

Service Parts

Marine Generator Sets



Models:

28/32EOZD
23/27EFOZD

KOHLER[®]
POWER SYSTEMS

9001
KOHLER
POWER SYSTEMS
NATIONALLY REGISTERED

TP-6273 6/04a

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Introduction

This manual lists service replacement parts for 28EOZD/23EFOZD and 32EOZD/27EFOZD 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.

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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 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.

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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.

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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.

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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.

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Specification Number Index

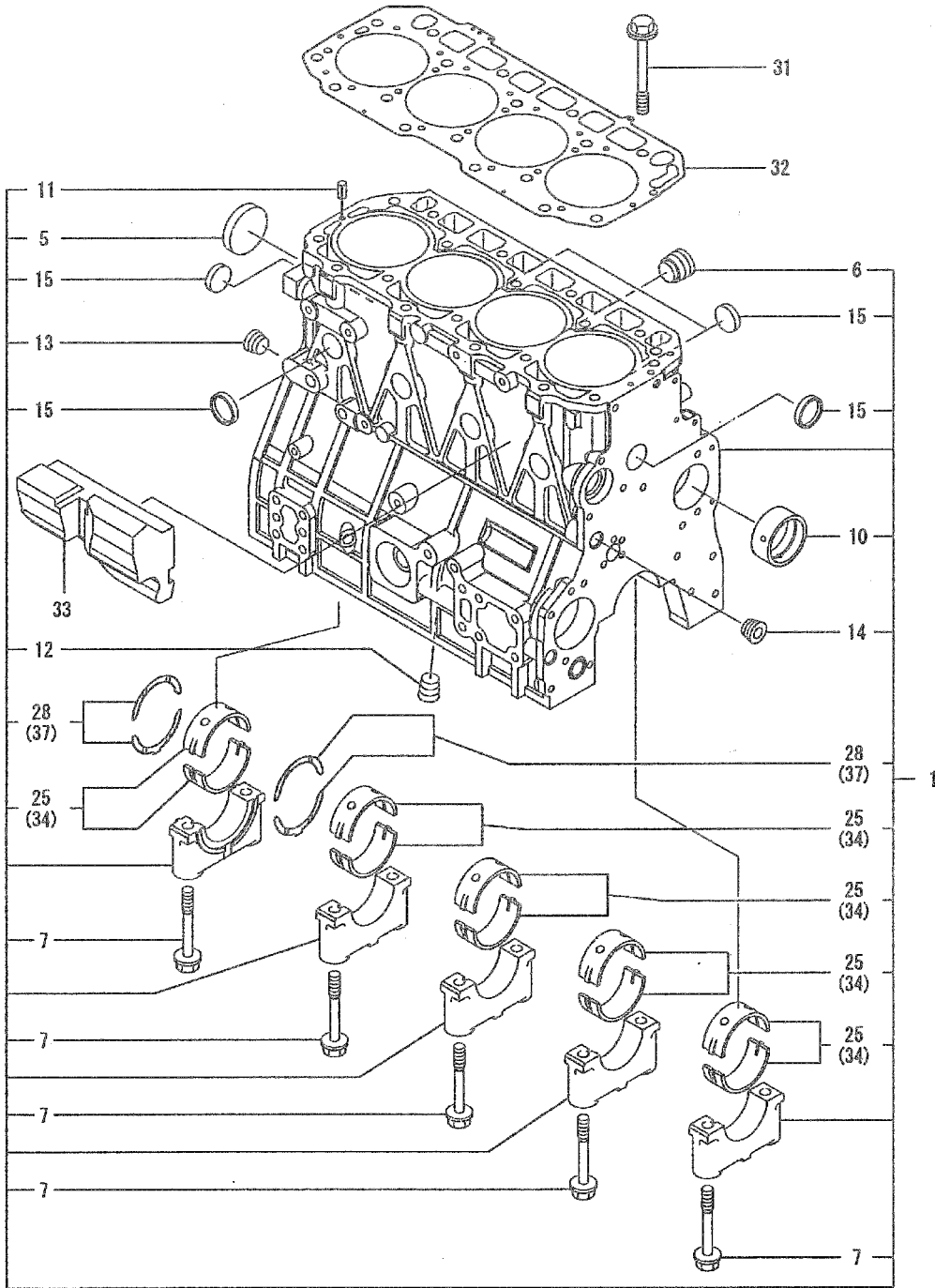
Group Title	<i>Cylinder Block</i>	<i>Gear Housing</i>	<i>Flywheel Housing & Oil Pan</i>	<i>Cylinder Head</i>	<i>Intake Manifold</i>	<i>Camshaft and Drive Gear</i>	<i>Crankshaft and Piston</i>	<i>Lube Oil System</i>	<i>Cooling Water System</i>	<i>Fuel Injection Pump</i>	<i>Fuel Injection Valve</i>	<i>Fuel Line</i>	<i>Starting Motor</i>	<i>Gasket Set</i>
Group No.	1	2	3	4	5	6	7	8	9	10	11	12	13	15
Spec No.	Variation Number													

GM32566-GA1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
GM32566-GA2	1	1	1	1	1	1	1	1	2	2	1	1	2	1
GM32566-GA3	1	1	1	1	1	1	1	1	1	1	1	1	1	1
GM32566-GA4	1	1	1	1	1	1	1	1	2	2	1	1	2	1
GM32566-GA5	1	1	1	1	1	1	1	1	1	1	1	1	1	1
GM32566-GA6	1	1	1	1	1	1	1	1	2	2	1	1	2	1
GM32566-GA7	1	1	1	1	1	1	1	1	1	1	1	1	1	1
GM32566-GA8	1	1	1	1	1	1	1	1	2	2	1	1	2	1

Group Title	<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.	101	103	104	105	107	109	201	301	701
Spec No.	Variation Number								

GM32566-GA1	GR1	GR2	GR4	GR5	GR7	GR9	GR10	GR12	52
GM32566-GA2	GR1	GR3	GR4	GR6	GR7	GR9	GR10	GR13	52
GM32566-GA3	GR1	GR2	GR4	GR5	GR8	GR9	GR11	GR12	55
GM32566-GA4	GR1	GR3	GR4	GR6	GR8	GR9	GR11	GR13	53
GM32566-GA5	GR1	GR2	GR4	GR5	GR7	GR9	GR10	GR12	54
GM32566-GA6	GR1	GR3	GR4	GR6	GR7	GR9	GR10	GR13	54
GM32566-GA7	GR1	GR2	GR4	GR5	GR8	GR9	GR11	GR12	55
GM32566-GA8	GR1	GR3	GR4	GR6	GR8	GR9	GR11	GR13	55

Group 1: Cylinder Block

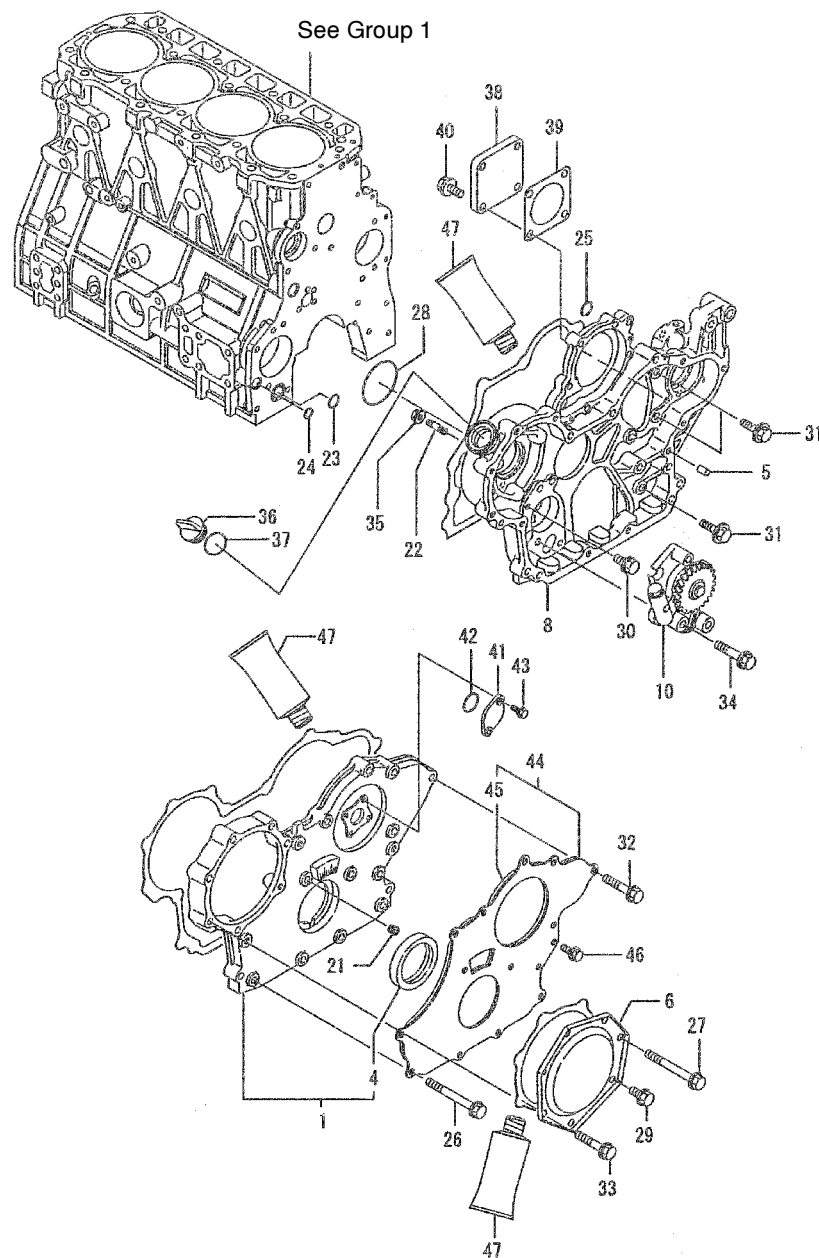


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Item	Part No.	Description	Qty.
			Var. 1
1	GM35762	Block assembly, cylinder	1
5	GM35649	Plug 55	1
6	252566	Plug	1
7	363104	Bolt, metal cap	10
10	363106	Bush, camshaft	1
11	250963	Spring pin, 6 x 12	2
12	GM35720	Plug, screw	1
13	GM35720	Plug, screw	1
14	GM35720	Plug, screw	1

Item	Part No.	Description	Qty.
			Var. 1
15	225924	Plug 30	8
25	GM35761	Main bearing set	5
28	363108	Bearing assembly, thrust	2
31	363098	Bolt, head	18
32	GM35657	Gasket, cylinder head	1
33	GM35656	Spacer	1
34	363105	Main bearing US=.025	5
37	363109	Bearing, thrust .25 OS	2

Group 2: Gear Housing

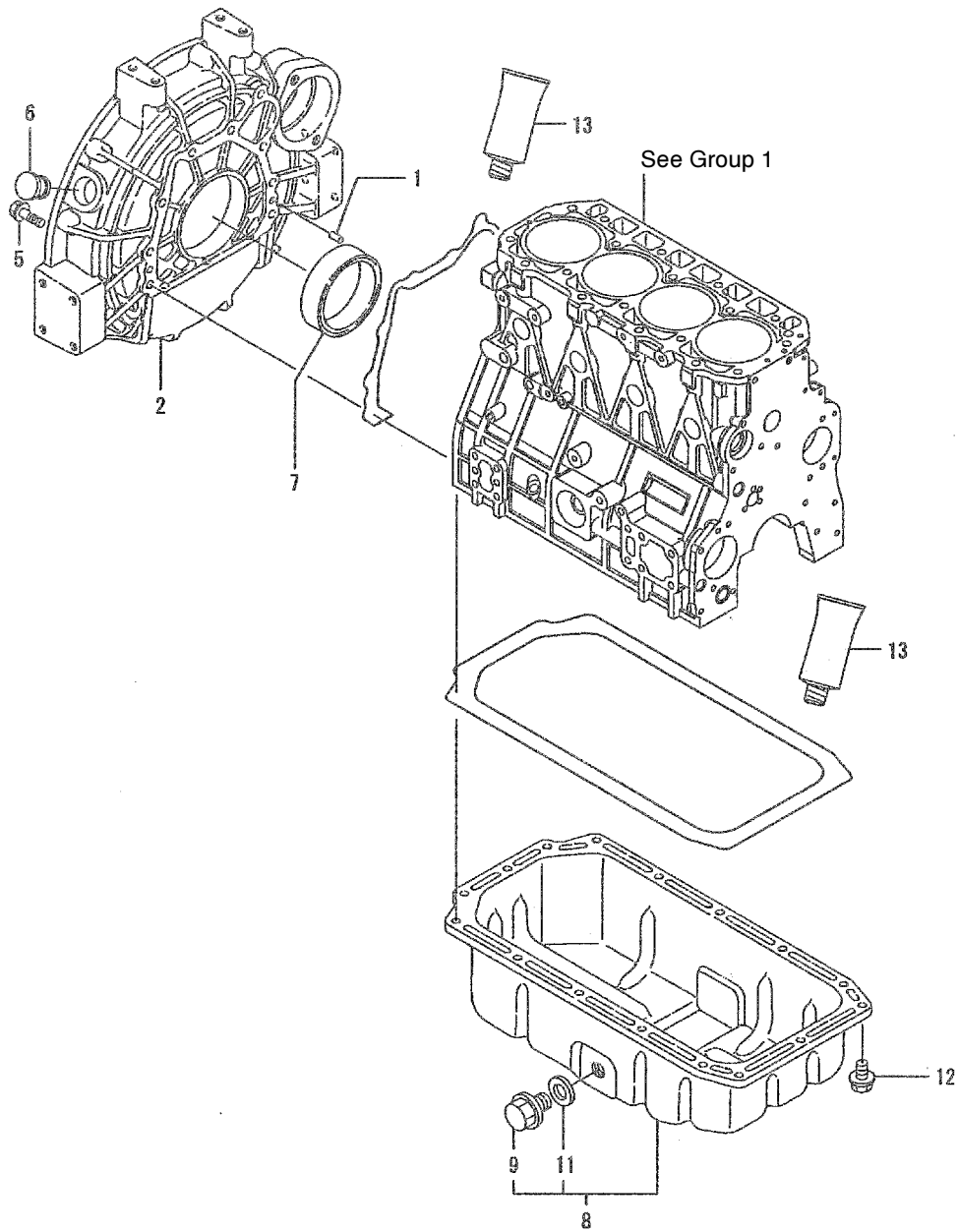


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Item	Part No.	Description	Qty. Var.
1	GM35763	Housing assembly, cover	1
4	363100	Seal, oil	1
5	256750	Parallel pin 8 x 16	4
6	363099	Cover, pump	1
8	GM35658	Housing, gear	1
10	GM35652	Pump assembly, oil	1
21	GM13812	Plug, PT 1/8, screw	1
22	GM35729	Stud	4
23	363143	O-ring	1
24	363145	O-ring	1
25	250800	O-ring	1
26	GM35521	Bolt, M8 x 70 plated	6
27	GM35521	Bolt, M8 x 70 plated	1
28	GM35724	Packing	1
29	252696	Bolt, M8 x 16	1
30	252696	Bolt, M8 x 16	1
31	252697	Bolt	3

