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Schematic/Electrical Parts

36021V5J, 36026V5J
42026V5J, 42030V6J
E-P Plus® Controls

Read the **separate safety manual** before installing, operating, or servicing

PELLERIN MILNOR CORPORATION POST OFFICE BOX 400, KENNER, LOUISIANA 70063-0400, U.S.A.

Table of Contents
ME7V5JG1CE/25194A

COMPONENT PARTS LIST

W7V7JPL/2024373N

COMPONENT NUMBER	FUNCTION OF THIS COMPONENT NUMBER	WHERE TO FIND THIS COMPONENT	MILNOR P/N	DESCRIPTION	LOCATION
	>>COMPONENT LOCATION DETAILS				
001	DETAIL-36 V6J & 42 V7J CONTROL BOX	W7V5JTG1	B2T2001045	36026V7J/42026V6J CONTROL PNL	SEE FUNCTION
002	DETAIL-36026 V5J CONTROL PANEL	W7V5JTG1	B2T2001046	36026V5J CONTROL PANEL	SEE FUNCTION
BA	**>>PRINTED CIRCUIT BOARDS**				
BADV	BOARD-DISPLAY/SW PNL	W7V7JBW	08BHEPSPDT	EP+ SWPNL SMT W/LCD>TEST	SWPL CTL BOX
BAFR	BOARD-V#J START CIRCUIT	W7V7JBW	08BHFRDT	START CIRCUIT BD-24VDC> TESTED	CONTROL BOX
BAUP	BOARD-PROCESSOR+I/O	W7V7JBW	08BH18EPDT	188PROCESSOR EP+ 20 MHZ->TEST	SWPL CTL BOX
CB	**>>CIRCUIT BREAKER**				
CB1	CIRCUIT CREAKER-HEAT/CONTROLS 36021/26	W7V7JEH	09FC032CAA	IEC MINI CIR.BREAK 32A 480V3P D CURVE	CONTROL BOX
CB1	CIRCUIT CREAKER-HEAT/CONTROLS 42026/30	W7V7JEH	09FC050CAA	THERM MAG CIR.BREAK 50A 480V3P D CURVE	CONTROL BOX
CR	**>>RELAY-PILOT OR CONTROL**				
CRC1	RELAY-FLUSH CHEMICAL #1	W7V7JCM	09C024D37	4PDT "KH" 110/120V	CONTROL BOX
CRC2	RELAY-FLUSH CHEMICAL #2	W7V7JCM	09C024D37	4PDT "KH" 110/120V	CONTROL BOX
CRC3	RELAY-FLUSH CHEMICAL #3	W7V7JCM	09C024D37	4PDT "KH" 110/120V	CONTROL BOX
CRC4	RELAY-FLUSH CHEMICAL #4	W7V7JCM	09C024D37	4PDT "KH" 110/120V	CONTROL BOX
CRC5	RELAY-FLUSH CHEMICAL #5	W7V7JCM	09C024D37	4PDT "KH" 110/120V	CONTROL BOX
CRC6	RELAY-FLUSH CHEMICAL #6	W7V7JCM	09C024D37	4PDT "KH" 110/120V	CONTROL BOX
CRDL	RELAY-DOOR IS CLOSED AND LOCKED	W7V7JS+	09C024D37	4PDT "KH" 110/120V	START/RELAY BD
CRD	RELAY-OK TO OPEN DOOR	W7V7JS+	09C024D37	4PDT "KH" 110/120V	START/RELAY BD
CRDRR	RELAY-DRAIN TO REUSE	W7V7JS+	09C024D37	4PDT "KH" 110/120V	CONTROL BOX
CRE	RELAY-OK TO LOCK DOOR	W7V7JS+	09C024D37	4PDT "KH" 110/120V	START/RELAY BD
CS	**>>CONTACTOR-MOTOR STARTER**				
CSVP	CONTACTOR-INVERTER	W7V7JS+	09MC08G337	37A 3P MCS CONT NR 120V5/6	CONTROL BOX
EB	**>>SIGNAL-AUDIBLE**				
EBSG	BUZZER-SIGNAL	W7V7JEB	09H020	ALARM SONALERT 115V	
EF	**>>FUSE OR FUSE HOLDER**				
EFP1	FUSE-TRANSFORMER PRIMARY X-BUS	W7V7JLV	MESSAGE VS	SEE EFP1HV OR LV FOR PART NUMBER	CONTROL BOX
EFP1HV	FUSE-XFORMER PRIMARY <415 VOLTS	W7V7JLV	09FF003AWN	FUSE #KTK 3A600V=HPS HOLDER	CONTROL BOX
EFP1LV	FUSE-XFORMER PRIMARY >415 VOLTS	W7V7JLV	09FF005AWN	FUSE #KTK 5A600V=HPS HOLDER	CONTROL BOX
EFP2	FUSE-TRANSFORMER PRIMARY Y-BUS	W7V7JLV	MESSAGE VS	SEE EFP1HV OR LV FOR PART NUMBER	CONTROL BOX
EFP2HV	FUSE-XFORMER PRIMARY <415 VOLTS	W7V7JLV	09FF003AWN	FUSE #KTK 3A600V=HPS HOLDER	CONTROL BOX
EFP2LV	FUSE-XFORMER PRIMARY >415 VOLTS	W7V7JLV	09FF005AWN	FUSE #KTK 5A600V=HPS HOLDER	CONTROL BOX
EL	**>>LIGHTS FLASHING SIGNAL**				

