

# Service Parts

Residential/Commercial Generator Sets



Model:

**8RESV/RESVL**  
**10RESV/RESVL**  
**12RESV/RESVL**



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# Introduction

This manual lists service replacement parts for 8-12RESV/RESVL generator sets.

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This manual includes the following main sections:

**Table of Contents.** Lists the sections of the manual.

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

**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 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>12</b>		
<b>Spec No.</b>	<b>Variation Number</b>												

<b>8RESV/RESVL</b>												
GM88347-GA1	7	29	53	24	64	9	2	209	1	25	68	
GM88347-GA4	7	29	53	24	64	9	2	209	1	25	68	
GM88347-GA7	7	29	53	24	64	11	2	209	1	26	68	
GM88347-GA10	7	29	53	24	64	11	2	209	1	26	68	
<b>10RESV/RESVL</b>												
GM88347-GA2	17	23	49	16	152	34	11	104	2	21	97	
GM88347-GA5	17	23	49	16	152	34	11	104	2	21	97	
GM88347-GA8	17	23	49	16	152	42	11	104	2	29	97	
GM88347-GA11	17	23	49	16	152	42	11	104	2	29	97	
<b>12RESV/RESVL</b>												
GM88347-GA3	17	23	49	16	152	34	11	104	2	21	97	
GM88347-GA6	17	23	49	16	152	34	11	104	2	21	97	
GM88347-GA9	17	23	49	16	152	42	11	104	2	29	97	
GM88347-GA12	17	23	49	16	152	42	11	104	2	29	97	

# Specification Number Index

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

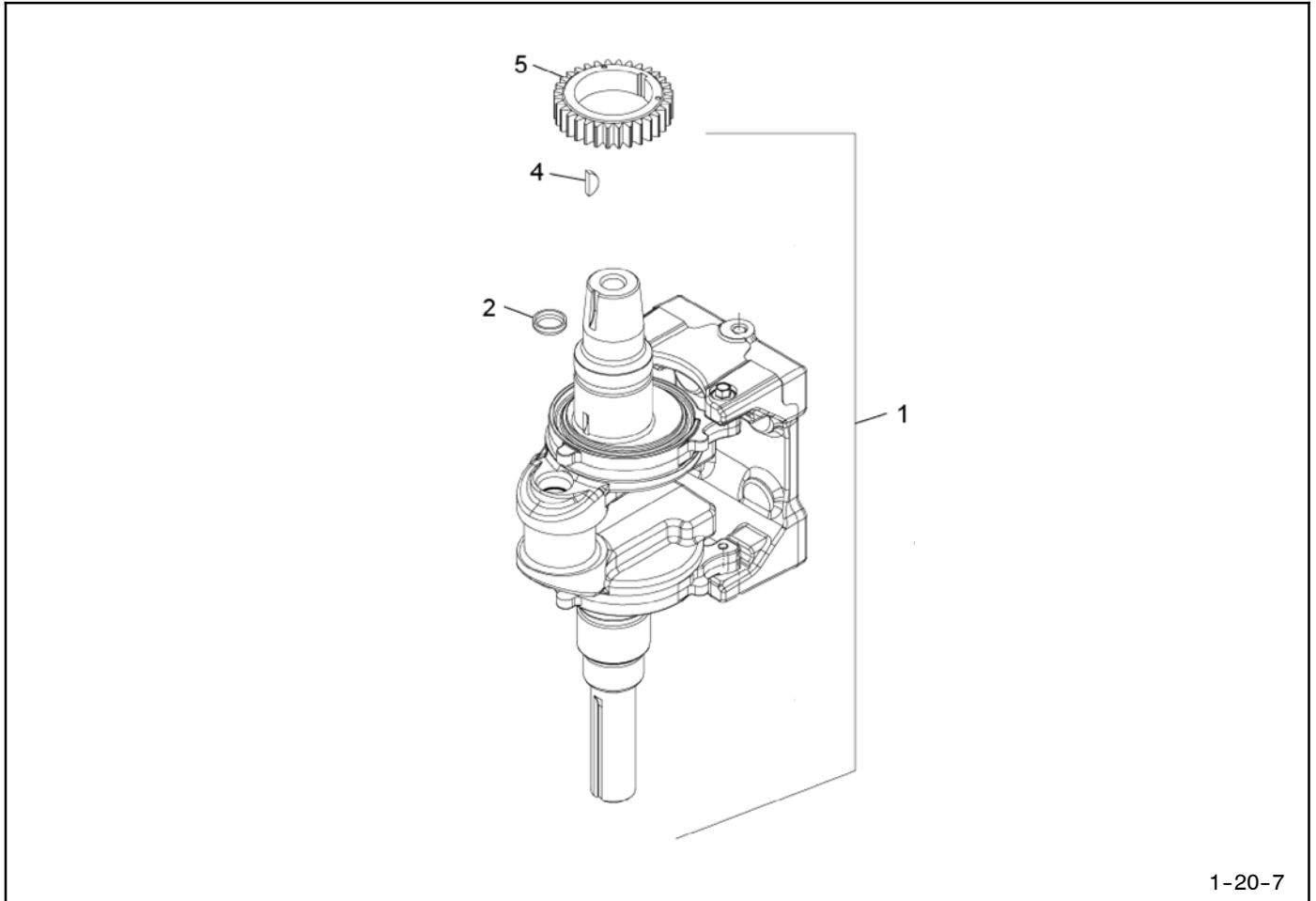
<b>8RESV/RESVL</b>											
GM88347-GA1	1	1	1	1	1	1	1	1	1	2	72
GM88347-GA4	1	1	1	1	1	1	2	1	2	73	
GM88347-GA7	1	4	1	1	1	1	1	1	2	88	
GM88347-GA10	1	4	1	1	1	1	2	1	2	89	
<b>10RESV/RESVL</b>											
GM88347-GA2	1	2	1	1	2	3	1	1	1	74	
GM88347-GA5	1	2	1	1	2	3	2	1	1	75	
GM88347-GA8	1	5	1	1	2	3	1	1	1	90	
GM88347-GA11	1	5	1	1	2	3	2	1	1	91	
<b>12RESV/RESVL</b>											
GM88347-GA3	1	3	1	1	2	2	1	1	1	74	
GM88347-GA6	1	3	1	1	2	2	2	1	1	75	
GM88347-GA9	1	5	1	1	2	2	1	1	1	90	
GM88347-GA12	1	5	1	1	2	2	2	1	1	91	

# Notes



# Group 1: Crankshaft

8RESV

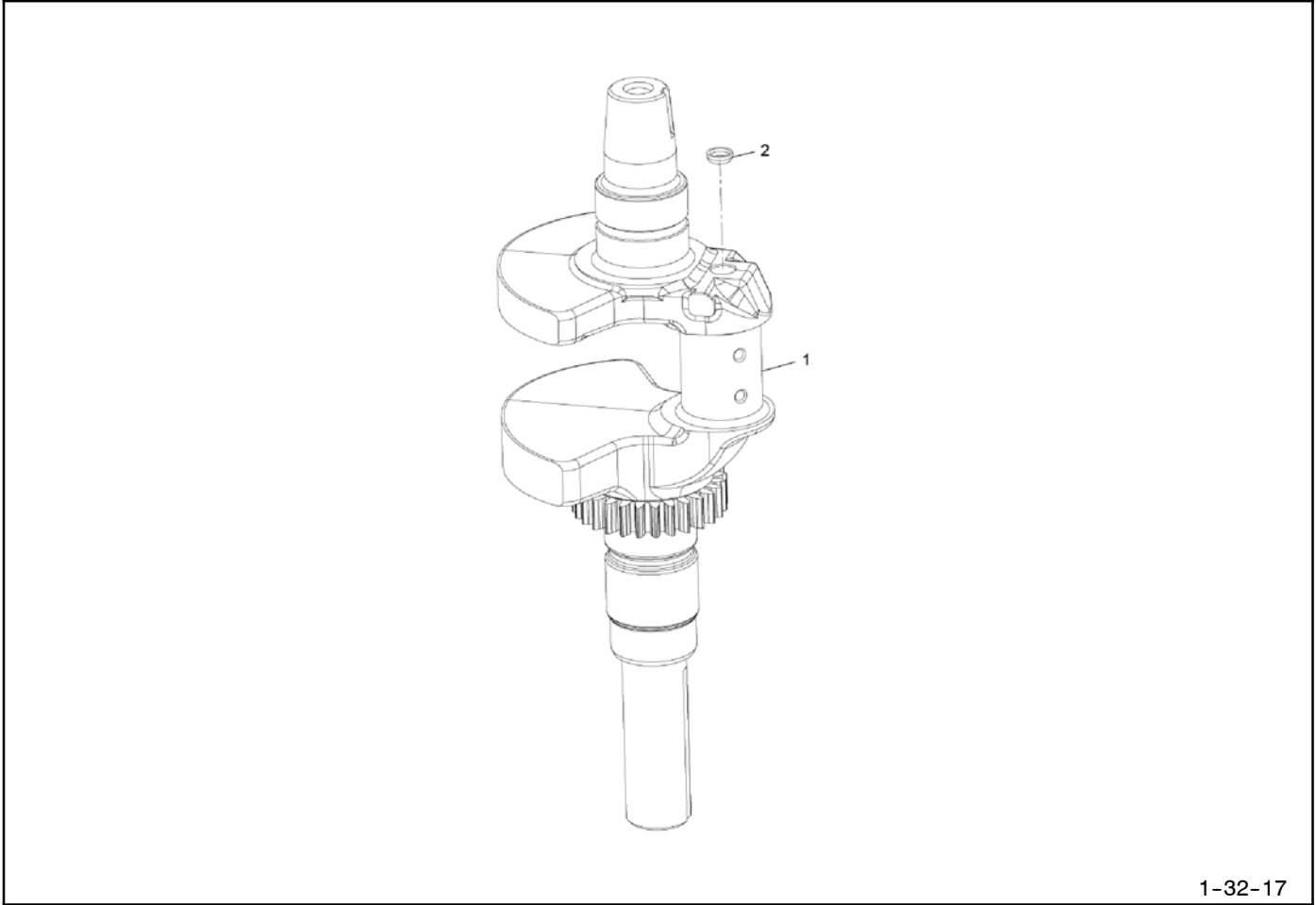


1-20-7

Item	Part Number	Description	Quantity
			Variation
1	20 014 53-S	CRANKSHAFT ASSEMBLY	7
2	25 139 27-S	PLUG, CUP	1
4	X-42-15-S	KEY, 3/16" X 5/8"	1
5	20 043 15-S	GEAR, CRANKSHAFT	1

# Group 1: Crankshaft

10/12RESV

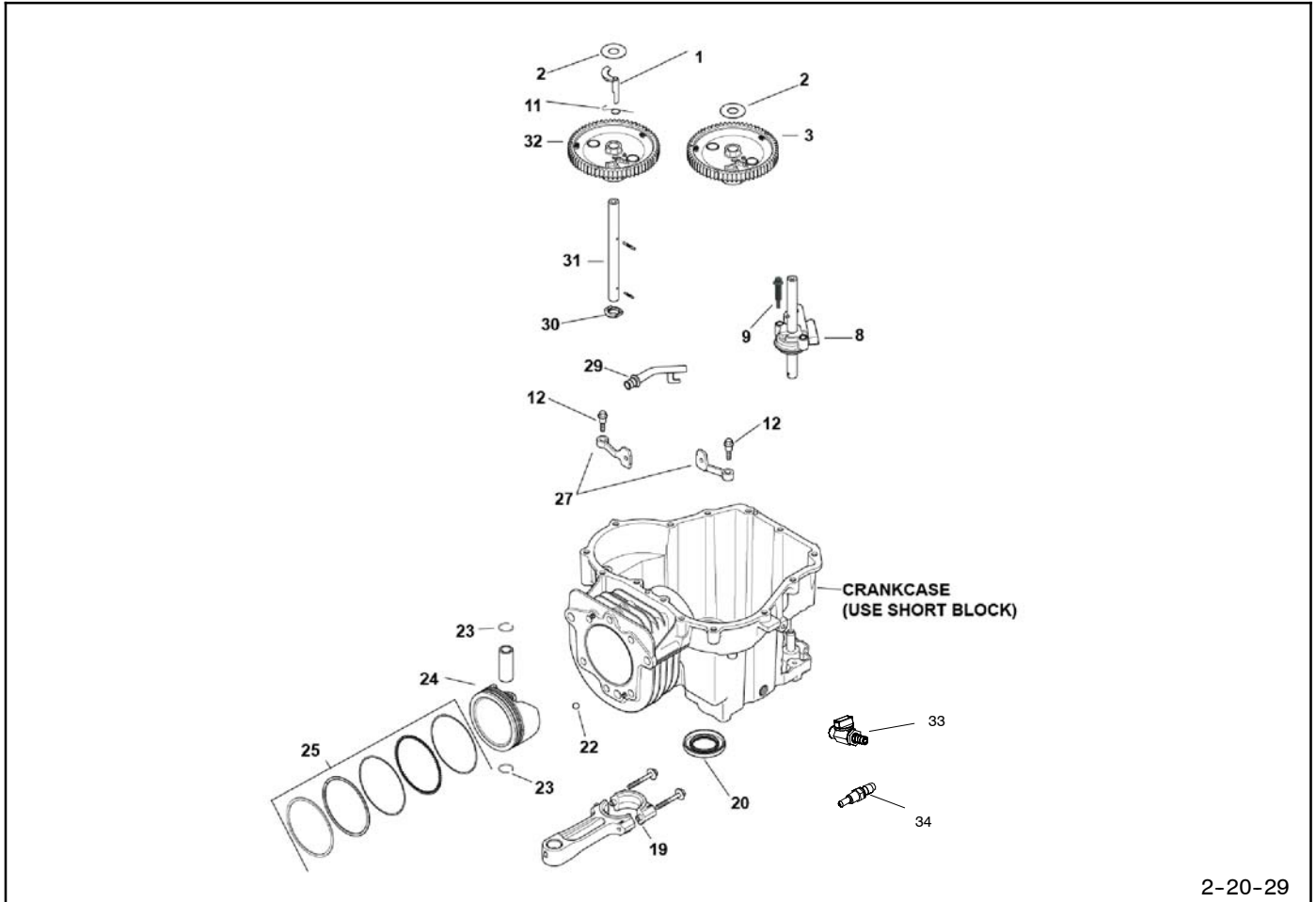


1-32-17

Item	Part Number	Description	Quantity
			Variation
			17
1	32 014 328-S	CRANKSHAFT ASSEMBLY	1
2	52 139 09-S	PLUG, CUP	1

# Group 2: Crankcase

8RESV

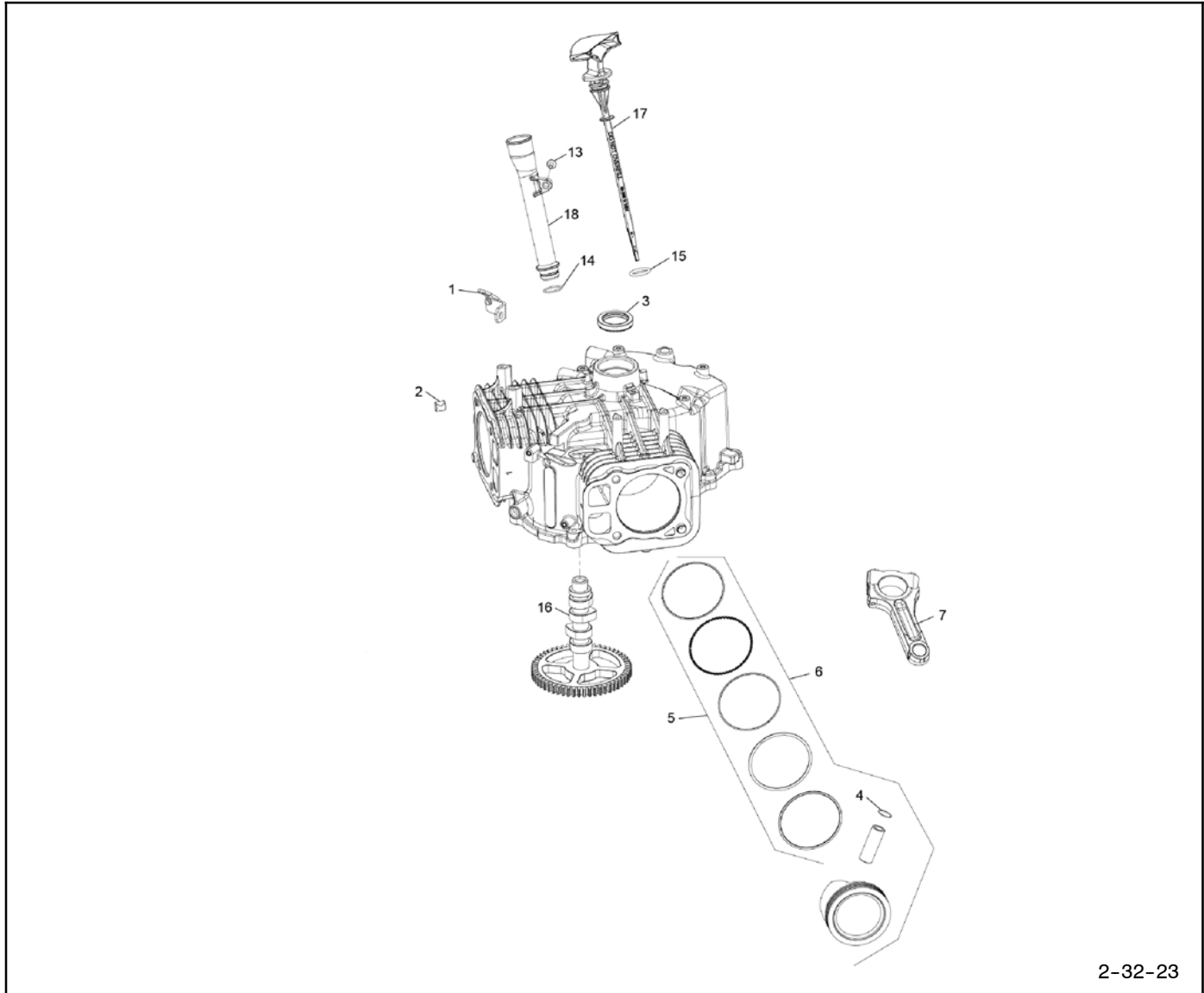


2-20-29

Item	Part Number	Description	Quantity
			Variation 29
1	20 044 32-S	KIT, ACR WEIGHT AND FOLLOWER	1
2	20 468 03-S	WASHER, THRUST -ACR	1
3	20 010 22-S	CAM GEAR ASSEMBLY, INTAKE	1
3	20 010 04-S	KIT, CAMSHAFT ASSEMBLY	1
8	20 393 02-S	KIT, OIL PUMP ASSEMBLY	1
9	20 086 12-S	SCREW, SHD THD FRM	2
11	20 089 06-S	SPRING, ACR	1
12	20 086 06-S	SCREW, SHD THD FRM M6X1X26	2
19	20 067 05-S	ROD, CONNECTING ASSEMBLY	1
20	20 032 08-S	SEAL, OIL	1
22	X-212-3-S	STEEL BALL	1
23	62 018 04-S	RETAINER, PISTON PIN	2
24	20 874 16-S	KIT, PISTON, RINGS & PIN ASSY 94mm BORE	1
25	20 108 04-S	RING SET (94MM)	1
27	20 090 12-S	KIT, CAM LEVER	2
29	20 123 02-S	TUBE, DRAINBACK	1
30	20 468 08-S	WASHER, THRUST	1
31	20 144 11-S	KIT, CAM CENTER SHAFT (EXHAUST)	1
32	20 010 23-S	CAM GEAR ASSEMBLY, EXHAUST	1
32	20 010 04-S	KIT, CAMSHAFT ASSEMBLY	1
33	359653	VALVE, DRAIN	1
34	GM28823	SENSOR, TEMPERATURE	1
-	25 158 18-S	BUSHING, REDUCING	1
-	25 294 46-S	FITTING, 3/8 NPT STREET TEE	1
-	52 755 50-S	KIT, OIL RELIEF	1

