

# Service Parts

## Marine Generator Sets



Models:

**6EOD/4.5EFOD**

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

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

TP-6268 9/07a



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# Introduction

This manual lists service replacement parts for 6EOD/4.5EFOD generator sets.

Information in this publication represents data available at the time of print. Kohler Co. reserves the right to change this publication and the products represented without notice and without any obligation or liability whatsoever.

This manual includes the following main sections:

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

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

**Specification Number Index.** Lists the generator set specs and groups.

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

**Kit Sections.** List modules and accessories and their parts.

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

## Numbering System Significance

This manual uses the following numbering systems:

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

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

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

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

## Illustrations

Illustrations (or exploded-view drawings) best representing the widest range of variations accompany most groups in this manual. Illustrations do not depict all details and may not show all parts. Do not use illustrations for assembly or disassembly.

## How to Find Part Numbers

Use the following steps to locate a service replacement part.

1. Locate the generator set nameplate to **identify the generator set spec number.**

2. Locate a second generator set nameplate listing accessories to **identify installed modules.** On some models the accessory nameplate is mounted inside the generator junction box.
3. **Turn to the Specification Number Index.** The first column lists the generator set spec numbers. The headings identify the groups of parts that make up the generator set.
4. **Identify the group** most likely to include the service part number.
5. **Find the group variation number** at the intersection of the spec number row and the group column. Note the variation number.
6. **Page forward to locate the group** identified in step 4 or find the appropriate page in the Table of Contents.
7. **Find the part on the illustration** and note the item number of the part or **find the part description in the parts list.**
8. Select **the part number that corresponds to your group variation.** The first column lists the illustration item number. Find the variation identified in the Specification Number Index or the module number found on the generator set nameplate in the appropriate column on the right side of the parts list table. Find the quantity used at the intersection of the item number row and the variation column. A blank space at the intersection means the variation/module does not use that part number.

## Hardware References

Many common hardware items do not appear in parts manuals or will appear as common hardware entries. A common hardware entry lists the size of the hardware. For example, an item that appears as "Hardware, 3/8-16" in the text means that the piece is 3/8-16 size. Obtain common hardware locally or, if contacting the factory, use the Common Hardware List in the appendix to identify the common hardware part number and specifications. See Common Hardware Application Guidelines in the appendix for mating hardware instructions.

Some hardware items require a specific size or some other characteristic. In that case, use the part number listed in the text.

**When replacing hardware, do not substitute inferior grade hardware.** Replacement hardware grade should be equal to or better than the grade of the manufacturer's original hardware. Use the Common Hardware List in the appendix to identify the common hardware hardness.

# Specification Number Index

Group Title	<i>Cylinder Block</i>	<i>Front Plate</i>	<i>Idle Gear</i>	<i>Piston and Rings</i>	<i>Connecting Rod</i>	<i>Crankshaft and Bearings</i>	<i>Cylinder Head Assembly</i>	<i>Cylinder Head Cover</i>	<i>Timing Case Mounting</i>	<i>Camshaft and Gears</i>	<i>Timing Case</i>	<i>Timing Case</i>	<i>Fuel Injection Pump</i>	<i>High Pressure Fuel Pipes</i>
Group No.	1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	4.1	4.2	4.3	4.4	5.1	5.2
Spec No.	Variation Number													
GM42043-GA1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

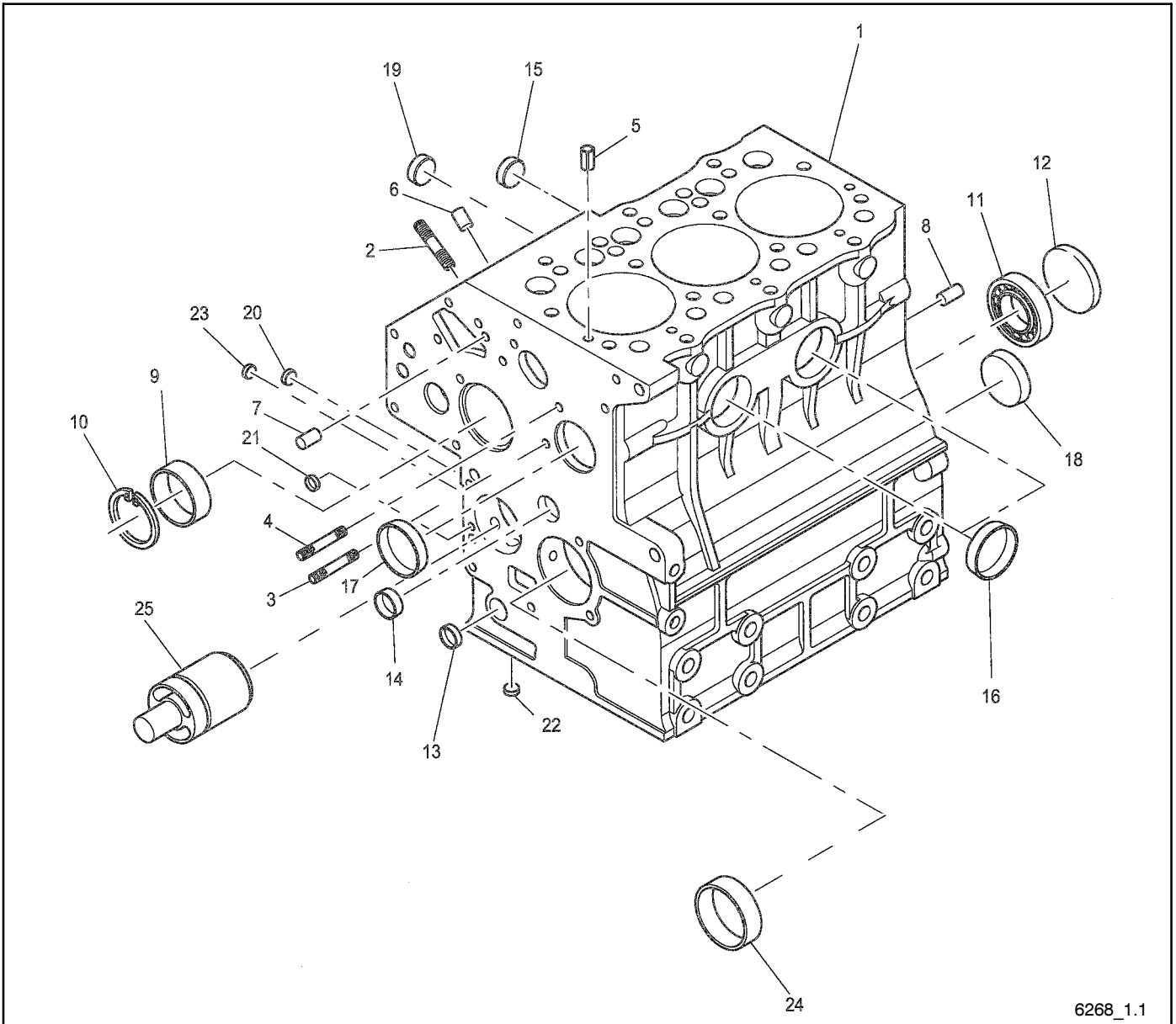
Group Title	<i>Fuel Injector</i>	<i>Fuel Leak-Off Pipe</i>	<i>Shutoff Solenoid</i>	<i>Glow Plugs</i>	<i>Water Pump</i>	<i>Seawater Pump</i>	<i>Exhaust Manifold Pipes</i>	<i>Thermostat</i>	<i>Water Pump Pulley</i>	<i>Fan Drive</i>	<i>Oil Pan</i>	<i>Dipstick and Tube</i>	<i>Oil Fill Cap</i>	<i>Oil Filter</i>
Group No.	5.3	5.4	5.5	6	7.1	7.2	7.3	7.4	7.5	8	9.1	9.3	9.4	9.5
Spec No.	Variation Number													
GM42043-GA1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

# Specification Number Index

Group Title	<i>Oil Intake</i>	<i>Oil Leak-Off Pipes</i>	<i>Oil Pump</i>	<i>Oil Relief Valve</i>	<i>Lift Pump</i>	<i>Flywheel</i>	<i>Starter Motor</i>	<i>Exhaust Manifold</i>	<i>Exhaust Manifold Mounting</i>	<i>Alternator</i>	<i>Alternator Mounting &amp; Belt</i>	<i>Engine Lifting</i>	<i>Auxiliary Drive</i>	<i>Oil Pressure Switch</i>
<b>Group No.</b>	<b>9.6</b>	<b>9.7</b>	<b>9.8</b>	<b>9.9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13.1</b>	<b>13.2</b>	<b>14.1</b>	<b>14.2</b>	<b>15</b>	<b>16</b>	<b>17</b>
<b>Spec No.</b>	<b>Variation Number</b>													
GM42043-GA1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Group Title	<i>Intake Manifold</i>	<i>Voltage Regulator</i>	<i>Fuel Filter Assembly</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>		
<b>Group No.</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>101</b>	<b>103</b>	<b>104</b>	<b>105</b>	<b>107</b>	<b>109</b>	<b>201</b>	<b>301</b>	<b>701</b>		
<b>Spec No.</b>	<b>Variation Number</b>													
GM42043-GA1	1	1	1	1	1	1	1	1	1	1	1	1		

# Group 1.1: Cylinder Block



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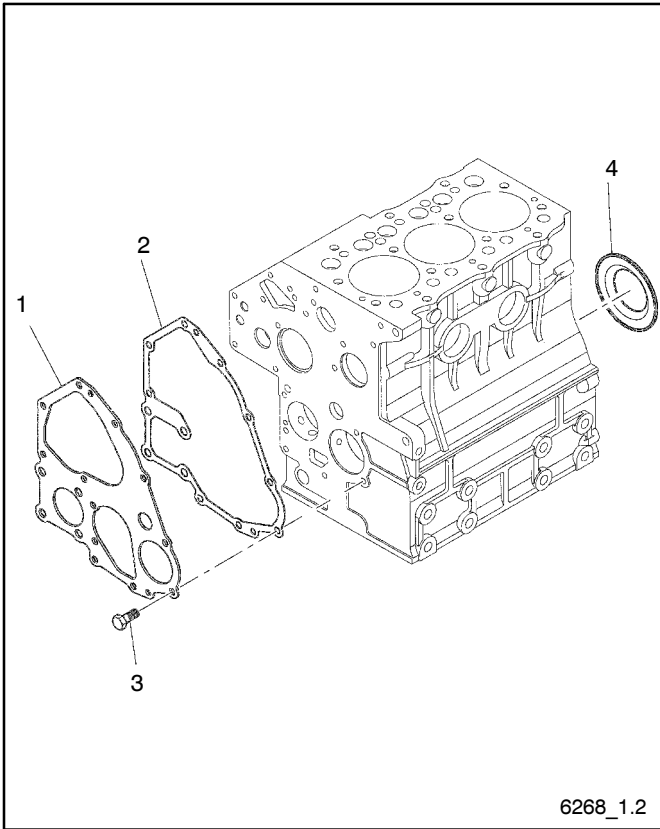


## Group 1.1: Cylinder Block

Item	Part Number	Description	Qty.
			Var. 1
1	X	Block (service by complete engine)	1
2	GM58334	Stud	2
3	GM58362	Stud	1
4	GM58360	Stud	1
5	GM58391	Pin	1
6	GM58392	Dowel	1
7	GM58394	Dowel	1
8	GM58395	Dowel	1
9	GM58409	Bearing, needle	1
10	GM58401	Circlip	1
11	GM58408	Bearing, ball	1
12	GM58421	Plug	1
13	GM58423	Cap	1
14	GM58424	Cap	1
15	GM58424	Cap	1
16	GM58426	Plug	1
17	GM58426	Plug	1
18	GM58426	Plug	1
19	GM58578	Plug	1
20	GM58576	Plug	4
21	GM58577	Plug	1
22	GM58579	Plug	1
24	GM58582	Bush	1
25	GM58544	Shaft	1

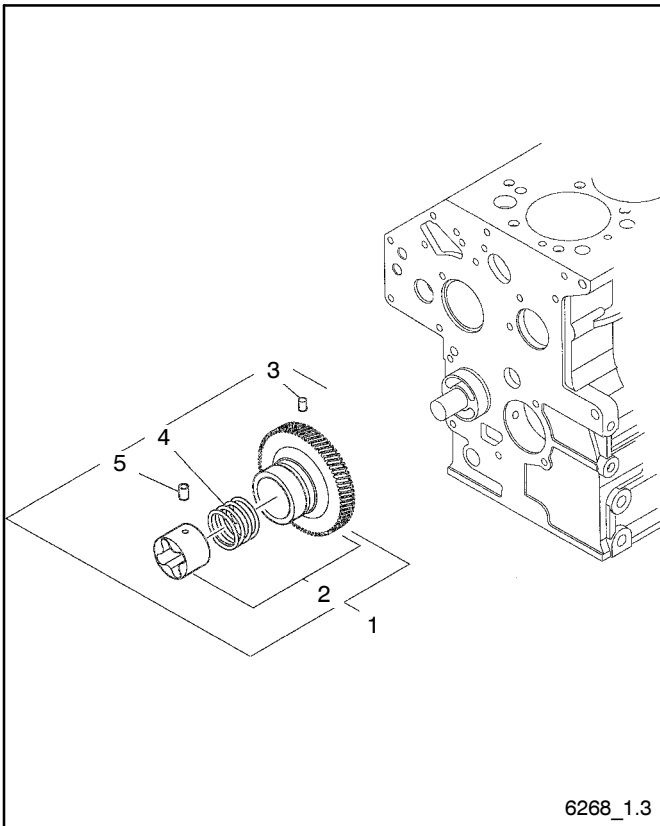
X Item not sold separately.

## Group 1.2: Front Plate



Item	Part Number	Description	Qty.
			Var.
1	GM58542	Plate	1
2	GM58545	Gasket, timing case	1
3	GM58347	Screw	3
4	GM58587	Seal, rear end oil	1

## Group 1.3: Idler Gear



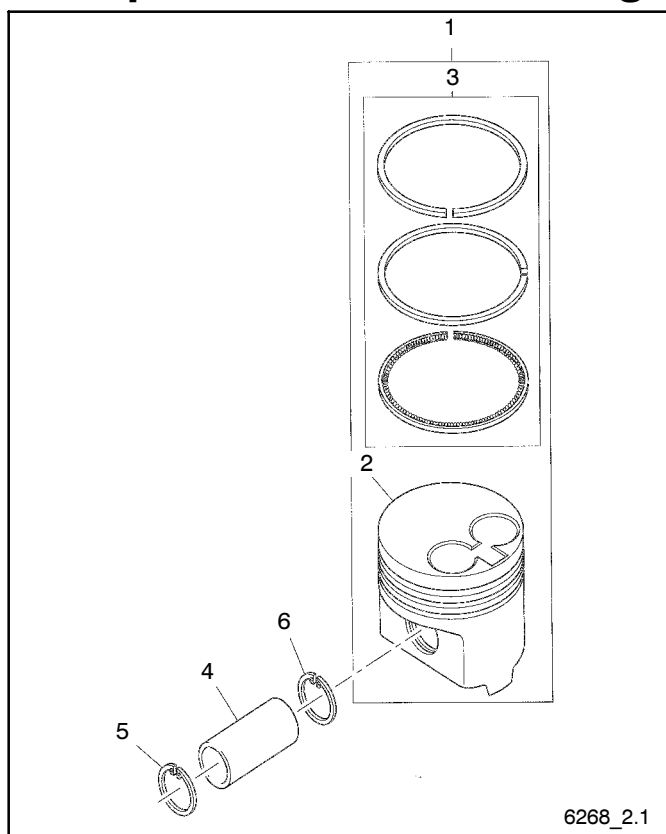
Item	Part Number	Description	Qty.
			Var.
1	GM58540	Gear, oil pump idler (includes items 2-5)	1
2	X	Gear (order item 1)	
3	GM58396	Dowel	3
4	GM58565	Spring	1
5	GM58581	Bush	1

X Item not sold separately.

## Group 2.1: Piston and Rings

Item	Part Number	Description	Qty.
			Var. 1
1	GM58453	Kit, piston and ring (includes items 2, 3)	3
2	X	Piston (order item 1)	
3	GM58455	Kit, piston ring	1
4	GM58459	Pin	3
5	GM58400	Circlip	3
6	GM58400	Circlip	3

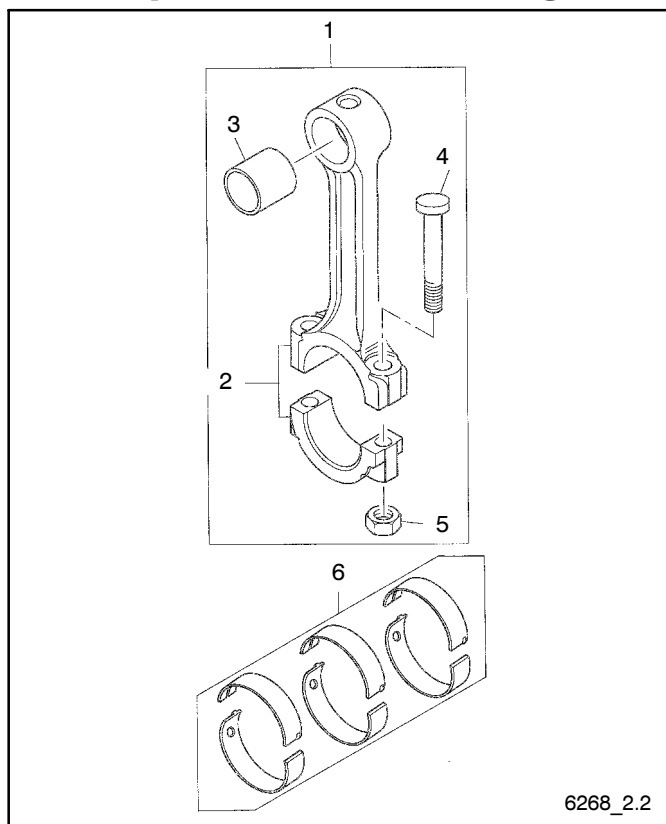
X Item not sold separately.



