

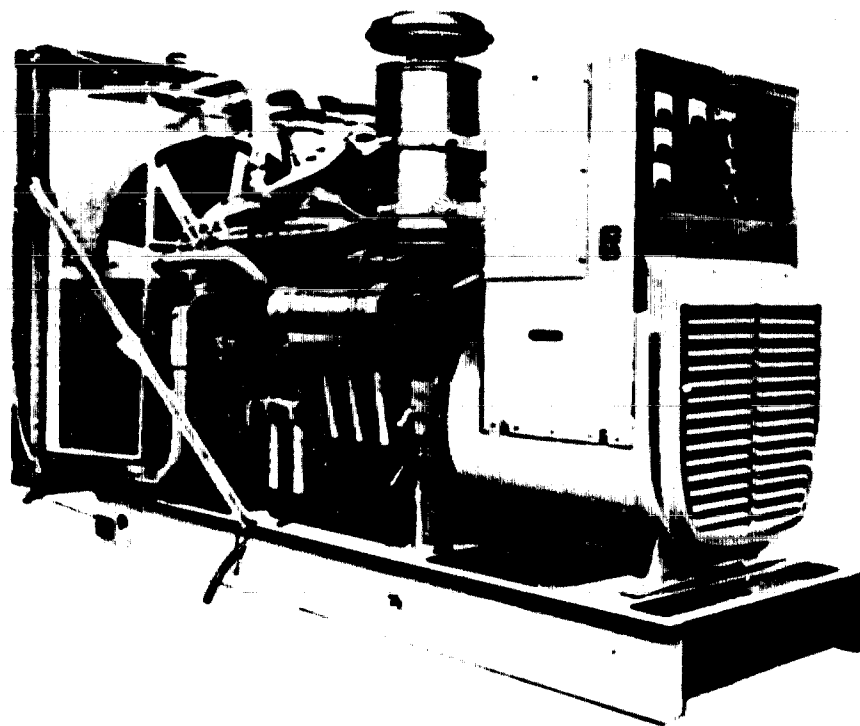
The following catalog  
has gaps in its page  
numbers, or doesn't  
have any numbers.  
We have chosen to  
leave the page  
numbering in the  
order that Acrobat  
assigns it.

# **Parts Manual**

## **DFV**

## **DFW**

## **GenSet**



# GENERAL INFORMATION

## INSTRUCTIONS FOR ORDERING REPAIR PARTS

For parts or service, contact the dealer from whom you purchased this equipment or refer to your Nearest Authorized Onan Parts and Service Center.

To avoid errors or delay in filling your parts order, please furnish all information requested.

Always refer to the nameplate on your unit.

1. Always give the MODEL, SPEC NO. and SERIAL NO.

The diagram shows a rectangular nameplate with rounded corners. At the top center, the text "McGRAW-EDISON" is printed in a bold, sans-serif font. Below this, the "Onan" logo is prominently displayed in a large, stylized font. Underneath the logo is a horizontal rectangular box. Below this box, the text "MODEL AND SPEC NO." is printed. Further down is another horizontal rectangular box. To the left of this box, the text "SERIAL NO." is printed. The nameplate is flanked by two small circles at the top. A small number "25-1140" is printed in the bottom right corner of the nameplate area.

For handy reference, insert "YOUR" nameplate information in the spaces above.

2. Do not order by reference number; always use part number and description.
3. Give the part number, description and quantity needed of each item. If an older part cannot be identified, return the part prepaid to your dealer or nearest Onan Parts and Service Center. Print your name and address plainly on the package. Write a letter to the same address stating the reason for returning the part.
4. State definite shipping instructions. Any claim for loss or damage to your unit in transit should be filed promptly against the transportation company making the delivery. Shipments are complete unless the packing list indicates items are back ordered.

Prices are purposely omitted from this Parts Manual due to the confusion resulting from fluctuating costs, import duties, sales taxes, exchange rates, etc.

For current parts prices, consult your Onan Dealer, Distributor or Parts and Service Center.

"En esta lista de partes los precios se omiten de proposito, ya que bastante confusion resulto de fluctuaciones de los precios, derechos aduanales, impuestos de venta, cambios extrajeros, etc."

Consiga los precios vigentes de su distribuidor de productos "ONAN."

# INDEX

|                                                                       | LOCATION                  |
|-----------------------------------------------------------------------|---------------------------|
| <b>GENERAL INFORMATION</b> .....                                      | <b>A2</b>                 |
| <b>SET DATA TABLE</b> .....                                           | <b>A4</b>                 |
| <b>REPLACEMENT ENGINE</b> .....                                       | <b>A5</b>                 |
| <b>EQUIPMENT PARTS SECTION</b>                                        |                           |
| Air Cleaner .....                                                     | <b>A6</b>                 |
| Air Duct Flanges, Radiator .....                                      | <b>A11</b>                |
| Alternator .....                                                      | <b>A7</b>                 |
| Bus Bar Assembly .....                                                | <b>B8</b>                 |
| Chassis, GenSet .....                                                 | <b>B11</b>                |
| Control, Engine .....                                                 | <b>B2</b>                 |
| Control, Generator .....                                              | <b>B4</b>                 |
| Cooling System With Radiator .....                                    | <b>A12</b>                |
| Engine Parts, Miscellaneous — Right Side .....                        | <b>A8</b>                 |
| Engine Coolant Temp Sender                                            | Oil Drain Hardware        |
| Fuel Lines                                                            | Tachometer Drive & Sender |
| High Engine Coolant Temp Switch (Alarm)                               | Wiring Harness            |
| Engine Parts, Miscellaneous — Left Side .....                         | <b>A9</b>                 |
| Battery Cables                                                        | Low Oil Pressure Switches |
| High Engine Coolant Temp Switch (Shutdown)                            | Oil Pressure Sender       |
| Low Engine Temp Switch                                                | Oil Temperature Sender    |
| Generator Assembly .....                                              | <b>B6</b>                 |
| Governor .....                                                        | <b>A10</b>                |
| Housing, Control .....                                                | <b>B12</b>                |
| Rotor, Exciter .....                                                  | <b>B10</b>                |
| <b>OPTIONAL EQUIPMENT SECTION</b>                                     |                           |
| Control, Generator With Switching Regulator .....                     | <b>C2</b>                 |
| Cooling System With Heat Exchanger .....                              | <b>D6</b>                 |
| Cooling System With Standpipe .....                                   | <b>D4</b>                 |
| Filter-Separator — Fuel/Water .....                                   | <b>C10</b>                |
| Filter, Lube Oil .....                                                | <b>D1</b>                 |
| Gauge, Fuel Pressure .....                                            | <b>C9</b>                 |
| Heater, Control .....                                                 | <b>C8</b>                 |
| Heater, Engine Coolant .....                                          | <b>D2</b>                 |
| Heater, Generator .....                                               | <b>C6</b>                 |
| Sensor Assembly, Dual — Over/Under Speed .....                        | <b>C7</b>                 |
| Tachometer .....                                                      | <b>B2</b>                 |
| Tank, Fuel Reservoir .....                                            | <b>C11</b>                |
| Tank, Fuel Reservoir — Overhead/Underground Supply Applications ..... | <b>C12</b>                |
| Voltage Suppressor Assembly .....                                     | <b>C4</b>                 |
| Voltage Suppressor Assembly — Dual .....                              | <b>C5</b>                 |
| Wattmeter .....                                                       | <b>C14</b>                |

This parts catalog applies to the standard generator sets listed below. Any engine parts modified or added by Onan will be listed in this catalog and have been assigned Onan part numbers for identification. These modified or added parts supersede similar parts listed in the Engine Manufacturer's manuals. The illustrations are arranged in groups of related items, and each part or assembly is identified by a reference number. All parts illustrated are typical, and unless otherwise mentioned, parts are interchangeable. These typical illustrations are subject to change and reflect only the latest replacement parts arrangement. The Right and Left generator set sides are determined by facing the front end of the engine.

**SET DATA TABLE**

| MODEL IDENTIFICATION | RATING        | MODEL IDENTIFICATION | RATING        |
|----------------------|---------------|----------------------|---------------|
| 330.0DFV-*/#£        | 330,000 WATTS | 400.0DFV-*/#£        | 400,000 WATTS |
| 400.0DFW-*/#£        | 400,000 WATTS | 450.0DFW-*/#£        | 450,000 WATTS |

**ELECTRICAL DATA TABLE**

| * VOLTAGE CODES | VOLTS            | HERTZ | WIRE | PHASE | NOTES |
|-----------------|------------------|-------|------|-------|-------|
| 4               | 120-208          | 60    | 4    | 3     |       |
| 4X              | 277/480          | 60    | 4    | 3     |       |
| 5               | 120/240          | 60    | 4    | 3     |       |
| 6               | 240/480          | 60    | 4    | 3     |       |
| 7               | 220/380          | 60    | 4    | 3     |       |
| 7X              | 240/416          | 60    | 4    | 3     |       |
| 9X              | 347/600          | 60    | 4    | 3     |       |
|                 | 139/240          | 60    | 4    | 3     | +     |
| 519             | 110/190, 115/200 | 50    | 4    | 3     |       |
| 520             | 220/380, 230/400 | 50    | 4    | 3     |       |
| 521             | 120/208, 127/220 | 50    | 4    | 3     |       |
| 522             | 240/416, 254/440 | 50    | 4    | 3     |       |

\* - Voltage codes follow model letter designations.

# - Specification number; number 1 is standard, all others indicate variations

£ - Specification letter; letter advances (A to B, B to C, etc) with major manufacturing changes

+ - No standard voltage code, code 99 marked on nameplate for reference information

## NOTICE!

ITEMS REFERENCED AS **OPTIONAL** INDICATE PART IS FACTORY INSTALLED AND MAY NOT BE APPLICABLE TO ALL MODELS. FOR FIELD CONVERSIONS ADDITIONAL PARTS ARE USUALLY REQUIRED.

## REPLACEMENT ENGINE

### ONAN PART NO.

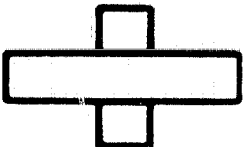
100-1540

**\*Engine, Replacement**  
Engine, Replacement

**Includes:** Complete Cylinder Block, Fuel Pump, Governor, Starter, Fan Blade (pusher type), Fan Belt, Flywheel, Water Pump, Fuel Filter, Oil Filter

**Excludes:** Alternator, Water Temperature Sender, Oil Pressure Sender, Radiator, Ammeter, Voltage Regulator, Air Cleaner

**\*NOTE:** This replacement engine is for Onan's Standard Spec 1 generator sets, for all other refer to the factory for replacement information.

|                |                      |                                                           |                      |                                                                                       |                      |                  |                      |
|----------------|----------------------|-----------------------------------------------------------|----------------------|---------------------------------------------------------------------------------------|----------------------|------------------|----------------------|
| <b>CUMMINS</b> |                      | CUMMINS ENGINE COMPANY, INC.<br>COLUMBUS, INDIANA, U.S.A. |                      |  |                      |                  |                      |
| SBM<br>NO.     | <input type="text"/> | MODEL                                                     | <input type="text"/> | ENG<br>NO.                                                                            | <input type="text"/> | OTHER<br>REF.NO. | <input type="text"/> |

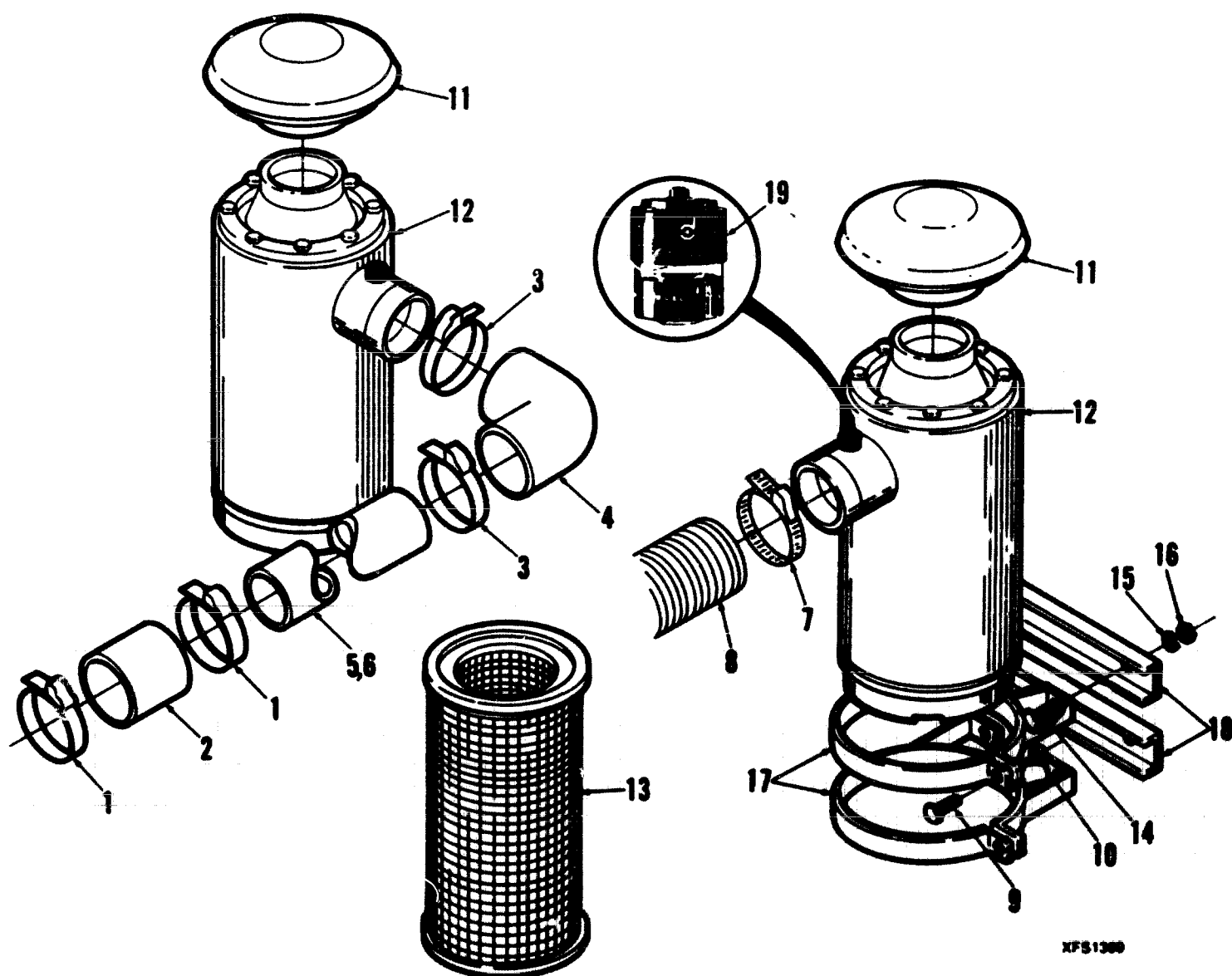
M1306

For handy reference, insert "YOUR" name-plate information in the spaces above.

### ENGINE REPLACEMENT PARTS

All engine replacement parts must be ordered from the engine manufacturer, except those modified or added by Onan. When ordering engine parts, refer to the manufacturer's nameplate and supply the Model, Spec, Serial numbers and other available information. Refer to the engine manufacturer's manuals for your nearest authorized distributor or parts center; or contact the Onan distributor from whom you purchased this set for assistance in ordering replacement parts.

# AIR CLEANER



XFS1389

| REF. NO. | PART NO.                                 | QTY. USED | PART DESCRIPTION                              |
|----------|------------------------------------------|-----------|-----------------------------------------------|
| 1        | 503-0863                                 | 4         | *Clamp, Hose                                  |
| 2        | 503-0806                                 | 2         | *Hose, Air - Flexible (5 1/2" ID)             |
| 3        | 503-0888                                 | 4         | *Clamp, Hose (T-Bar Type)                     |
| 4        | 140-1415                                 | 2         | *Elbow, Rubber (90 DEG)                       |
| 5        | TUBE, AIR - Right Side (Select as Req'd) |           |                                               |
|          | 140-1397                                 | 1         | *5-1/2" OD x 13" Lg                           |
|          | 140-1829                                 | 1         | *5-1/2" OD x 16" Lg                           |
| 6        | TUBE, AIR - Left Side (Select as Req'd)  |           |                                               |
|          | 140-1829                                 | 1         | *5-1/2" OD x 16" Lg                           |
|          | 140-1828                                 | 1         | *5-1/2" OD x 18" Lg                           |
| 7        | 503-0748                                 | 2         | *Clamp, Hose                                  |
| 8        | HOSE, AIR - FLEXIBLE                     |           |                                               |
|          | 503-0855                                 | 1         | *18" Lg                                       |
|          | 503-0854                                 | 1         | *21" Lg                                       |
| 9        | 800-0032                                 | 4         | Screw, Cap - Hex Head (5/16-18 x 1-3/4")      |
| 10       | 870-0257                                 | 4         | Nut, Self-locking - Hex Washer Head (5/16-18) |

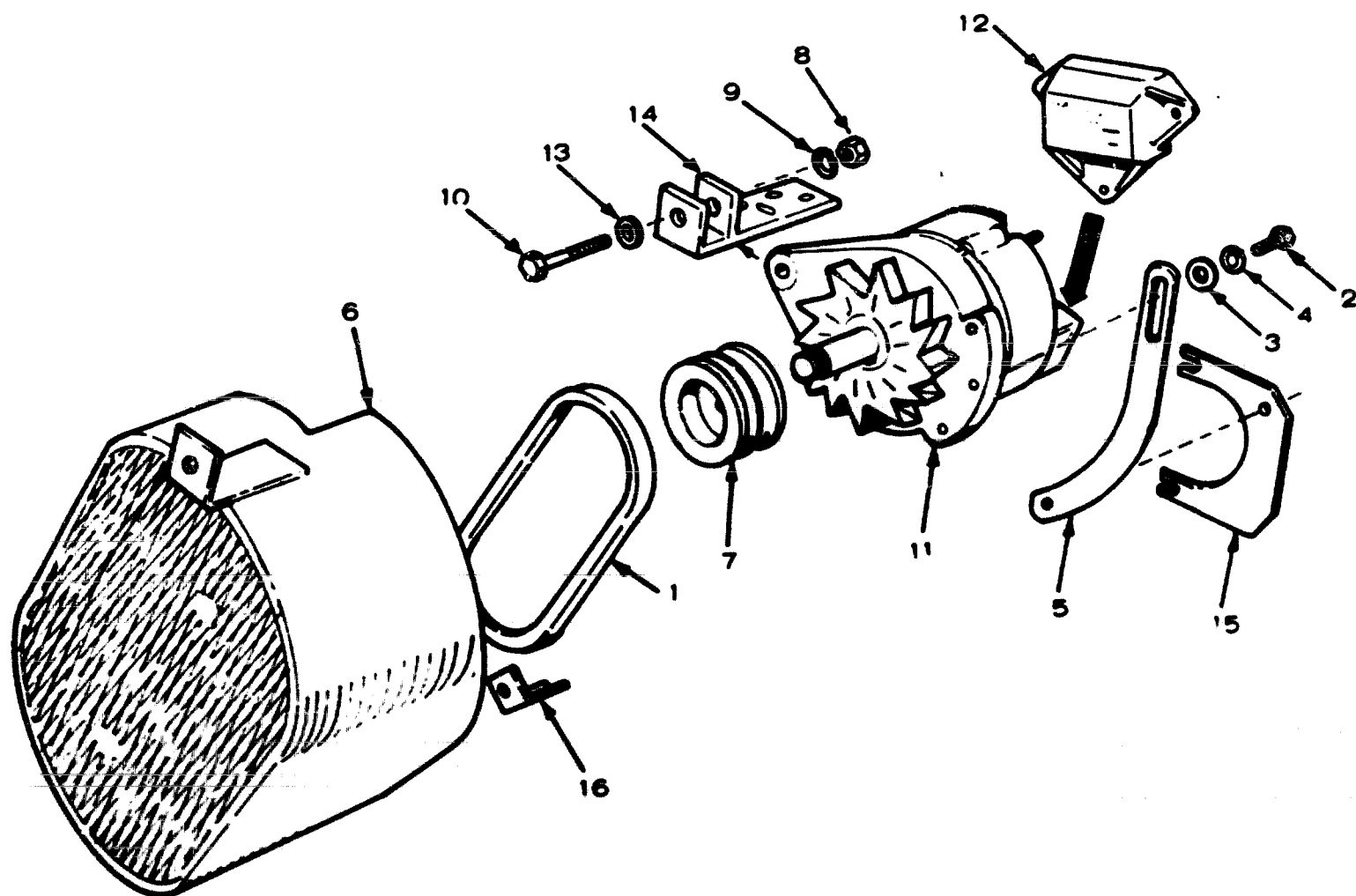
| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION                                     |
|----------|----------|-----------|------------------------------------------------------|
| 11       | 140-1347 | 2         | Cap, Air Cleaner                                     |
| 12       | 140-1346 | 2         | Air Cleaner (Includes Element)                       |
| 13       | 140-1376 | 2         | Element, Filter - Air Cleaner                        |
| 14       | 800-0071 | 10        | Screw, Self-locking - Hex Washer Head (7/16-14 x 1") |
| 15       | 850-0055 | 10        | Washer, Lock - Spring (7/16")                        |
| 16       | 862-0004 | 10        | Nut, Hex (7/16-14)                                   |
| 17       | 140-1345 | 4         | Band, Mounting - Air Cleaner                         |
| 18       | 140-1527 | 2         | Support - Air Cleaner                                |
| 19       | 140-1548 | 2         | Indicator, Service - Air Cleaner                     |

\* - Part used beginning January 1982

\* - Parts used prior to January 1982

NOTE: Items 1 through 6 may be used on Generator sets built prior to January 1982 in lieu of items 7 and 8.

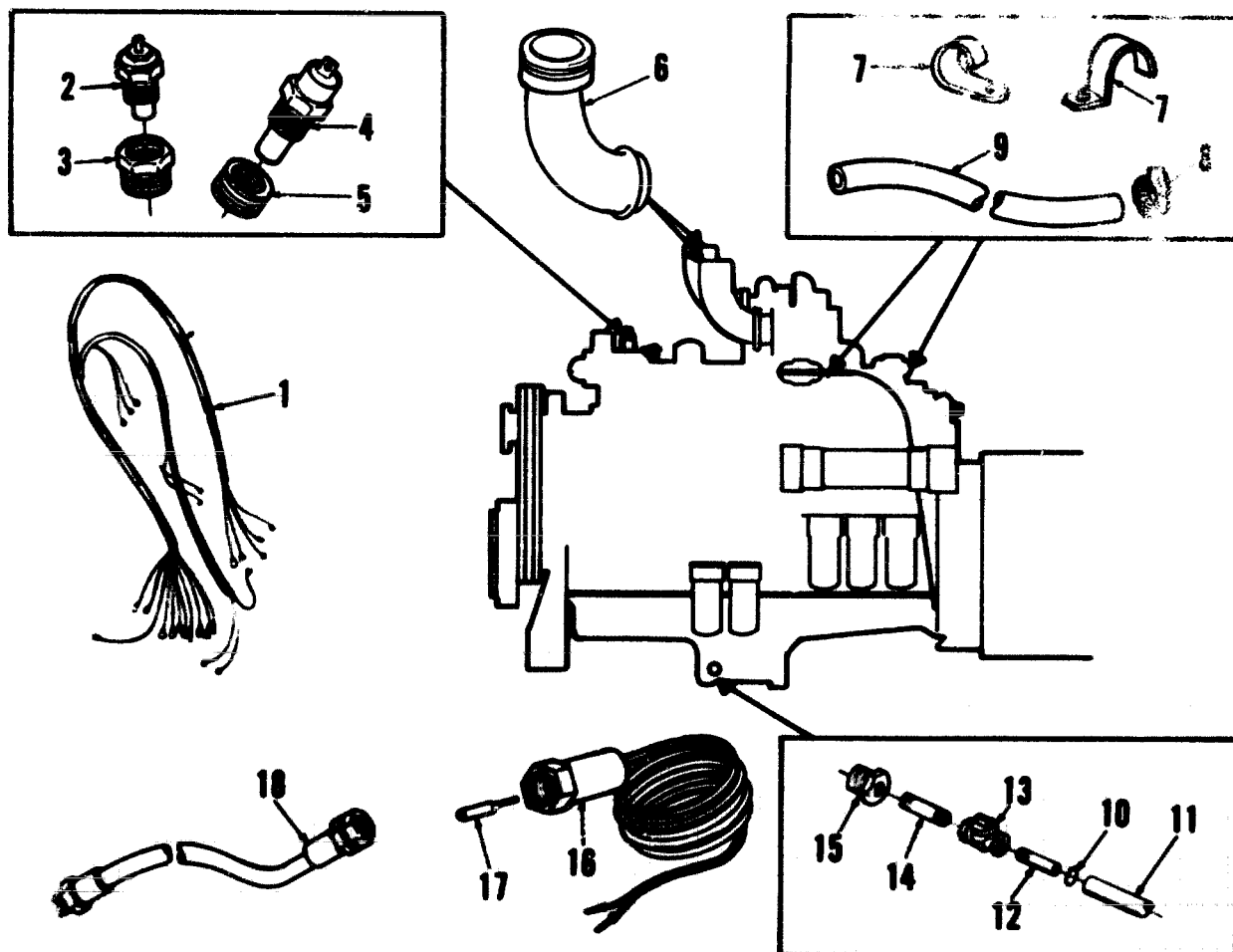
# ALTERNATOR



| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION                                |
|----------|----------|-----------|-------------------------------------------------|
| 1        | 511-0037 | 1         | Belt Drive                                      |
| 2        | 800-0028 | 1         | Screw, Cap - Hex Head<br>(5-16-18 x 3/4)        |
| 3        | 526-0022 | 1         | Washer, Flat (21/64 ID x<br>9/16 OD x 1/16 Thk) |
| 4        | 850-0045 | 1         | Washer Lock - Spring (5/16)                     |
| 5        | 191-1217 | 1         | Bracket Alternator Adjusting                    |
| 6        | 191-1212 | 1         | Guard Belt                                      |
| 7        | 191-1120 | 1         | Pulley, Alternator Drive                        |
| 8        | 852-0016 | 1         | Nut Hex (1/2-13)                                |
| 9        | 850-0080 | 1         | Washer Lock - Spring (1/2)                      |
| 10       | 800-0095 | 1         | Screw, Cap - Hex Head<br>(1/2-13 x 2-1/4)       |
| 11       | 191-0688 | 1         | Alternator - Includes Regulator                 |
| 12       | 191-0733 | 1         | Regulator Voltage - Part<br>of Alternator       |
| 13       | 526-0028 | 1         | Washer Flat (9/16 ID<br>x 15/16 OD x 1/16 Thk)  |
| 14       | 191-0697 | 1         | Bracket Alternator Mounting                     |
| 15       | 191-1228 | 1         | Bracket Belt Guard                              |
| 16       | 130-1210 | 1         | Bracket Belt Guard                              |



# MISCELLANEOUS ENGINE PARTS (RIGHT SIDE)



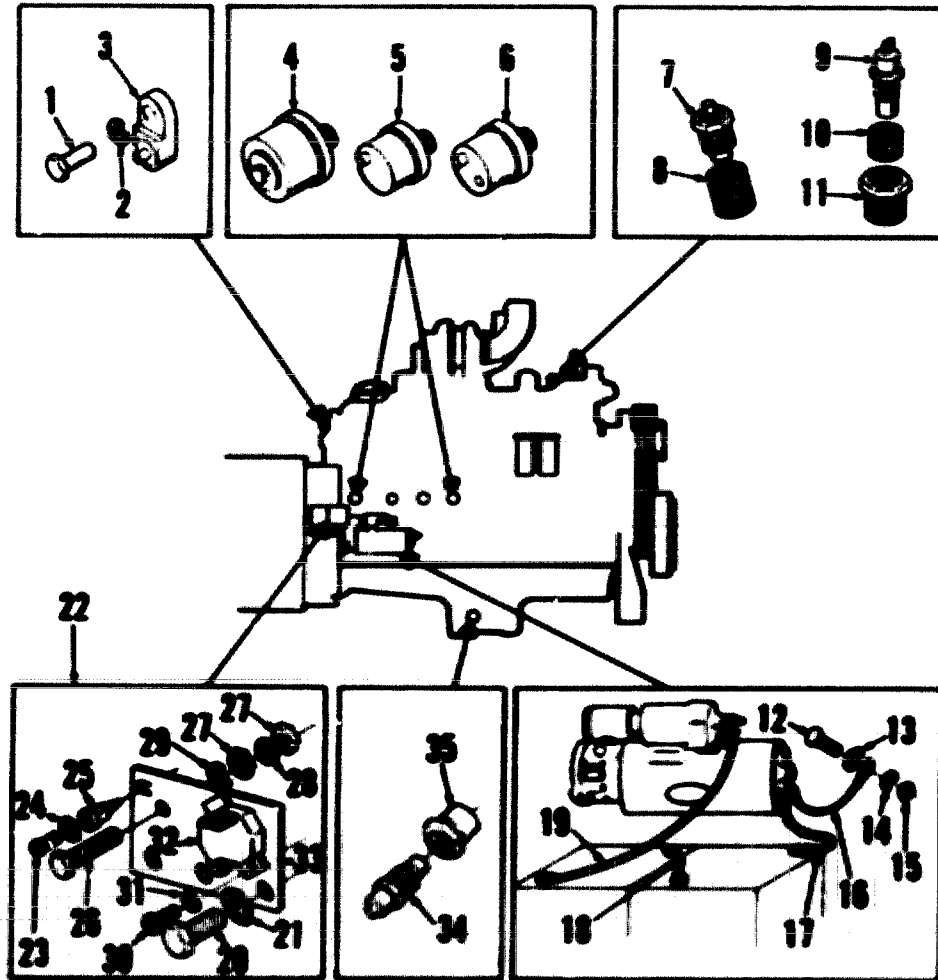
M1295

| REF. NO. | PART NO.                             | QTY. USED | PART DESCRIPTION                                                                                                                            |
|----------|--------------------------------------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | WIRING HARNESS - ENGINE<br>338-1103  | 1         | Standard                                                                                                                                    |
|          |                                      | 1         | Special (NOTE: Use Standard Wiring Harness and add electrical leads as required for optional sensors, switches per Gen Set wiring diagram.) |
| 2        | 193-0247                             | 1         | Sender, Temperature - Engine Coolant                                                                                                        |
| 3        | 505-0021                             | 1         | Bushing, Reducer - Hex (3/4" NPT x 1/2" NPT)                                                                                                |
| 4        | 309-0178                             | 1         | Switch, Thermostatic - High Coolant Temperature - Alarm                                                                                     |
| 5        | 505-0117                             | 1         | Bushing, Reducer - Flush, Brass (1/2" NPT x 3/8" NPT)                                                                                       |
| 6        | 155-1393                             | 2         | Elbow, Pipe - Exhaust                                                                                                                       |
| 7        | CLAMP, HOLDDOWN (Select As Required) |           |                                                                                                                                             |
|          | 148-0274                             | 4         | Loop, 1" ID                                                                                                                                 |
|          | 331-0151                             | 3         | Half Loop, 3/4" ID                                                                                                                          |
|          | 331-0152                             | 3         | Half Loop 1" ID                                                                                                                             |
| 8        | 503-0183                             | 2         | Clamp, Hose                                                                                                                                 |
| 9        | 503-0859                             | 2         | Hose, Rubber (5/8" ID x 7/8" OD x .42" Lg)                                                                                                  |
| 10       | 503-0197                             | 1         | Clamp, Hose                                                                                                                                 |
| 11       | 503-0789                             | 1         | Hose, Rubber (3/4" ID x 1" OD x 20" Lg)                                                                                                     |
| 12       | 505-0185                             | 1         | Nipple, Pipe - Half (1/2" NPT x 1-1/2")                                                                                                     |

| REF. NO. | PART NO.                                   | QTY. USED | PART DESCRIPTION                                                       |
|----------|--------------------------------------------|-----------|------------------------------------------------------------------------|
| 13       | 504-0011                                   | 1         | Valve, Shutoff - Oil Drain                                             |
| 14       | 505-0100                                   | 1         | Nipple, Pipe (1/2" NPT x 1-1/8")                                       |
| 15       | 505-0022                                   | 1         | Bushing, Reducer - Pipe (1" NPT x 1/2" NPT)                            |
| 16       | 302-0750                                   | 1         | †Sender, Tachometer                                                    |
| 17       | 302-0753                                   | 1         | †Tang, Drive - Tachometer                                              |
| 18       | LINE, FUEL - FLEXIBLE (Select As Required) |           |                                                                        |
|          | 501-0219                                   | 1         | RETURN - ENGINE TO TANK<br>30" Lg. 3/4-16 SAE 45 DEG Female Swivel End |
|          | 501-0248                                   | 1         | 36" Lg. 3/4-16 SAE 45 DEG Female Swivel End                            |
|          | 501-0216                                   | 1         | 42" Lg. 3/4-16 SAE 45 DEG Female Swivel End                            |
|          | 501-0211                                   | 1         | 65" Lg. 3/4-16 SAE 45 DEG Female Swivel End                            |
|          |                                            |           | IN - TANK TO ENGINE                                                    |
|          | 501-0332                                   | 1         | 30" Lg. 1-1/8-14 SAE 45 DEG Female Swivel End                          |
|          | 501-0285                                   | 1         | 36" Lg. 1-1/8-14 SAE 45 DEG Female Swivel End                          |
|          | 501-0217                                   | 1         | 52" Lg. 1-1/8-14 SAE 45 DEG Female Swivel End                          |

† - Optional Items Used With Fault Lights or Gauges on Engine Control Panel

## MISCELLANEOUS ENGINE PARTS (LEFT SIDE)



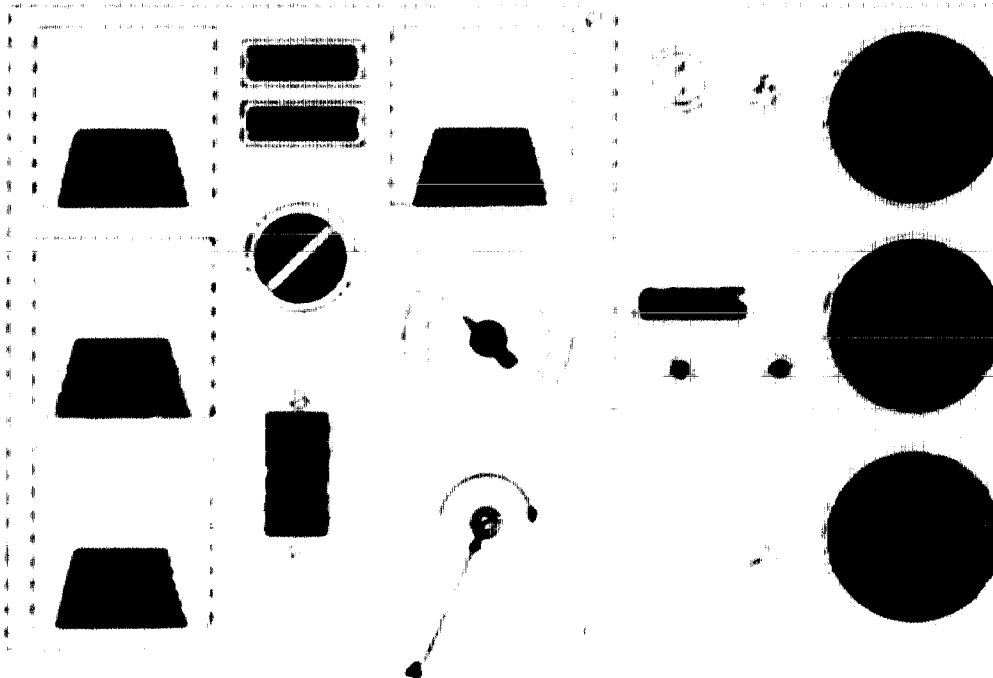
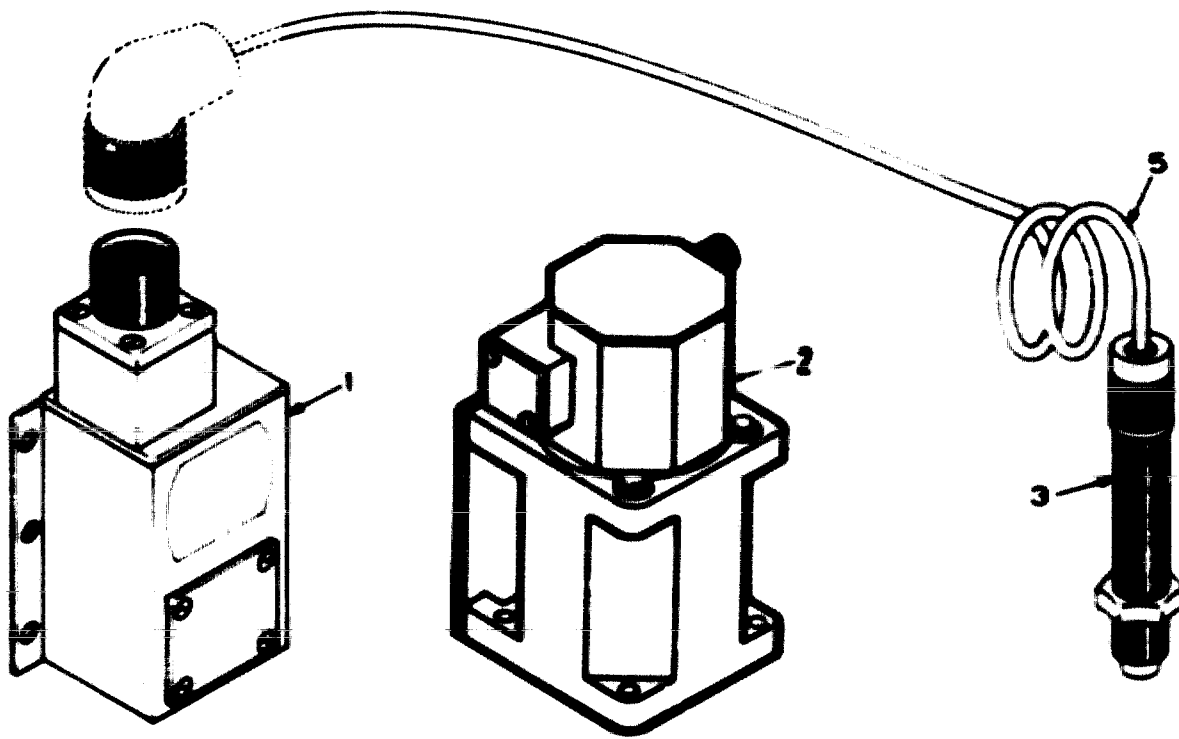
101200

| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION                                           | REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION                                                |
|----------|----------|-----------|------------------------------------------------------------|----------|----------|-----------|-----------------------------------------------------------------|
| 1        | 800-0028 | 1         | Screw, Cap - Hex Head (5/16-18 x 1")                       | 18       | 416-0448 | 1         | Cable, Battery - Jumper                                         |
| 2        | 850-0045 | 1         | Washer, Lock - Spring (5/16")                              | 19       | 416-0882 | 1         | Cable, Battery - Positive                                       |
| 3        | 308-0289 | 1         | Switch, Thermostatic - Low Engine Temperature              | 20       | 800-0130 | 1         | Screw, Cap - Hex Head (5/8-18 x 1")                             |
| 4        | 183-0244 | 1         | Sender, Pressure - Oil                                     | 21       | 888-0016 | 1         | Washer, Lock - EIT (5/8")                                       |
| 5        | 308-0272 | 1         | Switch, Pressure - Low Oil Alarm                           | 22       | 332-1383 | 1         | Assembly - Circuit Breaker & Terminal (Includes Items Marked *) |
| 6        | 308-0168 | 1         | Switch, Pressure - Low Oil Shutdown                        | 23       | 808-0005 | 1         | *Screw, Tap, wing - Round Head (#8-3/4")                        |
| 7        | 308-0178 | 1         | Switch, Thermostatic - High Coolant Temperature - Alarm    | 24       | 508-0015 | 1         | *Washer, Insulating - Fiber                                     |
| 8        | 505-0117 | 1         | Bushing, Reducer - Flush, Brass (1/2" NPT x 3/8" NPT)      | 25       | 870-0188 | 1         | *Nut, Insulated                                                 |
| 9        | 308-0179 | 1         | Switch, Thermostatic - High Coolant Temperature - Shutdown | 26       | 800-0005 | 1         | *Screw, Cap - Hex Head (1/4-20 x 3/4")                          |
| 10       | 505-0117 | 1         | Bushing, Reducer - Flush, Brass (1/2" NPT x 3/8" NPT)      | 27       | 882-0001 | 2         | *Nut, Hex (1/4-20)                                              |
| 11       | 505-0021 | 1         | Bushing, Reducer - Hex (3/4" NPT x 1/2" NPT)               | 28       | 884-0008 | 1         | *Washer, Lock - EIT (1/4")                                      |
| 12       | 800-0083 | 1         | Screw, Cap - Hex Head (1/2-13 x 1-3/4")                    | 29       | 880-0040 | 1         | *Washer, Lock - Spring (1/4")                                   |
| 13       | 888-0013 | 1         | Washer, Lock - EIT (1/2")                                  | 30       | 813-0103 | 2         | *Screw, Machine - Round Head (#10-32 x 3/4")                    |
| 14       | 880-0080 | 1         | Washer, Lock - Spring (1/2")                               | 31       | 850-0030 | 2         | *Washer, Lock - Spring (#10)                                    |
| 15       | 882-0016 | 1         | Nut, Hex (1/2-13)                                          | 32       | 320-0240 | 1         | *Circuit Breaker                                                |
| 16       | 416-0832 | 1         | Cable, Electrical - Starter to Ground                      | 33       | 332-1382 | 1         | *Board, Mounting                                                |
| 17       | 416-0881 | 1         | Cable, Battery - Negative                                  | 34       | 308-0388 | 1         | *Sensor, Temperature - Oil                                      |
|          |          |           |                                                            | 35       | 505-0022 | 1         | Bushing, Reducer - Hex (1" NPT x 1/2" NPT)                      |

