

Service Parts



Industrial Generator Sets

Models:

900-1600DS

See Group 701, Literature for
Engine and Accessories
Parts Catalog



Table of Contents

SUBJECT	PAGE	SUBJECT	PAGE
Introduction	3	Kit List	55
Number Significance	3	Controller Kits	55
How to Find Part Numbers	3	Cooling System Kits	56
Hardware Grades	3	Air Intake Kits	56
Hardware References	3	Accessories	56
Specification Number Index	4	Paint and Miscellaneous Parts	56
900DS	4	Parts Lists, Controller Kits	57
1000DS	5	6- and 7- Light Controller Kits	57
1200DS	6	6- and 7- Light Controller Assemblies	59
1250DS	7	16-Light Controller Kits	65
1500DS	8	16-Light Controller Assemblies	67
1600DS	9	Meterbox for Paralleling Kits	73
Group 101: Air Intake	10	Manual Paralleling Controller Kits	74
Modular Spec Cross-Reference Table	12	Manual Paralleling Controller Assemblies	75
Group 104: Coolant System	14	Parts Lists, Cooling System Kits	76
Group 105: Engine	22	Block Heaters	76
Group 107: Nameplates and Decals	28	Block Heater Isolation Valve	77
Group 108: Oil Pressure Switches	29	Radiator Duct Flange	78
Group 109: Skid and Plant Mounting	30	Unit-Mounted Radiator Cooling	78
Modular Spec Cross-Reference Table	31	City Water Cooling	80
Group 110: Water Temperature Switches	32	Remote Radiator Setup	82
Group 112: Starter	33	Parts Lists, Air Intake System Kits	83
Group 119: Recommended Spare Parts	34	Appendix	85
Maintenance Kits	34	A. Glossary of Abbreviations	85
Group 201: Generator and Mounting	35	B. Common Hardware Application Guidelines	87
Modular Spec Cross-Reference Table	41	C. General Torque Specifications	88
Alternator Assembly Components	41	D. Common Hardware Identification	89
Group 301: Controller and Mounting	42	E. Common Hardware List	90
Group 701: Literature	54		

Introduction

This manual contains a list of generator and some engine service replacement parts for Spectrum industrial generator sets. Refer to the Specification Number Index for models and specifications covered.

This manual includes the following main sections:

- **Table of Contents:** Lists the sections of this catalog.
- **Introduction (and other information sections):** Contains introductory material followed by sections on specification numbers, part numbers, and hardware.
- **Index:** Indexes generator set specifications and their groups.
- **Group Parts Lists:** Lists part numbers of parts in the groups.
- **Kit List and kit sections:** Lists controller and cooling system kits (by model) and their parts. See Parts Catalog MP-5707 for parts lists of optional accessory kits installed on the generator set.
- **Appendices:** Includes Glossary of Abbreviations, Common Hardware Application Guidelines, Common Hardware Identification, General Torque Specifications, and Common Hardware List.

Number Significance

This catalog uses a variety of numbering systems. A description of these follows:

- **Specification Number:** The generator specification number (spec number) is six digits with a PA-, PB-, or PE-prefix (Specification Number Index does not show prefixes). The first three digits designate generator size and engine model (specification series). The remaining digits are in sequence and identify a particular spec in a series. Spec numbers break down into groups.
- **Group Number:** A group consists of parts needed to perform one or more related functions. For example, the 101 group is the generator set Air Intake group.
- **Variation Number:** A group might have several variations. Parts comprising each variation perform the same function, but parts lists vary. For example, a 50 Hz generator alternator and 60 Hz generator alternator both perform the same function. However, they are constructed of different parts. Each of these differences necessitates the assignment of a group variation number.
- **Part Number:** The part number identifies an individual assembly, subassembly, component, or accessory kit.

How to Find Part Numbers

FOLLOW THESE STEPS to identify a part:

STEP 1: Turn to the Specification Number Index. The first column lists generator set specification numbers grouped by model. The headings across the top identify the groups

of parts that make up the generator set. The intersection of the specification number and the group numbers is the variation number corresponding to the components of that specification number. Note the variation number.

STEP 2: Find the page number of the group in the Table of Contents and turn to that page or page forward until you find the group. Variation numbers in the column heading of the group page correspond to variations found in the Specification Number Index. Find the description of the part you need in the description column. The intersection of the description row with the variation column identifies the quantity of that part used in that group. Find the part number to order to the left of the description in the part number column.

Hardware Grades

When replacing hardware do not substitute inferior grade hardware. All hex. head screws are hardness grade 5, except where noted. Socket head screws are similar to grade 8. All replacement hardware should be at least equal to original manufacturer's hardware quality. Refer to Common Hardware Application Guidelines and Common Hardware Identification in the back of the manual.

Hardware References

Many common hardware items will appear in parts catalogs as common hardware entries or hardware references. A common hardware entry refers to the size of common hardware to apply in accordance with hardware guidelines. For example, an item may appear as "3/8-16 hardware" in the text. It indicates that the piece is 3/8-16 size. See Common Hardware Application Guidelines.

A hardware reference has the abbreviation "ref." in the part's description. Hardware references specify common hardware items; however, size or some other characteristic requires specification in that application. For example, item 1 in Figure 1 below might appear in the text as follows:

Screw, 3/8-16 x 1, ref. X-6021-1

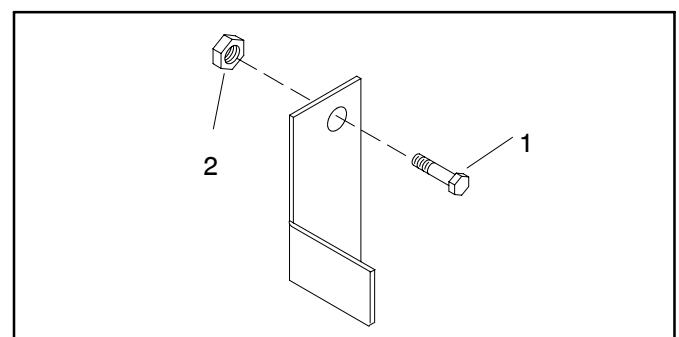


Figure 1. Hardware References

SPECIFICATION NUMBER INDEX

GROUP TITLE & NUMBER													
	<i>Air Intake</i>	<i>Cooling System</i>	<i>Engine</i>	<i>Nameplates and Decals</i>	<i>Oil Pressure Switches</i>	<i>Skid and Plant Mounting</i>	<i>Water Temperature Switches</i>	<i>Starter</i>	<i>Generator and Mounting</i>	<i>Controller and Mounting</i>	<i>Literature</i>		
GROUP NO.	101	104	105	107	108	109	110	112	201	301	701		
SPEC NO.	VARIATION NUMBER												

900DS													
191066	15	8	32	35	7	28	11	7	105	38	41		
191067	15	8	32	36	7	28	11	7	106	38	41		
191068	15	@	32	35	7	28	11	7	105	@	41		
191069	15	@	32	36	7	28	11	7	106	@	41		
191070	15	@	32	36	7	6	11	7	107	@	41		
191071	15	@	32	36	7	28	11	7	108	@	41		
191072	15	@	29	36	7	28	11	7	109	@	41		
191198	15	8	32	35	7	28	11	7	203	53	69		
191199	15	8	32	36	7	28	11	7	204	53	69		
191200	15	@	32	35	7	28	11	7	203	@	69		
191201	15	@	32	36	7	28	11	7	204	@	69		
191202	15	@	32	36	7	6	11	7	205	@	69		
191203	15	@	32	36	7	28	11	7	206	@	69		
191204	15	@	32	36	7	28	11	7	207	@	69		
191217	26	31	54	43	18	39	16	15	211	53	72		
191218	26	31	54	43	18	39	16	15	212	53	72		
191219	26	@	54	43	18	39	16	15	211	@	72		
191220	26	@	54	43	18	39	16	15	212	@	72		
191221	26	@	54	44	18	40	16	15	215	@	72		
191222	26	@	54	43	18	39	16	15	213	@	72		
191223	26	@	54	43	18	39	16	15	214	@	72		
191346	47	39	70	72	E70	60	E70	E70	363	133	72		
191347	47	39	70	72	E70	60	E70	E70	364	134	72		
191348	47	39	70	72	E70	60	E70	E70	365	134	72		
191349	47	39	70	72	E70	60	E70	E70	366	135	72		
191350	@	@	70	72	E70	@	E70	E70	@	@	72		

@ Configured group. Refer to the generator set nameplate for the kit number. Turn to the respective group on the following pages for parts breakdowns.

SPECIFICATION NUMBER INDEX

GROUP TITLE & NUMBER													
	<i>Air Intake</i>	<i>Cooling System</i>	<i>Engine</i>	<i>Nameplates and Decals</i>	<i>Oil Pressure Switches</i>	<i>Skid and Plant Mounting</i>	<i>Water Temperature Switches</i>	<i>Starter</i>	<i>Generator and Mounting</i>	<i>Controller and Mounting</i>	<i>Literature</i>		
GROUP NO.	101	104	105	107	108	109	110	112	201	301	701		
SPEC NO.	VARIATION NUMBER												
1000DS													
191073	15	9	33	37	7	6	9	7	107	39	41		
191074	15	@	33	37	7	6	11	7	107	@	41		
191075	15	@	33	37	7	6	11	7	110	@	41		
191077	15	@	33	37	7	6	11	7	111	@	41		
191078	15	@	25	37	7	6	11	7	112	@	41		
191205	15	9	33	37	7	6	9	7	205	54	69		
191206	15	@	33	37	7	6	11	7	205	@	69		
191207	15	@	33	37	7	6	11	7	208	@	69		
191208	15	@	33	37	7	6	11	7	209	@	69		
191209	15	@	33	37	7	6	11	7	210	@	69		
191224	26	31	54	45	18	40	16	15	215	54	72		
191225	26	@	54	45	18	40	16	15	215	@	72		
191226	26	@	54	45	18	40	16	15	216	@	72		
191227	26	@	54	45	18	40	16	15	217	@	72		
191228	26	@	54	45	18	40	16	15	218	@	72		
191351	47	39	70	84	E70	60	E70	E70	371	134	72		
191352	47	39	70	84	E70	67	E70	E70	372	139	72		
191353	47	39	70	84	E70	67	E70	E70	373	135	72		
191354	47	39	70	84	E70	67	E70	E70	374	135	72		
191355	47	39	70	84	E70	67	E70	E70	375	139	72		
191356	@	@	70	84	E70	@	E70	E70	@	@	72		

@ Configured group. Refer to the generator set nameplate for the kit number. Turn to the respective group on the following pages for parts breakdowns.

SPECIFICATION NUMBER INDEX

GROUP TITLE & NUMBER													
	Air Intake	Cooling System	Engine	Nameplates and Decals	Oil Pressure Switches	Skid and Plant Mounting	Water Temperature Switches	Starter	Generator and Mounting	Controller and Mounting	Literature		
GROUP NO.	101	104	105	107	108	109	110	112	201	301	701		
SPEC NO.	VARIATION NUMBER												
1200DS													
191079	22	28	46	38	14	34	14	11	113	39	59		
191080	22	28	46	38	14	34	14	11	114	39	59		
191081	22	@	46	38	14	34	14	11	113	@	59		
191082	22	@	46	38	14	34	14	11	114	@	59		
191083	22	@	46	38	14	33	14	11	115	@	59		
191084	22	@	46	38	14	34	14	11	116	@	59		
191085	22	@	46	38	14	34	14	11	117	@	59		
191210	24	29	51	38	16	36	15	14	168	54	62		
191211	24	29	51	38	16	36	15	14	169	54	62		
191212	24	@	51	38	16	36	15	14	168	@	62		
191213	24	@	51	38	16	36	15	14	169	@	62		
191214	24	@	51	38	16	37	15	14	170	@	62		
191215	24	@	51	38	16	36	15	14	171	@	62		
191216	24	@	51	38	16	36	15	14	172	@	62		
191357	55	47	82	89	E82	66	E82	E82	398	141	62		
191358	55	47	82	89	E82	66	E82	E82	399	141	62		
191359	55	47	82	89	E82	69	E82	E82	377	141	62		
191360	55	47	82	89	E82	66	E82	E82	400	141	62		
191361	55	47	82	89	E82	69	E82	E82	381	141	62		
191362	55	47	82	89	E82	66	E82	E82	401	135	62		
191363	55	47	82	89	E82	69	E82	E82	402	135	62		
191364	55	47	82	89	E82	66	E82	E82	403	149	62		
191365	55	47	82	89	E82	66	E82	E82	404	149	62		
191366	@	@	82	89	E82	@	E82	E82	@	@	62		

@ Configured group. Refer to the generator set nameplate for the kit number. Turn to the respective group on the following pages for parts breakdowns.

SPECIFICATION NUMBER INDEX

GROUP TITLE & NUMBER													
	<i>Air Intake</i>	<i>Cooling System</i>	<i>Engine</i>	<i>Nameplates and Decals</i>	<i>Oil Pressure Switches</i>	<i>Skid and Plant Mounting</i>	<i>Water Temperature Switches</i>	<i>Starter</i>	<i>Generator and Mounting</i>	<i>Controller and Mounting</i>	<i>Literature</i>		
GROUP NO.	101	104	105	107	108	109	110	112	201	301	701		
SPEC NO.	VARIATION NUMBER												
1250DS													
191367	55	47	78	88	E78	66	E78	E78	398	141	89		
191368	55	47	78	88	E78	66	E78	E78	399	141	89		
191369	55	47	78	88	E78	69	E78	E78	377	141	89		
191370	55	47	78	88	E78	66	E78	E78	400	141	89		
191371	55	47	78	88	E78	69	E78	E78	381	141	89		
191372	55	47	78	88	E78	69	E78	E78	402	143	89		
191373	55	47	78	88	E78	66	E78	E78	404	149	89		
191374	@	@	78	88	E78	@	E78	E78	@	@	89		

@ Configured group. Refer to the generator set nameplate for the kit number. Turn to the respective group on the following pages for parts breakdowns.

SPECIFICATION NUMBER INDEX

GROUP TITLE & NUMBER													
	Air Intake	Cooling System	Engine	Nameplates and Decals	Oil Pressure Switches	Skid and Plant Mounting	Water Temperature Switches	Starter	Generator and Mounting	Controller and Mounting	Literature		
GROUP NO.	101	104	105	107	108	109	110	112	201	301	701		
SPEC NO.	VARIATION NUMBER												
1500DS													
191086	23	27	44	39	14	35	14	11	118	40	41		
191087	23	@	44	39	14	35	14	11	118	@	41		
191088	23	@	44	39	14	35	14	11	119	@	41		
191089	23	@	44	39	14	35	14	11	120	@	41		
191090	23	@	44	39	14	35	14	11	121	@	41		
191131	25	30	52	39	17	38	15	14	173	56	50		
191132	25	@	52	39	17	38	15	14	173	@	50		
191133	25	@	52	39	17	38	15	14	174	@	50		
191134	25	@	52	39	17	38	15	14	174	@	50		
191135	25	@	52	39	17	38	15	14	176	@	50		
191375	56	48	80	88	E80	68	E80	E80	377	141	85		
191376	56	48	80	88	E80	68	E80	E80	379	141	85		
191377	56	48	80	88	E80	68	E80	E80	381	141	85		
191378	56	48	80	88	E80	68	E80	E80	384	141	85		
191379	56	48	80	88	E80	68	E80	E80	383	143	85		
191380	56	48	80	88	E80	68	E80	E80	389	147	85		
191381	56	48	80	88	E80	68	E80	E80	391	147	85		
191382	@	@	80	88	E80	@	E80	E80	@	@	85		

@ Configured group. Refer to the generator set nameplate for the kit number. Turn to the respective group on the following pages for parts breakdowns.

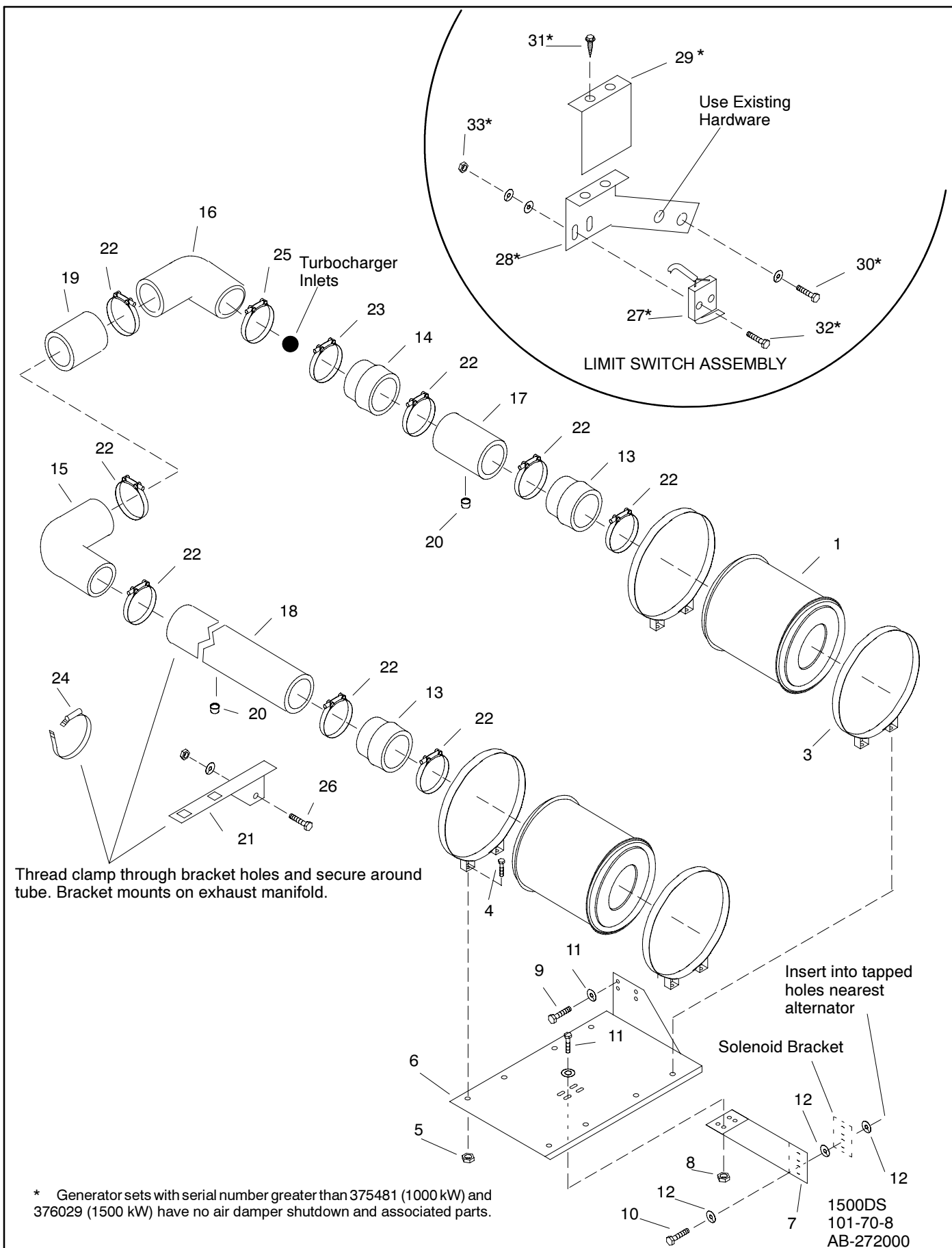
SPECIFICATION NUMBER INDEX

GROUP TITLE & NUMBER													
	<i>Air Intake</i>	<i>Cooling System</i>	<i>Engine</i>	<i>Nameplates and Decals</i>	<i>Oil Pressure Switches</i>	<i>Skid and Plant Mounting</i>	<i>Water Temperature Switches</i>	<i>Starter</i>	<i>Generator and Mounting</i>	<i>Controller and Mounting</i>	<i>Literature</i>		
GROUP NO.	101	104	105	107	108	109	110	112	201	301	701		
SPEC NO.	VARIATION NUMBER												

1600DS													
191091	23	27	45	40	14	35	14	11	119	40	41		
191092	23	@	45	40	14	35	14	11	119	@	41		
191093	23	@	45	40	14	35	14	11	122	@	41		
191094	23	@	45	40	14	35	14	11	120	@	41		
191095	23	@	45	40	14	35	14	11	121	@	41		
191136	25	30	53	40	17	38	15	14	174	56	50		
191137	25	@	53	40	17	38	15	14	174	@	50		
191138	25	@	53	40	17	38	15	14	177	@	50		
191139	25	@	53	40	17	38	15	14	175	@	50		
191140	25	@	53	40	17	38	15	14	176	@	50		
191383	56	48	81	88	E81	68	E81	E81	379	141	85		
191384	56	48	81	88	E81	68	E81	E81	387	145	85		
191385	56	48	81	88	E81	68	E81	E81	381	141	85		
191386	56	48	81	88	E81	68	E81	E81	384	141	85		
191387	56	48	81	88	E81	68	E81	E81	383	142	85		
191388	56	48	81	88	E81	68	E81	E81	389	147	85		
191389	56	48	81	88	E81	68	E81	E81	391	147	85		
191390	@	@	81	88	E81	@	E81	E81	@	@	85		

@ Configured group. Refer to the generator set nameplate for the kit number. Turn to the respective group on the following pages for parts breakdowns.

Group 101: Air Intake



Group 101: Air Intake

Item	Part Number	Description	Quantity									
			Variation/Kit Number									
			8	15	22	23	24	25	26	47	55	56
1	274821	Air Cleaner	4			4		4				4
1	272981	Air Cleaner		4	4		4		4	4	4	
2	-	Element (Replace with item 1)	4	4	4	4	4	4	4	4	4	4
3	272983	Clamp, 13-39/64 (air clnr. mtg.)	8	8	8	8	8	8	8	8	4	8
4	#	Hardware, 3/8-16	16	16	16	16	16	16	16	16	8	4
4	#	Hardware, 3/8-16 (radiator end)										4
4	X-6238-2	Screw, ref. (generator end)										4
5	X-101-13	Nut, Nylon Lock, 3/8-16	16	16	16	16	16	16			8	8
5	#	Hardware, 3/8-16							16	16		
6	274613	Bracket, RH Air Cleaner	1	1	1	1	1	1				
6	354585	Bracket, RH Air Cleaner								1		
6	354239	Bracket, RH Air Cleaner									1	
6	328683	Bracket, RH Air Cleaner							1			
6	274615	Bracket, LH Air Cleaner	1	1	1	1	1	1				
6	354584	Bracket, LH Air Cleaner								1		
6	328682	Bracket, LH Air Cleaner							1			
6	354468	Bracket, LH Air Cleaner (radiator end)										1
6	354466	Bracket, RH Air Cleaner (radiator end)										1
6	354467	Bracket, Air Cleaner (generator end)										2
7	274614	Bracket, RH Air Cleaner	1	1	1	1	1	1				
7	354240	Bracket, RH Air Cleaner									1	
7	354662	Bracket, RH Air Cleaner							1	1		
7	274616	Bracket, LH Air Cleaner	1	1	1	1	1	1			2	
7	354444	Bracket, Air Cleaner										
7	328684	Bracket, LH Air Cleaner							1	1		
7	X-25-30	Washer, Plain (between engine block and brackets for clearing rocker cover)							4	4		
8	X-101-13	Nut, Nylon Lock, 3/8-16	8	8	8	8	8	8				
9	X-6238-11	Screw, Ref., 3/8-16 x 1	8	8	8	8	8	8			8	8
9	X-6024-2	Screw, 7/16-14 x 1.00, ref.							4	4		
9	X-6238-20	Screw, ref. (radiator end)										4
9	X-6238-11	Screw, ref. (generator end)										8
10	X-6021-4	Screw, Ref., 5/8-11 x 1-14	4	4	4	4	4	4				
11	#	Hardware, 3/8-16	8	8	8	8	8	8			8	4
11	X-400-41	Spacer										8
12	X-22-43	Washer, Split Lock, 5/8, ref.	2	2	2	2	2	2				
13	291679	Hose, Hump, 7.0 ID x 6.0-7.0 L	4	4	4	4	4	4				
13	354441	Hose, Hump									4	
13	354447	Hose, Hump										4
14	291560	Hose, Hump, 5.5/7.0 ID x 6.0-7.4 L	2			2		2				
14	274430	Hose, Hump, 5.0/7.0 ID x 7.0 L		2	2		2		2	2		
15	291678	Hose, Elbow 90°, (7 ID)	2	2	2	2	2	2				
15	328686	Hose							2	2		
16	291567	Hose, Elbow 90°, (5 1/2-7 ID)	2			2		2				
16	274240	Hose, Elbow 90°, (5-7 ID)		2	2		2					
17	274819	Tube Assembly, 7 OD x 10.4"	2			2		2				
17	274664	Tube Assembly, 7 OD x 5"		2	2		2					
17	328609	Reducer, Hose Insert							2	2		
18	274820	Tube Assembly, 7 OD x 46.6"	2			2		2				
18	274663	Tube Assembly, 7 OD x 41.2"		2	2		2					
19	X-522-66	Tubing, Steel, 7 OD x 5 L	2	2	2	2	2	2				
20	X-268-7	Cap, Pipe, 1/8 NPT	4	4	4	4	4	4				
21	274617	Bracket, Air Intake Tube Support	2	2	2	2	2	2				
22	280998	Clamp, Hose (band), 7 7/8	16	16	16	16	16	16	4	4		4
23	291504	Clamp, Hose (band), 6	2			2		4				4
23	254344	Clamp, Hose (band), 5 1/2		4	4		4		2	2	4	
24	291559	Clamp, Hose (band), 7 1/2	2	2	2	2	2	2				
25	274976	Clamp, Hose, 5.94-6.25 ID	2			2						
25	272960	Clamp, Hose							2	2		
26	#	Hardware, 3/8-16	1	1	1	1	1	1				
27	272790	Switch Assembly*	1	1	1	1	1	1	1			
28	279565	Bracket, Mounting*	1	1	1	1			1			
28	279945	Bracket, Mounting*										
28	347231	Bracket, Mounting*					1	1				
29	279562	Guard, Limit Switch*	1	1	1	1						
30	#	Hardware, 1/4-20*	1	1	1	1	1	1				
31	X-794-2	Screw, Drill, 8-18 x .44/.56*	2	2	2	2	2	2				
32	X-49-3	Screw, 6-32 x 7/8*	2	2	2	2	2	2				
32	X-49-6	Screw, 6-32 x 3/4*							2			
33	#	Hardware, 6-32*	2	2	2	2	2	2	2			

Common Hardware; Procure Locally

Group 101: Air Intake

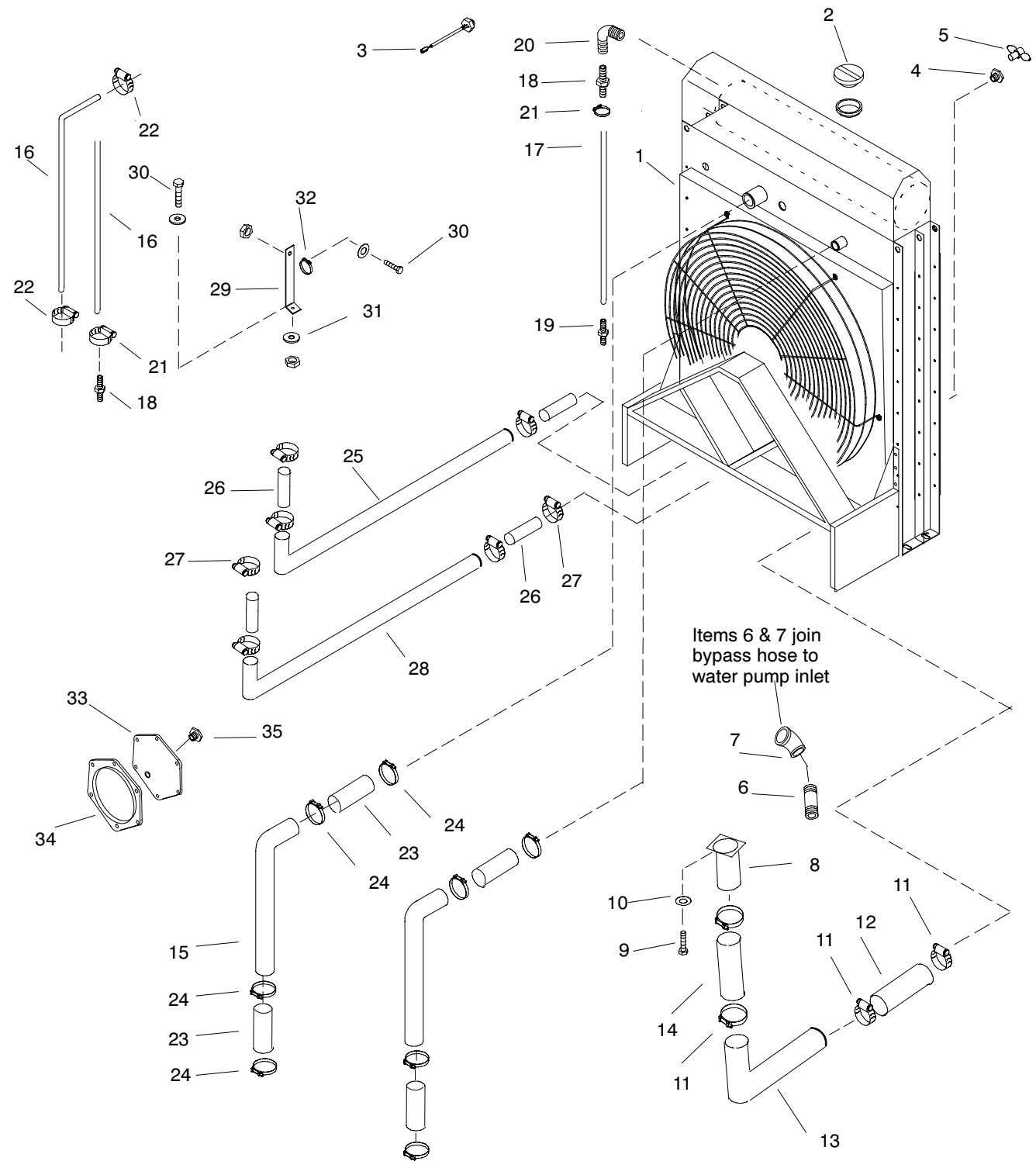
For modular specs with customer-selected air cleaner option, the air cleaner kit number appears on the generator set nameplate. The parts list of the normal-duty air cleaner kit is identical to a variation shown in this group. Use the following table to identify the equivalent variation number. See kit part list section for heavy-duty air cleaner kits.