# Group 2: Crankcase

10/12RESV

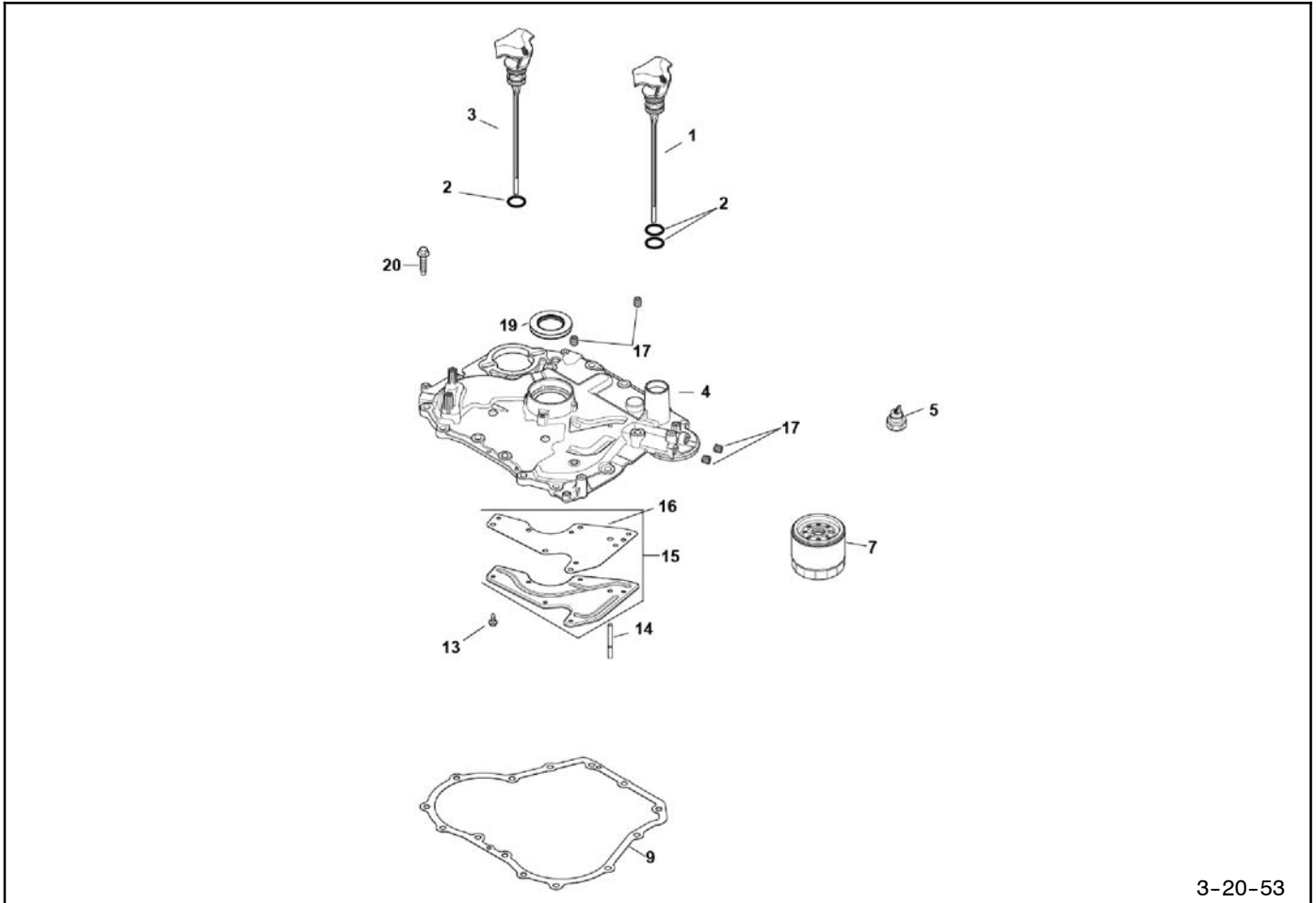


2-32-23

Item	Part Number	Description	Quantity
			Variation
1	24 126 243-S	BRACKET, OIL FILL TUBE	1
2	24 380 16-S	PIN, LOCATING	6
3	24 032 19-S	SEAL, OIL (HELIX LIP)	1
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 (0.08) 1.2MM TOP RING THICKNESS	2
5	25 108 03-S	RING SET (0.25) 1.2MM TOP RING THICKNESS	2
5	25 108 04-S	RING SET (0.50) 1.2MM TOP RING THCKNESS	2
6	25 874 13-S	PISTON KIT, 725CC (STD)	2
6	25 874 15-S	PISTON KIT, 725CC (+0.08)	2
6	25 874 16-S	PISTON KIT, 725CC (+0.25)	2
6	25 874 17-S	PISTON KIT, 725CC (+0.50)	2
7	24 067 28-S	ROD, ASSY CONNECTING (STD)-(#2406730S)	2
7	24 067 29-S	ROD, ASSY CONNECTING-USE 24 067 31-S	2
13	25 086 398-S	SCREW, THREAD FORMING	1
14	12 153 07-S	O-RING	1
15	25 153 09-S	O-RING	1
16	32 010 07-S	CAMSHAFT ASSEMBLY	1
17	32 038 12-S	DIPSTICK ASSEMBLY	1
18	32 123 14-S	TUBE ASSEMBLY, OIL FILL	1

# Group 3: Oil Pan/Lubrication

8RESV

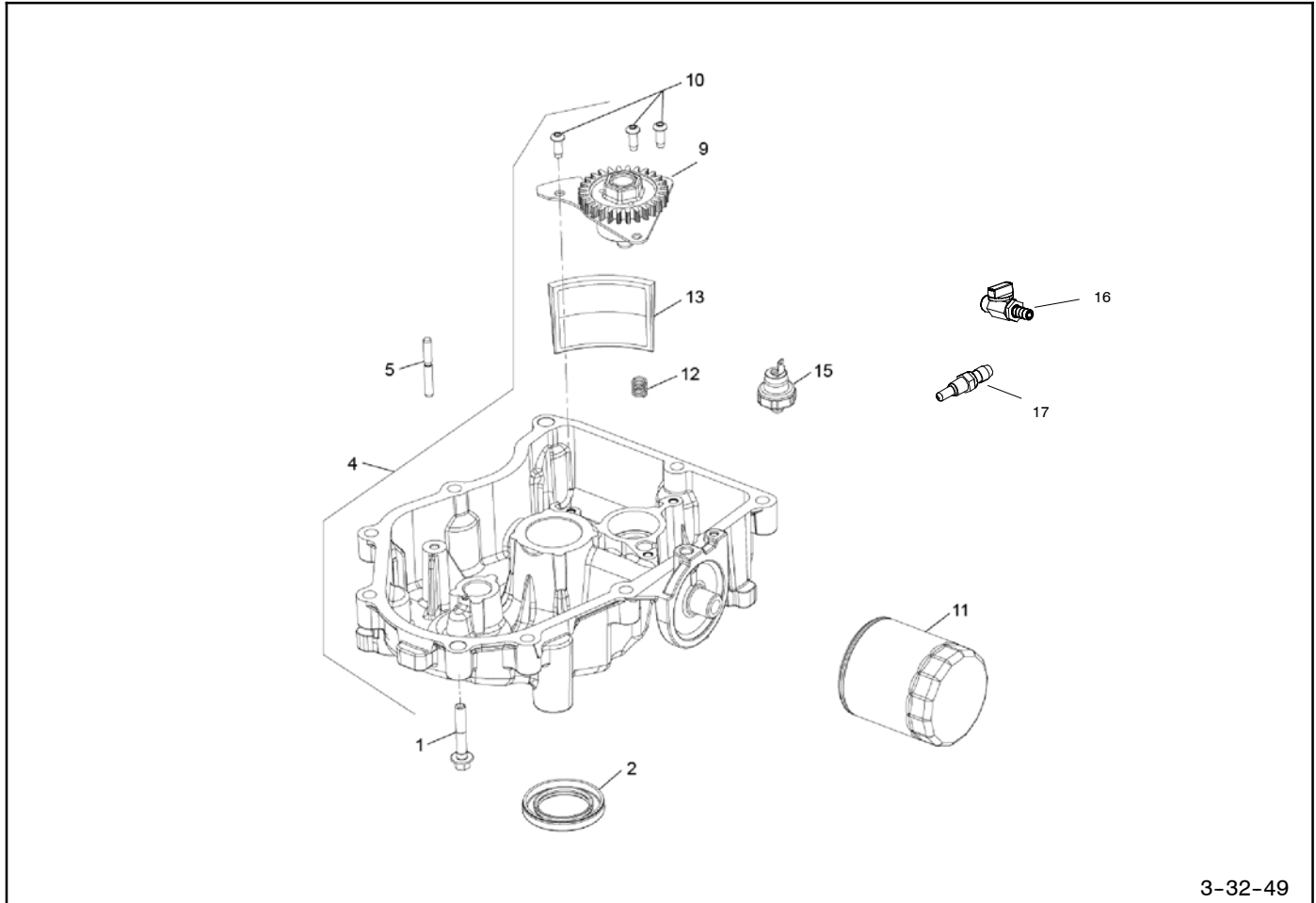


3-20-53

Item	Part Number	Description	Quantity
			Variation
			<b>53</b>
1	20 040 02-S	DIPSTICK, BLADE & CAP ASSY-USE 20 040 08	1
2	25 153 09-S	O-RING	2
3	20 040 08-S	BLADE, DIPSTICK ASSEMBLY	1
4	20 009 35-S	PLATE, CLOSURE ASSEMBLY	1
5	25 099 27-S	SWITCH, OIL PRESSURE	1
7	12 050 01-S	OIL FILTER	1
9	20 041 21-S	GASKET, CLOSURE PLATE	1
13	M-545013-S	SCREW, FLG THD FRM M5X0.8X13	3
14	20 144 03-S	SHAFT, GOVERNOR CROSS	1
15	20 096 21-S	KIT, OIL PASSAGE COVER	1
16	20 041 19-S	GASKET, OIL PASSAGE	1
17	25 139 60-S	PLUG, CTSK PIPE 1/8"	1
17	25 139 60-S	PLUG, CTSK PIPE 1/8"	1
19	20 032 08-S	SEAL, OIL	1
20	25 086 421-S	SCREW, HEX FLANGE	14

# Group 3: Oil Pan/Lubrication

10/12RESV

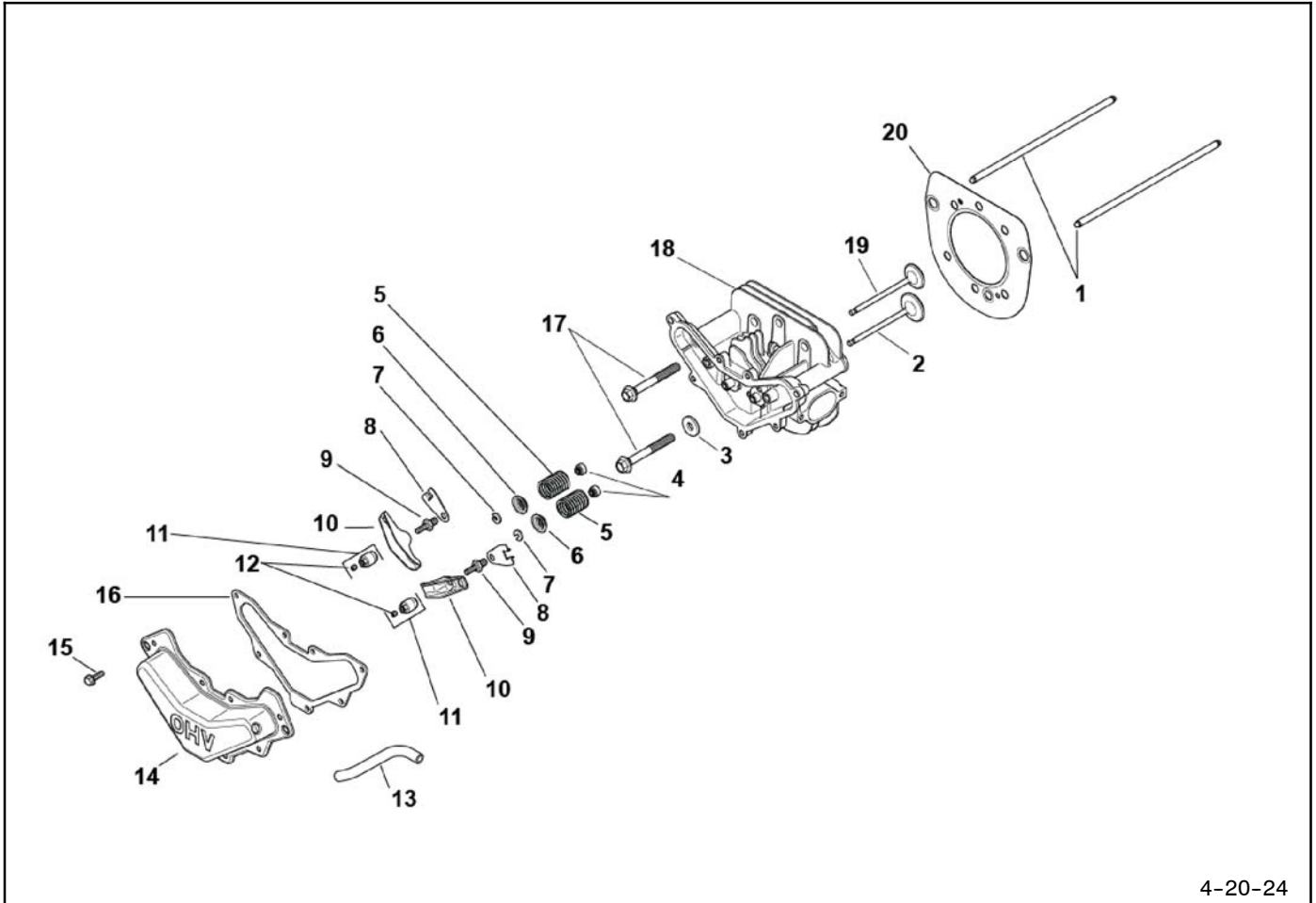


3-32-49

Item	Part Number	Description	Quantity
			Variation
			<b>49</b>
1	24 086 17-S	SCREW, FLG M8X1.25X45	10
2	25 032 06-S	SEAL, OIL	1
4	32 199 22-S	PAN ASSEMBLY, OIL (SERVICE)	1
5	12 144 02-S	SHAFT, GOVERNOR GEAR	1
9	32 393 18-S	PUMP ASSEMBLY, OIL	3
10	25 086 414-S	SCREW, BUTTON HEAD	3
11	12 050 01-S	OIL FILTER	1
12	32 089 06-S	SPRING, COMPRESSION	1
13	32 162 06-S	SCREEN, OIL	1
15	25 099 27-S	SWITCH, OIL PRESSURE	1
16	359653	VALVE, DRAIN	1
17	GM28823	SENSOR, TEMPERATURE	1
-	25 136 15-S	NIPPLE, PIPE	1
-	25 158 18-S	BUSHING, REDUCING	1

# Group 4: Cylinder Head/Valve/Breather

8RESV

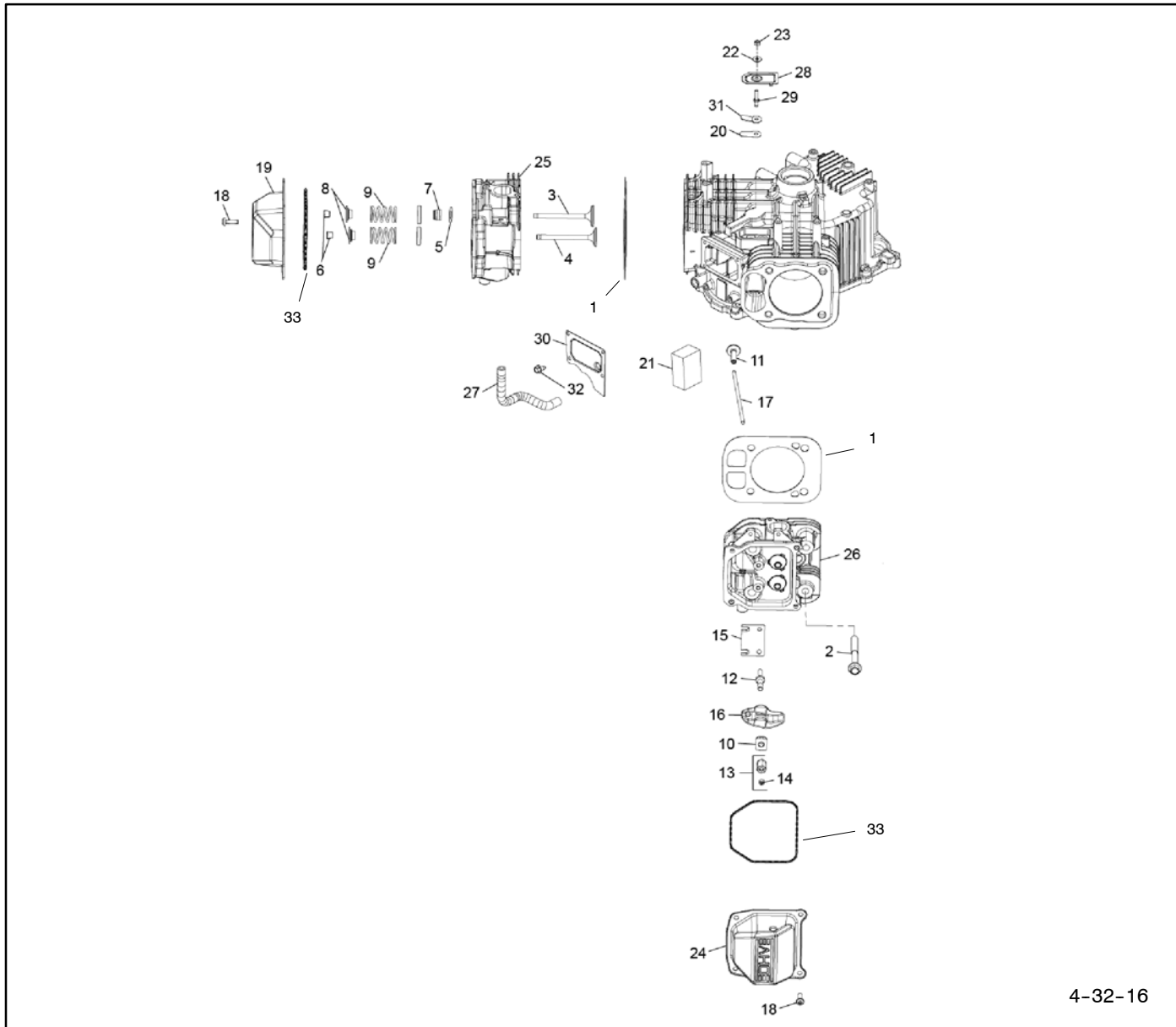


4-20-24

Item	Part Number	Description	Quantity
			Variation
			<b>24</b>
1	20 411 05-S	ROD, PUSH	2
2	20 017 02-S	VALVE, INTAKE	1
3	12 468 05-S	WASHER, FLAT 13/32"	1
4	20 032 10-S	SEAL, VALVE STEM	1
5	20 089 03-S	SPRING, VALVE	2
6	20 173 01-S	CAP, VALVE SPRING	2
7	20 062 01-S	LOCK, RETAINER	2
8	20 146 03-S	PLATE, PUSH ROD GUIDE	2
9	20 072 08-S	STUD, ROCKER	2
10	20 186 01-S	ARM, ROCKER	2
11	20 599 04-S	ROCKER PIVOT ASSEMBLY	2
11	20 599 04-S	PIVOT, ROCKER ARM	2
12	20 086 04-S	SCREW, SET	2
13	20 326 03-S	KIT, BREATHER HOSE	1
14	20 096 25-S	COVER ASSEMBLY, VALVE	1
15	25 086 460-S	SCREW, THREAD FORMING	7
16	25 597 07-S	RTV SEALANT	6
17	20 086 02-S	SCREW, CYLINDER HEAD (M10 X 80)	6
18	20 318 19-S	HEAD, CYLINDER FINISHED	1
19	20 016 03-S	VALVE, EXHAUST	1
20	20 841 01-S	KIT, CYLINDER HEAD GASKET	1

