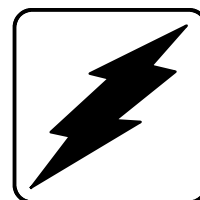


Service Parts

Commercial Generator Sets



Models:

Alpha 5
COM5
COM7.5

KOHLER
POWER SYSTEMS

ISO 9001
KOHLER
POWER SYSTEMS
NATIONALLY REGISTERED

TP-6091 1/09e

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Introduction

This manual lists service replacement parts for Alpha 5/COM5 and COM7.5 generator sets.

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This manual includes the following main sections:

Table of Contents. Lists the sections of the manual.

Introduction (and other information sections).

Contains introductory material about part numbers, illustrations, and hardware.

Index. Lists the generator set specs and groups.

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

Kit Sections. List modules and accessories and their parts.

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

Numbering System Significance

This manual uses the following numbering systems:

Specification Number. The product identification number located on the generator set nameplate. Spec numbers break down into groups.

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

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

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

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

Group Title	<i>Crankshaft</i>	<i>Crankcase</i>	<i>Lubrication</i>	<i>Cylinder Head/Valve/Breather</i>	<i>Ignition/Charging</i>	<i>Blower Housing & Baffles</i>	<i>Starting System</i>	<i>Engine Fuel System</i>	<i>Engine Controls</i>	<i>Air Intake/Filtration</i>	<i>Exhaust System</i>
Group No.	1	2	3	4	5	6	7	8	9	10	11
Spec No.	Variation Number										

Alpha 5/COM5											
PA-195023 (48 V)	23	70	127	40	260	128	28	192	—	42	10
PA-195027 (36 V)	23	70	127	40	260	128	28	192	—	42	10
GM14140-GA1 (48 V)	23	70	127	40	260	128	28	192	—	42	10
GM14140-GA2 (48 V)	23	70	127	40	260	128	28	192	—	42	10
GM14140-GA3 (36 V)	23	70	127	40	260	128	28	192	—	42	10
GM14140-GA4 (36 V)	23	70	127	44	260	128	28	192	—	42	10
GM14140-GA5 (48 V)	23	70	127	44	260	128	28	192	—	42	10
GM14140-GA6 (96 V)	23	70	127	44	260	128	28	192	—	42	10
GM14140-GA7 (39 V)	23	70	127	44	260	128	28	264	—	42	10
GM14140-GA8 (52 V)	23	70	127	44	260	128	28	264	—	42	10
GM14140-GA9 (96 V)	23	70	127	44	260	128	28	264	—	42	10
GM14140-GA10 (39 V)	23	70	127	44	260	128	28	264	—	42	10
GM14140-GA11 (52 V)	23	70	127	44	260	128	28	264	—	42	10
GM14140-GA12 (39 V)	23	101	127	81	260	128	28	264	—	42	10
GM14140-GA13 (52 V)	23	101	127	81	260	128	28	264	—	42	10
COM7.5											
GM19293-GA1 (48 V)	35	92	77	34	347	224	13	214A	98	20	90
GM19293-GA2 (96 V)	35	92	77	34	347	224	13	214A	98	20	90
GM19293-GA3 (48 V)	35	92	77	34	347	224	13	214B	98	20	90
GM19293-GA4 (96 V)	35	92	77	34	347	224	13	214B	98	20	90
GM19293-GA5 (48 V)	35	92	77	34	347	224	13	214B	98	20	90
GM19293-GA6 (48 V)	35	92	77	34	347	224	13	214B	98	20	90
GM19293-GA7 (96 V)	35	92	77	34	347	224	13	214B	98	20	90
GM19293-GA8 (48 V)	35	92	77	34	347	224	13	214B	98	20	90

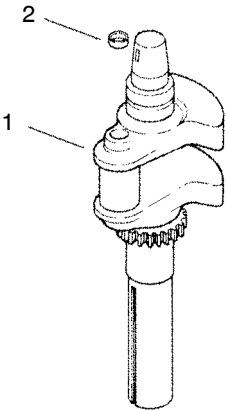
Specification Number Index

Group Title	<i>Fuel System</i>	<i>Engine</i>	<i>Nameplates and Decals</i>	<i>Skid and Plant Mounting</i>	<i>Exhaust System</i>	<i>Generator and Mounting</i>	<i>Controller and Mounting</i>	<i>Literature</i>
Group No.	103	105	107	109	116	201	301	701
Spec No.	Variation Number							

Alpha 5/COM5								
PA-195023 (48 V)	3	4	3	3	3	5	7	3
PA-195027 (36 V)	3	5	3	3	3	6	7	3
GM14140-GA1 (48 V)	GR1	GR6	GR10	GR2	GR3	GR4	GR8	3
GM14140-GA2 (48 V)	GR1	GR6	GR10	GR2	GR3	GR4	GR9	3
GM14140-GA3 (36 V)	GR1	GR7	GR10	GR2	GR3	GR5	GR9	3
GM14140-GA4 (36 V)	GR1	GR7	GR10	GR2	GR13	GR5	GR11	3
GM14140-GA5 (48 V)	GR1	GR6	GR10	GR2	GR13	GR4	GR11	3
GM14140-GA6 (96 V)	GR1	GR6	GR10	GR2	GR13	GR12	GR11	3
GM14140-GA7 (39 V)	GR1	GR15	GR10	GR2	GR13	GR5	GR11	3
GM14140-GA8 (52 V)	GR1	GR14	GR10	GR2	GR13	GR4	GR11	3
GM14140-GA9 (96 V)	GR1	GR14	GR10	GR2	GR13	GR12	GR11	3
GM14140-GA10 (39 V)	GR1	GR17	GR10	GR2	GR13	GR5	GR11	3
GM14140-GA11 (52 V)	GR1	GR16	GR10	GR2	GR13	GR4	GR11	3
GM14140-GA12 (39 V)	GR1	GR19	GR10	GR2	GR13	GR5	GR11	3
GM14140-GA13 (52 V)	GR1	GR18	GR10	GR2	GR13	GR4	GR11	3
COM7.5								
GM19293-GA1 (48 V)	93-2	93-1	93-8	—	93-4	93-5	93-6	10
GM19293-GA2 (96 V)	93-2	93-1	93-3	—	93-4	93-7	93-6	10
GM19293-GA3 (48 V)	93-2	93-13	93-8	—	93-4	93-5	93-11	10
GM19293-GA4 (96 V)	93-2	93-13	93-3	—	93-4	93-10	93-12	10
GM19293-GA5 (48 V)	93-2	93-13	93-8	—	93-4	93-5	93-11	16
GM19293-GA6 (48 V)	93-2	93-14	93-8	—	93-4	93-5	93-11	10
GM19293-GA7 (96 V)	93-2	93-14	93-3	—	93-4	93-10	93-12	10
GM19293-GA8 (48 V)	93-2	93-14	93-8	—	93-4	93-5	93-11	16

Notes

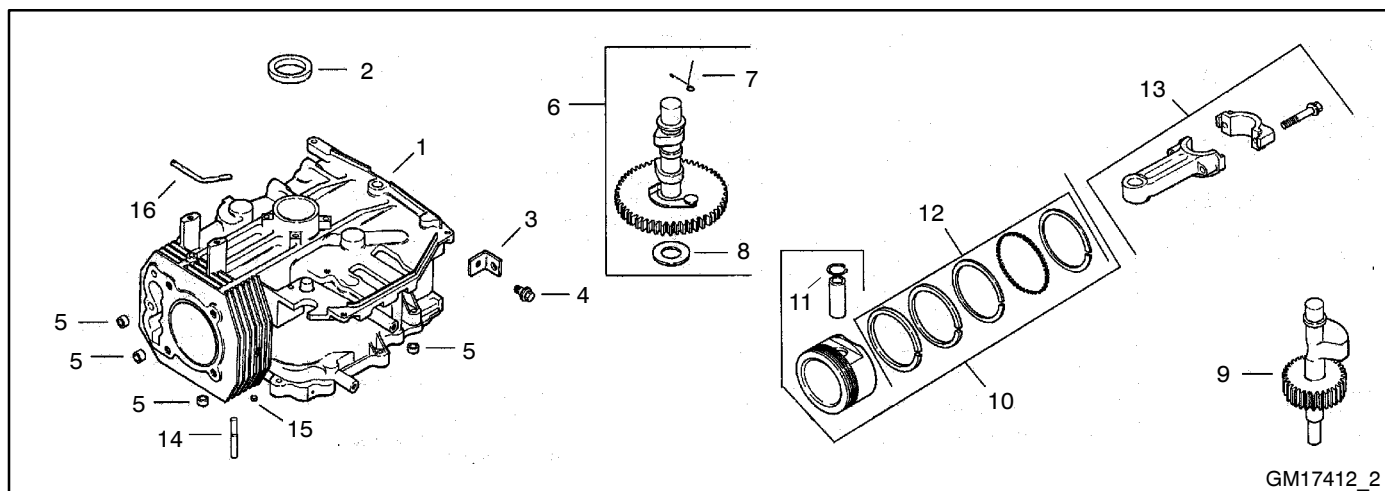
Group 1: Crankshaft



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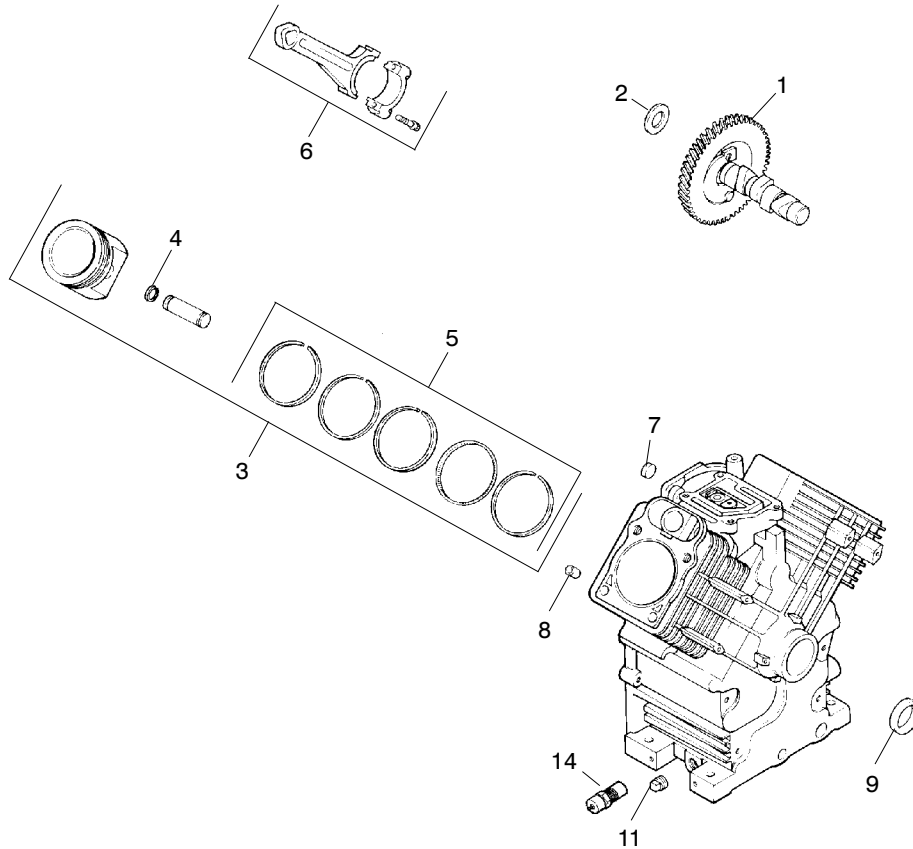
Item	Part Number	Description	Quantity	
			Variation	
			23	35
1	12 014 56	Crankshaft assembly	1	
1	24 014 106-S	Crankshaft assembly		1
2	12 139 01	Plug, cup	1	
2	52 139 09	Plug, cap		1

Group 2: Crankcase



Item	Part Number	Description	Quantity	
			Variation	
			70	101
1	12 561 32	Crankcase (service with a short block)	1	
1	12 561 59	Crankcase (service with a short block)		1
2	12 032 03	Seal, oil	1	1
3	12 445 02	Strap, lifting	1	1
4	M-839025	Screw, hex flange	1	1
5	12 380 17	Pin, split dowel	4	4
6	12 755 49-S	Camshaft	1	1
7	12 089 31	Spring, actuating	1	1
8	12 422 07	Shim, white spacer, thin	1	1
8	12 422 08	Shim, blue	1	1
8	12 422 09	Shim, red	1	1
8	12 422 10	Shim, yellow	1	1
8	12 422 11	Shim, green	1	1
8	12 422 12	Shim, gray, thick	1	1
8	12 422 13	Shim, black	1	1
9	12 144 27	Shaft, balance	1	1
10	12 874 01-S	Piston w/ring set, standard	1	
10	12 874 07-S	Piston w/ring set, standard		1
10	12 874 02-S	Piston w/ring set, 0.25mm	1	
10	12 874 08-S	Piston w/ring set, 0.25mm		1
10	12 874 03-S	Piston w/ring set, 0.50mm	1	
10	12 874 09-S	Piston w/ring set, 0.50mm		1
11	12 018 02	Retainer, piston pin	2	2
12	12 108 01-S	Ring set, standard	1	
12	12 108 07-S	Ring set, standard		1
12	12 108 02-S	Ring set, 0.25mm	1	
12	12 108 08-S	Ring set, 0.25mm		1
12	12 108 03-S	Ring set, 0.50mm	1	
12	12 108 09-S	Ring set, 0.50mm		1
13	12 067 05-S	Rod assembly connecting, standard	1	1
13	12 067 06-S	Rod, connecting, 0.25 undersize	1	1
14	12 144 02	Shaft, governor gear	1	1
15	25 139 19	Plug, cup	1	1
15	52 139 09	Plug, cup	1	1
16	12 755 64-S	Kit, governor cross shaft	1	1
—	12 090 25	Lever, cam (not shown)	1	1
—	12 380 26	Pin, control (not shown)	1	1
—	12 380 24	Pin, coiled spring, 3/32 x 11.25 (not shown)	1	1
—	12 380 19	Pin, pivot (not shown)	1	1
—	12 399 03	Rail, oil ring (not shown)	2	
—	12 399 04	Rail, oil ring (not shown)		2
—	24 380 13	Pin, split dowel (not shown)	4	4
—	X-280-3	Pin, roll, 1/8 x 3/4 (not shown)	1	1

Group 2: Crankcase, continued



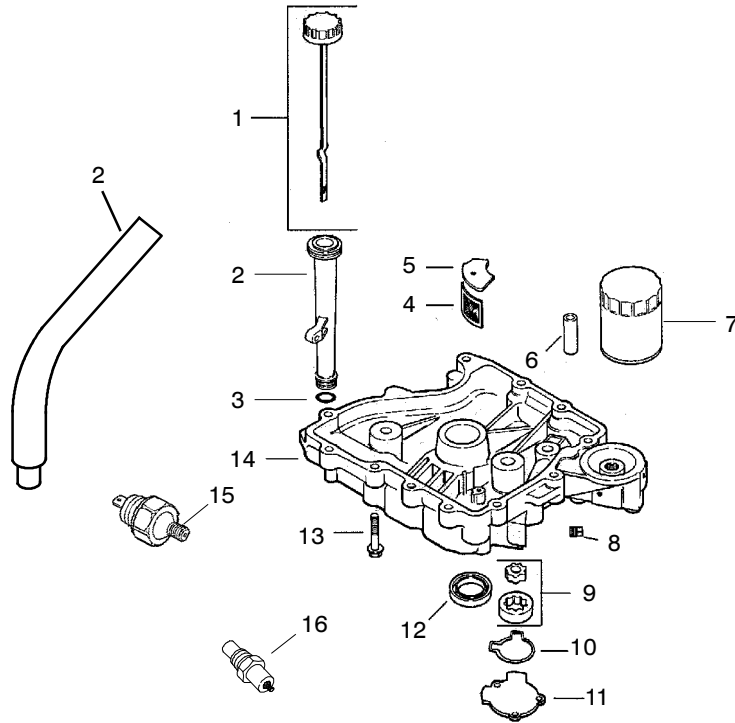
Items not shown: 10, 12, 13

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Item	Part Number	Description	Quantity
			Variation 92
1	24 012 10	Camshaft	1
2	12 422 09	Shim, camshaft, red, 0.03125-0.03275	AR
2	12 422 13	Shim, camshaft, black, 0.0395-0.04075	AR
2	12 422 07	Shim, camshaft, white, 0.02725-0.02875	AR
2	12 422 08	Shim, camshaft, blue, 0.02925-0.03075	AR
2	12 422 10	Shim, camshaft, yellow, 0.03325-0.03475	AR
2	12 422 11	Shim, camshaft, green, 0.03525-0.0367	AR
2	12 422 12	Shim, camshaft, gray, 0.03725-0.0387	AR
3	24 874 17-S	Piston w/ring set, standard	2
3	24 874 02	Piston w/ring set, 0.25	2
3	24 874 03	Piston w/ring set, 0.50	2
4	24 018 01	Retainer, piston pin	4
5	24 108 01	Ring set, standard	2
5	24 108 12-S	Ring set, 0.25	2
5	24 108 19-S	Ring set, 0.50	2
6	24 067 13	Rod, connecting, standard	2
6	24 067 14-S	Rod, connecting, 0.25	2
7	52 139 09	Plug, cup	1
8	12 380 17	Dowel, locating	6
9	24 032 01	Seal, oil front	1
10	25 139 57	Plug, cup	1
11	X-75-10	Plug, solid square head, 3/8 in., NPTF	2
12	24 522 162	Short block	1
13	24 782 17	Miniblock	1
14	24 418 02	Sensor, oil temperature	1