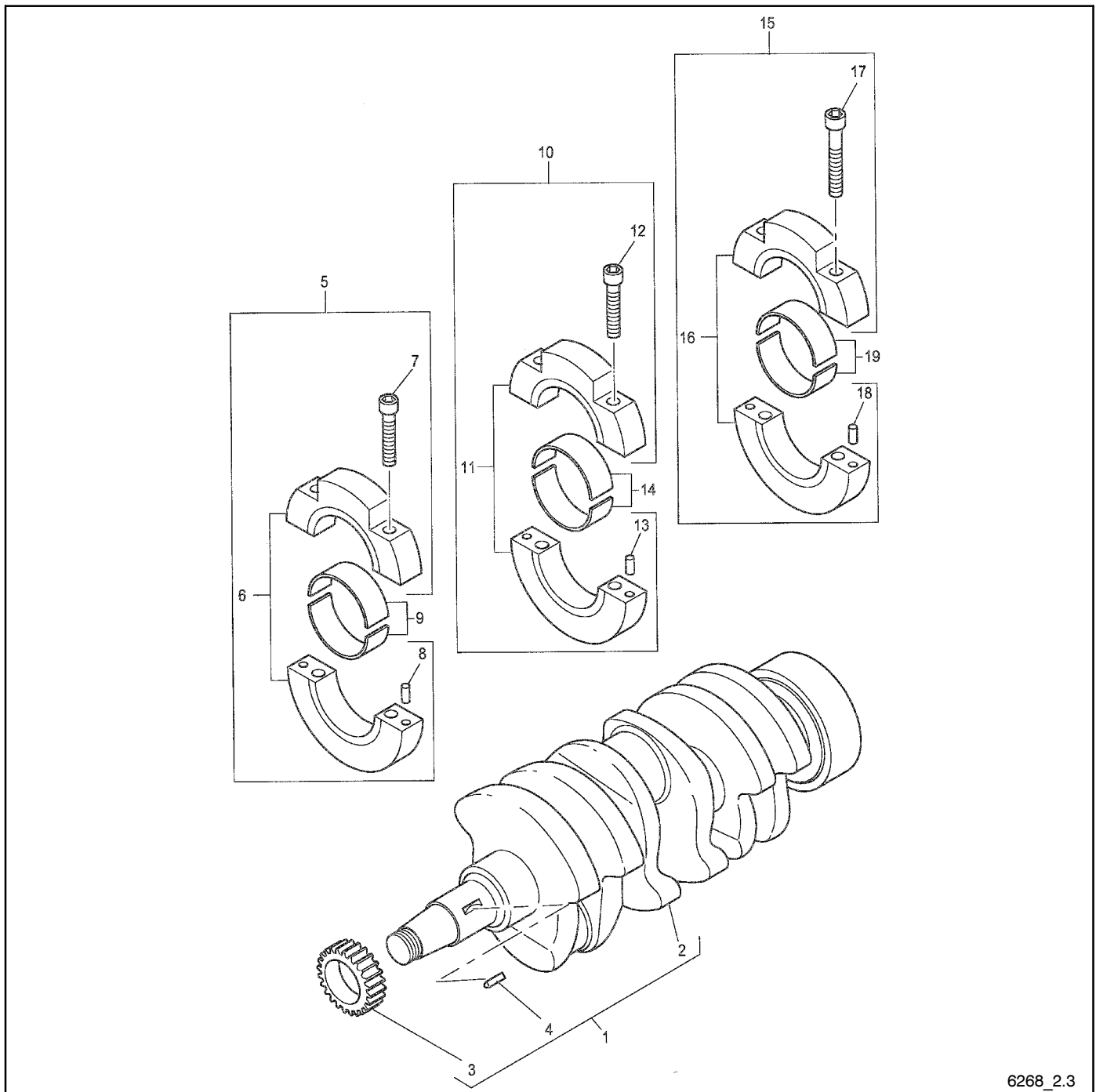
## Group 2.2: Connecting Rod

Item	Part Number	Description	Qty.
			Var. 1
1	GM58454	Connecting rod (includes items 2-5)	3
2	X	Connecting rod	
3	GM58583	Bush, small end	1
4	GM58456	Bolt, connecting rod	2
5	GM58370	Nut, connecting rod	2
6	GM58607	Bearing kit, big end	1

X Item not sold separately.



## Group 2.3: Crankshaft and Bearings

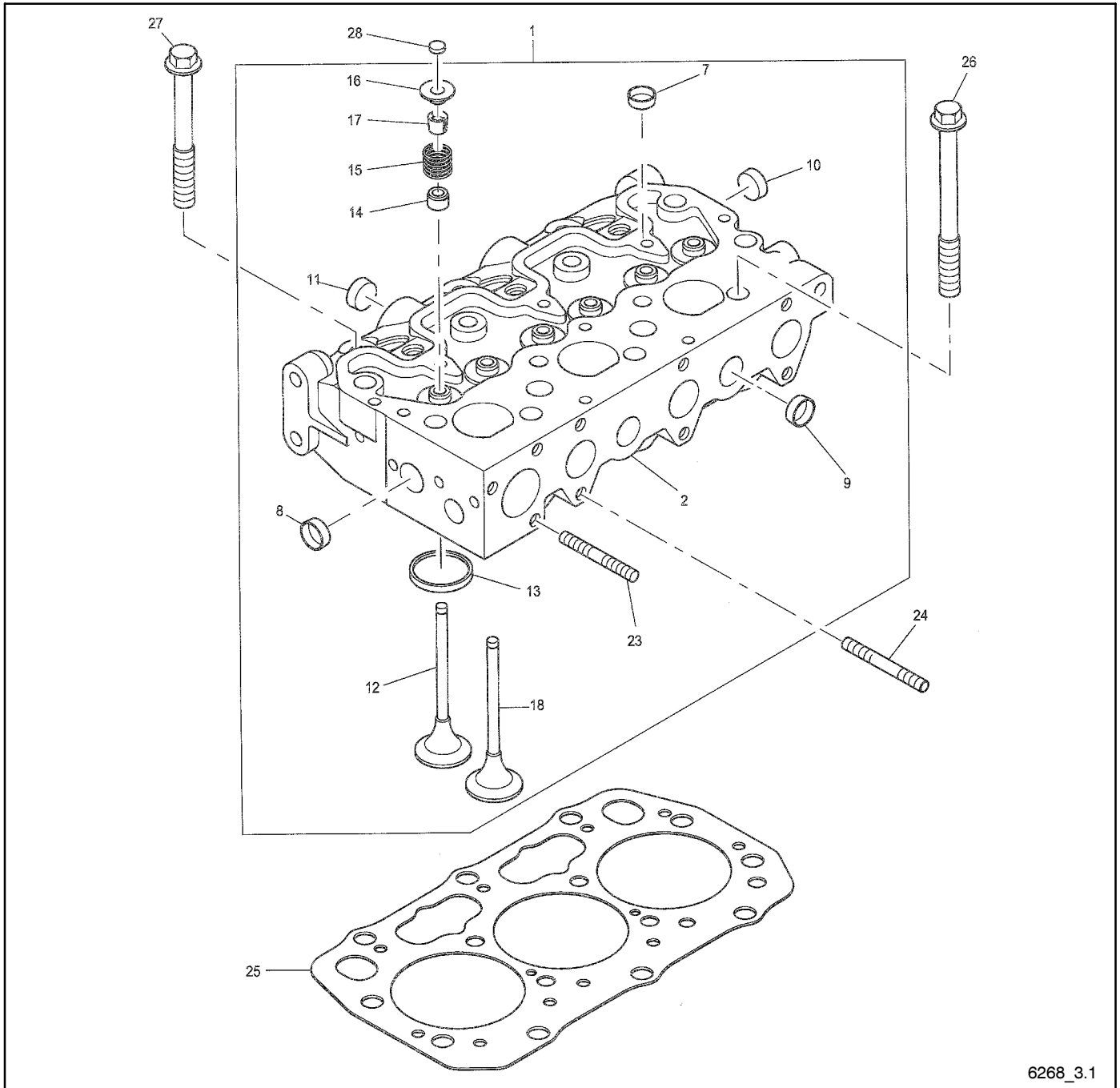


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Item	Part Number	Description	Qty.	Item	Part Number	Description	Qty.
			Var.				Var.
1	GM58457	Crankshaft kit (incl. items 2-4)	1	11	X	Assy., bearing holder (order item 10)	1
2	X	Crankshaft (order item 1)		12	GM58344	Bolt	2
3	GM58458	Crankshaft gear	1	13	GM58393	Dowel	2
4	GM58397	Key	1	14	GM58586	Main bearing kit	1
5	GM58434	Assy., bearing holder (incl. items 6-8)	1	15	GM58436	Assy., bearing holder (incl. items 16-18)	1
6	X	Assy., bearing holder (order item 5)		16	X	Assy., bearing holder (order item 16)	
7	GM58344	Bolt	2	17	GM58345	Bolt	2
8	GM58393	Dowel	2	18	GM58393	Dowel	2
9	GM58585	Main bearing kit	1	19	GM58584	Main bearing kit	1
10	GM58435	Assy., bearing holder (incl. items 11-13)	1				

X Item not sold separately.

# Group 3.1: Cylinder Head Assembly

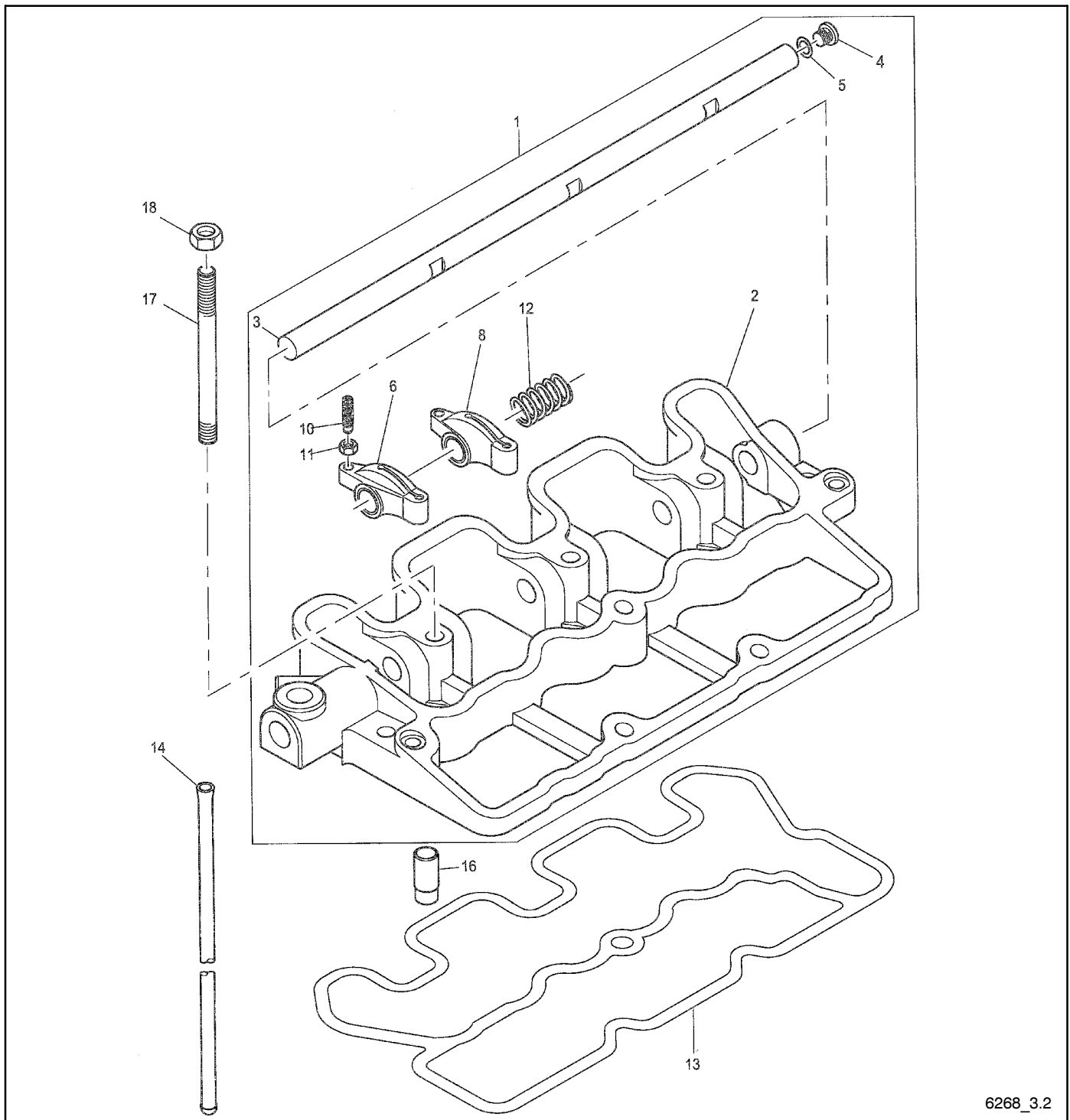


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Item	Part Number	Description	Qty.	Var.	Item	Part Number	Description	Qty.	Var.
1	GM58446	Assy., cylinder head (incl. items 2-23)	1		17	GM58472	Collet, valve	6	
2	X	Assy., cylinder head (order item 1)			18	GM58469	Valve, exhaust	3	
3	GM58432	Insert, valve seat	3		19	GM58476	Seal, valve stem	3	
7	GM58424	Cap	2		20	GM58566	Spring, valve	3	
8	GM58425	Plug	1		21	GM58470	Cap	3	
9	GM58425	Plug	2		22	GM58472	Collet, valve	6	
10	GM58425	Plug	1		23	GM58361	Stud	1	
11	GM58425	Plug	2		24	GM58359	Stud	2	
12	GM58468	Valve, intake	3		25	GM58449	Gasket, cylinder head, 1.2mm	1	
13	GM58433	Insert, valve seat	1		25	GM58450	Gasket, cylinder head, 1.3mm	1	
14	GM58476	Seal, valve stem	3		26	GM58447	Screw	11	
15	GM58566	Spring, valve	3		27	GM58448	Screw	3	
16	GM58470	Cap	3		28	GM58471	Cap	6	

X Item not sold separately.

## Group 3.2: Cylinder Head Cover



6268\_3.2

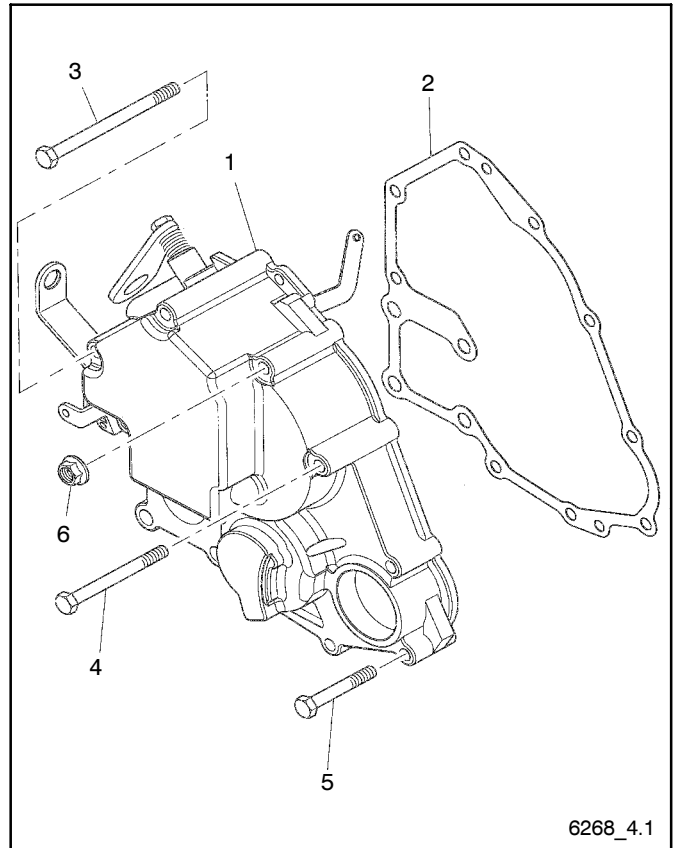
Item	Part Number	Description	Qty.
			Var. 1
1	GM58465	Assy., rocker box (includes item 2-12)	1
2	X	Bracket, rocker shaft (order item 1)	1
3	GM58473	Rockershaft	1
4	GM58575	Plug	1
5	GM58410	Seal, O-ring	1
6	GM58474	Arm, rocker	3
8	GM58475	Arm, rocker	3
10	GM58598	Screw, adjusting	6
11	GM58369	Nut	6

Item	Part Number	Description	Qty.
			Var. 1
12	GM58570	Spring, rocker shaft	2
13	GM58479	Seal, rocker box	1
14	GM58477	Pushrod	1
15	GM58466	Tappet	6
16	GM58467	Tappet	1
17	GM58358	Stud	3
18	GM58377	Nut	3
19	GM58363	Stud	3

X Item not sold separately.

## Group 4.1: Timing Case Mounting

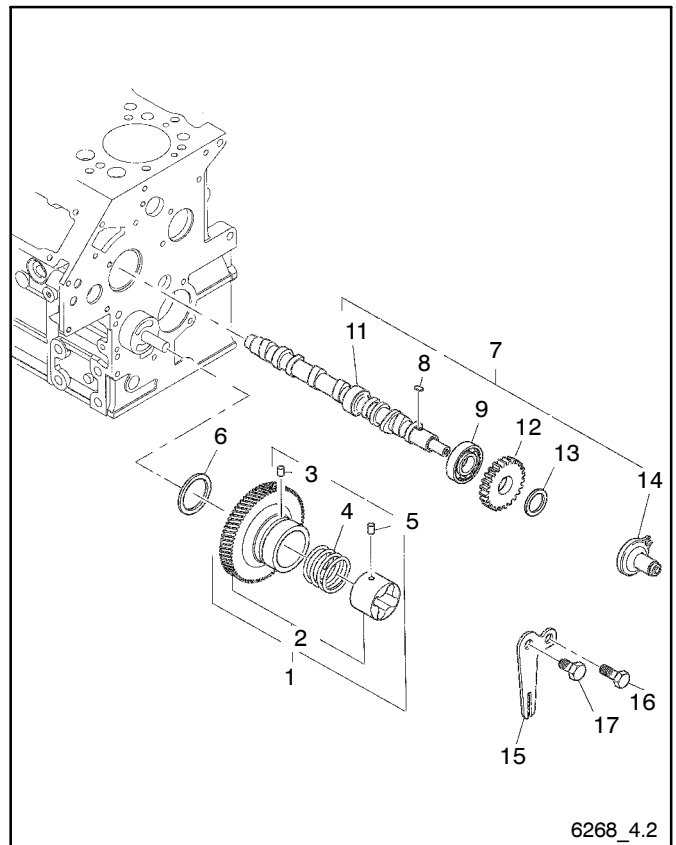
Item	Part Number	Description	Qty.	
			Var.	1
1	—	Timing case (see Group 4.3)	1	1
2	GM58546	Gasket, timing case cover	1	1
3	GM58356	Screw	2	2
4	GM58354	Screw	2	2
5	GM58352	Screw	4	4
6	GM58377	Nut	1	1



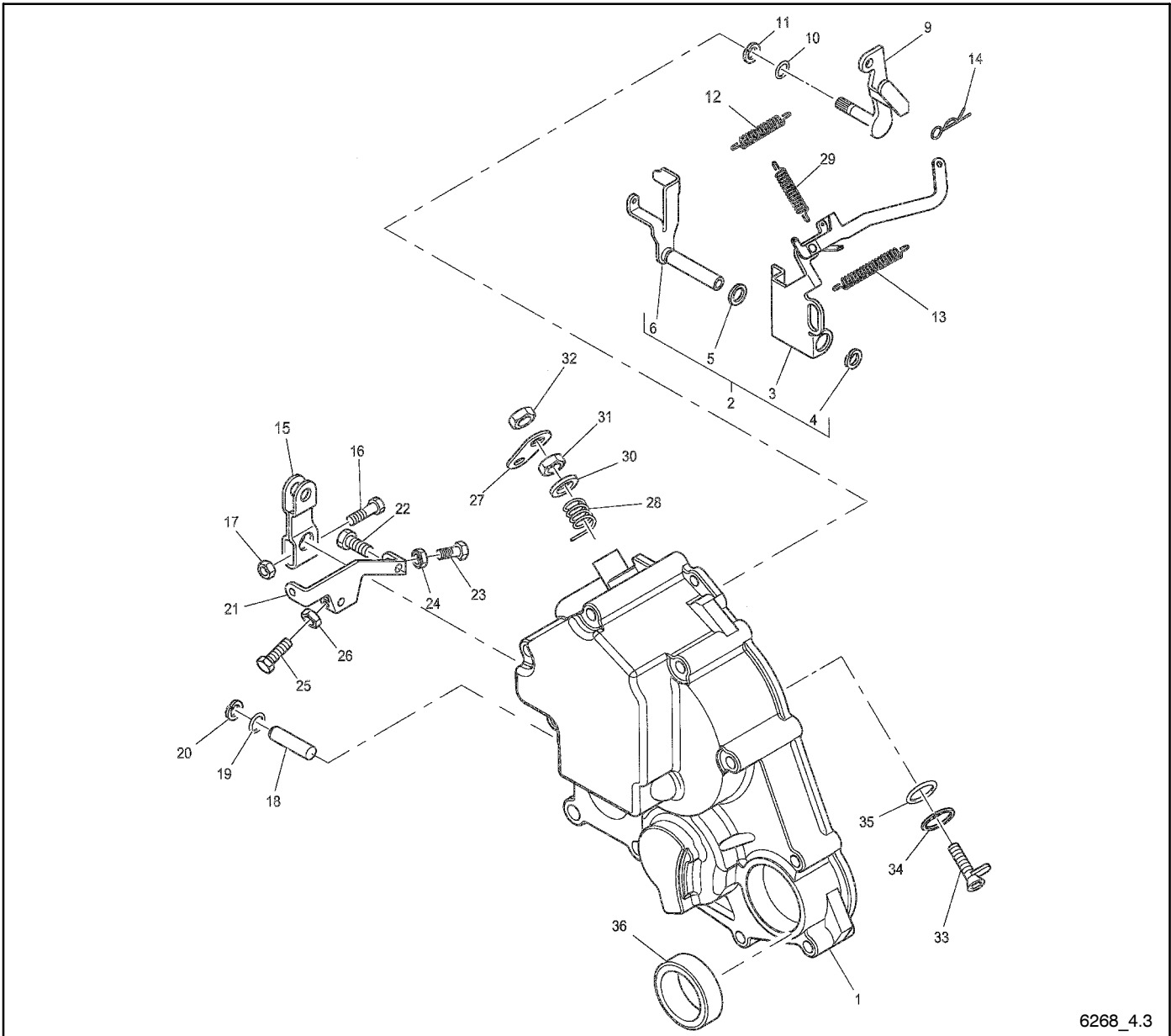
## Group 4.2: Camshaft and Gears

Item	Part Number	Description	Qty.	
			Var.	1
1	GM58540	Gear, oil pump idler (includes items 2-5)	1	1
2	X	Gear (order item 2)		
3	GM58396	Dowel	3	3
4	GM58565	Spring	1	1
5	GM58581	Bush	1	1
6	GM58593	Washer	1	1
7	GM58464	Camshaft (includes items 8-13)	1	1
8	GM58399	Woodruff key	1	1
9	GM58406	Bearing, ball	1	1
11	X	Camshaft (order item 7)		
12	GM58478	Camshaft gear	1	1
13	GM58590	Spacer	3	3
14	GM58485	Tappet	1	1
15	GM58600	Plate	1	1
16	GM58347	Screw	1	1
17	GM58343	Screw	1	1

X Item not sold separately.