\* - Items Included in Circuit Breaker Assembly

† - Optional Item Used With Gauge in Engine Control Panel

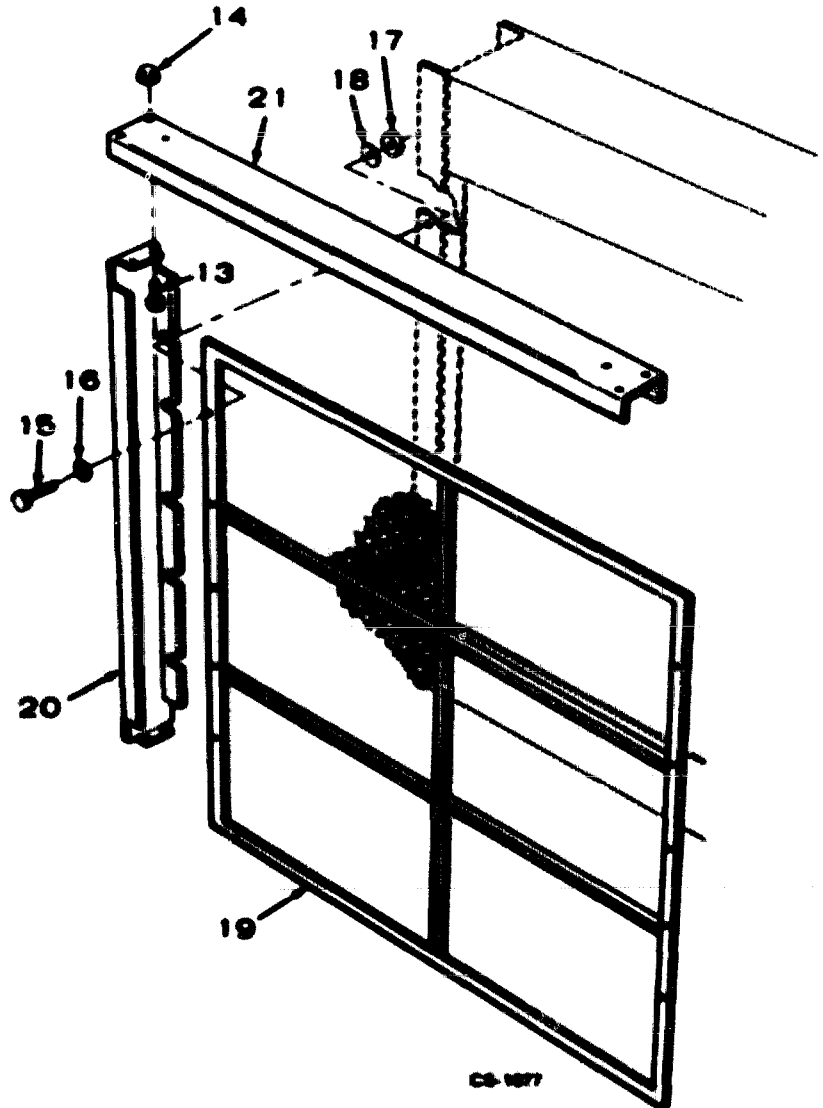
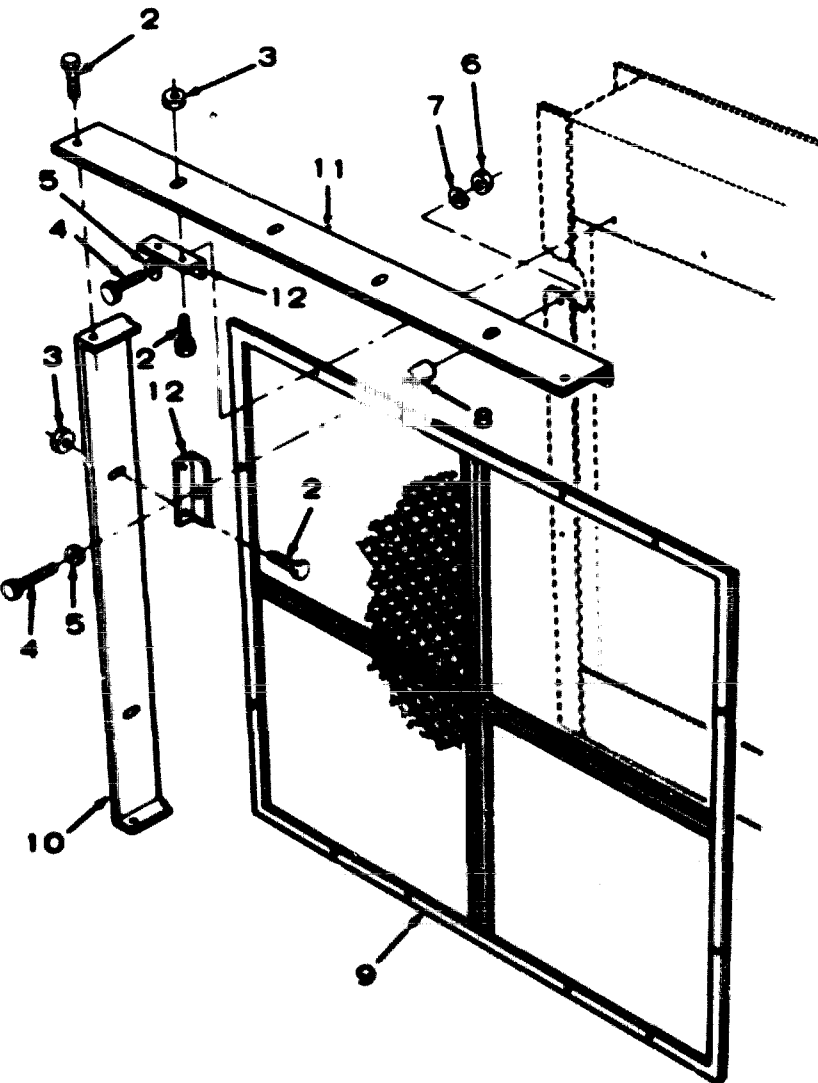
# GOVERNOR



PS 1272

| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION                        |
|----------|----------|-----------|-----------------------------------------|
| 1        | 151-0389 | 1         | Control Unit - Governor (24 volt)       |
| 2        | 151-0419 | 1         | Actuator - Governor (24 Volt)           |
| 3        | 151-0411 | 1         | Pickup Magnetic                         |
| 4        | 151-0402 | 1         | Potentiometer - Speed Control (5K Ohms) |
| 5        | 338-1086 | 1         | Harness Wiring - Governor               |

# RADIATOR AIR DUCT FLANGES

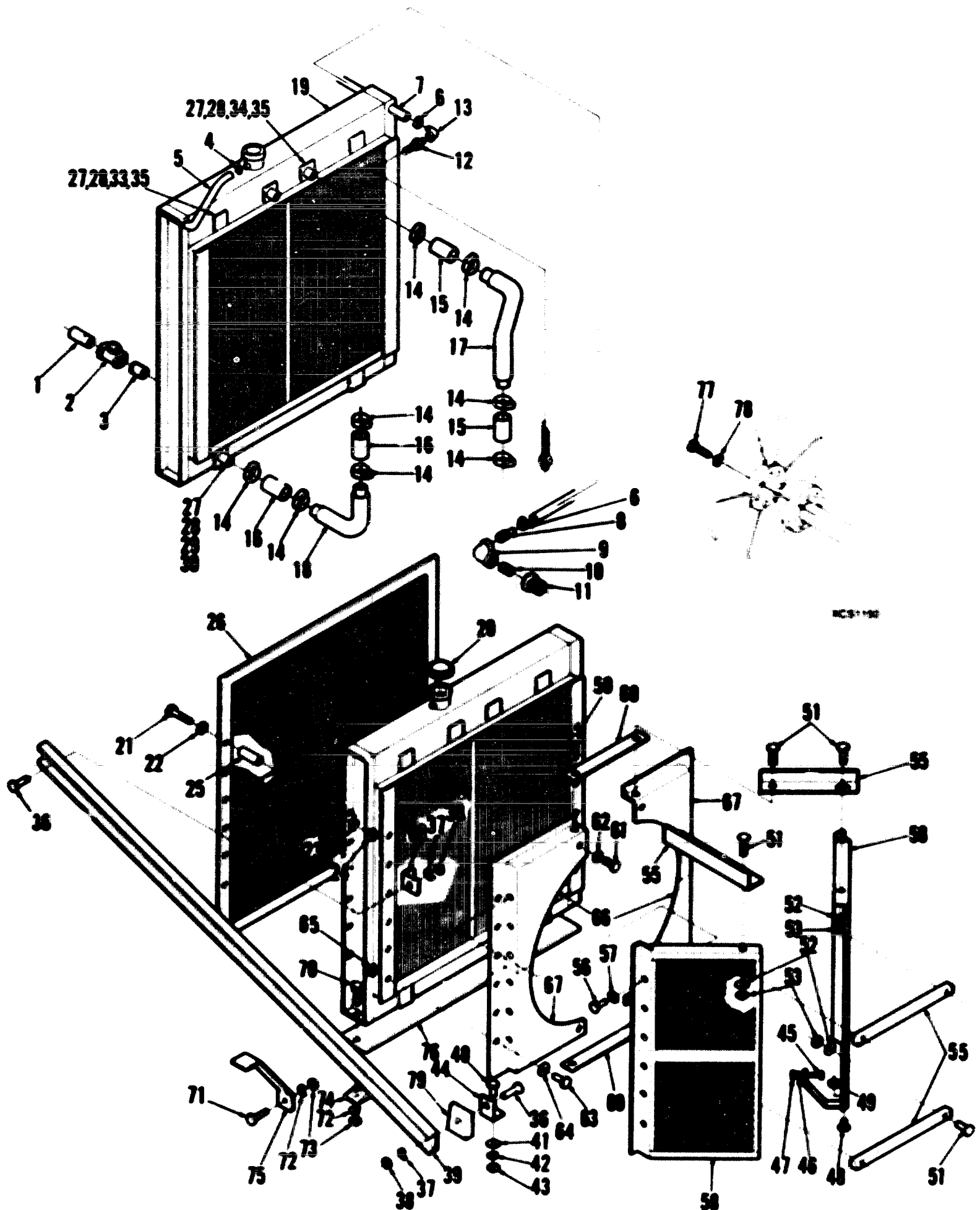


CS-1077

| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION                                     |
|----------|----------|-----------|------------------------------------------------------|
| 2        | 821-0010 | 28        | Screw Self-Locking - Hex Washer Head (1/4-20 x 1/2") |
| 3        | 862-0001 | 10        | Nut, Hex (1/4-20)                                    |
| 4        | 800-0032 | 10        | Screw, Cap - Hex Head (5/16-18 x 1-3/4")             |
| 5        | 526-0115 | 10        | Washer, Flat (11/32" ID x 11/16" OD x 1/16" Thk)     |
| 6        | 862-0015 | 10        | Nut, Hex (5/16-18)                                   |
| 7        | 850-0045 | 10        | Washer, Lock - Spring (5/16")                        |
| 8        | 402-0017 | 10        | Spacer, Sleeve                                       |
| 9        |          | 1         | Guard, Radiator (Part of Radiator)                   |
| 10       | 130-1114 | 2         | Flange, Air Duct - Side                              |
| 11       | 130-1115 | 2         | Flange, Air Duct - Top/Bottom                        |
| 12       | 370-1025 | 12        | Angle, Radiator Flange                               |

| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION                                     |
|----------|----------|-----------|------------------------------------------------------|
| 13       | 821-0010 | 8         | Screw Self-locking - Hex Washer Head (1/4-20 x 1/2") |
| 14       | 870-0212 | 8         | Nut, Self-locking - Hex (1/4-20)                     |
| 15       | 800-0026 | 10        | Screw, Cap - Hex Head (5/16-18 x 3/4")               |
| 16       | 526-0115 | 10        | Washer, Flat (11/32" ID x 11/16" OD x 1/16" Thk)     |
| 17       | 862-0015 | 10        | Nut, Hex (5/16-18)                                   |
| 18       | 850-0045 | 10        | Washer, Lock - Spring (5/16")                        |
| 19       |          | 1         | Guard, Radiator (Part of Radiator)                   |
| 20       | 130-1420 | 2         | Flange, Air Duct - Side                              |
| 21       | 130-1419 | 2         | Flange, Air Duct - Top/Bottom                        |

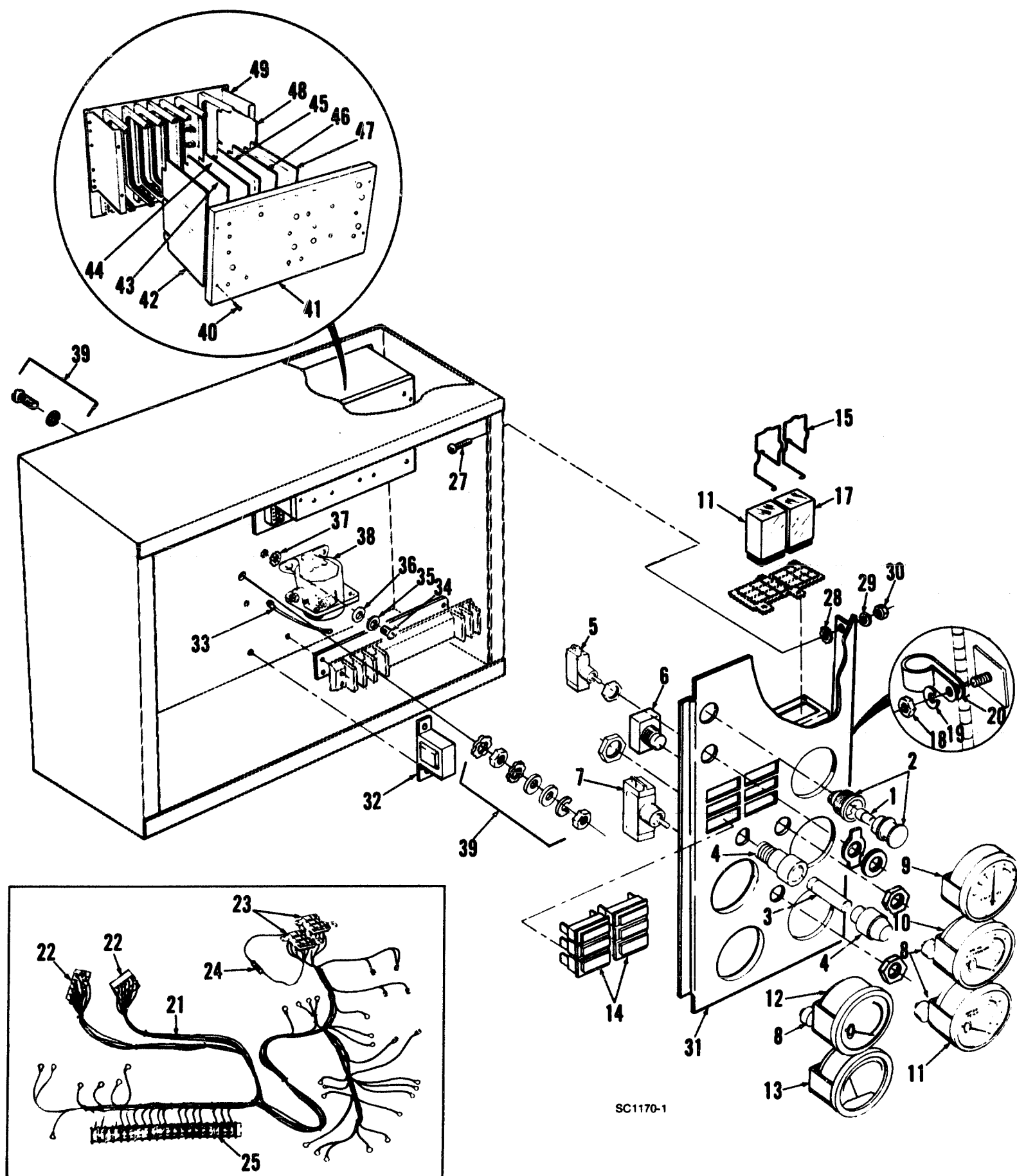
# COOLING SYSTEM WITH RADIATOR



# COOLING SYSTEM WITH RADIATOR

| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION                                 | REF. NO. | PART NO.          | QTY. USED    | PART DESCRIPTION                                       |
|----------|----------|-----------|--------------------------------------------------|----------|-------------------|--------------|--------------------------------------------------------|
| 1        | 505-0185 | 1         | Nipple, Pipe - Half (1/2" NPT x 1-1/2" Lg)       | 46       | 850-0045          | 2            | Washer, Lock - Spring (5/16)                           |
| 2        | 504-0011 | 1         | Valve, Shutoff (1/2" NPT)                        | 47       | 862-0015          | 2            | Nut, Hex (5/16-18)                                     |
| 3        | 505-0100 | 1         | Nipple, Pipe - Close (1/2" NPT x 1-1/8" Lg)      | 48       | 821-0018          | 2            | Screw, Self-locking - Hex Washer Head (5/16-18 x 3/4") |
| 4        | 503-0547 | 1         | Clamp, Hose                                      | 49       | 870-0257          | 2            | Nut, Self-locking - Hex Washer Head (5/16-18)          |
| 5        | 503-0803 | 1         | Hose, Rubber (1/2" ID x 144" Lg)                 | 50       | BRACE - FAN GUARD |              |                                                        |
| 6        | 503-0388 | 2         | Clamp, Hose                                      | 130-1218 | 2                 | Spec B Only  |                                                        |
| 7        | 503-0880 | 1         | Hose, Rubber (1" ID x 1-3/8" OD x 75" Lg)        | 130-1331 | 2                 | Begin Spec C |                                                        |
| 8        | 505-0759 | 1         | Adapter, Pipe to Hose                            | 51       | 821-0018          | 8            | Screw, Self-locking - Hex Washer Head (1/4-20 x 5/8")  |
| 9        | 505-0041 | 1         | Elbow Pipe, 90 DEG (1" NPT)                      | 52       | 526-0018          | 6            | Washer, Flat (17/64" ID x 5/8" OD x 1/16" Thk)         |
| 10       | 505-0004 | 1         | Nipple, Pipe - Close (1" NPT x 1-1/2" Lg)        | 53       | 870-0243          | 6            | Nut, Self-locking - Hex Washer Head (1/4-20)           |
| 11       | 505-0023 | 1         | Bushing, Reducer - Pipe (1-1/4" NPT x 1" NPT)    | 54       | BRACE - FAN GUARD |              |                                                        |
| 12       | 501-0247 | 2         | Line, Flexible                                   | 130-1205 | 2                 | Spec B Only  |                                                        |
| 13       | 502-0041 | 2         | Elbow, Pipe - Invt Male (1/4" NPT)               | 130-1333 | 2                 | Begin Spec C |                                                        |
| 14       | 503-0812 | 12        | Clamp, Hose                                      | 55       | BRACE - FAN GUARD |              |                                                        |
| 15       | 503-0788 | 4         | Hose, Rubber (3" ID x 4-1/2" Lg)                 | 130-1226 | 2                 | Spec B Only  |                                                        |
| 16       | 503-0888 | 2         | Hose, Rubber (3-1/2" ID x 4-1/2" Lg)             | 130-1332 | 2                 | Begin Spec C |                                                        |
| 17       | 130-1208 | 2         | Tube, Coolant - Upper                            | 56       | 821-0018          | 12           | Screw, Self-locking - Hex Washer Head (1/4-20 x 5/8")  |
| 18       | 130-1202 | 1         | Tube, Coolant - Lower                            | 57       | 526-0018          | 12           | Washer, Flat (17/64" ID x 5/8" OD x 1/16" Thk)         |
| 19       | 130-1197 | 1         | Radiator, Engine Coolant                         | 58       | GUARD, FAN        |              |                                                        |
| 20       |          | 1         | Cap, Radiator (Part of Radiator)                 | 130-1213 | 2                 | Spec B Only  |                                                        |
| 21       | 800-0032 | 8         | Screw, Cap - Hex Head (5/16-18 x 1-3/4")         | 130-1328 | 2                 | Begin Spec C |                                                        |
| 22       | 526-0115 | 8         | Washer, Flat (11/32" ID x 11/16" OD x 1/16" Thk) | 59       | 821-0018          | 8            | Screw, Self-locking - Hex Washer Head (1/4-20 x 5/8")  |
| 23       | 850-0045 | 8         | Washer, Lock - Spring (5/16")                    | 60       | 130-1225          | 2            | Bracket - Fan Shroud                                   |
| 24       | 862-0015 | 8         | Nut, Hex (5/16-18)                               | 61       | 821-0018          | 8            | Screw, Self-locking - Hex Washer Head (1/4-20 x 5/8")  |
| 25       | 403-0017 | 8         | Spacer, Shims                                    | 62       | 526-0018          | 8            | Washer, Flat (17/64" ID x 5/8" OD x 1/16" Thk)         |
| 26       |          | 1         | Guard, Front (Part of Radiator)                  | 63       | 821-0018          | 12           | Screw, Self-locking - Hex Washer Head (5/16-18 x 3/4") |
| 27       | 800-0080 | 24        | Screw, Cap - Hex Head (3/8-16 x 1")              | 64       | 526-0155          | 12           | Washer, Flat (3/8" ID x 7/8" OD x 5/64" Thk)           |
| 28       | 800-0080 | 24        | Washer, Lock - Spring (3/8")                     | 65       | 870-0257          | 12           | Nut, Self-locking - Hex Washer Head (5/16-18)          |
| 29       | 130-1222 | 1         | Adapter, Tube - Outlet                           | 66       | 130-1214          | 2            | Shroud, Fan (Lower Right, Upper Left)                  |
| 30       | 130-1229 | 1         | Gasket, Outlet Adapter                           | 67       | 130-1215          | 2            | Shroud, Fan (Lower Left, Upper Right)                  |
| 31       | 130-1221 | 1         | Plate, Cover - Outlet                            | 68       | 148-0274          | 2            | Clamp, Loop                                            |
| 32       | 130-1183 | 1         | Gasket, Outlet Cover Plate                       | 69       | 130-1228          | 2            | Bracket - Brace Mounting                               |
| 33       | 130-1223 | 2         | Plate, Cover - Inlet                             | 70       | 800-0159          | 4            | Screw, Cap - Hex Head (3/4-10 x 2")                    |
| 34       | 130-1203 | 2         | Adapter, Tube - Inlet                            | 71       | 800-0156          | 2            | Screw, Cap - Hex Head (3/4-10 x 2-1/4")                |
| 35       | 130-1227 | 4         | Gasket - Inlet Adapter & Cover Plate             | 72       | 850-0079          | 6            | Washer, Lock - Spring (3/4")                           |
| 36       | 800-0081 | 4         | Screw, Cap - Hex Head (1-2-13 x 1-1/4")          | 73       | 862-0020          | 6            | Nut, Hex (3/4-10)                                      |
| 37       | 850-0080 | 4         | Washer, Lock - Spring (1/2")                     | 74       | 403-1141          | 2            | Washer, Square - Bevel                                 |
| 38       | 862-0005 | 4         | Nut, Hex (1-2-13)                                | 75       | 130-1189          | 2            | Support - Radiator                                     |
| 39       | 130-1045 | 2         | Brace, Support - Radiator                        | 76       | 130-1188          | 1            | Plate, Support - Radiator                              |
| 40       | 800-0081 | 2         | Screw, Cap - Hex Head (1-2-13 x 1-1/4")          | 77       | 800-0084          | 8            | Screw, Cap - Hex Head (1-2-13 x 2")                    |
| 41       | 526-0028 | 2         | Washer, Flat (9/16" ID x 15/16" OD x 1/16" Thk)  | 78       | 850-0080          | 8            | Washer, Lock - Spring (1/2")                           |
| 42       | 850-0080 | 2         | Washer, Lock - Spring (1/2")                     | 79       | 526-0278          | 4            | Washer, Bevel - Spec B Only                            |
| 43       | 862-0005 | 2         | Nut, Hex (1-2-13)                                |          |                   |              |                                                        |
| 44       | 130-0844 | 2         | Bracket, Angle                                   |          |                   |              |                                                        |
| 45       | 800-0028 | 2         | Screw, Cap - Hex Head (5/16-18 x 1")             |          |                   |              |                                                        |

# ENGINE CONTROL



## ENGINE CONTROL

| REF. NO. | PART NO.                                                      | QTY. USED | PART DESCRIPTION                                           |
|----------|---------------------------------------------------------------|-----------|------------------------------------------------------------|
| 1        | 322-0017                                                      | 1         | Lamp, Incandescent (24 VDC)                                |
| 2        | 322-0149                                                      | 1         | Lampholder                                                 |
| 3        | 321-0147                                                      | 1         | Fuse (5 Amp)                                               |
| 4        | 321-0217                                                      | 1         | Fuseholder                                                 |
| 5        | 308-0002                                                      | 1         | Switch, Toggle (SPST)                                      |
| 6        | 308-0410                                                      | 1         | Switch, Push                                               |
| 7        | SWITCH, TOGGLE - SELECTOR                                     |           |                                                            |
|          | 308-0220                                                      | 1         | Standard & Cycle Cranking Controls                         |
|          | 308-0347                                                      | 1         | Penn State Controls                                        |
|          | 308-0539                                                      | 1         | Remote Alarm Circuit Controls                              |
| 8        | 193-0250                                                      | 3         | Resistor, Gauge                                            |
| 9        | 302-0061                                                      | 1         | Ammeter                                                    |
| 10       | 193-0243                                                      | 1         | Gauge, Pressure - Oil                                      |
| 11       | 193-0245                                                      | 1         | Gauge, Temperature - Engine Coolant                        |
| 12       | 193-0248                                                      | 1         | ‡Gauge, Temperature - Oil                                  |
| 13       | 302-0749                                                      | 1         | ‡Tachometer - Electrical                                   |
| 14       | *LIGHT, INDICATOR - 28 VDC (Lens Color & Legend Listed Below) |           |                                                            |
|          | 322-0119                                                      | 1         | RED - OVERCRANK                                            |
|          | 322-0120                                                      | 1         | RED - LO OIL PRESS                                         |
|          | 322-0121                                                      | 1         | RED - HI ENG TEMP                                          |
|          | 322-0122                                                      | 1         | RED - LO ENG TEMP                                          |
|          | 322-0123                                                      | 1         | RED - OVER SPEED                                           |
|          | 322-0135                                                      | 1         | RED - OVER VOLTAGE                                         |
|          | 322-0137                                                      | 1         | RED - (No Legend)                                          |
| 15       | 307-1157                                                      | 2         | Spring, Hold Down - Relay                                  |
| 16       | 307-1061                                                      | 1         | Relay - Starter Protection                                 |
| 17       | 307-1056                                                      | 1         | Relay - Start Disconnect                                   |
| 18       | 870-0053                                                      | 1         | Nut, Hex (#10-32)                                          |
| 19       | 850-0030                                                      | 1         | Washer, Lock - Spring (#10)                                |
| 20       | 332-0052                                                      | 1         | Clamp, Loop                                                |
| 21       | 338-1016                                                      | 1         | Harness, Wiring - Engine Control (Includes Parts Marked †) |
|          | ATTACHING HARDWARE FOR WIRING HARNESS                         |           |                                                            |
|          | 812-0061                                                      | 4         | Screw, Machine - Round Head (#6-32 x 3/8")                 |
|          | 812-0066                                                      | 2         | Screw, Machine - Round Head (#6-32 x 3/4")                 |
|          | 853-0003                                                      | 6         | Washer, Lock - Spring (#6)                                 |
|          | 860-0006                                                      | 4         | Nut, Hex (#6-32)                                           |
| 22       | 323-0984                                                      | 2         | †Connector, Plug, Electrical (12 Pin)                      |
| 23       | 323-0765                                                      | 2         | †Socket, Relay                                             |
| 24       | 357-0004                                                      | 1         | †Diode                                                     |
| 25       | 332-1005                                                      | 1         | †Board, Terminal (20 Place)                                |
| 26       | 332-1559                                                      | 1         | Strip, Marker                                              |

| REF. NO. | PART NO.                                           | QTY. USED | PART DESCRIPTION                                               |
|----------|----------------------------------------------------|-----------|----------------------------------------------------------------|
| 27       | 815-0026                                           | 3         | Screw, Machine - Truss Head (#10-32 x 3/8")                    |
| 28       | 856-0003                                           | 3         | Washer, Lock - EIT (#10)                                       |
| 29       | 850-0030                                           | 3         | Washer, Lock - Spring (#10)                                    |
| 30       | 870-0053                                           | 3         | Nut, Hex (#10-32)                                              |
| 31       | PANEL, CONTROL - ENGINE                            |           |                                                                |
|          | 301-4086                                           | 1         | With Three Gauge Mtg. Holes                                    |
|          | 301-4223                                           | 1         | With Four Gauge Mtg. Holes                                     |
|          | 301-3997                                           | 1         | With Five Gauge Mtg. Holes                                     |
| 32       | 315-0361                                           | 1         | Transformer, Step-down                                         |
|          | ATTACHING PARTS FOR TRANSFORMER                    |           |                                                                |
|          | 812-0061                                           | 2         | Screw, Machine - Round Head (#6-32 x 3/8")                     |
|          | 853-0003                                           | 2         | Washer, Lock - EIT (#6)                                        |
| 33       | 357-0018                                           | 1         | Diode With Terminals                                           |
| 34       | 813-0098                                           | 2         | Screw, Machine - Round Head (#10-32 x 3/8")                    |
| 35       | 850-0030                                           | 2         | Washer, Lock - Spring (#10)                                    |
| 36       | 526-0009                                           | 2         | Washer, Flat (7/32" ID x 1/2" OD x 1/16" Thk)                  |
| 37       | 856-0003                                           | 2         | Washer, Lock - EIT (#10)                                       |
| 38       | 307-0061                                           | 1         | Relay, Solenoid - Start (24 VDC)                               |
| 39       | GROUND TERMINAL ASSEMBLY (Includes Parts Marked #) |           |                                                                |
|          | 871-0010                                           | 2         | #Nut, Hex - Brass (#10-32)                                     |
|          | 850-0030                                           | 1         | #Washer, Lock - Spring (#10)                                   |
|          | 526-0062                                           | 2         | #Washer, Flat - Brass (13/64" ID x 1/2" OD x 1/16" Thk)        |
|          | 853-0008                                           | 1         | #Washer, Lock - ET (#10)                                       |
|          | 856-0003                                           | 1         | #Washer, Lock - EIT (#10)                                      |
|          | 815-0203                                           | 1         | #Screw, Machine - Round Head, Brass (#10-32 x 7/8")            |
| 40       | 815-0387                                           | 4         | Screw, Machine - Pan Head, Cross-Recessed Drive (#6-32 x 1/4") |
| 41       | 301-4015                                           | 1         | Cover, Access - Control Plug-in Modules                        |
| 42       | 300-1573                                           | 1         | £Control, Cycle Cranker                                        |
| 43       | 300-1574                                           | 1         | £Control, Start - Disconnect                                   |
| 44       | 300-1575                                           | 1         | £Control, Overspeed                                            |
| 45       | 300-1576                                           | 1         | £Control, Engine Monitor No. 1                                 |
| 46       | 300-1577                                           | 1         | £Control, Engine Monitor No. 2                                 |
| 47       | 300-1578                                           | 1         | £Control, Engine Shutdown                                      |
| 48       | 300-1579                                           | 1         | £Control, Time Delay, Start-Stop                               |
| 49       | 300-1572                                           | 1         | Chassis, Control                                               |

‡ - Optional Items Used with Engine Mounted Senders.

† - Parts Included in Wiring Harness.

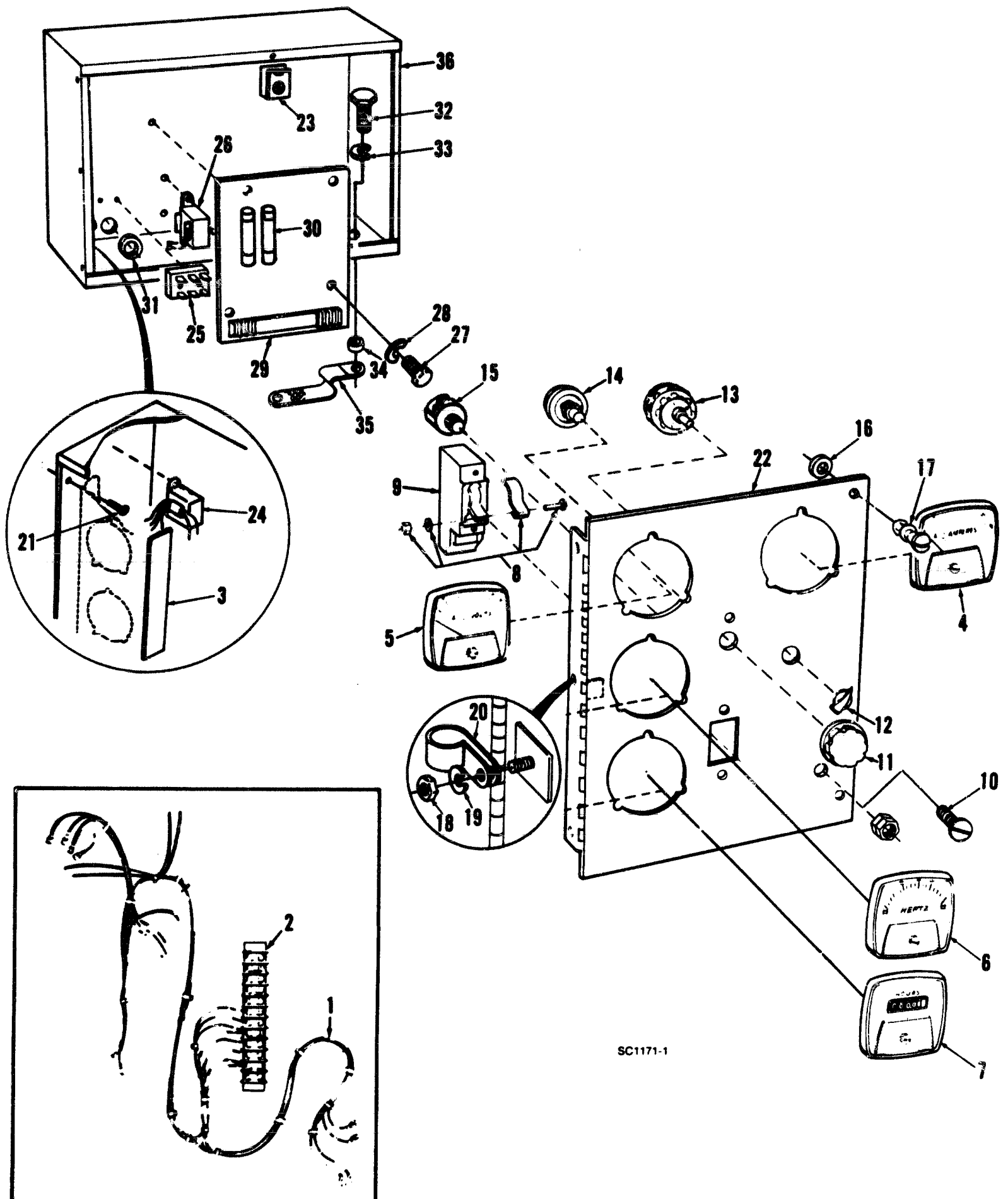
# - Parts Included in Ground Terminal Assembly.