AR as required

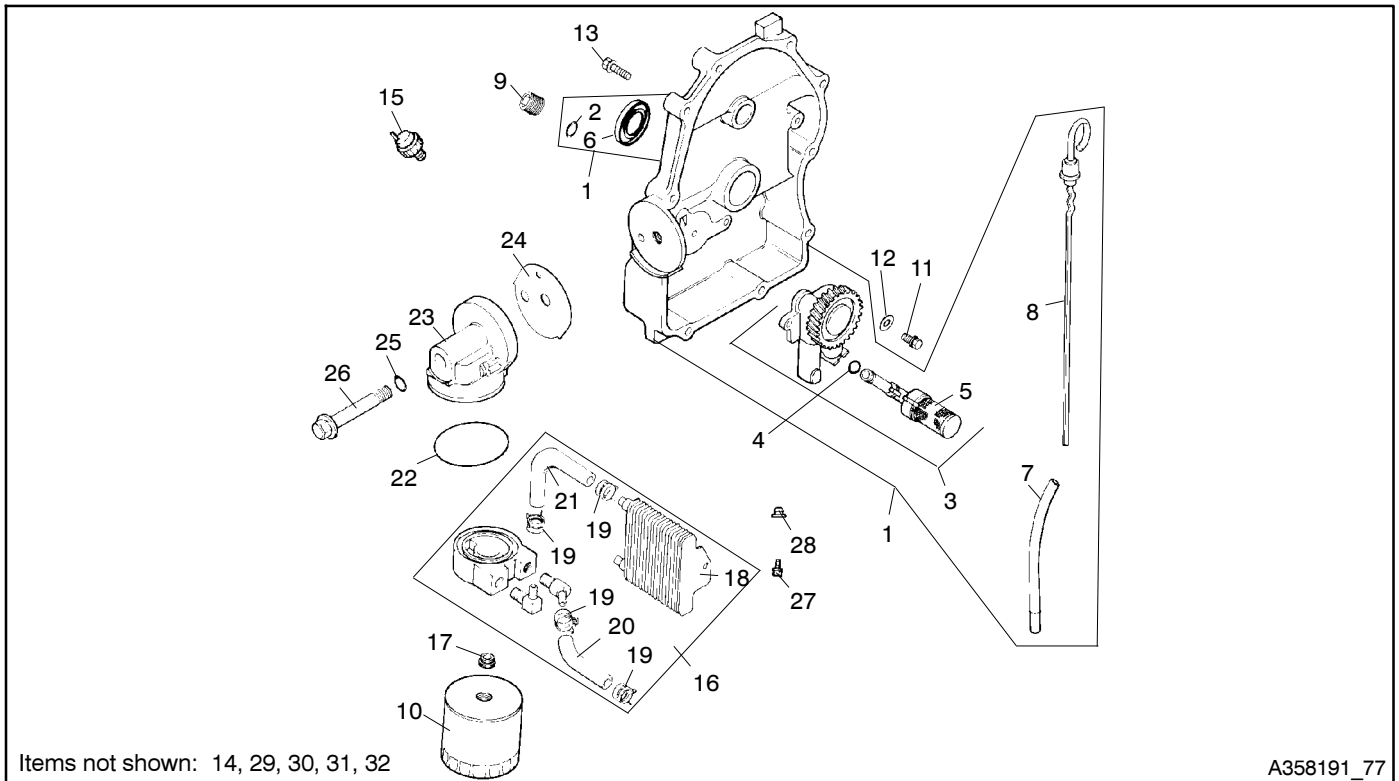
Group 3: Lubrication



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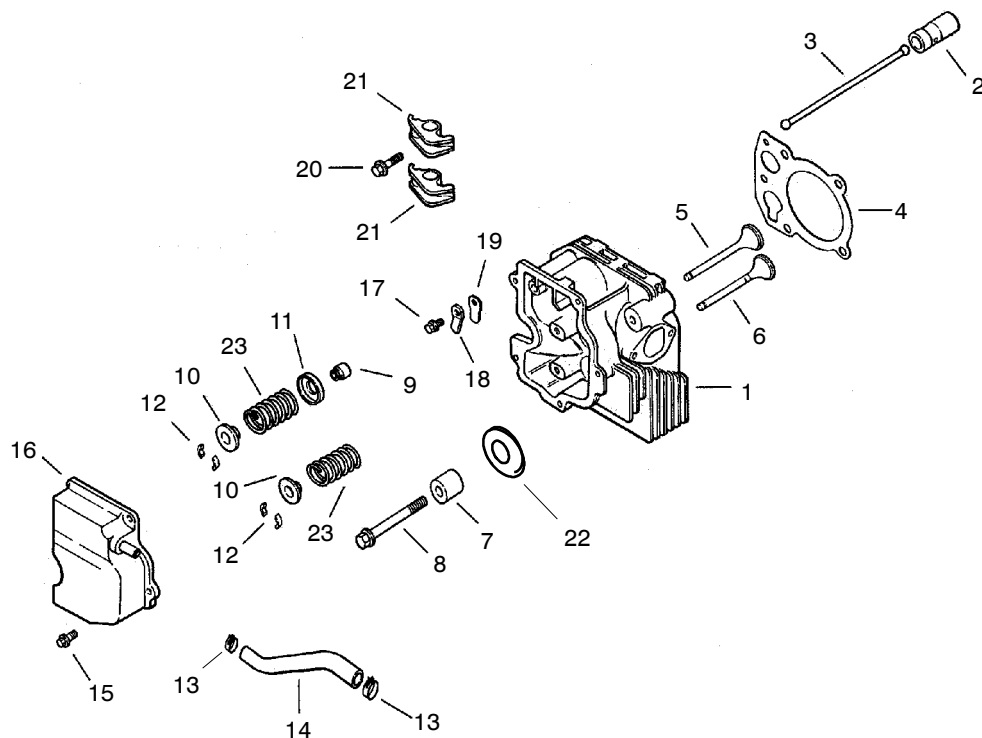
Item	Part Number	Description	Quantity
			Variation 127
1	12 038 16	Dipstick assembly (short)	1
1	12 038 19	Dipstick assembly (long, used with bent tube)	1
2	12 123 29	Tube, oil fill (straight)	1
2	12 123 31	Tube, oil fill (bent)	1
3	41 153 01	O-ring	1
4	25 162 07	Screen, oil	1
5	12 096 03	Cover, oil screen	1
6	25 462 09	Valve, oil pressure relief	1
7	12 050 01	Filter, oil	1
8	X-75-10	Plug, pipe, 3/8 in. NPTF	1
9	12 393 01	Pump assembly, oil	1
10	12 153 06	O-ring, oil pump cover	1
11	12 096 34	Cover, oil pump	1
12	12 032 03	Seal, oil	1
13	24 086 16	Screw, hex flange (not shown)	11
13	24 086 17	Screw, hex flange (not shown)	1
13	M-545016	Screw, hex flange thread forming	1
13	M-545016	Screw, hex flange thread forming	3
14	12 199 59	Pan, oil	1
15	25 099 24	Switch, pressure	1
16	24 418 02	Sensor, oil temperature	1

Group 3: Lubrication, continued



Item	Part Number	Description	Quantity
			Variation 77
1	24 009 92	Plate, closure	1
2	24 153 08	O-ring	1
3	24 393 10	Oil pump assembly (includes 4 and 5)	1
4	24 153 01	O-ring, oil pickup	1
5	24 381 04	Pickup, oil	1
6	52 032 08	Seal, oil	1
7	24 123 09	Tube, dipstick	1
8	24 038 03	Dipstick	1
9	X-75-23	Plug, Allen head, 1/8 in.	2
10	12 050 01	Filter, oil	1
11	M-0645025	Screw, hex flange, M6 x 1 x 25	2
12	M-0631005	Washer, plain, 6mm	2
13	24 086 16	Screw, hex flange, M8 x 1.25 x 45	9
14	24 086 17	Screw, hex flange, M8 x 1.25 x 45	1
15	25 099 24	Switch, oil pressure	1
16	24 755 85	Kit, oil cooler	1
17	24 136 02	Nipple, oil filter	1
18	24 594 10	Cooler, oil assembly	1
19	24 237 03	Clamp, hose	4
20	24 326 16	Hose, oil, 97 mm	1
21	24 326 17	Hose, oil, 140 mm	1
22	24 153 13	O-ring	1
23	24 029 01	Adapter, oil filter	1
24	24 041 29	Gasket, oil filter adapter	1
25	24 153 01	O-ring	1
26	24 211 01	Bolt, oil filter adapter	1
27	24 086 12	Screw, hex cap, M6 x 1.7 x 18	2
28	24 100 01	Nut, plastic	2
29	24 146 11	Plate, backing, #2 side	1
30	41 037 10	Decal, write-on nameplate	1
31	25 113 05	Decal, oil sentry	1
32	25 113 05	Decal, oil cooler	1

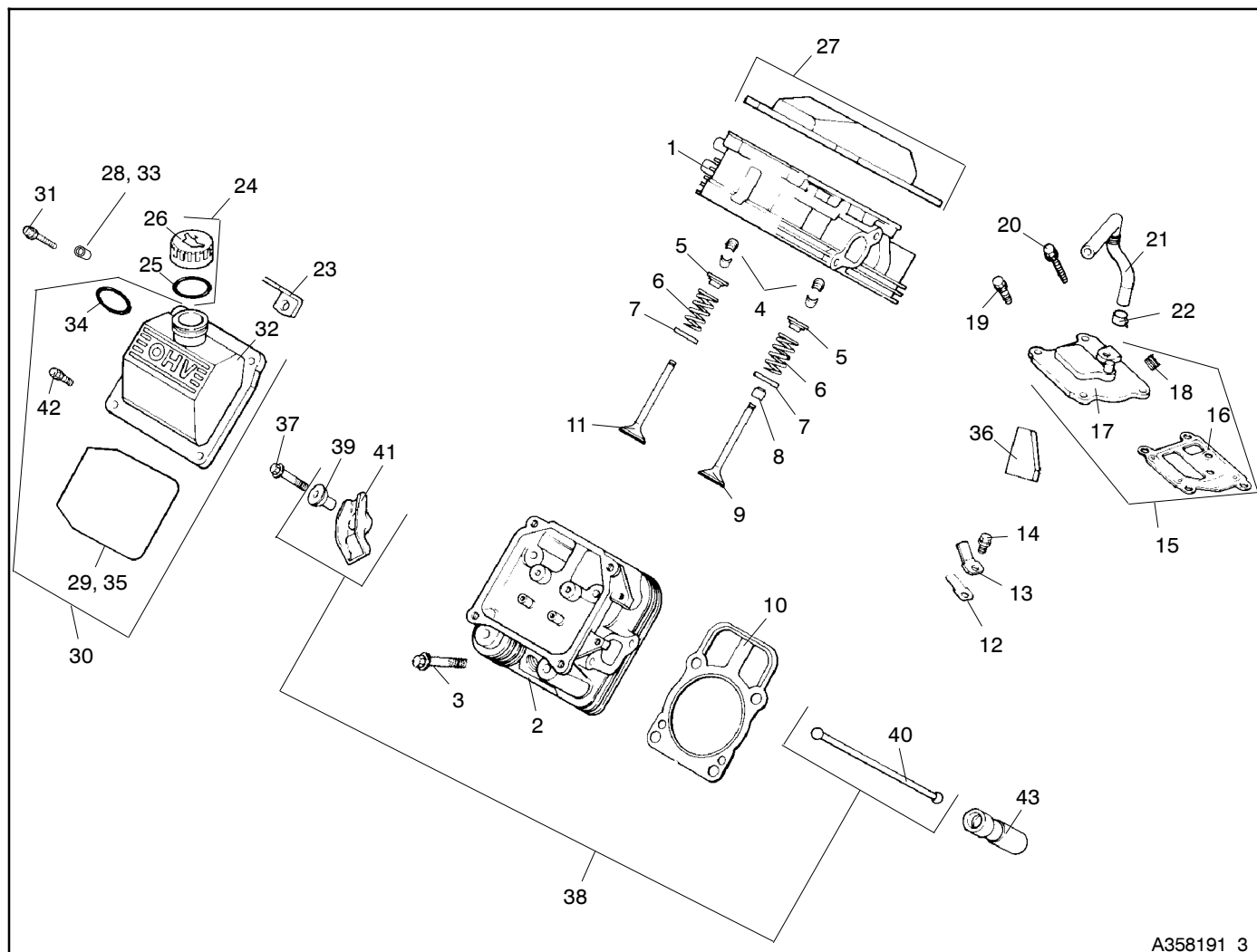
Group 4: Cylinder Head/Valve/Breather



GM17412_4

Item	Part Number	Description	Quantity		
			Variation		
			40	44	81
1	12 318 21-S	Head, cylinder	1	1	1
2	25 351 01	Lifter, hydraulic valve	2	2	2
3	12 411 01	Rod, push	2	2	2
4	12 041 08	Gasket, cylinder head	1	1	
4	12 041 10	Gasket, cylinder head			1
5	12 017 01	Valve, intake	1	1	1
5	12 017 02-S	Valve, intake, 0.25 oversize	1	1	1
6	12 016 01	Valve, exhaust (stellite)	1	1	1
6	12 016 02-S	Valve, exhaust, 0.25 oversize	1	1	1
7	12 112 16	Spacer, 10.5 x 19.0 x 27.0 in.	1	1	1
8	12 086 15	Screw	4	4	4
8	12 086 16	Screw, hex flange, reduced shank	1	1	1
9	66 032 05	Seal, valve stem	2	2	2
10	235011	Spring, retainer	2	2	2
11	12 173 01	Cap, valve spring	2	2	2
12	12 755 03-S	Kit, retainer	1	1	1
13	12 237 03	Clamp, band spring hose, 11/16 in.	1	1	1
13	25 237 14-S	Clamp, hose	1	1	1
14	12 326 03	Hose, breather	1	1	1
15	M-645016	Screw, hex flange thread form	4	4	4
16	12 096 45	Cover, valve with nipple	1	1	1
17	M-545010	Screw, hex flange thread form	1	1	1
18	12 018 01	Retainer, reed	1	1	1
19	12 402 02	Reed, breather	1	1	1
20	12 599 03	Pivot, rocker arm	2	2	2
20	M-640034	Screw, hex flange	2	2	2
21	25 186 01	Arm, rocker	2	2	2
22	12 468 05	Washer	1	1	1
23	12 089 34	Spring, valve	2	2	2
—	24 018 05	Retainer, valve guide (not shown)	1	1	1
—	X-75-23	Plug, pipe, 3 in. NPTF, repair (not shown)	1	1	1

Group 4: Cylinder Head/Valve/Breather, continued

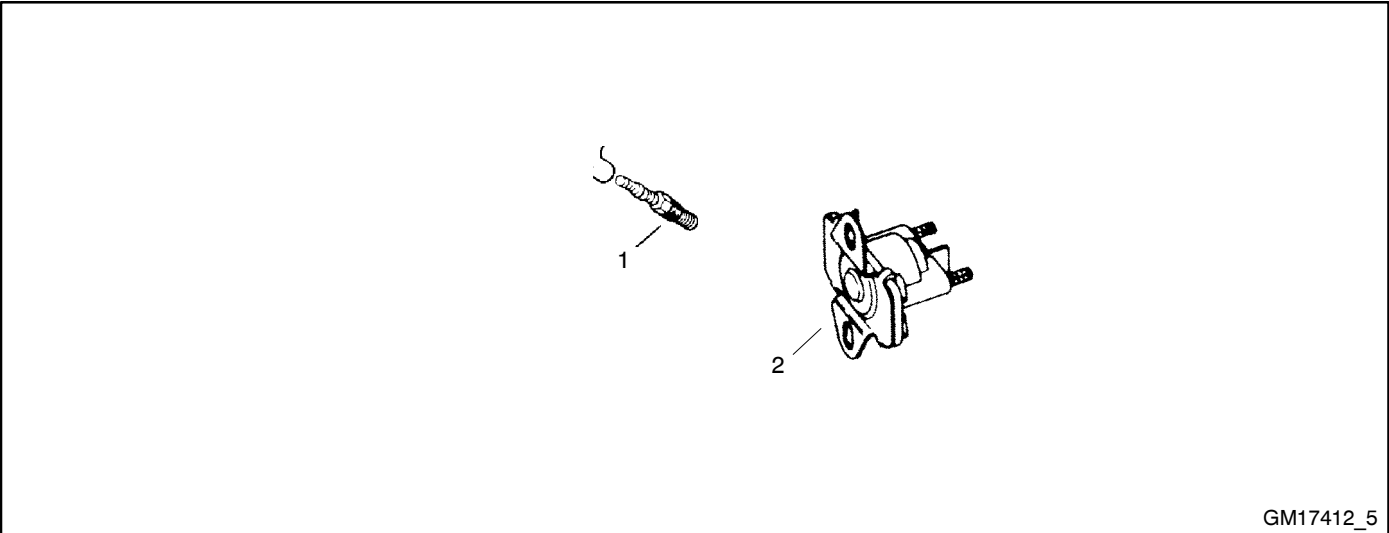


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Item	Part Number	Description	Qty. Var. 34
1	24 318 09	Head assembly, #1 cylinder	1
2	24 318 10	Head assembly, #2 cylinder	1
3	12 086 16	Screw, hex flange, M10 x 1.5 x 90	8
4	12 755 03	Kit, retainer	4
5	12 173 01	Cap, valve spring	4
6	24 089 02	Spring, valve	4
7	235011	Retainer, spring	4
8	24 032 05	Seal, valve stem	2
9	24 017 01	Valve, intake, standard	2
9	24 017 02	Valve, intake, 0.25	2
10	24 041 08	Gasket, cylinder head	2
11	24 016 01	Valve, exhaust, standard	2
11	24 016 02	Valve, exhaust, 0.25	2
12	24 402 03	Reed, breather	1
13	12 018 01	Retainer, breather reed	1
14	M-0545010	Screw, hex flange, M5 x 0.8 x 10	1
15	24 033 01	Kit, breather	1
16	24 041 23	Gasket, breather	1
17	24 096 02	Cover, breather	1
18	X-75-23	Plug, Allen head pipe, 1/8 in.	1
19	M-0645020	Screw, hex flange, M6 x 1.0 x 20	1
20	M-0645030	Screw, thread forming, M6 x 1.0 x 30	3
21	24 326 26	Hose, breather; cut to 50.8 mm (2 in.)	1
22	X-426-9	Clamp, breather	1

Item	Part Number	Description	Qty. Var. 34
23	12 445 05	Strap, lifting	2
24	24 755 46	Kit, oil fill cap (includes 25, 26)	1
25	12 153 03	O-ring, oil fill cap	1
26	12 173 04	Cap, oil fill tube	1
27	24 755 74	Kit, valve cover, plain (includes 27, 28)	1
28	24 112 08	Spacer	4
29	24 153 16	O-ring	1
30	24 755 75	Kit, valve cover, oil fill (includes 31, 32, 33, 34, 35)	1
31	24 086 32	Screw, shoulder	4
32	24 096 21	Rocker cover, oil fill	1
33	24 112 08	Spacer	4
34	24 153 09	O-ring	1
35	24 153 16	O-ring	1
36	24 050 01	Filter, breather	1
37	M-0640034	Screw, hex flange, M6 x 1.0 x 34	4
38	24 755 66	Kit, valve train (includes 39, 40, 41)	1
39	24 599 01	Pivot, rocker arm	4
40	24 411 05	Rod, push	4
41	25 186 01	Arm, rocker	4
42	M-0651030	Screw, valve cover	8
43	25 351 01	Lifter, valve	4

Group 5: Ignition/Electrical

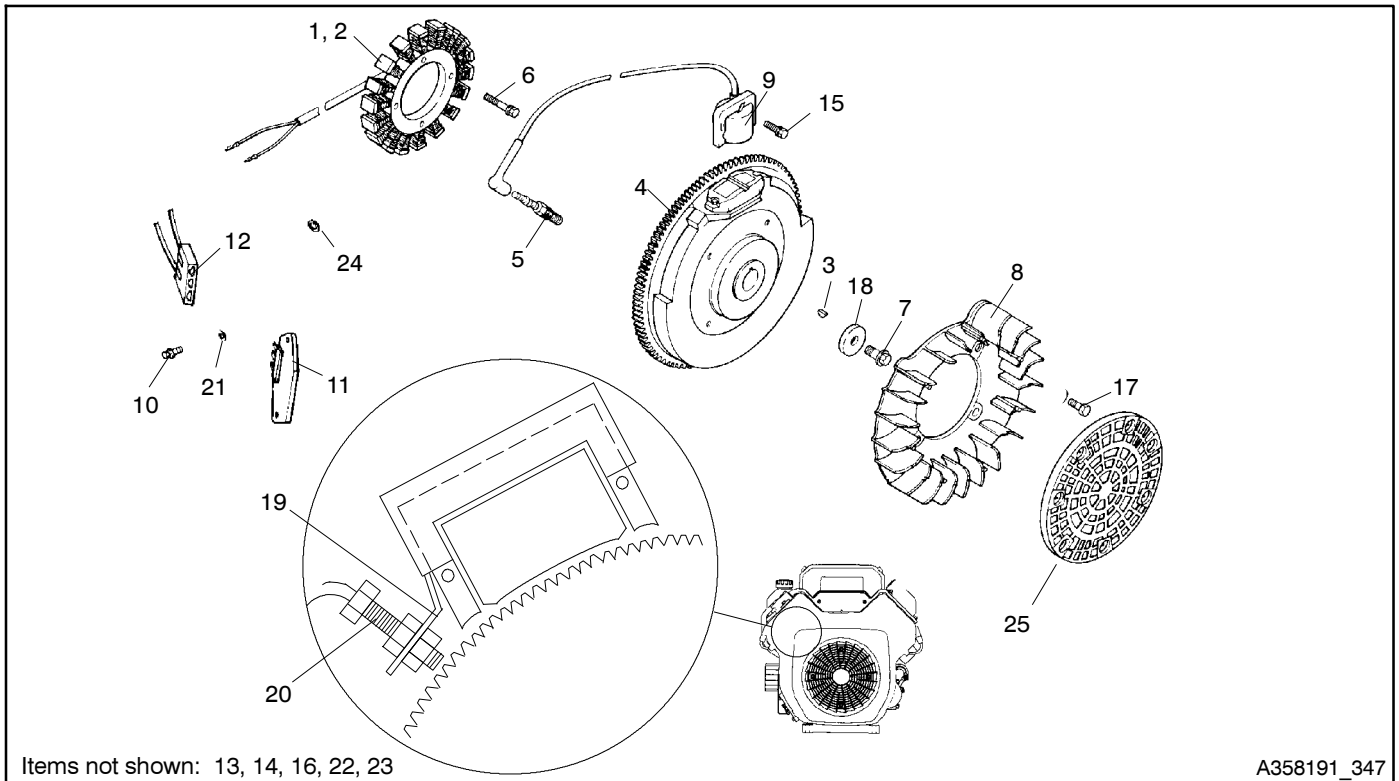


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Item	Part Number	Description	Quantity
			Variation 260
1	25 132 08-S	Plug, spark	1
2	12 126 74	Bracket, cranking relay	1
2	GM40989	Service Kit, solenoid (before serial number 2094977)*	1
2	GM40621	Solenoid (serial numbers 2094977 or higher)	1
—	M-645016	Screw, hex flange thread forming (not shown)	2

* Service kit includes solenoid GM40621.

