

# Service Parts

## Commercial Mobile Generator Sets



Models:

**10/13/15ERG**

**KOHLER**<sup>®</sup>  
POWER SYSTEMS

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

TP-6337 3/06a

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# Introduction

This manual lists service replacement parts for 10-15ERG 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

Group Title	<i>Engine Block/Lower End</i>	<i>Engine Head/Upper End</i>	<i>Engine Trim Parts</i>	<i>Air Intake</i>	<i>Fuel System</i>	<i>Cooling System</i>	<i>Engine</i>	<i>Nameplates and Decals</i>	<i>Skid and Plant Mounting</i>	<i>Generator and Mounting</i>	<i>Controller and Mounting</i>	<i>Literature</i>
Group No.	1	2	3	101	103	104	105	107	109	201	301	701
Spec No.	Variation Number											
<b>10ERG</b>												
GM34867-GA1	1	1	1	1	1	1	1	1	1	MA8	1	24
GM34867-GA4	1	1	2	2	2	1	2	1	1	MA8	2	24
GM39948-GA1	1	1	3	1	1	2	3	1	1	MA8	3	24
GM39948-GA4	1	1	4	2	2	2	4	1	1	MA8	4	24
<b>13ERG</b>												
GM34867-GA2	1	1	1	1	1	1	1	1	1	MA9	1	25
GM34867-GA5	1	1	2	2	2	1	2	1	1	MA9	2	25
GM39948-GA2	1	1	3	1	1	2	3	1	1	MA9	3	25
GM39948-GA5	1	1	4	2	2	2	4	1	1	MA9	4	25
<b>15ERG</b>												
GM34867-GA3	1	1	1	1	1	1	1	1	1	MA1	1	26
GM39948-GA3	1	1	3	1	1	2	3	1	1	MA1	3	26

# Notes

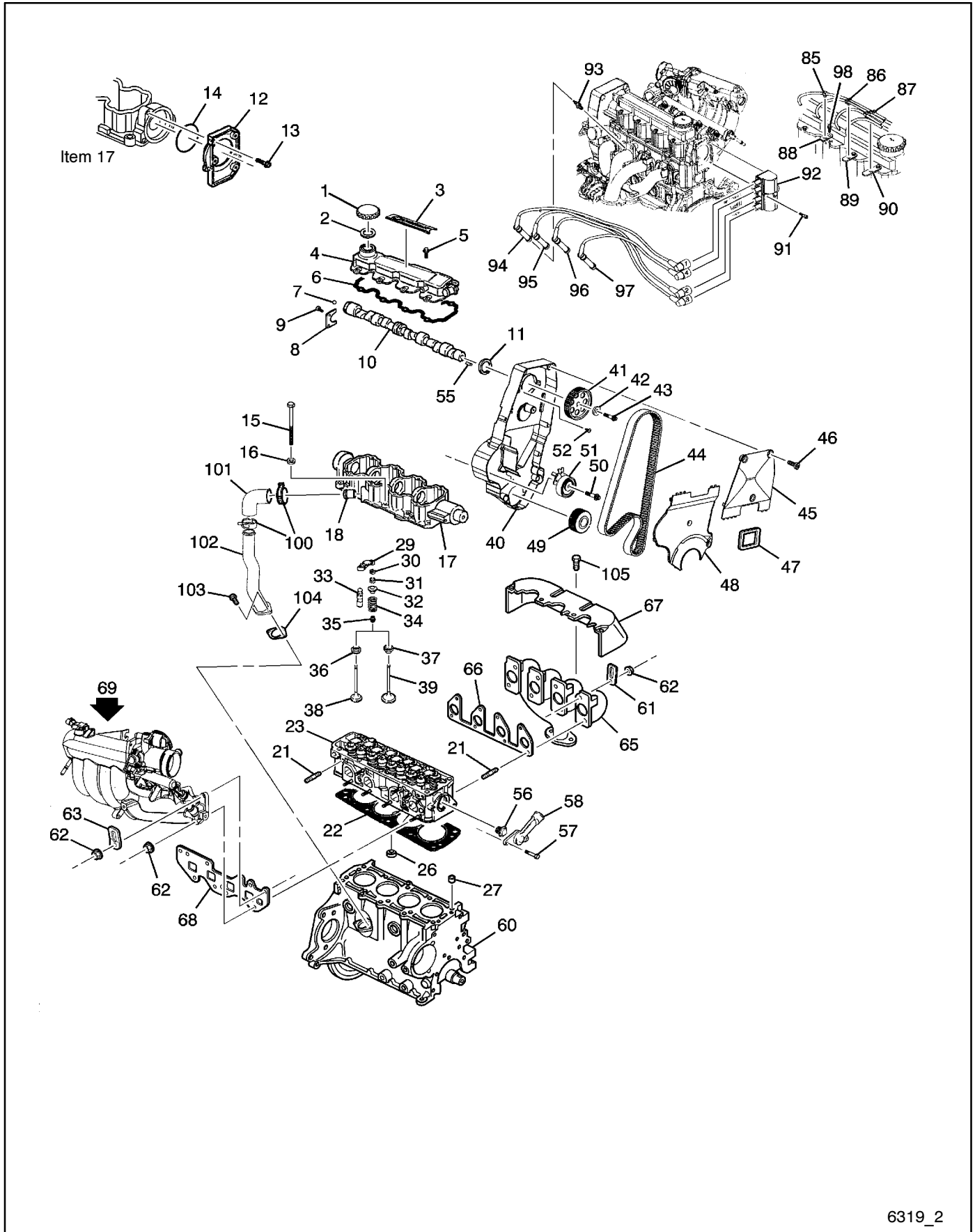


## Group 1: Engine Block/Lower End

Item	Part Number	Description	Quantity		Item	Part Number	Description	Quantity	
			Variation	1				Variation	1
1	GM38640	Ring kit, piston (part of item 2)		4	80	GM28351	Element, oil filter		1
2	GM38641	Piston w/pin (incl. items 1, 5, and 6)		1	81	GM38681	Fitting, oil filter		1
3	GM38642	Bearing kit, connecting rod, std.		1	82	GM38682	Sprocket, water pump (not shown)		1
3	GM38643	Bearing kit, connecting rod, 0.25 mm OS		1	83	GM38683	Plug, water pump hole		1
5	GM38644	Rod, connecting (part of item 2)		4	86	GM38684	Valve, oil filter bypass		1
6	GM38645	Bolt, connecting rod (part of item 2)		8	91	GM38685	Bolt, flywheel		6
7	GM38646	Pulley, crankshaft		1	93	GM38686	Gear, ring (part of item 99)		1
8	GM38647	Washer, crankshaft pulley		1	97	GM38687	Pin		2
9	GM38648	Bolt, crankshaft pulley		1	99	GM38688	Flywheel		1
13	-	Indicator, oil level (See Group 3)		1	101	GM38689	Bolt, water pump cover		3
14	-	Tube, oil level (See Group 3)		1	102	GM38690	Pump, water		1
16	GM18933	Sealer, oil level ind. tube	AR		103	GM38691	Seal, water pump cover		1
17	GM38651	Plug, engine block cool hole		7	104	GM38692	Pin		1
20	GM38652	Plug, engine block cool hole	AR		105	GM38693	Gasket, oil pump		1
21	GM38653	Block, engine (includes block, piston, rings)		1	106	GM38694	Pump, oil (incl. items 24-27, 121, 125)		1
22	GM38654	Seal, crankshaft oil		1	107	GM38695	Bolt, oil pump		6
23	GM38655	Bolt, crankshaft bearing cap		10	108	GM38696	Seal		1
24	GM38656	Bolt, oil pump cover (part of item 106)		5	109	GM38697	Seal, oil pump suction pipe		1
25	GM38657	Cover, oil pump (part of item 106)		1	110	GM38698	Pipe, oil pump suction (part of item 130)		1
26	GM38658	Gear, oil pump (part of item 106)		1	111	GM38717	Bolt, oil pump screen		2
27	GM38659	Gear, oil pump drive (part of item 106)		1	112	GM38699	Bolt, oil pump screen bracket		1
28	GM38660	Seal, oil pump housing		1	113	GM38662	Baffle, oil pan		1
29	GM38661	Plug, oil pump housing		1	114	GM38696	Seal, oil pan drain plug (part of item 41)		1
31	—	See item 113			115	GM38700	Plug, oil pan drain (part of item 41)		1
32	—	See item 113			120	GM38701	Spring, oil pressure relief valve (part of item 106)		1
33	GM38663	Clamp, PVC hose		1	121	GM38702	Plug, oil pressure relief valve bore		1
34	GM38664	Hose, PVC		1	122	-	Seal, oil fill cap (See Group 3)		1
35	GM38665	Tube, PVC		1	123	GM38704	Switch, engine oil pressure		1
36	GM38666	Bolt, PVC tube		2	124	GM38705	Valve, oil pressure relief		1
37	GM38667	Gasket, PVC tube		1	125	GM38706	Gasket, oil pressure relief valve bore plug		1
38	GM38668	Gasket, oil pan		1	126	GM38707	Pin, cylinder head		2
41	GM38669	Pan, oil (incl. items 31, 113, 114, 115)		1	128	GM38708	Bracket, oil pump screen		1
42	GM38670	Bolt, oil pan		5	130	GM38709	Screen, oil pump (incl. items 110, 129)		1
43	GM38671	Starter		1	131	GM38710	Bolt, crankshaft position sensor bracket		1
44	GM38672	Bolt, starter		1	132	GM38711	Sensor, crankshaft position		1
45	GM38673	Stud, starter		1	133	GM38712	Bracket, crankshaft position sensor lead clip		1
60	GM38674	Crankshaft		1	134	GM38710	Bolt, crankshaft position sensor		1
62	GM38675	Bearing kit, crankshaft (pos. #1, 2, 4, 5, std-brown)		4	134	GM38713	Bolt, crankshaft position sensor		3
62	GM38676	Bearing kit, crankshaft (pos. #1, 2, 4, 5, OS 0.25 mm-green)		4	136	GM38714	Seal, oil pump		1
62	GM38677	Bearing kit, crankshaft (pos. #1, 2, 3, 4, 5, std-brown/blue)		4					
62	GM38678	Bearing kit, crankshaft (pos. #1, 2, 3, 4, 5, 0.50 mm-green/blue)		4					
62	GM38679	Bearing kit, crankshaft (pos. #3, std-brown)		4					
62	GM38680	Bearing kit, crankshaft (pos. #3, std-green)		4					

AR As Required.

# Group 2: Engine Head/Upper End

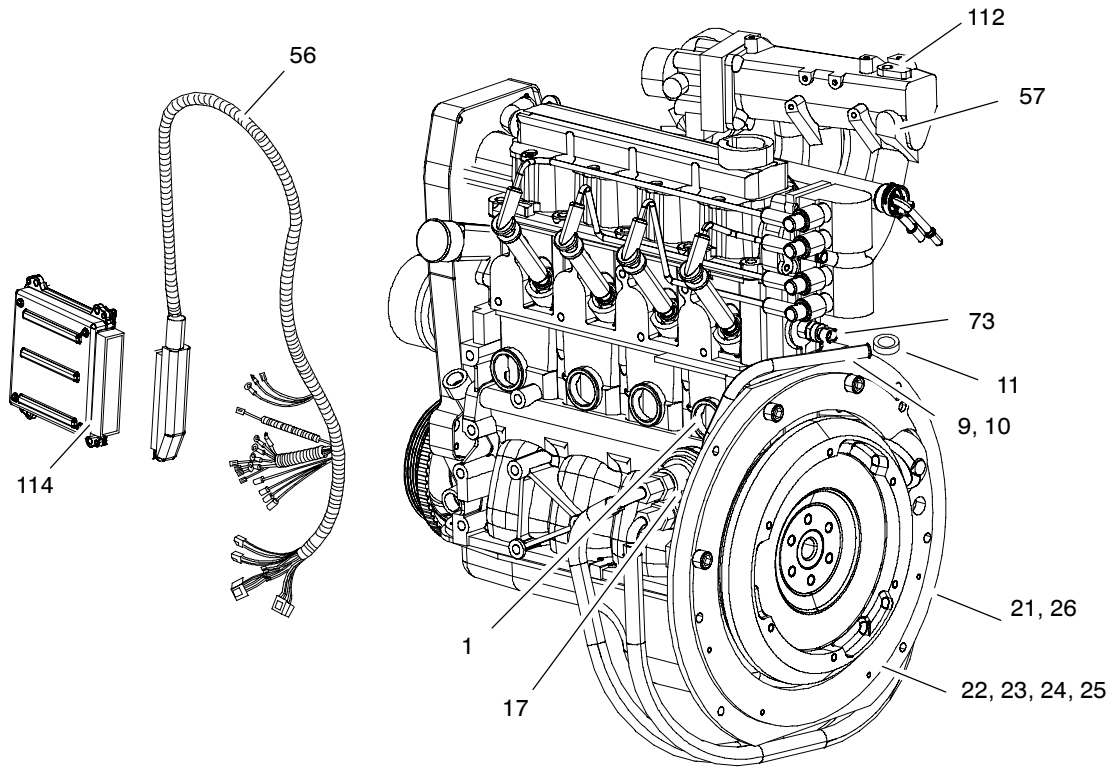


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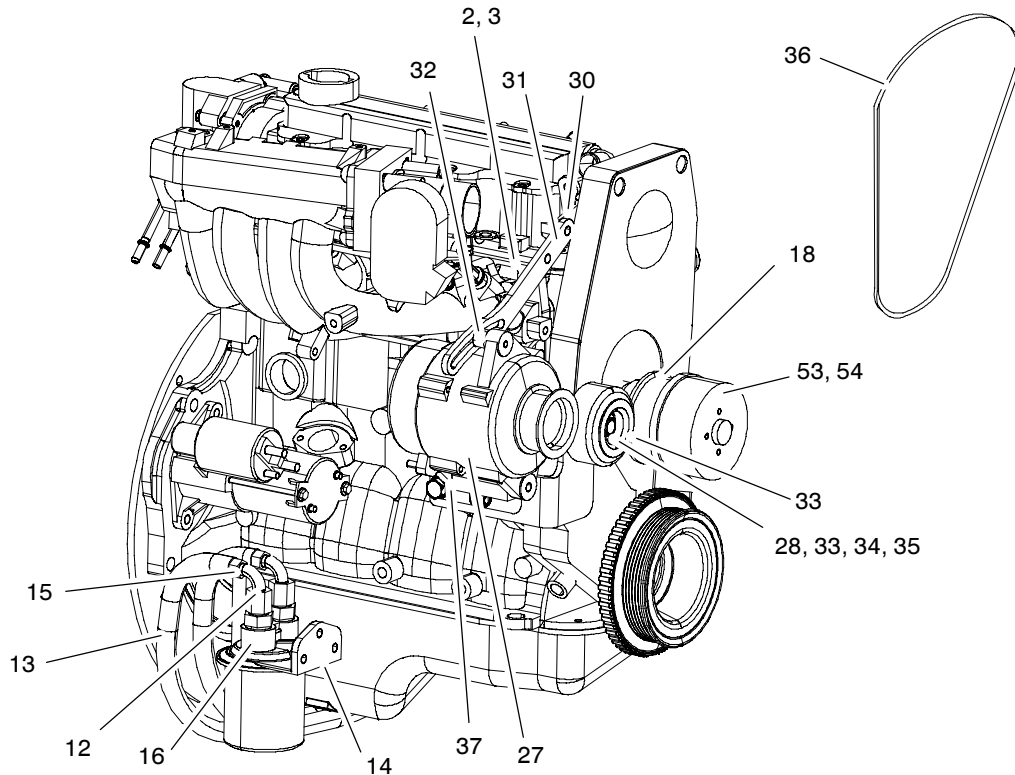
## Group 2: Engine Head/Upper End