£ - See Separate Parts Manual #900-0234 for Components.

\* - **NOTE:** For lamp replacement order 322-0137 remove and discard plain red lens, install lens with legend from burned out light - lights snap in and out of panel.



# GENERATOR CONTROL



SC1171-1

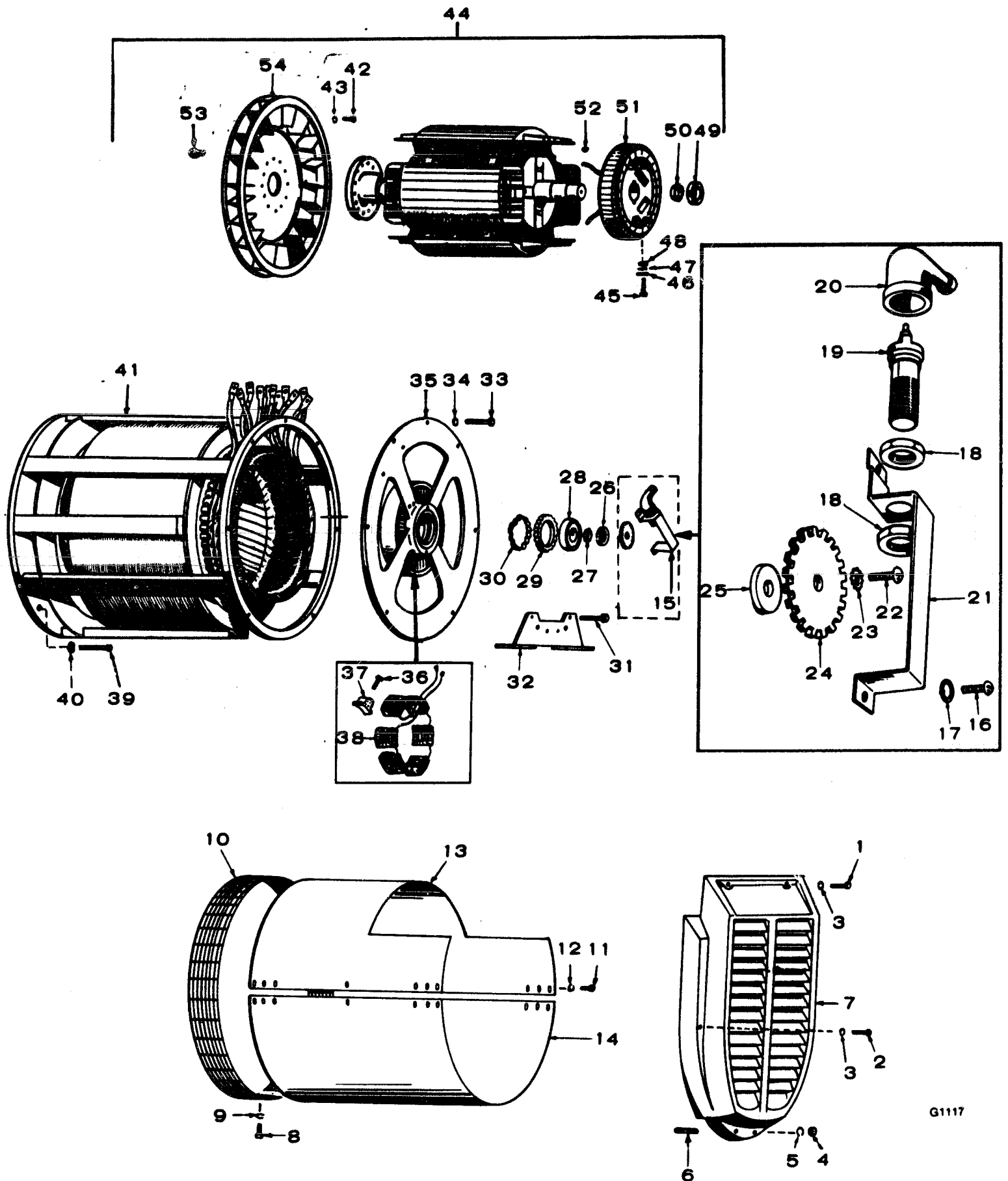
# GENERATOR CONTROL

| REF. NO. | PART NO.                                                     | QTY. USED | PART DESCRIPTION                                         |
|----------|--------------------------------------------------------------|-----------|----------------------------------------------------------|
| 1        | WIRING HARNESS - GENERATOR CONTROL (Includes Terminal Block) |           |                                                          |
|          | 338-0759                                                     | 1         | Used on Codes 31, 4R, 4X, 54X, 8, 58, 519, 521           |
|          | 338-0916                                                     | 1         | Used on Codes 57, 7X, 9X, 520, 522                       |
|          | ATTACHING HARDWARE FOR WIRING HARNESS                        |           |                                                          |
|          | 812-0066                                                     | 2         | Screw, Machine - Round Head (#16-32 x 3/4")              |
|          | 850-0020                                                     | 2         | Washer, Lock - Spring (#6)                               |
| 2        | 332-0795                                                     | 1         | Block, Terminal - 16 Place                               |
| 3        | 332-1242                                                     | 1         | Strip, Marker - 16 Place                                 |
| 4        | AMMETER (Select As Required)                                 |           |                                                          |
|          | 302-0414                                                     | 1         | Scale Reads 0-500 Amperes                                |
|          | 302-0415                                                     | 1         | Scale Reads 0-750 Amperes                                |
|          | 302-0416                                                     | 1         | Scale Reads 0-1000 Amperes                               |
|          | 302-0840                                                     | 1         | Scale Reads 0-1200 Amperes                               |
|          | 302-0841                                                     | 1         | Scale Reads 0-1500 Amperes                               |
|          | 302-0842                                                     | 1         | Scale Reads 0-2000 Amperes                               |
|          | 302-1044                                                     | 1         | Scale Reads 0-2500 Amperes                               |
|          | 302-1045                                                     | 1         | Scale Reads 0-3000 Amperes                               |
| 5        | VOLTMETER (Select As Required)                               |           |                                                          |
|          | 302-0421                                                     | 1         | Scale Reads 0-300 Volts                                  |
|          | 302-1283                                                     | 1         | Scale Reads 0-500 Volts                                  |
|          | 302-1072                                                     | 1         | Scale Reads 0-600 Volts                                  |
|          | 302-0779                                                     | 1         | Scale Reads 0-750 Volts                                  |
| 6        | METER, FREQUENCY (Select As Required)                        |           |                                                          |
|          | 302-0810                                                     | 1         | 60 Hertz, 208 Volt                                       |
|          | 302-0811                                                     | 1         | 60 Hertz, 240 Volt                                       |
|          | 302-0894                                                     | 1         | 50 Hertz, 208 Volt                                       |
|          | 302-0895                                                     | 1         | 50 Hertz, 240 Volt                                       |
| 7        | METER, TIME TOTALIZING (Select As Required)                  |           |                                                          |
|          | 302-0466                                                     | 1         | 60 Hertz                                                 |
|          | 302-0469                                                     | 1         | 50 Hertz                                                 |
| 8        | 320-0307                                                     | 1         | Lock, Handle - Circuit Breaker (Used on Penn State Sets) |
|          | ATTACHING HARDWARE FOR LOCK                                  |           |                                                          |
|          | 815-0203                                                     | 1         | Screw, Machine - Round Head (#10-32 x 7/8")              |
|          | 854-0010                                                     | 1         | Washer, Lock - IT (#10)                                  |
|          | 871-0010                                                     | 1         | Nut, Hex (#10-32)                                        |
| 9        | 320-0455                                                     | 1         | Circuit Breaker - 3 Amp, 240 Volt                        |
|          | ATTACHING HARDWARE FOR CIRCUIT BREAKER                       |           |                                                          |
|          | 812-0061                                                     | 2         | Screw, Machine - Round Head (#6-32 x 3/8")               |
|          | 850-0020                                                     | 2         | Washer, Lock - Spring (#6)                               |
|          | 815-0203                                                     | 1         | Screw, Machine - Round Head, Brass (#10-32 x 7/8")       |
|          | 871-0010                                                     | 1         | Nut, Hex - Brass (#10-32)                                |
|          | 853-0008                                                     | 1         | Washer, Lock - ET (#10)                                  |
|          | 526-0049                                                     | 1         | Washer, Flat - Brass (13/64" ID x 7/16" OD x 1/32" Thk)  |
| 10       | 517-0131                                                     | 1         | Plug, Plastic                                            |
| 11       | 303-0032                                                     | 1         | Knob                                                     |
| 12       | 303-0076                                                     | 1         | Knob, Pointer                                            |
| 13       | 308-0284                                                     | 1         | Switch, Selector                                         |
| 14       | 303-0170                                                     | 1         | Rheostat (35K Ohms, 25 Watt)                             |
| 15       | 151-0402                                                     | 1         | Potentiometer (5K Ohms)                                  |
| 16       | 406-0334                                                     | 2         | Clip, Retaining - Turnbutton Fastener                    |

| REF. NO.                                          | PART NO.                                            | QTY. USED | PART DESCRIPTION                                                  |
|---------------------------------------------------|-----------------------------------------------------|-----------|-------------------------------------------------------------------|
| 17                                                | 406-0333                                            | 2         | Stud, Turnbutton Fastener                                         |
| 18                                                | 870-0053                                            | 1         | Nut, Hex (#10-32)                                                 |
| 19                                                | 850-0030                                            | 1         | Washer, Lock - Spring (#10)                                       |
| 20                                                | 332-0051                                            | 1         | Clamp, Loop                                                       |
| 21                                                | 815-0026                                            | 3         | Screw, Machine - Truss Head (#10-32 x 3/8")                       |
| 22                                                | 301-3342                                            | 1         | Panel, Control                                                    |
| 23                                                | 406-0332                                            | 2         | Receptacle, Turnbutton Fastener                                   |
| 24                                                | 315-0384                                            | 1         | Reactor                                                           |
|                                                   | ATTACHING PARTS FOR REACTOR                         |           |                                                                   |
|                                                   | 812-0061                                            | 2         | Screw, Machine - Round Head (#6-32 x 3/8")                        |
|                                                   | 853-0003                                            | 2         | Washer, Lock - ET (#6)                                            |
| 25                                                | 305-0675                                            | 1         | Rectifier, Bridge                                                 |
|                                                   | ATTACHING PARTS FOR RECTIFIER                       |           |                                                                   |
|                                                   | 812-0070                                            | 2         | Screw, Machine - Round Head (#6-32 x 1-1/4")                      |
|                                                   | 850-0020                                            | 2         | Washer, Lock - Spring (#6)                                        |
| 26                                                | TRANSFORMER, VOLTAGE (Select As Applicable)         |           |                                                                   |
|                                                   | 315-0342                                            | 1         | 120 VAC Output Signal                                             |
|                                                   | 315-0431                                            | 1         | 240 VAC Output Signal                                             |
| NOTE: Transformer is Matched to Voltage Regulator |                                                     |           |                                                                   |
|                                                   | ATTACHING PARTS FOR TRANSFORMER                     |           |                                                                   |
|                                                   | 812-0061                                            | 2         | Screw, Machine - Round Head (#6-32 x 3/8")                        |
|                                                   | 853-0003                                            | 2         | Washer, Lock - ET (#6)                                            |
| 27                                                | 812-0065                                            | 4         | Screw, Machine - Round Head (#6-32 x 5/8")                        |
| 28                                                | 853-0003                                            | 4         | Washer, Lock - ET (#6)                                            |
| 29                                                | REGULATOR, VOLTAGE (Includes Fuses When Applicable) |           |                                                                   |
|                                                   | 332-1704                                            | 1         | £Requires 120 VAC Input Signal (Used Only on Early Spec B Models) |
|                                                   | 332-2029                                            | 1         | £Requires 240 VAC Input Signal Semi-Frequency Sensitive Type      |
|                                                   | 332-2030                                            | 1         | £Requires 240 VAC Input Signal - Voltage Sensitive Type           |
|                                                   | 332-2031                                            | 1         | £Requires 240 VAC Input Signal - Frequency Sensitive Type         |
| 30                                                | 321-0204                                            | 2         | Fuse, Cartridge (1/4 Amp) - Part of Voltage Regulator             |
| 31                                                | 508-0001                                            | 4         | Grommet, Rubber                                                   |
| 32                                                | 800-0045                                            | 4         | Screw, Cap - Hex Head (5/16-18 x 3/8")                            |
| 33                                                | 850-0045                                            | 4         | Washer, Lock - Spring (5/16")                                     |
| 34                                                | 402-0070                                            | 4         | Dampener, Vibration                                               |
| 35                                                | 337-0149                                            | 1         | Strap, Ground                                                     |
|                                                   | ATTACHING PARTS FOR STRAP                           |           |                                                                   |
|                                                   | 800-0046                                            | 1         | Screw, Cap - Hex Head (5/16-18 x 3/8")                            |
|                                                   | 850-0045                                            | 1         | Washer, Lock - Spring (5/16")                                     |
|                                                   | 856-0008                                            | 2         | Washer, Lock - EIT (5/16")                                        |
|                                                   | 862-0015                                            | 1         | Nut, Hex (5/16-18)                                                |
| 36                                                | 301-4135                                            | 1         | Box, Control                                                      |

£ - See Separate Parts Catalog #900-0234 For Components.

# GENERATOR ASSEMBLY



G1117

# GENERATOR ASSEMBLY

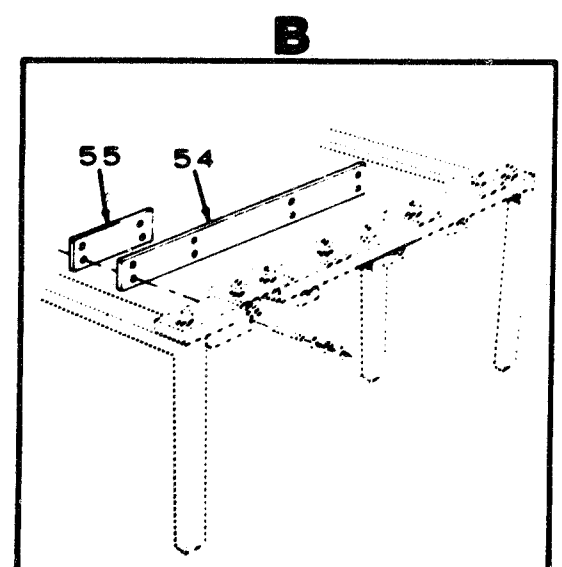
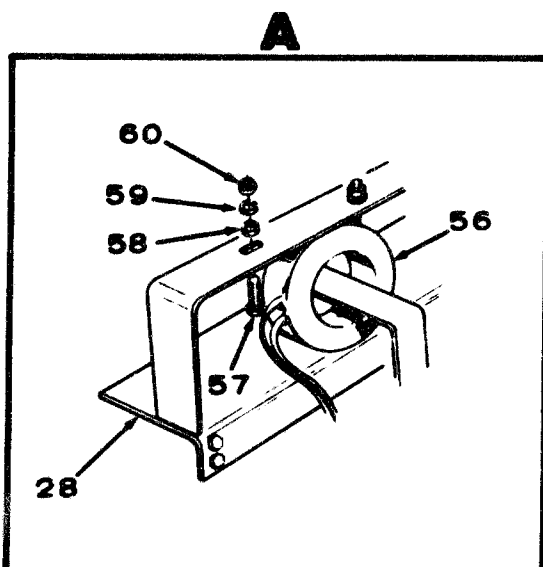
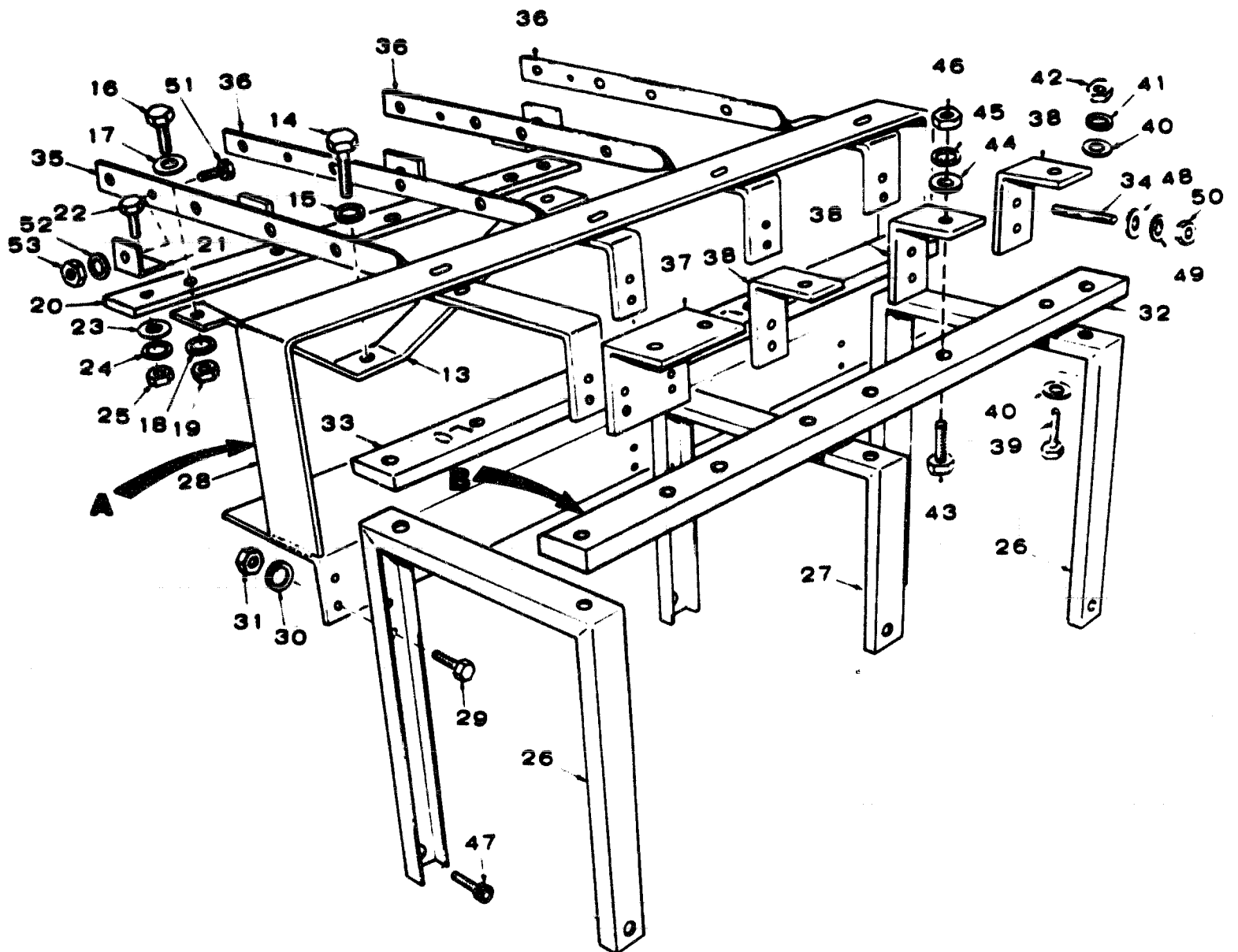
| REF. NO. | PART NO.                                                                  | QTY. USED | PART DESCRIPTION                                             | REF. NO. | PART NO.                                                             | QTY. USED | PART DESCRIPTION                                                      |
|----------|---------------------------------------------------------------------------|-----------|--------------------------------------------------------------|----------|----------------------------------------------------------------------|-----------|-----------------------------------------------------------------------|
| 1        | 800-0009                                                                  | 4         | Screw, Cap - Hex Head<br>(1/4-20 x 1-1/2")                   |          |                                                                      |           | <b>400 kW 60 Hz Sets</b>                                              |
| 2        | 800-0013                                                                  | 2         | Screw, Cap - Hex Head<br>(1/4-20 x 2-1/2")                   | 220-2754 | 1                                                                    |           | Code 7X; 240/416, 60 Hz                                               |
| 3        | 850-0040                                                                  | 6         | Washer, Lock - Spring (1/4")                                 | 220-2755 | 1                                                                    |           | Code 4; 120/208 V, 60 Hz                                              |
| 4        | 862-0007                                                                  | 4         | Nut, Hex (5/8-11)                                            | 220-2756 | 1                                                                    |           | Code 4X; 240/416 V, 60 Hz                                             |
| 5        | 850-0070                                                                  | 4         | Washer, Lock - Spring (5/8")                                 | 220-2757 | 1                                                                    |           | No Code; 139/240 V, 60 Hz                                             |
| 6        | 520-0692                                                                  | 2         | Stud (5/8-11 x 5/8-11 x 3-3/4")                              | 220-2758 | 1                                                                    |           | Code 9X; 347/600 V, 60 Hz                                             |
| 7        | 232-1973                                                                  | 1         | Grill - Generator End Bell                                   | 220-2759 | 1                                                                    |           | Code 5D; 120/240 V, 60 Hz                                             |
| 8        | 800-0003                                                                  | 1         | Screw, Cap - Hex Head<br>(1/4-20 x 1/2")                     | 220-2760 | 1                                                                    |           | Code 6D; 240/480 V, 60 Hz                                             |
| 9        | 850-0040                                                                  | 1         | Washer, Lock - Spring (1/4")                                 | 220-2761 | 1                                                                    |           | Code 7; 220/380 V, 60 Hz                                              |
| 10       | 234-0272                                                                  | 1         | Cover, Fan                                                   |          |                                                                      |           | <b>400 kW 60 Hz Sets</b>                                              |
| 11       | 800-0026                                                                  | 6         | Screw, Cap - Hex Head<br>(5/16-18 x 3/4")                    | 220-2778 | 1                                                                    |           | Code 520; 220/380,<br>230/400 V, 50 Hz                                |
| 12       | 850-0045                                                                  | 6         | Washer, Lock - Spring (5/16")                                | 220-2779 | 1                                                                    |           | Code 519; 110/190,<br>115/200 V, 50 Hz                                |
| 13       | BAND, STATOR - TOP                                                        |           |                                                              | 220-2780 | 1                                                                    |           | Code 522; 240/416,<br>254/440 V, 50 Hz                                |
|          | 234-0288                                                                  | 1         | 330 kW 50 Hz, 400 kW 60 Hz                                   | 220-2781 | 1                                                                    |           | Code 521; 120/208,<br>127/220V, 50 Hz                                 |
|          | 234-0289                                                                  | 1         | 400 kW 50 Hz, 450 kW 60 Hz                                   |          |                                                                      |           | <b>450 kW 60 Hz Sets</b>                                              |
| 14       | BAND, STATOR - BOTTOM                                                     |           |                                                              | 220-2769 | 1                                                                    |           | Code 7X; 240/416, 60 Hz                                               |
|          | 234-0278                                                                  | 1         | 330 kW 50 Hz, 400 kW 60 Hz                                   | 220-2770 | 1                                                                    |           | Code 4; 120/208 V, 60 Hz                                              |
|          | 234-0279                                                                  | 1         | 400 kW 50 Hz, 450 kW 60 Hz                                   | 220-2771 | 1                                                                    |           | Code 4X; 227/480 V, 60 Hz                                             |
| 15       | 150-1556                                                                  | 1         | Sensor Assembly - Speed<br>(Includes Parts Marked †)         | 220-2772 | 1                                                                    |           | No Code; 139/240 V, 60 Hz                                             |
| 16       | 812-0148                                                                  | 2         | Screw, Machine - Round Head<br>(1/4-20 x 1/2")               | 220-2773 | 1                                                                    |           | Code 9X; 347/600 V, 60 Hz                                             |
| 17       | 850-0040                                                                  | 2         | Washer, Lock - Spring (1/4")                                 | 220-2774 | 1                                                                    |           | Code 5D; 120/240 V, 60 Hz                                             |
| 18       | 868-0011                                                                  | 2         | †Nut, Hex - Jam (3/4-16)                                     | 220-2775 | 1                                                                    |           | Code 6D; 240/480 V, 60 Hz                                             |
| 19       | 150-1406                                                                  | 1         | †Sensor, Magnetic - Speed                                    | 220-2776 | 1                                                                    |           | Code 7; 220/380 V, 60 Hz                                              |
| 20       | 150-1410                                                                  | 1         | †Cap, Insulator                                              | 42       | 805-0035                                                             | 6         | Bolt, Place (5/8-11 x 1-1/2")                                         |
| 21       | 150-1555                                                                  | 1         | †Bracket, Mounting - Speed<br>Sensor                         | 43       | 850-0070                                                             | 6         | Washer, Lock - Spring (5/8")                                          |
| 22       | 812-0192                                                                  | 1         | Screw, Machine - Round Head<br>(3/8-16 x 1")                 | 44       | ROTOR ASSEMBLY, GENERATOR (Includes Parts<br>Marked £)               |           |                                                                       |
| 23       | 856-0010                                                                  | 1         | Washer, Lock - External/<br>Internal Tooth (3/8")            | 201-1784 | 1                                                                    |           | 400 kW, 60 Hz                                                         |
| 24       | 150-1557                                                                  | 1         | Wheel - Speed Sensor                                         | 201-1785 | 1                                                                    |           | 330 kW, 50 Hz                                                         |
| 25       | 526-0077                                                                  | 1         | Washer, Flat (13/32" ID x<br>1-1/4" OD x 1/4" Thk)           | 201-1786 | 1                                                                    |           | 450 kW, 60 Hz                                                         |
| 26       | 510-0091                                                                  | 1         | £Nut, Lock - Bearing                                         | 201-1787 | 1                                                                    |           | 400 kW, 50 Hz                                                         |
| 27       | 510-0093                                                                  | 1         | £Washer, Lock - Bearing                                      | 45       | 820-1067                                                             | 2         | £Screw, Machine - Pan Head,<br>Cross-Recessed (#10-32 x 1")           |
| 28       | 510-0090                                                                  | 1         | £Bearing, Ball                                               | 46       | 526-1009                                                             | 2         | £Washer, Flat - Cadmium Plated<br>(7/32" ID x 1/2" OD x 1/16"<br>Thk) |
| 29       | 232-1923                                                                  | 1         | Ring, Holder - Bearing                                       | 47       | 850-1030                                                             | 2         | £Washer, Lock - Spring,<br>Cadmium Plated (#10)                       |
| 30       | 232-1924                                                                  | 1         | Spring, Bearing Ring Holder                                  | 48       | 870-1053                                                             | 2         | £Nut, Hex (#10-32)                                                    |
| 31       | 805-0035                                                                  | 2         | Bolt - Hex Head (5/8-11 x 1-1/2")                            | 49       | 510-0092                                                             | 1         | £Nut, Lock - Bearing                                                  |
| 32       | 232-1957                                                                  | 1         | Support, Generator                                           | 50       | 510-0094                                                             | 1         | £Washer, Lock - Bearing                                               |
| 33       | 800-0051                                                                  | 6         | Screw, Cap - Hex Head<br>(3/8-16 x 1-1/4")                   | 51       | £ROTOR ASSEMBLY, EXCITER (See Separate Group for<br>Component Parts) |           |                                                                       |
| 34       | 850-0050                                                                  | 6         | Washer, Lock - Spring (3/8")                                 | 201-1501 | 1                                                                    |           | 60 Hz Sets                                                            |
| 35       | 211-0170                                                                  | 1         | End Bell Assembly (Includes<br>Replaceable Parts Marked *)   | 201-1549 | 1                                                                    |           | 50 Hz Sets                                                            |
| 36       | 800-0031                                                                  | 12        | *Screw, Cap - Hex Head<br>(5/16-18 x 1-1/2")                 | 52       | 515-0162                                                             | 1         | £Key, Rectangular                                                     |
| 37       | 221-0153                                                                  | 6         | *Shoe, Pole - Exciter Stator                                 | 53       | 805-0035                                                             | 12        | £Bolt (5/8-11 x 1-1/2")                                               |
| 38       | 222-1693                                                                  | 1         | *Coil Assembly, Field -<br>Exciter Stator (Set of Six Coils) | 54       | 232-2833                                                             | 1         | £Disc & Fan Assembly                                                  |
| 39       | 800-0092                                                                  | 16        | Screw, Cap - Hex Head<br>(1/2-13 x 1-1/2")                   |          |                                                                      |           |                                                                       |
| 40       | 850-0060                                                                  | 16        | Washer, Lock - Spring (1/2")                                 |          |                                                                      |           |                                                                       |
| 41       | STATOR, GENERATOR (Includes Bus Bar Assembly<br>Shown In Separate Figure) |           |                                                              |          |                                                                      |           |                                                                       |
|          |                                                                           |           | <b>330 kW 50 Hz Sets</b>                                     |          |                                                                      |           |                                                                       |
|          | 220-2763                                                                  | 1         | Code 520; 220/380,<br>230/400 V, 50 Hz                       |          |                                                                      |           |                                                                       |
|          | 220-2764                                                                  | 1         | Code 519; 110/190,<br>115/200 V, 50 Hz                       |          |                                                                      |           |                                                                       |
|          | 220-2765                                                                  | 1         | Code 522; 240/416,<br>254/440 V, 50 Hz                       |          |                                                                      |           |                                                                       |
|          | 220-2766                                                                  | 1         | Code 521; 120/208,<br>127/220V, 50 Hz                        |          |                                                                      |           |                                                                       |

† - Included in Speed Sensor Assembly.

\* - Included in End Bell Assembly.

£ - Included in Generator Rotor Assembly.

# BUS BAR ASSEMBLY

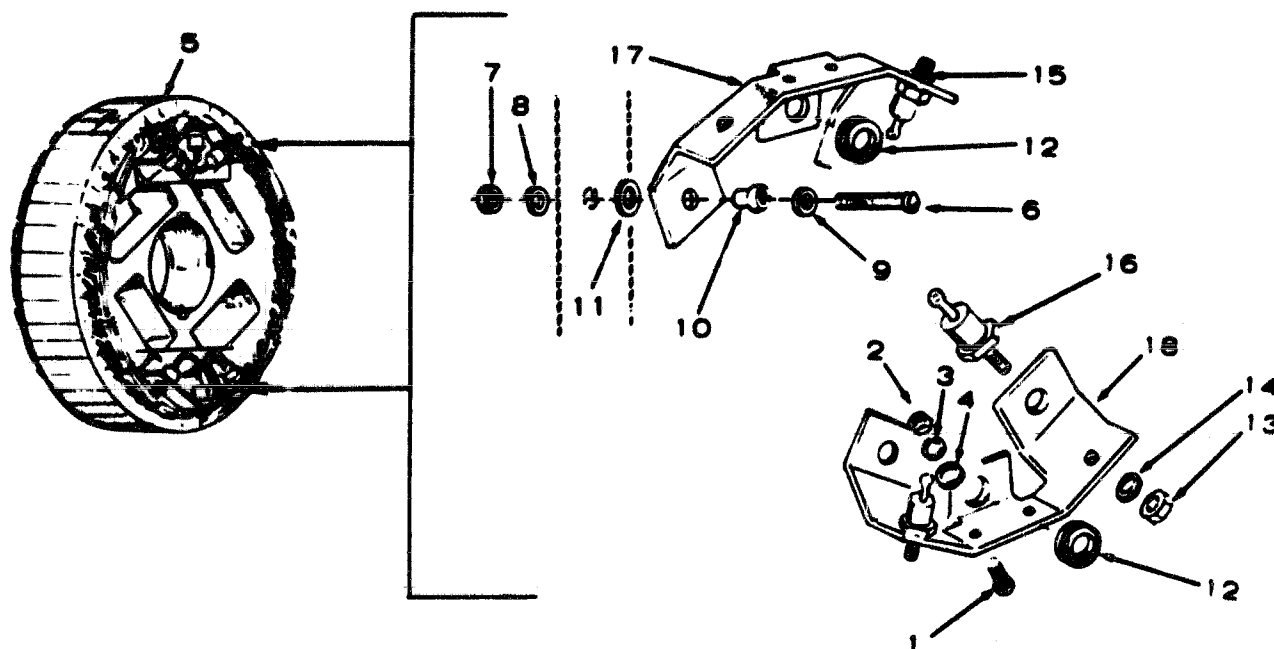


10-1203

## BUS BAR ASSEMBLY

| REF.<br>NO. | PART<br>NO. | QTY.<br>USED | PART<br>DESCRIPTION                            | REF.<br>NO. | PART<br>NO.                                                                   | QTY.<br>USED | PART<br>DESCRIPTION                                    |
|-------------|-------------|--------------|------------------------------------------------|-------------|-------------------------------------------------------------------------------|--------------|--------------------------------------------------------|
| 13          | 232-1994    | 1            | Bracket, Bus Bar                               | 40          | 526-0029                                                                      | 18           | Washer, Flat (25/64" ID x 7/8" OD x 1/16" Thk)         |
| 14          | 800-0151    | 1            | Screw, Cap - Hex Head (3/4-10 x 1")            | 41          | 850-0050                                                                      | 9            | Washer, Lock - Spring (3/8")                           |
| 15          | 850-0079    | 1            | Washer, Lock - Spring (3/4")                   | 42          | 862-0003                                                                      | 9            | Nut, Hex (3/8-16)                                      |
| 16          | 800-0051    | 2            | Screw, Cap - Hex Head (3/8-16 x 1-1/4")        | 43          | 800-0052                                                                      | 6            | Screw, Cap - Hex Head (3/8-16 x 1-1/2")                |
| 17          | 526-0029    | 2            | Washer, Flat (25/64" ID x 7/8" OD x 1/16" Thk) | 44          | 526-0029                                                                      | 6            | Washer, Flat (25/64" ID x 7/8" OD x 1/16" Thk)         |
| 18          | 850-0050    | 2            | Washer, Lock - Spring (3/8")                   | 45          | 850-0050                                                                      | 6            | Washer, Lock - Spring (3/8")                           |
| 19          | 862-0003    | 2            | Nut, Hex (3/8-16)                              | 46          | 862-0003                                                                      | 6            | Nut, Hex (3/8-16)                                      |
| 20          | 232-1997    | 1            | Board, Insulating                              | 47          | 802-0089                                                                      | 6            | Screw, Cap - Socket Head (3/8-16 x 5/8")               |
| 21          | 232-1992    | 4            | Bracket, Bus Bar                               | 48          | 526-0115                                                                      | 32           | Washer, Flat (11/32" ID x 11/16" OD x 1/16" Thk)       |
| 22          | 800-0007    | 4            | Screw, Cap - Hex Head (1/4-20 x 1")            | 49          | 850-0045                                                                      | 32           | Washer, Lock - Spring (5/16")                          |
| 23          | 526-0018    | 4            | Washer, Flat (17/64" ID x 5/8" OD x 1/16")     | 50          | 862-0015                                                                      | 32           | Nut, Hex (5/16-18)                                     |
| 24          | 850-0040    | 4            | Washer, Lock - Spring (1/4")                   | 51          | 800-0005                                                                      | 4            | Screw, Cap - Hex Head (1/4-20 x 3/4")                  |
| 25          | 862-0001    | 4            | Nut, Hex (1/4-20)                              | 52          | 850-0040                                                                      | 4            | Washer, Lock - Spring (1/4")                           |
| 26          | 232-1999    | 2            | Bracket, Terminal Board Mounting               | 53          | 862-0001                                                                      | 4            | Nut, Hex (1/4-20)                                      |
| 27          | 232-2000    | 1            | Bracket, Terminal Board Mounting               | 54          | 232-1993                                                                      | 1            | Jumper, Bus Bar (Used on Parallel Wye Wound Generator) |
| 28          | 315-0302    | 1            | Shelf, Current Transformer                     | 55          | 232-2005                                                                      | 1            | Jumper, Bus Bar (Used on Delta Wound Generator)        |
| 29          | 800-0005    | 6            | Screw, Cap - Hex Head (1/4-20 x 3/4")          | 55          | TRANSFORMER, CURRENT (Check Transformer Nameplate—Select According to Rating) |              |                                                        |
| 30          | 850-0040    | 6            | Washer, Lock - Spring (1/4")                   |             | 302-0547                                                                      | 3            | Nameplate Reads 500/5                                  |
| 31          | 862-0001    | 6            | Nut, Hex (1/4-20)                              |             | 302-0625                                                                      | 3            | Nameplate Reads 750/5                                  |
| 32          | 232-1998    | 1            | Board, Insulating                              |             | 302-0589                                                                      | 3            | Nameplate Reads 1000/5                                 |
| 33          | 232-1995    | 1            | Board, Insulating                              |             | 302-0643                                                                      | 3            | Nameplate Reads 1200/5                                 |
| 34          | 520-0693    | 16           | Stud (5/16-18 x 5/16-18 x 1-5/8")              |             | 302-0644                                                                      | 3            | Nameplate Reads 1500/5                                 |
| 35          | 232-1996    | 1            | Bar, Bus (17-3/8" Lg)                          |             | 302-0645                                                                      | 3            | Nameplate Reads 2000/5                                 |
| 36          | 232-2001    | 3            | Bar, Bus (13-1/4" Lg)                          | 57          | 800-0052                                                                      | 6            | Screw, Cap - Hex Head (3/8-16 x 1-1/2")                |
| 37          | 232-1991    | 1            | Bar, Bus (Double)                              | 58          | 526-0029                                                                      | 6            | Washer, Flat (25/64" ID x 7/8" OD x 1/16" Thk)         |
| 38          | 232-1990    | 3            | Bar, Bus                                       | 59          | 850-0050                                                                      | 6            | Washer, Lock - Spring (3/8")                           |
| 39          | 800-0052    | 9            | Screw, Cap - Hex Head (3/8-16 x 1-1/2")        | 60          | 862-0003                                                                      | 6            | Nut, Hex (3/8-16)                                      |