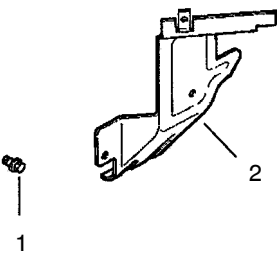
Group 5: Ignition/Electrical, continued



A358191_347

Item	Part Number	Description	Quantity
			Variation 347
1	54 755 09	Kit, 15-amp stator	1
2	24 126 71	Bracket, stator wire	1
3	X-42-15	Key	1
4	24 025 03	Flywheel	1
5	12 132 02-S	Spark plug	2
6	M-0548025	Screw, hex cap, M5 x 0.8 x 25	2
7	12 086 14	Screw, hex flange, M10 x 1.5 x 46	1
8	24 157 03	Fan	1
9	24 584 01	Module, ignition	2
10	24 086 18	Screw, Phillips head, 11-16 x 7/8	2
11	25 403 03	Rectifier-regulator	1
12	236602	Connector, 3-contact	1
13	25 518 28	Lead, black, 4 in. 18 gauge, insulated grip barrel eyelet terminals	1
14	24 176 43	Harness, wiring	1
15	M-0561025	Screw, hex socket head, M5 x 0.8 x 25	4
16	X-22-11	Washer, lock, 1/4 in.	1
17	25 086 47	Bolt, shoulder	4
18	12 468 03	Washer, plain, 3/8 in.	1
19	24 126 73	Bracket, sensor mounting	1
20	24 418 08	Sensor, magnetic	1
21	X-25-92	Washer, plain, 3/6 in.	2
22	24 518 18	Lead, white, 19 in. 18 gauge push-on tab terminals	1
23	24 518 17	Lead, red, 19 in. 18 gauge push-on tab terminals	1
24	X-25-63	Washer, plain, 1/4 in.	1
25	24 162 17	Screen	1

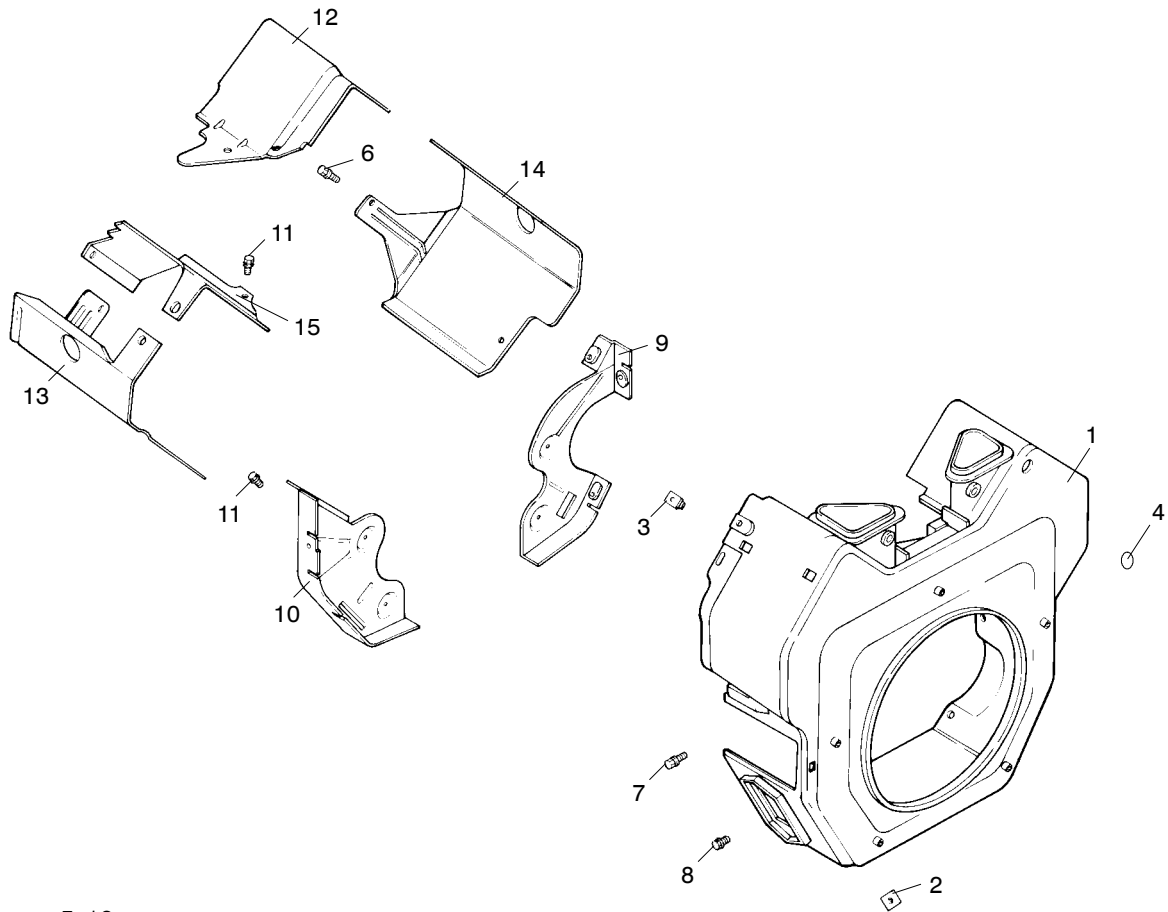
Group 6: Blower Housing & Baffles



GM17412_6

Item	Part Number	Description	Quantity
			Variation
1	M-545010	Screw, hex flange thread forming	128
2	12 063 05	Baffle, carburetor	1

Group 6: Blower Housing & Baffles, continued

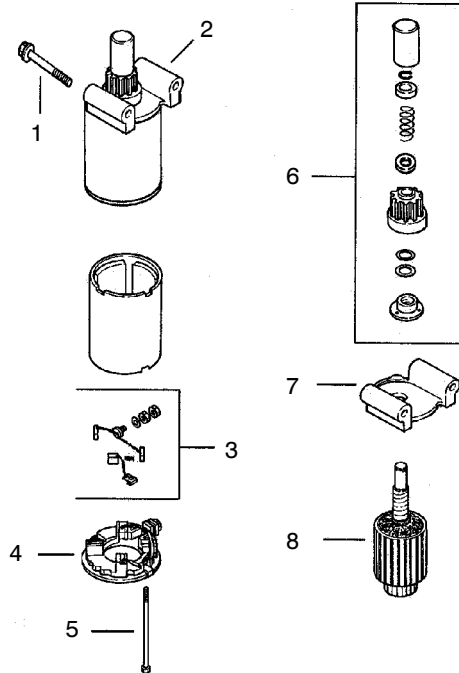


Items not shown: 5, 16

A358191_224

Item	Part Number	Description	Quantity
			Variation 224
1	24 027 30	Housing, blower assembly (includes 2-6)	1
2	24 100 01	Nut, plastic	3
3	24 100 02	Nut, plastic	2
4	25 139 16	Plug, button, 9/16 in.	1
5	24 063 36	Baffle, blower housing	1
6	M-0545010	Screw, hex flange, M5 x 0.8 x 10	2
7	M-0545016	Screw, hex flange, M5 x 0.8 x 16	6
8	M-0551016	Screw, hex flange, M5 x 0.8 x 16	1
9	24 146 08	Plate, backing, #1 side	1
10	24 146 11	Plate, backing, #2 side	1
11	M-0645016	Screw, hex flange, M6 x 1.0 x 16	8
12	24 063 24	Baffle, valley, #1 side	1
13	24 063 20	Baffle, cylinder barrel, #2 side	1
14	24 063 08	Baffle, cylinder barrel, #1 side	1
15	24 063 17	Baffle, valley, #2 side	1
16	24 113 12	Decal, HP	1

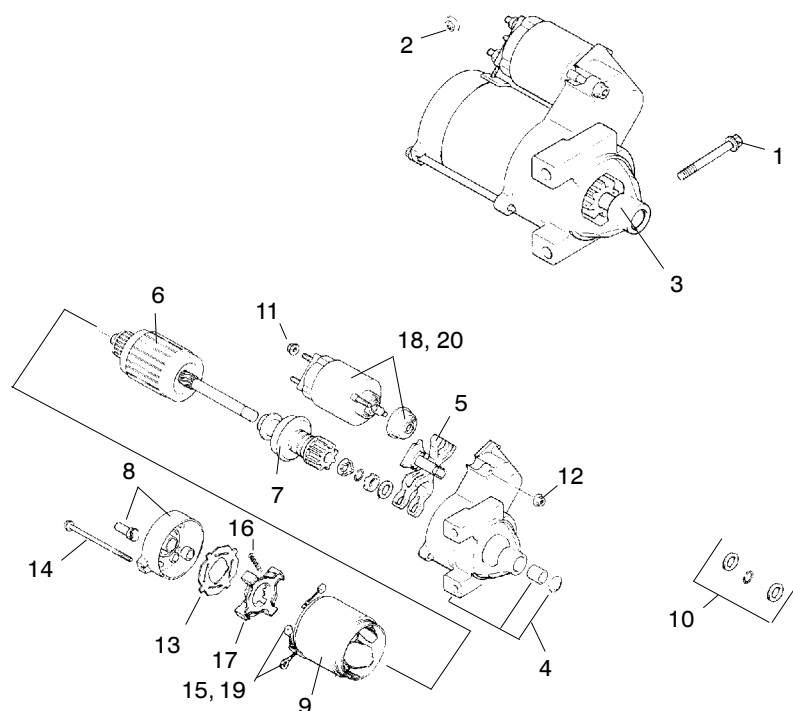
Group 7: Starting System



GM17412_7

Item	Part Number	Description	Quantity
			Variation 28
1	M-839070	Screw, hex flange	2
2	12 098 20	Starter assembly	1
3	82 755 28-S	Kit, brush and spring	1
4	12 227 11	Commutator, end cap	1
5	12 086 25-S	Screw	1
6	12 755 53-S	Kit, drive	1
7	12 227 16	Cap, drive end	1
8	45 170 03	Armature assembly	1
—	TT-5009	Installation literature (not shown)	1

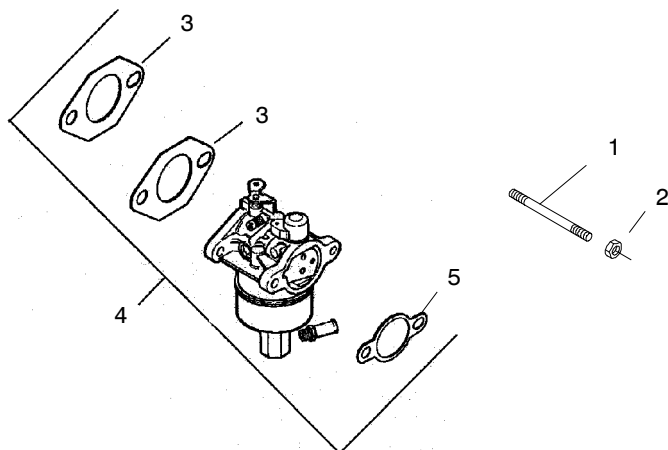
Group 7: Starting System, continued



A358191 5

Item	Part Number	Description	Quantity
			Variation 13
1	M-0839080	Screw, hex flange, M8 x 1.25 x 80	2
2	M-0841080	Nut, hex flange, M8 x 1.25	1
3	24 098 01	Starter, solenoid shift Nipendenso label (includes 4-18)	1
3	25 098 08	Starter, solenoid shift Delco-Remy label (includes 19-20)	1
4	24 081 04	Drive, end cap	1
5	12 090 10	Lever, starter drive	1
6	12 170 04	Armature, starter	1
7	12 239 01	Drive, pinion	1
8	24 301 01	Commutator, end cap	1
9	12 471 01	Frame	1
10	24 755 84	Kit, starter repair	1
11	52 100 09	Nut, starter	1
12	52 100 10	Nut, starter	2
13	52 168 01	Insulator	1
14	52 211 05	Bolt, thru, M5 x 0.8 x 99	2
15	52 221 01	Kit, brush and spring (includes 16)	1
16	52 089 09	Spring, brush	4
17	52 323 03	Holder, brush	1
18	52 435 02	Solenoid	1
19	25 221 01-S	Kit, brush	1
20	25 435 04-S	Solenoid	1

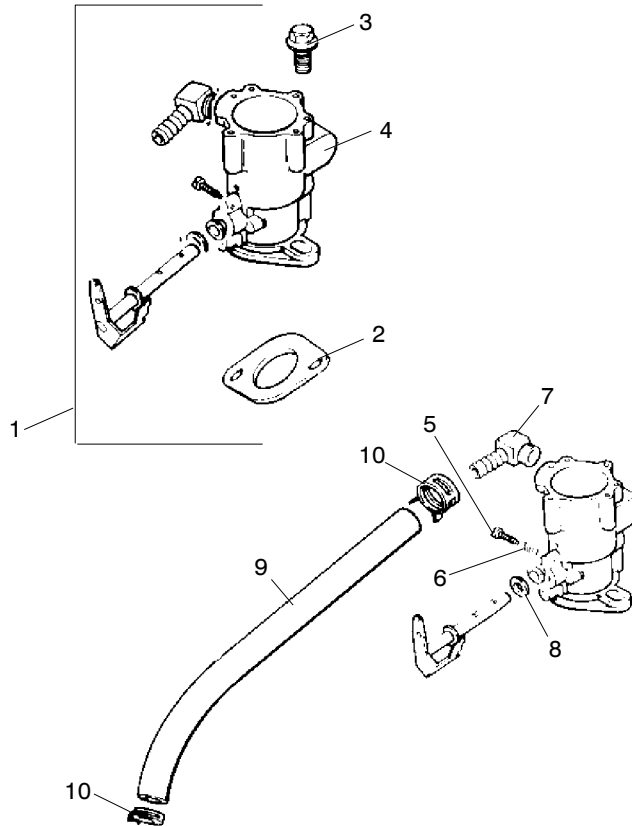
Group 8: Engine Fuel System



GM17412_8

Item	Part Number	Description	Quantity	
			Variation	
			192	264
1	M-629116	Stud	2	2
2	M-641060	Nut, hex flange	2	2
3	12 041 01	Gasket, carburetor	2	2
4	12 853 121-S	Kit, carburetor w/gaskets	1	
4	12 853 161-S	Kit, carburetor assembly (w/choke plate) w/gaskets		1
5	12 041 02	Gasket, air cleaner	1	1
—	12 265 08	Deflector, heat (not shown)	1	1
—	25 158 08	Bushing, linkage retaining (not shown)	1	1

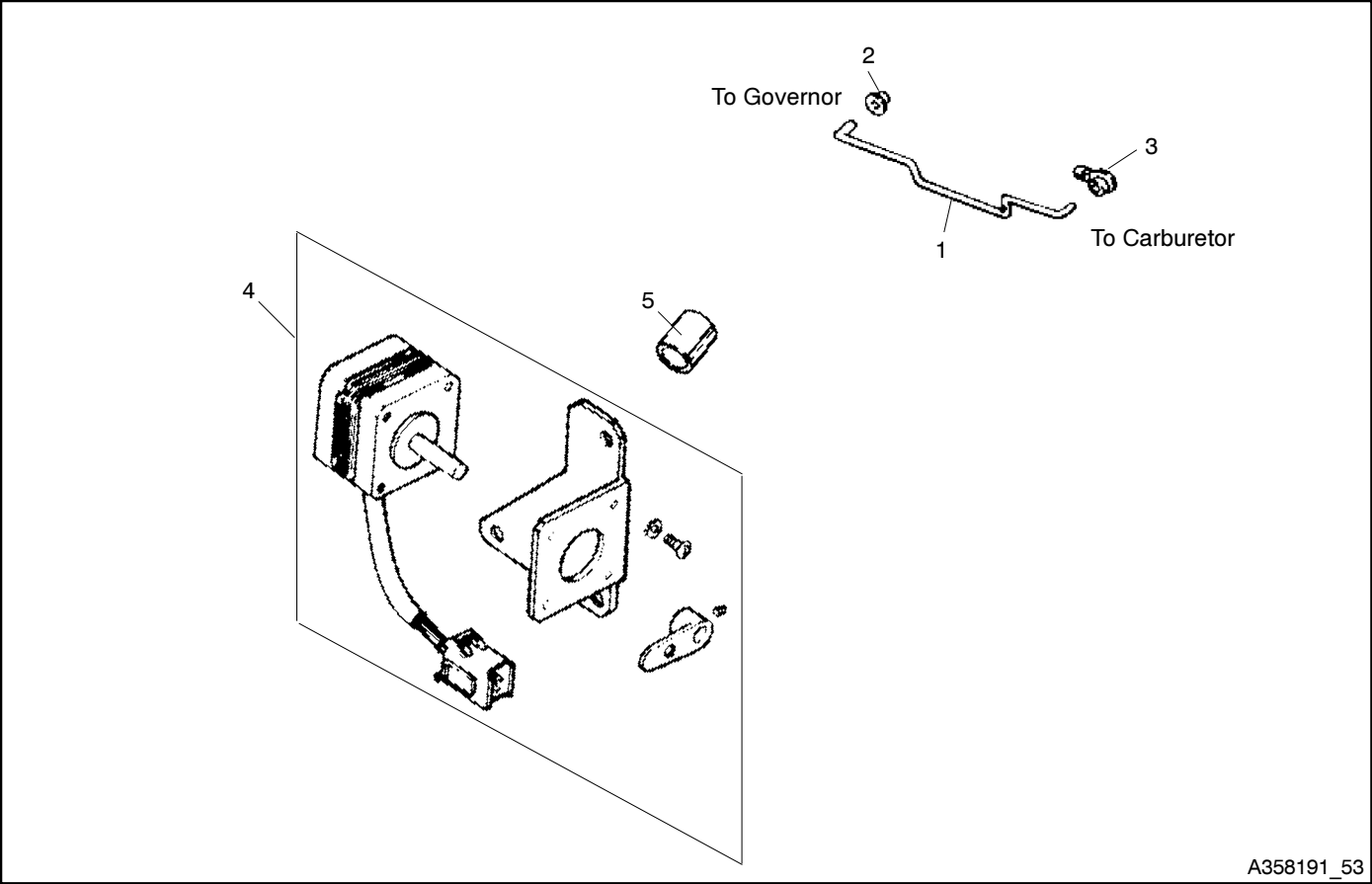
Group 8: Engine Fuel System, continued



A358191_214

Item	Part Number	Description	Quantity Variation	
			214A	214B
1	24 853 30-S	Kit, carburetor w/gasket (includes 2, 3)	1	
2	24 041 26	Gasket, carburetor	1	1
3	M-0851030	Screw, hex flange, M6 x 1.25 x 30	2	2
4	24 853 30	Carburetor assembly (for information only, not available separately)	1	
4	See Group 105	Carburetor assembly		1
5	232556	Screw, idle adjusting	1	1
6	232555	Spring, adjusting screw	1	1
7	24 294 05	Fitting, elbow	1	
8	X-25-8	Washer, plain, 1/4 in.	1	1
9	See Group 103	Line, fuel	1	1
10	X-426-3	Clamp, hose	2	2

