

# Service Parts

## Residential/Commercial Generator Sets



Models:

**20RESB**

**20RESD**

**KOHLER**<sup>®</sup>  
Power Systems

**9001**  
**KOHLER**  
POWER SYSTEMS  
NATIONALLY REGISTERED

TP-6927 7/15b

# 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.

<b>Description</b>	<b>Part Number</b>	<b>Quantity 20RESB/D</b>
Sensor, oil temperature	GM28823	1
Filter, oil	52 050 02-S	8
Switch, oil pressure	48 099 07-S	1
Spark plug	62 132 04-S	2
Kit, starter solenoid	25 435 06-S	1
Element, air filter	62 083 04-S	1
Bushing, linkage retaining	25 158 08-S	4
Coupling, stepper motor	358358	4

**Figure 1** 2000-Hour Replacement Parts

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# Introduction

This manual lists service replacement parts for 20RESB & 20RESD 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>											

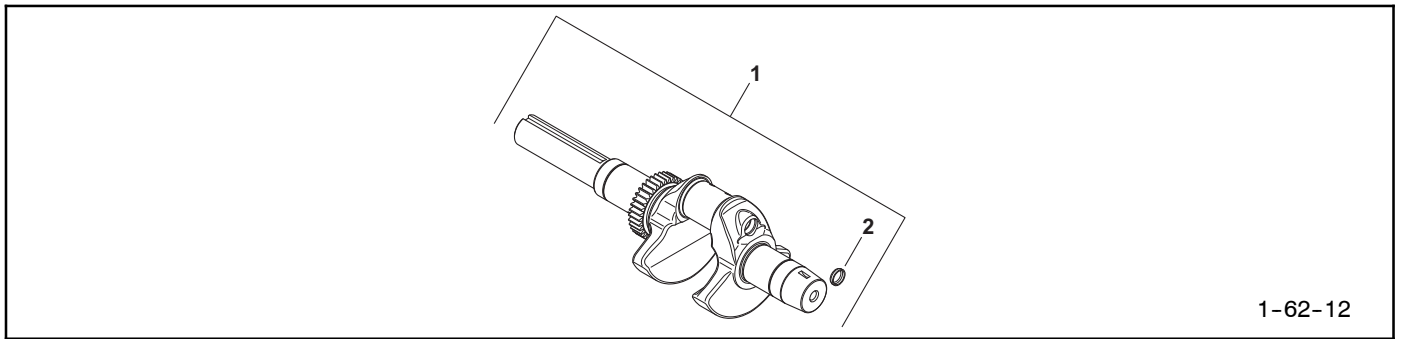
<b>20RESB</b>													
GM90202-GA1	12	6	21	13	37	6	1	20	45	30	9	16	
<b>20RESD</b>													
GM95527-GA1	12	24	52	23	71	26	1	20	45	30	9	53	

<b>Group Title</b>	<i>Fuel System</i>	<i>Engine</i>	<i>Nameplate and Decals</i>	<i>Skid</i>	<i>Customer Connection</i>	<i>Harness</i>	<i>Circuit Breaker</i>	<i>Exhaust</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>20RESB</b>													
GM90202-GA1	1	1	1	1	*	1	*	1	MA3	1	1	*	76
<b>20RESD</b>													
GM95527-GA1	2	2	1	1	*	2	*	1	MA3	1	2	*	85

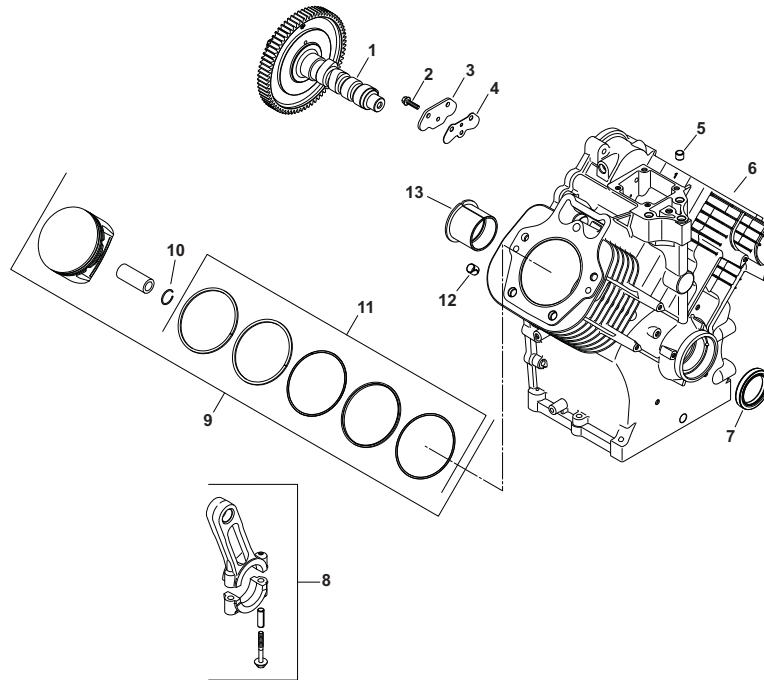
\* Configured group. Refer to the generator set nameplate for the module number. Turn to the respective group on the following pages for parts breakdowns.

# Group 1: Crankshaft



Item	Part Number	Description	Quantity
			Variation
1	62 014 120-S	Crankshaft assembly (includes item 2)	1
2	25 139 27-S	Plug, cup	1

## Group 2: Crankcase



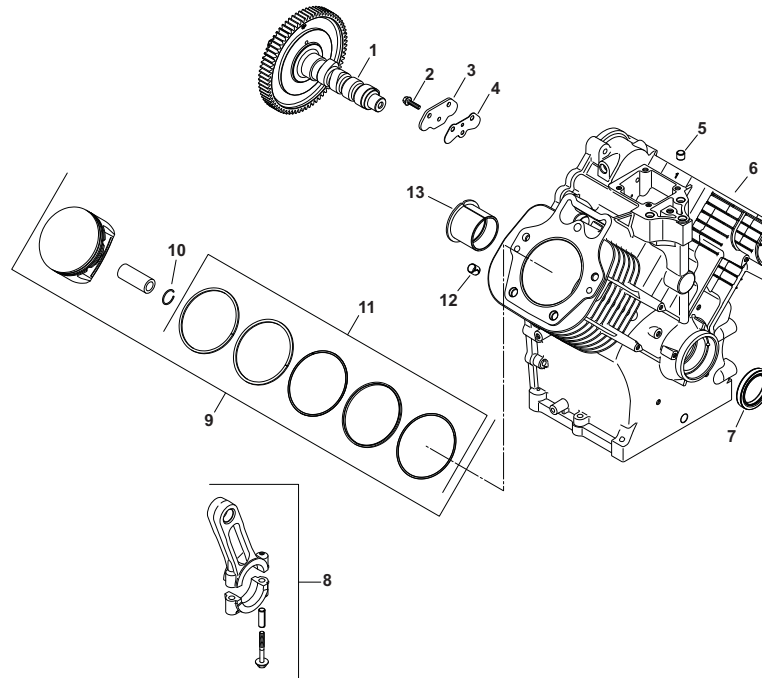
Illustrated parts without item reference numbers (the piston, for example) are not sold separately.

2-62-5

Item	Part Number	Description	Quantity
			Variation
			<b>6</b>
1	62 012 10-S	Camshaft	1
2	M-551020-S	Screw, hvy flg M5 x 0.8 x 20	3
3	62 096 29-S	Cover, lifter feed	1
4	62 041 24-S	Gasket, lifter feed cover	1
5	15 380 01-S	Pin	1
6	-	Crankcase (use short block)	1
7	62 032 21-S	Seal, oil	1
8	62 067 13-S	Rod, connecting assembly	2
9	62 874 17-S	Kit, piston, std (includes item 10, 11)	2
9	62 874 18-S	Kit, piston, 0.25 OS	2
9	62 874 19-S	Kit, piston, 0.50 OS	2
10	62 018 04-S	Retainer, piston pin	4
11	62 108 07-S	Ring set, standard	1
12	24 380 16-S	Pin, locating	6
13	-	Bearing, crankshaft (flywheel)	



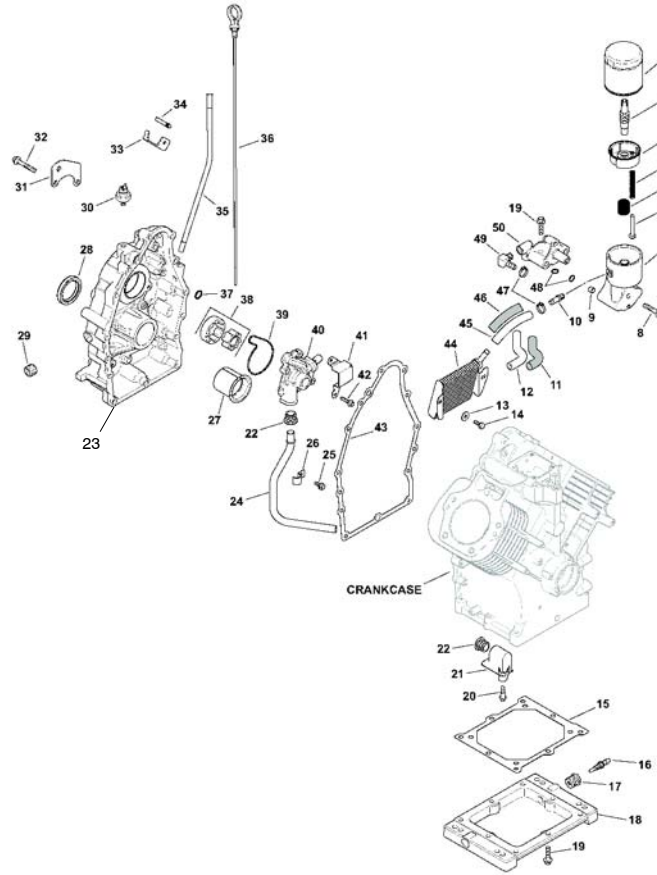
## Group 2: Crankcase



Illustrated parts without item reference numbers (the piston, for example) are not sold separately.

Item	Part Number	Description	Quantity
			Variation
1	62 012 10-S	Camshaft	1
2	M-551020-S	Screw, hvy flg M5 x 0.8 x 20	3
3	62 096 29-S	Cover, lifter feed	1
4	62 041 24-S	Gasket, lifter feed cover	1
5	15 380 01-S	Pin	3
6	-	Crankcase (use short block)	1
7	62 032 21-S	Seal, oil	1
8	62 067 13-S	Rod, connecting assembly	2
9	62 874 17-S	Kit, piston, std (includes item 10, 11)	2
9	62 874 18-S	Kit, piston, 0.25 OS	2
9	62 874 19-S	Kit, piston, 0.50 OS	2
10	62 018 04-S	Retainer, piston pin	4
11	62 108 07-S	Ring set, standard	2
12	24 380 16-S	Pin, locating	6
13	-	Bearing, crankshaft (flywheel)	

# Group 3: Oil Pan/Lubrication

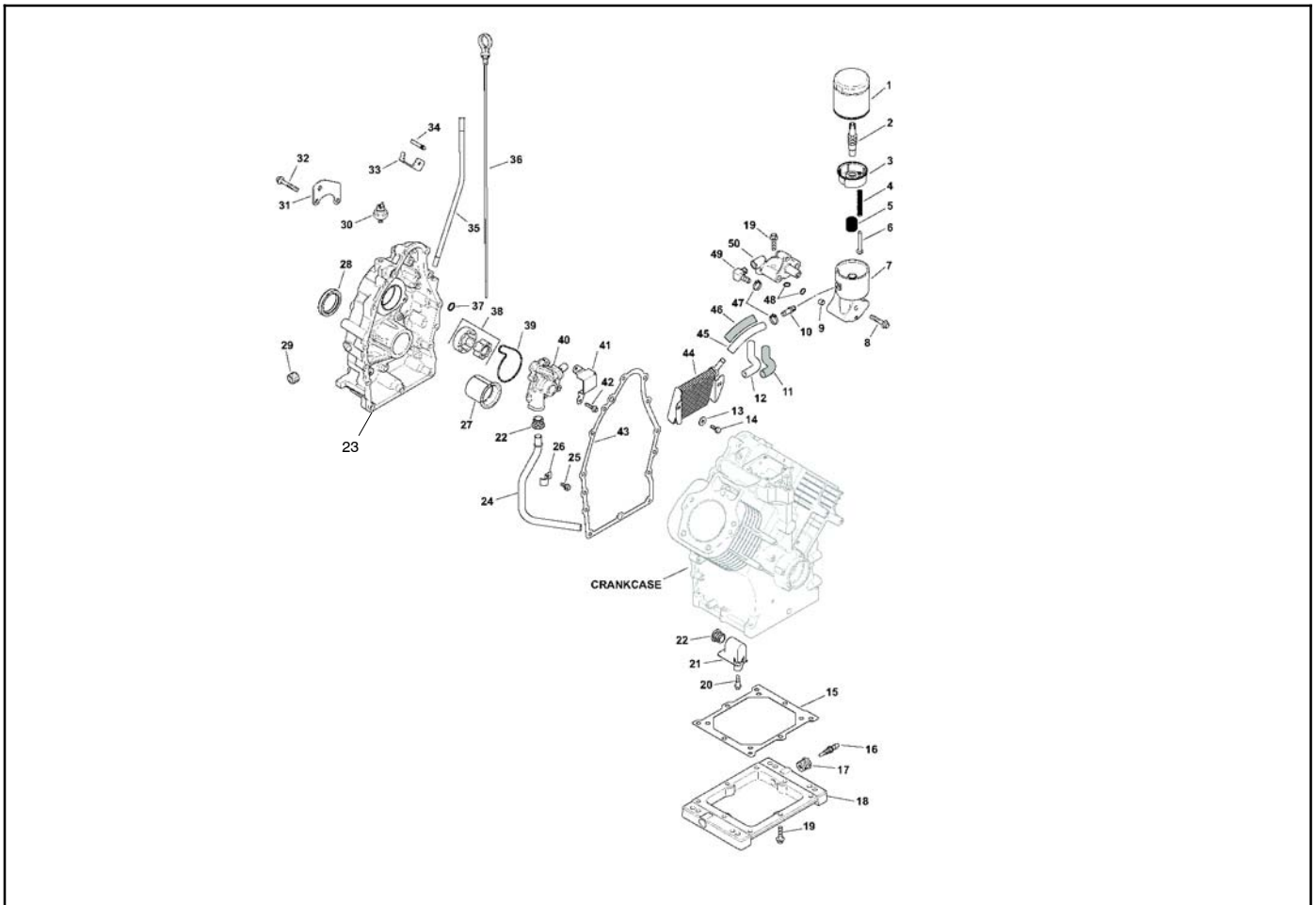


3-62-21

Item	Part Number	Description	Qty.
			Var. 21
1	52 050 02-S	Filter, oil	1
2	62 136 05-S	Nipple, oil filter	1
3	62 109 02-S	Cup, oil filter	1
4	62 089 11-S	Spring, oil filter valve	1
5	62 089 12-S	Spring, oil filter cup	1
6	62 462 02-S	Valve, oil filter	1
7	62 081 34-S	Housing, horizontal oil filter	1
8	M-851040-S	Screw, flg M8 x 1.25 x 40	1
10	12 294 04-S	Fitting, hose to pipe	1
11	25 431 12-S	Sleeve, anti abrasion	1
12	62 326 06-S	Hose, oil supply	1
13	X-25-52-S	Washer, flat 1/4 in.	2
14	24 086 12-S	Screw, tap M6 x 1.7 x 18	2
15	62 041 22-S	Gasket, oil reservoir	1
16	GM28823	Sensor, temperature	1
17	25 158 19-S	Bushing, reducer 1/2-1/8 in. NPT, steel	1
18	62 199 02-S	Kit, oil reservoir	1
19	M-851030-S	Screw, flg M8 x 1.25 x 30	9
20	32 086 01-S	Screw, shd thd frm, M6 x 1.0 x 26.5	1
21	62 081 06-S	Housing assembly, oil pickup	1
22	62 032 19-S	Seal, oil pick-up tube	2
23	62 009 33-S	Plate, closure	1
24	62 123 05-S	Tube, oil pickup	1
25	M-645016-S	Screw, flg thd frm, M6 x 1.0 x 16	1

Item	Part Number	Description	Qty.
			Var. 21
26	62 237 02-S	Clamp	1
28	62 032 21-S	Seal, oil	1
30	48 099 07-S	Switch, oil pressure	1
31	62 445 04-S	Strap, lifting	1
32	62 086 07-S	Screw, flg, M8 x 1.25 x 50	14
33	62 126 13-S	Bracket, dipstick tube	1
34	25 237 14-S	Clamp, spring hose, 1/2 in.	1
35	62 123 15-S	Kit, dipstick tube (includes 25 597 05-S)	1
36	62 038 04-S	Dipstick	1
37	24 153 08-S	O-ring	1
38	62 393 01-S	Pump assembly, oil/gerotor	1
39	62 153 04-S	O-ring, oil pump housing	1
40	62 081 37	Housing, oil pump	1
43	62 041 21-S	Gasket, oil pan	1
44	62 594 03-S	Cooler, oil assembly	1
45	62 326 10-S	Hose, oil return	1
46	25 431 16-S	Sleeve, anti abrasion	1
47	25 237 02-S	Clamp	4
48	24 153 01-S	O-ring, oil pick-up	3
49	24 294 12-S	Fitting, 90 deg, barbed	1
—	25 597 05-S	Sealant, Loctite (not shown)	1

