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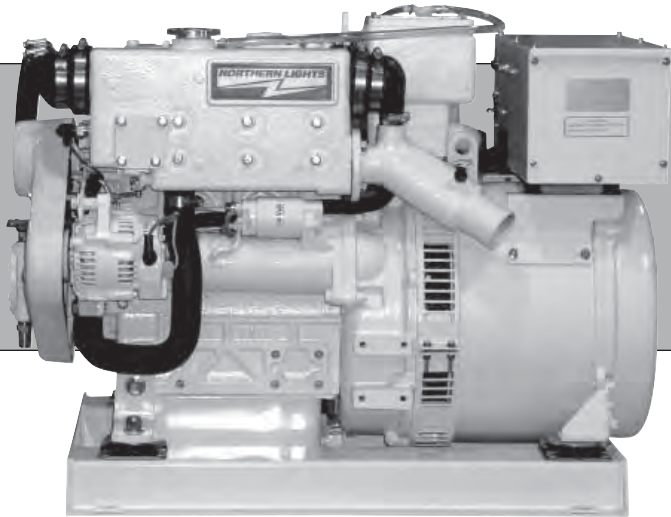
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For your convenience, Diesel Specialists is providing access to this Northern Lights Parts Catalog to assist you with purchasing the correct parts for your generator or engine.

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**P773-2**  
For Model: M773LW2

# PARTS MANUAL

Marine Generators | Marine Diesel Engines | Land-Based Generators



**LUGGER**





— CALIFORNIA —  
Proposition 65 Warning:

*Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.*



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# PARTS CATALOG

for Model  
**M773LW2**

*Please read thoroughly before attempting to use this manual:*

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#### Proprietary Information

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## INTRODUCTION

### MODEL DESIGNATION

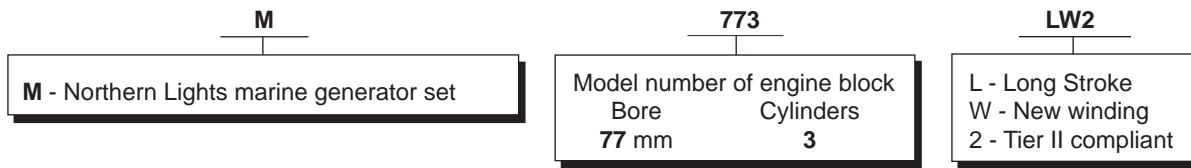
#### MODELS INCLUDED

This manual covers the operating instructions for:

**M773LW2** which uses the 773LW2 engine

### MODEL NUMBERS

Model numbers give the unit's application, block model, aspiration, and RPM:

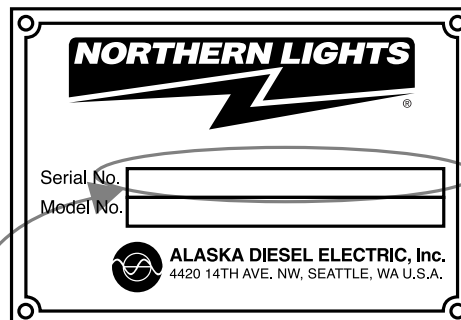


**M773LW2** = Northern Lights marine diesel generator set with an 773 engine and a PX309K2 generator, with a new winding, Tier II compliant.

### SERIAL NUMBERS

#### NORTHERN LIGHTS

Your set has three serial numbers: ① an engine number stamped on the block, ② a generator plate, and ③ a generator set plate. Use the serial number on the **generator set plate** when ordering parts or in correspondence. The generator set plate is found on the service side of the generator and resembles the drawing below.



*Generator Set Serial Number  
for units with PXX  
generators*

**READING A PARTS PAGE**

**IMPORTANT:**

Before selecting parts, be sure that you are choosing parts from the correct page.  
 Check the model designation at the page top.  
 Do not use this illustration for parts purchasing.

1 — ELECTRICAL SYSTEM

**ALTERNATOR ASSEMBLY: M - NL844**

KEY	PART NUMBER	QTY.	DESCRIPTION	SERIALNUMBER
0	185046210	1	Alternator Assembly	-
1	185446219	1	Flywheel, complete	-
2	185446217	1	Plate, complete	-
3	185716200	1	Plate	-
4	185446218	1	Stator, complete	-
5	040126210	2	Bearing	-
6	020210010	1	Nut	-
7	027100010	1	Spring washer	-
8	026100010	1	Washer	-
9	185446220	1	Clamp	-
10	015140408	1	Screw	-
11	015140425	2	Screw	-
12	199236510	1	Collar	-

13 — P844 06/05 — 14  
 11 — 5-2 — 12

**REFERENCES:**

- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>1. Grouping section title.</li> <li>2. Model designation of equipment that uses parts listed on this page.</li> <li>3. Title and description of assembly.</li> <li>4. Drawing numbers that correspond to key column numbers for parts identification.</li> <li>5. Key column for locating parts shown on drawing.</li> <li>6. Part number.</li> </ol> | <ol style="list-style-type: none"> <li>7. Quantity of parts used.</li> <li>8. Description of each component part.</li> <li>9. Serial number of unit the part fits.</li> <li>10. Assembly or kit designated by Key 0 or ••/•.</li> <li>11. Grouping index number.</li> <li>12. Page number within the grouping index.</li> <li>13. Manual title.</li> <li>14. Page publication date.</li> </ol> |
|--|--|

**NOTE:** ⇐ Arrows always point toward the front of the engine.

# Cylinder Block Assembly

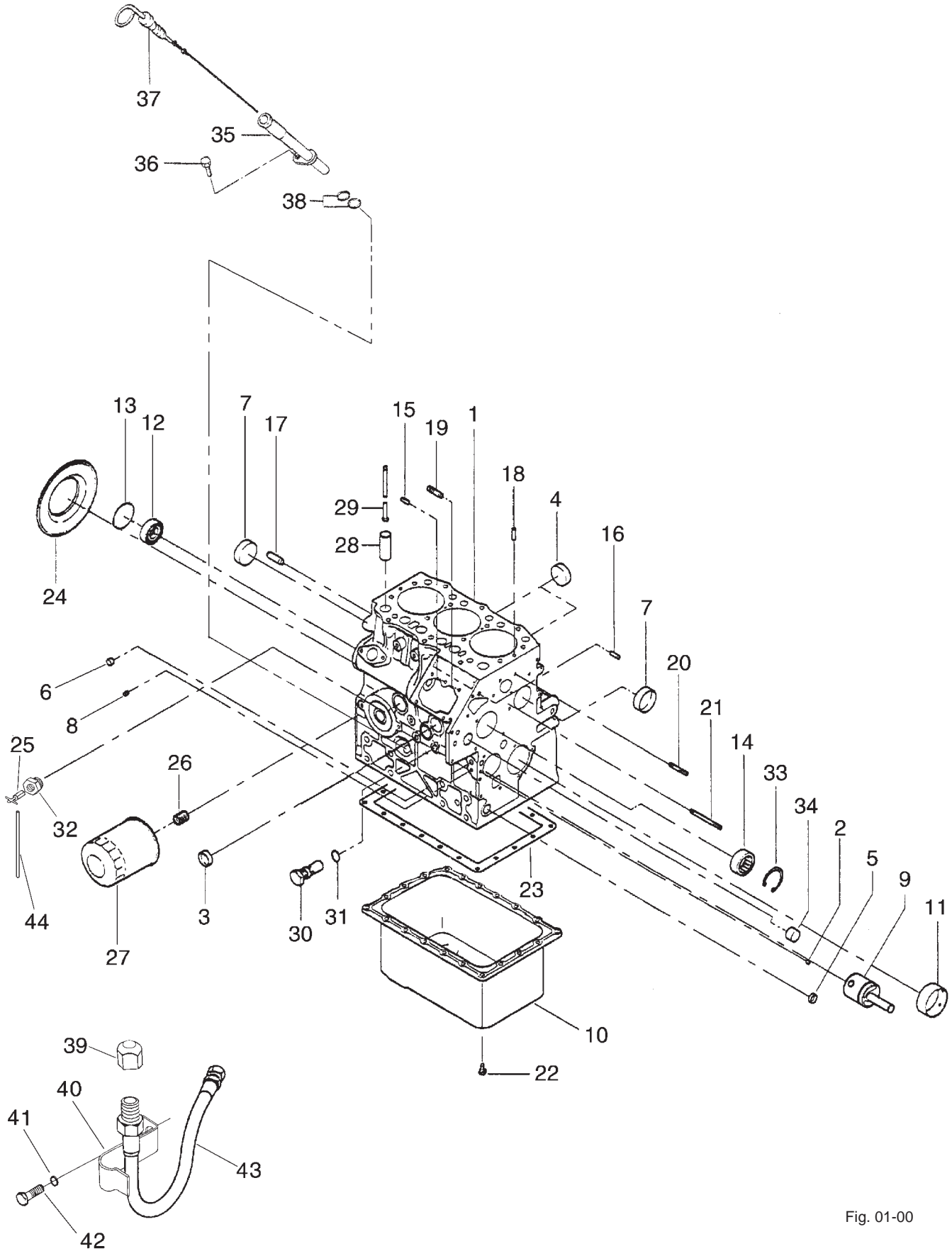


Fig. 01-00



## Cylinder Block Assembly

KEY	PART NUMBER	QTY	DESCRIPTION	S/N
1	110103541	1	Cylinder Block Assembly (Includes keys #2 - #21)	-
2	198466050	1	Plug	-
3	064210025	1	Expansion Plug, 25 mm	-
4	064210035	2	Expansion Plug, 35 mm	-
5	064210015	1	Expansion Plug, 15 mm	-
6	198466010	4	Plug	-
7	064210040	2	Expansion Plug, 40 mm	-
8	198466030	4	Plug	-
9	165296142	1	Idle Gear Shaft Assembly	-
10	110708620	1	Oil Pan	-
11	198517592	1	Bushing; S.T.D. (formerly #198517591)	-
	198517596	1	Bushing; U.S. 0.25 (formerly #198517595)	-
	198517599	1	Bushing; U.S. 0.50 (formerly #198517598)	-
12	040106203	1	Bearing	-
13	064100045	1	Expansion Plug, 45 mm	-
14	042303015	1	Bearing	-
15	030500512	2	Dowel Pin	-
16	030500616	2	Dowel Pin	-
17	030501025	2	Dowel Pin	-
18	030309005	2	Spring Pin	-
19	012100620	2	Stud	-
20	012100635	1	Stud	-
21	012110660	1	Stud	-
22	010109235	20	Capscrew, Hex Head M6 x 1.0 x 14 mm (with Lock Washer)	-
23	110996800	1	Gasket	-
24	050209107	1	Oil Seal	-
25	198736050	1	Drain Cock	-
26	140546020	1	Joint	-
27	24-02001	1	Oil Filter	-
28	120116160	6	Tappet	-
29	120456222	6	Push Rod	-
30	140036220	1	Relief Valve Assembly	-
31	052109078	1	O-ring	-
32	198486770	1	Bushing	-
33	036509005	1	Snap Ring	-
34	198466060	1	Plug	-
35	110756490	1	Dipstick Tube	-
36	011310612	1	Bolt	-
37	198416270	1	Dipstick	-
38	052109113	2	O-ring	-
39	21-00003	1	Cap	-
40	23-78601	1	Bracket	-
41	15-00302	1	Lock Washer 3/8	-
42	12-00311	1	Capscrew, Hex Head 3/8-16 x 3/4"	-
43	18-72004	1	Oil Drain Hose	-
44	068115200	1	Tube	-

# Crankshaft Assembly

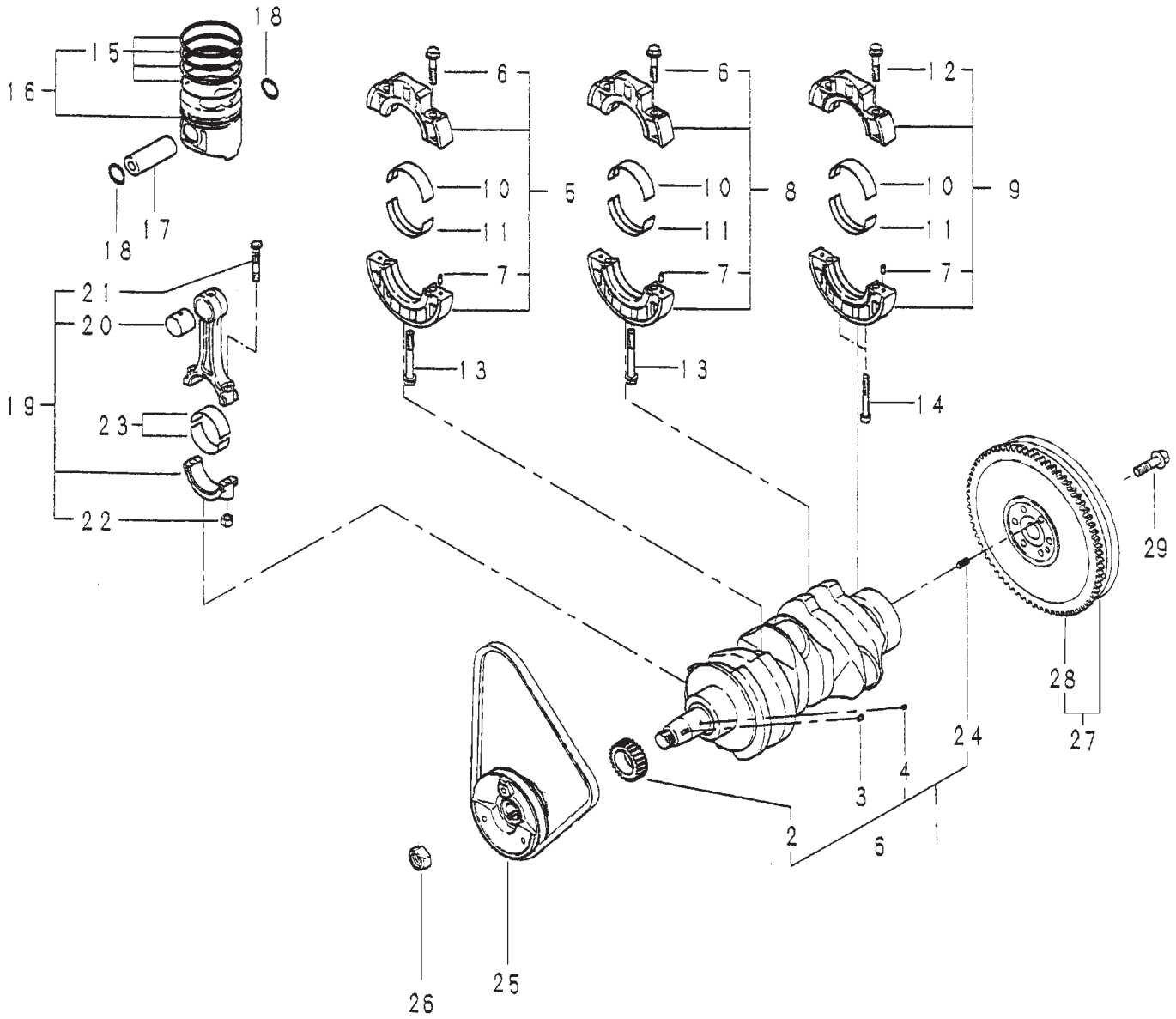


Fig. 1-2

## Crankshaft Assembly

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
1	115256830	1	Crankshaft Assembly (includes keys #2 - 4 & 24)	-
2	115276180	1	Crankshaft Gear	-
3	034100508	1	Key	-
4	030509020	1	Dowel Pin	-
5	110156400	1	Bearing Holder Assembly (includes keys #6 & 7)	-
6	010810840	4	Bolt	-
7	030500612	6	Dowel Pin	-
8	110156410	1	Bearing Holder Assembly (includes keys #6 & 7)	-
9	110156420	1	Bearing Holder Assembly (includes keys #7 & 12)	-
10	198517572	3	Bearing; Upper S.T.D. (formerly #198517571)	-
	198517576	3	Bearing; Upper Undersized 0.25 mm (formerly #198517575)	-
	198517579	3	Bearing; Upper Undersized 0.50 mm (formerly #198517578)	-
11	198517582	3	Bearing; Lower S.T.D. (formerly #198517581)	-
	198517586	3	Bearing; Lower U.S. 0.25 mm (formerly #198517585)	-
	198517589	3	Bearing; Lower U.S. 0.50 mm (formerly #198517588)	-
12	010810845	2	Bolt	-
13	011510840	2	Bolt	-
14	010700835	2	Bolt	-
15	115107900	3	Ring Kit; S.T.D.	-
	115107430	3	Ring Kit; Oversized 0.50 mm	-
16	115017460	3	Piston Kit; S.T.D.	-
	115017450	3	Piston Kit; Oversized 0.50 mm	-
17	115326231	3	Piston Pin	-
18	036500021	6	Snap Ring	-
19	115026340	3	Connecting Rod Assembly (includes keys #20 - 22)	-
20	198517125	3	Bushing	-
21	115176150	6	Connecting Rod Bolt	-
22	020109075	6	Nut	-
23	198517602	6	Bearing; S.T.D. (formerly #198517601)	-
	198517606	6	Bearing; Undersized 0.25 (formerly #198517605)	-
	198517609	6	Bearing; Undersized 0.50 (formerly #198517608)	-
24	030300816	1	Spring Pin	-
25	115396650	1	Crankshaft Pulley	-
26	020800018	1	Nut	-
27	115356720	1	Flywheel Assembly (includes key #28)	-
28	115376130	1	Ring Gear	-
29	010109340	6	Bolt	-