## EXCITER ROTOR

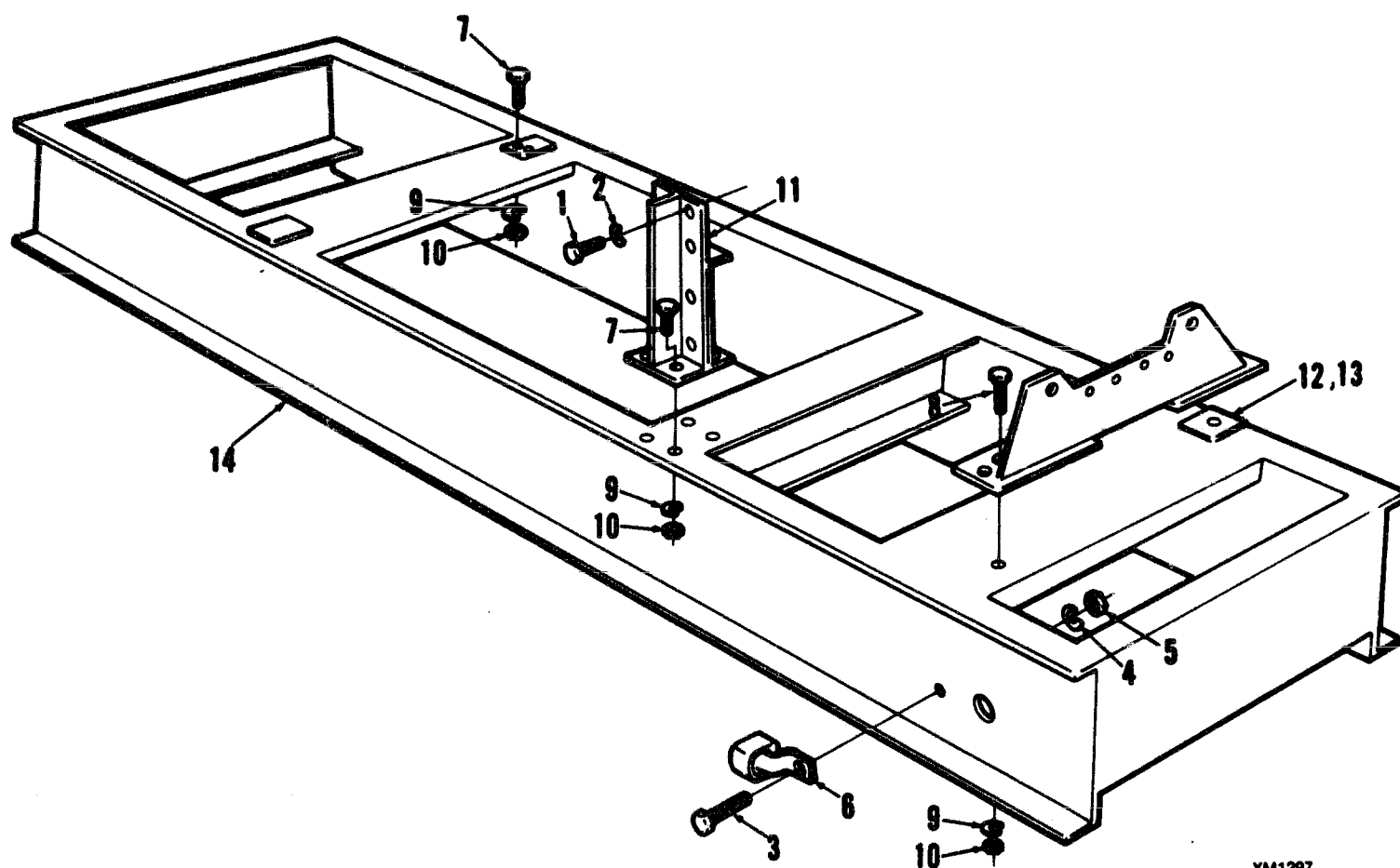


G-1092

| REF. NO. | PART NO.                                          | QTY. USED | PART DESCRIPTION                                 |
|----------|---------------------------------------------------|-----------|--------------------------------------------------|
| 1        | 813-0100                                          | 2         | Screw, Machine - Round Head (#10-32 x 1 2")      |
| 2        | 870-0053                                          | 2         | Nut, Hex (#10-32)                                |
| 3        | 850-0030                                          | 2         | Washer, Lock - Spring (#10)                      |
| 4        | 526-0008                                          | 2         | Washer, Flat (13 64" ID x 7/16" OD x 1 32" Thk)  |
| 5        | ROTOR ASSEMBLY, EXCITER (Includes Parts Marked -) |           |                                                  |
|          | 201-1501                                          | 1         | Standard, 60 Hz                                  |
|          | 201-1549                                          | 1         | Standard, 50 Hz                                  |
| 6        | 813-0114                                          | 4         | +Screw, Machine - Round Head (#10-32 x 3")       |
| 7        | 870-0053                                          | 4         | +Nut, Hex (#10-32)                               |
| 8        | 850-0030                                          | 4         | +Washer, Lock - Spring (#10)                     |
| 9        | 526-0009                                          | 4         | +Washer, Flat - (7 32" ID x 1/2" OD x 1 16" Thk) |
| 10       | 508-0124                                          | 4         | +Spacer, Stepped                                 |
| 11       | 508-0156                                          | 8         | +Washer, Insulating                              |
| 12       | 508-0093                                          | 2         | +Grommet, Rubber                                 |
| 13       | 862-0001                                          | 6         | +Nut, Hex (1 4-28)                               |
| 14       | 850-0040                                          | 6         | +Washer, Lock - Spring (1 4")                    |
| 15       | 358-0011                                          | 3         | +Diode, Rectifier - Positive (CR1, CR2, CR3)     |
| 16       | 358-0012                                          | 3         | +Diode, Rectifier - Negative (CR4, CR5, CR6)     |
| 17       | 363-0025                                          | 1         | +Heat, Sink - Positive Diodes                    |
| 18       | 363-0033                                          | 1         | +Heat, Sink - Negative Diodes                    |

+ - Parts Included in the Exciter Rotor Assembly.

## CHASSIS

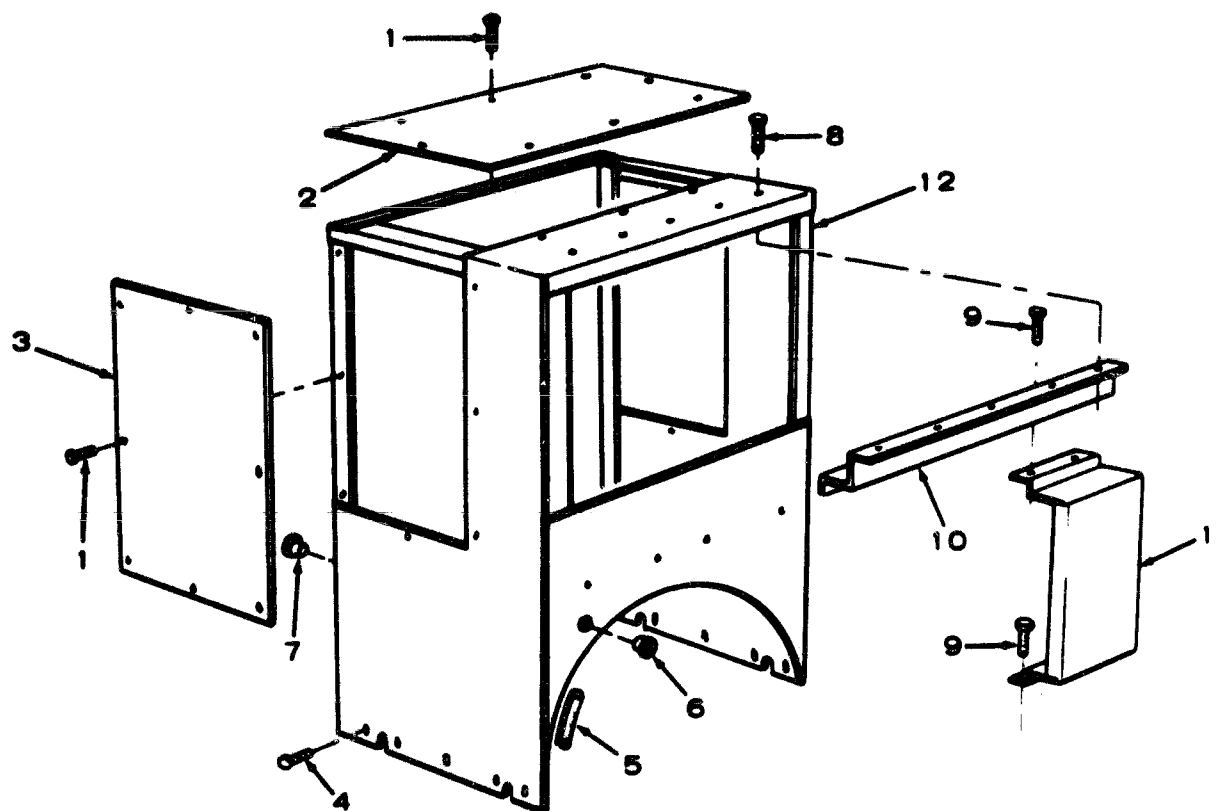


XM1297

| REF.<br>NO. | PART<br>NO. | QTY.<br>USED | PART<br>DESCRIPTION                         |
|-------------|-------------|--------------|---------------------------------------------|
| 1           | 800-0132    | 4            | Screw, Cap - Hex Head<br>(5/ 8-11 x 1-1/2") |
| 2           | 850-0070    | 4            | Washer, Lock - Spring (5/8")                |
| 3           | 800-0051    | 1            | Screw, Cap - Hex Head<br>(3/8-16 x 1-1/4")  |
| 4           | 850-0050    | 1            | Washer, Lock - Spring (3/8")                |
| 5           | 862-0003    | 1            | Nut, Hex (3/8-16)                           |
| 6           | 332-2001    | 1            | Lug, Terminal - Solderless                  |
| 7           | 800-0156    | 12           | Screw, Cap - Hex Head<br>(3/4-10 x 2-1/4")  |
| 8           | 800-0157    | 2            | Screw, Cap - Hex Head<br>(3/4-10 x 2-1/2")  |
| 9           | 850-0079    | 14           | Washer, Lock - Spring (3/4")                |
| 10          | 862-0020    | 14           | Nut, Hex (3/4-10)                           |
| 11          | 403-1360    | 2            | Brace, Support - Generator/<br>Engine       |
| 12          | 232-1489    | 6            | Shim (.0598" Thk)                           |
| 13          | 232-1490    | 6            | Shim (.0359" Thk)                           |
| 14          | 403-1363    | 1            | Base, Skid                                  |



## CONTROL, HOUSING



M-1202

| REF.<br>NO. | PART<br>NO. | QTY.<br>USED | PART<br>DESCRIPTION                                       |
|-------------|-------------|--------------|-----------------------------------------------------------|
| 1           | 821-0010    | 24           | Screw, Self-locking - Hex<br>Washer Head (1 4-20 x 1 2")  |
| 2           | 301-2904    | 1            | Panel, Access - Top                                       |
| 3           | 301-2905    | 2            | Panel, Access - Side                                      |
| 4           | 821-0014    | 8            | Screw, Self-locking - Hex<br>Washer Head (5 16-18 x 1 2") |
| 5           | 508-1000    | 4            | Channel, Rubber                                           |
| 6           | 331-0088    | 1            | Bushing, Insulator                                        |
| 7           | 508-0203    | 1            | Bushing, Insulator                                        |
| 8           | 821-0010    | 2            | Screw, Self-locking - Hex<br>Washer Head (1 4-20 x 1 2")  |
| 9           | 821-0014    | 4            | Screw, Self-locking - Hex<br>Washer Head (5 16-18 x 1 2") |
| 10          | 301-4125    | 1            | Bracket, Double Angle                                     |
| 11          | 301-4110    | 1            | Panel, Control - Blank                                    |
| 12          | 301-4118    | 1            | Housing, Control                                          |

## **OPTIONAL EQUIPMENT SECTION**

This section contains parts listing of factory installed options.  
**NOTE:** options may not be applicable to all models; for field installations, additional parts are usually required.

## OPTIONAL GENERATOR CONTROL (WITH SWITCHING REGULATOR)



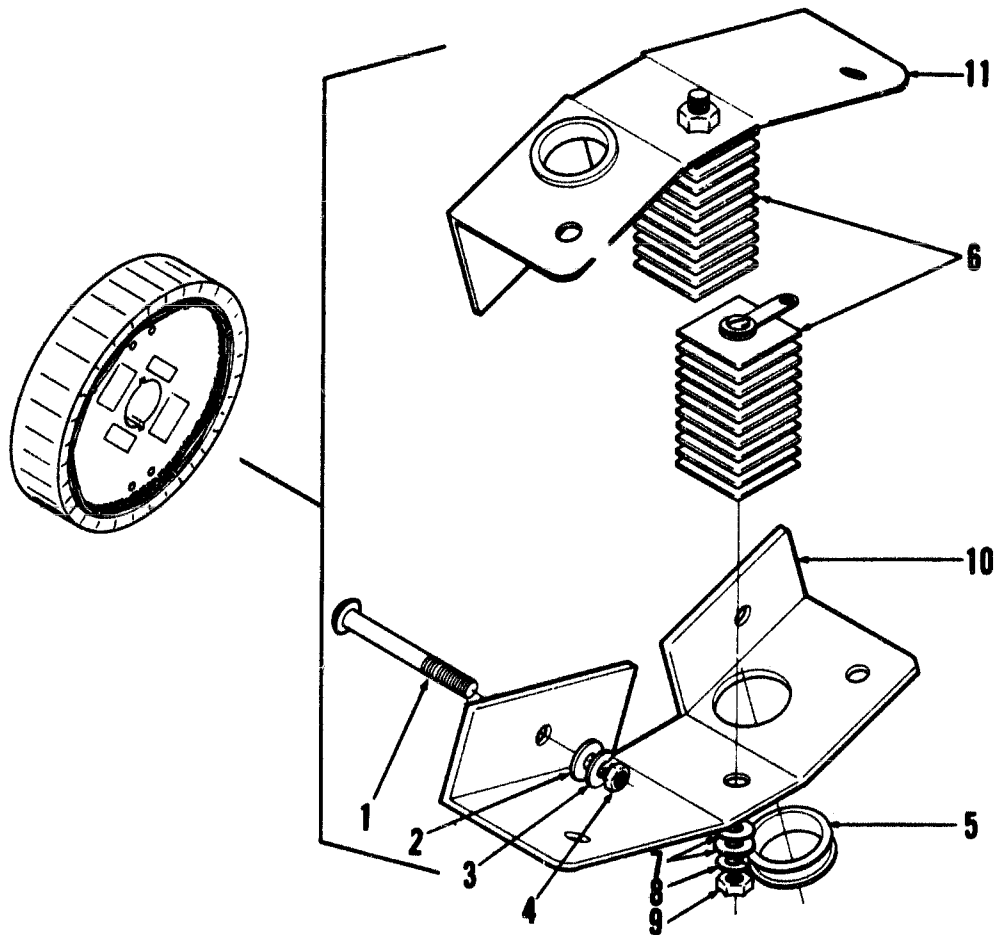
## OPTIONAL GENERATOR CONTROL (WITH SWITCHING REGULATOR)

| REF.<br>NO. | PART<br>NO.                                 | QTY.<br>USED | PART<br>DESCRIPTION                                         |
|-------------|---------------------------------------------|--------------|-------------------------------------------------------------|
| 1           | 338-1493                                    | 1            | Wiring Harness (Includes<br>Terminal Block)                 |
|             | ATTACHING HARDWARE FOR WIRING HARNESS       |              |                                                             |
|             | 812-0066                                    | 2            | Screw, Machine - Round Head<br>(#6-32 x 3/4")               |
|             | 850-0020                                    | 2            | Washer, Lock - Spring (#6)                                  |
| 2           | 332-0795                                    | 1            | Block, Terminal - 16 Place                                  |
| 3           | 332-1242                                    | 1            | Strip, Marker - 16 Place                                    |
| 4           | AMMETER (Select As Required)                |              |                                                             |
|             | 302-0414                                    | 1            | Scale Reads 0-500 Amperes                                   |
|             | 302-0415                                    | 1            | Scale Reads 0-750 Amperes                                   |
|             | 302-0416                                    | 1            | Scale Reads 0-1000 Amperes                                  |
|             | 302-0640                                    | 1            | Scale Reads 0-1200 Amperes                                  |
|             | 302-0641                                    | 1            | Scale Reads 0-1500 Amperes                                  |
|             | 302-0642                                    | 1            | Scale Reads 0-2000 Amperes                                  |
|             | 302-1044                                    | 1            | Scale Reads 0-2500 Amperes                                  |
|             | 302-1045                                    | 1            | Scale Reads 0-3000 Amperes                                  |
| 5           | VOLTMETER (Select As Required)              |              |                                                             |
|             | 302-0421                                    | 1            | Scale Reads 0-300 Volts                                     |
|             | 302-1283                                    | 1            | Scale Reads 0-500 Volts                                     |
|             | 302-1072                                    | 1            | Scale Reads 0-600 Volts                                     |
|             | 302-0779                                    | 1            | Scale Reads 0-750 Volts                                     |
| 6           | METER, FREQUENCY (Select As Required)       |              |                                                             |
|             | 302-0810                                    | 1            | 60 Hertz, 208 Volt                                          |
|             | 302-0811                                    | 1            | 60 Hertz, 240 Volt                                          |
|             | 302-0894                                    | 1            | 50 Hertz, 208 Volt                                          |
|             | 302-0895                                    | 1            | 50 Hertz, 240 Volt                                          |
| 7           | METER, TIME TOTALIZING (Select As Required) |              |                                                             |
|             | 302-0466                                    | 1            | 60 Hertz                                                    |
|             | 302-0469                                    | 1            | 50 Hertz                                                    |
| 8           | 320-0202                                    | 1            | Tie Bar - Circuit Breaker                                   |
| 9           | 320-0307                                    | 1            | Lock, Handle - Circuit Breaker<br>(Used On Penn State Sets) |
| 10          | 320-0455                                    | 2            | Circuit Breaker - 3 Amp, 240 Volt                           |
|             | ATTACHING HARDWARE FOR CIRCUIT BREAKER      |              |                                                             |
|             | 812-0061                                    | 4            | Screw, Machine - Round Head<br>(#6-32 x 3/8")               |
|             | 850-0020                                    | 4            | Washer, Lock - Spring (#6)                                  |
|             | 815-0203                                    | 2            | Screw, Machine - Round Head,<br>Brass (#10-32 x 7/8")       |
|             | 871-0010                                    | 2            | Nut, Hex - Brass (#10-32)                                   |
|             | 853-0008                                    | 2            | Washer, Lock - ET (#10)                                     |
|             | 526-0049                                    | 2            | Washer, Flat - Brass (13/64" ID x<br>7/16" OD x 1/32" Thk)  |

| REF.<br>NO. | PART<br>NO.                                           | QTY.<br>USED | PART<br>DESCRIPTION                             |
|-------------|-------------------------------------------------------|--------------|-------------------------------------------------|
| 11          | 517-0131                                              | 1            | Plug, Plastic                                   |
| 12          | 303-0032                                              | 1            | Knob                                            |
| 13          | 303-0076                                              | 1            | Knob, Pointer                                   |
| 14          | 302-0284                                              | 1            | Switch, Selector                                |
| 15          | 303-0170                                              | 1            | Rheostat (35 Ohm, 25 Watt)                      |
| 16          | 151-0402                                              | 1            | Potentiometer (5K Ohms)                         |
| 17          | 406-0334                                              | 2            | Clip, Retaining - Turnbutton<br>Fastener        |
| 18          | 406-0333                                              | 2            | Stud, Turnbutton Fastener                       |
| 19          | 870-0053                                              | 1            | Nut, Hex (#10-32)                               |
| 20          | 850-0030                                              | 1            | Washer, Lock - Spring (#10)                     |
| 21          | 332-0051                                              | 1            | Clamp, Loop                                     |
| 22          | 815-0026                                              | 3            | Screw, Machine - Truss Head<br>(#10-32 x 3/8")  |
| 23          | 301-6412                                              | 1            | Panel, Control                                  |
| 24          | 406-0332                                              | 2            | Receptacle, Turnbutton Fastener                 |
| 25          | 315-0431                                              | 1            | Transformer, Voltage (240 VAC<br>Output Signal) |
| 26          | 812-0065                                              | 4            | Screw, Machine - Round Head<br>(#6-32 x 5/8")   |
| 27          | 853-0003                                              | 4            | Washer, Lock - ET (#6)                          |
| 28          | REGULATOR, VOLTAGE (Requires 240 VAC Input<br>Signal) |              |                                                 |
|             | 300-1928                                              | 1            | £Semi-Frequency Sensitive Type                  |
|             | 300-1929                                              | 1            | £Voltage Sensitive Type                         |
|             | 300-1930                                              | 1            | £Frequency Sensitive Type                       |
| 29          | 508-0001                                              | 4            | Grommet, Rubber                                 |
| 30          | 800-0045                                              | 4            | Screw, Cap - Hex Head<br>(5/16-18 x 3/8")       |
| 31          | 850-0045                                              | 4            | Washer, Lock - Spring (5/16")                   |
| 32          | 402-0070                                              | 4            | Dampener, Vibration                             |
| 33          | 337-0049                                              | 1            | Strap, Ground                                   |
|             | ATTACHING PARTS FOR STRAP                             |              |                                                 |
|             | 800-0045                                              | 1            | Screw, Cap - Hex Head<br>(5/16-18 x 3/8")       |
|             | 850-0045                                              | 1            | Washer, Lock - Spring (5/16")                   |
|             | 856-0008                                              | 2            | Washer, Lock - EIT (5/16")                      |
|             | 862-0015                                              | 1            | Nut, Hex (5/16-18)                              |
|             | -----                                                 |              |                                                 |
| 34          | 301-4135                                              | 1            | Box, Control                                    |

£ - See Separate Parts Catalog #900-0234 For Components.

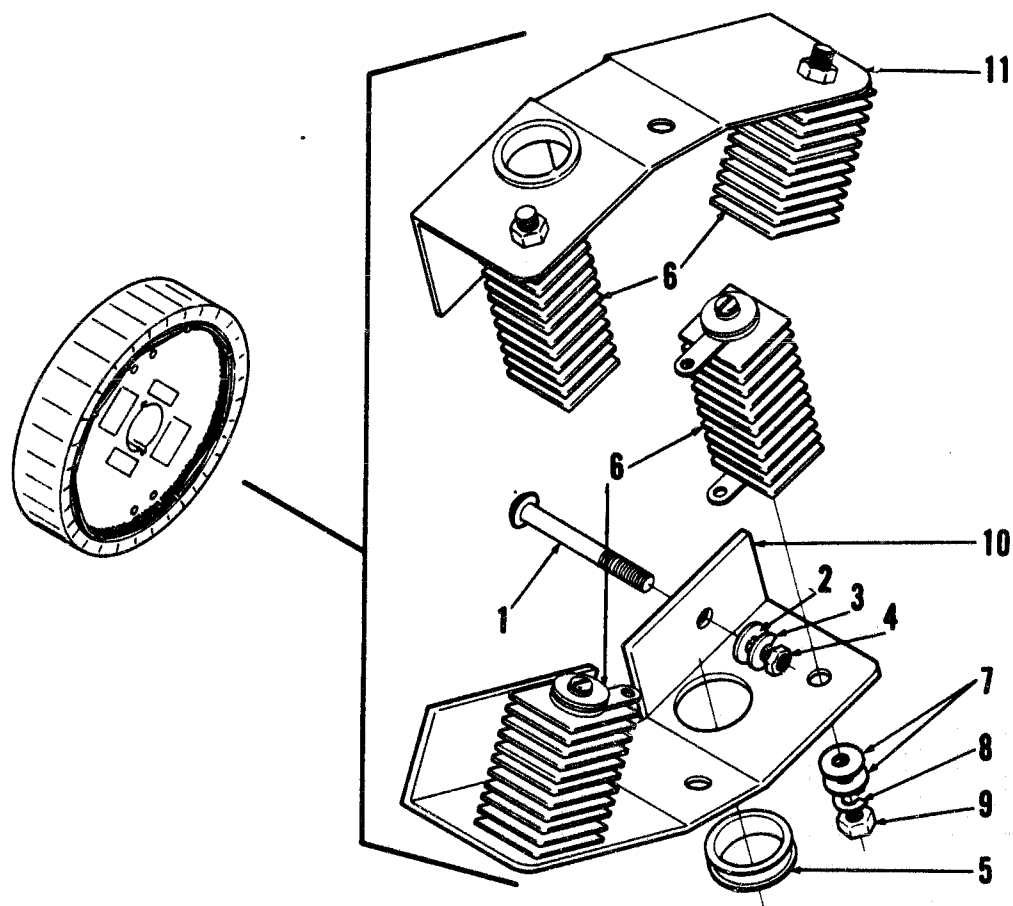
# **OPTIONAL VOLTAGE SUPPRESSOR ASSEMBLY**



XES1229

| REF.<br>NO. | PART<br>NO. | QTY.<br>USED | PART<br>DESCRIPTION                                                     |
|-------------|-------------|--------------|-------------------------------------------------------------------------|
|             |             | 1            | Voltage Suppressor Assembly                                             |
| 1           | 813-0120    | 4            | Screw, Machine - Round Head<br>(#10-32 x 3-1/2")                        |
| 2           | 526-0140    | 4            | Washer, Flat (7/32" ID x<br>3/8" OD x 3/64" Thk)                        |
| 3           | 850-0030    | 4            | Washer, Lock - Spring (#10)                                             |
| 4           | 870-0053    | 4            | Nut, Hex (#10-32)                                                       |
| 5           | 508-0093    | 2            | Grommet, Rubber                                                         |
| 6           | 305-0526    | 1            | Set, Voltage Suppressor<br>(Matched Pair) - Includes<br>Attaching Parts |
| 7           | 526-0140    | 4            | Washer, Flat (7/32" ID x<br>3/8" OD x 3/64" Thk)                        |
| 8           | 850-0030    | 4            | Washer, Lock - Spring (#10)                                             |
| 9           | 870-0053    | 4            | Nut, Hex (#10-32)                                                       |
| 10          | 363-0025    | 1            | Heatsink - Positive                                                     |
| 11          | 363-0033    | 1            | Heatsink - Negative                                                     |

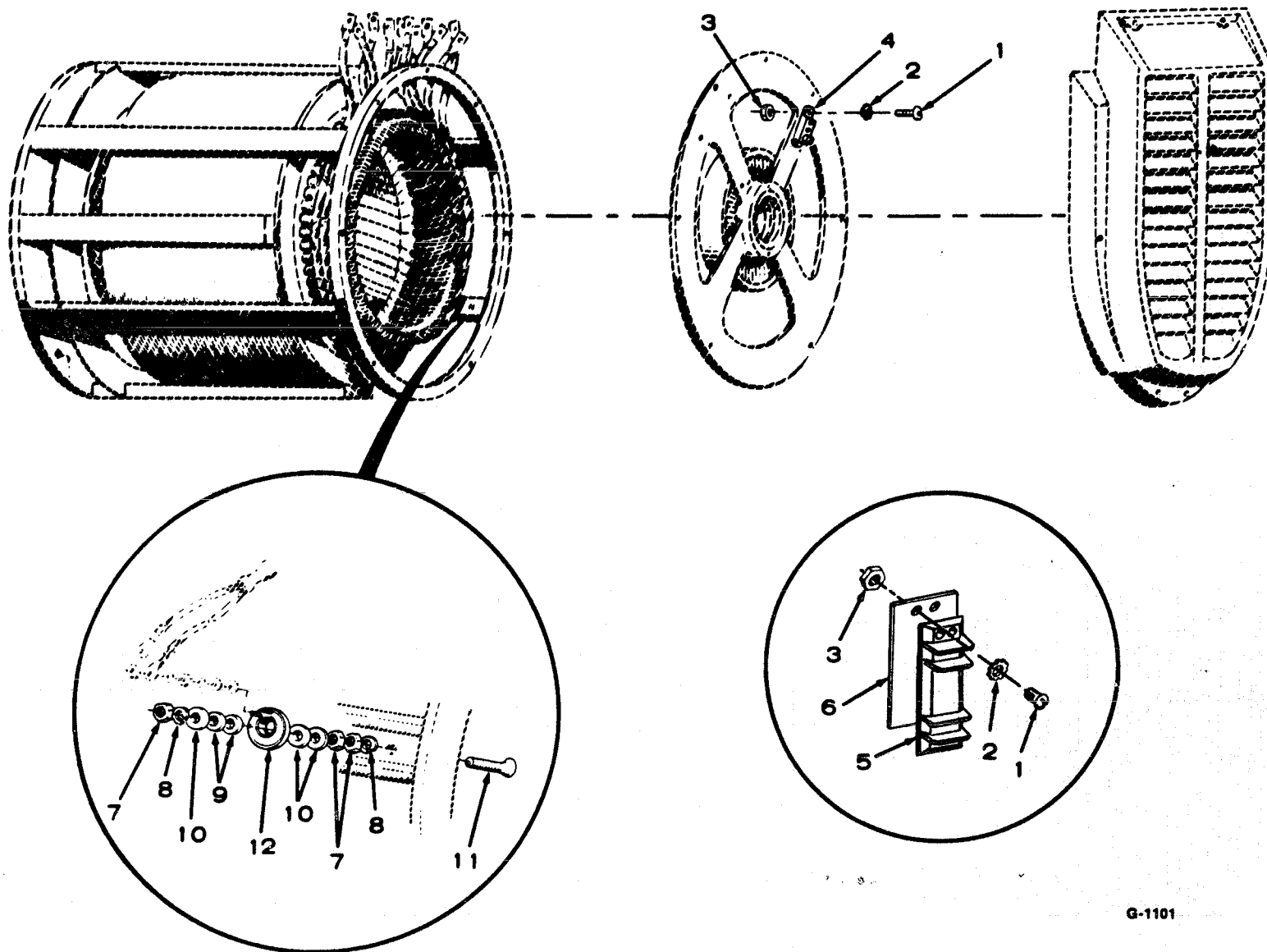
# **OPTIONAL DUAL VOLTAGE SUPPRESSOR ASSEMBLY**



XES1230

| REF.<br>NO. | PART<br>NO. | QTY.<br>USED | PART<br>DESCRIPTION                                                     |
|-------------|-------------|--------------|-------------------------------------------------------------------------|
|             |             | 1            | Dual Voltage Suppressor<br>Assembly                                     |
| 1           | 813-0120    | 8            | Screw, Machine - Round Head<br>(#10-32 x 3-1/2")                        |
| 2           | 526-0140    | 8            | Washer, Flat (7/32" ID x<br>3/8" OD x 3/64" Thk)                        |
| 3           | 850-0030    | 8            | Washer, Lock - Spring (#10)                                             |
| 4           | 870-0053    | 8            | Nut, Hex (#10-32)                                                       |
| 5           | 508-0093    | 2            | Grommet, Rubber                                                         |
| 6           | 305-0526    | 2            | Set, Voltage Suppressor<br>(Matched Pair) - Includes<br>Attaching Parts |
| 7           | 526-0140    | 8            | Washer, Flat (7/32" ID x<br>3/8" OD x 3/64" Thk)                        |
| 8           | 850-0030    | 8            | Washer, Lock - Spring (#10)                                             |
| 9           | 870-0053    | 8            | Nut, Hex (#10-32)                                                       |
| 10          | 363-0025    | 1            | Heatsink - Positive                                                     |
| 11          | 363-0033    | 1            | Heatsink - Negative                                                     |

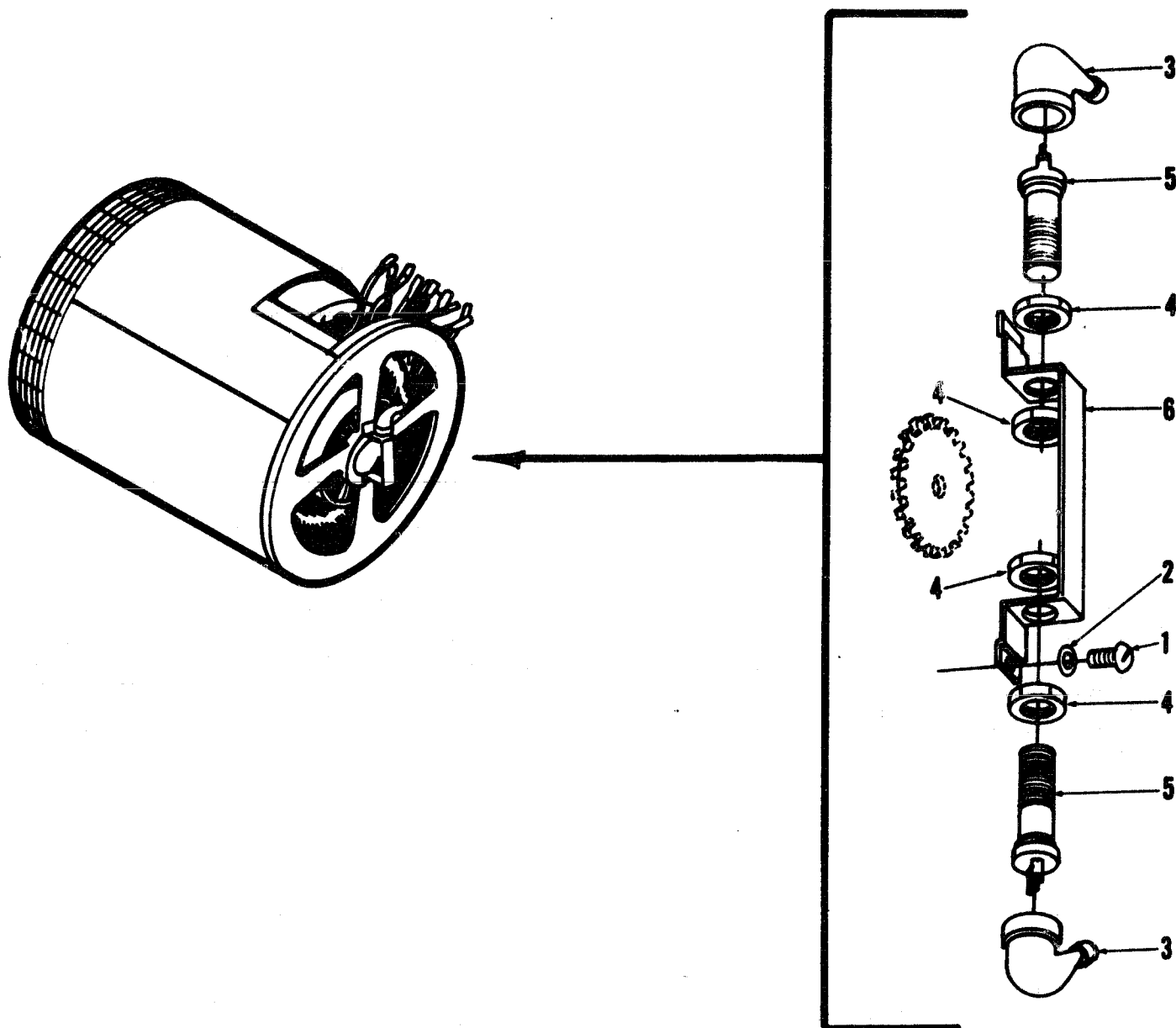
## OPTIONAL GENERATOR HEATER



G-1101

| REF.<br>NO. | PART<br>NO. | QTY.<br>USED | PART<br>DESCRIPTION                                 |
|-------------|-------------|--------------|-----------------------------------------------------|
| 1           | 812-0068    | 4            | Screw, Machine - Round Head<br>(#6-32 x 1")         |
| 2           | 853-0003    | 4            | Washer, Lock - External Tooth<br>(#6)               |
| 3           | 860-0005    | 4            | Nut, Hex (#6-32)                                    |
| 4           | 309-0128    | 1            | Thermostat - Adjustable                             |
| 5           | 332-0333    | 1            | Terminal Block                                      |
| 6           | 332-0499    | 1            | Strip, Marker                                       |
| 7           | 862-0003    | 6            | Nut, Hex (3/8-16)                                   |
| 8           | 850-0050    | 4            | Washer, Lock - Spring (3/8")                        |
| 9           | 526-0029    | 4            | Washer, Flat (25/64" ID x<br>7/8" OD x 1/16" Thk)   |
| 10          | 526-0123    | 6            | Washer, Flat (25/64" ID x<br>1-1/4" OD x 1/16" Thk) |
| 11          | 814-0203    | 2            | Screw, Machine - Flat Head<br>(3/8-16 x 2")         |
| 12          | 333-0059    | 2            | Heater - 120 Volt, 125 Watt                         |