Item	Part Number	Description	Quantity		Item	Part Number	Description	Quantity	
			Variation	1				Variation	1
1	GM38715	Cap, oil fill		1	41	GM38751	Sprocket, camshaft		1
2	GM38703	Seal, oil fill cap		1	42	GM38727	Washer, camshaft sprocket		1
3	—	Not sold as a service part		1	43	GM38752	Bolt, camshaft sprocket		1
4	GM38716	Cover, camshaft housing		1	44	GM38753	Belt, timing		1
5	GM38717	Bolt, camshaft housing cover		8	45	GM38754	Cover, timing belt front		1
6	GM38718	Gasket, camshaft housing cover		1	46	GM38670	Bolt, engine front cover		6
7	GM38719	Ball, camshaft (part of item 10)		1	48	GM38755	Cover, timing belt upper front		1
8	GM38720	Retainer, camshaft		1	49	GM38751	Sprocket, camshaft		1
9	GM38721	Bolt, camshaft retainer		2	50	GM38752	Bolt, camshaft sprocket		1
10	GM38773	Camshaft (includes items 7, 55)		1	51	GM38756	Tensioner, timing belt		1
11	GM38722	Seal, camshaft		1	52	GM38757	Bolt, timing belt tensioner		1
12	GM38723	Cover, camshaft housing		1	55	GM38707	Pin, camshaft housing (part of item 10)		2
13	GM38724	Bolt, camshaft rear cover		3					
14	GM38725	Seal, camshaft housing cover bolt		1	56	GM38758	Thermostat (includes seal and item 58)		1
15	GM38726	Bolt, cylinder head		10					
16	GM38727	Washer, camshaft sprocket		1	57	GM38759	Bolt, thermostat housing		2
17	GM38728	Housing, camshaft		1	58	—	See item 56		
18	GM38729	Tube, PVC		1	60	GM38760	Engine, 1.6 L		1
21	GM38730	Stud, intake manifold, M8 x 96		4	62	GM38761	Nut, exhaust manifold		8
21	GM38731	Stud, intake manifold, M8 x 28		9	65	GM38762	Manifold, exhaust		1
22	GM38732	Gasket, cylinder head		1	66	GM28349	Gasket, exhaust manifold		1
23	GM38733	Head, cylinder		1	67	GM38763	Shield, exhaust manifold		1
26	GM38734	Seat, intake valve, 0.4 mm OS		4	68	GM38764	Gasket, intake manifold		1
26	GM38735	Seat, exhaust valve, 0.4 mm OS		4	69	GM40170	Manifold, intake		1
26	GM38736	Seat, exhaust valve, std.		4	85	GM38765	Retainer, spark plug wire		1
26	GM38737	Seat, exhaust valve, 0.2 mm OS		4	86	GM38766	Retainer, spark plug wire		1
26	GM38738	Seat, intake valve, std.		4	87	GM38767	Retainer, spark plug wire		1
26	GM38739	Seat, intake valve, 0.2 mm OS		4	88	GM38768	Bracket, spark plug wire retainer		1
27	GM38707	Pin, cylinder head		2	89	GM38769	Bracket, spark plug wire retainer		1
29	GM38740	Arm, valve rocker		8	90	GM38770	Bracket, spark plug wire retainer		1
30	GM38741	Seat, valve spring		8	91	GM38710	Bolt, ignition coil bracket		1
30	GM38742	Seat, valve spring		8	92	GM38771	Coil, ignition		1
31	GM38743	Key, valve stem		16	93	GM35826	Spark plug		4
32	GM38744	Cap, valve spring		4	94	GM28356	Wire, spark plug #1 cylinder		1
33	GM38745	Adjuster		8	95	GM28357	Wire, spark plug #2 cylinder		1
34	GM38746	Spring, valve		8	96	GM28358	Wire, spark plug #3 cylinder		1
35	GM38747	Seal, valve stem		8	97	GM28359	Wire, spark plug #4 cylinder		1
36	GM38748	Rotator, valve		4	98	GM38710	Bolt, ignition coil bracket		1
37	GM38742	Seat, valve spring		8	100	GM38663	Clamp, PVC hose		1
37	GM38741	Seat, valve spring		8	101	GM38664	Hose, PVC		1
38	GM38749	Valve, exhaust		4	102	GM38665	Tube, PVC		1
39	GM38750	Valve, intake		1	103	GM38666	Bolt, PVC tube		2
40	GM38723	Cover, camshaft housing		1	104	GM38667	Gasket, PVC tube		1
					105	GM38772	Bolt, exhaust manifold heat shield		5

# Group 3: Engine Trim Parts



Not Shown: 4, 5, 6, 7, 8, 19, 20, 29, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 100, 101, 102, 103, 104, 105, 106, 108, 109, 111, 113



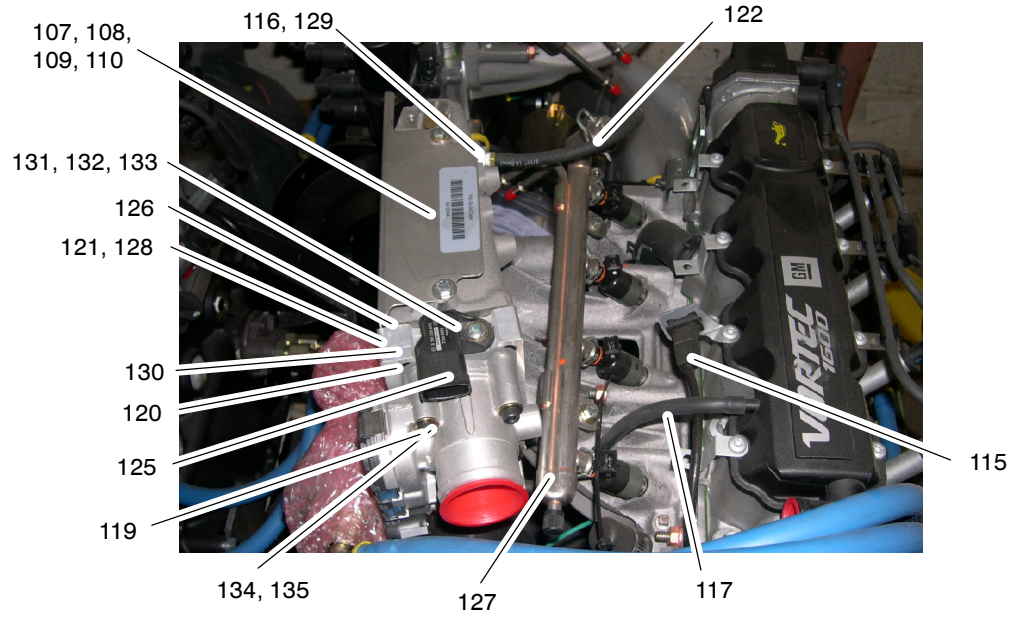
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## Group 3: Engine Trim Parts

Item	Part Number	Description	Quantity			
			Variation			
			1	2	3	4
1	GM39208	Adapter, freeze plug 3/8 in.	1	1	1	1
2	GM28888	Clamp, hose	1	1	1	1
3	GM39218	Cap, water outlet	1	1	1	1
4	GM28959	Nut, M6-1.0	1	1	1	1
5	GM24188	Washer, lock 1/4 in. SAE	1	1	1	1
6	#	Nut, flanged M8-1.25	1	1	1	1
7	#	Plug, pipe 3/8 in. intake manifold	1	1	1	1
8	X	Label, PSI serial number	1	1	1	1
9	GM40144	Tube, dipstick	1	1	1	1
10	GM40145	Adapter, tube dipstick	1	1	1	1
11	GM40146	Dipstick	1	1	1	1
12	GM40147	Elbow, hose, 90 deg.	4	4	4	4
13	GM40148	Hose, 1/2 in. ID push lock	2	2	2	2
14	GM40149	Mount, remote filter	1	1	1	1
15	GM40150	Fitting, #10 o-ring flared	4	4	4	4
16	GM40151	Adapter, oil filter	1	1	1	1
17	GM40152	Adapter, remote oil filter	1	1	1	1
18	GM39238	Base/Hub assembly	1	1	1	1
19	#	Bolt, M8-1.25 x 20 hex head grade 8.8	2	2	2	2
20	#	Washer, lock 5/16	2	2	2	2
21	GM39209	Backplate	1	1	1	1
22	GM39210	Plate, ring gear cover	1	1	1	1
23	GM28960	Washer, flat 1/4 in. SAE	1	1	1	1
24	GM24188	Washer, lock 1/4 in. SAE	4	4	4	4
25	#	Bolt, 1/4-20 x 1/2 in.	4	4	4	4
26	#	Bolt, M12-1.75 x 30 socket head	4	4	4	4
27	GM16180	Alternator	1	1	1	1
28	GM23422	Washer, idler	1	1	1	1
29	GM39213	Wire, ground	1	1	1	1
30	GM39214	Bracket, anchor alt. strap	1	1	1	1
31	GM39215	Strap, alternator adjust	1	1	1	1
32	GM39216	Spacer, alternator adjust strap	1	1	1	1
33	GM39234	Pulley, idler	1	1	1	1
34	GM39236	Dust shield, idler	1	1	1	1
35	GM39237	Spacer, idler .370 L x 1.378 OD	1	1	1	1
36	GM28353	Belt, Poly-6V 40.75 in.	1	1	1	1
37	GM39217	Bracket, mount	1	1	1	1
38	#	Nut, M8-1.25	1	1	1	1
39	#	Bolt, M8-1.25 x 20 hex head grade 8.8	2	2	2	2
40	#	Washer, flat 5/16 USS	1	1	1	1
41	#	Washer, lock 5/16	4	4	4	4
42	#	Washer, flat 5/16	1	1	1	1
43	#	Bolt, M8-1.25 x 50 hex head grade 5	1	1	1	1
44	#	Washer, lock M10 metric	3	3	3	3
45	#	Washer, flat 3/8 SAE	1	1	1	1
46	#	Bolt, M10-1.50 x 15 hex head grade 8.8	1	1	1	1
47	#	Bolt, M10-1.50 x 35 hex head grade 8.8	1	1	1	1
48	#	Bolt, M8-1.25 x 25 hex head grade 8.8	1	1	1	1
49	#	Bolt, M8-1.25 x 110 hex head grade 8.8	1	1	1	1
50	#	Bolt, M10-1.50 x 25 hex head grade 8.8	2	2	2	2
51	#	Nut, lock M8-1.25	1	1	1	1
52	#	Washer, star 3/8 in.	1	1	1	1
53	GM39240	Spacer, fan, pusher	1	1	1	1
54	#	Bolt, 3/8 x 16 x 1 1/2 Allen grade 8	3	3	3	3
56	GM39211	Harness, 1.6 L (includes relay box)	1	1		
56	-	Harness (See Control and Harness group)			1	1
112	GM39233	Plug, MAP sensor port	1	1	1	1
113	GM16226	Plug, 1/8 in. NPS square head	1	1	1	1
114	GM39242	ECM (ECU), gasoline	1		1	
114	GM42595	ECM (ECU), LP		1		1

# Common hardware. Procure locally.

## Group 3: Engine Trim Parts (Gasoline)



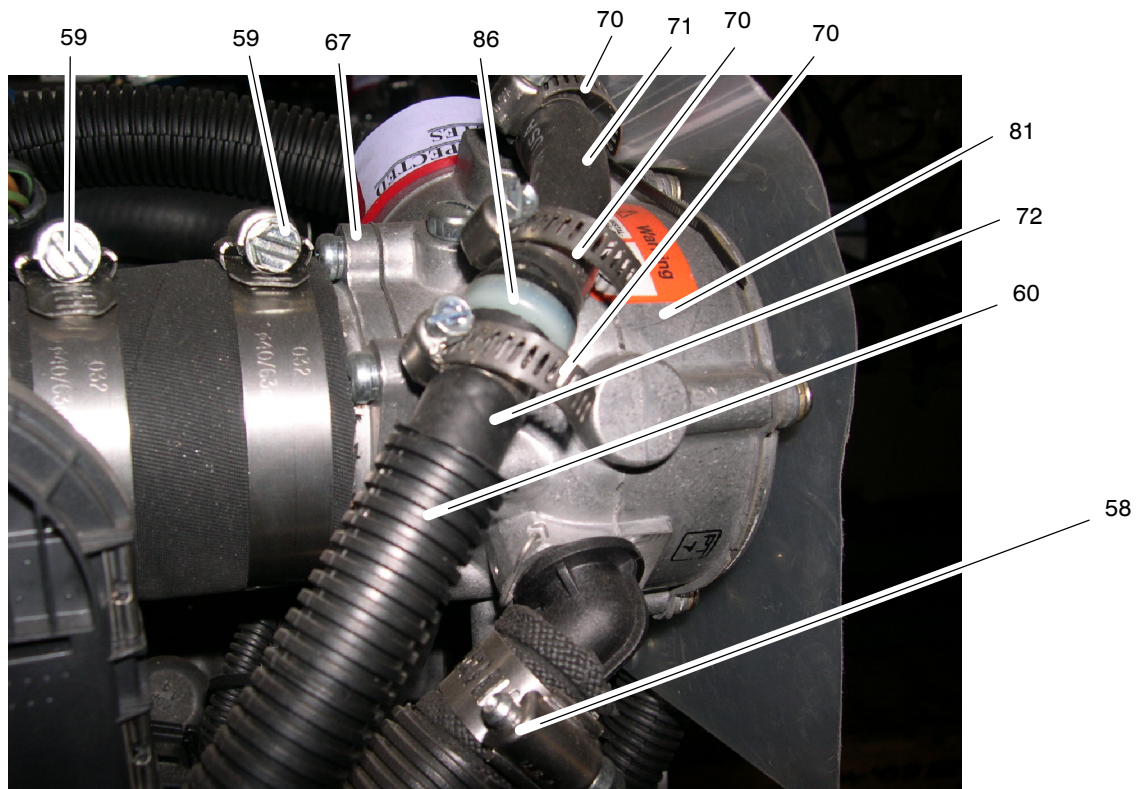
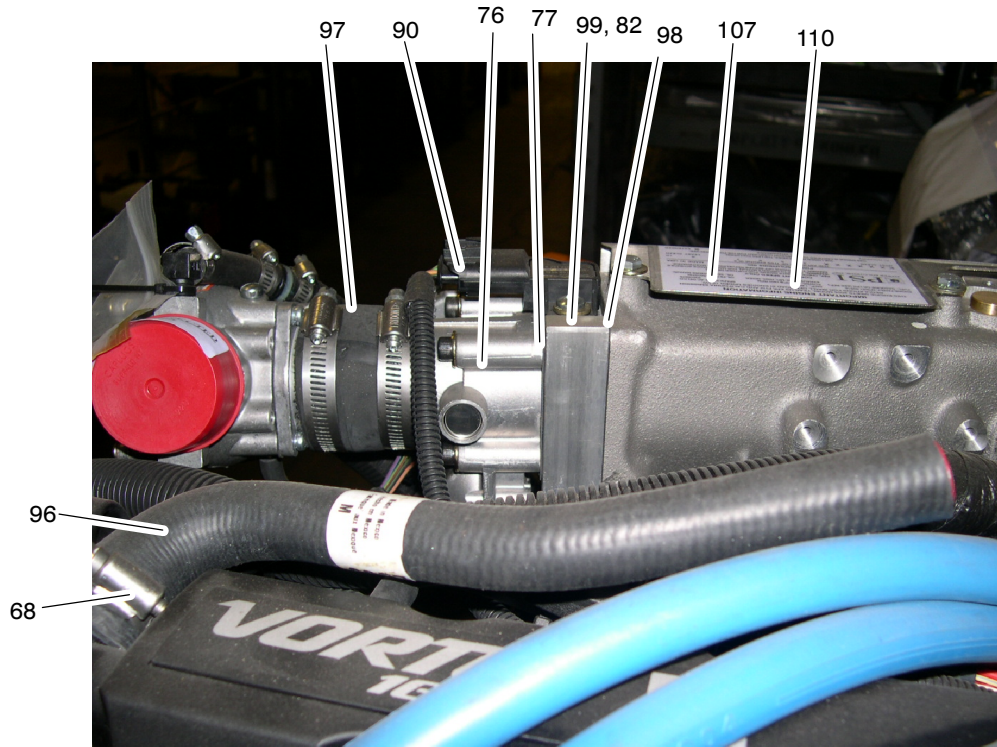
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## Group 3: Engine Trim Parts (Gasoline)