**Oil Pump & Pick-up**

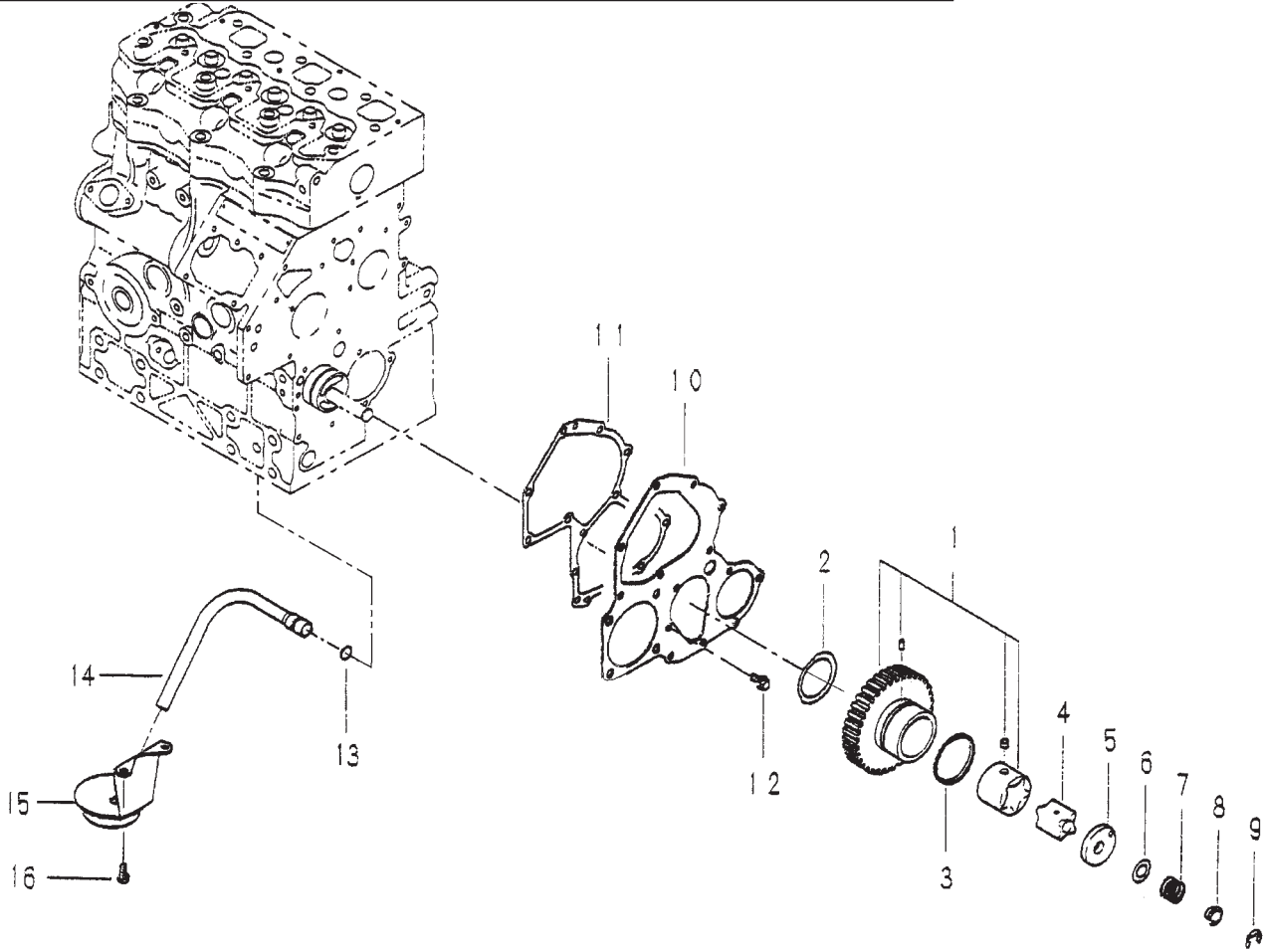


Fig. 1-4

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
1	165026100	1	Idle Gear Assembly	-
2	199266180	1	Thrust Washer	-
3	198216821	1	Spring	-
4	140166130	1	Rotor	-
5	140116140	1	Oil Pump Cover	-
6	199286150	**	Shim, 0.1 mm	-
	199286160	**	Shim, 0.15 mm	-
	199286170	**	Shim, 0.2 mm	-
	199286180	**	Shim, 0.5 mm	-
7	198216720	1	Spring	-
8	199236540	1	Collar	-
9	036800010	1	Snap Ring	-
10	165166240	1	Front Plate	-
11	165996520	1	Gasket	-
12	011310612	3	Bolt	-
13	052109076	1	O-ring	-
14	140986830	1	Oil Pipe	-
15	140406500	1	Pick-up	-
16	011310612	2	Bolt	-
			**As required	

Camshaft

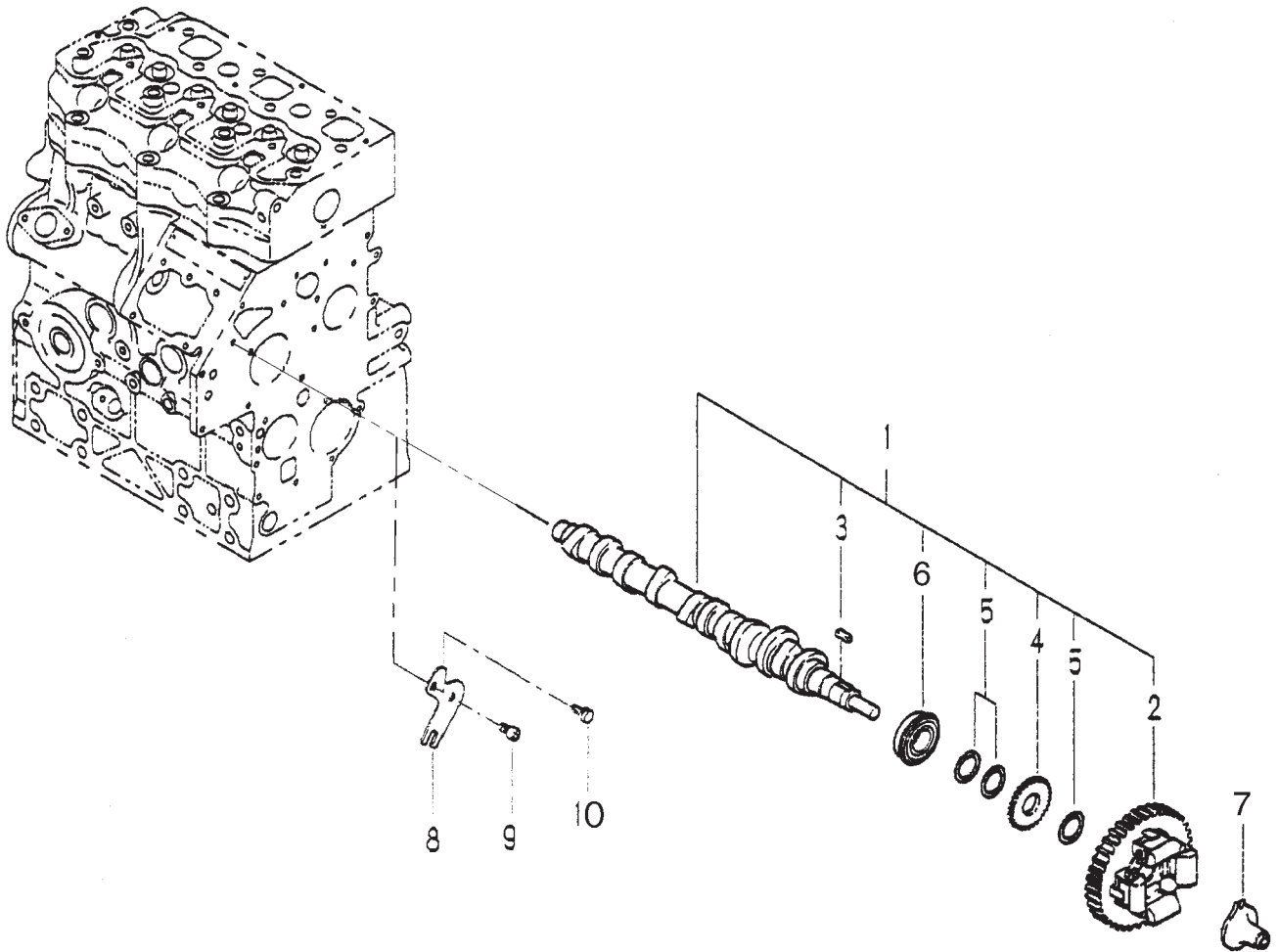


Fig. 1-5

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
1	120026081	1	Cam Shaft Assembly (includes keys #2- 6)	-
2	120016021	1	Cam Gear Assembly	-
3	034100508	1	Key	-
4	120736081	1	Gear	-
5	199216230	3	Spacer	-
6	040109059	1	Bearing	-
7	125256120	1	Slider	-
8	199566651	1	Plate	-
9	010700610	1	Bolt	-
10	011310612	1	Bolt	-

**Cylinder Head**

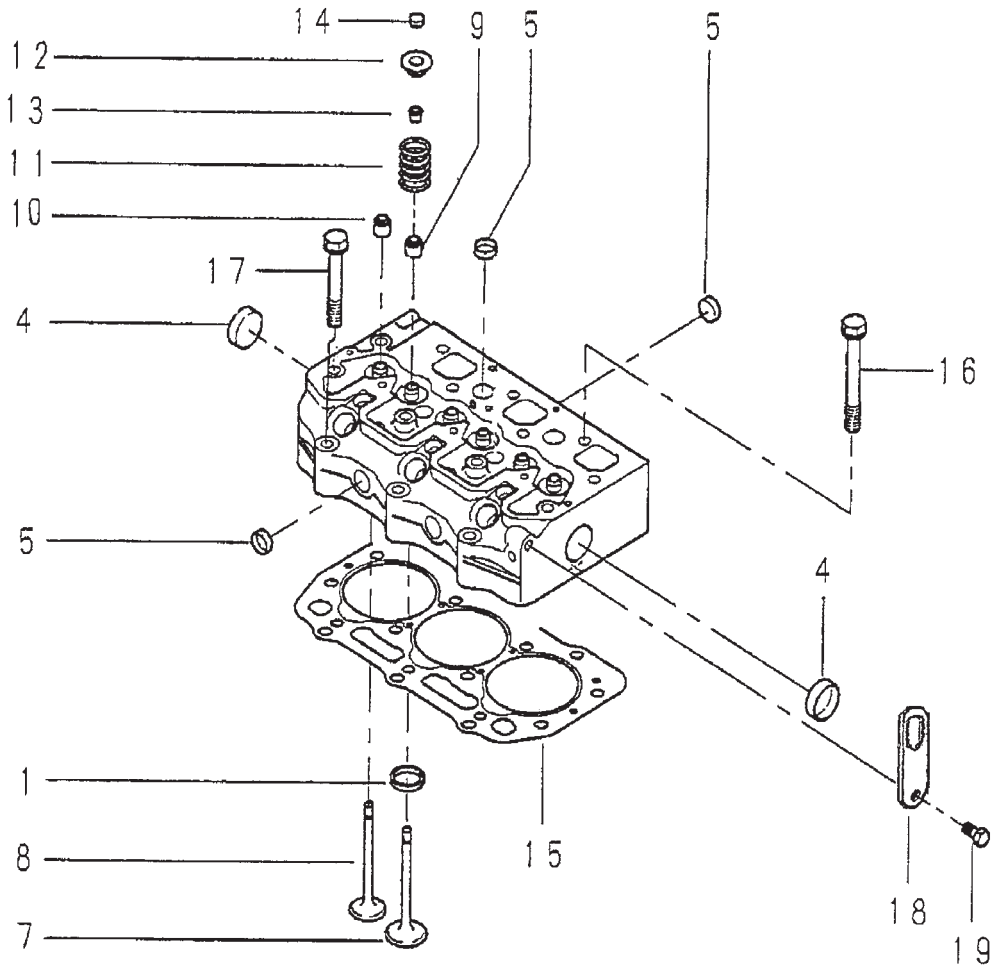
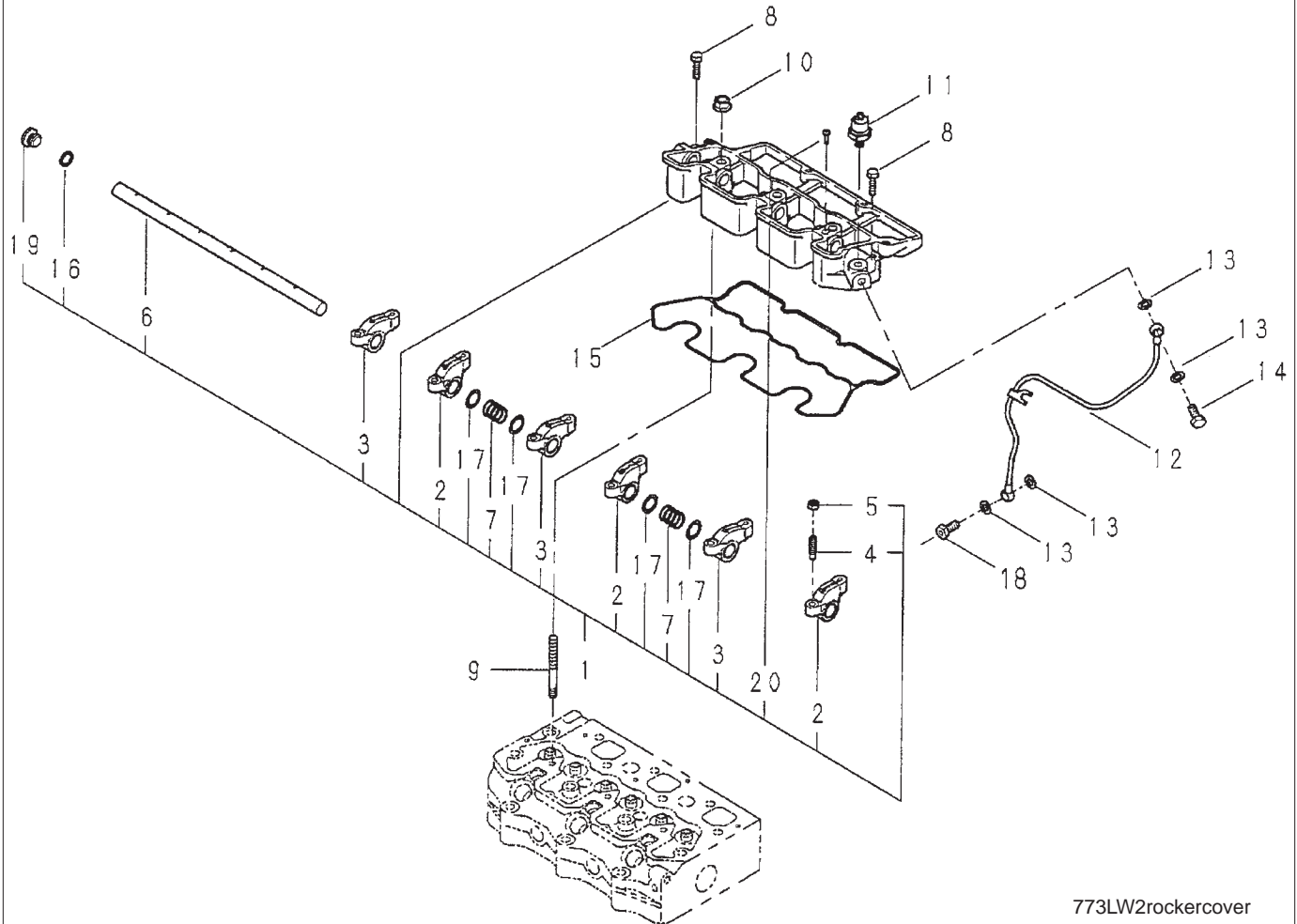


Fig. 1-6

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
••	111010720	1	Cylinder Head Assembly - (Includes keys #1 - 14)	-
1	110136300	3	Valve Seat	-
4	064210030	2	Expansion Plug, 30 mm	-
5	064210018	8	Expansion Plug, 18 mm	-
7	120166360	3	Intake Valve	-
8	120176250	3	Exhaust Valve	-
9	120406070	3	Intake Valve Guide Seal	-
10	120406050	3	Exhaust Valve Guide Seal	-
11	198216700	6	Spring	-
12	120186080	6	Retainer	-
13	120226070	12	Cotter	-
14	120216040	6	Cap	-
15	111147560	1	Head Gasket; t = 1.2	-
	111147570	1	Head Gasket; t = 1.3	-
16	111136440	11	Head Bolt	-
17	111136450	3	Head Bolt	-
18	195816650	2	Lifting Eye	-
19	011510820	1	Bolt	-

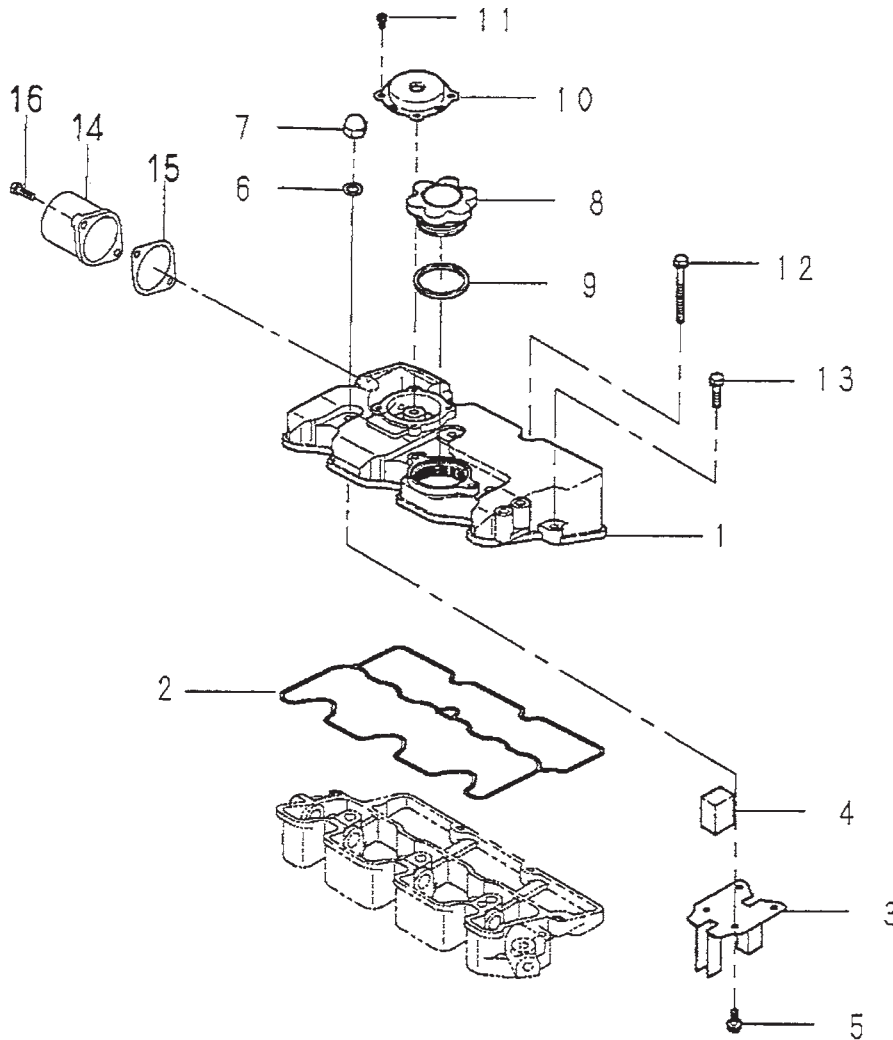
## Rocker Arm Assembly



773LW2rockercover

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
1	120037130	1	Rocker Arm Assembly (includes keys #2- 7, 16,17,19, & 20)	-
2	120356200	3	Intake Rocker Arm	-
3	120356210	3	Exhaust Rocker Arm	-
4	199486220	6	Screw	-
5	020109076	6	Nut	-
6	120316300	1	Rocker Arm Shaft	-
7	198216780	2	Spring	-
8	011310625	2	Bolt	-
9	012109177	3	Stud Bolt	-
10	023100008	3	Nut	-
11	185246011	1	Oil Pressure Switch (see Electrical System)	-
12	140607270	1	Oil Pipe	-
13	140996260	4	Gasket	-
14	198486780	1	Eye Bolt	-
15	120996150	1	Gasket	-
16	052100120	1	O-ring	-
17	199280280	4	Shim	-
18	198487590	1	Banjo Bolt (Tapped 1/8 NPT Female)	-
19	198436150	1	Plug	-
20	015100410	1	Screw	-