# Group 4.3: Timing Case



6268\_4.3

Item	Part Number	Description	Qty.
			Var.
1	GM58541	Timing case (includes items 2-6)	1
2	GM58480	Lever	1
3	X	Lever (order item 2)	1
4	GM58404	Ring, snap	1
5	GM58388	Washer	1
6	GM58486	Lever	1
9	GM58482	Arm	1
10	GM58417	Seal, O-ring	1
11	GM58404	Ring, snap	1
12	GM58567	Spring	1
13	GM58571	Spring	1
14	GM58398	Pin	1
15	GM58487	Lever	1
16	GM58337	Screw	1
17	GM58377	Nut	1
18	GM58481	Shaft	1

Item	Part Number	Description	Qty.
			Var.
19	GM58402	Circlip	1
20	GM58415	Seal, O-ring	2
21	GM58488	Stay	1
22	GM58348	Screw	2
23	GM58332	Screw	1
24	GM58377	Nut	1
25	GM58332	Screw	1
26	GM58377	Nut	1
27	GM58484	Lever	1
28	GM58564	Spring, stop	1
29	GM58568	Spring	1
30	GM58387	Washer	1
31	GM58374	Nut	1
32	GM58374	Nut	1
33	GM58483	Arm	1
34	GM58403	Circlip	1
35	GM58416	Seal, O-ring	1
36	GM58588	Seal, front end oil	1

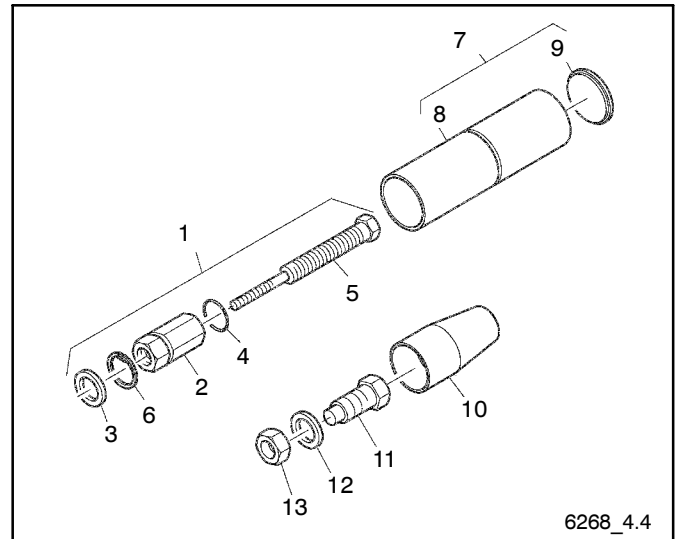
X Item not sold separately.



## Group 4.4: Timing Case

Item	Part Number	Description	Qty.
			Var. 1
1	GM58494	Assembly, bolt (includes items 2-6)	1
2	GM58371	Nut	1
3	GM58381	Washer	1
4	GM58414	Seal, O-ring	1
5	GM58506	Bolt	1
6	GM58572	Circlip	1
7	GM58608	Cap, anti-tamper (includes items 8, 9)	1
8	X	Cap, anti-tamper (order item 7)	1
9	GM58422	End cap	1
10	GM58497	Cap, anti-tamper	1
11	GM58599	Bolt	1
12	GM58381	Washer	1
13	GM58372	Nut	1

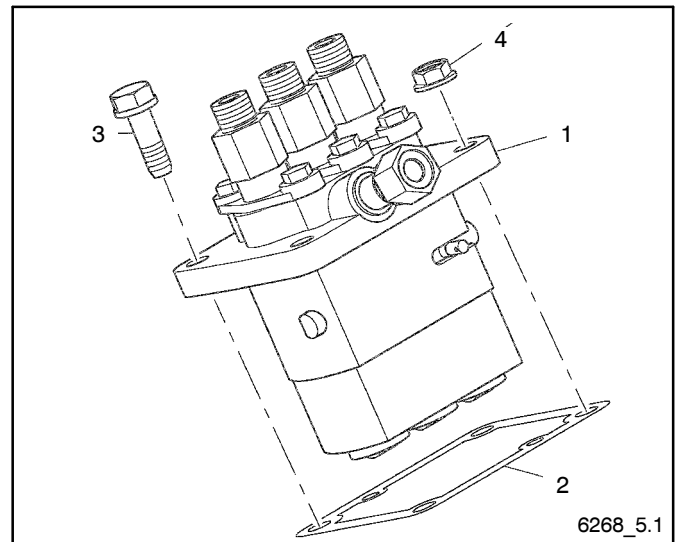
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## Group 5.1: Fuel Injection Pump

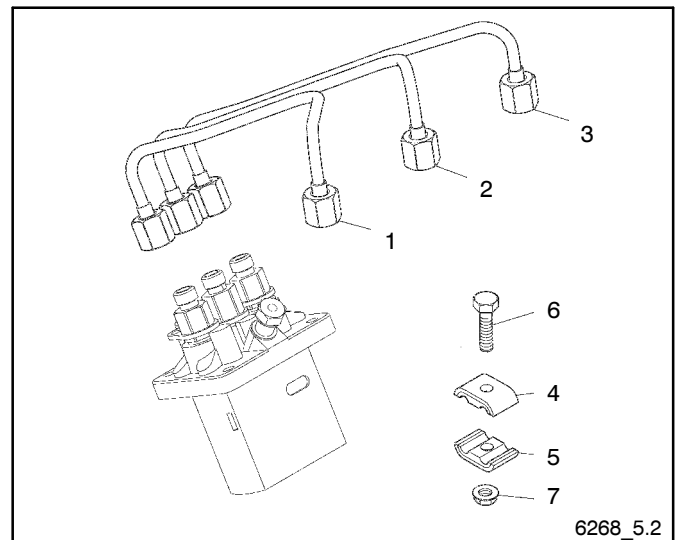
Item	Part Number	Description	Qty.
			Var. 1
1	GM58493	Pump, fuel injection	1
2	GM58501	Shim, 0.20mm (+) 0.20mm	1
2	GM58502	Shim, 0.3mm (+) 0.28mm	1
2	GM58503	Shim, 0.4mm (+) 0.38mm	1
2	GM58504	Shim, 0.5mm (+) 0.49mm	1
2	GM58505	Shim, 0.5mm (+) 0.90mm	1
3	GM58350	Screw	2
4	GM58377	Nut	2



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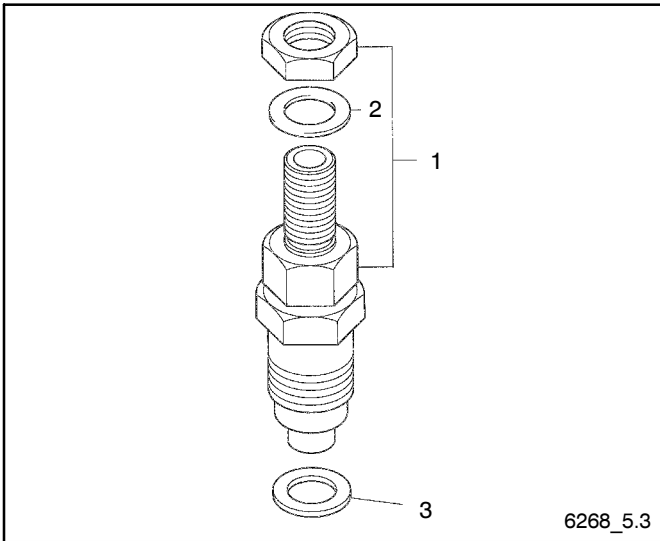
## Group 5.2: High Pressure Fuel Pipes

Item	Part Number	Description	Qty.
			Var. 1
1	GM58507	Pipe, fuel injection No. 1 cylinder	1
2	GM58508	Pipe, fuel injection No. 2 cylinder	1
3	GM58509	Pipe, fuel injection No. 3 cylinder	1
4	GM58589	Clamp	2
5	GM58589	Clamp	2
6	GM58336	Screw	2
7	GM58377	Nut	2



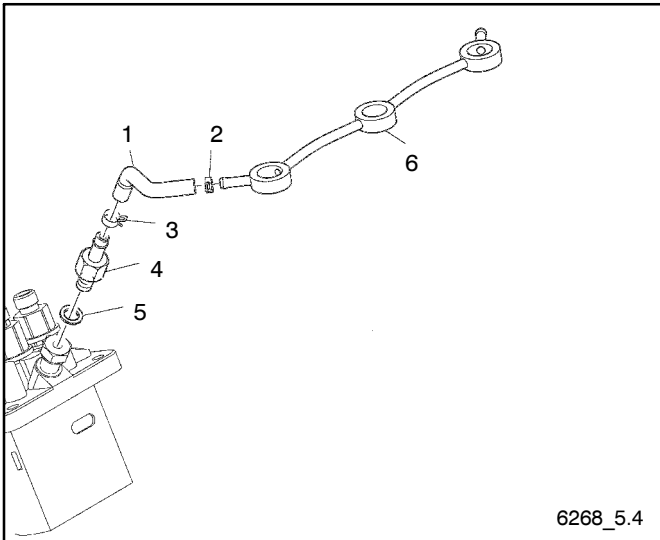
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## Group 5.3: Fuel Injector



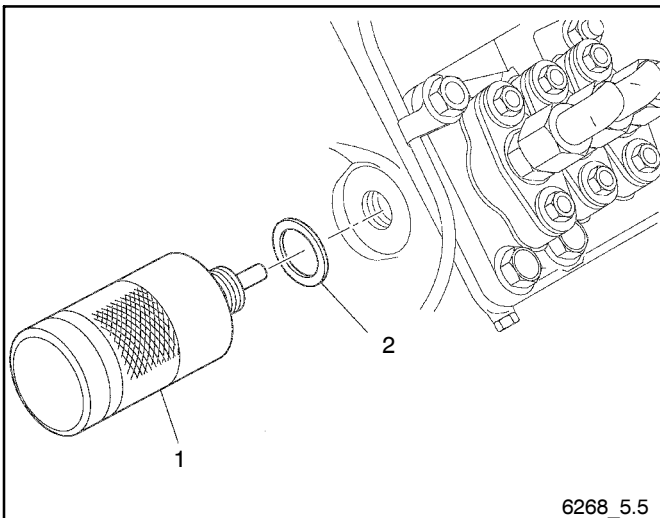
Item	Part Number	Description	Qty.
			Var.
1	GM58498	Injector (includes item 2)	3
2	GM58500	Washer	1
3	GM58499	Seal, injector	3

## Group 5.4: Fuel Leak-Off Pipe



Item	Part Number	Description	Qty.
			Var.
1	GM58431	Pipe, fuel injection pump return	1
2	GM58428	Clip	1
3	GM58428	Clip	1
4	GM58496	Connector	1
5	GM58380	Washer	1
6	GM58510	Pipe, atomizer leak-off	1

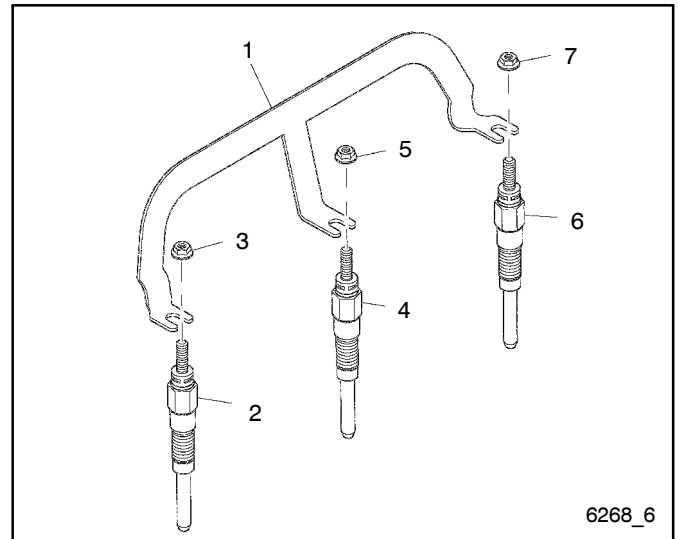
## Group 5.5: Shutoff Solenoid



Item	Part Number	Description	Qty.
			Var.
1	GM58550	Solenoid	1
2	GM58383	Washer	1

## Group 6: Glow Plugs

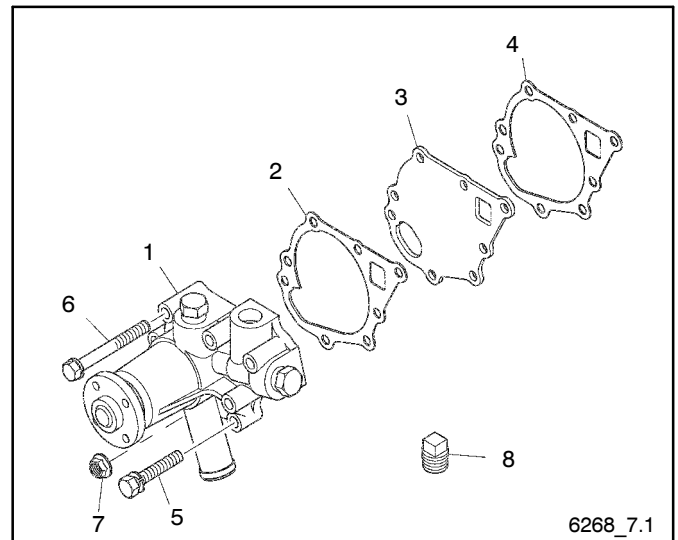
Item	Part Number	Description	Qty.
			Var. 1
1	GM58553	Connector	1
2	GM58552	Plug, glow	1
3	GM58376	Nut	1
4	GM58552	Plug, glow	1
5	GM58376	Nut	1
6	GM58552	Plug, glow	1
7	GM58376	Nut	1



6268\_6

## Group 7.1: Water Pump

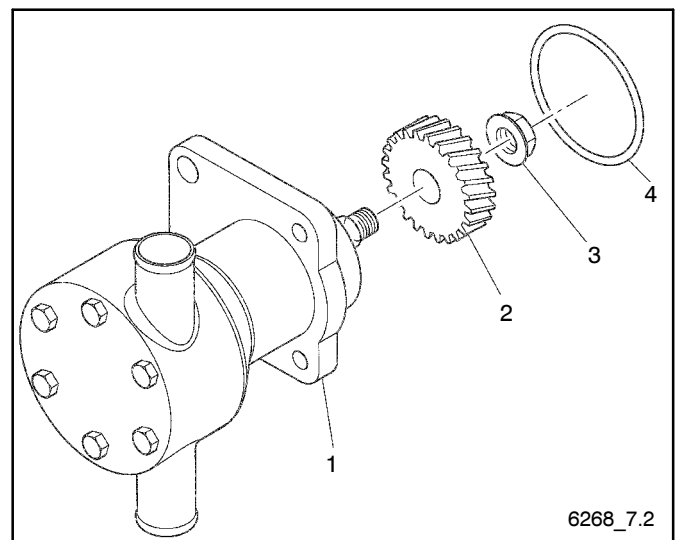
Item	Part Number	Description	Qty.
			Var. 1
1	GM58526	Pump, water	1
2	GM58539	Gasket, water pump	1
3	GM58528	Plate	1
4	GM58538	Gasket, water pump	1
5	GM58351	Screw	3
6	GM58353	Screw	4
7	GM58377	Nut	1
8	GM58427	Plug	1



6268\_7.1

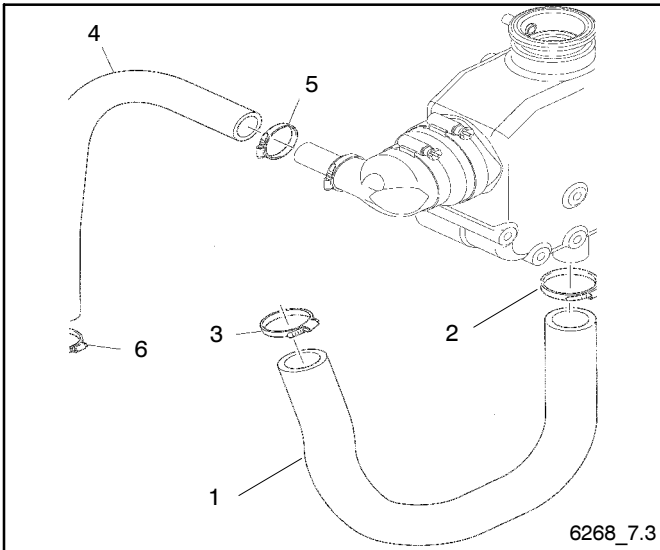
## Group 7.2: Seawater Pump

Item	Part Number	Description	Qty.
			Var. 1
1	GM58527	Pump, seawater	1
2	GM58603	Gear, water pump	1
3	GM58378	Nut	1
4	GM58420	Seal, O-ring	1
5	GM49316	Impeller, seawater pump (not shown)	1



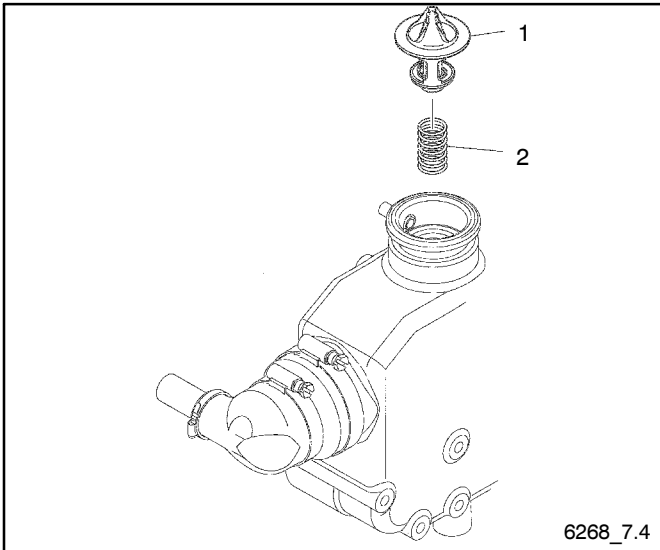
6268\_7.2

## Group 7.3: Exhaust Manifold Pipes



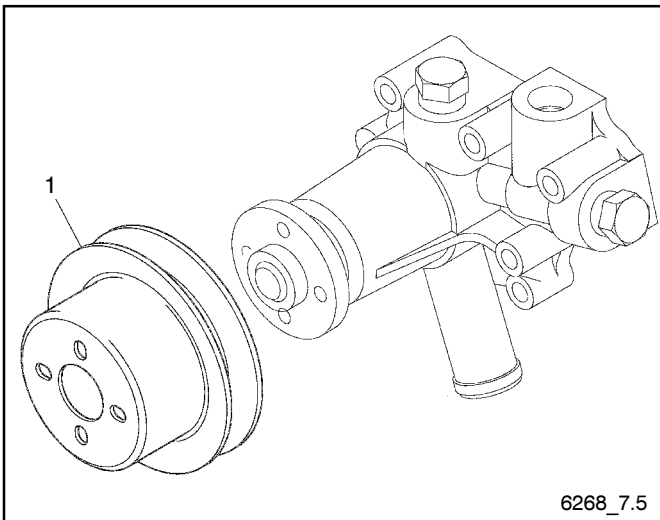
Item	Part Number	Description	Qty.
1	GM58534	Hose	1
2	GM58329	Clip, hose	1
3	GM58329	Clip, hose	1
4	GM58535	Hose	1
5	GM58328	Clip, hose	1
6	GM58328	Clip, hose	1