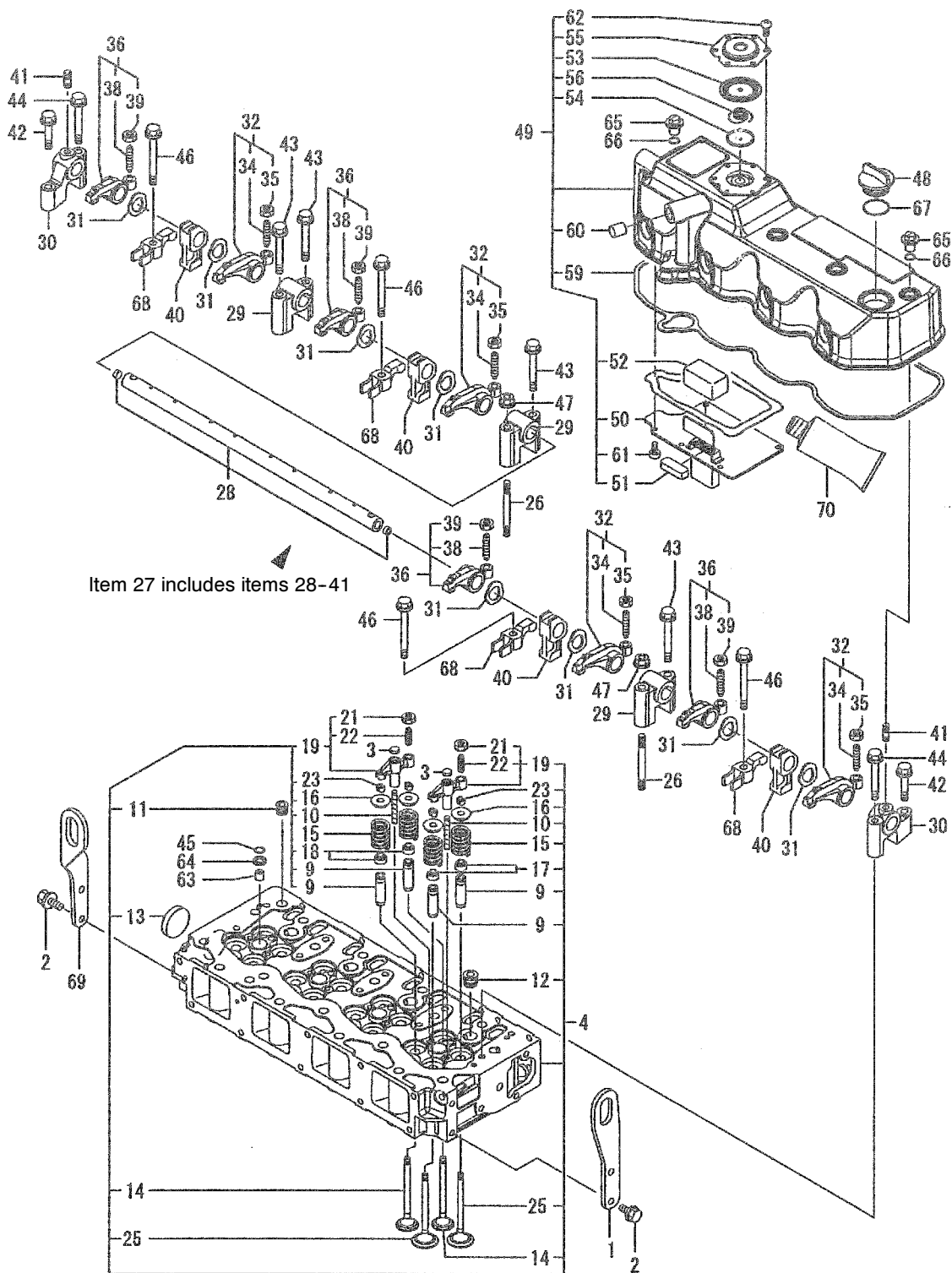
Item	Part No.	Description	Qty. Var.
32	252702	Bolt	5
33	252702	Bolt	5
34	252703	Bolt	3
35	229772	Nut	4
36	250837	Cap, lube oil	1
37	252684	O-ring	1
38	256531	Cover	1
39	252085	Gasket	1
40	252696	Bolt, M8 x 16	4
41	252750	Cover, blind	1
42	256796	O-ring	1
43	252693	Bolt	2
44	GM35650	Cover assembly	1
45	GM35651	Sponge	1
46	252696	Bolt, M8 x 16	3
47	252998	Gasket	1

Group 3: Flywheel Housing and Oil Pan



Item	Part No.	Description	Qty. Var.
1	256750	Parallel pin, 8 x 16	2
2	363187	Housing, flywheel	1
5	GM35728	Bolt, M10 x 35 plated	9
6	363011	Plug 25, rubber	1
7	363094	Seal	1
8	363172	Pump assembly, oil	1
9	225386	Drain plug, M22	1
11	225425	Seal washer	1
12	252695	Bolt, M8 x 12	16
13	252998	Gasket	1

Group 4: Cylinder Head

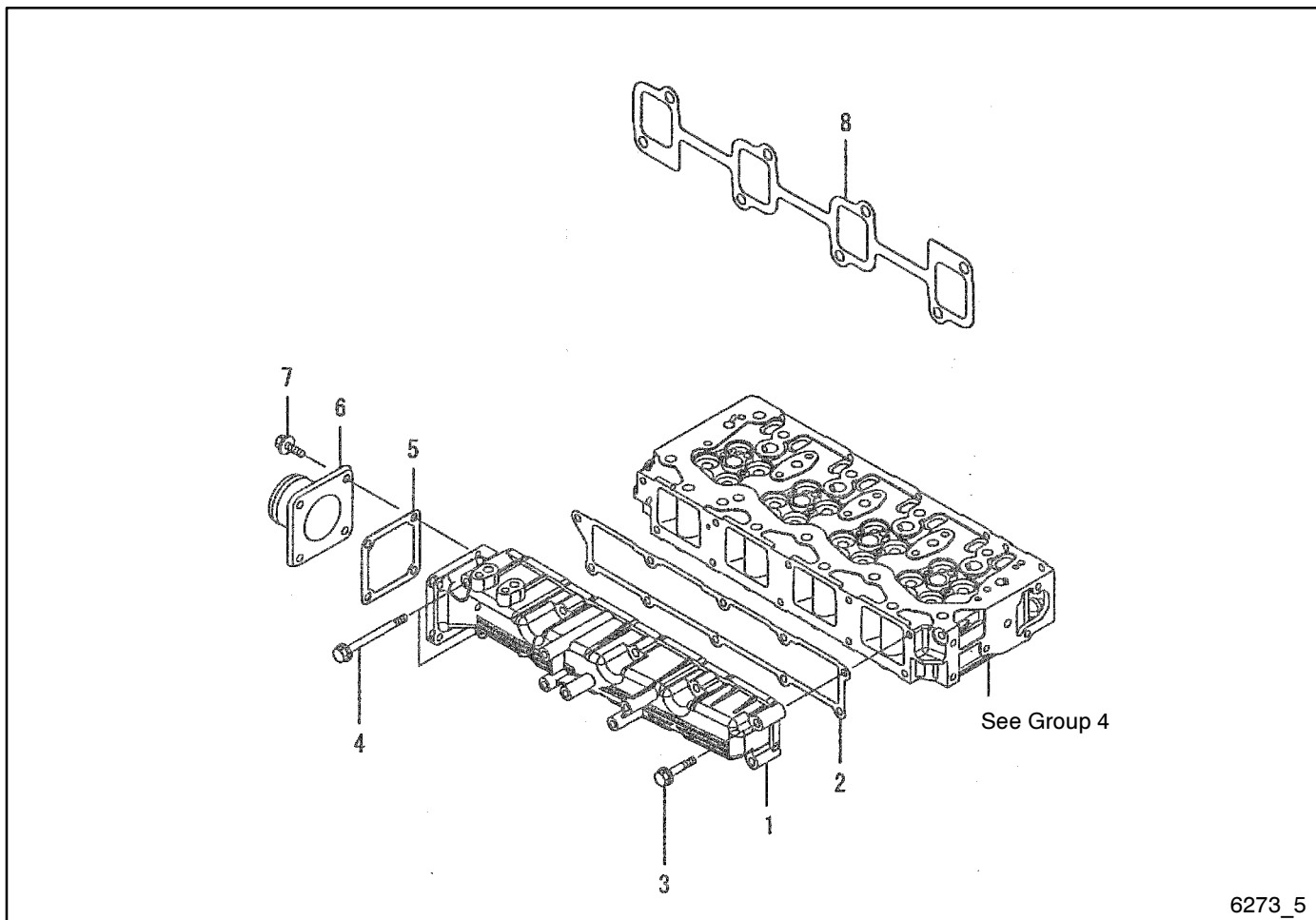


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Group 4: Cylinder Head

Item	Part No.	Description	Qty.
			Var. 1
1	GM35664	Lifter, engine	1
2	252696	Bolt, M8 x 16	4
3	GM35505	Seat, valve bridge	8
4	GM35677	Head assembly, cylinder	1
9	GM35678	Guide, valve	16
10	GM35507	Guide, valve bridge	8
11	GM35719	Plug, screw	1
12	GM35720	Plug, screw	4
13	252732	Plug 40	1
14	GM35666	Valve, exhaust	6
15	GM35667	Valve spring	16
16	363031	Retainer, spring	16
17	225766	Seal, valve stem	8
18	250844	Seal, valve stem	8
19	GM35674	Bridge assembly, valve	8
21	252817	Nut, M8 x p1.0	8
22	GM35508	Screw, valve bridge	8
23	250806	Pin, cotter	16
25	GM35665	Valve, intake	8
26	GM35420	Bolt, 8 x 80	2
27	GM35673	Support	1
28	GM35668	Shaft, rocker arm	1
29	GM35669	Support	3
30	GM35670	Support	2
31	GM35504	Washer	8
32	GM35675	Arm assembly, rocker	4
34	229844	Valve screw	4
35	252817	Nut, M8 x 1.0	4
36	GM35676	Arm assembly, rocker	4
38	229844	Valve screw	4
39	252817	Nut, M8 x 1.0	4
40	GM35680	Pedestal	4
41	GM35730	Stud, M8 x 22 plated	2
42	252702	Bolt	2
43	252705	Bolt	4
44	252705	Bolt	2
45	250801	O-ring	4
46	GM35681	Bolt, retainer	4
47	GM35732	Nut	2
48	250837	Cap, lube oil	1
49	GM35672	Bonnet assembly	1
50	GM35661	Plate, baffle	1
51	GM35662	Baffle	1
52	GM35663	Baffle	1
53	GM35500	Diaphragm, breather	1
54	GM35501	Center plate	1
55	GM35502	Plate, breather	1
56	GM35503	Spring, diaphragm	1
59	GM35671	Packing, bonnet	1
60	GM35422	Plug	1
61	363201	Screw, tapping, 5 x 10	6
62	363201	Screw, tapping, 5 x 10	6
63	GM35450	Protector, nozzle	4
64	252744	Seat	4
65	252470	Cap nut	4
66	250801	O-ring	4
67	252684	O-ring	1
68	GM35679	Retainer	4
69	GM35702	Lifter, engine	1
70	252998	Gasket	1

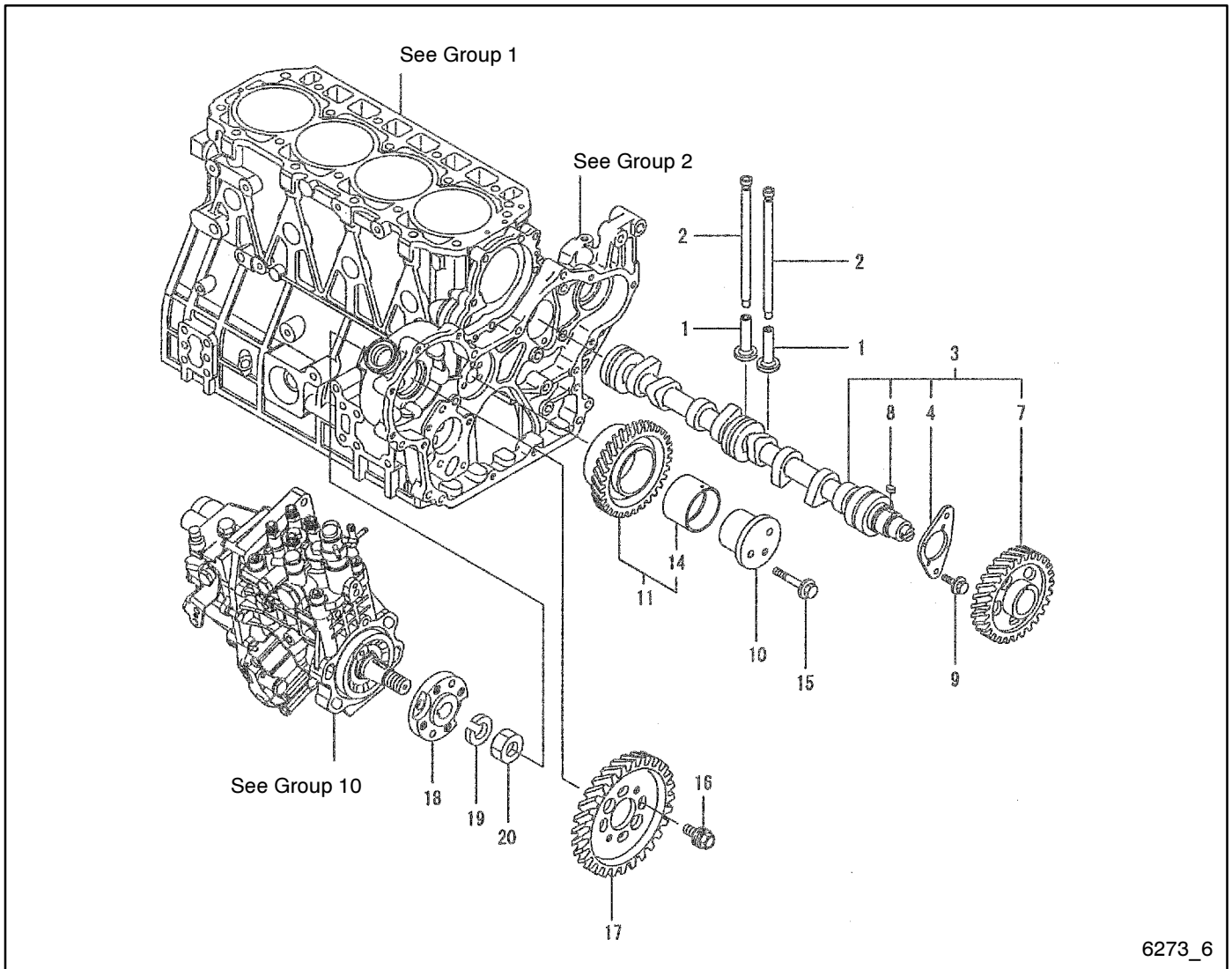
Group 5: Intake Manifold



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Item	Part No.	Description	Qty.
			Var.
1	GM35706	Intake manifold	1
2	GM35682	Gasket, intake manifold	1
3	252703	Bolt	8
4	252707	Bolt	2
5	363089	Gasket	1
6	GM35498	Joint	1
7	225818	Bolt, M8 x 14	4
8	363127	Gasket	1