Item	Part Number	Description	Qty	
			1	3
107	GM40164	Plate, label mounting	1	1
108	GM28963	Washer, lock M6	2	2
109	#	Bolt, M6 1.0 x 10 mm	2	2
110	X	Label, model	1	1
115	GM40143	Harness, gasoline jumper	1	1
116	GM40159	Fitting, 1/6 MPT x 3/16 brb hose	1	1
117	GM39228	Hose, vacuum 7/32 in.	12	12
118	GM29585	Sensor O2 (See Group 104)	1	1
119	GM39222	Throttle body, 40 mm	1	1
120	GM28360	Gasket, TB	1	1
121	GM39223	Fitting, vac, M16-1.5-6H	1	1
122	GM40160	Hose, fuel, 3/16 x 8 in.	1	1
123	GM41106	Fuel pump, high pressure (See Group 103)	1	1
124	GM40161	Fitting and gasket, fuel pump (See Group 103)	1	1
125	GM39227	Sensor, T map	1	1
126	GM39229	Gasket, intake manifold	1	1
127	GM40162	Rail, fuel PFI	1	1
128	GM39230	Adapter, intake/TB	1	1
129	GM40163	Bushing, M16-1.50 x 1/8-27 NPT	1	1
130	#	Bolt, M6-1.0 x 25 socket head gr. 12	4	4
131	GM28960	Washer, flat, 1/4 in. SAE	1	1
132	GM24188	Washer, lock, 1/4 in. SAE	1	1
133	#	Bolt, 1/4-20 x 1/2 in.	1	1
134	#	Washer, flat 1/4 in. hardened	4	4
135	#	Screw, M6-1.0 x 45 mm, skt head	4	4

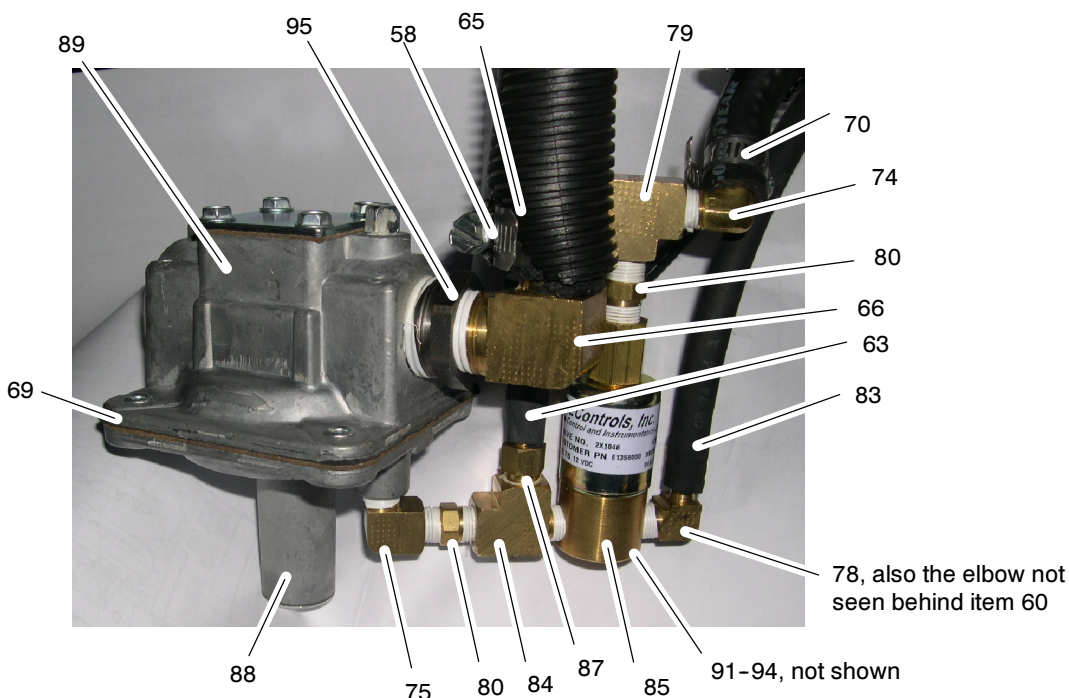
# Common hardware. Procure locally.

# Group 3: Engine Trim Parts (LP)



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## Group 3: Engine Trim Parts (LP)

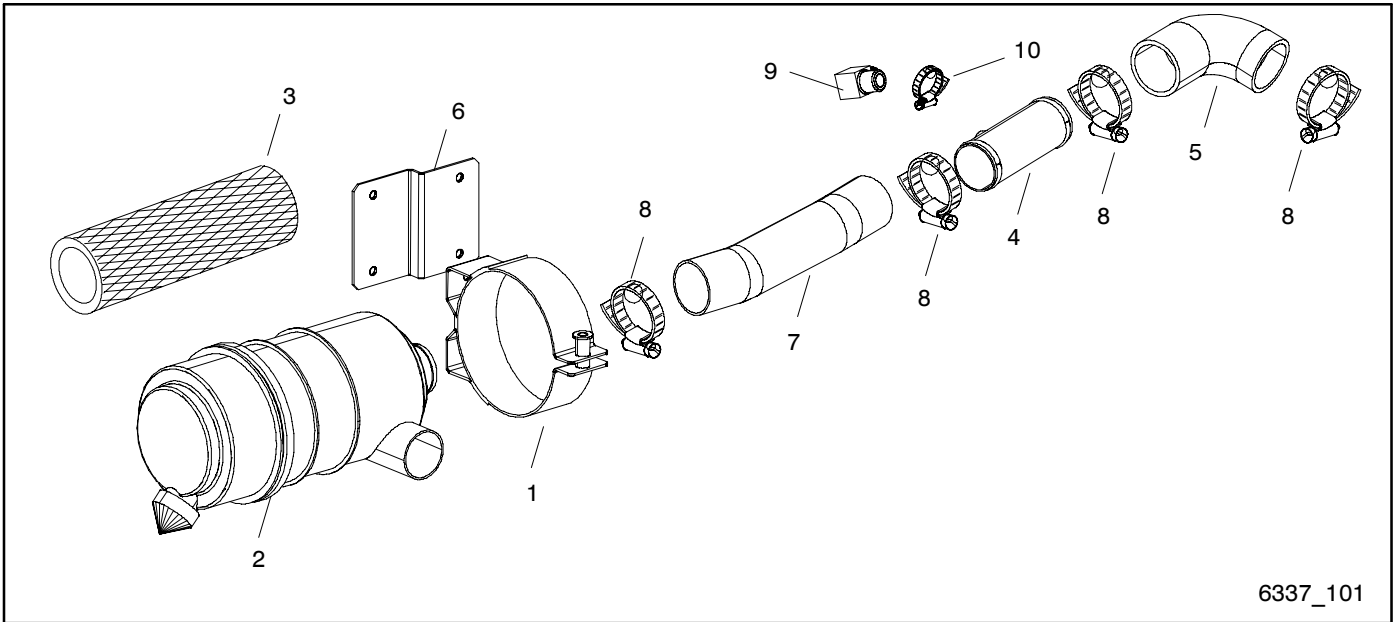


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Item	Part Number	Description	Quantity		Item	Part Number	Description	Quantity	
			2	4				2	4
57	GM39231	Plug	1	1	82	GM39223	Fitting, vac M16 1.5-6H (in bottom of item 99)	1	1
58	GM16144	Clamp, hose 1 in.	3	3	83	GM40160	Hose, fuel 3/16 in. (20 in.)	1	1
59	GM25970	Clamp, hose	2	2	84	GM42585	Tee 1/8 in.	1	1
60	GM42575	Loom, split 3/4 in. x 15 in.	1	1	85	GM42586	Valve, trim 3-way	1	1
62	GM42576	Loom, split 1/2 in. x 20 in.	1	1	86	GM42587	Valve, Check LPG	1	1
63	GM39228	Hose, Vacuum 7/32 in. (2 in.)	1	1	87	GM42588	Restrictor, in-line	1	1
64	GM39228	Hose, Vacuum 7/32 in. (12 in.) (fitting in manifold adapter to valve cover)	1	1	88	GM42589	Spring, regulator, upper	1	1
65	GM29846	Hose, 5/8 in. LP vapor (16 in.)	1	1	89	GM42590	Spring, regulator, lower	1	1
66	GM42577	Fitting, 1/2 MPT x 5/8	1	1	90	GM39227	Sensor, T Map	1	1
67	GM39224	Adapter, carb. AH (2 1/16 in. hose)	1	1	91	GM42591	Connector	1	1
68	GM28893	Clamp, hose, 1 1/4 in.	1	1	92	GM42592	Terminal	2	2
69	GM16171	Regulator, fuel 3/4 in. NPT	1	1	93	GM42593	Seal	2	2
70	GM42578	Clamp, 1/2 in. (M6)	4	4	94	GM42594	Harness, jumper	1	1
71	GM42579	Hose, fuel 3/8 in. (2 in.)	1	1	95	GM16213	Bushing, Reducer 3/4 in. - 1/2 in.	1	1
72	GM42579	Hose, fuel 3/8 in. (15 in.)	1	1	96	GM39219	Hose, vent	1	1
73	GM29585	Sensor O2	1	1	97	GM39221	Hose, rubber x 2 in. ID	1	1
74	GM28918	Fitting, 1/8 NPT x 3/8 in.	1	1	98	GM39229	Gasket, intake manifold	1	1
75	GM42580	Fitting, 1/8MPT x 1/8 FPT elbow	1	1	99	GM39230	Adaptor, intake/Bosch TB	1	1
76	GM39222	Throttle body, Bosch 40 mm	1	1	100	#	Bolt, M6-1.0 x 25 socket head grde 12	4	4
77	GM28360	Gasket, throttle body	1	1	101	#	Washer, flat 1/4 in. SAE	5	5
78	GM42581	Fitting, 1/8MPT x 1/4 HB 90 deg. elb.	2	2	102	#	Washer, lock 1/4 in. SAE	5	5
79	GM42582	Fitting, 1/8FPT tee, brass	1	1	103	#	Washer, lock #10	4	4
80	GM42583	Fitting, 1/8MPT closed nipple, brass	1	1	104	#	Screw, 10-32 x 3/4 slot head	4	4
81	GM42584	Mixer	1	1	105	#	Bolt, 1/4-20 x 1/2 in.	1	1
					106	#	Screw, M6-1.0 x 50mm sockethead	4	4
					107	GM40164	Plate, label mounting	1	1
					108	GM28963	Washer, lock M6	2	2
					109	#	Bolt, M6 1.0 x 10mm	2	2
					110	X	Label, model	1	1

# Common hardware. Procure locally.

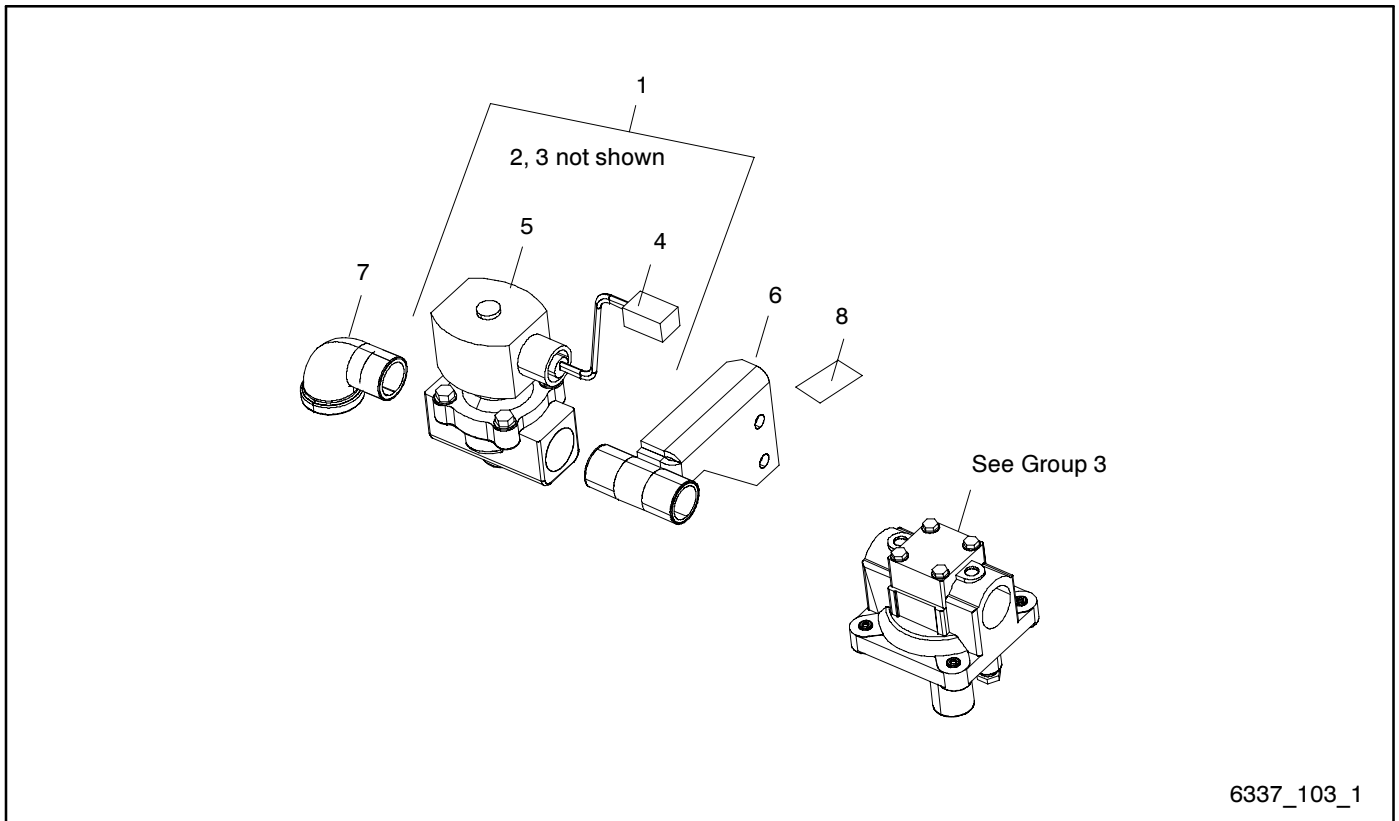
# Group 101: Air Intake



6337\_101

Item	Part Number	Description	Quantity	
			Variation	
			1	2
1	226956	Mount, air cleaner, 5.72 in. ID	1	1
2	A-226955	Air cleaner assembly	1	1
3	GM16944	Element, air cleaner	1	1
4	GM32867	Tube, air intake	1	1
5	GM34953	Hose, air intake	1	
5	GM32869	Hose, 90 deg. elbow		1
6	GM34970	Bracket, air cleaner mtg.	1	1
7	X-581-18	Hose, flexible air	1	1
8	X-426-6	Clamp, hose, 1.56/2.5 in.	4	4
9	X-391-19	Connector, 90 deg., 5/8 in. ID hose	1	1
10	X-426-10	Clamp, hose, .5/1 in.	1	1