## Group 7.4: Thermostat



Item	Part Number	Description	Qty.
1	GM58529	Thermostat	1
2	GM58569	Spring	1

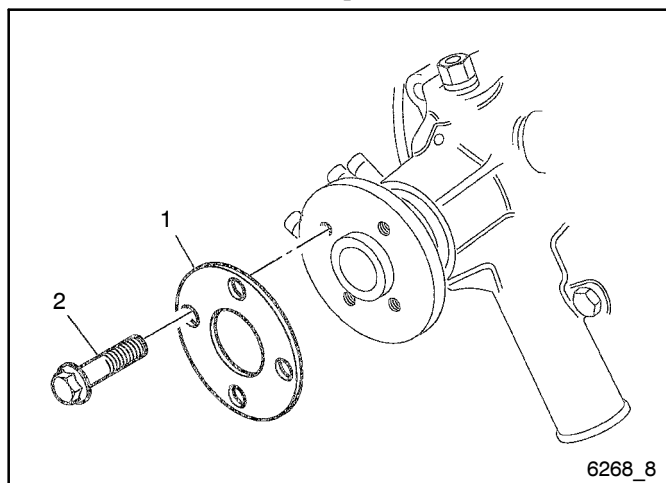
## Group 7.5: Water Pump Pulley



Item	Part Number	Description	Qty.
1	GM58530	Pulley, water pump	1

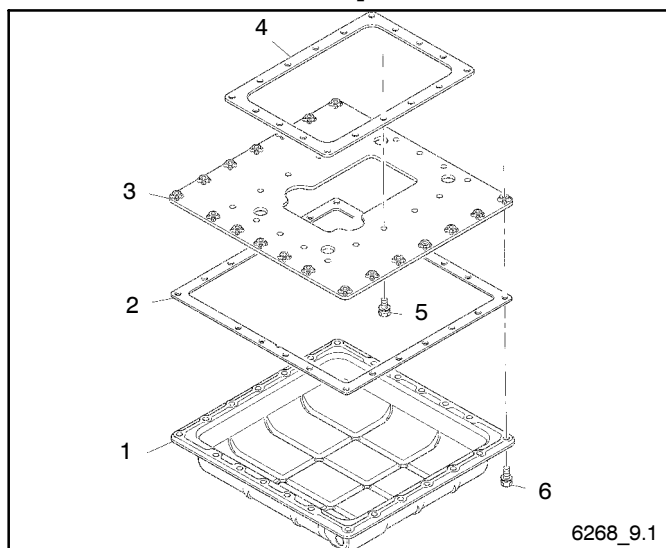
## Group 8: Fan Drive

Item	Part Number	Description	Qty.
			Var.
1	GM58531	Plate	1
2	GM58350	Screw	4



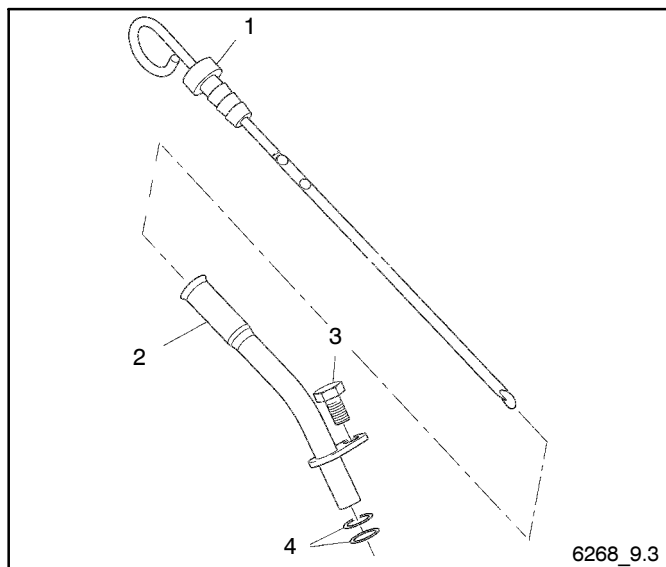
## Group 9.1: Oil Pan

Item	Part Number	Description	Qty.
			Var.
1	GM58442	Sump	1
2	GM58445	Gasket, sump	1
3	GM58438	Plate	1
4	GM58444	Gasket, sump	1
5	GM58348	Screw	13
6	GM58349	Screw	24

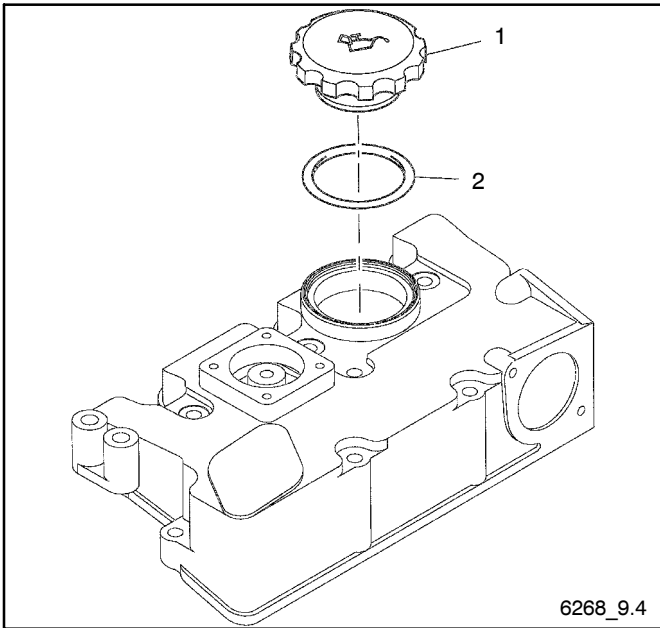


## Group 9.3: Dipstick and Tube

Item	Part Number	Description	Qty.
			Var.
1	GM58573	Dipstick	1
2	GM58443	Tube, dipstick	1
3	GM58347	Screw	1
4	GM58418	Seal, O-ring	2

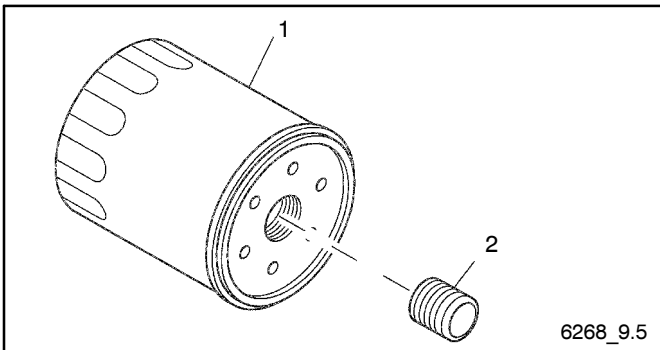


## Group 9.4: Oil Fill Cap



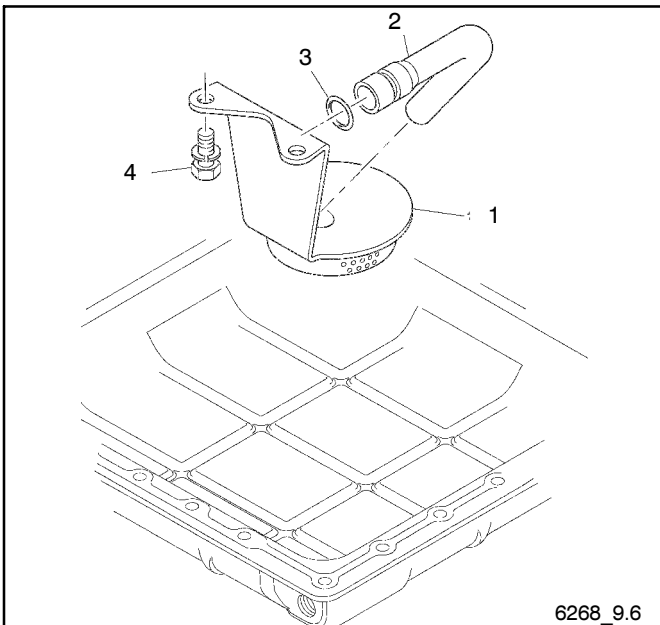
Item	Part Number	Description	Qty.
			Var.
1	GM58574	Oil filler cap	1
2	GM58411	Seal, O-ring	1

## Group 9.5: Oil Filter



Item	Part Number	Description	Qty.
			Var.
1	GM40999	Filter, oil	1
2	GM58521	Connection	1

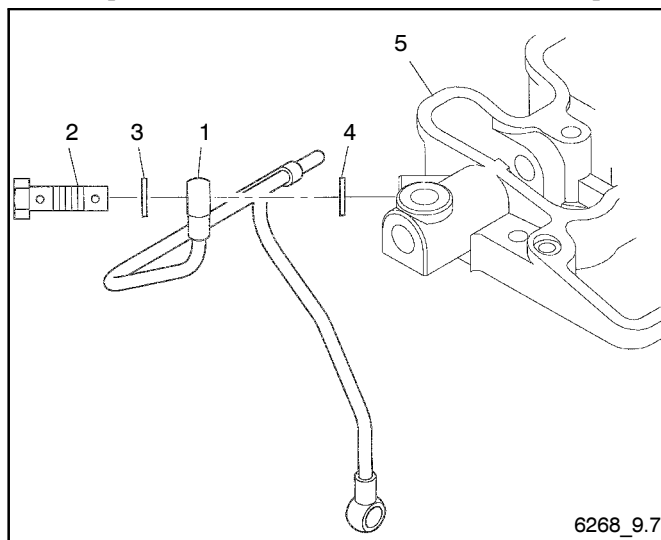
## Group 9.6: Oil Intake



Item	Part Number	Description	Qty.
			Var.
1	GM58520	Strainer, oil suction	1
2	GM58523	Pipe, oil	1
3	GM58412	Seal, O-ring	1
4	GM58347	Screw	1

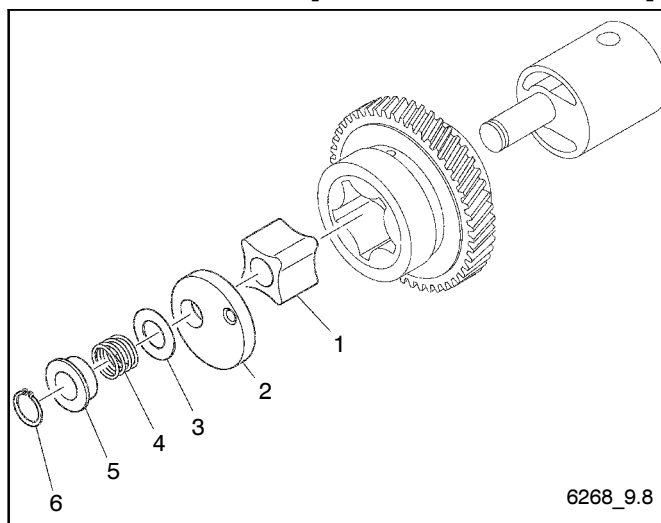
## Group 9.7: Oil Leak-Off Pipes

Item	Part Number	Description	Qty.	
			Var.	1
1	GM58522	Pipe, oil	1	1
2	GM58580	Bolt	1	1
3	GM58524	Washer	1	1
4	GM58524	Washer	1	1
5	—	Bracket, rocker shaft (see Group 3.2)	1	1



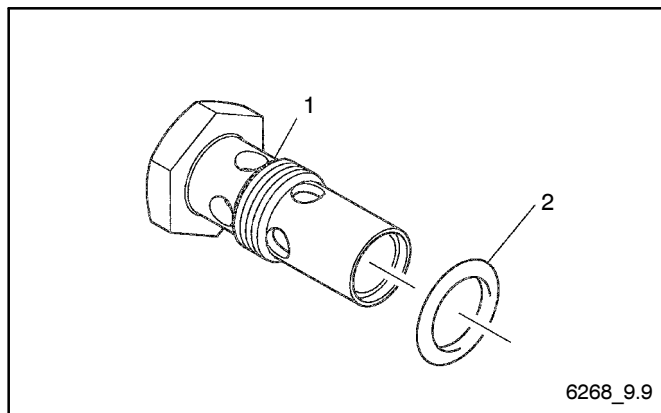
## Group 9.8: Oil Pump

Item	Part Number	Description	Qty.	
			Var.	1
1	GM58519	Rotor (also order oil pump idler gear, Group 1.3)	1	1
2	GM58518	Cover	1	1
3	GM58594	Shim (+) 0.10mm	1	1
3	GM58595	Shim (+) 0.15mm	1	1
3	GM58596	Shim (+) 0.20mm	1	1
3	GM58597	Shim (+) 0.50mm	1	1
4	GM58563	Spring	1	1
5	GM58592	Collar	1	1
6	GM58405	Circlip	1	1

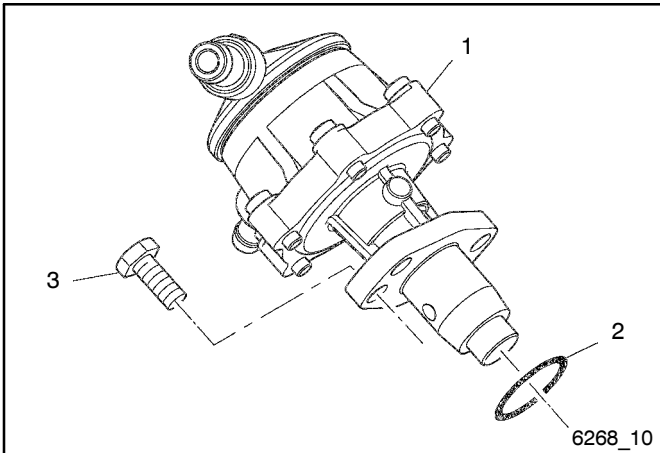


## Group 9.9: Oil Relief Valve

Item	Part Number	Description	Qty.	
			Var.	1
1	GM58517	Valve, relief	1	1
2	GM58413	Seal, O-ring	1	1

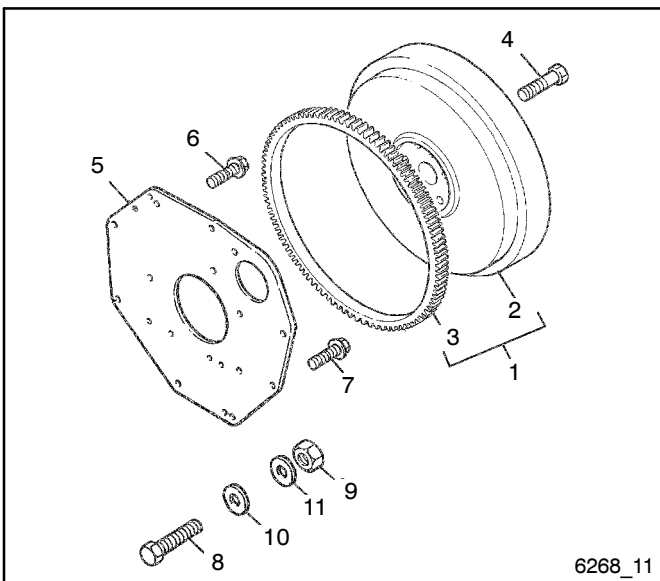


## Group 10: Lift Pump



Item	Part Number	Description	Qty.
			Var. 1
1	GM58492	Pump, lift	1
2	GM58606	Seal, O-ring	1
3	GM58605	Screw	2

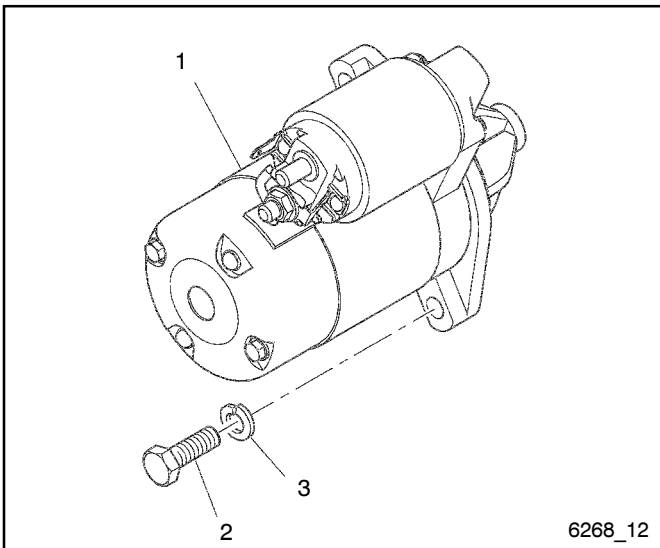
## Group 11: Flywheel



Item	Part Number	Description	Qty.
			Var. 1
1	GM58460	Flywheel (includes items 2, 3)	1
2	X	Flywheel (order item 1)	1
3	GM58461	Ring, starter	1
4	GM58333	Screw	4
5	GM58437	Backplate	1
6	GM58357	Screw	10

X Item not sold separately.

