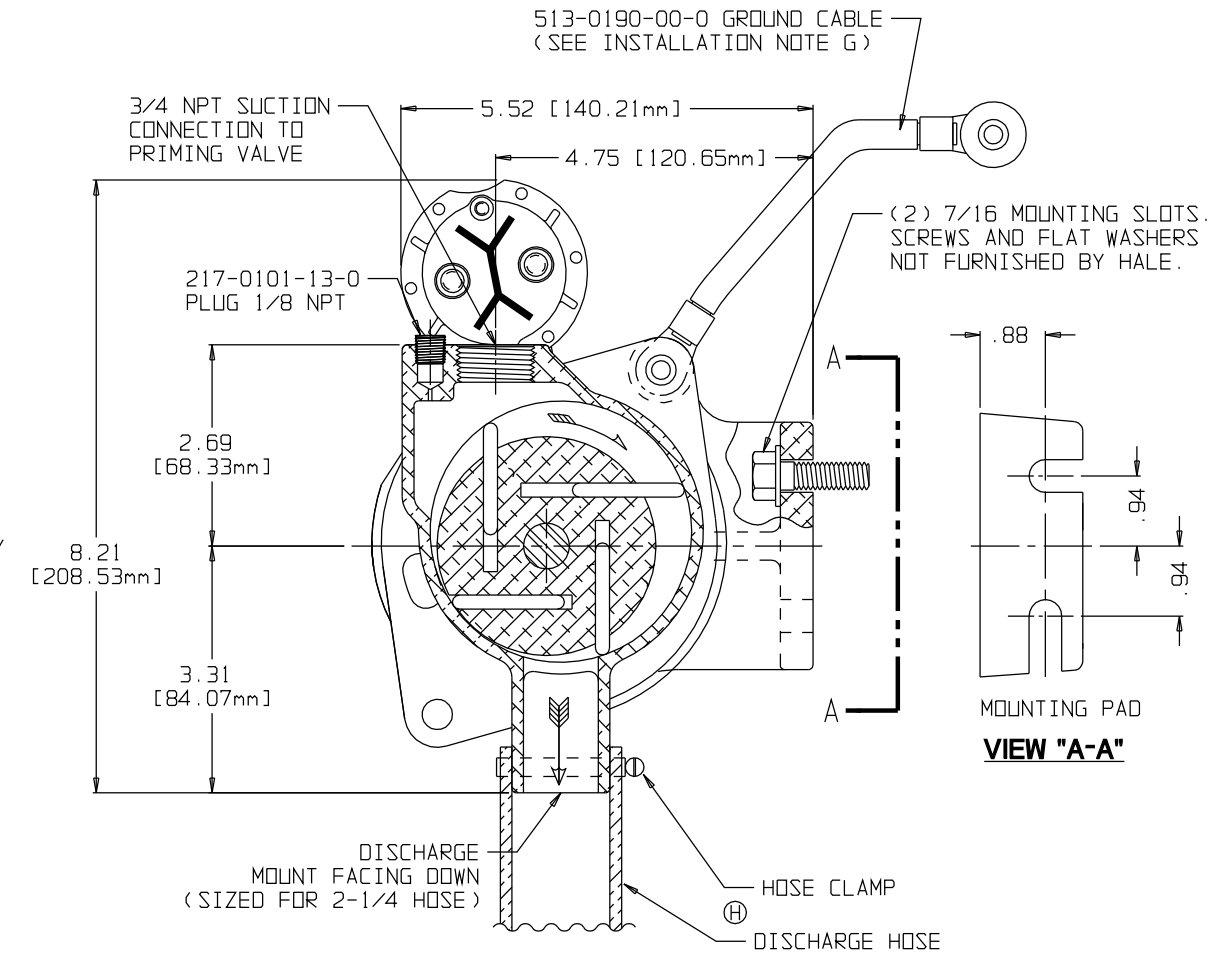