**Rocker Arm Cover**

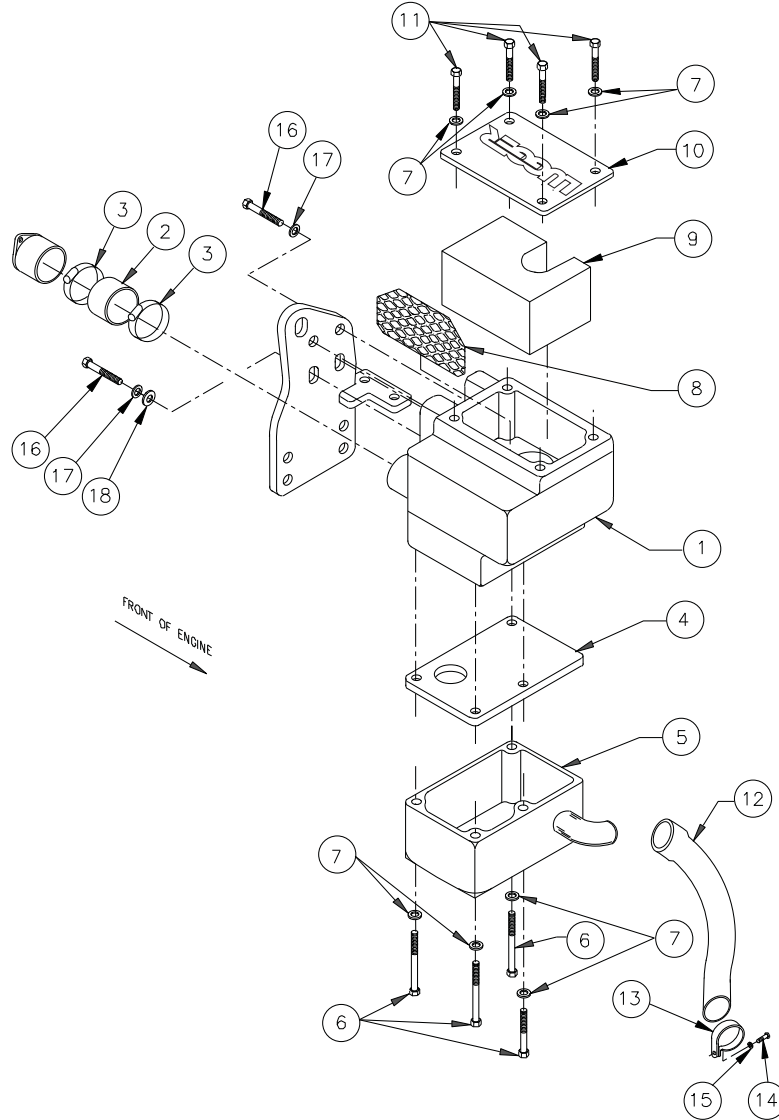


773LW2rockerarmcover

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
1	111217960	1	Rocker Arm Cover	-
2	111996420	1	Gasket	-
3	110666220	1	Retainer	-
4	110666060	1	Vent Filter	-
5	015600406	4	Screw	-
6	140996260	3	Gasket	-
7	024600008	3	Cap nut	-
8	198436010	1	Cap	-
9	052100400	1	O-ring	-
10	110566080	1	Valve	-
11	011100408	4	Bolt	-
12	011310680	3	Bolt	-
13	011310625	2	Bolt	-
14	135566610	1	Air Intake	-
15	135996750	1	Gasket	-
16	011310620	2	Bolt	-



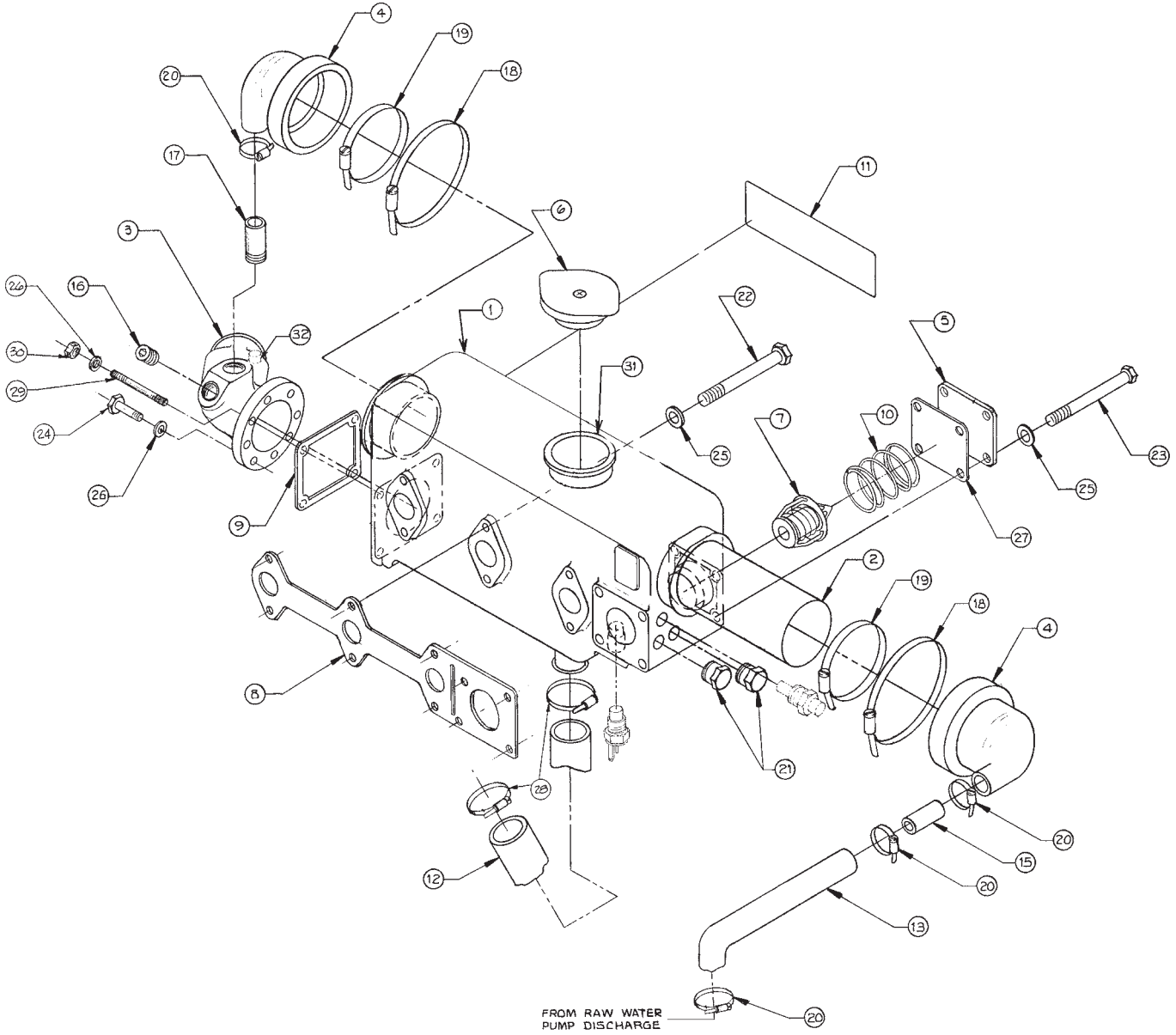
**Air Filter and Housing**



A-10836A / C-5742

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
••	24-28200	1	Air Filter Assembly (includes keys #1-18)	-
1	10-28202	1	Air Filter Housing	-
2	18-28201	1	Hose 1- 5/8" ID x 1- 3/4" 3 Ply Silicone	-
3	19-01024	2	Hose Clamp #24	-
4	28-28601	1	Intake Silencer Plate	-
5	10-28603	1	Cover, Lower Air Intake	-
6	12-01124	4	Capscrew, Hex Head M6 x 1.0 x 50 mm	-
7	15-00008	8	Flat Washer M6	-
8	24-28601	1	Screen	-
9	24-28602	1	Air Filter Element	-
10	10-28602	1	Cover, Air Filter Housing	-
11	12-01131	4	Capscrew, Hex Head M6 x 1.0 x 20 mm	-
12	18-28601	1	Hose, Air Intake	-
13	19-70022	1	Cushion Clamp #22	-
14	12-09751	1	Capscrew, Hex Head M8 x 1.25 x 16 mm S/S	-
15	15-00706	1	Flat Washer M8 S/S	-
16	12-00712	4	Capscrew, Hex Head M8 x 1.25 x 25 mm	-
17	15-00702	4	Lock Washer, Helical M8	-
18	15-00701	2	Flat Washer M8	-

Exhaust Manifold and Heat Exchanger



A-9289/ D-3465

## Exhaust Manifold and Heat Exchanger

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
1	10-02001	1	Exhaust Manifold/ Expansion Tank	-
2	20-12002	1	Heat Exchanger Element	-
3	27-32003	1	Wet Exhaust Elbow, Stainless Steel	-
	135616235	1	Wet Exhaust Elbow, Cast Iron	-
4	145536370	2	Heat Exchanger End Cap	-
5	28-18601	1	Thermostat Cover Plate	-
6	21-12013	1	Filler Cap	-
7	145206022	1	Thermostat	-
8	11-08601	1	Gasket	-
9	11-31902	1	Gasket	-
10	00-13101	1	Spring	-
11	00-08301	1	"Northern Lights" Decal	-
12	18-18601	1	Coolant Pump Inlet Hose	-
13	41-00004	13"	Hose 3/4" ID x 18-1/2"	-
15	21-13102	1	Union 3/4" Hose Barb	-
16	198436140	1	Socket Head Plug 1/2 BSPT, Steel	-
17	145986150	1	Connector 1/2 BSPT x 3/4 HB, Steel	-
18	19-00048	2	Hose Clamp #48	-
19	19-00040	2	Hose Clamp #40	-
20	19-00012	4	Hose Clamp #12	-
21	21-31003	**	Hex Head Plug, Brass 3/8 NPT	-
22	12-09136	6	Capscrew, Hex Head M6 x 1.0 x 90 mm S/S	-
23	12-09130	4	Capscrew, Hex Head M6 x 1.0 x 95 mm S/S	-
24	12-09712	3	Capscrew, Hex Head M8 x 1.25 x 25 mm S/S	-
25	15-01134	10	Flat Washer M6 S/S	-
26	15-00706	4	Flat Washer M8 S/S	-
27	11-18602	1	Gasket	-
28	19-00016	2	Hose Clamp #16	-
29	13-09710	1	Stud M8 x 1.25 x 25 mm (35 mm LOA S/S)	-
30	14-09711	1	Hex Nut, M8 x 1.25 S/S	-
31	20-12207	1	Filler Neck	-
32	22-42070	1	Switch, High Exhaust Temperature	-
33	22-40482	1	Harness, Exhaust Temperature Switch (not shown)	-

\*\*As required

**Coolant Pump**

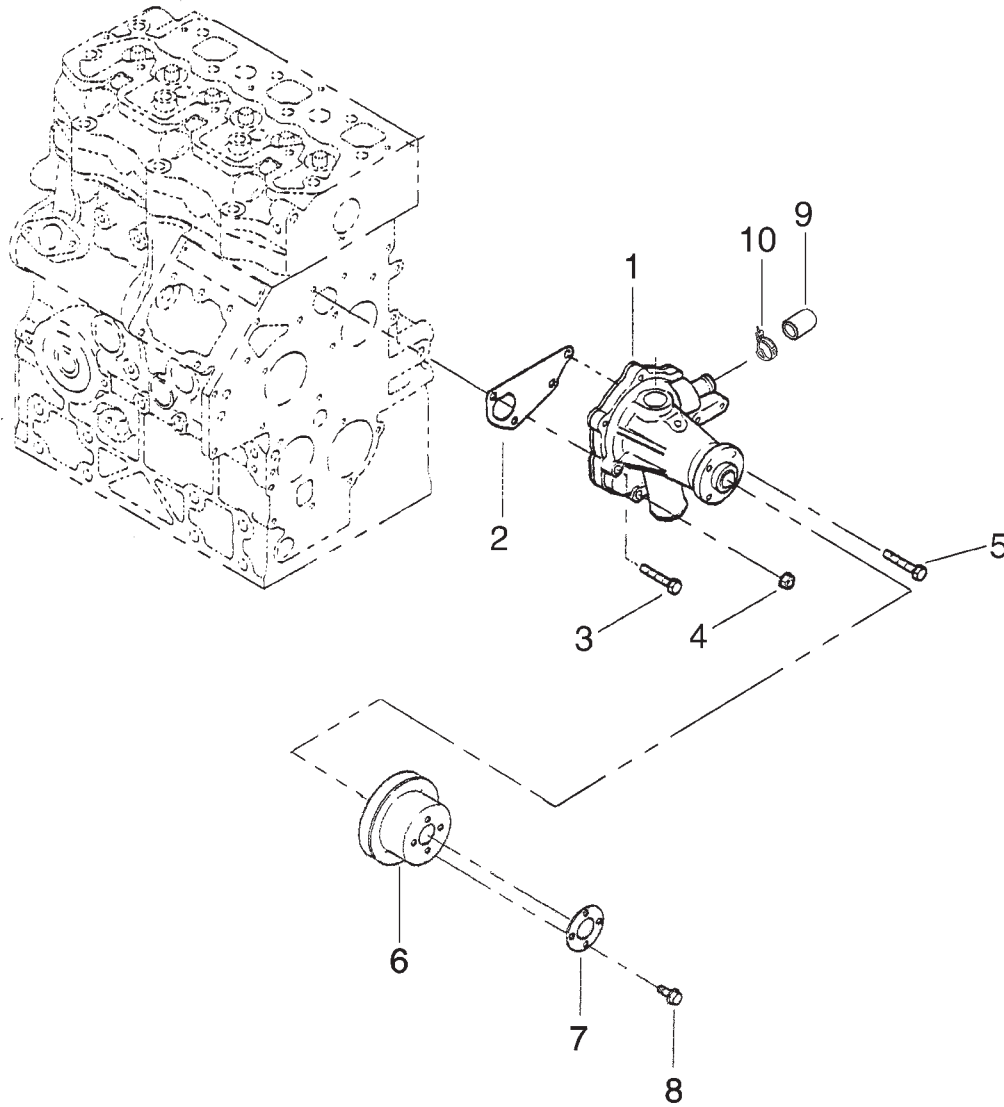
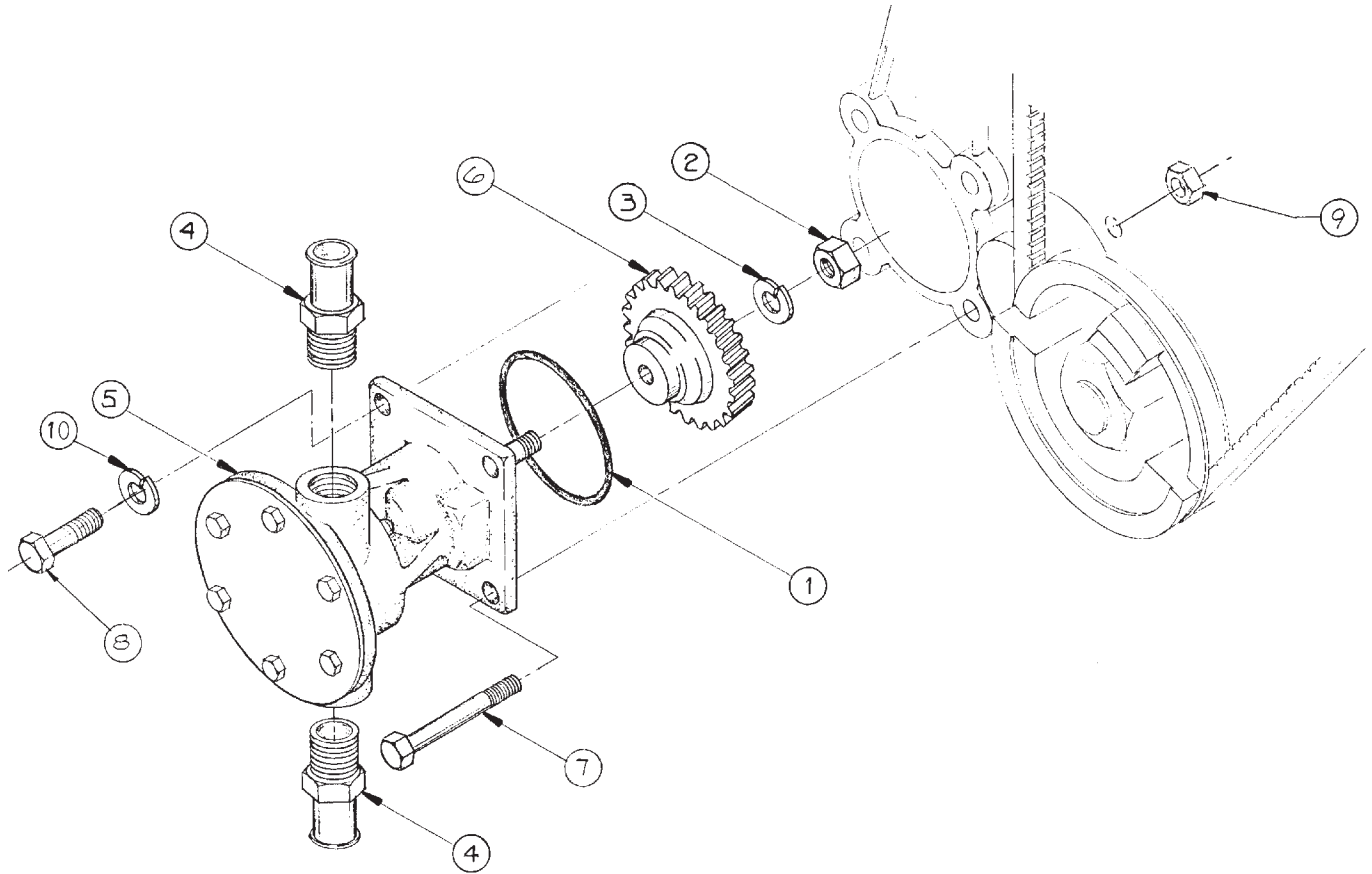