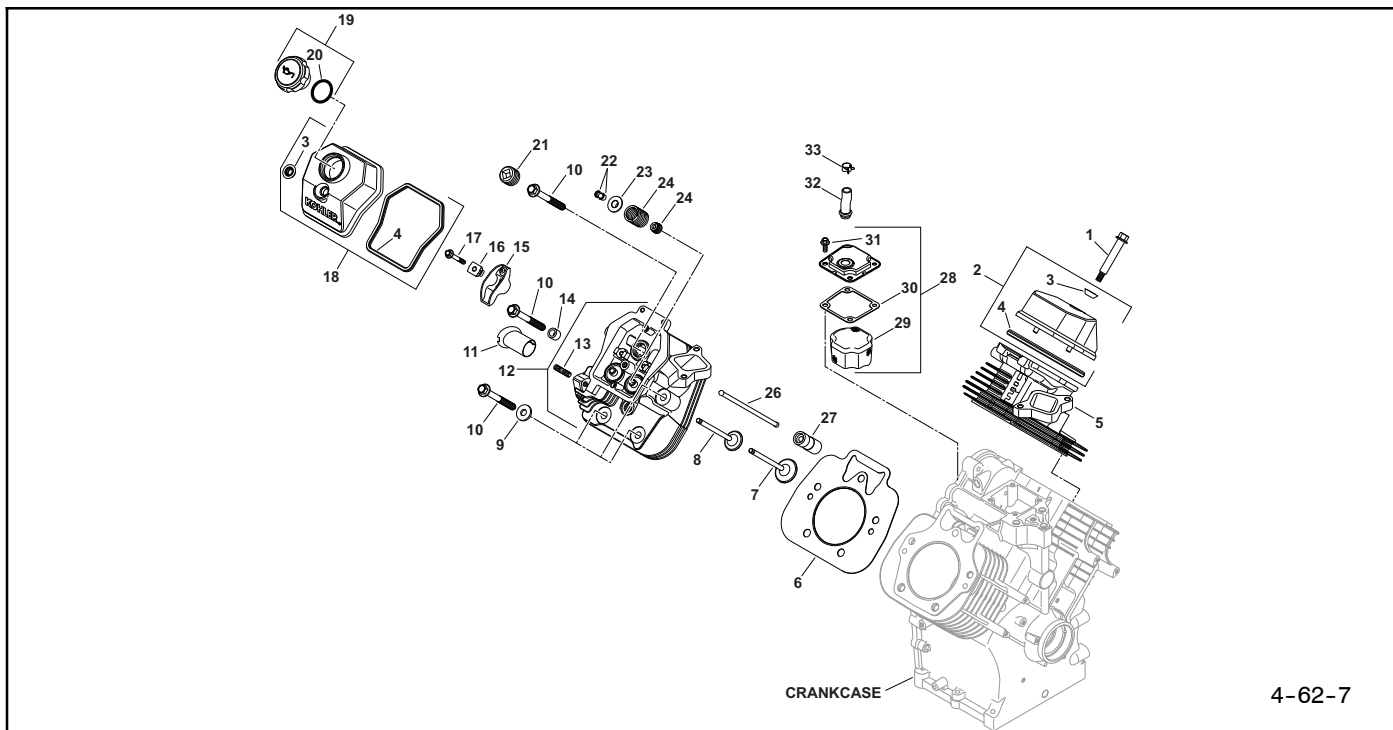
# Group 3: Oil Pan/Lubrication



Item	Part Number	Description	Qty.
			Var. 52
1	52 050 02-S	Filter, oil	1
2	62 136 05-S	Nipple, oil filter	1
3	62 109 02-S	Cup, oil filter	1
4	62 089 11-S	Spring, oil filter valve	1
5	62 089 12-S	Spring, oil filter cup	1
6	62 462 02-S	Valve, oil filter	1
7	62 081 34-S	Housing, horizontal oil filter	1
8	M-851040-S	Screw, flg M8 x 1.25 x 40	1
10	25 294 16-S	Fitting, barbed	1
11	25 431 12-S	Sleeve, anti abrasion	1
12	62 326 06-S	Hose, oil supply	1
13	X-25-52-S	Washer, flat 1/4 in.	2
14	24 086 12-S	Screw, tap M6 x 1.7 x 18	2
15	62 041 22-S	Gasket, oil reservoir	1
16	GM28823	Sensor, temperature	1
17	25 158 19-S	Bushing, reducer 1/2-1/8 in. NPT, steel	1
18	62 199 02-S	Kit, oil reservoir	1
19	M-851030-S	Screw, flg M8 x 1.25 x 30	9
20	32 086 01-S	Screw, shd thd frm, M6 x 1.0 x 26.5	1
21	62 081 06-S	Housing assembly, oil pickup	1
22	62 032 19-S	Seal, oil pick-up tube	2
23	62 009 33-S	Plate, closure	1
24	62 123 05-S	Tube, oil pickup	1
25	25 086 397-S	Screw, flg thd frm	1

Item	Part Number	Description	Qty.
			Var. 52
26	62 237 02-S	Clamp	1
28	62 032 21-S	Seal, oil	1
30	48 099 07-S	Switch, oil pressure	1
31	62 445 04-S	Strap, lifting	1
32	62 086 07-S	Screw, hex flg	14
33	62 126 13-S	Bracket, dipstick tube	1
34	25 237 14-S	Clamp, spring hose, 1/2 in.	1
35	62 123 15-S	Kit, dipstick tube (includes 25 597 05-S)	1
36	62 038 04-S	Dipstick	1
37	24 153 08-S	O-ring	1
38	62 393 01-S	Pump assembly, oil/gerotor	1
39	62 153 04-S	O-ring, oil pump housing	1
40	62 081 37	Housing, oil pump	1
43	62 041 21-S	Gasket, oil pan	1
44	62 594 05-S	Cooler, oil assembly	1
45	62 326 10-S	Hose, oil return	1
46	25 431 16-S	Sleeve, anti abrasion	1
47	25 237 02-S	Clamp	3
48	24 153 01-S	O-ring, oil pick-up	3
—	25 155 38-S	Connector, hose	1
—	25 597 05-S	Sealant, Loctite (not shown)	1

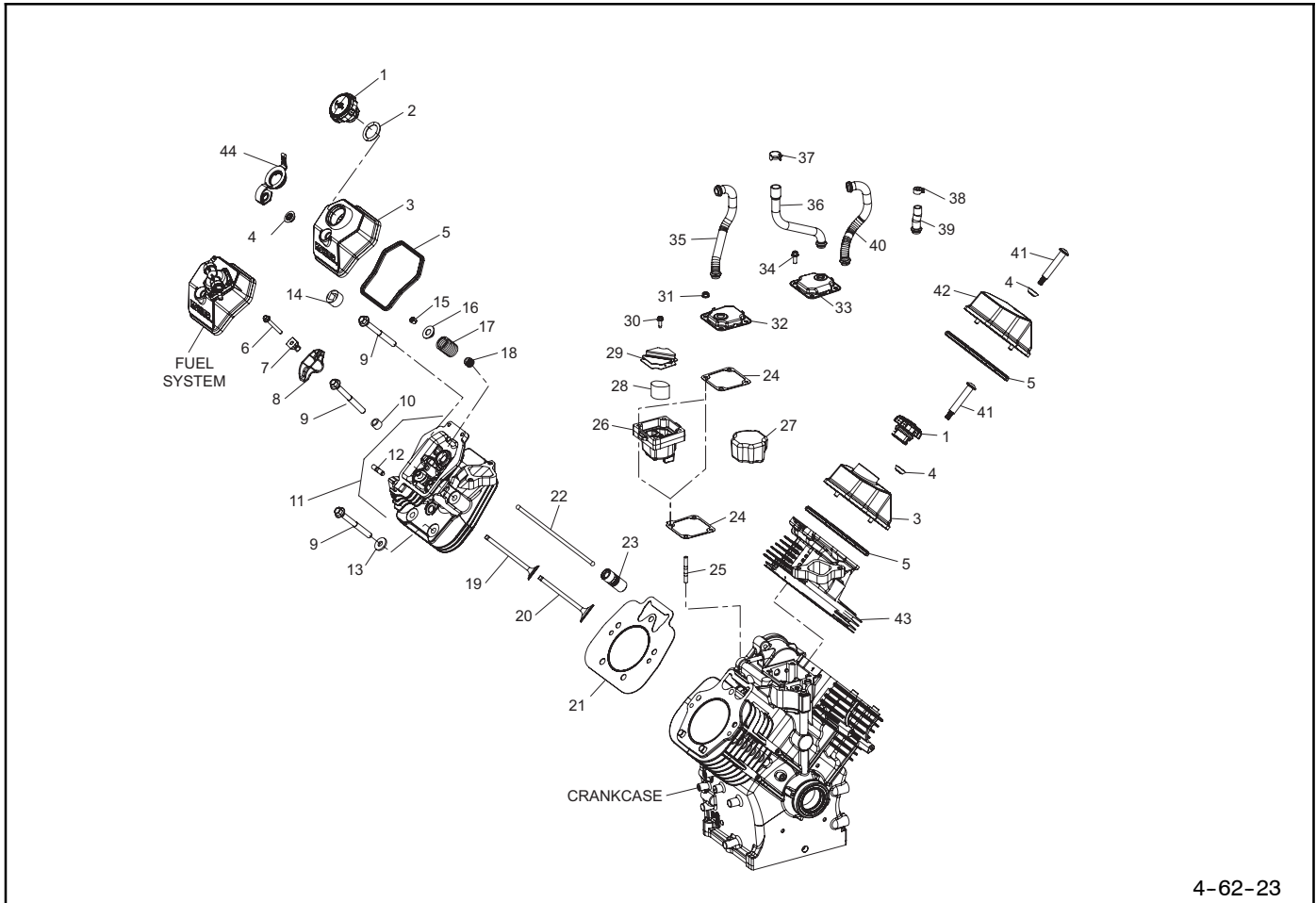
# Group 4: Cylinder Head/Valve/Breather



4-62-7

Item	Part Number	Description	Quantity
			Variation
1	25 086 272-S	Screw, shoulder	2
2	62 096 26-S	Kit, cover, valve (includes items 3, 4)	1
3	62 313 04-S	Grommet, valve cover screw	2
4	62 032 15-S	Seal, valve cover	2
5	62 318 12-S	Kit, cylinder head #1 (includes item 13 [qty2])	1
6	62 841 01-S	Kit, cylinder head gasket (includes 62 041 14-S, 62 041 13-S)	2
7	62 017 01-S	Valve, intake	2
8	62 016 02-S	Valve, exhaust	2
9	12 468 05-S	Washer, flat, 13/32 in.	6
10	62 086 08-S	Screw, flg, M10 x 1.5 x 90	10
11	62 605 05-S	Liner, exhaust port	2
12	62 318 13-S	Kit, cylinder head #2 (includes item 13 [qty2])	1
13	25 072 04-S	Stud, M8 x 1.25 x 33	4
14	62 112 03-S	Spacer	2
15	25 186 01-S	Arm, rocker	4
16	24 599 02-S	Pivot, rocker arm	4
17	32 086 04-S	Screw, flg, M6 x 1.0 x 45	4
18	62 096 27-S	Kit, cover, valve (includes items 3, 4)	1
19	62 173 03-S	Cap, oil fill assembly (includes item 20)	1
20	62 153 10-S	O-ring	1
21	25 139 66-S	Plug, pipe, 3/4 NPTF sq ctsk	2
22	12 755 03-S	Kit, retainer	4
23	25 173 28-S	Cap, valve spring	4
24	24 089 54-S	Spring, valve	4
25	66 032 05-S	Seal, valve stem	4
25	25 032 14-S	Seal, valve stem	4
26	12 411 04-S	Rod, push	4
27	25 351 10-S	Kit, hydraulic valve lifter (includes 25 357 14-S)	4
28	62 033 06-S	Kit, breather assembly (includes items 29-31)	1
29	62 050 10-S	Filter, breather	1
30	62 041 27-S	Gasket, breather	1
31	M-651016-S	Screw, flg, M6 x 1.0 x 16	4
32	62 326 29-S	Hose, breather	1
33	25 237 08-S	Clamp, band spring hose	1
—	62 755 03-S	Kit, cylinder head hardware services 1 head. Quantities listed are for both heads (includes items 7, 8, 15-17, 22-26)	2
—	25 357 14-S	Lubricant, camshaft (not shown)	1
—	62 041 14-S	Gasket, exhaust (not shown)	2
—	62 041 13-S	Gasket, intake manifold (not shown)	2

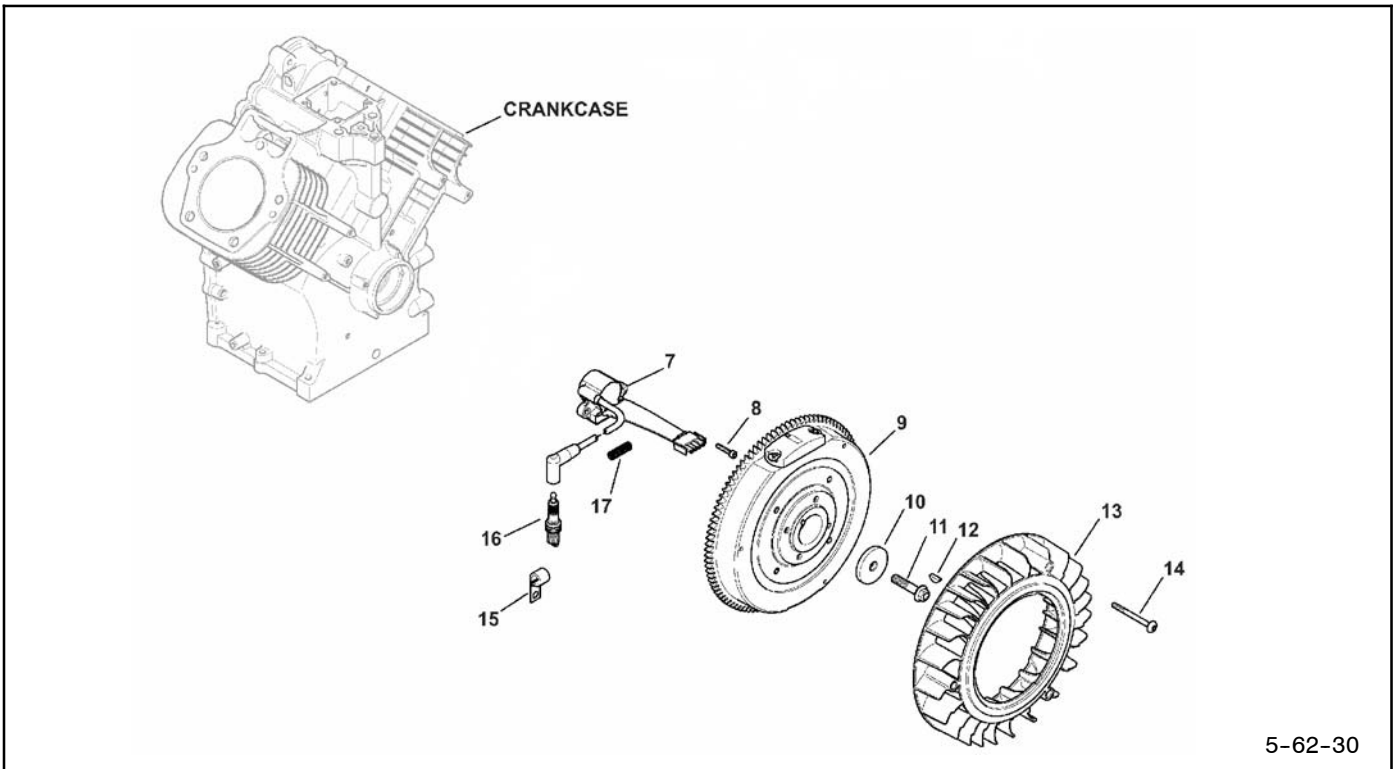
# Group 4: Cylinder Head/Valve/Breather



4-62-23

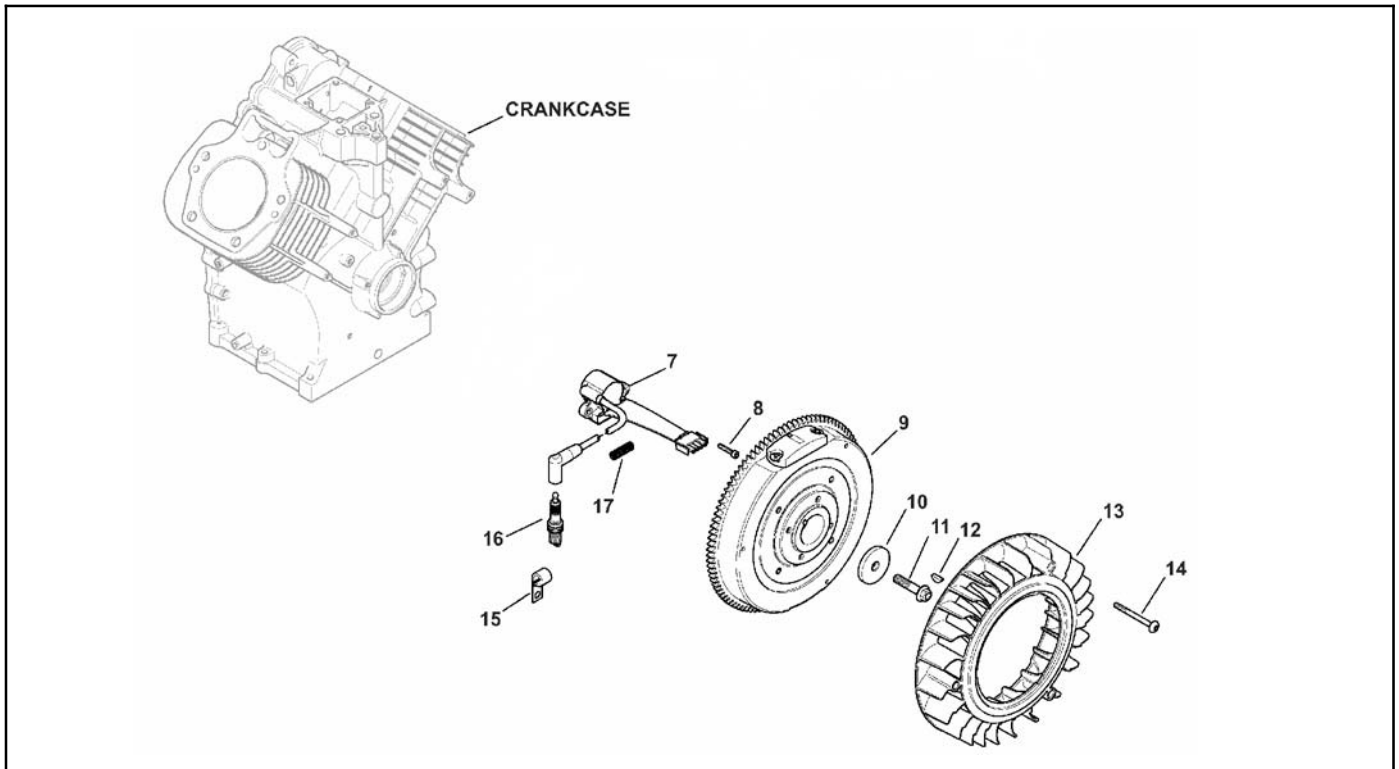
Item	Part Number	Description	Quantity
			Variation 23
3	62 096 37-S	Kit, cover, valve	1
6	32 086 04-S	Screw, flg, M6 x 1.0 x 45	4
7	24 599 02-S	Pivot, rocker arm	4
8	25 186 01-S	Arm, rocker	4
9	62 086 08-S	Screw, flg, M10 x 1.5 x 90	10
10	62 112 03-S	Spacer	2
11	62 318 30-S	Kit, cylinder head #2	1
12	25 072 04-S	Stud	4
13	12 468 05-S	Washer, flat, 13/32 in.	6
14	25 139 66-S	Plug, pipe, 3/4 NPTF sq ctsk	2
15	12 755 03-S	Kit, retainer	4
16	25 173 28-S	Cap, valve spring	4
17	24 089 54-S	Spring, valve	4
18	25 032 14-S	Seal, valve stem	2
19	62 016 02-S	Valve, exhaust	2
20	62 017 01-S	Valve, intake	2
21	62 841 01-S	Kit, cylinder head gasket (includes 62 041 14-S, 62 041 13-S)	2
22	12 411 04-S	Rod, push	4
23	25 351 10-S	Kit, hydraulic valve lifter (includes 25 357 14-S)	4
24	62 041 27-S	Gasket, breather	1
27	62 050 10-S	Filter, breather	1
33	62 033 06-S	Kit, breather assembly (includes items 24, 27)	1
34	M-651016-S	Screw, flg, M6 x 1.0 x 16	4
35	62 326 29-S	Hose, breather	1
41	25 086 410-S	Screw, shoulder	2
42	62 096 37-S	Kit, cover, valve	1
43	62 318 28-S	Kit, cylinder head #1	1
44	62 313 08-S	Grommet, oil fill	2