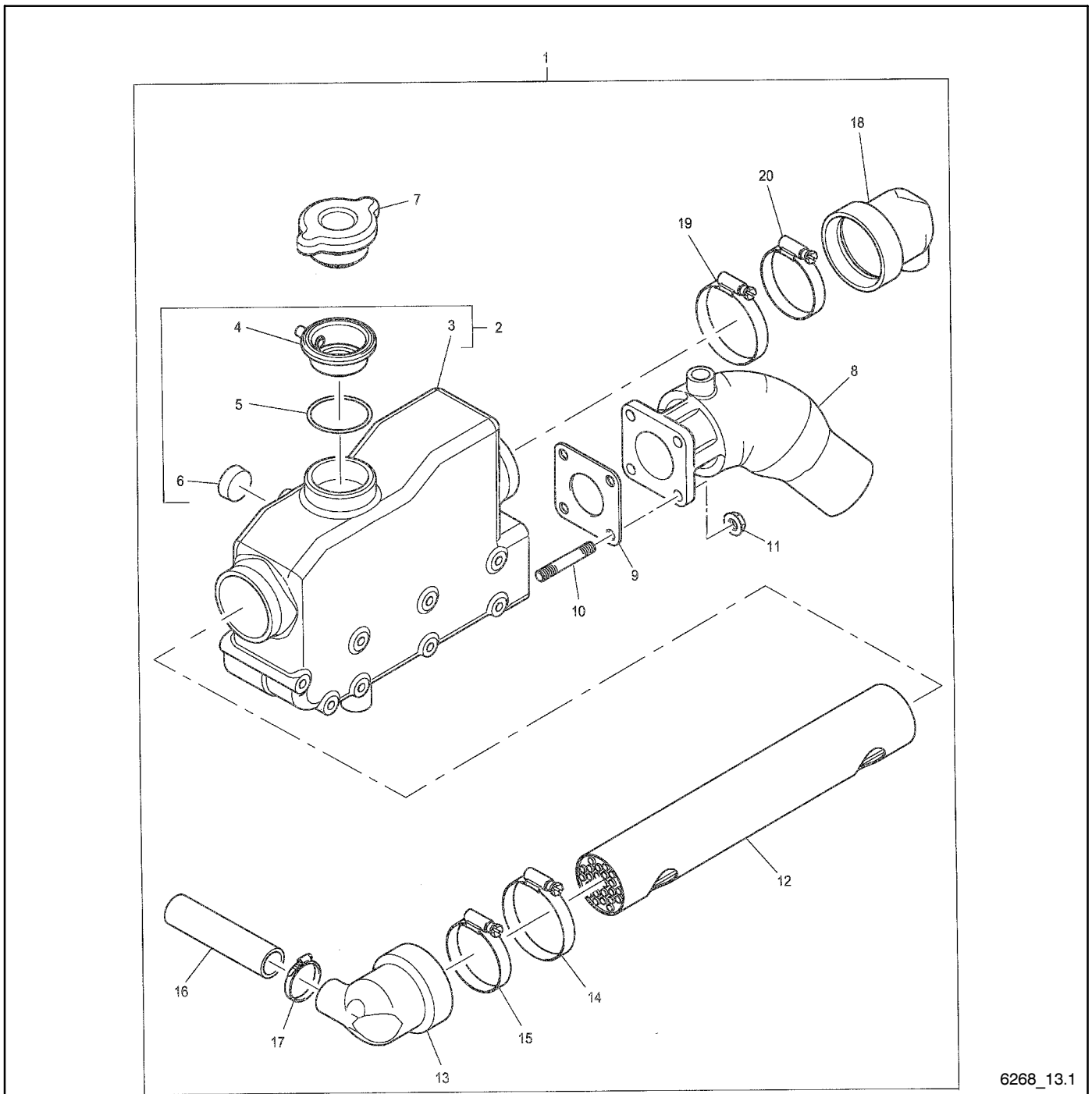
## Group 12: Starter Motor



Item	Part Number	Description	Qty.
			Var. 1
1	GM58549	Motor, starter	1
2	GM58341	Bolt	2
3	GM58390	Washer	2



# Group 13.1: Exhaust Manifold

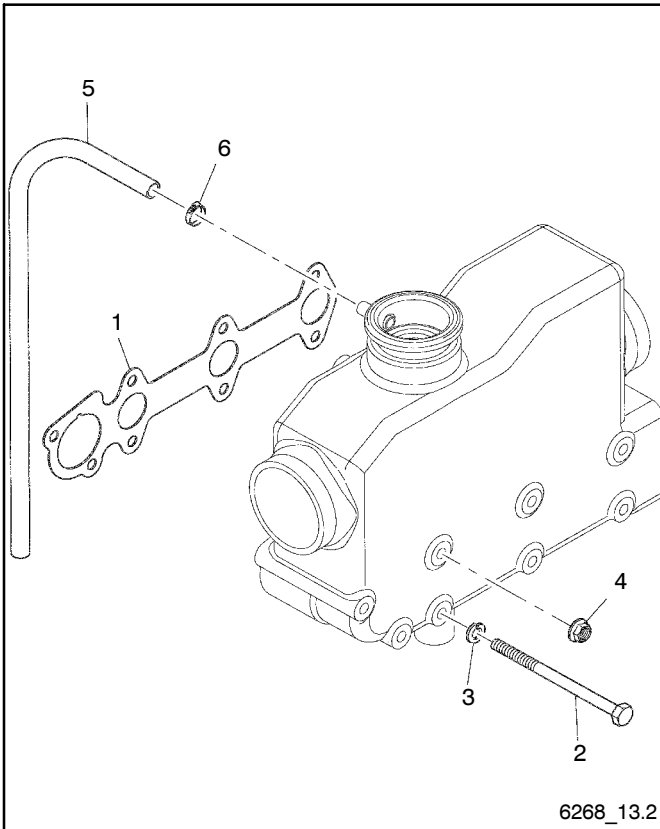


6268\_13.1

Item	Part Number	Description	Qty. Var. 1	Item	Part Number	Description	Qty. Var. 1
1	GM58511	Manifold, exhaust (includes items 2-20)	1	11	GM58378	Nut	4
2	GM58513	Manifold, exhaust (includes items 3-6)	1	12	GM58532	Exchanger, heat	1
3	X	Manifold, exhaust (order item 2)	1	13	GM58533	Hose	2
4	GM58536	Rim	1	14	GM58331	Clip, hose	1
5	GM58419	Seal, O-ring	1	15	GM58330	Clip, hose	1
6	GM58425	Plug	1	16	-	Tube (see Group 104)	1
7	GM58601	Cap	1	17	GM58329	Clip, hose	1
8	GM58514	Elbow, exhaust	1	18	GM58533	Hose	1
9	GM58602	Gasket	1	19	GM58331	Clip, hose	1
10	GM58364	Stud	4	20	GM58330	Clip, hose	1

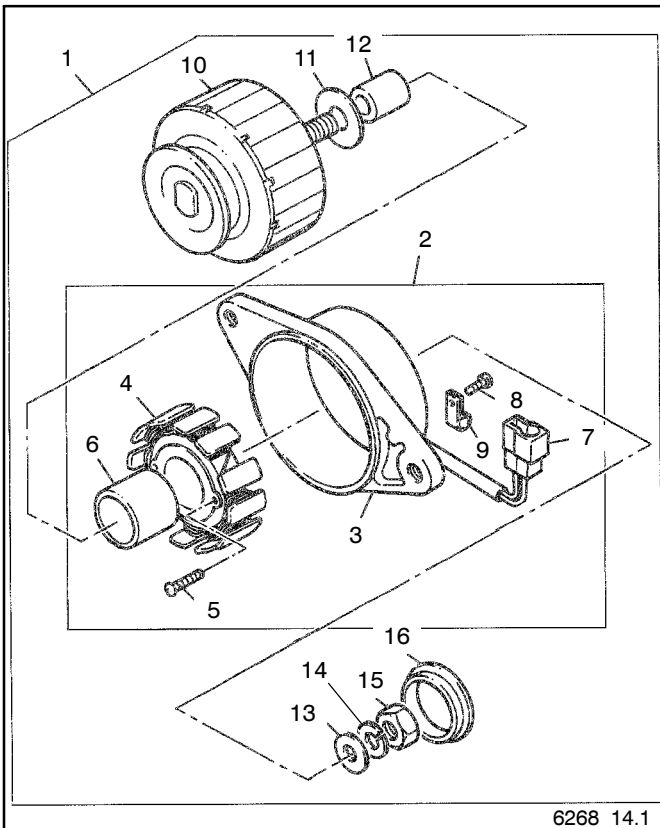
X Item not sold separately.

## Group 13.2: Exhaust Manifold Mounting



Item	Part Number	Description	Qty.
			Var. 1
1	GM58516	Gasket	1
2	GM58338	Bolt	5
3	GM58389	Washer	5
4	GM58377	Nut	3
5	GM58430	Pipe	1
6	GM58429	Clip	1

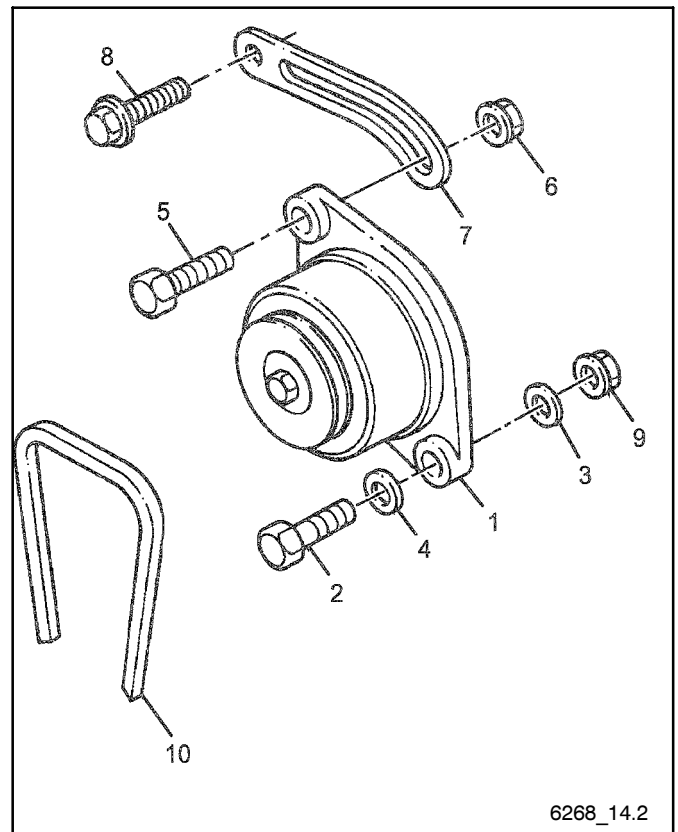
## Group 14.1: Alternator



Item	Part Number	Description	Qty.
			Var. 1
1	GM58548	Alternator (includes items 2-15)	1
2	GM58554	Plate (includes items 3-9)	1
3	GM58559	Plate	1
4	GM58555	Stator	1
5	GM58367	Screw	2
6	GM58407	Bearing, ball	1
8	GM58366	Screw	1
9	GM58557	Clip	1
10	GM58556	Pulley, alternator (includes item 11)	1
11	GM58407	Bearing, ball	1
12	GM58591	Collar	1
13	GM58385	Washer	1
14	GM58390	Washer	1
15	GM58373	Nut	1

## Group 14.2: Alternator Mounting and Belt

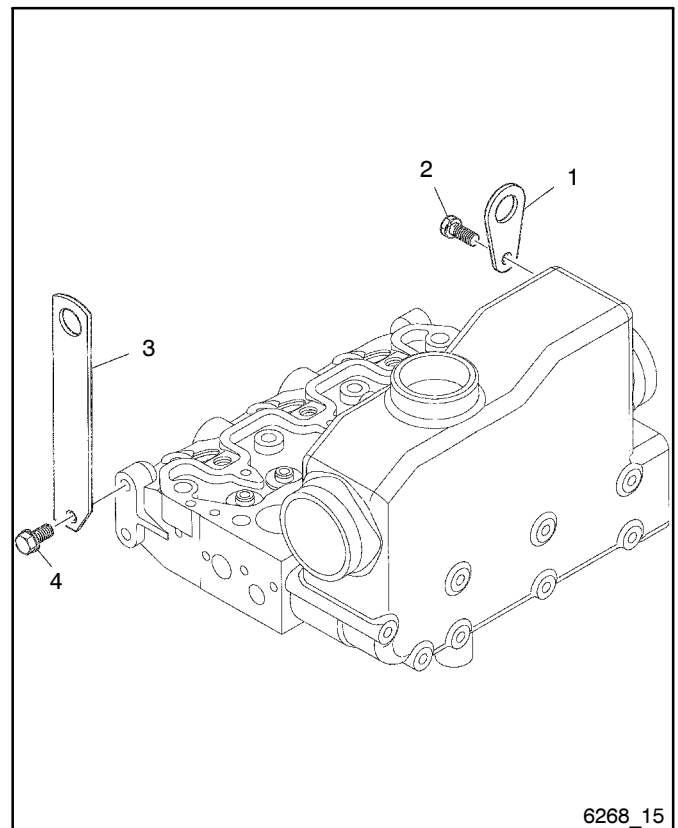
Item	Part Number	Description	Qty.	
			Var.	1
1	GM58548	Alternator	1	1
2	GM58339	Screw	1	1
3	GM58386	Washer	1	1
4	GM58384	Washer	1	1
5	GM58365	Screw	1	1
6	GM58378	Nut	1	1
7	GM58560	Lever	1	1
8	GM58357	Screw	1	1
9	GM58378	Nut	1	1
10	GM40998	V-belt, alternator	1	1



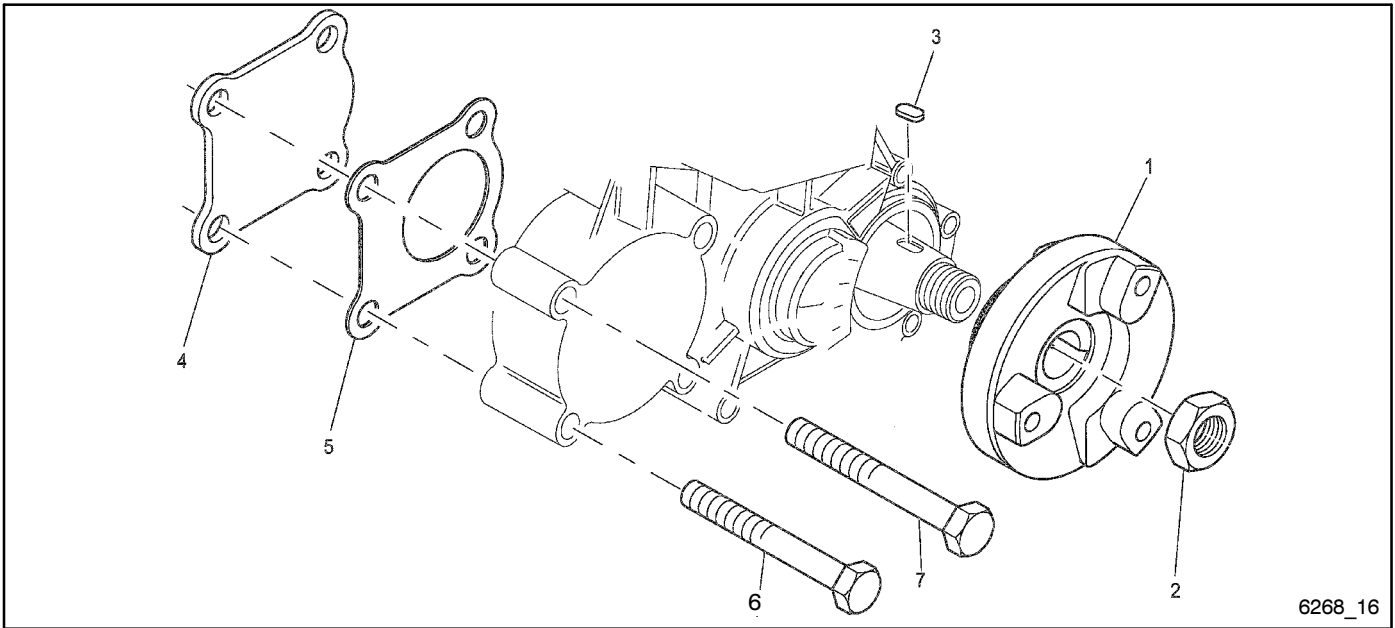
## Group 15: Engine Lifting

Item	Part Number	Description	Qty.	
			Var.	1
1	GM58561	Eye, lifting	1	1
2	#	Screw	1	1
3	GM58562	Eye, lifting	1	1
4	#	Screw	1	1

# Common hardware; procure locally.



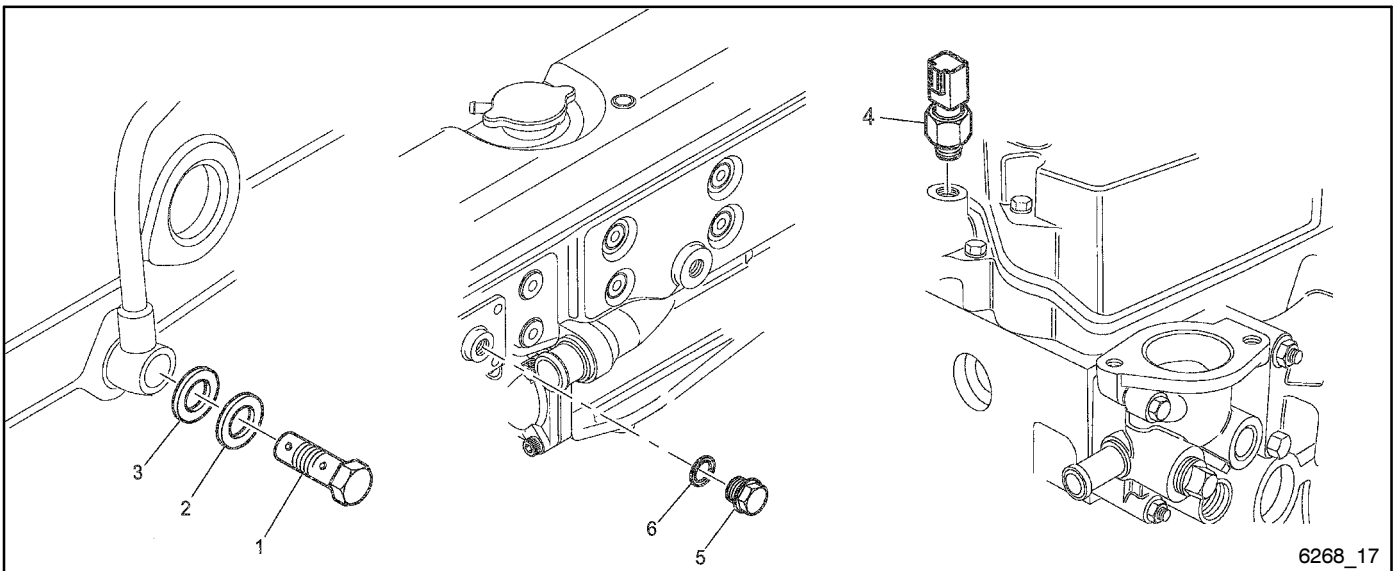
## Group 16: Auxiliary Drive



6268\_16

Item	Part Number	Description	Qty.
			Var. 1
1	GM58462	Pulley, crankshaft	1
2	GM58375	Nut	1
3	GM58399	Woodruff key	1
4	GM58543	Plate	1
5	GM58547	Gasket	1
6	GM58339	Screw	2
7	GM58340	Screw	2

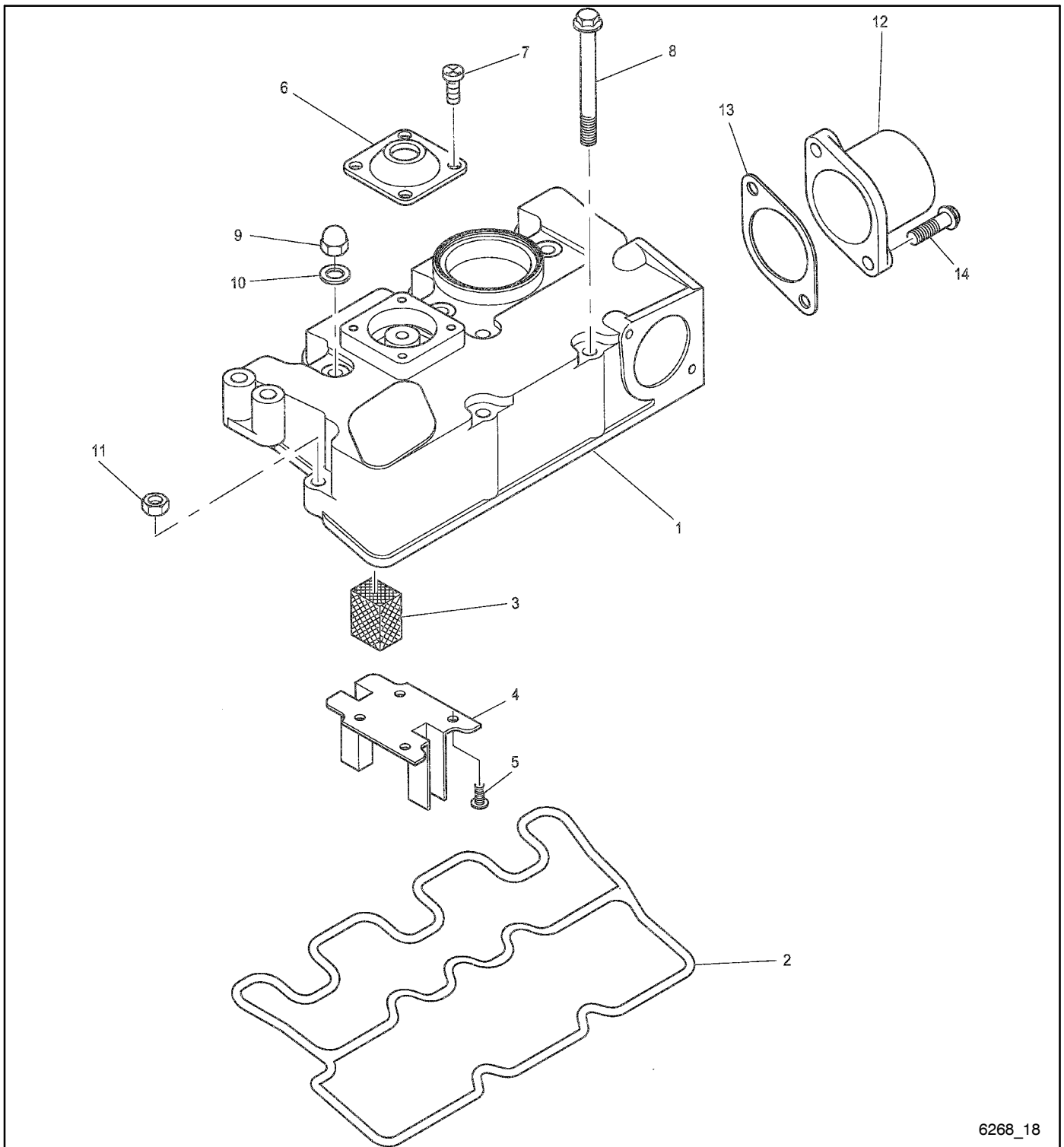
## Group 17: Oil Pressure Switch



6268\_17

Item	Part Number	Description	Qty.
			Var. 1
1	GM58580	Bolt	1
2	GM58524	Washer	1
3	GM58524	Washer	1
4	GM58551	Switch, oil pressure	1
5	GM58335	Bolt	1
6	GM58383	Washer	1

