	Bracket, Bulkhead Mtg	1
9	GM80545-1	Insulation, Acoustic (Bulkhead)	1
10	GM80545-2	Insulation, Acoustic (Air Intake)	1
11	GM81108	Duct, Exhaust	1
12	GM81110	Shield, Heat	1
13	GM83742	Bracket, Exhaust Duct Support	1
14	GM83743	Bracket, Compartment Separating	1
15	GM85355	Cover, Compartment Separating	1
16	M125A-08-80	Washer, Plain 8.4 ID x 16.0 OD	2
17	M6923-08-80	Nut, Hex 8mm	2
18	M933-08020-60	Screw, Hex Cap M8 X 20	2
19	X-284-31	Grommet, Round	2
20	X-634-28	Bushing	3
21	X-67-155	Screw, Tapping	1

# Enclosure



## GM80542- GR1

Item	Part Number	Description	Quantity
			Variation
			<b>1</b>
4	GM40019	Hinge	2
5	GM57165	Latch, Compression	1
6	GM78761-1	Screw, Sheetmetal	20
7	GM80510	Panel, Enclosure Side	1
8	GM80511	Panel, Enclosure Side	1
9	GM80512	Panel, Enclosure Rear	1
10	GM90739	Duct, Alternator Air Inlet	1
11	GM80517	Roof, Enclosure	1
12	GM80519	Door, Enclosure	1
13	GM80534	Cover, Customer Connection	1
14	GM80546-1	Insulation, Acoustic (Roof)	1
15	GM80546-2	Insulation, Acoustic (Side Panel)	1
16	GM80546-3	Insulation, Acoustic (Side Panel)	1
17	GM80546-4	Insulation, Acoustic (Air Duct)	1
18	GM80546-5	Insulation, Acoustic (Rear Panel)	1
19	277839	Strap, ground (11 in.)	2
20	LK-1036-1515	Lead, Ground	1
21	X-22-12	Washer, lock.262 IDx.743 in. OD	8
22	X-67-155	Screw, Tapping	7
23	X-6210-2	Nut, flange spirallock, 1/4- 20	2
24	GM82922	Tool, Latch Opening	2
25	GM90736	Cover, Air Duct	1

# Literature

Item	Part Number	Description	Quantity
			Variation
1	24 690 06	S/M, CH18- CH750 Command Twin	1
2	TP-6479	Warranty, 5- Yr., Standby	1
3	TP-6766	Warranty, Residential/Light Commercial	1
4	TP-6782	Warranty, 2011 Emissions, Residential	1
5	TP-6842	I/M 6VSG Res/Coml	1
6	TP-6843	O/M 6VSG Res/Coml	1
7	TP-6844	S/M 6VSG Res/Coml	1
8	TP-6845	P/C 6VSG Res/Coml	1

# Kit Parts List

Qty.	Description	Part No.
------	-------------	----------

## Fuel System Kit

<b>Flexible Fuel Line GM31054-KP1</b>		
1	Fuel line, flexible, 0.50 in. ID x 12 in.	X-504-1

<b>Flexible Fuel Line GM95496-KA1</b>		
1	Line, Flex Fuel	GM95497

## Electrical System Kits

<b>Battery, 1/12V, 500CCA, Wet GM75513-KP1</b>		
1	Battery (Wet)	GM75512

## Miscellaneous Kits

<b>Carburetor Heater GM19462-KP1-QS</b>		
1	Heater, Inlet 37W 120V	GM19463
1	Tube, Breather (.375" OD) Copper	GM19464
1	Insulator, breather line (.56" ID x 4")	GM19465
1	Decal, Caution Hot Carburetor Heater	GM22387
1	Plug, button	X-301-23
1	Bushing, 1.312 x 1.50 in. NPT	X-634-16
4	Screw, Hex Head	X-97-22
1	TT Carburetor Heater	TT-1297