**OPTIONAL  
DUAL SENSOR ASSEMBLY  
(GENERATOR OVER/UNDER SPEED)**

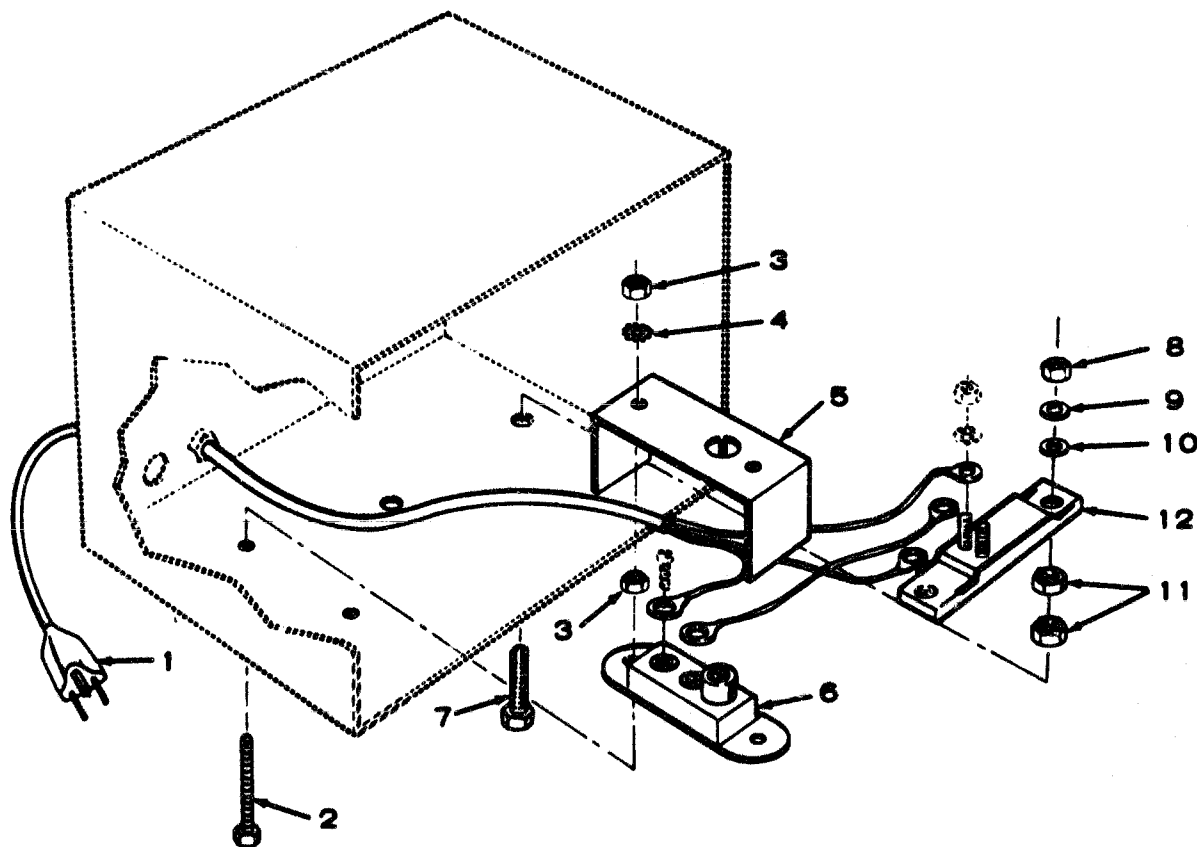


ES1228

| REF.<br>NO. | PART<br>NO. | QTY.<br>USED | PART<br>DESCRIPTION                            |
|-------------|-------------|--------------|------------------------------------------------|
| 1           | 812-0148    | 1            | Dual Sensor Assembly                           |
| 2           | 850-0040    | 2            | Screw, Machine - Round Head<br>(1/4-20 x 1/2") |
| 3           | 150-1410    | 2            | Washer, Lock - Spring (1/4")                   |
| 4           | 868-0011    | 4            | Cap, Insulating                                |
| 5           | 150-1406    | 2            | Nut, Hex - Jam (3/4-16)                        |
| 6           | 150-1878    | 1            | Sensor, Magnetic                               |
|             |             |              | Bracket, Mounting - Magnetic<br>Sensor         |



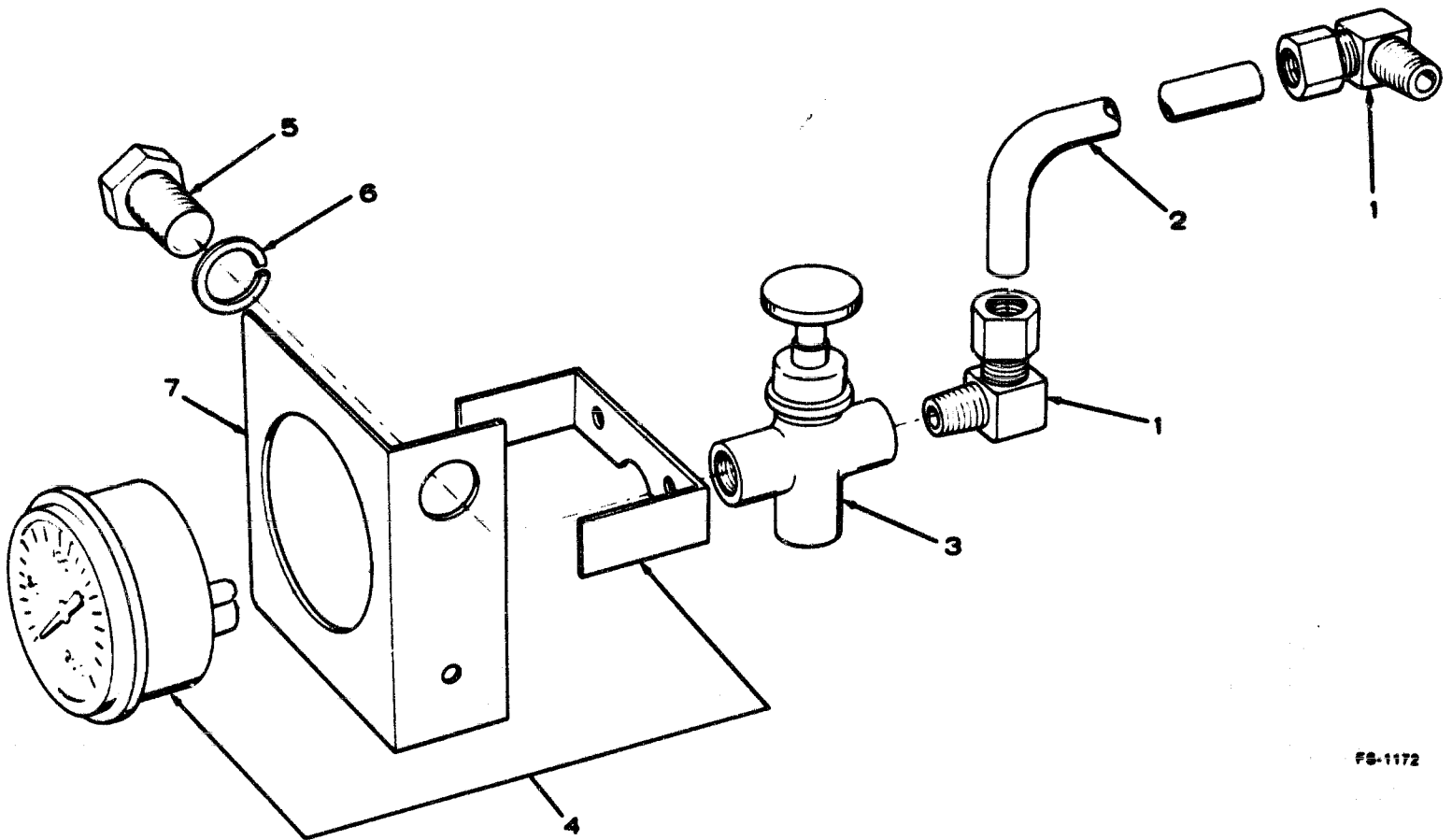
## OPTIONAL CONTROL HEATER



8C-1156

| REF.<br>NO. | PART<br>NO. | QTY.<br>USED | PART<br>DESCRIPTION                                |
|-------------|-------------|--------------|----------------------------------------------------|
| 1           | 335-0110    | 1            | Cable, Electrical (3 Wire)                         |
| 2           | 812-0090    | 2            | Screw, Machine - Round Head<br>(#6-32 x 2-1/4")    |
| 3           | 860-0006    | 4            | Nut, Hex (#6-32)                                   |
| 4           | 856-0001    | 2            | Washer, Lock - EIT (#6)                            |
| 5           | 301-1886    | 1            | Cover, Thermostat                                  |
| 6           | 309-0128    | 1            | Thermostat - Adjustable                            |
| 7           | 800-0007    | 2            | Screw, Cap - Hex Head<br>(1/4-20 x 1")             |
| 8           | 862-0001    | 2            | Nut, Hex (1/4-20)                                  |
| 9           | 850-0040    | 2            | Washer, Lock - Spring (1/4")                       |
| 10          | 526-0052    | 2            | Washer, Flat (17/64" ID x<br>9/16" OD x 1/16" Thk) |
| 11          | 862-0015    | 4            | Nut, Hex (5/16-18) - Used<br>As Spacers            |
| 12          | 333-0151    | 1            | Heater - 75 Watt, 120 Vac,<br>300 Watt, 240 VAC    |

# **OPTIONAL FUEL PRESSURE GAUGE**

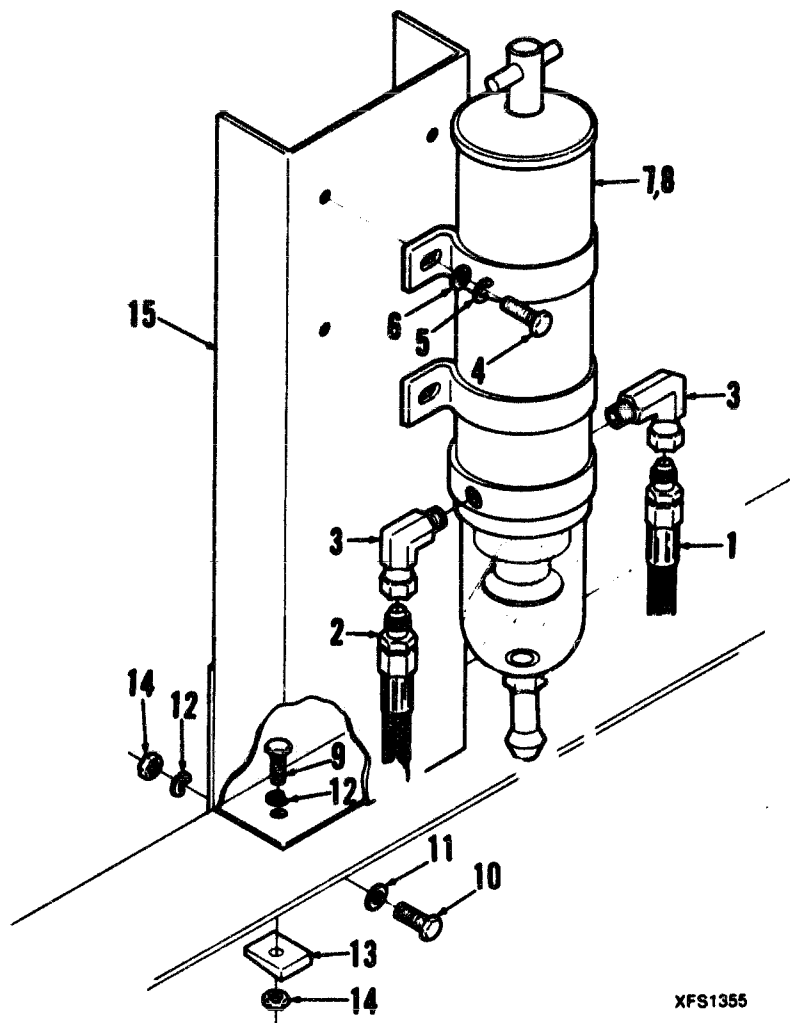


FS-1172

| REF.<br>NO. | PART<br>NO.                                      | QTY.<br>USED | PART<br>DESCRIPTION                                                      |
|-------------|--------------------------------------------------|--------------|--------------------------------------------------------------------------|
|             | FUEL PRESSURE GAUGE (Includes Parts<br>Marked #) |              |                                                                          |
|             | 539-0429                                         | 1            | 0 to 200 lbs. Range                                                      |
| 1           | 502-0034                                         | 2            | #Elbow with Compression Nut &<br>Ring - Brass (1/8" NPT x 3/16"<br>Tube) |
| 2           | 370-4003                                         | 1            | #Tube, Copper (3/16" OD x<br>.030 Thk x 72")                             |
| 3           | 504-0064                                         | 1            | #Valve, Gate (1/8" NPT)                                                  |
| 4           | 193-0128                                         | 1            | #Gauge, Pressure with Bracket<br>and Attaching Hardware                  |
| 5           | 800-0130                                         | 1            | #Screw, Cap - Hex Head<br>(5/8-11 x 1")                                  |
| 6           | 850-0070                                         | 1            | #Washer, Lock - Spring (5/8")                                            |
| 7           | 193-0029                                         | 1            | #Bracket, Mounting - Gauge                                               |

# - Parts included in Fuel Gauge Assembly

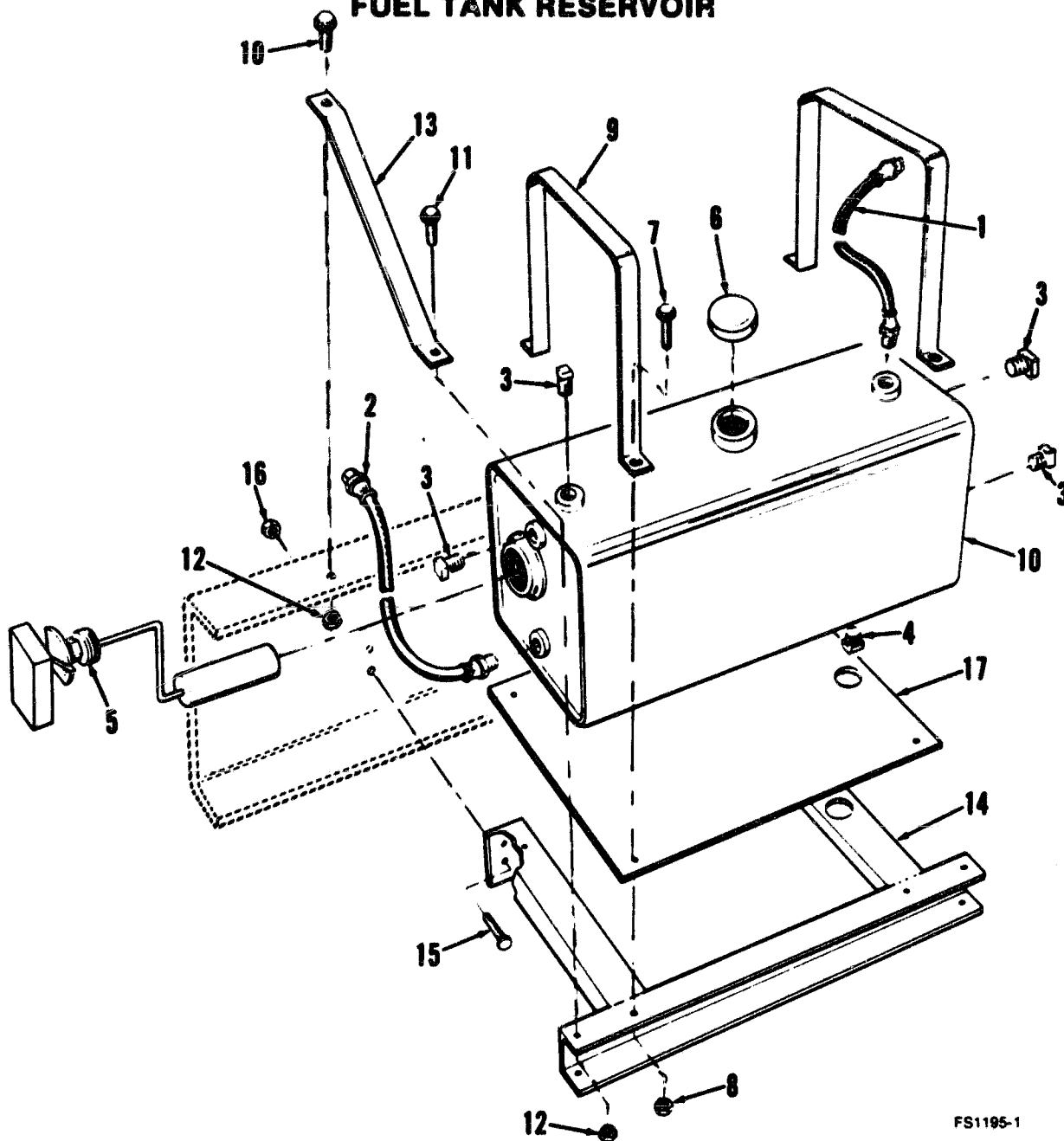
## OPTIONAL FILTER - FUEL/WATER



XFS1355

| REF.<br>NO. | PART<br>NO. | QTY.<br>USED | PART<br>DESCRIPTION                                |
|-------------|-------------|--------------|----------------------------------------------------|
| 1           | 501-0292    | 1            | Line, Fuel - Flexible                              |
| 2           | 501-0291    | 1            | Line, Fuel - Flexible                              |
| 3           | 502-0644    | 2            | Elbow, Pipe - 90 DEG, Swivel                       |
| 4           | 800-0028    | 4            | Screw, Cap - Hex Head<br>(5/16-18 x 1")            |
| 5           | 850-0045    | 4            | Washer, Lock - Spring (5/16")                      |
| 6           | 526-0022    | 4            | Washer, Flat (21/64" ID x<br>9/16" OD x 1/16" Thk) |
| 7           | 149-1625    | 1            | Filter, Fuel/Water (Includes<br>Element)           |
| 8           | 149-1689    | 1            | Element, Fuel/Water Filter                         |
| 9           | 800-0053    | 3            | Screw, Cap - Hex Head<br>(3/8-16 x 1-3/4")         |
| 10          | 800-0051    | 1            | Screw, Cap - Hex Head<br>(3/8-16 x 1-1/4")         |
| 11          | 526-0026    | 1            | Washer, Flat (13/32" ID x<br>3/4" OD x 1/16" Thk)  |
| 12          | 850-0050    | 3            | Washer, Lock - Spring (3/8")                       |
| 13          | 526-0280    | 1            | Washer, Bevel                                      |
| 14          | 862-0003    | 3            | Nut, Hex (3/8-16)                                  |
| 15          | 149-1683    | 1            | Bracket, Mounting - Fuel/Water<br>Filter           |

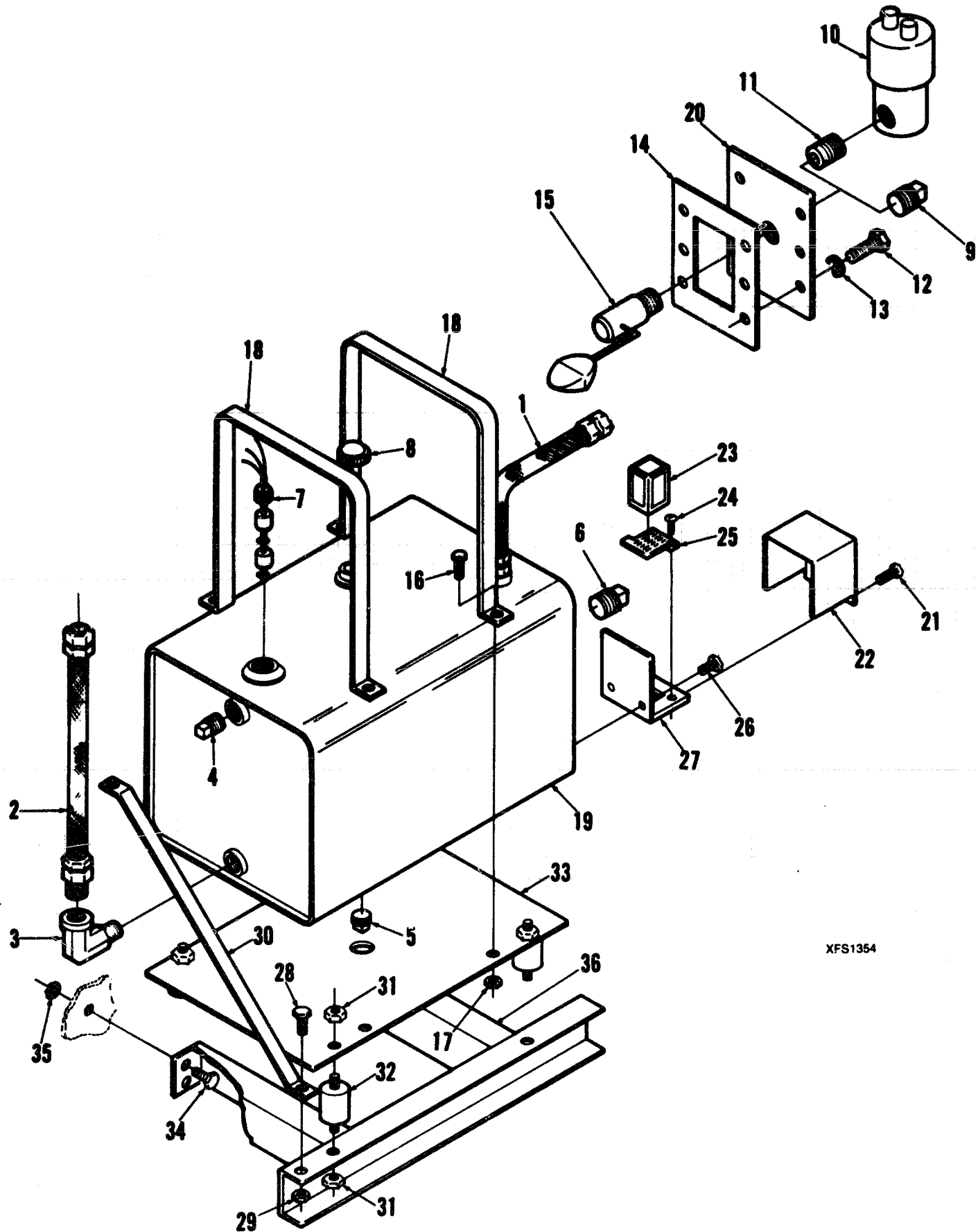
# **OPTIONAL FUEL TANK RESERVOIR**



FS1195-1

| REF. NO. | PART NO.                                   | QTY. USED | PART DESCRIPTION                               | REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION                                         |
|----------|--------------------------------------------|-----------|------------------------------------------------|----------|----------|-----------|----------------------------------------------------------|
| 1        | LINE, FUEL - FLEXIBLE (Select As Required) |           | RETURN - ENGINE TO TANK                        | 5        | 415-0170 | 1         | Switch, Fuel Level                                       |
|          | 501-0248                                   | 1         | 36" Lg, 3/4-16 SAE 45 DEG Female Swivel End    | 6        | 159-0020 | 1         | Cap, Fuel Tank                                           |
|          | 501-0216                                   | 1         | 42" Lg, 3/4-16 SAE 45 DEG Female Swivel End    | 7        | 821-0023 | 4         | Screw, Self-locking - Hex Washer Head (5/16-18 x 1-1/2") |
|          | 501-0211                                   | 1         | 65" Lg, 3/4-16 SAE 45 DEG Female Swivel End    | 8        | 870-0048 | 4         | Nut, Self-locking - Hex (5/16-18)                        |
| 2        | LINE, FUEL - FLEXIBLE (Select As Required) |           | IN - TANK TO ENGINE                            | 9        | 415-0110 | 2         | Strap, Hold-down                                         |
|          | 501-0332                                   | 1         | 30" Lg, 1-1/16-14 SAE 45 DEG Female Swivel End | 10       | 415-0172 | 1         | Tank, Fuel (25 Gals)                                     |
|          | 501-0285                                   | 1         | 36" Lg, 1-1/16-14 SAE 45 DEG Female Swivel End | 11       | 821-0013 | 4         | Screw, Self-locking - Hex Washer Head (1/4-20 x 1")      |
|          | 501-0217                                   | 1         | 52" Lg, 1-1/16-14 SAE 45 DEG Female Swivel End | 12       | 870-0065 | 4         | Nut, Self-locking - Hex (1/4-20)                         |
| 3        | 505-0056                                   | 4         | Plug, Pipe - Square Head (1/2" NPT)            | 13       | 159-1067 | 2         | Brace                                                    |
| 4        | 505-0110                                   | 1         | Plug, Pipe - Square Head (3/8" NPT)            | 14       | 159-1057 | 1         | Support, Channel                                         |
|          |                                            |           |                                                | 15       | 800-0051 | 4         | Screw, Cap - Hex Head (3/8-16 x 1-1/4")                  |
|          |                                            |           |                                                | 16       | 870-0138 | 4         | Nut, Self-locking - Hex (3/8-16)                         |
|          |                                            |           |                                                | 17       | 159-1058 | 1         | Plate, Mounting - Fuel Tank                              |

**OPTIONAL  
FUEL TANK RESERVOIR  
(OVERHEAD/UNDERGROUND APPLICATION)**



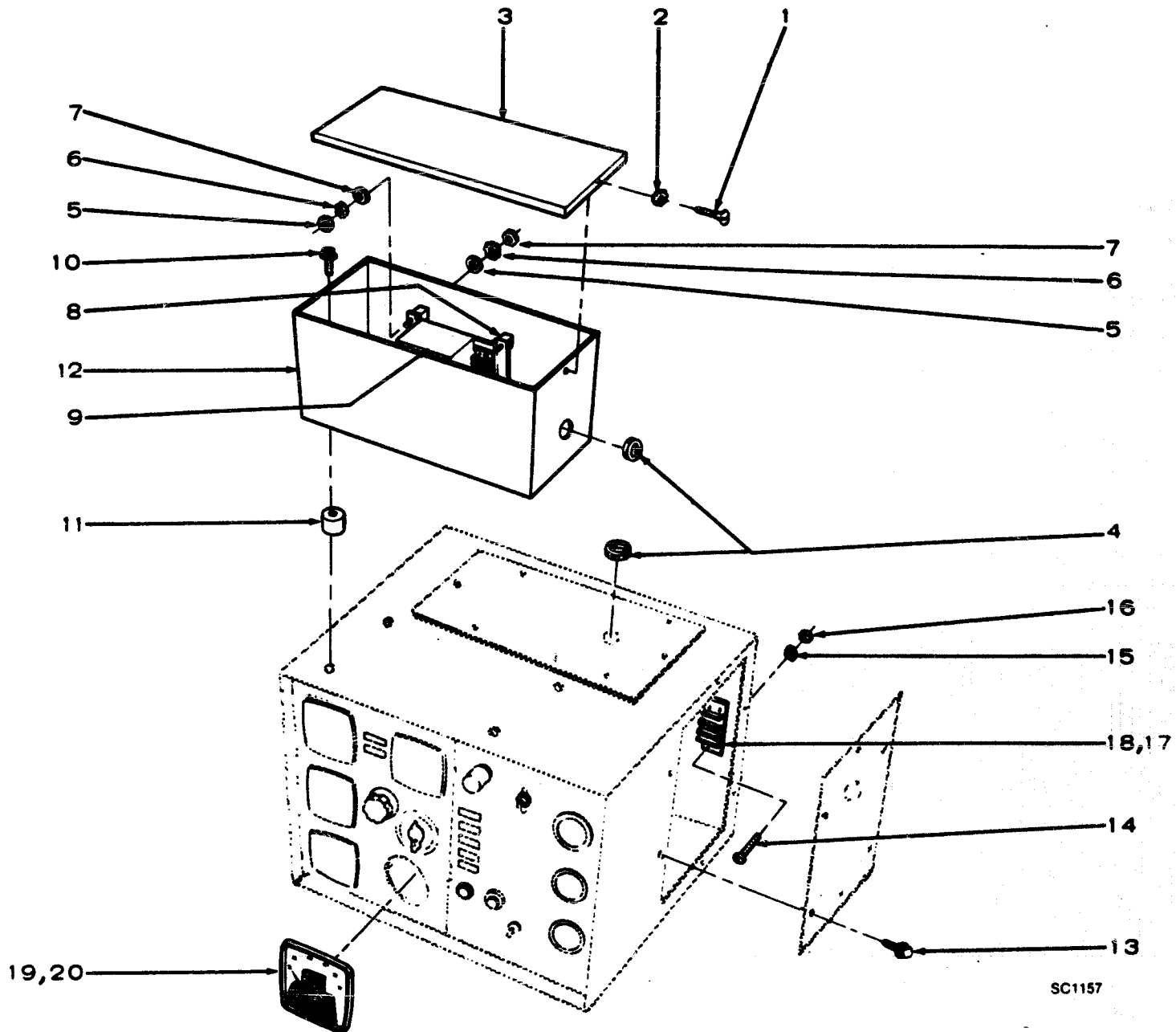
XFS1354

# OPTIONAL FUEL TANK RESERVOIR (OVERHEAD/UNDERGROUND APPLICATION)

| REF. NO.                                                 | PART NO.                                   | QTY. USED | PART DESCRIPTION                               | REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION                                         |
|----------------------------------------------------------|--------------------------------------------|-----------|------------------------------------------------|----------|----------|-----------|----------------------------------------------------------|
| FUEL TANK RESERVOIRS (All Parts Common Except As Marked) |                                            |           |                                                | 12       | 800-0002 | 8         | Screw, Cap - Hex Head (1/4-20 x 3/8")                    |
|                                                          |                                            | 1         | Underground Supply Tank Applications           | 13       | 526-0063 | 8         | Washer, Flat - Copper (17/64" ID x 7/16" OD x 1/32" Thk) |
|                                                          |                                            | 1         | Overhead Supply Tank Applications              | 14       | 415-0486 | 1         | Gasket - Access Plate                                    |
| 1                                                        | LINE, FUEL - FLEXIBLE (Select As Required) |           |                                                | 15       | 309-0407 | 1         | £Valve, Float                                            |
|                                                          |                                            |           | RETURN - ENGINE TO TANK                        | 16       | 821-0023 | 4         | Screw, Self-locking - Hex Washer Head (5/16-18 x 1-1/2") |
|                                                          | 501-0248                                   | 1         | 36" Lg, 3/4-16 SAE 45 DEG Female Swivel End    | 17       | 870-0048 | 4         | Nut, Self-locking - Hex Washer Head (5/16-18)            |
|                                                          | 501-0216                                   | 1         | 42" Lg, 3/4-16 SAE 45 DEG Female Swivel End    | 18       | 415-0110 | 2         | Strap, Retaining - Fuel Tank                             |
|                                                          | 501-0211                                   | 1         | 65" Lg, 3/4-16 SAE 45 DEG Female Swivel End    | 19       | 415-0482 | 1         | Tank, Fuel - 25 Gals (Includes Access Cover Plate)       |
| 2                                                        | LINE, FUEL - FLEXIBLE (Select As Required) |           |                                                | 20       | 415-0513 | 1         | Plate, Cover - Access                                    |
|                                                          |                                            |           | IN - TANK TO ENGINE                            | 21       | 821-0004 | 2         | Screw, Self-locking - Hex Washer Head (#10-32 x 5/16")   |
|                                                          | 501-0332                                   | 1         | 30" Lg, 1-1/6-14 SAE 45 DEG Female Swivel End  | 22       | 415-0464 | 1         | Cover, Access - Relay                                    |
|                                                          | 501-0285                                   | 1         | 36" Lg, 1-1/16-14 SAE 45 DEG Female Swivel End | 23       | 307-1056 | 1         | Relay - 24 VDC                                           |
|                                                          | 501-0217                                   | 1         | 52" Lg, 1-1/16-14 SAE 45 DEG Female Swivel End | 24       | 812-0079 | 2         | Screw, Machine - Round Head (#8-32 x 1/2")               |
| 3                                                        | 502-0133                                   | 1         | Elbow, Pipe - Street, 90 DEG (1/2" NPT)        | 25       | 323-0804 | 1         | Socket, Relay                                            |
| 4                                                        | 505-0130                                   | 1         | Plug, Pipe - Square Head (3/4" NPT)            | 26       | 821-0008 | 2         | Screw, Self-locking - Hex Washer Head (1/4-20 x 5/16")   |
| 5                                                        | 505-0110                                   | 1         | Plug, Pipe - Square Head (3/8" NPT)            | 27       | 415-0463 | 1         | Box, Control - Relay                                     |
| 6                                                        | 505-0056                                   | 1         | Plug, Pipe - Square Head (1/2" NPT)            | 28       | 821-0013 | 4         | Screw, Self-locking - Hex Washer Head (1/4-20 x 1")      |
| 7                                                        | 415-0485                                   | 1         | Switch, Float - Liquid Level                   | 29       | 870-0065 | 4         | Nut, Self-locking - Hex Washer Head (1/4-20)             |
| 8                                                        | 159-0020                                   | 1         | Cap, Fuel Tank                                 | 30       | 159-1059 | 2         | Brace, Support - Fuel Tank                               |
| 9                                                        | 505-0056                                   | 1         | †Plug, Pipe - Square Head (1/2" NPT)           | 31       | 870-0048 | 8         | Nut, Self-locking - Hex Washer Head (5/16-18)            |
| 10                                                       | 307-1861                                   | 1         | £Solenoid - 24 VDC (1/2" NPT)                  | 32       | 402-0485 | 4         | Mount, Vibration                                         |
| 11                                                       | 505-0100                                   | 1         | £Nipple, Pipe - Close (1/2" NPT x 1-1/8" Lg)   | 33       | 415-0483 | 1         | Plate, Mounting - Fuel Tank                              |
|                                                          |                                            |           |                                                | 34       | 800-0051 | 4         | Screw, Cap - Hex Head (3/18-16 x 1-1/4")                 |
|                                                          |                                            |           |                                                | 35       | 870-0138 | 4         | Nut, Self-locking - Hex Washer Head (3/18-16)            |
|                                                          |                                            |           |                                                | 36       | 159-1057 | 1         | Frame, Support - Fuel Tank                               |

† - Parts used only in Underground Supply Tank Applications.  
£ - Parts used only in Overhead Supply Tank Applications.