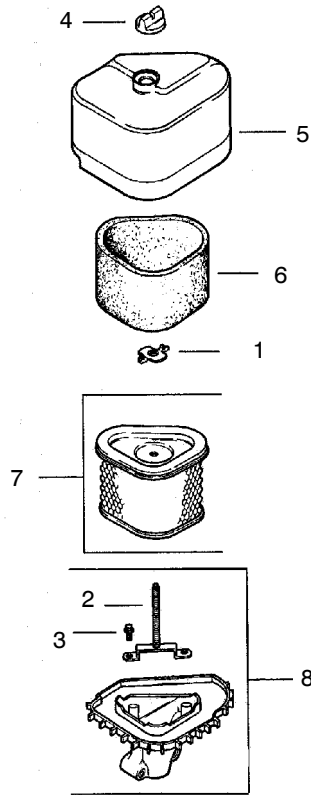
Group 9: Engine Controls



A358191_53

Item	Part Number	Description	Quantity
			Variation 98
1	24 079 09	Linkage, throttle	1
2	25 158 08	Bushing, linkage	1
3	25 158 11	Bushing, throttle linkage	1
4	24 310 03	Governor (actuator/stepper motor)	1
5	25 112 09	Spacer	3

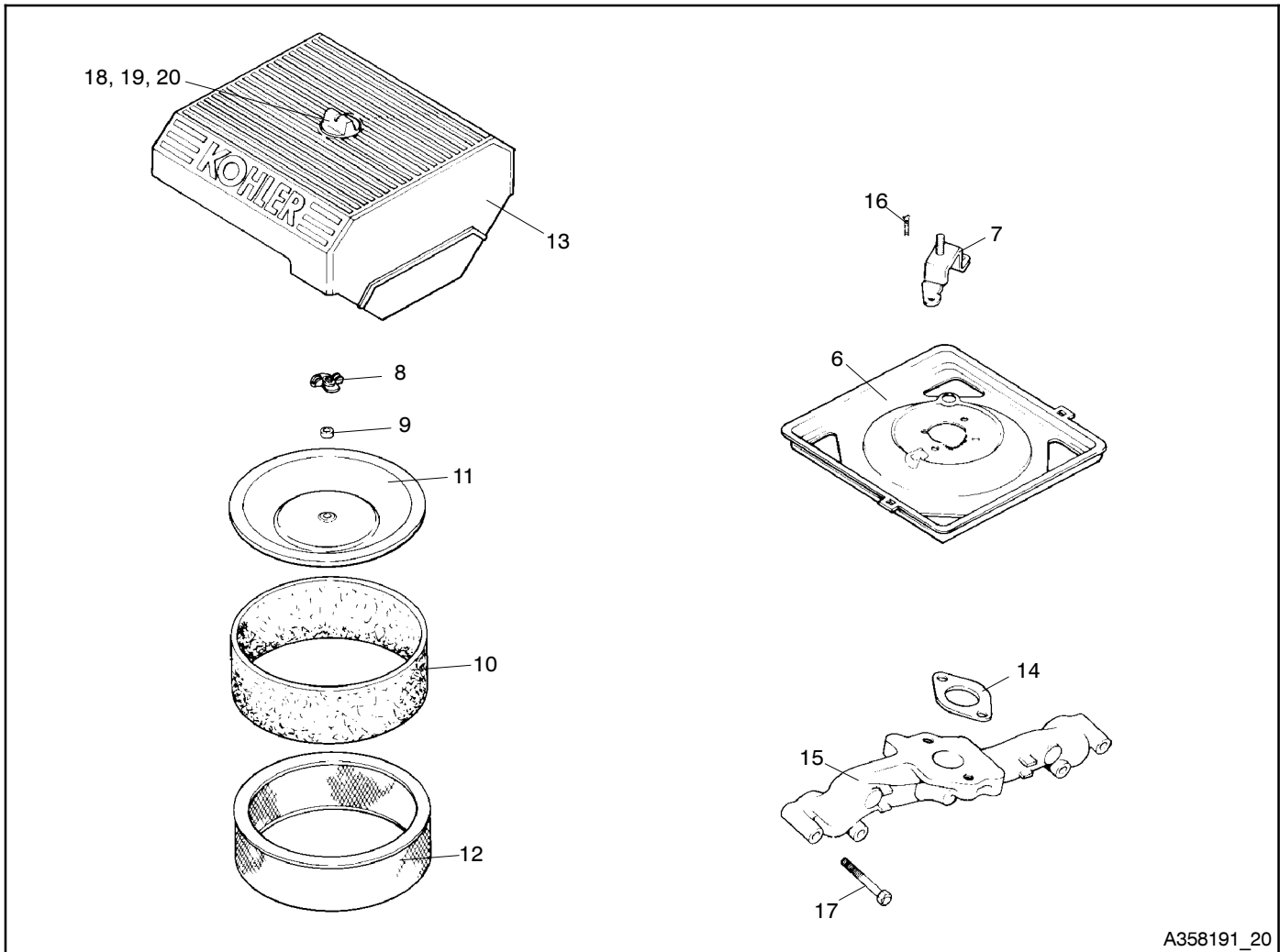
Group 10: Air Intake/Filtration



GM17412_10

Item	Part Number	Description	Quantity
			Variation 42
1	12 100 08	Nut, wing	1
2	12 072 05	Stud, mounting plate	1
3	12 086 01	Screw, hex head	2
4	25 341 04-S	Knob, cover	1
5	12 096 44-S	Cover, air cleaner	1
6	12 083 08	Precleaner, dry	1
7	12 083 09-S	Element, filter, UL recognized	1
8	12 094 16-S	Base, air cleaner	1
—	12 032 10	Seal (not shown)	1
—	12 032 14	Seal (not shown)	1
—	12 041 02	Gasket, air filter base (not shown)	1

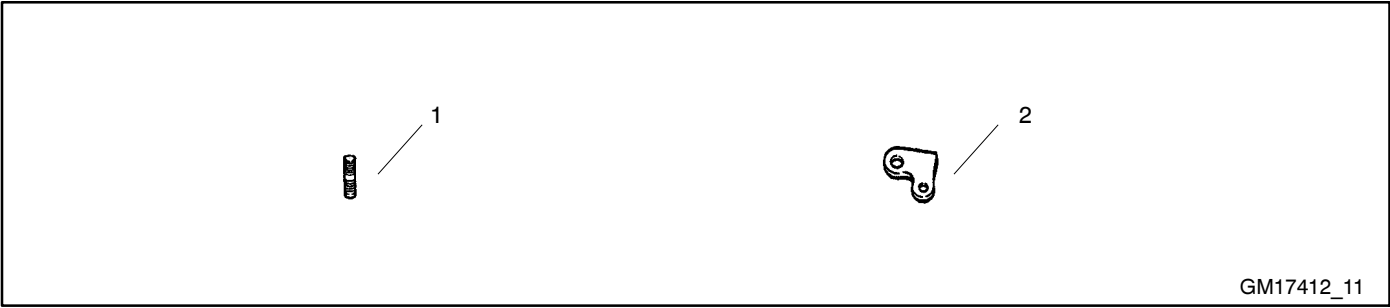
Group 10: Air Intake/Filtration, continued



A358191_20

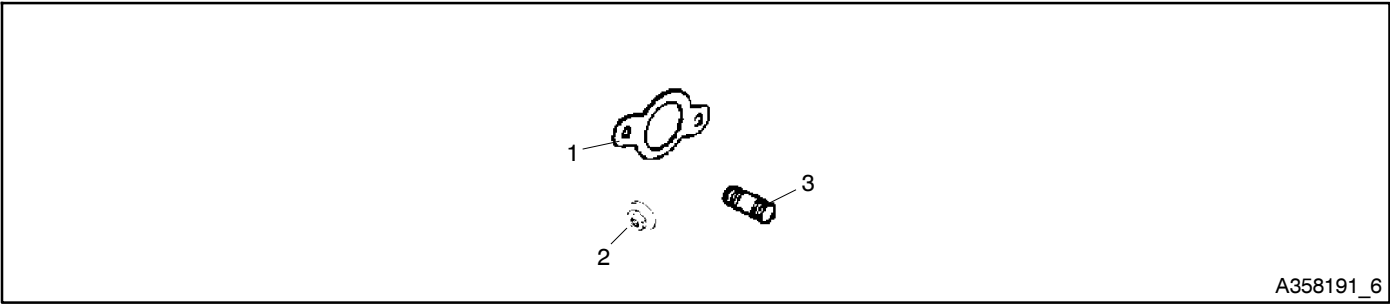
Item	Part Number	Description	Quantity
			Variation 20
6	24 094 12	Base, air cleaner	1
7	24 126 49	Bracket, air cleaner	1
8	12 100 01	Nut, wing	1
9	24 032 03	Seal, air intake	1
10	24 083 02-S	Element, precleaner	1
11	24 096 01	Cover, inner air cleaner	1
12	24 083 08	Element, air filter	1
13	24 096 67	Cover, air cleaner	1
14	24 041 01	Gasket, intake manifold	2
15	24 164 18	Manifold, intake	1
16	25 086 48	Screw, composite, 10-32 x 3/4 in.	4
17	M-0651055	Screw, hex flange, M6 x 1.0 x 55	4
18	54 755 01	Kit, knob w/seal (includes 16, 17)	1
19	24 153 20	O-ring	1
20	25 341 03	Knob, cover	1

Group 11: Engine Exhaust



GM17412_11

Item	Part Number	Description	Quantity
			Variation 10
1	25 072 04	Stud, M8 x 1.25 x 33	2
2	12 445 06	Strap, lifting	1
—	M-645020	Screw, hex flange thread form (not shown)	1

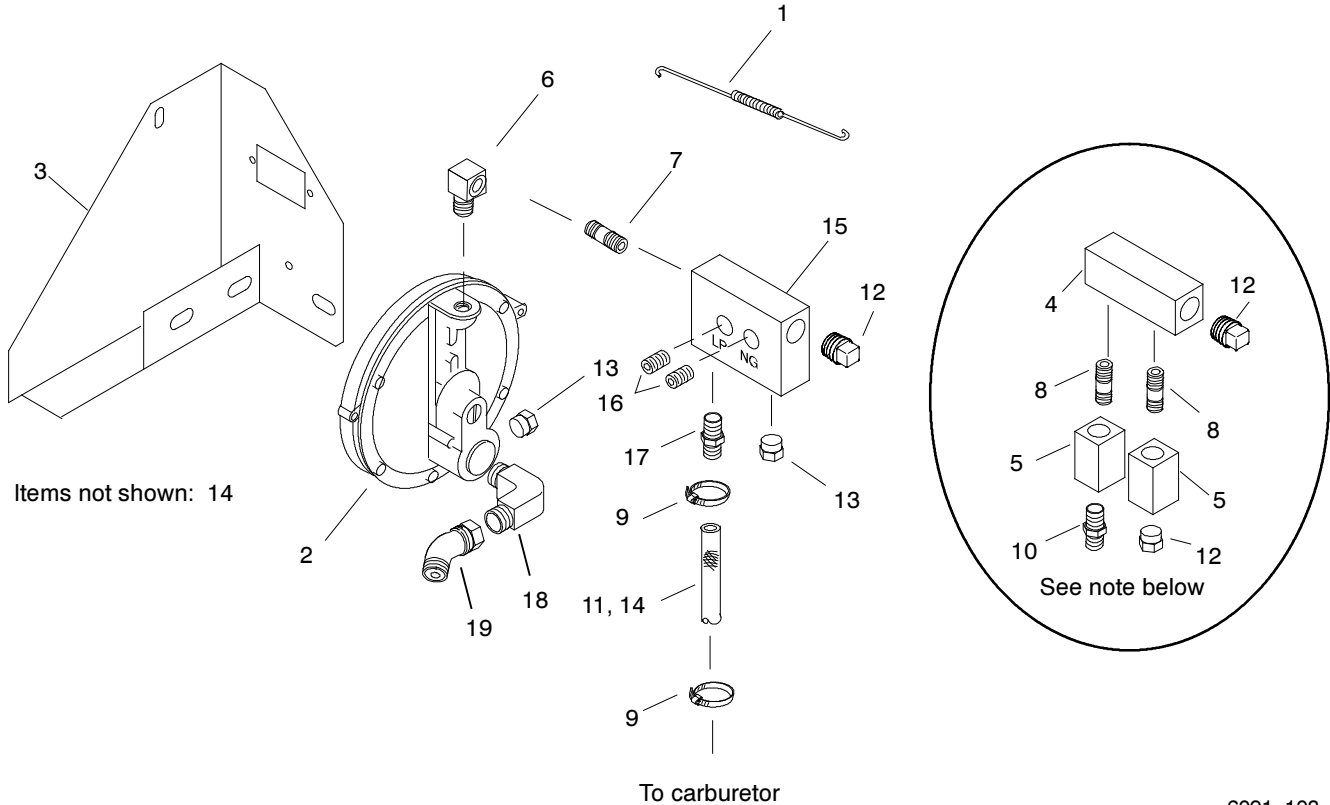


A358191_6

Item	Part Number	Description	Quantity
			Variation 90
1	24 041 02	Gasket, exhaust	2
2	M-0841080	Nut, hex flange, M8 x 1.25	4
3	25 072 04	Stud, M8 x 1.25 x 33	4

Group 103: Fuel System

Alpha 5/COM5



6091_103_1

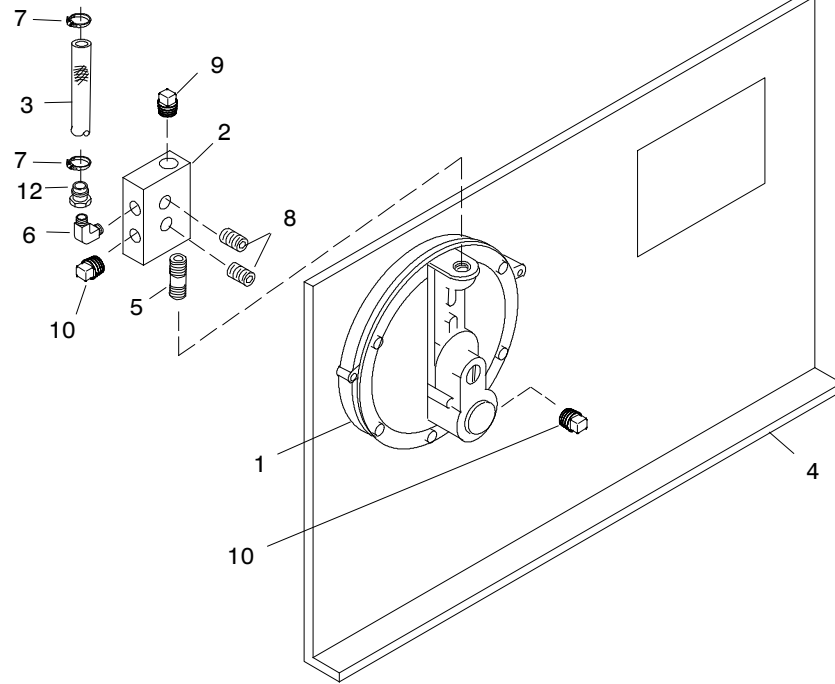
Item	Part Number	Description	Quantity	
			Variation	
			GR1	3
1	267446	Spring		1
2	GM58812	Regulator, gas	1	1
3	GM11504	Bracket, regulator	1	1
4	*	Block, fuel (was GM11885; order item 15)	1	1
5	*	Valve, fuel (was GM11886; order item 15)	2	2
6	S-404	Fitting, elbow, 3/8 in., street	1	1
7	X-204-9	Nipple, pipe, 3/8 x 1 in.	1	1
8	X-204-9*	Nipple, pipe, 3/8 x 1 in.	2	2
9	X-426-9	Clamp, hose, 0.25/0.70 in.	2	2
10	X-582-33	Connector, 3/8 in. x 3/8 in.	1	1
11	X-651-32	Hose, rubber, straight, 0.375 in. ID	1	1
12	X-75-10	Plug, pipe, 3/8	1	2
13	X-75-51	Plug, pipe	2	1
14	X-6003-130	Conduit (not shown)	1	1
15	GM16807	Valve, fuel metering	1	
16	X-6219-9	Screw, set	2	
17	X-582-36	Connector, hose	1	
18	X-6289-4	Elbow, oil line	1	
19	GM19032-1	Elbow, swivel nut, 45 deg.	1	

* On units with serial numbers below 0705842, replace items 4, 5, and 8 with the a one-piece fuel metering valve (item 15).