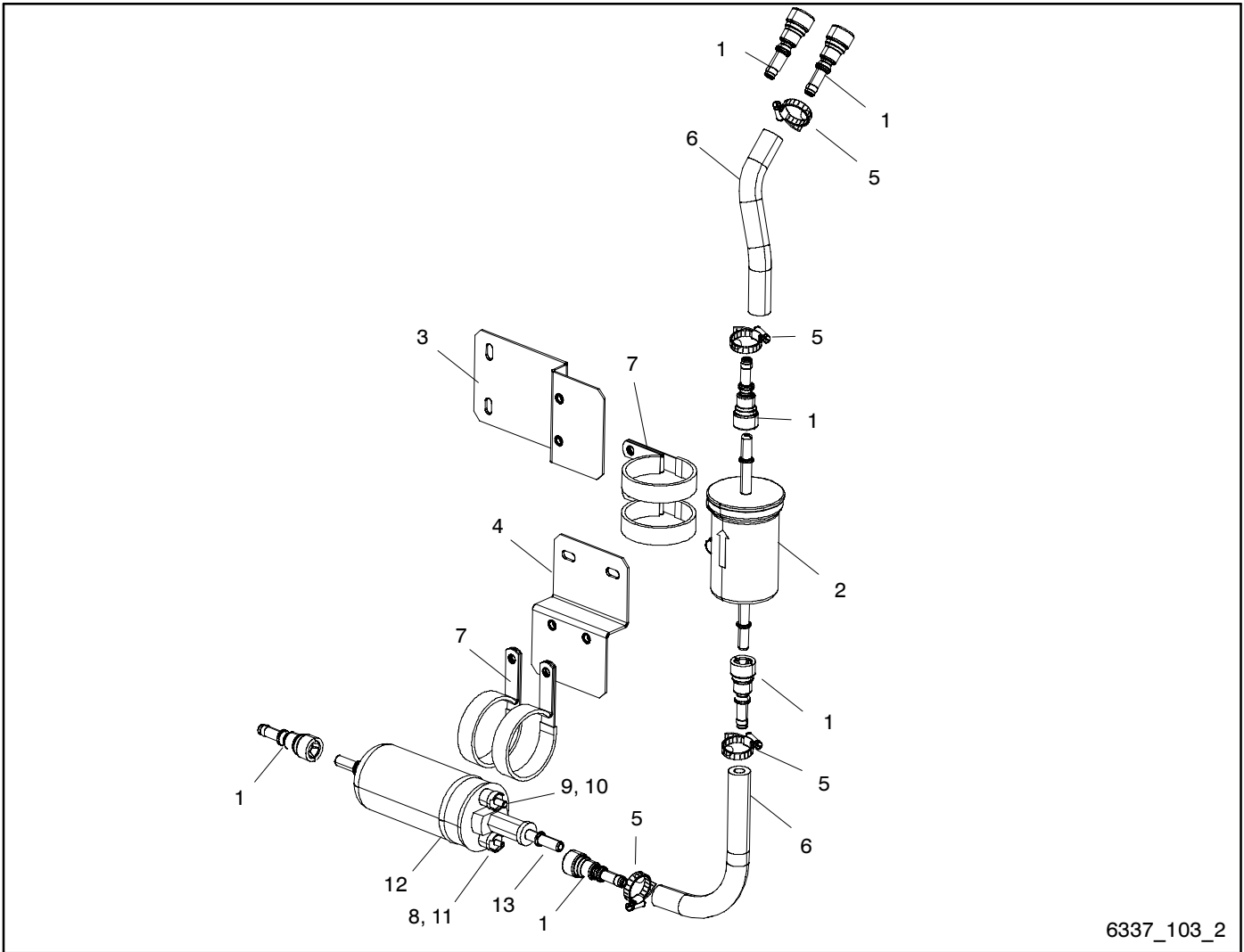
# Group 103: Fuel System, LP



6337\_103\_1

Item	Part Number	Description	Quantity
			Variation 2
1	254859	Valve assembly, gas (includes items 2-5)	1
2	X-6079-2	Tubing, heat shrink	1
3	241618	Terminal, pin, male, 14-20 AWG	2
4	292371	Connector, jack, 2-position	1
5	326223	Solenoid	1
6	GM23248	Bracket, fuel valve	1
7	X-211-5	Elbow, street, 90 deg. x 3/4 in. NPTF	1
8	GM20577	Decal, fuel type	1

# Group 103: Fuel System, Gasoline

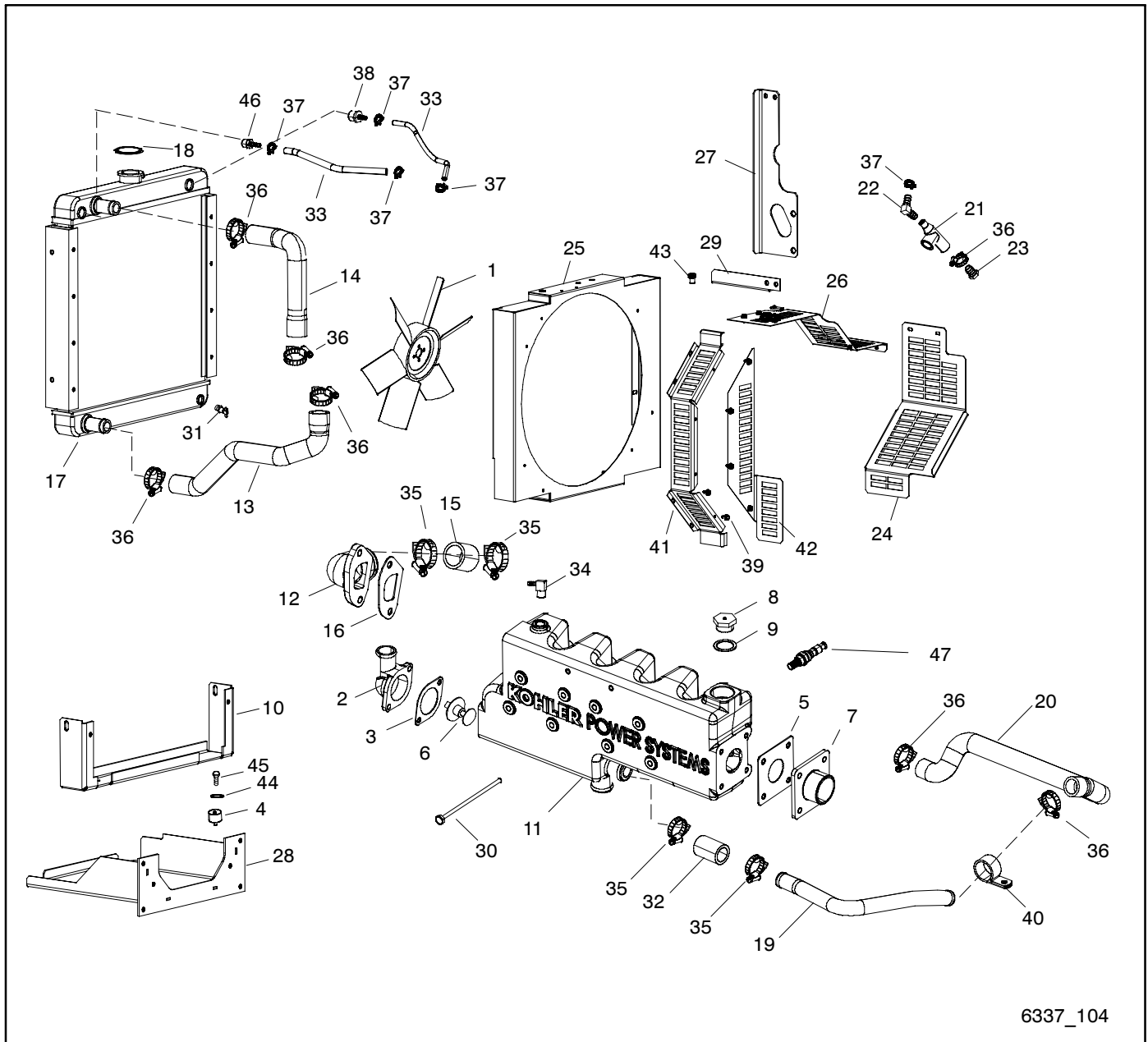


6337\_103\_2

## Group 103: Fuel System, Gasoline

Item	Part Number	Description	Quantity
			Variation 1
1	GM34548	Fitting, fuel quick disconnect	6
2	GM34570	Filter, fuel	1
3	GM34610	Bracket, fuel filter	1
4	GM34952	Bracket, fuel mtg.	1
5	X-426-18	Clamp, hose, .38/.88 in.	4
6	X-6251-4	Line, flex fuel	2
7	X-672-40	Clamp, insulated	4
8	M934-05-50	Nut, hex, 5 mm	1
9	M934-04-50	Nut, hex, 4 mm	1
10	X-22-7	Washer, lock, .172 ID x .333 in. OD	1
11	X-22-9	Washer, lock, .20 ID x .373 in. OD	1
12	GM41106	Fuel pump, high pressure	1
13	GM40161	Fitting and gasket, fuel pump	1