<b>Communications Kit GM85956-KA1</b>		
1	Switch, pushbutton	345327
1	Block, Terminal	GM85261
1	Bracket, Intrusion Alarm	GM85975
1	Decal, Customer Connection	GM85977
1	Assy., 6VSG Comm. Board (includes board and harness)	GM86941
1	Switch, Pressure	GM87721-1
2	Screw, Pan Head Machine	M7985A-03020-20
2	Nut, Hex 3mm (NRP)	M934-03-50
1	Bushing, reducing (1/8 x 1/2" npt)	X-202-29
1	Tee, pipe (1/2 x 1/2 x 1/2 npt)	X-203-13
2	Pipe (1/2" npt x 1.19")	X-209-2
1	Screw, Machine	X-49-1

<b>OnCue,RDC2/DC2/VSC Controller GM81385-KP1-QS</b>		
1	OnCue Welcome Letter	G18-181
1	Decal, OnCue Activation Code	GM81386
1	Dwg, OnCue Decal Placement	GM81770
1	Connector, RJ45 Female to RJ45 Female	GM84651
1	O/M OnCue Software, 14/20RES(L)	TP-6796

<b>OnCue Plus,RDC2/DC2/VSC GM81385-KP2-QS</b>		
1	OnCue Plus Welcome Letter	G18-246
1	OnCue App Quick Start Guide	G18-247
1	Decal, OnCue Activation Code	GM81386
1	Dwg, OnCue Decal Placement	GM81770
1	Connector, RJ45 Female to RJ45 Female	GM84651
1	O/M OnCue Plus	TP-6920

<b>OnCue Plus, Wireless, RDC2/DC2/VSC GM81385-KP3-QS</b>		
1	Cable, Patch, 3 Ft. RJ-45	357477
1	Decal, OnCue Activation Code	GM81386
1	Dwg, OnCue Decal Placement	GM81770
1	Kit, Wireless Router	GM91273
1	Tape, VHB 3/4", 10in Long	GM94015
1	O/M OnCue Plus Res/Coml	TP-6928
1	Install Guide WiFi Kit Res/Coml	TT-1618

Qty.	Description	Part No.
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## Oil Makeup Kit

<b>GM85224-KP1-QS</b>		
1	Valve, oil drain (3/8-18 npt)	359653
1	Connector, hose + vibra seal	X-582-5
1	Bottle, Oil	GM65453
1	Decal, Check Oil	GM66054
1	Bracket, Oil Level	GM85231
1	Bracket, Oil Tank	GM85232
1	Gauge, Oil Level	GM85454
2	Washer, Plain	M125A-06-80
6	Washer, Plain, 8.4 ID x 16.0 OD	M125A-08-80
6	Nut, Hex 8mm	M6923-08-80
2	Screw, hex cap	M931-08035-60
2	Screw, hex cap	M933-06010-60
4	Screw, hex cap	M933-08020-60
1	Bushing, reducing (1/2 x 3/4 in. npt)	X-202-41
1	Tee, pipe (3/8 x 3/8 x 3/8 npt)	X-203-15
1	Pipe, Nipple (3/8 in. npt x 2.00")	X-204-6
4	Washer, lock.326 IDx.883 in.OD	X-22-16
1	Oil hose, flexible	X-386-127
1	Oil hose, flexible	X-422-35
1	Oil hose, flexible 42 in.	X-386-128
1	Connector, 90 deg. ( 3/8 in. ID hose)	X-391-42
6	Clamp, hose, .69/1.25 in.	X-426-12
4	Cable Tie	X-468-2
2	Connector, hose + vibra seal	X-582-34
2	Screw, tapping	X-67-155

<b>Programmable Interface Module (PIM) GM81529-KP1-QS</b>		
1	Dimension Print, Programable Intf Module	ADV-8199
1	Diagram, Wiring PIM	GM84085
1	Diagram, Schematic PIM	GM84086
1	Programmable Interface Module (PIM)	TT-1584
1	PIM, Assy NEMA 3R	GM81529-1
1	Decal, Equipment GRD	344295
2	Gasket	GM20990
1	PCB Assy, RDC2 Programmable Interface	GM81372-2
1	Enclosure, PIM	GM81527
1	Silkscreen, Cover	GM82189
1	Decal, Torque	GM82855
1	Decal, PIM	GM84656-3
1	Lug, terminal, aluminum	X-6207-3