Group 103: Fuel System

COM7.5

To carburetor

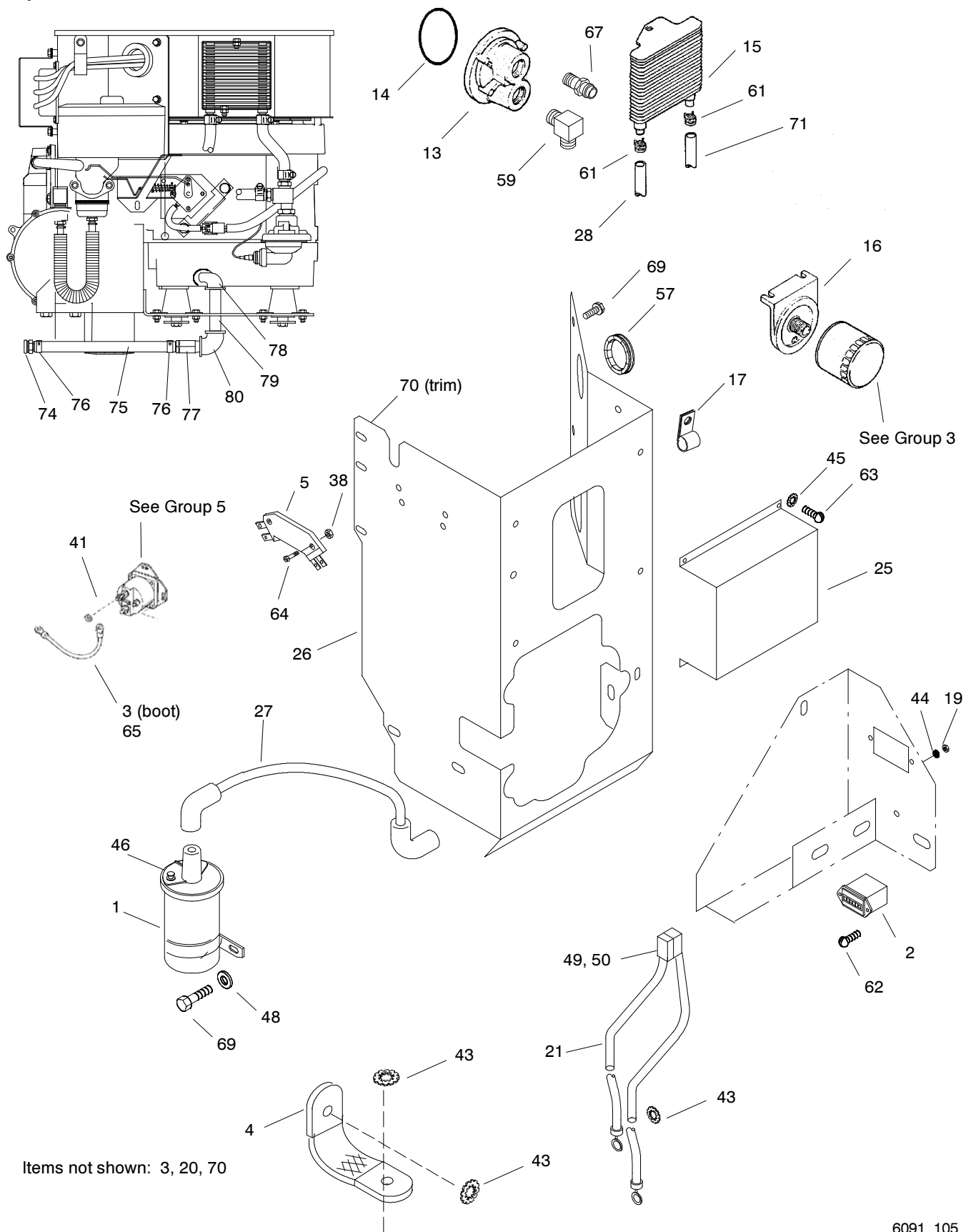


6091_103_2

Item	Part Number	Description	Quantity
			Variation 93-2
1	GM58812	Regulator, gas	1
2	GM16807	Valve, fuel metering	1
3	GM20549	Fuel line, LP gas	1
4	GM23599	Plate, mounting	1
5	X-204-9	Pipe, 3/8 NPT x 1 in.	1
6	X-447-21	Elbow, oil line	1
7	X-426-3	Clamp, hose, 0.56/1.06 in.	2
8	X-6219-9	Screw, hex socket set	2
9	X-75-10	Plug, pipe, 3/8 in. NPT	1
10	X-75-51	Plug, pipe, 1/4 in. NPT	2
12	X-653-2	Fitting, swivel, 1/2 in. ID	1

Group 105: Engine

Alpha 5/COM5



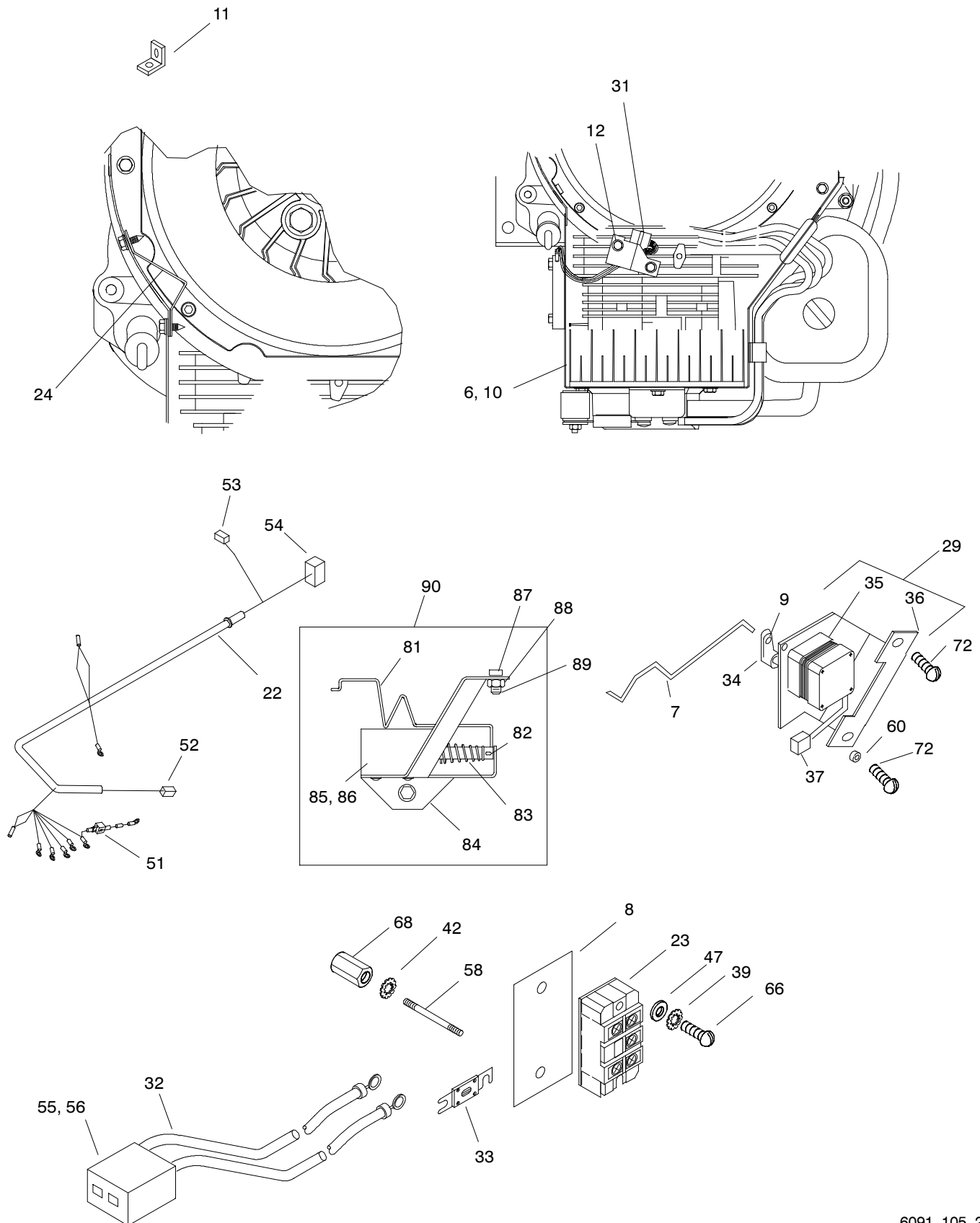
6091_105_1

Group 105: Engine, continued

Item	Part Number	Description	Quantity									
			Variation									
			4	5	GR6	GR7	GR14	GR15	GR16	GR17	GR18	GR19
1	41 519 21	Coil, ignition	1	1	1	1	1	1	1	1	1	1
2	238736	Meter, run time, 10000 hour	1	1	1	1	1	1	1	1	1	1
3	238915	Boot	1	1	1	1	1	1	1	1	1	1
4	245297	Strap, ground	1	1	1	1	1	1	1	1	1	1
5	GM23591	Module, ignition	1	1	1	1	1	1	1	1	1	1
13	24 029 02	Adapter, oil filter	1	1	1	1	1	1	1	1	1	1
14	24 153 13	O-ring	1	1	1	1	1	1	1	1	1	1
15	24 594 12	Cooler, oil	1	1	1	1	1	1	1	1	1	1
16	25 029 01	Adapter, remote filter	1	1	1	1	1	1	1	1	1	1
17	X-672-13	Clamp, insulated, 0.88 in.	1	1	1	1	1	1	1	1	1	1
19	X-71-2	Nut, hex machine screw, 6-32	2	2	2	2	2	2	2	2	2	2
20	GM23380	Engine assembly	1	1	1	1						
20	GM42352	Engine assembly, CV14					1	1	1	1		
20	GM57988	Engine assembly, CV15									1	1
21	GM11854	Harness, COM5 battery	1	1	1	1	1	1	1	1	1	1
25	GM12288	Cover, rectifier	1	1	1	1	1	1	1	1	1	1
26	GM40990	Baffle, engine	1	1	1	1	1	1	1	1	1	1
27	GM12295	Lead, ignition	1	1	1	1	1	1	1	1	1	1
28	GM20970	Hose, oil	2	2	2	2	2	2	2	2	2	2
38	X-101-11	Nut, hex elastic stop, 8-32	2	2	2	2	2	2	2	2	2	2
41	X-22-11	Washer, lock, 0.262 ID x 0.469 in. OD	3	2	3	3	3	3	3	3	3	3
43	X-22-16	Washer, lock, 0.326 ID x 0.883 in. OD	5	5	5	5	5	5	5	5	5	5
44	X-22-6	Washer, lock, 0.146 ID x 0.285 in. OD	2	2	2	2	2	2	2	2	2	2
45	X-22-9	Washer, lock, 0.20 ID x 0.373 in. OD	4		4	4	4	4	4	4	4	4
46	X-22-9	Washer, lock, 0.20 ID x 0.373 in. OD	1	1	1	1	1	1	1	1	1	1
48	X-25-45	Washer, plain, 0.203 ID x 0.75 in. OD	2	2	2	2	2	2	2	2	2	2
49	GM11860	Connector, power lock, red	1	1	1	1	1	1	1	1	1	1
50	GM11861	Connector, power lock, black	1	1	1	1	1	1	1	1	1	1
57	X-284-3	Grommet, round	1	1	1	1	1	1	1	1	1	1
59	X-391-42	Elbow, 1/2 NPT x 3/8 hose	1	1	1	1	1	1	1	1	1	1
61	X-426-18	Clamp, hose, 0.38/0.88 in.	4	4	4	4	4	4	4	4	4	4
62	X-49-39	Screw, slotted pan head machine	2	2	2	2	2	2	2	2	2	2
63	X-50-73	Screw, slotted pan head machine	4	4	4	4	4	4	4	4	4	4
64	X-51-4	Screw, cross recess round head	2	2	2	2	2	2	2	2	2	2
65	X-545-146	Cable, battery	1	1	1	1	1	1	1	1	1	1
67	X-582-34	Connector, 3/8 in. x 1/2 in.	1	1	1	1	1	1	1	1	1	1
69	X-6216-1	Screw, Phillips hex crimpite	10	10	10	10	10	10	10	10	10	10
70	X-6422-12	Seal, push-on trim	1	1	1	1	1	1	1	1	1	1
71	X-651-24	Hose, rubber, straight, 0.375 in. ID	1	1	1	1	1	1	1	1	1	1
74	GM20547	Plug, hose, 3/8			1	1	1	1	1	1	1	1
75	X-651-3	Hose, rubber, straight, 0.375 in. ID			1	1	1	1	1	1	1	1
76	X-309-17	Clamp, spring hose, 0.583/0.668 in.			2	2	2	2	2	2	2	2
77	359653	Valve, oil drain			1	1	1	1	1	1	1	1
78	X-211-8	Elbow, street, 90 deg. x 3/8 in. NPT	1	1	1	1	1	1	1	1	1	1
79	X-204-24	Pipe, 3/8 NPT x 2.5 in.			1	1	1	1	1	1	1	1
80	X-215-9	Elbow, pipe, 90 deg. x 3/8 in. NPT			1	1	1	1	1	1	1	1

Group 105: Engine, continued

Alpha 5/COM5



6091_105_2

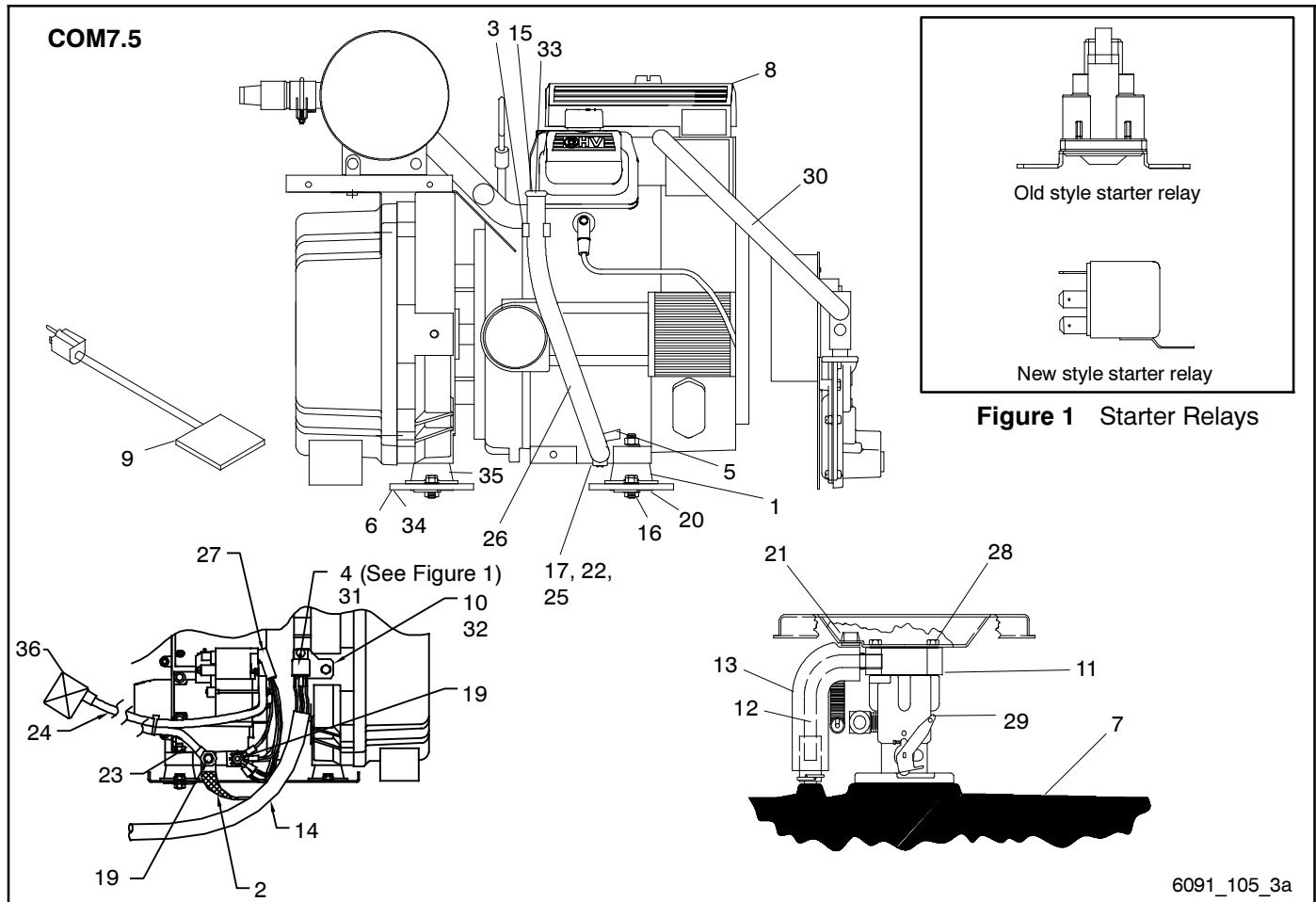
Group 105: Engine, continued

Item	Part Number	Description	Quantity									
			Variation									
			4	5	GR6	GR7	GR14	GR15	GR16	GR17	GR18	GR19
6	292372	Spacer	4	4	4	4	4	4	4	4	4	4
7	337027	Linkage, throttle	1	1	1	1	1	1	1	1	1	1
8	337168	Insulator, power module	1	1	1	1	1	1	1	1	1	1
9	25 158 11	Bushing, throttle linkage	1	1	1	1	1	1	1	1	1	1
10	345317	Heatsink	1	1	1	1	1	1	1	1	1	1
11	12 445 02	Strap, lifting	1	1	1	1	1	1	1	1	1	1
12	X-67-52	Screw, hex washer, thread-forming	2	2	2	2	2	2	2	2	2	2
22	GM11855	Harness, COM5 engine	1	1								
22	GM14252	Harness, COM5 engine			1	1						
22	GM42304	Harness, COM5 engine					1	1	1	1	1	1
23	GM11857	Module, rectifier diode	1	1	1	1	1	1	1	1	1	1
24	GM11940	Baffle, fan	1	1	1	1	1	1	1	1	1	1
29	GM13197	Assembly, governor	1	1	1	1	1	1	1	1	1	1
31	GM23592	Coil assembly, trigger	1	1	1	1	1	1	1	1	1	1
32	GM13491	Harness, COM5 output	1	1	1	1	1	1	1	1	1	1
33	337123	Fuse, 150 A, 125 VAC	1		1		1		1		1	
33	GM13492	Fuse, 200 A, 125 VAC		1		1		1		1		1
34	GM17663	Coupling, stepper motor	1	1	1	1	1	1	1	1	1	1
35	278672	Actuator	1	1	1	1	1	1	1	1	1	1
36	GM12289	Bracket, governor	1	1	1	1	1	1	1	1	1	1
37	239549	Connector, jack, 6-position	1	1	1	1	1	1	1	1	1	1
39	X-19-4	Washer, lock, 0.198 ID x 0.334 in. OD	2	2	2	2	2	2	2	2	2	2
42	X-22-12	Washer, lock, 0.262 ID x 0.743 in. OD	1	2								
47	X-25-115	Washer, plain, 0.203 ID x 0.438 in. OD	2	2	2	2	2	2	2	2	2	2
51	233959	Diode, 6 A	2	2	2	2	2	2	2	2	2	2
52	GM11859	Connector, 2-pin	1	1	1	1	1	1	1	1	1	1
53	269190	Connector, plug, 6-position	1	1	1	1	1	1	1	1	1	1
54	GM13269	Connector, 15-pin	1	1	1	1	1	1	1	1	1	1
55	GM11863	Connector, quick disconnect	1									
55	GM13490	Connector, quick disconnect		1	1	1	1	1	1	1	1	1
56	GM11864	Contact, quick disconnect	2									
56	GM13489	Contact, quick disconnect		2	2	2	2	2	2	2	2	2
58	X-352-116	Stud, 1/4-20 x 0.87 in.	1	1	1	1	1	1	1	1	1	1
60	X-400-142	Spacer, 0.260 ID x 0.5 OD x 0.188 in.	1	1	1	1	1	1	1	1	1	1
66	X-55-4	Screw, hex socket head machine	2	2	2	2	2	2	2	2	2	2
68	X-6128-30	Standoff insulator, 1/4-20 x 1 in.	1	1	1	1	1	1	1	1	1	1
72	X-67-116	Screw, hex washer, thread-forming	2	2	2	2	2	2	2	2	2	2
81	GM42300	Linkage, choke					1	1	1	1	1	1
82	X-36-1	Pin, cotter, 1/16 x 1/2 in.					1	1	1	1	1	1
83	GM42351	Spring, solenoid					1	1	1	1	1	1
84	GM42299	Bracket, choke solenoid mtg.					1	1	1	1	1	1
85	15 435 01	Solenoid					1	1	1	1	1	1
86	X-49-25	Screw, pan head, 6-32 x 1/4					2	2	2	2	2	2
87	265861	Spacer, 0.281 x 0.500 x 0.375					1	1	1	1	1	1
88	M933-06050-60	Screw, hex cap					1	1	1	1	1	1
89	M6923-06-80	Nut, hex, 6mm					1	1	1	1	1	1
90	GM47207	Subassembly, choke solenoid (includes items 81-86)					1	1	1	1	1	1

Note

Choke Solenoid Service Kit GM42302 includes items 81-89, air cleaner base gasket 12 041 02, choke solenoid harness GM42301, and instructions TT-1422.

