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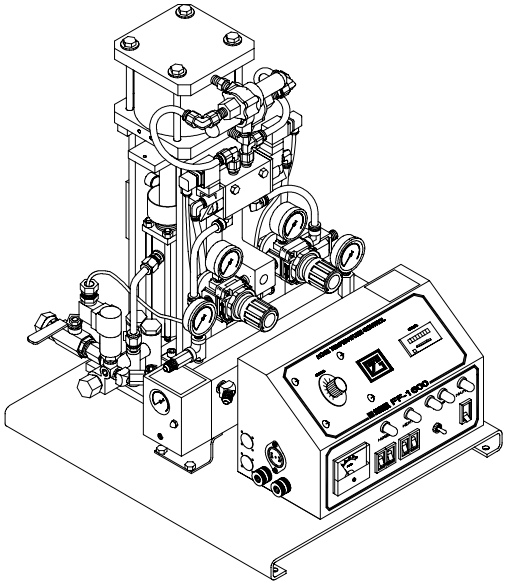
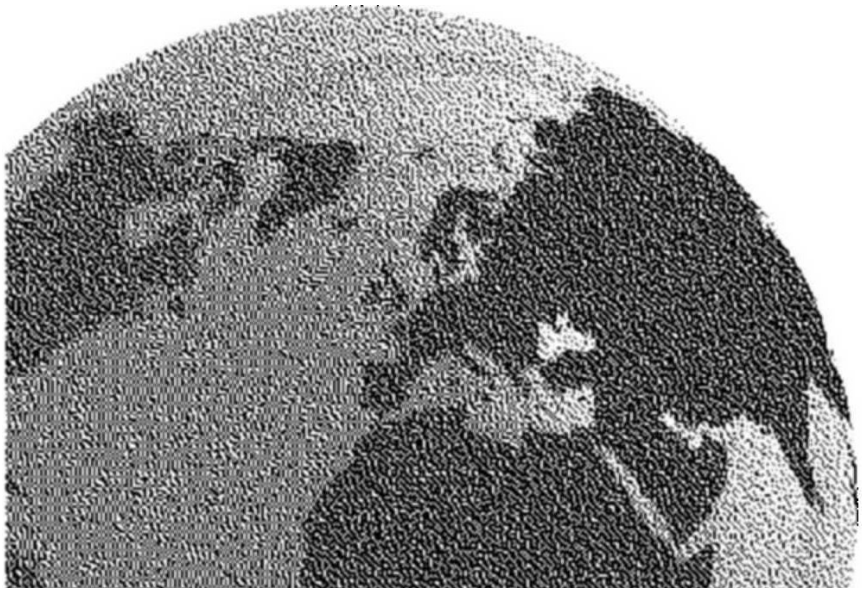


Model FF-1600 Proportioning Unit

Parts Identification Manual 17942-ID



December 2, 2002

Issue 7

GUSMER CORPORATION ®

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NOTICE: *The equipment described in this technical manual must only be operated or serviced by properly trained individuals, thoroughly familiar with the operating instructions and limitations of the equipment. For technical service, call your local distributor. Call: 1-800-FOR-GSMR (1-800-367-4767) for the name and telephone number of your local distributor.*

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WARRANTY

Gusmer Corporation (Gusmer) provides a limited warranty to the original purchaser (Customer) of Gusmer manufactured parts and equipment (Product) against any defects in material or workmanship for a period of one year from the date of shipment from Gusmer facilities.

In the event Product is suspected to be defective in material or workmanship, it must be returned to Gusmer, freight prepaid. If Product is found to be defective in material or workmanship, as determined solely by Gusmer, Gusmer will issue full credit to Customer for the freight charges incurred in returning the defective Product, and either credit will be issued for the replacement cost of the Product or a replacement part will be forwarded no-charge, freight prepaid to Customer.

This warranty shall not apply to Product Gusmer finds to be defective resulting from: installation, use, maintenance, or procedures not accomplished in accordance with our instructions; normal wear; accident; negligence; alterations not authorized in writing by Gusmer; use of "look alike" parts not manufactured or supplied by Gusmer; or Product used in conjunction with any other manufacturer's pumping or proportioning equipment. Further, the terms and conditions of this warranty shall not apply to services or repairs made to Product by any third party not authorized in writing by Gusmer. For such Product, a written estimate will be submitted to Customer at a nominal service charge, itemizing the cost for repair. Disposition of Product will be done in accordance with the terms stated on the written estimate.

The warranty provisions applied to product that are not manufactured by Gusmer will be solely in accordance with the warranty provided by the original manufacturer of the product.

GUSMER MAKES NO WARRANTY WHATSOEVER AS TO THE MERCHANTABILITY OF, OR SUITABILITY FOR, ITS PRODUCT TO PERFORM ANY PARTICULAR PURPOSE. CREDIT FOR, OR REPLACEMENT OF, PRODUCT DEFECTIVE IN MATERIAL OR WORKMANSHIP SHALL CONSTITUTE COMPLETE FULFILLMENT OF GUSMER OBLIGATIONS TO CUSTOMER. NO OTHER WARRANTY, EXPRESS OR IMPLIED ON ANY PRODUCT IT MANUFACTURES AND/OR SELLS, WILL BE RECOGNIZED BY GUSMER UNLESS SAID WARRANTY IS IN WRITING AND APPROVED BY AN OFFICER OF GUSMER.

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To insure proper validation of your warranty, please complete the warranty card and return it to Gusmer within two weeks of receipt of equipment.

Revised 11/12/98

MODEL FF-1600 PROPORTIONING UNIT ASSEMBLIES

FINAL ASSEMBLY, MANUAL HOSE HEAT (17000A-SIZE)

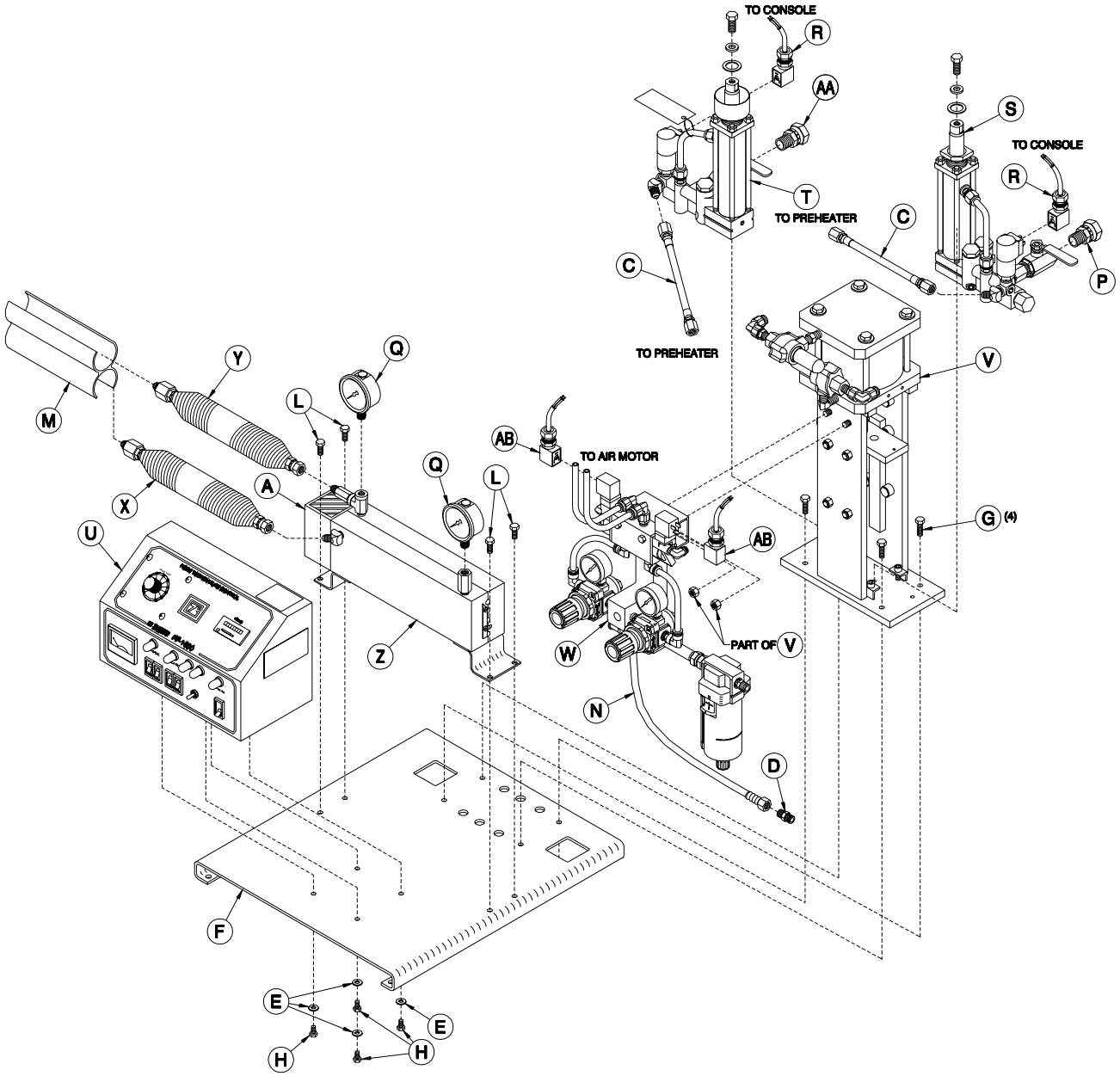


Figure 1. FF-1600 Assembly (Part No. 17000A-SIZE), Exploded View

TABLE 1. FF-1600 ASSEMBLY (PART NO. 17000A-SIZE), PARTS

Reference Letter	Part Number	Description	Quantity
A	0355B	Thermostat Cover Box	1
C	0372	Interconnect Hose	2
D	0561	Hex Nipple	1
E	0562-11-3	Flat Washer	4
F	0750A	Machine Base	1
G	0759	Hex Head Cap Screw	4
H	0760-3	Hex Head Cap Screw	4
L	1701-4	Hex Head Cap Screw	4
***M**	5204	Electrical Isolator	1
***N**	5270A-4	Air Hose	1
***P**	10420	Swivel Union	1
Q	17001	0-3000 PSI Gauge	2
R	6690-16-76-2	DIN Connector	2
S	17400-SIZE	Resin Proportioning Pump Assembly	1
T	17450-SIZE	Iso Proportioning Pump Assembly	1
U	17650A-220 17650A-380	Electric Console (220V) Electric Console (380V)	1 1
V	17755 17796	Air Motor Assembly Air Motor Assembly (10:1 Ratio)	1 1
W	17756	Air Control System	1
***X**	56273	R-Isolation Hose	1
***Y**	56274	A-Isolation Hose	1
Z	18300	Primary Heater (Includes A)	1
***AA**	OP179-6	Swivel Union	1
AB	8680-3-3	DIN Connector	2

**** Part of Accessory Package (AP17000), shown for reference only.***

ELECTRIC CONSOLE ASSEMBLY, MANUAL HOSE HEAT

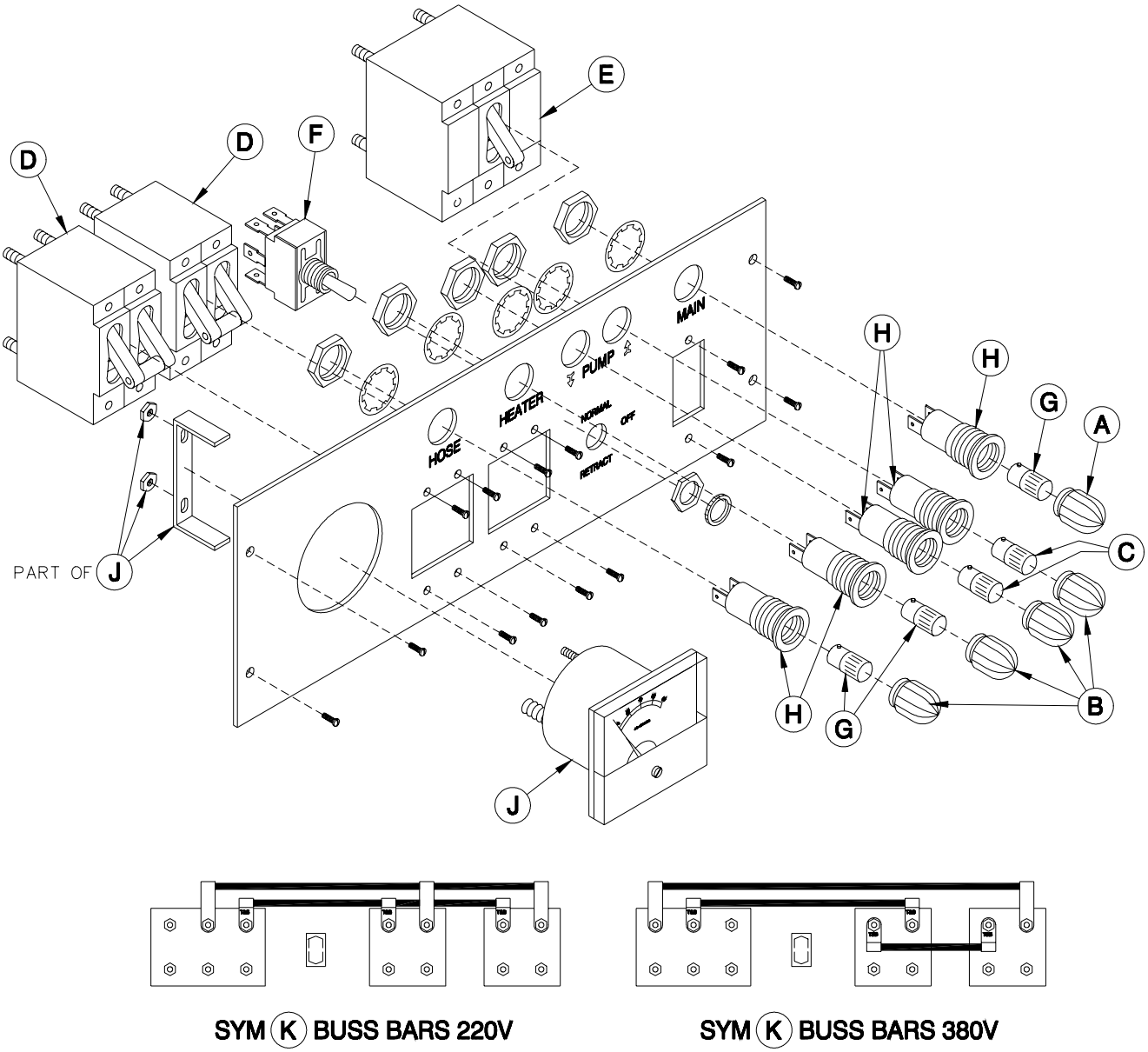


Figure 2. Electric Console, Manual Hose Heat (Part No. 17650A-220/380), Exploded View, Sheet 1 of 3

TABLE 2. ELECTRIC CONSOLE, MANUAL HOSE HEAT (PART NO. 17650A-220/380), PARTS, SHEET 1 OF 3

Reference Letter	Part Number	Description	Quantity
A	0656	White Lens	1
B	0660	Amber Lens	4
C	0662A	Incandescent Bulb	2
D	0692-1-25	25 AMP Circuit Breaker	2
E	6690-16-10	Switch	1
F	6690-16-6	Toggle Switch	1
G	6690-19-24	Bulb	3
H	6690-19-25	Light Base	5
J	5616-KIT	Ammeter	1
K	17650-5 17650-5-380	Buss Bar (220V) Buss Bar (380V)	1 1