# OPTIONAL WATTMETER

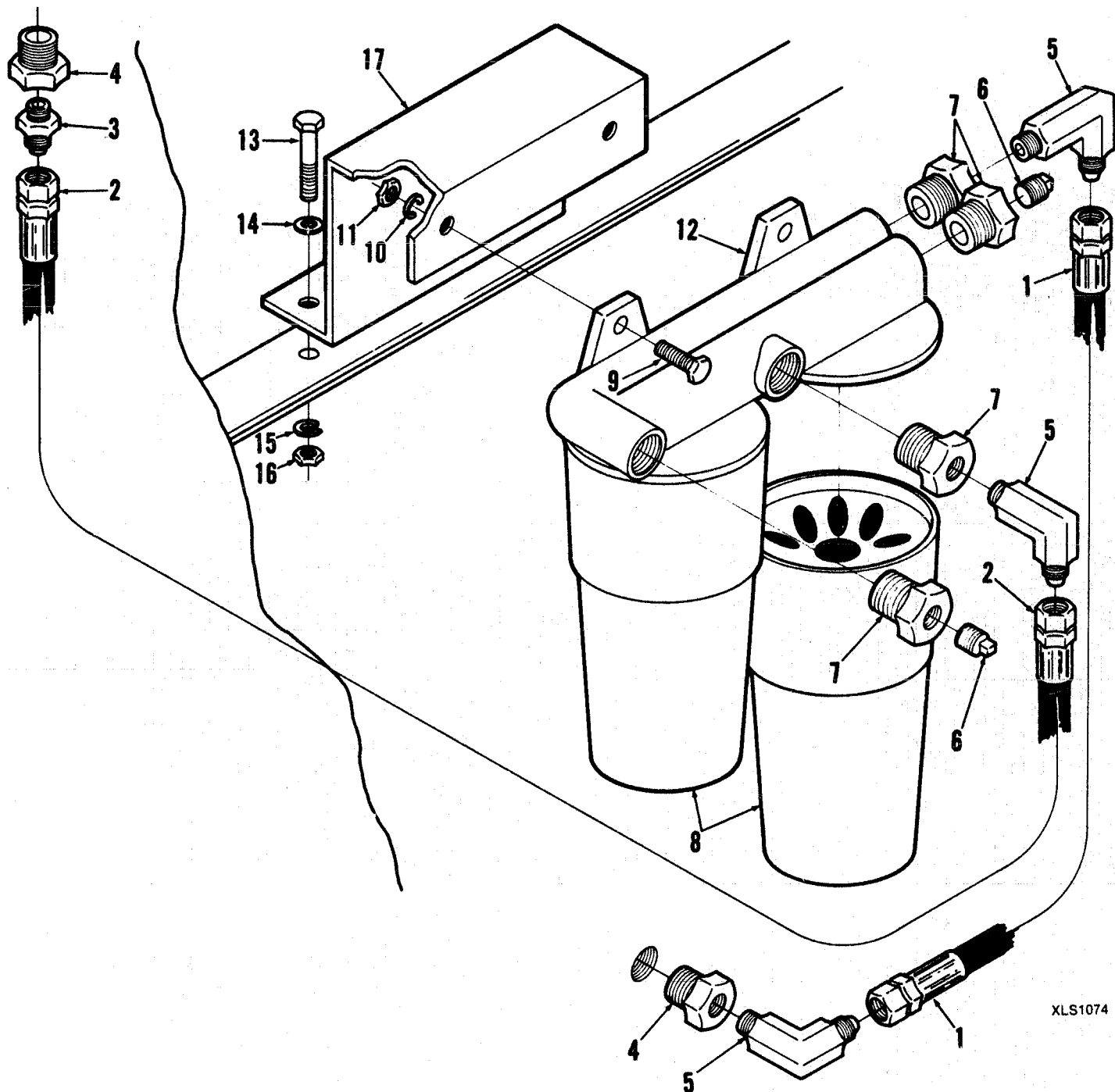


SC1157

| REF. NO. | PART NO.                        | QTY. USED | PART DESCRIPTION                                       |
|----------|---------------------------------|-----------|--------------------------------------------------------|
| 1        | 815-0026                        | 2         | Screw, Machine - Truss Head (#10-32 x 3/8")            |
| 2        | 853-0008                        | 2         | Washer, Lock - External Tooth (#10)                    |
| 3        | 301-3476                        | 1         | Cover - Transducer Box                                 |
| 4        | 508-0001                        | 2         | Grommet, Rubber (1-1/6" OD)                            |
| 5        | 860-0008                        | 8         | Nut, Hex (#8-32)                                       |
| 6        | 853-0005                        | 8         | Washer, Lock - External Tooth (#8)                     |
| 7        | 526-0003                        | 8         | Washer, Flat (11/64" ID x 3/8" OD x 1/32" Thk)         |
| 8        | 402-0354                        | 4         | Mount, Vibration                                       |
| 9        | TRANSDUCER (Select as Required) |           |                                                        |
|          | 302-1082                        | 1         | 60 Hertz                                               |
|          | 302-1083                        | 1         | 50 Hertz                                               |
| 10       | 821-0014                        | 8         | Screw, Self-locking - Hex Washer Head (5/16-18 x 1/2") |
| 11       | 402-0070                        | 4         | Mount, Vibration                                       |
| 12       | 301-3477                        | 1         | Box, Transducer                                        |
| 13       | 815-0350                        | 6         | Screw, Tapping - Hex Washer Head (#10-32 x 3/8")       |
| 14       | 812-0063                        | 4         | Screw, Machine - Round Head (#6-32 x 1/2")             |

| REF. NO. | PART NO.                             | QTY. USED | PART DESCRIPTION                   |
|----------|--------------------------------------|-----------|------------------------------------|
| 15       | 853-0003                             | 4         | Washer, Lock - External Tooth (#6) |
| 16       | 860-0006                             | 4         | Nut, Hex (#6-32)                   |
| 17       | 332-0609                             | 1         | Terminal, Strip                    |
| 18       | 332-0610                             | 1         | Marker, Strip                      |
| 19       | 302-1102                             | 1         | Wattmeter (Less Replaceable Dial)  |
| 20       | DIAL, WATTMETER (Select as Required) |           |                                    |
|          | 302-1103                             | 1         | Scale 0-35 kW                      |
|          | 302-1104                             | 1         | Scale 0-50 kW                      |
|          | 302-1105                             | 1         | Scale 0-70 kW                      |
|          | 302-1106                             | 1         | Scale 0-90 kW                      |
|          | 302-1107                             | 1         | Scale 0-115 kW                     |
|          | 302-1108                             | 1         | Scale 0-160 kW                     |
|          | 302-1109                             | 1         | Scale 0-180 kW                     |
|          | 302-1110                             | 1         | Scale 0-200 kW                     |
|          | 302-1115                             | 1         | Scale 0-250 kW                     |
|          | 302-1116                             | 1         | Scale 0-300 kW                     |
|          | 302-1117                             | 1         | Scale 0-350 kW                     |
|          | 302-1118                             | 1         | Scale 0-400 kW                     |
|          | 302-1119                             | 1         | Scale 0-450 kW                     |
|          | 302-1120                             | 1         | Scale 0-550 kW                     |
|          | 302-1121                             | 1         | Scale 0-650 kW                     |
|          | 302-1122                             | 1         | Scale 0-750 kW                     |

# **OPTIONAL FILTER - LUBE OIL**

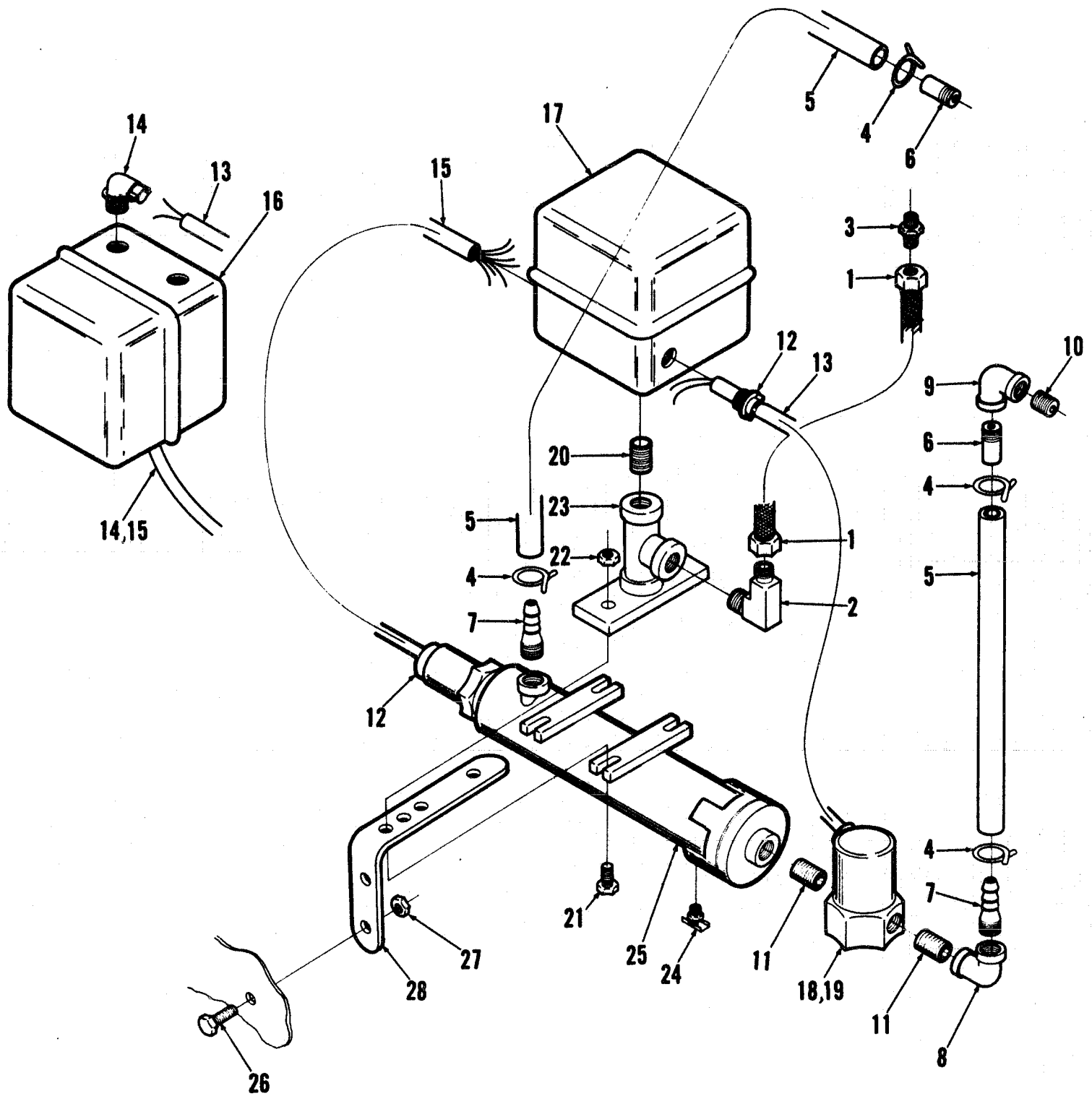


| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION                             |
|----------|----------|-----------|----------------------------------------------|
| 1        | 501-0380 | 1         | Line, Fuel - Flexible                        |
| 2        | 501-0382 | 1         | Line, Fuel - Flexible                        |
| 3        | 502-0682 | 1         | Nipple, Hex - Line to Pipe Adapter           |
| 4        | 505-0021 | 2         | Bushing, Reducer - Hex (3/4" NPT x 1/2" NPT) |
| 5        | 502-0599 | 3         | Elbow, Adapter - 90 DEG, Pipe to Line        |
| 6        | 505-0056 | 2         | Plug, Pipe - Square Head (1/2" NPT)          |
| 7        | 502-0701 | 4         | Bushing, Reducer - Hex (7/8-14 x 1/2" NPT)   |

| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION                                |
|----------|----------|-----------|-------------------------------------------------|
| 8        | 122-0526 | 2         | Element, Filter                                 |
| 9        | 800-0075 | 2         | Screw, Cap - Hex Head (7/16-14 x 2")            |
| 10       | 850-0055 | 2         | Washer, Lock - Spring (7/16")                   |
| 11       | 862-0004 | 2         | Nut, Hex (7/16-14)                              |
| 12       | 122-0525 | 1         | Head, Filter                                    |
| 13       | 800-0132 | 2         | Screw, Cap - Hex Head (5/8-11 x 1-1/2")         |
| 14       | 526-0033 | 2         | Washer, Flat (41/64" ID x 1-1/4" OD x 1/8" Thk) |
| 15       | 850-0070 | 2         | Washer, Lock - Spring (5/8")                    |
| 16       | 862-0007 | 2         | Nut, Hex (5/8-11)                               |
| 17       | 122-0545 | 1         | Bracket, Mounting - Lube Filter                 |



# **OPTIONAL ENGINE COOLANT HEATER**



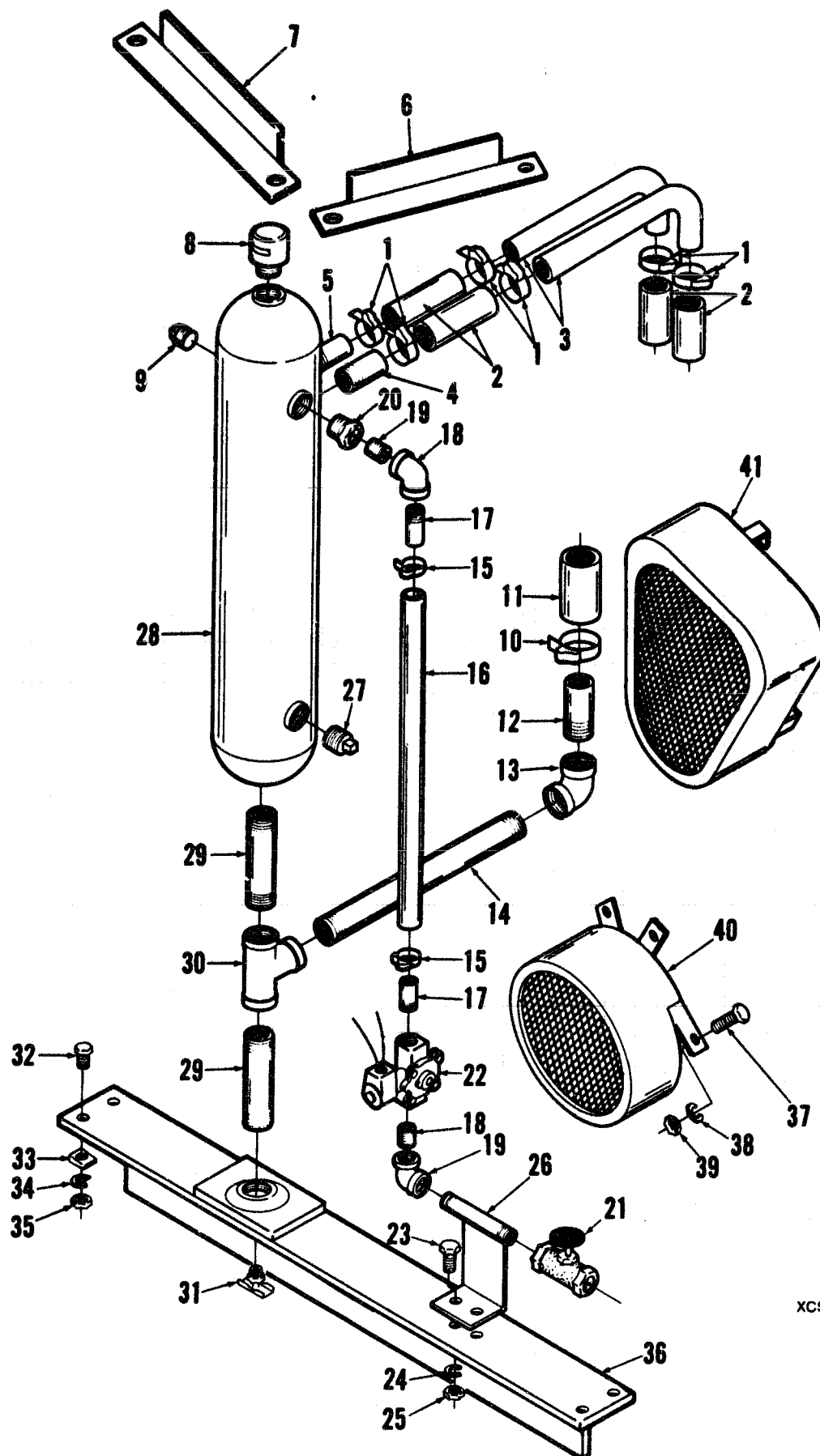
XCS1153

## OPTIONAL ENGINE COOLANT HEATER

| REF.<br>NO.           | PART<br>NO.                           | QTY.<br>USED | PART<br>DESCRIPTION                                   |
|-----------------------|---------------------------------------|--------------|-------------------------------------------------------|
| ENGINE COOLANT HEATER |                                       |              |                                                       |
|                       |                                       | 1            | 208 Volt, 1 Phase                                     |
|                       |                                       | 1            | 208 Volt, 3 Phase                                     |
|                       |                                       | 1            | 240 Volt, 1 Phase                                     |
|                       |                                       | 1            | 240 Volt, 3 Phase                                     |
|                       |                                       | 1            | 277 Volt, 1 Phase                                     |
|                       |                                       | 1            | 380 Volt, 1 Phase                                     |
|                       |                                       | 1            | 380 Volt, 3 Phase                                     |
|                       |                                       | 1            | 440/480 Volt, 1 Phase                                 |
|                       |                                       | 1            | 440/480 Volt, 3 Phase                                 |
| 1                     | 501-0199                              | 1            | Line, Fuel - Flexible                                 |
| 2                     | 502-0287                              | 1            | Elbow, Adapter - 90 DEG (Line To Pipe                 |
| 3                     | 502-0193                              | 1            | Adapter, Hex - Line To Pipe                           |
| 4                     | 503-0429                              | 4            | Clamp, Hose                                           |
| 5                     | HOSE, RUBBER - 1" ID x 1-3/8" OD      |              |                                                       |
|                       | 503-0798                              | 1            | 45" Lg                                                |
|                       | 503-0847                              | 1            | 30" Lg                                                |
| 6                     | 505-0324                              | 2            | Nipple, Pipe-Half (3/4" NPT x 2" Lg)                  |
| 7                     | 505-0759                              | 2            | Adapter - Pipe To Hose                                |
| 8                     | 505-0041                              | 1            | Elbow, Pipe - 90 DEG (1" NPT)                         |
| 9                     | 505-0132                              | 1            | Elbow, Pipe - 90 DEG (3/4" NPT)                       |
| 10                    | 505-0102                              | 1            | Nipple, Pipe - Close (3/4" NPT x 1-3/8" Lg)           |
| 11                    | 505-0004                              | 2            | Nipple, Pipe - Close (1" NPT x 1-1/2" Lg)             |
| 12                    | 331-0027                              | 4            | Connector, Romex                                      |
| 13                    | 335-0122                              | 1            | Cable, Electrical (2-#14, Type S0, 600 Volt)          |
| 14                    | 331-0027                              | 2            | Connector, Romex (Used With Electrical Contactor Box) |
| 15                    | CABLE, ELECTRICAL (Type S0, 600 Volt) |              |                                                       |
|                       | 335-0150                              | 1            | 3-#12 Wires (Single Phase Heaters)                    |
|                       | 335-0118                              | 1            | 4-#14 Wires (Three Phase Heaters)                     |

| REF.<br>NO. | PART<br>NO.                                                                           | QTY.<br>USED | PART<br>DESCRIPTION                                    |
|-------------|---------------------------------------------------------------------------------------|--------------|--------------------------------------------------------|
| 16          | CONTACTOR, ELECTRICAL                                                                 |              |                                                        |
|             | 307-1460                                                                              | 1            | 230 VAC, 3 Pole                                        |
|             | 307-1164                                                                              | 1            | 460 VAC, 3 Pole                                        |
| 17          | 309-0307                                                                              | 1            | Switch, Pressure                                       |
| 18          | 309-0304                                                                              | 1            | Switch, Thermostatic                                   |
| 19          | TERMINALS                                                                             |              |                                                        |
|             | 323-0957                                                                              | 2            | Nut, Wire - Used On Ground Lead                        |
|             | 332-0149                                                                              | 6            | Lug, Terminal - Used On White Leads                    |
| 20          | 505-0099                                                                              | 1            | Nipple, Pipe - Close (1/4" NPT x 7/8")                 |
| 21          | 800-0008                                                                              | 4            | Screw, Cap - Hex Head (1/4-20 x 1-1/4")                |
| 22          | 870-0212                                                                              | 4            | Nut, Self-locking - Hex (1/4-20)                       |
| 23          | 333-0142                                                                              | 1            | Support With Tee - Pressure Switch Mounting            |
| 24          | 504-0003                                                                              | 1            | Cock, Drain (1/4" NPT)                                 |
| 25          | HEATER, ELECTRICAL - ENGINE COOLANT (Select as Applicable to Match Voltage and Phase) |              |                                                        |
|             | 333-0143                                                                              | 1            | 4000 Watt, 208 VAC, 1 Phase                            |
|             | 333-0164                                                                              | 1            | 4000 Watt, 208 VAC, 3 Phase                            |
|             | 333-0138                                                                              | 1            | 4000 Watt, 240 VAC, 1 Phase                            |
|             | 333-0190                                                                              | 1            | 4000 Watt, 240 VAC, 3 Phase                            |
|             | 333-0150                                                                              | 1            | 4000 Watt, 277 VAC, 1 Phase                            |
|             | 333-0183                                                                              | 1            | 4000 Watt, 380 VAC, 1 Phase                            |
|             | 333-0174                                                                              | 1            | 4000 Watt, 380 VAC, 3 Phase                            |
|             | 333-0161                                                                              | 1            | 4000 Watt, 440/480 VAC, 1 Phase                        |
|             | 333-0144                                                                              | 1            | 4000 Watt, 440/480 VAC, 3 Phase                        |
| 26          | 821-0016                                                                              | 4            | Screw, Self-locking - Hex Washer Head (5/16-18 x 3/4") |
| 27          | 870-0257                                                                              | 4            | Nut, Hex (5/16-18)                                     |
| 28          | 130-1192                                                                              | 2            | Bracket, Mounting - Heater                             |

# **OPTIONAL COOLING SYSTEM WITH STANDPIPE**



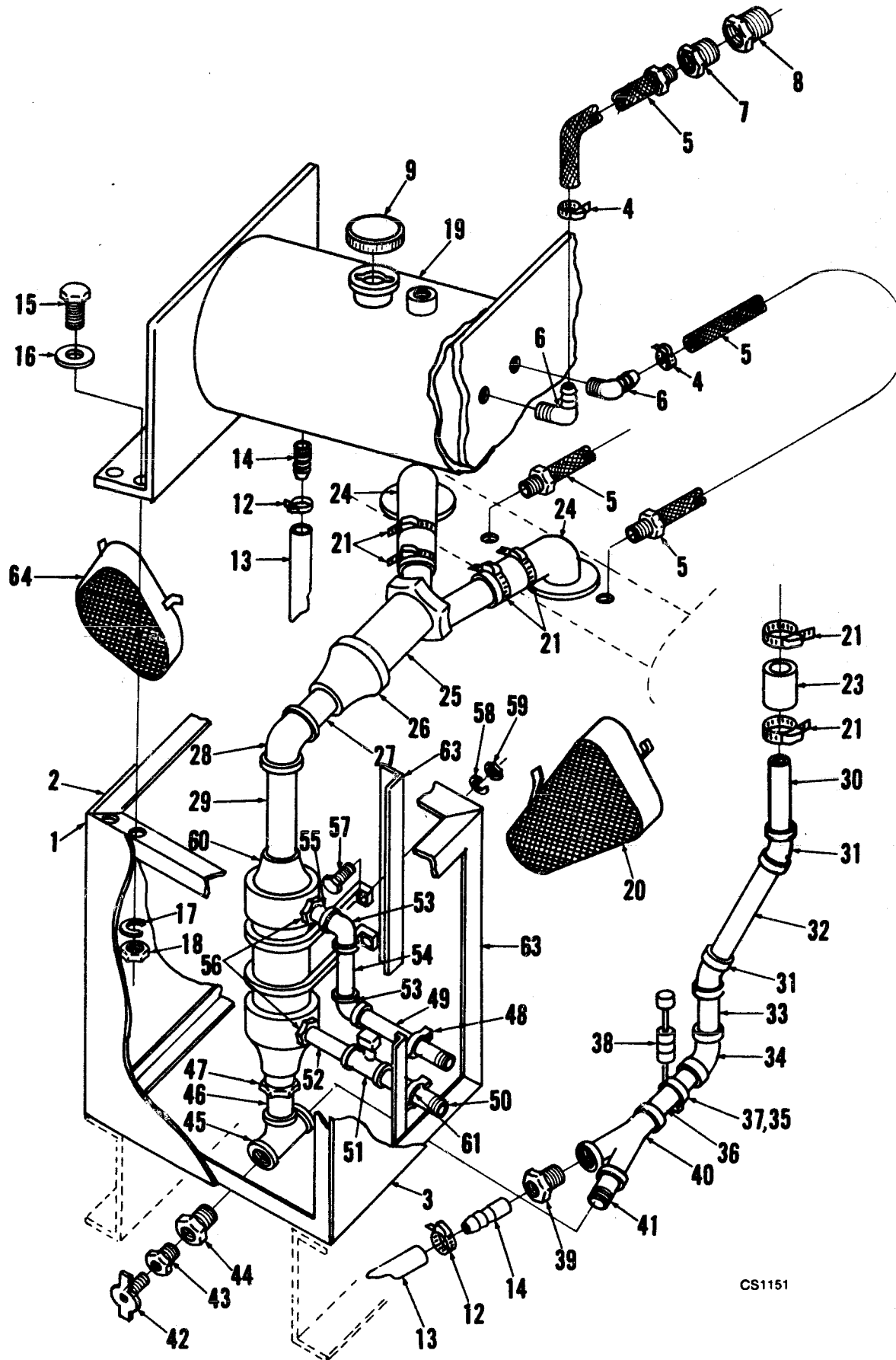
XCS1152

# **OPTIONAL COOLING SYSTEM WITH STANDPIPE**

| REF.<br>NO.                          | PART<br>NO. | QTY.<br>USED | PART<br>DESCRIPTION                                  |
|--------------------------------------|-------------|--------------|------------------------------------------------------|
| 1                                    | 503-0648    | 8            | Clamp, Hose                                          |
| 2                                    | 503-0788    | 4            | Hose, Rubber (3" ID x 3-1/4" OD<br>x 4-1/2" Lg)      |
| 3                                    | 130-1687    | 2            | Tube, Coolant - Preformed                            |
| 4                                    | 505-1046    | 1            | Nipple, Pipe - Half<br>(2-1/2" NPT x 6" Lg)          |
| 5                                    | 505-0178    | 1            | Nipple, Pipe - Half<br>(2-1/2" NPT x 4" Lg)          |
| 6                                    | 130-1688    | 1            | Brace, Standpipe - RH                                |
| 7                                    | 130-1689    | 1            | Brace, Standpipe - LH                                |
| ATTACHING PARTS FOR STANDPIPE BRACES |             |              |                                                      |
|                                      | 800-0028    | 2            | Screw, Cap - Hex Head<br>(5/16-18 x 1")              |
|                                      | 850-0045    | 2            | Washer, Lock - Spring (5/16")                        |
|                                      | 862-1015    | 2            | Nut, Hex - CAD Plate (5/16-18)                       |
|                                      |             |              | -----                                                |
| 8                                    | 504-0062    | 1            | Valve, Vacuum Relief                                 |
| 9                                    | 505-0334    | 1            | Plug, Pipe - Square Head<br>(2" NPT)                 |
| 10                                   | 503-0612    | 2            | Clamp, Hose                                          |
| 11                                   | 503-1114    | 1            | Hose, Rubber (3-1/2" ID x<br>3-3/4" OD x 10" Lg)     |
| 12                                   | 505-1047    | 1            | Nipple, Pipe - Half<br>(3" NPT x 7" Lg)              |
| 13                                   | 505-0453    | 1            | Elbow, Pipe - 90 DEG (3" NPT)                        |
| 14                                   | 505-1045    | 1            | Nipple, Pipe (3" NPT x 33" Lg)                       |
| 15                                   | 503-0365    | 2            | Clamp, Hose                                          |
| 16                                   | 503-1018    | 1            | Hose, Rubber (1-1/2" ID x 1-3/4"<br>OD x 44-1/2" Lg) |
| 17                                   | 505-0437    | 2            | Nipple, Pipe - Half (1-1/4" NPT<br>x 4" Lg)          |
| 18                                   | 505-0042    | 2            | Elbow, Pipe - 90 DEG<br>(1-1/4" NPT)                 |

| REF.<br>NO. | PART<br>NO. | QTY.<br>USED | PART<br>DESCRIPTION                             |
|-------------|-------------|--------------|-------------------------------------------------|
| 19          | 505-0258    | 2            | Nipple, Pipe (1-1/4" NPT x<br>3" Lg)            |
| 20          | 505-0270    | 1            | Bushing, Reducer - Hex<br>(2" NPT x 1-1/4" NPT) |
| 21          | 504-0051    | 1            | Valve, Globe (1-1/4" NPT)                       |
| 22          | 307-0839    | 1            | Valve, Control - Solenoid<br>(1-1/4" NPT)       |
| 23          | 800-0006    | 2            | Screw, Cap - Hex Head<br>(1/4-20 x 7/8")        |
| 24          | 850-0040    | 2            | Washer, Lock - Spring (1/4")                    |
| 25          | 862-0001    | 2            | Nut, Hex (1/4-20)                               |
| 26          | 110-1168    | 1            | Assembly, Nipple and Bracket                    |
| 27          | 505-0949    | 1            | Plug, Pipe - Socket Drive<br>(1-1/4" NPT)       |
| 28          | 130-1690    | 1            | Tank, Standpipe                                 |
| 29          | 505-0679    | 2            | Nipple, Pipe (3" NPT x 12" Lg)                  |
| 30          | 505-0669    | 1            | Tee, Pipe (3" NPT)                              |
| 31          | 504-0006    | 1            | Cock, Drain - Long Stem<br>(1/8" NPT)           |
| 32          | 800-0156    | 4            | Screw, Cap - Hex Head<br>(3/4-10 x 2-1/2")      |
| 33          | 403-1141    | 4            | Washer, Square - Bevel                          |
| 34          | 850-0079    | 4            | Washer, Lock - Spring (3/4")                    |
| 35          | 862-0008    | 4            | Nut, Hex (3/4-10)                               |
| 36          | 130-1640    | 1            | Support, Standpipe                              |
| 37          | 800-0016    | 2            | Screw, Cap - Hex Head<br>(3/8-16 x 1-1/4")      |
| 38          | 850-0051    | 2            | Washer, Lock - Spring (3/8")                    |
| 39          | 862-1003    | 2            | Nut, Hex - CAD Plate (3/8-16)                   |
| 40          | 130-1182    | 1            | Guard, Belt - Engine Dampener                   |
| 41          | 130-1373    | 1            | Guard, Belt - Air Compressor                    |

# **OPTIONAL COOLING SYSTEM WITH HEAT EXCHANGER**



CS1151

# **OPTIONAL COOLING SYSTEM WITH HEAT EXCHANGER**

| REF. NO.                               | PART NO. | QTY. USED | PART DESCRIPTION                                                     |
|----------------------------------------|----------|-----------|----------------------------------------------------------------------|
| 1                                      | 130-1507 | 1         | Panel, Front                                                         |
| 2                                      | 130-1506 | 1         | Panel, Side - LH                                                     |
| 3                                      | 130-1508 | 1         | Panel, Side - RH                                                     |
| <b>ATTACHING PARTS FOR PANELS</b>      |          |           |                                                                      |
|                                        | 815-0351 | 54        | Screw, Tapping - Hex Head<br>(1/4-20 x 3/8")                         |
| 4                                      | 503-0685 | 4         | Clamp, Hose                                                          |
| 5                                      | 501-0220 | 4         | Line, Fuel - Flexible                                                |
| 6                                      | 502-0313 | 4         | Elbow, Adapter - Pipe To Hose,<br>90 DEG (1/8 NPT x 1/4" ID<br>Hose) |
| 7                                      | 505-0151 | 2         | Bushing, Reducer - Hex<br>(1/2" NPT x 1/8" NPT)                      |
| 8                                      | 505-0022 | 2         | Bushing, Reducer - Hex<br>(1" NPT x 1/2" NPT)                        |
| 9                                      | 130-0449 | 1         | Cap, Radiator                                                        |
| 10                                     | 501-0089 | 1         | Line, Fuel - Flexible                                                |
| 11                                     | 502-0041 | 1         | Elbow Pipe - 90 DEG<br>(1/4" NPT x 1/4" Flared Tube)                 |
| 12                                     | 503-0398 | 2         | Clamp, Hose                                                          |
| 13                                     | 503-0860 | 1         | Hose, Rubber (1" ID x<br>1-3/8" OD x 75" Lg)                         |
| 14                                     | 505-0759 | 2         | Adapter - Pipe To Hose (1" NPT)                                      |
| 15                                     | 800-0051 | 6         | Screw, Cap - Hex Head<br>(3/8-16 x 1-1/4")                           |
| 16                                     | 526-0013 | 6         | Washer, Flat (25/64" ID x 1" OD<br>x 1/16" Thk)                      |
| 17                                     | 850-0050 | 6         | Washer, Lock - Spring (3/8")                                         |
| 18                                     | 862-0003 | 6         | Nut, Hex (3/8-16)                                                    |
| 19                                     | 130-1515 | 1         | Tank, Expansion - Engine<br>Coolant                                  |
| 20                                     | 130-1373 | 1         | Guard, Belt - Compressor Drive                                       |
| 21                                     | 503-0612 | 6         | Clamp, Hose                                                          |
| 22                                     | 503-0788 | 2         | Hose, Rubber (3" ID x 3-1/4" OD<br>x 4-1/2" Lg)                      |
| 23                                     | 503-0856 | 1         | Hose, Rubber (3-1/2" ID x<br>3-3/4" OD x 4-1/2" Lg)                  |
| 24                                     | 130-1908 | 2         | Housing, Outlet - Engine Coolant                                     |
| 25                                     | 130-1441 | 1         | Manifold, Coolant - Heat<br>Exchanger System                         |
| 26                                     | 505-0448 | 1         | Coupling, Pipe - Reducer<br>(5" NPT x 4" NPT)                        |
| 27                                     | 505-0164 | 1         | Nipple, Pipe (4" NPT x 2-7/8" Lg)                                    |
| 28                                     | 505-0171 | 1         | Elbow, Pipe - 90 DEG (4" NPT)                                        |
| 29                                     | 505-0962 | 1         | Nipple, Pipe (4" NPT x<br>13-1/2" Lg)                                |
| 30                                     | 505-0957 | 1         | Nipple, Pipe - Half<br>(3" NPT x 13" Lg)                             |
| 31                                     | 505-0605 | 2         | Elbow, Pipe - 45 DEG (3" NPT)                                        |
| 32                                     | 505-0958 | 1         | Nipple, Pipe (3" NPT x<br>10-3/4" Lg)                                |
| 33                                     | 505-0660 | 1         | Nipple, Pipe (3" NPT x 3-1/2" Lg)                                    |
| 34                                     | 505-0453 | 1         | Elbow, Pipe - 90 DEG (3" NPT)                                        |
| <b>HARDWARE USED WITH PIPE HANGER</b>  |          |           |                                                                      |
|                                        | 800-0028 | 1         | Screw, Cap - Hex Head<br>(5/16-18 x 1")                              |
|                                        | 850-0045 | 1         | Washer, Lock - Spring (5/16")                                        |
|                                        | 862-1015 | 1         | Nut, Hex - CAD Plate (5/16-18)                                       |
| 36                                     | 505-0603 | 1         | Nipple, Pipe (3" NPT x 8" Lg)                                        |
| 37                                     | 331-0198 | 1         | Hanger, Pipe (3")                                                    |
| <b>ATTACHING PARTS FOR PIPE HANGER</b> |          |           |                                                                      |
|                                        | 800-0043 | 1         | Screw, Cap - Hex Head<br>(5/16-18 x 5")                              |
|                                        | 850-0045 | 1         | Washer, Lock - Spring (5/16")                                        |
|                                        | 862-1015 | 1         | Nut, Hex - CAD Plate (5/16-18)                                       |

| REF. NO.                               | PART NO.                            | QTY. USED | PART DESCRIPTION                                |
|----------------------------------------|-------------------------------------|-----------|-------------------------------------------------|
| 38                                     | <b>SPACERS (Select As Required)</b> |           |                                                 |
|                                        | 526-0186                            | 4         | 29/64" ID x 1" OD x 1/8" Thk                    |
|                                        | 232-2693                            | 4         | 3/8" ID x 3/4" OD x 1/2" Thk                    |
| 39                                     | 505-0955                            | 1         | Bushing, Reducer - Hex<br>(3" NPT x 1" NPT)     |
| 40                                     | 505-0956                            | 1         | Tee - Y, Pipe (3" NPT)                          |
| 41                                     | 505-0328                            | 1         | Nipple, Pipe (3" NPT x 6" Lg)                   |
| 42                                     | 504-0080                            | 1         | Cock, Drain (3/8" NPT)                          |
| 43                                     | 505-0131                            | 1         | Bushing, Reducer - Hex<br>(3/4" NPT x 3/8" NPT) |
| 44                                     | 505-0812                            | 1         | Bushing, Reducer - Hex<br>(3" NPT x 3/4" NPT)   |
| 45                                     | 505-0669                            | 1         | Tee, Pipe (3" NPT)                              |
| 46                                     | 505-0382                            | 1         | Nipple, Pipe (3" NPT x<br>2-5/8" Lg)            |
| 47                                     | 505-0412                            | 1         | Bushing, Reducer - Hex<br>(4" NPT x 3" NPT)     |
| <b>HARDWARE USED WITH PIPE HANGERS</b> |                                     |           |                                                 |
|                                        | 800-0028                            | 2         | Screw, Cap - Hex Head<br>(5/16-18 x 1")         |
|                                        | 850-0045                            | 2         | Washer, Lock - Spring (5/16")                   |
|                                        | 862-1015                            | 2         | Nut, Hex - CAD Plate (5/16-18)                  |
| 49                                     | 505-0403                            | 1         | Nipple, Pipe (2" NPT x 10" Lg)                  |
| 50                                     | 505-0379                            | 1         | Nipple, Pipe (2" NPT x 7" Lg)                   |
| 51                                     | 307-0844                            | 1         | Valve, Control - Solenoid                       |
| 52                                     | 505-0173                            | 1         | Nipple, Pipe (2" NPT x 4" Lg)                   |
| 53                                     | 505-0175                            | 2         | Elbow, Pipe - 90 DEG (2" NPT)                   |
| 54                                     | 505-0432                            | 1         | Nipple, Pipe (2" NPT x<br>13-1/2" Lg)           |
| 55                                     | 505-0172                            | 1         | Nipple, Pipe (2" NPT x 2" Lg)                   |
| 56                                     | 505-0738                            | 2         | Bushing, Reducer - Hex<br>(3" NPT x 2" NPT)     |
| 57                                     | 800-0092                            | 4         | Screw, Cap - Hex Head<br>(1/2-13 x 1-1/2")      |
| 58                                     | 850-0060                            | 4         | Washer, Lock - Spring (1/2")                    |
| 59                                     | 862-0005                            | 4         | Nut, Hex (1/2-13)                               |
| 60                                     | 130-1432                            | 1         | Heat Exchanger                                  |
| 61                                     | 331-0197                            | 2         | Hanger, Pipe (2")                               |
| <b>ATTACHING PARTS FOR HANGERS</b>     |                                     |           |                                                 |
|                                        | 800-0009                            | 2         | Screw, Cap - Hex Head<br>(1/4-20 x 1-1/2")      |
|                                        | 850-0040                            | 2         | Washer, Lock - Spring (1/4")                    |
|                                        | 862-0001                            | 2         | Nut, Hex (1/4-20)                               |
| 62                                     | 130-1692                            | 1         | Bracket, Support - Pipe Hangers                 |
| <b>ATTACHING PARTS FOR BRACKET</b>     |                                     |           |                                                 |
|                                        | 800-0028                            | 2         | Screw, Cap - Hex Head<br>(5/16-18 x 1")         |
|                                        | 850-0045                            | 2         | Washer, Lock - Spring (5/16)                    |
|                                        | 862-1015                            | 2         | Nut, Hex - CAD Plate (5/16-18)                  |
| 63                                     | 130-1509                            | 1         | Frame - Heat Exchanger<br>Mounting              |
| <b>ATTACHING PARTS FOR FRAME</b>       |                                     |           |                                                 |
|                                        | 800-0094                            | 5         | Screw, Cap - Hex Head<br>(1/2-13 x 2")          |
|                                        | 526-0278                            | 5         | Washer, Bevel (1/2" ID)                         |
|                                        | 850-0060                            | 5         | Washer, Lock - Spring (1/2")                    |
|                                        | 862-0005                            | 5         | Nut, Hex (1/2-13)                               |
| 64                                     | 130-1212                            | 1         | Guard, Belt - Alternator Drive                  |

960-1008 (8-79).  
SUPPLEMENTARY PARTS LIST

This Supplementary Parts List applies to the standard LDFW models as listed below. Use these parts in place of/or in addition to those listed in main Parts Catalog 960-0227 and Supplementary Parts List 960-1014.

SET DATA TABLE

| MODEL AND<br>SPEC NO. | ELECTRICAL DATA |         |       |       |      |
|-----------------------|-----------------|---------|-------|-------|------|
|                       | WATTS           | VOLTS   | PHASE | HERTZ | WIRE |
| 345.OLDFW-522R/*      | 345,000         | 240/416 | 3     | 50    | 4    |
| 410.OLDFW-4XR/*       | 410,000         | 277/480 | 3     | 60    | 4    |

\* - The Specification letter advances (A to B, B to C, etc.) with manufacturing changes.