**Air Cleaner Kit/Variation
Cross-Reference Table**

Air Cleaner Kit	Equivalent Variation Number
347497	47
347379	55
354017	56

Notes

Group 104: Cooling System



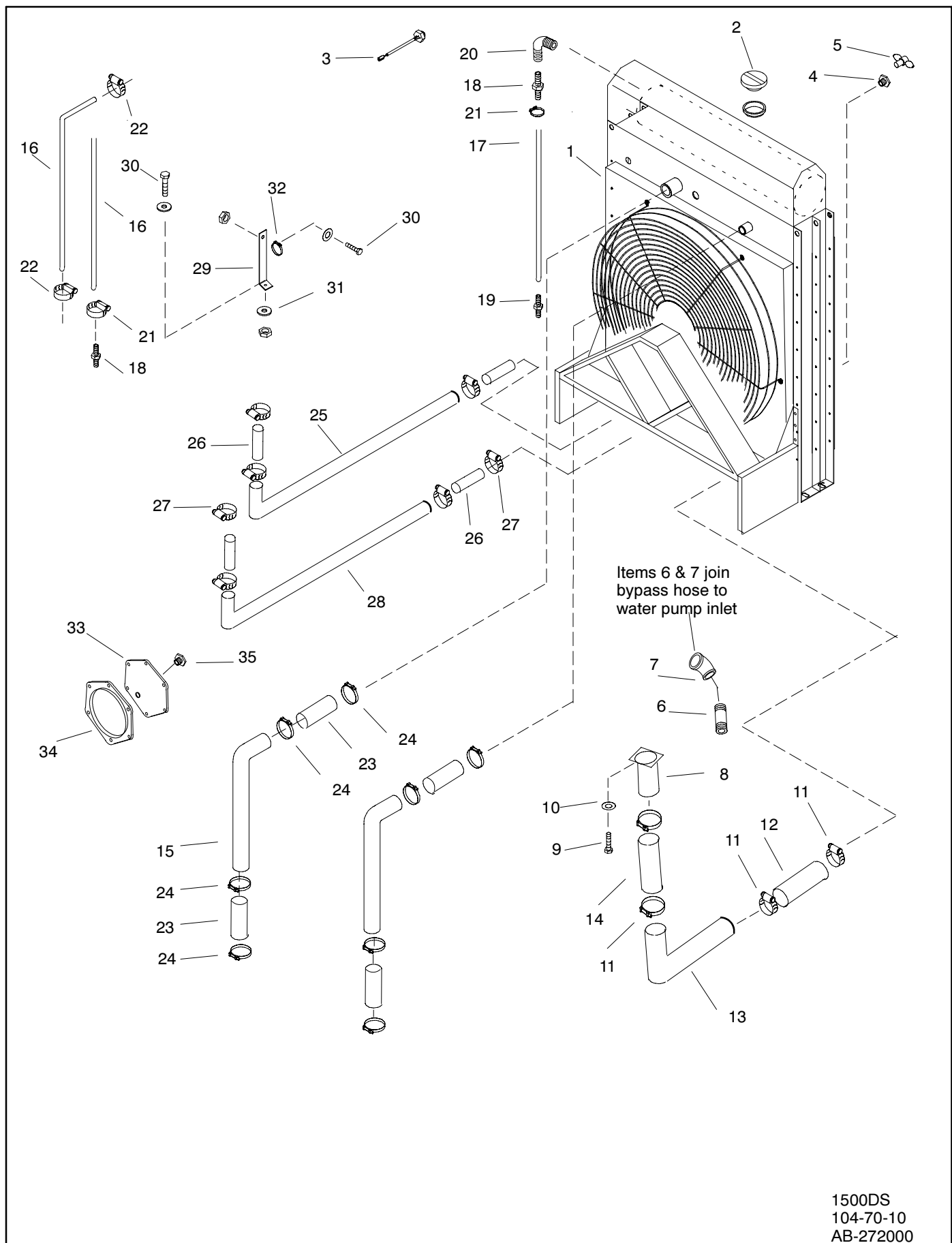
1500DS
104-70-10
AB-272000

Group 104: Cooling System, Continued

Item	Part Number	Description	Quantity											
			Variation/Kit Number											
			8	9	10	19	27	28	29	30	31	39	47	48
1	A-272883	Radiator Assembly	1											
1	A-272884	Radiator Assembly		1										
1	A-274823	Radiator Assembly			1									
1	A-279537	Radiator Assembly				1								
1	A-299850	Radiator Assembly					1							
1	A-299851	Radiator Assembly						1						
1	A-328242	Radiator Assembly							1					
1	A-328241	Radiator Assembly								1				
1	A-328379	Radiator Assembly									1			
1	A-354037	Radiator Assembly										1		
1	A-354191	Radiator Assembly											1	
1	A-354202	Radiator Assembly												1
2	347715	Cap, Radiator	1	1								1		
2	224359	Cap, Radiator			1	1								
2	241309	Cap, Radiator							1					
2	GM16641	Cap, Radiator					1	1		1			1	1
3	273469	Coolant Level Switch (before serial number 363369)	1	1	1	1	1	1	1	1	1			
3	254832	Coolant Level Switch (serial numbers 363369 and after)							1	1	1	1	1	1
3	X-202-28	Bushing, Reducer, 3/8 F x 1/2 M (serial numbers 363369 and after)							1	1	1	1	1	1
4	X-202-28	Bushing, Reducer, 3/8 F x 1/2 M	2	2	2	2	2	2	3	3	2	2	3	3
5	X-256-1	Valve, Drain, 3/8 NPT	2	2	2	2	2	2	3	3	2	2	3	3
5	X-256-5	Valve, Drain Upper Radiator (not shown)							2	2			2	2
6	X-205-7	Nipple, 1 1/2 NPT x 4"			1	1	1	1						
6	X-206-2	Nipple, Pipe 3/4 x 2									1	1		
7	X-225-3	Elbow, 45°, 1 1/2 NPT			1	1	1	1			1	1		
7	X-215-15	Elbow, Pipe												
7	X-6014-33	Hose, Bypass, 1 1/2 ID x 76 (not shown)	1	1										
7	X-6014-82	Hose (not shown)									1	1		
7	X-751-4	Adapter, 1 1/2 ID x 1 1/2 NPT (not shown)	1	1										
7	272930	Adapter, Hose									1	1		
7	X-426-4	Clamp, Hose, 1 3/8	1	1										
7	279699	Clamp, Hose									1	1		
7	X-202-1	Bushing, Reducer 3/4									1	1		
8	274265	Tube, Inlet, 4.68 OD x 4.25 L	1	1	1	1	1	1	1	1			1	1
8	274300	Gasket, Inlet (not shown)	1	1	1	1	1	1	1	1			1	1
9	X-6238-4	Screw, 3/8-16 x 1	4	4	4	4	4	4	4	4			4	4
10	#	Washer, 3/8	4	4	4	4	4	4	4	4			4	4
11	274443	Clamp, Hose (band), 4 7/8	4	4	4	4	4	4						
11	274545	Clamp, Hose									2	2		
11	324555	Clamp, Hose							4	4			4	4
12	X-6014-34	Hose, Radiator, 4 1/2 ID x 5"			1	1	1	1						
13	274907	Pipe, Radiator Inlet, 5.0/4.5 OD, with 3/4 NPT Half Coupling & Plug			1	1	1	1						
13	X-75-6	Plug, Pipe (not shown)			1	1	1	1						
14	X-6014-51	Hose, Radiator, 4.5 ID x 10 L			1	1	1	1	1	1			2	1
14	274390	Tube, Radiator, 4.7 OD, 3/4 NPT Flange with Plug	1	1			1	1						
14	328274	Tube, Lower Radiator							1	1				
14	328380	Hose, Lower Radiator									1	1		
14	354192	Tube, Lower Radiator										1	1	1
15	274445	Tube, Upper Radiator, 3.5 OD	2	2										
15	328493	Tube, Upper Radiator									2	2		
15	274897	Pipe, Radiator Inlet, 3.5 OD			2	2	2	2						
15	X-468-7	Tie, Cable (not shown)	8	8	8	8	8	8						
15	328092	Tube, Upper Radiator							2				2	
15	328081	Tube, Upper Radiator								2				2
16	X-651-3	Hose, Rubber 3/8 x 18"								2				
16	X-652-1	Fitting, Hose								4				
16	X-422-6	Line, Flexible 1/2 x 8								2				2
16	X-582-5	Connector, Hose								4			3	4
17	X-422-27	Line, Vent Hose, 1/2 ID	2	2										
17	X-651-11	Line, Vent Hose 3/8 " x 46"									1	1		
17	X-422-30	Hose, Vent							3				3	
17	X-422-32	Hose, Vent								3				3
18	X-582-4	Connector, Hose							3	3			3	3
19	X-582-5	Connector, Hose	2	2					3	7			7	7
19	X-582-4	Adapter, 1/2 ID x 3/8 NPT (not shown)	7	7										
19	X-652-1	Fitting, Hose									2	2		
20	X-211-3	Elbow								3				3
21	X-426-3	Clamp, Hose, 3 1/4" (not shown)	4	4										

Common Hardware; Procure Locally

Group 104: Cooling System, Continued



1500DS
104-70-10
AB-272000

Group 104: Cooling System, Continued

Item	Part Number	Description	Quantity											
			Variation/Kit Number											
			8	9	10	19	27	28	29	30	31	39	47	48
21	X-426-9	Clamp, Hose									2	2		
21	X-426-10	Clamp, Hose							6	10			6	10
22	X-426-9	Clamp, Hose								2				
23	X-6014-41	Hose, 3 1/2 ID x 8"			4	4	4							
23	X-6006-3	Hose, 3 1/2 ID x 4"	4	4										
23	X-507-6	Hose, Radiator									4	4		
23	X-6006-4	Hose, Radiator							4	4			4	4
24	291537	Clamp, Hose, 4	8		8		8	8	8	8			8	8
24	274824	Clamp, Hose, 3.68-4.00 OD				8		8						
24	291542	Clamp, Hose									8	8		
24	X-75-22	Plug, Pipe 1 NPT (replace existing square-headed plugs)	2											
25	274896	Pipe, Intercooler Return			1		1							
25	328028	Pipe, Intercooler Return							1				1	
25	279570	Pipe, Intercooler Return				1		1						
25	328026	Pipe, Intercooler Return								1				1
26	X-6014-8	Hose, 2 ID x 5"			4	4	4	4						
26	X-281-29	Hose, 0.67 ft.							2	2			2	2
26	X-281-31	Hose, 0.46 ft.							2	2			2	2
27	294887	Clamp, Hose (band), 4 7/8			8	8	8	8	8	8			8	8
28	274895	Pipe, Intercooler Supply			1		1							
28	279571	Pipe, Intercooler Supply				1		1						
28	328027	Pipe, Intercooler Supply							1	1			1	1
29	279499	Bracket, Tube Mounting			2	2	2	2						
29	328021	Bracket, Tube Mounting							2	2			2	2
30	#	Hardware, 1/4-20			4	4	4	4	4	4			4	4
31	X-6011-4	Washer, Beveled .44 ID, 2"/12" Slope			2		2		2	2			2	2
32	X-672-18	Clamp, Insulated, 2.12 ID			2	2	2	2	2	2			2	2
33	279558	Cover, Pressure Sensing			1	1	1	1						
34	279557	Gasket, Pressure Sensing			1	1	1	1						
35	X-75-41	Plug, Pipe, 1/4 NPTF			1	1	1	1						
36	X-101-13	Nut, Elastic, 3/8-16			2	2	2	2	2	2			2	2
37	#	Hardware, 3/8-16			2	2	2	2	2	2			2	2
38	279582	Brace, Upper Radiator Hose			1	1								
38	299866	Brace, Upper Radiator Hose					1	1						
38	328290	Brace, Upper Radiator Hose							1	1			1	1
39	279583	Brace, Upper Radiator Hose			1	1								
39	299867	Brace, Upper Radiator Hose					1	1						
39	328291	Brace, Upper Radiator Hose							1	1			1	1
40	291590	Clamp, Hose, 4.00-4.31 ID			2	2	2	2						
40	X-426-5	Clamp, Hose							2	2			2	2
41	279494	Bracket, Radiator Support			2	2								
41	279539	Brace, Radiator	2	2										
41	299863	Brace, Radiator					2	2						
41	328266	Brace, Radiator							2	2	2			
41	347873	Brace, Radiator										2	2	2
42	X-6239-3	Screw, 3/4-10 x 1 1/2	2	2	2	2	2	2						
43	#	Washer, 3/4	2	2	2	2	2	2						
44	#	Nut, 3/4-10	2	2	2	2	2	2						
45	279491	Support, Radiator (RH)			1	1								
45	299857	Support, Radiator (RH)					1	1						
45	279492	Support, Radiator (LH)			1	1								
45	299858	Support, Radiator (LH)					1	1						
45	279542	Support, Radiator (RH)	2	2										
46	279495	Support, Radiator (RH)			1	1								
46	299855	Support, Radiator (RH)					1	1						
46	279496	Support, Radiator (LH)			1	1								
46	299856	Support, Radiator (LH)					1	1						
46	279543	Support, Radiator (LH)	2	2										
47	#	Hardware, 5/8-11	4	4	4	4	4	4				8	8	8
48	X-6011-3	Washer, Beveled, 68 ID	4	4	4	4	4	4	4	4	4	4	4	4
49	274906	Pulley			1	1	1	1						
49	328253	Pulley							1	1			1	1
50	274905	Bushing, Pulley			1		1	1	1	1			1	1

Common Hardware; Procure Locally

This exploded view diagram illustrates the assembly of a 1500DS unit. The components are numbered as follows:

- 36, 37, 38, 39, 40:** Top panel and associated fasteners.
- 41:** Main vertical support structure.
- 42, 43, 44, 45, 46, 47, 48:** Internal structural components and fasteners.
- 49:** A circular fan or wheel component.
- 50, 51, 52, 53:** A large, curved, teardrop-shaped component and its fasteners.
- 54, 55, 56, 57, 58, 59:** Various side and bottom panel components.
- 60, 61, 62:** A small rectangular component and its fasteners.
- 63, 64, 65, 66, 67, 68, 69, 70, 71:** A series of fasteners and structural brackets.
- 74:** The top horizontal panel.

The diagram uses dashed lines to indicate the assembly path and relative positions of the parts.

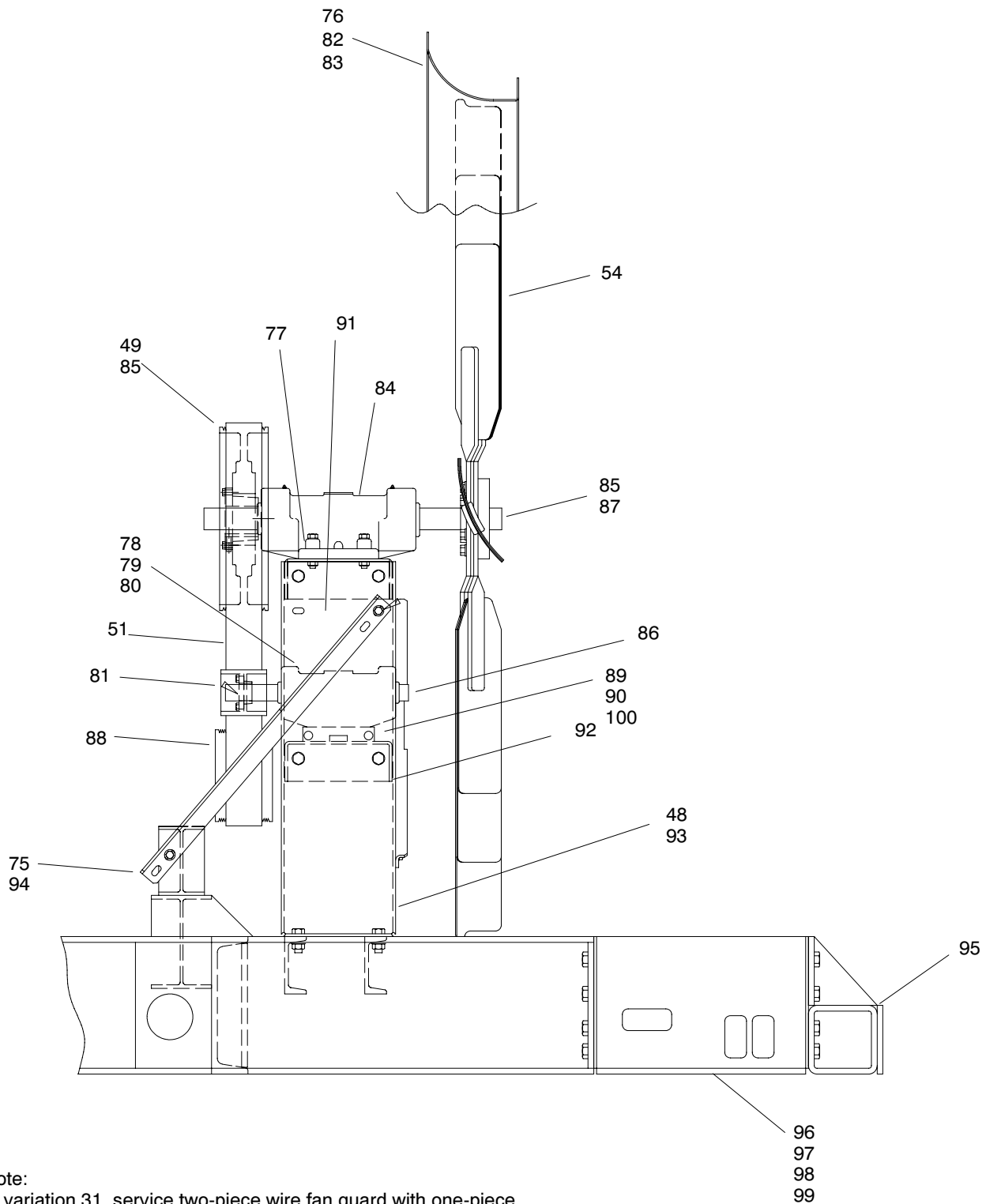
1500DS
104-70-10
AB-272000

Group 104: Cooling System, Continued

Item	Part Number	Description	Quantity											
			Variation/Kit Number											
			8	9	10	19	27	28	29	30	31	39	47	48
51	328780	Belt			1	1	1	1						
51	328260	Belt							1				1	
51	328695	Belt								1				1
51	274440	Belt	1											
51	274385	Belt		1										
52	274904	Pulley, Idler			1	1	1	1	1	1				1
53	274903	Bushing, Idler			1	1	1	1	1	1				1
54	272956	Fan	1											
54	272969	Fan		1										
54	328492	Fan									1	1		
54	328247	Fan							1				1	
54	328246	Fan								1				1
54	274247	Guard, LH Fan (not shown)		1										
54	274246	Guard, RH Fan (not shown)		1										
54	X-101-8	Nut, Elastic Stop, 1/4-20 (not shown)		11										
54	X-465-16	Screw, 1/4-20 x 3/4 (not shown)		45										
54	X-129-50	Screw, 1/2-13 x 5, Gr. 8 (not shown)	6	6										
54	X-129-53	Screw, Hex. Cap (not shown)										6	6	
54	290945	Washer, Hardened, 17/32 x 1 1/16 x 1/16 (not shown)	6	6								6	6	
54	X-20-1	Washer, Split Lock, 1/4 (not shown)	38	38										
55	274908	Guard, Belt (top)			1	1	1	1					1	
55	328020	Guard, Belt (top)							1					
55	272629	Guard, Belt (top)	1											
55	274254	Guard, Belt (top)		1										
55	328605	Guard, Belt (top)									1	1		
55	328276	Guard, Belt (top)								1				1
55	#	Hardware, 1/4-20			24	24	24	24						
55	274666	Brace, Belt Guard (top) (not shown)		1										
56	274909	Guard, Belt (rear)			1									
56	279662	Guard, Belt (rear)				1	1	1						
56	272630	Guard, Belt (rear)	1	1										
56	328275	Guard, Belt (rear)							1	1			1	1
57	274910	Guard, Belt (left)			1									
57	279572	Guard, Belt (left)				1								
57	272679	Guard, Belt (left)	1											
57	299859	Guard, Belt (left)					1	1						
57	328272	Guard, Belt (left)							1	1			1	1
57	328602	Guard, Belt (left)									1	1		
57	274825	Bracket, Left Belt Guard	1											
57	274256	Guard, Belt (left)		1										
58	274911	Guard, Belt (right)			1	1								
58	272659	Guard, Belt (right)	1											
58	274255	Guard, Belt (right)		1										
58	299864	Guard, Belt (right)					1	1						
58	328273	Guard, Belt (right)							1	1			1	1
58	328603	Guard, Belt (right)									1	1		
58	299865	Guard, Belt (left)					1	1						
58	274826	Bracket, Belt Guard (not shown)	1											
58	328601	Bracket, Belt Guard (not shown)									1	1		
58	328590	Guard, Belt (bottom)									1	1		
59	279485	Guard, Belt			1	1								
59	299860	Guard, Belt					1	1						
59	299861	Guard, Front (right)					1	1						
59	299862	Guard, Front (left)					1	1						
60	274913	Bracket, Mounting			2	2								
61	#	Bolt, 1/4-20			4	4	4	4						
62	X-101-8	Nut, Elastic, 1/4-20	4		4	4	4	4						
63	#	Hardware, 1/4-20	4	4	4	4	4	4						
64	#	Hardware, 3/8-16			1	1								
64	X-6216-1	Screw, Lock, 10-24 x 1/2	12	32										
65	274894	Support, Radiator (at Skid)			4	4	4	4						
66	#	Hardware, 5/8-11			32	32	32	32						
67	274893	Bracket, Radiator Support			2	2	2	2						
67	279568	Bracket, Radiator Support				2								
68	#	Hardware, 1/2-13			16	16	16	16						
69	#	Hardware, 3/4-10			8	8	8	8						
70	279497	Shim			12	12	12	12						
71	279498	Shim			12	12	12	12						
72	X-801-8	Washer, Hardened (not shown)									4	4		

Common Hardware; Procure Locally

Group 104: Cooling System, Continued



Note:
In variation 31, service two-piece wire fan guard with one-piece fan guard part number 328589.

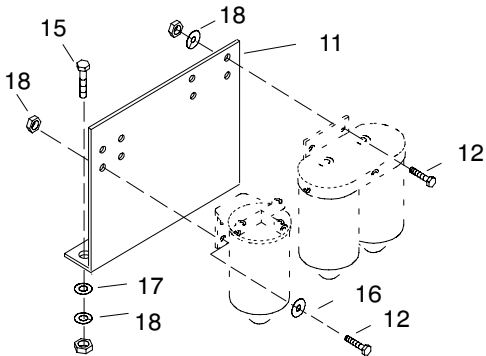
1500DS
104-70-10
AB-272000

Group 104: Cooling System, Continued

Item	Part Number	Description	Quantity											
			Variation/Kit Number											
			8	9	10	19	27	28	29	30	31	39	47	48
73	328589	Guard, Wire Fan									1	1		
73	239497	Mount, Vibro (not shown)									1	1		
73	328783	Support, Fan Guard (not shown)									1	1		
74	328726	Guard, Radiator Core									1	1		
75	X-400-206	Spacer							2					
76	X-801-6	Washer, Hardened							12	12			12	12
77	X-801-8	Washer, Hardened							8	8			8	8
78	328255	Block, Pillow							1	1			1	1
79	273738	Set Screw, Special							4	4			4	4
80	290945	Washer, Hardened							8	8			8	8
81	274903	Bushing, Idler							1	1			1	1
82	328248	Shroud, Fan							1	1				
82	354195	Shroud, Fan											3	1
83	328249	Guard, Flat Fan							4	4			4	4
84	328254	Block, Pillow							1	1			1	1
85	328256	Key							1	1			1	1
86	328257	Shaft, Idler							1	1			1	1
87	328258	Shaft, Fan							1	1			1	1
88	328259	Pulley, Idler							1				1	
89	328261	Block, Idler Slide (inner)							1	1			1	1
90	328262	Block, Idler Slide (outer)							1	1			1	1
91	328263	Support, Fan Bearing							1	1			1	1
92	328264	Support, Idler Bearing							1	1			1	
93	328265	Support, Fan Bearing							2				2	
93	328278	Support, Fan Bearing								2				2
93	328289	Shim, Fan and Support							4	4			4	4
94	328267	Brace, Fan							3	3			3	3
95	328268	Guard, Radiator							1	1				
95	354196	Guard, Radiator											1	1
96	328269	Bracket, Radiator (right Side)							1	1				
96	354193	Bracket, Radiator (right Side)											1	1
97	328270	Shim, Radiator							4	4			4	4
98	328271	Shim, Radiator							4	4			4	4
99	328301	Bracket, Radiator (left Side)							1	1				
99	354194	Bracket, Radiator (left Side)											1	1
100	328283	Bolt, Adjusting							2	2			2	2
101	328708	Support, Fan Guard (not shown)							4	4			4	4

Common Hardware; Procure Locally

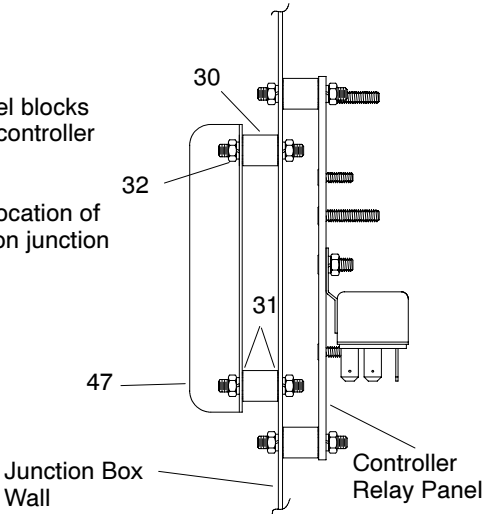
Group 105: Engine



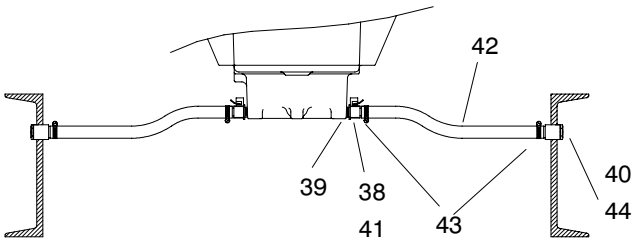
Fuel Filter Mounting
Bracket
And Hardware

Controller relay panel blocks
access to governor controller
mounting hardware.

See Group 201 for location of
governor controller on junction
box.



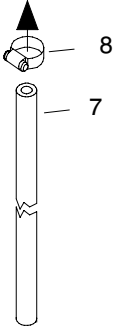
Governor Controller Mounting



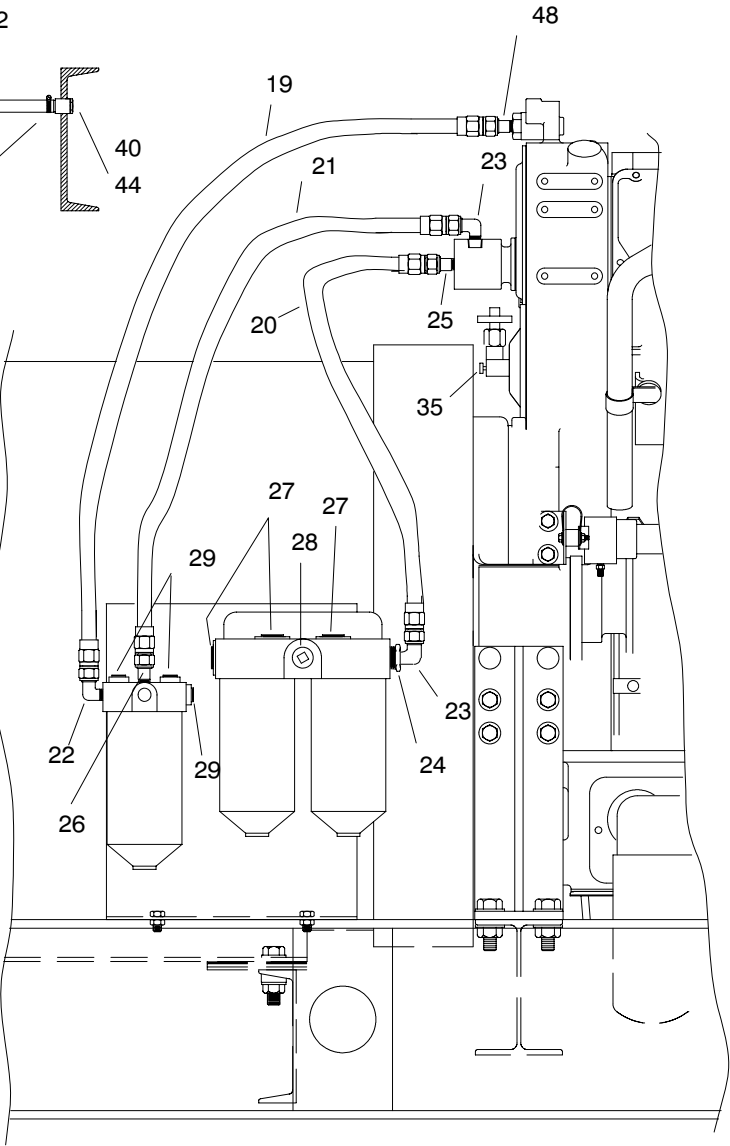
Attach
to air
box
drains.



Attach to valve
cover
breathers.



Items Not Shown: 45, 46



1500DS
105-70-27
AB-272000

Group 105: Engine, Continued

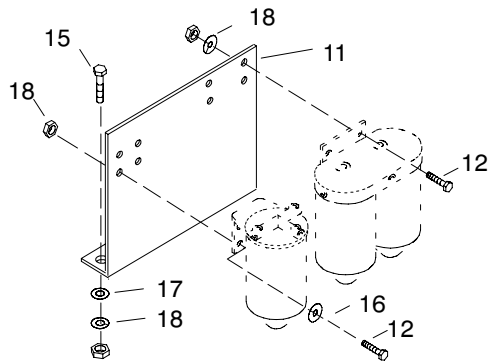
Item	Part Number	Description	Quantity										
			Variation/Kit Number										
			25	26	27	29	32	33	36	38	44	45	46
1	A-272752	Engine Assembly (12V-149TI)	1					1					
1	A-272753	Engine Assembly (12V-149TIB)		1									
1	A-272754	Engine Assembly (16V-149TIB)			1						1		
1	A-272957	Engine Assembly (12V-149TI)				1	1						
1	A-279670	Engine Assembly (12V-149TI)							1				1
1	A-279790	Engine Assembly (16V-149TIB)								1		1	
2	See Chart Below	Wiring Harness											
2	233959	Diode, 6 Amp. 100 Volt	4	4	4	4	4	4	4	4	4	4	4
2	239408	Connector, 4 Position	1	1	1	1	1	1	1	1	1	1	1
2	292370	Connector, 2 Position	1	1	1	1	1	1	1	1	1	1	1
2	292800	Connector, Cable	1	1	1	1	1	1	1	1	1	1	1
2	295145	Connector, 24 Position	1	1	1	1	1	1	1	1	1	1	1
2	292838	Pin, Female Gold Plated	13	13	13	13	13	13	13	13	13	13	13
2	292879	Terminal	4	4	4	4	4	4	4	4	4	4	4
3	243320	Grommet (in Junction Box Wall)	1	1	1	1	1	1	1	1	1	1	1
4	X-432-12	Line, Fuel (copper) 3/8 OD x 2"		4	4				4	4	4	4	4
5	X-651-32	Hose, .375 ID x 12 L		4	4				4	4	4	4	4
5	X-651-27	Hose, .375 ID x 20 L				4	4	4					
6	X-426-9	Clamp, Hose, 5/8	2	8	8	4	4	2	8	8	8	8	8
7	X-6261-1	Hose, 1 1/2 ID x 54"		1	3	2	2	1		3	1		
7	X-6261-2	Hose, 1 1/2 ID x 142"		2		1	1		2		2		
8	X-426-4	Clamp, Hose, 2 1/4	3	3	3	3	3	3	3	3	3	3	3
9	X-672-18	Clamp, Insul. (at Solenoids)	2	2		2	2	2	2				2
10	X-752-1	Clip, Conduit (not Shown)	1		1	1	1	1	1				
11	274395	Bracket, Mounting	1			1							
11	274626	Bracket, Mounting		1	1		1	1	1	1	1	1	1
12	X-129-19	Screw, 1/2-13 x 1 1/2	8	8	8	8	8	8	8	8	8	8	8
13	X-6238-11	Screw, 3/8-16 x 1	6			6							
14	#	Hardware, 3/8-16 (not shown)	6			6							
15	X-129-21	Screw, 1/2-13 x 2		2	2		2	2	2	2	2	2	2
16	X-25-26	Washer, Plain, 17/32 x 1 1/16	4	4	4	4	4	4	4	4	4	4	4
17	X-6011-3	Washer, Beveled		2	2		2	2	2	2	2	2	2
18	#	Hardware, 1/2-13	8	8	8	8	8	8	8	8	8	8	8
19	274228	Line, Flex. Fuel, 1/2 ID x 63"		1	1		1	1	1	1	1	1	1
19	274503	Line, Flex. Fuel, 1/2 ID x 17"	1			1							
20	274633	Line, Flex. Fuel, 1/2 ID x 49"		1	1		1	1	1	1	1	1	1
20	274502	Line, Flex. Fuel, 1/2 ID x 35"	1			1							
21	274634	Line, Flex. Fuel, 1/2 ID x 59"		1	1		1	1	1	1	1	1	1
21	274501	Line, Flex. Fuel, 1/2 ID x 28"	1			1							
22	X-447-14	Elbow, 7/8-14 x 3/8 NPT	2	1	1	2	1	1	1	1	1	1	1
23	X-447-8	Elbow, 7/8-14 x 1/2 NPT		2	2		2	2	2	2	2	2	2
24	168848	Bushing, Reducer, 1/2 F x 1 M	1	1	1	1	1	1	1	1	1	1	1
25	X-296-7	Connector, Half-union	2	2	2	2	2	2	2	2	2	2	2
26	X-296-8	Connector, 7/8-14 x 3/8 IP		1	1	1	1	1	1	1	1	1	1
27	X-75-22	Plug, Pipe, 1 NPT	3	3	3	3	3	3	3	3	3	3	3
28	X-75-3	Plug, Pipe, 1/2 NPT	1	1	1	1	1	1	1	1	1	1	1
29	X-75-10	Plug, Pipe, 3/8 NPT	3	3	3	3	3	3	3	3	3	3	3
30	282829	Mount, Vibro	4	4	4	4	4	4	4	4	4	4	4
31	X-22-20	Washer, Shakeproof, 8	8	8	8	8	8	8	8	8	8	8	8
32	#	Hardware, 8-32	8	8	8	8	8	8	8	8	8	8	8
33	X-256-3	Valve, Drain 1/4 NPT	1	1	1	1	1	1	1	1	1	1	1
34	X-202-12	Bushing, Reducer, 1/4 F x 1/2 M	1	1	1	1	1	1	1	1	1	1	1
35	X-465-7	Screw, 1/4-20 x 1 (speed sensor)		1	1					1			
36	-	Oil Filter (See Recommended Spares Section)	4	4	6	4	4	4	4	6	6	6	4
37	-	Fuel Filter (See Recommended Spares Section)	1	1	1	1	1	1	1	1	1	1	1

Serial Number-Contingent Wiring Harnesses

Variations	Chart 1, Wiring Harness Part Number	
	Before Serial Number 363369	Serial Numbers 363369 And After
25, 29, 32, 33	272878	272878
46, 51	274889	347229
44, 45, 52, 53	272946	347230
54	328608	347228

Common Hardware; Procure Locally

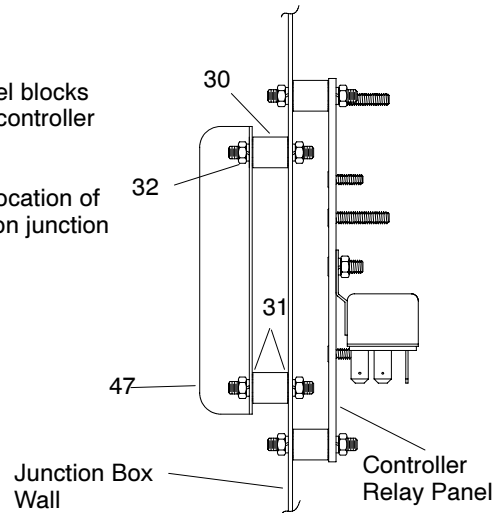
Group 105: Engine, Continued



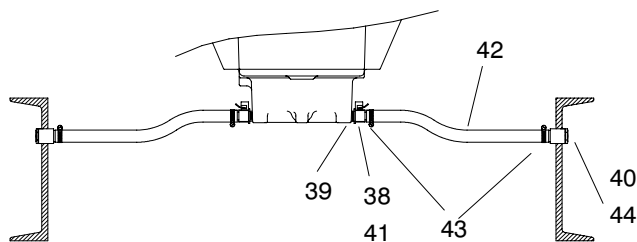
Fuel Filter Mounting
Bracket
And Hardware

Controller relay panel blocks
access to governor controller
mounting hardware.