<b>Programmable Interface Module (PIM) GM81529-KP2-QS</b>		
1	Dimension Print, Programable Intf Module	ADV-8199
1	Diagram, Wiring PIM	GM84085
1	Diagram, Schematic PIM	GM84086
1	Programmable Interface Module (PIM)	TT-1584
1	PIM, Assy NEMA 3R CSA	GM81529-2
1	Decal, Equipment GRD	344295
2	Gasket	GM20990
1	PCB Assy, RDC2 Programmable Interface	GM81372-2
1	Enclosure, PIM	GM81527
1	Silkscreen, Cover	GM82189
1	Decal, Torque	GM82855
1	Decal, PIM	GM84656-3
1	Lug, terminal, aluminum	X-6207-3

<b>Spark Arrestor GM85409-KP1-QS</b>		
1	Arrestor, Spark	GM39500

## Maintenance Service Kits

(includes oil, oil filter, air filter, spark plugs, and instructions (TT-1445))		
1	6/12/14kW Maintenance Kit - CH740	GM62346-SKP1-QS
1	6VSG Extended Oil Maintenance Kit	GM117090-S





# Appendix A Abbreviations

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

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

k	kilo (1000)	mtg.	mounting	rms	root mean square
K	kelvin	MTU	Motoren-und Turbinen-Union	rnd.	round
kA	kiloampere	MW	megawatt	ROM	read only memory
KB	kilobyte (2 <sup>10</sup> bytes)	mW	milliwatt	rot.	rotate, rotating
KBus	Kohler communication protocol	μF	microfarad	rpm	revolutions per minute
kg	kilogram	N, norm.	normal (power source)	RS	right side
kg/cm <sup>2</sup>	kilograms per square centimeter	NA	not available, not applicable	RTU	remote terminal unit
kgm	kilogram-meter	nat. gas	natural gas	RTV	room temperature vulcanization
kg/m <sup>3</sup>	kilograms per cubic meter	NBS	National Bureau of Standards	RW	read/write
kHz	kilohertz	NC	normally closed	SAE	Society of Automotive Engineers
kJ	kilojoule	NEC	National Electrical Code	scfm	standard cubic feet per minute
km	kilometer	NEMA	National Electrical Manufacturers Association	SCR	silicon controlled rectifier
kOhm, kΩ	kilo-ohm	NFPA	National Fire Protection Association	s, sec.	second
kPa	kilopascal			SI	<i>Systeme internationale d'unites</i> , International System of Units
kph	kilometers per hour	Nm	newton meter	SI/E0	side in/end out
kV	kilovolt	NO	normally open	sil.	silencer
kVA	kilovolt ampere	no., nos.	number, numbers	SN	serial number
kVAR	kilovolt ampere reactive	NPS	National Pipe, Straight	SNMP	simple network management protocol
kW	kilowatt	NPSC	National Pipe, Straight-coupling	SPDT	single-pole, double-throw
kWh	kilowatt-hour	NPT	National Standard taper pipe thread per general use	SPST	single-pole, single-throw
kWm	kilowatt mechanical	NPTF	National Pipe, Taper-Fine	spec	specification
kWth	kilowatt-thermal	NR	not required, normal relay	specs	specification(s)
L	liter	ns	nanosecond	sq.	square
LAN	local area network	OC	overcrank	sq. cm	square centimeter
L x W x H	length by width by height	OD	outside diameter	sq. in.	square inch
lb.	pound, pounds	OEM	original equipment manufacturer	SS	stainless steel
lbm/ft <sup>3</sup>	pounds mass per cubic feet	OF	overfrequency	std.	standard
LCB	line circuit breaker	opt.	option, optional	stl.	steel