Group 105: Engine, continued



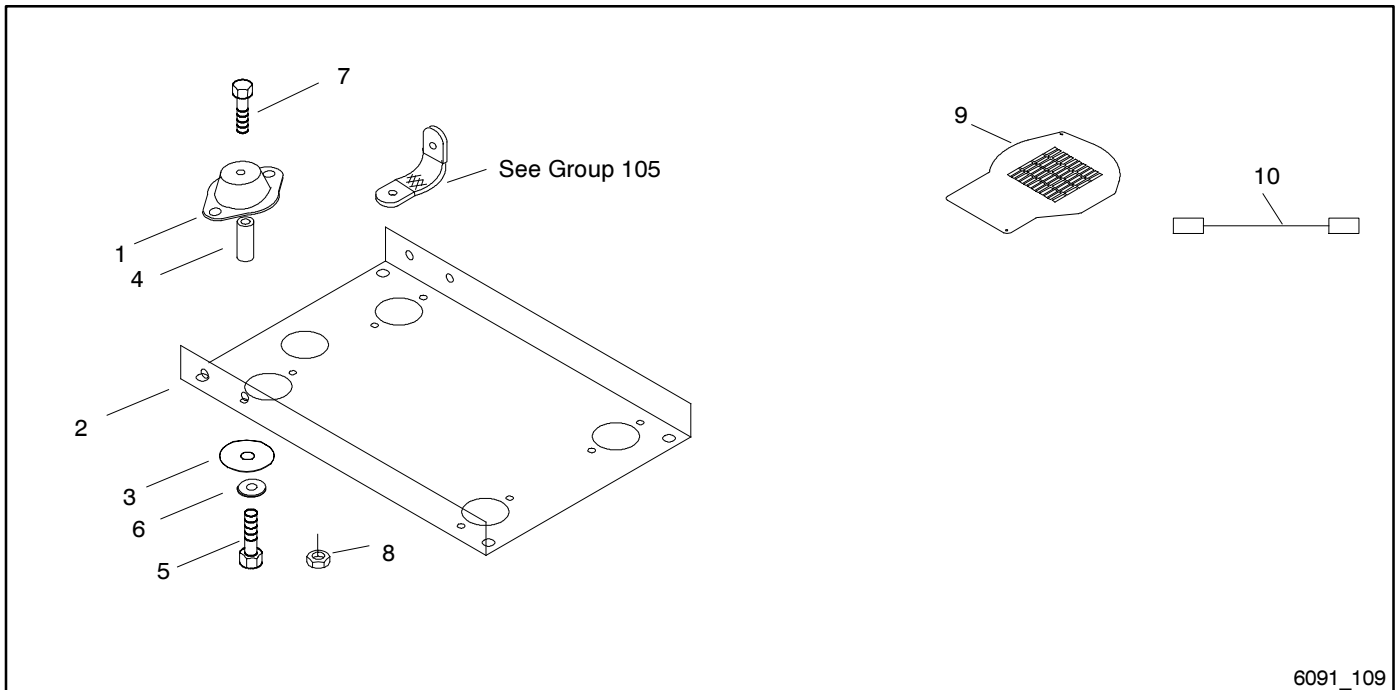
Group 105: Engine, continued

Item	Part Number	Description	Quantity		
			Variation		
			93-1	93-13	93-14
1	258659	Vibromount	2	2	2
2	290418	Strap, ground	1	1	1
3	345045	Clip, hose	1		
3	X-6084-1	Clip, J		1	1
4	GM50772	Relay service kit for old style relay 345079	1		
4	GM49746	Relay (new style)		1	1
5	359653	Valve, oil drain, 3/8-18 NPT	1	1	1
6	358285	Plate, mounting	1		
6	GM26026	Plate, mounting		1	1
7	24 096 17	Cover, blower housing	2		
8	B-358191	Engine assembly, CH20	1	1	
8	GM66707	Engine assembly, CH640			1
9	GM16283	Heater, block	1	1	1
10	GM48723	Bracket, relay mounting	1	1	1
11	GM19463	Heater, inlet 37 W, 120 V	1	1	1
12	GM19464	Tube, breather, copper, 0.375 in. OD	1	1	1
13	GM19465	Insulation, breather line	1	1	1
14	See Group 301	Harness, engine wiring	1	1	1
15	GM20548	Plug, hose, 1/2	1		
15	GM20547	Plug, hose, 3/8		1	1
16	M982-10-80	Nut, hex elastic stop	2	2	2
17	X-204-9	Pipe, 3/8 NPT x 1 in.	1	1	1
18	X-22-11	Washer, lock, 0.262 ID x 0.469 in. OD	3	2	2
19	X-22-16	Washer, lock, 0.326 ID x 0.883 in. OD	2	2	2
20	X-25-96	Washer, plain, 0.406 ID x 2 in. OD	3	3	3
21	X-301-23	Plug, button	1	1	1
22	X-426-18	Clamp, hose, 0.38/0.88 in.	1		
22	X-426-9	Clamp, hose, 0.25/0.70		1	1
23	X-545-155	Cable, battery, No. 4 x 35.43, black (-)	1	1	1
24	X-545-154	Cable, battery, No. 4 x 31.50 in., red (+)	1	1	1
25	X-582-4	Connector, hose + vibra seal	1		
25	X-216-23	Coupling, pipe, 3/8 in.		1	1
26	X-422-19	Line, flexible	1		
26	X-651-3	Hose, rubber		1	1
27	238915	Boot	3	1	1
28	X-97-22	Screw, hex head	4		
29	See Group 8	Carburetor assembly	1		
29	GM26187	Carburetor assembly		1	1
30	See Group 103	Fuel line and clamp		1	1
31	X-22-9	Washer, lock, 0.20 ID x 0.373 in. OD		1	1
32	X-22-14	Washer, lock, 0.391 ID x 0.975 in. OD	1	1	1
33	X-309-11	Clamp, hose	1	1	1
33	X-426-9	Clamp, hose, 0.25/0.70		1	1
34	X-400-91	Spacer, 0.406 ID x 0.625 OD x 0.5 in.		4	4
35	229127	Vibromount	1	1	1
36	GM20748	Boot, battery lug	1	1	1

Group 107: Nameplate and Decals

Item	Part Number	Description	Quantity			
			Variation			
			3	GR10	93-3	93-8
1	345016	Nameplate, model/ratings, Kohler	1	1	1	1
2	358313	Decal, electrical equipment	1	1		
3	GM11939	Decal, emissions	1	1		
3	GM19301	Decal, emissions			1	1
4	227620	Decal, flag			1	1
5	GM13680	Overlay, nameplate				1
6	GM28336	Decal, UL			1	1

Group 109: Skid and Plant Mounting

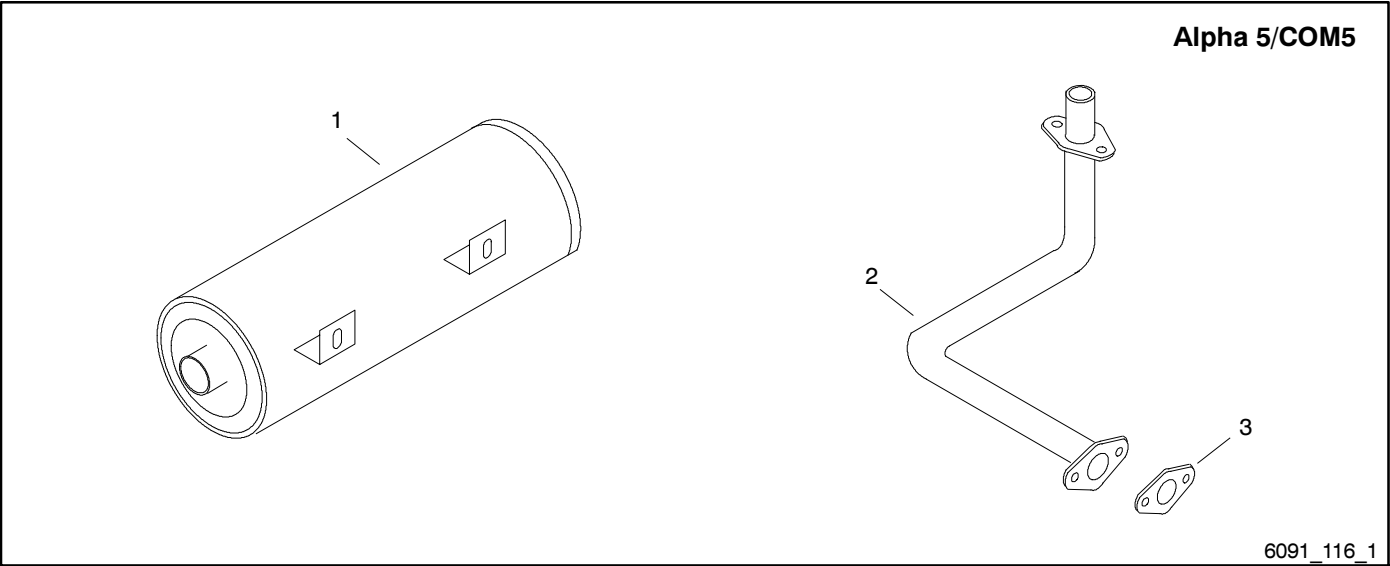


Item	Part Number	Description	Quantity	
			Variation	
			3	GR2
1	337104	Vibromount	4	4
2	GM22976	Bracket, engine mounting	1	1
3	X-25-146	Washer, plain, 0.406 ID x 1.5 in. OD	4	4
4	X-400-216	Spacer, 0.406 ID x 0.625 OD x 1.75 in.	4	4
5	M931-08070-60	Screw, hex cap		4
6	M125A-08-80	Washer, plain		4
7	M931-10070-60	Screw, hex cap	4	
8	M6923-10-80	Nut, hex	4	

Field Service Items

Item	Part Number	Description	Quantity	
			Variation	
			3	
9	GM23579	Plate, cover	1	
10	GM23713	Harness, extension, Alpha 5	1	

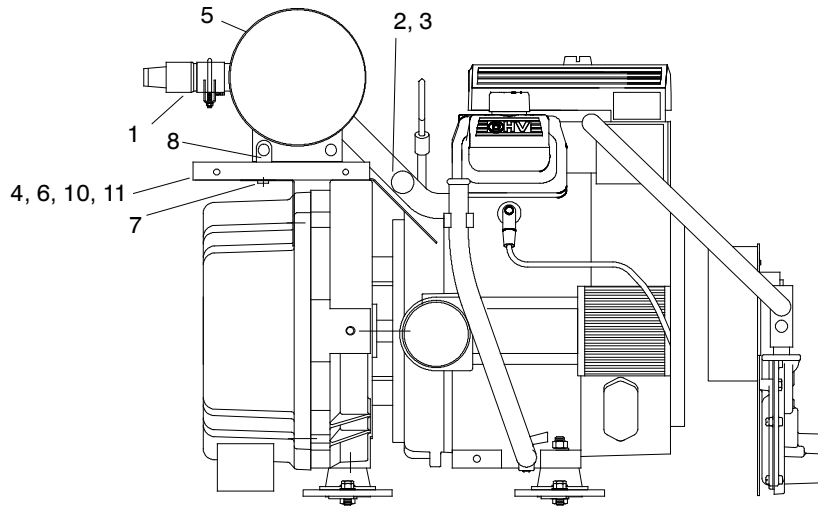
Group 116: Exhaust System



Item	Part Number	Description	Quantity		
			Variation		
			3	GR3	GR13
1	GM11509	Muffler, exhaust	1	1	1
2	GM17715	Pipe, exhaust	1	1	1
3	12 041 03	Gasket, exhaust manifold	2	2	2

Group 116: Exhaust System

COM7.5

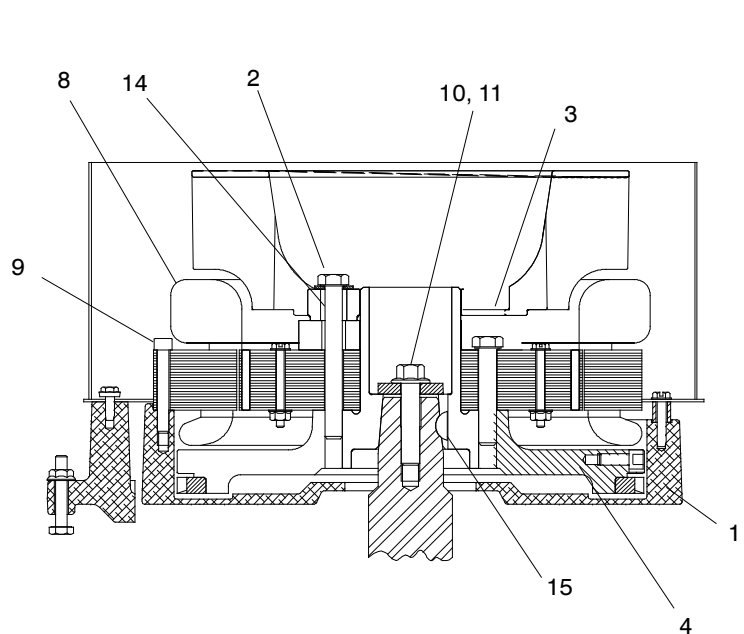


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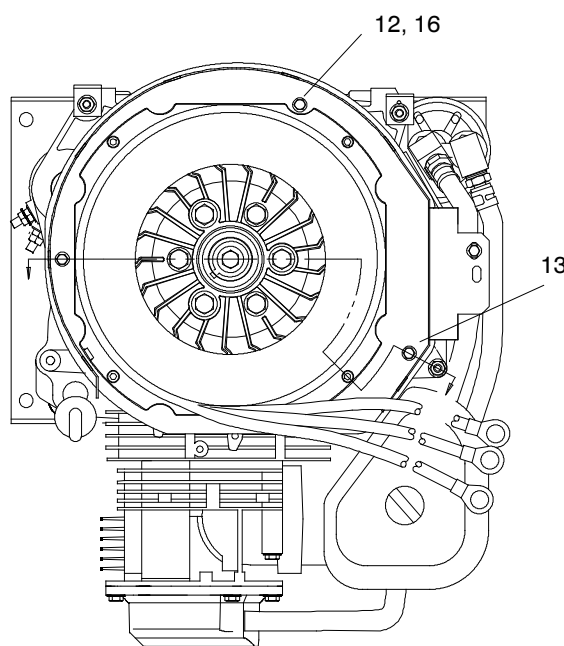
Item	Part Number	Description	Quantity
			Variation 93-4
1	GM39500	Arrester, spark	1
2	358224	Plug, water	1
3	358306	Gasket	1
4	GM11040-2	Insert, threaded (metric), 6mm	4
5	GM17084	Silencer, exhaust SISO	1
6	GM17086	Duct, exhaust, lower	1
7	GM17087	Bracket, duct mounting	1
8	GM20552	Bracket, exhaust	1
10	GM17089	Insulation, exhaust	1
11	X-25-45	Washer, plain, 0.203 ID x 0.75 in. OD	2

Group 201: Generator and Mounting

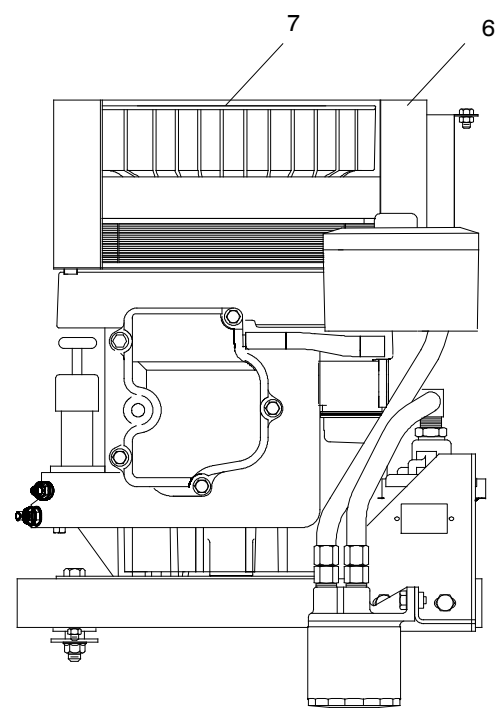
Alpha 5/COM5



Fan and Stator Detail



Top View



Side View

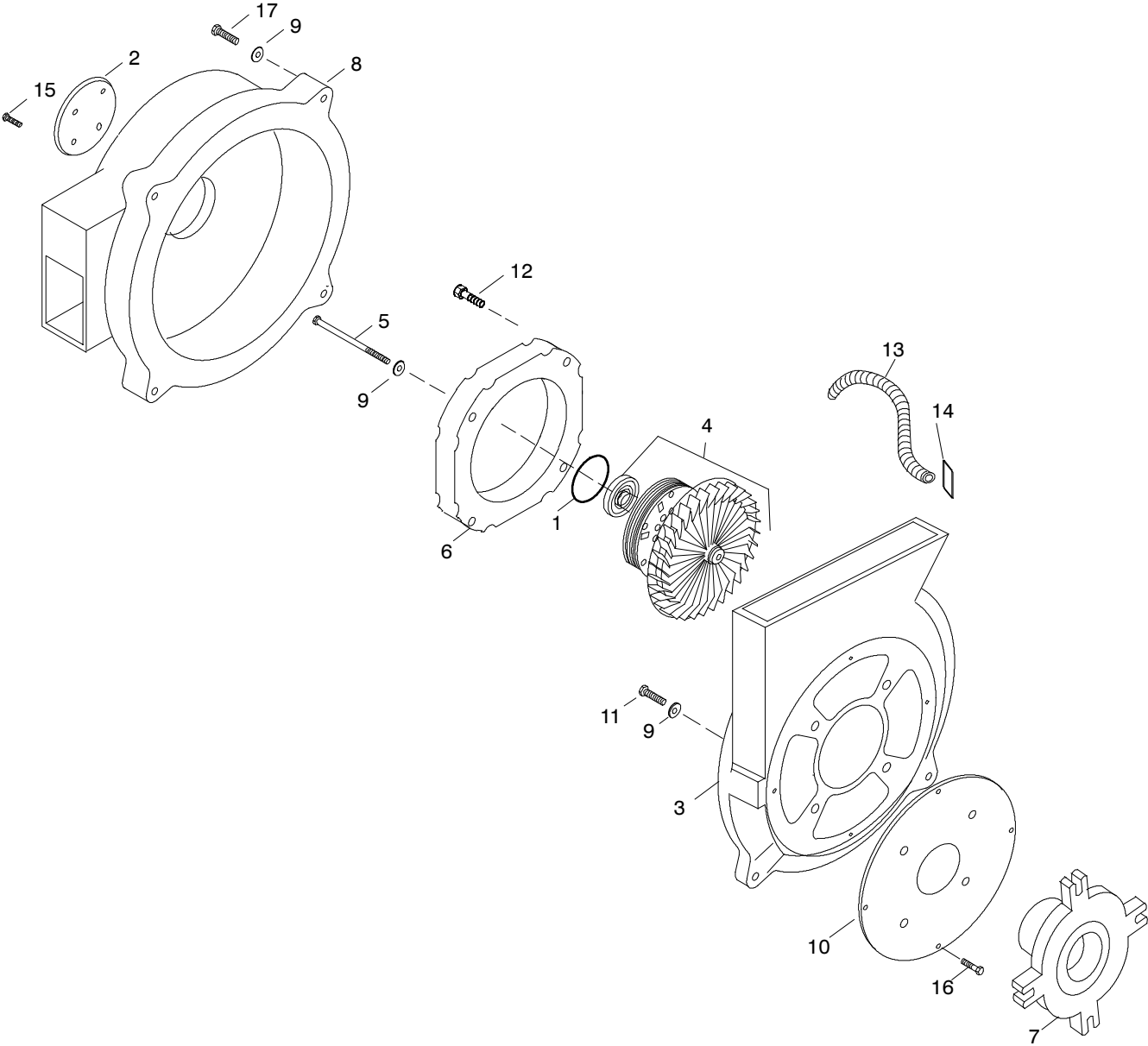
6091_201_1

Group 201: Generator and Mounting, continued

Item	Part Number	Description	Quantity				
			Variation				
			5	6	GR4	GR5	GR12
1	337148	Adapter, alternator	1	1	1	1	1
2	GM13832	Rotor subassembly	1	1	1	1	1
3	X-6238-1	Screw	3	3	3	3	3
4	GM13229	Flywheel assembly	1	1	1	1	1
6	GM11537	Scroll, alternator	1	1	1	1	1
7	GM21044	Fan, alternator	1	1	1	1	1
8	GM11539	Stator, wound, 48 volt	1		1		
8	GM13488	Stator, wound, 36 volt		1		1	
8	GM17813	Stator, wound, 96 volt					1
9	X-55-41	Screw, hex socket head machine	4	4	4	4	4
10	12 086 14	Screw, hex flange	1	1	1	1	1
11	12 468 03	Washer	1	1	1	1	1
12	X-67-129	Screw, hex washer, thread-forming	2	2	2	2	2
13	X-6216-1	Screw, Phillips hex crimp-tite	1	1	1	1	1
14	X-25-38	Washer, plain, 0.406 ID x 1.25 in. OD	3	3	3	3	3
15	X-42-15	Key, woodruff, 3/16 x 5/8	1	1	1	1	1
16	X-400-246	Spacer	2	2	2	2	2