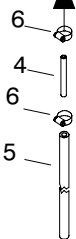
See Group 201 for location of
governor controller on junction
box.



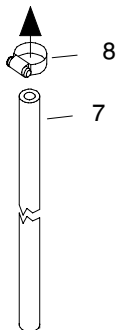
Governor Controller Mounting



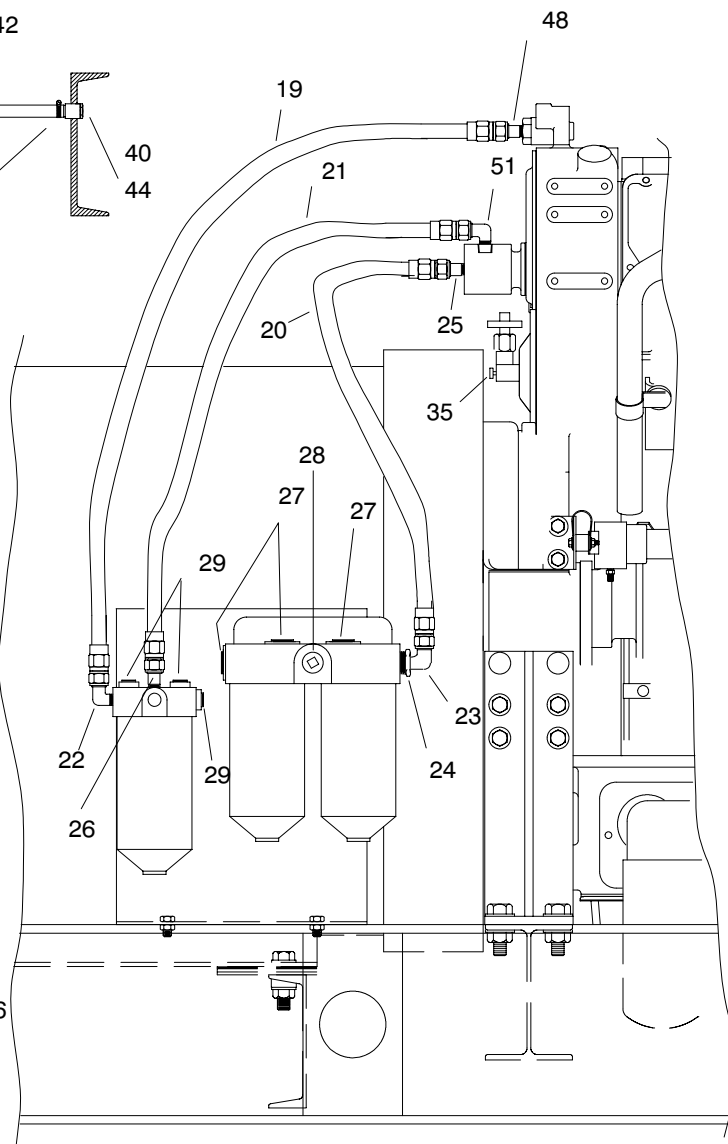
Attach
to air
box
drains.



Attach to valve
cover
breathers.



Items Not Shown: 33, 34, 45, 46



1500DS
105-70-27
AB-272000

Group 105: Engine, Continued

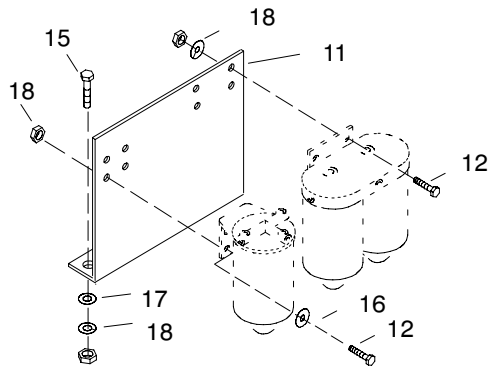
Item	Part Number	Description	Quantity								
			Variation/Kit Number								
			51	52	53	54	70	78	80	81	82
1	A-347102	Engine Assembly (See Chart 2 below)				1	1				
1	A-347107	Engine Assembly (See Chart 2 below)		1					1		
1	A-347109	Engine Assembly (See Chart 2 below)			1					1	
1	A-354179	Engine Assembly						1			
1	A-347105	Engine Assembly (See Chart 2 below)	1								1
2	See Chart 3, page 27	Wiring Harness (includes *)									
2	233959	*Diode, 6 Amp. 100 Volt	4	4	4	4	4	4	4	4	4
2	292800	*Connector, Cable	1	1	1	1	1	1	1	1	1
2	295145	*Connector, 24 Position	1	1	1	1	1	1	1	1	1
2	292838	*Pin, Female Gold Plated	13	13	13	13	13	13	13	13	13
2	292879	*Terminal	4	4	4	4	4	4	4	4	4
3	243320	Grommet (in Junction Box Wall)									
4	X-432-12	Line, Fuel (copper) 3/8 OD x 2"	4	4	4			4	4	4	4
4	X-6260-8	Hose, 1.25 ID x 4.9"				2	2				
5	X-651-32	Hose, .375 ID x 12 L	4	4	4			4	4	4	4
5	X-651-5	Hose, .375 ID x 20 L				4	4				
6	X-426-9	Clamp, Hose, 5/8		8	8	4	4	8	8	8	8
6	X-426-8	Clamp, Hose, 5/8				2	2				
7	X-6261-1	Hose, 1 1/2 ID x 54"	1	3					3		
7	X-6261-2	Hose, 1 1/2 ID x 142"	2								
7	X-6260-11	Hose, 1 1/4 ID x 4.9"				2	2				
8	X-426-4	Clamp, Hose, 2 1/4	3	3	3						
8	X-426-8	Clamp, Hose, 5/8				2	2				
9	X-672-18	Clamp, Insul. (at Solenoids)	2	2	2	2	2				
10	X-752-1	Clip, Conduit (not Shown)									
11	274626	Bracket, Mounting	1	1	1			1	1	1	1
12	X-129-19	Screw, 1/2-13 x 1 1/2	8	8	8						
12	#	Hardware, 1/2-13						4	8	8	4
13	X-6238-11	Screw, 3/8-16 x 1									
14	#	Hardware, 3/8-16									
15	X-129-21	Screw, 1/2-13 x 2	2	2	2						
15	#	Hardware, 1/2-13							2	2	
16	X-25-26	Washer, Plain, 17/32 x 1 1/16	4	4	4						
17	X-6011-3	Washer, Beveled	2	2	2			2	2	2	2
18	#	Hardware, 1/2-13	8	8	8			6	8	8	6
19	274228	Line, Flex. Fuel, 1/2 ID x 63"	1	1	1			1	1	1	1
20	344358	Line, Flex. Fuel	1	1	1			1	1	1	1
21	274634	Line, Flex. Fuel, 1/2 ID x 59"	1	1	1			1	1	1	1
22	X-447-14	Elbow, 7/8-14 x 3/8 NPT	1	1	1			1	1	1	1
23	X-447-18	Elbow	1	1	1			1	1	1	1
24	X-202-1	Bushing, Reducer	1	1	1			1	1	1	1
25	X-296-15	Connector, Half-union	1	1	1			1	2	2	1
26	X-296-8	Connector, 7/8-14 x 3/8 IP	1	1	1			1	1	1	1
27	X-75-22	Plug, Pipe, 1 NPT	2	2	2			2	3	3	2
28	X-75-3	Plug, Pipe, 1/2 NPT	1	1	1			1	1	1	1
28	X-202-1	Bushing, Reducer	1	1	1			1			1
28	X-75-18	Plug, Pipe	1	1	1			1			1

Chart 2, Engine Assemblies

Variation	Engine Assembly Part Number	
	With Air Damper	Without Air Damper
51	A-328252	A-347105
52	A-328251	A-347107
53	A-328250	A-347109
54	A-328617	A-347102

Common Hardware; Procure Locally

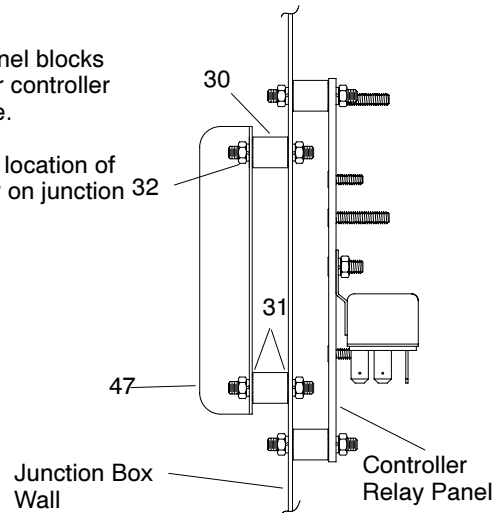
Group 105: Engine, Continued



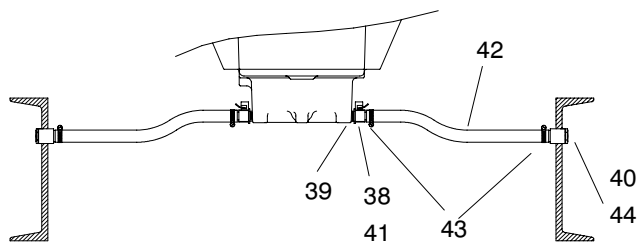
Fuel Filter Mounting
Bracket
And Hardware

Controller relay panel blocks
access to governor controller
mounting hardware.

See Group 201 for location of
governor controller on junction 32
box.

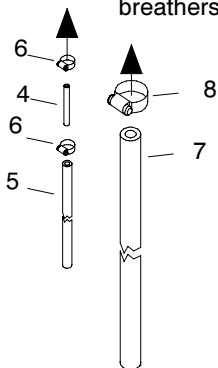


Governor Controller Mounting

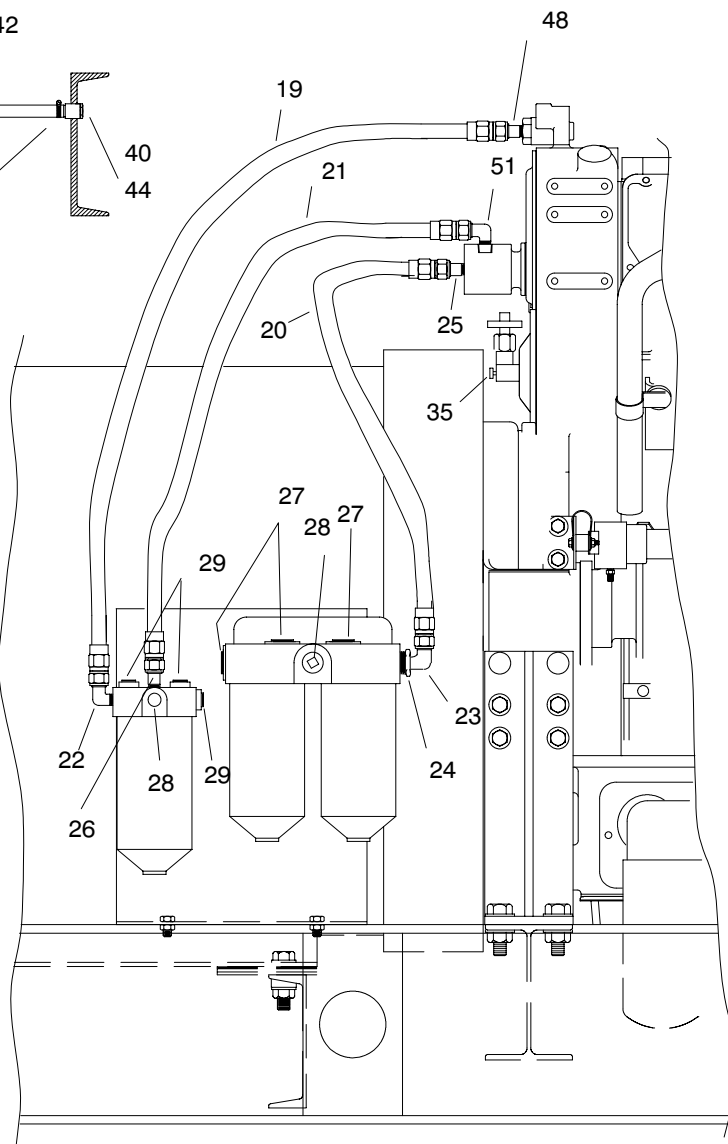


Attach
to air
box
drains.

Attach to valve
cover
breathers.



Items Not Shown: 33, 34, 45, 46



1500DS
105-70-27
AB-272000

Group 105: Engine, Continued

Item	Part Number	Description	Quantity								
			Variation/Kit Number								
			51	52	53	54	70	78	80	81	82
29	X-75-10	Plug, Pipe, 3/8 NPT	3	3	3			3	3	3	3
30	282829	Mount, Vibro	4	4	4			4	4	4	4
31	X-22-20	Washer, Shakeproof, 8	8	8	8				8	8	
32	#	Hardware, 8-32	8	8	8				8	8	
33	X-256-3	Valve, Drain, 1/4 NPT	1	1	1			1	1	1	1
34	X-202-12	Bushing, Reducer, 1/4 F x 1/2 M	1	1	1				1	1	1
35	X-465-7	Screw, 1/4-20 x 1 (speed sensor)									
36	-	Oil Filter (See Recommended Spares Section)	6	6	6	4	4	6	6	6	6
37	-	Fuel Filter (See Recommended Spares Section)	1	1	1	1	1	1	1	1	1
38	272701	Valve, Oil Drain				2	2	2	2	2	
39	273918	O-Ring, Oil Drain				2	2				
39	280562	Decal, Oil Drain				2	2	2			
40	276552	Nylon Washer, Oil Drain				2	2	2	2	2	
41	273857	Adapter, Oil Drain				2	2				
41	SA-472	Elbow, Street 3/4							2	2	
41	X-274-13	Elbow, Street 45 Degree						2			2
41	X-202-41	Bushing, Reducer 1/2 x 3/4						1	2	2	1
42	X-577-48	Hose, Oil Drain 1.58 ft.				2	2				
42	X-577-28	Hose, .625 x 17"						1			1
42	X-577-34	Hose, .625 x 2 ft.						1			1
42	X-577-18	Hose, .625 x 25"							2	2	
42	X-577-35	Hose, 2.5 ft.							2	2	
43	X-426-3	Clamp, Hose .56-1.06 in.				4	4				
43	X-426-8	Clamp, Hose .81-1.75 in.							4	4	
43	X-426-10	Clamp, Hose						4			4
44	241062	Plug, Drain				2	2	2	2	2	2
45	274444	Guard, Alternator Belt (not Shown)				1	1				
46	X-400-89	Spacer (not Shown)				1	1				
47	347840	Governor Controller	1	1	1	1	1	1	1	1	1
48	X-296-7	Connector, Half-Union 7/8-14 x 1/2	1	1	1			1	1	1	1
50	287363	Ground Strap, Starting Motor						1	1	1	1
51	X-447-8	Elbow, 7/8-14 x 1/2 NPT	1	1	1			1	1	1	1
52	X-545-140	Cable, battery, red + (not shown)					1	1	1	1	1

Chart 3, Serial Number-Contingent Wiring Harnesses

Variations	Wiring Harness Part Number		
	Before Serial Number 363369	Serial Numbers 363369 And After	
		Engine With Air Damper	Engine Without Air Damper
36, 46, 51	274889	347229	347305
27, 38, 44, 45, 52, 53	272946	347230	347306
54	328608	347228	347304
70	-	-	347304
78	-	-	347305
80, 81	-	-	347306

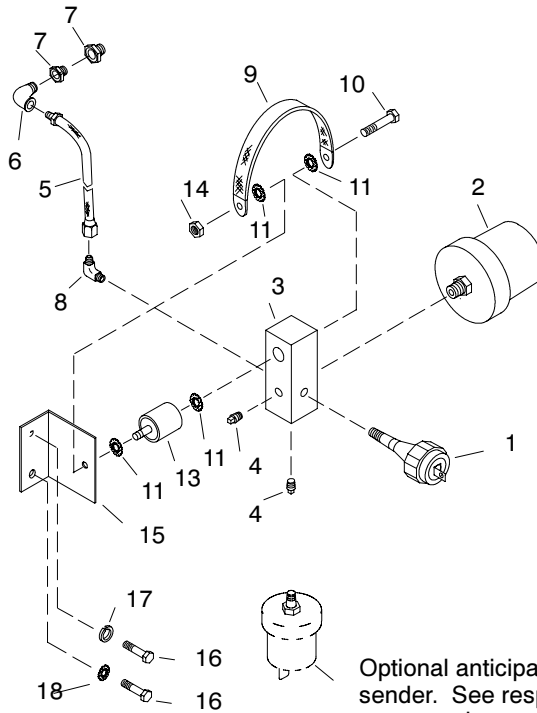
Common Hardware; Procure Locally

Group 107: Nameplates and Decals

Nameplates and Decals are not illustrated.

Item	Part Number	Description	Quantity												
			Variation Number												
			35	36	37	38	39	40	43	44	45	72	84	88	89
1	GM23477-3	Decal, DDC/MTU	1						1						
1	GM23477-5	Decal, DDC/MTU		1	1	1	1	1						1	1
1	GM23477-6	Decal, DDC/MTU (radiator)	1	1	1	1	1	1	1	1	1	1	1	1	1
2	X-6302-1	Decal, Torque Symbol 3.14"	1	1	1	1	1	1	1	1	1	1	1	1	
2	X-6302-2	Decal, Torque Symbol 5.25"	1	1	1	1	1	1	1	1	1	1	1	1	
3	238402	Decal, Positive Terminal	1	1	1	1	1	1	1	1	1	1	1	1	2
4	249809	Decal, Warning Hot Engine	1	1	1	1	1	1	1	1	1	1	1	1	1
5	X-6299-23	Decal, Model Rating 900 kW	1						1						
5	X-6300-1	Decal, Model Rating 900 kW								1	1				
5	X-6300-2	Decal, Model Rating		1	1										
5	X-6300-3	Decal, Model Rating				1									
5	X-6300-4	Decal, Model Rating					1								
5	X-6300-5	Decal, Model Rating						1							
6	249808	Decal, warning Rotating Parts	1	1	1	1	1	1	1	1	1				
6	274323	Decal, Warning Rotating Parts										1	1	1	1
7	257438	Decal, Hazardous Voltage	1	1	1	1	1	1	1	1	1	1	1	1	1
8	258815	Decal, Voltage/Backfeed	1	1	1	1	1	1	1	1	1				
9	279564	Tag, Caution Do Not Stand On...	1	1	1	1	1	1	1	1	1				
10	279598	Tag, Caution Manually Operate Damper	1	1	1	1	1	1	1	1	1				1
11	255882	Decal, For Standby Service..				1	1	1				1	1	1	1
12	343165	Decal, Not A Step				2	2	2						2	2

Group 108: Oil Pressure Switches



Optional anticipatory low oil pressure sender. See respective accessory parts catalog.

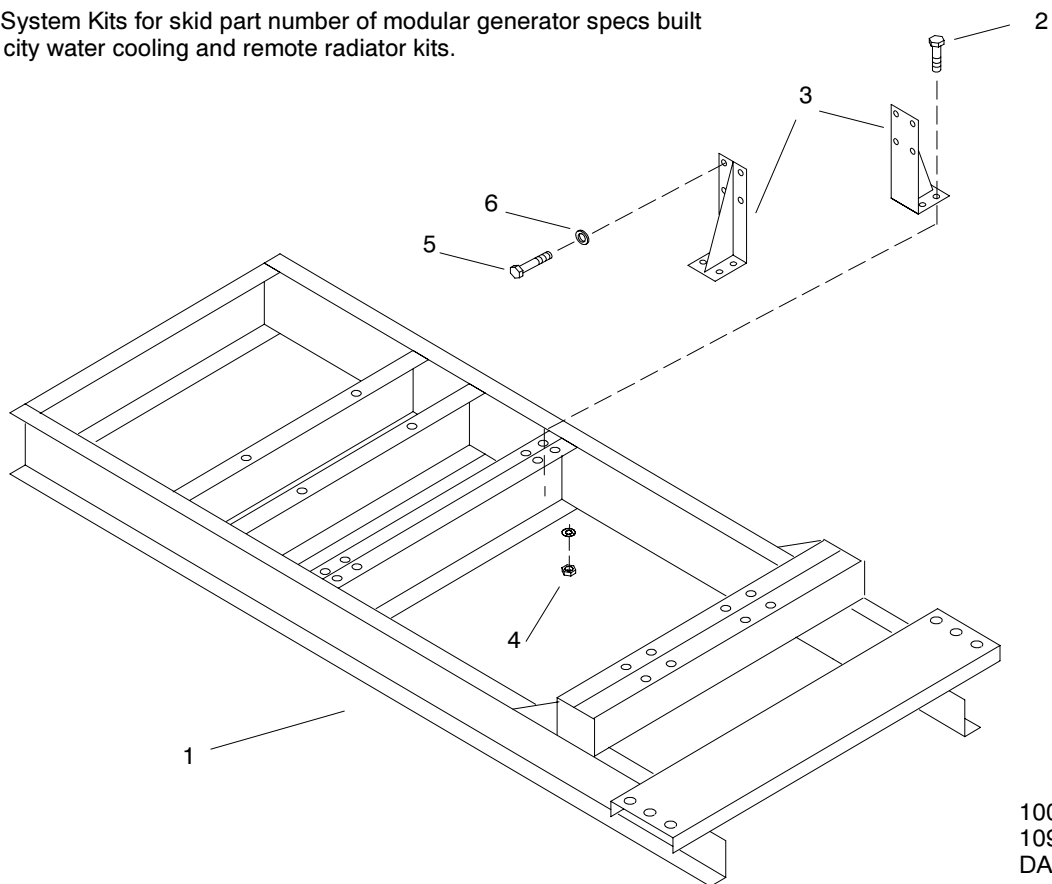
450-800DS
108-70-6
EW-272000

Item	Part Number	Description	Quantity									
			Variation/Kit Number									
			7	14	16	17	18	E70	E78	E80	E81	E82
1	328309	Switch, Oil Pressure	1	1	1	1	1	1	1	1	1	1
2	264390	Sender, Oil Pressure	1	1	1	1	1					
2	343473	Sender, Oil Pressure						1				
2	343474	Sender, Oil Pressure							1	1	1	1
3	267548	Block, Oil Gauge	1	1	1	1	1	1	1	1	1	1
4	X-75-1	Plug, Pipe (Steel), 1/8	2	2	2	2	2	2	2	2	2	2
5	280905	Line, Flex Fuel	1	1	1	1	1		1	1	1	1
5	239728	Line, Flex Fuel						1				
6	X-274-3	Elbow, 45° Street, 1/4 NPT	1	1	1	1	1		1	1	1	1
6	153659	Bushing, Reducer						1				
7	X-202-27	Bushing, Reducer, 1/8 F x 1/4 M	1	1	1	1	1		1	1	1	1
7	X-202-29	Bushing, Reducer						1				
7	X-211-10	Elbow						1				
8	X-447-10	Elbow, 90°, 7/16-20 x 1/8 NPT	1	1	1	1	1	1	1	1	1	1
9	223033	Strap, Ground, 3/8 x 5	1	1	1	1	1	1	1	1	1	1
10	X-465-8	Screw, 1/4-20 x 1 1/4	1	1	1	1	1	1	1	1	1	1
11	X-22-12	Washer, Int./Ext. Tooth Lock, 1/4	4	4	4	4	4	4	4	4	4	4
12	X-400-172	Spacer, .640 ID x .531 L (not shown)	1	1								
13	259632	Bumper	1	1	1	1	1	1	1	1	1	1
14	#	Nut, 1/4-20	1	1	1	1	1	1	1	1	1	1
15	279602	Bracket, Sender	1	1	1	1	1		1	1	1	1
15	274299	Bracket						1				
16	X-6021-3	Screw, 5/8-11 x 1	2	2	2	2	2		2	2	2	2
16	X-6238-11	Screw						2				
17	#	Washer, Lock, 5/8	1	1	1	1	1					
18	X-22-30	Washer, Shakeproof, 5/8	4	4	4	4	4		4	4	4	4
18	X-22-14	Washer, Int./Ext. Tooth Lock, 3/8						4				

Common Hardware; Procure Locally

Group 109: Skid and Plant Mounting

See Cooling System Kits for skid part number of modular generator specs built with optional city water cooling and remote radiator kits.



1000DS
109-70-6
DA-272000

Item	Part Number	Description	Quantity															
			Variation/Kit Number															
			6	9	23	26	28	33	34	35	36	37	38	60	66	67	68	69
1	272881	Skid	1															
1	274899	Skid		1														
1	279567	Skid			1													
1	279984	Skid				1												
1	299888	Skid					1											
1	299853	Skid						1										
1	299854	Skid							1									
1	299852	Skid								1								
1	328244	Skid									1							
1	328245	Skid										1						
1	328243	Skid											1					
1	354035	Skid												1				
1	354208	Skid													1			
1	354036	Skid														1		
1	354203	Skid															1	
1	354190	Skid																1
2	#	Hardware, 3/4-10	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
3	272879	Support, Rear Engine	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3	328496	Support, Rear Engine																
3	328495	Support, Front Engine																
3	X-801-5	Washer, Hardened																
3	#	Hardware, 5/8-11	8	8	8	8	8	8	8	8	8	8	8	4	8	4	8	8
4	#	Hardware, 3/4-10	4	4	4	4	4	4	4	4	4	4	4	8	8	8	8	8
5	#	Screw, 5/8-11 (existing bolts)																
5	X-6021-1	Screw, H.C.																
6	#	Hardware, 5/8	4	4	4	4	4	4	4	4	4	4	4	4	1	4	4	1
														2	2			2

Group 109: Skid and Plant Mounting

For modular specs with customer-selected skid kit option, the skid kit number appears on the generator set nameplate. The parts list of the skid kit is identical to a variation shown in this group. Use the following table to identify the equivalent variation number.

Skid Kit/Variation Cross-Reference Table

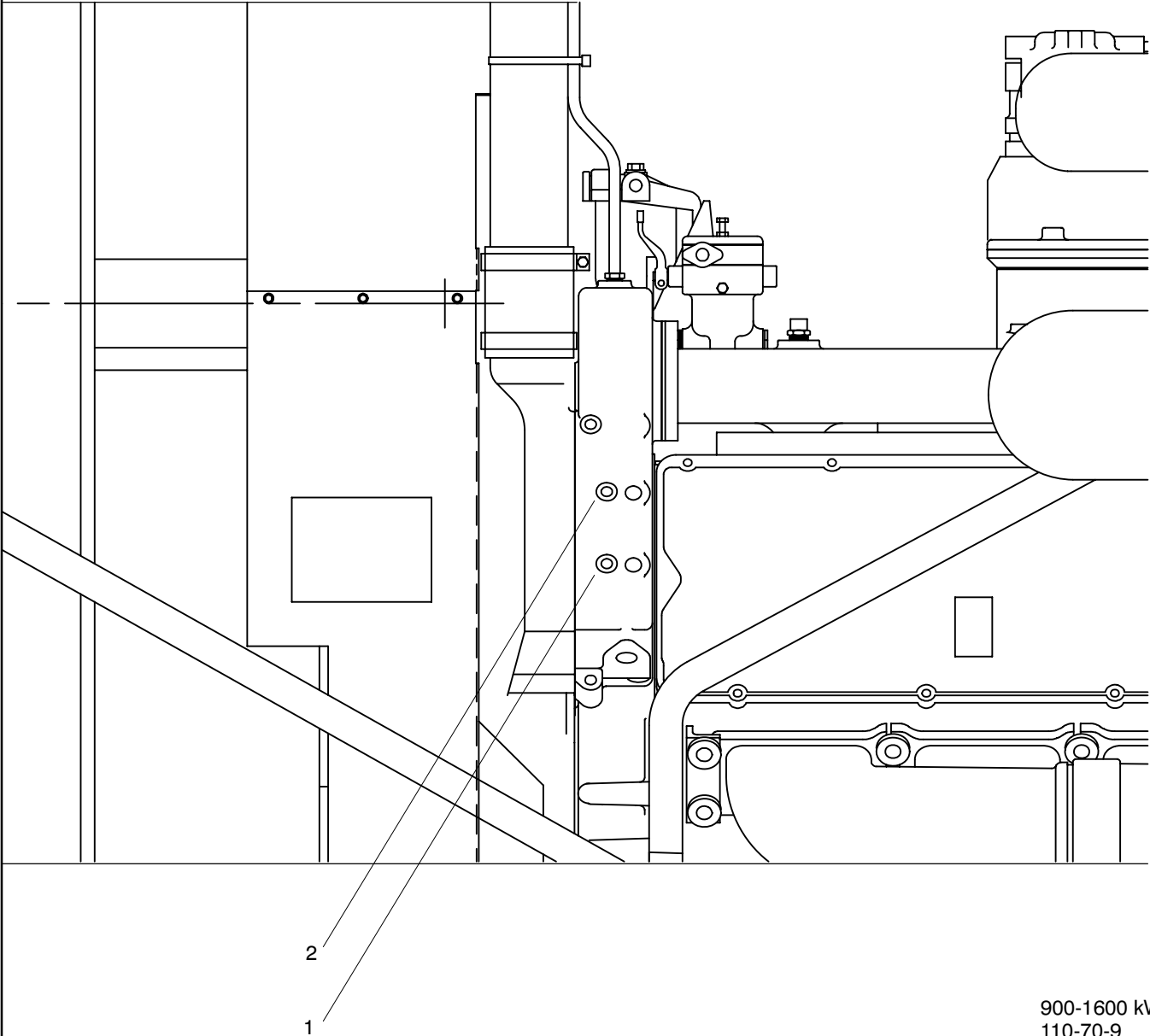
Skid Kit	Equivalent Variation Number	Part Number of Skid in Skid Kit
347498	60	354035
347573	67	354036
347574*	67	354052
347671	66	354208
347672	69	354190
354018	68	354203
354172*	60	354051
354173*	60	354050
354187*	67	354053
354313*	66	354311
354314*	66	354312

* The parts list of the skid kit is identical to the parts list of the variation number except for the skid part number.

Group 110: Water Temperature Switches

Left Side View

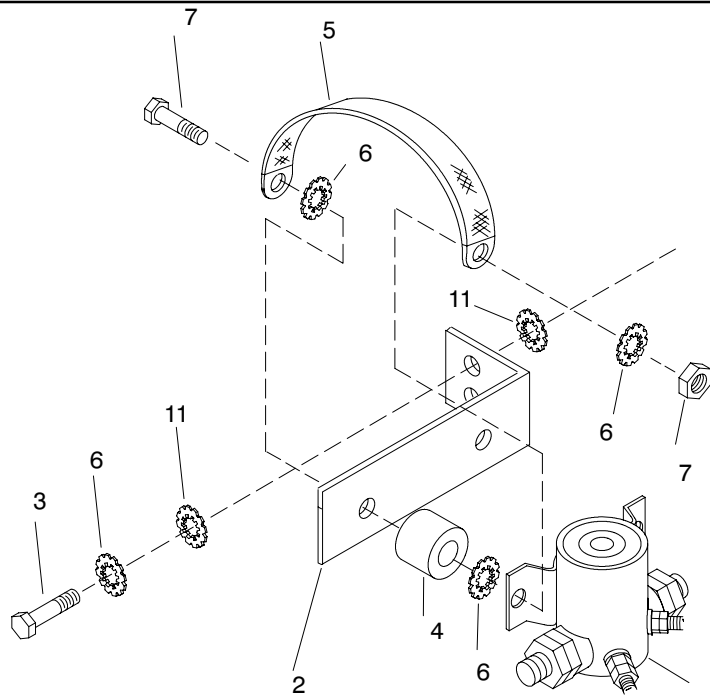
NOTE:
Items in parts list are on opposite
(right) side of engine.