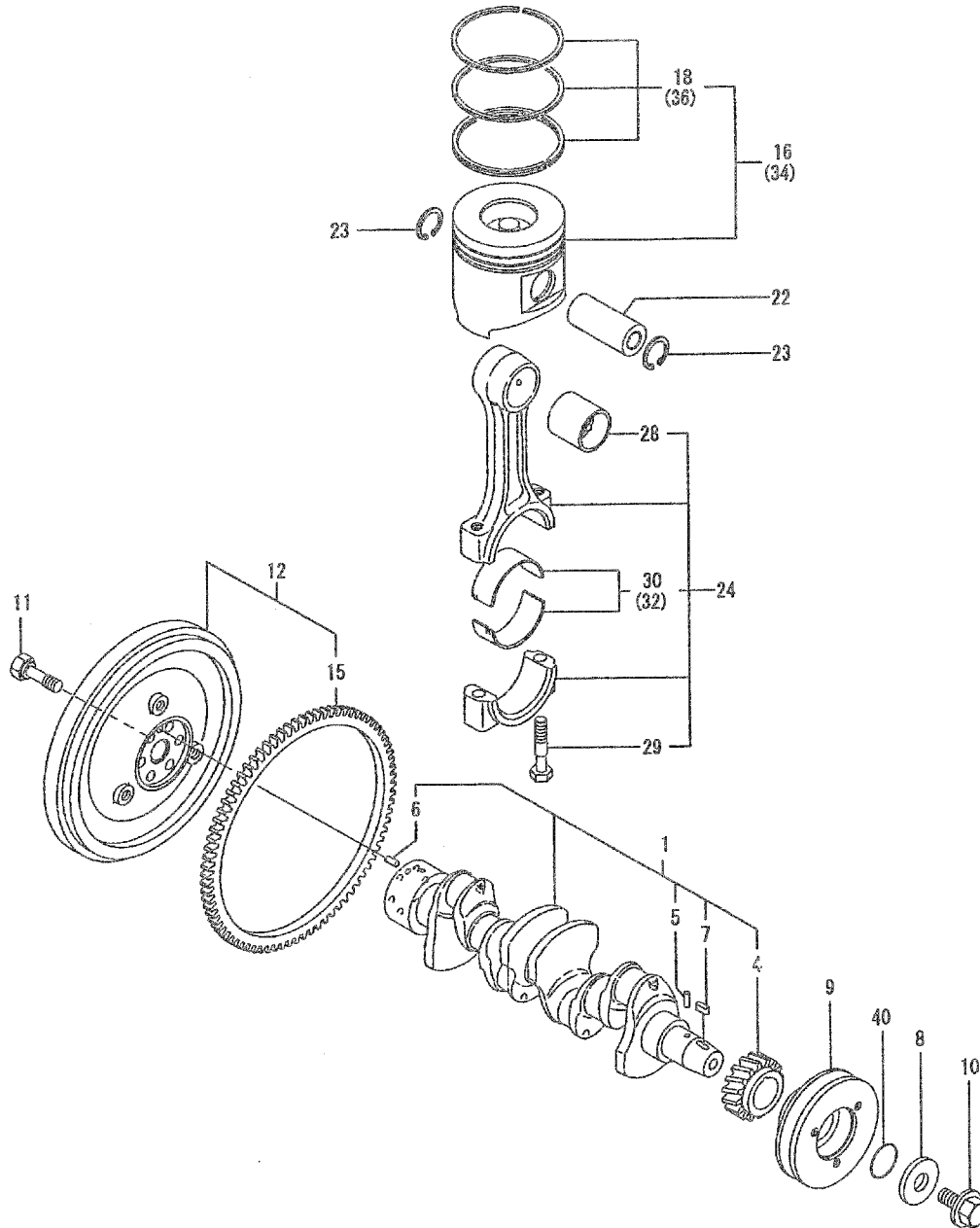
Group 6: Camshaft and Drive Gear



6273_6

Item	Part No.	Description	Qty.
			Var.
1	252819	Tappet	8
2	GM35683	Push rod	8
3	GM35684	Camshaft assembly	1
4	252804	Metal, thrust	1
7	363128	Gear, camshaft	1
8	252669	Key, 7 x 14	1
9	252696	Bolt, M8 x 16	2
10	GM35499	Shaft	1
11	363140	Gear assembly, idle	1
14	252825	Bush, idle gear	1
15	256798	Bolt, M8 x 55 plated	3
16	GM35707	Bolt	4
17	GM35509	Gear	1
18	GM35712	Flange	1
19	GM35715	Washer, spring	1
20	250992	Nut, lock	1

Group 7: Crankshaft and Piston

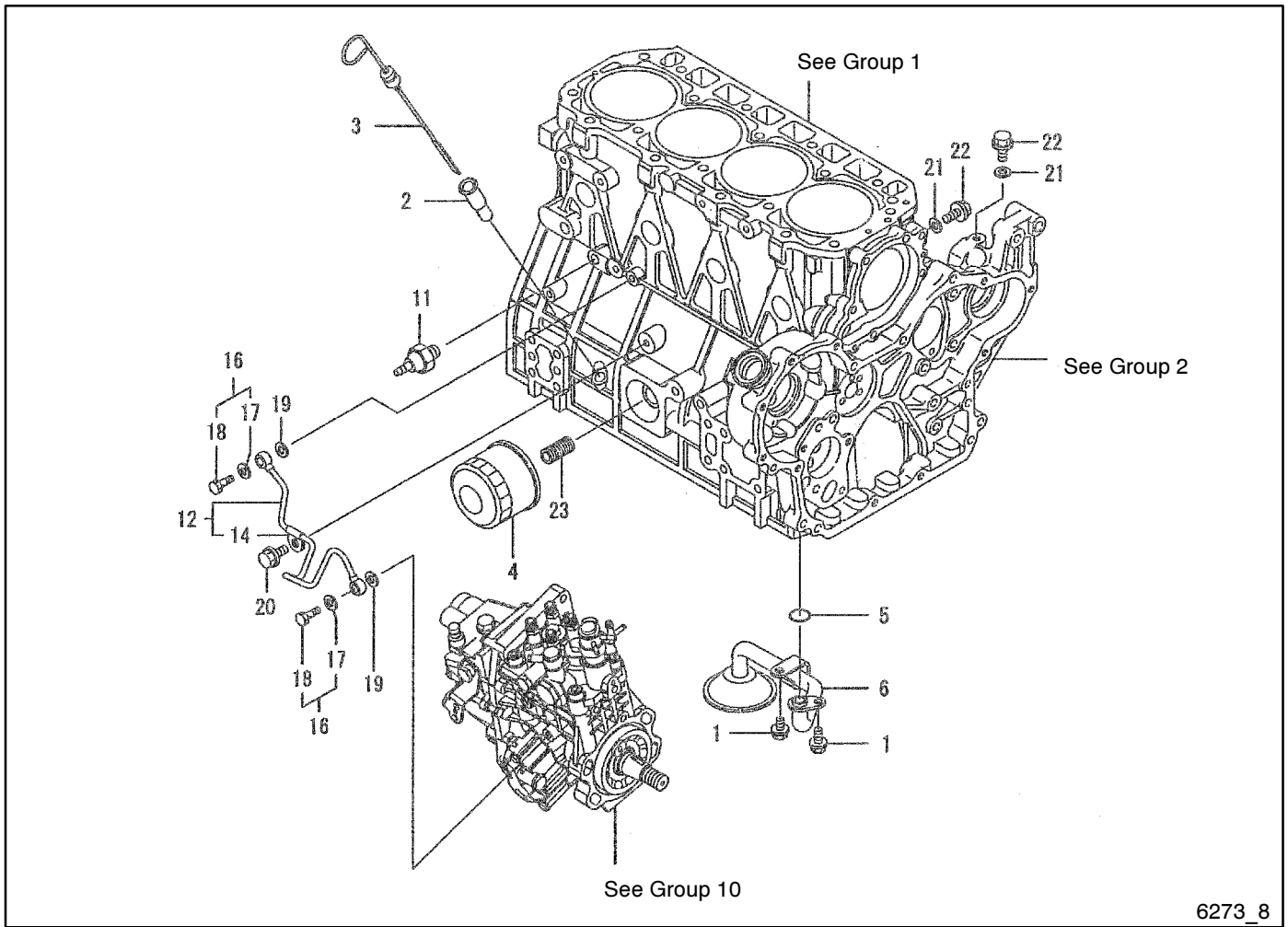


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Item	Part No.	Description	Qty. Var.
1	363173	Crankshaft	1
4	363131	Gear, crankshaft	1
5	363085	Parallel pin	1
6	363086	Parallel pin, 10 x 22	1
7	252669	Key, 7 x 14	1
8	GM35709	Washer	1
9	GM35710	V-pulley, crankshaft	1
10	GM35703	Bolt, V-pulley	1
11	363084	Bolt, flywheel	6
12	363174	Flywheel assembly	1
15	363095	Ring gear	1
16	GM35686	Piston wiring	4

Item	Part No.	Description	Qty. Var.
18	GM35685	Ring set, piston	4
22	363082	Pin, piston	4
23	252347	Circlip 30	8
24	363134	Rod assembly, connecting	4
28	363138	Bush, piston pin	4
29	363135	Bolt, rod	8
30	363136	Metal assembly, crankpin	4
32	363137	Bearing, pin US=0.25	4
34	GM35764	Piston w/ring OS=25	4
36	GM35765	Ring set OS=0.25	4
40	252688	O-ring	1

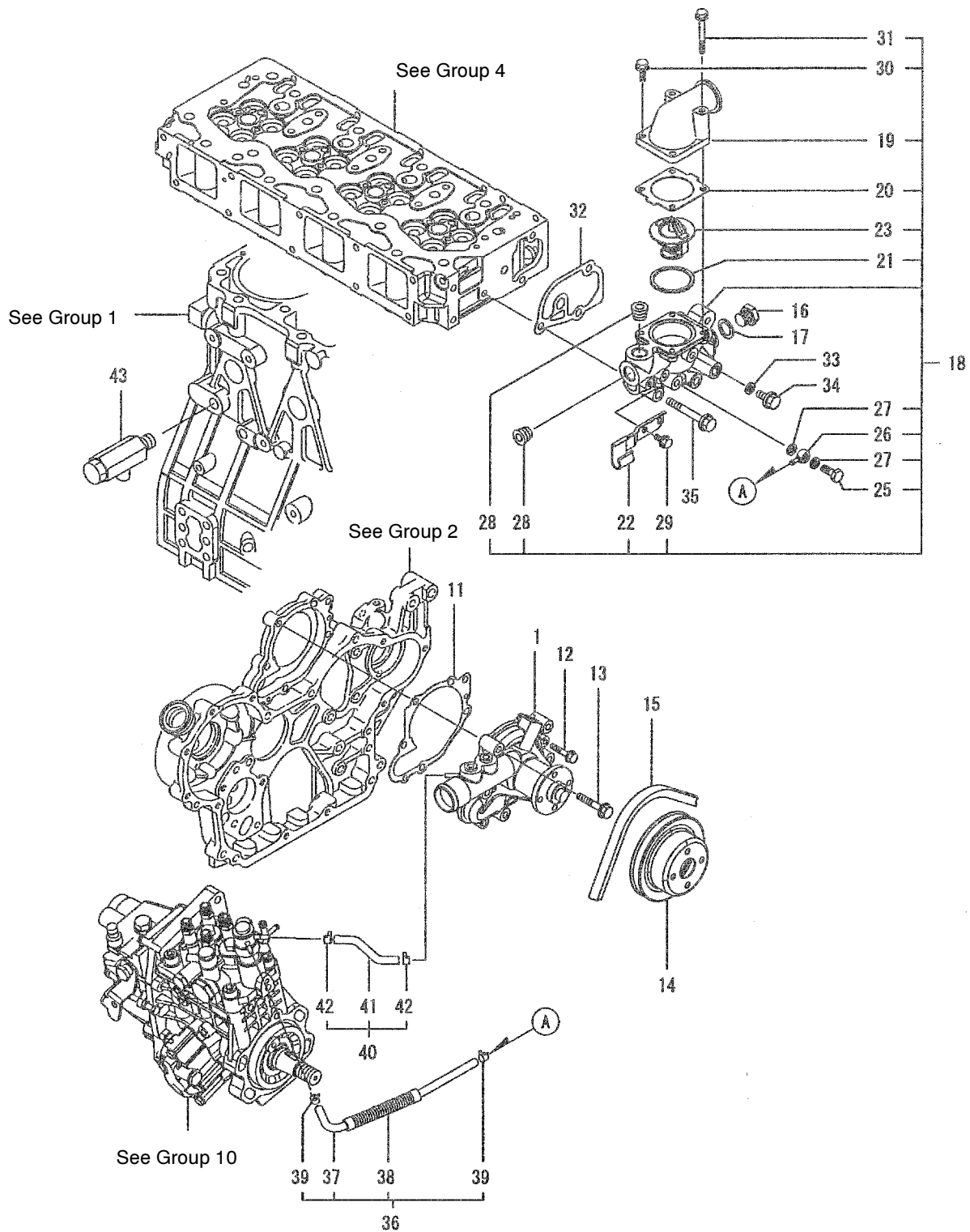
Group 8: Lubrication Oil System



6273_8

Item	Part No.	Description	Qty.
			Var. 1
1	252695	Bolt, M8 x 12	2
2	252759	Guide, dipstick	1
3	363146	Dipstick	1
4	252834	Filter, oil	1
5	363143	O-ring	1
6	363147	Pipe assembly, oil	1
11	GM35419	Switch, oil pressure	1
12	GM35687	Pipe assembly, oil	1
14	GM35510	Support, pipe	1
16	GM35550	Bolt assembly, joint	2
17	252734	Washer 8, seal	2
18	252677	Joint bolt	2
19	252734	Washer 8, seal	2
20	252695	Bolt, M8 x 12	1
21	252734	Washer 8, seal	2
22	252695	Bolt, M8 x 12	2
23	363012	Stud, lube oil filter	1

Group 9: Cooling Water System

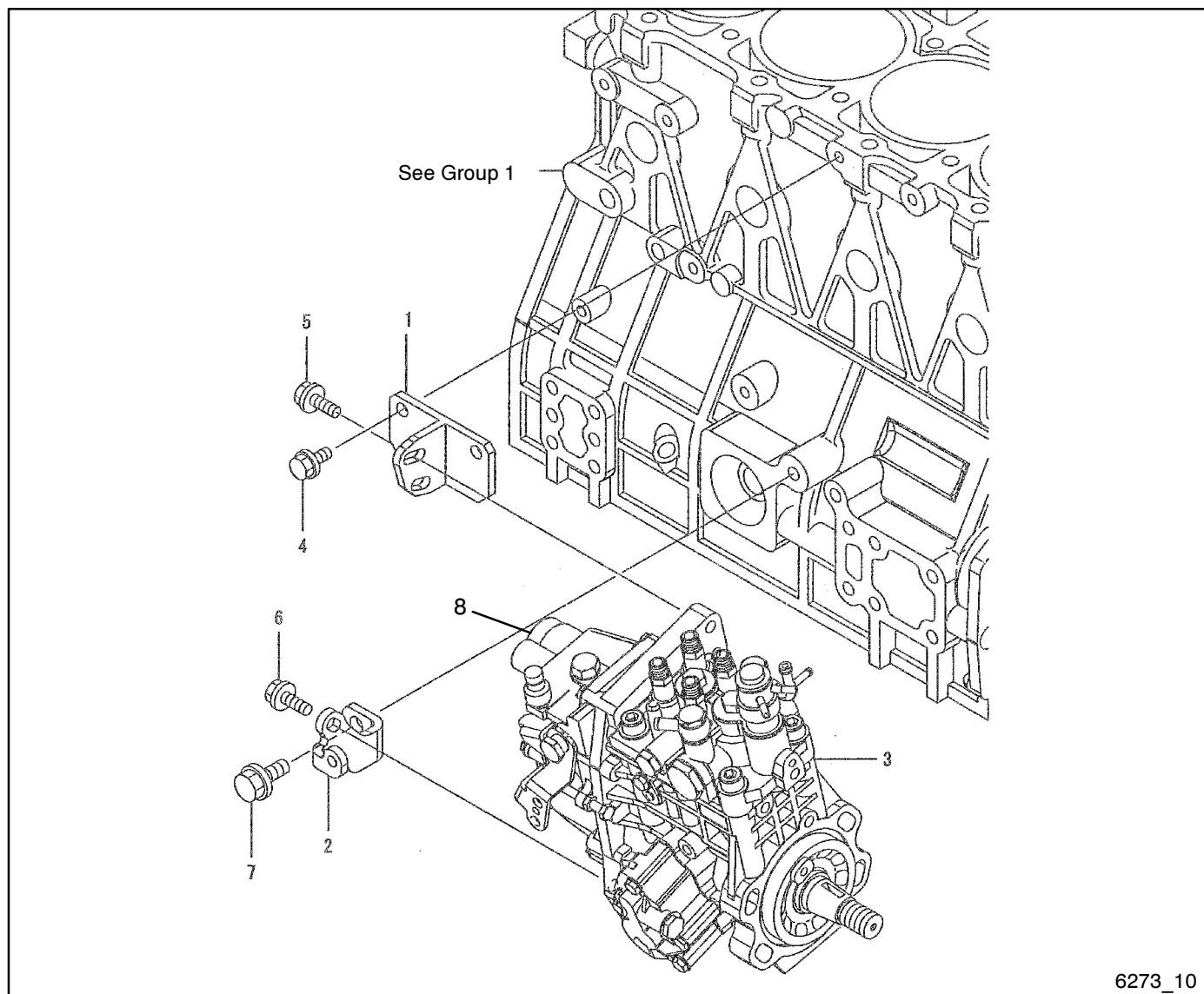


6273_9

Group 9: Cooling Water System

Item	Part No.	Description	Qty.	
			Var.	
			1	2
1	GM35688	Pump assembly, water	1	1
11	363150	Gasket, cooling water pump	1	1
12	229763	Bolt, M6 x 30	2	2
13	256798	Bolt, M8 x 55 Plated	5	5
14	363151	Pulley	1	1
15	363205	V-belt	1	
15	258955	V-belt (24 V models)		1
16	252757	Plug M16	1	1
249469	252773	Packing	1	1
18	GM35655	Case assembly, thermostat	1	1
19	GM23575	Cover, thermostat	1	1
20	363087	Gasket, thermostat	1	1
21	363088	Gasket, thermostat	1	1
22	GM35693	Pipe assembly, injection	1	1
23	-	Thermostat (see Group 104)	1	1
25	250995	Pipe bolt	1	1
26	GM35718	Joint	1	1
27	250967	Gasket 8, round	2	2
28	GM35704	Plug, drain	2	2
29	225816	Bolt, M6 x 12	2	2
30	225817	Bolt, M6 x 20	2	2
31	363206	Bolt, M6 x 55	2	2
32	363153	Gasket, case	1	1
33	250967	Gasket 8, round	1	1
34	252695	Bolt, M8 x 12	1	1
35	252705	Bolt	3	3
36	GM35689	Hose assembly, water	1	1
37	GM35691	Pipe, cooling water	1	1
38	GM35694	Protector, pipe	1	1
39	229411	Clamp	2	2
40	GM35690	Hose assembly, water	1	1
41	GM35692	Pipe, cooling water	1	1
42	229411	Clamp	2	2
43	252394	Valve	1	1