# Group 5: Ignition/Electrical



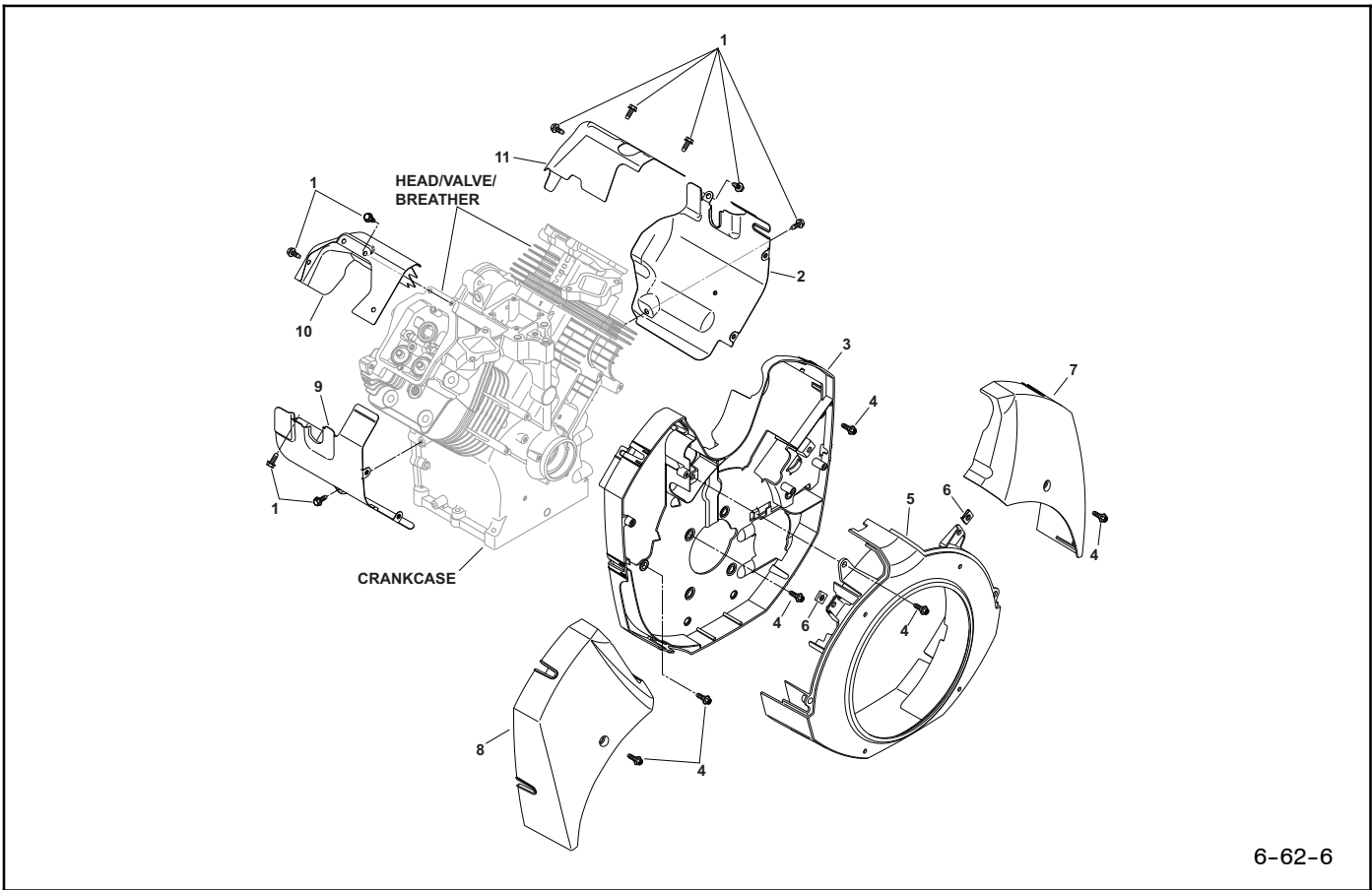
Item	Part Number	Description	Quantity
			Variation
7	62 584 04-S	Module, Ignition	2
8	-	Screw, skt thd frm, M5 x 0.8 x 25	1
9	62 025 11	Flywheel	1
10	62 468 01-S	Washer, flat 13/32 in.	1
11	12 086 14-S	Screw, flg, M10 x 1.5 x 45	1
12	X-42-15-S	Key, 3/16 in. x 5/8 in.	1
13	62 157 03	Fan	1
14	25 086 132-S	Screw, trs hd, M6 x 1.0 x 65	4
15	47 154 01-S	Clip, cable	1
16	62 132 04-S	Plug, spark	2
17	62 431 02-S	Sleeve, corrugated	2
—	12 454 03-S	Tie, cable (not shown)	1
—	25 454 07-S	Tie (not shown)	2
—	62 176 02-S	Harness, wiring (not shown)	1

## Group 5: Ignition/Electrical



Item	Part Number	Description	Quantity
			Variation
7	62 584 04-S	Module, Ignition	2
9	62 025 20-S	Flywheel	1
10	62 468 01-S	Washer, flat 13/32 in.	1
11	12 086 14-S	Screw, flg, M10 x 1.5 x 45	1
12	X-42-15-S	Key, 3/16 in. x 5/8 in.	1
13	62 157 04-S	Fan	1
14	25 086 47-S	Bolt, Shoulder	4
15	25 154 04-S	Clip, cable	1
16	62 132 04-S	Plug, spark	2
17	62 431 02-S	Sleeve, corrugated	2
—	12 454 03-S	Tie, cable (not shown)	1
—	25 454 07-S	Tie (not shown)	2
—	62 176 02-S	Harness, wiring (not shown)	1
—	25 086 656-S	Screw, thread throwing (not shown)	4

# Group 6: Blower Housing and Baffles

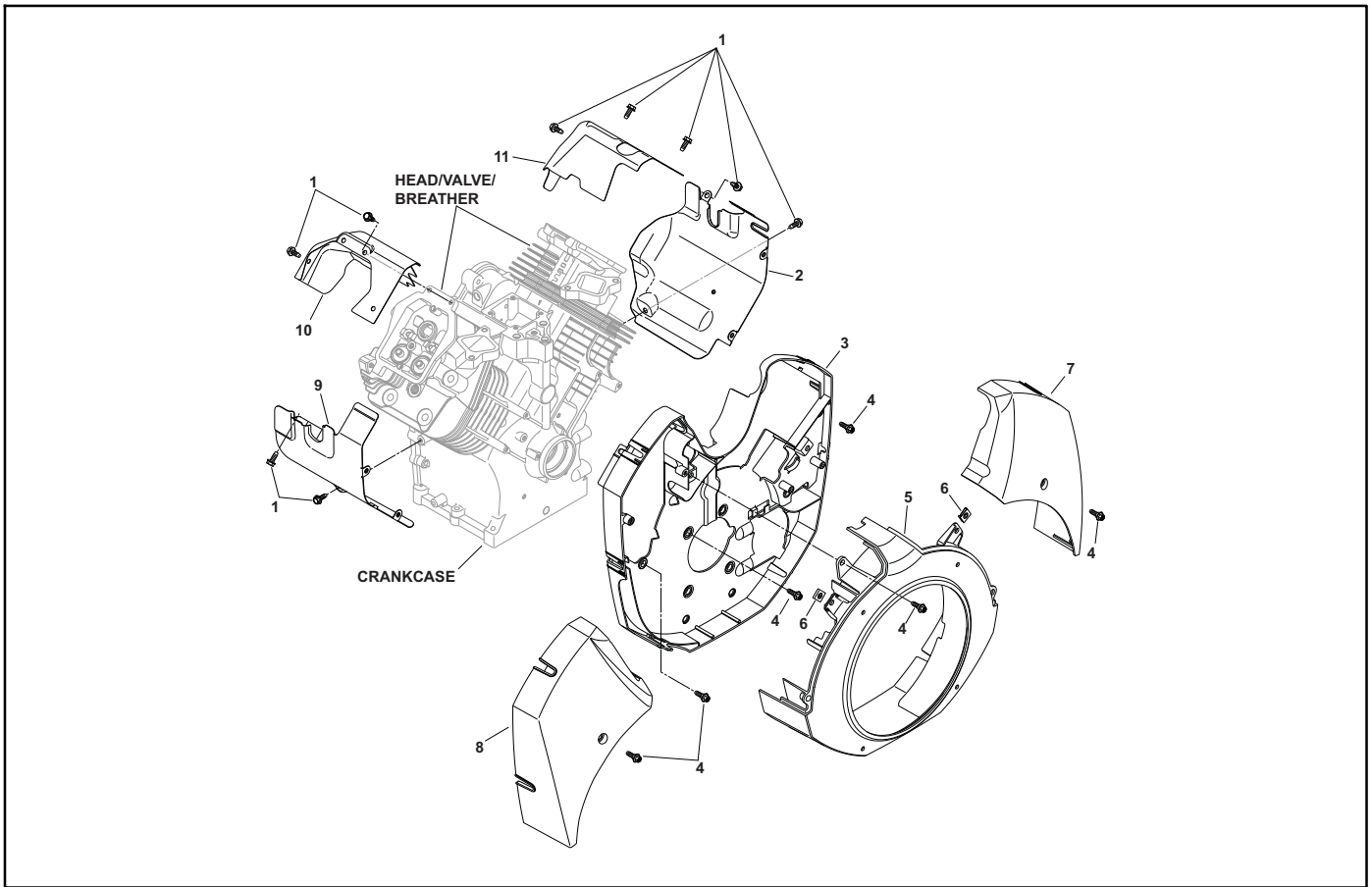


6-62-6

Item	Part Number	Description	Quantity
			Variation
			<b>6</b>
1	M-645016-S	Screw, flg thd frm, M6 x 1.0 x 16	10
2	62 063 03-S	Baffle, cyl barrel #1 side	1
3	62 424 07-S	Shroud, backing	1
4	62 086 10-S	Screw, shd thd frm	18
5	62 027 03-S	Kit, blower housing assembly (includes 41 037 10-S)	1
6	25 154 02-S	Clip, mounting	12
7	62 424 08-S	Shroud, #1 cylinder	1
8	62 424 09-S	Shroud, #2 cylinder	1
9	62 063 07-S	Baffle, cyl barrel #2 side	1
10	62 063 16-S	Baffle, valley #2 side	1
11	62 063 11-S	Baffle, valley #1 side	1
—	41 037 10-S	Nameplate, service (not shown)	1

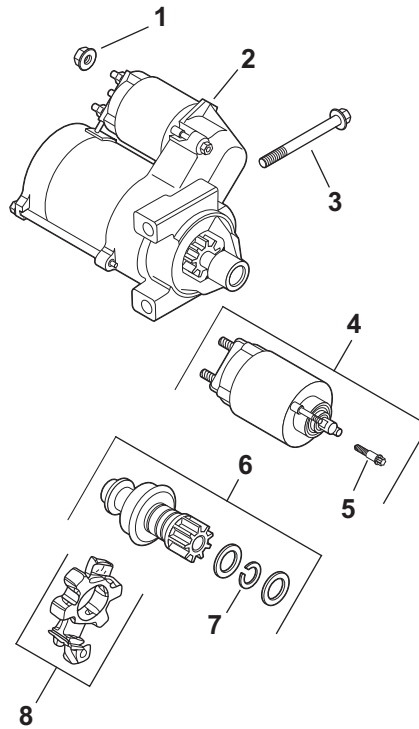


# Group 6: Blower Housing and Baffles



Item	Part Number	Description	Quantity
			Variation
			<b>26</b>
1	25 086 397-S	Screw, flg thd frm, M6 x 1.0 x 16	10
2	62 063 31-S	Baffle, cyl barrel #1 side	1
3	62 424 15-S	Shroud, backing	1
4	62 086 10-S	Screw, shd thd frm	4
5	62 027 20-S	Kit, blower housing assembly	1
6	25 154 13-S	Clip, mounting	10
7	62 424 17-S	Shroud, #1 cylinder	1
8	62 424 18-S	Shroud, #2 cylinder	1
9	62 063 32-S	Baffle, cyl barrel #2 side	1
10	62 063 38-S	Baffle, valley #2 side	1
11	62 063 37-S	Baffle, valley #1 side	1

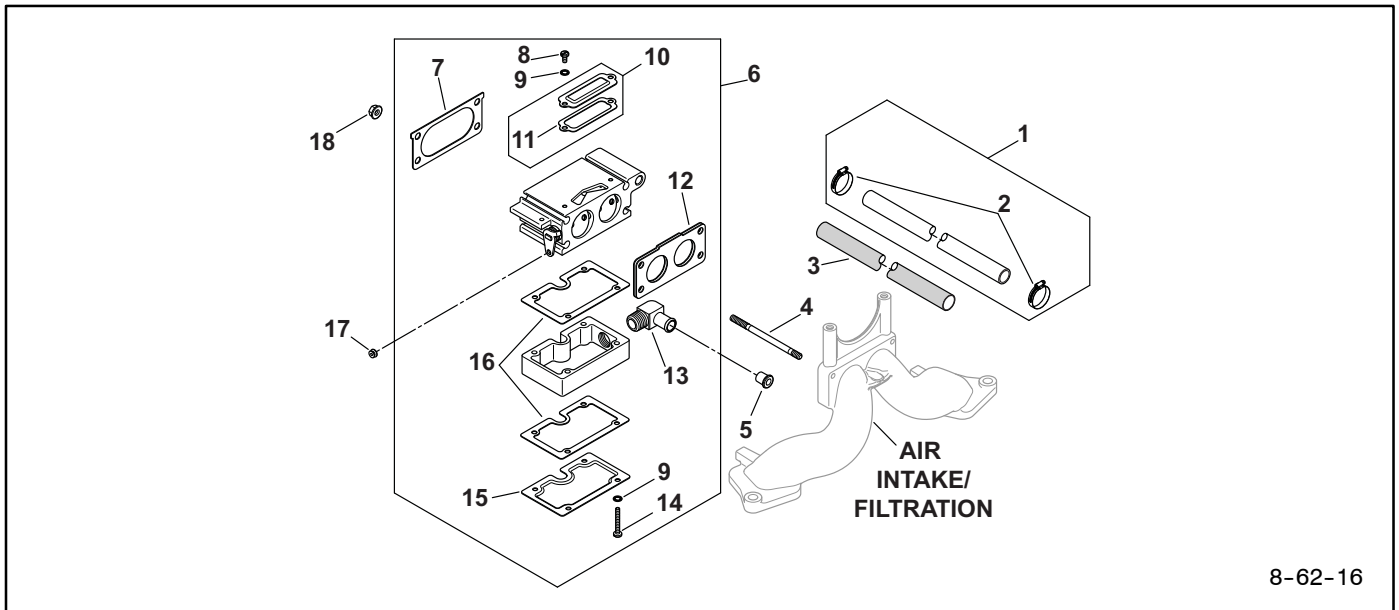
# Group 7: Starter



7-24-5  
7-62-1

Item	Part Number	Description	Quantity
			Variation
1	M-841080-S	Nut, flg, M8 x 1.25	1
2	25 098 11-S	Starter assembly, solenoid shift (includes items 4-8)	1
3	M-851080-S	Screw, flg, M8 x 1.25 x 80	2
4	25 435 06-S	Kit, solenoid (includes item 5)	1
5	25 086 113-S	Screw, external torx head	3
6	25 755 33-S	Kit, starter pinion (includes item 7)	1
7	25 141 05-S	Ring, retaining	1
8	25 221 01-S	Kit, brush holder	1

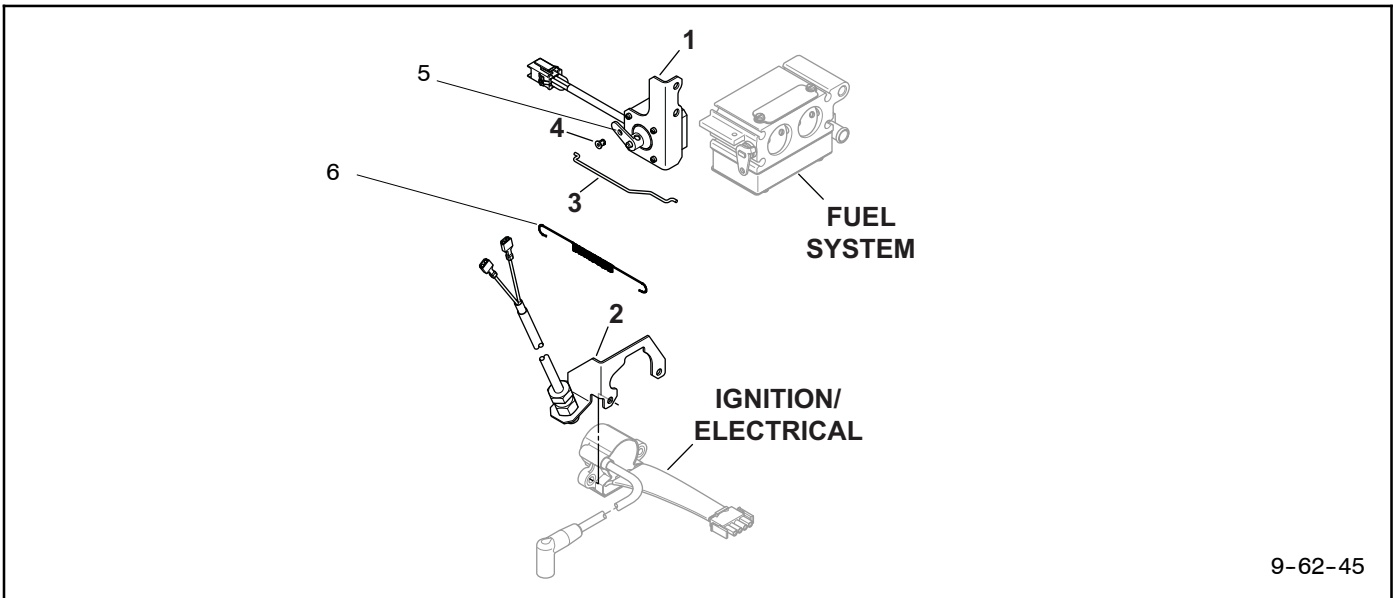
# Group 8: Carburetor



8-62-16

Item	Part Number	Description	Quantity	
			16	20
1	25 353 36-S	LP fuel line (23")	1	1
2	25 237 32-S	Clamp, hose	2	2
3	25 431 19-S	Sleeve, anti-abrasion	1	1
4	M-629095-S	Stud, M6 x 1.0 x 96	4	
4	25 072 26-S	Stud		4
5	-	Fitting, restrictor (See Fuel System group)	1	
6	62 853 44-S	Kit, Carburetor (includes items 7-17)	1	1
7	62 041 29-S	Gasket, air cleaner elbow	1	1
8	25 086 133-S	Screw, slotted pan, M4 x 0.7 x 8	2	
9	X-22-7-S	Washer, int tooth lock #8	6	
10	62 096 30-S	Cover, idle circuit	1	
11	62 041 30-S	Gasket, idle circuit plate	1	
12	24 041 81-S	Gasket, carburetor	1	1
13	25 294 19-S	Fitting, 90 deg. elbow	1	
14	25 086 134-S	Screw, slotted pan, M4 x 0.7 x 30	4	
15	62 096 31-S	Cover, plenum	1	
16	62 041 31-S	Gasket, plenum-carburetor	2	
17	25 158 03-S	Bushing	1	1
18	M641060-S	Nut, hex flange	4	4