Fig. 3-2

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
1	145017910	1	Coolant Pump Assembly	-
2	145996830	1	Gasket	-
3	011310635	1	Bolt	-
4	023100006	1	Nut	-
5	011310630	2	Bolt	-
6	145336490	1	Pulley	-
7	145386520	1	Spacer	-
8	011310614	4	Bolt	-
9	21-18601	1	Cap	-
10	19-18601	1	Clamp	-

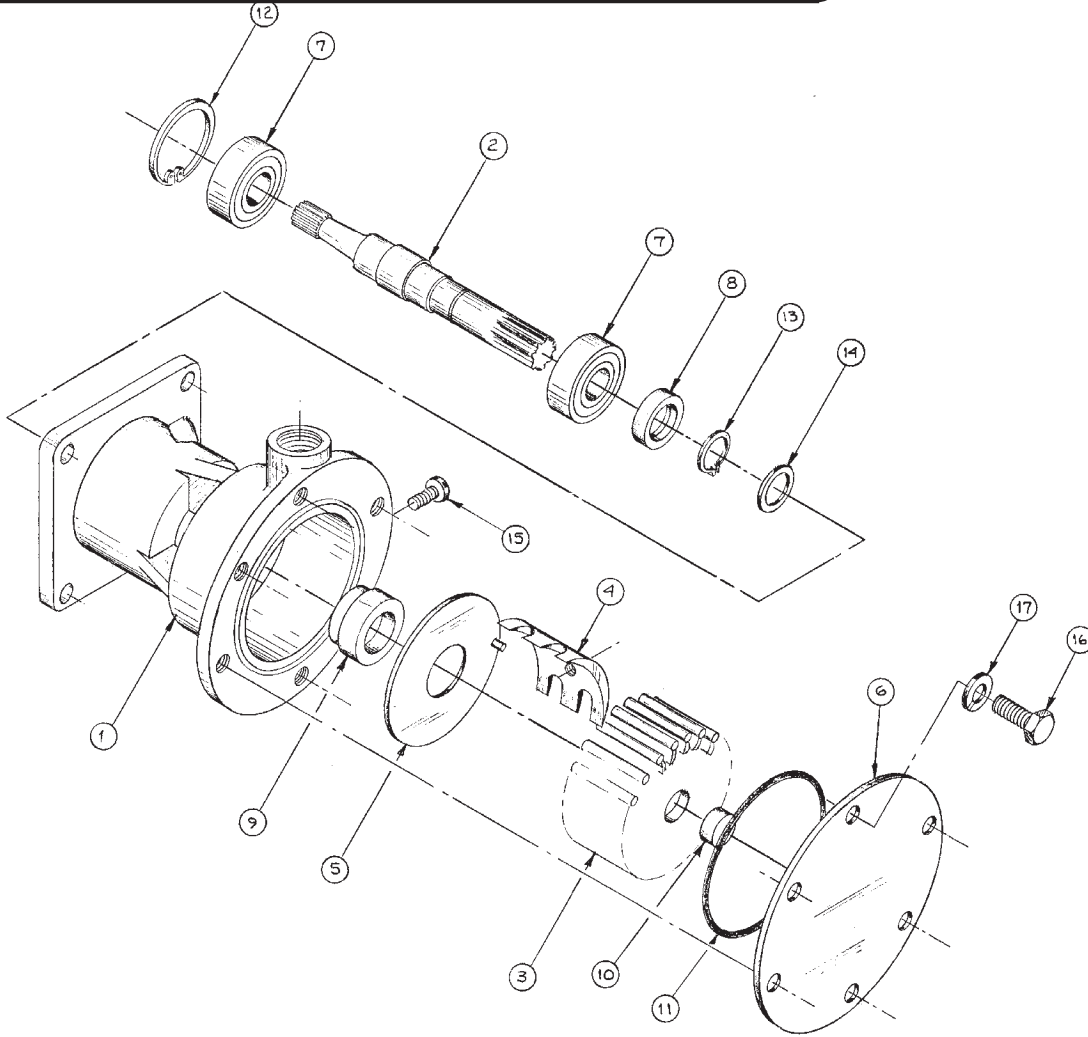
Raw Water Pump and Mounting



A-4779/ B-3842B

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
1	16-13101	1	O-Ring	-
2	14-00811	1	Nut M10 x 1.5	-
3	15-00802	1	Lock Washer M10	-
4	21-00129	2	Fitting 1/2 NPT x 3/4 Hose Barb	-
5	25-12057	1	Raw Water Pump (see parts detail)	-
6	340460141	1	Drive Gear	-
7	12-34801	3	Capscrew, Hex Head M8 x 1.25 x 70 mm	-
8	12-00718	1	Capscrew, Hex Head M8 x 1.25 x 65 mm	-
9	023100008	3	Hex Nut M8 x 1.25, Flanged	-
10	15-00702	1	Lock Washer M8	-

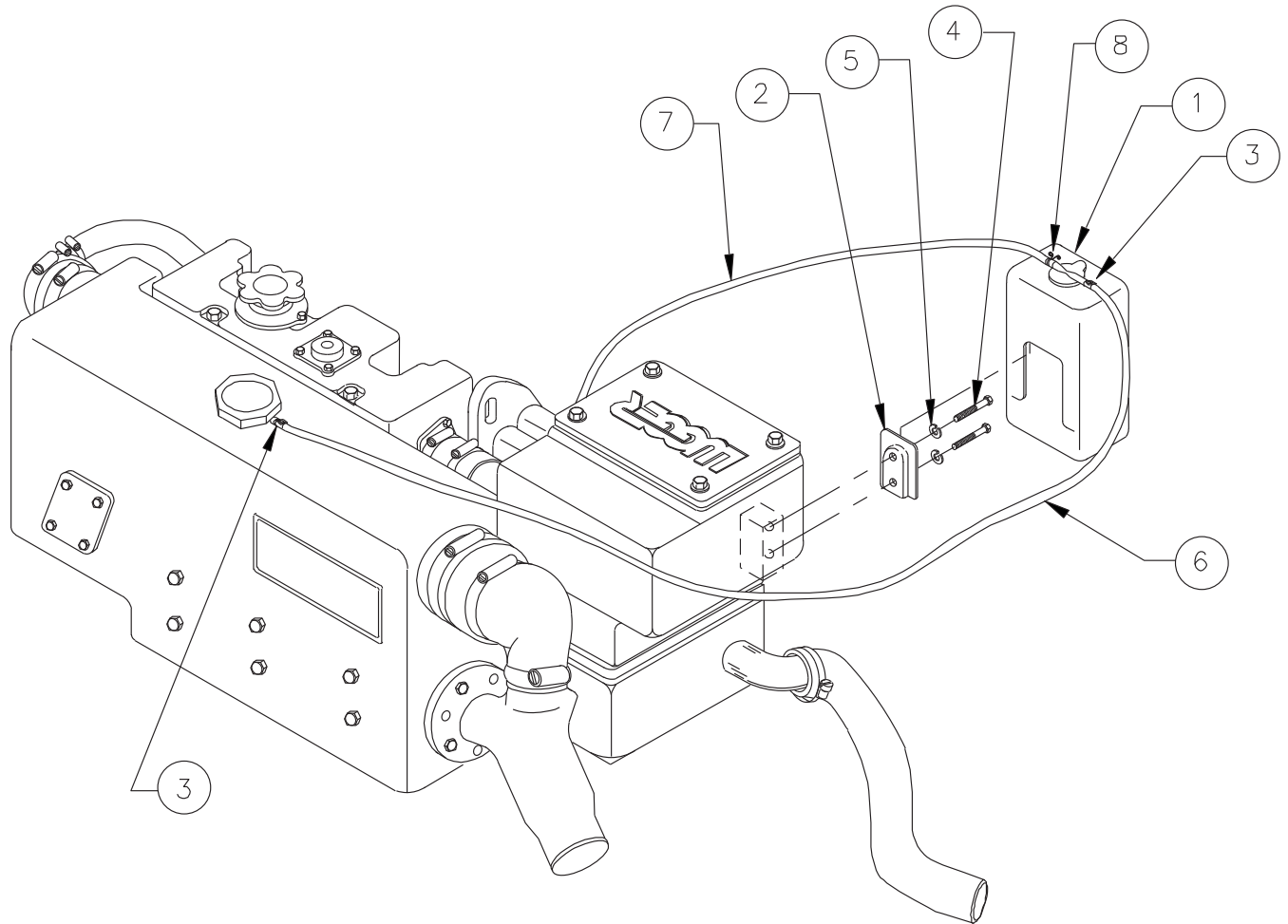
**Raw Water Pump Detail**



A-3706/ C-2204

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
••	25-12057	1	Raw Water Pump Assembly (includes keys #1 - 17)	-
•	25-12004	1	Repair Kit (includes keys #3- 9, & 11)	-
1	25-12058	1	Raw Water Pump Body	-
2	25-12059	1	Shaft	-
3	25-12060	1	Impeller	-
4	25-12061	1	Cam	-
5	25-12062	1	Wear Plate	-
6	25-12063	1	End Cover	-
7	25-12064	1	Bearing	-
8	25-12065	1	Lip Seal	-
9	25-12066	1	Mechanical Seal	-
10	25-12017	1	Spline Seal	-
11	25-12067	1	O-ring	-
12	25-12068	1	Retaining Ring	-
13	25-12069	1	Retaining Ring	-
14	25-12070	1	Washer	-
15	25-12071	1	Pan Head Screw #10-32 x 3/8	-
16	25-12072	1	Hex Head Screw #10-32 x 3/8	-
17	25-12073	1	Split Lock Washer #10	-

Coolant Recovery Tank



A-9347/ B-8741

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
1	310550130	1	Coolant Recovery Tank	-
2	222300090	1	Coolant Recovery Tank Mounting Bracket	-
3	19-18602	2	Hose Clamp	-
4	12-00030	2	Capscrew, Hex Head, M6 x 1.0 x 16 mm	-
5	15-01132	2	Lock Washer	-
6	27-18601	1	Tube 5/16" ID x 23" Polyurethane	-
7	18-18602	1	Hose 5/16" ID x 28" Polyvinyl	-
8	19-18602	1	Hose Clamp	-

General Arrangement

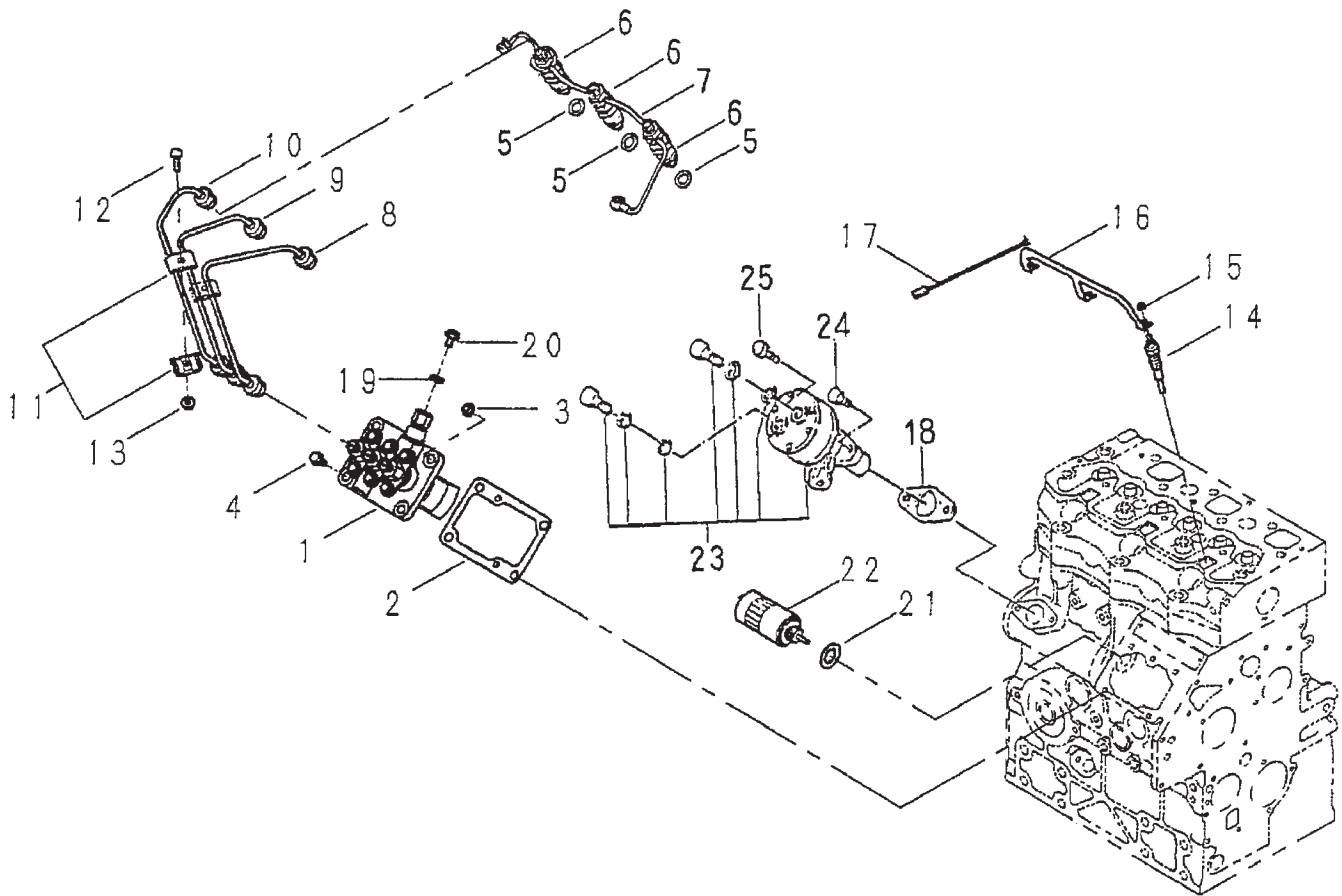


Fig. 4-00



## General Arrangement

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
1	131017921	1	Injection Pump Assembly	-
2	131426300	1	Shim Set	-
3	023100006	2	Nut	-
4	011310620	2	Bolt	-
5	131426200	3	Gasket	-
6	131406340	3	Injector Assembly	-
7	131606880	1	Return Line	-
8	131507740	1	Injection Line #1	-
9	131507750	1	Injection Line #2	-
10	131507760	1	Injection Line #3	-
11	199106021	4	Clamp	-
12	010110625	2	Bolt	-
13	023100006	2	Nut	-
14	185366220	3	Glow Plug, 12 Volt	-
15	023100004	3	Nut	-
16	185376370	1	Connector	-
17	185606170	1	Wire Harness	-
18	130996130	1	Gasket	-
19	025100006	1	Seal Washer	-
20	131236280	1	Screw	-
21	025100016	1	Seal Washer	-
22	185206084	1	Solenoid, 12 Volt Standard Ground	-
23	130506140	1	Feed Pump	-
24	011140614	2	Bolt	-
25	011140616	1	Bolt	-