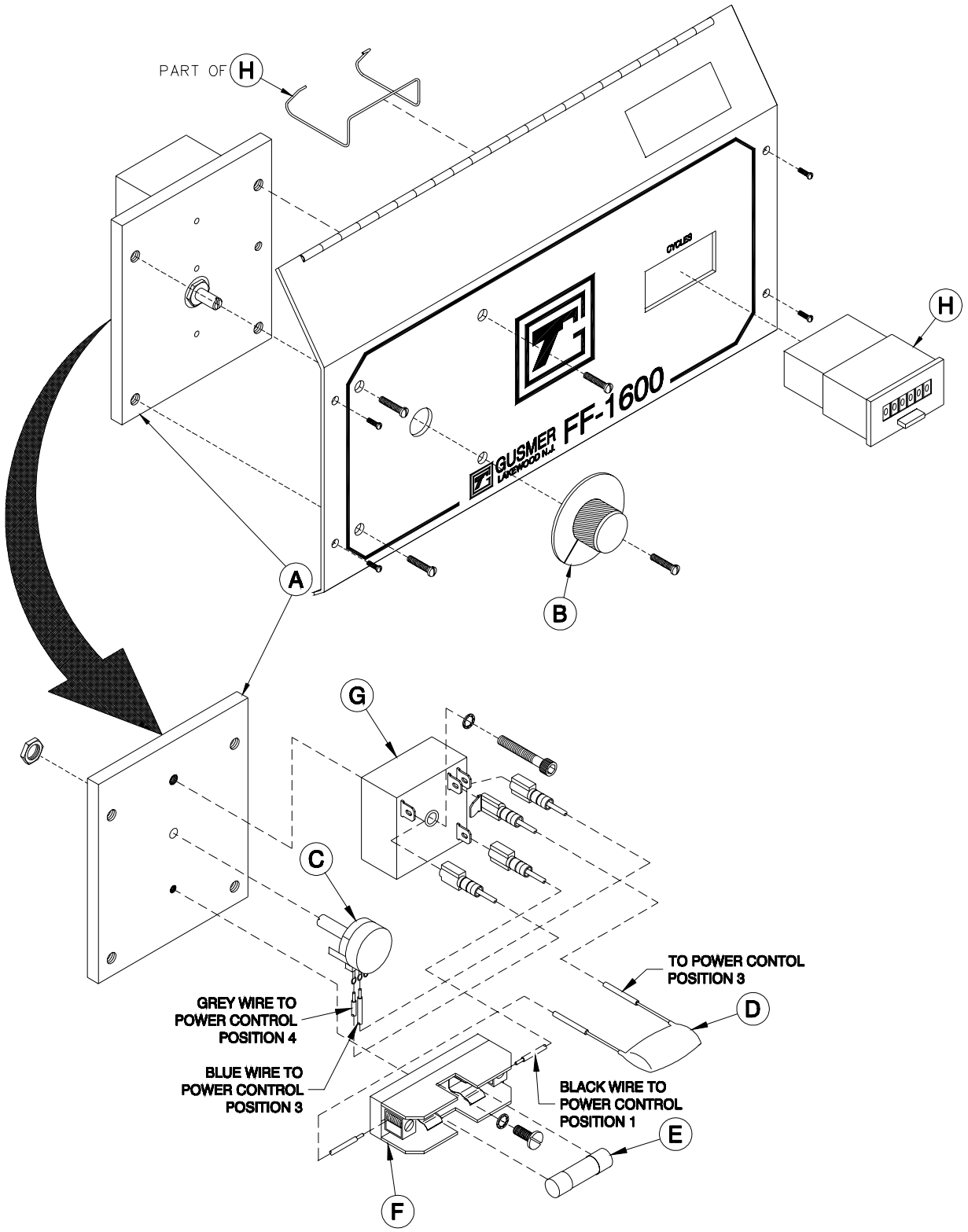


Figure 3. Electric Console, Manual Hose Heat (Part No. 17650A-220/380), Exploded View, Sheet 2 of 3

TABLE 3. ELECTRIC CONSOLE, MANUAL HOSE HEAT (PART NO. 17650A-220/380), PARTS, SHEET 2 OF 3

Reference Letter	Part Number	Description	Quantity
A	1662B	Heat Sink	1
B	17650-4	Knob	1
C	6690-5-17	Potentiometer	1
D	6690-21-4	Quencharc	1
E	6690-24-1	Fuse	1
F	6690-24-2	Fuse Block	1
G	6690-26-18	Phase Control	1
H	9651-6-2	Counter	1

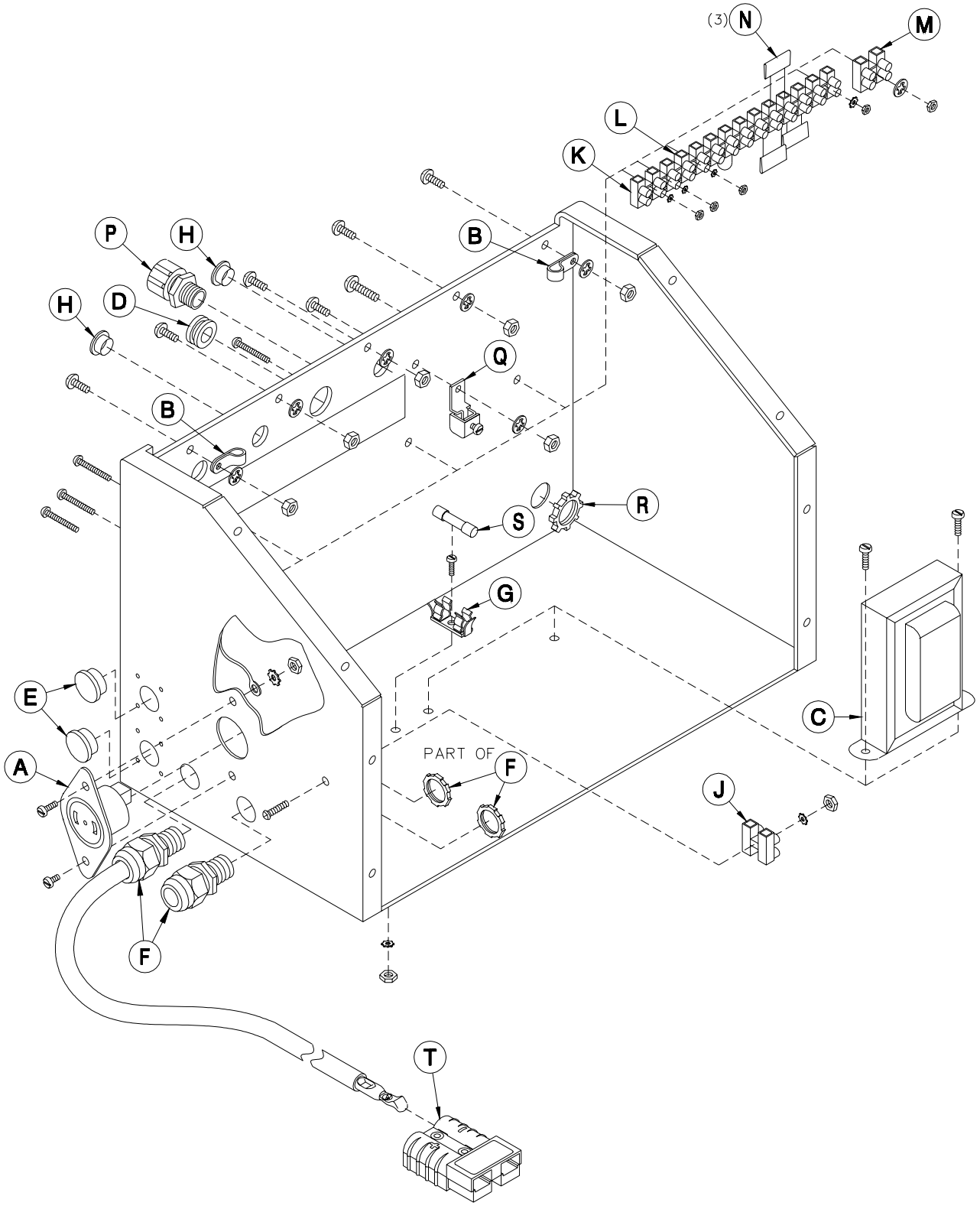


Figure 4. Electric Console, Manual Hose Heat (Part No. 17650A-220/380), Exploded View, Sheet 3 of 3

TABLE 4. ELECTRIC CONSOLE, MANUAL HOSE HEAT (PART NO. 17650A-220/380), PARTS, SHEET 3 OF 3

Reference Letter	Part Number	Description	Quantity
A	0670A-1-1	Socket	1
B	0681A	Cable Clamp	2
C	0689-1	Transformer	1
D	1701-16	Grommet	1
E	1704-2	Hole Plug	2
F	5621-136-105	Straight Connector	2
G	5653B	Fuse Holder	1
H	5703D-10	Bushing	2
J	6690-20-1-2	Terminal Block	1
K	6690-20-1-3	Terminal Block	1
L	6690-20-1-12	Terminal Block	1
M	6690-20-5-2	Main Terminal Block	1
N	6690-21-1	Quencharc	3
P	17650-1	Strain Relief	1
Q	17650-2	Terminal Lug	1
R	OP482-17-2	Locknut	1
S	OP5193-3-3	1 Amp Fuse	1
T	0684-2	Power-Lock™ Connector Housing	1

FINAL ASSEMBLY, DIGITAL HOSE HEAT (17000B-SIZE-DGT)

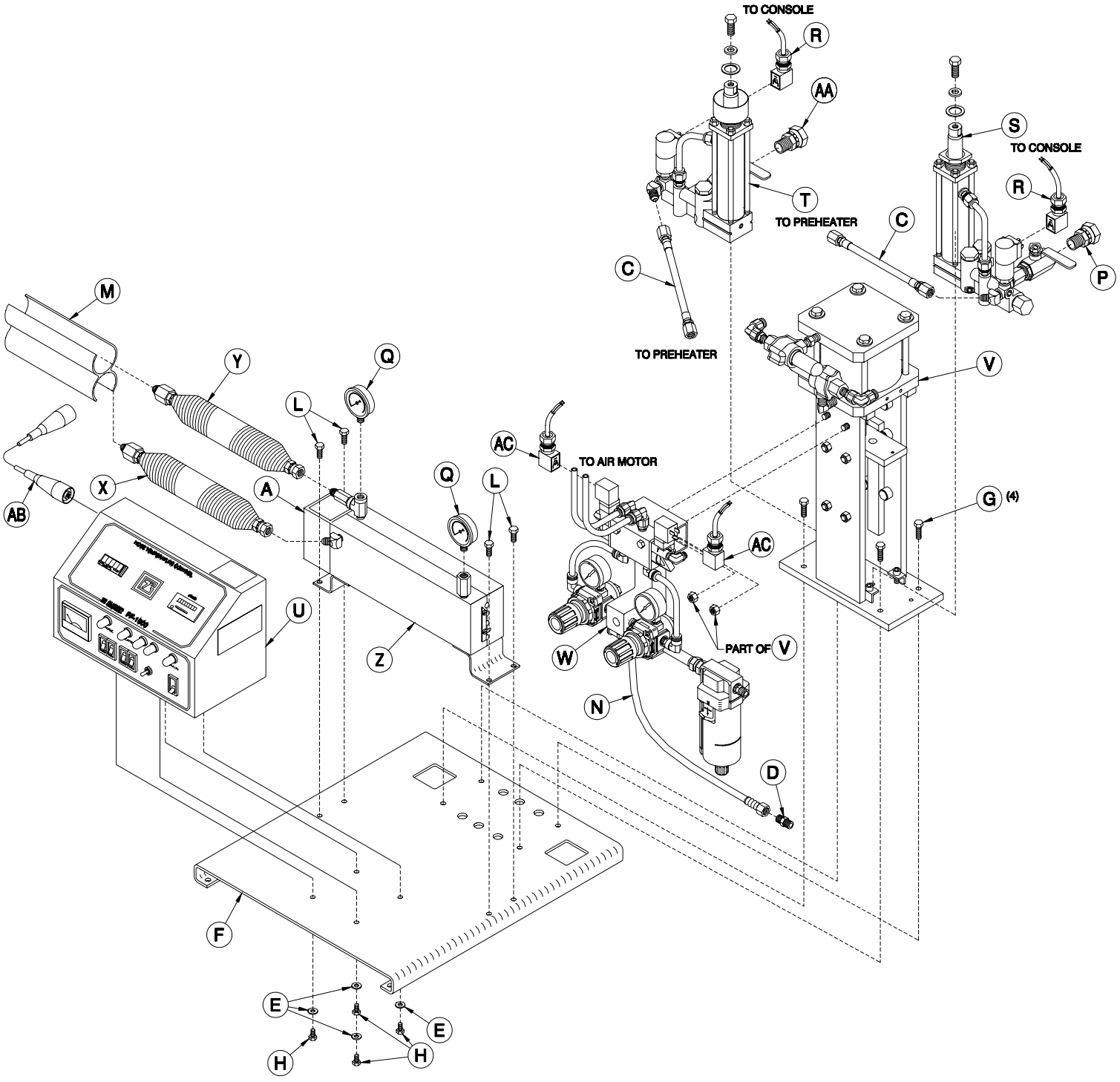


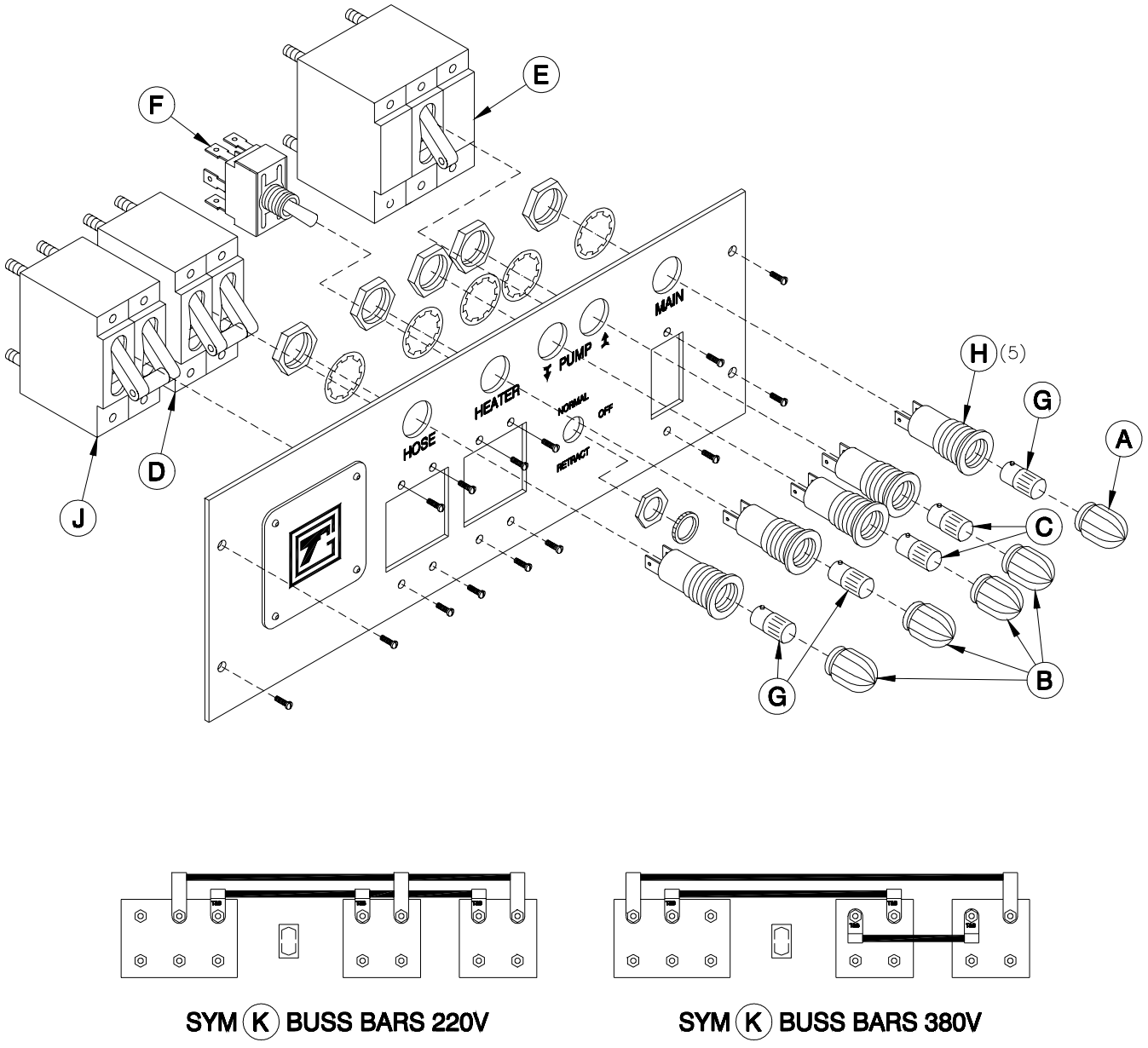
Figure 5. FF-1600 Assembly (Part No. 17000B-SIZE-DGT), Exploded View