# Group 104: Cooling System

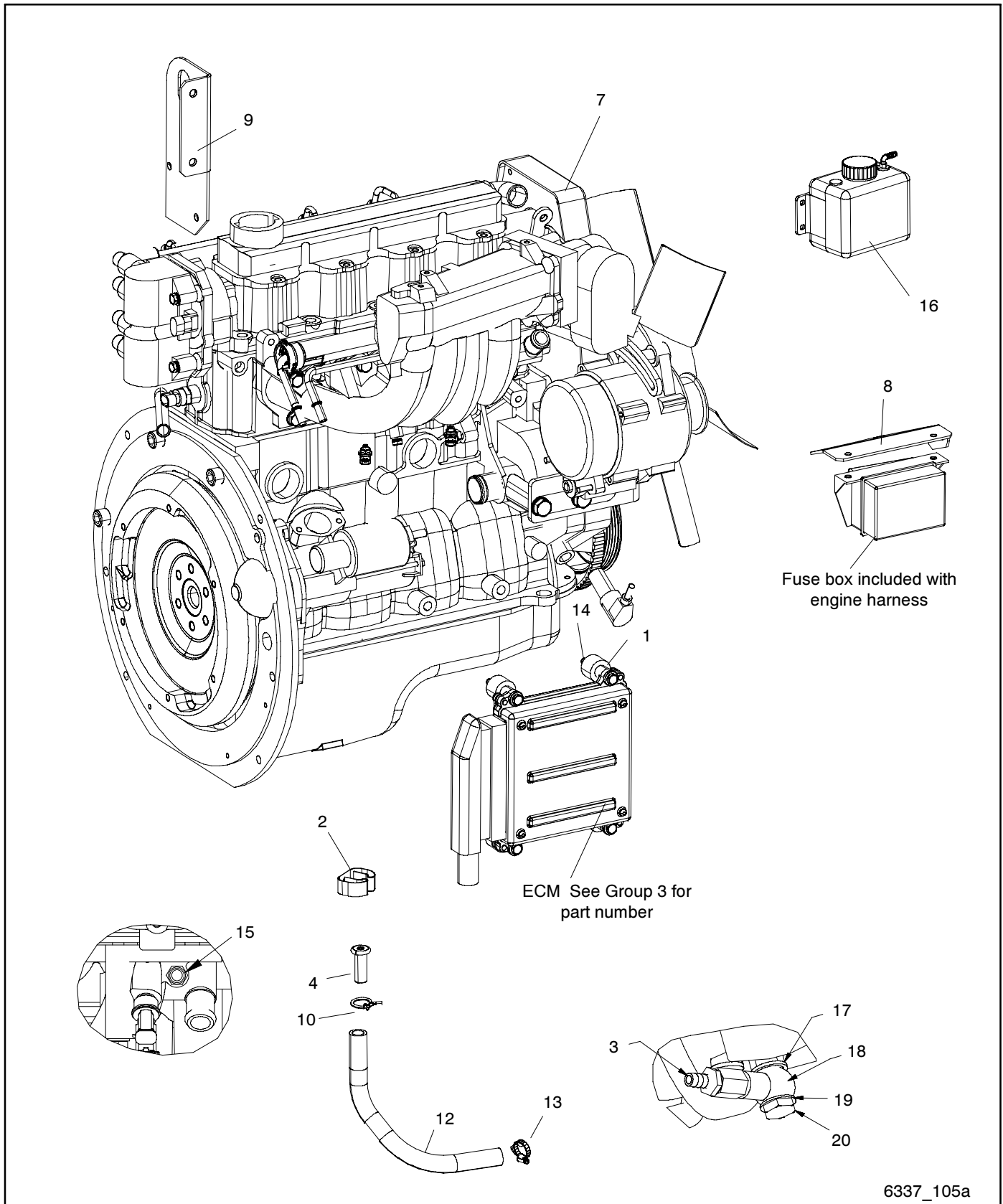


6337\_104

## Group 104: Cooling System

Item	Part Number	Description	Quantity	
			Variation	
			1	2
1	225771	Fan, pusher	1	1
2	229064	Cover, thermostat	1	1
3	229963	Gasket, water outlet	1	1
4	239497	Vibromount	2	2
5	249905	Gasket, exhaust	1	1
6	249930	Thermostat	1	1
7	254692	Flange, exhaust outlet	1	1
8	254761	Plug, exhaust manifold	1	1
9	254795	Gasket, exhaust manifold	1	1
10	363501	Bracket, radiator mounting	1	1
11	GM23247	Manifold, liquid cooled exhaust	1	1
12	GM23394	Adapter, hose	1	1
13	GM23397	Hose, lower radiator, 28.4 mm ID	1	1
14	GM23398	Hose, upper radiator, 28.4 mm ID	1	1
15	GM23528	Hose, coolant	1	1
16	GM23535	Gasket, hose adaptor	1	1
17	GM23689	Radiator	1	1
18	224368	Cap, radiator	1	1
19	GM28467	Tube, coolant, 1.25 in. OD	1	1
20	GM28468	Hose, molded water pump, 30 mm ID	1	1
21	GM28530	Tee, coolant vent	1	1
22	GM28691	Connector, hose	1	1
23	GM28706	Plug, hose	1	1
24	GM32864	Guard, belt, RS	1	1
25	GM34951	Shroud, fan	1	1
26	GM32866	Guard, belt, top	1	1
27	GM32876	Bracket, shroud support	1	1
28	GM34948	Support, radiator	1	1
29	GM34949	Bracket, shroud support	1	1
30	M931-08150-60	Screw, hex cap	8	8
31	X-256-3	Valve, drain, 1/4 in. NPTF	1	1
32	X-272-32	Hose, radiator	1	
32	X-272-2	Hose, radiator		1
33	X-386-62	Fuel line, flexible	2	2
34	X-391-44	Elbow, hose	1	1
35	X-426-4	Clamp, hose, 1.31/2.25 in.	4	4
36	X-426-8	Clamp, hose, .81/1.75 in.	7	7
37	X-426-9	Clamp, hose, .25/.70 in.	5	5
38	X-582-25	Connector, hose + vibra seal	1	1
39	X-6216-1	Screw, Phillips hex crimpite	15	15
40	X-672-4	Clamp, insulated, 1.25 in.	1	1
41	GM35332	Guard, belt, LS	1	1
42	GM35333	Guard, belt, rear	1	1
43	227418	Nut, well, 1/4-20	1	1
44	X-22-5	Washer, lock, .326 ID x .62 OD	2	2
45	X-125-33	Bolt, hex cap	2	2
46	X-582-38	Connector, hose	1	1
47	GM29585	Sensor, O2	1	1

# Group 105: Engine



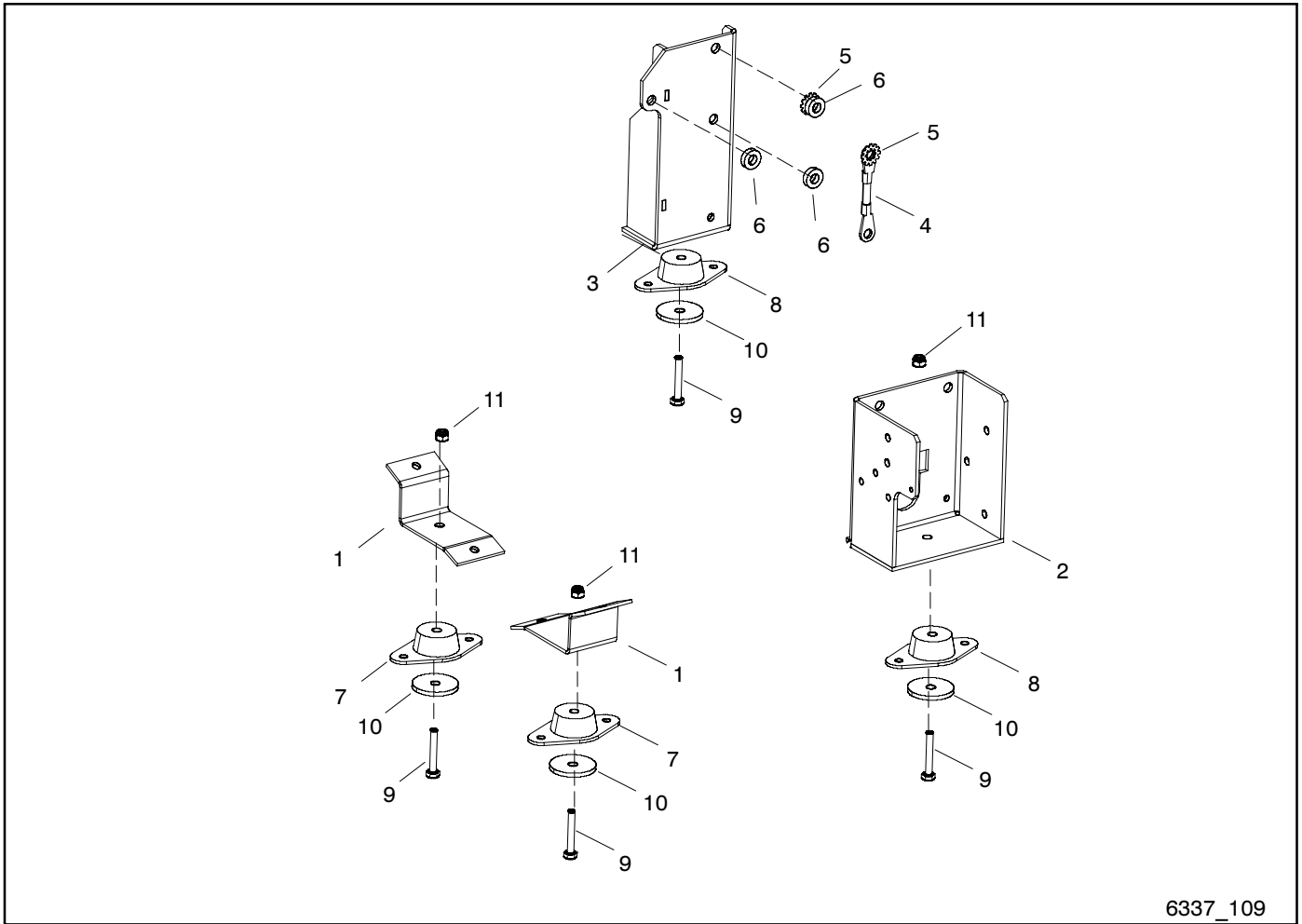
## Group 105: Engine

Item	Part Number	Description	Quantity			
			Variation			
			1	2	3	4
1	259632	Bumper	4	4	4	4
2	345045	Clip, hose	1	1	1	1
3	359653	Valve, oil drain (3/8-18 NPT)	1	1	1	1
4	GM20548	Plug, hose. 1/2	1	1	1	1
7	GM33149	Engine assembly	1			
7	GM33844	Engine assembly		1		
7	GM39668	Engine assembly			1	
7	GM39669	Engine assembly				1
8	GM34643	Bracket, relay box	1	1		
9	GM34950	Bracket, lifting eye	1	1	1	1
10	X-309-11	Clamp, hose 3/4	1	1	1	1
12	X-422-37	Line, flex fuel	1	1	1	1
13	X-426-18	Clamp, hose, .38/.88 in.	1	1	1	1
14	X-22-11	Washer, lock, .262 ID x .469 OD	4	4	4	4
15	GM28823	Sensor, temperature	1	1	1	1
16	256971	Bottle, overflow	1	1	1	1
17	GM42425	Washer, sealing	1	1	1	1
18	GM46849	Fitting, banjo bolt	1	1	1	1
19	276317	Washer, nylon, .578 ID x 1.067 in. OD	1	1	1	1
20	GM46850	Bolt, banjo	1	1	1	1

## Group 107: Nameplate and Decals

Item	Part Number	Description	Quantity
			Variation 1
1	224233	Decal, 1-800 number	1
2	238162	Marker, adhesive	1
3	249808	Decal, warning rotating parts	1
4	249809	Decal, caution hot engine	1
5	249810	Decal, warning hot coolant	1
6	327004	Nameplate, model/ratings, Kohler	1
7	GM14167	Decal, drain	2
8	X-6246-11	Decal	1
9	227620	Decal	1
10	GM13680	Nameplate, overlay	1
11	294520	Decal, danger	1
12	GM38522	Decal, fuse panel	1
14	GM35838	Decal, reconnection	1

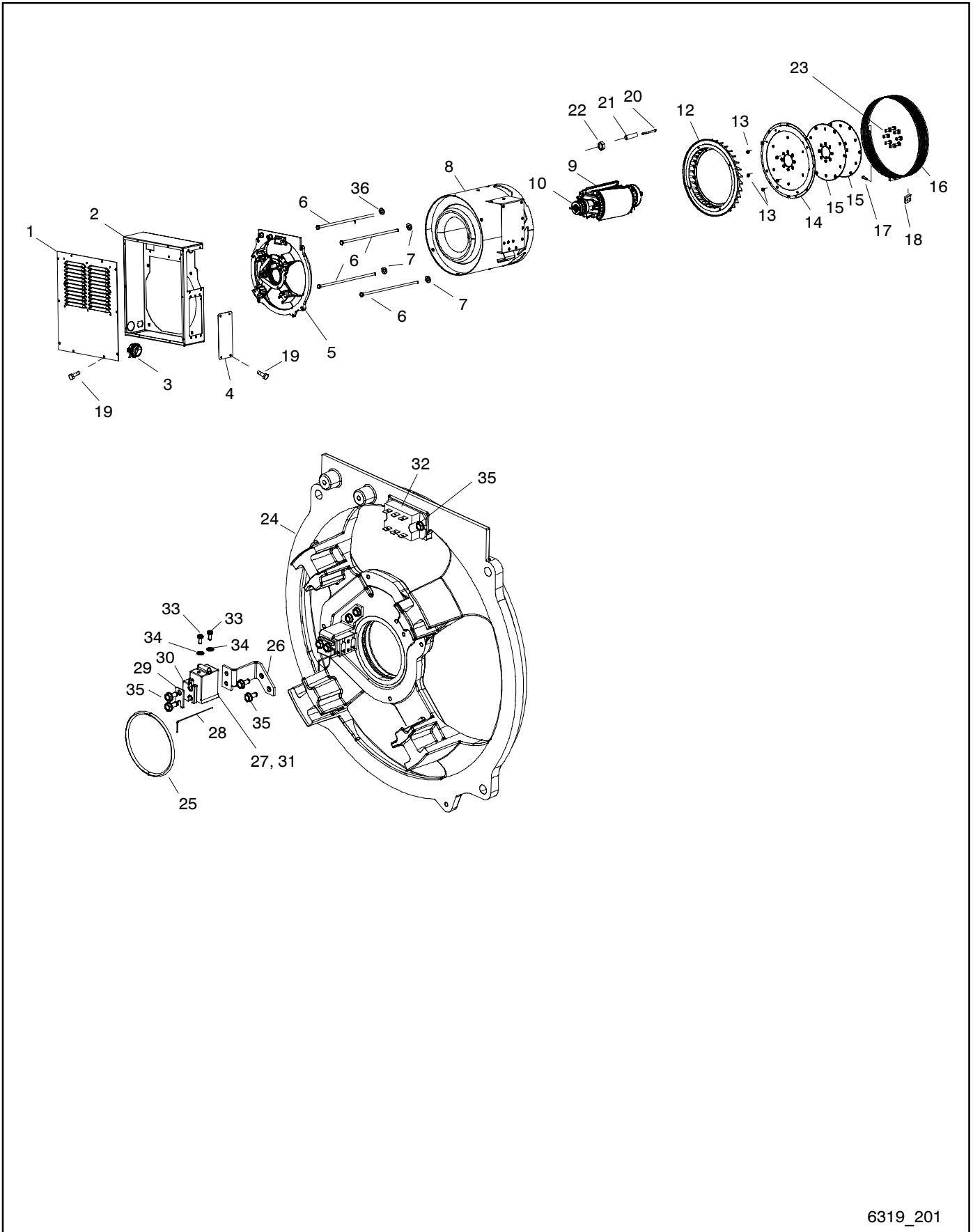
# Group 109: Skid and Plant Mounting



6337\_109

Item	Part Number	Description	Quantity
			Variation 1
1	GM23751	Bracket, generator mounting	2
2	GM34946	Support, engine, RS	1
3	GM34947	Support, engine, LS	1
4	LK-0616-1815	Lead	1
5	X-22-14	Washer, lock, .391 ID x .975 in. OD	2
6	X-400-198	Spacer, .437 ID x .875 OD x .25 in.	3
7	225124	Vibromount	2
8	225125	Vibromount	2
9	M931-08050-60	Screw, hex cap	4
10	X-25-96	Washer, plain, .406 ID x 2 in. OD	4
11	M982-08-80	Nut, hex elastic stop	4