Governor and Timing Gear Case

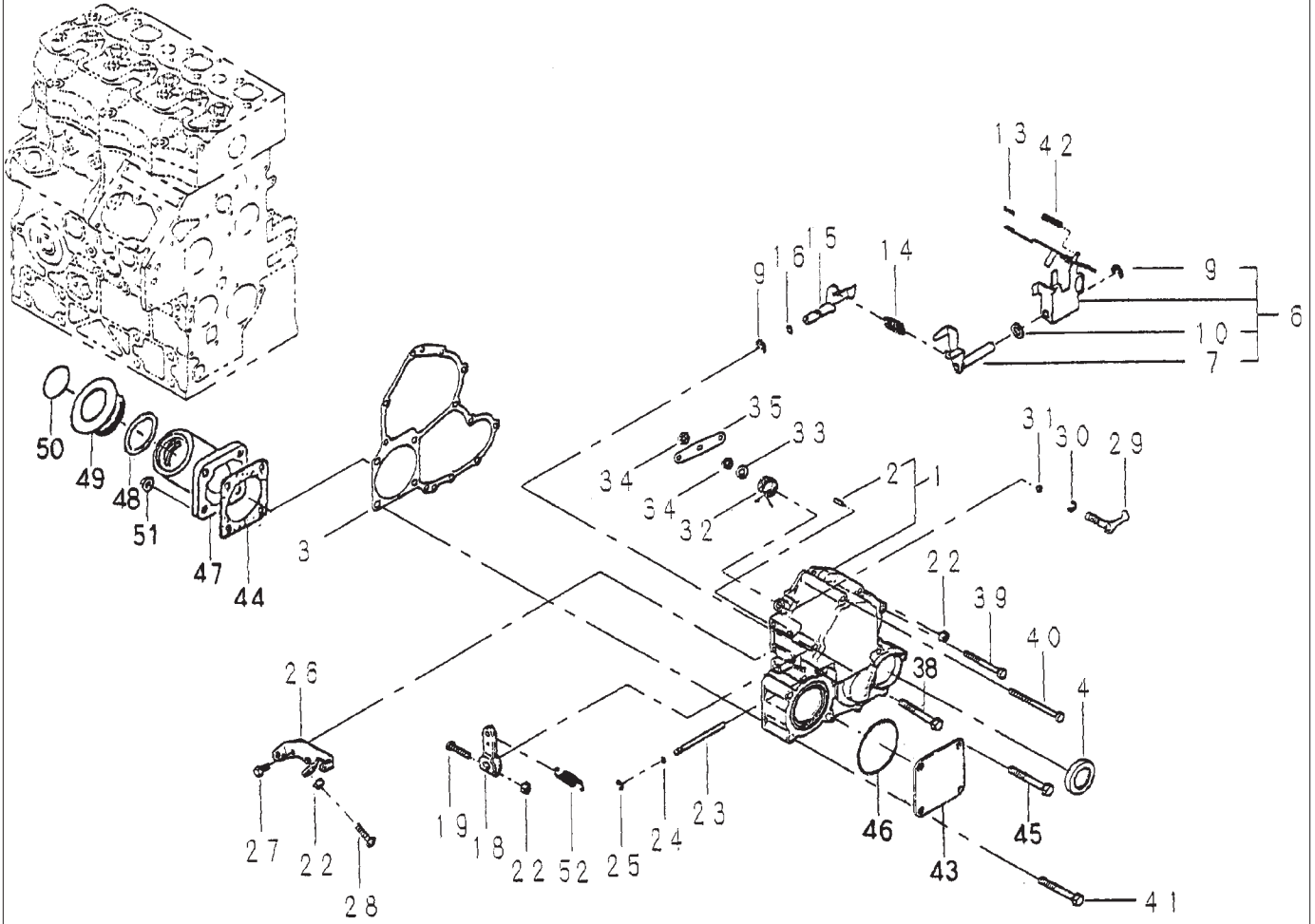


Fig. 4-2

## Governor and Timing Gear Case

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
1	165106111	1	Timing Gear Case (includes key #2)	-
2	030300414	1	Spring Pin	-
3	165996530	1	Gasket	-
4	198636090	1	Oil Seal	-
6	125046260	1	Governor Lever Assembly (includes keys 7, 9, 10)	-
7	125406071	1	Tension Lever	-
9	036800008	2	Snap Ring	-
10	026200010	1	Washer	-
13	031100004	1	Snap Pin	-
14	198217390	1	Spring	-
15	125156170	1	Arm	-
16	052109110	1	O-ring	-
18	125416020	1	Governor Lever	-
19	010110630	1	Bolt	-
22	023100006	3	Nut	-
23	125116131	1	Shaft	-
24	052109108	2	O-ring	-
25	036800005	1	Snap Ring	-
26	125976120	1	Bracket	-
27	011310614	2	Bolt	-
28	012810640	1	Bolt	-
29	125156180	1	Arm	-
30	036800006	1	Snap Ring	-
31	052109109	1	O-ring	-
32	198216760	1	Spring	-
33	026200008	1	Washer	-
34	020700008	2	Nut	-
35	125176080	1	Stop Lever	-
38	011310640	5	Bolt	-
39	011310660	3	Bolt	-
40	011310680	2	Bolt	-
41	011510865	3	Bolt	-
42	198216731	1	Start Spring	-
43	165206320	1	Cover (Keel Cooled Units Only)	-
44	340990011	1	Gasket	-
45	011510860	1	Bolt	-
46	052300700	1	O-ring	-
47	110766200	1	Holder	-
48	052300400	1	O-ring	-
49	198436010	1	Cap	-
50	390190460	1	Plate	-
51	023100008	3	Nut	-
52	398210070	1	Spring	-

# Fuel Filter and Piping

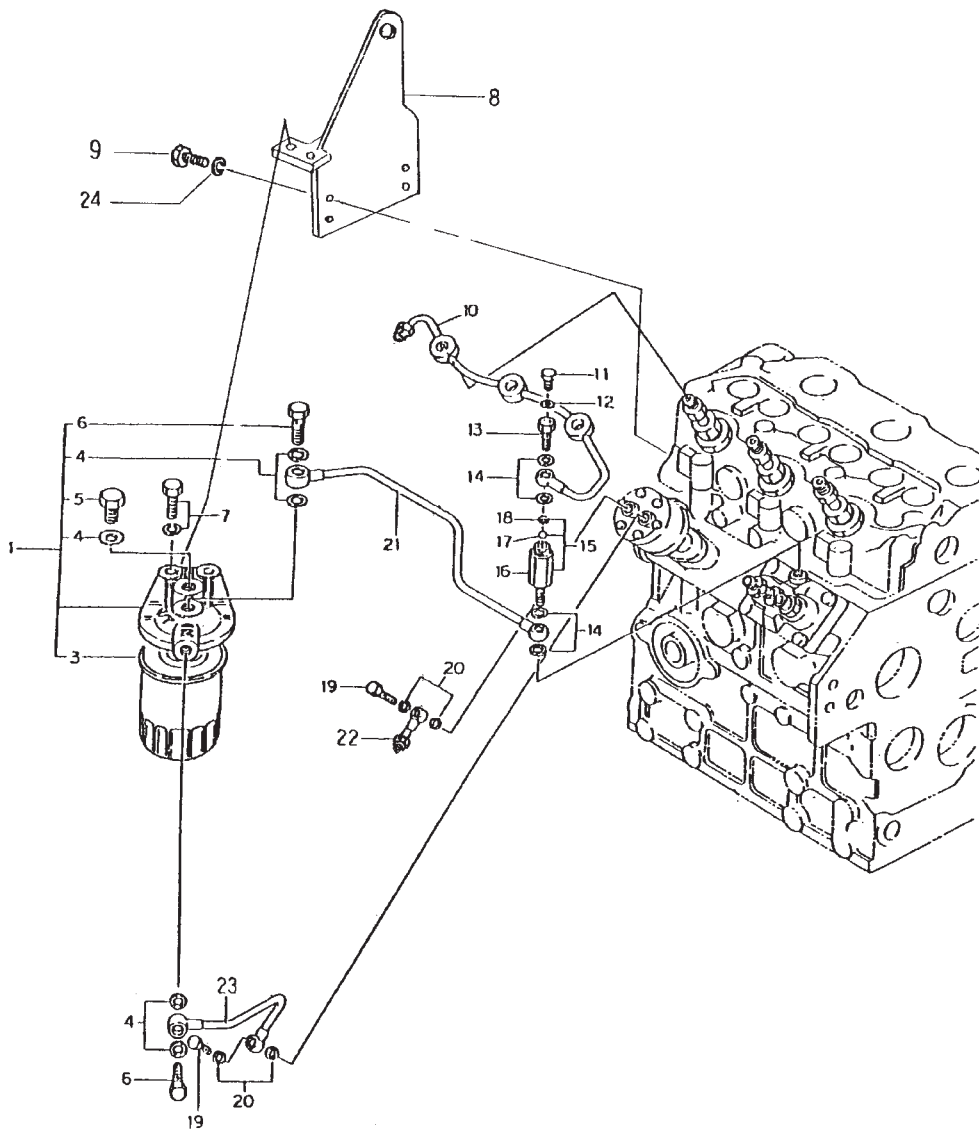
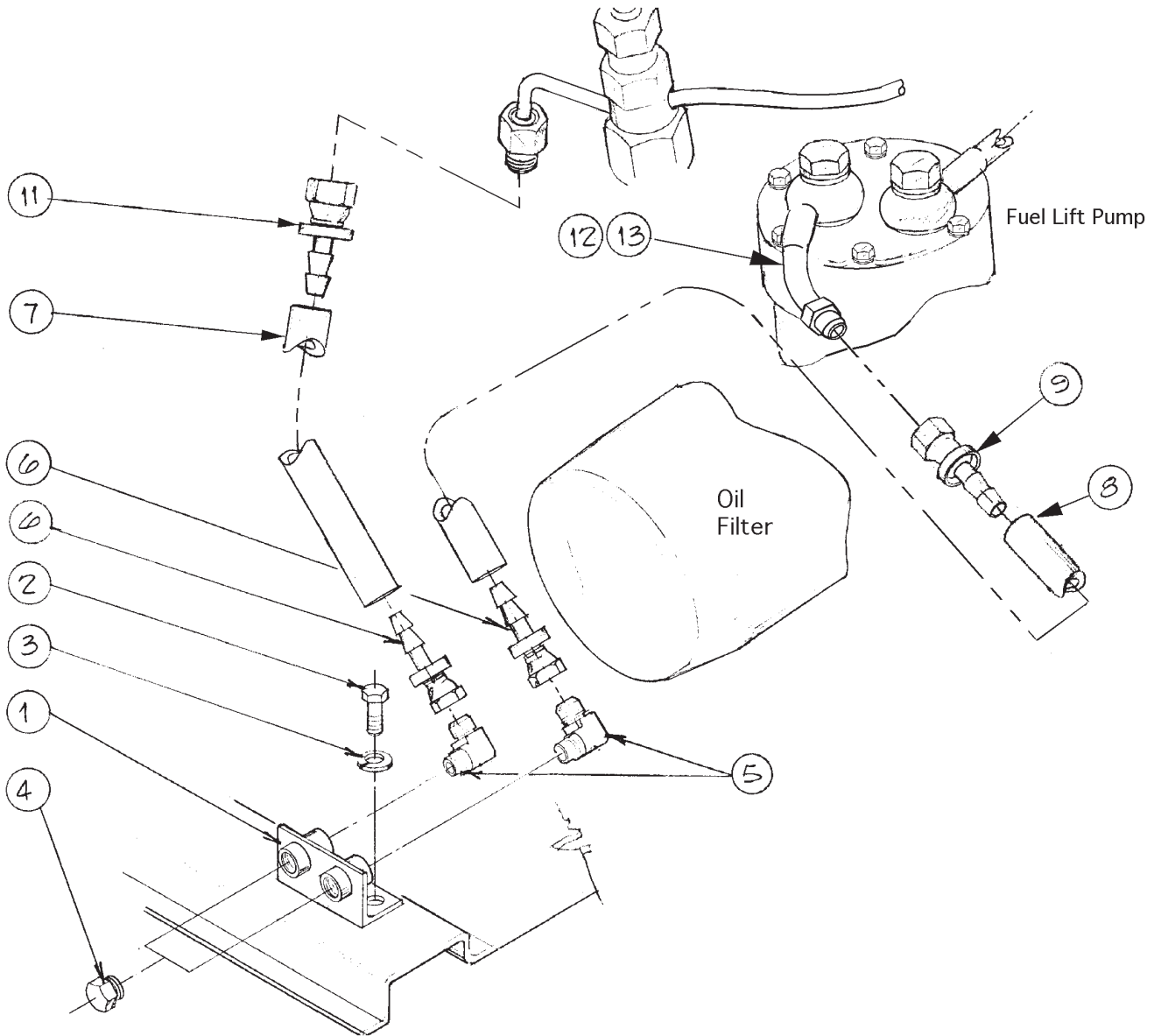


Fig. 4-4

## Fuel Filter and Piping

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
1	130306190	1	Fuel Filter Assembly (includes keys #3 - 6)	-
3	24-52020	1	Fuel Filter	-
4	130326051	5	Gasket	-
5	130396030	1	Plug	-
6	130436011	2	Joint Bolt	-
7	011511025	2	Bolt	-
8	23-08603	1	Bracket, Filter Support & Lifting Eye	-
9	010700820	4	Bolt	-
10	131606880	1	Return Pipe	-
11	131236280	1	Screw	-
12	025100006	1	Seal Washer	-
13	131236190	1	Bolt	-
14	140996270	4	Gasket	-
15	140036141	1	Valve Assembly (includes keys 16- 18)	-
16	198487002	1	Connector	-
17	048100010	1	Steel Ball	-
18	198116230	1	Rubber	-
19	130516092	2	Bolt	-
20	198996060	4	Gasket	-
21	130556921	1	Pipe	-
22	130556681	1	Pipe	-
23	130556931	1	Pipe	-
24	027100008	4	Spring Washer	-

**Fuel Line Connection**



A-9317/ B-7019

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
1	10-51099	1	Fuel Manifold 1/4 NPT	-
2	12-00031	2	Capscrew, Hex Head M6 x 1.0 x 20 mm S/S	-
3	15-01132	2	Lock Washer M6	-
4	21-00046	2	Plug, Plastic, 1/4 NPT (for shipping)	-
5	21-71044	2	Male Elbow 90°, brass 1/4 NPT x 1/4-45T	-
6	21-71045	2	Female Swivel, brass 1/4 HB x 1/4-45T	-
7	41-01011	12"	Hose 1/4" ID Push-on	-
8	41-01011	18"	Hose 1/4" ID Push-on	-
9	21-71048	1	Female Swivel, brass 1/4 HB x 5/16-45T	-
11	21-80002	1	Female Swivel, steel 1/4 HB x 1/4-37T	-
12	130556681	1	Fitting, Fuel Inlet M8 Banjo x 5/16-37T	-
13	130516069	2	Sealing Washer (not shown)	-

**Fuel Injector**

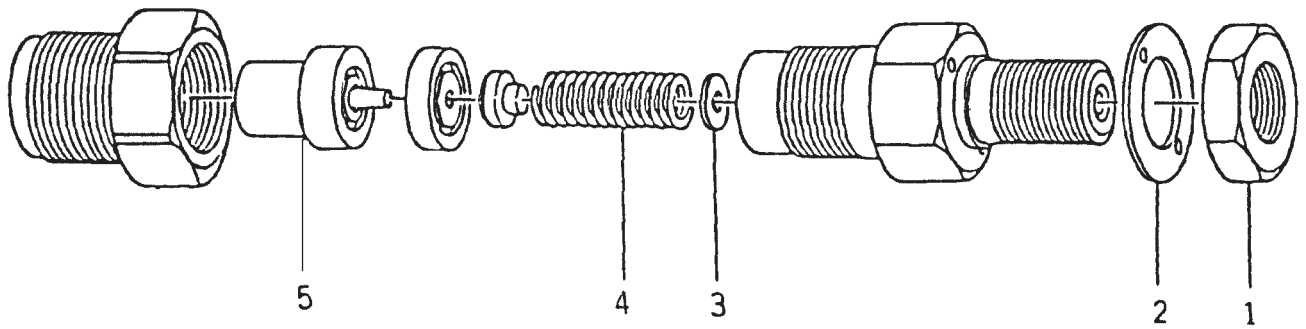


Fig. 4-10

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
••	131406340	1	Injector Assembly (includes keys #1 - #8)	-
1	131446069	1	Nut	-
2	131426210	1	Gasket	-
3	131437640	1	Shim	-
4	131446066	1	Spring	-
5	131416150	1	Nozzle	-

**Fuel Feed Pump**

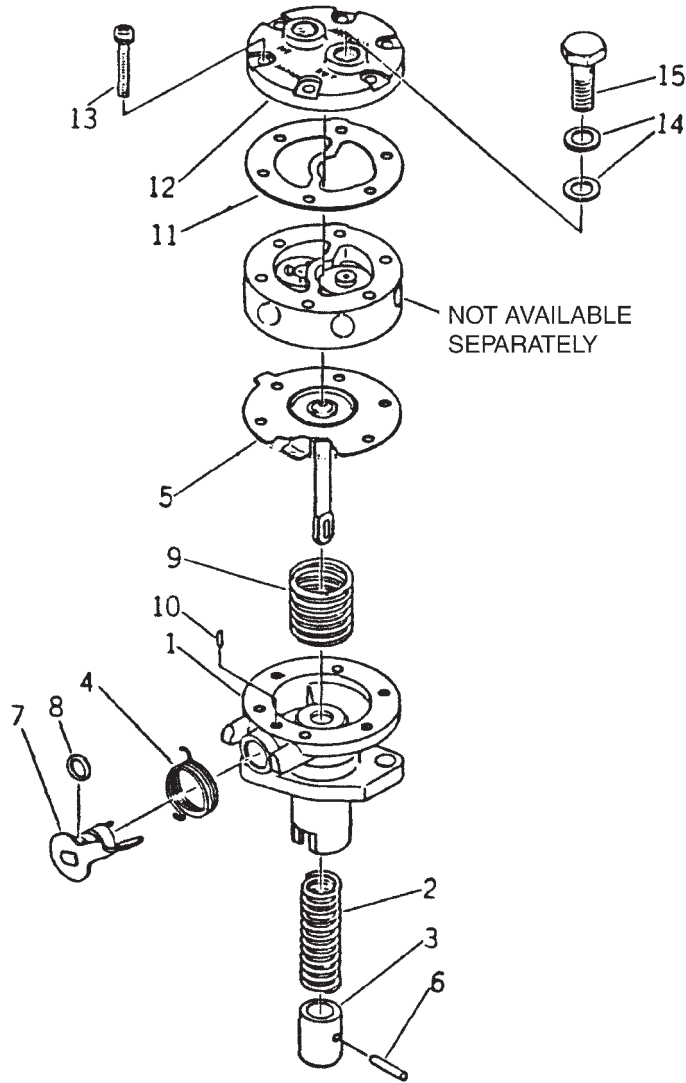
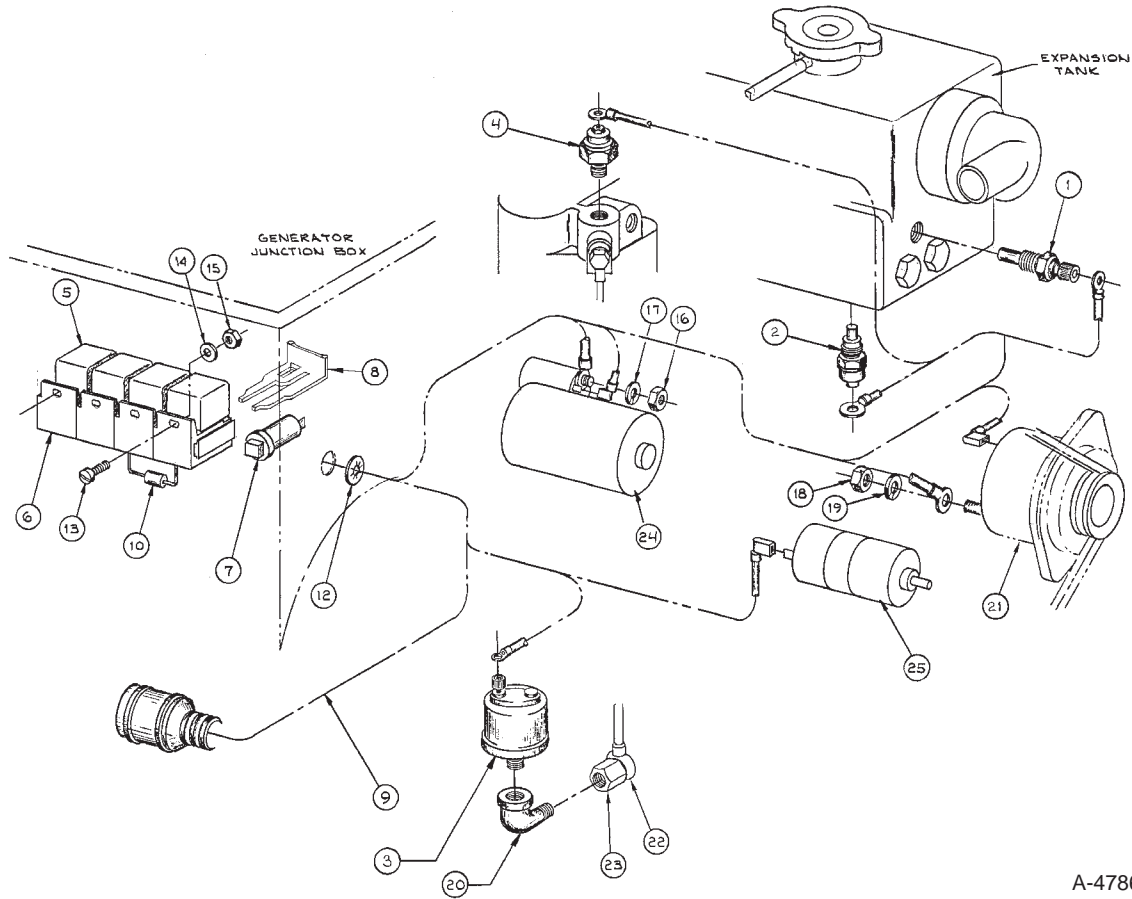