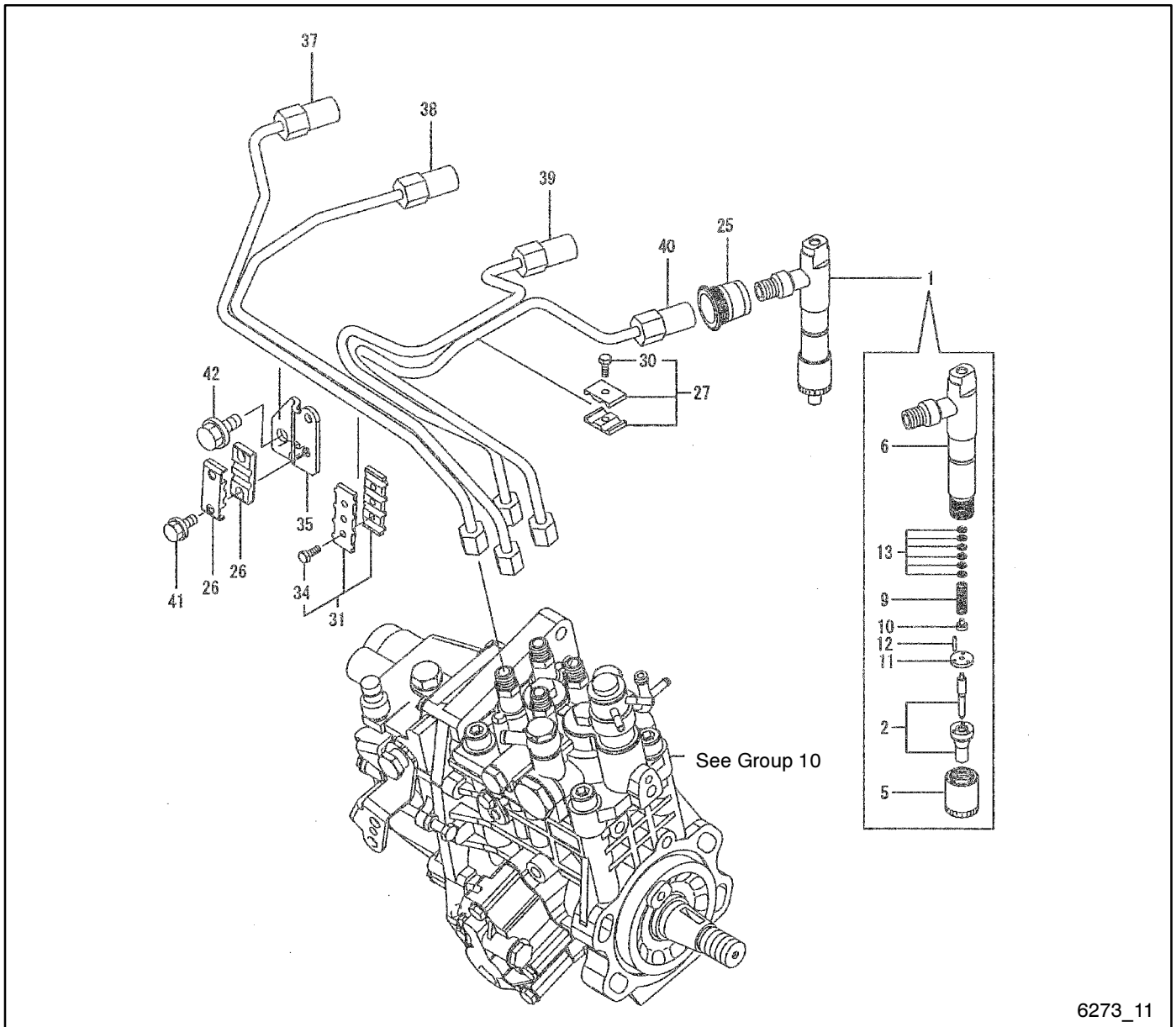
Group 10: Fuel Injection Pump



6273_10

Item	Part No.	Description	Qty.	
			Var.	
			1	2
1	GM35659	Retainer	1	1
2	GM35660	Retainer	1	1
3	GM35767	Injection pump assembly	1	1
4	252696	Bolt, M8 x 16	2	2
5	252698	Bolt	2	2
6	252698	Bolt	1	1
7	225923	Bolt	1	1
8	344746	Solenoid (24 V models)		1

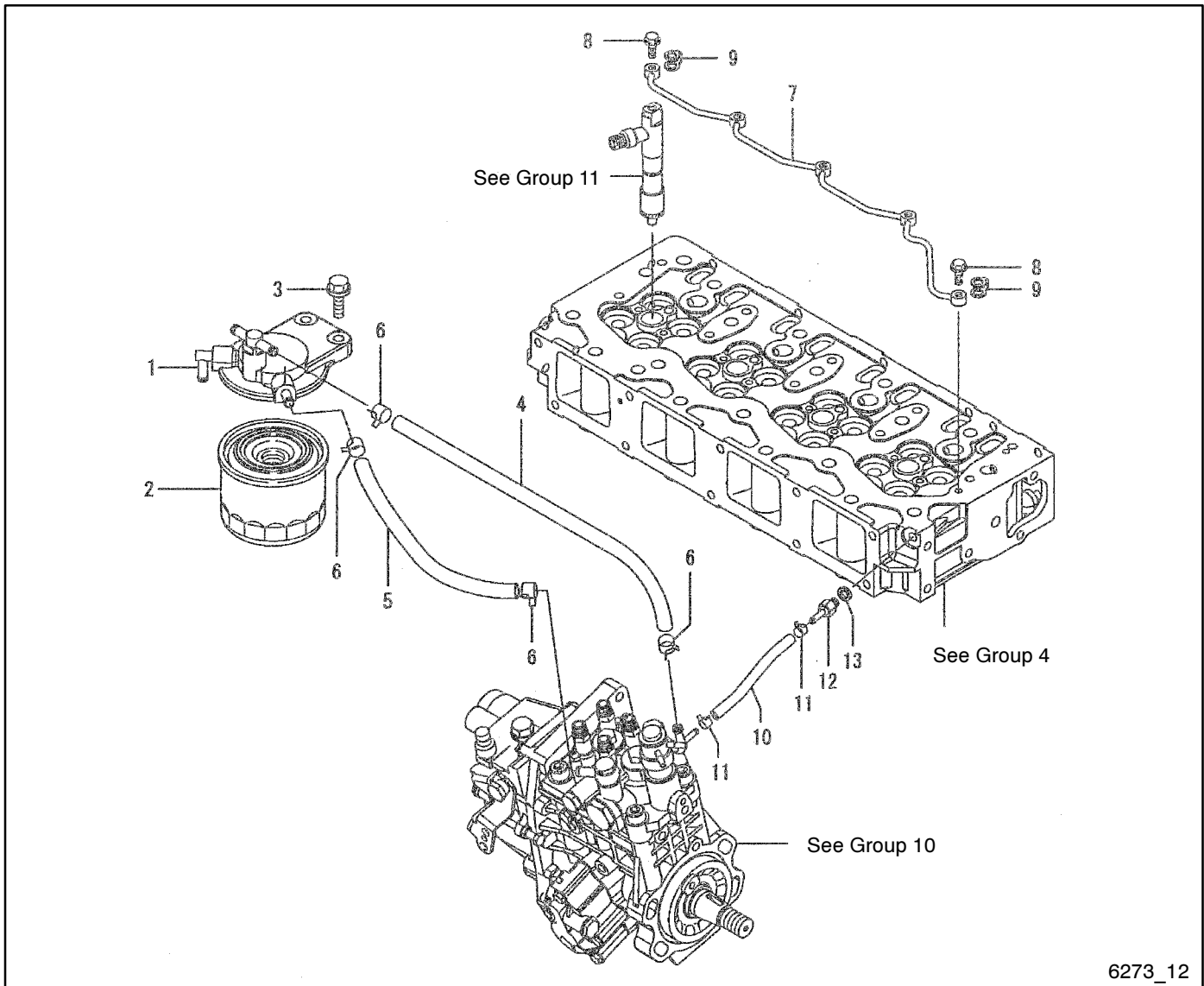
Group 11: Fuel Injection Valve



6273_11

Item	Part No.	Description	Qty. Var.	Item	Part No.	Description	Qty. Var.
1	GM35768	Fuel injector	4	27	225374	Retainer	1
2	GM35705	Nozzle assembly	4	30	225418	Bolt, M4 x 14 hex socket	1
5	256520	Nut, nozzle case	4	31	256708	Retainer	1
6	GM35695	Holder assembly, nozzle	4	34	225418	Bolt, M4 x 14 Hex socket	2
9	256521	Spring nozzle	4	35	GM35697	Pipe assembly, injection	1
10	256522	Seat, nozzle spring	4	37	GM35698	Pipe assembly, injection	1
11	256523	Plate, stop	4	38	GM35699	Pipe assembly, injection	1
12	256707	Pin	8	39	GM35700	Pipe assembly, injection	1
13	256524	Shim set	4	40	GM35701	Pipe assembly, injection	1
25	GM35506	Pipe seal	4	41	252693	Bolt	2
26	252453	Retainer	2	42	229499	Bolt	1

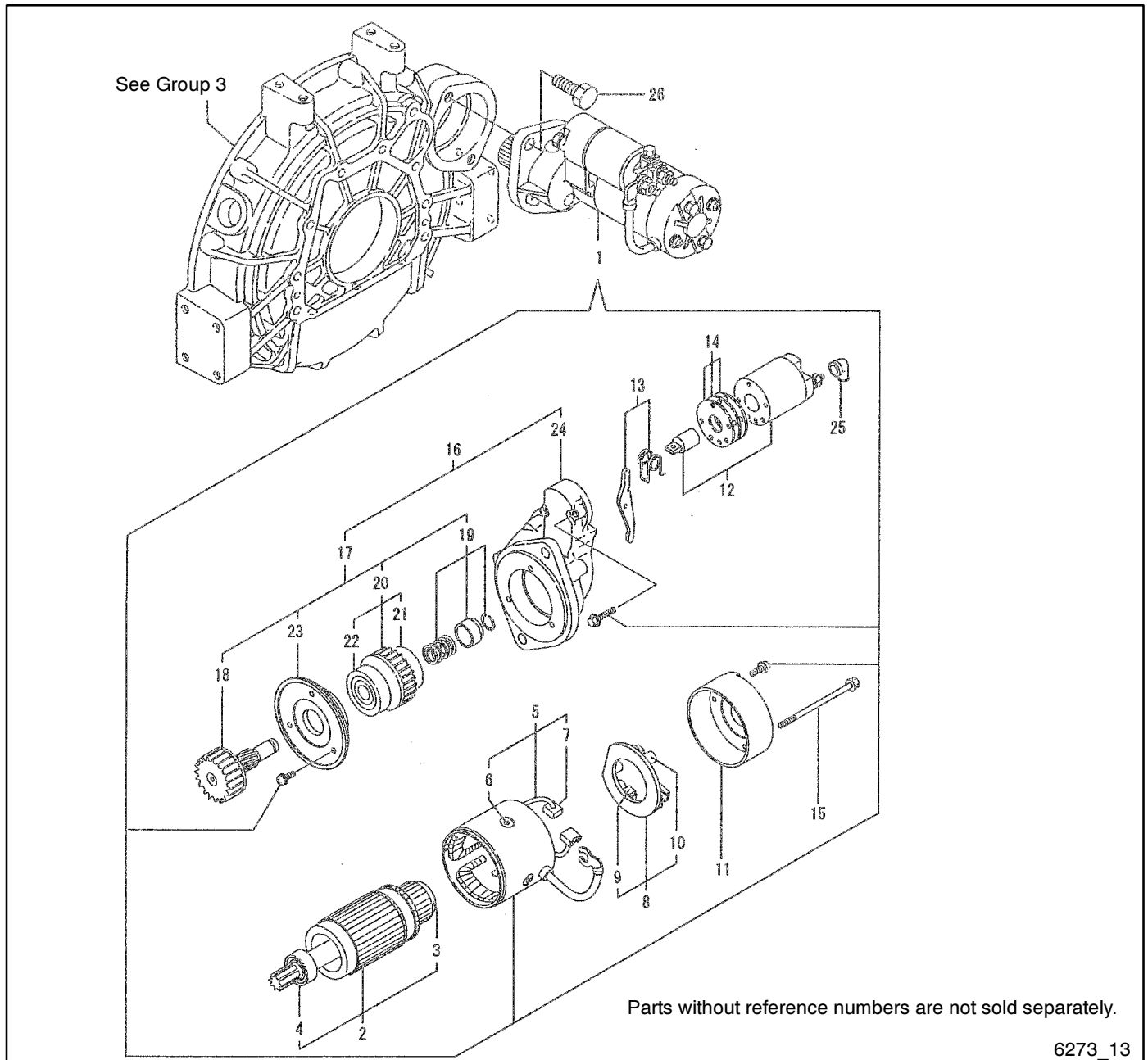
Group 12: Fuel Line



6273_12

Item	Part No.	Description	Qty.
			Var.
1	GM35541	Bracket, filter	1
2	GM32359	Filter, fuel	1
3	225819	Bolt, M8 x 30, plated	2
4	GM35427	Pipe, fuel	1
5	GM35620	Pipe, fuel oil	1
6	252670	Clamp	4
7	GM35696	Pipe assembly, return	1
8	GM35511	Joint bolt, M6	5
9	GM35512	Packing, fuel return	5
10	GM35581	Pipe, fuel oil	1
11	249843	Hose clamp	2
12	GM35513	Joint, hose	1
13	252734	Washer 8, seal	1