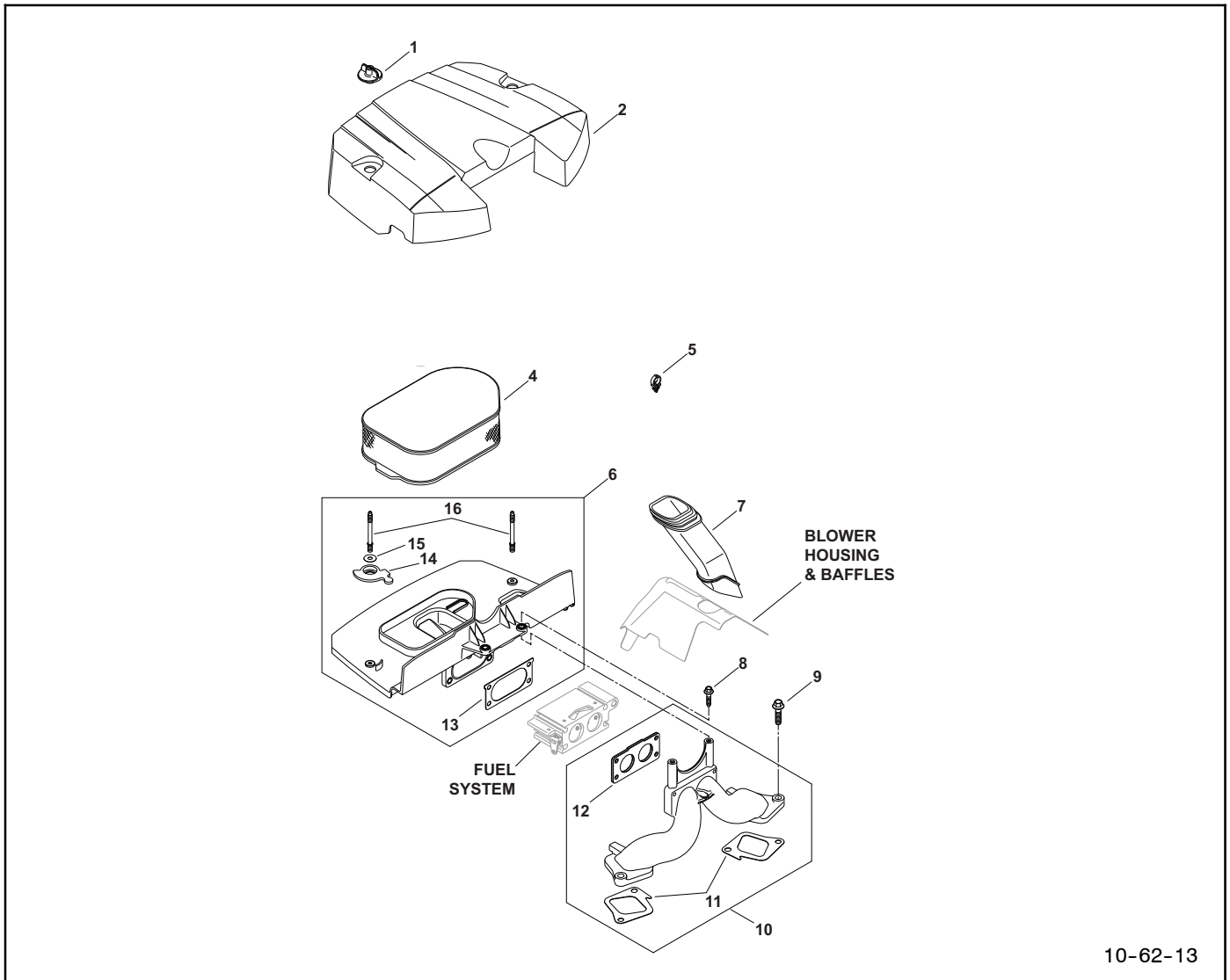
# Group 9: Engine Controls



9-62-45

Item	Part Number	Description	Quantity
			Variation
1	GM81265	Governor assembly	1
2	-	not used	1
3	62 079 16-S	Linkage, throttle	1
4	25 158 08-S	Bushing, linkage retaining	1
5	358358	Coupling, stepper motor	1
6	62 089 45-S	Spring, linkage	1

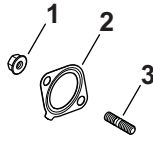
# Group 10: Air Intake/Filtration



10-62-13

Item	Part Number	Description	Quantity	
			13	30
1	25 341 04-S	Knob, cover	2	2
2	62 096 17-S	Cover, air cleaner	1	1
4	62 083 04-S	Element, air filter	1	1
5	62 154 05-S	Clip, fuel line	1	
6	62 094 40-S	Kit, air cleaner base (includes items 16,17)	1	1
7	62 123 19-S	Tube, air intake	1	
7	62 123 37-S	Tube, air intake		1
8	25 086 124-S	Screw, flg, M6 x 1.0 x 25	2	2
9	M-851030-S	Screw, flg, M8 x 1.25 x 30	4	4
10	62 164 22-S	Kit, intake manifold (includes items 11,12)	1	1
11	62 041 13-S	Gasket, intake manifold	2	2
12	24 041 82-S	Gasket, carburetor	1	1
13	62 041 29-S	Gasket, air cleaner elbow	1	1
14	-	not used		
15	-	not used		
16	20 072 04-S	Stud, air cleaner base	2	2
17	62 326 29-S	Hose, breather (not shown, see Group 4)	1	

## Group 11: Engine Exhaust



11-62-9

Item	Part Number	Description	Quantity
			Variation
			<b>9</b>
1	M-841080-S	Nut, flg, M8 x 1.25	4
2	62 041 14-S	Gasket, exhaust	2
3	25 072 24-S	Stud, M8 x 1.25 x 33	4

## Group 12: Engine Decals

Decals not illustrated.

Item	Part Number	Description	Quantity
			Variation
			<b>16</b>
1	25 113 39-S	Decal, clear laminate	1
2	25 113 50-S	Decal, Powered by Kohler-white	1
3	62 113 24-S	Decal, air cleaner	1

## Group 12: Engine Decals

Decals not illustrated.

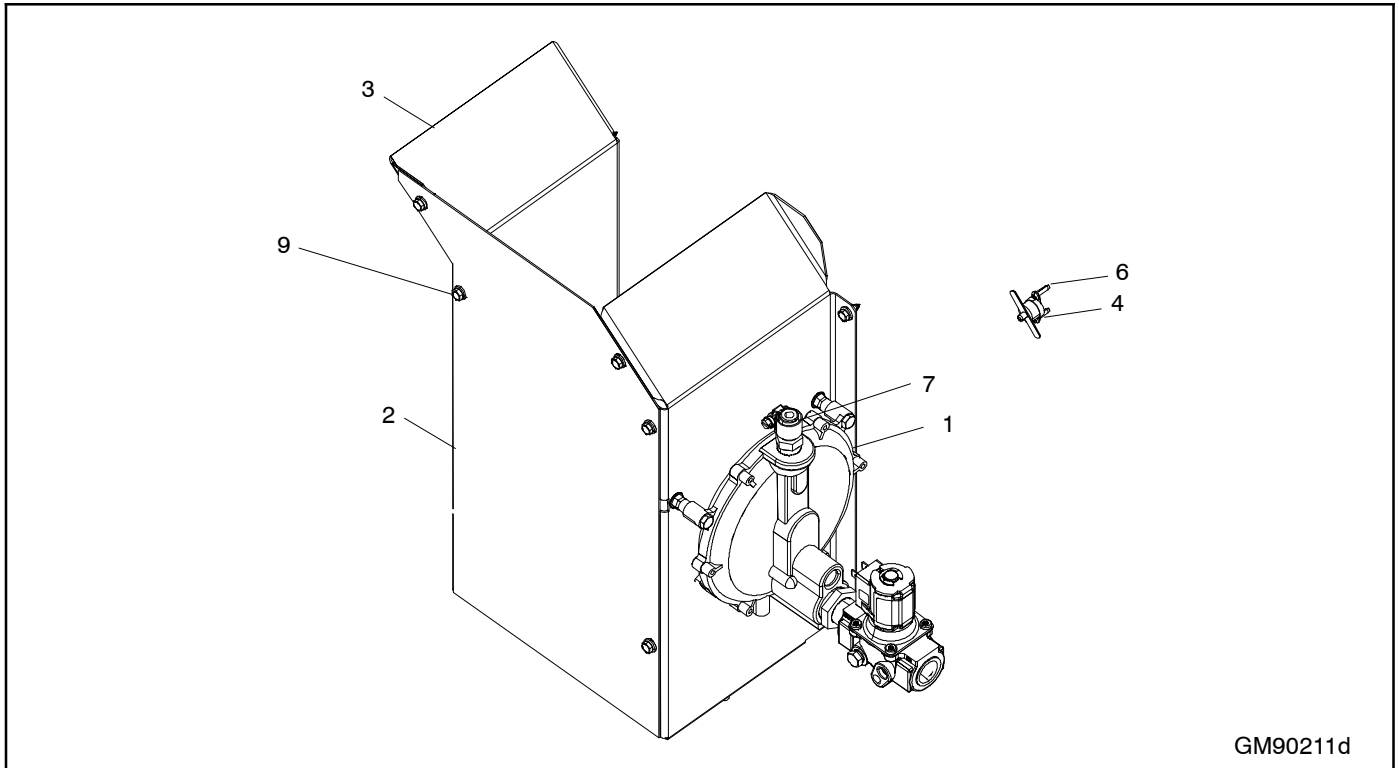
Item	Part Number	Description	Quantity
			Variation
			<b>53</b>
1	25 113 79-S	Decal, clear laminate	1
2	25 113 50-S	Decal, Powered by Kohler-white	1

## Group 13: Gasket Set

Gasket set not illustrated.

Item	Part Number	Description	Quantity
			Variation
			<b>1</b>
1	62 755 02-S	Gasket set	1

# Fuel System



GM90211d

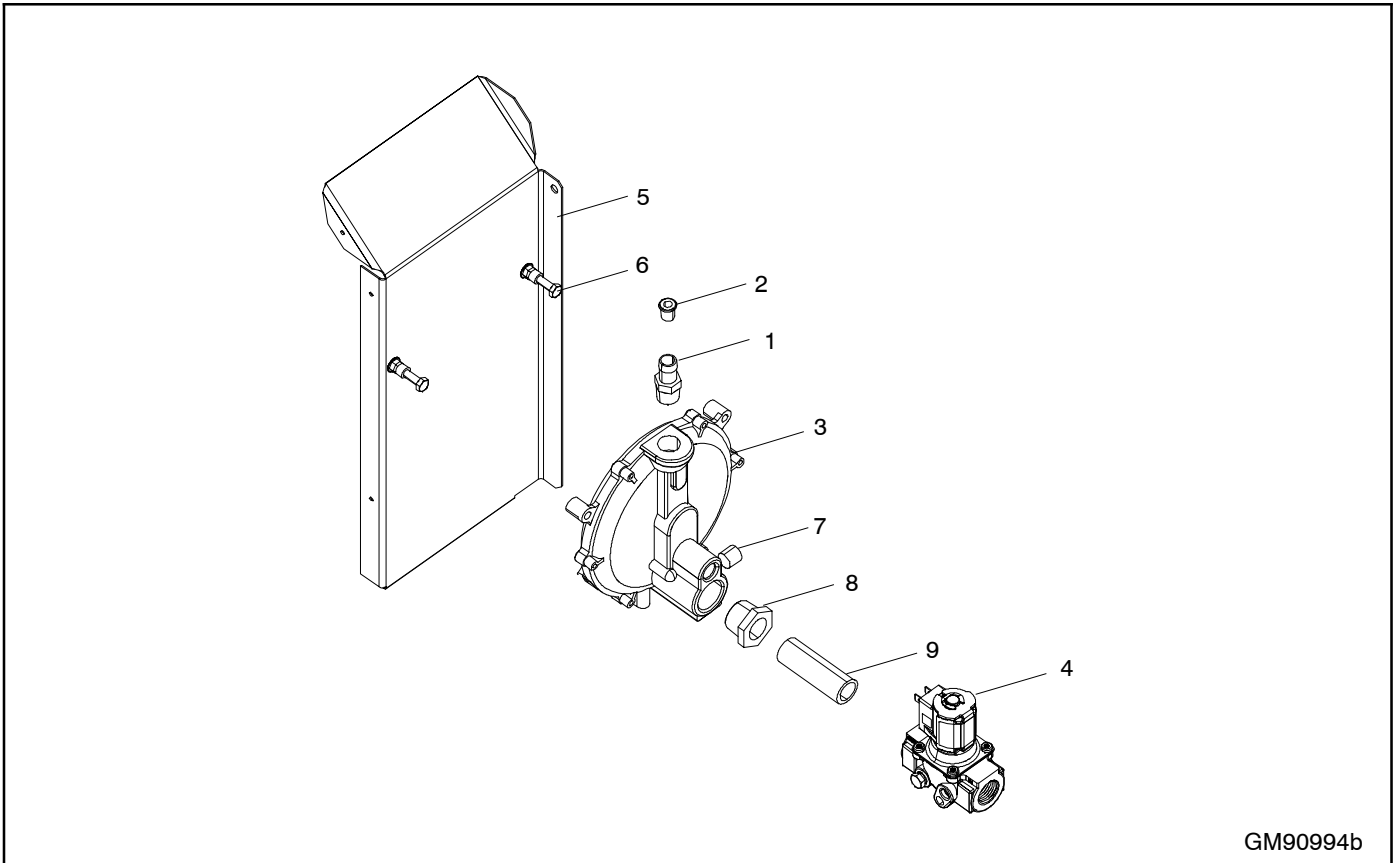
## GM90211-GR1

Item	Part Number	Description	Quantity
			Variation
1	GM90994	Fuel System , Subassy	1
2	GM92048	Panel, Air Intake Cover	1
3	GM92050	Panel, Air Intake Duct	1
4	GM92505	Thermostat, 250 deg.	1
6	X-67-152	Screw, Tapping	2
7	X-426-12	Clamp, hose, .69/1.25 in.	1
9	X-6216-1	Screw, Phillips hex crimpite	9

## GM93903-GR1

Item	Part Number	Description	Quantity
			Variation
1	GM90994	Fuel System , Subassy	1
2	GM95514	Panel, Air Intake Cover	1
3	GM93937	Bracket, Fuel Support	1
4	GM92505	Thermostat, 250 deg.	1
6	X-67-152	Screw, Tapping	2
7	X-426-12	Clamp, hose, .69/1.25 in.	1
9	X-6216-1	Screw, Phillips hex crimpite	7

# Fuel System

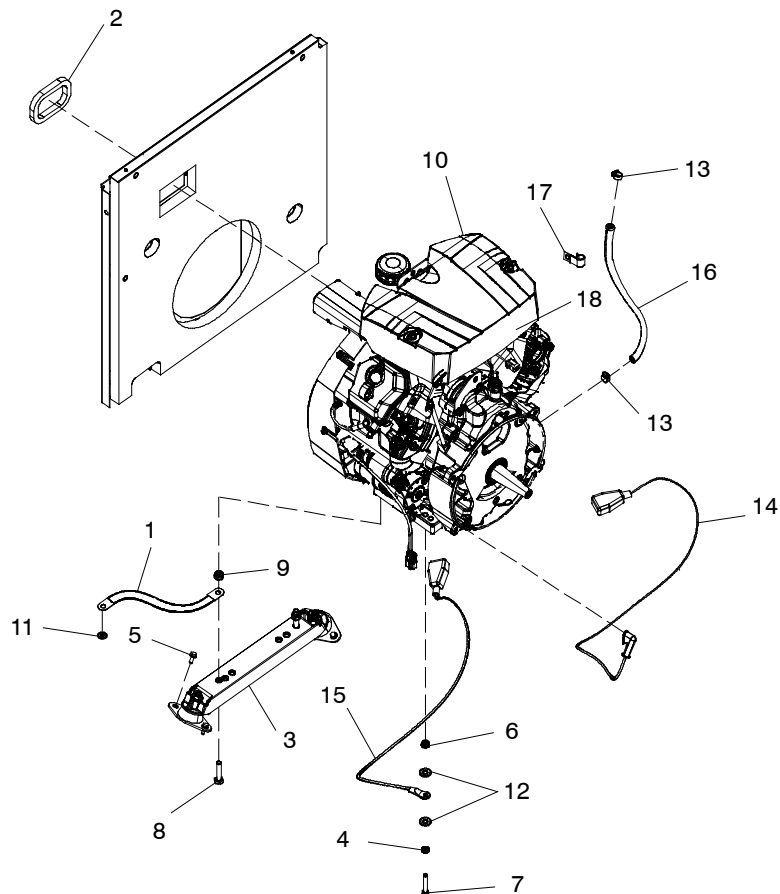


## GM90994

Item	Part Number	Description	Quantity
1	25 294 21-S	FITTING, STRAIGHT	1
2	62 294 06-S	FITTING, RESTRICTOR	1
3	GM71184	Regulator, Gas	1
4	GM85084	Valve, Gas Shut-off	1
5	GM92049	Panel, Fuel Regulator Mtg.	1
6	M933-06030-60	Screw, Hex Cap	2
7	X-75-51	Plug, pipe ( 1/4" nptf)	1
8	X-202-63	Bushing, Reducing (1/2 x 3/4"npt)	1
9	X-209-5	Pipe, Nipple (1/2" NPT x 1.50")	1



# Engine

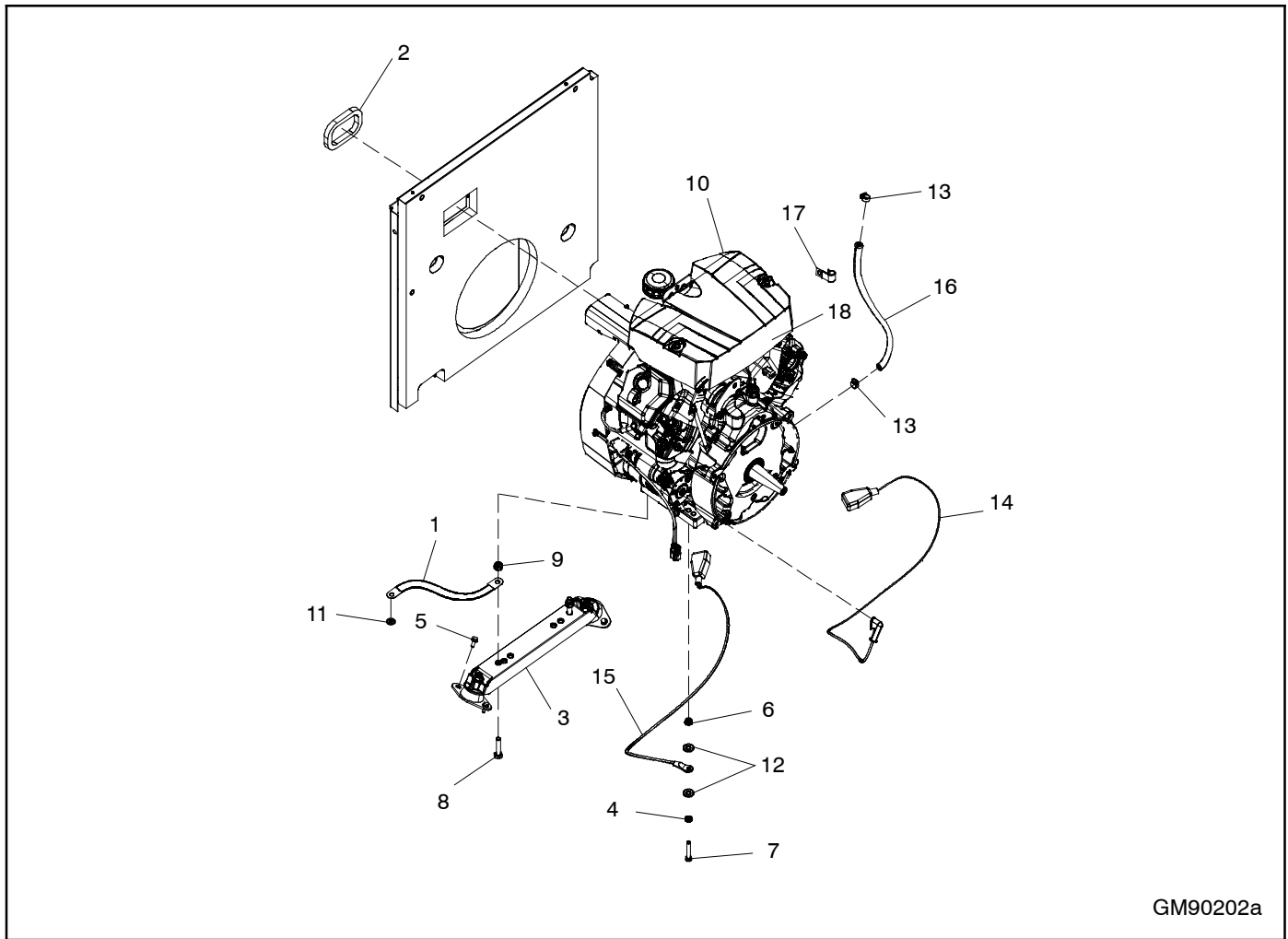


GM90202a

## GM90202-GA1

Item	Part Number	Description	Quantity
			Variation
			1
1	GM50449	Strap, Ground	1
2	GM84246	Insulation, Acoustic Foam	1
3	GM87305	Vibromount Assembly	1
4	M125A-08-80	Washer, Plain 8.4 ID x 16.0 OD	1
5	M6921-06016-60	Screw, Hex Flange M6x16mm fly thrd js500	4
6	M6923-08-80	Nut, Hex 8mm	1
7	M931-08055-60	Screw, Hex Cap	1
8	M931-10050-60	Screw, Hex Cap	2
9	M982-10-80	Nut, hex elastic stop	2
10	PS-CH1000-2025	CH1000EP EPA PH1 KPS-20KW GEN-SET (LPAC)	1
11	X-22-12	Washer, lock .262 IDx.743 in.OD	1
12	X-22-14	Washer, lock, .391 ID x .975 in. OD	2
13	X-426-9	Clamp, hose, .25/.70 in.	2
14	X-545-238	Cable, battery	1
15	X-545-239	Cable, battery	1
16	X-612-28	Hose, Oil Proof	1
17	X-6084-1	Clip, J	1
18	GM91274	Insulation, Acoustic Foam (Foil Patch)	