REPLACEMENT ENGINE

100-1585

1

Engine, Replacement

# MISCELLANEOUS ENGINE PARTS

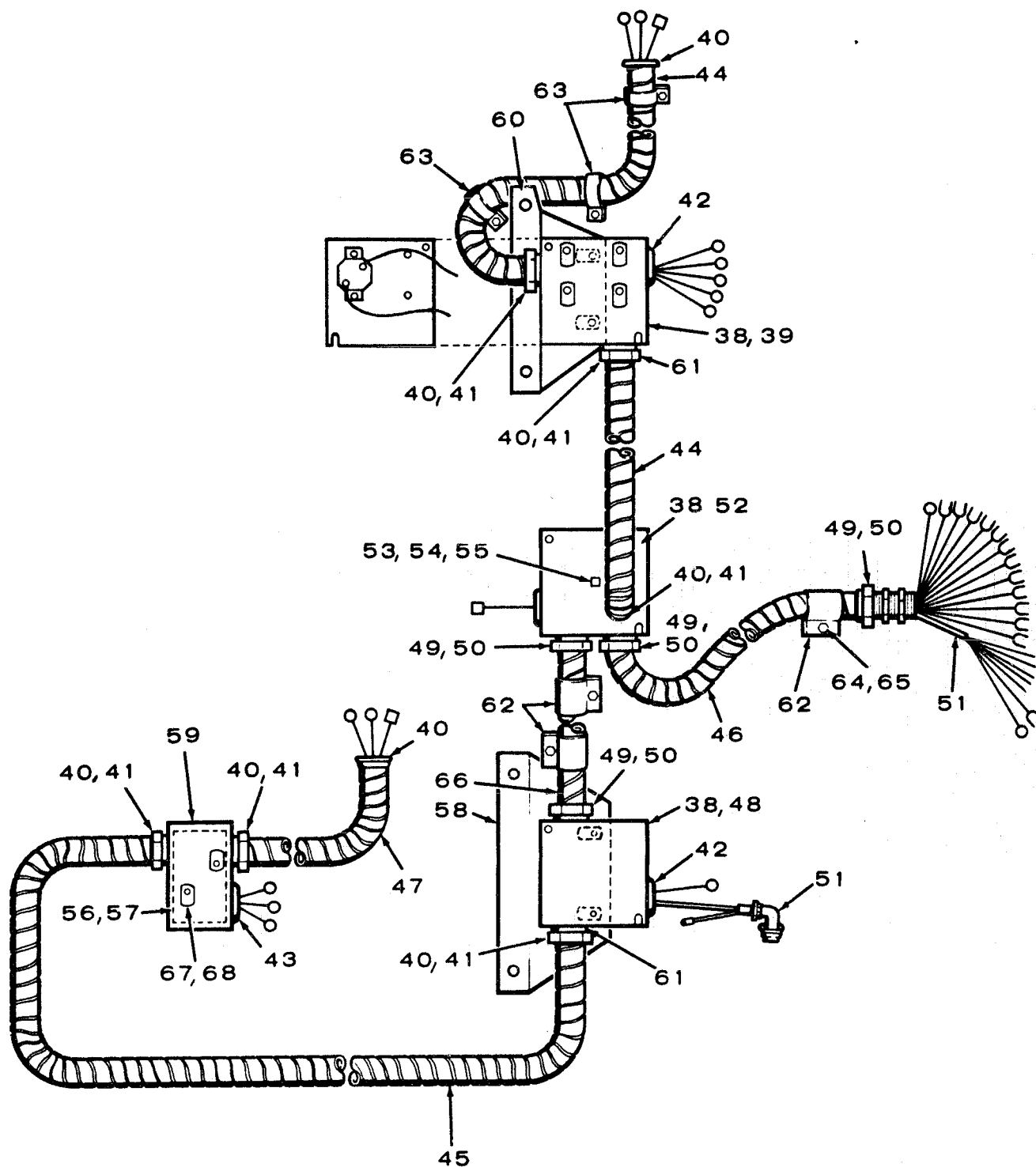
| <u>REF. NO.</u> | <u>PART NO.</u> | <u>QTY. USED</u> | <u>PART DESCRIPTION</u>                                 |
|-----------------|-----------------|------------------|---------------------------------------------------------|
| 15              | 505-0185        | 1                | Nipple, Half                                            |
| 35              | 501-0216        | 1                | Line, Fuel Flex (Fuel Outlet)                           |
| 36              | 338-1167        | 1                | Harness, Engine Wiring<br>(Includes Parts Marked *)     |
| 37              | 416-0632        | 1                | Cable Assy, Starter                                     |
| 38              | 330-0093        | 3                | *Box, Handi (Outlet) 4 x 4                              |
| 39              | 330-0105        | 1                | *Cover, Outlet Box                                      |
| 40              | 508-0201        | 8                | *Bushing                                                |
| 41              | 331-0149        | 6                | *Connector                                              |
| 42              | 508-0009        | 2                | *Grommet                                                |
| 43              | 508-0001        | 1                | *Grommet                                                |
| 44              | 331-0176        | 2                | *Conduit, Flex                                          |
| 45              | 331-0163        | 1                | *Conduit, Flex                                          |
| 46              | 331-0167        | 1                | *Conduit, Flex                                          |
| 47              | 331-0155        | 1                | *Conduit, Flex                                          |
| 48              | 330-0096        | 1                | *Cover, Outlet Box                                      |
| 49              | 331-0150        | 4                | *Connector                                              |
| 50              | 508-0202        | 4                | *Bushing                                                |
| 51              | 338-1141        | 1                | *Harness, Governor Wiring                               |
| 52              | 330-0096        | 1                | *Cover, Outlet Box                                      |
| 53              | 870-0196        | 1                | *Nut, Insulator                                         |
| 54              | 508-0015        | 1                | *Washer,                                                |
| 55              | 809-0035        | 1                | *Screw, Sheet Metal - Roundhead<br>(#8-32 x 3/4" 1g)    |
| 56              | 330-0094        | 1                | *Box, Handi (2 x 4)                                     |
| 57              | 330-0004        | 1                | *Cover                                                  |
| 58              | 301-4713        | 1                | *Bracket, Box Mtg.                                      |
| 59              | 301-4716        | 1                | *Bracket, Box Mtg.                                      |
| 60              | 301-4715        | 1                | *Bracket, Box Mtg.                                      |
| 61              | 331-0153        | 4                | *Washer, Reducing                                       |
| 62              | 331-0181        | 3                | *Strap, Half                                            |
| 63              | 331-0180        | 3                | *Strap, Half                                            |
| 64              | 821-0010        | 1                | *Screw, Cap - Locking Head<br>(1/4-20 x 1/2" 1g)        |
| 65              | 870-0212        | 1                | *Nut, Hex - Self Locking (1/4-20)                       |
| 66              | 331-0165        | 1                | *Conduit, Flex                                          |
| 67              | 813-0098        | 6                | *Screw, Machine - Roundhead<br>(#10-32 x 3/8" 1g)       |
| 68              | 853-0008        | 6                | *Washer, Lock - External (#10)                          |
|                 | 151-0423        | 1                | +Actuator, Governor (B.C.#11003-0-0-24)                 |
|                 | 151-0399        | 1                | +Control (Includes Mtg Screw)<br>(B.C.#DYN1 1000-20-24) |
|                 | 151-0441        | 1                | +Lever, Actuator (B.C.#DYNC-208)                        |
|                 | 151-0442        | 1                | +Rod, Threaded (B.C.#GYRF-43-1)                         |
|                 | 151-0443        | 2                | +Bearing, Rod End (B.C.#DYNZ-47-2)                      |
|                 | 151-0411        | 1                | +Pick up, Magnetic (B.C.#DYNT 10200)                    |
|                 |                 | 1                | +Bracket, Actuator Mtg (B.C.#DYNZ-68)                   |

+ - Check for Barber-Colman numbers when ordering parts.

\* - Parts Included in 338-1167 Wiring Harness Assembly.



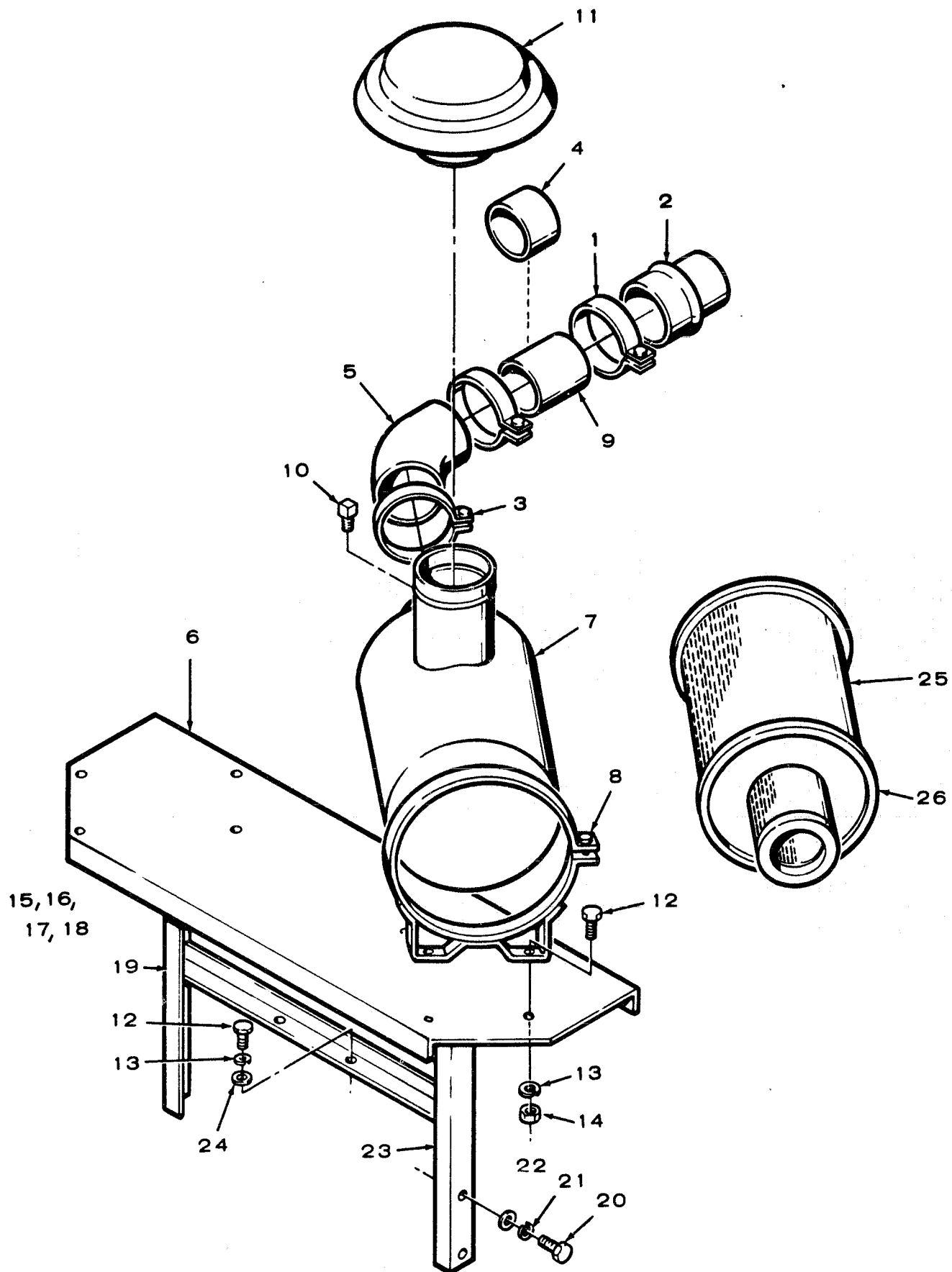
# MISCELLANEOUS ENGINE PARTS



# AIR CLEANER PARTS

| <u>REF. NO.</u> | <u>PART NO.</u> | <u>QTY. USED</u> | <u>PART DESCRIPTION</u>                            |
|-----------------|-----------------|------------------|----------------------------------------------------|
| 1               | 503-0863        | 2                | Clamp, Hose                                        |
| 2               | 503-0862        | 2                | Reducer, Tube                                      |
| 3               | 503-0864        | 6                | Clamp, Hose                                        |
| 4               | 140-1597        | 1                | Tube, Air Cleaner                                  |
| 5               | 503-1004        | 2                | Elbow                                              |
| 6               | 140-1595        | 1                | Support, Air Cleaner                               |
| 7               | 140-1537        | 2                | Cleaner, Air (Includes Elements)                   |
| 8               | 140-0757        | 4                | Clamp, Air Cleaner                                 |
| 9               | 140-1598        | 1                | Tube, Air Cleaner                                  |
| 10              | 140-1548        | 2                | Indicator, Service                                 |
| 11              | 140-1545        | 2                | Hood, Air Inlet                                    |
| 12              | 800-0071        | 10               | Screw, Cap - Hex Head (7/16-14 x 1" lg)            |
| 13              | 850-0055        | 10               | Washer, Lock - Spring (7/16")                      |
| 14              | 862-0004        | 8                | Nut, Hex (7/16-14)                                 |
| 15              | 800-0028        | 2                | Screw, Cap - Hex Head (5/16-18 x 1" lg)            |
| 16              | 850-0045        | 2                | Washer, Lock - Spring (5/16")                      |
| 17              | 526-0022        | 4                | Washer, Flat                                       |
| 18              | 870-0257        | 2                | Nut, Hex - Self Locking (5/16-18)                  |
| 19              | 140-1590        | 1                | Brace, Air Cleaner                                 |
| 20              | 800-0131        | 2                | Screw, Cap - Hex Head (5/8-11 x 1-1/4" lg)         |
| 21              | 850-0070        | 2                | Washer, Lock - Spring (5/8")                       |
| 22              | 526-0004        | 2                | Washer, Flat (11/16" ID x 3/4" OD x<br>9/64" Thk)  |
| 23              | 140-1591        | 1                | Brace, Air Cleaner                                 |
| 24              | 526-0014        | 2                | Washer, Flat (29/64" ID x 1-1/2" OD x<br>1/8" Thk) |
| 25              | 140-1631        | 1                | Element, Primary                                   |
| 26              | 140-1630        | 1                | Element, Safety                                    |

# AIR CLEANER PARTS



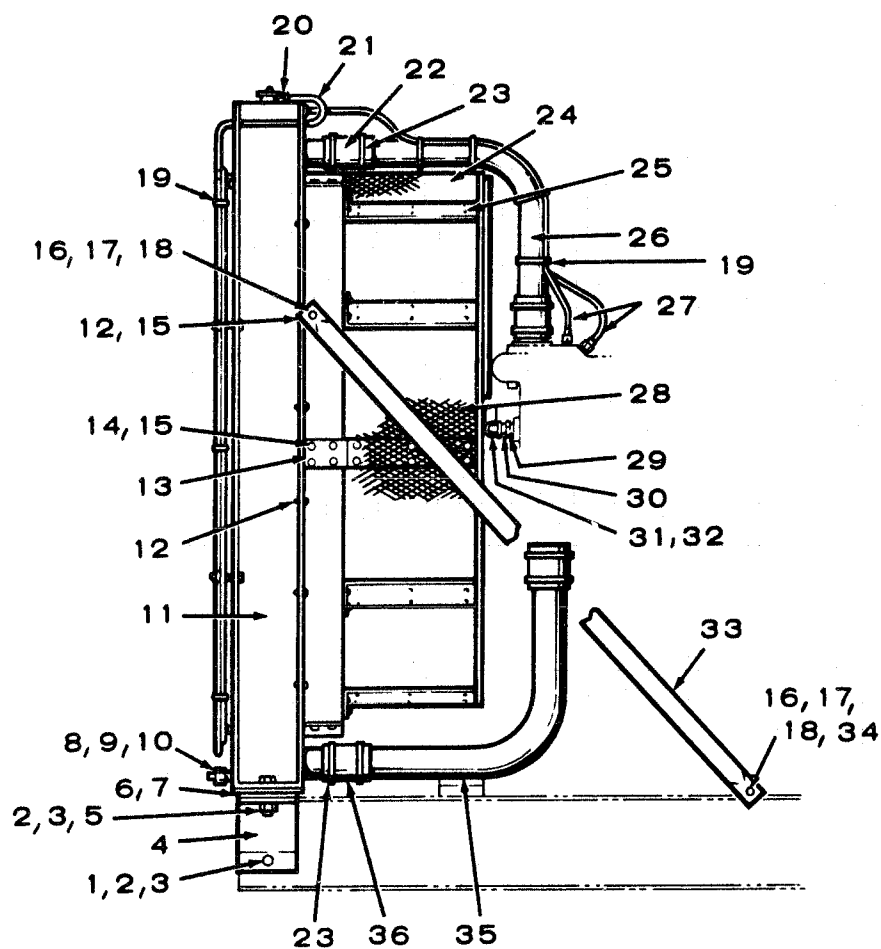
# COOLING SYSTEM

| <u>REF. NO.</u> | <u>PART NO.</u> | <u>QTY. USED</u> | <u>PART DESCRIPTION</u>                              |
|-----------------|-----------------|------------------|------------------------------------------------------|
| 1               | 800-0156        | 2                | Screw, Cap - Hex Head<br>(3/4-10 x 1/4" lg)          |
| 2               | 850-0079        | 6                | Washer, Lock - Spring (3/4")                         |
| 3               | 862-0020        | 6                | Nut, Hex (3/4-10)                                    |
| 4               | 130-1199        | 2                | Support, Radiator                                    |
| 5               | 800-0159        | 4                | Screw, Cap - Hex Head<br>(3/4-10 x 3" lg)            |
| 6               | 130-1198        | 1                | Plate, Radiator Mtg.                                 |
| 7               | 370-0028        | 2                | Plate                                                |
| 8               | 505-0185        | 1                | Nipple, Half                                         |
| 9               | 504-0011        | 1                | Valve, Shut Off                                      |
| 10              | 505-0100        | 1                | Nipple, Close                                        |
| 11              | 130-1237        | 1                | Radiator (Includes Cap)                              |
| 12              | 821-0016        | 12               | Screw, Cap - Locking Head<br>(5/16-18 x 3/4" lg)     |
| 13              | 130-1324        | 2                | Support, Fan Guard                                   |
| 14              | 821-0011        | 108              | Screw, Cap - Locking Head<br>(1/4-20 x 7/8" lg)      |
| 15              | 526-0123        | 104              | Washer, Flat (25/64" ID x 1-1/4" OD x<br>.0598" Thk) |
| 16              | 800-0091        | 6                | Screw, Cap - Hex Head<br>(1/2-13 x 1-1/4" lg)        |
| 17              | 850-0060        | 12               | Washer, Lock - Spring (1/2")                         |
| 18              | 862-0005        | 6                | Nut, Hex (1/2-13)                                    |
| 19              | 332-0941        | 16               | Tie, Cable                                           |
| 20              | 503-0547        | 1                | Clamp, Hose                                          |
| 21              | 503-0803        | 1                | Hose                                                 |
| 22              | 503-0788        | 4                | Hose, Radiator                                       |
| 23              | 503-0621        | 12               | Clamp, Hose                                          |
| 24              | 370-3010        | 1                | Screen                                               |
| 25              | 130-1310        | 8                | Support, Fan Guard                                   |
| 26              | 130-1251        | 2                | Tube, Radiator Inlet                                 |
| 27              | 501-0247        | 2                | Line, Flex Fuel                                      |
| 28              | 370-3009        | 2                | Screen                                               |
| 29              | 505-0297        | 1                | Bushing, Reducer                                     |
| 30              | 505-0102        | 1                | Nipple, Close                                        |
| 31              | 505-0132        | 1                | Elbow, Pipe                                          |
| 32              | 505-0324        | 1                | Nipple, Half                                         |
| 33              | 130-1045        | 2                | Brace, Radiator Support                              |
| 34              | 526-0028        | 2                | Washer, Flat (9/16" ID x 15/16" OD x<br>1/16" Thk)   |
| 35              | 130-1253        | 1                | Tube, Radiator Outlet                                |
| 36              | 503-0856        | 2                | Hose, Radiator                                       |
| 37              | 130-1254        | 2                | Shroud, Fan                                          |
| 38              | 130-1228        | 2                | Bracket, Brace Mtg.                                  |
| 39              | 130-1317        | 1                | Guard, Rear Fan                                      |
| 40              | 130-1326        | 1                | Guard, Lower Fan (LH)                                |
| 41              | 503-0398        | 2                | Clamp, Hose                                          |
| 42              | 502-0041        | 2                | Elbow, Inverted Male                                 |
| 43              | 503-0860        | 1                | Hose                                                 |
| 44              | 130-1247        | 2                | Shroud, Partial Fan                                  |
| 45              | 130-1333        | 2                | Brace, Fan Guard                                     |

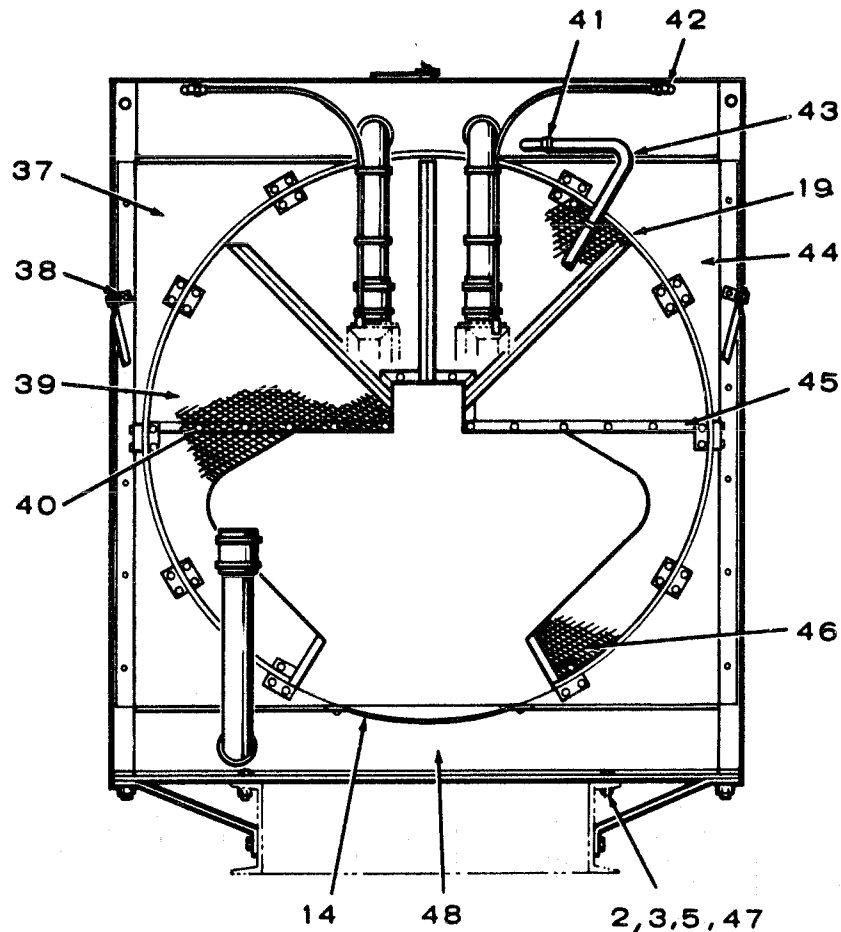
## COOLING SYSTEM (Continued)

| <u>REF. NO.</u> | <u>PART NO.</u> | <u>QTY. USED</u> | <u>PART DESCRIPTION</u>                   |
|-----------------|-----------------|------------------|-------------------------------------------|
| 46              | 130-1325        | 1                | Guard, Lower Fan (RH)                     |
| 47              | 403-1141        | 2                | Washer, Square Bevel                      |
| 48              | 130-1249        | 2                | Bridge, Fan Shroud                        |
| 49              | 800-0094        | 6                | Screw, Cap - Hex Head<br>(1/2-13 x 2" 1g) |

COOLING SYSTEM - SIDE VIEW



# COOLING SYSTEM - FRONT VIEW



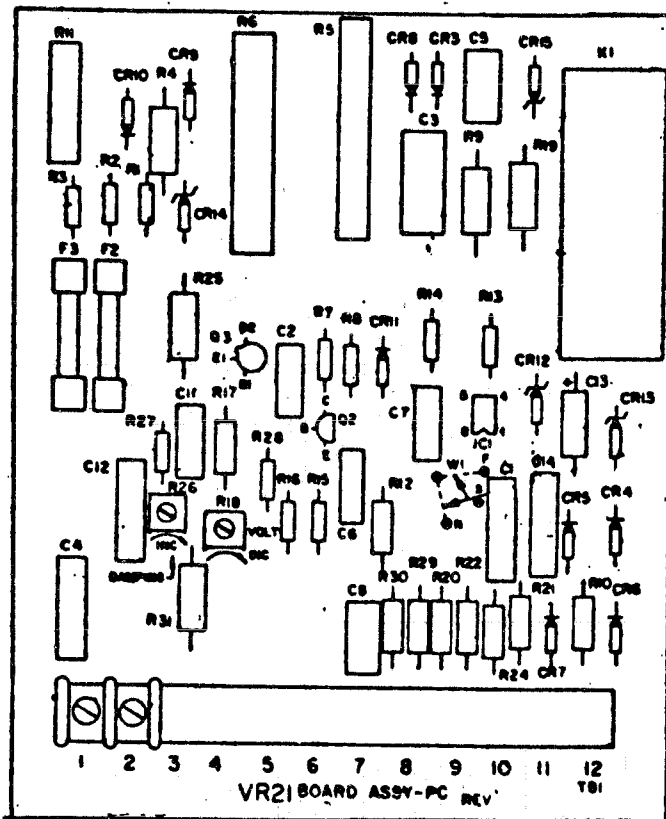
## GENERATOR

| <u>REF. NO.</u> | <u>PART NO.</u> | <u>QTY. USED</u> | <u>PART DESCRIPTION</u>   |
|-----------------|-----------------|------------------|---------------------------|
| 44              | ROTOR, WOUND    |                  |                           |
|                 | 201-1787        | 1                | 522R Sets (240/416 Volts) |
|                 | 201-1786        | 1                | 4XR Sets (277/480 Volts)  |

## CONTROL (AC Portion)

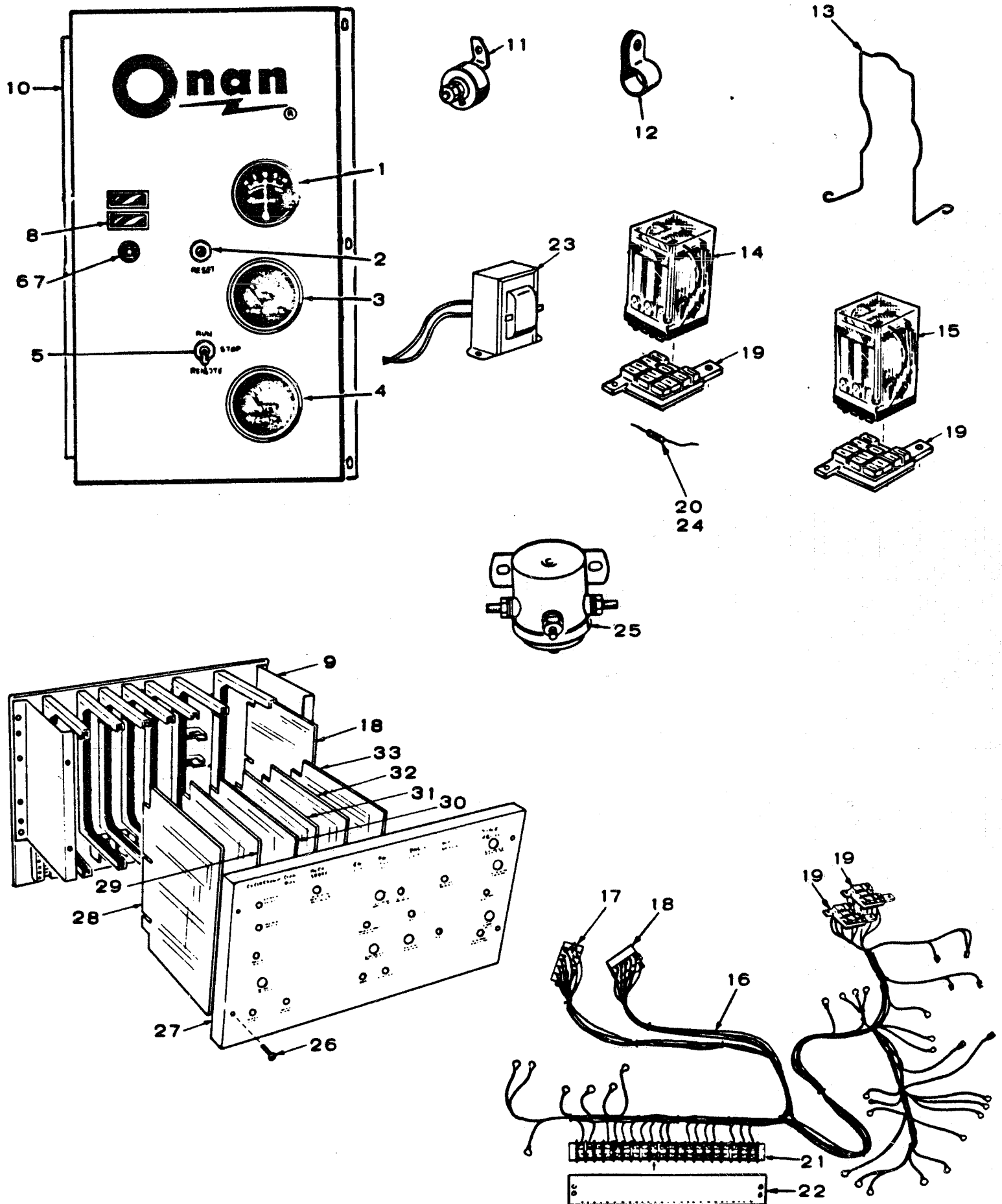
| <u>REF. NO.</u> | <u>PART NO.</u> | <u>QTY. USED</u> | <u>PART DESCRIPTION</u>                                         |
|-----------------|-----------------|------------------|-----------------------------------------------------------------|
| 25              | 332-2030        | 1                | Regulator Board, Voltage (See<br>Separate Group for Components) |
| 28              | 301-4668        | 1                | Box, Control                                                    |
| 29              | 321-0223        | 4                | Fuse, 15 Ampere                                                 |
| 30              | 321-0177        | 1                | Block, Fuse - 3 Pole                                            |
| 31              | 321-0176        | 1                | Block, Fuse - 2 Pole                                            |
| 32              | 338-1104        | 1                | Harness, Wiring                                                 |
| 33              | 151-0402        | 1                | Potentiometer, Governor Adj.                                    |

# VOLTAGE REGULATOR BOARD ASSEMBLY



| REF. NO.       | PART NO. | QTY. USED | PART DESCRIPTION                               |
|----------------|----------|-----------|------------------------------------------------|
|                | 332-1954 | 1         | Printed Circuit Board                          |
| C1,14          | 355-0042 | 2         | Capacitor - 47 Mfd., 250 Volt                  |
| C2,7           | 355-0043 | 2         | Capacitor - .22 Mfd, 250 Volt                  |
| C3             | 355-0047 | 1         | Capacitor - .47 Mfd, 400 Volt                  |
| C4,12          | 355-0044 | 2         | Capacitor - .47 Mfd, 250 Volt                  |
| C5,8           | 355-0046 | 2         | Capacitor - 1 Mfd, 100 Volt                    |
| C6             | 355-0056 | 1         | Capacitor - .33 Mfd, 250 Volt                  |
| C11            | 355-0048 | 1         | Capacitor - .1 Mfd, 400 Volt                   |
| C13            | 356-0039 | 1         | Capacitor - Electrolytic, 100 Mfd, 10 Volt     |
| CR3 thru 11    | 357-0014 | 9         | Rectifier - Silicon                            |
| CR12           | 359-0036 | 1         | Diode, Zener - 5.6 Volt                        |
| CR13           | 359-0025 | 1         | Diode, Zener - 20 Volt                         |
| CR14           | 359-0026 | 1         | Diode, Zener - 18 Volt                         |
| F1,2,3         | 321-0204 | 3         | Fuse - 1.4 Amp                                 |
| IC1            | 367-0005 | 1         | Integrated Circuit                             |
| Q2             | 362-0017 | 1         | Transistor - Silicon (NPN)                     |
| Q3             | 361-0004 | 1         | Transistor - Unijunction                       |
| R1             | 350-0355 | 1         | Resistor - 1/2 Watt, 47-Ohm                    |
| R2,3           | 350-0351 | 2         | Resistor - 1/2 Watt, 33-Ohm                    |
| R4             | 350-1075 | 1         | Resistor - 2 Watt, 4,700,000-Ohm               |
| R5             | 353-0040 | 1         | Resistor, Fixed - 10 Watt, 270-Ohm             |
| R6             | 353-0039 | 1         | Resistor, Fixed - 15 Watt, 5,000-Ohm           |
| R7             | 350-0398 | 1         | Resistor - 1/2 Watt, 3,000-Ohm                 |
| R8,16          | 350-0447 | 2         | Resistor - 1/2 Watt, 330,000-Ohm               |
| R10            | 351-0885 | 1         | Resistor - 1/2 Watt, 51,000-Ohm                |
| R11            | 352-0151 | 1         | Resistor, Fixed - 5 Watt, 15,000-Ohm           |
| R12            | 351-0909 | 1         | Resistor - 1/2 Watt, 90,900-Ohm                |
| R13            | 350-0411 | 1         | Resistor - 1/2 Watt, 10,000-Ohm                |
| R14            | 350-0443 | 1         | Resistor - 1/2 Watt, 220,000-Ohm               |
| R15,27         | 350-0435 | 2         | Resistor - 1/2 Watt, 100,000-Ohm               |
| R17            | 351-0293 | 1         | Resistor - Metal Film - 1/4 Watt, 11,000-Ohm   |
| R18            | 303-0210 | 1         | Potentiometer - 1/2 Watt, 5,000-Ohm            |
| R20,22,29 & 30 | 351-0520 | 4         | Resistor - 1/4 Watt, 28,000-Ohm                |
| R21            | 351-0522 | 1         | Resistor, Metal Film - 1/4 Watt, 5,110,000-Ohm |
| R24            | 351-0523 | 1         | Resistor, Metal Film - 1/4 Watt, 8,870,000-Ohm |
| R25,31         | 350-1011 | 2         | Resistor - 2 Watt, 10,000-Ohm                  |
| R26            | 303-0211 | 1         | Potentiometer - 1/2 Watt, 100,000-Ohm          |
| R28            | 350-0568 | 1         | Resistor - 1/2 Watt                            |
| TB1            | 332-1252 | 1         | Terminal Block                                 |
| CR15           | 359-0015 | 1         | Diode, Zener - 24 Volt                         |
|                | 321-0163 | 6         | Clip - Fuse                                    |
| K1             | 307-1063 | 1         | Relay - Magnetic Reed                          |
| R9             | 350-1014 | 1         | Resistor - 2 Watt, 13,000-Ohm                  |
| R19            | 350-1007 | 1         | Resistor - 2 Watt, 6,800-Ohm                   |

# CONTROL (ENGINE SECTION)





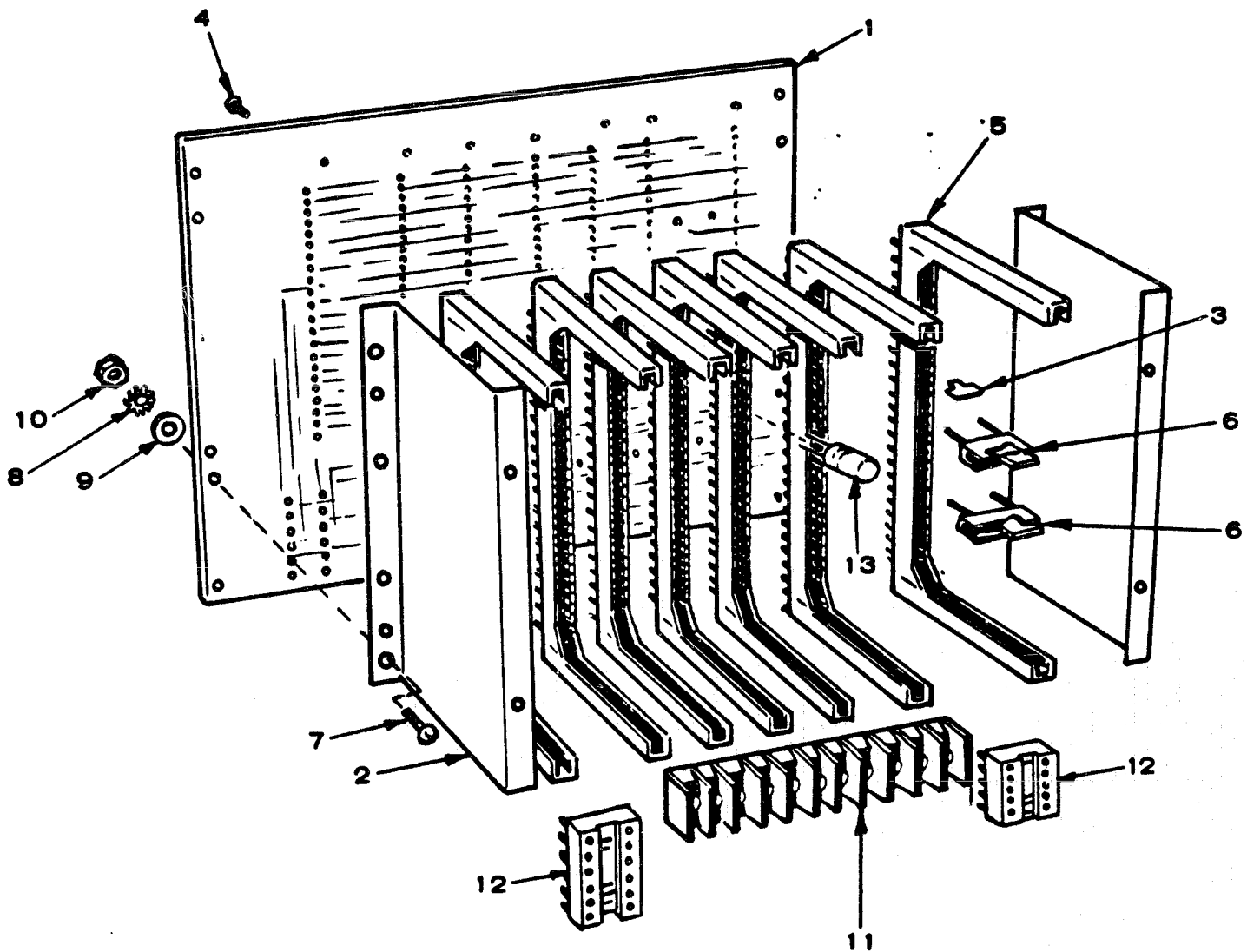
## CONTROL (ENGINE SECTION)

| REF.<br>NO. | PART<br>NO.      | QTY.<br>USED | PART<br>DESCRIPTION                     | REF.<br>NO. | PART<br>NO. | QTY.<br>USED | PART<br>DESCRIPTION                                                  |
|-------------|------------------|--------------|-----------------------------------------|-------------|-------------|--------------|----------------------------------------------------------------------|
| 1           | 302-0061         | 1            | Ammeter (30-0-30)                       | 16          | 338-1016    | 1            | Harness, Wiring (Includes<br>Parts Marked †)                         |
| 2           | 308-0410         | 1            | Switch, Push                            | 17          | 332-0984    | 2            | †Connector, Plug, Electrical<br>(12 Pin)                             |
| 3           | 193-0243         | 1            | Gauge, Oil Pressure (0-80)              | 18          | 300-1579    | 1            | *Module, Time Delay Start-Stop                                       |
| 4           | 193-0245         | 1            | Gauge, Water Temperature                | 19          | 323-0765    | 2            | †Socket, Relay                                                       |
| 5           | SWITCH, TOGGLE   |              |                                         | 20          | 357-0004    | 1            | †Diode                                                               |
|             | 308-0220         | 1            | Standard Sets                           | 21          | 332-1005    | 1            | †Board, Terminal (20 Place)                                          |
|             | 308-0347         | 1            | Penn State Sets                         | 22          | 332-1559    | 1            | Strip, Marker                                                        |
| 6           | 321-0147         | 1            | Fuse - 5 Amp                            | 23          | 315-0361    | 1            | Transformer, Step-down                                               |
| 7           | 321-0217         | 1            | Fuseholder                              | 24          | 357-0004    | 2            | Diode                                                                |
| 8           | LIGHT, INDICATOR |              |                                         | 25          | 307-0061    | 1            | Relay - Start Solenoid                                               |
|             | 322-0119         | 1            | Overcrank                               | 26          | 815-0387    | 4            | Screw, Machine - Pan Head,<br>Cross-Recessed Drive<br>(#6-32 x 1/4") |
|             | 322-0120         | 1            | Low Oil Pressure                        | 27          | 301-4015    | 1            | Cover, Access - Control<br>Modules                                   |
|             | 322-0121         | 1            | High Engine Temperature                 | 28          | 300-1573    | 1            | *Module, Cycle Cranker                                               |
|             | 322-0122         | 1            | Low Engine Temperature                  | 29          | 300-1574    | 1            | *Module, Start-Disconnect                                            |
|             | 322-0123         |              | Overspeed                               | 30          | 300-1575    | 1            | *Module, Overspeed Control                                           |
|             | 322-0135         | 1            | Over Voltage                            | 31          | 300-1576    | 1            | *Module, Monitor No. 1                                               |
| 9           | 300-1572         | 1            | *Chassis, Control                       | 32          | 300-1577    | 1            | *Module, Monitor No. 2                                               |
| 10          | 301-4692         | 1            | Panel, Control                          | 33          | 300-1578    | 1            | *Module, Engine Shutdown                                             |
| 11          | 193-0250         | 2            | Resistor, Gauge                         |             |             |              |                                                                      |
| 12          | 332-0052         | 1            | Clamp, Loop                             |             |             |              |                                                                      |
| 13          | 307-1157         | 2            | Spring, Hold-down - Relay               |             |             |              |                                                                      |
| 14          | 307-1061         | 1            | Relay, Armature - Starter<br>Protection |             |             |              |                                                                      |
| 15          | 307-1056         | 1            | Relay, Armature - Start<br>Disconnect   |             |             |              |                                                                      |

\* - See Separate Group for Components.