# Group 4: Cylinder Head/Valve/Breather

10/12RESV



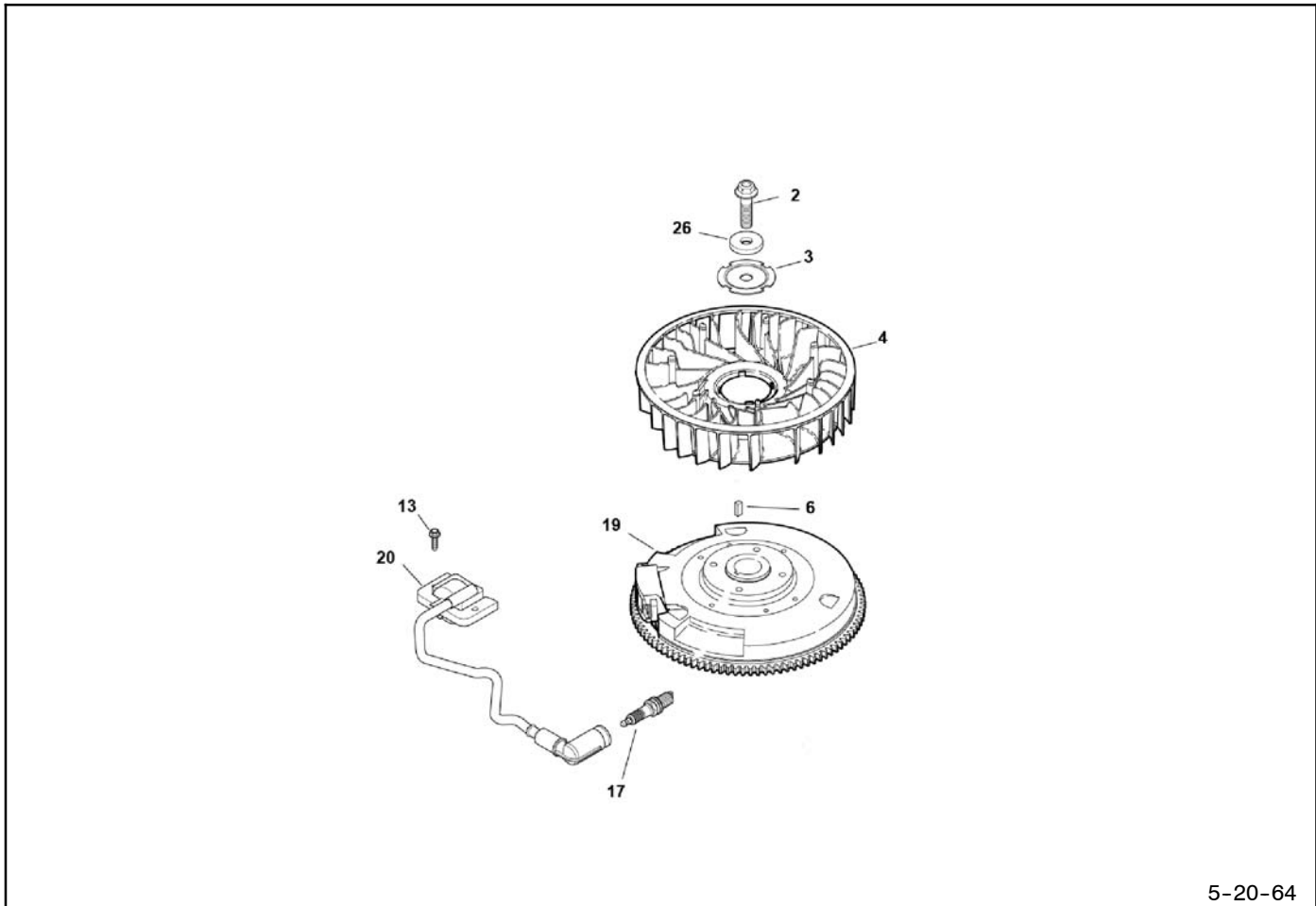
4-32-16

Item	Part Number	Description	Qty.	Item	Part Number	Description	Qty.
			Var.				Var.
1	32 841 02-S	KIT, CYLINDER HEAD GASKET	2	17	32 411 04-S	ROD, PUSH	4
2	62 086 08-S	SCREW, FLG M10X1.5X90	8	18	25 086 374-S	SCREW, PAN HEAD	8
3	32 017 01-S	VALVE, INTAKE	2	19	25 096 09-S	COVER, ROCKER	2
3	32 017 02-S	VALVE, INTAKE (.25)	2	20	12 402 02-S	REED, BREATHER	1
4	32 016 01-S	VALVE, EXHAUST	2	21	32 050 06-S	FILTER, BREATHER	1
4	32 016 02-S	VALVE, EXHAUST (.25)	2	22	32 468 01-S	WASHER, SEALING	1
5	275067-S	SPACER (.010")	2	23	M-547050-S	NUT, LOCK M5X.8	1
6	12 755 03-S	KIT, RETAINER	8	25	32 318 21-S	HEAD, ASSY CYLINDER (#1)	1
7	25 032 14-S	SEAL, VALVE BAND	2	26	32 318 22-S	HEAD, ASSY CYLINDER (#2)	1
8	25 173 28-S	CAP, VALVE SPRING	4	27	25 326 62-S	HOSE, BREATHER	1
9	32 089 05-S	SPRING, VALVE	4	28	32 096 16-S	COVER, BREATHER REED	1
10	25 599 01-S	PIVOT, ROCKER ARM	4	29	32 072 05-S	STUD	1
11	32 019 02-S	TAPPET	4	30	16 096 02-S	COVER, BREATHER MEDIA	1
12	32 072 04-S	STUD, ROCKER	4	31	66 018 04-S	RETAINER, REED	1
13	32 100 05-S	HEX NUT ASSEMBLY	4	32	25 086 400-S	SCREW, THREAD FORMING	4
14	25 086 168-S	SCREW, SET	4	33	25 597 07-S	RTV SILICONE SEALANT	1
15	32 146 09-S	PLATE, GUIDE	2	-	24 431 02-S	SLEEVE, INSULATING 6.0"	1
16	32 186 03-S	ARM, ROCKER	4				



# Group 5: Ignition/Electrical

8RESV

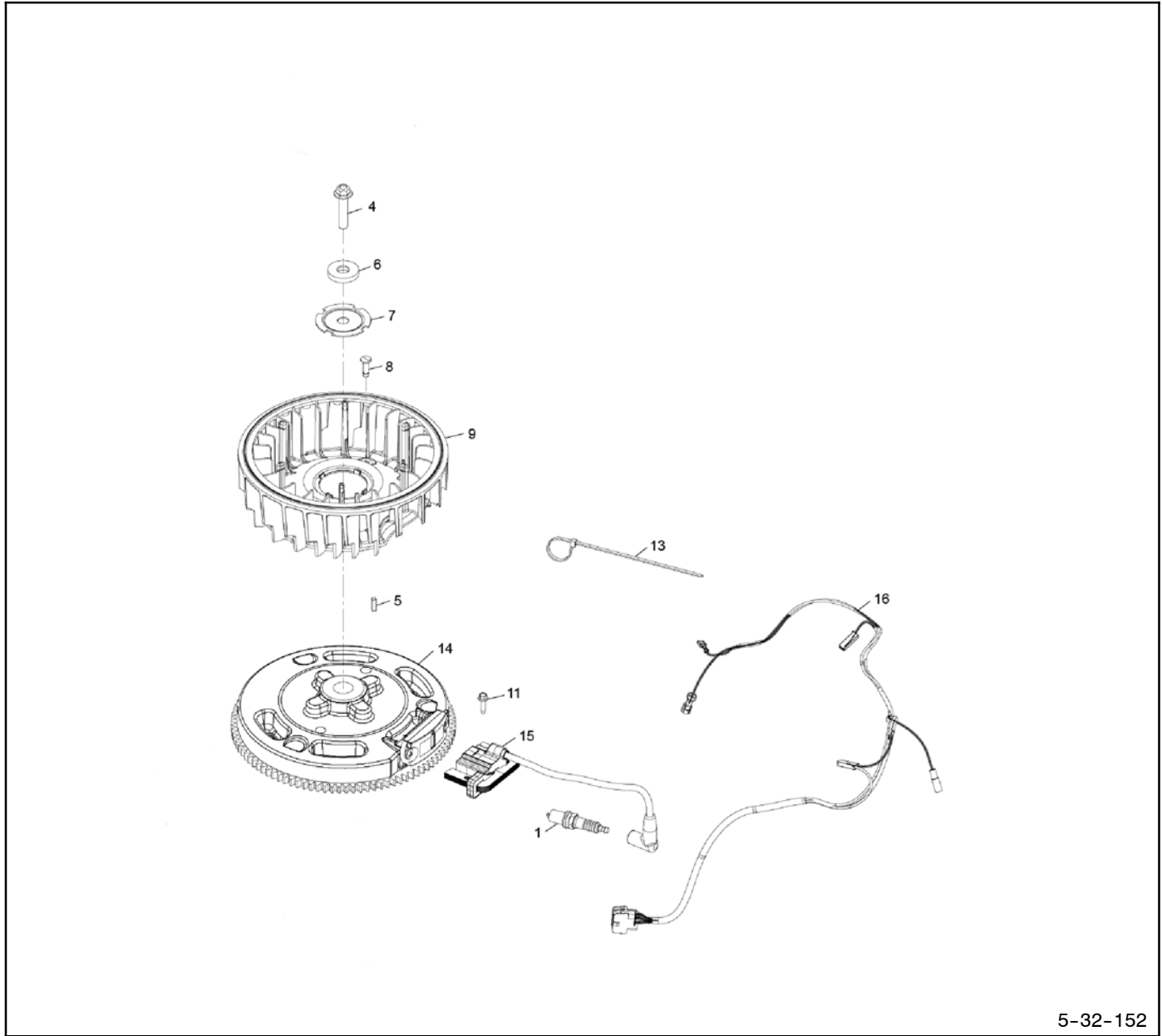


5-20-64

Item	Part Number	Description	Quantity
			Variation
2	25 086 362-S	SCREW, HEX FLANGE	1
3	20 146 05-S	PLATE, FAN MOUNTING	1
4	20 157 01-S	FAN	1
6	25 340 04-S	KEY, SQUARE	1
13	25 086 473-S	SCREW, THD FRM	2
17	25 132 14-S	SPARK PLUG, RFI	1
19	20 025 53-S	FLYWHEEL ASSEMBLY	1
20	20 584 03-S	MODULE, IGNITION (CDI FIXED)	1
26	25 468 09-S	WASHER, FLAT	1
-	20 176 23-S	HARNES, WIRING	1
-	25 454 05-S	TIE	1

# Group 5: Ignition/Electrical

10/12RESV

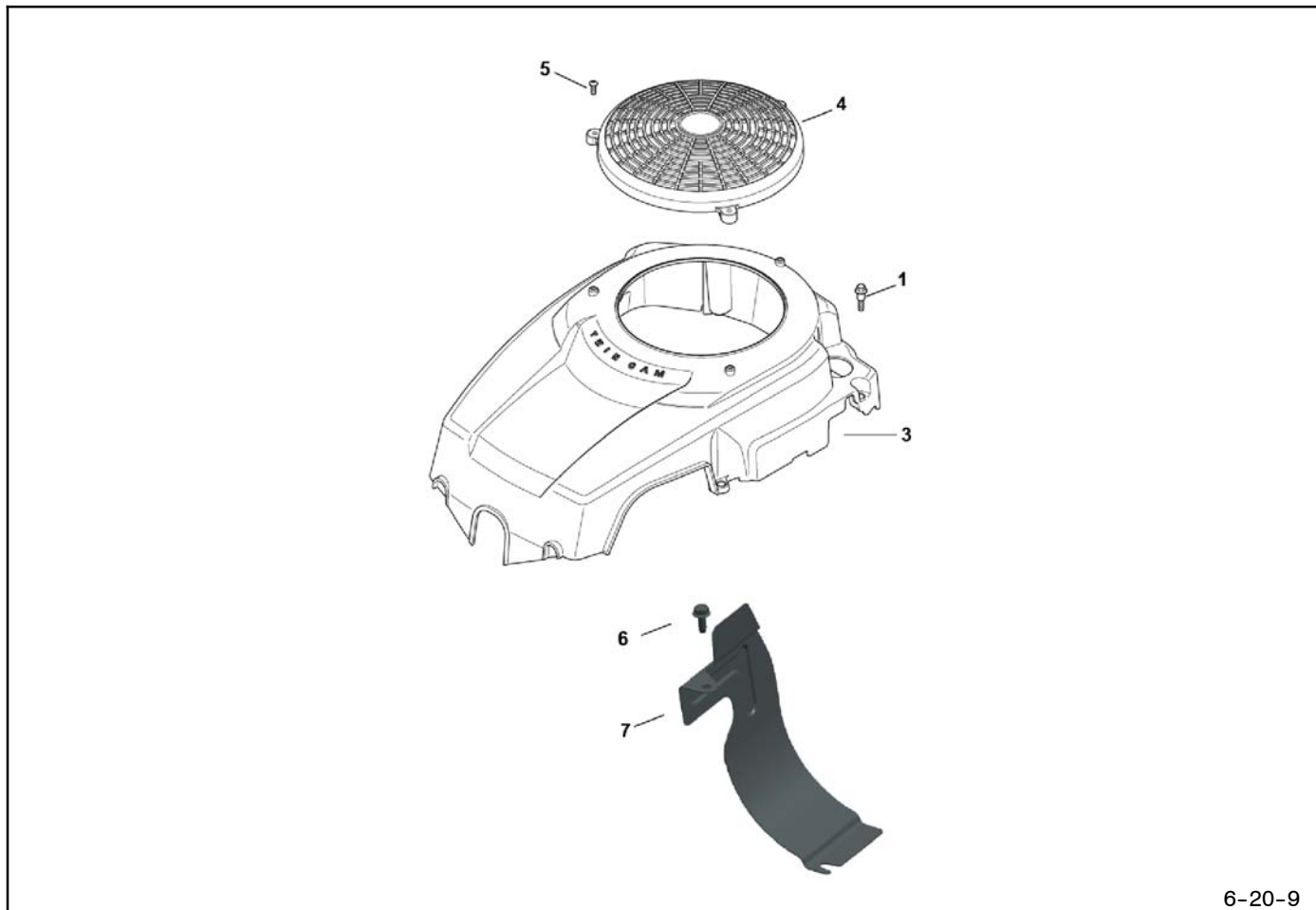


5-32-152

Item	Part Number	Description	Quantity
			Variation
			<b>152</b>
1	25 132 14-S	SPARK PLUG, RFI	2
4	25 086 361-S	SCREW, HEX FLANGE	1
5	25 340 04-S	KEY, SQUARE	1
6	25 468 09-S	WASHER, FLAT	1
7	20 146 05-S	PLATE, FAN MOUNTING	1
8	32 018 03-S	RETAINER, FLYWHEEL FAN	2
9	32 157 04-S	FAN	1
11	25 086 399-S	SCREW, THD FRM-USE 25 086 473-S	4
13	25 454 03-S	TIE, WIRE	2
14	32 025 26-S	FLYWHEEL ASSEMBLY	1
15	32 584 06-S	MODULE, IGNITION	2
16	32 176 33-S	HARNESS, WIRING ASSEMBLY	1

# Group 6: Blower Housing and Baffles

8RESV

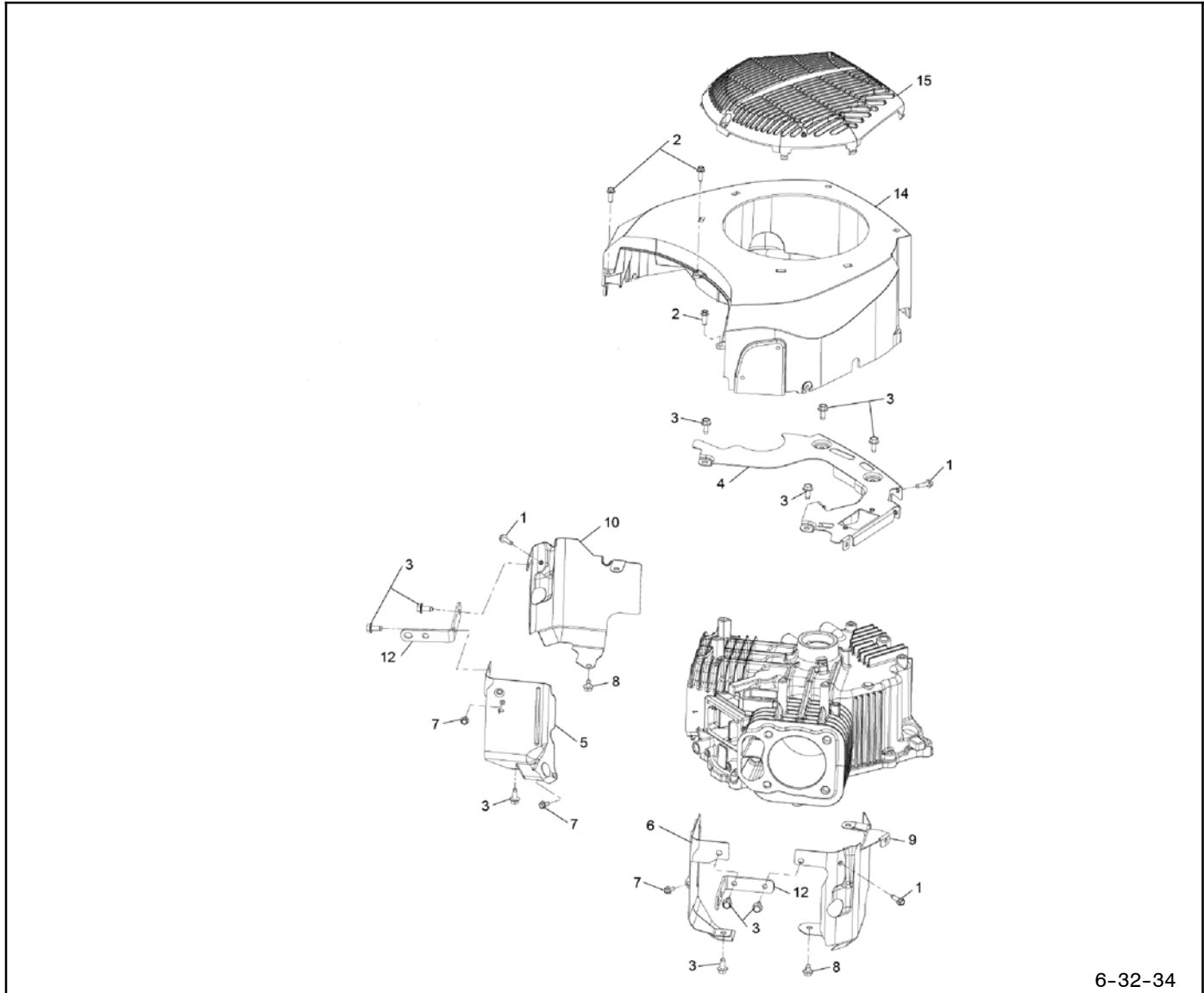


6-20-9

Item	Part Number	Description	Quantity	
			9	11
1	20 086 06-S	SCREW, SHD THD FRM M6X1X26	4	4
3	20 755 40-S	KIT, BLOWER HOUSING & GUARD	1	1
3	20 027 16-S	HOUSING, BLOWER		1
4	20 314 06-S	GUARD, FIXED	1	
4	20 314 09-S	GUARD, FIXED		1
5	24 086 41-S	SCREW, PHL HD #11-16X1/2"	3	3
6	25 086 397-S	SCREW, THREAD FORMING	2	2
7	20 063 03-S	BAFFLE, BARREL	1	
7	20 063 04-S	BAFFLE, BARREL		1
-	20 113 29-S	DECAL, KOHLER ROUND	1	1