TABLE 5. FF-1600 ASSEMBLY (PART NO. 17000B-SIZE-DGT), PARTS

Reference Letter	Part Number	Description	Quantity
A	0355B	Thermostat Cover Box	1
C	0372	Interconnect Hose	2
D	0561	Hex Nipple	1
E	0562-11-3	Flat Washer	4
F	0750A	Machine Base	1
G	0759	Hex Head Cap Screw	4
H	0760-3	Hex Head Cap Screw	4
Not Shown	1257	JIC Cap	1
Not Shown	1258	JIC Cap	1
L	1701-4	Hex Head Cap Screw	4
***M**	5204	Electrical Isolator	1
***N**	5270A-4	Air Hose	1
***P**	10420	Swivel Union	1
Q	17001	0-3000 PSI Gauge	2
R	6690-16-76-2	DIN Connector	2
S	17400-SIZE	Resin Proportioning Pump Assembly	1
T	17450-SIZE	Iso Proportioning Pump Assembly	1
U	17660B-220-DGT 17660B-380-DGT	Electric Console (220V) Electric Console (380V)	1 1
V	17755 17796	Air Motor Assembly Air Motor Assembly (10:1 Ratio)	1 1
W	17756	Air Control System	1
***X**	56273	R-Isolation Hose	1
***Y**	56274	A-Isolation Hose	1
Z	18300	Primary Heater (Includes A)	1
***AA**	OP179-6	Swivel Union	1
***AB**	20207-3	TSU Adapter	1
AC	8680-3-3	DIN Connector	2

**** Part of Accessory Package (AP17000-DGT), shown for reference only.***

ELECTRIC CONSOLE ASSEMBLY, DIGITAL HOSE HEAT



SYM (K) BUSS BARS 220V

SYM (K) BUSS BARS 380V

Figure 6. Electric Console, Digital Hose Heat (Part No. 17660B-220/380-DGT), Exploded View, Sheet 1 of 3

TABLE 6. ELECTRIC CONSOLE, DIGITAL HOSE HEAT (PART NO. 17660B-220/380-DGT), PARTS, SHEET 1 OF 3

Reference Letter	Part Number	Description	Quantity
A	0656	White Lens	1
B	0660	Amber Lens	4
C	0662A	Incandescent Bulb	2
D	0692-1-25	25 AMP Circuit Breaker	1
E	6690-16-10	Switch	1
F	6690-16-6	Toggle Switch	1
G	6690-19-24	Bulb	3
H	6690-19-25	Light Base	5
J	6690-25-6	15 AMP Circuit Breaker	1
K	17650-5 17650-5-380	Buss Bars (220V) Buss Bars (380V)	1 1

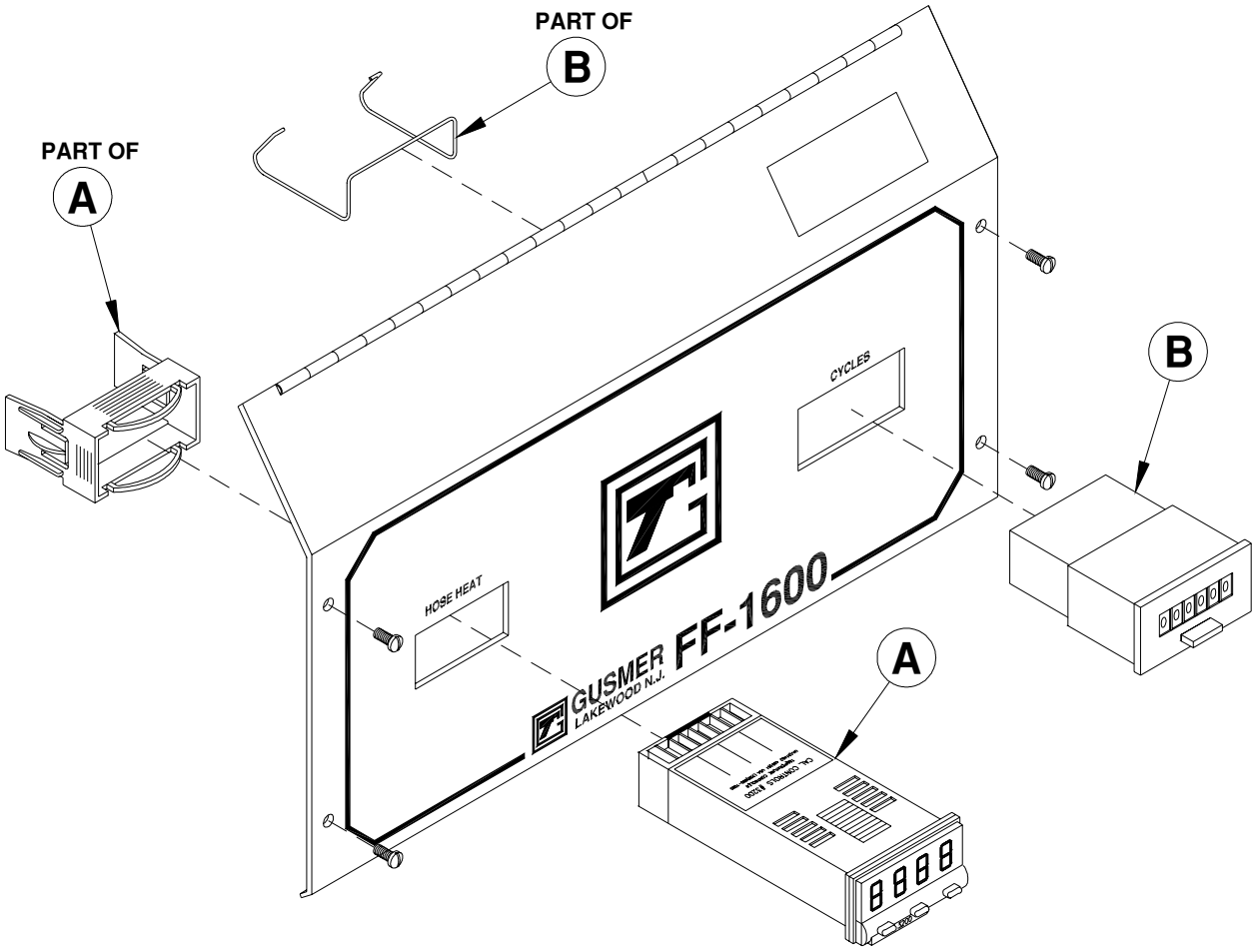


Figure 7. Electric Console, Digital Hose Heat (Part No. 17660B-220/380-DGT), Exploded View, Sheet 2 of 3

TABLE 7. ELECTRIC CONSOLE, DIGITAL HOSE HEAT (PART NO. 17660B-220/380-DGT), PARTS, SHEET 2 OF 3

Reference Letter	Part Number	Description	Quantity
A	6690-26-17	Temperature Controller	1
B	9651-6-2	Counter	1

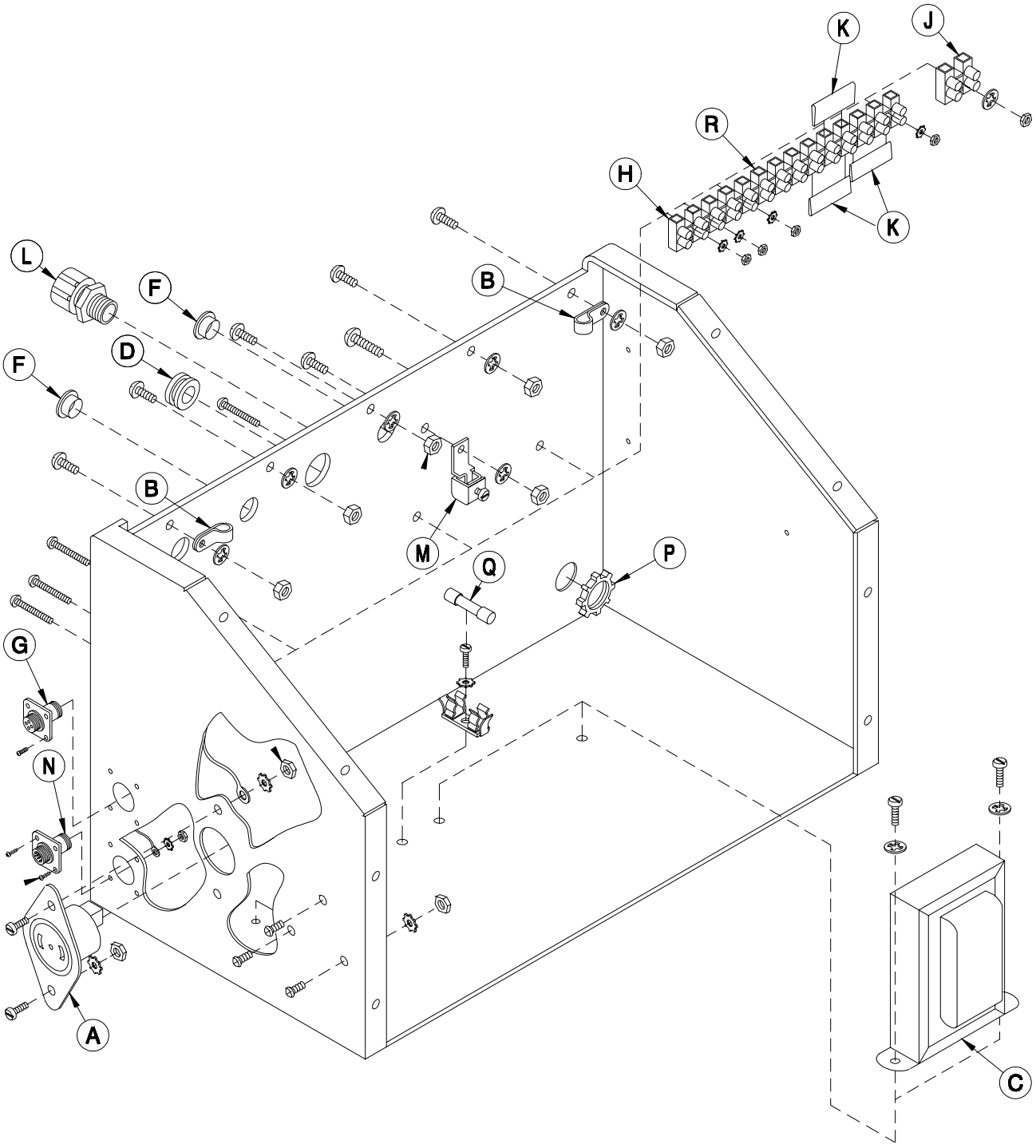


Figure 8. Electric Console, Digital Hose Heat (Part No. 17660B-220/380-DGT), Exploded View, Sheet 3 of 3

TABLE 8. ELECTRIC CONSOLE, DIGITAL HOSE HEAT (PART NO. 17660B-220/380-DGT), PARTS, SHEET 3 OF 3

Reference Letter	Part Number	Description	Quantity
A	0670A-1-1	Socket	1
B	0681A	Cable Clamp	2
C	0689-1	Transformer	1
D	1701-16	Grommet	1
E	5653B	Fuse Holder	1
F	5703D-10	Bushing	2
G	6690-13-2-11-41	4 Ckt FE Pin Housing	1
H	6690-20-1-3	Terminal Block	1
J	6690-20-5-2 6690-20-5-4	Main Terminal Block (220V) Main Terminal Block (380V)	1 1
K	6690-21-1	Quencharc	3
L	17650-1 11651-4	Strain Relief (220V) Strain Relief (380V)	1 1
M	17650-2	Terminal Lug	1
N	17660-8	TSU Plug Assembly	1
P	OP482-17-2 11651-5	Locknut (220V) Locknut (380V)	1 1
Q	OP5193-3-3	1 Amp Fuse	1
R	6690-20-1-12	Terminal Block	1

AIR MOTOR ASSEMBLIES

16:1 Ratio

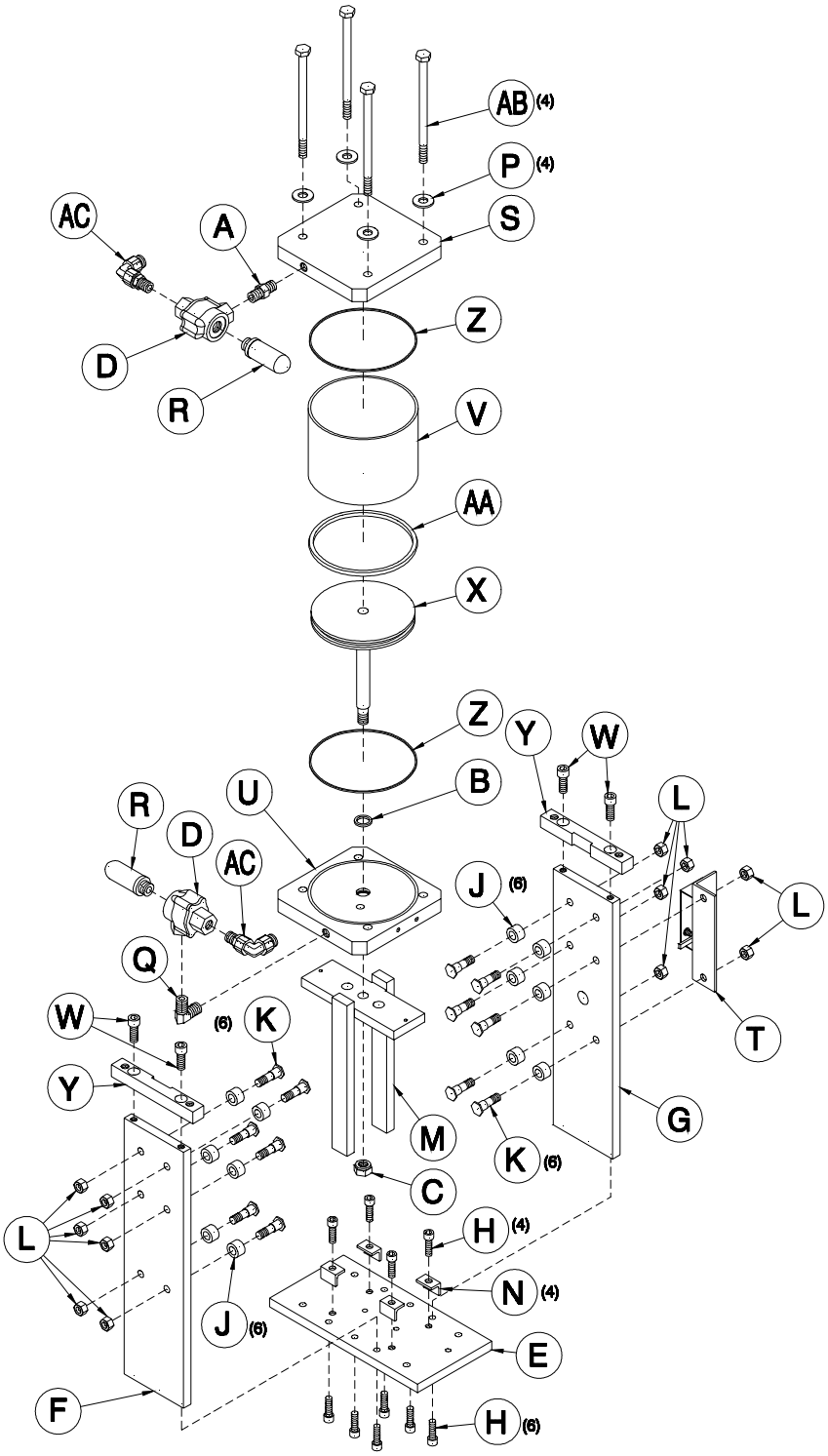


Figure 9. 16:1 Ratio Air Motor (Part No. 17755), Exploded View

TABLE 9. 16:1 RATIO AIR MOTOR (PART NO. 17755), PARTS

Reference Letter	Part Number	Description	Quantity
A	0466A	Hex Nipple	1
B	0551	O-Ring	1
C	0557	Piston Rod Nut	1
D	0562-12	Exhaust Valve	2
E	0751	Base	1
F	0752	Air Cylinder Upright	1
G	0753	Air Cylinder Upright-SW Side	1
H	0754	Socket Head Cap Screw	10
J	0755-1	Bearings	12
K	0755-2	Cam Roller Stud	12
L	0756	Hex Nut	12
M	0757A	Pump Yoke	1
N	0765	Pump Mounting Bracket	4
P	1516A-3	Washer	4
Q	14501-20	Elbow	1
R	17002	Muffler	2
S	17745-1	Air Cylinder Top Plate	1
T	17745-10	Reversing Switch Assembly	1
U	17745-2	Air Cylinder Bottom Plate	1
V	17745-3	Air Cylinder	1
W	17745-4	Socket Head Cap Screw	4
X	17745-5	Air Piston W/Rod	1
Y	17745-6	Air Cylinder Adapter	2
Z	17745-7	O-Ring	2
AA	17745-8	O-Ring	1
AB	17745-9	Hex Head Cap Screw	4
AC	20042	Tube Fitting	2

Air Cylinder Rebuild Kit (Part # 17745-3-1)- Includes B, Z, AA, & Air Cylinder Lubricant (Part #553-2). Order as required from your local distributor.