900-1600 kW
110-70-9
DA-272000

Item	Part Number	Description	Quantity										
			Variation/Kit Number										
			8	9	11	14	15	16	E70	E78	E80	E81	E82
1	268298	Sender, Water Temperature	1	1	1	1	1	1	1	1	1	1	1
2	241481	Switch, Water Temperature Shutdown	1	1	1	1	1	1	1	1	1	1	1
3	153659	Bushing, Reducer (not shown)	1					1	1				

Group 112: Starter



900-1600DS
112-70-7
AB-272000

Item	Part Number	Description	Quantity									
			Variation/Kit Number									
			7	11	14	15	E70	E78	E80	E81	E82	
1	272713	Solenoid, Cranking	2	2	2	2	2	2	2	2	2	
2	274327	Bracket, Relay Mounting	2	2	2		2	2	2	2	2	
2	272762	Bracket, Mounting				2	2					
3	X-6021-4	Screw, Ref., 5/8-11 x 1.25	4	4	4			4	4	4	4	
3	X-6238-11	Screw					4					
4	259632	Bumper	4				4	4	4	4	4	
5	223033	Strap, Ground, 5"	2				2	2	2	2	2	
6	X-22-12	Washer, Int./Ext. Tooth Lock, 1/4	16	16	8	8	8	8	8	8	8	
7	#	Hardware, 1/4-20	4	4	4		4	4		4	4	
7	X-465-6	Screw, Ref. 1/4-20 x 0.50				4	4		4	4		
8	266581	Lead, Ground (not shown)	2	2								
8	287363	Lead, Ground (not shown)			2	2	2	2	2	2	2	
9	274614	Bracket (not shown)		1								
10	274616	Bracket (not shown)		1								
11	X-22-14	Washer, Shakeproof 3/8					8					
11	X-22-43	Washer, Lock 5/5						8	8	8	8	

Common Hardware; Procure Locally

Recommended Spare Parts

Part Description	Model/Spec		
	900DS* 1000DS*	1200DS*	1500DS* 1600DS*
Fuse, 1.5 Amp	291207	291207	291207
Fuse, 3 Amp	243273	243273	243273
Fuse, 15 Amp	283645	283645	283645
Voltage Regulator	328725	328725	328725
Main Circuit Board	A-336415	A-336415	A-336415
Indicator Board	A-336432	A-336432	A-336432
Bulb	283420	283420	283420
Lamp	291740	291740	291740
Upper Radiator Hose	X-507-6	X-6006-4	X-6006-4
Lower Radiator Hose	328380	X-6014-51	X-6014-51
Belt	347702	328260	328695
Thermostat	328585	328585	328585
Thermostat Seal	328586	328586	328586
Thermostat Gasket	328587	328587	347336
Air Cleaner	272981	272981	274821
Primary Fuel Filter	328215	328215	328215
Secondary Fuel Filter	328216	328216	328216
Oil Filter	279260	279260	279260

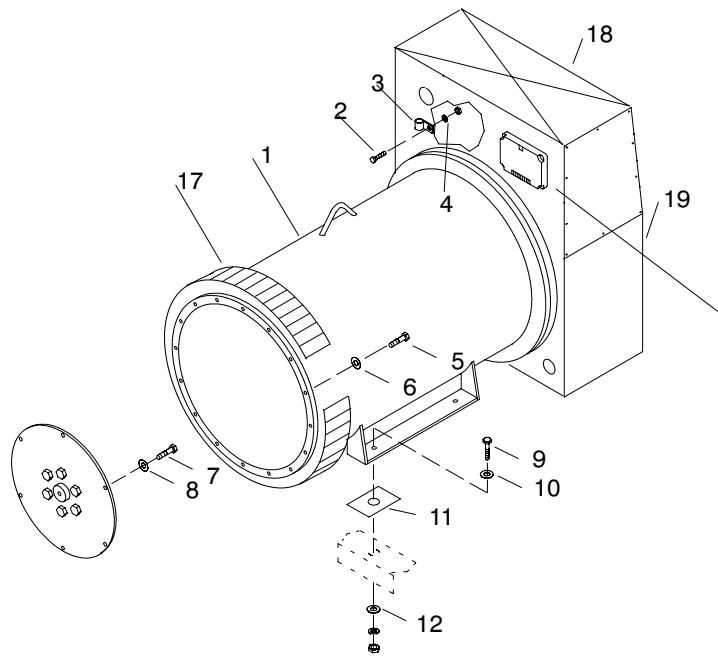
* Part numbers are listed for standard models with standard air cleaner, unit-mounted radiator, and 16-light controller.

Filter Maintenance Kits

Models	Kit Part Number
900-1200 kW	PA-328748
1500-1600 kW	PA-328749

Maintenance kits include air cleaner, oil filter, primary fuel filter, and secondary fuel filter.

Group 201: Generator and Mounting



Governor controller.
Supplied by engine manufacturer.
See group 105 for part number.

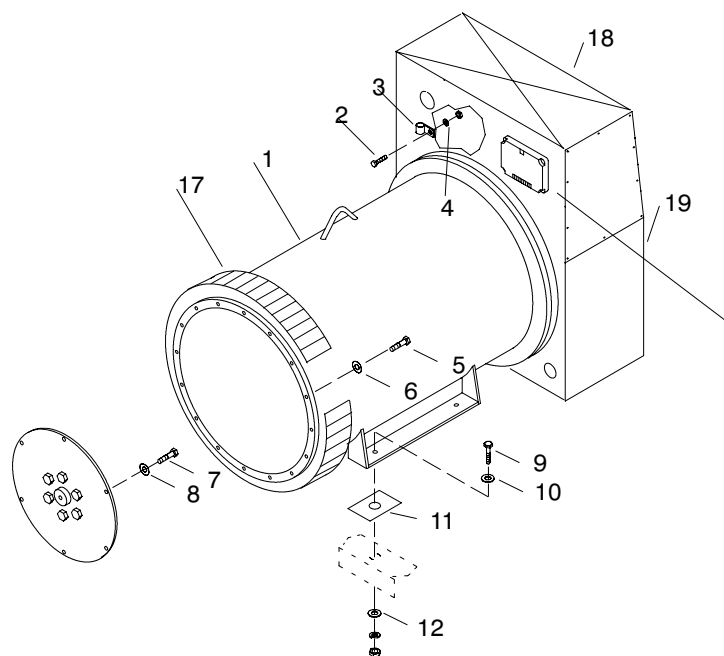
900DS
201-70-107
FB-272000

Item	Part Number	Description	Quantity											
			Variation/Kit Number											
			54	97	105	106	107	108	109	110	111	112	113	114
1	A-292478	Alternator Assembly*	1											
1	B-279959	Alternator Assembly*		1	1									
1	B-279960	Alternator Assembly*				1								
1	B-292447	Alternator Assembly*					1							
1	B-279961	Alternator Assembly*						1						
1	B-279962	Alternator Assembly*							1					
1	B-292448	Alternator Assembly*								1				
1	B-292478	Alternator Assembly*									1			
1	B-279592	Alternator Assembly*										1		
1	A-279996	Alternator Assembly*											1	
1	B-292450	Alternator Assembly*												1
2	X-50-15	Screw, 10-24 x 1/2	1	1	1	1	1	1	1	1	1	1	1	1
3	X-672-13	Clamp, Insulated	1	1	1	1	1	1	1	1	1	1	1	1
4	X-19-1	Washer, Split Lock, 10	1	1	1	1	1	1	1	1	1	1	1	1
5	X-129-20	Screw, Ref., 1/2-13 x 1 3/4	16	16	16	16	16	16	16	16	16	16	16	16
6	290945	Washer, Hardened, 17/32 x 1 1/16	16	16	16	16	16	16	16	16	16	16	16	16
7	X-6021-13	Screw, H.C.	6				6			6	6	6	6	4
7	X-6021-14	Screw, H.C.			6	6		6	6					
8	X-801-5	Washer, Hardened, 21/32 x 1 1/16 x 3/32	6	6	6	6	6	6	6	6	6	6	6	6
9	#	Hardware, 3/4-10	4		4	4	4	4	4	4	4	4	4	4
10	X-801-8	Washer, Plain	4	4	4	4	4	4	4	4	4	4	4	4
11	290743	Shim, 16 Gauge	6	6	6	6	6	6	6	6	6	6	6	6
11	290744	Shim, 7 Gauge	12	12	12	12	12	12	12	12	12	12	12	12
11	291191	Shim, .010	4	4	4	4	4	4	4	4	4	4	4	4
12	X-6011-1	Washer, Beveled, 13/16 dia.	4	4	4	4	4	4	4	4	4	4	4	4
13	X-400-172	Spacer, .640 ID x .531 L						6						
14	274324	Support, Generator			2	2		2	2					
15	X-6011-1	Washer, Beveled 13/16 dia.			8	8		8	8					
16	#	Hardware, 3/4-10			8	8		8	8					
17	328903	Screen												
17	328904	Screen												
18	328897	Cover, Top Back												
18	328898	Cover, Top Back												
19	328900	Cover, Louvered												
19	328901	Cover, Louvered												

* Alternator assembly includes parts not shown on the illustration. See page 41.

Common Hardware; Procure Locally.

Group 201: Generator and Mounting



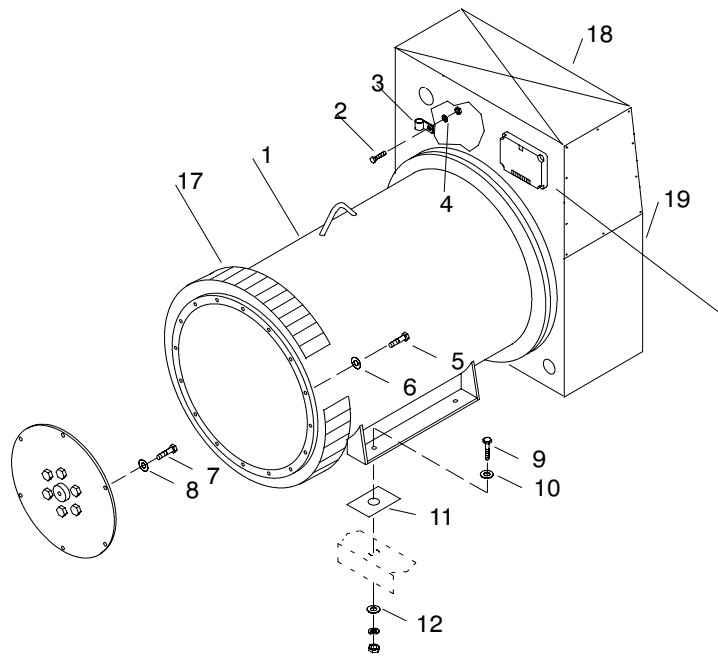
900DS
201-70-107
FB-272000

Item	Part Number	Description	Quantity											
			Variation/Kit Number											
			115	116	117	118	119	120	121	122	240	241	242	243
1	A-279982	Alternator Assembly*	1			1								
1	B-292479	Alternator Assembly*		1										
1	A-279979	Alternator Assembly*			1									
1	B-279907	Alternator Assembly*					1							
1	A-279983	Alternator Assembly*						1						
1	A-279980	Alternator Assembly*							1					
1	B-279908	Alternator Assembly*								1				
1	A-328811	Alternator Assembly*									1			
1	A-328112	Alternator Assembly*										1		
1	A-328113	Alternator Assembly*											1	
1	A-328135	Alternator Assembly*												1
2	X-50-15	Screw, 10-24 x 1/2	1	1	1	1	1	1	1	1				
3	X-672-13	Clamp, Insulated	1	1	1	1	1	1	1	1				
4	X-19-1	Washer, Split Lock, 10	1	1	1	1	1	1	1	1				
5	X-129-20	Screw, Ref., 1/2-13 x 1 3/4	16	16	16	16	16	16	16	16	16	16	16	16
6	290945	Washer, Hardened, 17/32 x 1 1/16	16	16	16	16	16	16	16	16	16	16	16	16
7	X-6021-13	Screw, H.C.	6	6	6	6	6	6	6	6	6	6	6	6
7	X-6021-14	Screw, H.C.												
8	X-801-5	Washer, Hardened, 21/32 x 1 1/16 x 3/32	6	6	6	6	6	6	6	6	6	6	6	6
9	#	Hardware, 3/4-10	4	4	4	4	4		4	4				
10	X-801-8	Washer, Plain	4	4	4	4	4	4	4	4	4	4	4	4
11	290743	Shim, 16 Gauge	6	6	6	6	6	6	6	6	6	6	6	6
11	290744	Shim, 7 Gauge	12	12	12	12	12	12	12	12	12	12	12	12
11	291191	Shim, .010	4	4	4	4	4	4	4	4	4	4	4	4
12	X-6011-1	Washer, Beveled, 13/16 dia.	4	4	4	4	4	4	4	4	4	4	4	4
13	X-400-172	Spacer, .640 ID x .531 L		6				6						6
14	274324	Support, Generator												
15	X-6011-1	Washer, Beveled 13/16 dia.												
16	#	Hardware, 3/4-10												
17	328903	Screen									1	1	1	1
17	328904	Screen												
18	328897	Cover, Top Back									1	1	1	1
18	328898	Cover, Top Back												
19	328900	Cover, Louvered									1	1	1	1
19	328901	Cover, Louvered												

* Alternator assembly includes parts not shown on the illustration. See page 41.

Common Hardware; Procure Locally.

Group 201: Generator and Mounting



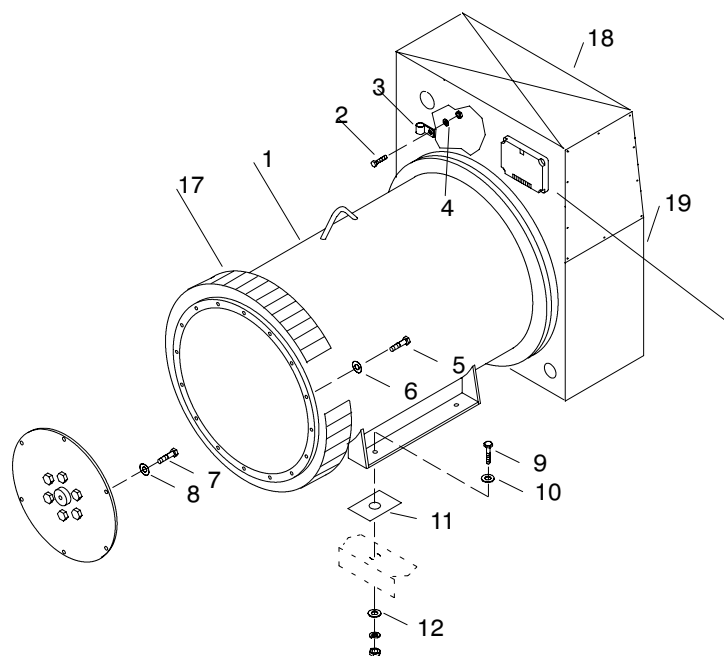
900DS
201-70-107
FB-272000

Item	Part Number	Description	Quantity											
			Variation/Kit Number											
			244	245	246	247	248	249	199	203	204	205	206	207
1	A-328124	Alternator Assembly*	1											
1	A-328113	Alternator Assembly*		1										
1	A-328114	Alternator Assembly*			1									
1	A-328137	Alternator Assembly*				1								
1	A-328125	Alternator Assembly*					1							
1	A-328115	Alternator Assembly*						1						
1	A-328107	Alternator Assembly*							1	1				
1	A-328108	Alternator Assembly*									1			
1	A-328109	Alternator Assembly*										1		
1	A-328132	Alternator Assembly*											1	
1	A-328122	Alternator Assembly*												1
2	X-50-15	Screw, 10-24 x 1/2	1	1	1	1	1	1	1	1	1	1	1	1
3	X-672-13	Clamp, Insulated	1	1	1	1	1	1	1	1	1	1	1	1
4	X-19-1	Washer, Split Lock, 10	1	1	1	1	1	1	1	1	1	1	1	1
5	X-129-20	Screw, Ref., 1/2-13 x 1 3/4	16	16	16	16	16	16	16	16	16	16	16	16
6	290945	Washer, Hardened, 17/32 x 1 1/16	16	16	16	16	16	16	16	16	16	16	16	16
7	X-6021-13	Screw, H.C.	6	6	6	6	6	6	6			6	6	
7	X-6021-14	Screw, H.C.								6	6			6
8	X-801-5	Washer, Hardened, 21/32 x 1 1/16 x 3/32	6	6	6	6	6	6	6	6	6	6	6	6
9	#	Hardware, 3/4-10												
10	X-801-8	Washer, Plain	4	4	4	4	4	4	4	4	4	4	4	4
11	290743	Shim, 16 Gauge	6	6	6	6	6	6	6	6	6	6	6	6
11	290744	Shim, 7 Gauge	12	12	12	12	12	12	12	12	12	12	12	12
11	291191	Shim, .010	4	4	4	4	4	4	4	4	4	4	4	4
12	X-6011-1	Washer, Beveled, 13/16 dia.	4	4	4	4	4	4	4	4	4	4	4	4
13	X-400-172	Spacer, .640 ID x .531 L				6								
14	274324	Support, Generator												
15	X-6011-1	Washer, Beveled 13/16 dia.												
16	#	Hardware, 3/4-10												
17	328903	Screen	1	1	1	1	1	1	1					
17	328904	Screen												
18	328897	Cover, Top Back	1	1	1	1	1	1	1					
18	328898	Cover, Top Back												
19	328900	Cover, Louvered	1	1	1	1	1	1	1					
19	328901	Cover, Louvered												
*	Alternator assembly includes parts not shown on the illustration. See page 41.													

* Alternator assembly includes parts not shown on the illustration. See page 41.

Common Hardware; Procure Locally.

Group 201: Generator and Mounting



Governor controller.
Supplied by engine manufacturer.
See group 105 for part number.

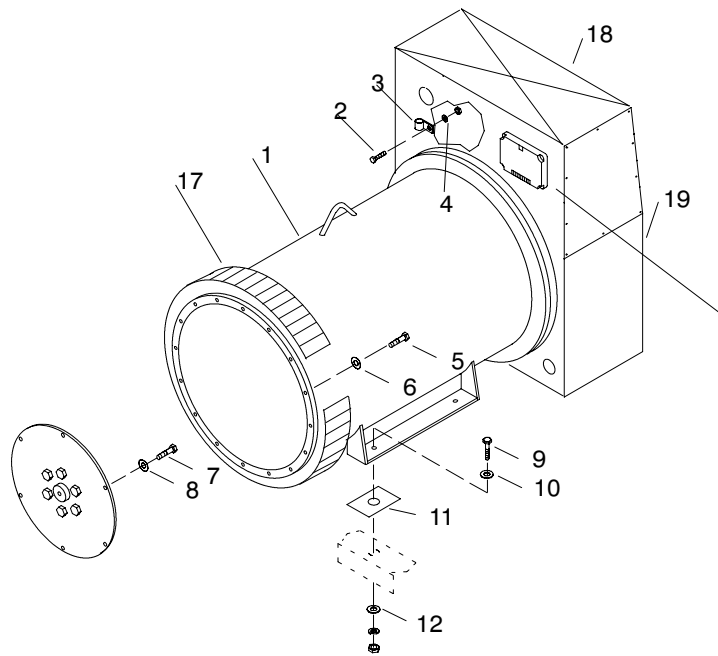
900DS
201-70-107
FB-272000

Item	Part Number	Description	Quantity											
			Variation/Kit Number											
			208	209	210	219	220	221	222	223	224	225	226	371
1	A-328110	Alternator Assembly*	1								1			
1	A-328133	Alternator Assembly*		1								1		
1	A-328123	Alternator Assembly*			1								1	
1	A-328107	Alternator Assembly*				1								
1	A-328108	Alternator Assembly*					1							
1	A-328132	Alternator Assembly*						1						
1	A-328122	Alternator Assembly*							1					
1	A-328109	Alternator Assembly*								1				
1	A-328403	Alternator Assembly*												1
2	X-50-15	Screw, 10-24 x 1/2	1	1	1	1	1	1	1	1	1	1	1	1
3	X-672-13	Clamp, Insulated	1	1	1	1	1	1	1	1	1	1	1	1
4	X-19-1	Washer, Split Lock, 10	1	1	1	1	1	1	1	1	1	1	1	1
5	X-129-20	Screw, Ref., 1/2-13 x 1 3/4	16	16	16	16	16	16	16	16	16	16	16	16
6	290945	Washer, Hardened, 17/32 x 1 1/16	16	16	16	16	16	16	16	16	16	16	16	16
7	X-6021-13	Screw, H.C.	6	6	6			6	6	6	6	6	6	6
7	X-6021-14	Screw, H.C.				6	6							
8	X-801-5	Washer, Hardened, 21/32 x 1 1/16 x 3/32	6	6	6	6	6	6	6	6	6	6	6	6
9	#	Hardware, 3/4-10												
10	X-801-8	Washer, Plain	4	4	4	4	4	4	4	4	4	4	4	4
11	290743	Shim, 16 Gauge	6	6	6	6	6	6	6	6	6	6	6	6
11	290744	Shim, 7 Gauge	12	12	12	12	12	12	12	12	12	12	12	12
11	291191	Shim, .010	4	4	4	4	4	4	4	4	4	4	4	4
12	X-6011-1	Washer, Beveled, 13/16 dia.	4	4	4	4	4	4	4	4	4	4	4	4
13	X-400-172	Spacer, .640 ID x .531 L												
14	274324	Support, Generator												
15	X-6011-1	Washer, Beveled 13/16 dia.												
16	#	Hardware, 3/4-10												
17	328903	Screen				1	1	1	1					
17	328904	Screen								1	1	1	1	1
18	328897	Cover, Top Back				1	1	1	1					
18	328898	Cover, Top Back								1	1	1	1	1
19	328900	Cover, Louvered				1	1	1	1					
19	328901	Cover, Louvered								1	1	1	1	1
*	Alternator assembly includes parts not shown on the illustration. See page 41.													

* Alternator assembly includes parts not shown on the illustration. See page 41.

Common Hardware; Procure Locally.

Group 201: Generator and Mounting



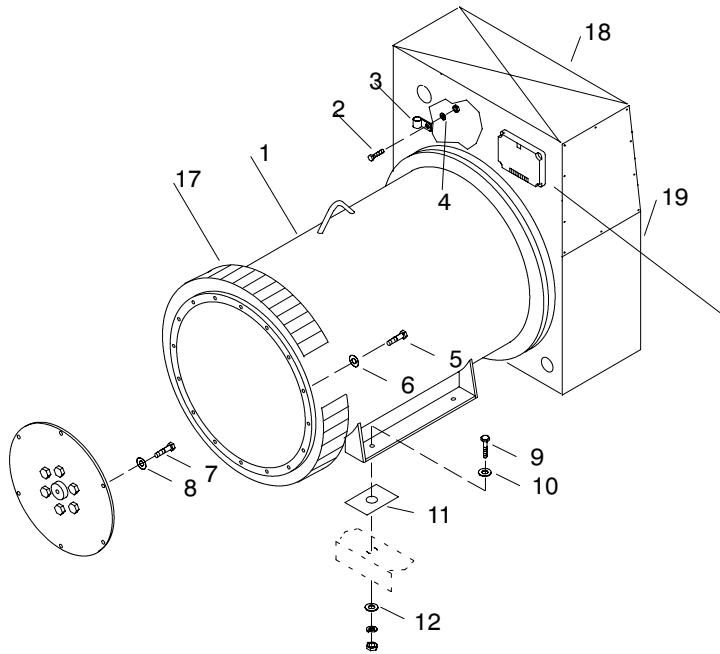
900DS
201-70-107
FB-272000

Item	Part Number	Description	Quantity											
			Variation/Kit Number											
			398	363	364	365	366	372	373	374	375	377	379	381
1	A-328658	Alternator Assembly*	1					1						
1	A-328107	Alternator Assembly*		1										
1	A-328108	Alternator Assembly*			1									
1	A-328122	Alternator Assembly*				1								
1	A-328132	Alternator Assembly*					1							
1	A-328133	Alternator Assembly*							1					
1	A-328134	Alternator Assembly*								1				
1	A-328123	Alternator Assembly*									1			
1	A-328113	Alternator Assembly*										1		
1	A-328114	Alternator Assembly*											1	
1	A-328125	Alternator Assembly*												1
2	X-50-15	Screw, 10-24 x 1/2	1	1	1	1	1	1	1	1	1	1	1	1
3	X-672-13	Clamp, Insulated	1	1	1	1	1	1	1	1	1	1	1	1
4	X-19-1	Washer, Split Lock, 10	1	1	1	1	1	1	1	1	1	1	1	1
5	X-129-20	Screw, Ref., 1/2-13 x 1 3/4	16	16	16	16	16	16	16	16	16	16	16	16
6	290945	Washer, Hardened, 17/32 x 1 1/16	16	16	16	16	16	16	16	16	16	16	16	16
7	X-6021-13	Screw, H.C.							6	6	6	6	6	6
7	X-6021-14	Screw, H.C.	6	6	6	6	6	6						
8	X-801-5	Washer, Hardened, 21/32 x 1 1/16 x 3/32	6	6	6	6	6	6	6	6	6	6	6	6
9	#	Hardware, 3/4-10												
10	X-801-8	Washer, Plain	4	4	4	4	4	4	4	4	4	4	4	4
11	290743	Shim, 16 Gauge	6	6	6	6	6	6	6	6	6	6	6	6
11	290744	Shim, 7 Gauge	12	12	12	12	12	12	12	12	12	12	12	12
11	291191	Shim, .010	4	4	4	4	4	4	4	4	4	4	4	4
12	X-6011-1	Washer, Beveled, 13/16 dia.	4	4	4	4	4	4	4	4	4	4	4	4
13	X-400-172	Spacer, .640 ID x .531 L												
14	274324	Support, Generator												
15	X-6011-1	Washer, Beveled 13/16 dia.												
16	#	Hardware, 3/4-10												
17	328903	Screen		1	1	1	1							
17	328904	Screen	1					1	1	1	1	1	1	1
18	328897	Cover, Top Back	1	1	1	1	1							
18	328898	Cover, Top Back							1	1	1	1	1	1
19	328900	Cover, Louvered	1	1	1	1	1	1						
19	328901	Cover, Louvered							1	1	1	1	1	1
*	Alternator assembly includes parts not shown on the illustration. See page 41.													

* Alternator assembly includes parts not shown on the illustration. See page 41.

Common Hardware; Procure Locally.

Group 201: Generator and Mounting



Governor controller.
Supplied by engine manufacturer.
See group 105 for part number.

900DS
201-70-107
FB-272000

Item	Part Number	Description	Quantity											
			Variation/Kit Number											
			384	383	387	389	391	399	400	401	402	403	404	
1	A-328126	Alternator Assembly*	1											
1	A-328137	Alternator Assembly*		1										
1	A-328115	Alternator Assembly*			1									
1	A-328146	Alternator Assembly*				1								
1	A-328147	Alternator Assembly*					1							
1	A-328112	Alternator Assembly*						1						
1	A-328124	Alternator Assembly*							1					
1	A-328135	Alternator Assembly*								1				
1	A-328136	Alternator Assembly*									1			
1	A-328144	Alternator Assembly*										1		
1	A-328145	Alternator Assembly*												1
2	X-50-15	Screw, 10-24 x 1/2	1	1	1	1	1	1	1	1	1	1	1	1
3	X-672-13	Clamp, Insulated	1	1	1	1	1	1	1	1	1	1	1	1
4	X-19-1	Washer, Split Lock, 10	1	1	1	1	1	1	1	1	1	1	1	1
5	X-129-20	Screw, Ref., 1/2-13 x 1 3/4	16	16	16	16	16	16	16	16	16	16	16	16
6	290945	Washer, Hardened, 17/32 x 1 1/16	16	16	16	16	16	16	16	16	16	16	16	16
7	X-6021-13	Screw, H.C.	6	6	6	6	6	6	6			6	6	
7	X-6021-14	Screw, H.C.												
8	X-801-5	Washer, Hardened, 21/32 x 1 1/16 x 3/32	6	6	6	6	6	6	6	6	6	6	6	6
9	#	Hardware, 3/4-10												
10	X-801-8	Washer, Plain	4	4	4	4	4	4	4	4	4	4	4	4
11	290743	Shim, 16 Gauge	6	6	6	6	6	6	6	6	6	6	6	6
11	290744	Shim, 7 Gauge	12	12	12	12	12	12	12	12	12	12	12	12
11	291191	Shim, .010	4	4	4	4	4	4	4	4	4	4	4	4
12	X-6011-1	Washer, Beveled, 13/16 dia.	4	4	4	4	4	4	4	4	4	4	4	4
13	X-400-172	Spacer, .640 ID x .531 L									6	6		
14	274324	Support, Generator												
15	X-6011-1	Washer, Beveled 13/16 dia.												
16	#	Hardware, 3/4-10												
17	328903	Screen												
17	328904	Screen	1	1	1	1	1	1	1	1	1	1	1	1
18	328898	Cover, Top Back	1	1	1	1	1	1	1	1	1	1	1	1
19	328901	Cover, Louvered	1	1	1	1	1	1	1	1	1	1	1	1
20	347717	Box, control (not shown)				1	1					1	1	
21	347718	Cover, control box (not shown)				1	1					1	1	

* Alternator assembly includes parts not shown on the illustration. See page 41.

Common Hardware; Procure Locally.

Group 201: Generator and Mounting

Alternator Assembly Components

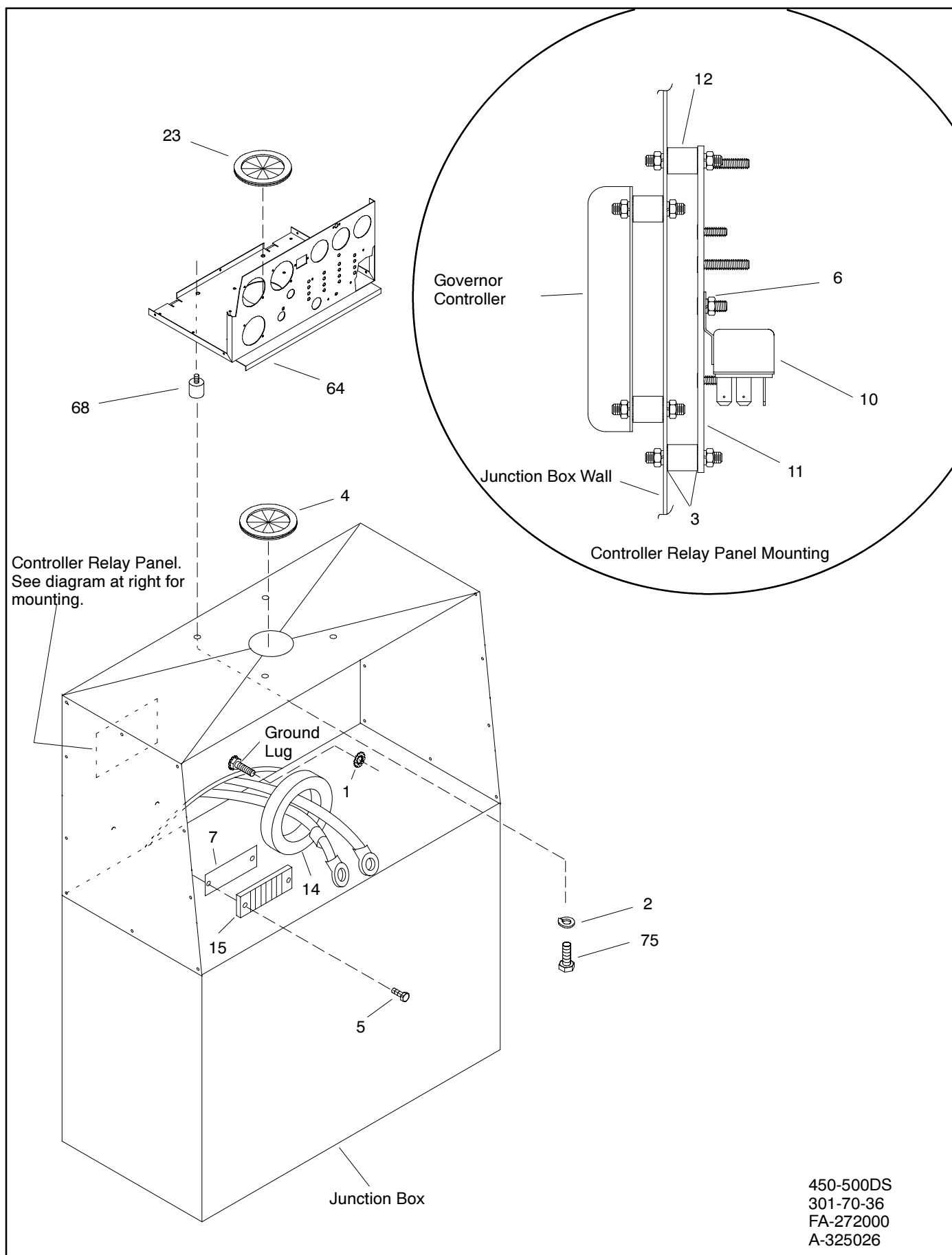
Part Description	Part Number	
	430 and 570 Frame Series (350-900 kW)	740 Frame Series (1000-2000 kW)
Exciter Rectifier Assembly (includes diodes and surge suppressor)	347071	347070
Diode, Standard Polarity	279772	279773
Diode, Reversing Polarity	279774	279775
Surge Suppressor	279776	279777
Capacitor	347160	347160
Fuse, 5 Amp	279778	249778
Fuse Cap	279779	279779

Alternator Kit/Variation Cross-Reference Table

For modular specs with customer-selected air alternator kit option, the alternator kit number appears on the generator set nameplate. The parts list of the alternator kit is identical to a variation shown in this group. Use the following table to identify the equivalent variation number.