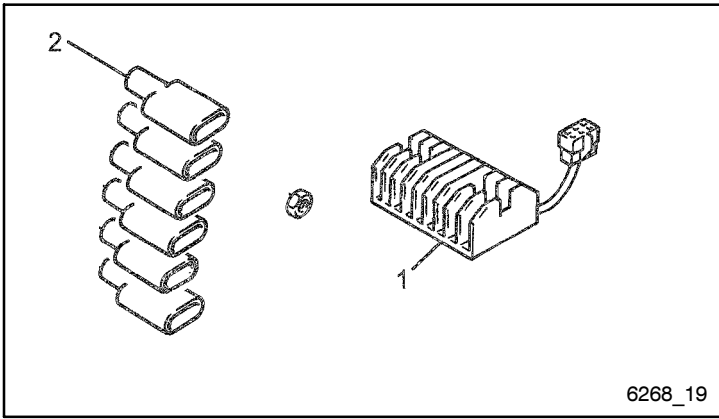
# Group 18: Intake Manifold



6268\_18

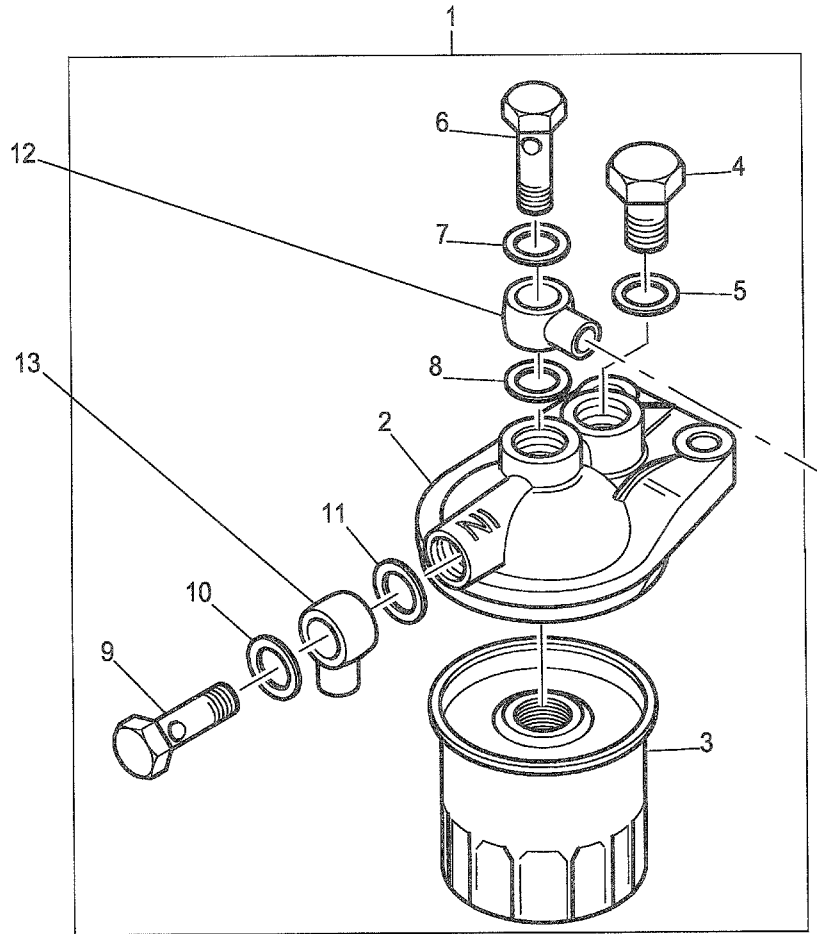
Item	Part Number	Description	Qty. Var. 1	Item	Part Number	Description	Qty. Var. 1
1	GM58451	Cover, cylinder head	1	8	GM58355	Screw	3
2	GM58452	Seal, cylinder head cover	1	9	GM58379	Capnut	3
3	GM58441	Gauze	1	10	GM58525	Washer	3
4	GM58440	Plate clamping	1	11	GM58377	Nut	2
5	GM58368	Screw	4	12	GM58512	Pipe, air	1
6	GM58439	Valve, breather	1	13	GM58515	Gasket	1
7	GM58346	Metric bolt	4	14	GM58350	Screw	2

# Group 19: Voltage Regulator



Item	Part Number	Description	Qty.
			Var. 1
1	GM58558	Regulator	1
2	GM58604	Terminal	1

# Group 20: Fuel Filter Assembly

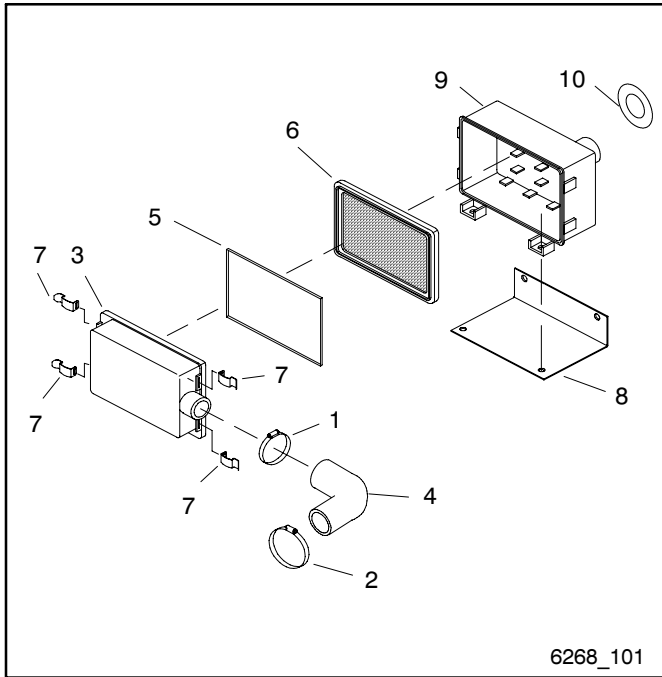


6268\_20

Item	Part Number	Description	Qty.
			Var. 1
1	GM53076	Assembly, fuel filter	1
2	X	Head, filter	1
3	GM49315	Element, fuel filter	1
4	GM58490	Plug	1
5	GM58489	Washer	1
6	GM58491	Bolt	1
7	GM58489	Washer	1
8	GM58489	Washer	1
9	GM58491	Bolt	1
10	GM58489	Washer	1
11	GM58489	Washer	1
12	GM58495	Connection	1
13	GM58495	Connection	1

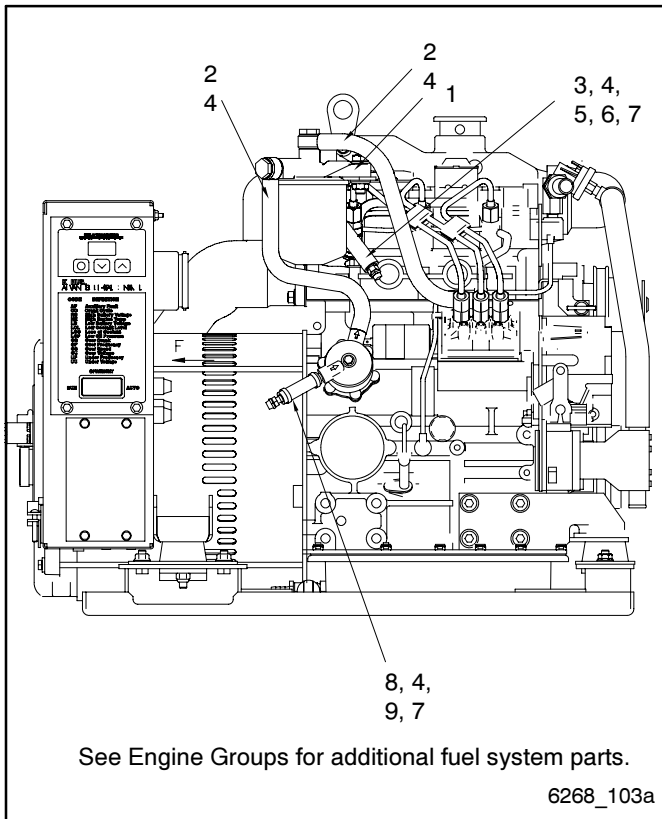
X Item not sold separately.

## Group 101: Air Intake



Item	Part Number	Description	Qty.
			Var.
1	X-426-19	Clamp, hose, 1/2 in.	1
2	X-426-4	Clamp, hose, 1.31/2.25 in.	1
3	278856	Cover, plastic	1
4	GM41925	Hose, molded air intake	1
5	278857	Filter, air	1
6	278858	Element, air cleaner	1
7	278862	Clip, air cleaner	4
8	344898	Bracket, air cleaner mounting	1
9	344899	Base, air cleaner	1
10	X-284-4	Grommet, round	1

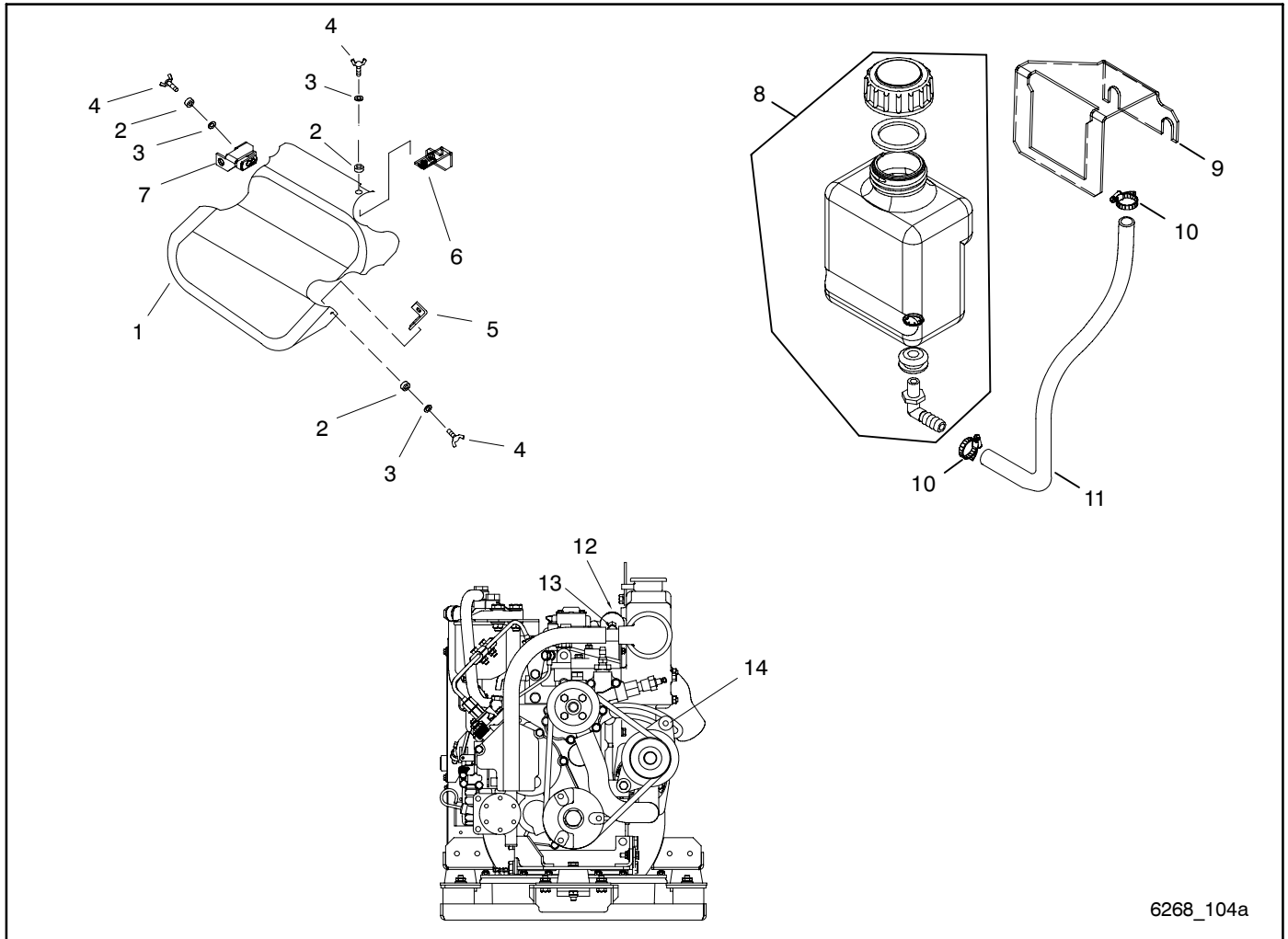
## Group 103: Fuel System



Item	Part Number	Description	Qty.
			Var.
1	GM41042	Bracket, fuel filter	1
2	X-6251-25	Line, flex fuel, .25 ID x 12 in.	2
3	X-6251-26	Line, flex fuel, .41 ID x 3 in.	1
4	X-426-9	Clamp, hose, 0.25/0.70 in.	8
5	X-582-41	Fitting, hose connector	1
6	X-216-29	Coupling, pipe	1
7	X-268-3	Cap, pipe (1/4 in. NPT)	2
8	X-6251-20	Line, flex fuel, .312 x 1.75	1
9	X-380-4	Connector, hose	1



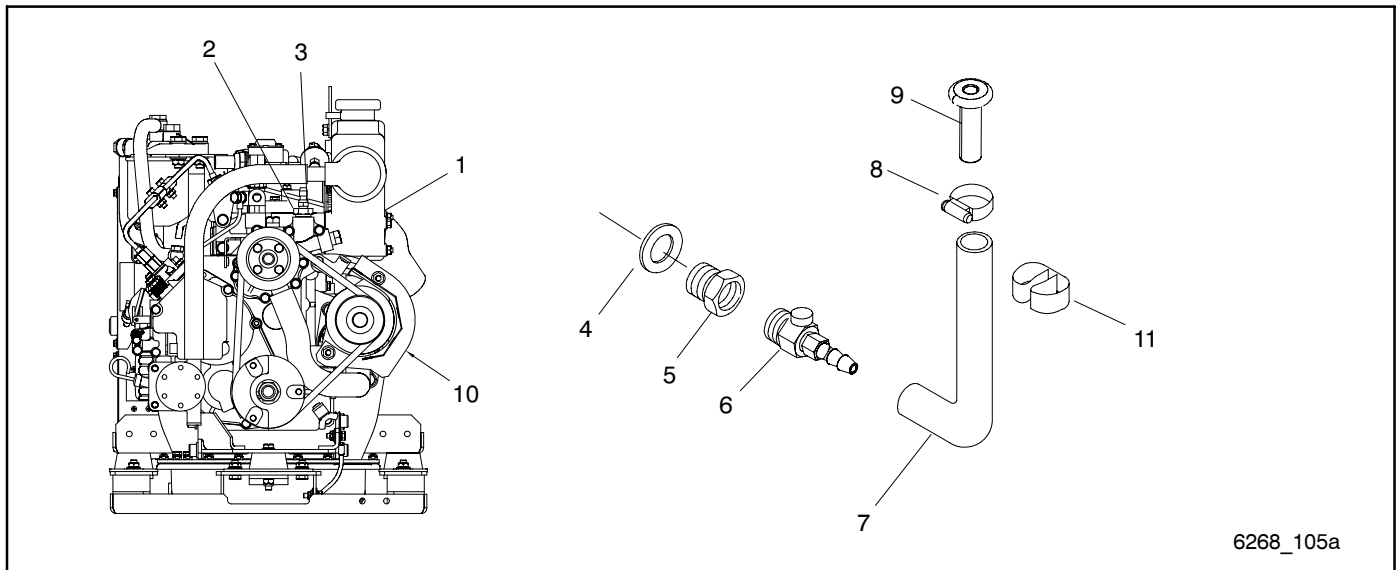
# Group 104: Cooling System



6268\_104a

Item	Part Number	Description	Qty.
			Var.
1	GM41911	Guard, belt	1
2	X-284-39	Grommet, round	2
3	X-25-40	Washer, plain, 0.281 ID x 0.625 in. OD	2
4	GM35951	Screw, wing	2
5	GM45915	Bracket, belt guard, bottom	1
6	GM41915	Bracket, belt guard, top	1
7	GM41914	Bracket, belt guard, RH	1
8	359037	Bottle, overflow	1
9	GM42190	Bracket, water bottle	1
10	X-426-9	Clamp, hose, 0.25/0.70 in.	2
11	X-386-34	Fuel line, flexible	1
12	GM30263	Switch, pressure assembly	1
13	GM41987	Tube, seawater	1
14	X-400-170	Spacer, .344 ld x .625 OD x .143 in.	1