# Group 6: Blower Housing and Baffles

10/12RESV

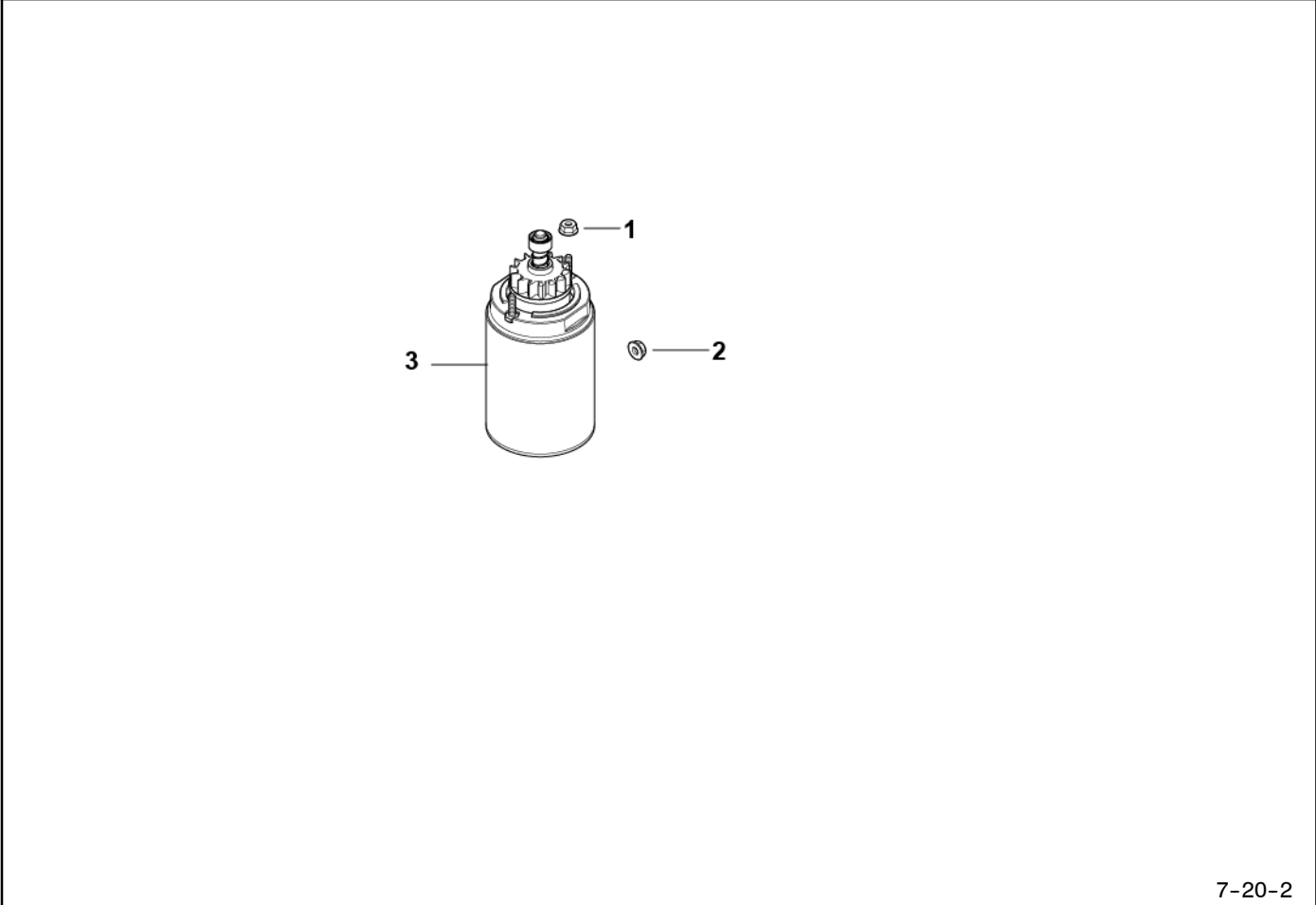


6-32-34

Item	Part Number	Description	Quantity	
			34	42
1	25 086 399-S	SCREW, THD FRM-USE 25 086 473-S	4	4
2	25 086 450-S	SCREW, HI-LOW	3	3
3	25 086 397-S	SCREW, THREAD FORMING	4	4
3	25 086 397-S	SCREW, THREAD FORMING	4	4
3	25 086 397-S	SCREW, THREAD FORMING	4	4
4	32 146 15-S	PLATE, BACKING	1	1
5	32 063 23-S	BAFFLE, VALLEY #1	1	1
6	32 063 22-S	BAFFLE, VALLEY #2	1	1
7	25 086 400-S	SCREW, THREAD FORMING	1	1
7	25 086 400-S	SCREW, THREAD FORMING	2	2
8	25 086 400-S	SCREW, THREAD FORMING	2	2
9	32 063 17-S	BAFFLE, LEFT BARREL	1	1
10	32 063 18-S	BAFFLE, RIGHT BARREL	1	1
12	32 445 01-S	STRAP, LIFTING	2	1
14	32 027 17-S	KIT, BLOWER HOUSING	1	
14	32 027 26-S	KIT, BLOWER HOUSING (W/GUARD)		1
15	32 314 06-S	GUARD, FIXED	1	
-	41 096 23-S	COVER, KNOCK OUT	1	1

# Group 7: Starter

8RESV

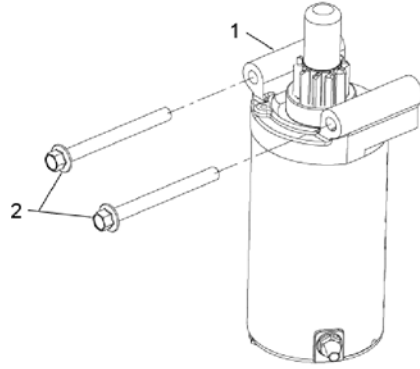


7-20-2

Item	Part Number	Description	Quantity
			Variation
1	25 100 56-S	NUT, HEX FLANGE LOCK (10-24)	2
2	12 100 07-S	NUT, FLANGE 1/4-20	1
3	20 098 10-S	ELECTRIC STARTER-BENDIX DRIVE	1

# Group 7: Starter

10/12RESV

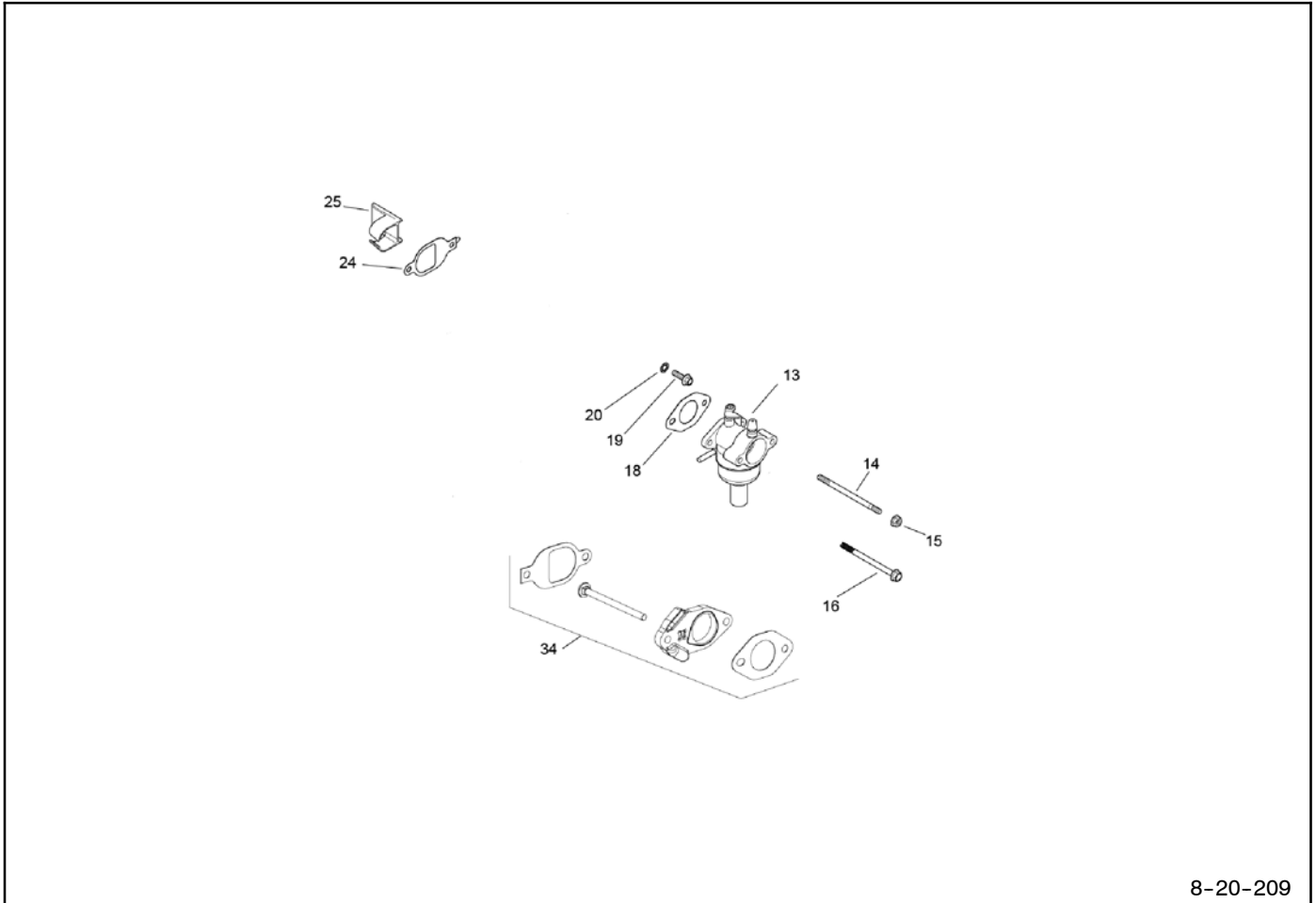


7-32-11

Item	Part Number	Description	Quantity
			Variation
			11
1	32 098 08-S	ELECTRIC STARTER-BENDIX DRIVE	1
2	M-851080-S	SCREW, FLG M8X1.25X80	2

# Group 8: Carburetor

8RESV

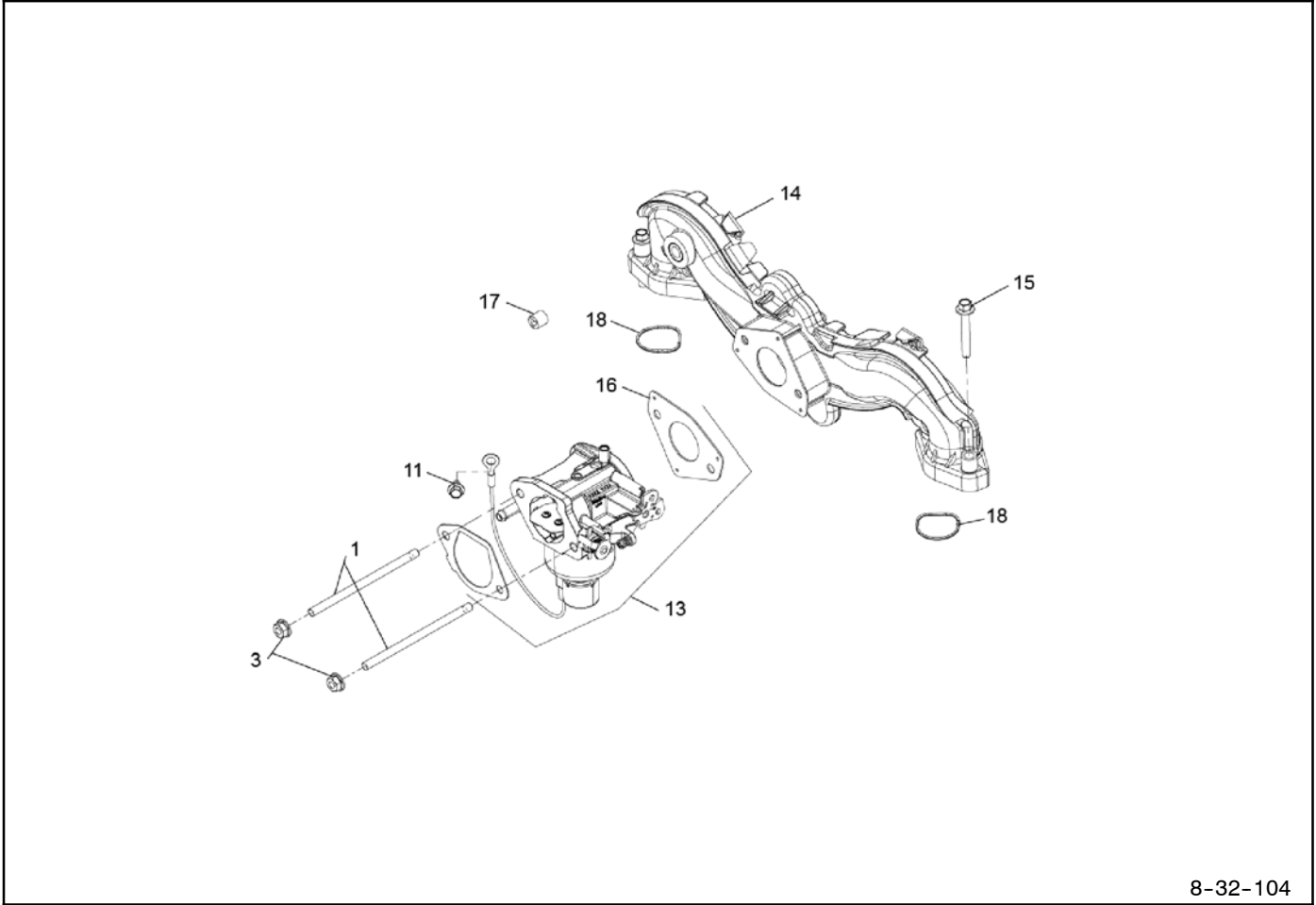


8-20-209

Item	Part Number	Description	Quantity
			Variation 209
13	20 853 101-S	CARBURETOR, GASEOUS FUEL	1
14	20 072 10-S	STUD	1
14	20 072 09-S	STUD, CARBURETOR	1
15	M-641060-S	NUT, FLG M6X1.0	2
18	12 041 01-S	GASKET, CARBURETOR	1
19	M-651020-S	SCREW, FLG M6x1.0x20	1
20	X-22-11-S	WASHER, INT TOOTH LOCK 1/4"	1
24	20 041 18-S	GASKET, HEAT DEFLECTOR	1
25	20 332 01-S	INSERT, INTAKE PORT	1
34	20 112 08-S	KIT, CARBURETOR SPACER	1
-	25 454 05-S	TIE	1

# Group 8: Carburetor

10/12RESV



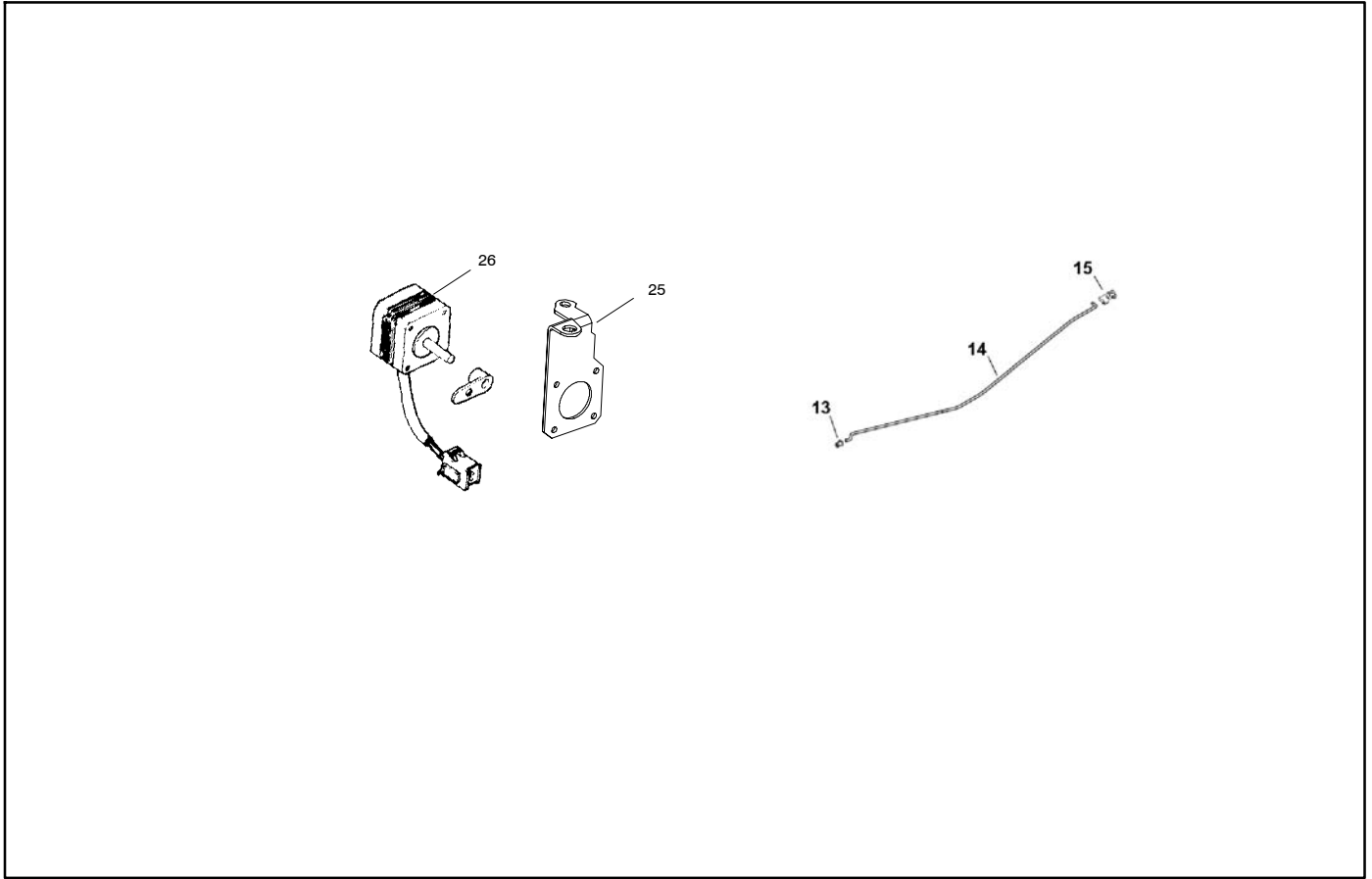
8-32-104

Item	Part Number	Description	Quantity
			Variation
			<b>104</b>
1	25 072 25-S	STUD	2
2	25 086 398-S	SCREW, THREAD FORMING	1
3	M-641060-S	NUT, FLG M6X1.0	2
13	32 853 60-S	CARBURETOR, GASEOUS FUEL	1
14	24 164 91-S	KIT, INTAKE MANIFOLD	1
15	M-651040-S	SCREW, FLG M6X1.0X40	4
16	24 041 52-S	GASKET, CARBURETOR	1
17	25 139 60-S	PLUG, CTSK PIPE 1/8"	1
18	24 153 27-S	O-RING, INTAKE PORT	1