LCD	liquid crystal display	OS	oversize, overspeed	tach.	tachometer
ld. shd.	load shed	OSHA	Occupational Safety and Health Administration	TD	time delay
LED	light emitting diode	OV	overvoltage	TDC	top dead center
Lph	liters per hour	oz.	ounce	TDEC	time delay engine cooldown
Lpm	liters per minute	p., pp.	page, pages	TDEN	time delay emergency to normal
LOP	low oil pressure	PC	personal computer	TDES	time delay engine start
LP	liquefied petroleum	PCB	printed circuit board	TDNE	time delay normal to emergency
LPG	liquefied petroleum gas	pF	picofarad	TDOE	time delay off to emergency
LS	left side	PF	power factor	TDON	time delay off to normal
L <sub>wa</sub>	sound power level, A weighted	ph., ∅	phase	temp.	temperature
LWL	low water level	PHC	Phillips® head Crimptite® (screw)	term.	terminal
LWT	low water temperature	PHH	Phillips® hex head (screw)	THD	total harmonic distortion
m	meter, milli (1/1000)	PHM	pan head machine (screw)	TIF	telephone influence factor
M	mega (10 <sup>6</sup> when used with SI units), male	PLC	programmable logic control	TIR	total indicator reading
m <sup>3</sup>	cubic meter	PMG	permanent magnet generator	tol.	tolerance
m <sup>3</sup> /hr.	cubic meters per hour	pot	potentiometer, potential	turbo.	turbocharger
m <sup>3</sup> /min.	cubic meters per minute	ppm	parts per million	typ.	typical (same in multiple locations)
mA	milliampere	PROM	programmable read-only memory	UF	underfrequency
man.	manual	psi	pounds per square inch	UHF	ultrahigh frequency
max.	maximum	psig	pounds per square inch gauge	UL	Underwriter's Laboratories, Inc.
MB	megabyte (2 <sup>20</sup> bytes)	pt.	pint	UNC	unified coarse thread (was NC)
MCCB	molded-case circuit breaker	PTC	positive temperature coefficient	UNF	unified fine thread (was NF)
MCM	one thousand circular mils	PTO	power takeoff	univ.	universal
meggar	megohmmeter	PVC	polyvinyl chloride	US	undersize, underspeed
MHz	megahertz	qt.	quart, quarts	UV	ultraviolet, undervoltage
mi.	mile	qty.	quantity	V	volt
mil	one one-thousandth of an inch	R	replacement (emergency) power source	VAC	volts alternating current
min.	minimum, minute	rad.	radiator, radius	VAR	voltampere reactive
misc.	miscellaneous	RAM	random access memory	VDC	volts direct current
MJ	megajoule	RDO	relay driver output	VFD	vacuum fluorescent display
mJ	millijoule	ref.	reference	VGA	video graphics adapter
mm	millimeter	rem.	remote	VHF	very high frequency
MOV	metal oxide varistor	Res/Coml	Residential/Commercial	W	watt
MPa	megapascal	RFI	radio frequency interference	WCR	withstand and closing rating
mpg	miles per gallon	RH	round head	w/	with
mph	miles per hour	RHM	round head machine (screw)	w/o	without
MS	military standard	rly.	relay	wt.	weight
ms	millisecond			xfrm	transformer
m/sec.	meters per second				
MTBF	mean time between failure				
MTBO	mean time between overhauls				

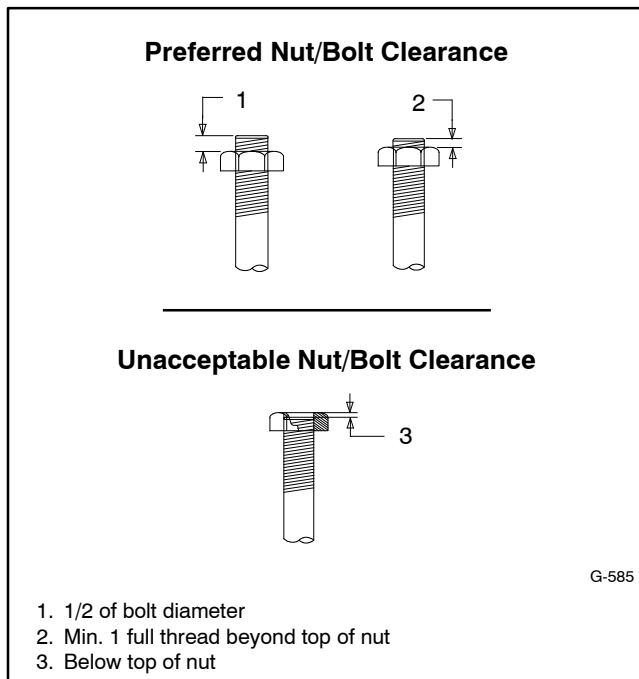
## Appendix B Common Hardware Application Guidelines