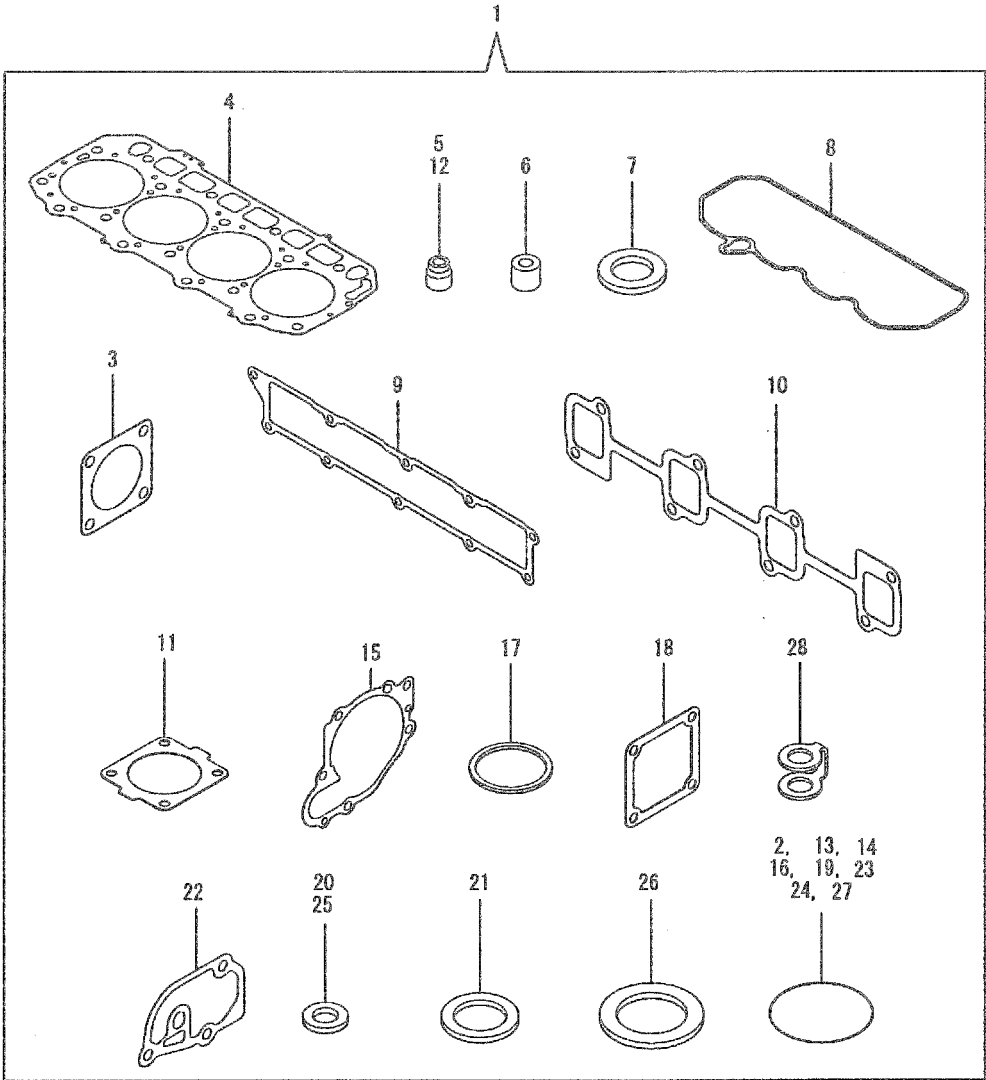
Group 13: Starting Motor



Item	Part No.	Description	Qty.	
			1	2
1	363154	Motor, starting	1	
1	359118	Motor, starting (24 V models)		1
2	363155	Armature assembly	1	
3	GM35775	Ball bearing	1	
4	GM35769	Ball bearing	1	
5	363156	Coil assembly, field	1	
6	225899	Screw	4	
7	363157	Brush (+)	2	
8	363159	Holder assembly, brush	1	
9	363157	Brush (+)	2	
10	GM35773	Brush spring	4	
11	363158	Cover, rear	1	
12	363165	Switch assembly, magnetic	1	
13	363167	Shift lever set	1	

Item	Part No.	Description	Qty.	
			1	2
14	363169	Cover assembly, dust	1	
15	363168	Bolt, through	2	
16	GM35654	Case assembly, gear	1	
17	363161	Pinion assembly	1	
18	363163	Shaft, pinion	1	
19	363164	Stopper set	1	
20	363162	Clutch assembly	1	
21	225915	Ball bearing (3)	1	
22	225916	Ball bearing	1	
23	363166	Retainer, bearing	1	
24	363170	Housing, gears	1	
25	225917	Cover	1	
26	252713	Bolt, M12 x 30	2	

Group 15: Gasket Set

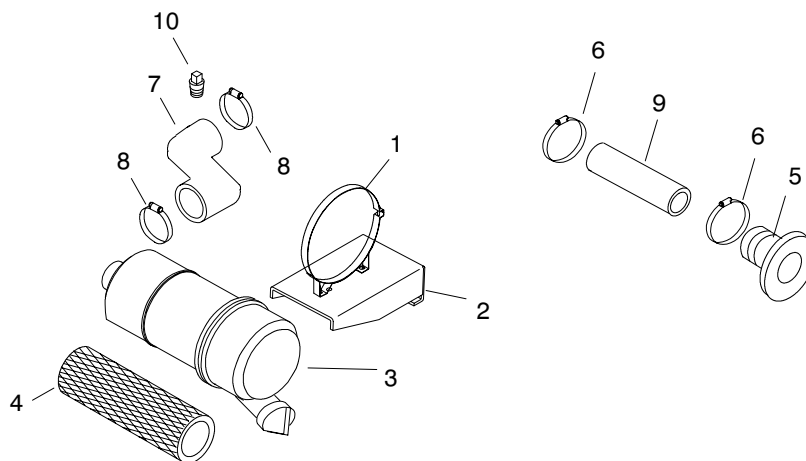


6273_15

Group 15: Gasket Set

Item	Part No.	Description	Qty.
			Var.
1	GM35766	Gasket set (includes items 2-28 in the illustration)	1

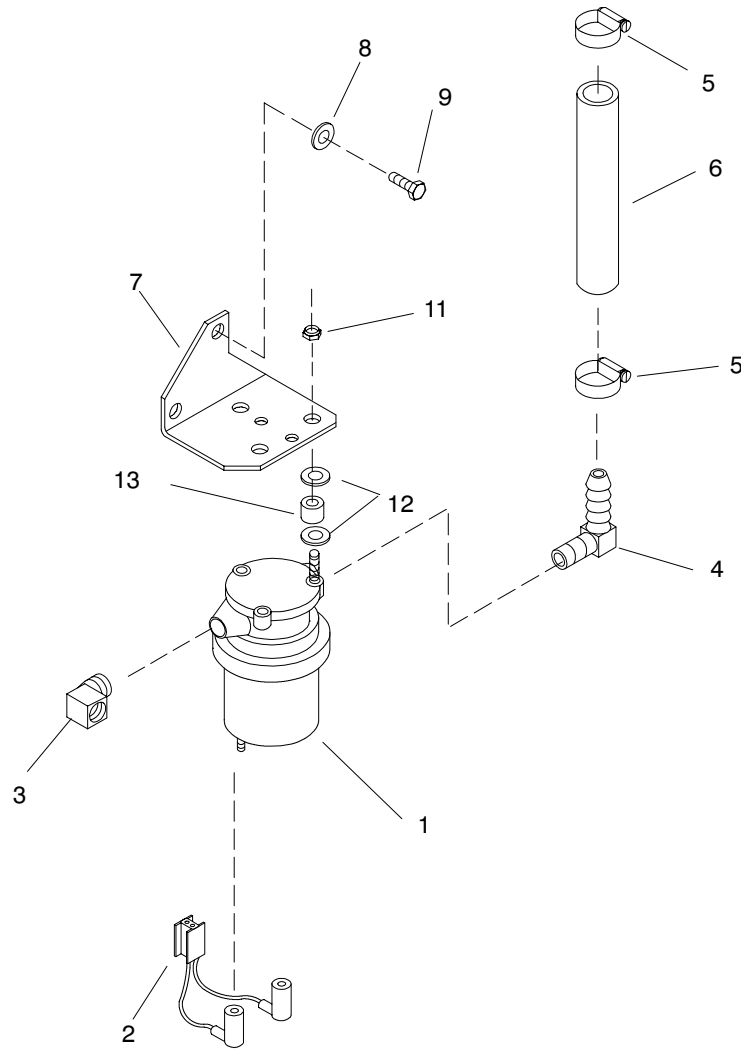
Group 101: Air Intake



6273_101

Item	Part No.	Description	Qty.
			Var. GR1
1	226956	Mount, air cleaner, 5.72 in. ID	1
2	GM31073	Bracket, air cleaner	1
3	GM23382	Cleaner assembly, air	1
4	GM16944	Element, air cleaner	1
5	359546	Connector, hose	1
6	X-426-4	Clamp, hose, 1.31/2.25 in.	2
7	GM31573	Hose, air cleaner	1
8	250081	Clamp, hose, 2.06/3 in.	2
9	X-6292-3	Hose, flexible air	1
10	X-75-1	Plug, pipe, 1/8 in. NTP	1

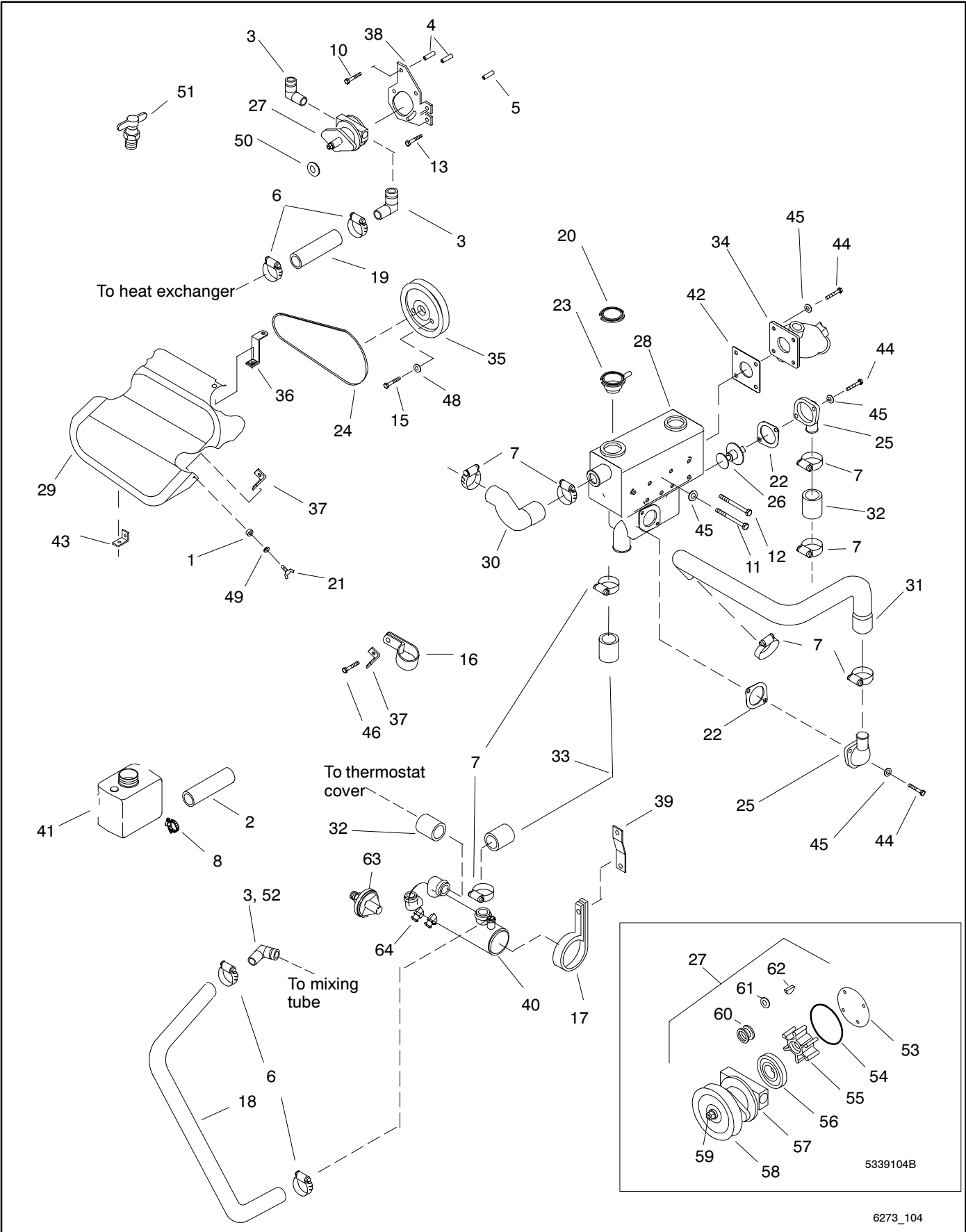
Group 103: Fuel System



6273_103

Item	Part Number	Description	Quantity	
			Variation Number GR2	GR3
1	229051	Pump, fuel	1	
1	344740	Pump, fuel		1
2	229168	Lead assembly	1	1
3	X-555-1	Elbow, street, 1/4 x 1/4	1	1
4	X-391-25	Connector, 90 deg.	1	1
5	X-426-9	Clamp, hose, .25/.70 in.	2	2
6	X-386-32	Line, fuel	1	1
7	229290	Bracket, fuel pump	1	1
8	M125A-10-80	Washer, plain	2	2
9	M933-10020-60	Screw, hex cap	2	2
11	X-101-25	Nut, lock	3	3
12	X-25-40	Washer, plain	6	6
13	X-284-39	Grommet	3	3

Group 104: Cooling System



6273_104

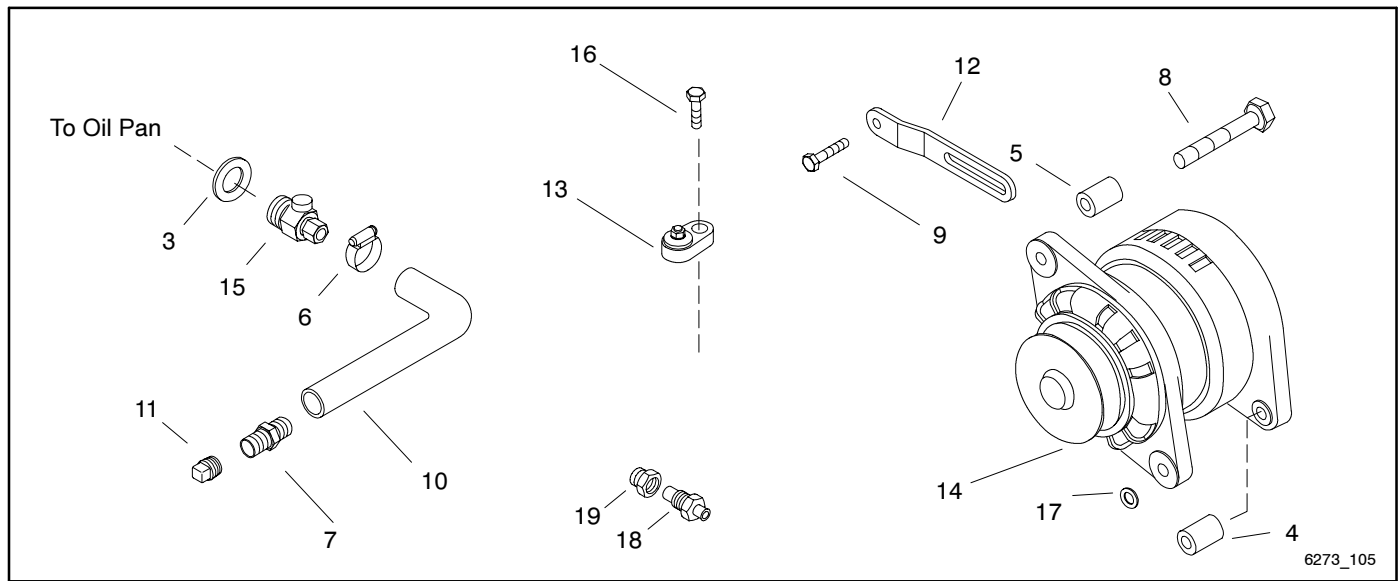
Group 104: Cooling System

Item	Part No.	Description	Qty.
			Var. GR4
1	X-284-39	Grommet	3
2	X-386-36	Line, flexible	1
3	X-391-23	Connector, hose elbow	3
4	X-400-184	Spacer, .344 x .625 x .949 in.	1
5	X-400-37	Spacer, .437 ID x .625 OD x .656 in.	2
6	X-426-12	Clamp, hose, 1.25 maximum	4
7	X-426-4	Clamp, hose, 1.375 x 2.1	8
8	X-426-9	Clamp, hose	2
9	X-468-4	Tie, cable (not shown)	1
10	M931-08060-60	Screw, hex head cap	2
11	M931-08140-60	Screw, hex head cap	6
12	M931-08130-60	Screw, hex head cap	2
13	M931-08095-60	Screw, hex head cap	1
14	M933-08016-60	Screw, hex head cap	2
15	M933-10025-60	Screw, hex head cap	3
16	X-672-18	Clamp, insulated	2
17	X-672-34	Clamp, insulated	2
18	X-691-26	Hose, .75 in. x 39 in.	1
19	X-691-38	Hose	1
20	229980	Cap, radiator	1
21	229330	Screw, wing	3
22	229963	Gasket, water outlet	2
23	241311	Neck	1
24	249989	Belt, V	1
25	254885	Housing, thermostat	2
26	254920	Thermostat	1
27	344089	Pump, seawater	1
28	344848	Manifold, exhaust	1
29	GM35776	Guard, belt	1
30	344910	Hose, molded coolant	1
31	359350	Hose, molded coolant	1
32	344912	Hose, molded coolant	1
33	344913	Hose, molded coolant	1
34	359375	Tube, wet exhaust mixing	1
35	344923	Pulley, pump drive	1
36	359349	Bracket, belt guard	1
37	344925	Bracket, belt guard left	2
38	344926	Bracket, seawater pump	1
39	344927	Bracket, heat exchanger	2
40	GM30881	Exchanger, heat	1
41	359037	Bottle, overflow	1
42	359095	Gasket, exhaust	1
43	359281	Bracket, belt guard	1
44	X-125-5	Screw	2
45	X-25-85	Washer, 5/16	1
46	X-465-6	Screw	1
47	#	Washer, 7/16	3
48	#	Hardware, M10	1
49	#	Washer, 1/4	1
50	X-25-37	Washer	1
51	X-256-1	Valve, drain, 3/8 in. NPT	1
52	S-404	Elbow, street, 90 deg. x 3/8 in. NPT	1
53	344306	Plate, cover	1
54	344584	Gasket	1
55	229826	Kit, impeller (includes gasket)	1
56	344043	Bearing, ball	1
57	344585	Housing	1
58	344606	Pulley	1
59	344587	Shaft, drive	1
60	GM16865	Seal	1
61	GM22995	Seat, ceramic	1
62	GM17702	Key	1
63	GM30263	Switch, pressure	1
64	260085	Kit, zinc anode	1

Common hardware; procure locally.