Exhaust Valve Repair Kit (Part # 0562-12-1-H)- Order as required from your local distributor

10:1 Ratio (Optional)

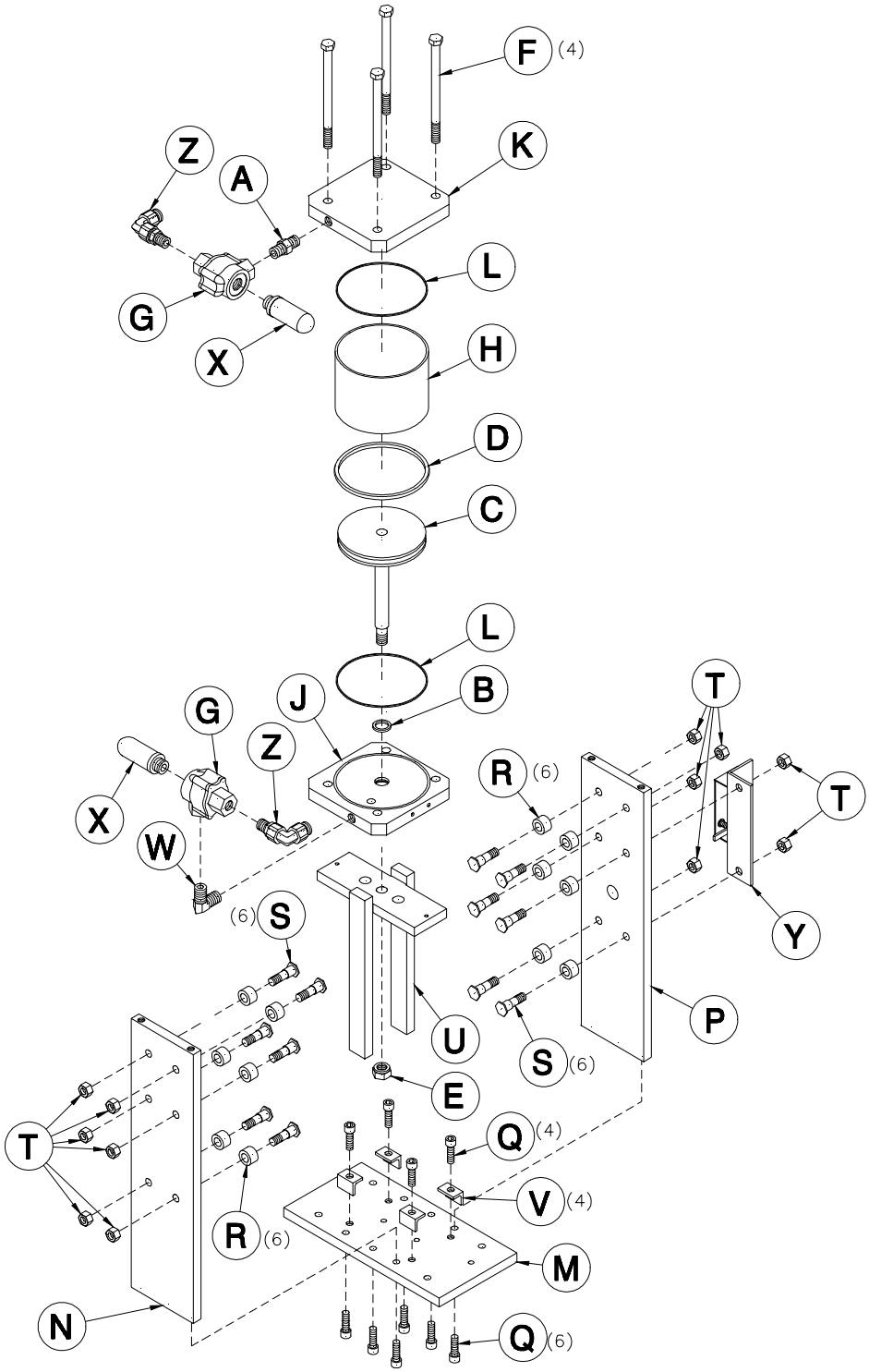


Figure 10. 10:1 Ratio Air Motor (Part No. 17796), Exploded View

TABLE 10. 10:1 RATIO AIR MOTOR (PART NO. 17796), PARTS

Reference Letter	Part Number	Description	Quantity
A	0466A	Hex Nipple	1
B	0551	O-Ring	1
C	0555	Air Piston w/Rod	1
D	0556	O-Ring	1
E	0557	Piston Rod Nut	1
F	0558	Hex Head Cap Screw	4
G	0562-12	Exhaust Valve	2
H	0746-1	Air Cylinder	1
J	0746-2	Air Cylinder bottom Plate	1
K	0746-3	Air Cylinder Top Plate	1
L	0746-4	O-Ring	2
M	0751	Base	1
N	0752	Air Cylinder Upright	1
P	0753	Air Cylinder Upright-SW Side	1
Q	0754	Socket Head Cap Screw	10
R	0755-1	Bearings	12
S	0755-2	Cam Roller Stud	12
T	0756	Hex Nut	12
U	0757A	Pump Yoke	1
V	0765	Pump Mounting Bracket	4
W	14501-20	Elbow	1
X	17002	Muffler	2
Y	17745-10	Reversing Switch Assembly	1
Z	20042	Tube Fitting	2

Air Cylinder Rebuild Kit (Part # 746-1-1)- Includes B, D, L, & Air Cylinder Lubricant (Part #553-2). Order as required from your local distributor.

Exhaust Valve Repair Kit (Part # 0562-12-1-H)- Order as required from your local distributor.

REVERSING SWITCH ASSEMBLY

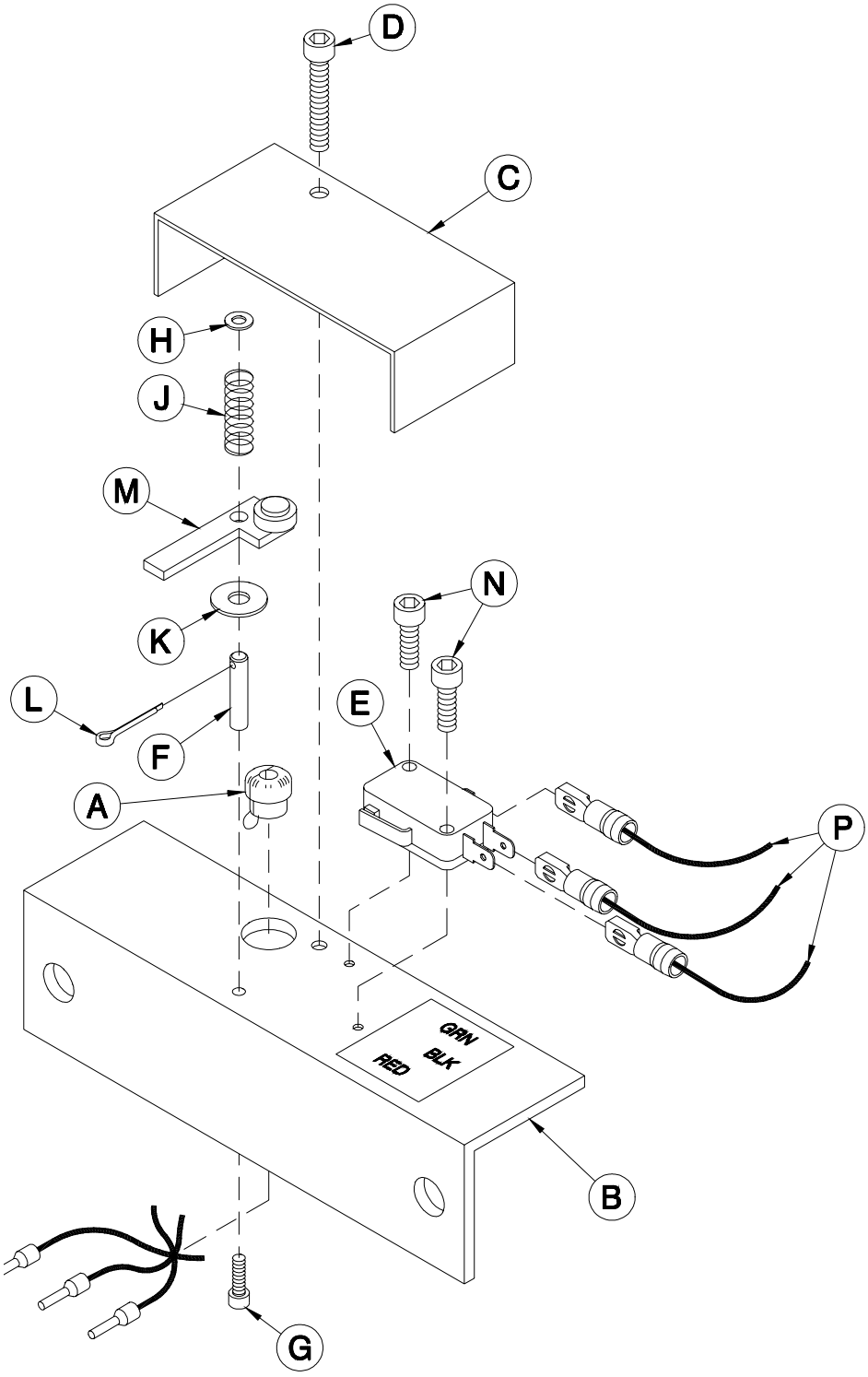


Figure 11. Reversing Switch (Part No17745-10), Exploded View

TABLE 11. REVERSING SWITCH (PART NO. 17745-10), PARTS

Reference Letter	Part Number	Description	Quantity
A	0364	Bushing	1
B	0577B-1	Reversing Switch Bracket (Includes N, F, & G)	1
C	0577-2	Reversing Switch Cover Box	1
D	0577-3	Socket Head Cap Screw	1
E	0578A	Reversing Switch	1
F	0579-2	Pivot Arm	1
G	0579-3	Socket Head Cap Screw	1
H	0579-4	Flat Washer	1
J	0579-5	Spring	1
K	0579-6	Fiber Washer	1
L	0579-7	Cotter Pin	1
M	0579A-1	Reversing Switch Lever	1
N	9577-10	Socket Head Cap Screw	2
P	17745-10-1	Reversing Switch Harness	1

AIR CONTROL SYSTEM ASSEMBLY

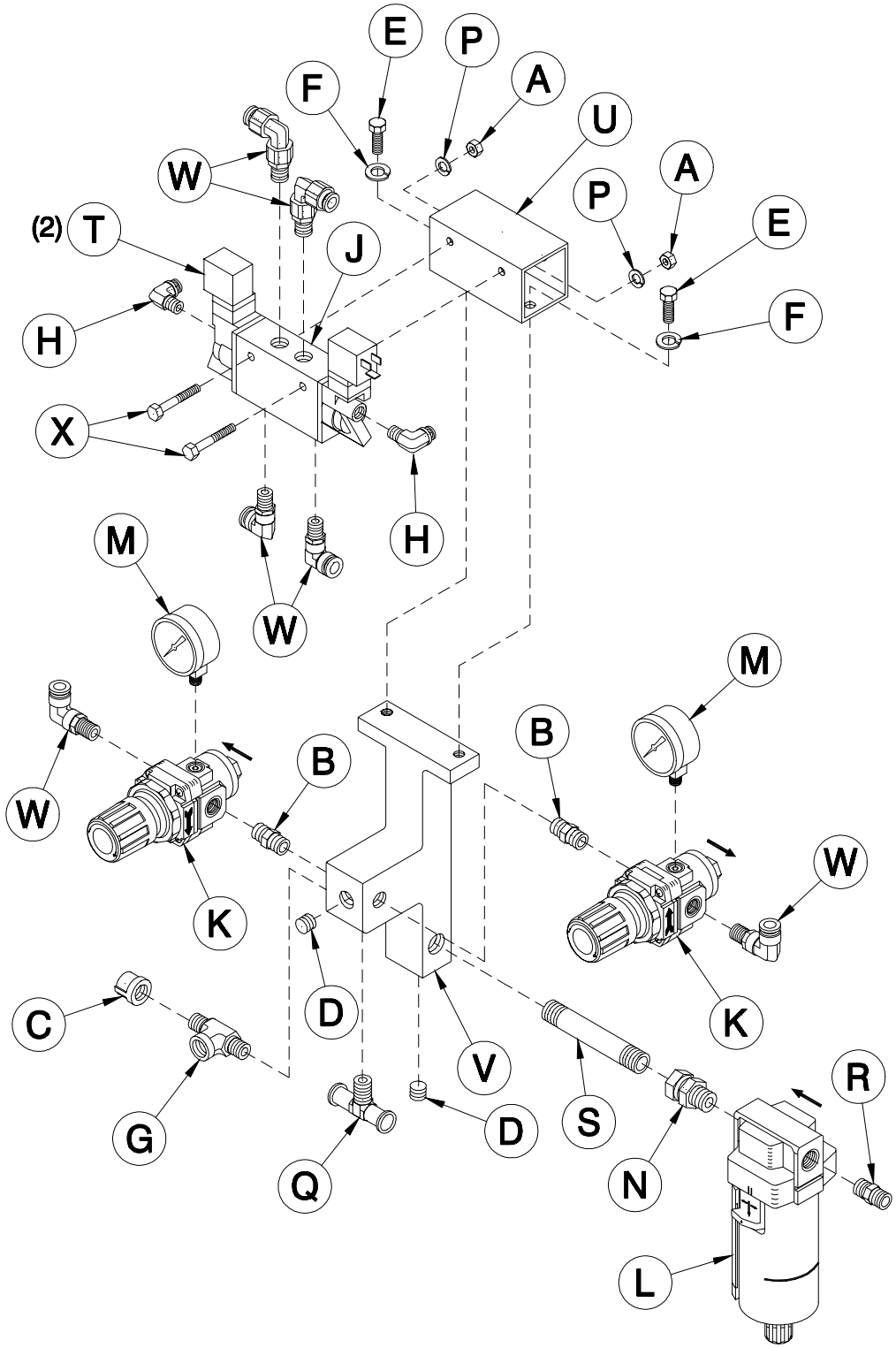


Figure 12. Air Control System (Part No. 17756), Exploded View

TABLE 12. AIR CONTROL SYSTEM (PART NO. 17756), PARTS

Reference Letter	Part Number	Description	Quantity
A	0385-4	Hex Nut	2
B	0561	Hex Nipple	2
C	0575	Pipe Cap	1
D	0576	Pipe Plug	2
E	1701-4	Hex Head Cap Screw	2
F	5504-3	Helical Lock Washer	2
G	6304-21	Branch Tee	1
H	6306-3	Tube Fitting	2
J	6311-109	Valve (Includes 17756-2-24)	1
K	6311-124	Regulator	2
L	6312-26	Air Filter	1
M	6314-31	Gauge	2
N	9457	Swivel Union	1
P	9758	Lockwasher	2
Q	17746-5	Pipe Tee	1
R	17746-7	Hex Nipple	1
S	17746-12	Pipe Nipple	1
T	17756-2-24	Coil	2
U	17756-4	Mounting Bracket	1
V	17756-7	Air Manifold	1
W	20042	Tube Fitting	6
X	IP1119	Hex Head Cap Screw	2
Not Shown	8680-3-2	Din Connector	2

Spool Replacement Kit (Part #17756-2-1)- Order as required from your local distributor.