Fig. 4-11

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
••	130506140	1	Feed Pump Assembly (includes keys #1 - 15)	-
1	130516080	1	Housing*	-
2	130516081	1	Spring*	-
3	130516082	1	Piston*	-
4	130516083	1	Spring*	-
5	130516084	1	Diaphragm	-
6	130516085	1	Pin*	-
7	130516086	1	Lever*	-
8	131226180	1	O-ring*	-
9	130516087	1	Spring*	-
10	130516088	1	Guide*	-
11	130516089	1	Gasket*	-
12	130516090	1	Cap*	-
13	130516091	6	Screw	-
14	130516069	4	Gasket	-
15	130516092	2	Joint Bolt	-
			*Not available separately	



**Engine Electrical - 12 Volt Standard Ground**



A-4786/ C-2490B

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
1	22-42055	1	Temperature Sender, 0-250°F Single Station 3/8 NPT	-
2	385720110	1	Temperature Switch 95°C	-
3	22-41016	1	Oil Pressure Sender 0-80 PSI, Single Station 1/8 NPT	-
4	185246011	1	Oil Pressure Switch	-
5	22-42047	4	Relay, 12 Volt SPDT	-
6	22-40391	4	Relay Base	-
7	22-42043	1	Circuit Breaker	-
8	22-40393	4	Terminal Retainer	-
9	22-48601	1	Engine Wire Harness (includes key #10)	-
10	22-41060	2	Diode, 6 Amp 50 Volt	-
11	22-40930	1	Wire Harness Extension 20' (not shown)	-
12	00-40028	1	Grommet	-
13	12-00094	2	Machine Screw #10-32 x 3/8" Stainless Steel	-
14	15-00032	2	Flat Washer #10	-
15	14-00001	2	Hex Nut, #10-32	-
16	14-00711	1	Hex Nut, M8 x 1.25	-
17	15-00702	1	Lock Washer M8	-
18	14-04401	1	Hex Nut, M5 x 0.8	-
19	15-04400	1	Lock Washer M5	-
20	21-04801	1	Street Elbow 90°, 1/8 NPT Steel	-
21	185046220	1	Alternator 12 Volt (see parts detail)	-
22	140607270	1	Oil Line	-
23	198487590	1	Banjo Bolt (Tapped 1/8 NPT Female)	-
24	185086551	1	Starter 12 Volt (marked #M001T66081, see parts detail)	-
25	185206084	1	Fuel Solenoid	-

Alternator and Starter

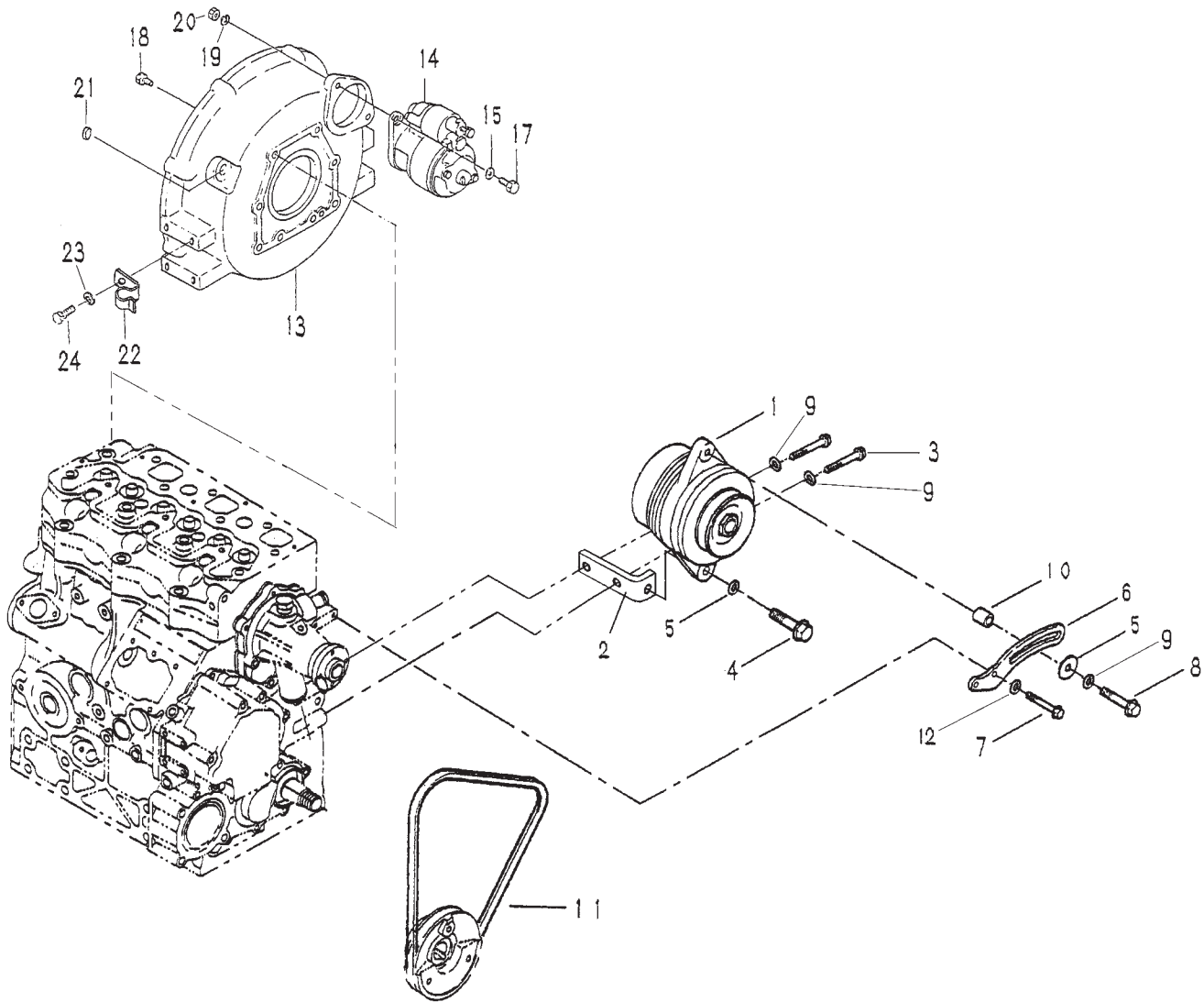


Fig. 5-1

## Alternator and Starter

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
1	185046220	1	Alternator 12 Volt, 40 Amp (see parts detail)	-
2	23-48601	1	Bracket, Alternator Mounting	-
3	12-09712	2	Capscrew, Hex Head M8 x 1.25 x 25 mm S/S	-
4	12-09814	1	Capscrew, Hex Head M10 x 1.5 x 35 mm S/S	-
5	15-09805	2	Flat Washer M10 S/S	-
6	23-48602	1	Tensioning Arm	-
7	12-01102	2	Capscrew, Hex Head M6 x 1.0 x 16 mm S/S	-
8	12-09714	1	Capscrew, Hex Head M8 x 1.25 x 40 mm S/S	-
9	15-00705	2	Lock Washer M8 S/S	-
10	199236680	1	Spacer	-
11	40-08601	1	Drive Belt	-
12	15-00610	2	Lock Washer M6 S/S	-
13	110446421	1	Flywheel Housing	-
14	185086551	1	Starter, 12 Volt (see parts detail)	-
15	026100010	2	Washer	-
17	010311045	2	Bolt	-
18	010311020	8	Bolt	-
19	027100010	2	Spring Washer	-
20	020900010	2	Nut	-
21	398460091	1	Plug	-
22	140976080	1	Bracket	-
23	027100010	1	Spring Washer	-
24	199436350	1	Bolt	-

# Alternator Assembly

12 Volt / 40 Amp Standard Ground

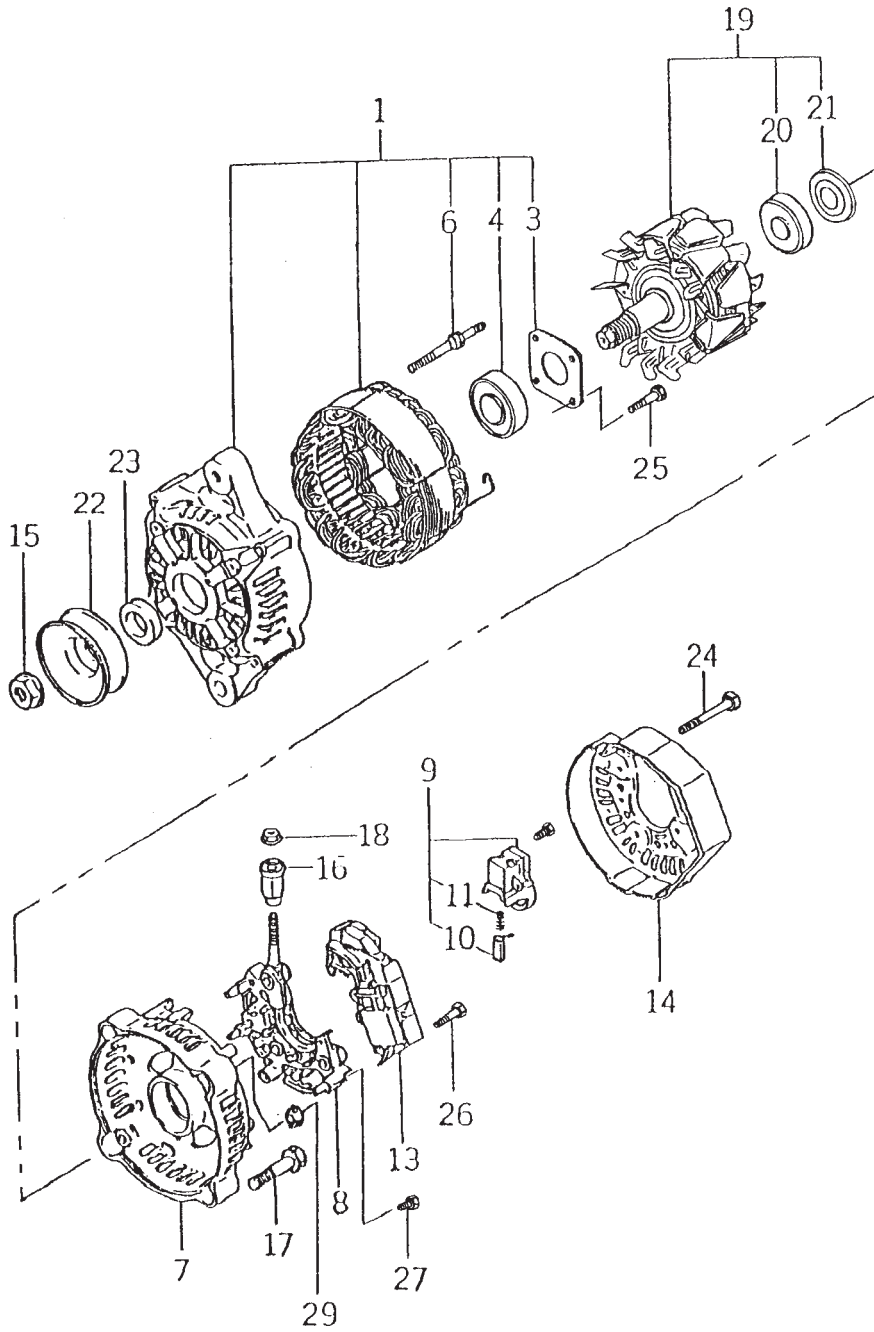


Fig. 5-4

**Alternator Assembly***12 Volt / 40 Amp Standard Ground*

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
••	185046220	1	Alternator Assembly (includes keys #1- 29)	-
1	185446221	1	Frame Sub Assembly (includes keys #3,4,6)	-
3	185446223	1	Retainer Plate	-
4	185446224	1	Ball Bearing	-
6	185446227	2	Stud Bolt	-
7	185446228	1	Rear End Frame	-
8	185446229	1	Rectifier Holder	-
9	185446230	1	Brush Holder (includes keys #10-11)	-
10	185426231	2	Brush	-
11	185446232	2	Spring	-
13	185446234	1	Regulator Assembly	-
14	185446235	1	Rear End Cover	-
15	185446236	1	Nut	-
16	185446237	1	Insulation Brush	-
17	185446238	2	Bolt	-
18	185446239	1	Nut	-
19	185446240	1	Rotor Assembly (includes keys #20- 21)	-
20	185446241	1	Ball Bearing	-
21	185446242	1	Bearing Cover	-
22	185446243	1	Pulley	-
23	185446244	1	Collar	-
24	185446245	3	Bolt	-
25	185446258	4	Screw	-
26	185446262	2	Screw	-
27	185446260	6	Screw	-
29	185446261	1	Screw	-

**12 Volt Starter Assembly**

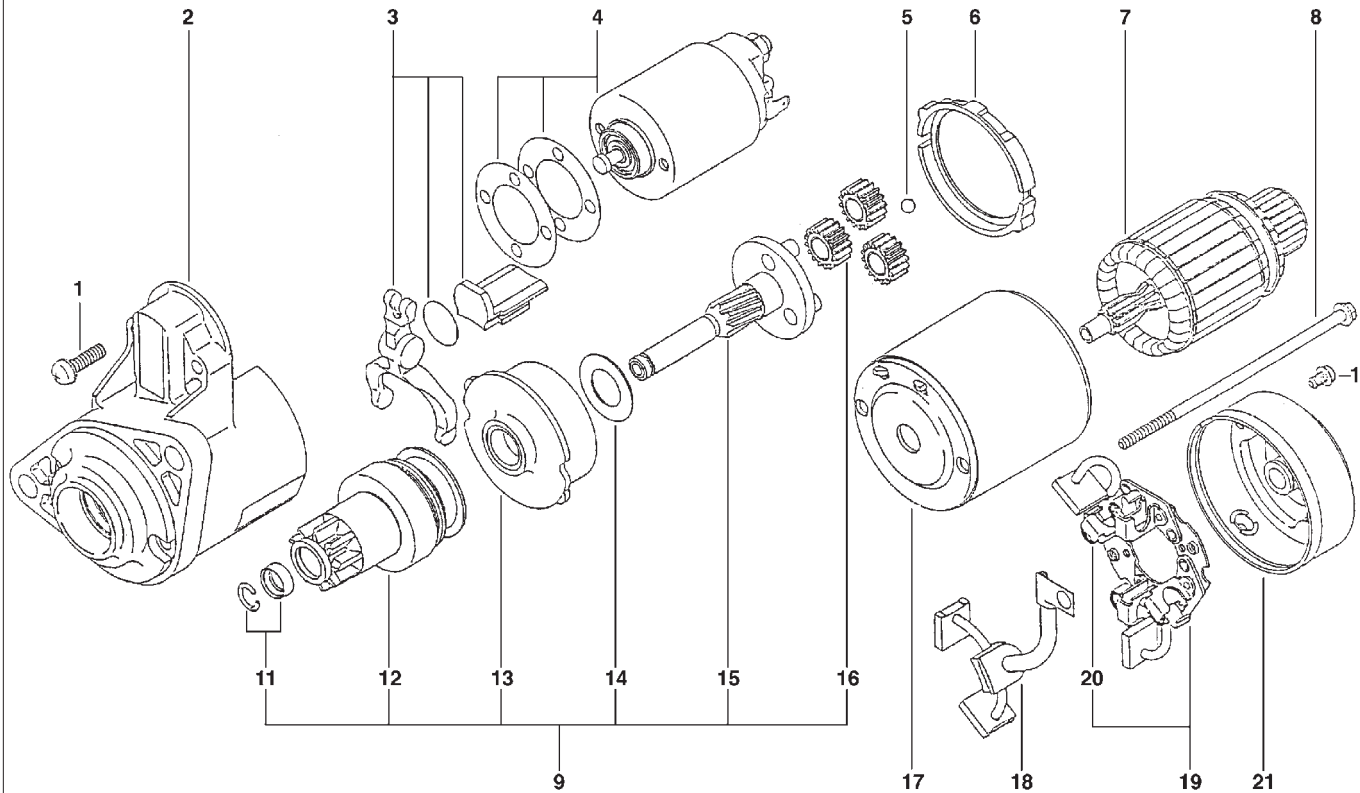
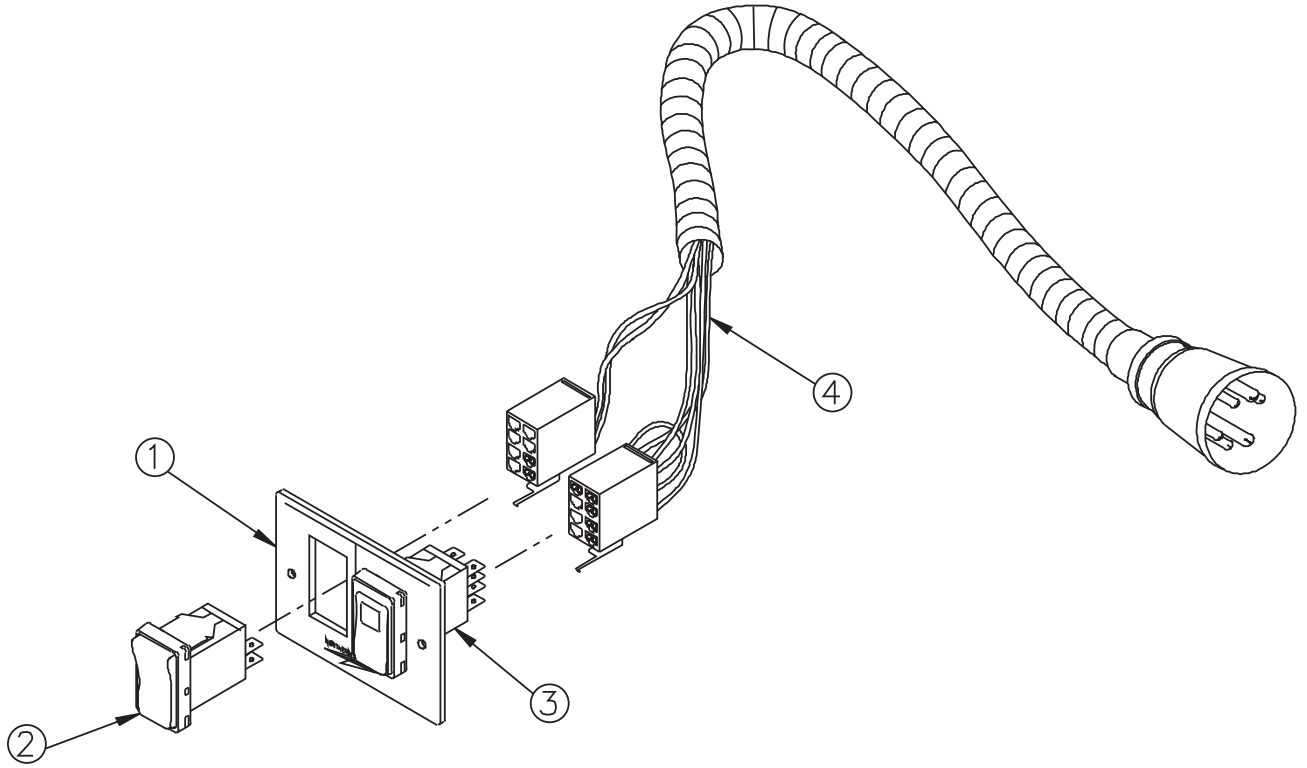