## Group 105: Engine



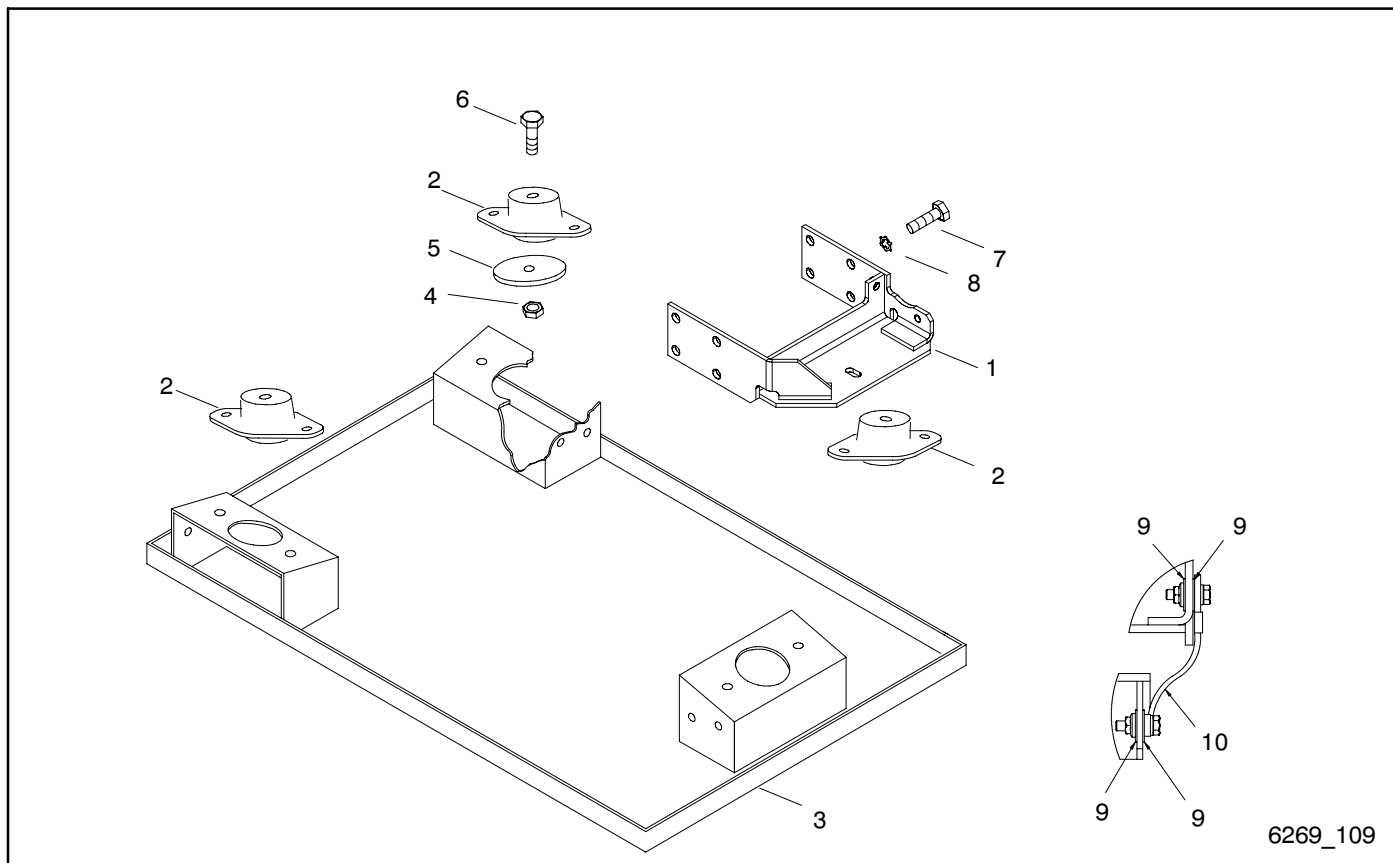
6268\_105a

Item	Part Number	Description	Qty.
			Var.
1	GM35919	Engine assembly, Perkins ISM 403C-07	1
2	GM30245	Bushing, adapter	1
3	GM28823	Sensor, temperature	1
4	X-6278-9	Washer, nylon, 0.48 ID x 0.825 in. OD	1
5	GM42038	Adapter, bushing	1
6	359653	Valve, oil drain, 3/8-18 NPT	1
7	X-651-21	Hose, rubber, straight, 0.375 in. ID	1
8	X-426-9	Clamp, hose, 0.25/0.70 in.	1
9	GM20547	Plug, hose, 3/8	1
10	GM49668	Guard, alternator belt	1
11	267959	Clip, hose	1

## Group 107: Nameplate and Decals

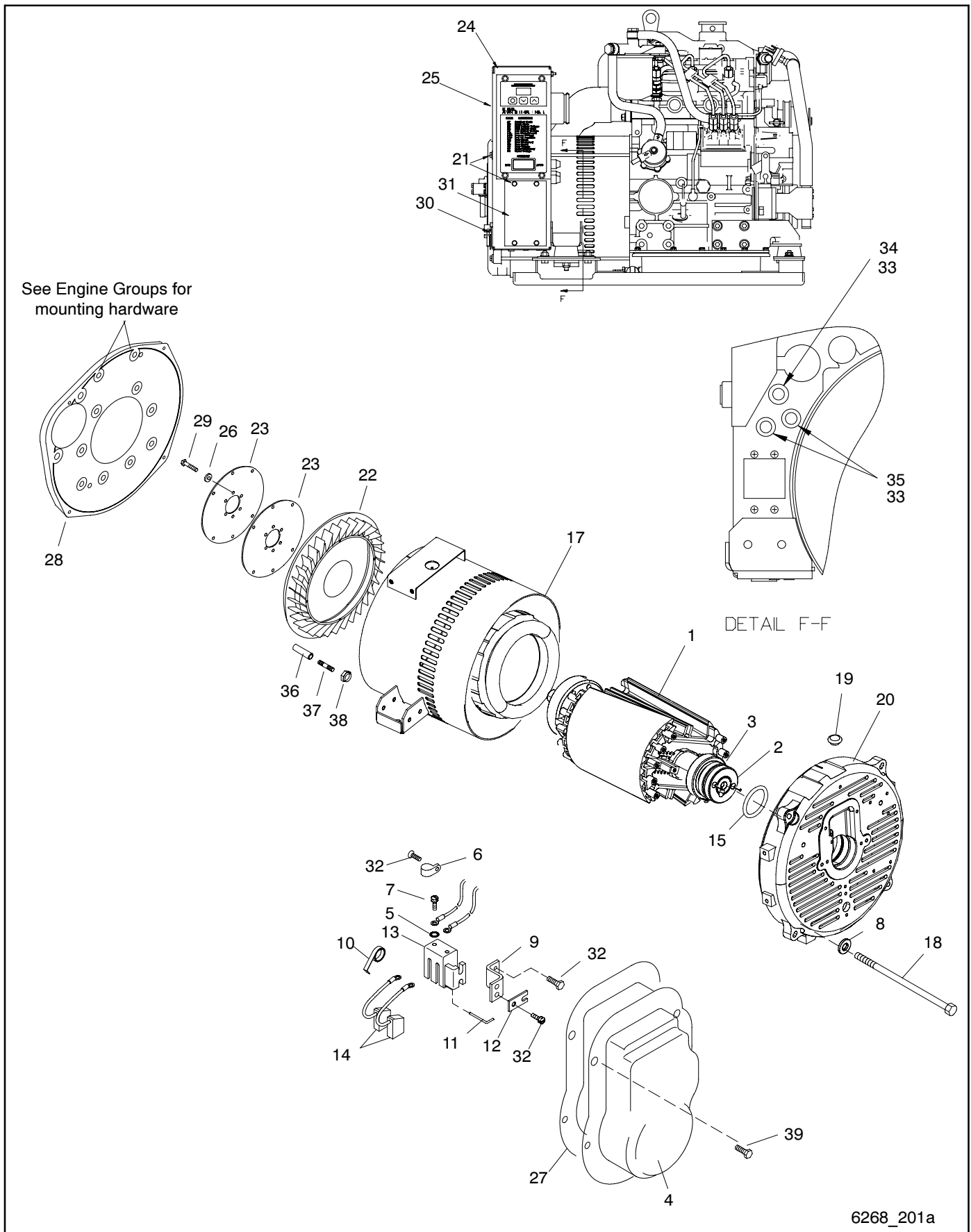
Item	Part Number	Description	Qty.
			Var.
1	224233	Decal, 1-800 number	1
2	GM35838	Decal, reconnection	1
3	226917	Decal, negative battery conn	1
4	249808	Decal, warning rotating parts	1
5	249809	Decal, caution hot engine	1
6	249810	Decal, warning hot coolant	1
7	GM14167	Decal, drain	1
8	344295	Decal, equipment grd	1
9	344486	Decal, CE	1
10	359446	Nameplate, model/ratings, Kohler	1
11	294520	Decal, danger, high voltage	1
12	GM47384	Decal, fuse panel	1

# Group 109: Skid and Plant Mounting



Item	Part Number	Description	Qty.
			Var.
1	GM41871	Support, engine	1
2	225124	Vibromount	3
3	GM41870	Tray, drip	1
4	M982-08-80	Nut, hex elastic stop, 8 mm	3
5	X-25-96	Washer, plain, 0.406 ID x 2 in. OD	3
6	M931-08055-60	Screw, hex cap	3
7	M912-10025-92	Screw, socket head cap	8
8	X-22-14	Washer, lock, 0.391 ID x 0.975 in. OD	1
9	X-22-12	Washer, lock, 0.262 ID x 0.743 in. OD	4
10	LK-0606-1515	Lead	1

# Group 201: Generator and Mounting

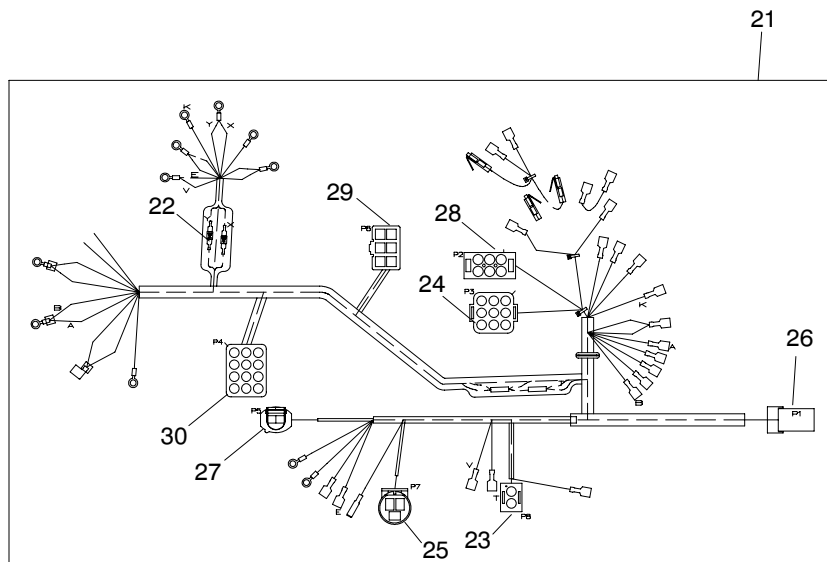
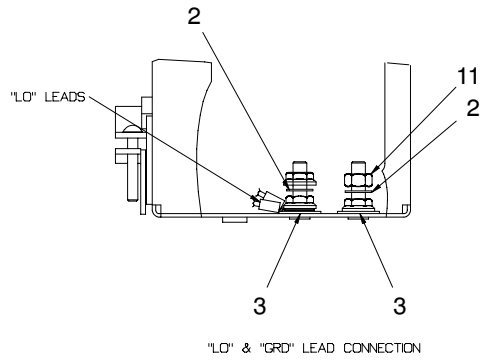
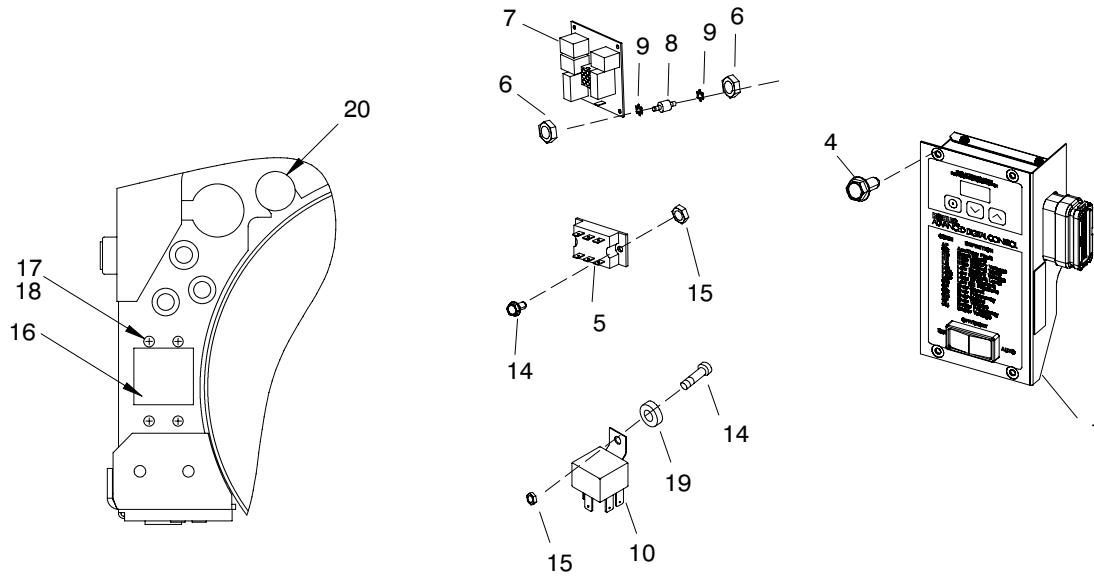


# Group 201: Generator and Mounting

Item	Part Number	Description	Qty.
			Variation 1
1	GM40268	Rotor assembly (includes item 2, 3)	1
2	241671	Ring, collector	1
3	X-758-17	Bearing, ball	1
4	GM29354	Cover, brush holder	1
5	X-22-6	Washer, lock, 0.146 ID x 0.285 in. OD	2
6	X-468-3	Cable tie, nylon	1
7	X-49-1	Screw, pan head, 6-32 x 5/16	2
8	<del>229239</del>	Washer, special, 0.281 ID x 0.62 in. OD	4
9	229335	Bracket, brush holder	1
10	238150	Spring, stainless steel	2
11	238247	Retainer, wire	1
12	238248	Shim, brush holder	2
13	239247	Holder, brush	1
14	239282	Brush	2
15	256466	O-ring, 2.050 in. ID	1
17	GM40269	Stator assembly, 6EOD	1
18	X-6051-35	Screw, hex head M6-1.0 x 11.181	1
18	X-6051-41	Screw, hex head M6-1.0 x 11.811	3
19	X-634-27	Bushing	1
20	GM39950	Bracket, end	1
21	X-6216-1	Screw, Phillips hex crimpbite	12
22	GM40022	Fan, alternator	1
23	GM40270	Disc, drive	2
24	GM40396	Box, junction	1
25	GM41900	Panel, junction box louver	1
26	X-801-3	Washer, hardened, 0.406 ID x 0.812 in. OD	6
27	278427	Gasket, cover	1
28	GM40271	Plate, back	1
29	M933-10025-82	Screw, hex cap	6
30	X-6266-1	Connector, cable	1
31	GM41923	Plate, junction box	1
32	X-67-64	Screw, self-tapping	5
33	238426	Fuse holder, 0.25 x 1.25 in.	3
34	358337	Fuse, 10 A, 250 V	1
35	223316	Fuse, 10 A, 250 V	2
36	GM41040	Spacer, alternator	6
37	X-352-65	Stud, 5/16-18 x 1.5 in.	6
38	M6923-08-80	Nut, hex, 8 mm	6
39	X-67-133	Screw, hex washer, thread-forming	2
40	GM53187	End bracket assembly (includes items 5-7, 9-15, 19, 20, 32)	1

X-25-68 →

# Group 301: Controller and Mounting



6269\_301

## Group 301: Controller and Mounting

Item	Part Number	Description	Qty.
			Var. 1
1	GM34969	Controller, ADC2100 service replacement	1
2	X-22-11	Washer, lock, 0.262 ID x 0.469 OD	2
3	X-22-12	Washer, lock, 0.262 ID x 0.743 in. OD	2
4	X-67-64	Screw, self-tapping	4
5	GM28483	SCR module	1
6	X-6210-4	Nut, flange whiz, 8-32	8
7	GM29671	PCB assembly, relay board, 12 V	1
8	282829	Vibromount	4
9	X-22-20	Washer, lock, 0.172 ID x 0.373 in. OD	8
10	GM49746	Relay, 12 VDC	1
11	X-81-8	Nut, hex, 1/4-20	1
12	201621-84	Marker, lead	1
13	201620-152	Tab ID "grd"	1
14	M7985A-05012-20	Screw, pan head machine	3
15	M934-05-50	Nut, hex, 5 mm	3
16	245264-BLK	Plate, cover	1
17	X-49-1	Screw, pan head, 6-32 x 5/16	4
18	X-22-6	Washer, lock, 0.146 ID x 0.285 in. OD	4
19	200705	Grommet, round	1
20	X-301-29	Plug, button	1
21	GM42201	Harness, engine, 6 kW Perkins marine	1
22	233959	Diode, 6 A	2
23	292370	Connector, plug, 2-position	1
24	320711	Connector, 9-position	1
25	GM15493	Connector, weathertight, 3-position	1
26	GM28678	Connector, weathertight	1
27	GM29249	Connector	1
28	GM29998	Connector, 6-position, blk, male	1
29	GM39888	Connector, 6 position	1
30	229989	Connector	1

## Group 701: Literature

Item	Part Number	Description	Qty.
			Var. 1
1	TP-5375	Warranty, Marine	1
2	TP-5620	Safety Precautions, Marine	1
3	TP-6252	O/M 6EOD/8-32EOZD/4.5EFOD/6.5-27EFOZD	1
4	TP-6253	I/M EOZ/EFOZ/EOZD/EFOZD Models, Marine	1
5	TP-6255	S/M 8-32EOZD/6.5-27EFOZD, Marine	1
6	TP-6268	P/C 6EOD/4.5EFOD Marine	1
7	TP-6435	O/M Perkins	1
8	TP-6436	S/M Perkins 403C-07	1

# Parts List: Accessories

Qty.	Description	Part No.
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## Circuit Breakers

<b>Circuit Breaker</b>		<b>GM30331-KA(KP)48</b>
1	Plate, cover	229183
1	Plate, circuit breaker	GM41922
2	Screw, pan head, 6-32 x 3/16 in.	X-49-21
2	Screw, machine	X-49-25
1	Circuit breaker, 55 A, 250 V, 1-pole	X-506-47

<b>Circuit Breaker</b>		<b>GM30331-KA(KP)49</b>
1	Plate, circuit breaker	GM41922
4	Screw, pan head, 6-32 x 3/16 in.	X-49-21
1	Circuit breaker, 22 A, 250 V, 2-pole	X-506-57

<b>Circuit Breaker</b>		<b>GM30331-KA(KP)50</b>
1	Plate, circuit breaker	GM41922
4	Screw, pan head, 6-32 x 3/16 in.	X-49-21
1	Circuit breaker, 25 A, 250 V, 2-pole	X-506-40

## Electrical System

<b>Isolated Ground System, 12 V</b>		<b>GM31865-KA(KP)7</b>
1	Adapter, sender	229323
4	Insulator, panel	233269
1	Relay, 12 VDC,	233442
1	Sensor, pressure	GM28822
1	Switch, high temperature cutout	GM29289
1	Bus, isolated ground	GM31868
1	Bracket, bus support	GM40566
1	Harness, engine	GM41073
1	Bracket, solenoid mounting	GM48878
1	Relay, 12 VDC	GM49746
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

<b>Isolated Ground, Sound Shield</b>		<b>GM31865-KA(KP)8</b>
1	Adapter, sender	229323
4	Insulator, panel	233269
1	Relay, 12 VDC	233442
1	Sensor, pressure	GM28822
1	Switch, high temperature cutout	GM29289
1	Bus, isolated ground	GM31868
1	Bracket, bus support	GM40566
1	Harness, engine	GM41073
1	Bracket, solenoid mounting	GM48878
1	Relay, 12 VDC	GM49746
1	Cable, battery	X-545-161
1	Cable, battery, black	X-545-178
1	Cable, battery, black	X-545-193
1	Conduit, convoluted	X-6003-48
2	Stud (metric)	X-6054-23
1	Insulator, standoff	X-6128-35

<b>Harness, 12 in., Pigtail</b>		<b>GM32332-KP1</b>
1	Harness, pigtail	GM32324

<b>Harness, 15 in., 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>Harness, 100 ft., Remote Panel</b>		<b>GM32333-KP4</b>
1	Harness, extension	GM47391

Qty.	Description	Part No.
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<b>Oil Pressure Sender</b>		<b>GM32112-KA(KP)1</b>
1	Adapter, sender	229323
1	Sensor, pressure	GM28822

<b>Preheat Kit, 12 Volt</b>		<b>GM32117-KA(KP)1</b>
1	Harness, air heater	229233
1	Relay	233442
1	Boot	238915
1	Bracket, mounting	GM32427
4	Washer, plain	M125A-06-80
4	Screw, hex cap, M6 x 16 mm	M933-06016-60
1	Washer, lock, 0.262 ID x 0.743 in. OD	X-22-12
1	Conduit, convoluted	X-6003-5
1	Installation Instructions	TT-1397

<b>Remote Digital Gauge</b>		<b>GM32337-KP1</b>
1	Decal, warning	249494
1	Gauge, digital	GM30565
1	Harness, remote	GM32325
1	Installation Instructions	TT-1364
1	Installation Instructions	TT-1379

<b>Remote Start Panel, 12 V</b>		<b>GM32335-KP1</b>
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, 0.146 ID x 0.285 in. OD	X-22-6