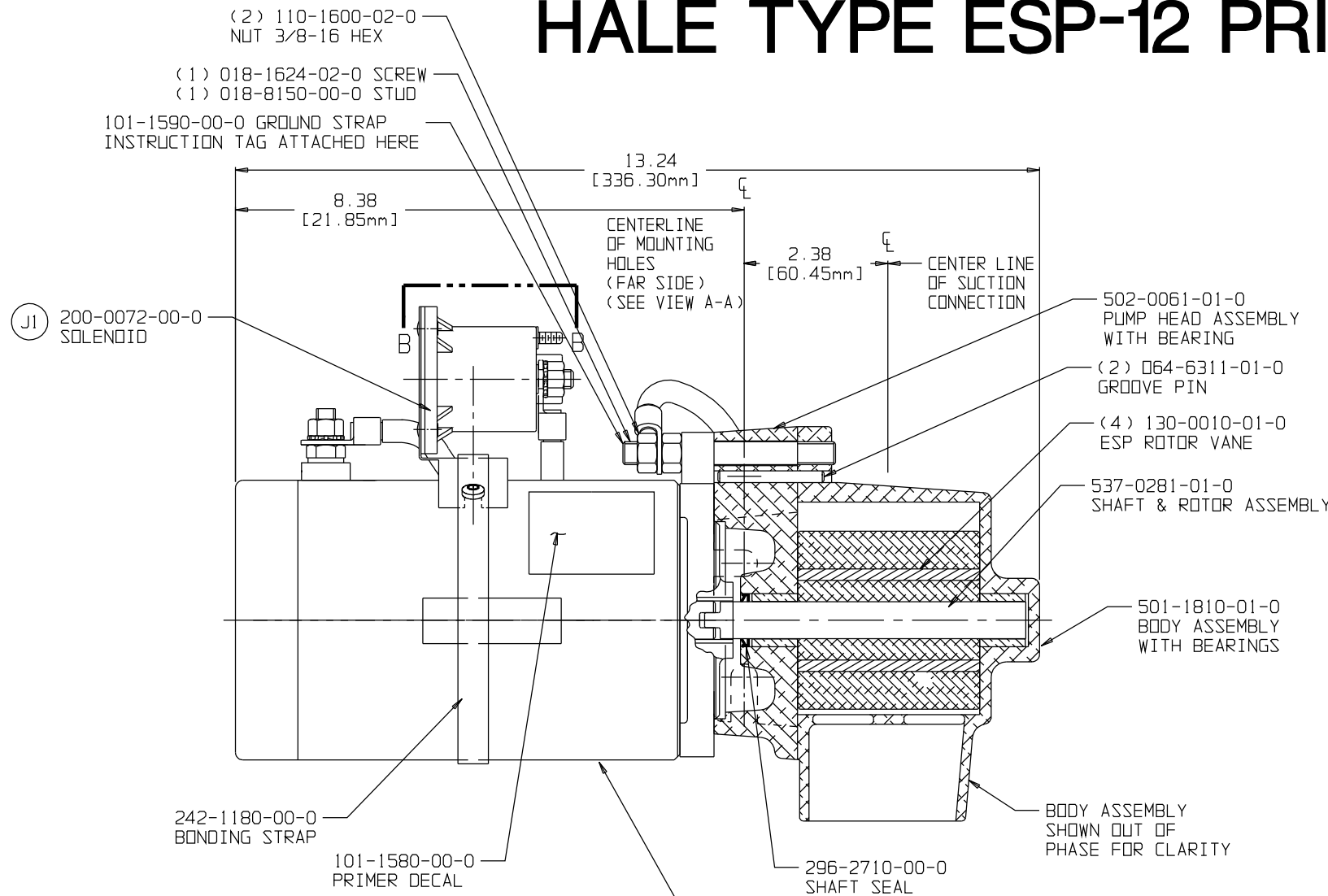