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.



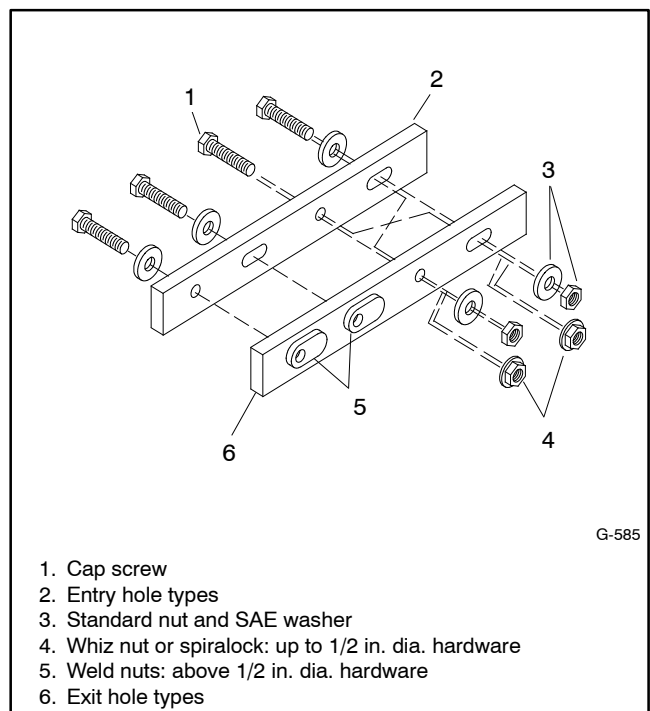
**Figure 1** Acceptable Bolt Lengths

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

# Appendix C General Torque Specifications















American Standard Fasteners Torque Specifications						
Size	Assembled into Cast Iron or Steel					Assembled into Aluminum
	Grade 2		Grade 5		Grade 8	
8-32	2.0 Nm	(18 in. lb.)	3.1 Nm	(27 in. lb.)	-	See Note 3
10-24	3.2 Nm	(28 in. lb.)	4.9 Nm	(43 in. lb.)	-	
10-32	3.6 Nm	(32 in. lb.)	5.5 Nm	(49 in. lb.)	-	
12-24	5.0 Nm	(44 in. lb.)	7.7 Nm	(68 in. lb.)	-	
1/4-20	7.6 Nm	(67 in. lb.)	11.6 Nm	(103 in. lb.)	16.5 Nm (146 in. lb.)	
1/4-28	8.6 Nm	(76 in. lb.)	13.2 Nm	(117 in. lb.)	18.8 Nm (166 in. lb.)	
5/16-18	15.5 Nm	(137 in. lb.)	24.0 Nm	(212 in. lb.)	33.9 Nm (300 in. lb.)	
5/16-24	17.1 Nm	(151 in. lb.)	26.4 Nm	(234 in. lb.)	40 Nm (28 ft. lb.)	
3/8-16	27 Nm	(243 in. lb.)	42 Nm	(31 ft. lb.)	60 Nm (44 ft. lb.)	
3/8-24	31 Nm	(274 in. lb.)	47 Nm	(35 ft. lb.)	68 Nm (50 ft. lb.)	
7/16-14	43 Nm	(32 ft. lb.)	68 Nm	(50 ft. lb.)	96 Nm (71 ft. lb.)	
7/16-20	49 Nm	(36 ft. lb.)	76 Nm	(56 ft. lb.)	107 Nm (79 ft. lb.)	
1/2-13	66 Nm	(49 ft. lb.)	103 Nm	(76 ft. lb.)	146 Nm (108 ft. lb.)	
1/2-20	75 Nm	(55 ft. lb.)	117 Nm	(86 ft. lb.)	164 Nm (121 ft. lb.)	
9/16-12	96 Nm	(71 ft. lb.)	149 Nm	(110 ft. lb.)	210 Nm (155 ft. lb.)	
9/16-18	107 Nm	(79 ft. lb.)	165 Nm	(122 ft. lb.)	235 Nm (173 ft. lb.)	
5/8-11	133 Nm	(98 ft. lb.)	206 Nm	(152 ft. lb.)	290 Nm (214 ft. lb.)	
5/8-18	150 Nm	(111 ft. lb.)	232 Nm	(171 ft. lb.)	328 Nm (242 ft. lb.)	
3/4-10	-	-	365 Nm	(269 ft. lb.)	515 Nm (380 ft. lb.)	
3/4-16	-	-	405 Nm	(299 ft. lb.)	572 Nm (422 ft. lb.)	
1-8	-	-	881 Nm	(650 ft. lb.)	1245 Nm (918 ft. lb.)	
1-12	-	-	961 Nm	(709 ft. lb.)	1357 Nm (1001 ft. lb.)	