Note: Items 1, 21, 29, 36, 37, and 43 are not used when an optional sound shield is installed.

Group 105: Engine



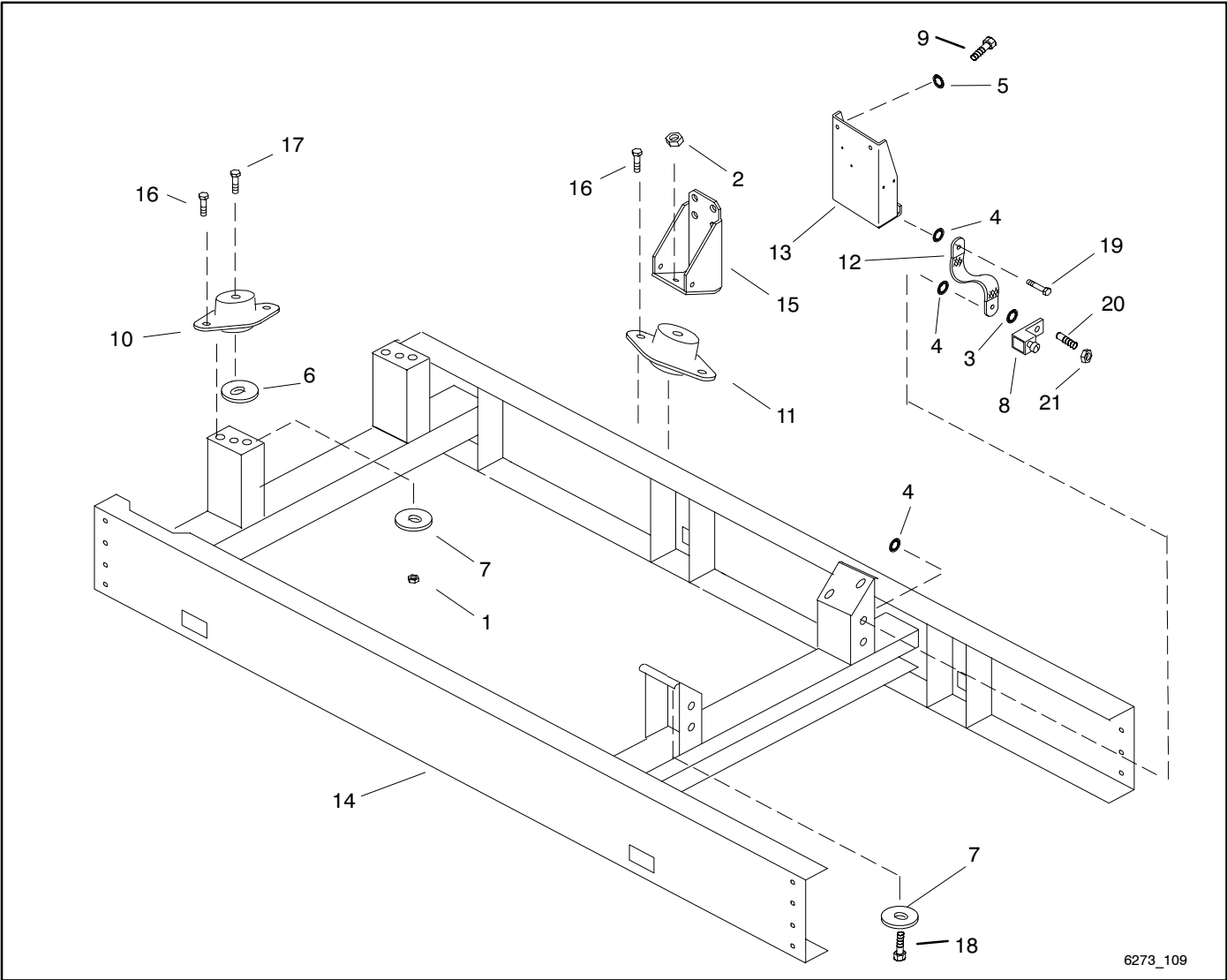
Item	Part No.	Description	Quantity	
			Variation Number GR5	GR6
1	GM29468	Engine assembly, 4TNV98 (see Groups 1-16)	1	1
2	X-22-16	Washer, lock, interior/exterior tooth, 5/16 (not shown)	1	1
3	X-25-145	Washer, plain, .859 ID x 1.185 in. OD	1	1
4	X-400-152	Spacer, .344 ID x .625 OD x 1.5 in.	1	
4	X-400-98	Spacer, .375 ID x 1 OD x 1.375 in.		1
5	X-400-41	Spacer, .344 ID x .75 OD x .375 in.	1	
5	X-400-233	Spacer, .375 ID x .875 OD x .2 in.		1
6	X-426-9	Clamp, hose, .25/.70 in.	2	2
7	X-582-9	Connector, hose	1	1
8	M931-08035-60	Screw, hex head cap	1	
8	M933-08025-60	Screw, hex head cap		1
9	M933-08016-16	Screw, hex head cap	1	1
10	X-651-38	Hose, rubber	1	1
11	X-75-55	Plug, pipe, 3/8	1	1
12	229212	Bracket, alternator adjustment	1	
12	324410	Bracket, alternator adjustment		1
13	249872	Switch, high temperature cutout	1	1
14	256924	Alternator	1	
14	344742	Alternator, 24 V		1
14	344815	Guard, alternator fan (not shown)		1
15	344828	Valve, oil drain	1	1
16	X-123-23	Screw	1	1
17	X-400-170	Spacer, .344 ID x .625 OD x .143 in.		1
18	GM28823	Sensor, temperature		
19	GM30245	Bushing, adapter	1	1

Note: Item 10 is not used when an optional sound shield is installed.

Group 107: Nameplate and Decals

Item	Part No.	Description	Quantity	
			Variation Number	
			GR7	GR8
1	X-6348-3	Decal	1	1
3	224233	Decal, 1-800 number	1	1
4	359446	Nameplate	1	1
5	GM35838	Decal, reconnection 1 phase	1	
6	229883	Decal, reconnection 3 phase		1
7	GM14167	Decal, drain	3	3
8	249808	Decal, warning	1	1
9	249809	Decal, warning	1	1
10	249810	Decal, warning	1	1
11	344282	Decal, notice	1	1
12	344295	Decal, equipment ground	1	1
13	344486	Decal, CE	1	1
14	226917	Decal, negative battery connection	1	1

Group 109: Skid and Plant Mounting



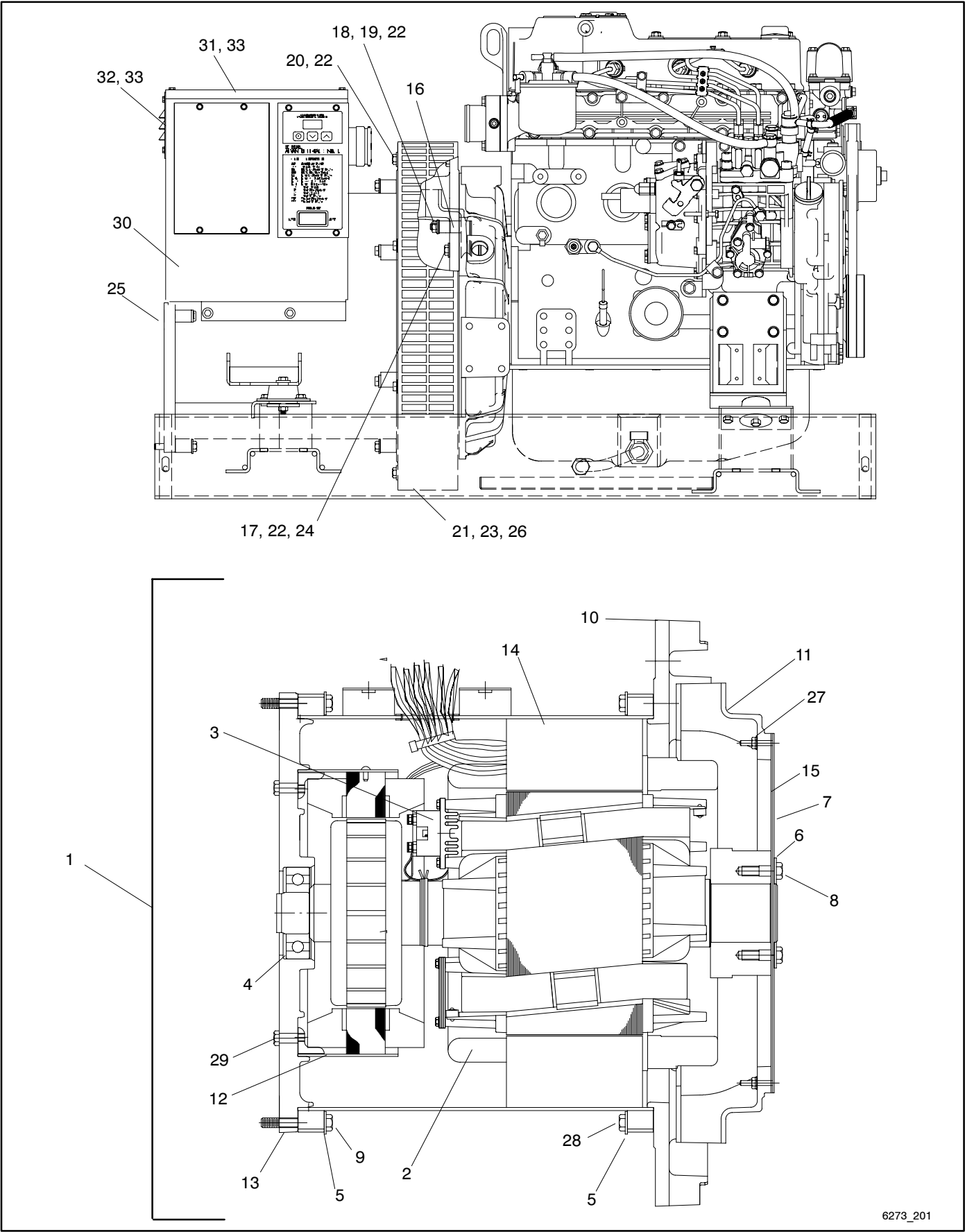
6273_109

Group 109: Skid and Plant Mounting

Item	Part No.	Description	Qty.
			Var. GR9
1	M982-10-80	Nut, hex elastic stop	2
2	M982-08-80	Nut, hex elastic stop	2
3	X-22-11	Washer, lock, interior tooth, 1/4	1
4	X-22-12	Washer, lock, interior/exterior tooth, 1/4	4
5	X-22-14	Washer, lock, interior/exterior tooth, 3/8	1
6	X-25-38	Washer, plain	2
7	X-25-96	Washer, plain	4
8	X-377-12	Connector, cable	1
9	M933-10020-60	Screw, hex head cap	8
10	225125	Vibromount	2
11	226458	Vibromount	2
12	245297	Strap, ground	1
13	344915	Bracket	1
14	GM30939	Skid	1
15	359417	Bracket, engine mounting	1
16	#	Hardware, M8	2
17	M931-10055-60	Screw, hex head	2
18	M931-08055-60	Screw, hex head	2
19	#	Hardware, M6	2
20	X-6054-22	Stud	2
21	M934-06-64	Nut, hex, 6 mm	1

Common hardware; procure locally.