# Group 9: Engine Controls

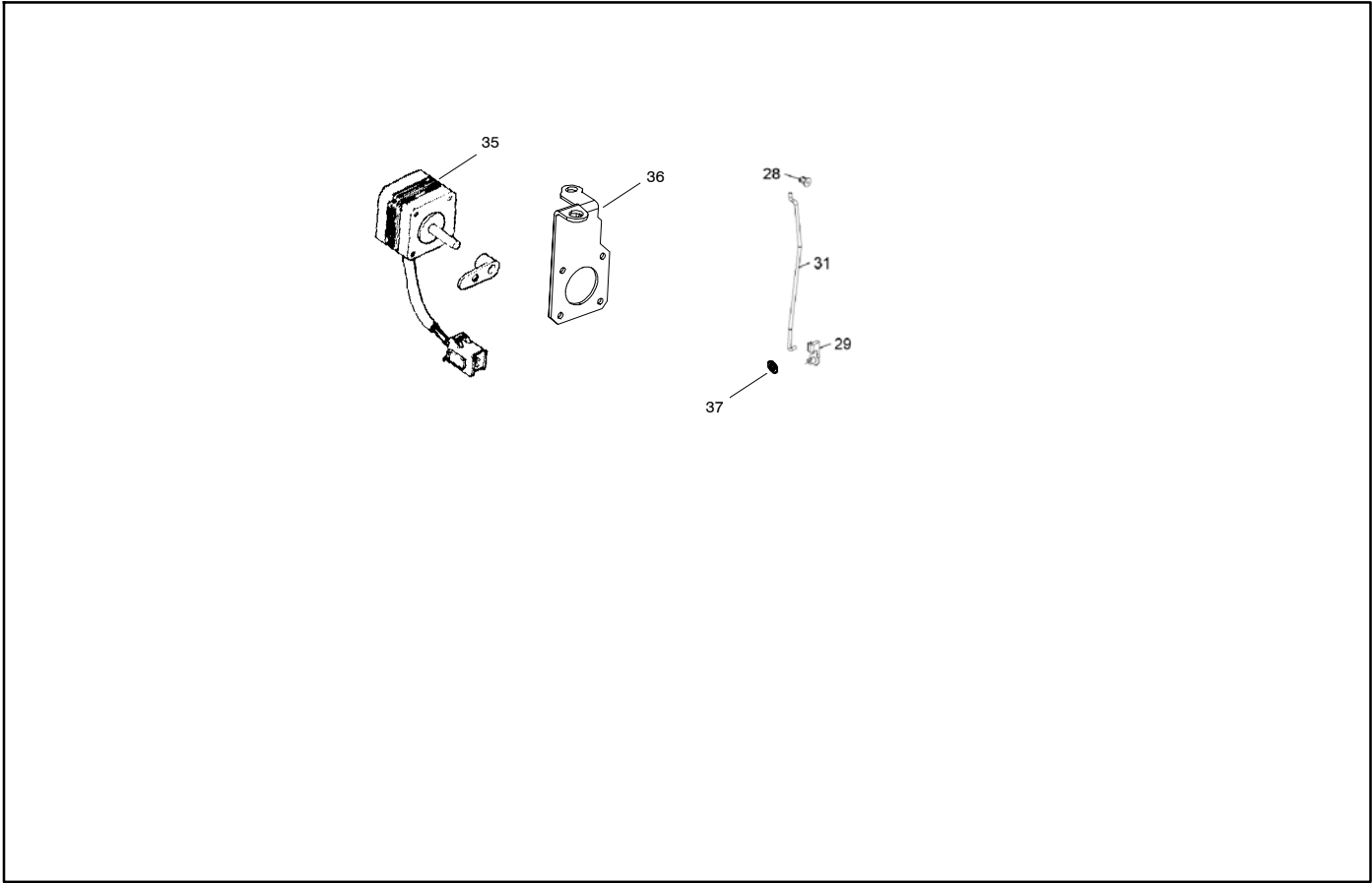
8RESV



Item	Part Number	Description	Quantity
			Variation
13	25 158 08-S	BUSHING, LINKAGE RETAINING	1
14	20 079 10-S	LINKAGE, THROTTLE	1
15	25 158 11-S	BUSHING, THROTTLE LINKAGE	1
25	25 126 17-S	BRACKET, STEPPER MOTOR	1
26	25 364 01-S	MOTOR ASSEMBLY	1
-	25 086 589-S	SCREW, PAN HEAD, #4-40	4
-	25 086 590-S	SCREW, HEX FLANGE M8 X 1.25	1
-	M-639010-S	SCREW, FLG M6X1.0X10	1

# Group 9: Engine Controls

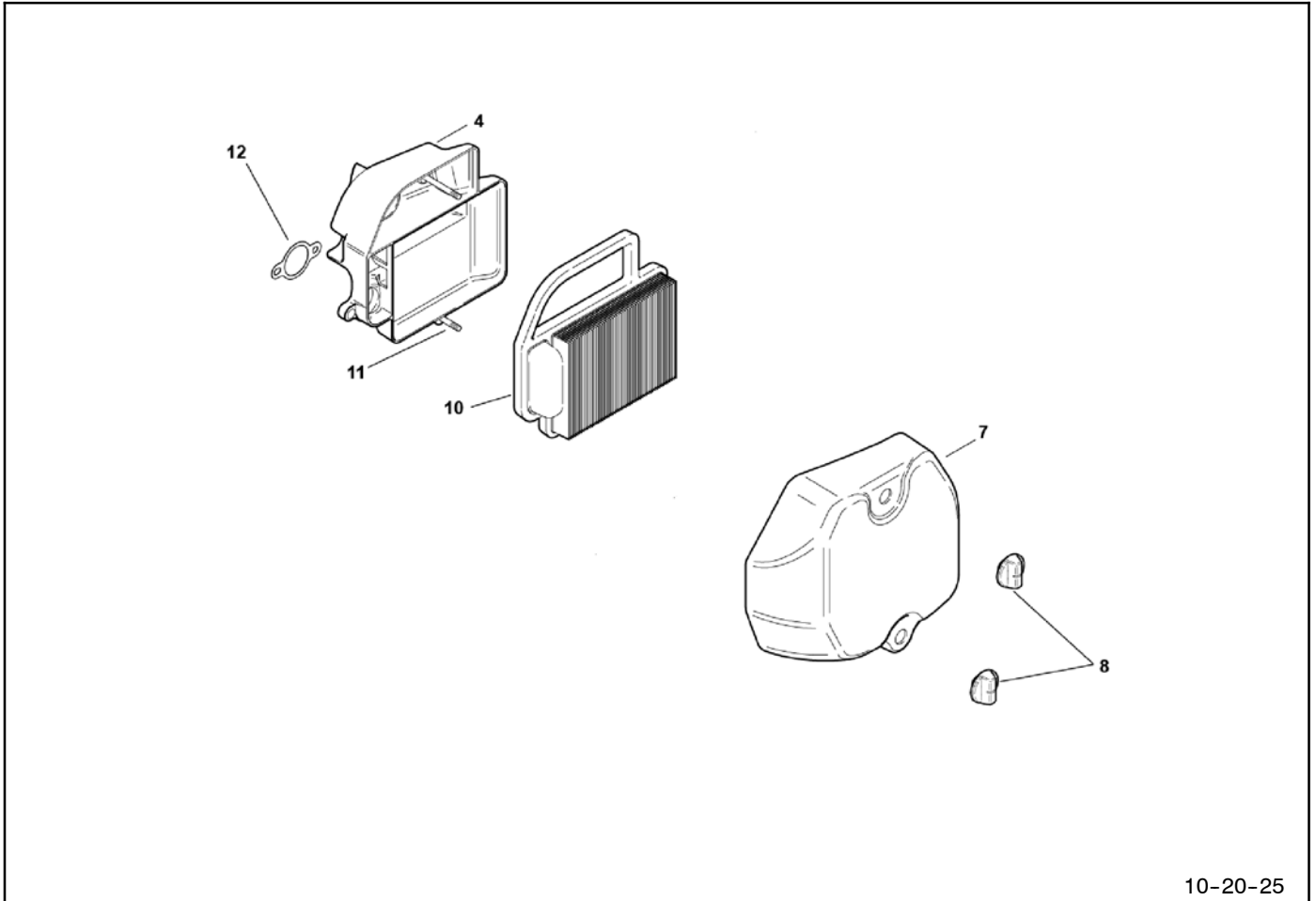
10/12RESV



Item	Part Number	Description	Quantity
			Variation
			<b>2</b>
28	25 158 08-S	BUSHING, LINKAGE RETAINING	1
29	25 158 11-S	BUSHING, THROTTLE LINKAGE	1
31	32 079 05-S	LINKAGE, THROTTLE	1
35	25 364 01-S	MOTOR ASSEMBLY	1
36	25 126 17-S	BRACKET, STEPPER MOTOR	1
37	32 468 05	WASHER, FELT	1
-	25 086 589-S	SCREW, PAN HEAD, #4-40	4
-	25 086 590-S	SCREW, HEX FLANGE M8 X 1.25	1
-	M-639010-S	SCREW, FLG M6X1.0X10	1

# Group 10: Air Intake/Filtration

8RESV

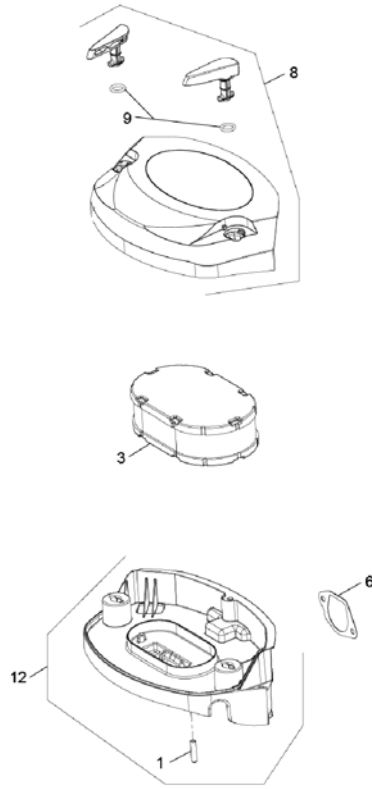


10-20-25

Item	Part Number	Description	Quantity	
			25	26
4	20 094 11-S	KIT, AIR CLEANER BASE	1	
4	20 094 15-S	AIR CLEANER BASE		1
7	20 096 15-S	KIT, AIR CLEANER COVER	1	
7	20 096 30-S	AIR CLEANER COVER		1
8	25 341 04-S	KNOB, COVER	2	
8	25 341 07-S	KNOB, COVER		2
10	20 083 07-S	ELEMENT, AIR FILTER	1	1
11	20 072 04-S	STUD, AIR CLEANER BASE	2	2
12	12 041 02-S	GASKET, AIR CLEANER BASE	1	1
-	54 755 01-S	KIT, KNOB W/SEAL	2	
-	25 173 34-S	CAP, MASKING	1	1

# Group 10: Air Intake/Filtration

10/12RESV



10-32-21

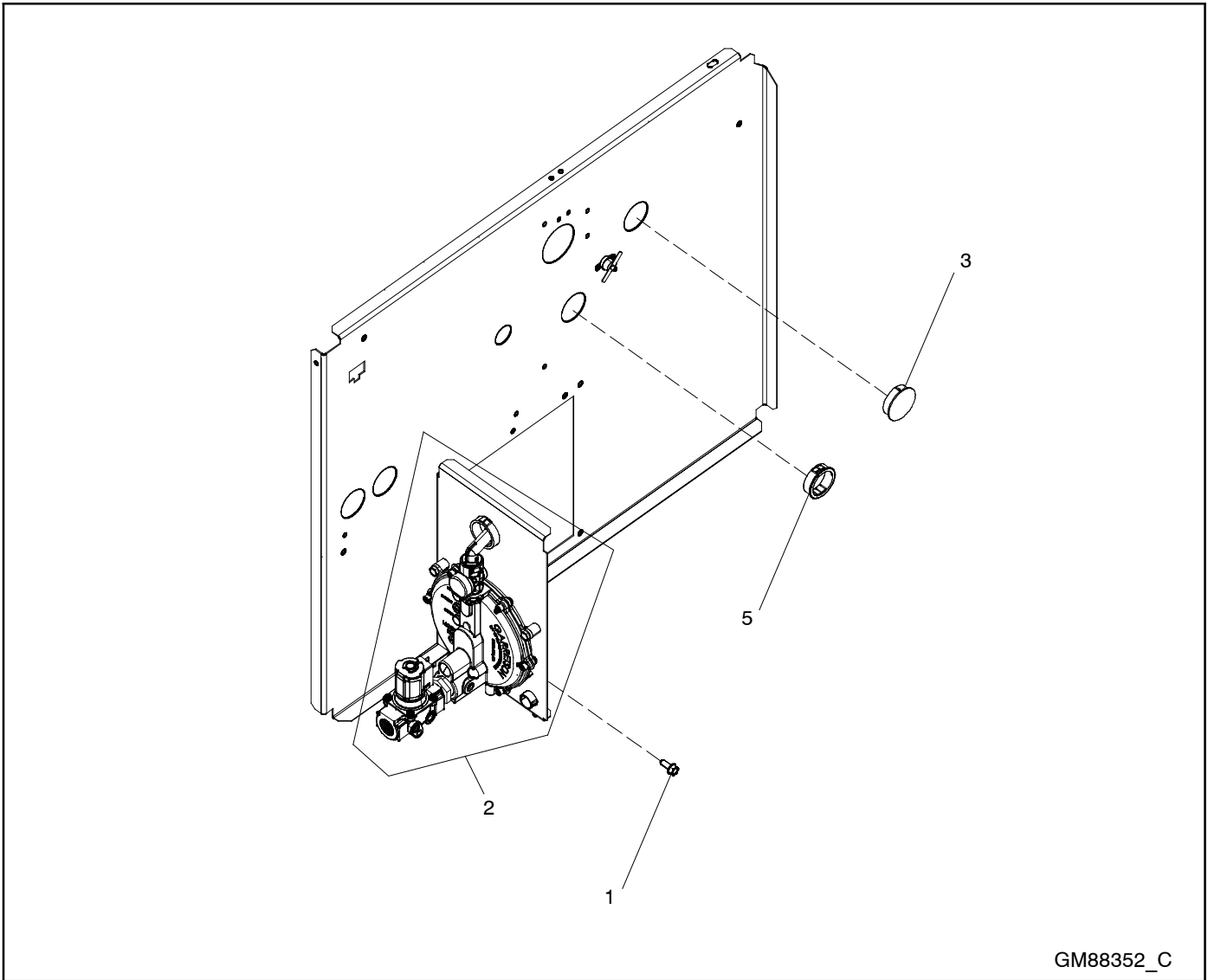
Item	Part Number	Description	Quantity	
			21	29
1	25 173 09-S	CAP, MASKING	1	1
3	32 083 12-S	ELEMENT, AIR FILTER	1	1
6	32 041 04-S	GASKET, AIR CLEANER BASE	1	1
8	32 096 28-S	COVER ASSEMBLY, AIR CLEANER	1	
8	32 096 32-S	COVER ASSEMBLY, AIR CLEANER		1
9	25 153 15-S	O-RING	2	
12	32 094 13-S	BASE ASSEMBLY, AIR CLEANER	1	
12	32 094 17-S	BASE ASSEMBLY, AIR CLEANER		1

## Group 12: Engine Decals

Decals are not illustrated.