# Engine



GM90202a

## GM95513-GR1

Item	Part Number	Description	Quantity
			Variation
			<b>2</b>
1	GM50449	Strap, Ground	1
2	GM84246	Insulation, Acoustic Foam	1
3	GM87305	Vibromount Assembly	1
4	M125A-08-80	Washer, Plain 8.4 ID x 16.0 OD	1
5	M6921-06016-60	Screw, Hex Flange M6x16mm fly thrd js500	4
6	M6923-08-80	Nut, Hex 8mm	1
7	M931-08055-60	Screw, Hex Cap	1
8	M931-10050-60	Screw, Hex Cap	2
9	M982-10-80	Nut, hex elastic stop	2
10	PS-CH1000-3011	CH1000EP EPA PHI KPS-20KW GEN-SET	1
11	X-22-12	Washer, lock .262 IDx.743 in.OD	1
12	X-22-14	Washer, lock, .391 ID x .975 in. OD	2
13	X-426-9	Clamp, hose, .25/.70 in.	2
14	X-545-238	Cable, battery	1
15	X-545-239	Cable, battery	1
16	X-612-28	Hose, Oil Proof	1
17	X-6084-1	Clip, J	1
18	GM91274	Insulation, Acoustic Foam (Foil Patch)	

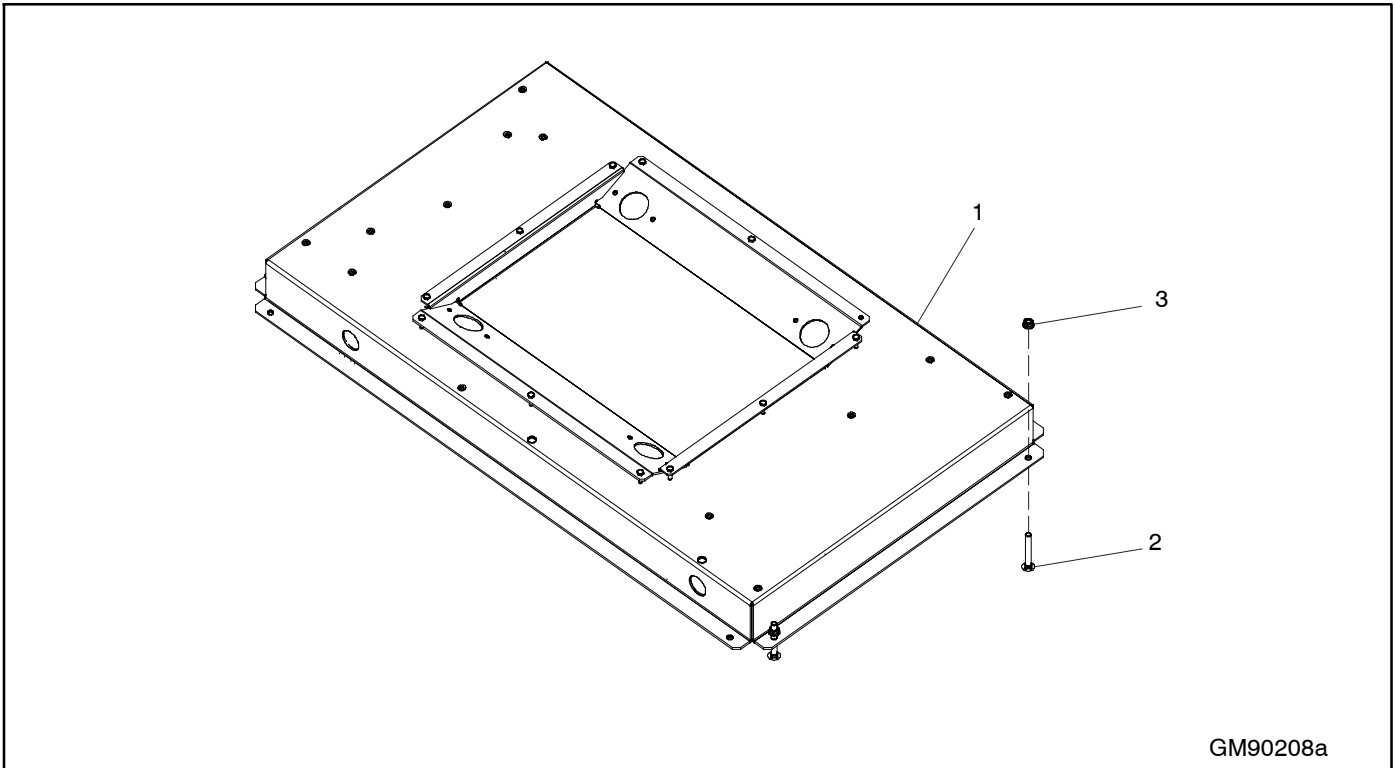
# Nameplate and Decals

Nameplate and decals are not illustrated.

**GM90793-GR1**

Item	Part Number	Description	Quantity
			Variation
1	224233	Decal, 1-800 number	1
2	239789	Decal, notice, neutral bonded to frame	1
3	249808	Decal, warning rotating parts	1
4	249809	Decal, Caution Hot Engine	3
5	255882	Decal, caution stdby svc connect	1
6	257438	Decal, danger moving rotor	1
7	294520	Decal, danger, high voltage	1
8	GM13680	Nameplate, Overlay (NRP) 500 per roll	1
9	GM15299	Decal, Rainproof Enclosure	1
10	GM20172	Decal, Unbalanced Load	1
11	GM29924	Decal, notice, fuel connection	1
12	GM47407	Decal, Fuel Type	1
13	GM53084	Decal, Power Breaker	1
14	GM60175	Decal, Warning Non GFCI Outlet	1
15	GM75728	Decal, Fuel Type	1
16	GM81760	Decal, Kohler -RDC2/DC2/VSC	1
17	GM75579	Decal, Kohler Logo	1

# Skid

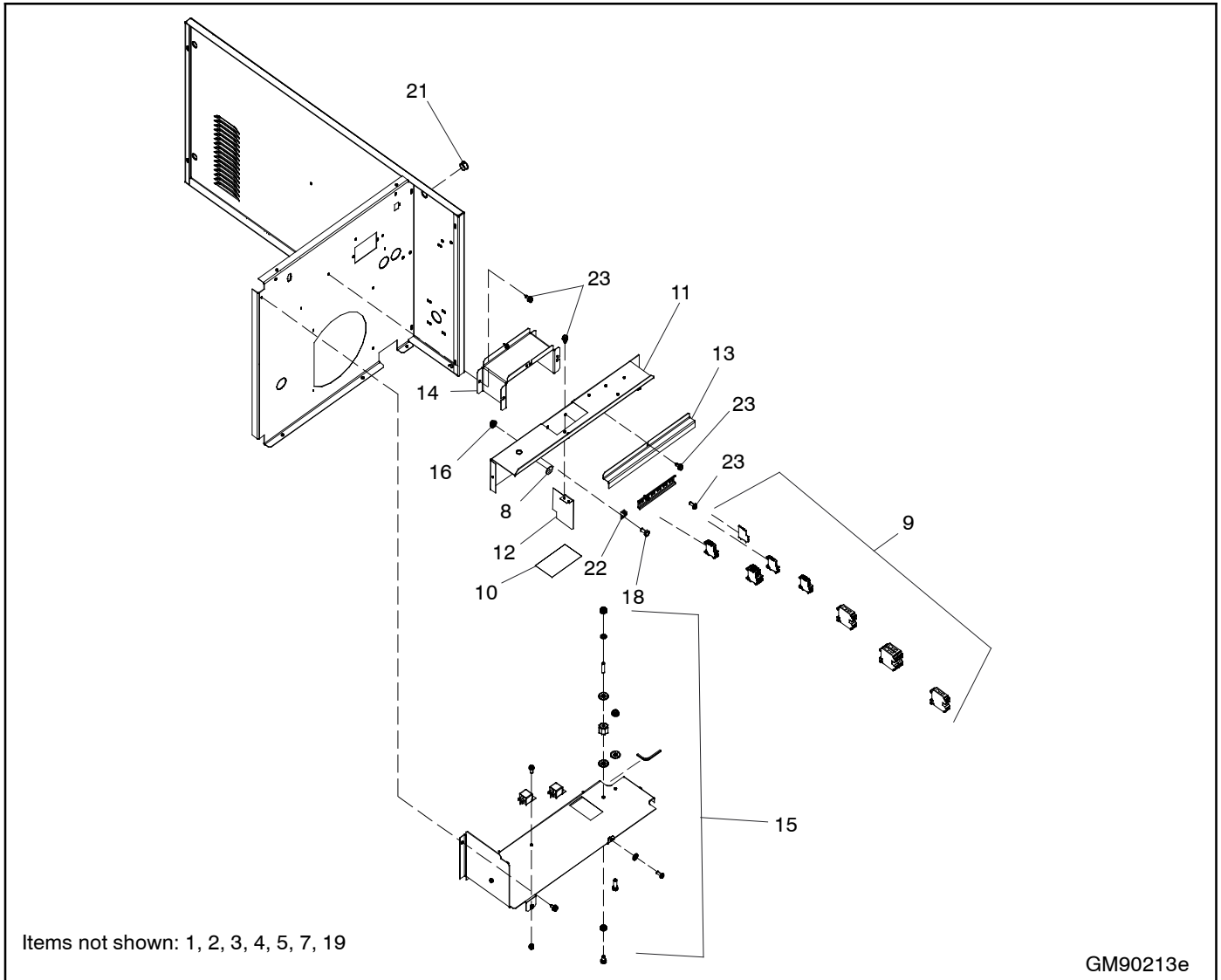


GM90208a

## GM90208-GR2

Item	Part Number	Description	Quantity
			Variation
			<b>1</b>
1	GM90999	Skid Assy	1
2	PNP-2003-30	Bolt, carriage (3/8-16 x 3.00")	4
3	X-6210-9	Nut, flange spiralock, 3/8-16	4

# Customer Connection (Terminal Block)

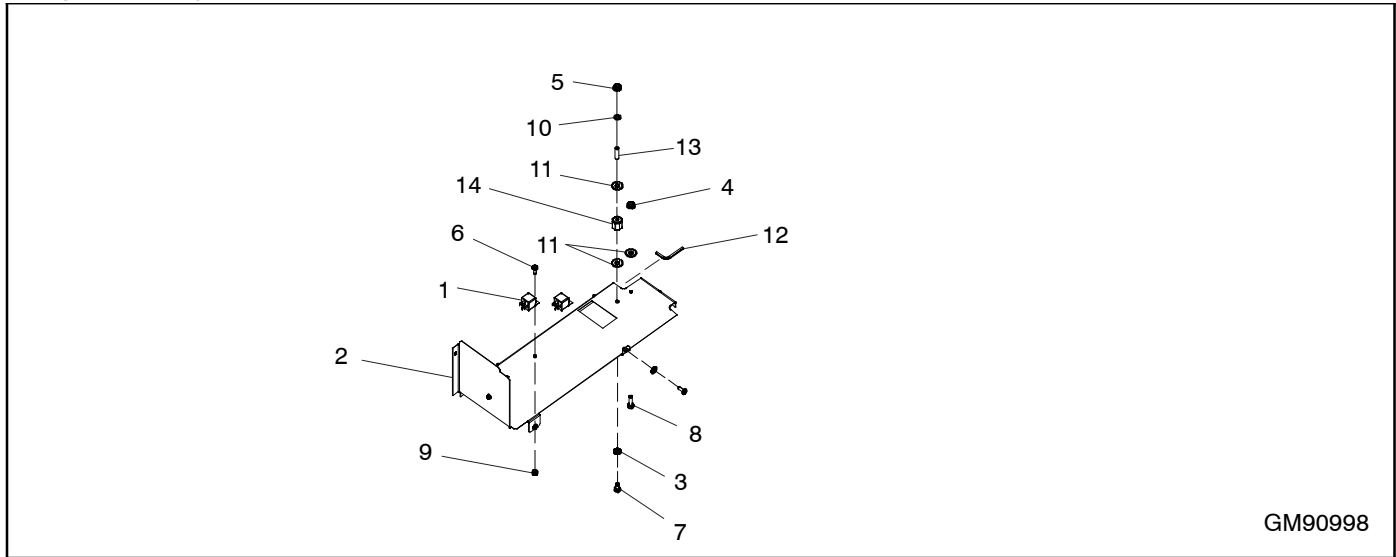


GM90213-MA1

Item	Part Number	Description	Quantity
			Variation
1	357477	Cable, Patch, 3 Ft. RJ-45	1
2	GM69982	Lead, Customer Connection	1
3	GM69983	Lead, Customer Connection	1
4	GM91138	Lead, Customer Connection	1
5	GM91139	Lead, Customer Connection	1
7	GM75874	Lead, Jumper	1
8	345211	Decal, ground	1
9	GM79122	Terminal Block Bagged Kit	1
10	GM91712	Decal, Terminal Block	1
11	GM89953	Panel, Terminal Block	1
12	GM89954	Panel, Hi-Low Voltage Separation	1
13	GM89955	Trough, Communication Wiring	1
14	GM90198	Duct, Engine Combustion Air	1
15	GM93317	Trough Subassy	1
16	M6923-06-80	Nut, Hex 6mm	1
18	M933-06012-60	Screw, Hex Cap	1
19	M933-06020-60	Screw, Hex Cap	1
21	X-301-29	Plug,button	1
22	X-6207-1	Lug, terminal, aluminum	1
23	X-6216-1	Screw, Phillips hex crimpbite	13

# Customer Connection (Terminal Block)

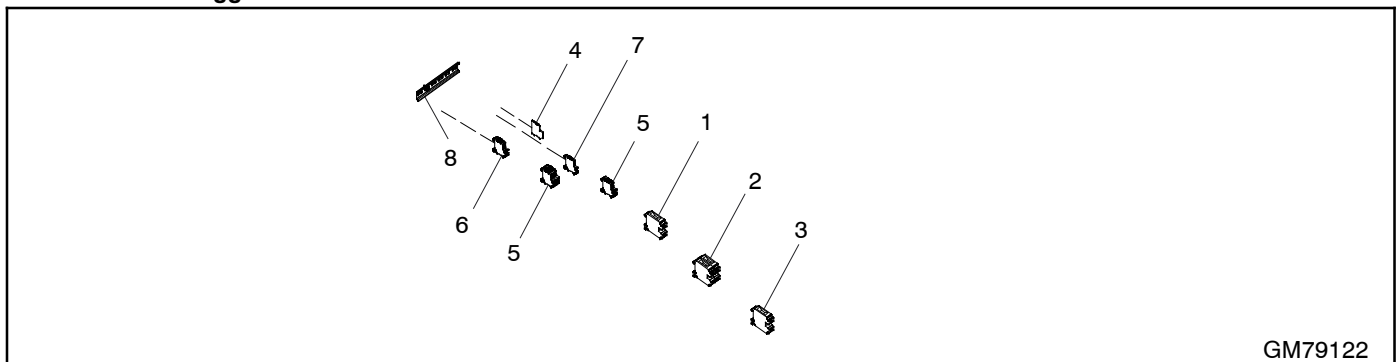
## Trough Assembly GM93317



Note: Trough Assembly GM93317 includes items 1-14.

Item	Part Number	Description	Quantity
1	GM49746	Relay, 12 VDC	2
2	GM93314	Panel, Lower Controller Mtg.	1
3	M125A-06-80	Washer, Plain	1
4	M6923-06-80	Nut, Hex 6mm	1
5	M6923-06-83	Nut, Hex	1
6	M7985A-05012-20	Screw, Pan Head Machine	2
7	M933-06010-60	Screw, Hex Cap	1
8	M933-06020-60	Screw, Hex Cap	1
9	M982-05-60	Nut, hex elastic stop, 5mm	2
10	X-22-11	Washer, lock .262 ID x .469 OD	1
11	X-22-12	Washer, lock .262 IDx.743 in.OD	3
12	X-6047-59	Grommet, u-channel	1
13	X-6054-23	Stud (Metric)	1
14	X-6128-35	Insulator, Standoff	1

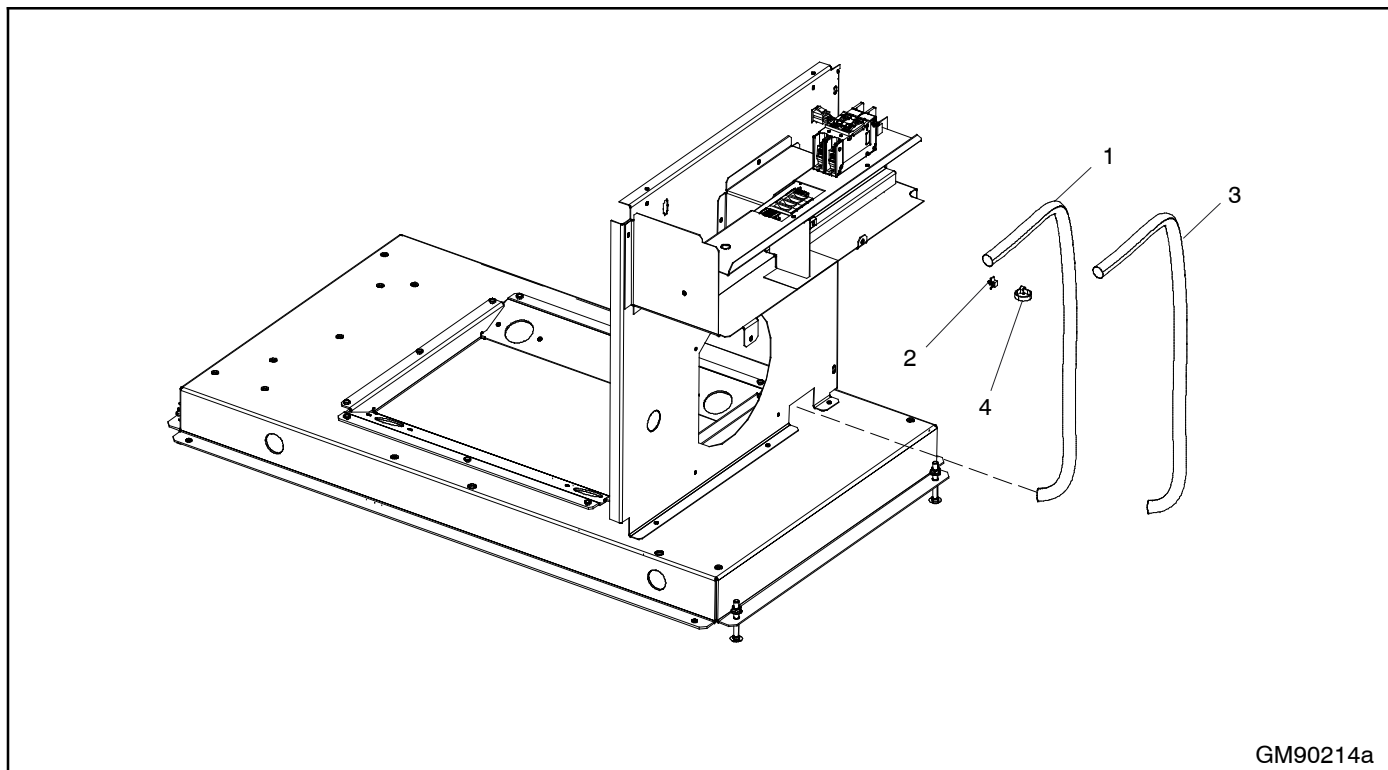
## Terminal Block Bagged Kit GM79122



Note: Terminal Block Bagged Kit GM79122 includes items 1-8.