# Group 201: Generator and Mounting

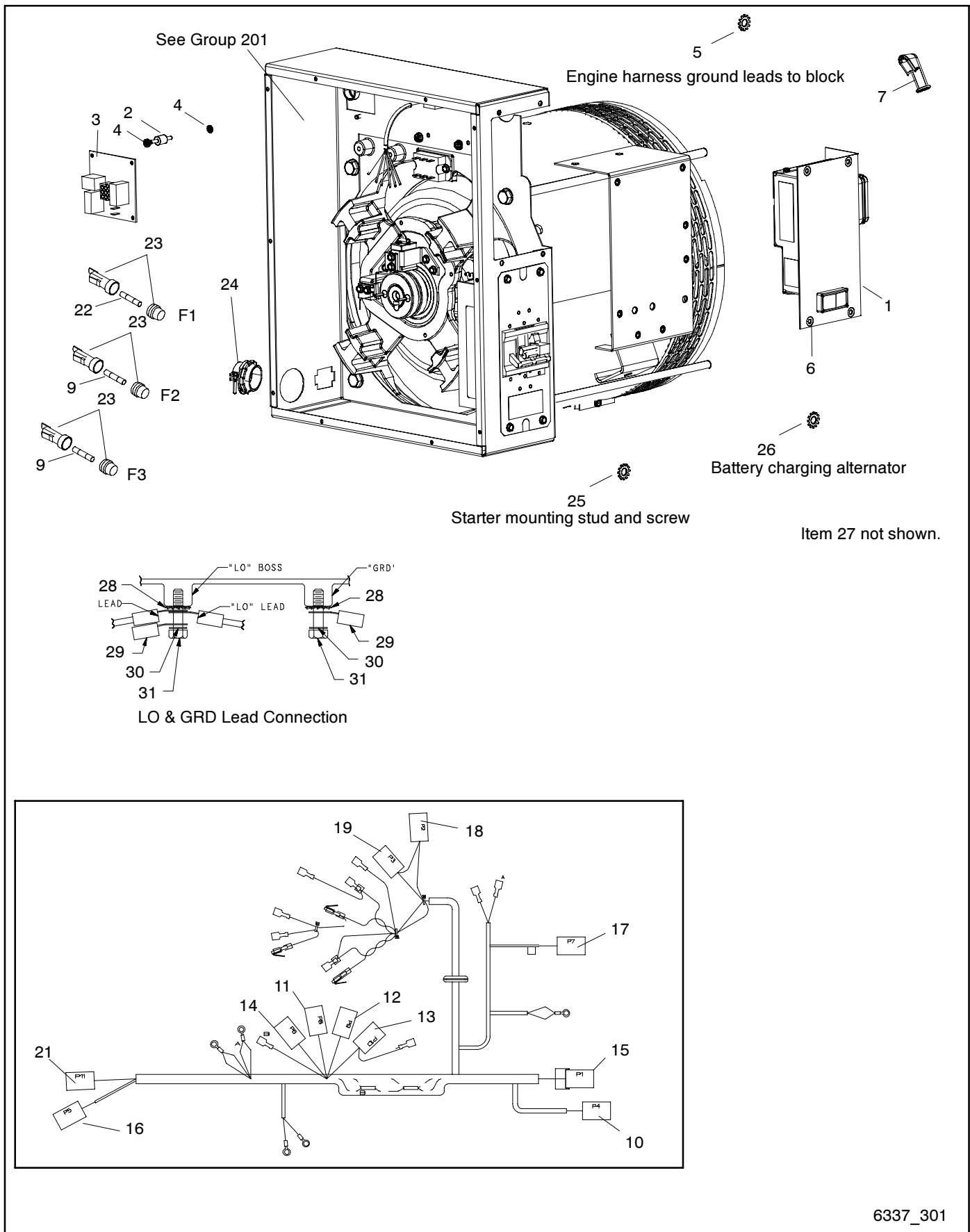


6319\_201

# Group 201: Generator and Mounting

Item	Part Number	Description	Quantity Variation				
			MA1	MA8	MA9	MA10	MA11
1	GM32852	Louver panel, junction box	1	1	1	1	1
2	GM39727	Box, junction	1	1	1	1	1
3	X-6266-1	Connector, cable	1	1	1	1	1
4	GM32853	Cover, circuit breaker	1	1	1	1	1
5	GM26308	End bracket assembly (includes items 24-40)	1	1	1	1	1
6	X-6051-16	Screw, hex head machine	4				
6	X-6051-15	Screw, hex head machine		4	4	4	4
7	X-801-3	Washer,hardened,.406 ID x .812 in. OD	3	3	3	3	3
8	GM25984	Stator assembly	1				
8	GM28611	Stator assembly		1			
8	GM25983	Stator assembly			1		
8	GM38803	Stator assembly				1	
8	GM38804	Stator assembly					1
9	GM24176	Rotor assembly (includes item 10)	1				
9	GM28612	Rotor assembly (includes item 10)		1			1
9	GM23319	Rotor assembly (includes item 10)			1	1	
10	X-758-15	Bearing, ball	1	1	1	1	1
12	225214	Fan, generator	1	1	1	1	1
13	M933-07025-60	Screw, hex cap	6	6	6	6	6
14	GM28588	Disc, drive	1	1	1	1	1
15	257014	Disc, drive, 4P SAE 8 in. flywheel	2	2	2	2	2
16	229109	Guard, generator fan	1	1	1	1	1
17	X-67-125	Screw, hex washer, thread-forming	1	1	1	1	1
18	257442	Clip, speed	1	1	1	1	1
19	X-6216-1	Screw, self-tapping	16	16	16	16	16
20	X-6284-2	Screw, slotted pan head machine	4	4	4	4	4
21	X-400-189	Spacer, .215 ID x .312 OD x 1.2 in.	4	4	4	4	4
22	X-6351-7	Nut, flange whiz lock, M5-0.8	4	4	4	4	4
23	X-6238-11	Bolt, hex cap	8	8	8	8	8
24	GM28378	Bracket, end	1	1	1	1	1
25	229110	O-ring, 2.859 in. ID	1	1	1	1	1
26	GM28383	Bracket, brush holder	2	2	2	2	2
27	238150	Spring, stainless steel	4	4	4	4	4
28	238247	Retainer, wire	2	2	2	2	2
29	238248	Shim, brush holder	2	2	2	2	2
30	239247	Holder, brush	2	2	2	2	2
31	239282	Brush	4	4	4	4	4
32	GM28483	SCR module	1	1	1	1	1
33	X-49-1	Screw, pan head 6-32 x 5/16	4	4	4	4	4
34	X-22-6	Washer, lock.146 ID x .285 in. OD	4	4	4	4	4
35	X-67-64	Screw, self-tapping	10	10	10	10	10
36	X-22-14	Washer, lock, .391 ID x .975 in. OD	1	1	1	1	1

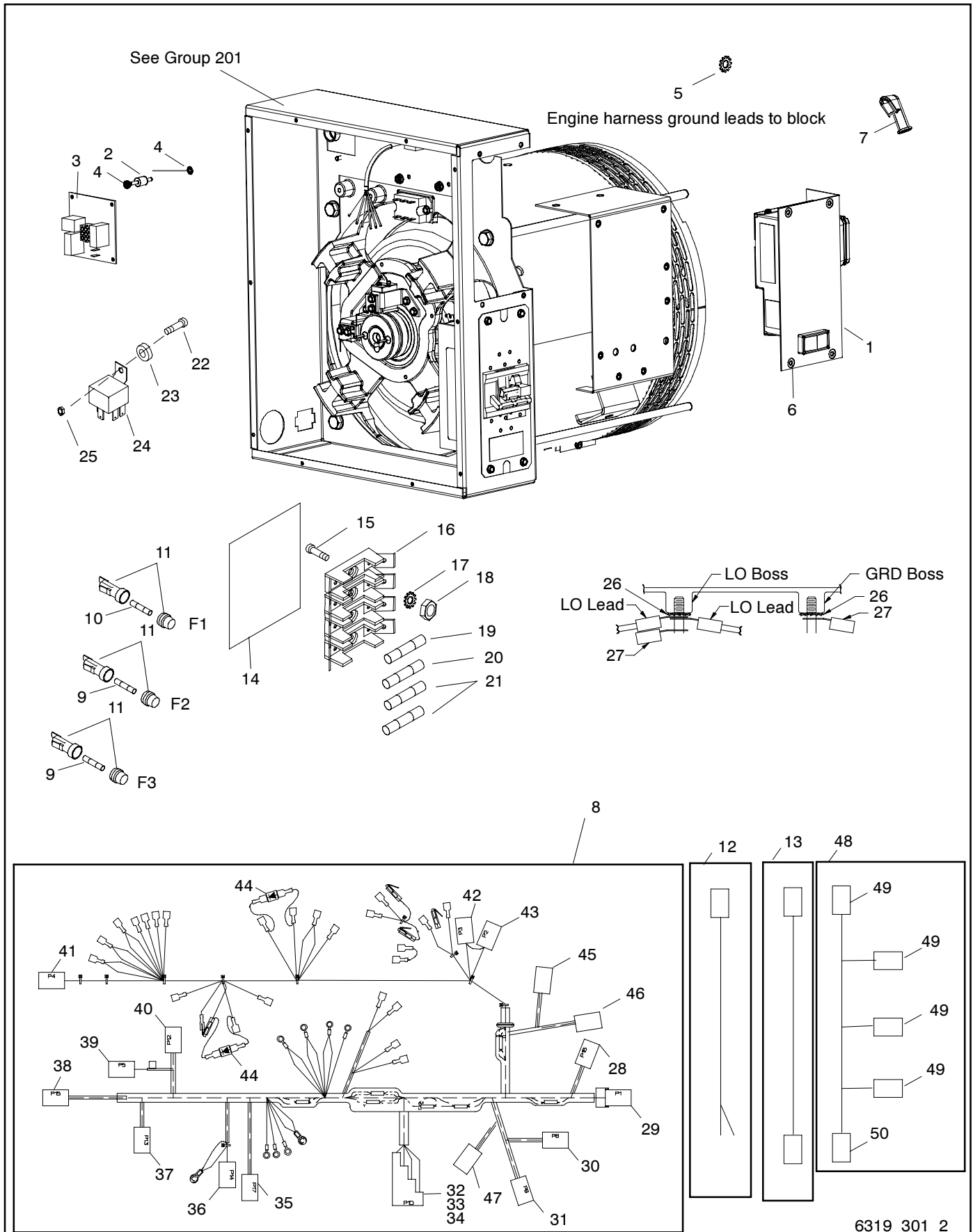
# Group 301: Control and Harness



## Group 301: Control and Harness

Item	Part Number	Description	Quantity	
			Variation	
			1	2
1	GM34969	Controller assembly, ADC 2100	1	1
2	282829	Vibromount	4	4
3	GM29671	PCB assembly, relay board, 12 V	1	1
4	X-22-20	Washer, lock, .172 ID x .373 in. OD	8	8
5	X-22-14	Washer, lock, .391 ID x .975 in. OD	1	1
6	X-67-64	Screw, self-tapping	4	4
7	238915	Boot	1	1
8	GM23534	Harness, wiring (includes items 10-21)	1	1
9	223316	Fuse, 10 A, 250 V (F2 and F3)	2	2
10	229989	Connector, receptacle	1	1
11	GM34394	Connector, weathertight	1	1
12	GM24991	Connector, 6-pin male	1	1
13	GM24992	Connector, 8-pin male	1	1
14	GM24994	Connector, 10-pin male	1	1
15	GM28678	Connector, weathertight	1	1
16	GM29249	Connector	1	1
17	GM15493	Connector, weathertight, 3-position	1	1
18	GM29998	Connector, 6-position, male	1	1
19	320711	Connector, 9-position	1	1
20	292370	Connector, plug, 2-position	1	1
21	GM29250	Connector	1	1
22	358337	Fuse, 10 A, 250 V (F1)	1	1
23	238426	Fuse holder, .25 x 1.25 in.	3	3
24	X-6266-1	Connector, cable	3	3
25	X-22-16	Washer, lock, .326 ID x .883 in. OD	2	2
26	X-22-9	Washer, lock, .20 ID x .373 in. OD	1	1
27	GM39621	Harness, extension (not shown)		1
28	X-22-12	Washer, lock, .262 ID x .743 in. OD	2	2
29	X-377-11	Connector, cable	2	2
30	M125A-06-80	Washer, plain	2	2
31	M933-06016-60	Bolt, hex cap	2	2

# Group 301: Control and Harness, continued



## Group 301: Control and Harness, continued

Item	Part Number	Description	Quantity	
			3	4
1	GM34969	Controller assembly, ADC 2100	1	1
2	282829	Vibromount	4	4
3	GM29671	PCB assembly, relay board, 12 V	1	1
4	X-22-20	Washer, lock, .172 ID x .373 in. OD	8	8
5	X-22-4	Washer, lock, .521 ID x .884 in. OD	1	1
6	X-67-64	Screw, self-tapping	4	4
7	238915	Boot	1	1
8	GM39845	Harness, wiring (includes items 28-44)	1	1
9	223316	Fuse, 10 A, 250 V (F2 and F3)	2	2
10	358337	Fuse, 10 A, 250 V (F1)	1	1
11	238426	Fuse holder, .25 x 1.25 in.	3	3
12	GM39631	Harness, extension trim (includes item 45)		1
13	GM36112	Harness, fuel solenoid (includes items 46, 47)		1
14	GM39268	Strip, marker	1	1
15	X-49-2	Screw, pan head, 6-32 x 3/8	2	2
16	336635	Fuse holder	1	1
17	X-22-6	Washer, lock, .146 ID x .285 in. OD	2	2
18	X-6210-3	Nut, flange whiz, 6-32	2	2
19	239298	Fuse, 5 A (F7)	1	1
20	GM39266	Fuse, 20 A (F6)	1	1
21	283645	Fuse, 15 A (F4 and F5)	2	2
22	M7985A-05012-20	Screw, pan head machine	2	2
23	200705	Grommet, round	2	2
24	GM28787	Relay	2	2
25	M934-05-50	Nut, hex 5 mm	2	2
26	X-22-12	Washer, lock, .262 ID x .743 in. OD	2	2
27	X-377-11	Connector, cable	2	2
28	322583	Housing, socket	1	1
29	GM28678	Connector, weathertight	1	1
30	GM13697	Connector, weathertight, 2-position	1	1
31	GM36155	Connector, 4-position	1	1
32	GM36164	Connector, 56-position	1	1
33	GM36165	Locking cam	1	1
34	GM36166	Cover	1	1
35	GM38887	Connector, 1-position	1	1
36	GM13697	Connector, weathertight, 2-position	1	1
37	GM36161	Connector, 4-position	1	1
38	GM36159	Connector, 3-position	1	1
39	GM29249	Connector	1	1
40	GM36156	Connector, 6-position	1	1
41	229989	Connector, receptacle	1	1
42	320711	Connector, 9-position	1	1
43	GM29998	Connector, 6-position, blk, male	1	1
44	233959	Diode, 6 A	2	2
45	343126	Connector, weathertight	1	1
46	292370	Connector, plug, 2-position	1	1
47	GM34394	Connector, weathertight	1	1
48	GM36083	Harness, injector (includes items 49, 50)	1	
49	GM36170	Connector, 2-position	4	
50	GM34394	Connector, weathertight	1	

# Group 701: Literature

Item	Part Number	Description	Quantity		
			Variation		
			24	25	26
1	TP-5251	Safety Precautions, Coml/Rec Mobile	1	1	1
3	TP-6101	O/M Supplement, GM Engines	1	1	1
4	TP-6327	S/M GM 1.6L, 10-30 kW	1	1	1
5	TP-6017	Warranty Commercial/Recreational Mobile	1	1	1
6	TP-6334	O/M 10-15ERG, Mobile	1	1	1
7	TP-6335	I/M 10-15ERG, Mobile	1	1	1
8	TP-6336	S/M 10/13/15ERG Mobile	1	1	1
9	TP-6337	P/C 10/13/15ERG, Mobile	1	1	1

# Parts List: Accessories

Qty.	Description	Part No.
<b>Block Heater, 1000W, 120W, 1Ph</b> <b>GM32877-KP1</b>		
1	Bracket, block heater	GM32987
1	Heater, block	GM28585
1	Connector, hose	GM28690
1	Connector, hose + vibra seal	X-582-2
1	Hose, .63 ID	X-312-52
2	Clamp, hose, .5/1 in.	X-426-10
6	Screw, hex cap	M933-06020-60
6	Nut, Hex 6 mm	M6923-06-80
4	Washer, plain	M125A-06-80
2	Clamp, hose, .56/1.06 in.	X-426-3
1	Conduit, convoluted	X-6003-79
1	Hose, .63 ID	X-312-51
1	Shield, heat	GM3962
<b>Flexible Exhaust Conn., 1.5 in. NPT</b> <b>PA-254973</b>		
1	Coupling, pipe, 1 1/2 in.	X-216-21
1	Bushing, reducing, 1 1/4 x 1 1/2 in. NPT	153016
1	Connector, exhaust	254972
<b>Harness, 12 In. Pigtail</b> <b>GM32332-KP1</b>		
1	Harness, pigtail	GM32324
<b>Harness, 15 Ft., Remote Panel</b> <b>GM32333-KP1</b>		
1	Harness, extension	GM30248
<b>Harness, 25 Ft., Remote Panel</b> <b>GM32333-KP2</b>		
1	Harness, extension	GM32323
<b>Heat Recovery Fittings</b> <b>GM35873-KP1</b>		
1	Cover, thermostat	249942
1	Housing assy, thermostat	A-326937
1	Tube, air intake	GM36069
1	Hose, upper radiator	GM36070
1	Hose	GM36071
2	Clamp, hose, 1.56/2.5 in.	X-426-6
2	Clamp, hose, .81/1.75 in.	X-426-8
1	Connector, hose + vibra seal	X-582-11
<b>Line Circuit Breaker, 50A, 2P, 240V</b> <b>GM33030-KP1</b>		
4	Clip, speed	239332
1	Breaker, circuit	358384
1	Cover, circuit breaker	GM32854
4	Screw, cross recess, sheet metal	X-67-143
1	Decal, power breaker	GM15301
1	TT Circuit Breaker, Single Phase, ADC 2100	TT-1394
<b>Line Circuit Breaker, 60A, 2P, 240V</b> <b>GM33030-KP2</b>		
4	Clip, speed	239332
1	Breaker, circuit	GM28742
1	Cover, circuit breaker	GM32854
4	Screw, cross recess, sheet metal	X-67-143
1	Decal, power breaker	GM15301
1	TT Circuit Breaker, Single Phase, ADC 2100	TT-1394
<b>Line Circuit Breaker, 70A, 2P, 240V</b> <b>GM33030-KP3</b>		
4	Clip, speed	239332
1	Breaker, circuit	GM28743
1	Cover, circuit breaker	GM32854
4	Screw, cross recess, sheet metal	X-67-143
1	Decal, power breaker	GM15301
1	TT Circuit Breaker, Single Phase, ADC 2100	TT-1394