Metric Fasteners Torque Specifications, Measured in Nm (ft. lb.)							
Size (mm)	Assembled into Cast Iron or Steel					Assembled into Aluminum	
	Grade 5.8		Grade 8.8		Grade 10.9		Grade 12.9
Mxxx-04xxx-xx	1.9	(1.4)	2.9	(2.1)	4.3	(3.2)	See Note 3
Mxxx-05xxx-xx	3.8	(2.8)	5.8	(4.3)	8.5	(6.3)	
Mxxx-06xxx-xx	6.5	(4.8)	10.4	(7.7)	14.7	(11)	
Mxxx-08xxx-xx	16	(12)	25	(17)	36	(26)	
Mxxx-08xxx-xxF	17	(13)	27	(20)	38	(28)	
Mxxx-10xxx-xx	31	(23)	50	(37)	70	(52)	
Mxxx-10xxx-xxF	33	(24)	53	(39)	74	(55)	
Mxxx-12xxx-xx	55	(40)	87	(64)	123	(91)	
Mxxx-12xxx-xxF	60	(44)	95	(70)	134	(99)	
Mxxx-14xxx-xx	87	(64)	135	(103)	196	(145)	
Mxxx-14xxx-xxF	94	(69)	151	(111)	212	(156)	
Mxxx-16xxx-xx	135	(100)	217	(160)	305	(225)	
Mxxx-16xxx-xxF	145	(107)	231	(171)	325	(240)	
Mxxx-18xxx-xx	187	(138)	299	(221)	421	(310)	
Mxxx-18xxx-xxF	210	(155)	336	(248)	473	(349)	
Mxxx-20xxx-xx	264	(195)	423	(312)	595	(439)	
Mxxx-20xxx-xxF	293	(216)	469	(346)	660	(487)	
Mxxx-22xxx-xx	360	(266)	576	(425)	811	(598)	
Mxxx-22xxx-xxF	396	(292)	633	(467)	890	(657)	
Mxxx-24xxx-xx	457	(337)	731	(539)	1028	(758)	
Mxxx-24xxx-xxF	498	(367)	797	(588)	1121	(827)	
Mxxx-27xxx-xx	-	-	1072	(790)	1507	(1112)	
Mxxx-27xxx-xxF	-	-	1156	(853)	1626	(1199)	
Mxxx-30xxx-xx	-	-	1453	(1072)	2043	(1507)	

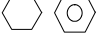




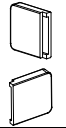
**Notes:**

1. The torque values above are general guidelines. Always use the torque values specified in the service manuals and/or assembly drawings when they differ from the above torque values.
2. The torque values above are based on new plated threads. Increase torque values by 15% if non-plated threads are used.
3. At minimum, hardware threaded into aluminum must have two diameters of thread engagement. Hardware threaded into steel and cast iron must have 1.25 diameters of thread.
4. Torque values are calculated as equivalent stress loading on American hardware with an approximate preload of 75% of proof strength and a friction coefficient of 0.2.