Fig. 03-03

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
••	185086551	1	Starter (includes all keys)	-
1	185846468	1	Screw Set	-
2	185846610	1	Front Housing	-
3	185846615	1	Lever Assembly	-
4	185816340	1	Solenoid	-
5	185846616	1	Ball	-
6	185846617	1	Packing Ring	-
7	185846618	1	Armature	-
8	185846621	1	Bolt Set	-
9	185866391	1	Drive Assembly (includes keys #11 - 16)	-
11	185846614	1	Stopper Set	-
12	185866411	1	Pinion Assembly	-
13	185846612	1	Internal Gear Assembly	-
14	185846611	1	Washer	-
15	185866400	1	Shaft Assembly	-
16	185846613	3	Gear Assembly	-
17	185846619	1	Housing and Field Coil Assembly	-
18	185416490	1	Brush Assembly	-
19	185416500	1	Brush Holder Assembly	-
20	185886070	1	Spring	-
21	185846620	1	Rear Housing	-

**S-1 Control Panel 12 & 24 Volt**

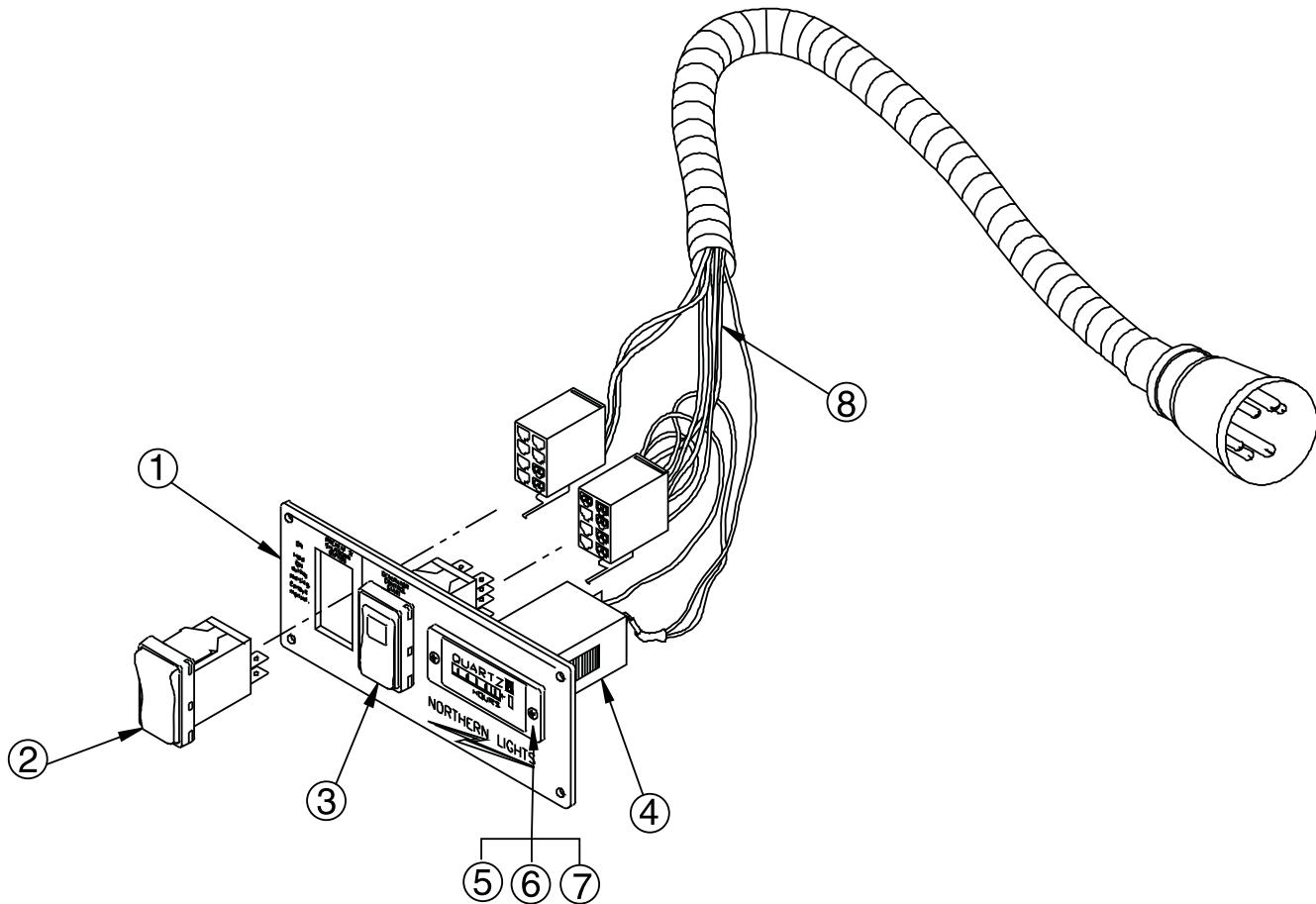


A-8551, A-8552/ B-5970

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
••	22-92110	1	S-1 Start/Stop Control Panel, 12 Volt (includes all keys)	-
••	22-92115	1	S-1 Start/Stop Control Panel, 24 Volt (includes all keys)	-
1	00-40013	1	Plate, S-1 Control Panel	-
2	22-90167	1	Rocker Switch	-
3	22-90168	1	Rocker Switch	-
4	22-42066	1	Wire Harness, 12 Volt	-
	22-42067	1	Wire Harness, 24 Volt	-
5	00-00013	1	Label "12 Volt" *	-
	00-00014	1	Label "24 Volt" *	-
6	22-40012	1	Resistor, 200 Ohm, 3 Watt (24 Volt Panel only) *	-
			*Not shown	

**Series 1-B Start-Stop Control Panel**

12 and 24 Volts



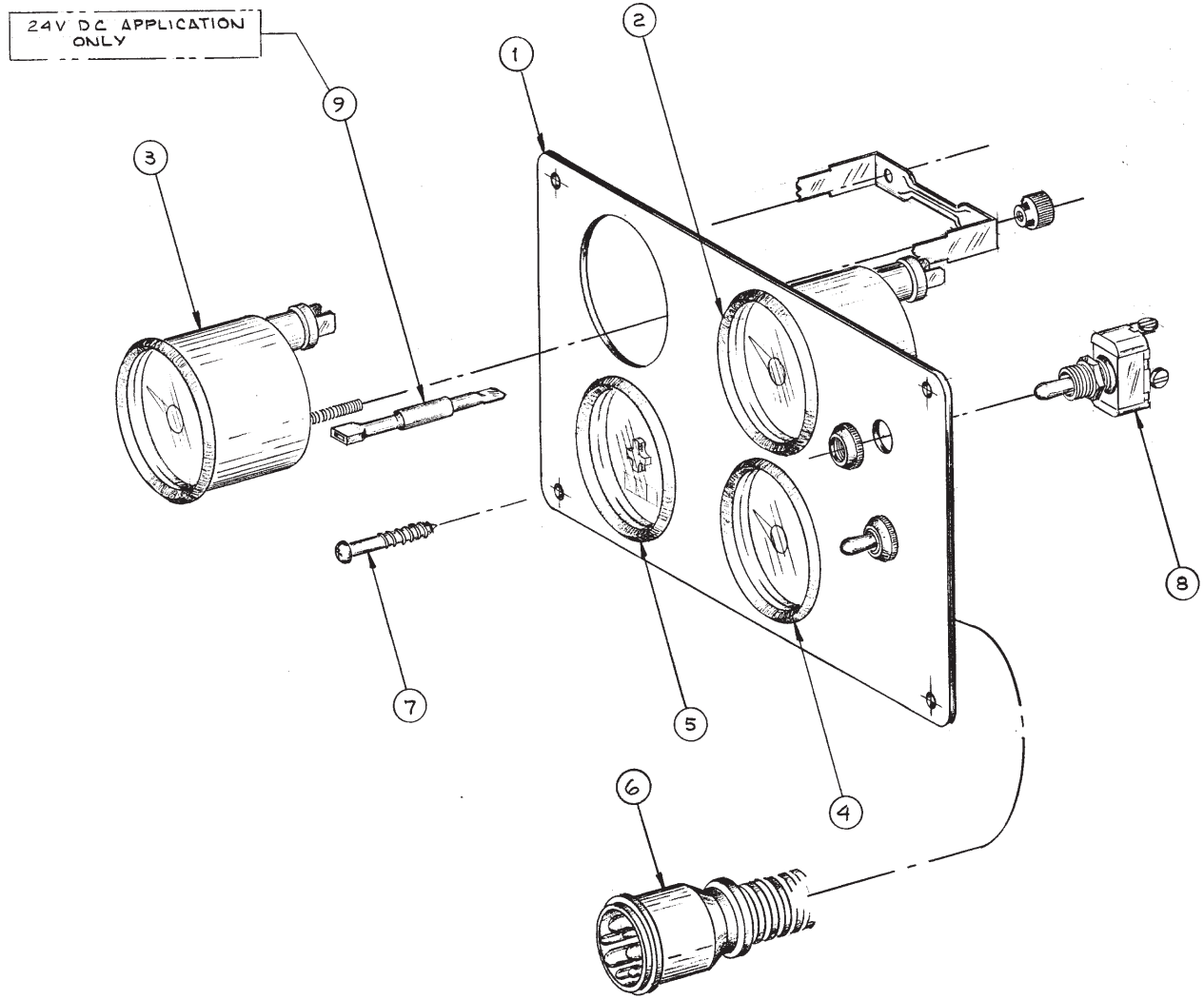
A-8553/ B-5971

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
••	22-92120	1	S 1-B Start/Stop Control Panel - 12 Volt (includes all keys)	-
••	22-92125	1	S 1-B Start/Stop Control Panel - 24 Volt (includes all keys)	-
1	28-90003	1	Plate	-
2	22-90167	1	Rocker Switch	-
3	22-90168	1	Rocker Switch	-
4	22-90009	1	Hour Meter	-
5	12-00093	2	Machine Screw, Round Head Philips #6 - 32 x 1/2"	-
6	15-00030	2	Star Washer, Internal #6, Stainless Steel	-
7	14-00015	2	Hex Nut #6 - 32, Stainless Steel	-
8	22-42063	1	Wire Harness - 12 Volt Panels	-
	22-42064	1	Wire Harness - 24 Volt Panels	-



**Flush Mount Dual Station Control Panel 12 & 24 Volt**

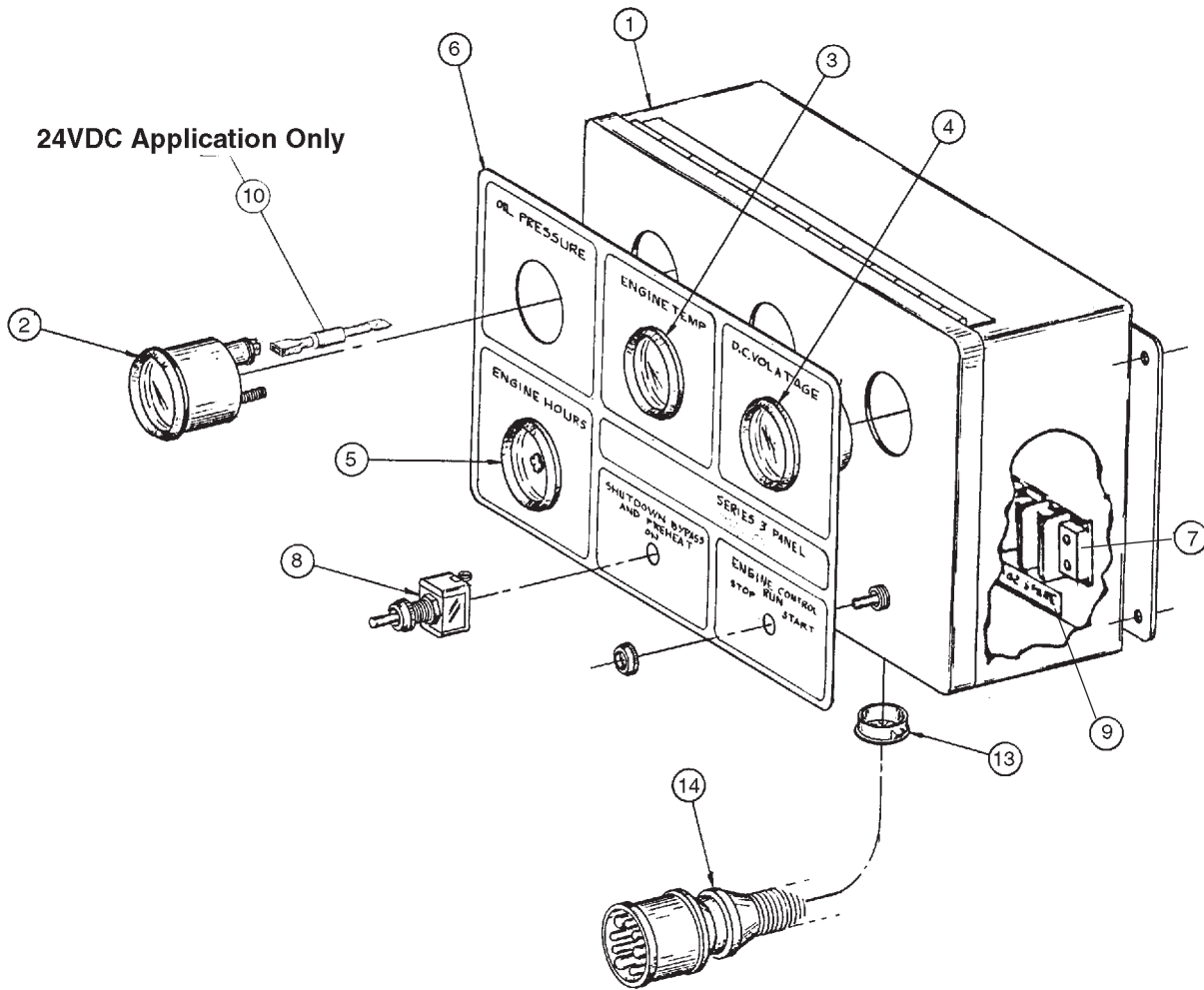
VDO Standard Line Black Bezel Gauges



A-4732, A-4597/ C-2441

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
••	22-92015	1	S-3C Control Panel, 12 Volt (includes all keys)	-
••	22-92014	1	S-3C Control Panel, 24 Volt (includes all keys)	-
1	28-90010	1	Panel Plate	-
2	37-40010	1	Oil Pressure Gauge, 0-80 PSI	-
3	37-40011	1	Engine Temperature Gauge, 0-250° F	-
4	37-40012	1	DC Voltmeter, 12 Volt	-
	37-40014	1	DC Voltmeter, 24 Volt	-
5	37-40013	1	Hourmeter	-
6	22-42024	1	Panel Wire Harness (not shown)	-
7	12-90007	**	Self Tapping Screw, Oval Head Phillips #6 x 3/4"	-
8	22-41051	2	Toggle Switch	-
9	22-40004	2	Resistor Kit (24 volt panel only)	-
10	22-44852	**	12 Volt Bulb (not shown)	-
	22-44853	**	24 Volt Bulb (not shown)	-
			**As required	