<b>Ship to Shore Switch</b>		<b>PAA-246617</b>
1	Switch, transfer, 3-pole	A-246617
1	Installation Instructions	TT-535

<b>Isolated Standoff</b>		<b>GM38314-KA1</b>
2	Nut, hex, 6 mm	M934-06-60
2	Stud, metric	X-6054-23
1	Insulator, standoff	X-6128-35

<b>Electronic Governor</b>		<b>GM46858-KA(KP)1</b>
1	Pickup, magnetic speed	GM11708
1	Controller, governor, digital, NLS	GM17644-4
1	Kit, governor programming	GM39344
1	Actuator, electronic governor	GM48879
1	Harness, electronic governor	GM48880
4	Washer, plain	M125A-08-80
4	Nut, hex, 5 mm	M934-05-50
4	Spacer, 0.209 ID x 0.375 OD x 0.406 in.	X-400-127

<b>O.P. and W.T. Senders</b>		<b>GM50552-KA(KP)1</b>
1	Sender, water temperature	249287
1	Sender, oil pressure	343472
1	Adapter, bushing	GM10841



# Parts List: Accessories

Qty.	Description	Part No.
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## Miscellaneous Accessories

### Fuel/Water Separator

#### GM31994-KP1

1	Filter assembly, fuel/water separator	GM32181
1	Element, water separator	GM32182
1	TT Fuel/Water Separator, 6.5-32EOZD	TT-1375

### Siphon Break

#### GM24866-KA1

1	Tubing, clear flexible plastic	GM34883
1	Valve, siphon break assembly (includes*)	GM32985
1	*Valve, duct	328666
1	*Cap, siphon valve	GM32984
1	*Loop, siphon valve vent	GM32988

### Siphon Break Hose Connection

#### GM46179-KA(KP)1

2	Coupling, hose	344934
1	Tubing, clear flexible plastic	GM34883
1	Hose, molded seawater	GM46178
2	Grommet, round	X-284-42
1	Clamp, hose, 0.69/1.25 in.	X-426-12
1	Clamp, hose, 0.25/0.70 in.	X-426-9
1	Hose	X-691-14
1	*Valve, siphon break assembly (includes*)	GM32985
1	*Valve, duct	328666
1	*Cap, siphon valve	GM32984
1	*Loop, siphon valve vent	GM32988

### Siphon Break Kit

#### PA-229928

1	Valve, siphon	229928
1	Installation Instructions	TT-1268

### Stainless Steel Drip Tray

#### GM49018-KA(KP)3

1	Tray, stainless steel	GM40845
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## Sound Shield

### Sound Shield

#### GM42039-KA(KP)1

1	Connector, hose, 90 degree elbow	359102
2	Foam, insulation acoustic	359584
1	Hose, exhaust, 2 in. ID x 6.5 in.	GM10073
4	Connector, outside corner	GM15486
1	Boot, battery lug	GM20748
2	Retainer, stainless steel, 0.485 in.	GM29918
2	Stud, wing head	GM29920
1	Panel, ADC, 8.4 x 4.4 in.	GM30251
1	Base, 29 x 19.8 in.	GM41924
2	Extruded rail, 18 in.	GM42058
2	Extruded rail, 20.6 in.	GM42059
2	Extruded rail, 14.3 in.	GM42060
1	Door, RH service side, 18.8 x 16.5 in.	GM42095
1	Door, engine end, 15.5 x 14.2 in.	GM42097

Qty.	Description	Part No.
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### Sound Shield

#### GM42039-KA(KP)1

1	Door, LH nonservice side, 18.8 x 16.5 in.	GM42099
1	Door, generator end, 14.2 x 11.5 in.	GM42101
1	Roof, 22.5 x 15.6 in.	GM42103
1	Panel ADC, service side, 18.8 x 6 in.	GM42105
1	Panel, nonservice side, 18.8 x 6 in.	GM42107
2	Extruded rail, 18 in.	GM42423
1	Rail, engine end, 15.8 x 4.5 in.	GM42518
1	Bulkhead panel, generator end rail, 15.8 x 4.5 in.	GM42520
1	Panel, exhaust, 14.2 x 4 in.	GM42786
1	Frame, circuit breaker, 4 x 3 in.	GM42845
1	Plate, end bracket, 9.6 x 6.7 in.	GM45904
1	Panel, junction box, 13.2 x 11.6 in.	GM45907
1	Elbow, exhaust, 5.8 in.	GM45998
1	Tube, exhaust, 8 in.	GM46007
1	Gasket, exhaust	GM46183
6	Washer, plain, #6 screw size	M125A-06-80
1	Washer, plain, #10 screw size	M125A-10-80
1	Nut, hex, 6 mm	M6923-06-80
5	Screw, hex cap, M6 x 16 mm	M933-06016-60
1	Screw, hex cap, M6 x 50 mm	M933-06050-60
1	Screw, hex cap, M10 x 20 mm	M933-10020-60
1	Washer, lock, 1/4 in. thread size	X-22-12
1	Washer, lock, 3/8 in. thread size	X-22-14
9	Washer, 0.281 x 0.625 x 0.065	X-25-142
8	Washer, plain, 0.219 ID x 0.5 OD	X-25-36
4	Washer, plain, 0.406 x 0.812 x 0.065	X-25-37
1	Fuel inlet line, flex., 20 in.	X-6251-7
1	Fuel return line, flex., 28 in.	X-6251-17
1	Connector, hose, 90 degree, 3/4 in. ID hose	X-391-23
4	Clamp, hose, 0.69/1.25 in.	X-426-12
4	Clamp, hose, 1.81/2.75 in.	X-426-16
5	Clamp, hose, 0.25/0.70 in.	X-426-9
9	Bolt, hex cap, 1/4-20 x 0.625	X-465-24
8	Screw, pan head, 10-24 x 1/2	X-50-15
1	Cable, battery, red (+) to starter, 26 in.	X-545-175
1	Cable, battery, black (-), 20 in.	X-545-190
1	Conduit, convoluted, 24 in.	X-6003-27
1	Conduit, convoluted, 19 in.	X-6003-37
2	U-channel, 11.5 in.	X-6047-3645
1	Clip, speed	X-6220-3
4	Bolt, hex cap, 3/8-16 x 0.875	X-6238-3
2	Washer, nylon, 0.296 ID x 0.516 OD	X-6278-15
1	Bushing, nylon, 0.672 ID x 0.875 in.	X-634-25
3	Seal, push-on trim, 3.19 in.	X-6422-17
1	Seal, push-on trim, 12.28 in.	X-6423-10
1	Seal, push-on trim, 11.57 in.	X-6423-11
1	Seal, push-on trim, 3.94 in.	X-6423-9
4	Screw, self tapping, 10-32, 0.438/0.408	X-67-64
1	Hose, seawater pump, 0.75 ID x 30 in.	X-691-28
1	Hose, 0.75 ID x 2.7 in.	X-691-40
24	Screw, drill, #8 stainless steel	X-794-5
1	Duct, preheater, 1.5 ID x 5.25 in.	GM41046
1	Clamp, hose, 0.81/1.75 in.	X-426-8
1	Grommet, 2.38 in. diameter	X-284-14
1	Installation Instructions	TT-1442

# Notes

# Appendix A Abbreviations

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

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

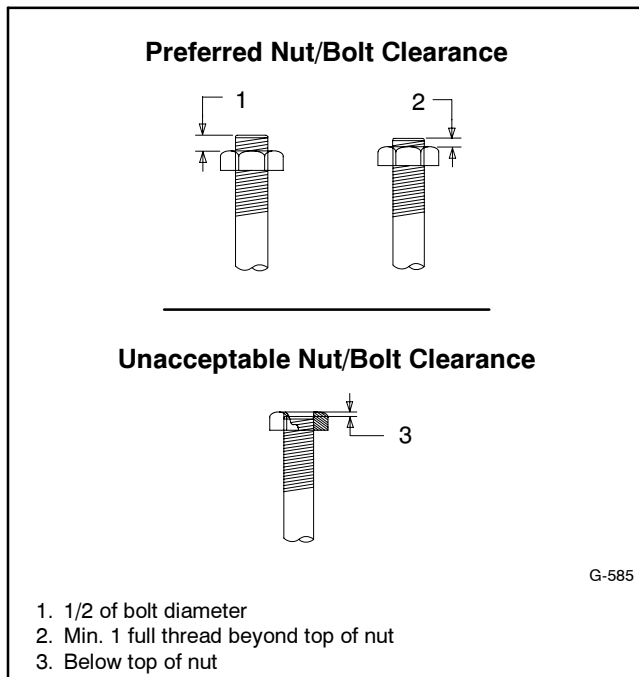
k	kilo (1000)	MTBO	mean time between overhauls	rms	root mean square
K	kelvin	mtg.	mounting	rnd.	round
kA	kiloampere	MTU	Motoren-und Turbinen-Union	ROM	read only memory
KB	kilobyte (2 <sup>10</sup> bytes)	MW	megawatt	rot.	rotate, rotating
KBus	Kohler communication protocol	mW	milliwatt	rpm	revolutions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

## Appendix B Common Hardware Application Guidelines

Use the information below and on the following pages to identify proper fastening techniques when no specific reference for reassembly is made.

**Bolt/Screw Length:** When bolt/screw length is not given, use Figure 1 as a guide. As a general rule, a minimum length of one thread beyond the nut and a maximum length of 1/2 the bolt/screw diameter beyond the nut is the preferred method.

**Washers and Nuts:** Use split lock washers as a bolt locking device where specified. Use SAE flat washers with whiz nuts, spirallock nuts, or standard nuts and preloading (torque) of the bolt in all other applications. See Appendix C, General Torque Specifications, and other torque specifications in the service literature.



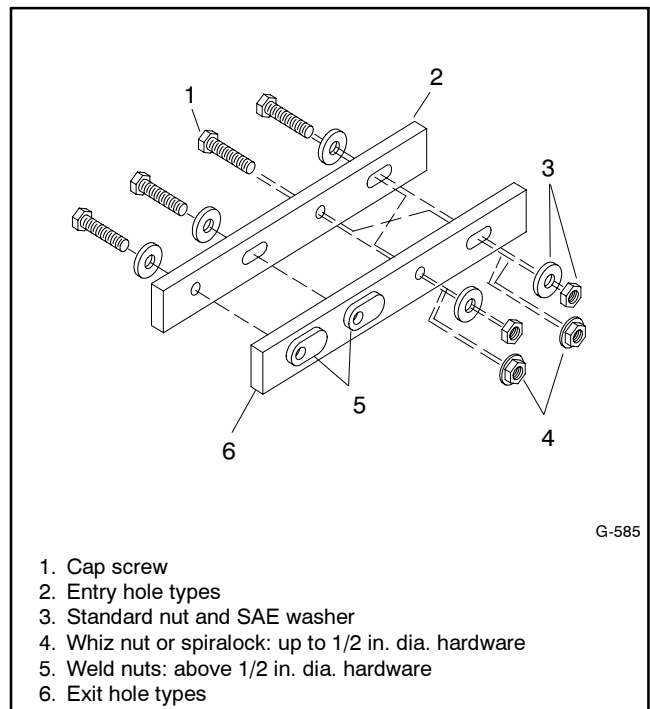
**Figure 1** Acceptable Bolt Lengths

Steps for common hardware application:

1. Determine entry hole type: round or slotted.
2. Determine exit hole type: fixed female thread (weld nut), round, or slotted.

For round and slotted exit holes, determine if hardware is greater than 1/2 inch in diameter, or 1/2 inch in diameter or less. Hardware that is *greater than 1/2 inch* in diameter takes a standard nut and SAE washer. Hardware *1/2 inch or less* in diameter can take a properly torqued whiz nut or spirallock nut. See Figure 2.

3. Follow these SAE washer rules after determining exit hole type:
  - a. Always use a washer between hardware and a slot.
  - b. Always use a washer under a nut (see 2 above for exception).
  - c. Use a washer under a bolt when the female thread is fixed (weld nut).
4. Refer to Figure 2, which depicts the preceding hardware configuration possibilities.



**Figure 2** Acceptable Hardware Combinations

# Appendix C General Torque Specifications















American Standard Fasteners Torque Specifications					
Size	Torque Measurement	Assembled into Cast Iron or Steel			Assembled into Aluminum Grade 2 or 5
		Grade 2	Grade 5	Grade 8	
8-32	Nm (in. lb.)	1.8 (16)	2.3 (20)	—	See Note 3
10-24	Nm (in. lb.)	2.9 (26)	3.6 (32)	—	
10-32	Nm (in. lb.)	2.9 (26)	3.6 (32)	—	
1/4-20	Nm (in. lb.)	6.8 (60)	10.8 (96)	14.9 (132)	
1/4-28	Nm (in. lb.)	8.1 (72)	12.2 (108)	16.3 (144)	
5/16-18	Nm (in. lb.)	13.6 (120)	21.7 (192)	29.8 (264)	
5/16-24	Nm (in. lb.)	14.9 (132)	23.1 (204)	32.5 (288)	
3/8-16	Nm (ft. lb.)	24.0 (18)	38.0 (28)	53.0 (39)	
3/8-24	Nm (ft. lb.)	27.0 (20)	42.0 (31)	60.0 (44)	
7/16-14	Nm (ft. lb.)	39.0 (29)	60.0 (44)	85.0 (63)	
7/16-20	Nm (ft. lb.)	43.0 (32)	68.0 (50)	95.0 (70)	
1/2-13	Nm (ft. lb.)	60.0 (44)	92.0 (68)	130.0 (96)	
1/2-20	Nm (ft. lb.)	66.0 (49)	103.0 (76)	146.0 (108)	
9/16-12	Nm (ft. lb.)	81.0 (60)	133.0 (98)	187.0 (138)	
9/16-18	Nm (ft. lb.)	91.0 (67)	148.0 (109)	209.0 (154)	
5/8-11	Nm (ft. lb.)	113.0 (83)	183.0 (135)	259.0 (191)	
5/8-18	Nm (ft. lb.)	128.0 (94)	208.0 (153)	293.0 (216)	
3/4-10	Nm (ft. lb.)	199.0 (147)	325.0 (240)	458.0 (338)	
3/4-16	Nm (ft. lb.)	222.0 (164)	363.0 (268)	513.0 (378)	
1-8	Nm (ft. lb.)	259.0 (191)	721.0 (532)	1109.0 (818)	
1-12	Nm (ft. lb.)	283.0 (209)	789.0 (582)	1214.0 (895)	












Metric Fasteners Torque Specifications, Measured in Nm (ft. lb.)				
Size (mm)	Assembled into Cast Iron or Steel			Assembled into Aluminum Grade 5.8 or 8.8
	Grade 5.8	Grade 8.8	Grade 10.9	
M6 x 1.00	6.2 (4.6)	9.5 (7)	13.6 (10)	See Note 3
M8 x 1.25	15.0 (11)	23.0 (17)	33.0 (24)	
M8 x 1.00	16.0 (11)	24.0 (18)	34.0 (25)	
M10 x 1.50	30.0 (22)	45.0 (34)	65.0 (48)	
M10 x 1.25	31.0 (23)	47.0 (35)	68.0 (50)	
M12 x 1.75	53.0 (39)	80.0 (59)	115.0 (85)	
M12 x 1.50	56.0 (41)	85.0 (63)	122.0 (90)	
M14 x 2.00	83.0 (61)	126.0 (93)	180.0 (133)	
M14 x 1.50	87.0 (64)	133.0 (98)	190.0 (140)	
M16 x 2.00	127.0 (94)	194.0 (143)	278.0 (205)	
M16 x 1.50	132.0 (97)	201.0 (148)	287.0 (212)	
M18 x 2.50	179.0 (132)	273.0 (201)	390.0 (288)	
M18 x 1.50	189.0 (140)	289.0 (213)	413.0 (305)	






**Notes:**

1. The torque values above are general guidelines. Always use the torque values specified in the service manuals and/or assembly drawings when they differ from the above torque values.
2. The torque values above are based on new plated threads. Increase torque values by 15% if non-plated threads are used.
3. Hardware threaded into aluminum must have either two diameters of thread engagement or a 30% or more reduction in the torque to prevent stripped threads.
4. Torque values are calculated as equivalent stress loading on American hardware with an approximate preload of 90% of the yield strength and a friction coefficient of 0.125.

# Appendix D Common Hardware Identification

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

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

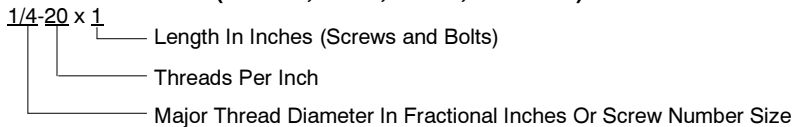
Hardness Grades	
American Standard	
Grade 2	
Grade 5	
Grade 8	
Grade 8/9 (Hex Socket Head)	
Metric	
Number stamped on hardware; 5.8 shown	

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

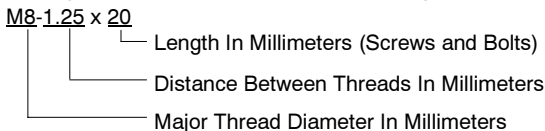
Phillips® screw is a registered trademark of Phillips Screw Company.

## Sample Dimensions

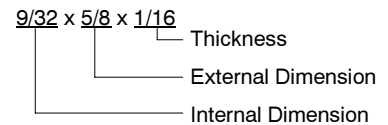
### American Standard (Screws, Bolts, Studs, and Nuts)



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



### Plain Washers



### Lock Washers



# Appendix E Common Hardware List

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

## American Standard

Part No.	Dimensions	Part No.	Dimensions	Part No.	Dimensions	Type
<b>Hex Head Bolts (Grade 5)</b>						
X-465-17	1/4-20 x .38	X-6238-14	3/8-24 x .75	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					

<b>Washers</b>					
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
<b>Hex Nuts</b>		
M934-03-50	M3-0.50	Standard
M934-04-50	M4-0.70	Standard
M934-04-B	M4-0.70	Brass
M934-05-50	M5-0.80	Standard
M934-06-60	M6-1.00	Standard
M934-06-64	M6-1.00	Std. (green)
M6923-06-80	M6-1.00	Spirallock
M982-06-80	M6-1.00	Elastic Stop
M934-08-60	M8-1.25	Standard
M6923-08-80	M8-1.25	Spirallock
M982-08-80	M8-1.25	Elastic Stop
M934-10-60	M10-1.50	Standard
M934-10-60F	M10-1.25	Standard
M6923-10-80	M10-1.50	Spirallock
M6923-10-62	M10-1.50	Spirallock†
M982-10-80	M10-1.50	Elastic Stop
M934-12-60	M12-1.75	Standard
M934-12-60F	M12-1.25	Standard
M6923-12-80	M12-1.75	Spirallock
M982-12-80	M12-1.75	Elastic Stop
M982-14-60	M14-2.00	Elastic Stop
M6923-16-80	M16-2.00	Spirallock
M982-16-80	M16-2.00	Elastic Stop
M934-18-80	M18-2.5	Standard
M982-18-60	M18-2.50	Elastic Stop
M934-20-80	M20-2.50	Standard
M982-20-80	M20-2.50	Elastic Stop
M934-22-60	M22-2.50	Standard
M934-24-80	M24-3.00	Standard
M982-24-60	M24-3.00	Elastic Stop
M934-30-80	M30-3.50	Standard

## Washers

Part No.	ID	OD	Thick.	Bolt/ Screw
M125A-03-80	3.2	7.0	0.5	M3
M125A-04-80	4.3	9.0	0.8	M4
M125A-05-80	5.3	10.0	1.0	M5
M125A-06-80	6.4	12.0	1.6	M6
M125A-08-80	8.4	16.0	1.6	M8
M125A-10-80	10.5	20.0	2.0	M10
M125A-12-80	13.0	24.0	2.5	M12
M125A-14-80	15.0	28.0	2.5	M14
M125A-16-80	17.0	30.0	3.0	M16
M125A-18-80	19.0	34.0	3.0	M18
M125A-20-80	21.0	37.0	3.0	M20
M125A-24-80	25.0	44.0	4.0	M24

† This metric hex nut's hardness is grade 8.



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