Item	Part Number	Description	Quantity
1	GB31613529803	Block, Terminal	1
2	GM69859	Block, Terminal	2
3	GM69860	Block, Terminal	1
4	GM79116	Plate, End - UT2.5	2
5	GM79117	Block, Terminal - UT2.5/1P Gray	6
6	GM79118	Block, Terminal - UT2.5/1P Blue	2
7	GM79119	Block, Terminal - UT2.5/1P-PE - Yellow	1
8	GM89998	RAIL, DIN	1

# Harness

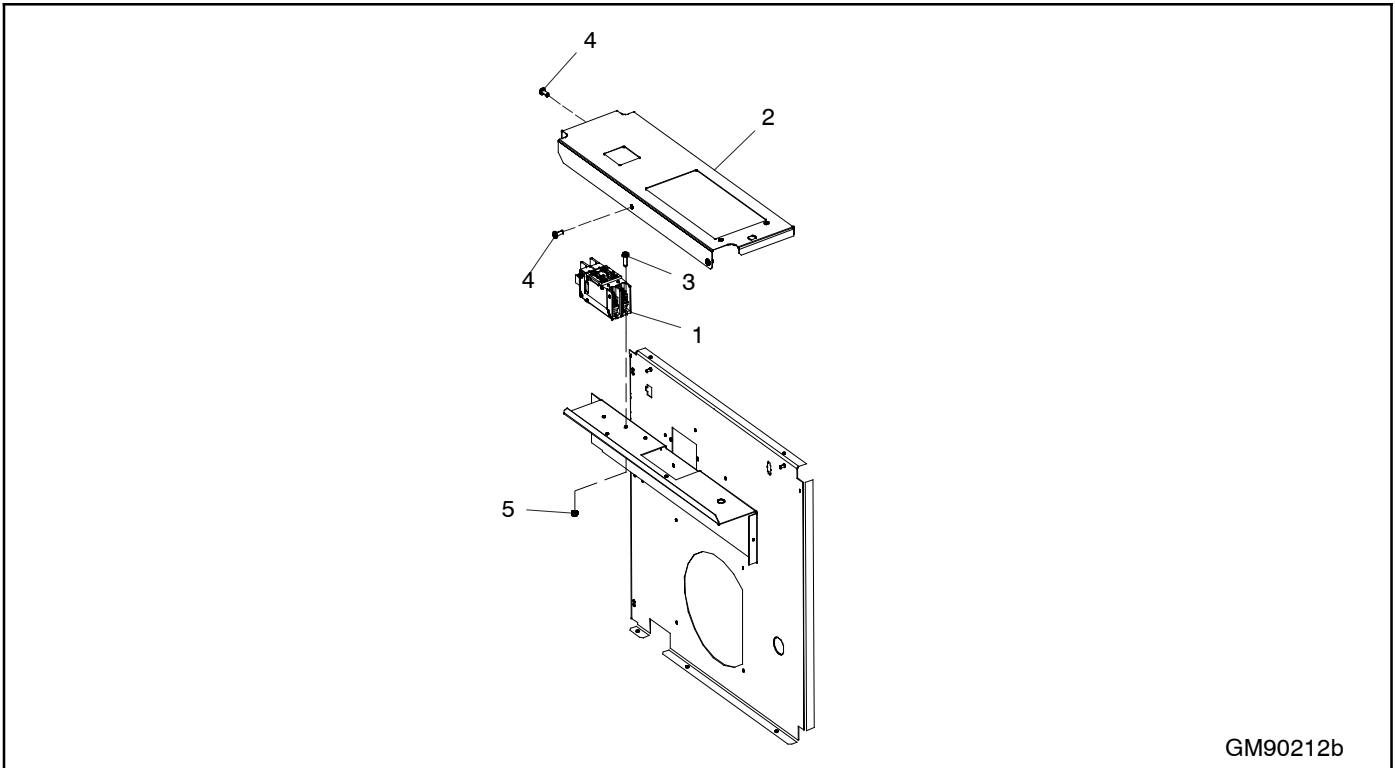


GM90214a

## GM90214-GR1, GR2

Item	Part Number	Description	Quantity	
			1	2
1	GM89938	Harness, Extension	1	1
2	361567	Base, tie wrap snapin	4	4
3	GM93297	Harness, Engine 10-20KW RES	1	
3	GM96292	Harness, Engine 10-20KW RES		1
4	X-468-1	Cable Tie	4	4

# Circuit Breaker



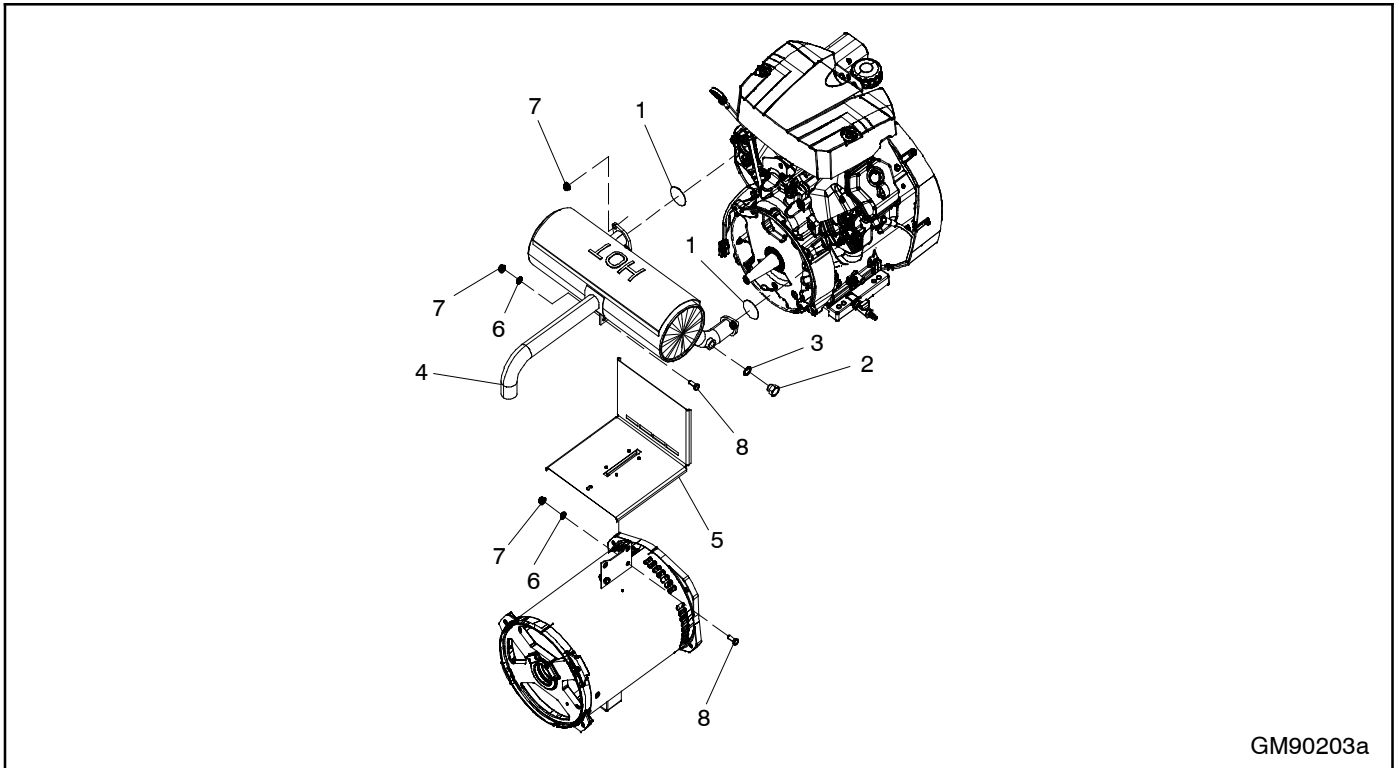
GM90212b

## GM90212-MA1

Item	Part Number	Description	Quantity
			Variation
1	GM77390	Breaker, Circuit	1
2	GM89950	Panel, Upper Controller Mtg.	1
3	M7985A-05016-20	Screw, Pan Head Machine	2
4	M933-06020-60	Screw, Hex Cap	4
5	M934-05-50	Nut, Hex 5mm	2



# Exhaust

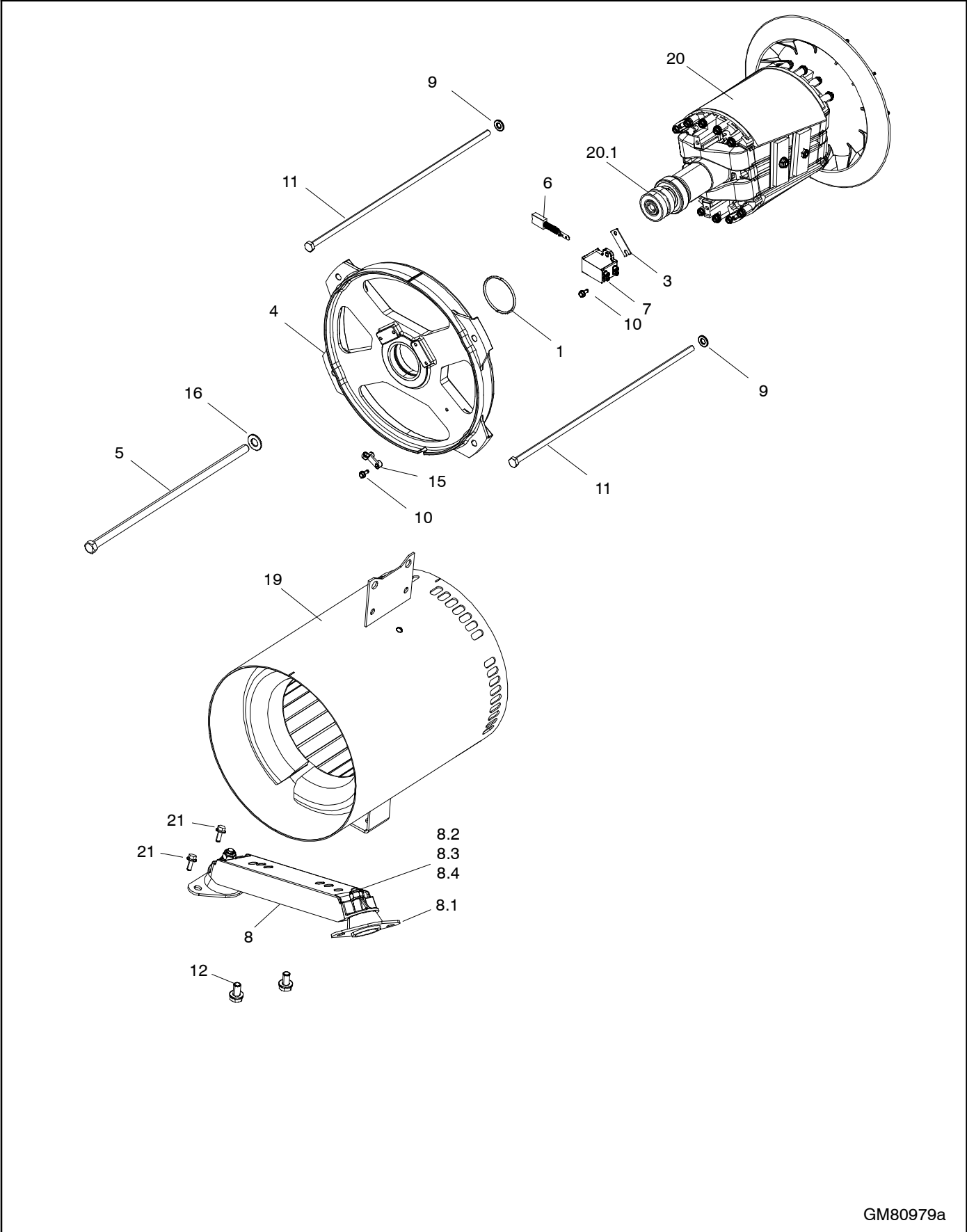


GM90203a

## GM90203-GR1

Item	Part Number	Description	Quantity
			Variation
1	62 041 14	GASKET, EXHAUST	2
2	358224	Plug, water	1
3	358306	Gasket	1
4	GM51737	Silencer, Exhaust SISO	1
5	GM91001	Shield, heat	1
6	M125A-08-80	Washer, Plain 8.4 ID x 16.0 OD	2
7	M6923-08-80	Nut, Hex 8mm	6
8	M933-08020-60	Screw, Hex Cap	2

# Alternator



GM80979a

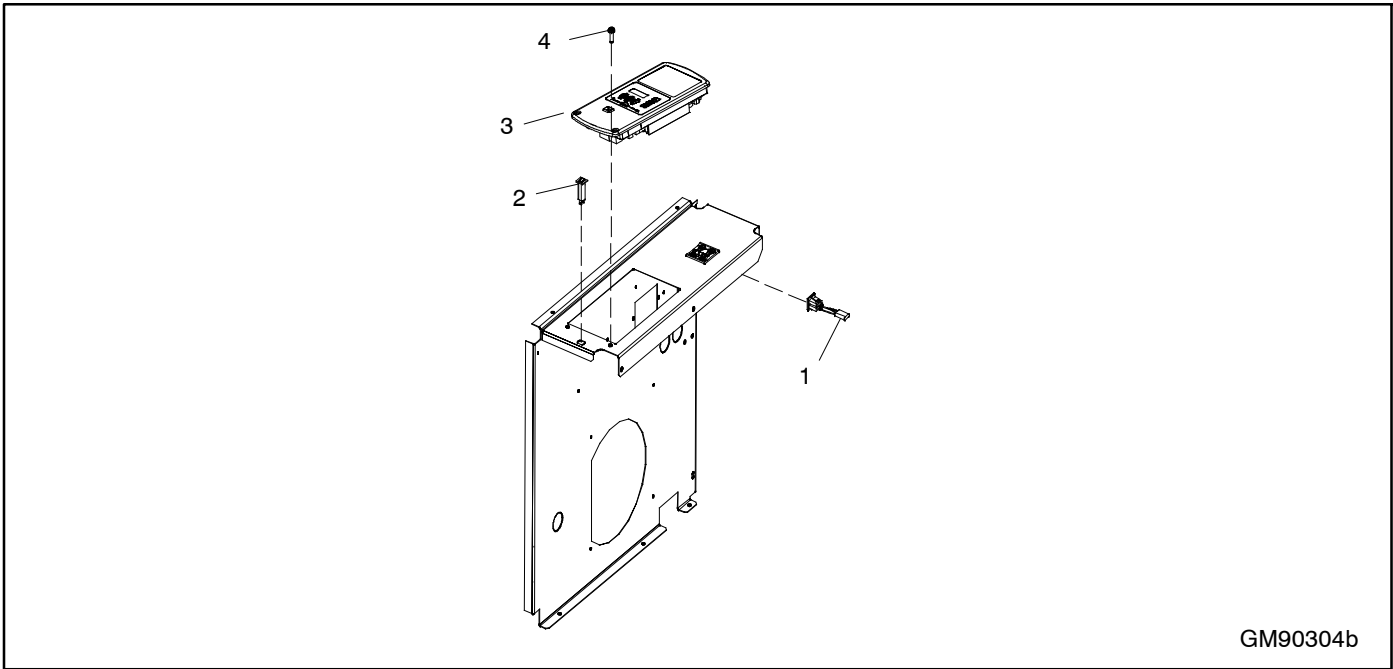
# Alternator

GM88221-

Item	Part Number	Description	Quantity
			Variation MA3
1	256466	O-Ring (2.050" ID)	1
3	GM62996	Shim, Brush Holder	1
4	GM66767	Bracket, End	1
5	GM62982	Bolt, Armature Thru	1
6	GM80981	Brush w/spring	2
7	GM80982	Holder, Brush*	1
8	GM87306	Vibromount Assembly (includes 8.1-8.4)	1
8.1	GM75725	Vibromount	2
8.2	M931-10055-60	Screw, hex cap	2
8.3	M125A-10-80	Washer, Plain (EXP) 10.5 ID x 20.0 OD	2
8.4	M982-10-80	Nut, hex elastic stop	2
9	M125A-08-80	Washer, Plain 8.4 ID x 16.0 OD	4
10	M7500D-04016-83	Screw, Metric Thread Forming 16mm	3
11	M931-08385-60	Screw, Hex Cap (Metric)	4
12	M933-10020-60	Screw, hex cap	2
14	X-468-1	Cable Tie	2
15	X-468-3	Cable tie, nylon	1
16	X-801-6	Washer, hardened, .469 ID x .922 in. OD	1
19	GC90173	Stator Assembly, 1 PH	1
20	GM88217	Rotor Assembly (includes item 20.1)	1
20.1	GM53091	Ring, collector	1
21	M6921-06016-60	Screw, Hex Flange M6x16mm fly thrd js500	4

\* Brush Holder Service Kit GM82981-S includes items 6 and 7.