Group 201: Generator and Mounting, continued

COM7.5



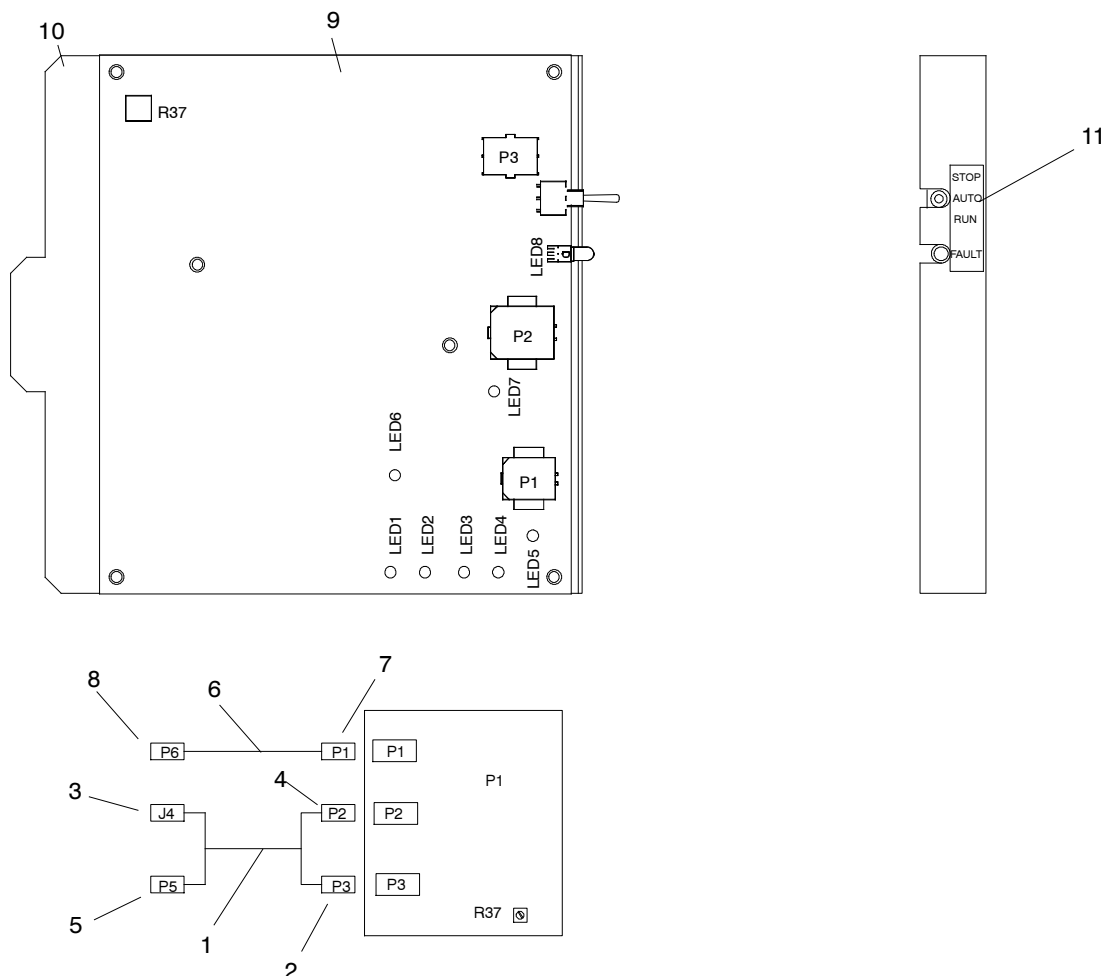
6091_201_2

Group 201: Generator and Mounting, continued

Item	Part Number	Description	Quantity		
			Variation		
			93-5	93-7	93-10
1	229110	O-ring	1	1	1
2	345024	Cover, bearing	1	1	1
3	345061	Adapter, alternator	1	1	1
4	A-345225	Rotor assembly (includes fan and bearing)	1	1	1
5	345222	Bolt, armature thru, 3/8-16 x 8 in.	1	1	1
6	GM28369	Stator, wound, 48 V	1		
6	GM21394	Stator, wound, 96 V		1	
6	GM26025	Stator, wound, 96 V			1
7	345324	Spacer, alternator adapter, 0.1 in.	1	1	1
8	345343	End bracket	1	1	1
9	X-25-37	Washer, plain	9	9	9
10	GM17255	Guard, adapter	1	1	1
11	X-6238-6	Bolt, hex cap	4	4	4
12	X-55-41	Screw, hex socket head machine	4	4	4
13	X-6003-116	Conduit, convoluted	1	1	1
14	X-6090-4	Grommet, U-channel	1	1	1
15	X-6216-1	Screw, Phillips hex crimpite	4	4	4
16	X-67-133	Screw, hex washer, thread-forming	4	4	4
17	X-6328-5	Bolt, hex cap	4	4	4
18	X-25-96	Washer, plain, 0.406 ID x 2 in. OD	1	1	1

Group 301: Controller and Mounting

Alpha 5/COM5



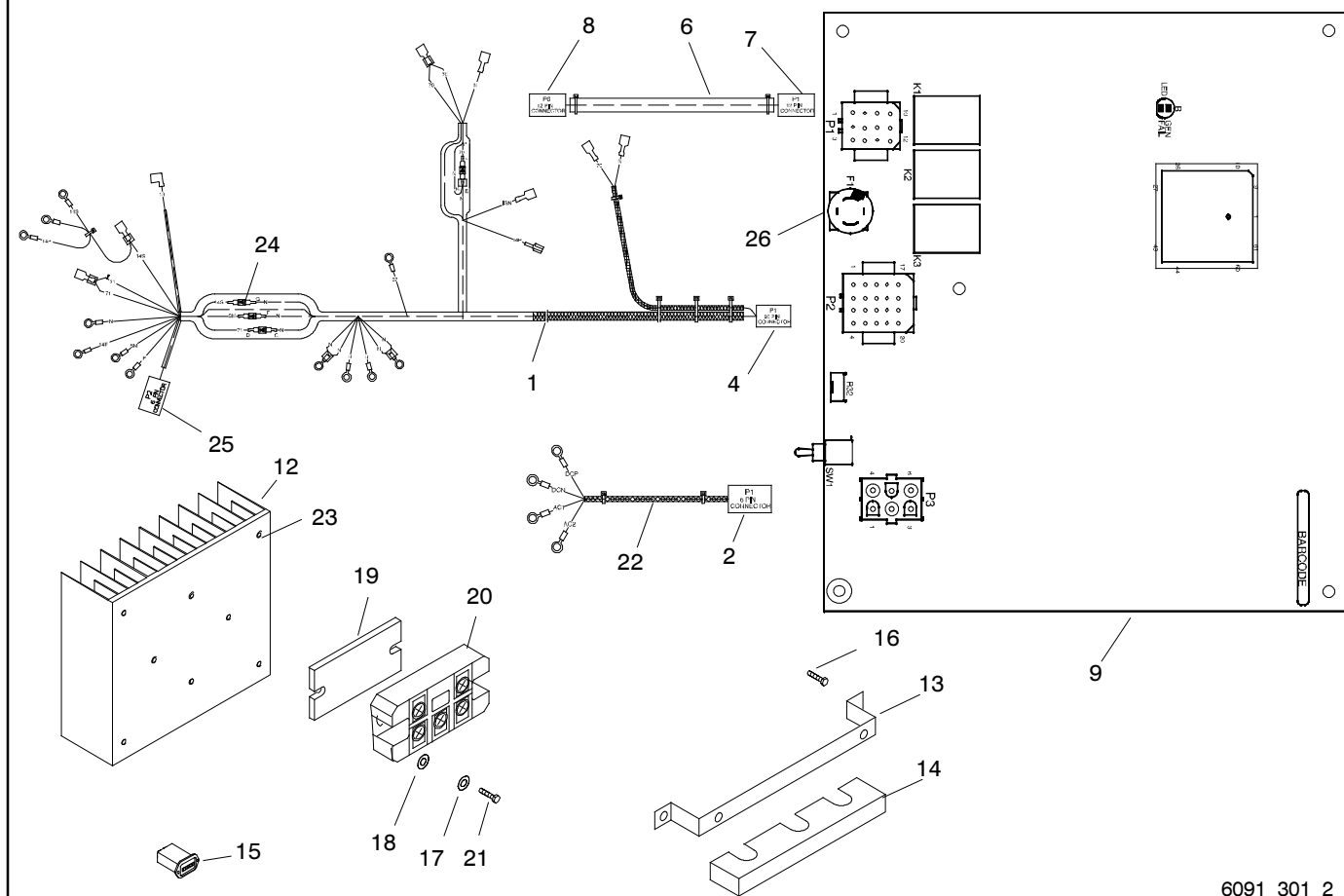
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Item	Part Number	Description	Quantity			
			Variation			
			7	GR8	GR9	GR11
1	GM11852	Harness, COM5 engine interface	1			
1	GM14244	Harness, COM5 engine interface		1	1	1
2	241617	Connector, plug, 6-position	1	1	1	1
3	GM13270	Connector, jack, 15-pin M-MNL	1	1	1	1
4	278775	Connector, plug, 20-position	1	1	1	1
5	GM11859	Connector, 2-pin M-MNL	1	1	1	1
6	GM11853	Harness, COM5 ALPHA interface	1			
6	GM14245	Harness, COM5 ALPHA interface		1	1	1
7	241605	Connector, plug, 12-position	1	1	1	1
8	GM13271	Connector, plug, 12-pin dual row M-MNL	1	1	1	1
9	GM38867*	Kit, PCB assembly, COM7.5 control	1	1	1	1
10	GM12306	Bracket, PCB mounting	1			
11	GM12309	Decal, controller	1			

* Control board kit GM38867 includes one control board (GM22402), three jumpers (294634), and instruction sheet (TT-1401).

Group 301: Controller and Mounting

COM7.5



6091_301_2

Item	Part Number	Description	Quantity		
			Variation		
			93-6	93-11	93-12
1	GM48724	Harness, engine (old style starter relay)(serviced with kit GM48724-S; kit includes GM55460)	1	1	1
1	GM55460	Harness, engine (used with starter relay GM49746)	1	1	1
2	241617	Connector, plug, 6-position	1	1	1
4	278775	Connector, plug, 20-position	1	1	1
6	GM14245	Harness, COM5 ALPHA interface	1	1	1
7	241605	Connector, plug, 12-position	1	1	1
8	GM13271	Connector, plug, 12-pin dual row M-MNL	1	1	1
9	GM38867*	Kit, PCB assembly, COM7.5 control	1	1	1
12	345317	Heatsink	1	1	1
13	GM23600	Bracket, loom	1		
14	GM23601	Clamp, loom	1		
15	238736	Meter, run time, 10000 hour	1	1	1
16	X-50-69	Screw, slotted pan head machine	4		
17	X-19-4	Washer, lock, 0.198 ID x 0.334 in. OD	2	2	2
18	X-25-115	Washer, plain, 0.203 ID x 0.438 in. OD	2	2	2
19	337465	Insulator, power module	1		
20	345316	Power module	1		
20	GM11857	Module, rectifier diode		1	1
21	X-55-4	Screw, hex socket head machine	2	2	2
22	GM20544	Harness, sensing	1	1	1
23	X-50-72	Screw, slotted pan head machine	4	4	4
24	233959	Diode, 6 amp	4	4	4
25	269190	Connector, plug, 6-position	1	1	1
26	GM22466	Fuse	1	1	1

* Control board kit GM38867 includes one control board (GM22402), three jumpers (294634), and instruction sheet (TT-1401).

Group 701: Literature

Item	Part Number	Description	Quantity		
			Variation		
			3	10	16
1	TP-6076	O/M ALPHA5 generator set	1		
2	TP-6119	O/I/M COM 7.5		1	
2	TP-6418	O/S/M COM 7.5			1
3	TP-6342	Warranty, 18-Month, Alpha COM5/7.5	1	1	
3	TP-6168	Warranty, Federal/CA Emissions 2002	1	1	1
4	TP-6091	P/C ALPHA5/COM5/7.5	1	1	1
5	TP-6092	S/M ALPHA5	1		
5	TP-6120	S/M COM 7.5		1	

Appendix A Abbreviations

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

A, amp	ampere	cert.	certificate, certification, certified	ESD	electrostatic discharge
ABDC	after bottom dead center			est.	estimated
AC	alternating current	cfh	cubic feet per hour	E-Stop	emergency stop
A/D	analog to digital	cfm	cubic feet per minute	etc.	et cetera (and so forth)
ADC	advanced digital control; analog to digital converter	CG	center of gravity	exh.	exhaust
adj.	adjust, adjustment	CID	cubic inch displacement	ext.	external
ADV	advertising dimensional drawing	CL	centerline	F	Fahrenheit, female
Ah	amp-hour	cm	centimeter	FHM	flat head machine (screw)
AHWT	anticipatory high water temperature	CMOS	complementary metal oxide substrate (semiconductor)	fl. oz.	fluid ounce
AISI	American Iron and Steel Institute	com	communications (port)	flex.	flexible
ALOP	anticipatory low oil pressure	coml	commercial	freq.	frequency
alt.	alternator	Coml/Rec	Commercial/Recreational	FS	full scale
Al	aluminum	conn.	connection	ft.	foot, feet
ANSI	American National Standards Institute (formerly American Standards Association, ASA)	cont.	continued	ft. lb.	foot pounds (torque)
AO	anticipatory only	CPVC	chlorinated polyvinyl chloride	ft./min.	feet per minute
APDC	Air Pollution Control District	crit.	critical	ftp	file transfer protocol
API	American Petroleum Institute	CSA	Canadian Standards Association	g	gram
approx.	approximate, approximately	CT	current transformer	ga.	gauge (meters, wire size)
APU	Auxiliary Power Unit	Cu	copper	gal.	gallon
AQMD	Air Quality Management District	cUL	Canadian Underwriter's Laboratories	gen.	generator
AR	as required, as requested	CUL	Canadian Underwriter's Laboratories	genset	generator set
AS	as supplied, as stated, as suggested	cu. in.	cubic inch	GFI	ground fault interrupter
ASE	American Society of Engineers	cw.	clockwise	GND, ⊕	ground
ASME	American Society of Mechanical Engineers	CWC	city water-cooled	gov.	governor
assy.	assembly	cyl.	cylinder	gph	gallons per hour
ASTM	American Society for Testing Materials	D/A	digital to analog	gpm	gallons per minute
ATDC	after top dead center	DAC	digital to analog converter	gr.	grade, gross
ATS	automatic transfer switch	dB	decibel	GRD	equipment ground
auto.	automatic	dB(A)	decibel (A weighted)	gr. wt.	gross weight
aux.	auxiliary	DC	direct current	H x W x D	height by width by depth
avg.	average	DCR	direct current resistance	HC	hex cap
AVR	automatic voltage regulator	deg., °	degree	HCHT	high cylinder head temperature
AWG	American Wire Gauge	dept.	department	HD	heavy duty
AWM	appliance wiring material	dia.	diameter	HET	high exhaust temp., high engine temp.
bat.	battery	DI/EO	dual inlet/end outlet	hex	hexagon
BBDC	before bottom dead center	DIN	Deutsches Institut für Normung e. V. (also Deutsche Industrie Normenausschuss)	Hg	mercury (element)
BC	battery charger, battery charging	DIP	dual inline package	HH	hex head
BCA	battery charging alternator	DPDT	double-pole, double-throw	HHC	hex head cap
BCI	Battery Council International	DPST	double-pole, single-throw	HP	horsepower
BDC	before dead center	DS	disconnect switch	hr.	hour
BHP	brake horsepower	DVR	digital voltage regulator	HS	heat shrink
blk.	black (paint color), block (engine)	E ² PROM, EEPROM	electrically-erasable programmable read-only memory	hsg.	housing
blk. htr.	block heater	E, emer.	emergency (power source)	HVAC	heating, ventilation, and air conditioning
BMEP	brake mean effective pressure	ECM	electronic control module, engine control module	HWT	high water temperature
bps	bits per second	EDI	electronic data interchange	Hz	hertz (cycles per second)
br.	brass	EFR	emergency frequency relay	IBC	International Building Code
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 ₂ O	inches of water
CAT5	Category 5 (network cable)	eng.	engine	in. Hg	inches of mercury
CB	circuit breaker	EPA	Environmental Protection Agency	in. lb.	inch pounds
CC	crank cycle	EPS	emergency power system	Inc.	incorporated
cc	cubic centimeter	ER	emergency relay	ind.	industrial
CCA	cold cranking amps	ES	engineering special, engineered special	int.	internal
ccw.	counterclockwise			int./ext.	internal/external
CEC	Canadian Electrical Code			I/O	input/output
				IP	internet protocol
				ISO	International Organization for Standardization
				J	joule
				JIS	Japanese Industry Standard
				k	kilo (1000)

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

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.