Group 201: Generator and Mounting



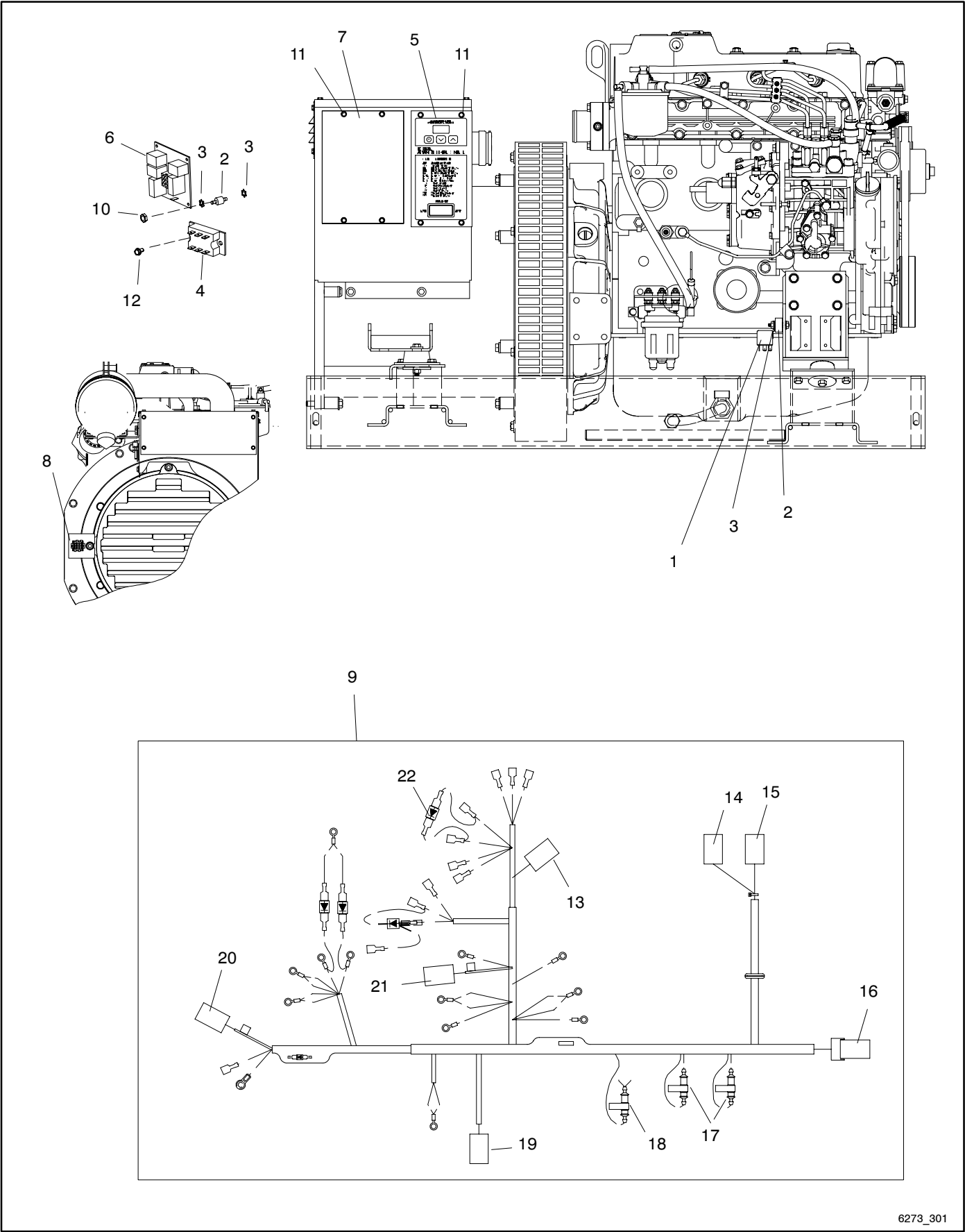
6273_201

Group 201: Generator and Mounting

Item	Part No.	Description	Quantity	
			Variation Number GR10	GR11
1	GM31062	Alternator assembly (items 2-15, 27-29)	1	
1	GM31063	Alternator assembly (items 2-15, 27-29)		1
2	A-344997	Rotor assembly (includes items 3, 4)	1	1
3	A-257444	Rectifier assembly	1	1
4	X-758-2	Bearing, ball	1	1
5	X-25-93	Washer	10	10
6	X-801-3	Washer, hardened	8	8
7	257016	Disc, armature drive	1	1
8	270956	Screw, hexagon head	8	8
9	273736	Screw, special	4	4
10	344917	Adapter, alternator	1	1
11	344919	Fan, alternator	1	1
12	GM31595	Exciter assembly, field	1	1
13	359006	Bracket, end	1	1
14	GM31038	Stator assembly		1
14	GM31037	Stator assembly	1	
15	359271	Disc, drive assembly	1	1
16	X-400-229	Spacer	16	16
17	M933-10030-60	Screw, hex head cap	12	12
18	M6923-10-62	Nut, hex	8	8
19	X-6054-15	Stud, metric	8	8
20	X-6238-38	Bolt, hex cap	12	12
21	X-67-51	Screw, hex head, 10-24 x 3/4	2	2
22	X-801-3	Washer, hardened	32	32
23	257442	Clip, speed	2	2
24	344918	Adapter, alternator	1	1
25	344991	Cover, end bracket	1	1
26	359035	Guard, generator fan	1	1
27	X-6210-1	Nut, 10-32	4	4
28	X-6238-1	Screw, 3/8-16 x 1.75	6	6
29	X-125-5	Screw, 5/16-18 x .88	4	4
30	GM31071	Box, junction	1	1
31	GM31072	Cover, junction box	1	1
32	GM31603	Panel, junction box access	1	1
33	X-67-64	Screw, self-tapping	8	8

Note: Item 25 is not used when an optional sound shield is installed.

Group 301: Controller and Mounting



6273_301

Group 301: Controller and Mounting

Item	Part No.	Description	Quantity	
			Variation Number	
			GR12	GR13
1	259391	Relay, 12 VDC	1	
1	272684	Relay, 24 VDC		1
2	282829	Vibromount	5	5
3	X-22-20	Washer, lock, 172 ID x .373 in. OD	10	10
4	GM28483	SCR module	1	1
5	GM34969	Controller assembly kit, ADC 2100	1	1
6	GM29671 GM29779	PCB assembly, relay board 12 V	1	
6	GM29779 GM29780	PCB assembly, relay board 24 V		1
7	GM31019	Plate, cover	1	1
8	GM33047	Bracket, harness connector mounting	1	1
9	GM33065	Harness, wiring (includes items 13-22	1	1
10	M934-05-50	Nut, hex, 5 mm	2	2
11	X-67-64	Screw, self-tapping	8	8
12	M7985A-05012-20	Screw, pan head machine	2	2
13	292370	Connector, plug, 2-position	1	1
14	320711	Connector, 9-position	1	1
15	GM29998	Connector, 6-position	1	1
16	GM28678	Connector, weathertight	1	1
17	358337	Fuse, 10 A, 250 V (F1, F2)	2	2
18	223316	Fuse, 10 A, 250 V (F3)	1	1
19	229989	Connector, receptacle	1	1
20	GM29249	Connector	1	1
21	GM15493	Connector, weathertight, 3-position	1	1
22	233959	Diode, 6 A	5	5

Note: Item 8 is not used when an optional sound shield is installed.

Group 701: Literature

Item	Part No.	Description	Quantity			
			Variation			
			52	53	54	55
1	TP-5620	Safety Precautions, Marine	1	1	1	1
2	TP-6252	O/M 8-32EOZD/6.5-27EFOZD	1	1	1	1
3	TP-6253	I/M EOZ/EFOZ/EOZD/EFOZD Models	1	1	1	1
4	TP-6255	S/M 8-15.5EOZD/6.5-13EFOZD	1	1	1	1
5	TP-6273	P/C 28-32EOZD/23-27EFOZD	1	1	1	1
6	TP-6292	O/M Yanmar TNV Series	1	1	1	1
7	TP-6293	S/M Yanmar TNV Series	1	1	1	1

Paint and Miscellaneous Parts

Item	Part Number	Description
1	221334	White paint, gallon can
1	221335	White paint, spray can

Parts List: Accessories

Qty.	Description	Part No.
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Circuit Breakers

Circuit Breaker Kit		GM30331-KA(KP)27
4	Screw, pan head	M7985A-04100-20
2	Nut, hex, 4 mm	M934-04-05
2	Washer, plain, .203 ID x .75 ID x .75 in. OD	X-25-45
2	Spacer, .260 ID x .5 OD x .188 in.	X-400-142
1	Plate, circuit breaker	GM31021
1	Circuit breaker, 125 A, 2 pole	359029

Circuit Breaker Kit		GM30331-KA(KP)28
4	Screw, pan head	X-49-21
1	Plate, circuit breaker	GM32048
1	Circuit breaker, 100 A, 2 pole	359133

Circuit Breaker Kit		GM30331-KA(KP)30
4	Screw, pan head	X-49-52
2	Spacer, .260 ID x .5 OD x .188 in.	X-400-142
1	Plate, circuit breaker	GM31020
1	Circuit breaker, 100 A, 3 pole	253226
3	Boot	238915

Circuit Breaker Kit		GM30331-KA(KP)31
4	Screw, pan head	X-49-52
2	Spacer, .260 ID x .5 OD x .188 in.	X-400-142
1	Plate, circuit breaker	GM31020
1	Circuit breaker, 80 A, 3 pole	253225
3	Boot	238915

Circuit Breaker Kit		GM30331-KA(KP)34
6	Screw, pan head	X-49-52
4	Spacer, .260 ID x .5 OD x .188 in.	X-400-142
1	Plate, circuit breaker	GM31020
1	Circuit breaker, 90 A, 3 pole	344905

Circuit Breaker Kit		GM30331-KA(KP)40
6	Screw, pan head	X-49-52
4	Spacer, .260 ID x .5 OD x .188 in.	X-400-142
1	Plate, circuit breaker	GM31020
1	Circuit breaker, 50 A, 3 pole	258928
3	Boot	238915

Circuit Breaker Kit		GM30331-KA(KP)41
6	Screw, pan head	X-49-52
4	Spacer, .260 ID x .5 OD x .188 in.	X-400-142
1	Plate, circuit breaker	GM31020
1	Circuit breaker, 40 A, 3 pole	269252
3	Boot	238915

Electrical System

Isolated Ground System, 12 V		GM31866-KA(KP)1
1	Adapter, sender	229323
4	Insulator, panel	233269
1	V-belt (24 in.)	344829
1	Sensor, pressure	GM28822
1	Switch, high temp. cut-out	GM29289
1	Solenoid	GM30412
1	Harness, engine	GM35829
1	Bus, isolated ground	GM31868
1	Alternator, battery charging	GM31919
1	Bracket, support	GM33029
1	Cable, battery	X-545-161
1	Cable, battery (black)	X-545-178
2	Stud (metric)	X-6054-23
1	Insulator, standoff	X-6128-35

Qty.	Description	Part No.
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Isolated Ground System, 24 V		GM31866-KA(KP)4
1	Adapter, sender	229323
4	Insulator, panel	233269
1	V-belt (24 in.)	344829
1	Guard, alternator fan	344815
1	Arm, alternator adjusting	359554
1	Sensor, pressure	GM28822
1	Switch, high temp. cut-out	GM29289
1	Solenoid	GM30413
1	Harness, engine	GM35829
1	Bus, isolated ground	GM31868
1	Alternator, battery charging	GM31920
1	Bracket, support	GM33029
1	Spacer, .344 ID x .625 OD x 1.5 in.	X-400-152
1	Cable, battery	X-545-161
1	Cable, battery (black)	X-545-178
1	Cable, battery (black)	X-545-179
2	Stud (metric)	X-6054-23
1	Insulator, standoff	X-6128-35

Harness, 12 in., Pigtail		GM32332-KP1
1	Harness, pigtail	GM32324

Harness, 15 in., Remote Panel		GM32333-KP1
1	Harness, extension	GM30248

Harness, 25 in., Remote Panel		GM32333-KP2
1	Harness, extension	GM32323

Oil Pressure Sender		GM32112-KA(KP)1
1	Adapter, sender	229323
1	Sensor, pressure	GM28822

Preheat Kit, 12 Volt		GM32117-KA(KP)6
1	Harness, air heater	229233
1	Relay	233442
1	Boot	238915
1	Heater, air	GM24332
2	Gasket, air heater	GM24333
2	Washer, plain	M125A-06-80
4	Washer, plain	M125A-08-80
2	Nut, hex, 6 mm	M6923-06-80
2	Screw, hex cap	M931-08040-60
2	Screw, hex cap	M931-08080-60
2	Screw, hex cap	M933-06020-60
1	Washer, lock, .262 ID x .743 in. OD	X-22-12
1	Conduit, convoluted	X-6003-5

Preheat Kit, 24 Volt		GM32117-KA(KP)7
1	Harness, air heater	229233
1	Solenoid	344741
1	Boot	238915
2	Heater, air	GM24332
3	Gasket, air heater	GM24333
2	Washer, plain	M125A-06-80
4	Washer, plain	M125A-08-80
2	Nut, hex, 6 mm	M6923-06-80
2	Screw, hex cap	M931-08060-60
2	Screw, hex cap	M931-08100-60
2	Screw, hex cap	M933-06020-60
1	Washer, lock, .262 ID x .743 in. OD	X-22-12
1	Conduit, convoluted	X-6003-5

Remote Digital Gauge		GM32337-KP1
1	Decal, warning	249494
1	Gauge, digital	GM30565
1	Harness, remote	GM32325
1	Installation instructions, remote digital gauge	TT-1379
1	Installation instructions, ADC controller replacement	TT-1364

Parts List: Accessories

Qty.	Description	Part No.
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Remote Start Panel

GM32335-KP1

1	Decal, warning	249494
1	Installation instructions	TT-1378
1	Panel assembly, control (includes *)	GM33848-1
1	*Meter, runtime	238736
1	*Panel, control	GM33847
1	*Switch, rocker	GM33849
1	*Harness, wiring	GM33851
2	*Screw, pan head M3 x 12	M7985A-03012-20
2	*Nut, hex, 3 mm	M934-03-50
2	*Washer, lock, .146 ID x .285 in. OD	X-22-6

Remote Start Panel, 24 V

GM32335-KP2

1	Decal, warning	249494
1	Installation instructions	TT-1378
1	Panel assembly, control (includes *)	GM33848-2
1	*Meter, runtime	238736
1	*Panel, control	GM33847
1	*Switch, rocker	GM33850
1	*Harness, wiring	GM33851
2	*Screw, pan head M3 x 12	M7985A-03012-20
2	*Nut, hex, 3 mm	M934-03-50
2	*Washer, lock, .146 ID x .285 in. OD	X-22-6

Ship to Shore Switch

PAA-246617

1	Switch, transfer, 3-pole	A-246617
1	Installation Instructions	TT-535

Miscellaneous Accessories

Fuel/Water Separator

GM31994-KP1

1	Filter assembly, fuel/water separator	GM32181
1	Element, water separator	GM32182

Keel Cooling Conversion

GM32201-KA(KP)5

1	Gasket, exhaust	359095
1	Flange, exhaust outlet	GM32201

Siphon Break

PA-229928

1	Valve, siphon break	GM32985
1	Installation Instructions	TT-1268

Hydrolastic Mounting

GM33012-KA(KP)1

4	Mount, fluid	344090
1	Bracket, engine mount (LS)	359408
1	Bracket, engine mount (RS)	359409
1	Skid	GM32751
7	Washer, plain	M125A-10-80
8	Screw, hex cap	M933-10020-60
1	Washer, lock, .391 ID x .975 in. OD	X-22-14
4	Washer, plain, .656 ID x 1.31 in. OD	X-25-15
4	Screw, hex head machine	X-6021-14
1	Strap, ground, 11 in.	X-6046-6
8	Nut, flange spiralock, 1/2-13	X-3210-12

Qty.	Description	Part No.
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Sound Shield

Siphon Break Hose Connection GM32719-KA(KP)3

1	Valve, siphon break	267935
2	Connector, hose, 90 deg. elbow	359102
1	Hose	X-691-12
1	Hose	X-691-21
2	Grommet, round	X-284-42
2	Clamp, hose, .69/1.25 in.	X-426-12

Sound Shield

GM32567-KA(KP)1

1	Tube, exhaust elbow (3.00 in. OD)	359462
1	Tube, exhaust elbow (3.00 in. OD)	359463
2	Rail, sound shield	GM30948
2	Rail, sound shield	359043
1	Hose, radiator, straight, 3 in. ID	X-507-7
4	Connector, outside corner	GM15486
1	Base, sound shield	GM30633
2	Rail, sound shield	GM29321
1	Sound shield subassembly	GM29469
1	Decal, negative battery connection	226917
1	Coupling, bulkhead pipe	229291
1	Marker, adhesive	238162
1	Decal, warning rotating parts	249808
1	Decal, caution, not a step	343165
1	Decal, equipment grd	344295
18	Insert, threaded, 1/4-20 in.	344484
14	Pin, threaded (1/4-20 x 1.18 in.)	345283
14	Insert, threaded, #10-24	346258
1	Decal, fuel inlet	359278
1	Decal, fuel return	359279
4	Foam, acoustic insulation (Yanmar)	359584
1	Decal, warning fire port	GM10148
4	Connector, outside corner	GM15486
1	Panel, bulkhead connection	GM33813
1	Panel, sound shield (front)	GM29374
2	Frame, circuit breaker	GM33803
2	Clip, speed	GM29919
6	Latch, lockable	GM29980
1	Panel, sound shield ADC lead	GM30251
1	Foam, acoustic kit (28-32 kW)	GM31061
1	Washer, lock, .262 ID x .469 OD	X-22-11
2	Washer, lock, .262 ID x .743 in. OD	X-22-12
1	Grommet, round	X-284-44
2	Button, plug	X-301-35
1	Connector, hose	X-582-8
4	Clip, speed	X-6220-3
1	Bushing, .672 x .875 in. NPT	X-634-25
2	Connector, hose	X-582-39
3	Plug, pipe (3/8 in. NPT)	X-75-10
15	Rivet, pop, .187 in.	X-781-14
1	Channel, U	X-6047-39
1	Channel, U	X-6047-33
1	Channel, U	X-6047-21
1	Nut, hex 6 mm	M934-06-64
1	Stud, metric	X-6054-22
2	Block, junction	GM33684
4	Screw, pan head machine	M7985A-05012-20
2	Screw, pan head machine	M7985A-05016-20
6	Nut, hex 5 mm	M934-05-50
1	Barrier, battery terminal	GM33828
4	Washer, lock, .391 ID x .975 in. OD	X-22-14
2	Rail, sound shield	359044
2	Retainer	GM29918
2	Stud, wing head	GM29920
1	Door subassembly, sound shield (rh)	GM34516