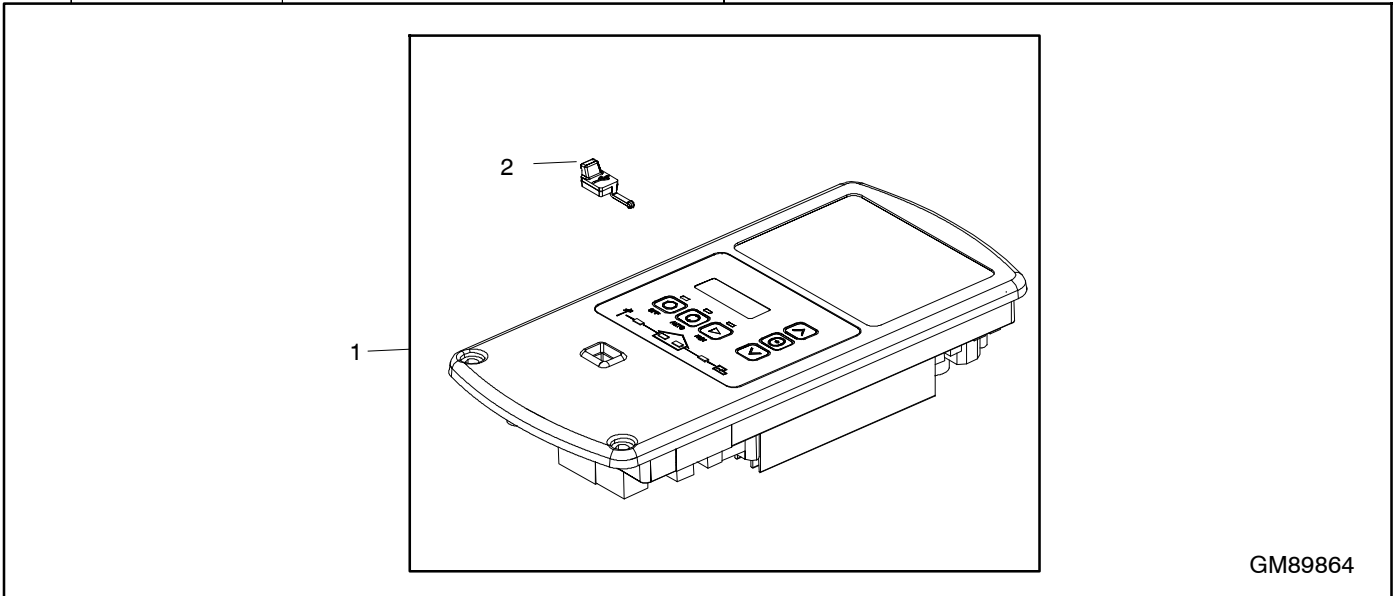
# Controller



GM90304b

## GM90304-GR1

Item	Part Number	Description	Quantity
			Variation
			1
1	GM48108	Harness, Pigtail Customer Connection	1
2	GM63134	Breaker, Circuit (20A.)	1
3	GM92089	Controller Assy, Resi-LC Distributor	1
4	M7985A-05016-20	Screw, Pan Head Machine	2

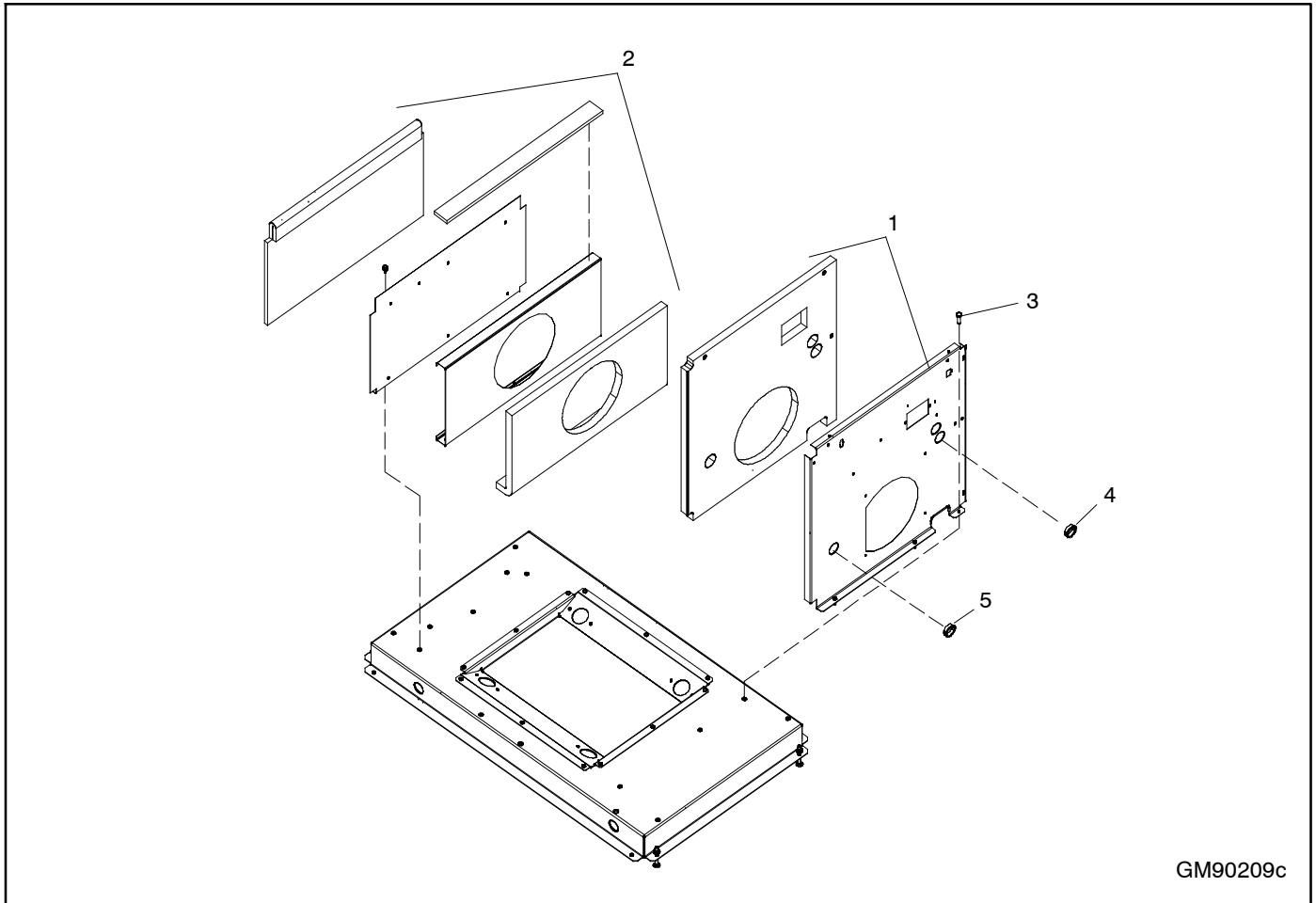


GM89864

## GM92089

Item	Part Number	Description	Quantity
1	GM92089	Controller RDC2 (ref. GM89864-1)	1
2	GM89865	Plug, USB	1

# Bulkhead



GM90209c

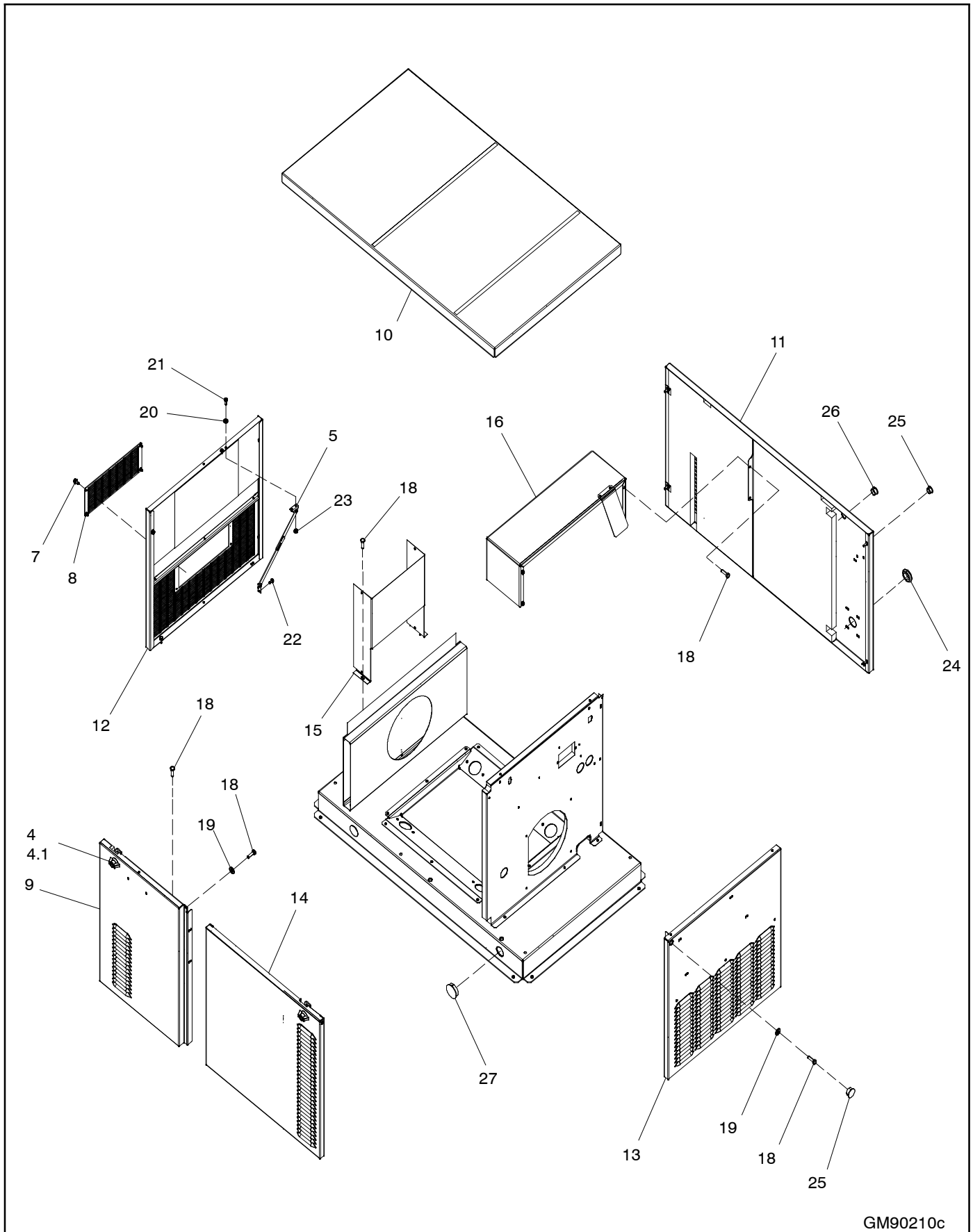
## GM90209-GR1

Item	Part Number	Description	Quantity
			Variation
1	GM90995	Bulkhead Subassy	1
2	GM90996	Alternator Air Duct Subassembly	1
3	M6921-06016-60	Screw, Hex Flnge M6x16mm fly thrd	6
4	X-301-45	Plug, Button	1
5	X-634-28	Bushing	2

## GM93900-GR1

Item	Part Number	Description	Quantity
			Variation
1	GM93902	Bulkhead Subassy	1
2	GM90996	Alternator Air Duct Subassembly	1
3	M6921-06016-60	Screw, Hex Flnge M6x16mm fly thrd	6
4	X-301-45	Plug, Button	1
5	X-634-28	Bushing	2

# Enclosure



GM90210c

# Enclosure

## GM90210-MA2

Item	Part Number	Description	Quantity
			Variation
			1
4	GM51573	Latch, Locking	2
4.1	362361	Key, latch	1
5	GM51973	Stay, Cover (LH)	1
7	X-6216-1	Screw, Phillips hex crimplite	4
8	GM90321	Grill, Exhaust	1
9	GM90483	Panel Assy, Housing (LH)	1
10	GM90484	Roof, Housing Assy	1
11	GM91357	Panel, Housing Left Assy	1
12	GM90490	Rear Panel Assy	1
13	GM90491	Front Panel Assy	1
14	GM90492	Door, Housing (Right) Assy	1
15	GM90666	Shield, Exhaust	1
16	GM90997	Exhaust Heat Shield Subassy	1
18	M6921-06016-60	Screw, Hex Cap	19
19	X-25-40	Washer, plain, .281 ID x .625 in.OD	2
20	X-25-48	Washer, plain, .188 ID x .438 in.OD	2
21	X-51-15	Screw, Machine	2
22	X-67-43	Screw, slotted hex washer, thr-cut	2
23	X-101-11	Nut, hex elastic stop, 8-32	2
24	X-284-3	Grommet, round	1
25	X-301-24	Plug,button	5
26	X-301-29	Plug,button	1
27	X-301-45	Plug, Button	4

## GM95502-MA1

Item	Part Number	Description	Quantity
			Variation
			2
4	GM51573	Latch, Locking	2
4.1	362361	Key, latch	1
5	GM51973	Stay, Cover (LH)	1
7	X-6216-1	Screw, Phillips hex crimplite	4
8	GM90321	Grill, Exhaust	1
9	GM90483	Panel Assy, Housing (LH)	1
10	GM90484	Roof, Housing Assy	1
11	GM91357	Panel, Housing Left Assy	1
12	GM95498	Rear Panel Assy	1
13	GM90491	Front Panel Assy	1
14	GM90492	Door, Housing (Right) Assy	1
15	GM90666	Shield, Exhaust	1
16	GM90997	Exhaust Heat Shield Subassy	1
18	M6921-06016-60	Screw, Hex Cap	19
19	X-25-40	Washer, plain, .281 ID x .625 in.OD	2
20	X-25-48	Washer, plain, .188 ID x .438 in.OD	2
21	X-51-15	Screw, Machine	2
22	X-67-43	Screw, slotted hex washer, thr-cut	2
23	X-101-11	Nut, hex elastic stop, 8-32	2
24	X-284-3	Grommet, round	1
25	X-301-24	Plug,button	5
26	X-301-29	Plug,button	1
27	X-301-45	Plug, Button	4

# Literature

Item	Part Number	Description	Quantity	
			76	85
1	62 690 01	S/M, CH940-CH980 COMMAND PRO	1	1
2	TP-6479	Warranty, 5-Yr., Standby	1	1
3	TP-6805	S/M 14/20RESA/RESAL	1	1
4	TP-6885	Warranty, CARB/EPA Emissions, LSI	1	1
5	TP-6925	I/M 20RESB, Res/Coml	1	1
6	TP-6926	O/M 20RESB, Res/Coml	1	1
7	TP-6927	P/C 20RESB, Res/Coml	1	1



# Kit Parts List

Qty.	Description	Part No.
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## Fuel System Kit

<b>Flexible Fuel Line</b>		<b>GM31054-KA1</b>
1	Fuel line, flexible, 0.50 in. ID x 12 in.	X-504-1

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

<b>Regulator Heater Kit, 120V, 60W</b>		<b>GM79141-KP1-QS</b>
2	Spacer, .281 X .500 X .375 Steel	265861
1	Heater, Regulator Pad	GM79142
1	Splitter, Receptacle	GM84773
1	Bushing	X-634-28
1	TT Regulator Heater Kit, 20RES/RESL	TT-1569

<b>Regulator Heater Kit, 240V, 100W</b>		<b>GM79141-KP2-QS</b>
2	Spacer, .281 X .500 X .375 Steel	265861
1	Harness, Adapter	GM88995
1	Heater, Regulator Pad	GM89838
2	Nut, Hex 6mm	M6923-06-80
2	Screw, hex cap	M933-06040-60
1	Regulator Heater Kit, 20RES(A)/RESL(A)	TT-1569
2	Cable Tie	X-468-2
1	Bushing	X-634-28

<b>Regulator Heater Kit, 240V, 100W</b>		<b>GM79141-KP3-QS</b>
2	Spacer, .281 X .500 X .375 Steel	265861
1	Heater, Regulator Pad	GM79142
1	Bushing	X-634-28
1	TT Regulator Heater Kit, 20RES/RESL	TT-1569

## Electrical System Kits

<b>Battery, 1/12V, 525CCA, Wet</b>		<b>GM48808-KP1</b>
1	Battery (Wet)	GM48784

<b>Battery Heater, 80W, 110-120V</b>		<b>GM89021-KP1</b>
1	Heater, battery wrap	336814
1	Heater, battery pad	336826

<b>Emergency Stop</b>		<b>GM90095-KP1-QS</b>
1	Decal, Emergency Stop	GB31311173101
1	Harness, Assembly E-Stop	GM90094

<b>Load Control Module, w/ Harness</b>		<b>GM77177-KP1-QS</b>
1	Load Control Module Assy, w/ Harness	GM77177-1
1	Decal, CSA	297721
1	Decal, equipment grd (NRP)	344295
2	Insert, threaded, #10-24	346258
1	Dimension Print, Load Control Module	ADV-8198
4	Gasket	GM20990
2	Label, Blank	GM24703
1	Decal, 120VAC Only	GM75393
1	Plate, Mounting	GM77176
4	Relay	GM77178
1	Cover w/ Decals, Load Shed	GM77191
1	Enclosure, Load Shed	GM79445
1	Harness, Load Control	GM80092
1	Harness, Relay Control	GM80673
1	Indicator, Load Status	GM80879
1	Decal, Wiring Diagram	GM80950
2	Decal, Warning	GM81264
1	PCB Assy, RDC2 Load Control	GM81372-1
1	Transformer, Current	GM83929
1	Decal, LCM - w/ whip	GM84656-1
1	TT Load Control Module, Res/Comm	TT-1574
1	Terminal block	X-405-2
3	Washer	X-6086-23
3	Lug, terminal, aluminum	X-6207-3

Qty.	Description	Part No.
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## Load Control Module, w/ Terminal Blocks

<b>Load Control Module, w/ Terminal Blocks</b>		<b>GM77177-KP2-QS</b>
1	Load Control Module Assy, w/ Term.	GM77177-2
1	Decal, equipment grd (NRP)	344295
2	Insert, threaded, #10-24	346258
1	Dimension Print, Load Control Module	ADV-8198
4	Gasket	GM20990
1	Decal, Nameplate	GM21291
2	Label, Blank	GM24703
1	Decal, 120VAC Only	GM75393
1	Plate, Mounting	GM77176
4	Relay	GM77178
1	Cover w/ Decals, Load Shed	GM77191
1	Enclosure, Load Shed	GM79445
1	Harness, Relay Control	GM80673
8	Harness, Terminal Block	GM80674
4	Block, Terminal	GM80862
1	Indicator, Load Status	GM80879
1	Marker, Strip	GM80949
1	Decal, Wiring Diagram	GM80950
2	Decal, Warning	GM81264
1	PCB Assy, RDC2 Load Control	GM81372-1
1	Diagram, Wiring Load Control	GM81374
1	Diagram, Schematic Load Control	GM81638
1	Transformer, Current	GM83929
1	TT Load Control Module, Res/Comm	TT-1574
1	Terminal block	X-405-2
3	Washer	X-6086-23
3	Lug, terminal, aluminum	X-6207-3

## Load Control Module, w/ Harness, CSA

<b>Load Control Module, w/ Harness, CSA</b>		<b>GM77177-KP3-QS</b>
1	Load Control Module Assy, w/ Harness	GM77177-1
1	Decal, CSA	297721
1	Decal, equipment grd (NRP)	344295
2	Insert, threaded, #10-24	346258
1	Dimension Print, Load Control Module	ADV-8198
4	Gasket	GM20990
2	Label, Blank	GM24703
1	Decal, 120VAC Only	GM75393
1	Plate, Mounting	GM77176
4	Relay	GM77178
1	Cover w/ Decals, Load Shed	GM77191
1	Enclosure, Load Shed	GM79445
1	Harness, Load Control	GM80092
1	Harness, Relay Control	GM80673
1	Indicator, Load Status	GM80879
1	Decal, Wiring Diagram	GM80950
2	Decal, Warning	GM81264
1	PCB Assy, RDC2 Load Control	GM81372-1
1	Transformer, Current	GM83929
1	Decal, LCM - w/ whip	GM84656-1
1	TT Load Control Module, Res/Comm	TT-1574
1	Terminal block	X-405-2
3	Washer	X-6086-23
3	Lug, terminal, aluminum	X-6207-3

# Kit Parts List, continued

Qty.	Description	Part No.
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## Load Control Module, w/ Terminal Blocks, CSA GM77177-KP4-QS

1	Load Control Module Assy, w/ Term.	GM77177-2
1	Decal, CSA	297721
1	Decal, equipment grd (NRP)	344295
2	Insert, threaded, #10-24	346258
1	Dimension Print, Load Control Module	ADV-8198
4	Gasket	GM20990
1	Decal, Nameplate	GM21291
2	Label, Blank	GM24703
1	Decal, 120VAC Only	GM75393
1	Plate, Mounting	GM77176
4	Relay	GM77178
1	Cover w/ Decals, Load Shed	GM77191
1	Enclosure, Load Shed	GM79445
1	Harness, Relay Control	GM80673
8	Harness, Terminal Block	GM80674
4	Block, Terminal	GM80862
1	Indicator, Load Status	GM80879
1	Marker, Strip	GM80949
1	Decal, Wiring Diagram	GM80950
2	Decal, Warning	GM81264
1	PCB Assy, RDC2 Load Control	GM81372-1
1	Diagram, Wiring Load Control	GM81374
1	Diagram, Schematic Load Control	GM81638
1	Transformer, Current	GM83929
1	TT Load Control Module, Res/Comm	TT-1574
1	Terminal block	X-405-2
3	Washer	X-6086-23
3	Lug, terminal, aluminum	X-6207-3