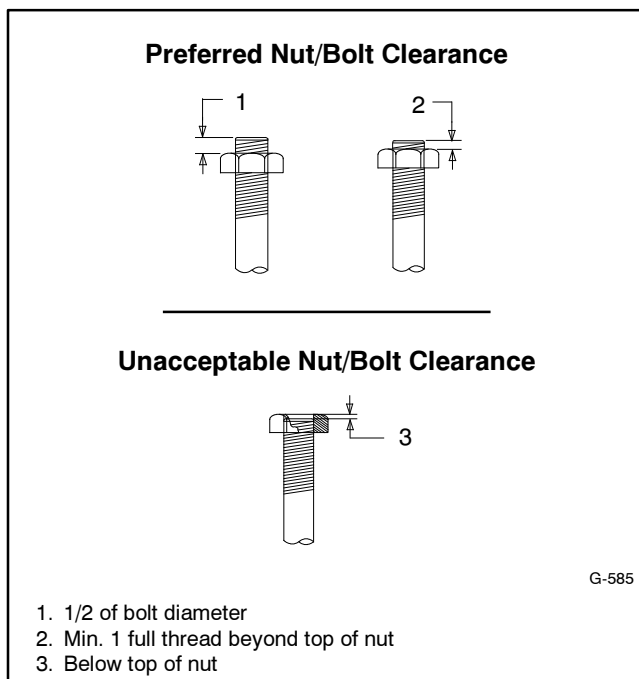


Figure 1 Acceptable Bolt Lengths

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.

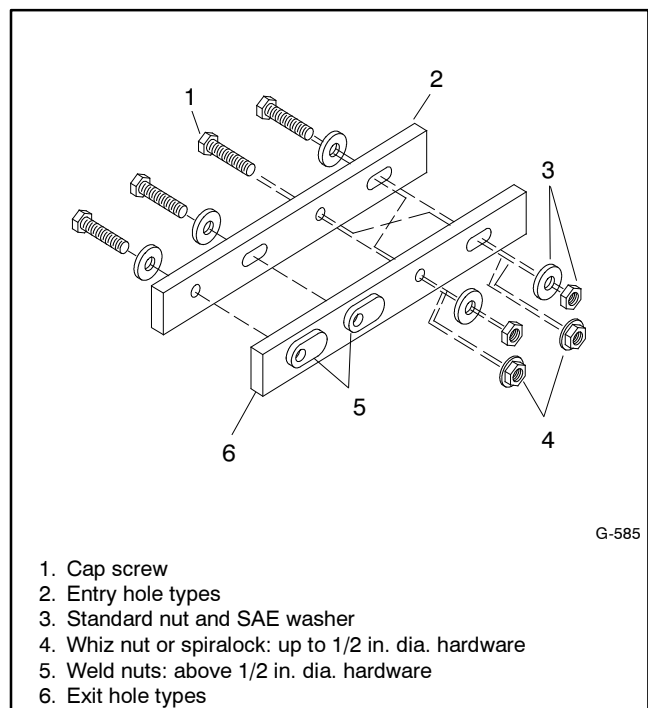


Figure 2 Acceptable Hardware Combinations

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	

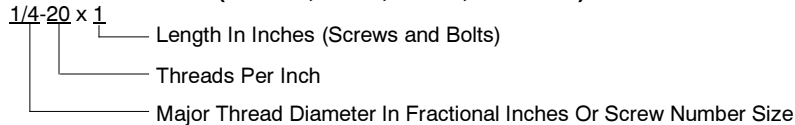
Hardness Grades	
American Standard	
Grade 2	
Grade 5	
Grade 8	
Grade 8/9 (Hex Socket Head)	
Metric	
Number stamped on hardware; 5.8 shown	

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

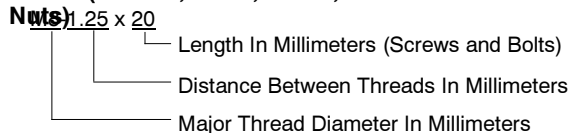
Phillips® screw is a registered trademark of Phillips Screw Company.

Sample Dimensions

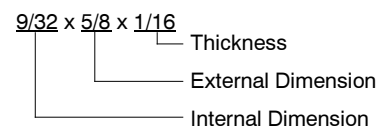
American Standard (Screws, Bolts, Studs, and Nuts)



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		
Hex Head Bolts (Grade 5)		Hex Head Bolts, cont.		Hex Nuts				
X-465-17	1/4-20 x .38	X-6238-14	3/8-24 x .75	X-6009-1	1-8	Standard		
X-465-6	1/4-20 x .50	X-6238-16	3/8-24 x 1.25					
X-465-2	1/4-20 x .62	X-6238-21	3/8-24 x 4.00					
X-465-16	1/4-20 x .75	X-6238-22	3/8-24 x 4.50					
X-465-18	1/4-20 x .88				X-6210-3	6-32	Whiz	
X-465-7	1/4-20 x 1.00	X-6024-5	7/16-14 x .75		X-6210-4	8-32	Whiz	
X-465-8	1/4-20 x 1.25	X-6024-2	7/16-14 x 1.00		X-6210-5	10-24	Whiz	
X-465-9	1/4-20 x 1.50	X-6024-8	7/16-14 x 1.25		X-6210-1	10-32	Whiz	
X-465-10	1/4-20 x 1.75	X-6024-3	7/16-14 x 1.50		X-6210-2	1/4-20	Spiralock	
X-465-11	1/4-20 x 2.00	X-6024-4	7/16-14 x 2.00		X-6210-6	1/4-28	Spiralock	
X-465-12	1/4-20 x 2.25	X-6024-11	7/16-14 x 2.75		X-6210-7	5/16-18	Spiralock	
X-465-14	1/4-20 x 2.75	X-6024-12	7/16-14 x 6.50		X-6210-8	5/16-24	Spiralock	
X-465-21	1/4-20 x 5.00				X-6210-9	3/8-16	Spiralock	
X-465-25	1/4-28 x .38	X-129-15	1/2-13 x .75		X-6210-10	3/8-24	Spiralock	
X-465-20	1/4-28 x 1.00	X-129-17	1/2-13 x 1.00	X-6210-11	7/16-14	Spiralock		
		X-129-18	1/2-13 x 1.25	X-6210-12	1/2-13	Spiralock		
		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-125-3	5/16-18 x .75	X-129-22	1/2-13 x 2.25	X-85-3	5/8-11	Standard		
X-125-31	5/16-18 x .88	X-129-23	1/2-13 x 2.50	X-88-12	3/4-10	Standard		
X-125-5	5/16-18 x 1.00	X-129-24	1/2-13 x 2.75	X-89-2	1/2-20	Standard		
X-125-24	5/16-18 x 1.25	X-129-25	1/2-13 x 3.00					
X-125-34	5/16-18 x 1.50	X-129-27	1/2-13 x 3.50					
X-125-25	5/16-18 x 1.75	X-129-29	1/2-13 x 4.00					
X-125-26	5/16-18 x 2.00	X-129-30	1/2-13 x 4.50					
230578	5/16-18 x 2.25	X-463-9	1/2-13 x 5.50					
X-125-29	5/16-18 x 2.50	X-129-44	1/2-13 x 6.00					
X-125-27	5/16-18 x 2.75							
X-125-28	5/16-18 x 3.00	X-129-51	1/2-20 x .75	X-25-46	.125	.250	.022	#4
X-125-22	5/16-18 x 4.50	X-129-45	1/2-20 x 1.25	X-25-9	.156	.375	.049	#6
X-125-32	5/16-18 x 5.00	X-129-52	1/2-20 x 1.50	X-25-48	.188	.438	.049	#8
X-125-35	5/16-18 x 5.50			X-25-36	.219	.500	.049	#10
X-125-36	5/16-18 x 6.00	X-6021-3	5/8-11 x 1.00	X-25-40	.281	.625	.065	1/4
X-125-40	5/16-18 x 6.50	X-6021-4	5/8-11 x 1.25	X-25-85	.344	.687	.065	5/16
		X-6021-2	5/8-11 x 1.50	X-25-37	.406	.812	.065	3/8
X-125-43	5/16-24 x 1.75	X-6021-1	5/8-11 x 1.75	X-25-34	.469	.922	.065	7/16
X-125-44	5/16-24 x 2.50	273049	5/8-11 x 2.00	X-25-26	.531	1.062	.095	1/2
X-125-30	5/16-24 x .75	X-6021-5	5/8-11 x 2.25	X-25-15	.656	1.312	.095	5/8
X-125-39	5/16-24 x 2.00	X-6021-6	5/8-11 x 2.50	X-25-29	.812	1.469	.134	3/4
X-125-38	5/16-24 x 2.75	X-6021-7	5/8-11 x 2.75	X-25-127	1.062	2.000	.134	1
		X-6021-12	5/8-11 x 3.75					
X-6238-2	3/8-16 x .62	X-6021-11	5/8-11 x 4.50					
X-6238-10	3/8-16 x .75	X-6021-10	5/8-11 x 6.00					
X-6238-3	3/8-16 x .88							
X-6238-11	3/8-16 x 1.00	X-6021-9	5/8-18 x 2.50					
X-6238-4	3/8-16 x 1.25							
X-6238-5	3/8-16 x 1.50	X-6239-1	3/4-10 x 1.00					
X-6238-1	3/8-16 x 1.75	X-6239-8	3/4-10 x 1.25					
X-6238-6	3/8-16 x 2.00	X-6239-2	3/4-10 x 1.50					
X-6238-17	3/8-16 x 2.25	X-6239-3	3/4-10 x 2.00					
X-6238-7	3/8-16 x 2.50	X-6239-4	3/4-10 x 2.50					
X-6238-8	3/8-16 x 2.75	X-6239-5	3/4-10 x 3.00					
X-6238-9	3/8-16 x 3.00	X-6239-6	3/4-10 x 3.50					
X-6238-19	3/8-16 x 3.25							
X-6238-12	3/8-16 x 3.50	X-792-1	1-8 x 2.25					
X-6238-20	3/8-16 x 3.75	X-792-5	1-8 x 3.00					
X-6238-13	3/8-16 x 4.50	X-792-8	1-8 x 5.00					
X-6238-18	3/8-16 x 5.50							
X-6238-25	3/8-16 x 6.50							

Metric

Hex head bolts are hardness grade 8.8 unless noted.

Part No. Dimensions Hex Head Bolts (Partial Thread)

M931-05055-60	M5-0.80 x 55
M931-06040-60	M6-1.00 x 40
M931-06055-60	M6-1.00 x 55
M931-06060-60	M6-1.00 x 60
M931-06060-SS	M6-1.00 x 60
M931-06070-60	M6-1.00 x 70
M931-06070-SS	M6-1.00 x 70
M931-06075-60	M6-1.00 x 75
M931-06090-60	M6-1.00 x 90
M931-06145-60	M6-1.00 x 145
M931-06150-60	M6-1.00 x 150
M931-08035-60	M8-1.25 x 35
M931-08040-60	M8-1.25 x 40
M931-08045-60	M8-1.25 x 45
M931-08050-60	M8-1.25 x 50
M931-08055-60	M8-1.25 x 55
M931-08055-82	M8-1.25 x 55*
M931-08060-60	M8-1.25 x 60
M931-08070-60	M8-1.25 x 70
M931-08070-82	M8-1.25 x 70*
M931-08075-60	M8-1.25 x 75
M931-08080-60	M8-1.25 x 80
M931-08090-60	M8-1.25 x 90
M931-08095-60	M8-1.25 x 95
M931-08100-60	M8-1.25 x 100
M931-08110-60	M8-1.25 x 110
M931-08120-60	M8-1.25 x 120
M931-08130-60	M8-1.25 x 130
M931-08140-60	M8-1.25 x 140
M931-08150-60	M8-1.25 x 150
M931-08200-60	M8-1.25 x 200
M931-10040-82	M10-1.25 x 40*
M931-10040-60	M10-1.50 x 40
M931-10045-60	M10-1.50 x 45
M931-10050-60	M10-1.50 x 50
M931-10050-82	M10-1.25 x 50*
M931-10055-60	M10-1.50 x 55
M931-10060-60	M10-1.50 x 60
M931-10065-60	M10-1.50 x 65
M931-10070-60	M10-1.50 x 70
M931-10080-60	M10-1.50 x 80
M931-10080-82	M10-1.25 x 80*
M931-10090-60	M10-1.50 x 90
M931-10090-82	M10-1.50 x 90*
M931-10100-60	M10-1.50 x 100
M931-10110-60	M10-1.50 x 110
M931-10120-60	M10-1.50 x 120
M931-10130-60	M10-1.50 x 130
M931-10140-60	M10-1.50 x 140
M931-10180-60	M10-1.50 x 180
M931-10235-60	M10-1.50 x 235
M931-10260-60	M10-1.50 x 260
M960-10330-60	M10-1.25 x 330
M931-12045-60	M12-1.75 x 45
M960-12050-60	M12-1.25 x 50
M960-12050-82	M12-1.25 x 50*
M931-12050-60	M12-1.75 x 50
M931-12050-82	M12-1.75 x 50*
M931-12055-60	M12-1.75 x 55
M931-12060-60	M12-1.75 x 60
M931-12060-82	M12-1.75 x 60*
M931-12065-60	M12-1.75 x 65
M931-12075-60	M12-1.75 x 75
M931-12080-60	M12-1.75 x 80
M931-12090-60	M12-1.75 x 90
M931-12100-60	M12-1.75 x 100
M931-12110-60	M12-1.75 x 110

Part No. Dimensions Hex Head Bolts (Partial Thread), continued

M960-16090-60	M16-1.50 x 90
M931-16090-60	M16-2.00 x 90
M931-16100-60	M16-2.00 x 100
M931-16100-82	M16-2.00 x 100*
M931-16120-60	M16-2.00 x 120
M931-16150-60	M16-2.00 x 150
M931-20065-60	M20-2.50 x 65
M931-20090-60	M20-2.50 x 90
M931-20100-60	M20-2.50 x 100
M931-20120-60	M20-2.50 x 120
M931-20140-60	M20-2.50 x 140
M931-20160-60	M20-2.50 x 160
M931-22090-60	M22-2.50 x 90
M931-22120-60	M22-2.50 x 120
M931-22160-60	M22-2.50 x 160
M931-24090-60	M24-3.00 x 90
M931-24120-60	M24-3.00 x 120
M931-24160-60	M24-3.00 x 160
M931-24200-60	M24-3.00 x 200

Hex Head Bolts (Full Thread)

M933-04006-60	M4-0.70 x 6
M933-05030-60	M5-0.80 x 30
M933-05035-60	M5-0.80 x 35
M933-05050-60	M5-0.80 x 50
M933-06010-60	M6-1.00 x 10
M933-06012-60	M6-1.00 x 12
M933-06014-60	M6-1.00 x 14
M933-06016-60	M6-1.00 x 16
M933-06020-60	M6-1.00 x 20
M933-06025-60	M6-1.00 x 25
M933-06030-60	M6-1.00 x 30
M933-06040-60	M6-1.00 x 40
M933-06050-60	M6-1.00 x 50
M933-07025-60	M7-1.00 x 25
M933-08010-60	M8-1.25 x 10
M933-08012-60	M8-1.25 x 12
M933-08016-60	M8-1.25 x 16
M933-08020-60	M8-1.25 x 20
M933-08025-60	M8-1.25 x 25
M933-08030-60	M8-1.25 x 30
M933-08030-82	M8-1.25 x 30*
M933-10012-60	M10-1.50 x 12
M961-10020-60	M10-1.25 x 20
M933-10020-60	M10-1.50 x 20
M933-10025-60	M10-1.50 x 25
M961-10025-60	M10-1.25 x 25
M933-10025-82	M10-1.50 x 25*
M961-10030-60	M10-1.25 x 30
M933-10030-60	M10-1.50 x 30
M933-10030-82	M10-1.50 x 30*
M961-10035-60	M10-1.25 x 35
M933-10035-60	M10-1.50 x 35
M933-10035-82	M10-1.50 x 35*
M961-10040-60	M10-1.25 x 40

Part No. Dimensions Hex Head Bolts (Full Thread), continued

M933-12016-60	M12-1.75 x 16
M933-12020-60	M12-1.75 x 20
M961-12020-60F	M12-1.50 x 20
M933-12025-60	M12-1.75 x 25
M933-12025-82	M12-1.75 x 25*
M961-12030-60	M12-1.25 x 30
M933-12030-82	M12-1.75 x 30*
M961-12030-82F	M12-1.50 x 30*
M933-12030-60	M12-1.75 x 30
M933-12035-60	M12-1.75 x 35
M961-12040-82	M12-1.25 x 40*
M933-12040-60	M12-1.75 x 40
M933-12040-82	M12-1.75 x 40*
M961-14025-60	M14-1.50 x 25
M933-14025-60	M14-2.00 x 25
M961-14050-82	M14-1.50 x 50*
M961-16025-60	M16-1.50 x 25
M933-16025-60	M16-2.00 x 25
M961-16030-82	M16-1.50 x 30*
M933-16030-82	M16-2.00 x 30*
M933-16035-60	M16-2.00 x 35
M961-16040-60	M16-1.50 x 40
M933-16040-60	M16-2.00 x 40
M961-16045-82	M16-1.50 x 45*
M933-16045-82	M16-2.00 x 45*
M933-16050-60	M16-2.00 x 50
M933-16050-82	M16-2.00 x 50*
M933-16060-60	M16-2.00 x 60
M933-16070-60	M16-2.00 x 70
M933-18035-60	M18-2.50 x 35
M933-18050-60	M18-2.50 x 50
M933-18060-60	M18-2.50 x 60
M933-20050-60	M20-2.50 x 50
M933-20055-60	M20-2.50 x 55
M933-24060-60	M24-3.00 x 60
M933-24065-60	M24-3.00 x 65
M933-24070-60	M24-3.00 x 70

Pan Head Machine Screws

M7985A-03010-20	M3-0.50 x 10
M7985A-03012-20	M3-0.50 x 12
M7985A-04010-20	M4-0.70 x 10
M7985A-04016-20	M4-0.70 x 16
M7985A-04020-20	M4-0.70 x 20
M7985A-04050-20	M4-0.70 x 50
M7985A-04100-20	M4-0.70 x 100
M7985A-05010-20	M5-0.80 x 10
M7985A-05012-20	M5-0.80 x 12
M7985A-05016-20	M5-0.80 x 16
M7985A-05020-20	M5-0.80 x 20
M7985A-05025-20	M5-0.80 x 25
M7985A-05030-20	M5-0.80 x 30
M7985A-05080-20	M5-0.80 x 80
M7985A-05100-20	M5-0.80 x 100
M7985A-06100-20	M6-1.00 x 100

Flat Head Machine Screws

M965A-04012-SS	M4-0.70 x 12
M965A-05012-SS	M5-0.80 x 12
M965A-05016-20	M5-0.80 x 16
M965A-06012-20	M6-1.00 x 12

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

Metric, continued

Part No.	Dimensions	Type
Hex Nuts		
M934-03-50	M3-0.50	Standard
M934-04-50	M4-0.70	Standard
M934-04-B	M4-0.70	Brass
M934-05-50	M5-0.80	Standard
M934-06-60	M6-1.00	Standard
M934-06-64	M6-1.00	Std. (green)
M6923-06-80	M6-1.00	Spiralock
M982-06-80	M6-1.00	Elastic Stop
M934-08-60	M8-1.25	Standard
M6923-08-80	M8-1.25	Spiralock
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	Spiralock
M6923-10-62	M10-1.50	Spiralock†
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	Spiralock
M982-12-80	M12-1.75	Elastic Stop
M982-14-60	M14-2.00	Elastic Stop
M6923-16-80	M16-2.00	Spiralock
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-6091 1/09e

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