HALE TYPE ESP-12 PRIMING PUMP



PART NO.	VOLTAGE DC	AMPERES MAX.
(J1) 200-0043-00-0	12	280

NOTES:

- 1) WEIGHT OF PRIMING PUMP AND MOTOR IS 27 LBS. (12.2 Kg).
- 2) THEORETICAL DISPLACEMENT IS .066 GAL. (.25 LITERS) PER REVOLUTION OR 47,000 CU. IN. (770,000 CU. CM) AIR PER MINUTE.
- 3) VACUUM CAPABILITY: 24 IN. Hg (610 MM Hg).
- 4) TO AID IN LONG PRIMER LIFE AND PROPER PERFORMANCE, IT IS RECOMMENDED THAT THE PRIMING PUMP BE CLEANED YEARLY OR AFTER 500 CYCLES OF USE. SEPARATE THE PUMP BODY AND HEAD FROM THE MOTOR AND REMOVE ANY BLACK BUILD UP OR CONTAMINATES WITH SAFETY KLEEN OR STODDARD SOLVENT. USE CARE TO REINSTALL THE VANES IN THE SAME ORIENTATION AND TO GREASE THE SHAFT SEAL.
- 5) SEE PLATE NO. 938 FOR 24V PRIMING PUMP DETAILS.
- 6) TO PREVENT DAMAGE TO PLASTIC HOUSING WHEN INSTALLING OR REMOVING LEADS, DO NOT APPLY SIDE LOADS TO NUTS.
- 7) WHEN USING A TERMINAL LUG ON THE BATTERY CONNECTION WITH A 5/16 DIA. HOLE, LOWER WASHER IS NOT NEEDED. IF HOLE DIA. IS LARGER THAN 5/16, WASHERS ARE REQUIRED BOTH ABOVE AND BELOW THE TERMINAL.
- 8) FOR ELECTRICAL DETAILS REFER TO SHEET 2

INSTALLATION NOTES:

- A) USE A MINIMUM OF 1/2 TUBING FOR BOOSTER PUMPS.
- B) USE A MINIMUM OF 3/4 PIPE FOR MIDSHIP PUMPS.
- C) CONNECT TO HIGHEST POINT ON DISCHARGE OF MAIN PUMP IF PRIMING WHILE THE PUMP IS STATIONARY.
- D) CONNECT TO HIGHEST POINT ON THE SUCTION NEAR THE IMPELLER EYE IF PRIMING WHEN THE MAIN PUMP IS RUNNING.
- E) A SHUT-OFF VALVE, SUCH AS A HALE PVG OR SPV PRIMING VALVE, MUST BE LOCATED IN THE PRIMING LINE BETWEEN THE PRIMING PUMP AND THE MAIN PUMP.
- F) THE PRIMING PUMP MUST BE MOUNTED SO THAT THE MOTOR SHAFT IS IN A HORIZONTAL PLANE WITH THE PRIMING PUMP DISCHARGE FACING DOWN.
- G) GROUND THE PRIMING PUMP TO THE TRUCK CHASSIS, USING THE GROUND STRAP FURNISHED. THE GROUND STRAP IS REQUIRED FROM THE TRUCK CHASSIS TO THE TERMINAL STUD ON THE PRIMING PUMP. THIS IS TO INSURE A GROUND FOR THE MOTOR. THE CABLE IS SIZED FOR A 12 VOLT DC 300 AMP LOAD.
- H) DURING THE PRIMING OPERATION (EVACUATING AIR), DO NOT RUN MOTOR FOR MORE THAN 60 SECONDS.