Alternator Kit (Model)	Equivalent Variation Number
325942 (5M4036)	363
325952 (5M4038)	364
325953 (5M4044)	371
325954 (5M4168)	365
325955 (5M4280)	366
350036 (7M4046)	372
350037 (7M4282)	373
350038 (7M4284)	374
350039 (7M4170)	375
350106 (7M4046)	398
350107 (7M4048)	399
350108 (7M4050)	377
350109 (7M4172)	400
350110 (7M4174)	381
350111 (7M4286)	401
350112 (7M4288)	402
350113 (7M4052)	387
350114 (7M4176)	384
350115 (7M4290)	383
350116 (7M4054)	387
350130 (7M4370)	391
350131 (7M4368)	389
350132 (7M4364)	403
350133 (7M4366)	404

Group 301: Controller and Mounting



Group 301: Controller and Mounting

Item	Part Number	Description	Quantity							
			Variation/Kit Number							
			38	39	40	53	54	56		
1	X-22-14	Washer, Shakeproof 3/8	1	1	1	1	1	1		
2	X-22-16	Washer, Lock 5/16	4	4	4	4	4	4		
3	X-22-20	Washer, Ext. Tooth Lock 8	8	8	8	8	8	8		
4	X-284-25	Grommet	1	1	1	1	1	1		
5	X-51-11	Screw, 8/32 x 3/4	2	2	2	2	2	2		
6	X-6210-1	Nut, Whiz Lock	1	1	1	1	1	1		
7	255080	Marker, Strip	1	1	1	1	1	1		
8	258453	Harness, Wiring CT (not shown)	1	1	1	1	1	1		
9	258455	Harness, Wiring AC (not shown)	1			1				
9	274964	Harness, Wiring AC (not shown)		1	1		1	1		
10	272684	Relay	2	2	2	2	2	2		
11	274796	Panel, Relay	1	1	1	1	1	1		
12	282829	Mount, Vibro	1	1	1	1	1	1		
13	291288	Pickup, Speed (on flywheel housing, not shown)	1	1	1	1	1	1		
14	291548	Transformer, Current	3	3		3	3			
14	297675	Transformer, Current			3			3		
14	287684	Transformer, Stepdown (not shown)	3	3	3	3	3	3		
15	295314	Block, Terminal	1	1	1	1	1	1		
16	See Chart Below	Controller Assembly	1	1	1	1	1	1		
17	See Chart Below	*Circuit Board, Main	1	1	1	1	1	1		
18	See Chart Below	*Circuit Board, Indicator	1	1	1	1	1	1		
19	X-22-20	*Washer, Shakeproof	1	1	1	1	1	1		
20	X-22-50	*Washer, Lock	2	2	2	2	2	2		
21	X-22-6	*Washer, Lock #6	4	4	4	4	4	4		
22	X-22-7	*Washer, Lock #8	3	3	3	3	3	3		
23	X-284-31	*Grommet	1	1	1	1	1	1		
24	X-301-29	*Plug, Button	1	1	1	1	1	1		
25	X-301-34	*Plug, Button	1	1	1	1	1	1		
26	X-468-3	*Tie, Cable Nylon	1	1	1	1	1	1		
27	X-49-2	*Screw, r.h.m. 6-32 x 3	2	2	2	2	2	2		
28	X-49-25	*Screw, r.h.m. 6-32 x 1	18	18	18	18	18	18		
29	X-49-39	*Screw, Pan Head 6-32 x .50	2	2	2	2	2	2		
30	X-50-3	*Screw, r.h.m. 10-24 x .75	5	5	5	5	5	5		
31	X-50-70	*Screw, r.h.m. 10-24 x 1	1	1	1	1	1	1		
32	X-51-53	*Screw, r.h.m. 8-32 x .625	2	2	2	2	2	2		
33	X-519-1	*Plug, Cap 1/8 Inch	2	2	2	2	2	2		
34	X-6046-2	*Strap, Ground	1	1	1	1	1	1		
35	X-6048-2	*Jumper, Terminal Block	2	2	2	2	2	2		
36	X-6216-1	*Screw, Hex Crimptite	10	10	10	10	10	10		
37	X-6234-6	*Nut, Hex	2	2	2	2	2	2		
38	X-67-127	*Screw, Thread Forming	2	2	2	2	2	2		
39	X-696-5	*Sleeve	1	1	1	1	1	1		
40	X-712-9	*Spacer	4	4	4	4	4	4		
		Parts list continues								

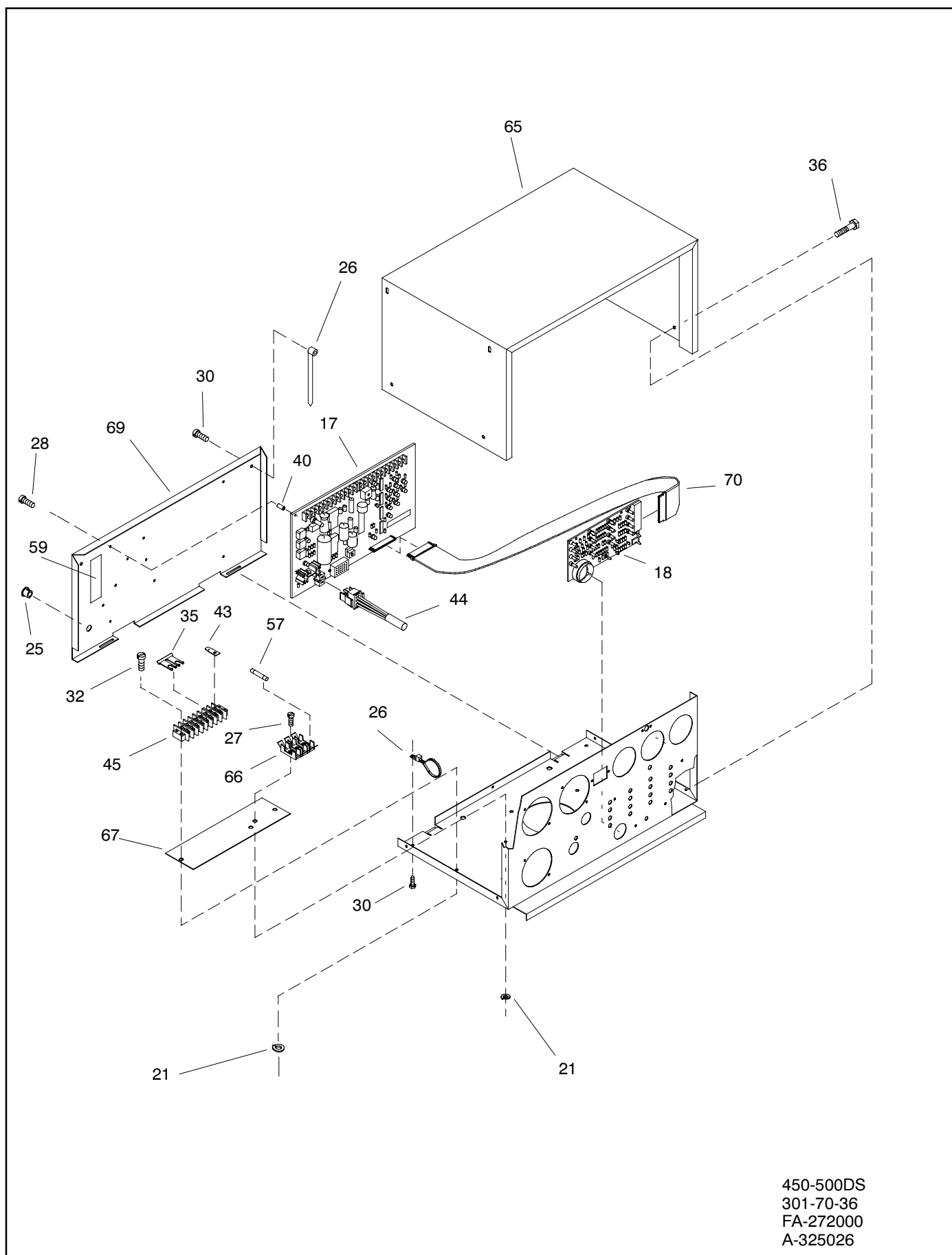
Serial Number-Contingent Controller Parts

Part Description	Part Number	
	Before Serial Number 363369	Serial Numbers 363369 And After
Main Circuit Board	G-292806	A-336415
Indicator Board	B-292357	A-336432
Controller Ribbon Cable	292836	336428

Serial Number-Contingent Controller Assemblies

Variations	Controller Assembly Part Number	
	Before Serial Number 363369	Serial Numbers 363369 And After
38, 39	A-325030	A-325030
40	A-325036	A-325036
53, 54	A-325030	A-325734
56	A-325401	A-325744

Group 301: Controller and Mounting

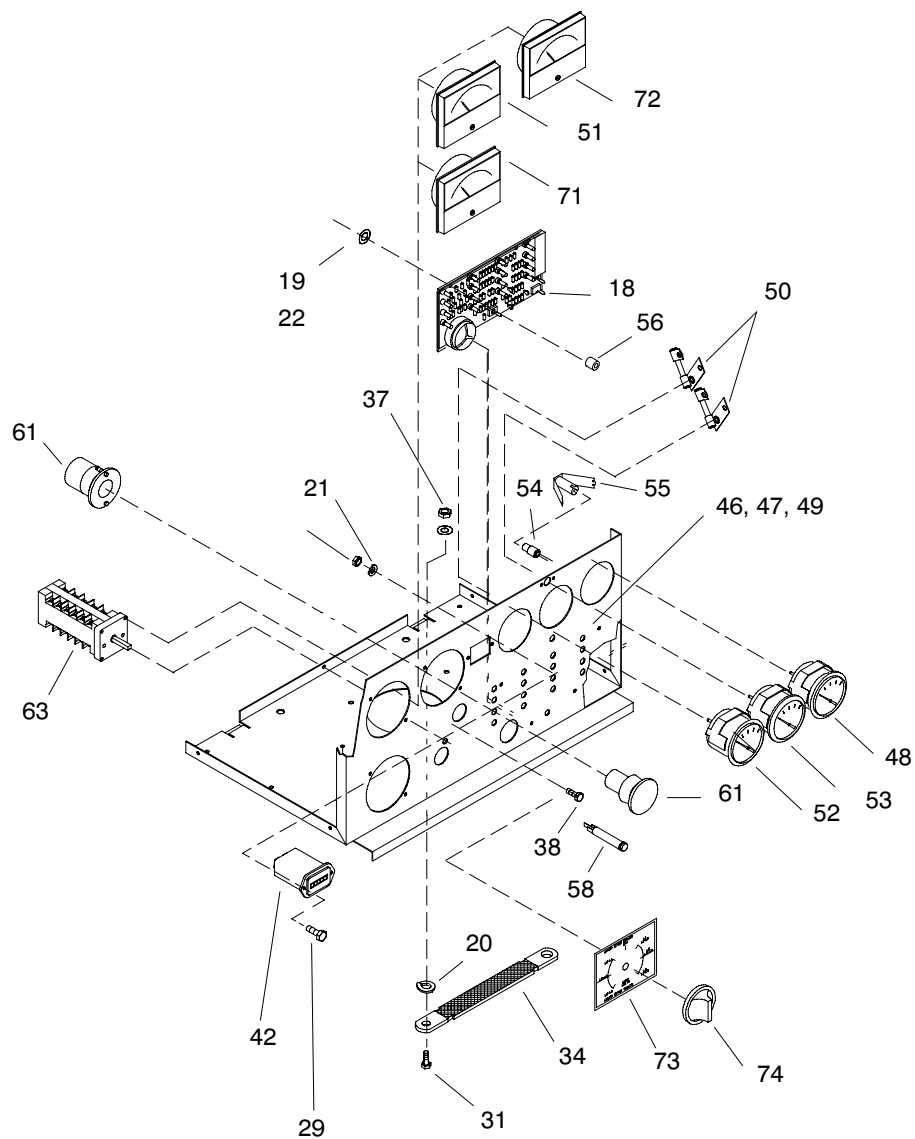


450-500DS
301-70-36
FA-272000
A-325026

Group 301: Controller and Mounting

Item	Part Number	Description	Quantity							
			Variation/Kit Number							
			38	39	40	53	54	56		
1	X-22-14	Washer, Shakeproof 3/8	1	1	1	1	1	1		
2	X-22-16	Washer, Lock 5/16	4	4	4	4	4	4		
3	X-22-20	Washer, Ext. Tooth Lock 8	8	8	8	8	8	8		
4	X-284-25	Grommet	1	1	1	1	1	1		
5	X-51-11	Screw, 8/32 x 3/4	2	2	2	2	2	2		
6	X-6210-1	Nut, Whiz Lock	1	1	1	1	1	1		
7	255080	Marker, Strip	1	1	1	1	1	1		
8	258453	Harness, Wiring CT (not shown)	1	1	1	1	1	1		
9	258455	Harness, Wiring AC (not shown)	1		1	1		1		
9	274964	Harness, Wiring AC (not shown)		1			1			
10	272684	Relay	2	2	2	2	2	2		
11	274796	Panel, Relay	1	1	1	1	1	1		
12	282829	Mount, Vibro	1	1	1	1	1	1		
13	291288	Pickup, Speed (on flywheel housing, not shown)	1	1	1	1	1	1		
14	291548	Transformer, Current	3	3		3	3			
14	297675	Transformer, Current			3			3		
14	287684	Transformer, Stepdown (not shown)	3	3	3	3	3	3		
15	295314	Block, Terminal	1	1	1	1	1	1		
16	See Chart	Controller Assembly	1	1	1	1	1	1		
17	See Chart	*Circuit Board, Main	1	1	1	1	1	1		
18	See Chart	*Circuit Board, Indicator	1	1	1	1	1	1		
19	X-22-20	*Washer, Shakeproof	1	1	1	1	1	1		
20	X-22-50	*Washer, Lock	2	2	2	2	2	2		
21	X-22-6	*Washer, Lock #6	4	4	4	4	4	4		
22	X-22-7	*Washer, Lock #8	3	3	3	3	3	3		
23	X-284-31	*Grommet	1	1	1	1	1	1		
24	X-301-29	*Plug, Button	1	1	1	1	1	1		
25	X-301-34	*Plug, Button	1	1	1	1	1	1		
26	X-468-3	*Tie, Cable Nylon	1	1	1	1	1	1		
27	X-49-2	*Screw, r.h.m. 6-32 x 3	2	2	2	2	2	2		
28	X-49-25	*Screw, r.h.m. 6-32 x 1	18	18	18	18	18	18		
29	X-49-39	*Screw, Pan Head 6-32 x .50	2	2	2	2	2	2		
30	X-50-3	*Screw, r.h.m. 10-24 x .75	5	5	5	5	5	5		
31	X-50-70	*Screw, r.h.m. 10-24 x 1	1	1	1	1	1	1		
32	X-51-53	*Screw, r.h.m. 8-32 x .625	2	2	2	2	2	2		
33	X-519-1	*Plug, Cap 1/8 inch	2	2	2	2	2	2		
34	X-6046-2	*Strap, Ground	1	1	1	1	1	1		
35	X-6048-2	*Jumper, Terminal Block	2	2	2	2	2	2		
36	X-6216-1	*Screw, Hex Crimpfit	10	10	10	10	10	10		
37	X-6234-6	*Nut, Hex	2	2	2	2	2	2		
38	X-67-127	*Screw, Thread Forming	2	2	2	2	2	2		
39	X-696-5	*Sleeve	1	1	1	1	1	1		
40	X-712-9	*Spacer	4	4	4	4	4	4		
41	201620-86	*Tab, Identification	1	1	1	1	1	1		
42	238736	*Meter, Hour	1	1	1	1	1	1		
43	238898	*Terminal	1	1	1	1	1	1		
44	241617	*Connector, 6 Position	1	1	1	1	1	1		
45	246115	*Block, Terminal	1	1	1	1	1	1		
46	253241	*Lens, Red	12	12	12	12	12	12		
47	253242	*Lens, Green	1	1	1	1	1	1		
48	255224	*Voltmeter, DC	1	1	1	1	1	1		
49	255931	*Lens, Yellow	3	3	3	3	3	3		
50	268297	*Resistor, 24 volt	2	2	2	2	2	2		
51	282814	*Voltmeter, AC	1	1	1	1	1	1		
52	282897	*Gauge, Oil Pressure	1	1	1	1	1	1		
53	282898	*Gauge, Water Temperature	1	1	1	1	1	1		
54	283420	*Bulb	2	2	2	2	2	2		
55	284990	*Socket, Lamp	2	2	2	2	2	2		
56	287948	*Spacer, Circuit Board	9	9	9	9	9	9		
57	291207	*Fuse, 1.5 Amp	3	3	3	3	3	3		
58	291740	*Lamp	2	2	2	2	2	2		
59	292347	*Decal	1	1	1	1	1	1		
60	292361	*Decal	1	1	1	1	1	1		
		Parts list continues								

Group 301: Controller and Mounting

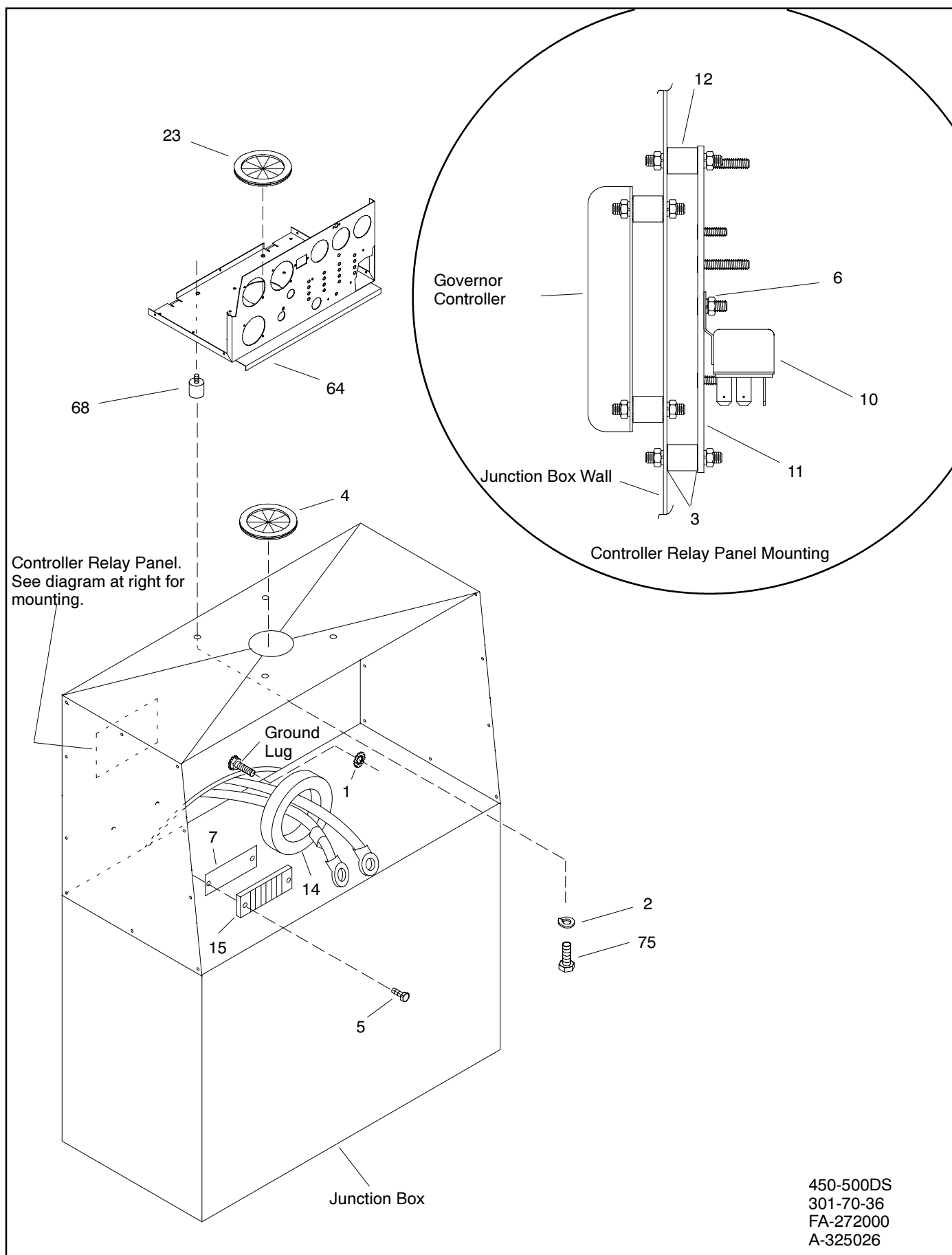


450-500DS
301-70-36
FA-272000
A-325026

Group 301: Controller and Mounting

Item	Part Number	Description	Quantity							
			Variation/Kit Number							
			38	39	40	53	54	56		
61	292364	*Switch, Pushbutton	1	1	1	1	1	1		
62	292467	*Decal, Emergency Stop	1	1	1	1	1	1		
63	292374	*Switch, Selector	1	1	1	1	1	1		
64	325073	*Box, Controller	1	1	1	1	1	1		
65	325003	*Cover, Controller	1	1	1	1	1	1		
66	292821	*Holder, Fuse	1	1	1	1	1	1		
67	292823	*Marker, Strip	1	1	1	1	1	1		
68	292834	*Bumper	4	4	4	4	4	4		
69	292908	*Plate, Hinged Back	1	1	1	1	1	1		
70	See Chart	*Cable Assembly	1	1	1	1	1	1		
71	295069	*Meter, Frequency	1	1	1	1	1	1		
72	282960	*Ammeter, AC	1		1			1		
72	299967	*Ammeter, AC		1		1	1			
73	325072	*Decal, Selector Switch	1	1	1	1	1	1		
74	296291	*Knob	1	1	1	1	1	1		
75	X-125-23	Screw, Ref. 5/16-18 x 3 1/2	1	1	1	1	1	1		

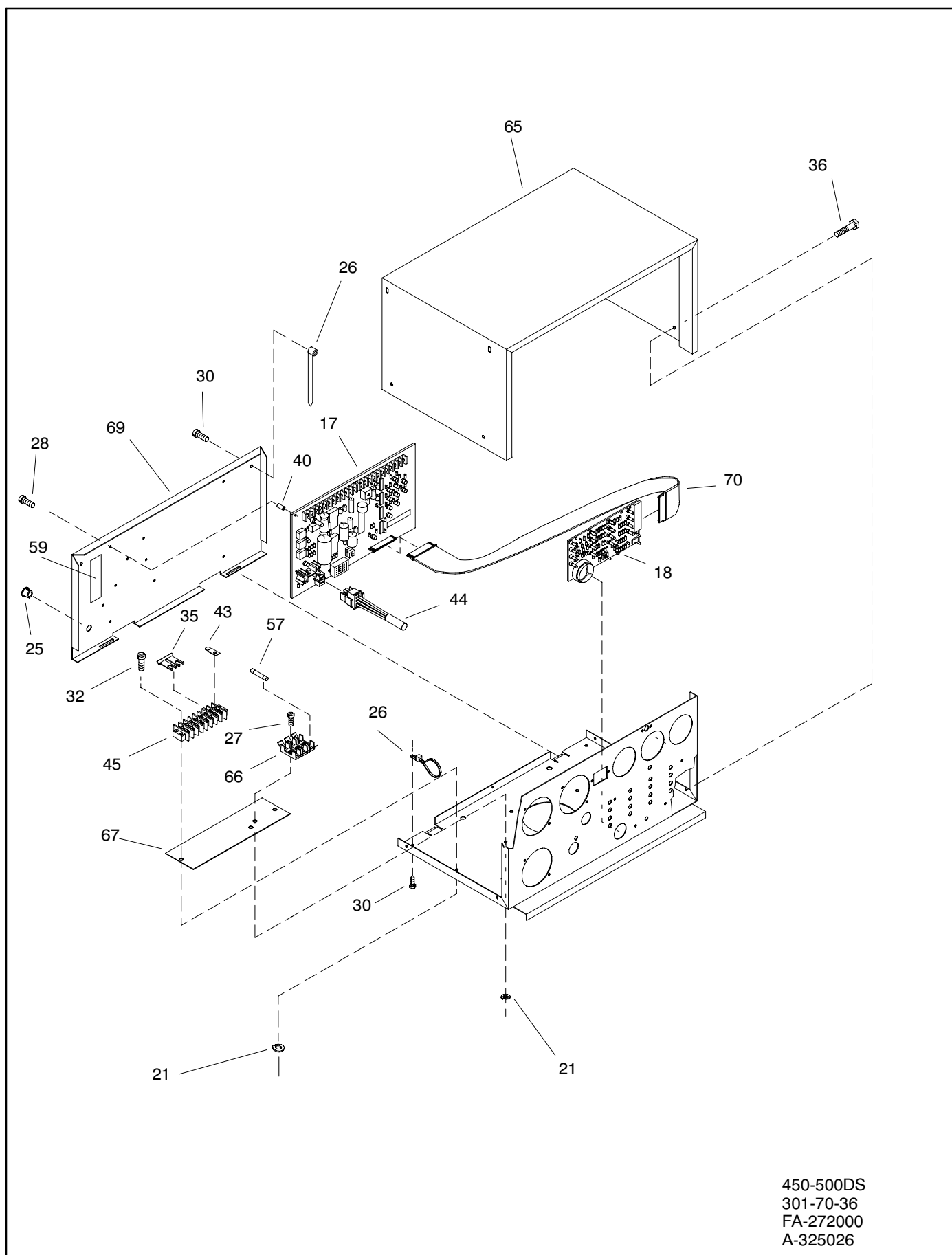
Group 301: Controller and Mounting



Group 301: Controller and Mounting

Item	Part Number	Description	Quantity								
			Variation/Kit Number								
			133	134	135	139	141	143	145	147	149
1	X-22-14	Washer, Shakeproof 3/8	1	1	1	1	1	1	1	1	1
2	X-22-16	Washer, Lock 5/16	4	4	4	4	4	4	4	4	4
3	X-22-20	Washer, Ext. Tooth Lock 8	8	8	8	8	8	8	8	8	8
4	X-284-25	Grommet	1	1	1	1	1	1	1	1	1
5	X-51-11	Screw, 8/32 x 3/4	2	2	2	2	2	2	2	2	2
6	X-6210-1	Nut, Whiz Lock	1	1	1	1	1	1	1	1	1
7	255080	Marker, Strip	1	1	1	1	1	1	1	1	1
8	258453	Harness, Wiring CT (not shown)	1	1	1	1	1	1	1	1	1
9	258455	Harness, Wiring AC (not shown)	1								
9	274964	Harness, Wiring AC (not shown)		1	1	1	1	1	1		
9	347562	Harness, Wiring AC (not shown)								1	1
9	347564	Harness, Wiring AC (not shown)								1	1
10	272684	Relay	2	2	2	2	2	2	2	2	2
11	274796	Panel, Relay	1	1	1	1	1	1	1	1	1
12	282829	Mount, Vibro	4	4	4	4	4	4	4	4	4
13	291288	Pickup, Speed (on flywheel housing, not shown)	1	1	1	1	1	1	1	1	1
14	297676	Transformer, Current	3						3		
14	291548	Transformer, Current		3				3			
14	291547	Transformer, Current			3						
14	297675	Transformer, Current				3	3				
14	233952	Transformer, Current								3	
14	233951	Transformer, Current									3
14	287684	Transformer, Stepdown (not shown)	3	3			3		3		
14	258990	Transformer, Stepdown (not shown)			3			3			
14	276578	Transformer, Stepdown (not shown)				3					
14	X-6121-55	Transformer, Stepdown (not shown)								3	3
15	295314	Block, Terminal	1	1	1	1	1	1	1	1	1
16	A-325734	Controller Assembly	1	1							
16	A-325742	Controller Assembly			1						
16	A-325740	Controller Assembly				1					
16	A-325744	Controller Assembly					1				
16	A-325745	Controller Assembly						1			
16	A-325879	Controller Assembly							1		
16	A-325881	Controller Assembly								1	
16	A-354253	Controller Assembly									1
17	A-336415	*Circuit Board, Main	1	1	1	1	1	1	1	1	1
18	A-336432	*Circuit Board, Indicator	1	1	1	1	1	1	1	1	1
19	X-22-20	*Washer, Shakeproof	1	1	1	1	1	1	1	1	1
20	X-22-50	*Washer, Lock	2	2	2	2	2	2	2	2	2
21	X-22-6	*Washer, Lock #6	4	4	4	4	4	4	4	4	4
22	X-22-7	*Washer, Lock #8	3	3	3	3	3	3	3	3	3
23	X-284-31	*Grommet	1	1	1	1	1	1	1	1	1
24	X-301-29	*Plug, Button	1	1	1	1	1	1	1	1	1
25	X-301-34	*Plug, Button	1	1	1	1	1	1	1	1	1
26	X-468-3	*Tie, Cable Nylon	1	1	1	1	1	1	1	1	1
27	X-49-2	*Screw, r.h.m. 6-32 X 3	2	2	2	2	2	2	2	2	2
28	X-49-25	*Screw, r.h.m. 6-32 X 1	18	18	18	18	18	18	18	18	18
29	X-49-39	*Screw, Pan Head 6-32 X .50	2	2	2	2	2	2	2	2	2
30	X-50-3	*Screw, r.h.m. 10-24 X .75	5	5	5	5	5	5	5	5	5
31	X-50-70	*Screw, r.h.m. 10-24 X 1	1	1	1	1	1	1	1	1	1
32	X-51-53	*Screw, r.h.m. 8-32 X .625	2	2	2	2	2	2	2	2	2
33	X-519-1	*Plug, Cap 1/8 Inch	2	2	2	2	2	2	2	2	2
34	X-6046-2	*Strap, Ground	1	1	1	1	1	1	1	1	1
35	X-6048-2	*Jumper, Terminal Block	2	2	2	2	2	2	2	2	2
36	X-6216-1	*Screw, Hex Crimptite	10	10	10	10	10	10	10	10	10
37	X-6234-6	*Nut, Hex	2	2	2	2	2	2	2	2	2
38	X-67-127	*Screw, Thread Forming	2	2	2	2	2	2	2	2	2
39	X-696-5	*Sleeve	1	1	1	1	1	1	1	1	1
40	X-712-9	*Spacer	4	4	4	4	4	4	4	4	4
		Parts list continues									