Seal Kit (Part #17756-2-3)- Order as required from your local distributor.

Valve Modification/Rebuild Kit (Part #6311-109-1)- Two required per valve assembly. Spool Assembly not included. Order as required from your local distributor.

Regulator Rebuild Kit (Part #MK6311-124-1)- Order as required from your local distributor.

Filter Rebuild Kit (Part #MK6312-26-1)- Order as required from your local distributor.

PRIMARY HEATER ASSEMBLY

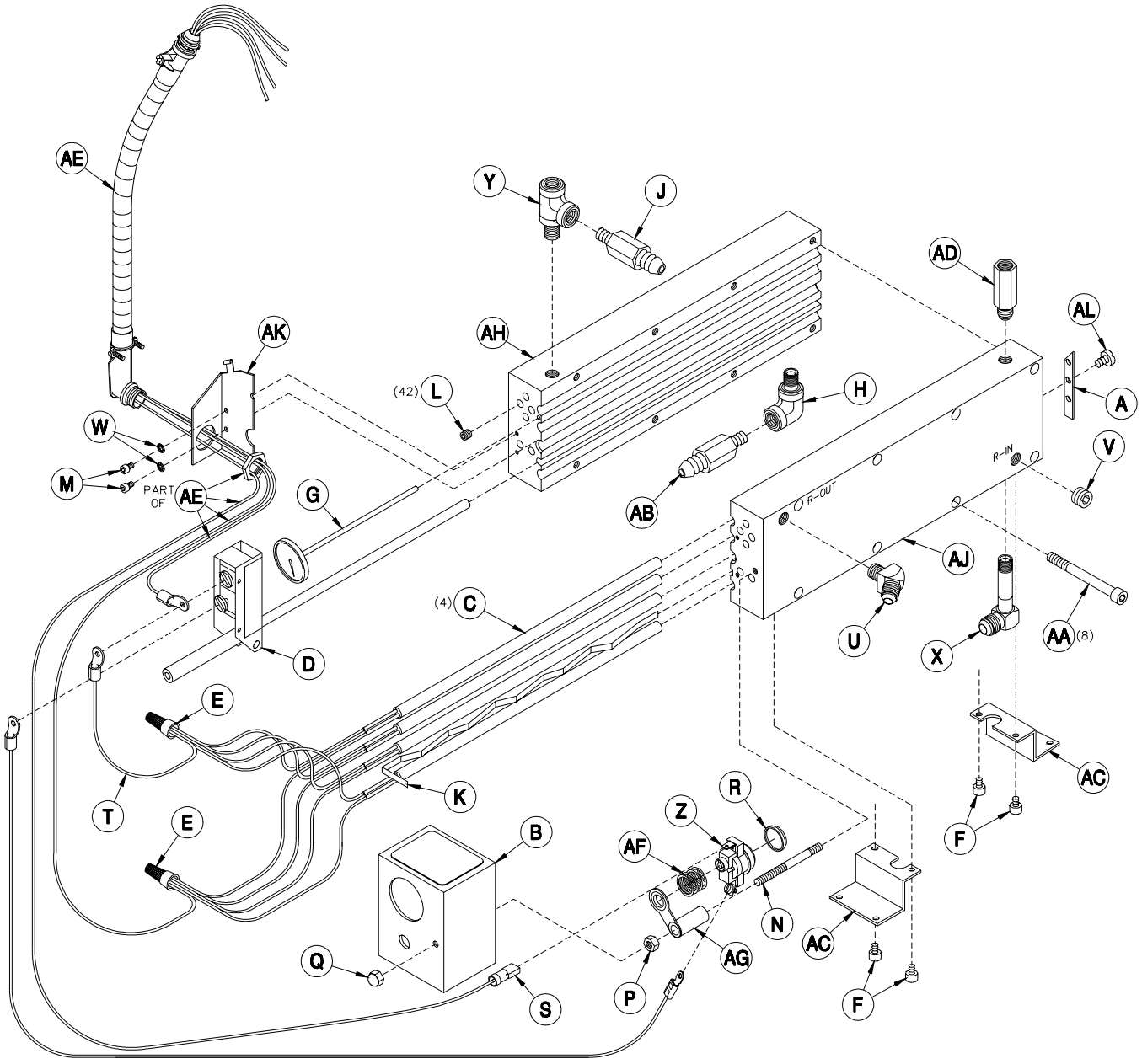


Figure 13. Primary Heater (Part No. 18300), Exploded View

TABLE 13. PRIMARY HEATERS (PART NO. 18300), PARTS

Reference Letter	Part Number	Description	Quantity
A	0351B-1	Stop	1
B	0355B	Thermostat Cover Box	1
C	0361-1250	Heating Element	4
D	0362C	Thermostat	1
E	0363A	Insulating Wire Nut	2
F	0371	Socket Head Cap Screw	4
G	0374	Dial Thermometer	1
H	0375B-2	Street Elbow	1
J	0375C-3	Hose Nipple	1
K	0376	Leaf Spring	1
L	0377	Pipe Plug	42
M	0379-2	Socket Head Cap Screw	2
N	0385-3	Threaded Stud	1
P	0385-4	Hex Nut	1
Q	0385-5	Acorn Nut	1
R	0385-6	Heat Tranfer Plate	1
S	0385-7A	Wire Harness	1
T	0386	Firerod Harness	1
U	0465	Hose Elbow	1
V	0576	Pipe Plug	1
W	0651A-10	Lockwasher	2
X	1323	Long Male Elbow	1
Y	6465	Pipe Tee	1
Z	6690-7-29	Thermal Limit Switch	1
AA*	9463	Socket Head Cap Screw	8
AB	10350-1	Extended Hose Nipple	1
AC	10356	Bracket	2
AD	17357	Bushing	1
AE	17365	Heater Wire Harness	1
AF	17385-1	Wave Spring	1
AG	17385-2	Mounting Bracket	1
AH	56350-1-1	A-Primary Heater Half ***(Includes L)***	1
AJ	56300-1-1	R-Primary Heater Half ***(Includes L & V)***	1
AK	56379-1	Thermostat Mounting Bracket	1
AL	OP168B-1-2	Pan Head Machine Screw	1

*** Torque Specifications: 87 Inch Pounds**

PROPORTIONING PUMP ASSEMBLY

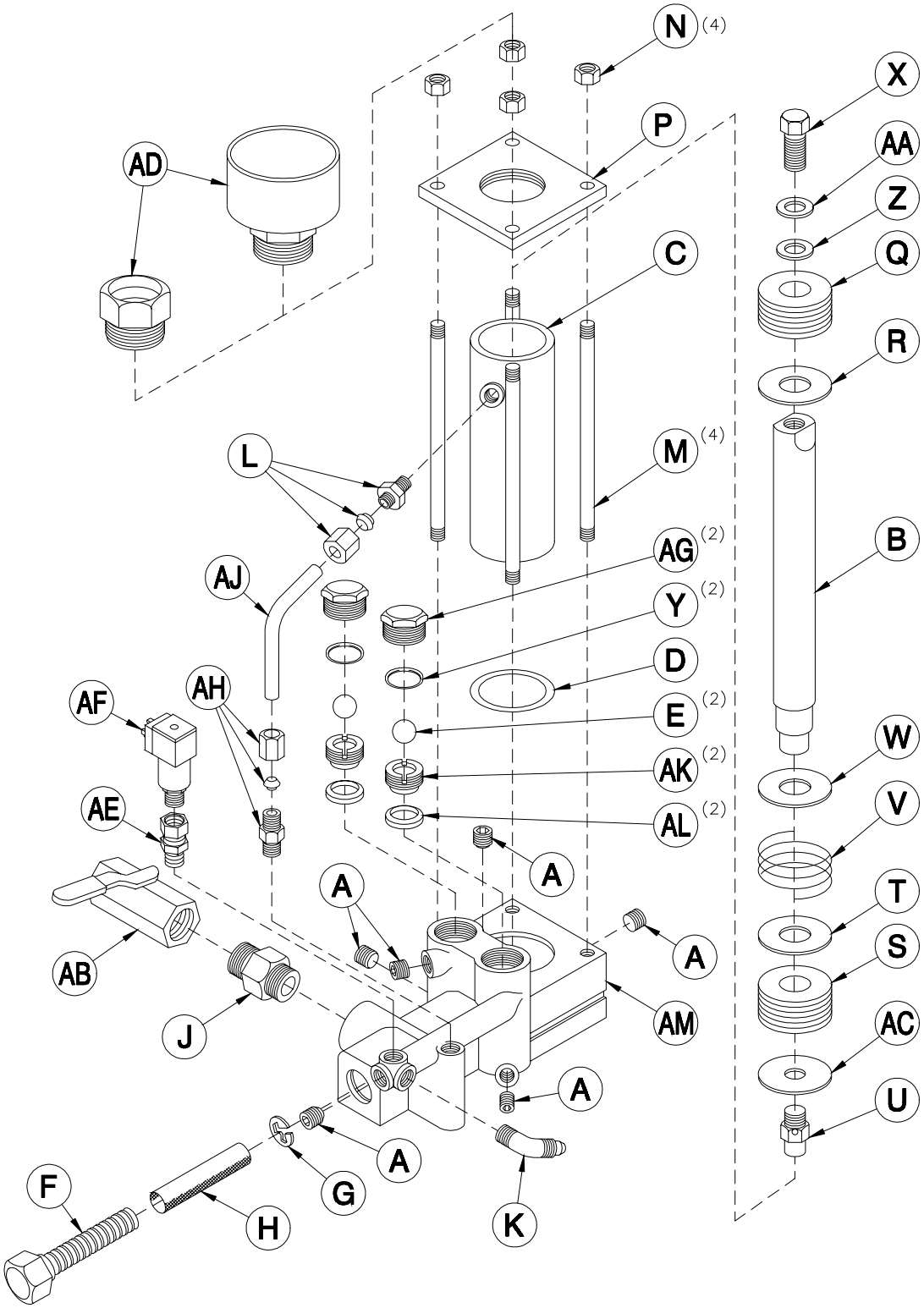


Figure 14. Proportioning Pump (Part No. 17400/17450-SIZE), Exploded View

TABLE 14. PROPORTIONING PUMP (PART NO. 17400/17450-SIZE), PARTS

Reference Letter	Part Number	Description	Quantity
A	0377	Pipe Plug	6
B	See Schedule	Pump Piston Rod	1
C	See Schedule	Pump Cylinder	1
D	0453	O-Ring	1
E	0455	Valve Ball	2
F	0460	Screen Screw	1
G	0461	Snap Ring	1
H	0462	Pump Screen	1
J	0463	Hex Nipple	1
K	0465	Hose Elbow	1
L	0470	Tube Nipple	1
M	56427	Tie Rod	4
N	0213-1	Hex Nut	4
P	0474	Cylinder Top	1
Q	See Schedule	Packing Set	1
R	See Schedule	Packing Support Washer	1
S	See Schedule	Packing Set	1
T	See Schedule	Packing Support Washer	1
U	See Schedule	Packing Retainer Bolt	1
V	See Schedule	Conical Spring	1
W	See Schedule	Spring Retainer Washer	1
X	See Schedule	Hex Head Cap Screw	1
Y	0485	O-Ring	2
Z	See Schedule	Washer	1
AA	See Schedule	Washer	1
AB	0487A	Ball Valve	1
AC	See Schedule	Packing Retainer Washer	1
AD	See Schedule See Schedule	R-Packing Nut A-Packing Nut w/Lube Cup	1 1
AE	0562-15	Swivel Union	1
AF	6690-16-161	Pressure Switch	1
AG	17402	Check Valve Retainer	2
AH	17404	Tube Fitting	1
AJ	17405	Crossover Tube w/Ferrule	1
AK	17406	Check Valve Seat	2
AL	17407	Check Valve Seal	2
AM	17428 17478	Resin Pump Base (Includes A) Iso Pump Base (Includes A)	1 1

TABLE 15. SCHEDULE OF PARTS

Reference Letter	Pump Size				
	15	19	22	24	30
B	0451A-15	0451A-19	0451A-22	0451A-24	0451A-30
C	0452B-15	0452B-19	0452B-22	0452B-24	0452B-30
Q	0476-15	0476-19	0476-22	0476-24	0476-30
R	0477-15	0477-19	0477-22	0477-24	0477-30
S	0478-15	0478-19	0478-22	0478-24	0476-19
T	0479-15	0479-19	0479-22	0479-24	0479-30
U	0480D-22/15	0480D-22/15	0480D-22/15	0480D-30/24	0480D-30/24
V	0481-15	0481-22/19	0481-22/19	0481-24	0481-30
W	0482-15	0482-19	0482-22	0482-24	0482-30
X	0483-5/16	0483-5/16	0483-5/16	0483-3/8	0483-3/8
Z	0486-5/16	0486-5/16	0486-5/16	0486-3/8	0486-3/8
AA	0486-5/16	0486-5/16	0486-5/16	0486-3/8	Not Used
AC	0488-15	0488-19	0488-22	0488-24	0488-30
AD	0475-15 0489-15	0475-19 0489-19	0475-22 0489-22	0475-24 0489-24	0475-30 0489-30

TABLE 16. SCHEDULE OF PARTS

Reference Letter	Pump Size					
	40	44	48	52	56	60
B	0451A-40	0451A-44	0451A-48	0451A-52	0451A-56	0451A-60
C	0452B-40	0452B-44	0452B-48	0452B-52	0452B-56	0452B-60
Q	0476-40	0476-44	0476-48	0476-52	0476-56	0476-60
R	0477-40	0477-44	0477-48	0477-52	0477-56	0477-60
S	0478-40	0478-44	0478-48	0478-52	0478-56	0478A-60
T	0479-40	0479-44	0479-48	0479-52	0479-56	0479-60
U	0480D-60/40	0480D-60/40	0480D-60/40	0480D-60/40	0480D-60/40	0480D-60/40
V	0481-44/40	0481-22/44	0481-60/48	0481-60/48	0481-60/48	0481-60/48
W	0482-40	0482-44	0482-48	0482-52	0482-56	0482-60
X	0483-7/16	0483-7/16	0483-7/16	0483-7/16	0483-7/16	0483-7/16
Z	0486-7/16	0486-7/16	0486-7/16	0486-7/16	0486-7/16	0486-7/16
AA	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used
AC	0488-40	0488-44	0488-48	0488-52	0488-56	0488-60
AD	0475-40 0489-40	0475-44 0489-44	0475-48 0489-48	0475-52 0489-52	0475-56 0489-56	0475-60 0489-60