PLUMBING INSTALLATION DETAILS

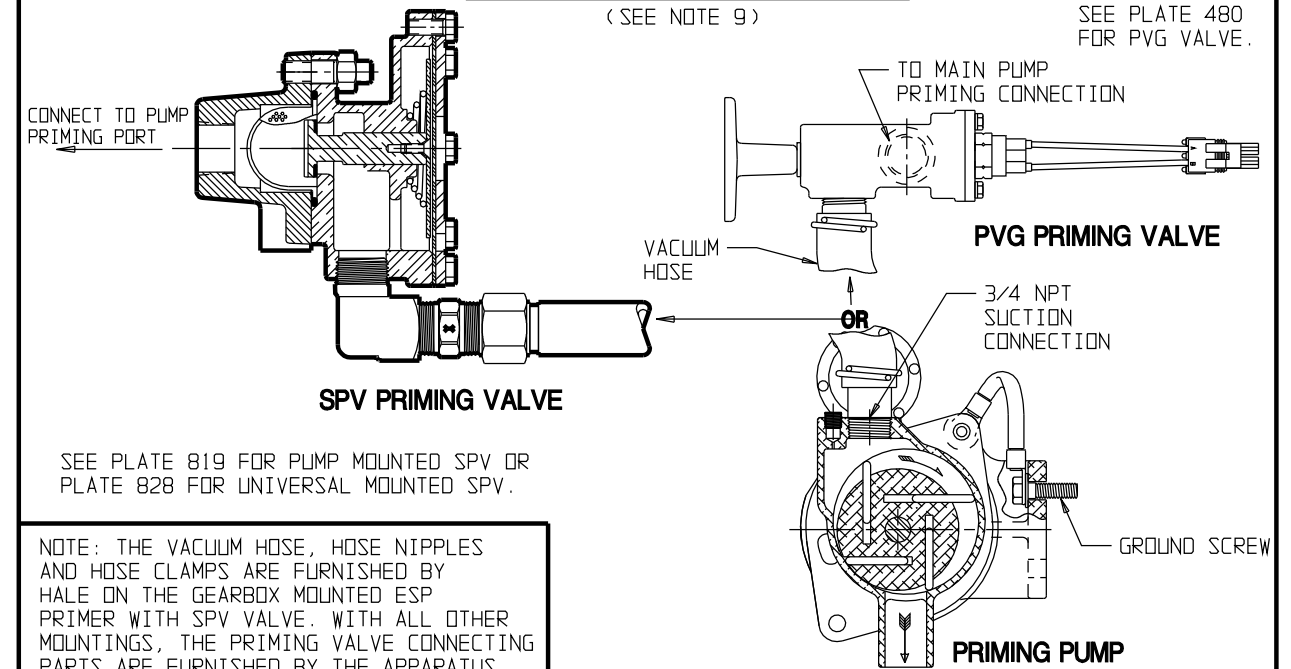


PLATE NO. 821AJ (SHEET 1 OF 2)

ECD NO	REV	CHANGED FROM	BY	DATE	APVD	ECD NO	REV	CHANGED FROM	BY	DATE	APVD
Q2-251	G	ADDED TOP VIEW OF SOLENOID AND DIMENSIONS IN MILLIMETER. FIXED GROUND STRAP TO BE ATTACHED TO APPARATUS CHASSIS.	BVP	08-15-02	MAL	0815	J1	WAS 200-0042-00-0 & 200-0071-00-0	JRP	01-22-09	MAL
Q411	H	ADDED DETAIL C AND HOSE	KSM	7-24-06	MAL	0815	J2	ADDED NOTE I	JRP	01-22-09	MAL
Q526	I	REDRAWN AND ADDED SHEET 2	MLJ	2-22-07	MAL						



HALE PRODUCTS, INC.
A Unit of IDEX Corporation
Conshohocken, PA 19428 USA

NOT TO BE REPRODUCED OR USED TO MAKE OTHER DRAWINGS OR MACHINERY. DRAWN: [] ROT: [] DATE: 2-19-95. SIZE: [] SCALE: FULL

HALE TYPE ESP-12 PRIMING PUMP

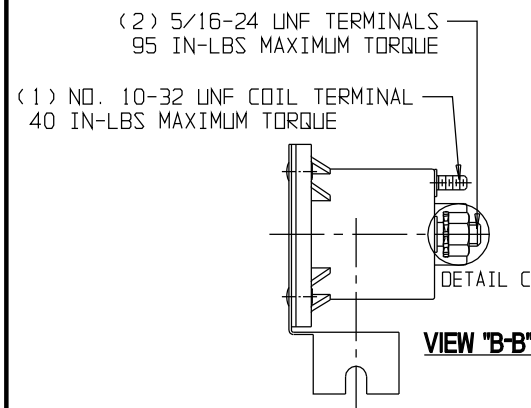
ELECTRICAL INSTALLATION DETAILS

MATING CONNECTOR NOT PROVIDED BY HALE
 CAN BE PURCHASED AS HALE KIT # 546-1780-00-0
 PACKARD WEATHER PACK SEALED CONNECTOR:
 (1) P/N: 12010973 (2 CONTACT) SHROUD HALF
 (2) P/N: 12124582 (16-14 GAGE) MALE TERMINAL
 (2) P/N: 12010293 (16-14 GAGE) LT GRAY CABLE SEAL
 USE A MINIMUM OF 14 AWG SXL, GXL OR TXL
 SAE J1128 WIRE TYPE