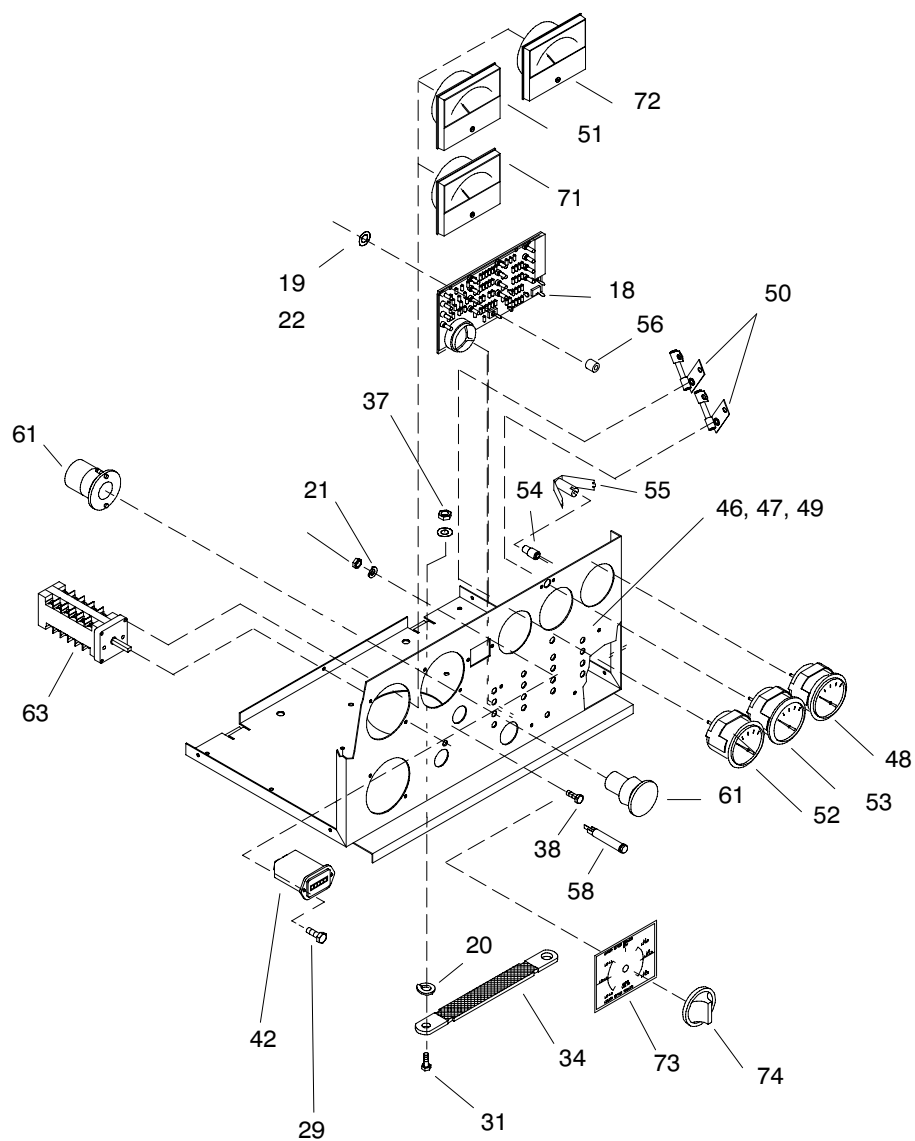
Group 301: Controller and Mounting



Group 301: Controller and Mounting

Item	Part Number	Description	Quantity								
			Variation/Kit Number								
			133	134	135	139	141	143	145	147	149
41	201620-86	*Tab, Identification	1	1	1	1	1	1	1	1	1
42	238736	*Meter, Hour	1	1	1	1	1	1	1	1	1
43	238898	*Terminal	1	1	1	1	1	1	1	1	1
44	241617	*Connector, 6 Position	1	1	1	1	1	1	1	1	1
45	246115	*Block, Terminal	1	1	1	1	1	1	1	1	1
46	253241	*Lens, Red	12	12	12	12	12	12	12	12	12
47	253242	*Lens, Green	1	1	1	1	1	1	1	1	1
48	255224	*Voltmeter, DC	1	1	1	1	1	1	1	1	1
49	255931	*Lens, Yellow	3	3	3	3	3	3	3	3	3
50	268297	*Resistor, 24 Volt	2	2	2	2	2	2	2	2	2
51	282814	*Voltmeter, AC	1	1		1	1		1		
51	282815	*Voltmeter, AC			1			1			
51	350143	*Voltmeter, AC								1	
51	354245	*Voltmeter, AC									1
52	282897	*Gauge, Oil Pressure	1	1	1	1					
52	328072	*Gauge, Oil Pressure					1	1	1	1	1
53	282898	*Gauge, Water Temperature	1	1	1	1	1	1	1	1	1
54	283420	*Bulb	2	2	2	2	2	2	2	2	2
55	284990	*Socket, Lamp	2	2	2	2	2	2	2	2	2
56	287948	*Spacer, Circuit Board	9	9	9	9	9	9	9	9	9
57	291207	*Fuse, 1.5 Amp	3	3	3	3	3	3	3	3	3
58	291740	*Lamp	2	2	2	2	2	2	2	2	2
59	292347	*Decal	1	1	1	1	1	1	1	1	1
60	292361	*Decal Parts list continues	1	1	1	1	1	1	1	1	1

Group 301: Controller and Mounting



450-500DS
301-70-36
FA-272000
A-325026

Group 301: Controller and Mounting

Item	Part Number	Description	Quantity								
			Variation/Kit Number								
			133	134	135	139	141	143	145	147	149
61	292364	*Switch, Pushbutton	1	1	1	1	1	1	1	1	1
62	292467	*Decal, Emergency Stop	1	1	1	1	1	1	1	1	1
63	292374	*Switch, Selector	1	1	1	1	1	1	1	1	1
64	325073	*Box, Controller	1	1	1	1	1	1	1	1	1
65	325003	*Cover, Controller	1	1	1	1	1	1	1	1	1
66	292821	*Holder, Fuse	1	1	1	1	1	1	1	1	1
67	292823	*Marker, Strip	1	1	1	1	1	1	1	1	1
68	292834	*Bumper	4	4	4	4	4	4	4	4	4
69	292908	*Plate, Hinged Back	1	1	1	1	1	1	1	1	1
70	336428	*Cable Assembly	1	1	1	1	1	1	1	1	1
71	295069	*Meter, Frequency	1	1	1	1	1	1	1	1	
71	282818	*Meter, Frequency									1
72	282960	*Ammeter, AC	1	1		1	1	1			
72	299967	*Ammeter, AC									
72	282959	*Ammeter, AC			1						
72	325467	*Ammeter, AC							1		
72	295340	*Ammeter, AC								1	
72	282807	*Ammeter, AC									1
73	325072	*Decal, Selector Switch	1	1	1	1	1	1	1	1	1
74	296291	*Knob	1	1	1	1	1	1	1	1	1
75	X-125-23	Screw, Ref. 5/16-'8 x 3 1/2	1	1	1	1	1	1	1	1	1
	X-6129-8	Block, Fuse								1	1
	X-6129-9	Block, Fuse								1	1
	X-6134-9	Fuse								1	1

Group 701: Literature

Item	Part Number	Description	Quantity							
			Variation/Kit Number							
			41	50	59	62	69	72	85	89
1	MP-5700	Standby Installation Instructions	1	1	1	1	1	1	1	1
2	TP-5611	Operation Manual, DDC Engine	1	1	1	1	1	1	1	1
2	MP-5750	Operation Manual, 20-2000 kW Generator	1	1	1	1	1	1	1	1
2	TP-5578	Operation Manual, MagnaMax Alternator	1	1	1	1	1	1	1	1
3	TP-5278	Operation Manual, PM100 Voltage Regulator	1		1					
3	TP-5579	Operation Manual, DVR 2000 Regulator		1		1	1	1	1	1
4	TP-5384	Service Manual, DDC 149 Series	1	1	1	1	1		1	
4	TP-5615	Service Manual, DDC 12V-71 Series						1		
4	MP-5583	Service Manual, Generator Set	1	1	1	1	1	1	1	1
5	MP-5602	Parts Catalog, 900-1600 kW Generator	1	1	1	1	1	1	1	1
5	MP-5707	Parts Catalog, Accessories	1	1	1	1	1	1	1	1
5	TP-5644	Parts Catalog, DDC (900/1000 kW)	1				1			
5	TP-5643	Parts Catalog, DDC (1200 kW)			1	1				
5	TP-5703	Parts Catalog, DDC (1500/1600 kW)		1					1	
5	TP-5680	Parts Catalog, DDC (900/1000 kW)						1		
5	TP-5860	Parts Catalog, DDC (1250 kW)								1
6	MP-5722	Wiring Diagrams		1		1		1	1	1

Kit List

This section lists the part numbers of kits not listed in the Group Parts Lists. Refer to the generator set nameplate or the list below to identify the kit number installed on your generator set. See Figure 2 on the following page for an example of a generator set nameplate. See the sections following this page for the parts list of the kit.

	900DS	1000DS	1200DS	1250DS	1500DS	1600DS
--	-------	--------	--------	--------	--------	--------

CONTROLLER KITS

6/7-Light

Standard Meterbox	325282	325284	325284	325412	325295	325295
	325448	325452	325412		325412	325412
Standard Meterbox, 380 V	325290	325295	325295	325412	325295	325295
	325469	325473	325412		325412	350169
Standard Meterbox, 600 V	325294	325294	325294	325417	325300	325300
	325456	325456	325456		325417	325417
Standard Meterbox, 4160 V			350145	350145	350015	350015
Oversize Meterbox	325286	325288	325288	325414	325298	325298
	325450	325454	325414		325414	325414
Oversize Meterbox, 380 V	325292	325298	325298	325414	325298	325298
	325471	325475	325414		325414	350171
Oversize Meterbox, 600 V	325296	325296	325296	325419	325301	325301
	325458	325458	325458		325419	325419
Oversize Meterbox, 4160 V			350147	350147	350017	350017

16-Light

Standard Meterbox	325275	325277	325277	325411	325293	325293
	325447	325451	325411		325411	325411
Standard Meterbox, 380 V	325289	325293	325293	325411	325293	325293
	325468	325472	325411		325411	350168
Standard Meterbox, 600 V	325279	325279	325279	325416	325297	325297
	325455	325455	325455		325416	325416
Standard Meterbox, 4160 V			350144	350144	350014	350014
Oversize Meterbox	325281	325283	325283	325413	325291	325291
	325449	325453	325413		325413	325413
Oversize Meterbox, 380 V	325287	325291	325291	325413	325291	325291
	325470	325474	325413		325413	350170
Oversize Meterbox, 600 V	325285	325285	325285	325418	325299	325299
	325457	325457	325457		325418	325418
Oversize Meterbox, 4160 V			350146	350146	350016	350016
Engine Gauge Box for Paralleling	325273	325273	325273	325426	325273	325273
	N/A	N/A	325426		325415	325415
Engine Gauge Box for Paralleling, 600V	325219	325219	325219		325219	325219
Engine Gauge Box for Paralleling, 4160 V			350149	350149	350158	350158

Kit List

	900DS	1000DS	1200DS	1250DS	1500DS	1600DS
COOLING SYSTEM KITS						
Block Heater, 190-208-210/240-380/480 volt	279930	279930	279931	328036	279932	279932
	328648	328648	328036		328037	328037
Block Heater Isolation Valve			347881	347881	347881	347881
Radiator, Duct Flange	274233	274233	299873	328277	299873	299873
	328227	328277	328277		328033	328033
Radiator, Unit Mounted	274937	274938	299878	354209	299877	299877
	328239	328239	328282		328281	328281
	354171	354171	354209		354215	354215
City Water Cooling	328705	354199				
	354199	328706				
	328706					
Remote Radiator Setup	328694	354200	328765	354293	328767	328767
	354200	328723	354293		354214	354214
	328723		328766			
Remote Radiator Flex Kit			PA-354280	PA-354280		
Radiator Core Guard	328727	328727	N/A		N/A	N/A

AIR INTAKE KITS

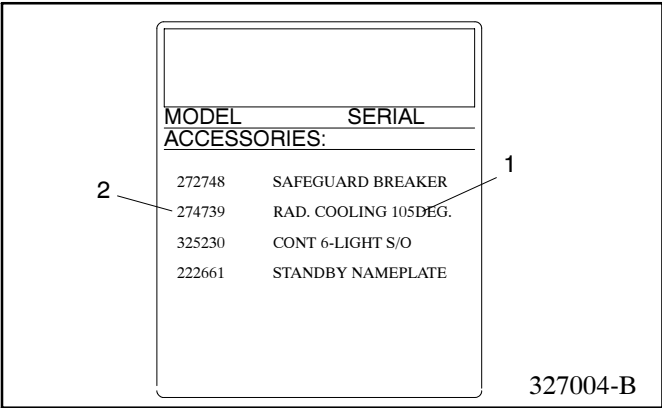
Heavy-duty Air Cleaner	354201	354201	354266	354266	354220	354220
------------------------	--------	--------	--------	--------	--------	--------

OPTIONAL KITS

See Parts Catalog MP-5707 Accessory Parts Catalog (Diesel) for parts lists of optional kits (kits other than controllers and cooling).

PAINT AND MISCELLANEOUS PARTS

Generator Paint, Spectrum Grey (Spray Can)	221331
Generator Paint, Spectrum Grey (Gallon Can)	221332



- 1. Kit Description
- 2. Factory-installed Kit Number

Figure 2. Generator Accessory Nameplate

6- and 7-Light Controller Kits

6- AND 7-LIGHT MICROPROCESSOR CONTROLLER KIT PARTS							
Qty.	Description	Common	Kit Numbers/Unique Parts				
			325282 325448	325284 328452	325286 325450	325288 325454	325290 325469
1	Controller Assembly*	X-284-25	A-325062	A-325062	A-325131	A-325131	A-325062
1	Controller Assembly*		A-325803**	A-325803**	A-325838**	A-325838**	A-325803**
1	Grommet						
1	Marker, Strip		255080				
1	Harness, Wiring		258453				
2	Relay	272684					
1	Panel, Relay	274796					
1	Harness, Wiring		258455	274964	258455	274964	274964
4	Mount, Vibro	282829					
3	Transformer		287684	287684	287684	287684	276578
1	Speed Pickup	291288					
3	Transformer, Current	291548					
1	Block, Terminal	295314					

6- AND 7-LIGHT MICROPROCESSOR CONTROLLER KIT PARTS, CONTINUED							
Qty.	Description	Common	Kit Numbers/Unique Parts				
			325292 325471	325294 325456	325295 325473	325296 325458	325298 325475
1	Controller Assembly*	X-284-25	A-325131	A-325070	A-325068	A-325139	A-325137
1	Controller Assembly*		A-325838**	A-325811**	A-325809**	A-325846**	A-325844**
1	Grommet						
1	Marker, Strip		255080				
1	Harness, Wiring		258453				
2	Relay	272684					
1	Panel, Relay	274796					
1	Harness, Wiring	274964					
4	Mount, Vibro	282829					
3	Transformer		276578	258990	276578	258990	276578
1	Speed Pickup	291288					
3	Transformer, Current		291548	291547	297675	291547	297675
1	Block, Terminal	295314					

6- AND 7-LIGHT MICROPROCESSOR CONTROLLER KIT PARTS, CONTINUED							
Qty.	Description	Common	Kit Numbers/Unique Parts				
			325300 325417	325301 325419	325412	325414	
1	Controller Assembly*	X-284-25	A-325071	A-325140	A-325403	A-325405	
1	Controller Assembly*		A-325812**	A-325847**	A-325813**	A-325848**	
1	Grommet						
1	Marker, Strip		255080				
1	Harness, Wiring		258453				
2	Relay	272684					
1	Panel, Relay	274796					
1	Harness, Wiring	274964					
4	Mount, Vibro	282829					
3	Transformer		287684	258990	276578	276578	
1	Speed Pickup	291288					
3	Transformer, Current		291548	291548	279675	279675	
1	Block, Terminal	295314					

* See Controller Assembly section for parts list.

** Controller assembly part number used in the kit effective with generator set serial number greater than or equal to 363369.

6- and 7-Light Controller Kits

6- AND 7-LIGHT MICROPROCESSOR CONTROLLER KIT PARTS, CONTINUED							
Qty.	Description	Common	Kit Numbers/Unique Parts				
			350015	350017	350145	350147	350169
1	Controller Assembly*		A-325897	A-325905	A-350151	A-350153	A-325895
1	Grommet	X-284-25					
1	Marker, Strip	255080					
1	Harness, Wiring CT		347563	347563	347563	347563	258453
2	Relay	272684					
1	Panel, Relay	274796					
1	Harness, Wiring AC		347564	347564	347564	347564	
1	Harness, Wiring AC		347562	347562	347562	347562	274964
4	Mount, Vibro	282829					
3	Transformer		X-6121-55	X-6121-55	X-6121-55	X-6121-55	287684
1	Speed Pickup	291288					
3	Transformer, Current		233952	233952	233951	233951	291288
1	Block, Terminal	295314					
1	Block, Fuse		X-6129-8	X-6129-8	X-6129-8	X-6129-8	
1	Block, Fuse		X-6129-9	X-6129-9	X-6129-9	X-6129-9	
1	Fuse		X-6134-9	X-6134-9	X-6134-9	X-6134-9	

6- AND 7-LIGHT MICROPROCESSOR CONTROLLER KIT PARTS, CONTINUED							
Qty.	Description	Common	Kit Numbers/Unique Parts				
			350171				
1	Controller Assembly*		A-325903				
1	Grommet	X-284-25					
1	Marker, Strip	255080					
1	Harness, Wiring CT		258453				
2	Relay	272684					
1	Panel, Relay	274796					
1	Harness, Wiring AC		274964				
4	Mount, Vibro	282829					
3	Transformer		287684				
1	Speed Pickup	291288					
3	Transformer, Current		297676				
1	Block, Terminal	295314					

* See Controller Assembly section for parts list.

** Controller assembly part number used in the kit effective with generator set serial number greater than or equal to 363369.

6-Light Controller Assemblies

Qty.	Description	Common Parts	6-Light Controller Assembly Number/Unique Parts				
			A-325062	A-325068	A-325070	A-325071	A-325403
1	6-light Circuit Board	B-292381					
1	Main Circuit Board	G-292806					
1	Washer, Shakeproof	X-22-20					
2	Washer, Lock	X-22-50					
4	Washer, Lock #6	X-22-6					
3	Washer, Lock #8	X-22-7					
1	Grommet	X-284-31					
1	Plug, Button	X-301-29					
1	Plug, Button	X-301-34					
2	Screw, r.h.m. 6-32 x 3/8	X-49-2					
18	Screw, r.h.m. 6-32 x 1/4	X-49-25					
2	Screw, Pan Head	X-49-39					
4	Screw, r.h.m. 10-24 x 3/4	X-50-3					
1	Screw, Pan Head Machine	X-50-70					
2	Screw, r.h.m.	X-51-53					
1	Strap, Ground	X-6046-2					
1	Jumper	X-6048-2					
10	Screw, Hex	X-6216-1					
2	Nut, Hex.	X-6234-6					
2	Screw, Thread Forming	X-67-127					
1	Sleeve	X-696-5					
4	Spacer	X-712-9					
1	Tab, Ident.	201620-86					
1	Meter, Hour	238736					
1	Terminal	238898					
1	Connector, Plug 6 Position	241617					
1	Block, Terminal	246115					
6	Lens, Red	253241					
1	Voltmeter	255224					
2	Lamp, Meter Scale	253332					
2	Bulb	283430					
1	Plate, Hinge	292908					
1	Voltmeter, AC		282814	282814	282815	282815	282814
1	Gauge, Oil Pressure	282897					
1	Gauge, Water Temperature	282898					
1	Ammeter		282960	299967	282959	282960	299967
2	Socket, Lamp	284990					
8	Spacer, Circuit Board	287948					
3	Fuse, 1.5 Amp	291207					
1	Decal	292347					
1	Resistor		292352	292352	292352	292352	292352
1	Decal	292361					
1	Switch, Selector		292374	292374	292374	292374	292374
1	Holder, Fuse	292821					
1	Marker, Strip	292823					
1	Bumper	292834					
1	Harness, Cable	292836					
1	Meter, Frequency	295069					
1	Cover, Controller	325003					
1	Decal, Selector Switch	325072					
1	Box, Silkscreened Controller	325074					
1	Resistor, 24 volt	268297					
1	Switch, Pushbutton	292364					
1	Decal, Emergency Stop	292467					

N/A Not Applicable

6-Light Controller Assemblies, Continued

Qty.	Description	Common Parts	6-Light Controller Assembly Number/Unique Parts				
			A-325131	A-325137	A-325139	A-325140	A-325405
1	6-light Circuit Board	B-292381					
1	Main Circuit Board	G-292806					
1	Washer, Shakeproof	X-22-20					
2	Washer, Lock	X-22-50					
4	Washer, Lock #6	X-22-6					
3	Washer, Lock #8	X-22-7					
1	Grommet	X-284-31					
1	Plug, Button	X-301-29					
1	Plug, Button	X-301-34					
2	Screw, r.h.m. 6-32 x 3/8	X-49-2					
18	Screw, r.h.m. 6-32 x 1/4	X-49-25					
2	Screw, Pan Head	X-49-39					
4	Screw, r.h.m. 10-24 x 3/4	X-50-3					
1	Screw, Pan Head Machine	X-50-70					
2	Screw, r.h.m.	X-51-53					
1	Strap, Ground	X-6046-2					
1	Jumper	X-6048-2					
12	Screw, Hex	X-6216-1					
2	Nut, Hex.	X-6234-6					
2	Screw, Thread Forming	X-67-127					
1	Sleeve	X-696-5					
4	Spacer	X-712-9					
1	Tab, Ident.	201620-86					
1	Meter, Hour	238736					
1	Terminal	238898					
1	Connector, Plug 6 Position	241617					
1	Block, Terminal	246115					
6	Lens, Red	253241					
1	Voltmeter	255224					
2	Lamp, Meter Scale	253332					
2	Bulb	283420					
4	Bumper	255443					
1	Plate, Hinge	273785					
1	Voltmeter, AC		282814	282814	282815	282815	282814
1	Gauge, Oil Pressure	282897					
1	Gauge, Water Temperature	282898					
1	Ammeter		282960	299967	282959	282960	299967
3	Socket, Lamp	284990					
8	Spacer, Circuit Board	287948					
3	Fuse, 1.5 Amp	291207					
1	Decal	292347					
1	Resistor		292352	292352	292352	292352	292352
1	Decal	292361					
1	Switch, Selector		292374	292374	292374	292374	292374
1	Holder, Fuse	292821					
1	Marker, Strip	292823					
1	Bumper	292834					
1	Harness, Cable	292836					
1	Meter, Frequency	295069					
1	Cover, Controller	325007					
1	Decal, Selector Switch		325072	325072	325072	325072	325072
1	Box, Silkscreened Controller	325076					
1	Resistor, 24 volt	268297					
1	Switch, Pushbutton	292364					
1	Decal, Emergency Stop	292467					

N/A Not Applicable

7-Light Controller Assemblies

Qty.	Description	Common Parts	7-Light Controller Assembly Number/Unique Parts				
			A-325803	A-325809	A-325811	A-325812	A-325813
1	Indicator Circuit Board	A-336430					
1	Main Circuit Board	A-336415					
1	Washer, Shakeproof	X-22-20					
2	Washer, Lock	X-22-50					
4	Washer, Lock #6	X-22-6					
3	Washer, Lock #8	X-22-7					
1	Grommet	X-284-31					
1	Plug, Button	X-301-29					
1	Plug, Button	X-301-34					
2	Screw, r.h.m. 6-32 x 3/8	X-49-2					
18	Screw, r.h.m. 6-32 x 1/4	X-49-25					
2	Screw, Pan Head	X-49-39					
4	Screw, r.h.m. 10-24 x 3/4	X-50-3					
1	Screw, Pan Head Machine	X-50-70					
2	Screw, r.h.m.	X-51-53					
1	Strap, Ground	X-6046-2					
1	Jumper	X-6048-2					
10	Screw, Hex	X-6216-1					
2	Nut, Hex.	X-6234-6					
2	Screw, Thread Forming	X-67-127					
1	Sleeve	X-696-5					
4	Spacer	X-712-9					
1	Tab, Ident.	201620-86					
1	Meter, Hour	238736					
1	Terminal	238898					
1	Connector, Plug 6 Position	241617					
1	Block, Terminal	246115					
6	Lens, Red	253241					
1	Voltmeter	255224					
2	Lamp, Meter Scale	253332					
2	Bulb	283430					
1	Plate, Hinge	292908					
1	Voltmeter, AC		282814	282814	282815	282815	282814
1	Gauge, Oil Pressure	328072					
1	Gauge, Water Temperature	282898					
1	Ammeter		282960	299967	282959	282960	299967
2	Socket, Lamp	284990					
8	Spacer, Circuit Board	287948					
3	Fuse, 1.5 Amp	291207					
1	Decal	292347					
1	Resistor		292352	292352	292352	292352	292352
1	Decal	292361					
1	Switch, Selector		292374	292374	292374	292374	292374
1	Holder, Fuse	292821					
1	Marker, Strip	292823					
1	Bumper	292834					
1	Harness, Cable	292836					
1	Meter, Frequency	295069					
1	Cover, Controller	325003					
1	Decal, Selector Switch	325072					
1	Box, Silkscreened Controller	325074					
1	Resistor, 24 volt	268297					
1	Switch, Pushbutton	292364					
1	Decal, Emergency Stop	292467					

N/A Not Applicable

7-Light Controller Assemblies, Continued

Qty.	Description	Common Parts	7-Light Controller Assembly Number/Unique Parts				
			A-325838	A-325844	A-325846	A-325847	A-325848
1	Indicator Circuit Board	A-336430					
1	Main Circuit Board	A-336415					
1	Washer, Shakeproof	X-22-20					
2	Washer, Lock	X-22-50					
4	Washer, Lock #6	X-22-6					
3	Washer, Lock #8	X-22-7					
1	Grommet	X-284-31					
1	Plug, Button	X-301-29					
1	Plug, Button	X-301-34					
2	Screw, r.h.m. 6-32 x 3/8	X-49-2					
18	Screw, r.h.m. 6-32 x 1/4	X-49-25					
2	Screw, Pan Head	X-49-39					
4	Screw, r.h.m. 10-24 x 3/4	X-50-3					
1	Screw, Pan Head Machine	X-50-70					
2	Screw, r.h.m.	X-51-53					
1	Strap, Ground	X-6046-2					
1	Jumper	X-6048-2					
12	Screw, Hex	X-6216-1					
2	Nut, Hex.	X-6234-6					
2	Screw, Thread Forming	X-67-127					
1	Sleeve	X-696-5					
4	Spacer	X-712-9					
1	Tab, Ident.	201620-86					
1	Meter, Hour	238736					
1	Terminal	238898					
1	Connector, Plug 6 Position	241617					
1	Block, Terminal	246115					
6	Lens, Red	253241					
1	Voltmeter	255224					
2	Lamp, Meter Scale	253332					
2	Bulb	283420					
4	Bumper	255443					
1	Plate, Hinge	273785					
1	Voltmeter, AC		282814	282814	282815	282815	282814
1	Gauge, Oil Pressure	282897					
1	Gauge, Water Temperature	328072					
1	Ammeter		282960	299967	282959	282960	282959
3	Socket, Lamp	284990					
8	Spacer, Circuit Board	287948					
3	Fuse, 1.5 Amp	291207					
1	Decal	292347					
1	Resistor		292352	292352	292352	292352	292352
1	Decal	292361					
1	Switch, Selector		292374	292374	292374	292374	292374
1	Holder, Fuse	292821					
1	Marker, Strip	292823					
1	Bumper	292834					
1	Harness, Cable	292836					
1	Meter, Frequency	295069					
1	Cover, Controller	325007					
1	Decal, Selector Switch		325072	325072	325072	325072	325072
1	Box, Silkscreened Controller	325076					
1	Resistor, 24 volt	268297					
1	Switch, Pushbutton	292364					
1	Decal, Emergency Stop	292467					

7-Light Controller Assemblies

Qty.	Description	Common Parts	7-Light Controller Assembly Number/Unique Parts				
			A-325895	A-325897	A-325903	A-325905	
1	Indicator Circuit Board	A-336430					
1	Main Circuit Board	A-336415					
1	Washer, Shakeproof	X-22-20					
2	Washer, Lock	X-22-50					
4	Washer, Lock #6	X-22-6					
3	Washer, Lock #8	X-22-7					
1	Grommet	X-284-31					
1	Plug, Button	X-301-29					
1	Plug, Button	X-301-34					
2	Screw, r.h.m. 6-32 x 3/8	X-49-2					
18	Screw, r.h.m. 6-32 x 1/4	X-49-25					
2	Screw, Pan Head	X-49-39					
4	Screw, r.h.m. 10-24 x 3/4	X-50-3					
1	Screw, Pan Head Machine	X-50-70					
2	Screw, r.h.m.	X-51-53					
1	Strap, Ground	X-6046-2					
1	Jumper	X-6048-2					
12	Screw, Hex	X-6216-1					
2	Nut, Hex.	X-6234-6					
2	Screw, Thread Forming	X-67-127					
1	Sleeve	X-696-5					
4	Spacer	X-712-9					
1	Tab, Ident.	201620-86					
1	Meter, Hour	238736					
1	Terminal	238898					
1	Connector, Plug 6 Position	241617					
1	Block, Terminal	246115					
6	Lens, Red	253241					
1	Voltmeter	255224					
2	Lamp, Meter Scale	253332					
2	Bulb	283420					
4	Bumper	255443					
1	Plate, Hinge		292908	292908	273785	273785	
1	Voltmeter, AC		282814	350143	282814	350143	
1	Gauge, Oil Pressure	328072					
1	Gauge, Water Temperature	282898					
1	Ammeter		325467	295340	325467	295340	
3	Socket, Lamp	284990					
8	Spacer, Circuit Board	287948					
3	Fuse, 1.5 Amp	291207					
1	Decal	292347					
1	Resistor		292352	292352	292352	292352	
1	Decal	292361					
1	Switch, Selector		292374	292374	292374	292374	
1	Holder, Fuse	292821					
1	Marker, Strip	292823					
1	Bumper	292834					
1	Harness, Cable	336428					
1	Meter, Frequency	295069					
1	Cover, Controller		325003	325003	325007	325007	
1	Decal, Selector Switch		325072	325072	325072	325072	
1	Box, Silkscreened Controller		325945	325945	325943	325943	
1	Resistor, 24 volt	268297					
1	Switch, Pushbutton	292364					
1	Decal, Emergency Stop	292467					

7-Light Controller Assemblies, Continued

Qty.	Description	Common Parts	7-Light Controller Assembly Number/Unique Parts				
			A-350151	A-350153			
1	Indicator Circuit Board	A-336430					
1	Main Circuit Board	A-336415					
1	Washer, Shakeproof	X-22-20					
2	Washer, Lock	X-22-50					
4	Washer, Lock #6	X-22-6					
3	Washer, Lock #8	X-22-7					
1	Grommet	X-284-31					
1	Plug, Button	X-301-29					
1	Plug, Button	X-301-34					
2	Screw, r.h.m. 6-32 x 3/8	X-49-2					
18	Screw, r.h.m. 6-32 x 1/4	X-49-25					
2	Screw, Pan Head	X-49-39					
4	Screw, r.h.m. 10-24 x 3/4	X-50-3					
1	Screw, Pan Head Machine	X-50-70					
2	Screw, r.h.m.	X-51-53					
1	Strap, Ground	X-6046-2					
1	Jumper	X-6048-2					
12	Screw, Hex	X-6216-1					
2	Nut, Hex.	X-6234-6					
2	Screw, Thread Forming	X-67-127					
1	Sleeve	X-696-5					
4	Spacer	X-712-9					
1	Tab, Ident.	201620-86					
1	Meter, Hour	238736					
1	Terminal	238898					
1	Connector, Plug 6 Position	241617					
1	Block, Terminal	246115					
6	Lens, Red	253241					
1	Voltmeter	255224					
2	Lamp, Meter Scale	253332					
2	Bulb	283420					
4	Bumper	255443					
1	Plate, Hinge		292908	273785			
1	Voltmeter, AC		350143	350143			
1	Gauge, Oil Pressure	328072					
1	Gauge, Water Temperature	282898					
1	Ammeter		295339	295339			
3	Socket, Lamp	284990					
8	Spacer, Circuit Board	287948					
3	Fuse, 1.5 Amp	291207					
1	Decal	292347					
1	Resistor		292352	292352			
1	Decal	292361					
1	Switch, Selector		292374	292374			
1	Holder, Fuse	292821					
1	Marker, Strip	292823					
1	Bumper	292834					
1	Harness, Cable	336428					
1	Meter, Frequency	295069					
1	Cover, Controller		325003	325007			
1	Decal, Selector Switch		325072	325072			
1	Box, Silkscreened Controller		325945	325943			
1	Resistor, 24 volt	268297					
1	Switch, Pushbutton	292364					
1	Decal, Emergency Stop	292467					

N/A Not Applicable

16-Light Controller Kits

16-LIGHT MICROPROCESSOR CONTROLLER KIT PARTS							
Qty.	Description	Common	Kit Number/Unique Parts				
			325275 325477	325277 325451	325279 325455	325281 325449	325283 325453
1	Controller Assembly*	X-284-25 255080 258453 272684	A-325030	A-325030	A-325038	A-325099	A-325099
1	Controller Assembly*		A-325734**	A-325734**	A-325742**	A-325768**	A-325768**
1	Grommet						
1	Marker, Strip						
1	Harness, Wiring						
2	Relay						
1	Panel, Relay	274796					
1	Harness, Wiring		258455	274964	274964	258455	274964
4	Mount, Vibro	259919					
3	Transformer		287684	287684	258990	287684	287684
1	Speed Pickup	291288					
3	Transformer, Current		291548	291548	291547	297676	291548
1	Block, Terminal	295314					

16-LIGHT MICROPROCESSOR CONTROLLER KIT PARTS, CONTINUED							
Qty.	Description	Common	Kit Number/Unique Parts				
			325285 325457	325287 325468	325289 325453	325291 325474	325293 325472
1	Controller Assembly*	X-284-25 255080 258453 272684	A-325107	A-325099	A-325020	A-325105	A-325036
1	Controller Assembly*		A-325776**	A-325768**	A-325724**	A-325774**	A-325740**
1	Grommet						
1	Marker, Strip						
1	Harness, Wiring						
2	Relay						
1	Panel, Relay	274796					
1	Harness, Wiring	274964					
4	Mount, Vibro	259919					
3	Transformer		258990	276578	276578	276578	276578
1	Speed Pickup	291288					
3	Transformer, Current		291547	291548	291548	297675	297675
1	Block, Terminal	295314					

16-LIGHT MICROPROCESSOR CONTROLLER KIT PARTS, CONTINUED							
Qty.	Description	Common	Kit Number/Unique Parts				
			325297 325416	325299 325418	325411	325413	
1	Controller Assembly*	X-284-25 255080 258453 272684	A-325039	A-325108	A-325401	A-325407	
1	Controller Assembly*		A-325743**	A-325777**	A-325744**	A-325778**	
1	Grommet						
1	Marker, Strip						
1	Harness, Wiring						
2	Relay						
1	Panel, Relay	274796					
1	Harness, Wiring	274964					
4	Mount, Vibro	259919					
3	Transformer		258990	258990	276578	276578	
1	Speed Pickup	291288					
3	Transformer, Current		291548	291548	297675	297675	
1	Block, Terminal	295314					

* See Controller Assembly section for parts list.