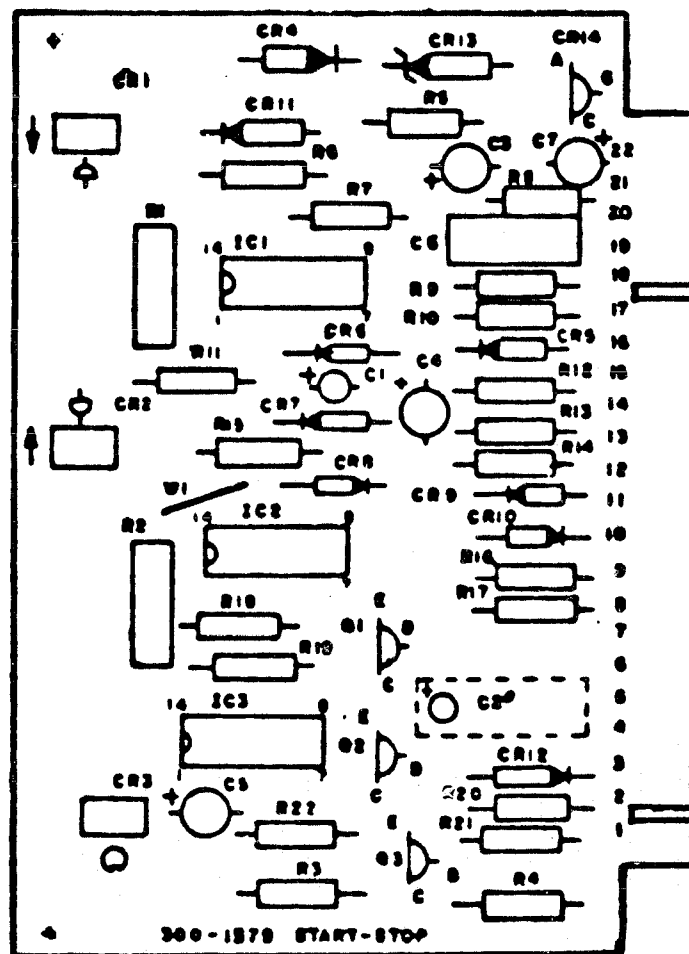
† - Included in Wiring Harness.

# CONTROL CHASSIS



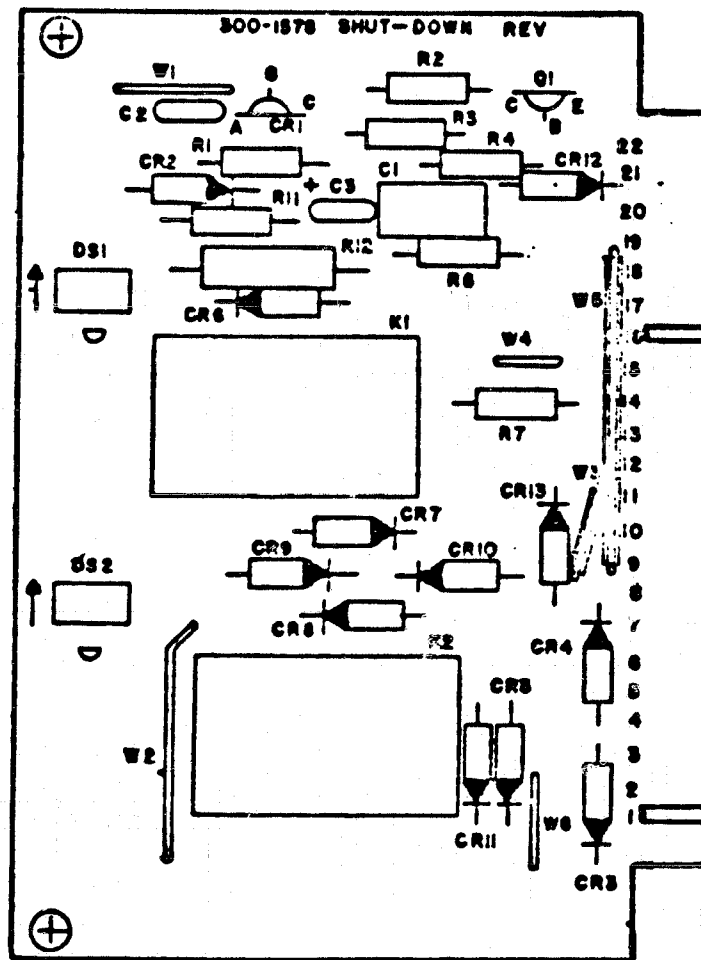
| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION                               |
|----------|----------|-----------|------------------------------------------------|
|          | 300-1572 | 1         | Chassis, Control (Complete)                    |
| 1        | 332-1884 | 1         | Board, Printed Circuit                         |
| 2        | 301-3880 | 2         | Bracket, Module Cover Mtg.                     |
| 3        | 332-1917 | 14        | Plug, Keying                                   |
| 4        | 812-0029 | 14        | Screw, Machine - Roundhead (#4-40 x 3/8" long) |
| 5        | 332-1887 | 7         | Socket Plug In Module                          |
| 6        | 308-0324 | 2         | Switch, Slide                                  |
| 7        | 812-0059 | 4         | Screw, Machine - Roundhead (#6-32 x 1/4" long) |
| 8        | 853-0003 | 4         | Washer, Lock - External (#6)                   |
| 9        | 526-0047 | 4         | Washer, Flat (.147" ID x 5/16" OD x 1/32" Thk) |
| 10       | 860-0006 | 4         | Nut, Hex (#6-32)                               |
| 11       | 332-1909 | 1         | Block, Terminal (11 Place)                     |
| 12       | 323-0983 | 2         | Connector, Receptacle Electrical (12 Pin)      |
| 13       | 356-0068 | 1         | Capacitor, Electrolytic (180 MFD - 40 Volt)    |

# **TIME DELAY START-STOP MODULE (300-1579)**



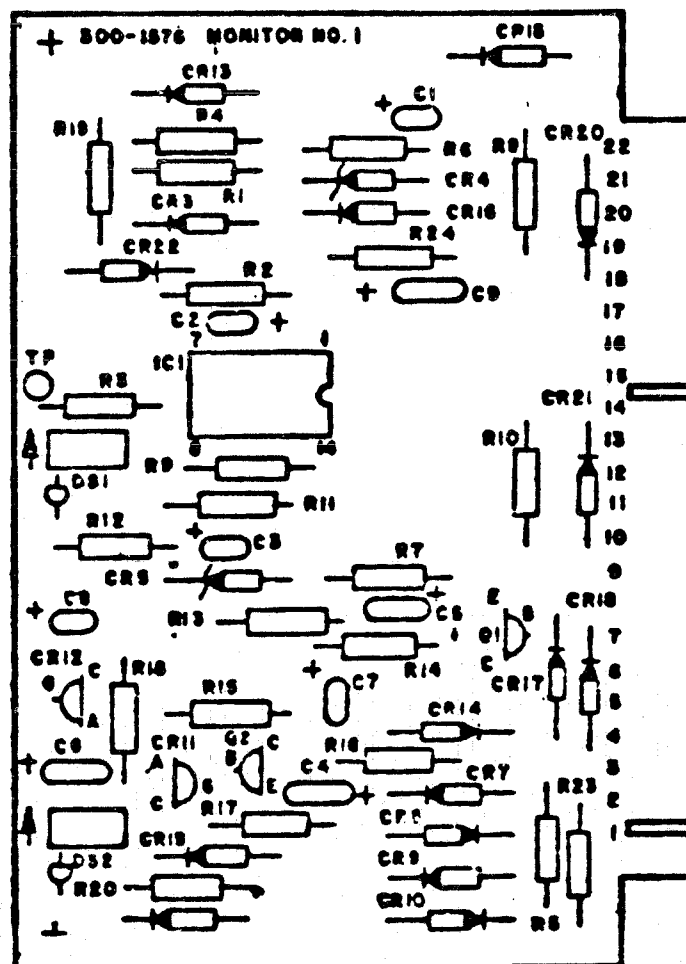
| REF.<br>NO. | PART<br>NO. | QTY.<br>USED | PART<br>DESCRIPTION                            | REF.<br>NO.      | PART<br>NO. | QTY.<br>USED | PART<br>DESCRIPTION                    |
|-------------|-------------|--------------|------------------------------------------------|------------------|-------------|--------------|----------------------------------------|
|             | 300-1579    | 1            | Module, Time Delay<br>Start-Stop (Complete)    | 1C3              | 367-0017    | 1            | Integrated Circuit, Counter<br>7 Stage |
| C1,2        | 356-0059    | 2            | Capacitor, Electrolytic<br>(2.2 Mfd., 35 Volt) | Q1,2,3           | 362-0011    | 3            | Transistor, Signal                     |
| C3,4,5      | 356-0051    | 3            | Capacitor, Electrolytic<br>(6.8 Mfd., 35 Volt) | R1,2             | 303-0169    | 2            | Potentiometer (3.5 Megohm)             |
| C6          | 355-0062    | 1            | Capacitor, Composition<br>(1 Mfd., 100 Volt)   | R3,19            | 350-0418    | 2            | Resistor (20,000-Ohm,<br>2 Watt)       |
| C7          | 356-0053    | 1            | Capacitor, Tantalum<br>(1.0 Mfd., 35 Volt)     | R7               | 350-0370    | 1            | Resistor (200-Ohm, 1/2 Watt)           |
| CR1         | 322-0172    | 1            | Lamp, Indicator (Green)                        | R5,11,<br>15,18  | 350-0548    | 4            | Resistor (10,000-Ohm, 2 Watt)          |
| CR2         | 322-0157    | 1            | Lamp, Indicator (Red)                          | R6               | 350-0373    | 1            | Resistor (470-Ohm, 1/2 Watt)           |
| CR3         | 322-0171    | 1            | Lamp, Indicator (Red-Green)                    | R8               | 350-0505    | 1            | Resistor (2.7-Ohm,<br>1/2 Watt)        |
| CR4-12      | 322-0175    | 3            | Receptacle, Lamp                               | R10,14,<br>16,22 | 350-0394    | 4            | Resistor (2,000-Ohm, 1/2 Watt)         |
|             | 357-0004    | 9            | Rectifier, Diode<br>(400 Volt, 400 MA)         | R12              | 350-0443    | 1            | Resistor (220,000-Ohm, 1/2 Watt)       |
| CR13        | 359-0002    | 1            | Diode, Zener (13 Volt,<br>400 MW)              | R13,17,<br>20,21 | 350-0537    | 4            | Resistor (12,000-Ohm, 2 Watt)          |
| CR14        | 364-0011    | 1            | Rectifier, Gate Control                        | R4               | 350-0376    | 1            | Resistor (360-Ohm, 1/2 Watt)           |
| 1C1,2       | 367-0016    | 2            | Integrated Circuit, Timing                     | R9               | 350-0524    | 1            | Resistor (100-Ohm, 1/2 Watt)           |

# SHUTDOWN MODULE (300-1578)



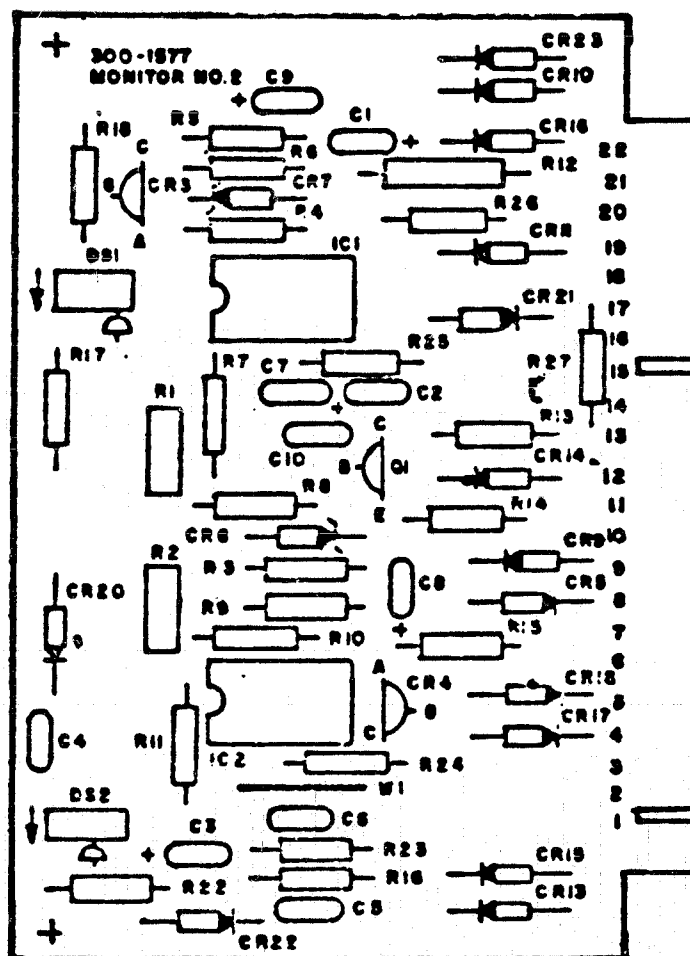
| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION                          |
|----------|----------|-----------|-------------------------------------------|
|          | 300-1578 | 1         | Module, Shut Down (Complete)              |
| C1       | 355-0045 | 1         | Capacitor, Composition (1 Mfd., 200 Volt) |
| DS1      | 322-0175 | 2         | Receptacle, Lamp                          |
| DS2      | 322-0157 | 1         | Lamp, Indicator (Red)                     |
| C2       | 355-0041 | 1         | Capacitor, Ceramic (.22 Mfd., 35 Volt)    |
| C3       | 356-0051 | 1         | Capacitor, Tantalum (6.8 Mfd., 35 Volt)   |
| CR1      | 364-0011 | 1         | Rectifier, Gate Control                   |
| CR2-13   | 357-0004 | 12        | Rectifier, Diode (400 Volt, 400 MA)       |
| K1,2     | 307-1076 | 2         | Relay                                     |
| Q1       | 362-0026 | 1         | Transistor, Signal                        |
| R2       | 350-0398 | 1         | Resistor (3,000-Ohm, 1/2 Watt)            |
| R1       | 350-0505 | 1         | Resistor (2.7-Ohm, 1/2 Watt)              |
| R7       | 350-0533 | 1         | Resistor (560-Ohm, 1/2 Watt)              |
| R3       | 350-0529 | 1         | Resistor (270-Ohm, 1/2 Watt)              |
| R4       | 350-0540 | 1         | Resistor (2,200-Ohm, 1/2 Watt)            |
| R6       | 350-0379 | 1         | Resistor (470-Ohm, 1/2 Watt)              |
| R11,12   | 350-0393 | 2         | Resistor (1,800-Ohm, 1/2 Watt)            |

# MONITOR NUMBER ONE MODULE (300-1576)



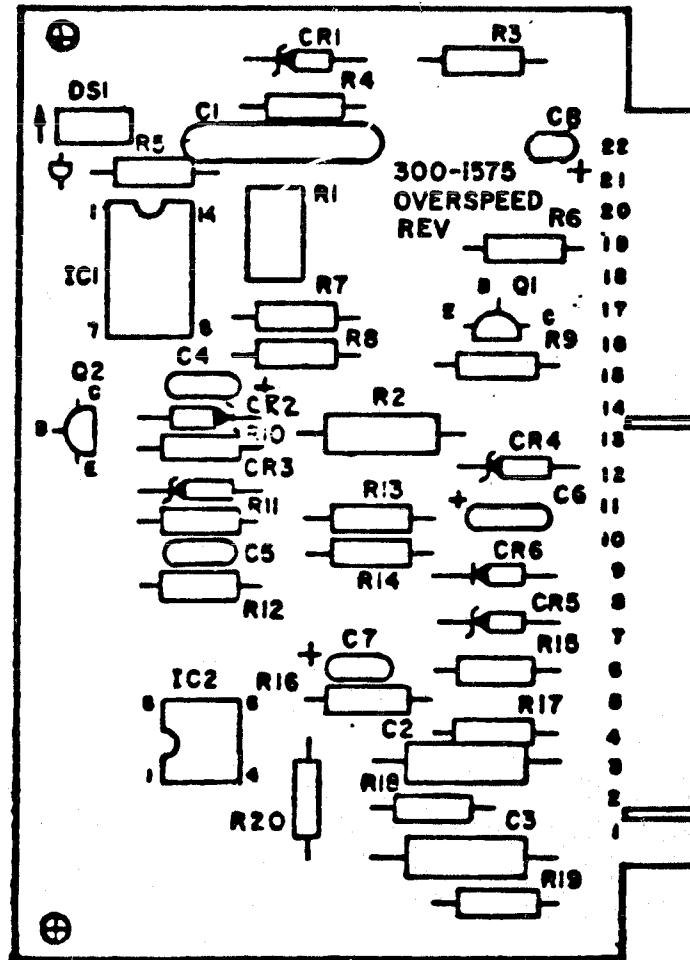
| REF. NO.        | PART NO. | QTY. USED | PART DESCRIPTION                            | REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION                 |
|-----------------|----------|-----------|---------------------------------------------|----------|----------|-----------|----------------------------------|
|                 | 300-1576 | 1         | Module, Monitor Number One (Complete)       | R1       | 350-0397 | 1         | Resistor (2,700-Ohm, 1/2 Watt)   |
| C1,2,3          | 356-0051 | 5         | Capacitor, Electrolytic (6.8 Mfd., 35 Volt) | R2       | 350-0446 | 1         | Resistor (300,000-Ohm, 1/2 Watt) |
| C4              | 356-0053 | 1         | Capacitor, Tantalum (1 Mfd., 35 Volt)       | R3       | 350-0584 | 1         | Resistor (10 Megohm, 1/2 Watt)   |
| C5,6,9          | 355-0041 | 3         | Capacitor, Ceramic (.22 Mfd., 35 Volt)      | R4,6     | 350-0536 | 2         | Resistor (1,000-Ohm, 1/2 Watt)   |
| CR3,7-10, 13-23 | 357-0004 | 16        | Rectifier, Diode (400 Volt, 400 MA)         | R5,23    | 350-0404 | 2         | Resistor (5,100-Ohm, 1/2 Watt)   |
| CR4             | 359-0026 | 1         | Diode, Zener (18 Volt, 400 MW)              | R7,18    | 350-0505 | 2         | Resistor (2.7-Ohm, 1/2 Watt)     |
| CR5             | 359-0002 | 1         | Diode, Zener (13 Volt, 400 MW)              | R8       | 350-0544 | 1         | Resistor (4,700-Ohm, 1/2 Watt)   |
| CR11,12         | 364-0011 | 2         | Rectifier, Gate Control                     | R9       | 350-0548 | 1         | Resistor (10,000-Ohm, 1/2 Watt)  |
| DS1,2           | 322-0157 | 2         | Lamp, Indicator (Red)                       | R10,17   | 350-0529 | 2         | Resistor (270-Ohm, 1/2 Watt)     |
| IC1             | 367-0016 | 1         | Integrated Circuit, Timing                  | R11,15   | 350-0398 | 2         | Resistor (3,000-Ohm, 1/2 Watt)   |
| Q1,2            | 362-0026 | 2         | Transistor, Signal                          | R12      | 350-0380 | 1         | Resistor (510-Ohm, 1/2 Watt)     |
|                 |          |           |                                             | R13,14   | 350-0379 | 2         | Resistor (470-Ohm, 1/2 Watt)     |
|                 |          |           |                                             | R16      | 350-0540 | 1         | Resistor (2,200-Ohm, 1/2 Watt)   |
|                 |          |           |                                             | R19,20   | 350-0393 | 2         | Resistor (18,000-Ohm, 1/2 Watt)  |
|                 |          |           |                                             | R24      | 350-0451 | 1         | Resistor (470,000-Ohm, 1/2 Watt) |
|                 |          |           |                                             |          | 322-0175 | 2         | Receptacle, Lamp                 |

# MONITOR NUMBER TWO MODULE (300-1577)



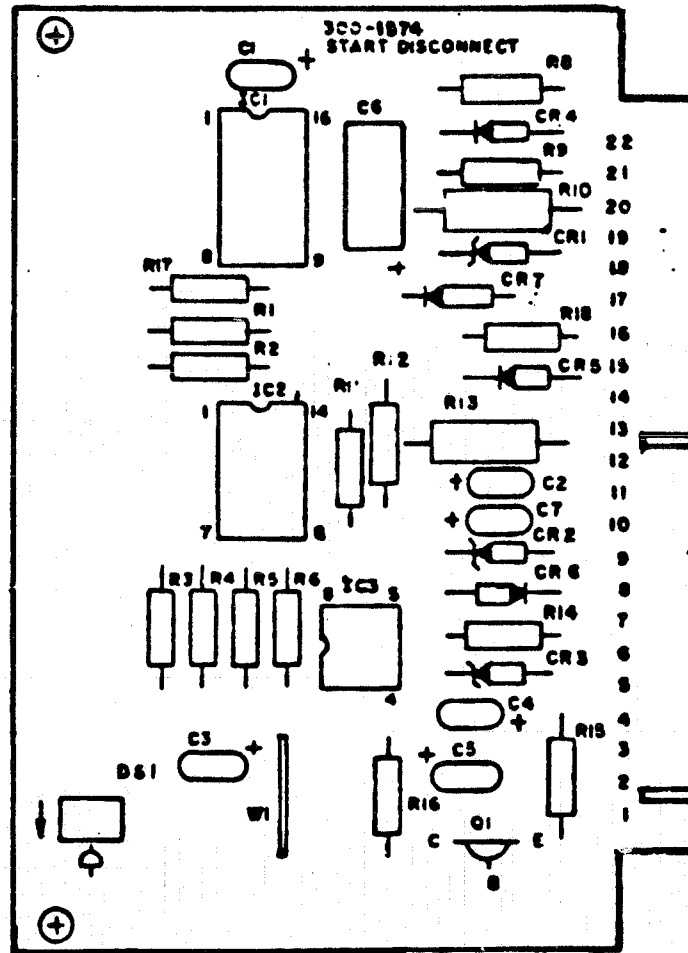
| REF. NO.          | PART NO. | QTY. used | PART DESCRIPTION                            |
|-------------------|----------|-----------|---------------------------------------------|
|                   | 300-1577 | 1         | Module, Monitor Number Two                  |
| C1                | 356-0066 | 1         | Capacitor, Electrolytic (47 Mfd.)           |
| C2                | 356-0059 | 1         | Capacitor, Electrolytic (2.2 Mfd., 35 Volt) |
| C3,8,9            | 356-0051 | 3         | Capacitor, Electrolytic (6.8 Mfd., 35 Volt) |
| C4,5,6,7,10       | 355-0041 | 5         | Capacitor, Ceramic (.22 Mfd.)               |
| CR3,4             | 364-0011 | 2         | Rectifier, Gate Control                     |
| CR5-9,13-18,20-23 | 357-0004 | 14        | Rectifier, Diode (400 Volt, 400 MA)         |
| CR6               | 359-0016 | 1         | Diode, Zener (6.8 Volt, 400 MW)             |
| CR7               | 359-0033 | 1         | Diode, Zener (14 Volt, 5 W)                 |
| IC1,2             | 367-0016 | 2         | Integrated Circuit, Timing                  |
| DS1,2             | 322-0157 | 2         | Lamp, Indicator (Red)                       |
|                   | 322-0175 | 2         | Receptacle, Lamp                            |
| Q1                | 362-0011 | 1         | Transistor, Signal                          |
| R1,2              | 303-0169 | 2         | Potentiometer (3.5 Megohm)                  |
| R3                | 350-0420 | 1         | Resistor (24,000-Ohm, 1/2 Watt)             |
| R4,7,10,13,16     | 350-0548 | 5         | Resistor (10,000-Ohm, 1/2 Watt)             |
| R5,15             | 350-0379 | 2         | Resistor (470-Ohm, 1/2 Watt)                |
| R6,9              | 350-0398 | 2         | Resistor (3,000-Ohm, 1/2 Watt)              |
| R8                | 350-0418 | 1         | Resistor (20,000-Ohm, 1/2 Watt)             |
| R11               | 350-0466 | 1         | Resistor (2 Megohm, 1/2 Watt)               |
| R12               | 350-0672 | 1         | Resistor (240-Ohm, 1/2 Watt)                |
| R14               | 350-0389 | 1         | Resistor (1,200-Ohm, 1/2 Watt)              |
| R17,18            | 350-0393 | 2         | Resistor (1,800-Ohm, 1/2 Watt)              |
| R22,23            | 350-0505 | 2         | Resistor (2,700-Ohm, 1/2 Watt)              |
| R24,25,27         | 350-0451 | 3         | Resistor (470,000-Ohm, 1/2 Watt)            |
| R26               | 350-0421 | 1         | Resistor (27,000-Ohm, 1/2 Watt)             |

# OVERSPEED MODULE (300-1575)



| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION                              | REF. NO.   | PART NO. | QTY. USED | PART DESCRIPTION                    |
|----------|----------|-----------|-----------------------------------------------|------------|----------|-----------|-------------------------------------|
|          | 300-1575 | 1         | Module, Overspeed (Complete)                  | CR6        | 357-0004 | 1         | Rectifier, Diode (400 Volt, 400 MA) |
| C1       | 355-0043 | 1         | Capacitor, Composition (22 Mfd., 200 Volt)    | DS1        | 322-0172 | 1         | Lamp, Indicator (Green)             |
| C2,3     | 355-0010 | 2         | Capacitor, Composition (.0022 Mfd., 100 Volt) |            | 322-0175 | 1         | Receptacle, Lamp                    |
| C4,8     | 356-0051 | 2         | Capacitor, Electrolytic (6.8 Mfd., 35 Volt)   | 1C1        | 367-0002 | 1         | Integrated Circuit                  |
| C5       | 355-0049 | 1         | Capacitor, Ceramic (22 Mfd., 1000 Volt)       | 1C2        | 367-0001 | 1         | Integrated Circuit                  |
| C6,7     | 356-0066 | 2         | Capacitor, Tantalum (47 Mfd., 20 Volt)        | Q1,2       | 362-0011 | 2         | Transistor, Signal                  |
| CR1,3    | 359-0016 | 2         | Diode, Zener (6.8 Volt, 400,000 Watt)         | R1         | 303-0191 | 1         | Potentiometer (5,000-Ohm, 4 Watt)   |
| CR2      | 359-0017 | 1         | Diode, Zener (5.1 Volt, 400 MW)               | R2         | 350-0683 | 1         | Resistor (680-Ohm, 1 Watt)          |
| CR4      | 359-0032 | 1         | Diode, Zener (8.2 Volt, 400 MW)               | R3         | 350-0379 | 1         | Resistor (470-Ohm, 2 Watt)          |
| CR5      | 359-0002 | 1         | Diode, Zener (13 Volt, 400 MW)                | R4,6,7     | 350-0411 | 7         | Resistor (10,000-Ohm, 1/2 Watt)     |
|          |          |           |                                               | 8,10,17,19 |          |           |                                     |
|          |          |           |                                               | R5         | 350-0414 | 1         | Resistor (13,000-Ohm, 1/2 Watt)     |
|          |          |           |                                               | R9         | 350-0427 | 1         | Resistor (47,000-Ohm, 1/2 Watt)     |
|          |          |           |                                               | R11,13     | 350-0394 | 2         | Resistor (2,000-Ohm, 1/2 Watt)      |
|          |          |           |                                               | R14        | 350-0380 | 1         | Resistor (510-Ohm, 1/2 Watt)        |
|          |          |           |                                               | R15,18     | 350-0536 | 2         | Resistor (1,000-Ohm, 2 Watt)        |
|          |          |           |                                               | R12,16,20  | 350-0451 | 3         | Resistor (470,000-Ohm, 1/2 Watt)    |

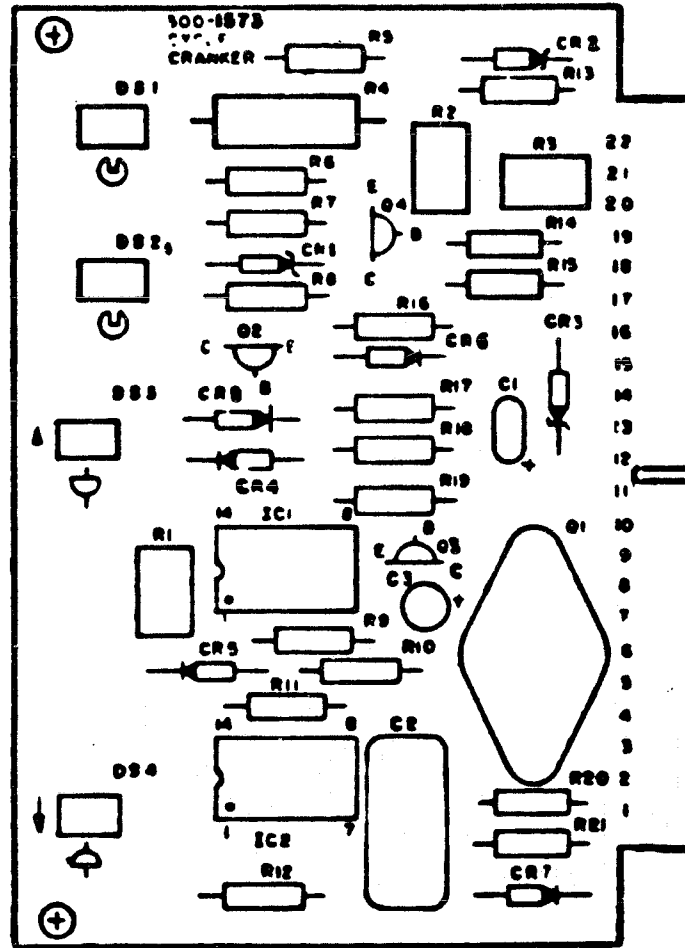
# START DISCONNECT MODULE (300-1574)



| REF. NO.       | PART NO. | QTY. USED | PART DESCRIPTION                             |
|----------------|----------|-----------|----------------------------------------------|
|                | 300-1574 | 1         | Module, Start Disconnect (Complete)          |
| C1,2,3         | 356-0051 | 3         | Capacitor, Electrolytic (6.8 Mfd., 35 Volt)  |
| C4,7           | 356-0066 | 2         | Capacitor, Tantalum (.47 Mfd.)               |
| C5             | 356-0059 | 1         | Capacitor, Electrolytic (2.2 Mfd)            |
| C6             | 355-0045 | 1         | Capacitor, Composition (.1 Mfd)              |
| DS1            | 322-0172 | 1         | Lamp, Indicator                              |
| CR1,2          | 359-0033 | 2         | Diode, Zener (14 Volt, 5 Watt)               |
| CR3            | 359-0032 | 1         | Diode, Zener (8.2 Volt)                      |
| CR4,5,6,7      | 357-0004 | 4         | Rectifier, Diode (400 Volt, 400 Milliampere) |
| IC1            | 367-0014 | 1         | Integrated Circuit (Multivibrator)           |
| IC2            | 367-0013 | 1         | Integrated Circuit (Dual, 2 Input, and Gate) |
| IC3            | 367-0001 | 1         | Integrated Circuit (Oral Amp)                |
| Q1             | 362-0011 | 1         | Transistor, Signal                           |
| R1,2,5,6       | 350-0418 | 1         | Resistor (20,000-Ohm, 1/2 Watt)              |
| R3,11,12,15,16 | 350-0548 | 5         | Resistor (10,000-Ohm, 1/2 Watt)              |
| R4,8           | 350-0422 | 2         | Resistor (30,000-Ohm, 1/2 Watt)              |
| R9             | 350-0435 | 1         | Resistor (100,000-Ohm, 1/2 Watt)             |
| R10,13         | 350-0672 | 2         | Resistor (240-Ohm, 1 Watt)                   |
| R14            | 350-0404 | 1         | Resistor (1,000-Ohm, 1/2 Watt)               |
| R18            | 350-0536 | 1         | Resistor (1,000-Ohm, 1/2 Watt)               |
| R17            | 350-0459 | 1         | Resistor (1 Megohm, 1/2 Watt)                |
|                | 322-0175 | 1         | Receptacle, Lamp                             |



# **CYCLE CRANKER MODULE (300-1573)**



| REF. NO. | PART NO. | QTY. USED | PART DESCRIPTION                       | REF. NO.  | PART NO. | QTY. USED | PART DESCRIPTION                            |
|----------|----------|-----------|----------------------------------------|-----------|----------|-----------|---------------------------------------------|
|          | 300-1573 | 1         | Module, Cycle Cranker (Complete)       | R1        | 303-0171 | 1         | Potentiometer (100,000-Ohm)                 |
| C1       | 356-0066 | 1         | Capacitor, Tantalum (47 Mfd., 20 Volt) | R2,3      | 303-0191 | 2         | Potentiometer (5000-Ohm)                    |
| C2       | 355-0042 | 1         | Capacitor (.47 Mfd., 250 Volt)         | R4        | 350-1132 | 1         | Resistor (470-Ohm, 2 Watt)                  |
| DS1,2    | 322-0171 | 2         | Lamp, Indicator (Red-Green)            | R5,18     | 350-0532 | 2         | Resistor (470-Ohm, 1/2 Watt)                |
| DS3      | 322-0157 | 1         | Lamp, Indicator, (Red)                 | R6,8      | 350-0537 | 2         | Resistor (1200-Ohm, 1/2 Watt)               |
| DS4      | 322-0172 | 1         | Lamp, Indicator (Green)                | R7        | 350-0382 | 1         | Resistor (620-Ohm, 1/2 Watt)                |
| CR1      | 359-0032 | 1         | Diode, Zener - 8.2 Volt                | R9        | 350-0394 | 1         | Resistor (2000-Ohm, 1/2 Watt)               |
| CR2      | 359-0016 | 1         | Diode, Zener - 6.8 Volt                | R10       | 350-0418 | 1         | Resistor (20,000-Ohm, 1/2 Watt)             |
| CR3      | 359-0002 | 1         | Diode, Zener - 13 Volt                 | R11,13,16 | 350-0548 | 5         | Resistor (10,000-Ohm, 1/2 Watt)             |
| CR4-8    | 357-0004 | 5         | Rectifier, Diode - 400 Volt 400 MA     | 17,21     |          |           |                                             |
| 1C1      | 367-0017 | 1         | Integrated Circuit, Counter            | R12       | 350-0437 | 1         | Resistor (120,000-Ohm, 1/2 Watt)            |
| 1C2      | 367-0016 | 1         | Integrated Circuit, Timing             | R14,15    | 350-0538 | 2         | Resistor (1,000-Ohm, 1/2 Watt)              |
| Q1       | 362-0038 | 1         | Transistor, Power                      | R19       | 350-0380 | 1         | Resistor (510-Ohm, 1/2 Watt)                |
| Q2,3,4   | 362-0011 | 3         | Transistor, Signal                     | R20       | 350-0387 | 1         | Resistor (1,000-Ohm, 1/2 Watt)              |
|          |          |           |                                        | C3        | 356-0051 | 1         | Capacitor, Electrolytic (6.8 Mfd., 35 Volt) |
|          |          |           |                                        |           | 322-0175 | 4         | Receptacle, Lamp                            |