# 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	

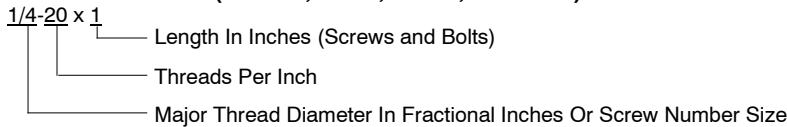
Hardness Grades	
American Standard	
Grade 2	
Grade 5	
Grade 8	
Grade 8/9 (Hex Socket Head)	
Metric	
Number stamped on hardware; 5.8 shown	
Hose Clamp Covers	
Black, EPDM rubber used on worm gear clamps	

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

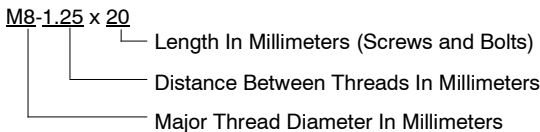
Phillips® screw is a registered trademark of Phillips Screw Company.

## Sample Dimensions

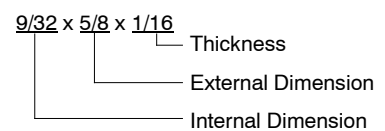
### American Standard (Screws, Bolts, Studs, and Nuts)



### 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 Hex Head Bolts (Grade 5)

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

### Part No. Dimensions Hex Head Bolts, cont.

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
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

### Part No. Dimensions Type

#### Hex Nuts

X-6009-1	1-8	Standard
X-6210-3	6-32	Whiz
X-6210-4	8-32	Whiz
X-6210-5	10-24	Whiz
X-6210-1	10-32	Whiz
X-6210-2	1/4-20	Spiralock
X-6210-6	1/4-28	Spiralock
X-6210-7	5/16-18	Spiralock
X-6210-8	5/16-24	Spiralock
X-6210-9	3/8-16	Spiralock
X-6210-10	3/8-24	Spiralock
X-6210-11	7/16-14	Spiralock
X-6210-12	1/2-13	Spiralock
X-6210-15	7/16-20	Spiralock
X-6210-14	1/2-20	Spiralock
X-85-3	5/8-11	Standard
X-88-12	3/4-10	Standard
X-89-2	1/2-20	Standard

#### Washers

Part No.	ID	OD	Thick.	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

#### Hose Clamp Covers

Part No.	Clamp Size
GM102674-1	13 mm (1/2 in.)
GM102674-2	8 mm (5/16 in.)

## Metric

Hex head bolts are hardness grade 8.8 unless noted.

<b>Part No.</b>	<b>Dimensions</b>	<b>Part No.</b>	<b>Dimensions</b>	<b>Part No.</b>	<b>Dimensions</b>
<b>Hex Head Bolts (Partial Thread)</b>		<b>Hex Head Bolts (Partial Thread), continued</b>		<b>Hex Head Bolts (Full Thread), continued</b>	
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	<b>Hex Head Bolts (Full Thread)</b>		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	<b>Pan Head Machine Screws</b>	
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			<b>Flat Head Machine Screws</b>	
M931-12080-60	M12-1.75 x 80			M965A-04012-SS	M4-0.70 x 12
M931-12090-60	M12-1.75 x 90			M965A-05012-SS	M5-0.80 x 12
M931-12100-60	M12-1.75 x 100			M965A-05016-20	M5-0.80 x 16
M931-12110-60	M12-1.75 x 110			M965A-06012-20	M6-1.00 x 12

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

## Metric, continued

Part No.	Dimensions	Type
<b>Hex Nuts</b>		
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.









**TP-6845 3/22d**

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Phone 920-457-4441, Fax 920-459-1646  
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