**S-3B Control Panel 12 & 24 Volt**

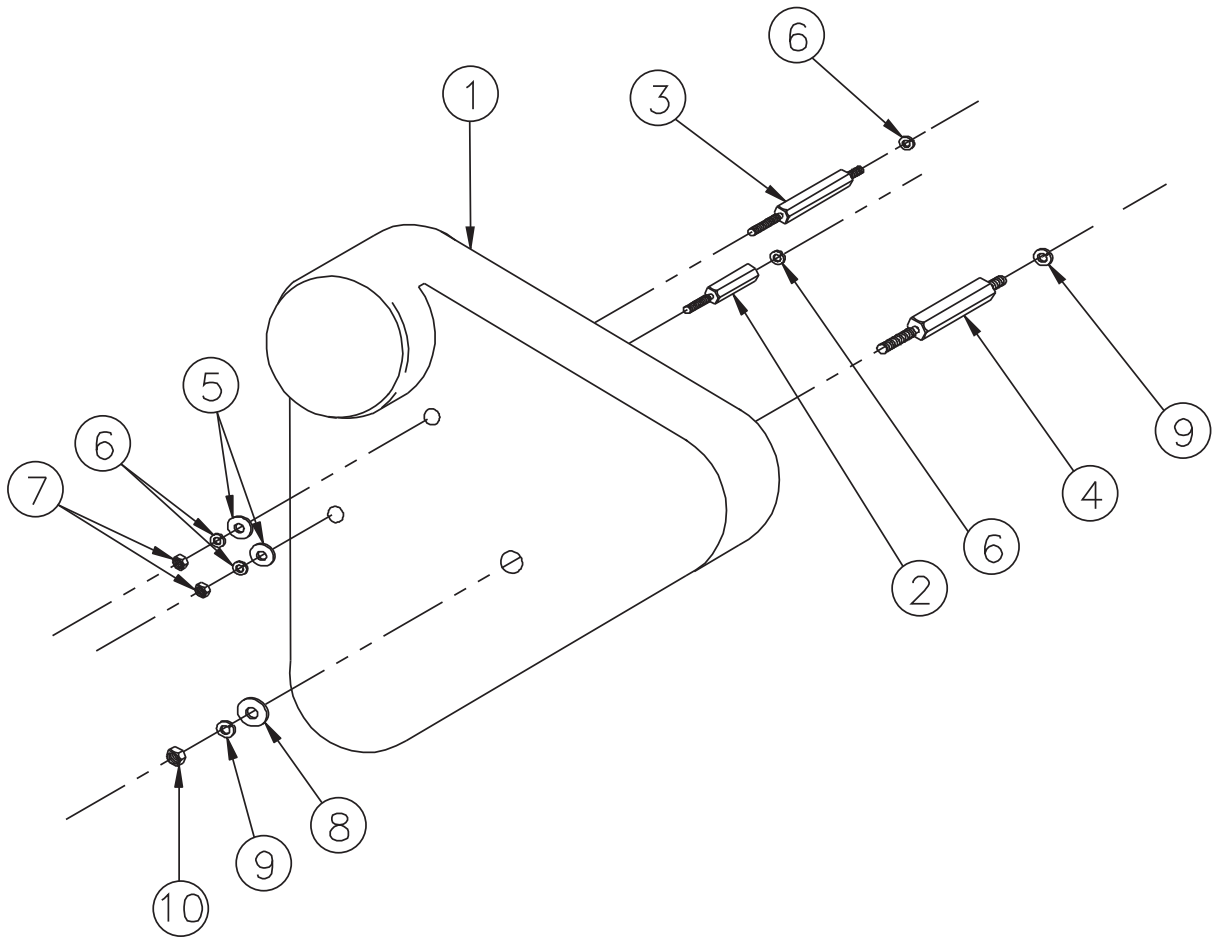


A-4722, A-4723/ C-2470

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
••	22-92031	1	S-3B Control Panel, 12 Volt (includes all keys)	-
••	22-95420	1	S-3B Control Panel, 24 Volt (includes all keys)	-
1	39-40008	1	Enclosure	-
2	37-40010	1	Oil Pressure Gauge, 0-80 PSI	-
3	37-40011	1	Engine Temperature Gauge, 0-250° F	-
4	37-40012	1	DC Voltmeter, 12 Volt	-
	37-40014	1	DC Voltmeter, 24 Volt	-
5	37-40013	1	Hourmeter	-
6	00-91018	1	Panel Decal	-
7	22-41077	1	Terminal Board	-
8	22-41051	2	Toggle Switch	-
9	22-00052	1	Number Strip	-
10	22-40004	2	Resistor Kit (24 volt panel only)	-
11	22-44852	**	12 Volt Bulb (not shown)	-
	22-44853	**	24 Volt Bulb (not shown)	-
12	22-40257	1	Wire Harness (not shown)	-
13	00-41015	1	Plastic Bushing	-
14	22-40062	1	Connection Harness	-
			**As required	

**Belt Guard Assembly**

*Standard Small Frame Alternators*



A-9314/ B-6972

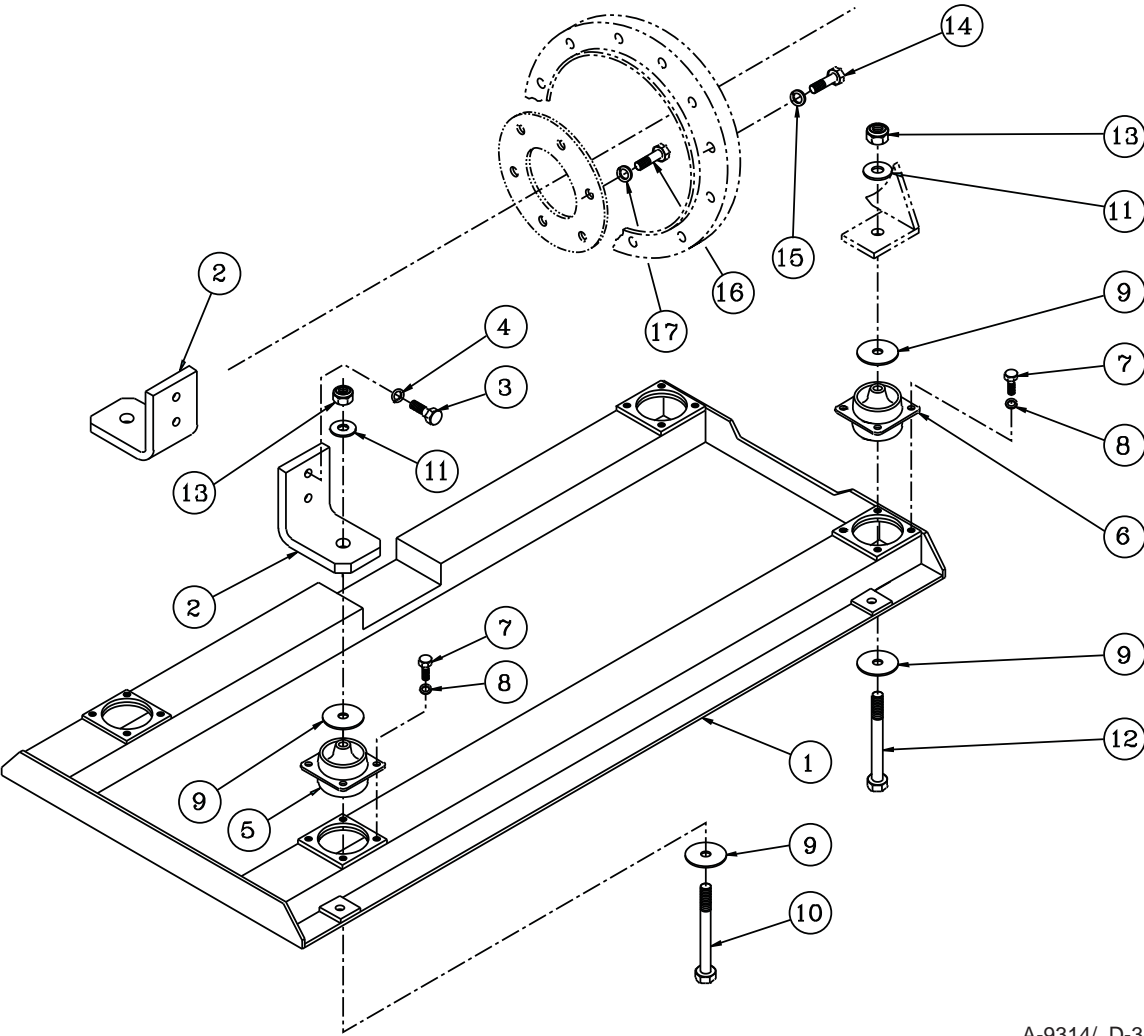
KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
1	00-08601	1	Belt Guard	-
2	12-90049	1	Capscrew, Hex Head M6 x 1.0 x 15 mm (Head tapped M6 x 1.0 x 10 mm Special)	-
3	13-91132	1	Stud, M6 x 1.0 x 111.4 mm	-
4	13-90070	1	Stud, M10 x 1.5 x 110.8 mm	-
5	15-01134	2	Flat Washer M6 S/S	-
6	15-00610	4	Lock Washer, Helical M6 S/S	-
7	14-01132	2	Hex Nut M6 x 1.0 S/S	-
8	15-09805	1	Flat Washer M10 S/S	-
9	15-00808	2	Lock Washer, Helical M10 S/S	-
10	14-00817	1	Hex Nut M10 x 1.5 mm S/S	-

**GROUP 6 – GASKET SETS**

**Gasket Kits**

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
••	29-08601	1	Gasket Kit (includes all keys)	-
1	050209107	1	Oil Seal, Rear	-
2	052109076	1	O-ring, Suction Oil Pipe	-
3	110996800	1	Gasket, Oil Pan	-
4	165996520	1	Gasket, Front Plate	-
5	052109108	2	O-ring, Governor Shaft	-
6	052109110	1	O-ring, Rocker Arm	-
7	052109109	1	O-ring, Rocker Arm	-
8	165996530	1	Gasket, Timing Gear Case	-
9	198636090	1	Oil Seal, Front	-
10	340990011	1	Gasket, Gear Case Cover	-
11	131426300	1	Adjusting Shim Set	-
12	025100006	1	Seal Washer	-
13	140996260	4	Gasket	-
14	111147570	1	Head Gasket, t=1.3	-
15	120406050	3	Valve Guide Seal, Exhaust	-
16	120406070	3	Valve Guide Seal, Intake	-
17	131426200	3	Gasket, Injector Lower Side	-
18	131426210	3	Gasket, Injector Upper Side	-
19	052100120	1	O-ring, Rocker Arm Shaft	-
20	120996150	1	Gasket, Rocker Arm Bracket	-
21	111996420	1	Gasket, Rocker Arm Cover	-
22	140996260	3	Gasket, Rocker Arm Cover	-
23	052100400	2	O-ring, Oil Filter Cap	-
24	135996750	1	Gasket, Air Intake	-
25	145996830	1	Gasket, Water Pump	-
26	130516069	4	Gasket	-
27	130996130	1	Gasket, Fuel Pump	-
28	052109113	2	O-ring, Gauge Guide	-
29	025100016	1	Seal Washer, Solenoid	-
30	052109078	1	O-ring, Relief Valve	-
31	130326051	5	Gasket	-
32	140996270	4	Gasket, Valve Assembly	-
33	052300700	1	O-ring, Gear Case Cover	-
34	314990030	1	Gasket	-
35	11-08601	1	Gasket, Exhaust	-
36	11-18602	1	Gasket, Thermostat Cover	-
37	16-13101	1	O-ring, Raw Water Pump	-

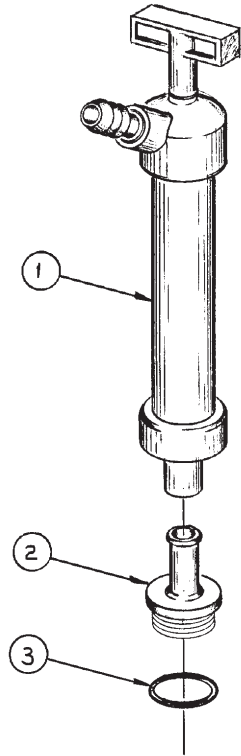
**Base Frame Assembly**



A-9314/ D-3472

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
1	39-88601	1	Base Frame, Steel	-
2	23-88211	2	Bracket	-
3	12-00943	4	Capscrew, Hex Head M12 x 1.25 x 30 mm	-
4	15-00912	4	Lock Washer, Helical M12	-
5	33-83108	2	Platform Mount, 155 lb.	-
6	33-83108	2	Platform Mount, 155 lb.	-
7	12-00776	16	Capscrew, Hex Head M8 x 1.25 x 20 mm, Stainless Steel	-
8	15-00705	16	Lock Washer, Helical M8, S/S	-
9	15-00020	8	Snubbing Washer 2.88 x 0.52 x 0.125	-
10	12-09956	2	Capscrew, Hex Head M12 x 1.75 x 65 mm, S/S	-
11	15-09007	4	Flat Washer M12, S/S	-
12	12-09956	2	Capscrew, Hex Head M12 x 1.75 x 65 mm S/S	-
13	14-09830	4	Hex Nut, Nylock M12 x 1.75, S/S	-
14	12-00313	8	Capscrew, Hex Head 3/8-16 x 1-1/4"	-
15	15-00302	8	Lock Washer, Helical 3/8	-
16	12-00753	6	Capscrew, Hex Head M8 x 1.25 x 30 mm	-
17	15-00702	6	Lock Washer, Helical M8	-

**Oil Drain Kit**

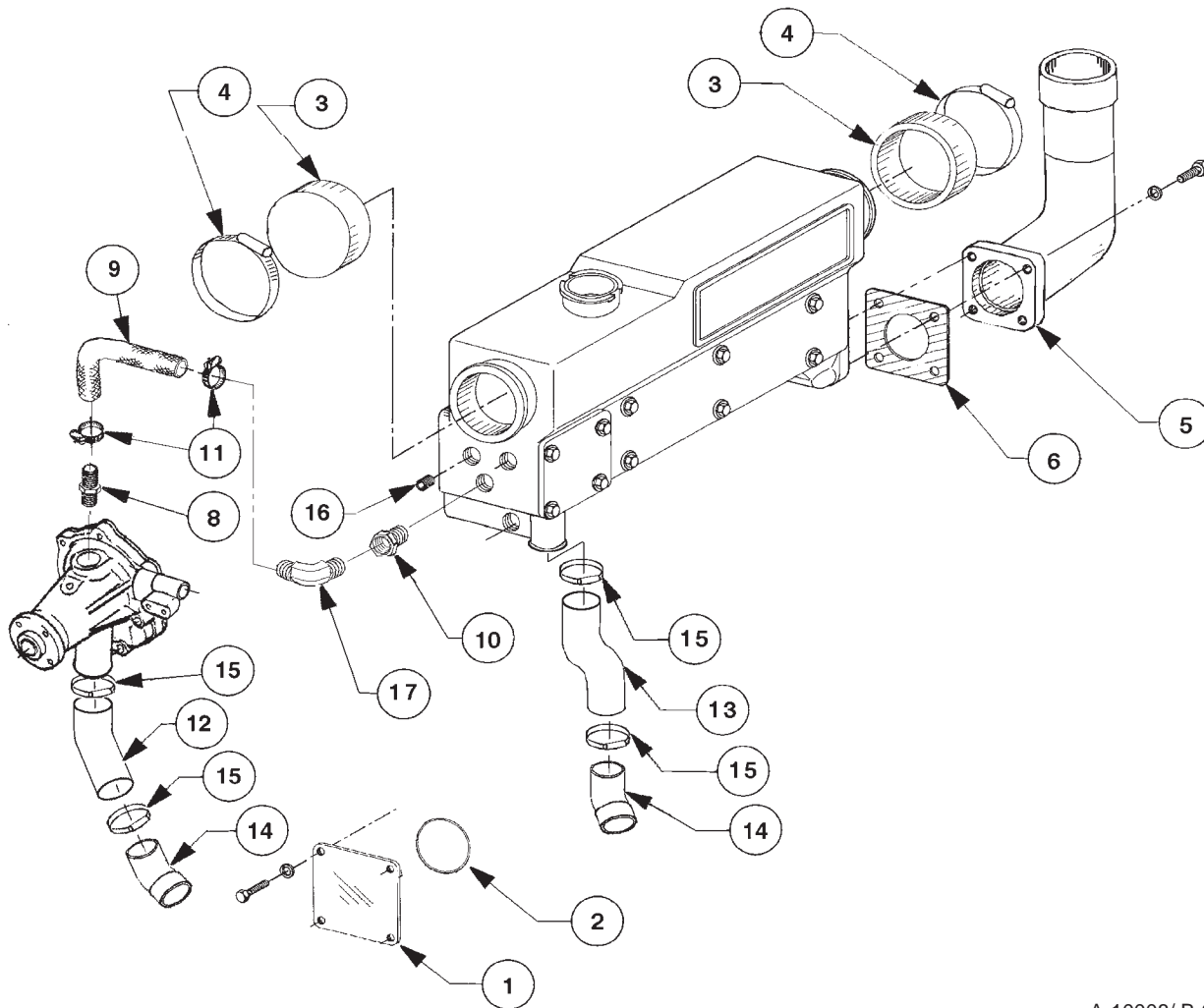


A-5024/ B-3990

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
••	34-70010		Oil Drain Kit Complete (includes all keys)	-
1	36-72002	1	Hand Pump	-
2	31-70001	1	Adapter, Oil Drain	-
3	16-70001	1	O-ring	-

**Keel Cooling Conversion**

Marine Application - with Dry Exhaust



A-10008/ B-9387

KEY	PART NUMBER	QTY	DESCRIPTION	SERIAL NUMBER
1	165206320	1	Cover (white)	-
2	052300700	1	O-ring	-
3	20-12019	2	End Cap, Rubber	-
4	19-00048	2	Hose Clamp, #48	-
5	27-32007	1	Elbow, Dry Exhaust 1-1/2" NPT	-
6	11-31902	1	Gasket, Exhaust Outlet Mtg.	-
7	00-32008	1	Exhaust Lagging (not shown)	-
8	21-17304	1	Male Connector, Brass 3/8 NPT x 5/8 HB	-
9	18-18603	1	Hose, Coolant By-pass	-
10	21-10044	1	Adapter, 3/8 NPT x 3/8 NPT	-
11	19-00008	2	Hose Clamp #8	-
12	18-18604	1	Hose, Coolant Pump Inlet	-
13	18-18605	1	Hose, Expansion Tank Outlet	-
14	21-18602	2	Male Elbow, 45°, Copper 1-1/8" HB x 1-1/4" HB	-
15	19-00016	4	Hose Clamp #16	-
16	21-51900	1	Plug, Socket Head 1/8 NPT	-
17	21-05409	1	Male Elbow, 3/8 NPT x 5/8 Hose Barb	-



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