## Programmable Interface Module (PIM) GM81529-KP1-QS

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
2	Gasket	GM20990
1	Decal, Nameplate	GM21291
1	PCB Assy, RDC2 Programmable Int.	GM81372-2
1	Enclosure, PIM	GM81527
1	Silkscreen, Cover	GM82189
1	Decal, Torque	GM82855

## Programmable Interface Mod. (PIM),CSA GM81529-KP2-QS

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
2	Gasket	GM20990
1	Decal, Nameplate	GM21291
1	PCB Assy, RDC2 Programmable Int.	GM81372-2
1	Enclosure, PIM	GM81527
1	Silkscreen, Cover	GM82189
1	Decal, Torque	GM82855

## Automatic Paralleling Module, 200A

### GM85144-KP1-QS

2	APM, OnCue, RDC2/DC2/VSC	GM81385-1
1	AUTOMATIC PARALLELING MODULE, 200A N3R	GM85144-1
2	TRANSFORMER, CURRENT ASSY	GM86609
2	Harness, Adapter	GM86610
1	Software, RDC2 Paralleling	GM87436
1	TT Automatic Paralleling Module Kit, Res	TT-1596

## Breaker, Kit APM-14RESA GM86368-KP1-QS

2	Breaker, Circuit	GM28743
1	BRACKET, CIRCUIT BREAKER	GM85151
4	Lead	LN-0607-0606
1	TT Automatic Paralleling Module Kit, Res	TT-1596
8	Spacer, .209 ID x .375 OD x .234 in.	X-400-145
8	Screw, Tapping	X-67-132

Qty.	Description	Part No.
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## Breaker, Kit APM-20RESA GM86369-KP1-QS

2	Breaker, Circuit	GM77390
1	BRACKET, CIRCUIT BREAKER	GM85151
4	Lead	LN-0407-0606
1	TT Automatic Paralleling Module Kit, Res	TT-1596
4	Screw, Tapping	X-67-132

## Miscellaneous Kits

### Carburetor Heater 120 V GM57969-KP1-QS

1	Decal, caution hot carburetor	GM22387
1	Heater, carburetor	GM57968
1	Bushing, 1.000 x 1.375 in. NPT	X-634-15
1	Bushing, 1.312 x 1.50 in. NPT	X-634-16

### Carburetor Heater 240 V GM57969-KP3-QS

1	Decal, Caution Hot Carburetor Heater	GM22387
1	Heater, Carburetor	GM88228
1	Carburetor Heater, 17/18/20kW, Res/Coml	TT-1482
1	Bushing, 1.000 x 1.375 in. NPT	X-634-15
1	Bushing, 1.312 x 1.50 in. NPT	X-634-16

### Carburetor Heater 120 V GM57969-KP4-QS

1	Decal, caution hot carburetor	GM22387
1	Heater, carburetor	GM57968
1	Cord, Extension	GM91360
1	Adapter, Carb Heater	GM91361
1	Carburetor Heater, 17/18/20kW, Res/Coml	TT-1482

### Carburetor Heater, 40W, 120V GM57969-KP5-QS

1	Decal, Caution Hot Carburetor Heater	GM22387
1	Heater, Carburetor	GM57968
1	Adapter, Carb Heater	GM91361
1	Cord, 3 Way Extension	GM95628
1	CarbHeater, 17/18/20, 8-10RESV, Res/Coml	TT-1482

## Maintenance Service Kits

(includes oil, oil filter, air filter, spark plugs, and instructions (TT-1445))

1	Kit, Residential Maint (20 kW)	GM62347-SKP1-QS
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## OnCue, RDC2/DC2/VSC Controller GM81385-KP1-QS

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

## OnCue Plus, RDC2/DC2/VSC GM81385-KP2-QS

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

## OnCue Plus, Wireless, RDC2/DC2/VSC GM81385-KP3-QS

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

# 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 fur 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	ER	emergency relay	in. lb.	inch pounds
CCA	cold cranking amps	ES	engineering special, engineered special	Inc.	incorporated
ccw.	counterclockwise	ESD	electrostatic discharge	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			spec	specification
kWth	kilowatt-thermal	NPTF	National Pipe, Taper-Fine	specs	specification(s)
L	liter	NR	not required, normal relay	sq.	square
LAN	local area network	ns	nanosecond	sq. cm	square centimeter
L x W x H	length by width by height	OC	overcrank	sq. in.	square inch
lb.	pound, pounds	OD	outside diameter	SS	stainless steel
lbm/ft <sup>3</sup>	pounds mass per cubic feet	OEM	original equipment manufacturer	std.	standard
LCB	line circuit breaker	OF	overfrequency	stl.	steel
LCD	liquid crystal display	opt.	option, optional	tach.	tachometer
ld. shd.	load shed	OS	oversize, overspeed	TD	time delay
LED	light emitting diode	OSHA	Occupational Safety and Health Administration	TDC	top dead center
Lph	liters per hour			TDEC	time delay engine cooldown
Lpm	liters per minute	OV	overvoltage	TDEN	time delay emergency to normal
LOP	low oil pressure	oz.	ounce	TDES	time delay engine start
LP	liquefied petroleum	p., pp.	page, pages	TDNE	time delay normal to emergency
LPG	liquefied petroleum gas	PC	personal computer	TDOE	time delay off to emergency
LS	left side	PCB	printed circuit board	TDON	time delay off to normal
L <sub>wa</sub>	sound power level, A weighted	pF	picofarad	temp.	temperature
LWL	low water level	PF	power factor	term.	terminal
LWT	low water temperature	ph., ∅	phase	THD	total harmonic distortion
m	meter, milli (1/1000)	PHC	Phillips® head CrimpTite® (screw)	TIF	telephone influence factor
M	mega (10 <sup>6</sup> when used with SI units), male	PHH	Phillips® hex head (screw)	TIR	total indicator reading
m <sup>3</sup>	cubic meter	PHM	pan head machine (screw)	tol.	tolerance
m <sup>3</sup> /hr.	cubic meters per hour	PLC	programmable logic control	turbo.	turbocharger
m <sup>3</sup> /min.	cubic meters per minute	PMG	permanent magnet generator	typ.	typical (same in multiple locations)
mA	milliampere	pot	potentiometer, potential	UF	underfrequency
man.	manual	ppm	parts per million	UHF	ultrahigh frequency
max.	maximum	PROM	programmable read-only memory	UL	Underwriter's Laboratories, Inc.
MB	megabyte (2 <sup>20</sup> bytes)	psi	pounds per square inch	UNC	unified coarse thread (was NC)
MCCB	molded-case circuit breaker	psig	pounds per square inch gauge	UNF	unified fine thread (was NF)
MCM	one thousand circular mils	pt.	pint	univ.	universal
meggar	megohmmeter	PTC	positive temperature coefficient	US	undersize, underspeed
MHz	megahertz	PTO	power takeoff	UV	ultraviolet, undervoltage
mi.	mile	PVC	polyvinyl chloride	V	volt
mil	one one-thousandth of an inch	qt.	quart, quarts	VAC	volts alternating current
min.	minimum, minute	qty.	quantity	VAR	voltampere reactive
misc.	miscellaneous	R	replacement (emergency) power source	VDC	volts direct current
MJ	megajoule	rad.	radiator, radius	VFD	vacuum fluorescent display
mJ	millijoule	RAM	random access memory	VGA	video graphics adapter
mm	millimeter	RDO	relay driver output	VHF	very high frequency
MOV	metal oxide varistor	ref.	reference	W	watt
MPa	megapascal	rem.	remote	WCR	withstand and closing rating
mpg	miles per gallon	Res/Coml	Residential/Commercial	w/	with
mph	miles per hour	RFI	radio frequency interference	w/o	without
MS	military standard	RH	round head	wt.	weight
ms	millisecond	RHM	round head machine (screw)	xfrm	transformer
m/sec.	meters per second	rly.	relay		
MTBF	mean time between failure				
MTBO	mean time between overhauls				

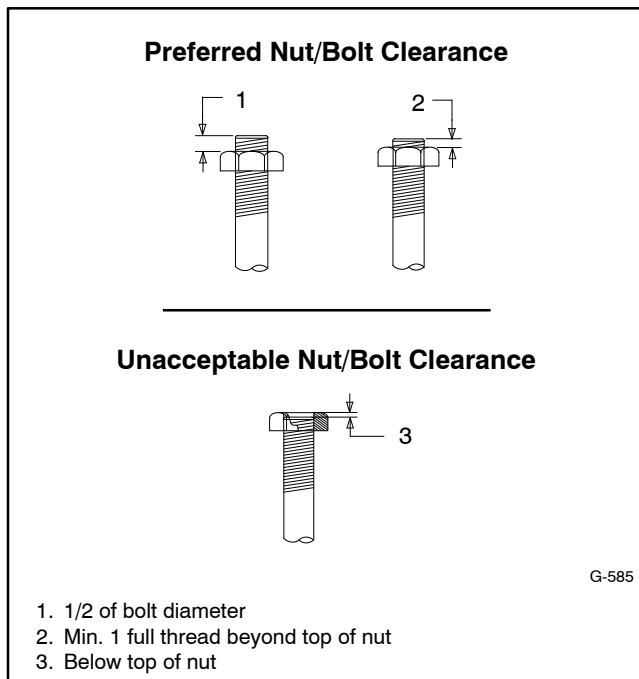
# Appendix B Common Hardware Application Guidelines

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.



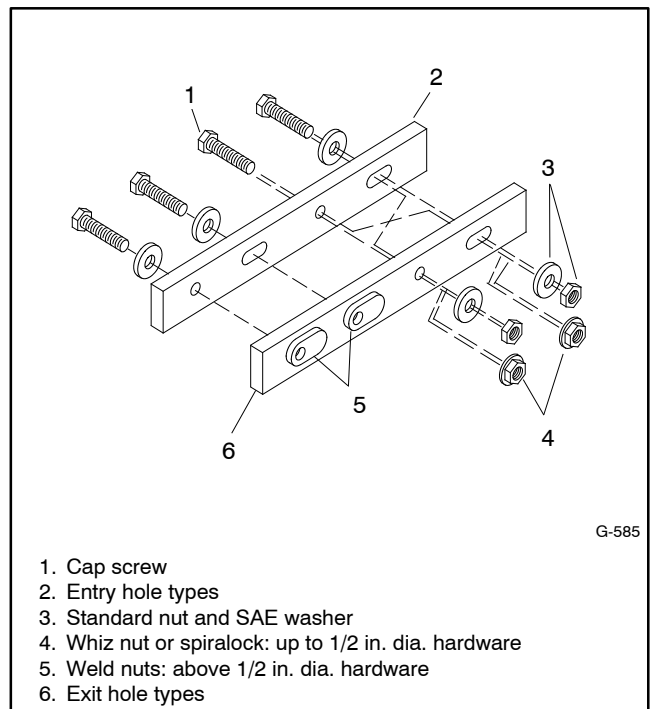
**Figure 1** Acceptable Bolt Lengths

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	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. 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. Hardware threaded into aluminum must have either two diameters of thread engagement or a 30% or more reduction in the torque to prevent stripped threads.
4. Torque values are calculated as equivalent stress loading on American hardware with an approximate preload of 90% of the yield strength and a 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	

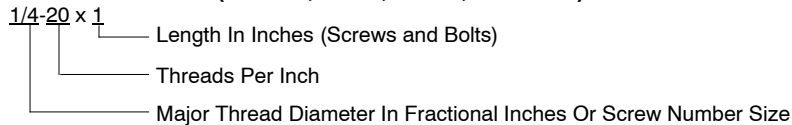
Hardness Grades	
American Standard	
Grade 2	
Grade 5	
Grade 8	
Grade 8/9 (Hex Socket Head)	
Metric	
Number stamped on hardware; 5.8 shown	

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

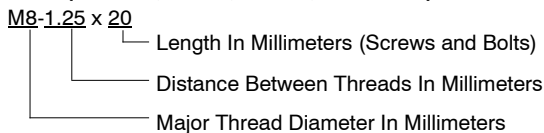
Phillips® screw is a registered trademark of Phillips Screw Company.

## Sample Dimensions

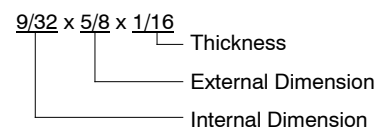
### American Standard (Screws, Bolts, Studs, and Nuts)



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



## 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
M931-06060-SS	M6-1.00 x 60	M931-16120-60	M16-2.00 x 120	M933-12025-82	M12-1.75 x 25*
M931-06070-60	M6-1.00 x 70	M931-16150-60	M16-2.00 x 150	M961-12030-60	M12-1.25 x 30
M931-06070-SS	M6-1.00 x 70			M933-12030-82	M12-1.75 x 30*
M931-06075-60	M6-1.00 x 75	M931-20065-60	M20-2.50 x 65	M961-12030-82F	M12-3.00 x 30*
M931-06090-60	M6-1.00 x 90	M931-20090-60	M20-2.50 x 90	M933-12030-60	M12-1.75 x 30
M931-06145-60	M6-1.00 x 145	M931-20100-60	M20-2.50 x 100	M933-12035-60	M12-1.75 x 35
M931-06150-60	M6-1.00 x 150	M931-20120-60	M20-2.50 x 120	M961-12040-82	M12-1.25 x 40*
		M931-20140-60	M20-2.50 x 140	M933-12040-60	M12-1.75 x 40
M931-08035-60	M8-1.25 x 35	M931-20160-60	M20-2.50 x 160	M933-12040-82	M12-1.75 x 40*
M931-08040-60	M8-1.25 x 40				
M931-08045-60	M8-1.25 x 45	M931-22090-60	M22-2.50 x 90	M961-14025-60	M14-1.50 x 25
M931-08050-60	M8-1.25 x 50	M931-22120-60	M22-2.50 x 120	M933-14025-60	M14-2.00 x 25
M931-08055-60	M8-1.25 x 55	M931-22160-60	M22-2.50 x 160	M961-14050-82	M14-1.50 x 50*
M931-08055-82	M8-1.25 x 55*				
M931-08060-60	M8-1.25 x 60	M931-24090-60	M24-3.00 x 90	M961-16025-60	M16-1.50 x 25
M931-08070-60	M8-1.25 x 70	M931-24120-60	M24-3.00 x 120	M933-16025-60	M16-2.00 x 25
M931-08070-82	M8-1.25 x 70*	M931-24160-60	M24-3.00 x 160	M961-16030-82	M16-1.50 x 30*
M931-08075-60	M8-1.25 x 75	M931-24200-60	M24-3.00 x 200	M933-16030-82	M16-2.00 x 30*
M931-08080-60	M8-1.25 x 80			M933-16035-60	M16-2.00 x 35
M931-08090-60	M8-1.25 x 90	<b>Hex Head Bolts (Full Thread)</b>			
M931-08095-60	M8-1.25 x 95	M933-04006-60	M4-0.70 x 6	M961-16040-60	M16-1.50 x 40
M931-08100-60	M8-1.25 x 100			M933-16040-60	M16-2.00 x 40
M931-08110-60	M8-1.25 x 110	M933-05030-60	M5-0.80 x 30	M961-16045-82	M16-1.50 x 45*
M931-08120-60	M8-1.25 x 120	M933-05035-60	M5-0.80 x 35	M933-16045-82	M16-2.00 x 45*
M931-08130-60	M8-1.25 x 130	M933-05050-60	M5-0.80 x 50	M933-16050-60	M16-2.00 x 50
M931-08140-60	M8-1.25 x 140			M933-16050-82	M16-2.00 x 50*
M931-08150-60	M8-1.25 x 150	M933-06010-60	M6-1.00 x 10	M933-16060-60	M16-2.00 x 60
M931-08200-60	M8-1.25 x 200	M933-06012-60	M6-1.00 x 12	M933-16070-60	M16-2.00 x 70
		M933-06014-60	M6-1.00 x 14		
M931-10040-82	M10-1.25 x 40*	M933-06016-60	M6-1.00 x 16	M933-18035-60	M18-2.50 x 35
M931-10040-60	M10-1.50 x 40	M933-06020-60	M6-1.00 x 20	M933-18050-60	M18-2.50 x 50
M931-10045-60	M10-1.50 x 45	M933-06025-60	M6-1.00 x 25	M933-18060-60	M18-2.50 x 60
M931-10050-60	M10-1.50 x 50	M933-06030-60	M6-1.00 x 30		
M931-10050-82	M10-1.25 x 50*	M933-06040-60	M6-1.00 x 40	M933-20050-60	M20-2.50 x 50
M931-10055-60	M10-1.50 x 55	M933-06050-60	M6-1.00 x 50	M933-20055-60	M20-2.50 x 55
M931-10060-60	M10-1.50 x 60				
M931-10065-60	M10-1.50 x 65	M933-07025-60	M7-1.00 x 25	M933-24060-60	M24-3.00 x 60
M931-10070-60	M10-1.50 x 70			M933-24065-60	M24-3.00 x 65
M931-10080-60	M10-1.50 x 80	M933-08010-60	M8-1.25 x 10	M933-24070-60	M24-3.00 x 70
M931-10080-82	M10-1.25 x 80*	M933-08012-60	M8-1.25 x 12		
M931-10090-60	M10-1.50 x 90	M933-08016-60	M8-1.25 x 16	<b>Pan Head Machine Screws</b>	
M931-10090-82	M10-1.50 x 90*	M933-08020-60	M8-1.25 x 20	M7985A-03010-20	M3-0.50 x 10
M931-10100-60	M10-1.50 x 100	M933-08025-60	M8-1.25 x 25	M7985A-03012-20	M3-0.50 x 12
M931-10110-60	M10-1.50 x 110	M933-08030-60	M8-1.25 x 30		
M931-10120-60	M10-1.50 x 120	M933-08030-82	M8-1.25 x 30*	M7985A-04010-20	M4-0.70 x 10
M931-10130-60	M10-1.50 x 130			M7985A-04016-20	M4-0.70 x 16
M931-10140-60	M10-1.50 x 140	M933-10012-60	M10-1.50 x 12	M7985A-04020-20	M4-0.70 x 20
M931-10180-60	M10-1.50 x 180	M961-10020-60	M10-1.25 x 20	M7985A-04050-20	M4-0.70 x 50
M931-10235-60	M10-1.50 x 235	M933-10020-60	M10-1.50 x 20	M7985A-04100-20	M4-0.70 x 100
M931-10260-60	M10-1.50 x 260	M933-10025-60	M10-1.50 x 25		
M960-10330-60	M10-1.25 x 330	M961-10025-60	M10-1.25 x 25	M7985A-05010-20	M5-0.80 x 10
		M933-10025-82	M10-1.50 x 25*	M7985A-05012-20	M5-0.80 x 12
M931-12045-60	M12-1.75 x 45	M961-10030-60	M10-1.25 x 30	M7985A-05016-20	M5-0.80 x 16
M960-12050-60	M12-1.25 x 50	M933-10030-60	M10-1.50 x 30	M7985A-05020-20	M5-0.80 x 20
M960-12050-82	M12-1.25 x 50*	M933-10030-82	M10-1.50 x 30*	M7985A-05025-20	M5-0.80 x 25
M931-12050-60	M12-1.75 x 50	M961-10035-60	M10-1.25 x 35	M7985A-05030-20	M5-0.80 x 30
M931-12050-82	M12-1.75 x 50*	M933-10035-60	M10-1.50 x 35	M7985A-05080-20	M5-0.80 x 80
M931-12055-60	M12-1.75 x 55	M933-10035-82	M10-1.50 x 35*	M7985A-05100-20	M5-0.80 x 100
M931-12060-60	M12-1.75 x 60	M961-10040-60	M10-1.25 x 40		
M931-12060-82	M12-1.75 x 60*			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				
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
<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.



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