** Controller assembly part number used in the kit effective with generator set serial number greater than or equal to 363369.

16-Light Controller Kits

16-LIGHT MICROPROCESSOR CONTROLLER KIT PARTS, CONTINUED							
Qty.	Description	Common	Kit Number/Unique Parts				
			350014	350016	350144	350146	350168
1	Controller Assembly*		A-325881	A-325889	A-350150	A-350152	A-325879
1	Marker, Strip	255080					
1	Harness, Wiring CT		347563	347563	347563	347563	258453
2	Relay	272684					
1	Panel, Relay	274796					
1	Harness, Wiring AC		347562	347562	347562	347562	274964
1	Harness, Wiring AC		347564	347564	347564	347564	
4	Mount, Vibro	259919					
3	Transformer		X-6121-55	X-6121-55	X-6121-55	X-6121-55	287684
1	Speed Pickup	291288					
3	Transformer, Current		233952	233952	233951	233951	297676
1	Block, Terminal	295314					
1	Block, Fuse		X-6129-8	X-6129-8	X-6129-8	X-6129-8	
	Block, Fuse		X-6129-9	X-6129-9	X-6129-9	X-6129-9	
	Fuse		X-6134-9	X-6134-9	X-6134-9	X-6134-9	

16-LIGHT MICROPROCESSOR CONTROLLER KIT PARTS, CONTINUED							
Qty.	Description	Common	Kit Number/Unique Parts				
			350170				
1	Controller Assembly*		A-325887				
1	Marker, Strip	255080					
1	Harness, Wiring CT		258453				
2	Relay	272684					
1	Panel, Relay	274796					
1	Harness, Wiring CT		274964				
4	Mount, Vibro	259919					
3	Transformer		287684				
1	Speed Pickup	291288					
3	Transformer, Current		297676				
1	Block, Terminal	295314					

* See Controller Assembly section for parts list.

** Controller assembly part number used in the kit effective with generator set serial number greater than or equal to 363369.

16-Light Controller Assemblies

Qty.	Description	Common Parts	16-Light Controller Assembly Number/Unique Parts					
			A-325020	A-325030	A-325036	A-325038	A-325039	A-325401
1	Potentiometer Assembly		A-255041	N/A	N/A	N/A	N/A	N/A
1	16-light Circuit Board	B-292357						
1	Main Circuit Board	G-292806						
1	Washer, Shakeproof	X-22-20						
2	Washer, Lock	X-22-50						
4	Washer, Lock #6	X-22-6						
3	Washer, Lock #8	X-22-7						
1	Grommet	X-284-31						
1	Plug, Button	X-301-29						
1	Plug, Button	X-301-34						
2	Screw, r.h.m. 6-32 x 3/8	X-49-2						
18	Screw, r.h.m. 6-32 x 1/4	X-49-25						
2	Screw, Pan Head	X-49-39						
5	Screw, r.h.m. 10-24 x 3/4	X-50-3						
1	Screw, Pan Head Machine	X-50-70						
2	Screw, r.h.m.	X-51-53						
1	Strap, Ground	X-6046-2						
1	Jumper	X-6048-2						
10	Screw, Phil Hex Crimptite	X-6216-1						
2	Nut, Hex.	X-6234-6						
2	Screw, Thread Forming	X-67-127						
1	Sleeve	X-696-5						
4	Spacer	X-712-9						
1	Tab, Ident.	201620-86						
1	Meter, Hour	238736						
1	Terminal	238898						
1	Connector, Plug 6 Position	241617						
1	Block, Terminal	246115						
12	Lens, Red	253241						
1	Voltmeter	253329						
2	Lamp, Meter Scale	253332						
2	Lamp	255126						
1	Plate, Hinge	292908						
1	Voltmeter, AC		282814	282814	282814	282815	282815	282814
1	Gauge, Oil Pressure	282897						
1	Gauge, Water Temperature	282898						
1	Ammeter		295069	282960	299967	282959	282960	299967
2	Socket, Lamp	284990						
8	Spacer, Circuit Board	287948						
3	Fuse, 1.5 Amp	291207						
1	Decal	292347						
1	Resistor		N/A	292352	N/A	292352	292352	292352
1	Decal	292361						
1	Switch, Selector		292374	292374	292374	292374	292374	292374
1	Holder, Fuse	292821						
1	Marker, Strip	292823						
1	Bumper	292834						
1	Harness, Cable	292836						
1	Meter, Frequency	295069						
1	Cover, Controller	325003						
1	Decal, Selector Switch	325072						
1	Box, Silkscreened Controller	325073						
1	Lens, Green	253242						
3	Lens, Yellow	255931						
1	Switch, Pushbutton	292364						
1	Decal, Emergency Stop	292467						
1	Resistor, 24 volt	268297						

N/A Not Applicable

16-Light Controller Assemblies, Continued

Qty.	Description	Common Parts	16-Light Controller Assembly Number/Unique Parts				
			A-325099	A-325105	A-325107	A-325108	A-325407
1	16-light Circuit Board	B-292357					
1	Main Circuit Board	G-292806					
1	Washer, Shakeproof	X-22-20					
2	Washer, Lock	X-22-50					
4	Washer, Lock #6	X-22-6					
3	Washer, Lock #8	X-22-7					
1	Grommet	X-284-31					
1	Plug, Button	X-301-29					
1	Plug, Button	X-301-34					
2	Screw, r.h.m. 6-32 x 3/8	X-49-2					
18	Screw, r.h.m. 6-32 x 1/4	X-49-25					
2	Screw, Pan Head	X-49-39					
4	Screw, r.h.m. 10-24 x 3/4	X-50-3					
1	Screw, Pan Head Machine	X-50-70					
2	Screw, r.h.m.	X-51-53					
1	Strap, Ground	X-6046-2					
1	Jumper	X-6048-2					
12	Screw, Phil Hex Crimptite	X-6216-1					
2	Nut, Hex.	X-6234-6					
2	Screw, Thread Forming	X-67-127					
1	Sleeve	X-696-5					
4	Spacer	X-712-9					
1	Tab, Ident.	201620-86					
1	Meter, Hour	238736					
1	Terminal	238898					
1	Connector, Plug 6 Position	241617					
1	Block, Terminal	246115					
12	Lens, Red	253241					
1	Voltmeter	255224					
2	Lamp, Meter Scale	253332					
2	Lamp	255126					
1	Plate, Hinge	273785					
1	Voltmeter, AC		282814	282814	282815	282815	282814
1	Gauge, Oil Pressure	282897					
1	Gauge, Water Temperature	282898					
1	Ammeter		282960	299967	282959	282960	299967
2	Socket, Lamp	284990					
8	Spacer, Circuit Board	287948					
3	Fuse, 1.5 Amp	291207					
1	Decal	292347					
1	Resistor		292352	292352	N/A	292352	292352
1	Decal	292361					
1	Switch, Selector	292374					
1	Holder, Fuse	292821					
1	Marker, Strip	292823					
1	Bumper	292834					
1	Harness, Cable	292836					
1	Meter, Frequency	295069					
1	Cover, Controller	325007					
1	Decal, Selector Switch	325072					
1	Box, Silkscreened Controller	325075					
1	Lens, Green	253242					
3	Lens, Yellow	255931					
1	Switch, Pushbutton	292364					
1	Decal, Emergency Stop	292467					
1	Resistor, 24 volt	268297					

N/A Not Applicable

16-Light Controller Assemblies, Continued

Qty.	Description	Common Parts	16-Light Controller Assembly Number/Unique Parts					
			A-325724	A-325734	A-325740	A-325742	A-325743	A-325744
1	Potentiometer Assembly		A-255041	N/A	N/A	N/A	N/A	N/A
1	16-light Circuit Board	A-336432						
1	Main Circuit Board	A-336415						
1	Washer, Shakeproof	X-22-20						
2	Washer, Lock	X-22-50						
4	Washer, Lock #6	X-22-6						
3	Washer, Lock #8	X-22-7						
1	Grommet	X-284-31						
1	Plug, Button	X-301-29						
1	Plug, Button	X-301-34						
2	Screw, r.h.m. 6-32 x 3/8	X-49-2						
18	Screw, r.h.m. 6-32 x 1/4	X-49-25						
2	Screw, Pan Head	X-49-39						
5	Screw, r.h.m. 10-24 x 3/4	X-50-3						
1	Screw, Pan Head Machine	X-50-70						
2	Screw, r.h.m.	X-51-53						
1	Strap, Ground	X-6046-2						
1	Jumper	X-6048-2						
10	Screw, Phil Hex Crimptite	X-6216-1						
2	Nut, Hex.	X-6234-6						
2	Screw, Thread Forming	X-67-127						
1	Sleeve	X-696-5						
4	Spacer	X-712-9						
1	Tab, Ident.	201620-86						
1	Meter, Hour	238736						
1	Terminal	238898						
1	Connector, Plug 6 Position	241617						
1	Block, Terminal	246115						
12	Lens, Red	253241						
1	Voltmeter	253329						
2	Lamp, Meter Scale	253332						
2	Lamp	255126						
1	Plate, Hinge	292908						
1	Voltmeter, AC		282814	282814	282814	282815	282815	282814
1	Gauge, Oil Pressure	282897						
1	Gauge, Water Temperature	282898						
1	Ammeter		295069	282960	299967	282959	282960	299967
2	Socket, Lamp	284990						
8	Spacer, Circuit Board	287948						
3	Fuse, 1.5 Amp	291207						
1	Decal	292347						
1	Resistor		N/A	292352	N/A	292352	292352	292352
1	Decal	292361						
1	Switch, Selector		292374	292374	292374	292374	292374	292374
1	Holder, Fuse	292821						
1	Marker, Strip	292823						
1	Bumper	292834						
1	Harness, Cable	292836						
1	Meter, Frequency	295069						
1	Cover, Controller	325003						
1	Decal, Selector Switch	325072						
1	Box, Silkscreened Controller	325073						
1	Lens, Green	253242						
3	Lens, Yellow	255931						
1	Switch, Pushbutton	292364						
1	Decal, Emergency Stop	292467						
1	Resistor, 24 volt	268297						

N/A Not Applicable

16-Light Controller Assemblies, Continued

Qty.	Description	Common Parts	16-Light Controller Assembly Number/Unique Parts				
			A-325768	A-325774	A-325776	A-325777	A-325777
1	16-light Circuit Board	A-336432					
1	Main Circuit Board	A-336415					
1	Washer, Shakeproof	X-22-20					
2	Washer, Lock	X-22-50					
4	Washer, Lock #6	X-22-6					
3	Washer, Lock #8	X-22-7					
1	Grommet	X-284-31					
1	Plug, Button	X-301-29					
1	Plug, Button	X-301-34					
2	Screw, r.h.m. 6-32 x 3/8	X-49-2					
18	Screw, r.h.m. 6-32 x 1/4	X-49-25					
2	Screw, Pan Head	X-49-39					
4	Screw, r.h.m. 10-24 x 3/4	X-50-3					
1	Screw, Pan Head Machine	X-50-70					
2	Screw, r.h.m.	X-51-53					
1	Strap, Ground	X-6046-2					
1	Jumper	X-6048-2					
12	Screw, Hex	X-6216-1					
2	Nut, Hex.	X-6234-6					
2	Screw, Thread Forming	X-67-127					
1	Sleeve	X-696-5					
4	Spacer	X-712-9					
1	Tab, Ident.	201620-86					
1	Meter, Hour	238736					
1	Terminal	238898					
1	Connector, Plug 6 Position	241617					
1	Block, Terminal	246115					
12	Lens, Red	253241					
1	Voltmeter	255224					
2	Lamp, Meter Scale	253332					
2	Lamp	255126					
1	Plate, Hinge	273785					
1	Voltmeter, AC		282814	282814	282815	282815	282814
1	Gauge, Oil Pressure	282897					
1	Gauge, Water Temperature	282898					
1	Ammeter		282960	299967	282959	282960	299967
2	Socket, Lamp	284990					
8	Spacer, Circuit Board	287948					
3	Fuse, 1.5 Amp	291207					
1	Decal	292347					
1	Resistor		292352	292352	N/A	292352	292352
1	Decal	292361					
1	Switch, Selector	292374					
1	Holder, Fuse	292821					
1	Marker, Strip	292823					
1	Bumper	292834					
1	Harness, Cable	292836					
1	Meter, Frequency	295069					
1	Cover, Controller	325007					
1	Decal, Selector Switch	325072					
1	Box, Silkscreened Controller	325075					
1	Lens, Green	253242					
3	Lens, Yellow	255931					
1	Switch, Pushbutton	292364					
1	Decal, Emergency Stop	292467					
1	Resistor, 24 volt	268297					

16-Light Controller Assemblies, Continued

Qty.	Description	Common Parts	16-Light Controller Assembly Number/Unique Parts				
			A-325879	A-325881	A-325887	A-325889	
1	16-light Circuit Board	A-336432					
1	Main Circuit Board	A-336415					
1	Washer, Shakeproof	X-22-20					
2	Washer, Lock	X-22-50					
4	Washer, Lock #6	X-22-6					
3	Washer, Lock #8	X-22-7					
1	Grommet	X-284-31					
1	Plug, Button	X-301-29					
1	Plug, Button	X-301-34					
2	Screw, r.h.m. 6-32 x 3/8	X-49-2					
18	Screw, r.h.m. 6-32 x 1/4	X-49-25					
2	Screw, Pan Head	X-49-39					
4	Screw, r.h.m. 10-24 x 3/4	X-50-3					
1	Screw, Pan Head Machine	X-50-70					
2	Screw, r.h.m.	X-51-53					
1	Strap, Ground	X-6046-2					
1	Jumper	X-6048-2					
12	Screw, Hex	X-6216-1					
2	Nut, Hex.	X-6234-6					
2	Screw, Thread Forming	X-67-127					
1	Sleeve	X-696-5					
4	Spacer	X-712-9					
1	Tab, Ident.	201620-86					
1	Meter, Hour	238736					
1	Terminal	238898					
1	Connector, Plug 6 Position	241617					
1	Block, Terminal	246115					
12	Lens, Red	253241					
1	Voltmeter	255224					
2	Lamp, Meter Scale	253332					
2	Lamp	255126					
1	Plate, Hinge		292908	292908	273785	273785	
1	Voltmeter, AC		282814	350143	282814	350143	
1	Gauge, Oil Pressure	328072					
1	Gauge, Water Temperature	282898					
1	Ammeter		325467	295340	325467	295340	
2	Socket, Lamp	284990					
8	Spacer, Circuit Board	287948					
3	Fuse, 1.5 Amp	291207					
1	Decal	292347					
1	Resistor		292352	292352	292352	292352	
1	Decal	292361					
1	Switch, Selector	292374					
1	Holder, Fuse	292821					
1	Marker, Strip	292823					
1	Bumper	292834					
1	Harness, Cable	292836					
1	Meter, Frequency	295069					
1	Cover, Controller		325003	325003	325007	325007	
1	Decal, Selector Switch	325072					
1	Box, Silkscreened Controller		325073	325073	325075	325075	
1	Lens, Green	253242					
3	Lens, Yellow	255931					
1	Switch, Pushbutton	292364					
1	Decal, Emergency Stop	292467					
1	Resistor, 24 volt	268297					

16-Light Controller Assemblies, Continued

Qty.	Description	Common Parts	16-Light Controller Assembly Number/Unique Parts				
			A-350150	A-350152			
1	16-light Circuit Board	A-336432					
1	Main Circuit Board	A-336415					
1	Washer, Shakeproof	X-22-20					
2	Washer, Lock	X-22-50					
4	Washer, Lock #6	X-22-6					
3	Washer, Lock #8	X-22-7					
1	Grommet	X-284-31					
1	Plug, Button	X-301-29					
1	Plug, Button	X-301-34					
2	Screw, r.h.m. 6-32 x 3/8	X-49-2					
18	Screw, r.h.m. 6-32 x 1/4	X-49-25					
2	Screw, Pan Head	X-49-39					
4	Screw, r.h.m. 10-24 x 3/4	X-50-3					
1	Screw, Pan Head Machine	X-50-70					
2	Screw, r.h.m.	X-51-53					
1	Strap, Ground	X-6046-2					
1	Jumper	X-6048-2					
12	Screw, Hex	X-6216-1					
2	Nut, Hex.	X-6234-6					
2	Screw, Thread Forming	X-67-127					
1	Sleeve	X-696-5					
4	Spacer	X-712-9					
1	Tab, Ident.	201620-86					
1	Meter, Hour	238736					
1	Terminal	238898					
1	Connector, Plug 6 Position	241617					
1	Block, Terminal	246115					
12	Lens, Red	253241					
1	Voltmeter	255224					
2	Lamp, Meter Scale	253332					
2	Lamp	255126					
1	Plate, Hinge		292908	273785			
1	Voltmeter, AC		350143	350143			
1	Gauge, Oil Pressure	328072					
1	Gauge, Water Temperature	282898					
1	Ammeter		295339	295339			
2	Socket, Lamp	284990					
8	Spacer, Circuit Board	287948					
3	Fuse, 1.5 Amp	291207					
1	Decal	292347					
1	Resistor		292352	292352			
1	Decal	292361					
1	Switch, Selector	292374					
1	Holder, Fuse	292821					
1	Marker, Strip	292823					
1	Bumper	292834					
1	Harness, Cable	292836					
1	Meter, Frequency	295069					
1	Cover, Controller		325003	325007			
1	Decal, Selector Switch	325072					
1	Box, Silkscreened Controller		325073	325075			
1	Lens, Green	253242					
3	Lens, Yellow	255931					
1	Switch, Pushbutton	292364					
1	Decal, Emergency Stop	292467					
1	Resistor, 24 Volt	268297					

N/A Not Applicable

Meterbox for Paralleling Controller Kits

METERBOX FOR PARALLELING							
Qty.	Description	Common	Kit Number/Unique Parts				
			325219	325273	325426		
1	Controller Assembly*		A-325346	A-325345	A-325345		
1	Switch Assembly, Limit	263438					
2	Relay	272684					
1	Grommet		N/A	X-284-25	X-284-25		
1	Marker, Strip		N/A	255080	255080		
1	Panel, Relay		N/A	274796	274796		
4	Mount, Vibro		N/A	282829	282829		
1	Block, Terminal (6-terminal)		N/A	295314	295314		
1	Sensor, Low Coolant		N/A	N/A	273521		

* See Controller Assembly section for parts list.

N/A Not Applicable

Qty.	Description	Common Parts	Controller Assembly Number/Unique Parts		
			A-325345	A-325346	
1	Potentiometer Assembly		N/A	A-255041	
1	Strap, Ground	X-6046-2			
1	Switch, Speed	X-6122-1			
1	Meter, Hour	238736			
1	Voltmeter	255224			
1	Box, Controller	263153			
1	Panel	263154			
1	Resistor, 24 volt	268297			
1	Harness, Wiring (24-pin)	273764			
1	Strip, Marker	273781			
1	Harness, Wiring (4-lead)	273983			
1	Harness, Wiring (shielded)	273984			
1	Gauge, Oil Pressure	282897			
1	Gauge, Water Temperature	282898			
6	Strip, Terminal (9-terminal)	283060			
3	Bulb	283420			
3	Socket, Lamp	284990			
1	Decal		N/A	292361	
1	Switch, Pushbutton	292364			
1	Decal, Emergency Stop	292467			
1	Cover, Controller	292818			
4	Bumper	292834			

Manual Paralleling Controller Kits

MANUAL PARALLELING CONTROLLER KIT PARTS							
Qty.	Description	Common	Kit Number/Unique Parts				
			325686	325687	325688	325689	325690
1	Controller Assembly*		A-325556	A-325573	A-325587	A-325556	A-325573
6	Screw, H.C. 10-24 x 5/8	X-117-5					
1	Washer, Lock 3/8	X-22-14				N/A	N/A
4	Washer, Lock 5/16	X-22-16				N/A	N/A
8	Washer, Shakeproof	X-22-20				N/A	N/A
1	Grommet	X-284-25				N/A	N/A
2	Screw, r.h.m. 8/32	X-51-11				N/A	N/A
3	Clamp	X-672-10					
1	Clamp, Insulator	X-672-15				N/A	N/A
1	Marker, Strip	255080				N/A	N/A
2	Relay	272684				N/A	N/A
1	Panel, Relay	274796					
4	Mount, Vibro	282829				N/A	N/A
1	Module, Single-Phase	328784					
1	Pickup, Speed	291288				N/A	N/A
1	Block, Terminal	295314				N/A	N/A
1	Harness, Wiring	328905					
3	Transformer		291548	291548	291547	291548	291548

MANUAL PARALLELING CONTROLLER KIT PARTS							
Qty.	Description	Common	Kit Number/Unique Parts				
			325691				
1	Controller Assembly*		A-325587				
6	Screw, H.C. 10-24 x 5/8	X-117-5					
3	Clamp	X-672-10					
1	Module, Single-Phase	328784					
1	Harness, Wiring	328905					
3	Transformer, Current	291547					

Manual Paralleling Controller Assemblies

Qty.	Description	Common Parts	Manual Paralleling Controller Assembly Number/Unique Parts				
			A-325556	A-325573	A-325587		
1	Indicator Circuit Board	A-336432					
1	Main Circuit Board	A-336415					
1	Strap, Ground	X-6046-2					
2	Resistor	X-472-6					
1	Jumper	X-6048-2					
1	Relay, Reverse Power	X-6115-10					
1	Relay, Synch Power	X-6120-17					
2	Knob, Potentiometer	X-6136-35					
4	Spacer	X-712-9					
1	Ring, Lock	151511					
3	Diode, 6 Amp, 100 Volt In-line	233959					
1	Meter, Hour	238736					
1	Terminal	238898					
2	Socket, Screw Clear	243645					
2	Bulb	243987					
1	Block, Terminal	246115					
1	Switch, Toggle	249689					
1	Resistor, 24 Volt	268297					
1	Voltmeter	255224					
1	Lamp	264513					
1	Potentiometer	273767					
1	Wattmeter	299979					
1	Transducer, Watt		328550	328564	328876		
1	Ammeter, AC		282960	282960	282959		
1	Voltmeter, AC		282814	282814	282815		
1	Meter, Frequency	295069					
1	Gauge, Oil Pressure	282897					
1	Gauge, Water Temperature	282898					
3	Lamp	283420					
1	Fuse, 15 Amp	283645					
4	Fuse, 1 Amp	284205					
3	Socket, Lamp	284990					
9	Spacer, Circuit Board	287948					
3	Fuse, 1.5 Amp	291207					
2	Relay	291309					
2	Lamp	291740					
1	Decal	292347					
1	Switch, Pushbutton	292364					
1	Switch, Selector	292374					
1	Nameplate	292383					
1	Decal, Emergency Stop	292467					
3	Holder, Fuse	292821					
2	Socket, Relay	295034					
2	Block, Terminal	295266					
1	Lamp, Socket	295325					
1	Lens	295328					
2	Cover, Terminal Strip	295925					
1	Box, Controller	325611					
1	Cover, Controller	325590					
1	Transducer, Watt	328550					
1	Panel, Hinge	328491					
4	Mount, Controller	328644					
4	Mount, Controller	328645					
1	Harness, Wiring	325615					
1	Switch, Pushbutton	328773					
4	Transformer		328674	328675	328676		
1	Switch, Toggle	328789					
12	Lens, Red	253241					
1	Lens, Green	253242					
3	Lens, Yellow	255931					
1	Cable, Ribbon	336579					
2	Bracket, Transformer	342176					
1	Strip, Marker	342177					
1	Strip, Marker	342178					
1	Strip, Marker	342179					

Cooling System Kits

Qty.	Description	Part No.
------	-------------	----------

Block Heater

279930

1	Elbow, 45°, 1	X-274-10
1	Elbow, Street 3/8	X-274-6
4	Clamp, Hose .69-1.25 ID	X-426-12
9	Tie, Cable	X-468-1
1	Connector, Hose, 3/4 ID 3/8 NPT	X-582-11
2	Connector, Hose, 3/4 ID 1 NPT	X-582-15
1	Connector, Hose, 3/4 ID 3/4 NPT	X-582-8
1	Track, Mounting, 2.00"	X-6008-2
2	Washer, Beveled, .44	X-6011-4
1	Hose, .75 x 46 L	X-691-15
1	Hose, .75 x 103 L	X-691-32
2	Screw, Drill, 8-18	X-794-2
1	Bushing, Reducing, 1/2 x 3/4	153659
1	Thermostat, Block Heater	279813
1	Pump, Circulating Heater	279933
1	Pump Includes *	
1	*Element, Block Heater	224371
1	*Pump	328148
1	*Contactor	328217
1	*Transformer	328218
1	*Box, Control	347276
1	Harness, Block Heater	279956
1	Socket Assembly	291273
1	Relay	291309

Block Heater

279931

4	Clamp, Hose, .69-1.25 ID	X-426-12
9	Tie, Cable	X-468-1
2	Connector, Hose, 3/4 ID 1 NPT	X-582-15
2	Connector, Hose, 3/4 ID 3/4 NPT	X-582-8
1	Track, Mounting, 2.00"	X-6008-2
2	Washer, Beveled, .44	X-6011-4
1	Hose .75 x 55 L	X-691-21
1	Hose .75 x 103 L	X-691-32
2	Screw, Drill, 8-18	X-794-2
1	Elbow, 1"	151385
1	Bushing, Reducing, 1/2 x 3/4	153659
1	Adapter, Plate	274881
1	Gasket	274882
1	Thermostat, Block Heater	279813
1	Pump, Circulating Heater	279933
1	Pump Includes *	
1	*Element, Block Heater	224371
1	*Pump	328148
1	*Contactor	328217
1	*Transformer	328218
1	*Box, Control	347276
1	Harness, Block Heater	279956
1	Socket Assembly	291273
1	Relay	291309

Qty.	Description	Part No.
------	-------------	----------

Block Heater

279932

1	Bushing, Reducer, 3/4 x 1 1/4 NPT	X-202-18
1	Elbow, 45°, 1	X-274-10
4	Clamp, Hose, .69-1.25 ID	X-426-12
9	Tie, Cable	X-468-1
2	Connector, Hose, 3/4 ID 1 NPT	X-582-15
2	Connector, Hose, 3/4 ID 3/4 NPT	X-582-8
1	Track, Mounting, 2.00"	X-6008-2
2	Washer, Beveled, .44	X-6011-4
1	Hose, .75 x 65 L	X-691-19
1	Hose, .75 x 109 L	X-691-33
2	Screw, Drill, 8-18	X-794-2
1	Bushing, Reducing, 1/2 x 3/4	153659
1	Adapter, Plate	274881
1	Gasket	274882
1	Thermostat, Block Heater	279813
1	Pump, Circulating Heater	279933
1	Pump Includes *	
1	*Element, Block Heater	224371
1	*Pump	328148
1	*Contactor	328217
1	*Transformer	328218
1	*Box, Control	347276
1	Harness, Block Heater	279956
1	Socket Assembly	291273
1	Relay	291309

Block Heater

328648

1	Elbow, 45°, 1	X-274-10
1	Elbow	X-274-2
4	Clamp, Hose .69-1.25 ID	X-426-12
1	Connector, Nonmetallic	X-567-1
2	Connector, Hose, 3/4 ID 1 NPT	X-582-15
1	Connector, Hose, 3/4 ID 3/4 NPT	X-582-8
1	Track, Mounting, 2.00"	X-6008-2
2	Washer, Beveled, .44	X-6011-4
1	Hose	X-691-34
1	Hose	X-691-36
2	Screw, Drill, 8-18	X-794-2
1	Bushing, Reducing, 1/2 x 3/4	153659
1	Thermostat, Block Heater	279813
1	Pump, Circulating Heater	279933
1	Pump Includes *	
1	*Element, Block Heater	224371
1	*Pump	328148
1	*Contactor	328217
1	*Transformer	328218
1	*Box, Control	347276
1	Harness, Block Heater	279956
1	Socket Assembly	291273
1	Relay	291309

Cooling System Kits, Continued

Qty.	Description	Part No.
------	-------------	----------

Block Heater

328037

1	Bushing, Reducer, 3/4 x 1 1/4 NPT	X-202-18
1	Tee, Black Iron 3/8	X-203-15
1	Nipple, Pipe 3/8	X-204-9
2	Nipple, Pipe	X-206-9
1	Cross Pipe	X-207-5
1	Elbow, Pipe 3/4	X-215-2
1	Elbow, 45°, 1	X-274-10
1	Elbow, 90 Deg.	X-391-23
6	Clamp, Hose, .69-1.25 ID	X-426-12
2	Connector, Hose	X-582-11
2	Connector, Hose, 3/4 ID 1 NPT	X-582-15
1	Connector, Hose, 3/4 ID 3/4 NPT	X-582-8
1	Track, Mounting, 2.00"	X-6008-2
1	Hose	X-691-25
1	Hose	X-691-34
1	Hose	X-691-35
2	Screw, Drill, 8-18	X-794-2
1	Bushing, Reducing, 1/2 x 3/4	153659
1	Adapter, Plate	274881
1	Gasket	274882
1	Thermostat, Block Heater	279813
1	Pump, Circulating Heater	279933
1	Pump Includes *	
1	*Element, Block Heater	224371
1	*Pump	328148
1	*Contactor	328217
1	*Transformer	328218
1	*Box, Control	347276
1	Harness, Block Heater	279956
1	Socket Assembly	291273
1	Relay	291309

Qty.	Description	Part No.
------	-------------	----------

Block Heater

328036

1	Bushing, Reducer, 3/4 x 1 1/4 NPT	X-202-18
1	Tee, Black Iron 3/8	X-203-15
1	Nipple, Pipe 3/8	X-204-9
2	Nipple, Pipe	X-206-9
1	Cross Pipe	X-207-5
6	Clamp, Hose, .69-1.25 ID	X-426-12
2	Connector, Hose	X-582-11
2	Connector, Hose, 3/4 ID 1 NPT	X-582-15
1	Connector, Hose, 3/4 ID 3/4 NPT	X-582-8
1	Track, Mounting, 2.00"	X-6008-2
2	Washer, Beveled, .44	X-6011-4
1	Hose, .75 x 65 L	X-691-19
1	Hose	X-691-25
1	Hose	X-691-35
2	Screw, Drill, 8-18	X-794-2
1	Elbow	151385
1	Bushing, Reducing, 1/2 x 3/4	153659
1	Adapter, Plate	274881
1	Gasket	274882
1	Thermostat, Block Heater	279813
1	Harness, Block Heater	279956
1	Pump, Circulating Heater	279933
1	Pump Includes *	
1	*Element, Block Heater	224371
1	*Pump	328148
1	*Contactor	328217
1	*Transformer	328218
1	*Box, Control	347276
1	Socket Assembly	291273
1	Relay	291309

Block Heater Isolation Valve

347881

2	Bushing, Reducer, 3/4	X-202-1
4	Nipple, Pipe	X-206-9
2	Union, Pipe	X-277-7
2	Valve	255632

Cooling System Kits, Continued

Qty.	Description	Part No.
------	-------------	----------

Duct Flange, Radiator 274233

8	Rivet, Alumin./steel Pop, 3/16 x 1/4	X-781-11
10	Screw, Drill, 1/4-14 x 3/4	X-794-1
2	Frame, Air Duct (sides)	274303
2	Frame, Air Duct (top/bottom)	274304

Duct Flange, Radiator 279536

8	Rivet, Alumin./steel Pop	X-781-10
2	Frame, Air Duct	279534
2	Frame, Air Duct	279535

Duct Flange, Radiator 299873

8	Rivet, Alumin./steel Pop	X-781-10
2	Frame, Air Duct	299872
2	Frame, Air Duct	299874

Duct Flange, Radiator 328033

12	Rivet, Alumin./steel Pop	X-781-10
2	Frame, Air Duct	328031
1	Frame, Air Duct	328279
1	Frame, Air Duct	328280
2	Bracket, Air Duct	328032