Parts List: Accessories, continued

Qty.	Description	Part No.
Sound Shield, continued GM32567-KA(KP)1		
1	Decal, warning rotating parts	249808
2	Insert, threaded, 1/4-20 in.	344484
2	Latch, lockable	GM29980
2	Pin, threaded (1/4-20 x 1.18 in.)	345283
1	Door, sound shield (rh)	GM30637
1	Decal, warning fire port	GM10148
1	Insulation, acoustic foam	GM34671
1	Panel subassembly, sound shield (rh)	GM34556
4	Insert, threaded, 1/4-20 in.	344484
2	Pin, threaded (1/4-20 x 1.18 in.)	345283
1	Insulation, acoustic foam	GM34668
1	Insulation, acoustic foam	GM34669
1	Panel, sound shield	GM33119
8	Insert, threaded, #10-24	346258
1	Door subassembly, sound shield (front)	GM34546
2	Insert, threaded, 1/4-20 in.	344484
2	Pin, threaded (1/4-20 x 1.18 in.)	345283
1	Latch, lockable	GM29980
1	Door, sound shield (front)	GM30638
1	Insulation, acoustic foam	GM34672
1	Door subassembly, sound shield (lh)	GM34599
2	Insert, threaded, 1/4-20 in.	344484
2	Latch, lockable	GM29980
1	Insulation, acoustic foam	GM34674
1	Foam, acoustic insulation	GM31160
1	Foam, acoustic insulation	GM31162
1	Duct, air outlet (front)	GM24894
2	Pin, threaded (1/4-20 x 1.18 in.)	345283
1	Door, sound shield (lh)	GM30639
1	Foam, acoustic insulation	GM31163
9	Rivet, pop, .187 in.	X-781-14
1	Duct, air outlet (rear)	GM31059
1	Foam, acoustic insulation	GM31164
1	Foam, acoustic insulation	GM31165
1	Foam, acoustic insulation	GM31166
1	Foam, acoustic insulation	GM31167
1	Foam, acoustic insulation	GM31168
1	Foam, acoustic insulation	GM31161
2	Foam, acoustic insulation	GM31170
1	Foam, acoustic insulation	GM31171
1	Foam, acoustic insulation	GM31172
1	Channel, U	X-6047-39
1	Door subassembly, sound shield (rear)	GM34602
2	Insert, threaded, 1/4-20 in.	344484
1	Latch, lockable	GM29980
2	Foam, acoustic insulation	GM31176
2	Foam, acoustic insulation	GM31738
2	Insulation, acoustic foam	GM34666
1	Duct, air intake	GM31607
2	Pin, threaded (1/4-20 x 1.18 in.)	345283
1	Door, sound shield (rear)	GM31608
1	Foam, acoustic insulation	GM31737
6	Rivet, pop, .187 in.	X-781-14
1	Foam, acoustic insulation	GM31175
1	Channel, U	X-6047-21
1	Roof subassembly, sound shield	GM34567
1	Decal, caution, not a step	343165
2	Insert, threaded, 1/4-20 in.	344484
2	Pin, threaded (1/4-20 x 1.18 in.)	345283
1	Roof, sound shield	GM30640
2	Clip, speed	GM29919
1	Insulation, acoustic foam	GM34670
1	Panel subassembly sound shield (lh)	GM34574
4	Insert, threaded, 1/4-20 in.	344484
2	Pin, threaded (1/4-20 x 1.18 in.)	345283
1	Insulation, acoustic foam	GM34675
1	Panel, sound shield (lh)	GM33120
2	Button, plug	X-301-35

Qty.	Description	Part No.
1	Rail subassembly, sound shield (front)	GM34581
1	Panel, sound shield (front)	GM29374
2	Clip, speed	X-6220-3
1	Insulation, acoustic foam	GM34673
1	Panel subassembly, bulkhead connection	GM34587
1	Grommet, round	X-284-44
2	Clip, speed	X-6220-3
1	Channel, U	X-6047-33
1	Nut, hex 6 mm	M934-06-64
1	Panel, bulkhead connection	GM33813
1	Plug, pipe (3/8 in. NPT)	X-75-10
2	Connector, hose	X-582-39
1	Coupling, bulkhead pipe	229291
1	Connector, hose	X-582-8
1	Marker, adhesive	238162
1	Decal, negative battery connection	226917
1	Decal, fuel inlet	359278
1	Decal, fuel return	359279
1	Decal, equipment grd	344295
2	Block, junction	GM33684
1	Barrier, battery terminal	GM33828
4	Screw, pan head machine	M7985A-05012-20
2	Screw, pan head machine	M7985A-05016-20
6	Nut, hex 5 mm	M934-05-50
4	Washer, lock, .391 ID x .975 in. OD	X-22-14
1	Insulation, acoustic foam	GM34667
1	Washer, lock, .262 ID x .469 OD	X-22-11
2	Washer, lock, .262 ID x .743 in. OD	X-22-12
1	Stud, metric	X-6054-22
5	Washer, plain	M125A-06-80
5	Screw, hex cap	M933-06016-60
4	Washer, plain, .281 ID x .625 in. OD	X-25-142
14	Washer, plain, .219 ID x .5 in. OD	X-25-36
4	Washer, plain, .406 ID x .812 in. OD	X-25-37
1	Hose	X-691-23
1	Fuel line, flexible	X-386-36
1	Hose, rubber, straight, .375 in. ID	X-651-33
1	Hose, radiator, straight, 3 in. ID	X-507-9
1	Washer, lock, .391 ID x .975 in. OD	X-22-14
1	Screw, hex cap	M933-10020-60
1	Washer, plain	M125A-10-80
1	Washer, lock, .262 ID x .743 in. OD	X-22-12
1	Line, flex fuel	X-386-90
8	Clamp, hose, 2.81/3.75 in.	X-426-1
2	Clamp, hose, .69/1.25 in.	X-426-12
4	Clamp, hose, .25/.70 in.	X-426-9
4	Bolt, hex cap	X-465-24
14	Screw, pan head, 10-24 x 1/2	X-50-15
1	Cable, battery	X-545-174
1	Cable, battery	X-545-173
4	Bolt, hex cap	X-6238-3
2	Washer, nylon	X-6278-15
2	Seal, push-on trim	X-6422-22
2	Seal, push-on trim	X-6422-23
1	Connector, hose	X-380-4
24	Screw, drill #8 stainless steel	X-794-5
1	Duct subassembly, air intake	GM34642
3	Seal, push-on trim	X-6422-24
1	Seal, push-on trim	X-6422-26
1	Baffle, end bracket	GM31613
1	Duct, end bracket (lh)	GM33840
1	Duct, end bracket (bottom)	GM33841
2	Foam, acoustic insulation	GM31123
1	Foam, acoustic insulation	GM31124
1	Foam, acoustic insulation	GM31125
1	Panel, sound shield ADC lead	GM30251
1	Bushing, .672 x .875 in. NPT	X-634-25
2	Frame, circuit breaker	GM33803
4	Foam, acoustic insulation (Yanmar)	359584
1	Seal, push-on trim	X-6422-21
1	Seal, push-on trim	X-6422-25

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 ₂ 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 ¹⁰ bytes)	MW	megawatt	rnd.	round
kg	kilogram	mW	milliwatt	ROM	read only memory
kg/cm ²	kilograms per square centimeter	μF	microfarad	rot.	rotate, rotating
kgm	kilogram-meter	N, norm.	normal (power source)	rpm	revolutions per minute
kg/m ³	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 ³	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 _{wa}	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 ⁶ when used with SI units), male	PHH	Phillips hex head (screw)	tol.	tolerance
m ³	cubic meter	PHM	pan head machine (screw)	turbo.	turbocharger
m ³ /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 ²⁰ 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.

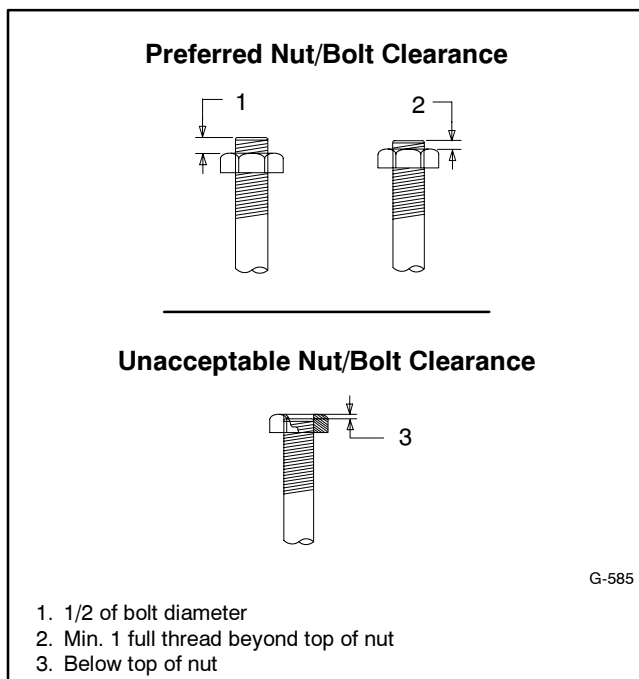


Figure 1 Acceptable Bolt Lengths

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.

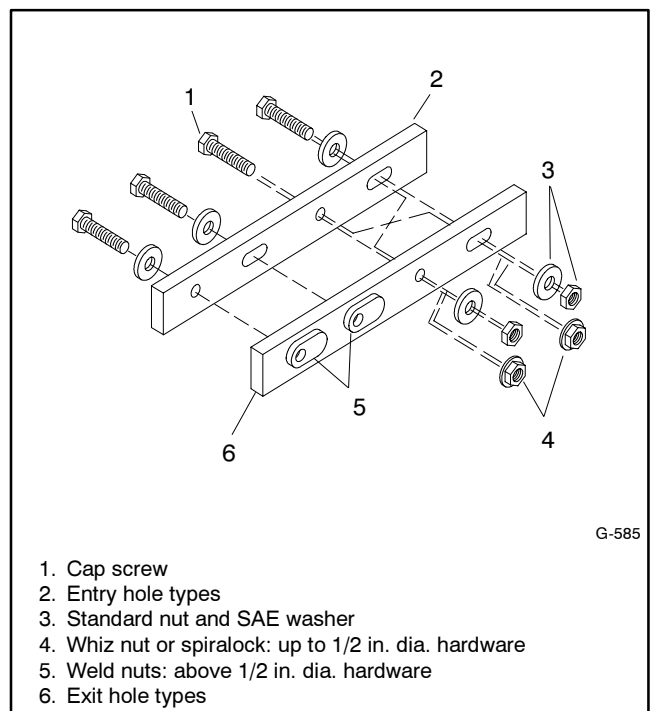


Figure 2 Acceptable Hardware Combinations

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%.

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)	—	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)	—

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	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)

1/4-20 x 1
 — Length In Inches (Screws and Bolts)
 — Threads Per Inch
 — Major Thread Diameter In Fractional Inches Or Screw Number Size

Metric (Screws, Bolts, Studs, and Nuts)

M8-1.25 x 20
 — Length In Millimeters (Screws and Bolts)
 — Distance Between Threads In Millimeters
 — Major Thread Diameter In Millimeters

Plain Washers

9/32 x 5/8 x 1/16
 — Thickness
 — External Dimension
 — Internal Dimension

Lock Washers

5/8
 — Internal Dimension

Appendix E Common Hardware List

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

American Standard

Part No. Dimensions Hex Head Bolts (Grade 5)

X-465-17	1/4-20 x .38
X-465-6	1/4-20 x .50
X-465-2	1/4-20 x .62
X-465-16	1/4-20 x .75
X-465-18	1/4-20 x .88
X-465-7	1/4-20 x 1.00
X-465-8	1/4-20 x 1.25
X-465-9	1/4-20 x 1.50
X-465-10	1/4-20 x 1.75
X-465-11	1/4-20 x 2.00
X-465-12	1/4-20 x 2.25
X-465-14	1/4-20 x 2.75
X-465-21	1/4-20 x 5.00
X-465-25	1/4-28 x .38
X-465-20	1/4-28 x 1.00
X-125-33	5/16-18 x .50
X-125-23	5/16-18 x .62
X-125-3	5/16-18 x .75
X-125-31	5/16-18 x .88
X-125-5	5/16-18 x 1.00
X-125-24	5/16-18 x 1.25
X-125-34	5/16-18 x 1.50
X-125-25	5/16-18 x 1.75
X-125-26	5/16-18 x 2.00
230578	5/16-18 x 2.25
X-125-29	5/16-18 x 2.50
X-125-27	5/16-18 x 2.75
X-125-28	5/16-18 x 3.00
X-125-22	5/16-18 x 4.50
X-125-32	5/16-18 x 5.00
X-125-35	5/16-18 x 5.50
X-125-36	5/16-18 x 6.00
X-125-40	5/16-18 x 6.50
X-125-43	5/16-24 x 1.75
X-125-44	5/16-24 x 2.50
X-125-30	5/16-24 x .75
X-125-39	5/16-24 x 2.00
X-125-38	5/16-24 x 2.75
X-6238-2	3/8-16 x .62
X-6238-10	3/8-16 x .75
X-6238-3	3/8-16 x .88
X-6238-11	3/8-16 x 1.00
X-6238-4	3/8-16 x 1.25
X-6238-5	3/8-16 x 1.50
X-6238-1	3/8-16 x 1.75
X-6238-6	3/8-16 x 2.00
X-6238-17	3/8-16 x 2.25
X-6238-7	3/8-16 x 2.50
X-6238-8	3/8-16 x 2.75
X-6238-9	3/8-16 x 3.00
X-6238-19	3/8-16 x 3.25
X-6238-12	3/8-16 x 3.50
X-6238-20	3/8-16 x 3.75
X-6238-13	3/8-16 x 4.50
X-6238-18	3/8-16 x 5.50
X-6238-25	3/8-16 x 6.50

Part No. Dimensions Hex Head Bolts, cont.

X-6238-14	3/8-24 x .75
X-6238-16	3/8-24 x 1.25
X-6238-21	3/8-24 x 4.00
X-6238-22	3/8-24 x 4.50
X-6024-5	7/16-14 x .75
X-6024-2	7/16-14 x 1.00
X-6024-8	7/16-14 x 1.25
X-6024-3	7/16-14 x 1.50
X-6024-4	7/16-14 x 2.00
X-6024-11	7/16-14 x 2.75
X-6024-12	7/16-14 x 6.50
X-129-15	1/2-13 x .75
X-129-17	1/2-13 x 1.00
X-129-18	1/2-13 x 1.25
X-129-19	1/2-13 x 1.50
X-129-20	1/2-13 x 1.75
X-129-21	1/2-13 x 2.00
X-129-22	1/2-13 x 2.25
X-129-23	1/2-13 x 2.50
X-129-24	1/2-13 x 2.75
X-129-25	1/2-13 x 3.00
X-129-27	1/2-13 x 3.50
X-129-29	1/2-13 x 4.00
X-129-30	1/2-13 x 4.50
X-463-9	1/2-13 x 5.50
X-129-44	1/2-13 x 6.00
X-129-51	1/2-20 x .75
X-129-45	1/2-20 x 1.25
X-129-52	1/2-20 x 1.50
X-6021-3	5/8-11 x 1.00
X-6021-4	5/8-11 x 1.25
X-6021-2	5/8-11 x 1.50
X-6021-1	5/8-11 x 1.75
273049	5/8-11 x 2.00
X-6021-5	5/8-11 x 2.25
X-6021-6	5/8-11 x 2.50
X-6021-7	5/8-11 x 2.75
X-6021-12	5/8-11 x 3.75
X-6021-11	5/8-11 x 4.50
X-6021-10	5/8-11 x 6.00
X-6021-9	5/8-18 x 2.50
X-6239-1	3/4-10 x 1.00
X-6239-8	3/4-10 x 1.25
X-6239-2	3/4-10 x 1.50
X-6239-3	3/4-10 x 2.00
X-6239-4	3/4-10 x 2.50
X-6239-5	3/4-10 x 3.00
X-6239-6	3/4-10 x 3.50
X-792-1	1-8 x 2.25
X-792-5	1-8 x 3.00
X-792-8	1-8 x 5.00

Part No. Dimensions Type

Hex Nuts

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

Washers

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

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-6273 6/04a

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KOHLER[®] POWER SYSTEMS

KOHLER CO. Kohler, Wisconsin 53044
Phone 920-565-3381, Fax 920-459-1646
For the nearest sales and service outlet in the
US and Canada, phone 1-800-544-2444
KohlerPowerSystems.com

Kohler Power Systems
Asia Pacific Headquarters
7 Jurong Pier Road
Singapore 619159
Phone (65)264-6422, Fax (65)264-6455