Qty.	Description	Part No.
<b>Oil Pressure &amp; Temperature Sender</b> <b>GM35299-KP1</b>		
1	Fitting, 45 deg. street elbow	267428
1	Adapter, bushing	364350
1	Sensor, pressure	GM28822
<b>Paint</b>		
1	Spray paint, black	221292
<b>Radiator Guard</b> <b>GM35874-KP1</b>		
4	Bolt, hex cap	X-125-3
4	Washer, plain, .344 ID x .687 in. OD	X-25-85
2	Spacer, .344 ID x .625 OD x .143 in.	X-400-170
1	Guard, radiator	GM35968
<b>Remote Digital Gauge</b> <b>GM32337-KP1</b>		
1	Harness, remote	GM32325
1	Gauge, digital	GM30565
1	Decal, warning	249494
1	TT Remote Digital Gauge, 6.5-32 kW	TT-1379
1	TT ADC 2100 Controller Replacement	TT-1364
<b>Remote Start Panel, 12V</b> <b>GM32335-KP1</b>		
1	Panel assy, control 12V	GM33848-1
2	Nut, hex, 3mm	M934-03-50
2	Washer, lock. 146 ID x .285 in. OD	X-22-6
1	Panel, control	GM33847
1	Harness, wiring panel assy, control	GM33851
1	Meter, run time, 10000 hour	238736
1	Switch, rocker, 12V	GM33849
2	Screw, pan head M3 x 12	M7985A-03012-20
1	TT Rmt Start Panel, 8-32EOZD/6.5-27EFOZD	TT-1378
1	Decal, warning	249494
<b>Silencer, Critical, Engine-Mounted</b> <b>PA-254964</b>		
1	Bolt, hex cap	X-125-23
1	Bushing, reducing, 1 1/4 x 1 1/2 in. NP	X-202-48
1	Pipe, 1 1/4 in. NPT x 6.00 in., hi-temp paint	X-210-25
1	Pipe, 1 1/4 in. NPT x 16.50 in., hi-temp paint	X-210-26
1	Fitting, elbow, pipe	X-215-20
1	Fitting, elbow, 90 degree	X-215-21
1	Coupling	X-216-30
6	Washer, plain, .281 ID x .625 in. OD	X-25-40
1	Washer, plain, .344 ID x .687 in. OD	X-25-85
1	Bolt, 5/16-18 x 2.68 in.	X-397-3
2	Bolt, hex cap	X-465-18
2	Nut, flange spirallock, 1/4-20	X-6210-2
1	Silencer, maxim EIEO, 1 1/4 in. NPT	150213
1	Bracket, silencer support	254962
1	Bracket, silencer support	254963
1	TT Silencer and Mtg, 10/12CC/CZ/RV/RZ	TT-1148
<b>Silencer and Mounting</b> <b>GM34977-KP1</b>		
1	Silencer, industrial, 1.91 in.	255332
1	Clamp, hose, 6.25/6.56 in.	254013
1	Insulating blanket, silencer	GM28478
1	Insulating blanket, exhaust pipe	GM28479
2	Washer, plain	M125A-08-80
2	Screw, hex cap	M933-08020-60
1	Fitting, elbow, 90 degree	X-215-21
1	Pipe, 1 1/2 NPT	X-205-28
1	Clamp, muffler, 2.12 in.	X-722-5

# Notes

# Appendix A Abbreviations

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

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

k	kilo (1000)	MTBF	mean time between failure	RHM	round head machine (screw)
K	kelvin	MTBO	mean time between overhauls	rly.	relay
kA	kiloampere	mtg.	mounting	rms	root mean square
KB	kilobyte (2 <sup>10</sup> bytes)	MW	megawatt	rnd.	round
kg	kilogram	mW	milliwatt	ROM	read only memory
kg/cm <sup>2</sup>	kilograms per square centimeter	μF	microfarad	rot.	rotate, rotating
kgm	kilogram-meter	N, norm.	normal (power source)	rpm	revolutions per minute
kg/m <sup>3</sup>	kilograms per cubic meter	NA	not available, not applicable	RS	right side
kHz	kilohertz	nat. gas	natural gas	RTV	room temperature vulcanization
kJ	kilojoule	NBS	National Bureau of Standards	SAE	Society of Automotive Engineers
km	kilometer	NC	normally closed	scfm	standard cubic feet per minute
kOhm, kΩ	kilo-ohm	NEC	National Electrical Code	SCR	silicon controlled rectifier
kPa	kilopascal	NEMA	National Electrical Manufacturers Association	s, sec.	second
kph	kilometers per hour	NFPA	National Fire Protection Association	SI	<i>Système international d'unités</i> , International System of Units
kV	kilovolt	Nm	newton meter	SI/EO	side in/end out
kVA	kilovolt ampere	NO	normally open	sil.	silencer
kVAR	kilovolt ampere reactive	no., nos.	number, numbers	SN	serial number
kW	kilowatt	NPS	National Pipe, Straight	SPDT	single-pole, double-throw
kWh	kilowatt-hour	NPSC	National Pipe, Straight-coupling	SPST	single-pole, single-throw
kWm	kilowatt mechanical	NPT	National Standard taper pipe thread per general use	spec, specs	specification(s)
L	liter	NPTF	National Pipe, Taper-Fine	sq.	square
LAN	local area network	NR	not required, normal relay	sq. cm	square centimeter
L x W x H	length by width by height	ns	nanosecond	sq. in.	square inch
lb.	pound, pounds	OC	overcrank	SS	stainless steel
lbm/ft <sup>3</sup>	pounds mass per cubic feet	OD	outside diameter	std.	standard
LCB	line circuit breaker	OEM	original equipment manufacturer	stl.	steel
LCD	liquid crystal display	OF	overfrequency	tach.	tachometer
ld. shd.	load shed	opt.	option, optional	TD	time delay
LED	light emitting diode	OS	oversize, overspeed	TDC	top dead center
Lph	liters per hour	OSHA	Occupational Safety and Health Administration	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	TIF	telephone influence factor
m	meter, milli (1/1000)	PHC	Phillips head crimplite (screw)	TIR	total indicator reading
M	mega (10 <sup>6</sup> when used with SI units), male	PHH	Phillips hex head (screw)	tol.	tolerance
m <sup>3</sup>	cubic meter	PHM	pan head machine (screw)	turbo.	turbocharger
m <sup>3</sup> /min.	cubic meters per minute	PLC	programmable logic control	typ.	typical (same in multiple locations)
mA	milliampere	PMG	permanent-magnet generator	UF	underfrequency
man.	manual	pot	potentiometer, potential	UHF	ultrahigh frequency
max.	maximum	ppm	parts per million	UL	Underwriter's Laboratories, Inc.
MB	megabyte (2 <sup>20</sup> bytes)	PROM	programmable read-only memory	UNC	unified coarse thread (was NC)
MCM	one thousand circular mils	psi	pounds per square inch	UNF	unified fine thread (was NF)
MCCB	molded-case circuit breaker	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
mOhm, mΩ	milliohm	ref.	reference	W	watt
MOhm, MΩ	megohm	rem.	remote	WCR	withstand and closing rating
MOV	metal oxide varistor	Res/Coml	Residential/Commercial	w/	with
MPa	megapascal	RFI	radio frequency interference	w/o	without
mpg	miles per gallon	RH	round head	wt.	weight
mph	miles per hour			xfmr	transformer
MS	military standard				
m/sec.	meters per second				

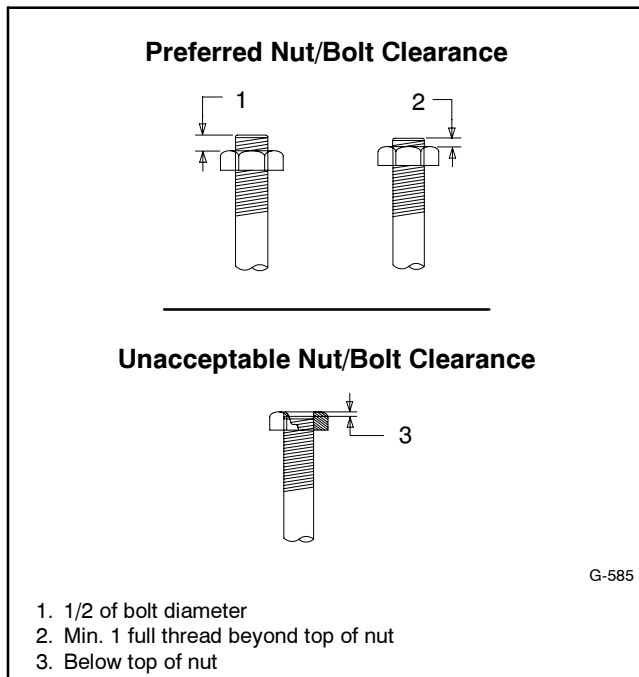
## Appendix B Common Hardware Application Guidelines

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.



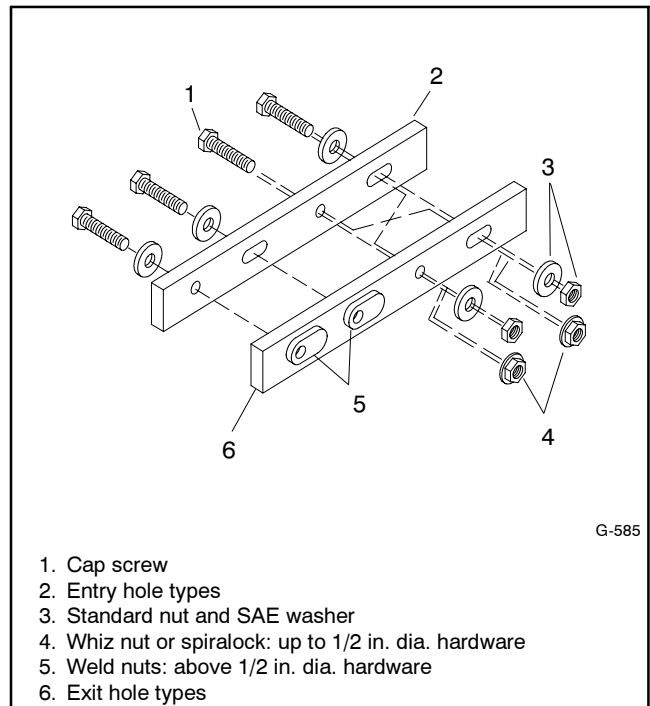
**Figure 1** Acceptable Bolt Lengths

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















Use the following torque specifications when service literature instructions give no specific torque values. The charts list values for new plated, zinc phosphate, or












oiled threads. Increase values by 15% for nonplated threads. All torque values are +0%/-10%.






<b>American Standard Fasteners Torque Specifications</b>					
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)	—	1.8 (16)
10-24	Nm (in. lb.)	2.9 (26)	3.6 (32)	—	2.9 (26)
10-32	Nm (in. lb.)	2.9 (26)	3.6 (32)	—	2.9 (26)
1/4-20	Nm (in. lb.)	6.8 (60)	10.8 (96)	14.9 (132)	6.8 (60)
1/4-28	Nm (in. lb.)	8.1 (72)	12.2 (108)	16.3 (144)	8.1 (72)
5/16-18	Nm (in. lb.)	13.6 (120)	21.7 (192)	29.8 (264)	13.6 (120)
5/16-24	Nm (in. lb.)	14.9 (132)	23.1 (204)	32.5 (288)	14.9 (132)
3/8-16	Nm (ft. lb.)	24.0 (18)	38.0 (28)	53.0 (39)	24.0 (18)
3/8-24	Nm (ft. lb.)	27.0 (20)	42.0 (31)	60.0 (44)	27.0 (20)
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)	—

<b>Metric Fasteners Torque Specifications, Measured in Nm (ft. lb.)</b>					
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	5.6 (4)	9.9 (7)	14.0 (10)	5.6 (4)	
M8 x 1.25	13.6 (10)	25.0 (18)	35.0 (26)	13.6 (10)	
M8 x 1.00	21.0 (16)	25.0 (18)	35.0 (26)	21.0 (16)	
M10 x 1.50	27.0 (20)	49.0 (35)	68.0 (50)	27.0 (20)	
M10 x 1.25	39.0 (29)	49.0 (35)	68.0 (50)	39.0 (29)	
M12 x 1.75	47.0 (35)	83.0 (61)	117.0 (86)	—	
M12 x 1.50	65.0 (48)	88.0 (65)	125.0 (92)	—	
M14 x 2.00	74.0 (55)	132.0 (97)	185.0 (136)	—	
M14 x 1.50	100.0 (74)	140.0 (103)	192.0 (142)	—	
M16 x 2.00	115.0 (85)	200.0 (148)	285.0 (210)	—	
M16 x 1.50	141.0 (104)	210.0 (155)	295.0 (218)	—	
M18 x 2.50	155.0 (114)	275.0 (203)	390.0 (288)	—	
M18 x 1.50	196.0 (145)	305.0 (225)	425.0 (315)	—	

# Appendix D Common Hardware Identification

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

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

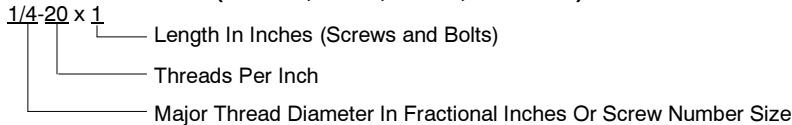
Hardness Grades	
American Standard	
Grade 2	
Grade 5	
Grade 8	
Grade 8/9 (Hex Socket Head)	
Metric	
Number stamped on hardware; 5.8 shown	

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

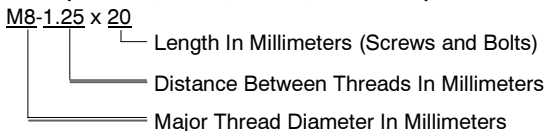
Phillips® screw is a registered trademark of Phillips Screw Company.