Duct Flange, Radiator 328277

8	Rivet, Alumin./steel Pop	X-781-10
2	Frame, Air Duct	328224
2	Frame, Air Duct	328226
2	Bracket, Air Duct	328225

Qty.	Description	Part No.
------	-------------	----------

Radiator Cooling 274937

1	Radiator Assembly	A-272883
4	Nut, Elastic Stop, 1/4-20	X-101-8
6	Screw, HC 1/2-13 x 5.0	X-129-50
1	Bushing, Reducer, 3/8 x 1/2 NPT	X-202-28
1	Valve, Drain, 3/8 NPTF	X-256-1
2	Line, Flex. Fuel, 1/2 x .781 55.0 L	X-422-27
4	Clamp, Hose, .56-1.06 ID	X-426-3
2	Clamp, Hose, 1.31-2.25 ID	X-426-4
1	Tie, Cable	X-468-2
4	Tie, Cable	X-468-7
2	Adapter, Hose, 1/2 ID 3/8 NPT	X-582-4
2	Adapter, Hose, 1/2 ID 1/2 NPT	X-582-5
4	Hose, Radiator, 3.50 x 5.0	X-6006-3
4	Washer, Beveled, .68	X-6011-3
1	Hose, 1.50 x 76.00"	X-6014-33
2	Hose, Radiator, 4.50 x 5.00"	X-6014-34
12	Screw, Phil Hex Crim, 10-24 x .50	X-6216-1
2	Plug, Pipe, 1	X-75-22
1	Adapter, 1 1/2 ID 1 1/2 NPT	X-751-4
2	Screw, Drill Hex., 1/4-14	X-794-1
1	Guard, Belt	272629
1	Guard, Belt	272630
1	Guard, Belt	272659
1	Guard, Belt	272679
1	Fan	272956
1	Switch Assembly, Level	273469
1	Tube, Inlet (mtl), 4.68 OD	274265
1	Gasket, Inlet	274300
1	Tube, Radiator (stl), 4.50 ID	274390
1	Belt	274440
4	Clamp, Hose, 5.81-6.12 ID	274443
2	Tube, Radiator Upper, 3.50 ID	274445
1	Bracket, Belt Guard	274825
1	Bracket, Belt Guard	274826
2	Brace, Radiator	279539
2	Support, Radiator	279542
2	Support, Radiator	279543
6	Washer, Hardened, 17/32 x 1 1/16	290945
8	Clamp, Hose, 3.75-4.06 ID	291537

Cooling System Kits, Continued

Qty.	Description	Part No.
Radiator Cooling		274938
1	Radiator Assembly	A-272884
4	Nut, Elastic Stop, 1/4-20	X-101-8
6	Screw, HC 1/2-13 x 5.0	X-129-50
1	Bushing, Reducer, 3/8 x 1/2 NPT	X-202-28
1	Valve, Drain, 3/8 NPTF	X-256-1
2	Line, Flex. Fuel, 1/2 x .781 55.0 L	X-422-27
4	Clamp, Hose, .56-1.06 ID	X-426-3
2	Clamp, Hose, 1.31-2.25 ID	X-426-4
1	Tie, Cable	X-468-2
2	Adapter, Hose, 1/2 ID 3/8 NPT	X-582-4
2	Adapter, Hose, 1/2 ID 1/2 NPT	X-582-5
4	Hose, Radiator, 3.50 x 5.0"	X-6006-3
4	Washer, Beveled, .68	X-6011-3
1	Hose, 1.50 x 76.00"	X-6014-33
2	Hose, Radiator, 4.50 x 5.00"	X-6014-34
32	Screw, Phil Hex Crim, 10-24 x .50	X-6216-1
2	Plug, Pipe, 1	X-75-22
1	Adapter, 1 1/2 ID 1 1/2 NPT	X-751-4
4	Screw, Drill Hex., 1/4-14	X-794-1
1	Guard, Belt	272630
1	Fan	272969
1	Switch Assembly, Level	273469
1	Guard, Fan	274246
1	Guard, Fan	274247
1	Guard, Belt	274254
1	Guard, Belt	274255
1	Guard, Belt	274256
1	Tube, Inlet (mtl), 4.68 OD	274265
1	Gasket, Inlet	274300
1	Belt	274385
1	Tube, Radiator (stl), 4.50 ID	274390
4	Clamp, Hose, 5.81-6.12 ID	274443
2	Tube, Radiator Upper, 3.50 ID	274445
1	Brace, Belt Guard	274666
2	Brace, Radiator	279539
2	Support, Radiator	279542
2	Support, Radiator	279543
6	Washer, Hardened, 17/32 x 1 1/16	290945
8	Clamp, Hose, 3.75-4.06 ID	291537

Qty.	Description	Part No.
Radiator Cooling		279672
1	Radiator Assembly	A-279537
2	Nut, Lock, 3/8-16	X-101-13
2	Bushing, Reducer, 3/8 x 1/2 NPT	X-202-28
1	Nipple, Pipe, 1 1/2 x 4	X-205-7
1	Elbow, 45°, 1 1/2 NPT	X-225-3
2	Washer, Plain, .438 ID, 1.000 OD	X-25-1
2	Valve, Drain, 3/8 NPTF	X-256-1
4	Clamp, Hose, 4.06-5.00 ID	X-426-7
4	Washer, Beveled, .68	X-6011-3
1	Hose, Radiator, 4.50 x 5.00"	X-6014-34
4	Hose, 3.50 x 5.00"	X-6014-41
1	Hose, Radiator, 4.50 x 10.00"	X-6014-51
4	Hose, 2 x 8"	X-6014-8
2	Clamp, Insulated, 2.12 ID	X-672-18
3	Clamp, Insulated, .44 ID	X-672-7
1	Plug, Pipe, 1/4 NPTF	X-75-41
1	Plug, Pipe, 3/4	X-75-6
1	Clip, Conduit	X-752-1
8	Clamp, Hose, 2.25-2.56 ID	249887
1	Switch Assembly, Level	273469
1	Tube, Inlet (mtl), 4.68 OD	274265
1	Gasket, Inlet	274300
4	Clamp, Hose, 4/81-5/12 ID	274443
8	Clamp, Hose, 3.68-4.00 ID	274824
4	Support, Radiator	274894
2	Pipe, 3.5 ID	274897
1	Bushing, Idler	274903
1	Pulley, Idler	274904
1	Bushing, Pulley	274905
1	Pulley	274906
1	Pipe, Rad. Outlet	274907
1	Guard, Belt	274908
1	Guard, Belt	274911
2	Bracket, Mounting	274913
1	Belt, Poly-v	328780
1	Guard, Belt	279485
1	Support, Radiator	279491
1	Support, Radiator	279492
2	Bracket, Radiator	279494
1	Support, Radiator	279495
1	Support, Radiator	279496
12	Shim	279497
12	Shim	279498
2	Bracket, Mounting	279499
1	Gasket, Pressure Sensitive	279557
1	Cover, Pressure Sensitive	279558
2	Bracket, Radiator Support	279568
1	Pipe, Intercooler Return	279570
1	Pipe, Intercooler Support	279571
1	Guard, Belt (left)	279572
1	Brace, Upper Rad. Hose	279582
1	Brace, Upper Rad. Support	279583
1	Guard, Belt	279662
2	Decal, Caution	279748
2	Clamp, Hose, 4.00-4.31 ID	291590

Cooling System Kits, Continued

Qty.	Description	Part No.
Radiator Cooling		299878
	See Group 104, Variation 28 For Parts List.	
Radiator Cooling		299877
	See Group 104, Variation 27 For Parts List.	
Radiator Cooling		328239
	See Group 104, Variation 31 For Parts List.	
Radiator Cooling		328281
	See Group 104, Variation 30 For Parts List.	
Radiator Cooling		328282
	See Group 104, Variation 29 For Parts List.	
Radiator Cooling		354171
	See Group 104, Variation 39 For Parts List.	
Radiator Cooling		354209
	See Group 104, Variation 47 For Parts List.	
Radiator Cooling		354215
	See Group 104, Variation 48 For Parts List.	

Qty.	Description	Part No.
Cooling, City Water		328705
4	Elbow, Street 1 1/2	A-27
2	Bushing, Reducer	X-202-19
4	Bushing, Reducer	X-202-20
1	Bushing, Reducer	X-202-32
4	Bushing, Reducer	X-202-45
2	Tee, Pipe	X-203-23
1	Tee, Pipe	X-203-24
1	Tee, Pipe	X-203-25
3	Pipe	X-205-11
2	Pipe	X-205-16
1	Nipple, Pipe	X-205-22
1	Nipple, Pipe 1 1/2 x 4	X-205-7
2	Elbow, Street 4	X-211-13
2	Elbow, Pipe 1	X-215-15
3	Elbow, Pipe 4	X-215-8
1	Nipple, Pipe 1 x 3	X-218-22
2	Valve, Drain, 3/8 NPT	X-256-1
1	Valve, Drain	X-256-5
2	Union, Straight	X-277-9
2	Valve, Solenoid	X-350-9
1	Hose	X-386-96
4	Elbow, Hose	X-391-30
7	Clamp, Hose	X-426-9
1	Pipe	X-458-1
1	Nipple, Pipe	X-549-11
1	Nipple, Pipe	X-549-12
3	Pipe	X-549-6
3	Adapter, Hose	X-570-23
8	Washer, Beveled	X-6011-3
1	Hose, Radiator	X-6014-61
2	Hose, Radiator	X-6014-80
2	Hose, Radiator	X-6014-81
2	Nipple, Combination	X-6268-4
2	Hose, Rubber	X-651-27
1	Hose	X-651-33
2	Fitting, Hose	X-652-1
2	Clamp, Isulated	X-672-7
1	Bushing, Reducer 1/2	168848
2	Adapter, Hose	272930
1	Switch Assembly, Level	273469
4	Clamp, Hose	274545
2	Clamp, Hose	279669
2	Heat Exchanger	291418
4	Clamp, Hose	291542
2	Bracket, Heat Exchanger	296955
1	Skid	328688
1	Guard, Pulley	328696
1	Guard, Lower Pulley	328697
2	Support, Surge Tank	328698
1	Bracket, Pulley Guard	328699
1	Regulator, Water	328700
2	Gasket, Companion Flange	328701
2	Flange, Companion	328702
2	Brace, Surge Tank Support	328703
1	Panel, Front	328704
1	Tank, Surge	328707

Cooling System Kits, Continued

Qty.	Description	Part No.
Cooling, City Water		328706
4	Elbow, Street 1 1/2	A-27
2	Bushing, Reducer	X-202-19
4	Bushing, Reducer	X-202-20
1	Bushing, Reducer	X-202-32
4	Bushing, Reducer	X-202-45
2	Tee, Pipe	X-203-23
1	Tee, Pipe	X-203-24
1	Tee, Pipe	X-203-25
3	Pipe	X-205-11
2	Pipe	X-205-16
1	Nipple, Pipe	X-205-22
1	Nipple, Pipe 1 1/2 x 4	X-205-7
2	Elbow, Street 4	X-211-13
2	Elbow, Pipe 1	X-215-15
3	Elbow, Pipe 4	X-215-8
1	Nipple, Pipe 1 x 3	X-218-22
2	Valve, Drain, 3/8 NPT	X-256-1
1	Valve, Drain	X-256-5
2	Union, Straight	X-277-9
2	Valve, Solenoid	X-350-9
1	Hose	X-386-96
4	Elbow, Hose	X-391-30
7	Clamp, Hose	X-426-9
1	Pipe	X-458-1
1	Nipple, Pipe	X-549-11
1	Nipple, Pipe	X-549-12
3	Pipe	X-549-6
3	Adapter, Hose	X-570-23
8	Washer, Beveled	X-6011-3
1	Hose, Radiator	X-6014-61
2	Hose, Radiator	X-6014-80
2	Hose, Radiator	X-6014-81
2	Nipple, Combination	X-6268-4
2	Hose, Rubber	X-651-27
1	Hose	X-651-33
2	Fitting, Hose	X-652-1
2	Clamp, Isulated	X-672-7
1	Bushing, Reducer 1/2	168848
2	Adapter, Hose	272930
1	Switch Assembly, Level	273469
4	Clamp, Hose	274545
2	Clamp, Hose	279669
2	Heat Exchanger	291418
4	Clamp, Hose	291542
2	Bracket, Heat Exchanger	296955
1	Skid	328689
1	Guard, Pulley	328696
1	Guard, Lower Pulley	328697
2	Support, Surge Tank	328698
1	Bracket, Pulley Guard	328699
1	Regulator, Water	328700
2	Gasket, Companion Flange	328701
2	Flange, Companion	328702
2	Brace, Surge Tank Support	328703
1	Panel, Front	328704
1	Tank, Surge	328707

Qty.	Description	Part No.
Cooling, City Water		354199
4	Elbow, Street 1 1/2	A-27
1	Bushing, Reducer 3/4	X-202-1
2	Bushing, Reducer	X-202-19
4	Bushing, Reducer	X-202-20
1	Bushing, Reducer	X-202-32
4	Bushing, Reducer	X-202-45
2	Tee, Pipe	X-203-23
1	Tee, Pipe	X-203-24
1	Tee, Pipe	X-203-25
3	Pipe	X-205-11
2	Pipe	X-205-16
1	Nipple, Pipe	X-205-22
2	Nipple, Pipe 1 1/2 x 4	X-205-7
1	Nipple, Pipe 3/4	X-206-2
2	Elbow, Street 4	X-211-13
1	Elbow, Pipe 1	X-215-15
3	Elbow, Pipe 4	X-215-8
2	Valve, Drain, 3/8 NPT	X-256-1
1	Valve, Drain	X-256-5
2	Union, Straight	X-277-9
2	Valve, Solenoid	X-350-9
1	Hose	X-386-96
4	Elbow, Hose	X-391-30
7	Clamp, Hose	X-426-9
1	Pipe	X-458-1
1	Nipple, Pipe	X-549-11
1	Nipple, Pipe	X-549-12
3	Pipe	X-549-6
3	Adapter, Hose	X-570-23
8	Washer, Beveled	X-6011-3
1	Hose, Radiator	X-6014-61
2	Hose, Radiator	X-6014-80
2	Hose, Radiator	X-6014-81
2	Nipple, Combination	X-6268-4
2	Hose, Rubber	X-651-27
1	Hose	X-651-33
2	Fitting, Hose	X-652-1
2	Clamp, Isulated	X-672-7
1	Bushing, Reducer 1/2	168848
2	Adapter, Hose	272930
1	Sensor, Low Fluid	254832
4	Clamp, Hose	274545
2	Clamp, Hose	279669
2	Heat Exchanger	291418
4	Clamp, Hose	291542
2	Bracket, Heat Exchanger	296955
1	Guard, Pulley	328696
1	Guard, Lower Pulley	328697
2	Support, Surge Tank	328698
1	Bracket, Pulley Guard	328699
1	Regulator, Water	328700
2	Gasket, Companion Flange	328701
2	Flange, Companion	328702
2	Brace, Surge Tank Support	328703
1	Panel, Front	328704
1	Tank, Surge	328707

Cooling System Kits, Continued

Qty.	Description	Part No.
------	-------------	----------

Cooling, Remote Radiator 328694

2	Hose, Radiator	X-507-6
1	Hose, Radiator	X-6014-80
2	Clamp, Hose	274545
4	Clamp, Hose	291542
1	Guard, Pulley	328696
1	Guard, Lower Pulley	328697
1	Bracket, Pulley Guard	328699
1	Skid	328709

Cooling, Remote Radiator 328723

2	Hose, Radiator	X-507-6
1	Hose, Radiator	X-6014-80
2	Clamp, Hose	274545
4	Clamp, Hose	291542
1	Guard, Pulley	328696
1	Guard, Lower Pulley	328697
1	Bracket, Pulley Guard	328699
1	Skid	328710

Cooling, Remote Radiator 328765

2	Hose, 2" x 18"	X-6014-3
2	Hose, Radiator	X-6014-43
1	Hose, Radiator	X-6014-51
4	Clamp, Hose	249887
1	Tube, Inlet	274265
1	Gasket, Inlet	274300
2	Clamp, Hose	274443
4	Clamp, Hose	274824
1	Tube, Lower Radiator	328274
1	Guard, Pulley	328732
1	Guard, Pulley	328733
1	Guard, Front	328734
1	Skid	328736

Cooling, Remote Radiator 328766

2	Hose, 2" x 18"	X-6014-3
2	Hose, Radiator	X-6014-43
1	Hose, Radiator	X-6014-51
4	Clamp, Hose	249887
1	Tube, Inlet	274265
1	Gasket, Inlet	274300
2	Clamp, Hose	274443
4	Clamp, Hose	274824
1	Tube, Lower Radiator	328274
1	Guard, Pulley	328732
1	Guard, Pulley	328733
1	Guard, Front	328734
1	Skid	328737

Qty.	Description	Part No.
------	-------------	----------

Cooling, Remote Radiator 328767

2	Hose, 2" x 18"	X-6014-3
2	Hose, Radiator	X-6014-43
1	Hose, Radiator	X-6014-51
4	Clamp, Hose	249887
1	Tube, Inlet	274265
1	Gasket, Inlet	274300
2	Clamp, Hose	274443
4	Clamp, Hose	274824
1	Tube, Lower Radiator	328274
1	Guard, Pulley	328732
1	Guard, Pulley	328733
1	Guard, Front	328734
1	Skid	328735

Cooling, Remote Radiator 354200

2	Hose, Radiator	X-507-6
1	Hose, Radiator	X-6014-80
2	Clamp, Hose	274545
4	Clamp, Hose	291542
1	Guard, Pulley	328696
1	Guard, Lower Pulley	328697
1	Bracket, Pulley Guard	328699

Cooling, Remote Radiator 354214

2	Hose, 2" x 18"	X-281-31
1	Hose, Radiator	X-6014-51
1	Clamp	X-722-3
2	Clamp, U	X-722-5
4	Clamp, Hose	249887
1	Tube, Inlet	274265
1	Gasket, Inlet	274300
2	Clamp, Hose	324555
1	Guard, Pulley	328732
1	Guard, Pulley	328733
1	Guard, Front	328734
2	Gasket, Outlet	354043
1	Tube, Outlet	354273
1	Tube, Intercooler Return	354274
1	Tube, Intercooler Return	354275
1	Tube, Inlet	354276
1	Bracket, Inlet Tube	354277
1	Bracket, Intercooler Tube	354278

Cooling System Kits, Continued

Qty.	Description	Part No.	Qty.	Description	Part No.
Cooling, Remote Radiator 354293			Heavy-Duty Air Cleaner Kit 354220		
2	Hose, 2" x 18"	X-281-31	4	Cleaner Assembly, Air	A-279714
1	Hose, Radiator	X-6014-51	4	Element, Air Cleaner	279738
1	Clamp	X-722-3	4	Element, Air Cleaner	279739
2	Clamp, U	X-722-5	4	Cap, Pipe	X-268-7
4	Clamp, Hose	249887	2	Tube, Steel	X-522-64
1	Tube, Inlet	274265	2	Tube, Metal	274819
1	Gasket, Inlet	274300	2	Tube, Metal	274820
2	Clamp, Hose	324555	4	Bracket	279288
1	Guard, Pulley	328732	8	Bracket, Air Cleaner	279715
1	Guard, Pulley	328733	4	Hose, Hump	279720
1	Guard, Front	328734	4	Cap, Rain	279722
2	Gasket, Outlet	354043	4	Clamp, Hose	279743
1	Tube, Outlet	354273	2	Bracket, Air Cleaner	279781
1	Tube, Intercooler Return	354274	1	Bracket, Air Cleaner	279782
1	Tube, Inlet	354276	1	Bracket, Air Cleaner	279783
1	Bracket, Inlet Tube	354277	1	Bracket, Air Cleaner	279784
1	Bracket, Intercooler Tube	354278	1	Bracket, Air Cleaner	279785
1	Tube, Intercooler Return	354279	12	Clamp	280998
Radiator Core Guard 328727			4	Clamp, Hose	291504
4	Guard, Radiator Core	328726	2	Hose, Hump	291560
Remote Radiator Flex Kit PA-354280			2	Hose, 90 Degree Elbow	291567
2	Adapter, Flexible 3" ID	354281	2	Hose, 90 Degree Elbow	291678
2	Adapter, Flexible 5" ID	354282	Heavy-Duty Air Cleaner Kit 354226		
Heavy-Duty Air Cleaner Kit 354201			4	Cleaner Assembly, Air	A-279713
4	Cleaner Assembly, Air	A-328582	4	Element, Air Cleaner	279736
4	Element, Air Cleaner	328583	4	Element, Air Cleaner	279737
2	Clamp, Hose	254344	4	Cap, Pipe	X-268-7
2	Clamp, Hose	272960	2	Tube, Steel	X-522-64
2	Hose, Hump	274430	4	Clamp, Hose	254344
4	Clamp	280998	4	Cap, Rain	272674
4	Precleaner Assembly, Air	328240	4	Clamp, Hose	272960
1	Bracket, Air Cleaner	328497	2	Hose, 90 Degree Elbow	274240
1	Bracket, Air Cleaner	328498	2	Hose, Hump	274430
8	Mount, Air Cleaner	328499	2	Tube Assembly	274663
2	Reducer, Hose Insert	328609	2	Tube Assembly	274664
2	Hose, 45 Degree Elbow	328610	1	Bracket	279288
1	Bracket, Air Cleaner	328611	4	Hose, Hump	279744
1	Bracket, Air Cleaner	328612	1	Bracket, Air Cleaner	279765
			1	Bracket, Air Cleaner	279766
			1	Bracket, Air Cleaner	279767
			1	Bracket, Air Cleaner	279768
			2	Bracket, Air Cleaner	279781
			12	Clamp	280998
			8	Bracket, Air Cleaner	291666
			2	Hose, 90 Degree Elbow	291678

Notes

Appendix A Abbreviations

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

A, amp	ampere	CG	center of gravity	fglass.	fiberglass
ABDC	after bottom dead center	CID	cubic inch displacement	FHM	flat head machine (screw)
AC	alternating current	CL	centerline	fl. oz.	fluid ounce
A/D	analog to digital	cm	centimeter	flex.	flexible
ADC	analog to digital converter	CMOS	complementary metal oxide substrate (semiconductor)	freq.	frequency
adj.	adjust, adjustment	cogen.	cogeneration	FS	full scale
ADV	advertising dimensional drawing	com	communications (port)	ft.	foot, feet
AHWT	anticipatory high water temperature	coml	commercial	ft. lb.	foot pounds (torque)
AISI	American Iron and Steel Institute	Coml/Rec	Commercial/Recreational	ft./min.	feet per minute
ALOP	anticipatory low oil pressure	conn.	connection	g	gram
alt.	alternator	cont.	continued	ga.	gauge (meters, wire size)
Al	aluminum	CPVC	chlorinated polyvinyl chloride	gal.	gallon
ANSI	American National Standards Institute (formerly American Standards Association, ASA)	crit.	critical	gen.	generator
AO	anticipatory only	CRT	cathode ray tube	genset	generator set
API	American Petroleum Institute	CSA	Canadian Standards Association	GFI	ground fault interrupter
approx.	approximate, approximately	CT	current transformer	GND, ⊕	ground
AR	as required, as requested	Cu	copper	gov.	governor
AS	as supplied, as stated, as suggested	cu. in.	cubic inch	gph	gallons per hour
ASE	American Society of Engineers	cw.	clockwise	gpm	gallons per minute
ASME	American Society of Mechanical Engineers	CWC	city water-cooled	gr.	grade, gross
assy.	assembly	cyl.	cylinder	GRD	equipment ground
ASTM	American Society for Testing Materials	D/A	digital to analog	gr. wt.	gross weight
ATDC	after top dead center	DAC	digital to analog converter	H x W x D	height by width by depth
ATS	automatic transfer switch	dB	decibel	HC	hex cap
auto.	automatic	dBA	decibel (A weighted)	HCHT	high cylinder head temperature
aux.	auxiliary	DC	direct current	HD	heavy duty
A/V	audiovisual	DCR	direct current resistance	HET	high exhaust temperature, high engine temperature
avg.	average	deg., °	degree	hex	hexagon
AVR	automatic voltage regulator	dept.	department	Hg	mercury (element)
AWG	American Wire Gauge	dia.	diameter	HH	hex head
AWM	appliance wiring material	DI/EO	dual inlet/end outlet	HHC	hex head cap
bat.	battery	DIN	Deutsches Institut für Normung e. V. (also Deutsche Industrie Normenausschuss)	HP	horsepower
BBDC	before bottom dead center	DIP	dual inline package	hr.	hour
BC	battery charger, battery charging	DPDT	double-pole, double-throw	HS	heat shrink
BCA	battery charging alternator	DPST	double-pole, single-throw	hsg.	housing
BCI	Battery Council International	DS	disconnect switch	HVAC	heating, ventilation, and air conditioning
BDC	before dead center	DVR	digital voltage regulator	HWT	high water temperature
BHP	brake horsepower	E, emer.	emergency (power source)	Hz	hertz (cycles per second)
blk.	black (paint color), block (engine)	EDI	electronic data interchange	IC	integrated circuit
blk. htr.	block heater	EFR	emergency frequency relay	ID	inside diameter, identification
BMEP	brake mean effective pressure	e.g.	for example (<i>exempli gratia</i>)	IEC	International Electrotechnical Commission
bps	bits per second	EG	electronic governor	IEEE	Institute of Electrical and Electronics Engineers
br.	brass	EGSA	Electrical Generating Systems Association	IMS	improved motor starting
BTDC	before top dead center	EIA	Electronic Industries Association	in.	inch
Btu	British thermal unit	EI/EO	end inlet/end outlet	in. H ₂ O	inches of water
Btu/min.	British thermal units per minute	EMI	electromagnetic interference	in. Hg	inches of mercury
C	Celsius, centigrade	emiss.	emission	in. lb.	inch pounds
cal.	calorie	eng.	engine	Inc.	incorporated
CARB	California Air Resources Board	EPA	Environmental Protection Agency	ind.	industrial
CB	circuit breaker	EPS	emergency power system	int.	internal
cc	cubic centimeter	ER	emergency relay	int./ext.	internal/external
CCA	cold cranking amps	ES	engineering special, engineered special	I/O	input/output
ccw.	counterclockwise	ESD	electrostatic discharge	IP	iron pipe
CEC	Canadian Electrical Code	est.	estimated	ISO	International Organization for Standardization
cert.	certificate, certification, certified	E-Stop	emergency stop	J	joule
cfh	cubic feet per hour	etc.	et cetera (and so forth)	JIS	Japanese Industry Standard
cfm	cubic feet per minute	exh.	exhaust	k	kilo (1000)
		ext.	external	K	kelvin
		F	Fahrenheit, female	kA	kiloampere
				KB	kilobyte (2 ¹⁰ bytes)
				kg	kilogram

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

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.

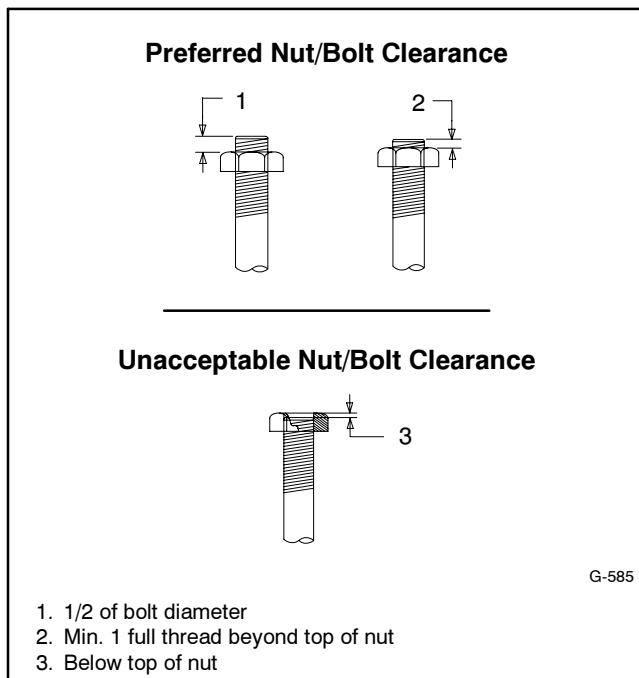


Figure 1 Acceptable Bolt Lengths

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.

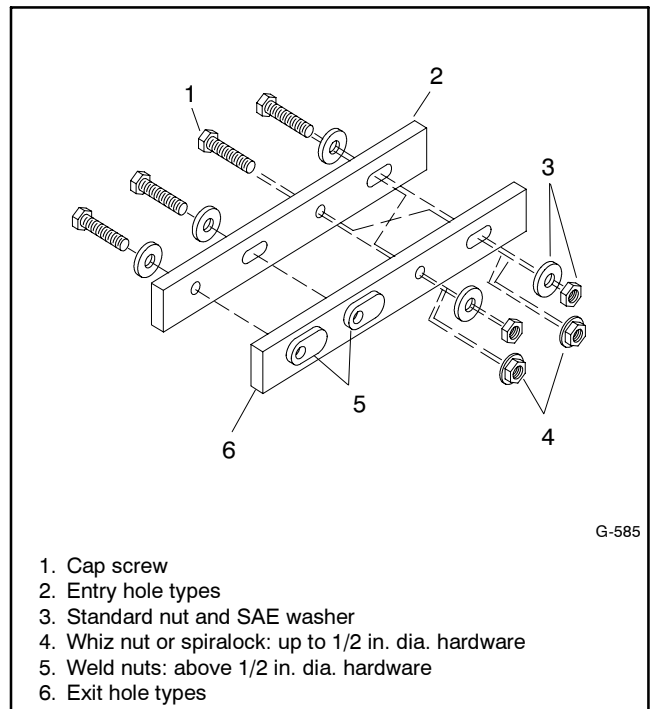


Figure 2 Acceptable Hardware Combinations

Appendix C General Torque Specifications

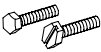
American Standard Fasteners Torque Specifications					
Size	Torque Measurement	Assembled into Cast Iron or Steel			Assembled into Aluminum Grade 2 or 5
		Grade 2	Grade 5	Grade 8	
8-32	Nm (in. lb.)	1.8 (16)	2.3 (20)	—	See Note 3
10-24	Nm (in. lb.)	2.9 (26)	3.6 (32)	—	
10-32	Nm (in. lb.)	2.9 (26)	3.6 (32)	—	
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. Do not use these values when the torque values are specified on the assembly drawing.
2. These values are based on new plates threads. Increase values by 15% if non-plated threads are used.
3. Hardware threaded into aluminum must have two diameters of thread engagement or may require 30% or more reduction in the torque.
4. Torques are calculated as equivalent stress loading to American hardware and approximately a preload of 90% of yield strength and 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)

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

Metric (Screws, Bolts, Studs, and Nuts)

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

Plain Washers

$\frac{9}{32}$ x $\frac{5}{8}$ x $\frac{1}{16}$
 — Thickness
 — External Dimension
 — Internal Dimension

Lock Washers

$\frac{5}{8}$
 — Internal Dimension

Appendix E Common Hardware List

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

American Standard

Part No. Dimensions Hex Head Bolts (Grade 5)

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

Part No. Dimensions Hex Head Bolts, cont.

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

Part No. Dimensions Type

Hex Nuts

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

Washers

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

Metric

Hex head bolts are hardness grade 8.8 unless noted.

Part No. Dimensions Hex Head Bolts (Partial Thread)

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

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

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

Hex Head Bolts (Full Thread)

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

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

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

Pan Head Machine Screws

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

Flat Head Machine Screws

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

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

Metric, continued

Part No.	Dimensions	Type
Hex Nuts		
M934-03-50	M3-0.50	Standard
M934-04-50	M4-0.70	Standard
M934-04-B	M4-0.70	Brass
M934-05-50	M5-0.80	Standard
M934-06-60	M6-1.00	Standard
M934-06-64	M6-1.00	Std. (green)
M6923-06-80	M6-1.00	Spiralock
M982-06-80	M6-1.00	Elastic Stop
M934-08-60	M8-1.25	Standard
M6923-08-80	M8-1.25	Spiralock
M982-08-80	M8-1.25	Elastic Stop
M934-10-60	M10-1.50	Standard
M934-10-60F	M10-1.25	Standard
M6923-10-80	M10-1.50	Spiralock
M6923-10-62	M10-1.50	Spiralock†
M982-10-80	M10-1.50	Elastic Stop
M934-12-60	M12-1.75	Standard
M934-12-60F	M12-1.25	Standard
M6923-12-80	M12-1.75	Spiralock
M982-12-80	M12-1.75	Elastic Stop
M982-14-60	M14-2.00	Elastic Stop
M6923-16-80	M16-2.00	Spiralock
M982-16-80	M16-2.00	Elastic Stop
M934-18-80	M18-2.5	Standard
M982-18-60	M18-2.50	Elastic Stop
M934-20-80	M20-2.50	Standard
M982-20-80	M20-2.50	Elastic Stop
M934-22-60	M22-2.50	Standard
M934-24-80	M24-3.00	Standard
M982-24-60	M24-3.00	Elastic Stop
M934-30-80	M30-3.50	Standard

Washers

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

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

Notes

Notes



DDC/MTU Power Generation
605 North 8th Street, Suite 501
Sheboygan, Wisconsin 53081 USA
Phone 920-451-0846, Fax 920-451-0843
ddcmtupowergeneration.com