HOSE HEAT POWER PACK ASSEMBLIES

Manual Hose Heat

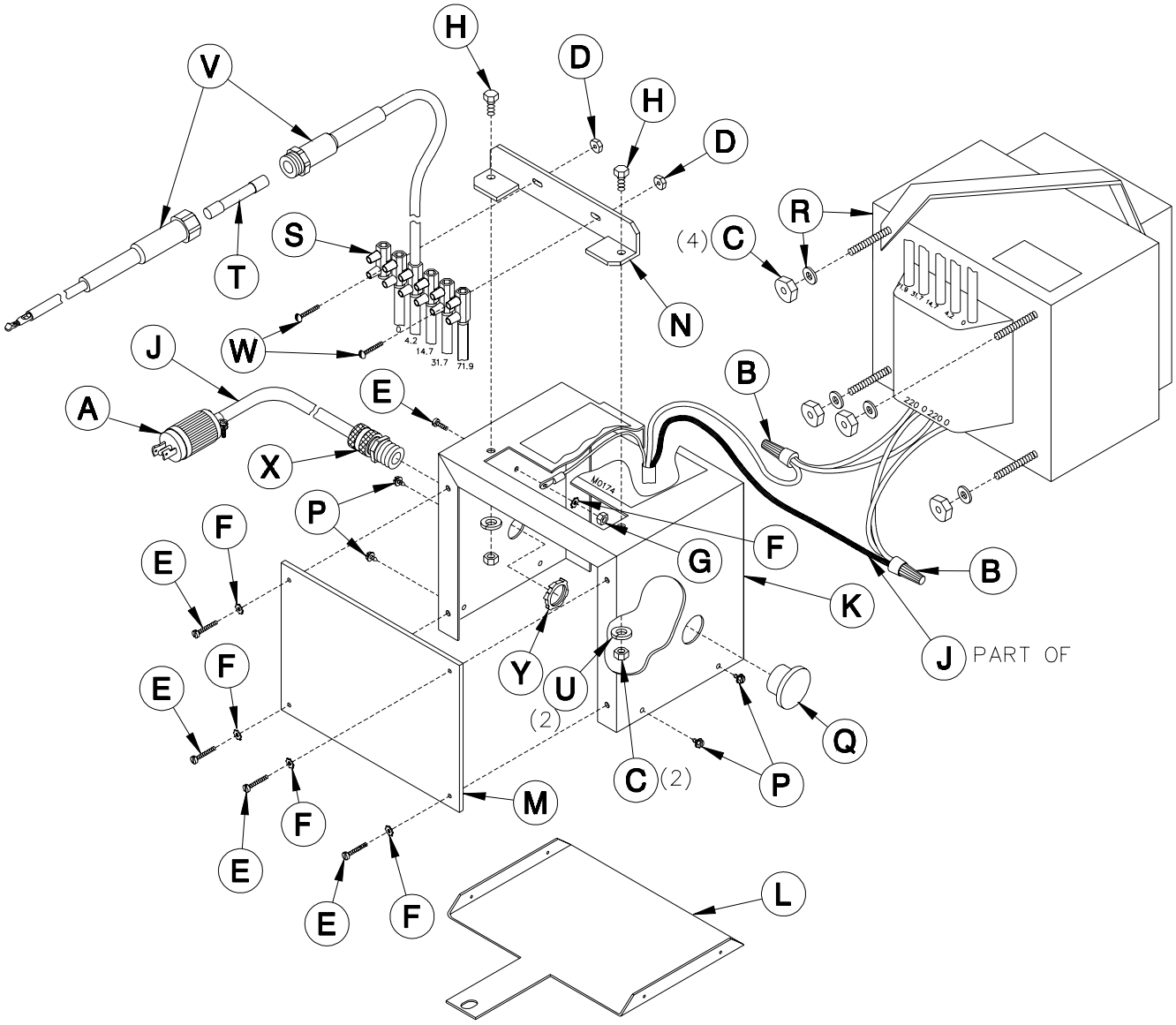


Figure 15. Manual Hose Heat Power Pack (Part No. 17276), Exploded View

TABLE 17. MANUAL HOSE HEAT POWER PACK (PART NO. 17276), PARTS

Reference Letter	Part Number	Description	Quantity
A	0251-1	Plug	1
B	0363A	Wire Nut	2
C	0385-4	Hex Nut	6
D	0651A-9	Hex Nut	2
E	0655-2	Pan Head Machine Screw	5
F	0655-4	Lockwasher	5
G	0668-3	Hex Nut	1
H	0760-3	Hex Head Cap Screw	2
J	1275B-2	Input (Power) Wire Harness (Includes A)	1
K	1277-1	Transformer Cover Box	1
L	1277-2	Bottom Cover	1
M	1277-3	Front Cover	1
N	1277-4	Terminal Block Mounting Bracket.	1
P	1615C-4	Sheet Metal Screw	4
Q	1704-5	Hole Plug	1
R	6690-15-5	Transformer	1
S	6690-20-5-6	Terminal Block	1
T	6690-24-14	50 AMP Fuse	2
U	9758	Helical Lockwasher	2
V	17276-1	Hose Conn. Lead	1
W	60302	Round Head Machine Screw	2
X	OP482-17-1	Bushing	1
Y	OP482-17-2	Locknut	1

Digital Hose Heat

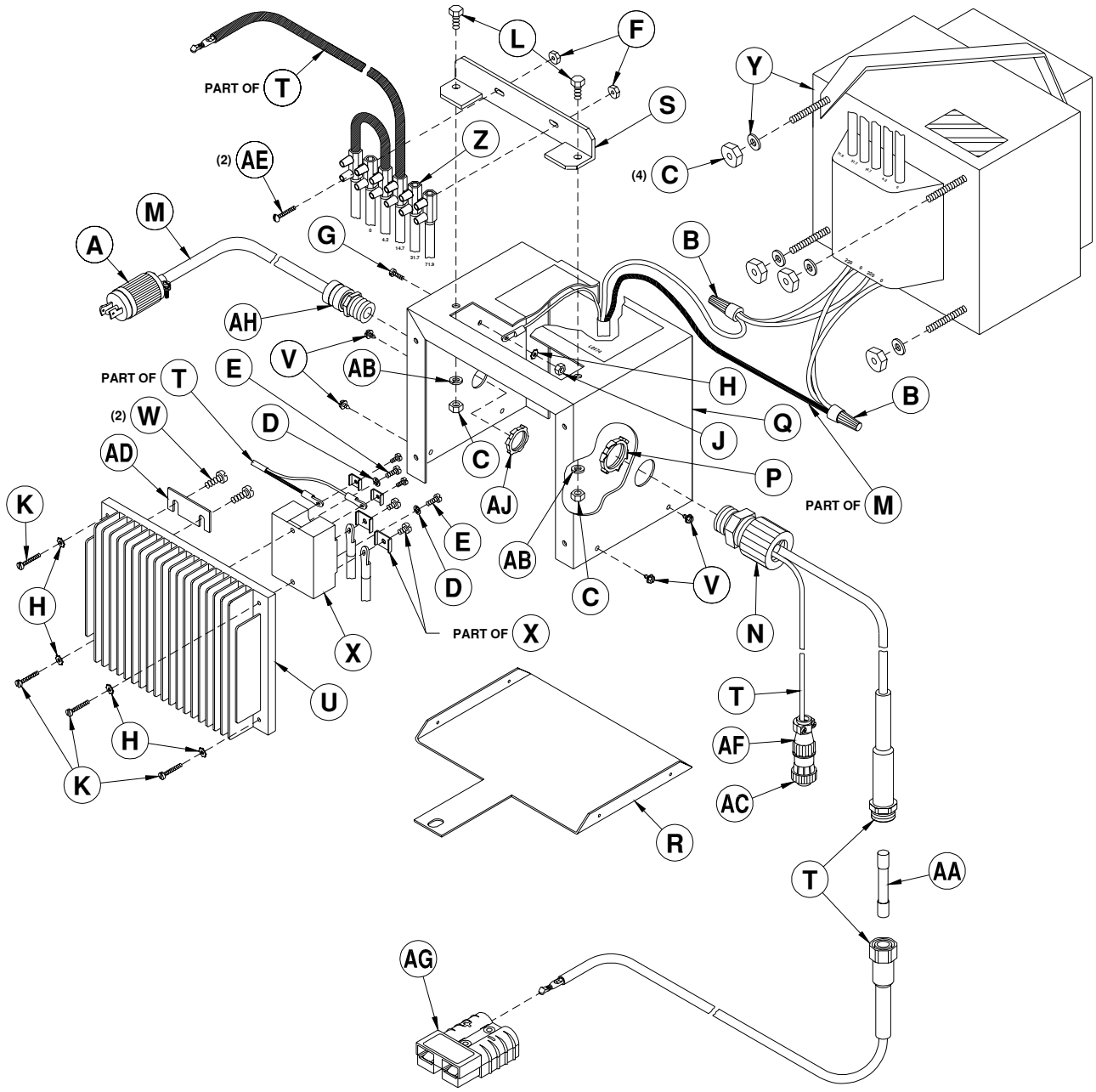


Figure 16. Digital Hose Heat Power Pack (Part No 17277), Exploded View

TABLE 18. DIGITAL HOSE HEAT POWER PACK (PART NO. 17277), PARTS

Reference Letter	Part Number	Description	Quantity
A	0251-1	Plug	1
B	0363A	Insulating Wire Nut	2
C	0385-4	Hex Nut	6
D	0651A-10	Lockwasher	2
E	0651A-8	Pan Head Machine Screw	2
F	0651A-9	Hex Nut	2
G	0655-2	Pan Head Machine Screw	1
H	0655-4	Lockwasher	5
J	0668-3	Hex Nut	1
K	0698-3	Pan Head Machine Screw	4
L	0760-3	Hex Head Cap Screw	2
M	1275B-2	Input (Power) Wire Harness	1
N	1275C-1-2-1	Strain Relief	1
P	1275C-1-2-2	Locknut	1
Q	1277-1	Transformer Cover Box	1
R	1277-2	Bottom Cover	1
S	1277-4	Terminal Block Mounting Bracket	1
T	17277-1	Transformer Wire Harness (Includes AC, AF)	1
U	1278-2	Heat Sink	1
V	1615C-4	Sheet Metal Screw	4
W	4605-3	Pan Head Machine Screw	2
X	6690-1-46	Solid State Relay	1
Y	6690-15-5	Transformer	1
Z	6690-20-5-6	Terminal Block	1
AA	6690-24-14	50 AMP Fuse	2
AB	9758	Lockwasher	2
AC	6690-13-3-11-41	4 CKT Ma Pin Plug	1
AD	14667	Terminal Jumper	1
AE	60302	Round Head Machine Screw	2
AF	6690-13-4-11	Cable Housing	1
AG	0684-2	Power-Lock™ Connector Housing	1
AH	OP482-17-1	Bushing	1
AJ	OP482-17-2	Locknut	1