SOLENOID RELOCATION INSTRUCTIONS

- 1-REMOVE (2) SCREWS HOLDING THE SOLENOID TO THE MOTOR AND LOOSEN THE SOLENOID CLAMP SCREW.
- 2-LOOSELY INSTALL THE CLAMP USING THE EXISTING SOLENOID MOUNTING HOLES. THE SCREWS MUST GO THROUGH TWO OF THE HOLES IN THE CLAMP.
- 3-POSITION THE SOLENOID IN THE DESIRED LOCATION. PLACE THE CLAMP BETWEEN THE FOUR CLAMP GUIDES ON THE SOLENOID MOUNTING BRACKET. TIGHTEN THE THE SOLENOID CLAMP, THEN TIGHTEN THE SOLENOID SCREWS. MAKE SURE CLAMP AND SCREWS ARE TIGHTENED IN THIS ORDER.
- 4-TIGHTEN THE LOWER TERMINAL NUT TO 50 LBS-IN. INSTALL THE CABLE AND THE UPPER TERMINAL NUT. HOLD THE LOWER TERMINAL NUT WITH A WRENCH WHILE THIGHTENING THE UPPER TERMINAL NUT TO 50 LBS-IN.
- 5-INSTALL THE CABLE TO THE SOLENOID TERMINAL AND TIGHTEN THE TERMINAL NUT TO 35 LBS-IN.
- 6-INSTALL THE SOLENOID POWER CABLE AND TIGHTEN THE LARGE SOLENOID NUT TO 35 LBS-IN. INSTALL THE SOLENOID "ACTIVATION" WIRE AND TIGHTEN THE SMALL NUT TO 15 LBS-IN. POSITION THE CABLES SO THEY HAVE THE LEAST POSSIBILITY FOR DAMAGE.

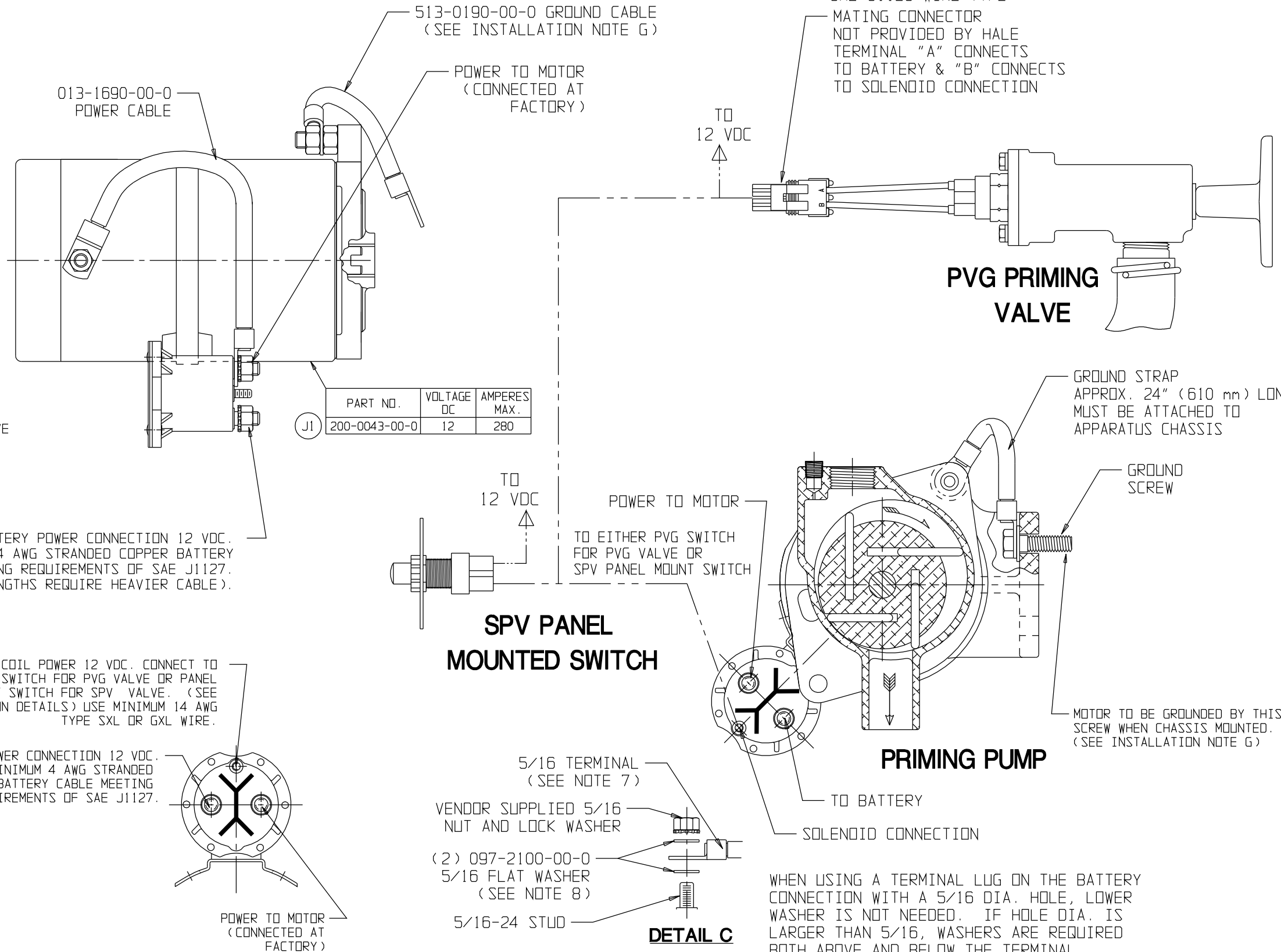
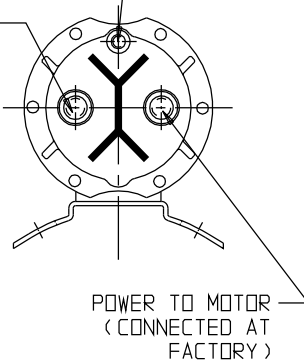
SOLENOID FASTENER TORQUE SPECIFICATION