## Sample Dimensions

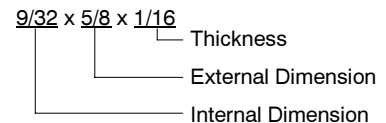
### American Standard (Screws, Bolts, Studs, and Nuts)



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



### Plain Washers



### Lock Washers



# Appendix E Common Hardware List

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

## American Standard

Part No.	Dimensions	Part No.	Dimensions	Part No.	Dimensions	Type
<b>Hex Head Bolts (Grade 5)</b>						
X-465-17	1/4-20 x .38	X-6238-14	3/8-24 x .75	X-6009-1	1-8	Standard
X-465-6	1/4-20 x .50	X-6238-16	3/8-24 x 1.25	X-6210-3	6-32	Whiz
X-465-2	1/4-20 x .62	X-6238-21	3/8-24 x 4.00	X-6210-4	8-32	Whiz
X-465-16	1/4-20 x .75	X-6238-22	3/8-24 x 4.50	X-6210-5	10-24	Whiz
X-465-18	1/4-20 x .88			X-6210-1	10-32	Whiz
X-465-7	1/4-20 x 1.00	X-6024-5	7/16-14 x .75			
X-465-8	1/4-20 x 1.25	X-6024-2	7/16-14 x 1.00	X-6210-2	1/4-20	Spiralock
X-465-9	1/4-20 x 1.50	X-6024-8	7/16-14 x 1.25	X-6210-6	1/4-28	Spiralock
X-465-10	1/4-20 x 1.75	X-6024-3	7/16-14 x 1.50	X-6210-7	5/16-18	Spiralock
X-465-11	1/4-20 x 2.00	X-6024-4	7/16-14 x 2.00	X-6210-8	5/16-24	Spiralock
X-465-12	1/4-20 x 2.25	X-6024-11	7/16-14 x 2.75	X-6210-9	3/8-16	Spiralock
X-465-14	1/4-20 x 2.75	X-6024-12	7/16-14 x 6.50	X-6210-10	3/8-24	Spiralock
X-465-21	1/4-20 x 5.00	X-129-15	1/2-13 x .75	X-6210-11	7/16-14	Spiralock
X-465-25	1/4-28 x .38	X-129-17	1/2-13 x 1.00	X-6210-12	1/2-13	Spiralock
X-465-20	1/4-28 x 1.00	X-129-18	1/2-13 x 1.25	X-6210-15	7/16-20	Spiralock
		X-129-19	1/2-13 x 1.50	X-6210-14	1/2-20	Spiralock
X-125-33	5/16-18 x .50	X-129-20	1/2-13 x 1.75			
X-125-23	5/16-18 x .62	X-129-21	1/2-13 x 2.00	X-85-3	5/8-11	Standard
X-125-3	5/16-18 x .75	X-129-22	1/2-13 x 2.25	X-88-12	3/4-10	Standard
X-125-31	5/16-18 x .88	X-129-23	1/2-13 x 2.50	X-89-2	1/2-20	Standard
X-125-5	5/16-18 x 1.00	X-129-24	1/2-13 x 2.75			
X-125-24	5/16-18 x 1.25	X-129-25	1/2-13 x 3.00			
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-125-22	5/16-18 x 4.50	X-129-45	1/2-20 x 1.25			
X-125-32	5/16-18 x 5.00	X-129-52	1/2-20 x 1.50			
X-125-35	5/16-18 x 5.50					
X-125-36	5/16-18 x 6.00	X-6021-3	5/8-11 x 1.00			
X-125-40	5/16-18 x 6.50	X-6021-4	5/8-11 x 1.25			
		X-6021-2	5/8-11 x 1.50			
X-125-43	5/16-24 x 1.75	X-6021-1	5/8-11 x 1.75			
X-125-44	5/16-24 x 2.50	273049	5/8-11 x 2.00			
X-125-30	5/16-24 x .75	X-6021-5	5/8-11 x 2.25			
X-125-39	5/16-24 x 2.00	X-6021-6	5/8-11 x 2.50			
X-125-38	5/16-24 x 2.75	X-6021-7	5/8-11 x 2.75			
		X-6021-12	5/8-11 x 3.75			
X-6238-2	3/8-16 x .62	X-6021-11	5/8-11 x 4.50			
X-6238-10	3/8-16 x .75	X-6021-10	5/8-11 x 6.00			
X-6238-3	3/8-16 x .88					
X-6238-11	3/8-16 x 1.00	X-6021-9	5/8-18 x 2.50			
X-6238-4	3/8-16 x 1.25					
X-6238-5	3/8-16 x 1.50	X-6239-1	3/4-10 x 1.00			
X-6238-1	3/8-16 x 1.75	X-6239-8	3/4-10 x 1.25			
X-6238-6	3/8-16 x 2.00	X-6239-2	3/4-10 x 1.50			
X-6238-17	3/8-16 x 2.25	X-6239-3	3/4-10 x 2.00			
X-6238-7	3/8-16 x 2.50	X-6239-4	3/4-10 x 2.50			
X-6238-8	3/8-16 x 2.75	X-6239-5	3/4-10 x 3.00			
X-6238-9	3/8-16 x 3.00	X-6239-6	3/4-10 x 3.50			
X-6238-19	3/8-16 x 3.25					
X-6238-12	3/8-16 x 3.50	X-792-1	1-8 x 2.25			
X-6238-20	3/8-16 x 3.75	X-792-5	1-8 x 3.00			
X-6238-13	3/8-16 x 4.50	X-792-8	1-8 x 5.00			
X-6238-18	3/8-16 x 5.50					
X-6238-25	3/8-16 x 6.50					

### Washers

Part No.	ID	OD	Thick.	Bolt/ Screw
X-25-46	.125	.250	.022	#4
X-25-9	.156	.375	.049	#6
X-25-48	.188	.438	.049	#8
X-25-36	.219	.500	.049	#10
X-25-40	.281	.625	.065	1/4
X-25-85	.344	.687	.065	5/16
X-25-37	.406	.812	.065	3/8
X-25-34	.469	.922	.065	7/16
X-25-26	.531	1.062	.095	1/2
X-25-15	.656	1.312	.095	5/8
X-25-29	.812	1.469	.134	3/4
X-25-127	1.062	2.000	.134	1

## 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>					
M931-05055-60	M5-0.80 x 55	<b>Hex Head Bolts (Partial Thread), continued</b>		<b>Hex Head Bolts (Full Thread), continued</b>	
M931-06040-60	M6-1.00 x 40	M960-16090-60	M16-1.50 x 90	M933-12016-60	M12-1.75 x 16
M931-06055-60	M6-1.00 x 55	M931-16090-60	M16-2.00 x 90	M933-12020-60	M12-1.75 x 20
M931-06060-60	M6-1.00 x 60	M931-16100-60	M16-2.00 x 100	M961-12020-60F	M12-1.50 x 20
M931-06060-SS	M6-1.00 x 60	M931-16100-82	M16-2.00 x 100*	M933-12025-60	M12-1.75 x 25
M931-06070-60	M6-1.00 x 70	M931-16120-60	M16-2.00 x 120	M933-12025-82	M12-1.75 x 25*
M931-06070-SS	M6-1.00 x 70	M931-16150-60	M16-2.00 x 150	M961-12030-60	M12-1.25 x 30
M931-06075-60	M6-1.00 x 75			M933-12030-82	M12-1.75 x 30*
M931-06090-60	M6-1.00 x 90	M931-20065-60	M20-2.50 x 65	M961-12030-82F	M12-1.50 x 30*
M931-06145-60	M6-1.00 x 145	M931-20090-60	M20-2.50 x 90	M933-12030-60	M12-1.75 x 30
M931-06150-60	M6-1.00 x 150	M931-20100-60	M20-2.50 x 100	M933-12035-60	M12-1.75 x 35
		M931-20120-60	M20-2.50 x 120	M961-12040-82	M12-1.25 x 40*
M931-08035-60	M8-1.25 x 35	M931-20140-60	M20-2.50 x 140	M933-12040-60	M12-1.75 x 40
M931-08040-60	M8-1.25 x 40	M931-20160-60	M20-2.50 x 160	M933-12040-82	M12-1.75 x 40*
M931-08045-60	M8-1.25 x 45			M961-14025-60	M14-1.50 x 25
M931-08050-60	M8-1.25 x 50	M931-22090-60	M22-2.50 x 90	M933-14025-60	M14-2.00 x 25
M931-08055-60	M8-1.25 x 55	M931-22120-60	M22-2.50 x 120	M961-14050-82	M14-1.50 x 50*
M931-08055-82	M8-1.25 x 55*	M931-22160-60	M22-2.50 x 160		
M931-08060-60	M8-1.25 x 60			M961-16025-60	M16-1.50 x 25
M931-08070-60	M8-1.25 x 70	M931-24090-60	M24-3.00 x 90	M933-16025-60	M16-2.00 x 25
M931-08070-82	M8-1.25 x 70*	M931-24120-60	M24-3.00 x 120	M961-16030-82	M16-1.50 x 30*
M931-08075-60	M8-1.25 x 75	M931-24160-60	M24-3.00 x 160	M933-16030-82	M16-2.00 x 30*
M931-08080-60	M8-1.25 x 80	M931-24200-60	M24-3.00 x 200	M933-16035-60	M16-2.00 x 35
M931-08090-60	M8-1.25 x 90			M961-16040-60	M16-1.50 x 40
M931-08095-60	M8-1.25 x 95	<b>Hex Head Bolts (Full Thread)</b>			
M931-08100-60	M8-1.25 x 100	M933-04006-60	M4-0.70 x 6	M933-16040-60	M16-2.00 x 40
M931-08110-60	M8-1.25 x 110			M961-16045-82	M16-1.50 x 45*
M931-08120-60	M8-1.25 x 120	M933-05030-60	M5-0.80 x 30	M933-16045-82	M16-2.00 x 45*
M931-08130-60	M8-1.25 x 130	M933-05035-60	M5-0.80 x 35	M933-16050-60	M16-2.00 x 50
M931-08140-60	M8-1.25 x 140	M933-05050-60	M5-0.80 x 50	M933-16050-82	M16-2.00 x 50*
M931-08150-60	M8-1.25 x 150			M933-16060-60	M16-2.00 x 60
M931-08200-60	M8-1.25 x 200	M933-06010-60	M6-1.00 x 10	M933-16070-60	M16-2.00 x 70
		M933-06012-60	M6-1.00 x 12		
M931-10040-82	M10-1.25 x 40*	M933-06014-60	M6-1.00 x 14	M933-18035-60	M18-2.50 x 35
M931-10040-60	M10-1.50 x 40	M933-06016-60	M6-1.00 x 16	M933-18050-60	M18-2.50 x 50
M931-10045-60	M10-1.50 x 45	M933-06020-60	M6-1.00 x 20	M933-18060-60	M18-2.50 x 60
M931-10050-60	M10-1.50 x 50	M933-06025-60	M6-1.00 x 25		
M931-10050-82	M10-1.25 x 50*	M933-06030-60	M6-1.00 x 30	M933-20050-60	M20-2.50 x 50
M931-10055-60	M10-1.50 x 55	M933-06040-60	M6-1.00 x 40	M933-20055-60	M20-2.50 x 55
M931-10060-60	M10-1.50 x 60	M933-06050-60	M6-1.00 x 50		
M931-10065-60	M10-1.50 x 65			M933-24060-60	M24-3.00 x 60
M931-10070-60	M10-1.50 x 70	M933-07025-60	M7-1.00 x 25	M933-24065-60	M24-3.00 x 65
M931-10080-60	M10-1.50 x 80			M933-24070-60	M24-3.00 x 70
M931-10080-82	M10-1.25 x 80*	M933-08010-60	M8-1.25 x 10		
M931-10090-60	M10-1.50 x 90	M933-08012-60	M8-1.25 x 12	<b>Pan Head Machine Screws</b>	
M931-10090-82	M10-1.50 x 90*	M933-08016-60	M8-1.25 x 16	M7985A-03010-20	M3-0.50 x 10
M931-10100-60	M10-1.50 x 100	M933-08020-60	M8-1.25 x 20	M7985A-03012-20	M3-0.50 x 12
M931-10110-60	M10-1.50 x 110	M933-08025-60	M8-1.25 x 25	M7985A-04010-20	M4-0.70 x 10
M931-10120-60	M10-1.50 x 120	M933-08030-60	M8-1.25 x 30	M7985A-04016-20	M4-0.70 x 16
M931-10130-60	M10-1.50 x 130	M933-08030-82	M8-1.25 x 30*	M7985A-04020-20	M4-0.70 x 20
M931-10140-60	M10-1.50 x 140			M7985A-04050-20	M4-0.70 x 50
M931-10180-60	M10-1.50 x 180	M933-10012-60	M10-1.50 x 12	M7985A-04100-20	M4-0.70 x 100
M931-10235-60	M10-1.50 x 235	M961-10020-60	M10-1.25 x 20		
M931-10260-60	M10-1.50 x 260	M933-10020-60	M10-1.50 x 20	M7985A-05010-20	M5-0.80 x 10
M960-10330-60	M10-1.25 x 330	M933-10025-60	M10-1.50 x 25	M7985A-05012-20	M5-0.80 x 12
		M961-10025-60	M10-1.25 x 25	M7985A-05016-20	M5-0.80 x 16
M931-12045-60	M12-1.75 x 45	M933-10025-82	M10-1.50 x 25*	M7985A-05020-20	M5-0.80 x 20
M960-12050-60	M12-1.25 x 50	M961-10030-60	M10-1.25 x 30	M7985A-05025-20	M5-0.80 x 25
M960-12050-82	M12-1.25 x 50*	M933-10030-60	M10-1.50 x 30	M7985A-05030-20	M5-0.80 x 30
M931-12050-60	M12-1.75 x 50	M933-10030-82	M10-1.50 x 30*	M7985A-05080-20	M5-0.80 x 80
M931-12050-82	M12-1.75 x 50*	M961-10035-60	M10-1.25 x 35	M7985A-05100-20	M5-0.80 x 100
M931-12055-60	M12-1.75 x 55	M933-10035-60	M10-1.50 x 35		
M931-12060-60	M12-1.75 x 60	M933-10035-82	M10-1.50 x 35*	M7985A-06100-20	M6-1.00 x 100
M931-12060-82	M12-1.75 x 60*	M961-10040-60	M10-1.25 x 40		
M931-12065-60	M12-1.75 x 65			<b>Flat Head Machine Screws</b>	
M931-12075-60	M12-1.75 x 75			M965A-04012-SS	M4-0.70 x 12
M931-12080-60	M12-1.75 x 80			M965A-05012-SS	M5-0.80 x 12
M931-12090-60	M12-1.75 x 90			M965A-05016-20	M5-0.80 x 16
M931-12100-60	M12-1.75 x 100			M965A-06012-20	M6-1.00 x 12
M931-12110-60	M12-1.75 x 110				

\* 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.

# Notes

**TP-6337 3/06a**

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