ELECTRICAL SCHEMATIC DIAGRAMS

MANUAL HOSE HEAT SCHEMATIC DIAGRAMS

220V Single Phase 50/60Hz

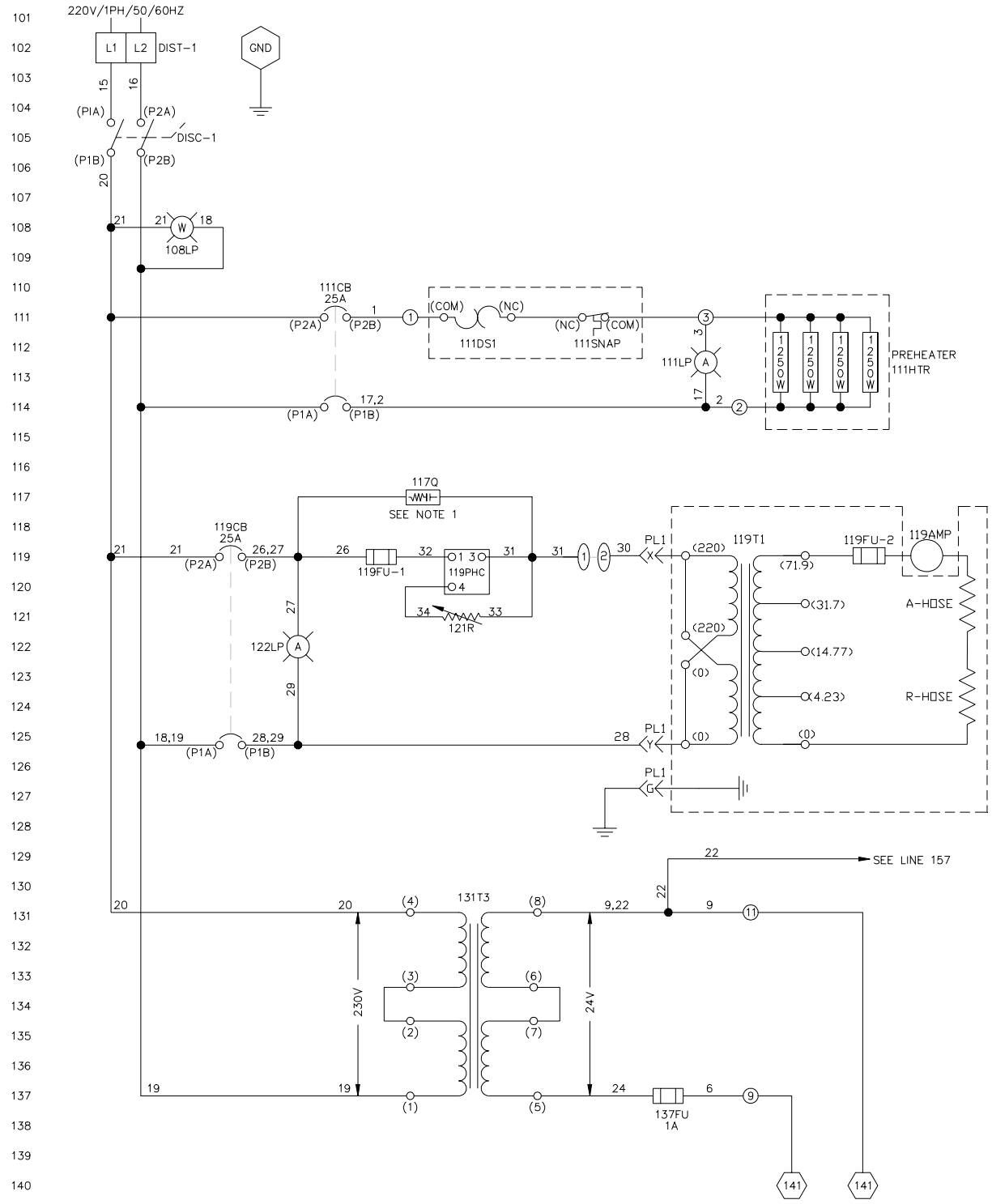


Figure 17. FF-1600 Electrical Schematic (SD17000A-220), Sheet 1 of 2

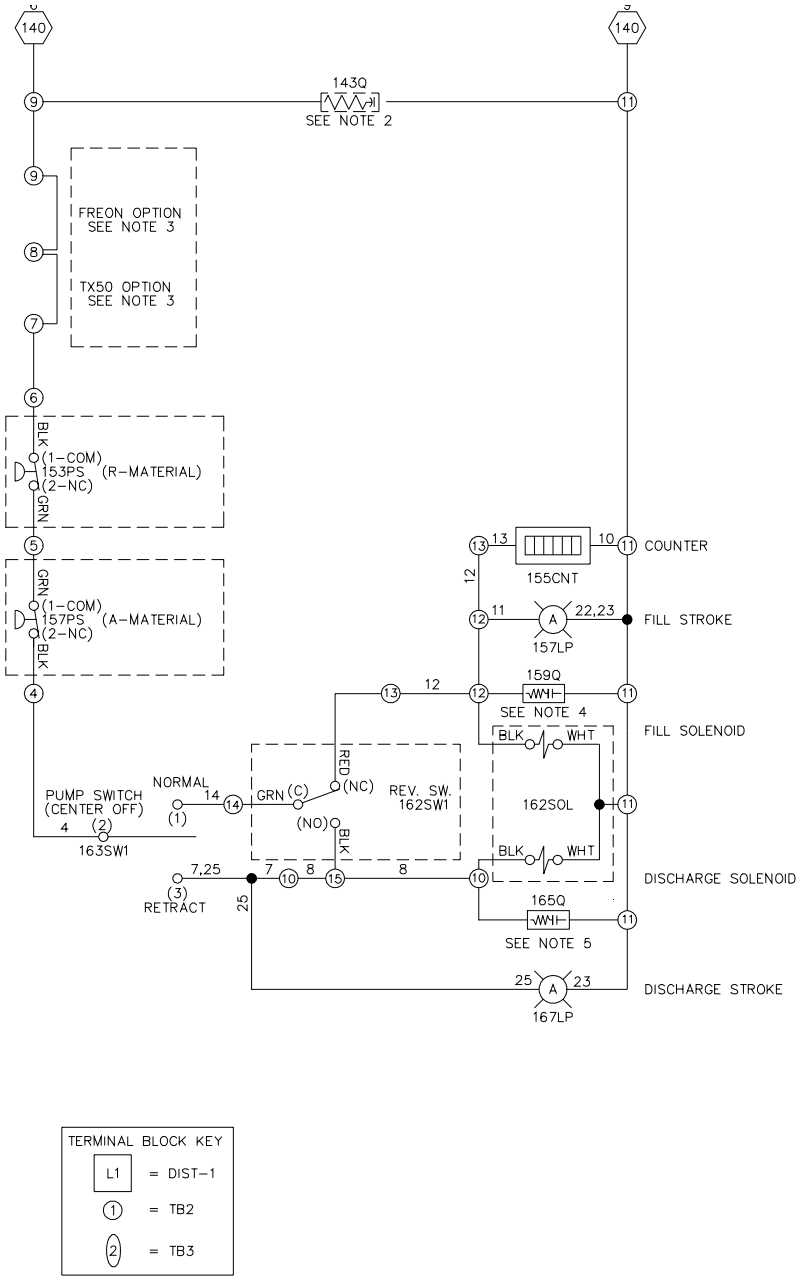


Figure 18. FF-1600 Electrical Schematic (SD17000A-220), Sheet 2 of 2

380V Three Phase 50Hz

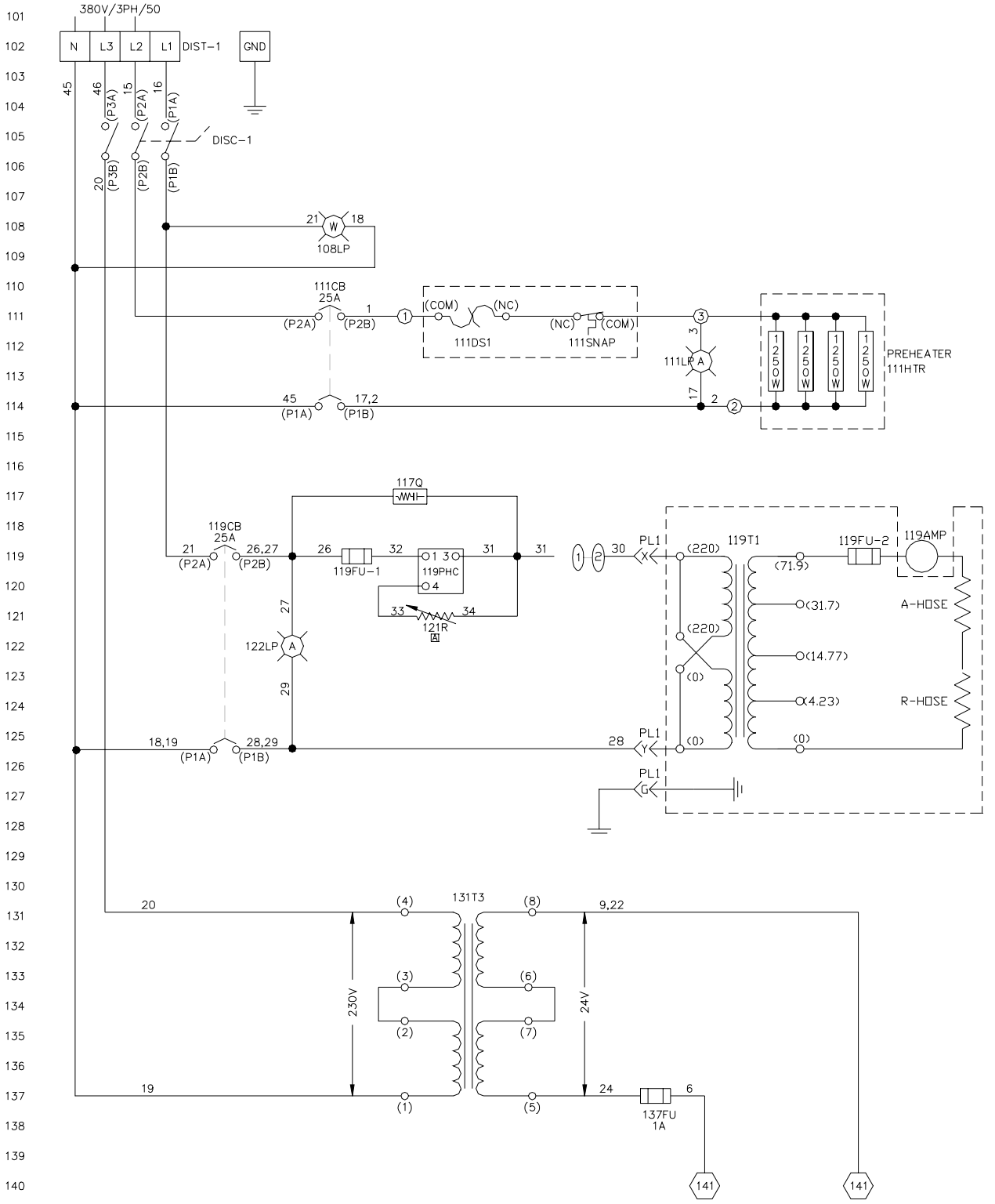


Figure 19. FF-1600 Electrical Schematic (SD17000A-380), Sheet 1 of 2

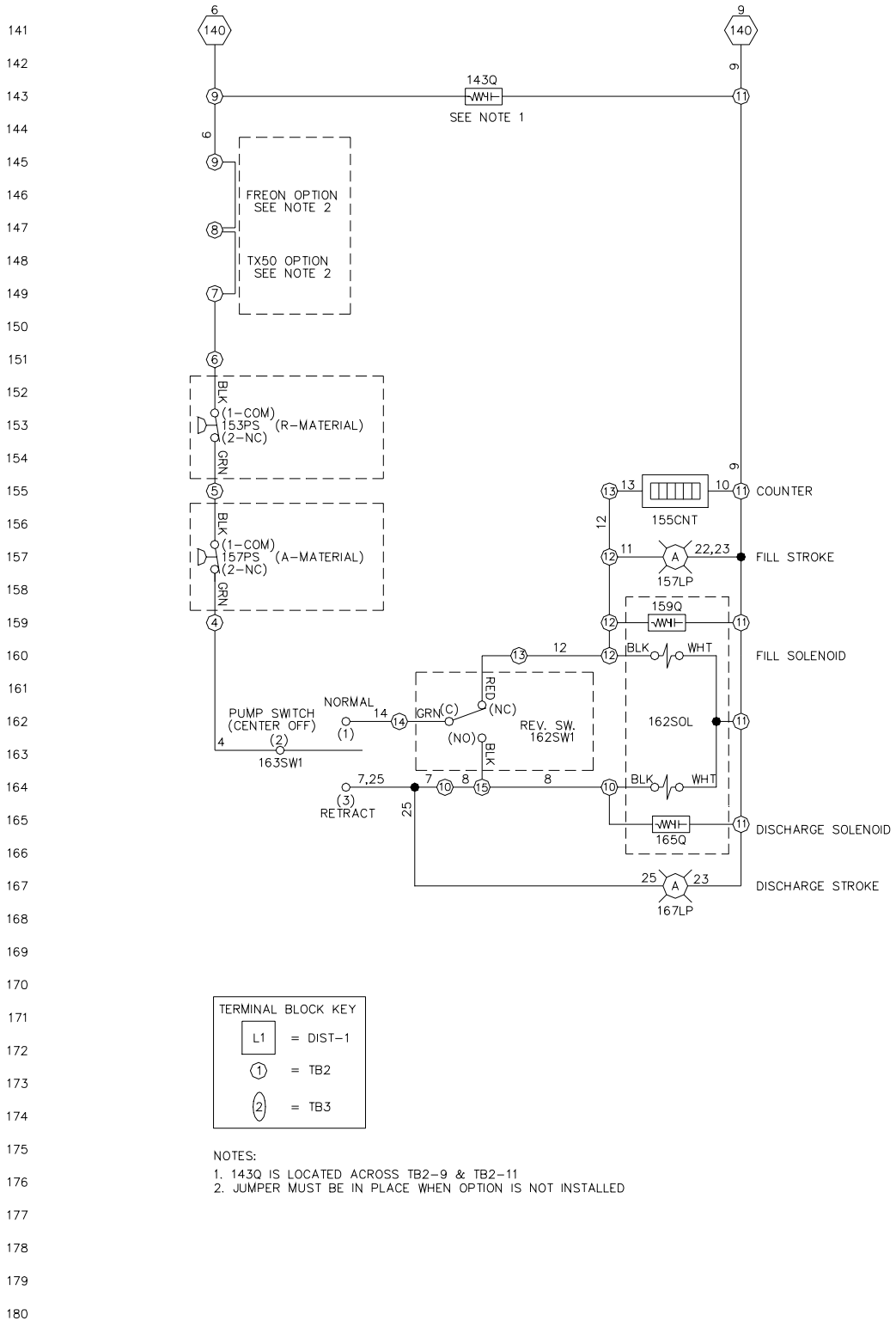


Figure 20. FF-1600 Electrical Schematic (SD17000A-380), Sheet 2 of 2

TABLE 19. FF-1600 ELECTRICAL SCHEMATIC (SD17000A-220/380), PARTS

Reference Number	Part No.	Description	Qty
DIST-1	6690-20-5-2 6690-20-5-4	Main Power Distribution Block (220V Unit) Main Power Distribution Block (380V Unit)	1 1
	17650-2	Wire Terminal Lug	1
DISC-1	6690-16-10	Switch	1
108LP	0656	Indicator Cap - White	1
	6690-19-25	Light Base	1
	6690-19-24	Bulb	1
111CB	0692-1-25	25Amp Circuit Breaker	1
111DS1	0362C	Thermostat	REF (1)
111SNAP	6690-7-29	Thermal Limit Switch	REF (1)
111LP	6690-19-25	Light Base	1
	0660	Indicator Cap - Amber	1
	6690-19-24	Bulb	1
111HTR	0361-1250	Heating Element - 1250 WATT	REF (4)
115AMP	9651-6-8	Ammeter 0-15A	1
117Q	6690-21-4	Quencharc	1
119CB	0692-1-25	25Amp Circuit Breaker	1
119FU-1	6690-24-1	Fuse 25 Amp	1
	6690-24-2	Fuse Block 30A	1
119PHC	6690-26-18	Phase Control 20A	1
P1	0670A-1-1	Hose Socket / Wired	1
119T1	6690-15-5	Transformer	REF (1)
119AMP	5616-KIT	Ammeter Replacement Kit	1
119FU-2	6690-24-13	Fuse Holder	REF (1)
	6690-24-14	Fuse 50 Amp	REF (1)
A-HOSE		ISO-HOSE Assembly	REF
B-HOSE		POLY-HOSE Assembly	REF
121R1	6690-5-17	Potentiometer	1
	17650-4	Knob	1
121Q	6690-21-2	Quencharc with Lugs	1
122LP	6690-19-25	Light Base	1
	0660	Indicator Cap - Amber	1
	6690-19-24	Bulb	1
131T3	0689-1	Transformer	1
137FU	OP5193-3-3	1 Amp Fuse	1
	5653B	Fuse Holder	1
143Q	6690-21-1	Quencharc	1
153PS	6690-16-161	Pressure Switch	REF (1)
	6690-16-76-2	Din Connector (Pressure Switch)	REF (1)
155CNT	9651-6-2	Counter	1
157PS	6690-16-161	Pressure Switch	REF (1)
	6690-16-76-2	Din Connector (Pressure Switch)	REF (1)
157LP	6690-19-25	Incandescent Light Base	1
	0660	Indicator Cap - Amber	1
	0662A	Incandescent Bulb	1
159Q	6690-21-1	Quencharc	1
162SW1	0578A	Reversing Switch	REF (1)

Reference Number	Part No.	Description	Qty
162SOL	6311-109	Valve	REF (1)
163SW1	6690-16-6	Toggle Switch	1
165Q	6690-21-1	Quencharc	1
167LP	6690-19-25	Incandescent Light Base	1
	0660	Indicator Cap - Amber	1
	0662A	Incandescent Bulb	1