Item	Part Number	Description	Quantity
			Variation
1	25 113 70-S	LABEL, CLEAR LAMINATION	1
2	25 454 05-S	TIE	1

# Fuel System

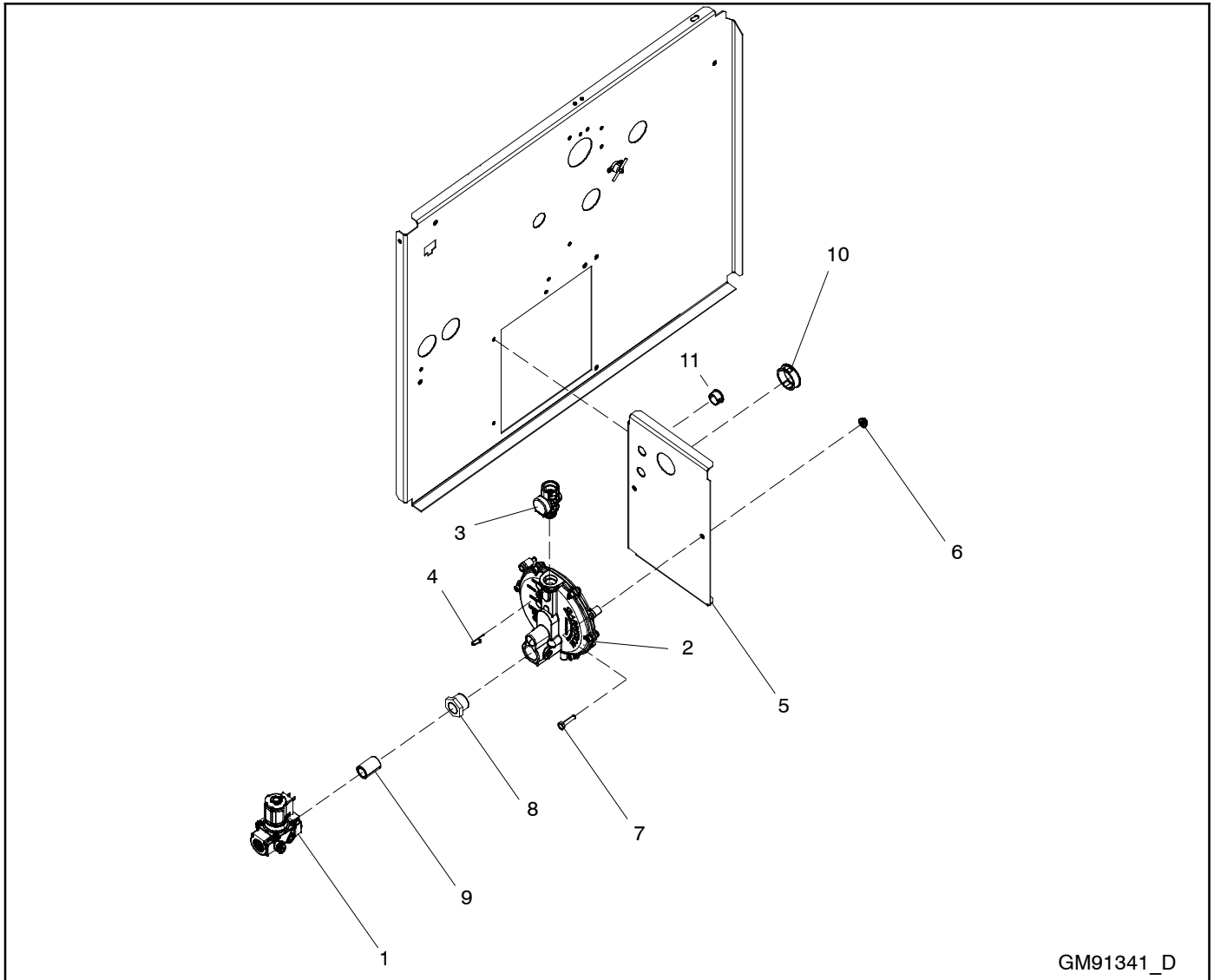


GM88352\_C

## GM88352-

Item	Part Number	Description	Quantity
			Variation
1	GM78761-1	Screw, Sheetmetal	3
2	GM91341	Fuel Block (see following page)	1
3	X-301-45	Plug, Button	1
5	X-634-28	Bushing	1

# Fuel System

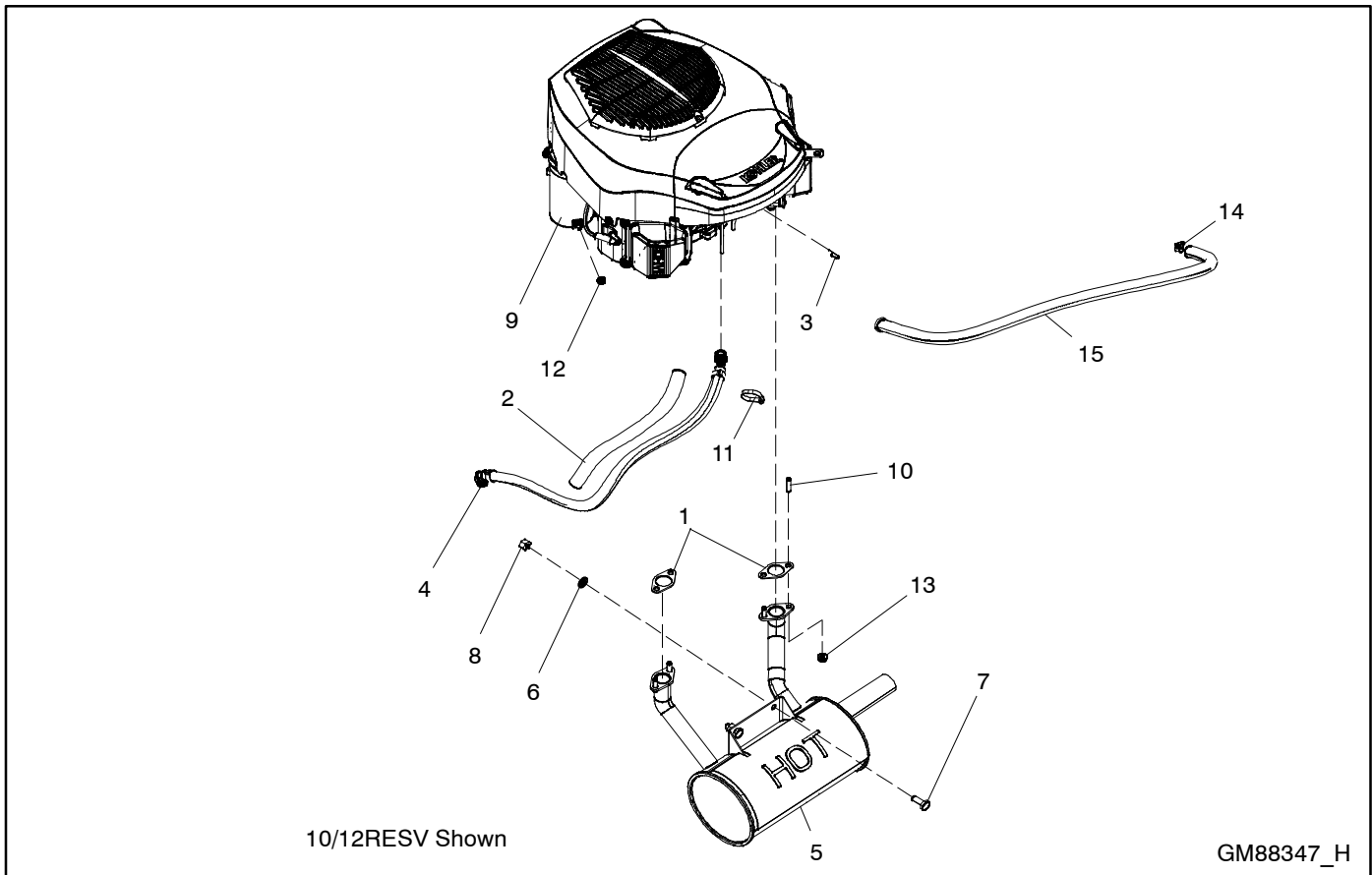


GM91341\_D

## GM91341

Item	Part Number	Description	Quantity
			Variation
1	GM85084	Valve, Gas Shut-off	1
2	GM88295-1	ASSY GAS REGULATOR MAIN BODY	1
3	GM88295-2	Assy Gas Regulator Selector Valve	1
4	GM88295-4	Assy, Gas Regulator Pin	1
5	GM88319	Panel, Gas Regulator	1
6	M6923-06-80	Nut, Hex 6mm	2
7	M933-06025-60	Screw, Hex Cap	2
8	X-202-63	Bushing, Reducing (1/2 x 3/4"npt)	1
9	X-209-2	Pipe (1/2"npt x 1.19")	1
10	X-634-28	Bushing	1
11	X-634-9	Bushing, .625 x .750 in. NPT	2

# Engine



## GM88347-, GM9549-GR

Item	Part Number	Description	Quantity				
			Variation				
			1	2	3	4	5
1	24 041 12	Gasket, Exhaust Manifold	1			1	
1	24 041 49	Gasket, Exhaust Manifold		2	2		2
2	GM10669	Shield, Heat	1			1	1
2	GM42198	Shield, Heat		1	1		
3	GM88295-4	Assy, Gas Regulator Pin	2	2	2	2	2
4	GM91159	Hose, Fuel	1	1	1	1	1
5	GM93087	Silencer, Exhaust SISO	1			1	
5	GM93088	Silencer, Exhaust SISO		1	1		1
6	M125A-08-80	Washer, Plain 8.4 ID x 16.0 OD	4			4	
6	M125A-10-80	Washer, Plain 10.5 ID x 20.0 OD		2	2		2
6	M6921-08020-60	Screw, Hex Flange M8 x 20	4			4	
7	M933-10025-60	Screw, hex cap,fully thrd M10 x 25mm		2	2		2
8	M980-08-60	Nut, Hex Lock	4			4	
8	M980-10-60	Nut, hex elastic stop		2	2		2
9	PS-SV620-3223	Engine, SV620EP* See Note	1				
9	PS-SV620-3224	Engine, SV620EP* See Note				1	
9	PS-KT725-3026	Engine, KT725 EP* See Note		1	1		
9	PS-KT725-3036	Engine, KT725 EP* See Note					1
10	X-352-37	Stud, 5/16-18 x 1.03 in.	2	4	4		
10	25 072 30-S	Stud, Exahaust				2	4
11	X-468-1	Cable Tie		2	2		2
12	X-6210-2	Nut, flange spirallock, 1/4-20		1	1		1
13	X-6210-7	Nut,flange spirallock, 5/16-18	2	4	4		
13	M980-08-60	Nut, Hex Lock				2	4
14	X-426-9	Clamp, hose, .25/.70 in.	1	1	1	1	1
15	X-612-28	Hose, Oil Proof	1	1	1	1	1

\* Note: Also order the following parts with the engine assembly:

Item 1: Exhaust Manifold Gasket

Item 10: Stud

Item 13: Nut

Alternator Group-Item 16: Self-Tapping Screws

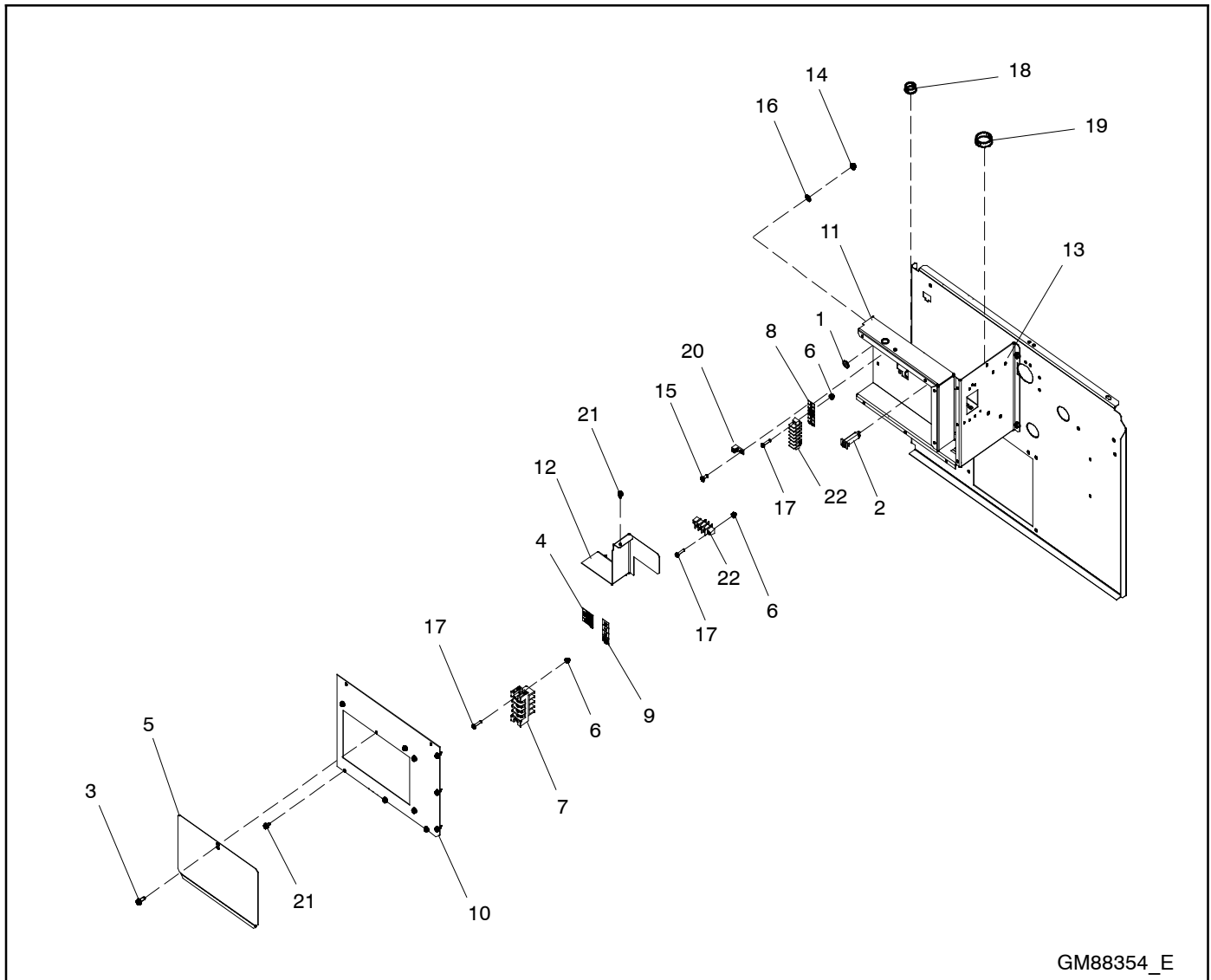


# Nameplate and Decals

GM88356-GR1

Item	Part Number	Description	Quantity
			Variation
1	239789	Decal, notice, neutral bonded to frame	1
2	249808	Decal, warning rotating parts	1
3	249809	Decal, Caution Hot Engine	1
4	255882	Decal, caution stdby svc connect	1
5	257438	Decal, danger moving rotor	1
6	294520	Decal, danger, high voltage	1
7	GM13680	Nameplate, Overlay 500 per roll	1
8	GM15299	Decal, Rainproof Enclosure	1
9	GM47407	Decal, Fuel Type	1
10	GM53084	Decal, Power Breaker	1
11	GM62217	Nameplate, 5" Tall, Blank	1
12	273780	Decal, warning explosion	1
12	GM95011	Decal, Fuel Type, 8/10/12RESV	1

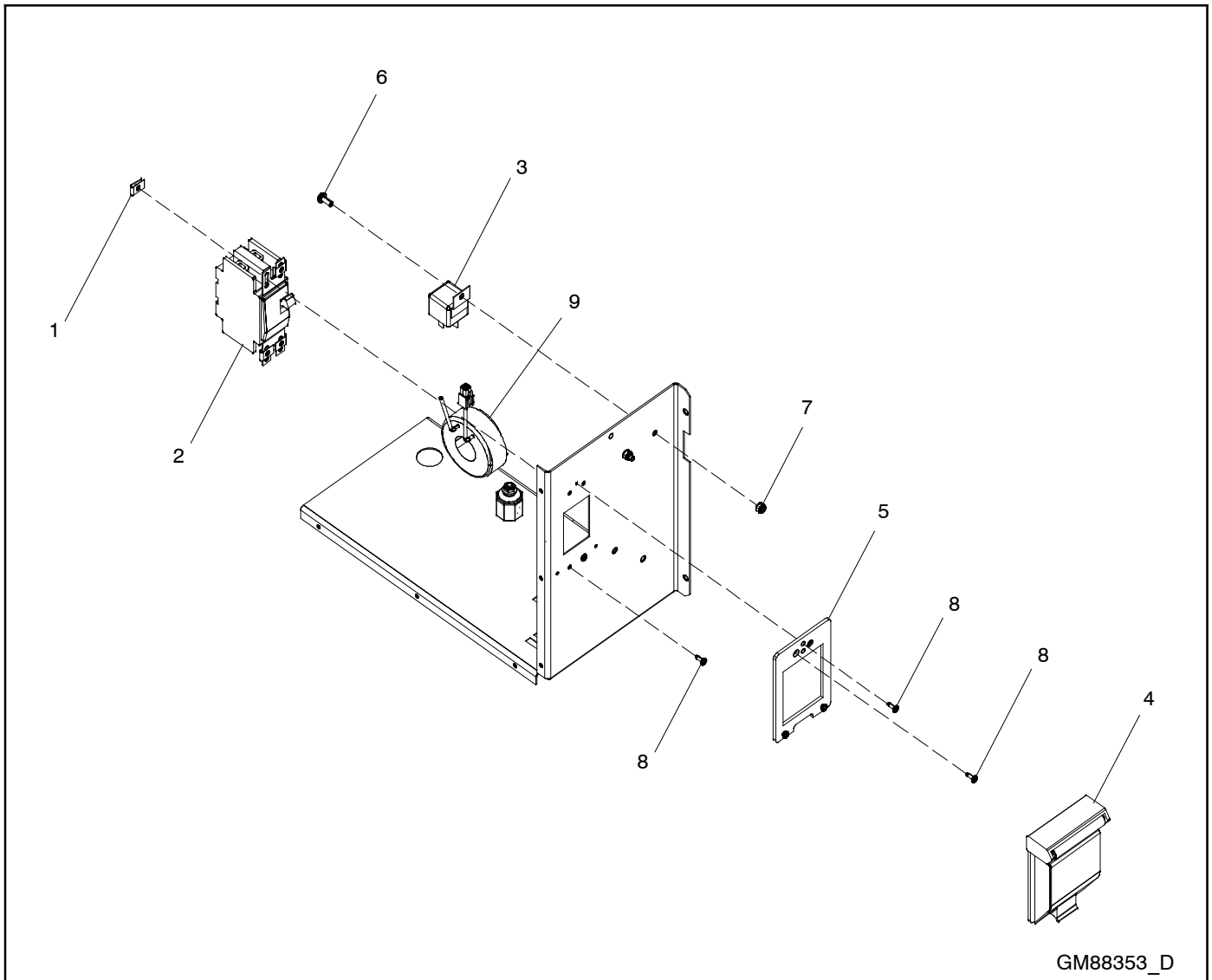
# Customer Connection (Terminal Block)



## GM88354-

Item	Part Number	Description	Quantity
			Variation
1	345211	Decal, ground	1
2	GM63134	Breaker, Circuit (20A.)	1
3	GM78761-1	Screw, Sheetmetal	5
4	GM85263	Decal, Utility Connection	1
5	GM87878	Cover, Controller Mounting	1
6	GM88058	Insert, Threaded, #10-24, Hex	6
7	GM88200	Terminal Block	1
8	GM88490	Decal, Customer Connection	1
9	GM88491	Decal, Customer Connection	1
10	GM91352	Box, Junction, Front	1
11	GM91353	Panel, Divider	1
12	GM91354	Panel, Divider	1
13	GM92171	Box, Junction SubAssembly	1
14	M6923-06-80	Nut, Hex 6mm	1
15	M933-06012-60	Screw	1
16	X-22-5	WASHER, LOCK .326 ID x .62 OD	1
17	X-50-12	Screw, Machine	6
18	X-634-26	Bushing, Installation	1
19	X-634-28	Bushing	1
20	X-6207-1	Lug, terminal, aluminum	1
21	X-6216-1	Screw, Phillips hex crimpite	12
22	-	Terminal Block (part of wiring harness)	6