BATTERY POWER CONNECTION 12 VDC.
 USE MINIMUM 4 AWG STRANDED COPPER BATTERY
 CABLE MEETING REQUIREMENTS OF SAE J1127.
 (LONGER LENGTHS REQUIRE HEAVIER CABLE).

SOLENOID COIL POWER 12 VDC. CONNECT TO
 EITHER PVG SWITCH FOR PVG VALVE OR PANEL
 MOUNT SWITCH FOR SPV VALVE. (SEE
 INSTALLATION DETAILS) USE MINIMUM 14 AWG
 TYPE SXL OR GXL WIRE.

BATTERY POWER CONNECTION 12 VDC.
 USE MINIMUM 4 AWG STRANDED
 COPPER BATTERY CABLE MEETING
 REQUIREMENTS OF SAE J1127.



PART NO.	VOLTAGE DC	AMPERES MAX.
200-0043-00-0	12	280

WHEN USING A TERMINAL LUG ON THE BATTERY
 CONNECTION WITH A 5/16 DIA. HOLE, LOWER
 WASHER IS NOT NEEDED. IF HOLE DIA. IS
 LARGER THAN 5/16, WASHERS ARE REQUIRED
 BOTH ABOVE AND BELOW THE TERMINAL.

ECO NO	REV	CHANGED FROM	BY	DATE	APVD	ECO NO	REV	CHANGED FROM	BY	DATE	APVD
02-251	G	ADDED TOP VIEW OF SOLENOID AND DIMENSIONS IN MILLIMETER. FIXED GROUND STRAP TO BE ATTACHED TO APPARATUS CHASSIS.	BVP	08-15-02	MAL	0815	J1	WAS 200-0042-00-0 & 200-0071-00-0	JRP	01-22-09	MAL
0411	H	ADDED DETAIL C AND HOSE	KSM	7-24-06	MAL	0815	J2	ADDED SOLENOID ROTATION NOTE	JRP	01-22-09	MAL
0526	I	REDRAWN AND ADDED SHEET 2	MLJ	2-22-07	MAL						