DIGITAL HOSE HEAT SCHEMATIC DIAGRAMS

220V Single Phase 50/60Hz

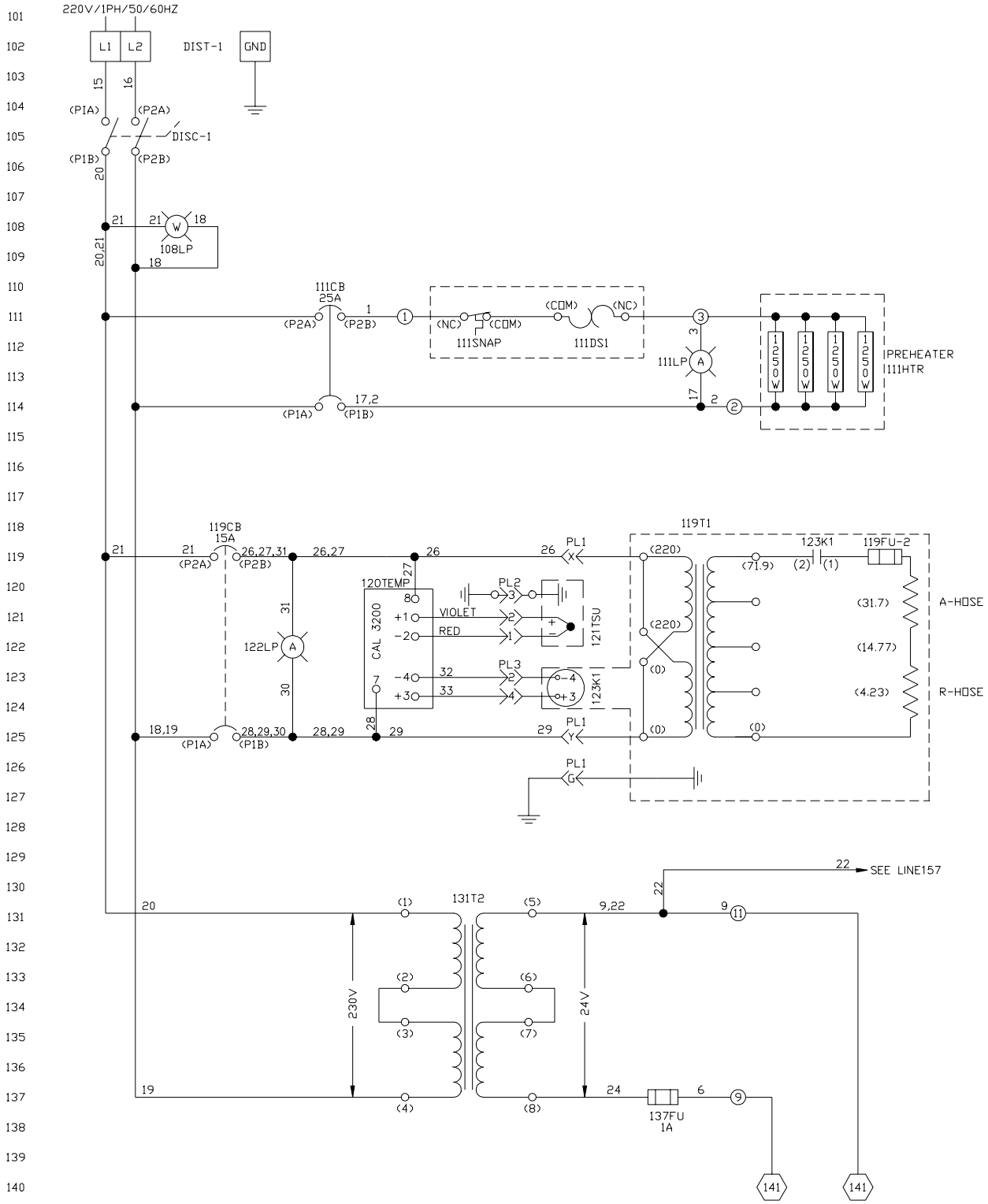


Figure 21. FF-1600 Electrical Schematic (SD17000B-220), Sheet 1 of 2

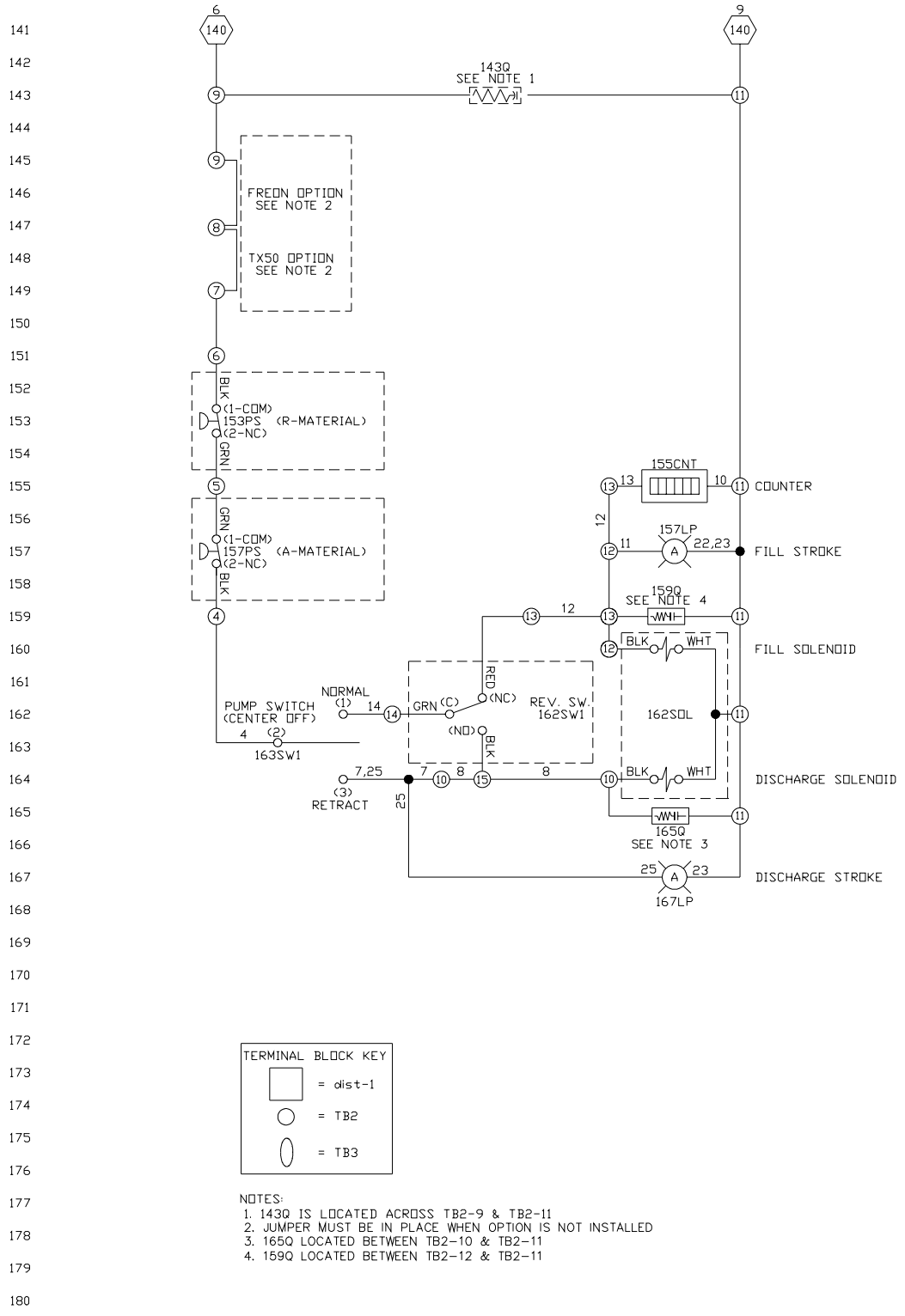


Figure 22. FF-1600 Electrical Schematic (SD17000B-220), Sheet 2 of 2

380V Three Phase 50Hz

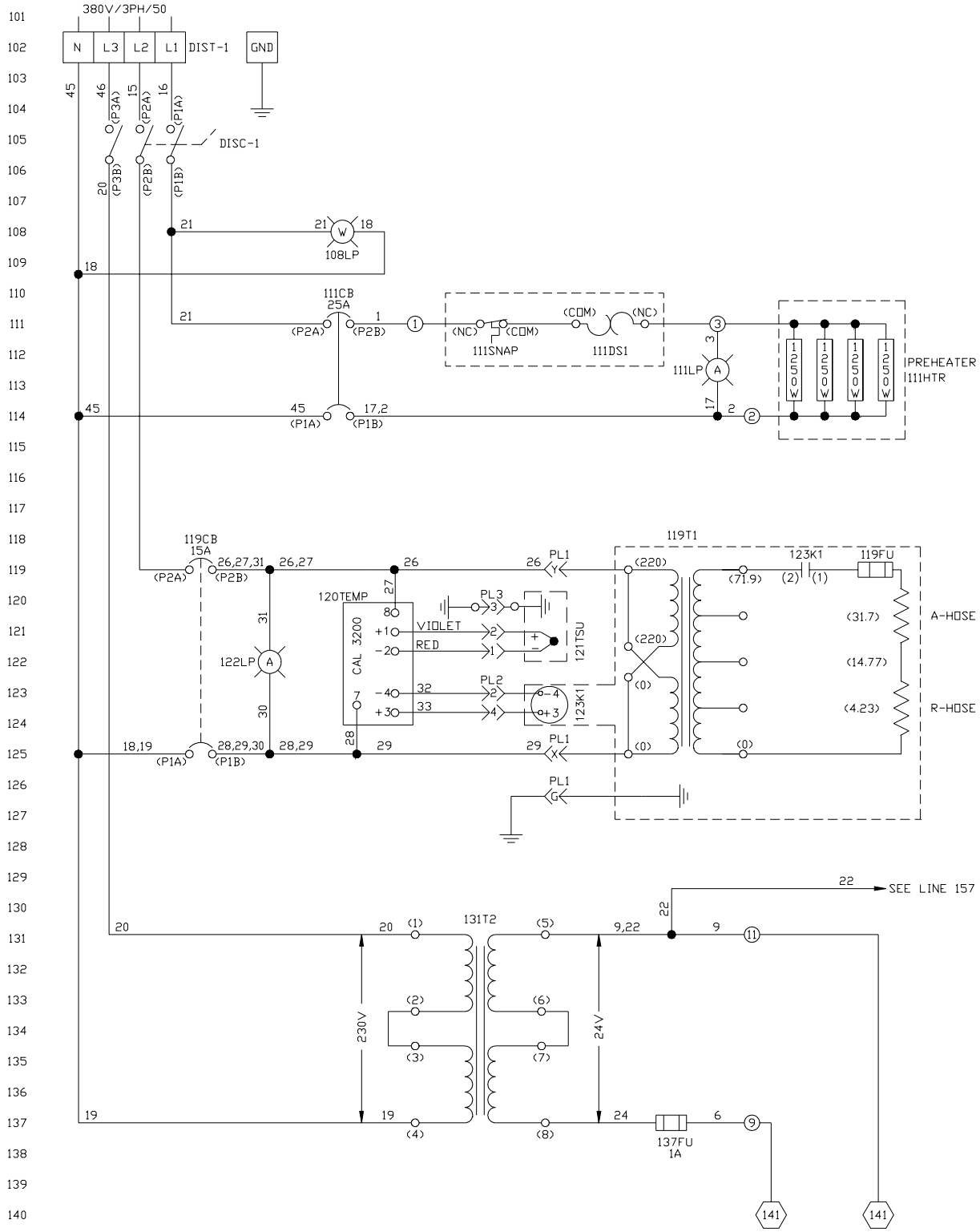


Figure 23. FF-1600 Electrical Schematic (SD17000B-380), Sheet 1 of 2

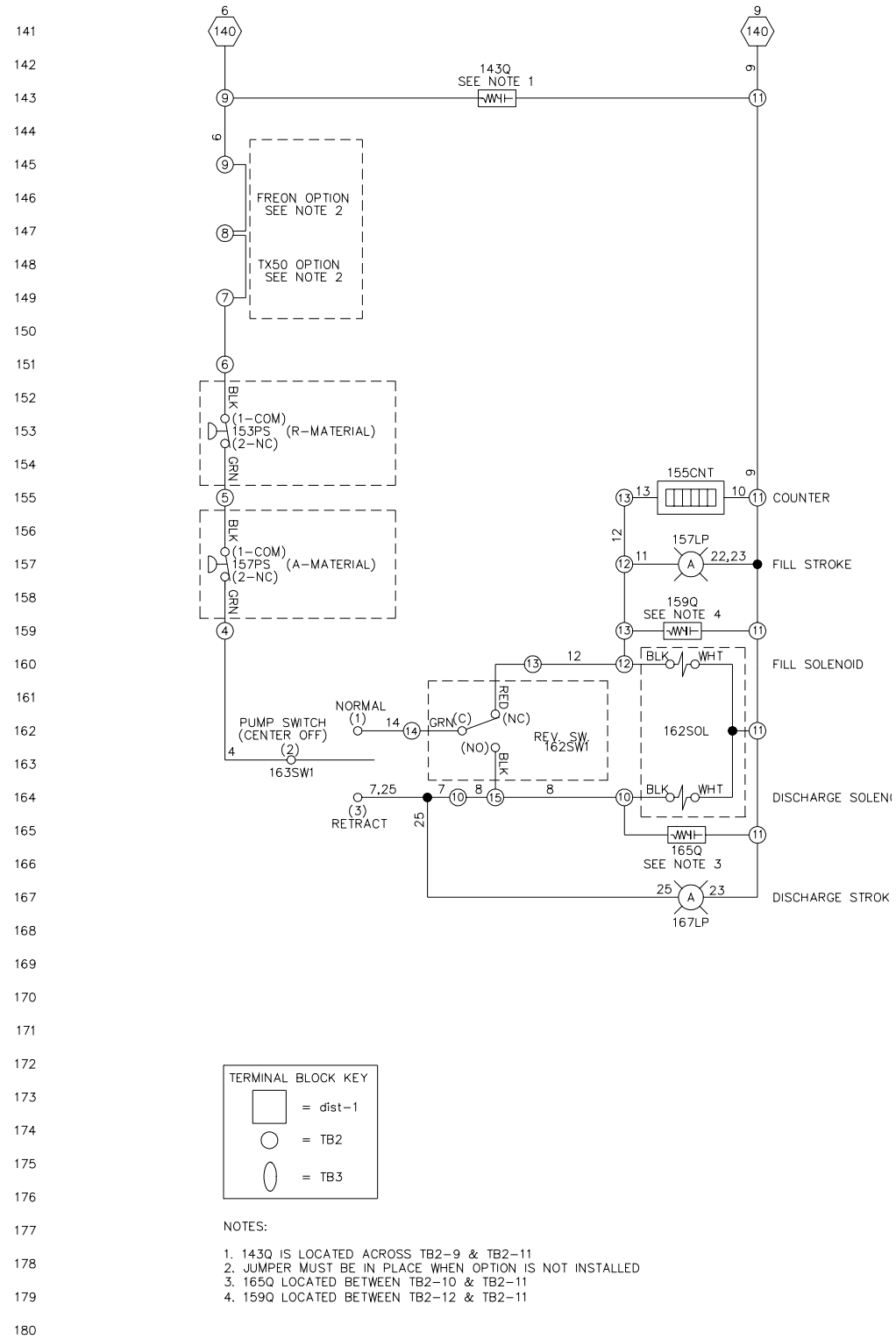


Figure 24. FF-1600 Electrical Schematic (SD17000B-380), Sheet 2 of 2

TABLE 20. FF-1600 ELECTRICAL SCHEMATIC (SD17000B-220/380), PARTS

Reference Number	Part No.	Description	Qty
DIST-1	6690-20-5-2	Main Power Distribution Block (220V Unit)	1
	6690-20-5-4	Main Power Distribution Block (380V Unit)	1
	17650-2	Wire Terminal Lug	1
DISC-1	6690-16-10	Switch	1
108LP	0656	Indicator Cap - White	1
	6690-19-25	Light Base	1
	6690-19-24	Bulb	1
111CB	0692-1-25	25Amp Circuit Breaker	1
111DS1	0362C	Thermostat with Terminal Screw	REF (1)
111SNAP	6690-7-29	Thermal Limit Switch	REF (1)
111LP	6690-19-25	Light Base	1
	0660	Indicator Cap - Amber	1
	6690-19-24	Bulb	1
111HTR	17350	5000W LV Primary Heater	REF (1)
	0361-1250	Heating Element - 1250 WATT	REF (4)
119CB	6690-25-6	1Amp Circuit Breaker	1
117Q	6690-21-1	Quencharc	1
117T1	9651-6-9	Transformer	1
119CB	0692-1-25	25Amp Circuit Breaker	1
P1	0670A-1-1	Hose Socket / Wired	1
119T1	6690-15-5	Transformer	REF (1)
119FU	6690-24-13	Fuse Holder	REF (1)
	6690-24-14	Fuse 50 Amp	1
119T2	6690-15-5	Transformer	REF (1)
119FU-2	6690-24-13	Fuse Holder	REF (1)
	6690-24-14	Fuse 50 Amp	REF (1)
A-HOSE		ISO-HOSE Assembly	REF
B-HOSE		POLY-HOSE Assembly	REF
120TEMP	6690-26-17	CAL 3200	1
PL2	17660-8	TSU Plug Assembly	1
	20207-3	TSU Extension Adapter	REF (1)
121TSU		TSU	REF
122LP	6690-19-25	Light Base	1
	0660	Indicator Cap - Amber	1
	6690-19-24	Bulb	1
PL3	6690-13-2-11-4	4CKT FE Pin Housing	1
123K1	6690-1-46	Solid State Relay	REF (1)
131T2	0689-1	Transformer	1
137FU	OP5193-3-3	1 Amp Fuse	1
	5653B	Fuse Holder	REF (1)
143Q	6690-21-1	Quencharc	1
153PS	6690-16-161	Pressure Switch	REF (1)
	6690-16-76-2	Din Connector (Pressure Switch)	REF (1)
155CNT	9651-6-2	Counter	1
157PS	6690-16-161	Pressure Switch	REF (1)
	6690-16-76-2	Din Connector (Pressure Switch)	REF (1)
157LP	6690-19-25	Incandescent Light Base	1

Reference Number	Part No.	Description	Qty
	0660	Indicator Cap - Amber	1
	0662A	Incandescent Bulb	1
159Q	6690-21-1	Quencharc	1
162SW1	0578A	Reversing Switch	REF (1)
162SOL	6311-109	Valve	REF (1)
163SW1	6690-16-6	Toggle Switch	1
165Q	6690-21-1	Quencharc	1
167LP	6690-19-25	Incandescent Light Base	1
	0660	Indicator Cap - Amber	1
	0662A	Incandescent Bulb	1

NOTES

INSTRUCTION MANUAL DISCREPANCY REPORT

Field Number	Field Title	Description
1	Date	
2	Name	
3	IM Number	
4	Issue Number	
5	Date of Issue	
6	Page Number	
7	Discrepancy	

Instructions:

Complete the above fields of the form by following the instructions listed on the reverse side of this sheet and mail to:

Gusmer Corporation

One Gusmer Drive PO Box 2055

Lakewood, NJ 08701

Field Number	Field Title	Description
1	**Date**	Enter date report is submitted.
2	**Name**	Enter name of person making report.
3	**IM Number**	Enter the Part Number of the Instruction Manual from the title page.
4	**Issue Number**	Enter the Issue number of the Instruction Manual from the title page. If there is no issue number, enter **NONE.**
5	**Date of Issue**	Enter the date of Issue of the Instruction Manual from the title page. If there is no issue date, enter **NONE.**
6	**Page Number**	Enter the page number containing the discrepancy.
7	**Discrepancy**	Provide a brief description of discrepancy. **NOTE:** You may send a marked copy of the page as an attachment to your submittal.