# Circuit Breaker

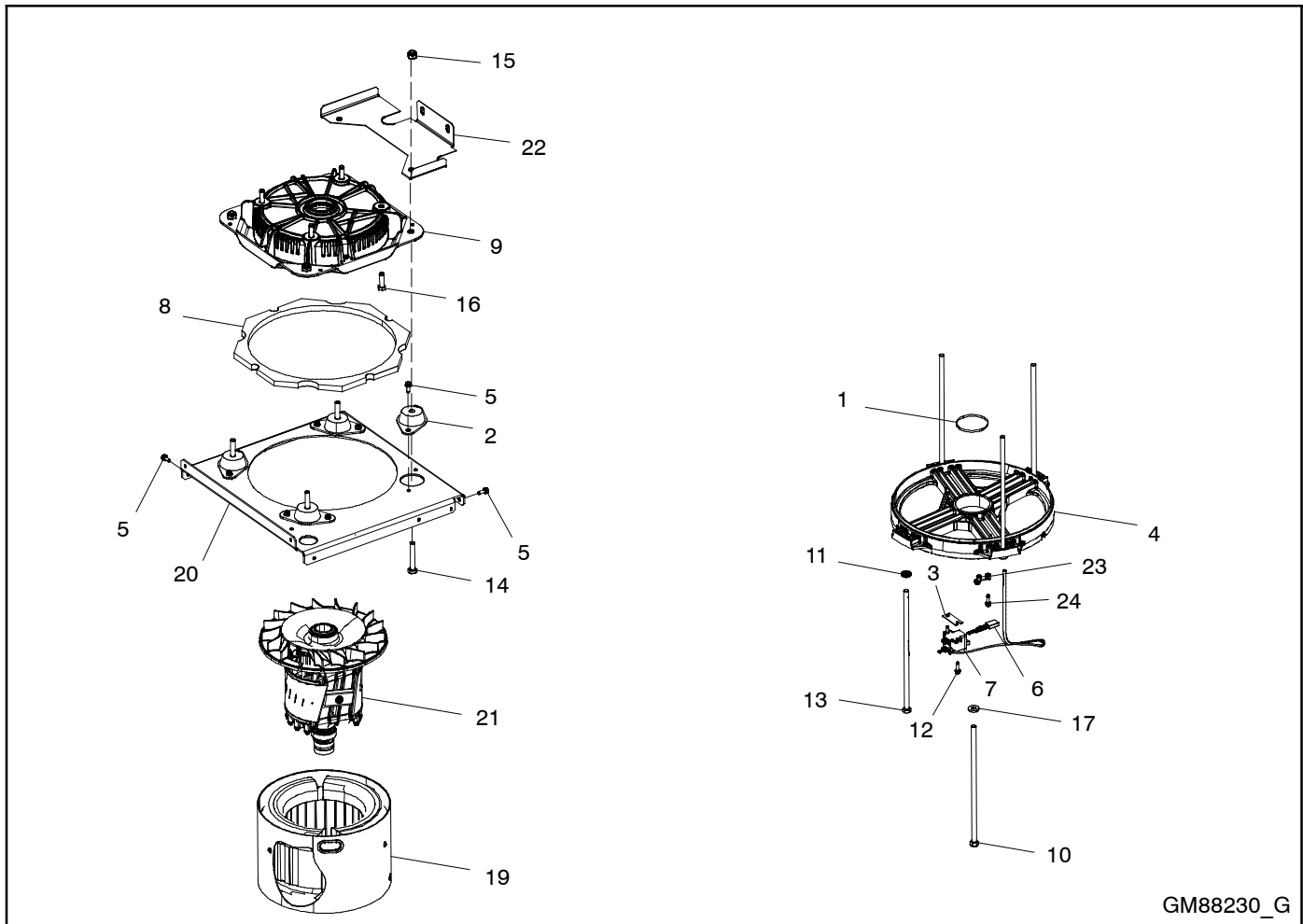


GM88353\_D

**GM88353-**

Item	Part Number	Description	Quantity		
			Variation		
			1	2	3
1	239332	Clip, speed	4	4	4
2	GM24928	Breaker, Circuit	1		
2	358384	Breaker, Circuit		1	
2	GM28742	Breaker, Circuit			1
3	GM49746	Relay, 12 VDC			2
4	GM89982	Cover, Circuit Breaker	1	1	1
5	GM91350	Seal, CB Cover	1	1	1
6	M7985A-05012-20	Screw, pan head mach.	2	2	2
7	M982-05-60	Nut, hex elastic stop, 5mm	2	2	2
8	X-67-143	Screw, cross recess, sheet metal	7	7	7
9	GM86609	Transformer, current		1	1

# Alternator

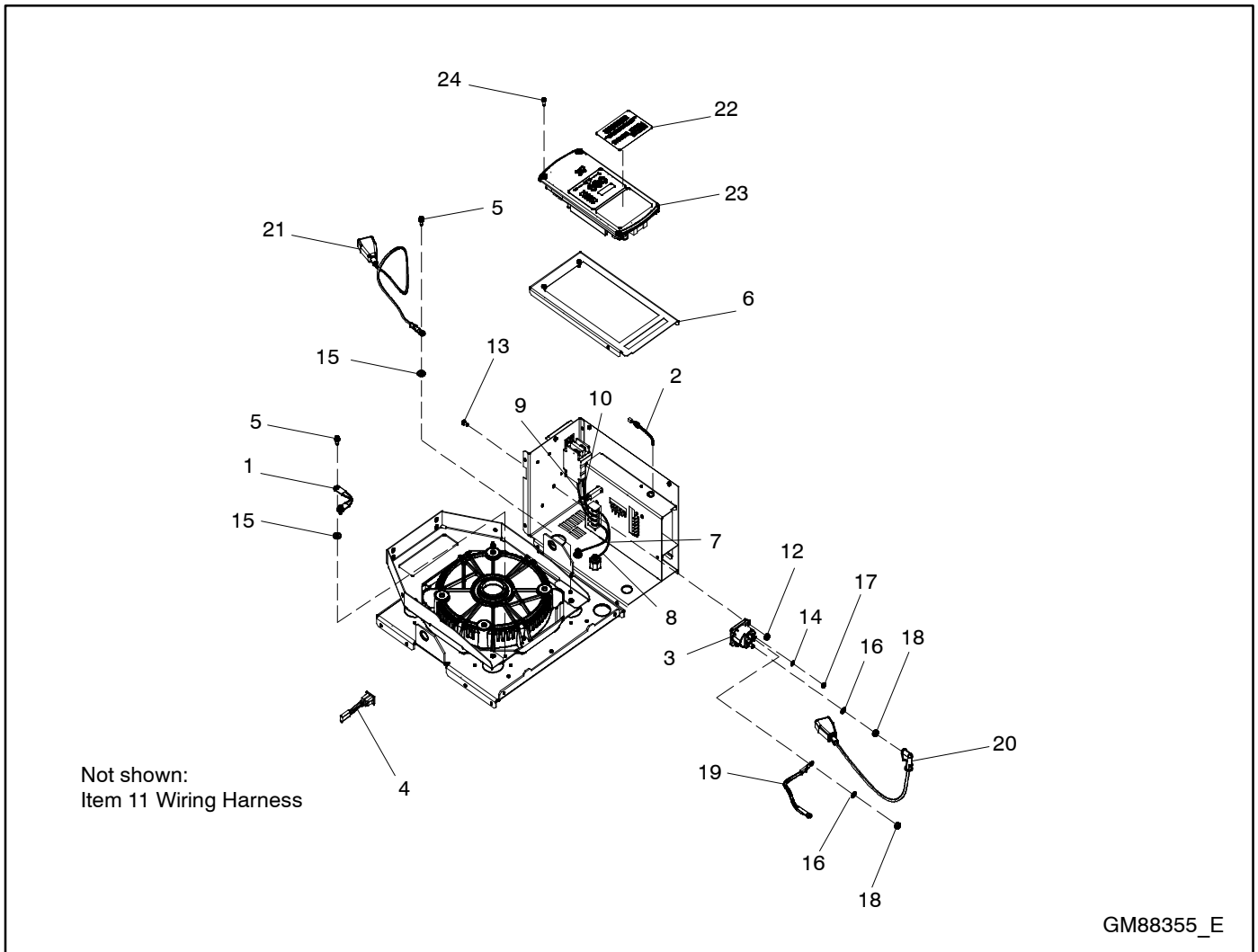


GM88230\_G

## GM88230

Item	Part Number	Description	Quantity		
			Variation		
			1	2	3
1	256466	O-Ring (2.050" id)	1	1	1
2	258659	Vibromount	4	4	4
3	GM62996	Shim, Brush Holder	1	1	1
4	GM66767	Bracket, End	1	1	1
5	GM78761-1	Screw, Sheetmetal	14	14	14
6	GM80981	Brush w/ Spring	2	2	2
7	GM80982	Brush Holder	1	1	1
8	GM87396	Acoustic Foam, Type 1	1	1	1
9	GM88168	Adapter, Alternator	1	1	1
10	GM88401	Bolt, Armature Thru	1	1	1
11	M125A-08-80	Washer, Plain 8.4 ID x 16.0 OD	4	4	4
12	M7500D-04016-83	Screw, Metic Thread Forming 16mm	2	2	2
13	M931-08235-60	Screw, Hex Cap (Metric)	4	4	4
14	M931-10060-60	Screw, Hex Cap	4	4	4
15	M982-10-80	Nut, hex elastic stop	4	4	4
16	X-67-162	Screw, Tapping	4	4	4
17	X-801-4	Washer, hardened, .328 ID x .719 in. OD	1	1	1
19	GC88231-2	Stator Assembly, 1PH		1	
19	GC88231-1	Stator Assembly, 1PH	1		1
20	GM89897	Plate, Alternator Mounting		1	1
20	GM94370	Plate, Alternator Mounting	1		
21	GM88344-2	Rotor Fan Assembly		1	
21	GM88344-1	Rotor Fan Assembly	1		1
22	GM91034	Bracket, Silencer Mounting		1	1
22	GM95160	Bracket, Silencer Mounting	1		
23	X-468-1	Cable tie	1		
23	X-468-3	Cable tie, nylon		1	1
24	M7500D-04016-83	Screw, Metic Thread Forming 16mm		1	1

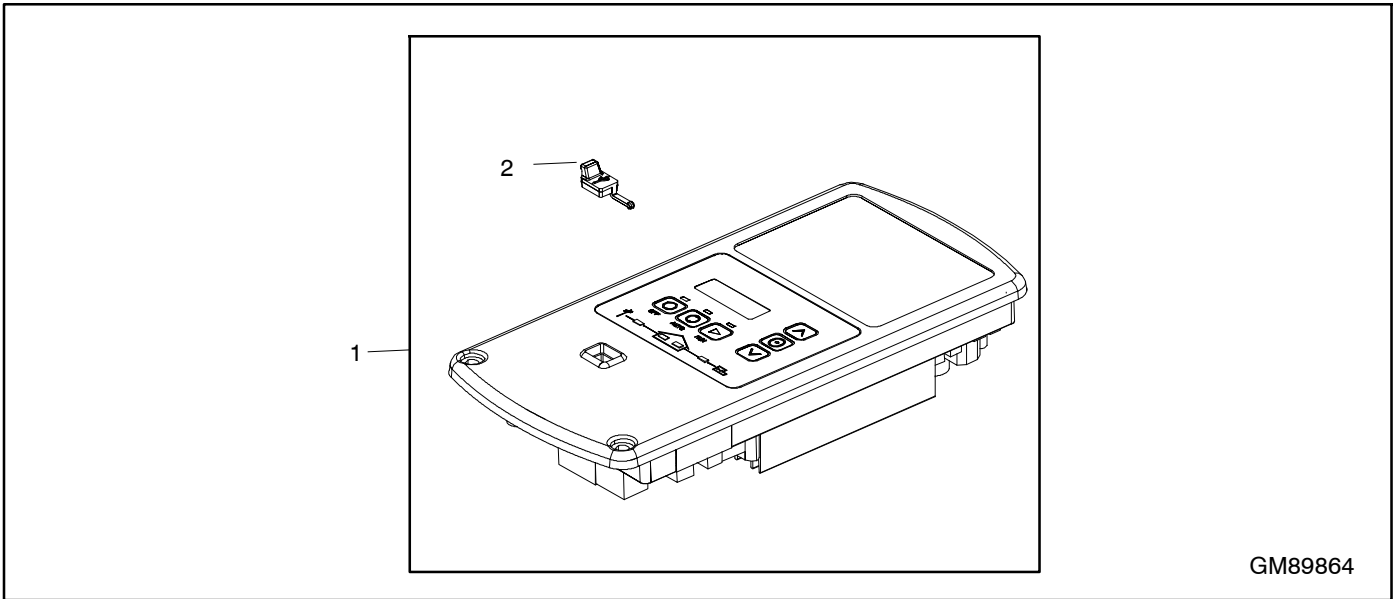
# Control and Harness



GM88355

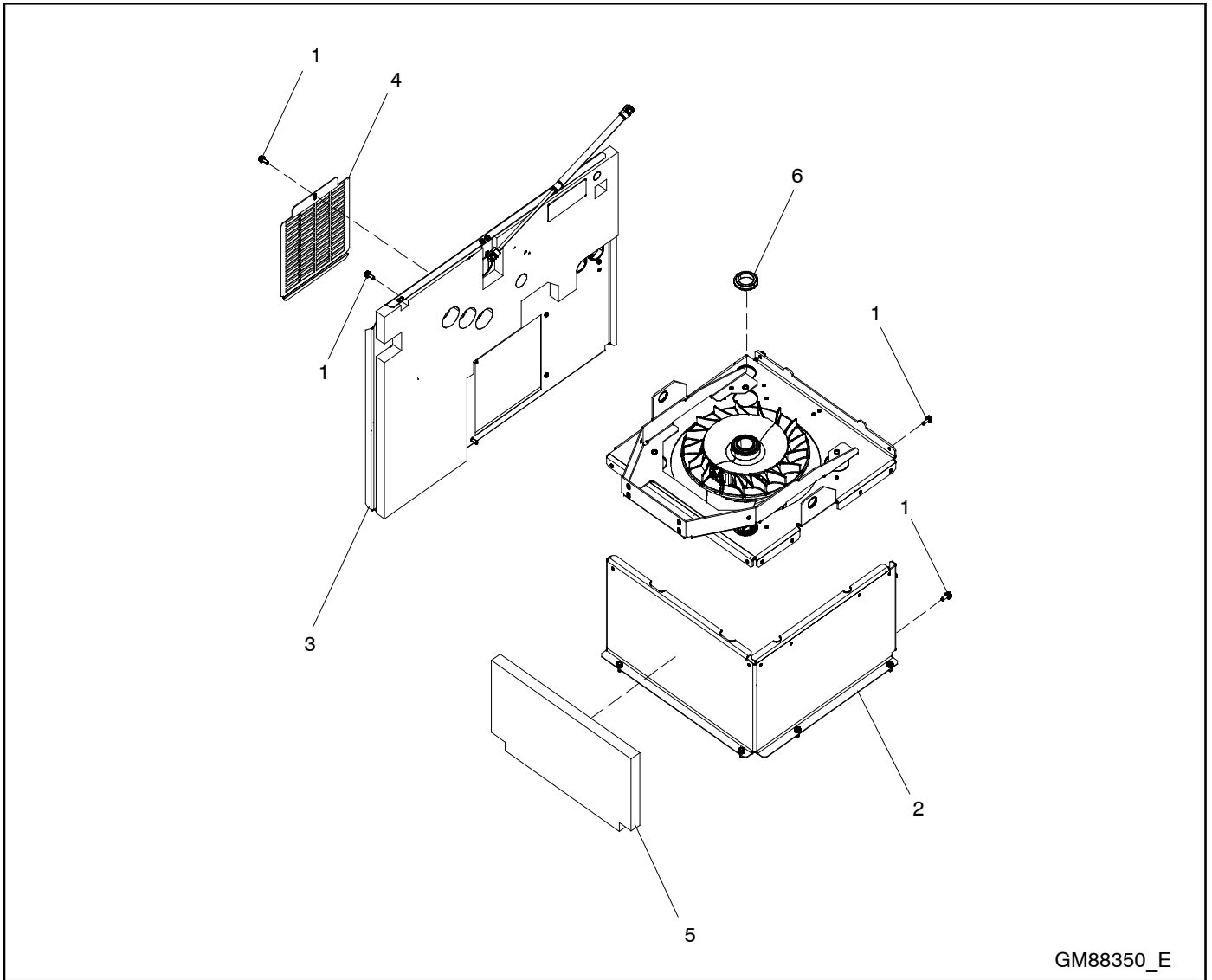
Item	Part Number	Description	Quantity	
			1	2
1	223033	Strap, ground ( 5 in.)	1	1
2	357477	Cable, Patch, 3 Ft. RJ-45	1	1
3	GM40621	Solenoid, Starter	1	1
4	GM48108	Harness, Pigtail Customer Connection	1	1
5	GM78761-1	Screw, Sheetmetal	3	3
6	GM87875	Panel, Controller Mounting	1	1
7	GM88492	Lead, Customer Connection	1	1
8	GM88493	Lead, Customer Connection	1	1
9	GM88494	Lead, Customer Connection	1	1
10	GM88495	Lead, Customer Connection	1	1
11	GM89011	Harness, Engine 8-12 kW RES	1	1
12	M6923-06-80	Nut, Hex 6mm	2	2
13	M933-06010-60	Screw, hex cap	2	2
14	X-22-11	Lock .262 ID x .469 OD	1	1
15	X-22-12	Washer, lock.262 IDx.743 in.OD	3	3
16	X-22-5	WASHER,LOCK .326 ID x .62 OD	2	2
17	X-70-3	Nut, hex machine screw, 10-32	1	1
18	X-82-6	Nut, hex, 5/16-18	2	2
19	X-545-146	Cable, battery (No.6 x 8.86") red+	1	1
20	X-545-235	Cable, Battery	1	1
21	X-545-236	Cable, Battery	1	1
22	GM81760	Decal, Kohler -RDC2/DC2/VSC	1	1
23	GM92089	Controller, Service RDC2	1	
23	GM92090	Controller, Service DC2		1
24	M7985A-05016-20	Screw, Pan Head Machine	2	2

# Control and Harness



Item	Part Number	Description	Quantity	
			1	2
1	GM92089	Controller, Service RDC2 (ref. GM89864-1)	1	
1	GM92090	Controller, Service DC2 (ref. GM89864-2)		1
2	GM89865	Plug, USB	1	1

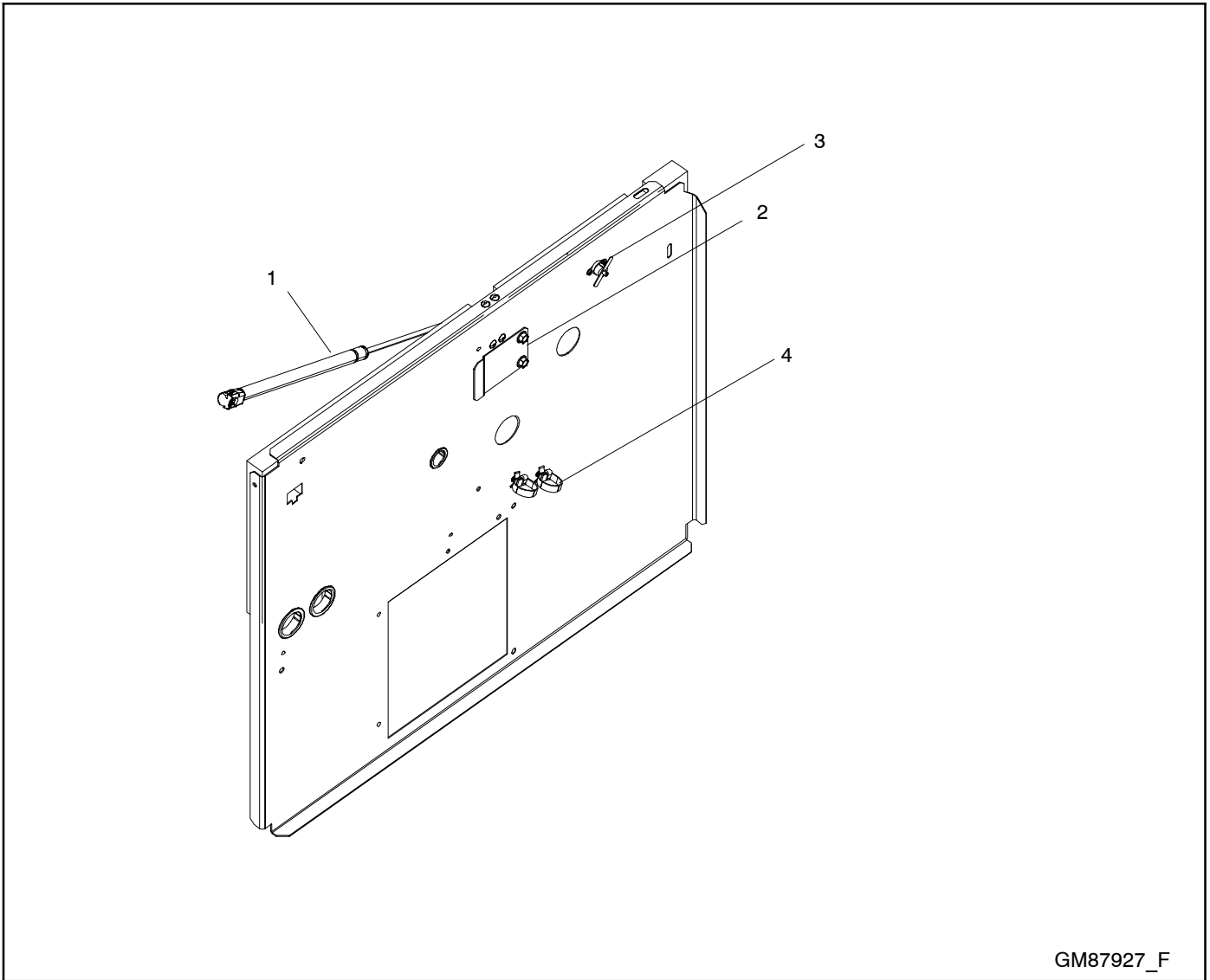
# Bulkhead



GM88350\_E

<b>GM88350</b>			
<b>Item</b>	<b>Part Number</b>	<b>Description</b>	<b>Quantity</b>
			<b>Variation</b>
1	GM78761-1	Screw, Sheetmetal	13
2	GM87891	Cover, Engine Mount	1
3	GM87927	Inner, Panel Assy.	1
4	GM88156	Cover, Inner Panel	1
5	GM93399	Foam, Acoustic	1
6	X-284-2	Grommet, round	1

# Bulkhead



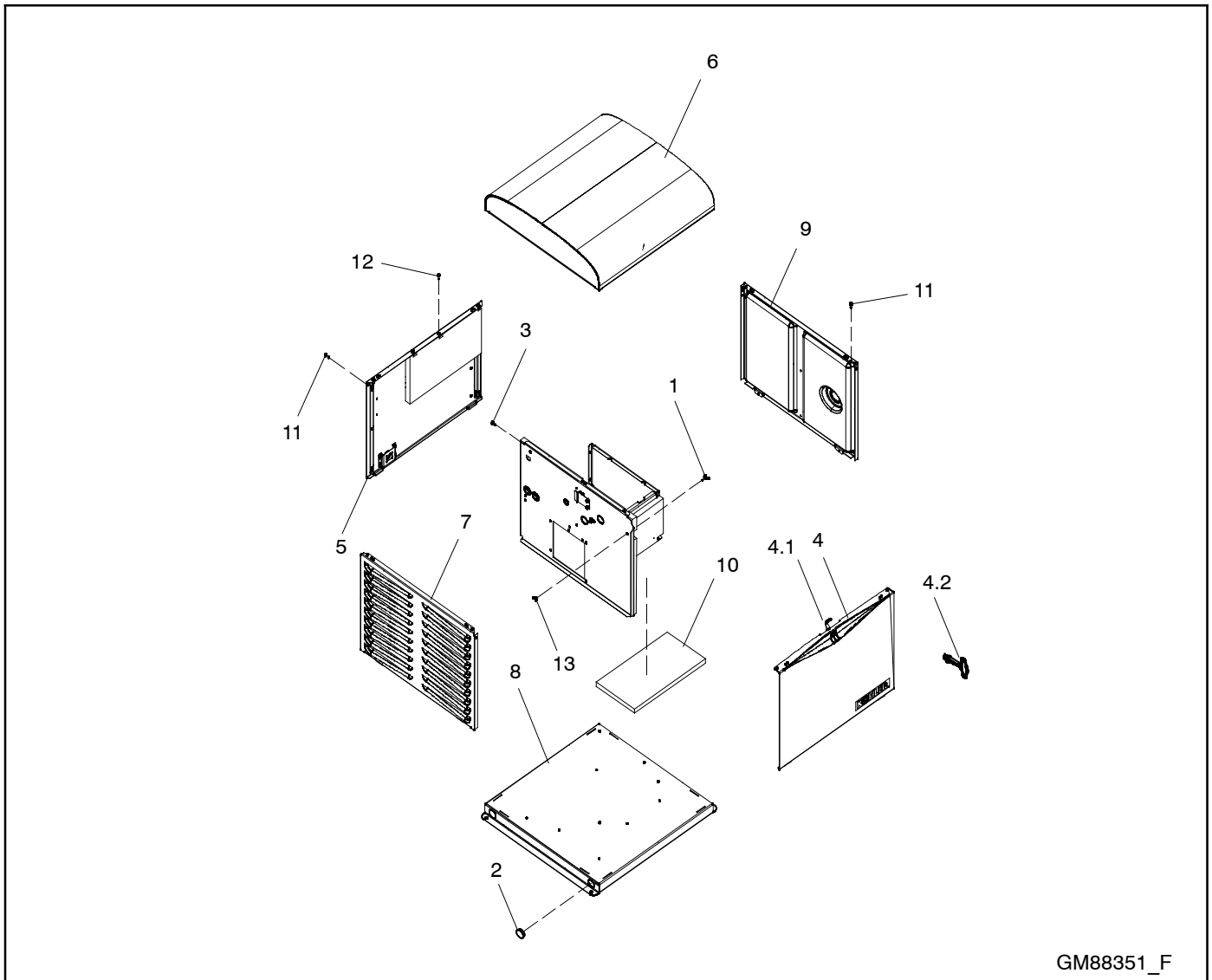
GM87927\_F

## GM87927

Item	Part Number	Description	Quantity
			Variation
			1
1	GM89981	Spring, Gas Support	1
2	GM91342	Panel, Spark Plug Access	1
3	GM92505	Thermostat, 250 deg. F	1
4	361567	Base, tie wrap snapin	1



# Enclosure



GM88351\_F

GM88351

Item	Part Number	Description	Quantity	
			1	2
1	GM35951	Screw, Wing	1	1
2	GM75735	Plug, Button	4	4
3	GM78761-1	Screw, Sheetmetal	1	1
4	GM87924-CAS	Panel, Front	1	1
4.1	GM81245	Latch Assy (Tumbler, Tool, Hooked Cam)	1	1
4.2	GM82922	Latch Opening Tool	1	1
5	GM87925-CAS	Rear Panel Assy	1	1
6	GM87928-1-CAS	Panel, Roof	1	
6	GM87928-2-CAS	Panel, Roof		1
7	GM89935-CAS	Panel, Side	1	1
8	GM90051-CAS	Base	1	1
9	GM93206-CAS	Panel, Side	1	1
10	GM93403	Foam, Acoustic	1	
10	GM94103	Foam, Acoustic		1
11	M7985A-06020-20	Screw, Pan Head Machine	4	4
12	M933-06020-60	Screw, hex cap	4	4
13	X-276-9	Nut, wing, 1/4-20	1	1

# Literature

701-187-

Item	Part Number	Description	Quantity			
			Variation			
			72	73	74	75
1	20 690 01	SM, SV470-SV620	1	1		
1	32 690 03	SM, KT715-KT745 7000 Series			1	1
2	TP-6479	Warranty, 5-Yr., Standby	1	1	1	1
3	TP-6879	I/M 8/10/12RESV/L, RES	1	1	1	1
4	TP-6880	O/M 8/10/12RESV/L, RES	1	1	1	1
5	TP-6881	S/M 8/10/12RESV/L, RES	1	1	1	1
6	TP-6882	P/C 8/10/12RESV/L, RES	1	1	1	1
7	TP-6886	Warranty, Emissions, 2013-14 SORE 2-year	1	1	1	1

Item	Part Number	Description	Quantity			
			Variation			
			88	89	90	91
1	20 690 01	SM, SV470-SV620	1	1		
1	32 690 03	SM, KT715-KT745 7000 Series			1	1
2	TP-6479	Warranty, 5-Yr., Standby	1	1	1	1
3	TP-6984	I/M 8/10/12RESV/L, RES	1	1	1	1
4	TP-6880	O/M 8/10/12RESV/L, RES	1	1	1	1
5	TP-6881	S/M 8/10/12RESV/L, RES	1	1	1	1
6	TP-6882	P/C 8/10/12RESV/L, RES	1	1	1	1
7	TP-6886	Warranty, Emissions, 2013-14 SORE 2-year	1	1	1	1

# Kit Parts List

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

## Fuel System Kit

### Flexible Fuel Line

1 Fuel line, flexible, 0.50 in. ID x 12 in.

**GM31054-KA1**  
X-504-1

### Flexible Fuel Line

1 Line, Flex Fuel

**GM95496-KA1**  
GM95497

## Electrical System Kits

### Battery, 1/12V, 500CCA, Wet

1 Battery (Wet)

**GM75513-KP1**  
GM75512

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

## Load Control Module, w/ Harness

### GM77177-KP1-QS

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

## Load Control Module, w/ Terminal Blocks

### GM77177-KP2-QS

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

# Kit Parts List, continued

Qty.	Description	Part No.
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## Load Control Module, w/ Harness, CSA GM77177-KP3-QS

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

## 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

Qty.	Description	Part No.
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## 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

## Miscellaneous Kits

### 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	Installation Instructions	TT-1482

### Pallet, Concrete Pad, 3",8-12RESV(L) GM92228-KP1-QS

10	Pad, Concrete Mounting 3"	GM92226
1	TT Concrete pad	TT-1619

### Pallet, Concrete Pad, 4",8-12RESV(L) GM92228-KP2-QS

10	Pad, Concrete Mounting 4"	GM92227
1	TT Concrete pad	TT-1619

## Maintenance Service Kits

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

1	Maintenance Kit-SV620-8RESV(L)	GM90365-SKP1-QS
1	Maintenance Kit-KT725-10/12RESV(L)	GM90366-SKP1-QS

## OnCue Plus,RDC2/DC2/VSC GM81385-KA1

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-6928

# 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	DPST	double-pole, single-throw	HP	horsepower
BHP	brake horsepower	DS	disconnect switch	hr.	hour
blk.	black (paint color), block (engine)	DVR	digital voltage regulator	HS	heat shrink
blk. htr.	block heater	E, emer.	emergency (power source)	hsg.	housing
BMEP	brake mean effective pressure	ECM	electronic control module, engine control module	HVAC	heating, ventilation, and air conditioning
bps	bits per second	EDI	electronic data interchange	HWT	high water temperature
br.	brass	EFR	emergency frequency relay	Hz	hertz (cycles per second)
BTDC	before top dead center	e.g.	for example ( <i>exempli gratia</i> )	IC	integrated circuit
Btu	British thermal unit	EG	electronic governor	ID	inside diameter, identification
Btu/min.	British thermal units per minute	EGSA	Electrical Generating Systems Association	IEC	International Electrotechnical Commission
C	Celsius, centigrade	EIA	Electronic Industries Association	IEEE	Institute of Electrical and Electronics Engineers
cal.	calorie	EI/EO	end inlet/end outlet	IMS	improved motor starting
CAN	controller area network	EMI	electromagnetic interference	in.	inch
CARB	California Air Resources Board	emiss.	emission	in. H <sub>2</sub> O	inches of water
CB	circuit breaker	eng.	engine	in. Hg	inches of mercury
cc	cubic centimeter	EPA	Environmental Protection Agency	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				

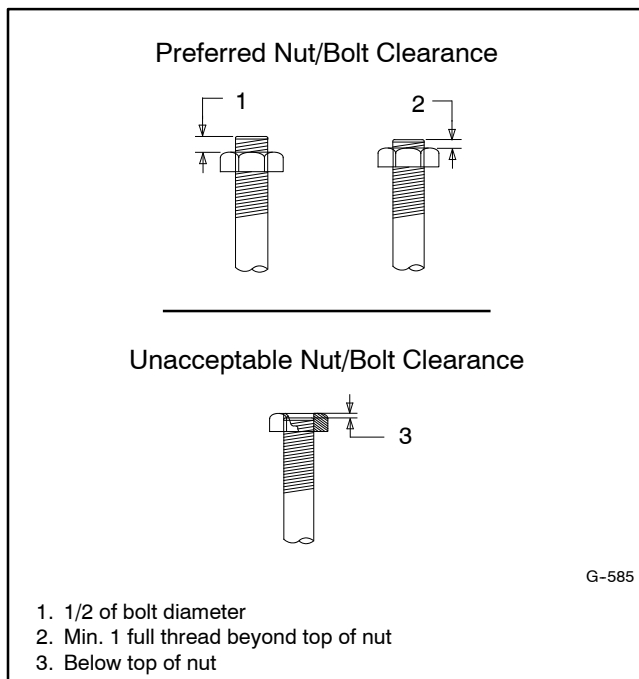
## Appendix B Common Hardware Application Guidelines

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.



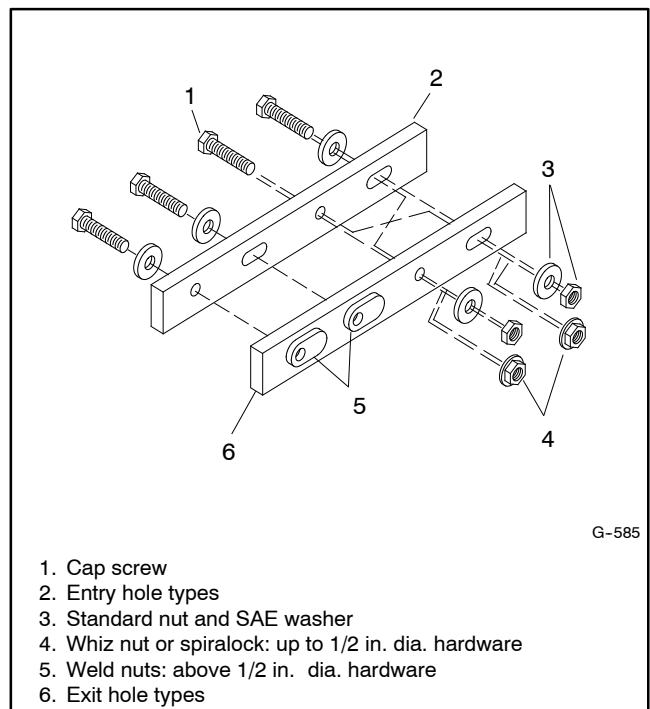
**Figure 1** Acceptable Bolt Lengths

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	

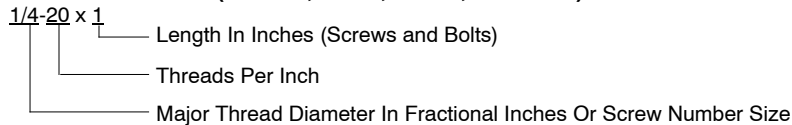
Hardness Grades	
American Standard	
Grade 2	
Grade 5	
Grade 8	
Grade 8/9 (Hex Socket Head)	
Metric	
Number stamped on hardware; 5.8 shown	

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

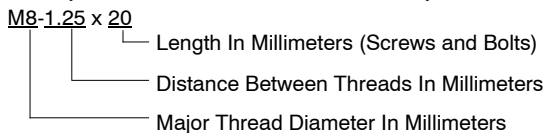
Phillips® screw is a registered trademark of Phillips Screw Company.

## Sample Dimensions

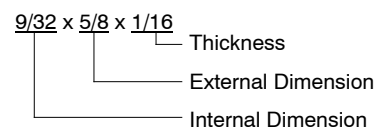
### American Standard (Screws, Bolts, Studs, and Nuts)



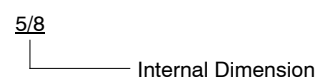
### Metric (Screws, Bolts, Studs, and Nuts)



### 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>		<b>Hex Head Bolts, cont.</b>		<b>Hex Nuts</b>				
X-465-17	1/4-20 x .38	X-6238-14	3/8-24 x .75	X-6009-1	1-8	Standard		
X-465-6	1/4-20 x .50	X-6238-16	3/8-24 x 1.25	X-6210-3	6-32	Whiz		
X-465-2	1/4-20 x .62	X-6238-21	3/8-24 x 4.00	X-6210-4	8-32	Whiz		
X-465-16	1/4-20 x .75	X-6238-22	3/8-24 x 4.50	X-6210-5	10-24	Whiz		
X-465-18	1/4-20 x .88	X-6024-5	7/16-14 x .75	X-6210-1	10-32	Whiz		
X-465-7	1/4-20 x 1.00	X-6024-2	7/16-14 x 1.00	X-6210-2	1/4-20	Spiralock		
X-465-8	1/4-20 x 1.25	X-6024-8	7/16-14 x 1.25	X-6210-6	1/4-28	Spiralock		
X-465-9	1/4-20 x 1.50	X-6024-3	7/16-14 x 1.50	X-6210-7	5/16-18	Spiralock		
X-465-10	1/4-20 x 1.75	X-6024-4	7/16-14 x 2.00	X-6210-8	5/16-24	Spiralock		
X-465-11	1/4-20 x 2.00	X-6024-11	7/16-14 x 2.75	X-6210-9	3/8-16	Spiralock		
X-465-12	1/4-20 x 2.25	X-6024-12	7/16-14 x 6.50	X-6210-10	3/8-24	Spiralock		
X-465-14	1/4-20 x 2.75	X-129-15	1/2-13 x .75	X-6210-11	7/16-14	Spiralock		
X-465-21	1/4-20 x 5.00	X-129-17	1/2-13 x 1.00	X-6210-12	1/2-13	Spiralock		
X-465-25	1/4-28 x .38	X-129-18	1/2-13 x 1.25	X-6210-15	7/16-20	Spiralock		
X-465-20	1/4-28 x 1.00	X-129-19	1/2-13 x 1.50	X-6210-14	1/2-20	Spiralock		
X-125-33	5/16-18 x .50	X-129-20	1/2-13 x 1.75	X-85-3	5/8-11	Standard		
X-125-23	5/16-18 x .62	X-129-21	1/2-13 x 2.00	X-88-12	3/4-10	Standard		
X-125-3	5/16-18 x .75	X-129-22	1/2-13 x 2.25	X-89-2	1/2-20	Standard		
X-125-31	5/16-18 x .88	X-129-23	1/2-13 x 2.50					
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.







**TP-6882 8/15b**

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