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COMPONENT NUMBER	FUNCTION OF THIS COMPONENT NUMBER	WHERE TO FIND THIS COMPONENT	MILNOR P/N	DESCRIPTION	LOCATION
ELSG	LIGHT-FLASHING SIGNAL	09H026V37	09H026V37	BEACON 90MM AMBER CE ALLEN BRADLEY	TOP OF C-BOX
EM	**>>ELECTROMAGNET AND SOLENOID**				
EMCF	FAN-INVERTER COOLING	W7V7JS+	13AF100A37	FAN 92CFM115V60 NEWARK#90F6921	CONTROL BOX
EMDL	SOLENOID-DOOR UNLOCK	W7V7JS+	09K063C24	DOOR LOCK SOLENOID 24V	DOOR LTCH BX
EMDR	SOLENOID-DRAIN VALVE	W7V7JEV	96R301A37	1/8" AIRPILOT 3W NC 120V50/60	AIR VALVE BX
ES	**>>POWER SUPPLY-ELECTRONIC**				
ESPS	POWER SUPPLY-MICROPROCESSOR	W7V7JBW	08PSS3401T	40 WATT POWER SUPPLY TESTED	SW PANEL BOX
ET	**>>THERMAL OVERLOAD DEVICES**				
ETBD	OVERLOAD-RESISTOR	W7V7JVP	09F024A	0L RELAY 1P SZ1 SQD #9065-CO1	CONTROL BOX
EX	**>>TRANSFORMERS**				
EXHV	TRANSFORMER-INCOMING VOLT.120VAC	W7V7JLV	MESSAGE EW	SEE EX37-1, -2, OR -3 FOR VOLTAGE	CONTROL BOX
EXHV-1	TRANSFORMER-208/240>120VAC	W7V7JLV	09U249AA37	XFMR 200-240V PRI/120VSEC/250VA	CONTROL BOX
EXHV-2	TRANSFORMER-380/480>120VAC	W7V7JLV	09U200AAB	XFMR 380-480V/240-120V-250VA	CONTROL BOX
EX96A	TRANSFORMER-600V PRI/480V SEC	W7V7JLV	09US010A96	XFMR 1PH1.5KVA240/480X120/240	SIDE OF MACH
EX96B	TRANSFORMER-600V PRI/480V SEC	W7V6ZMT6	09US010A96	XFMR 1PH1.5KVA240/480X120/240	SIDE OF MACH
MT	**>>MOTORS**				
MTWE	MOTOR	W7V7JVP	MESSAGE SN	SEE SPECIFIC MACHINE+NAMEPLATE	BOTTOM REAR
SH	**>>SWITCH-HAND OPERATED**				
SHDO	SWITCH-DOOR OPEN	W7V7JS+	09N405PB10	SWASS PBBK 1NO	SWITCH PANEL
SK	**>>SWITCH-KEYLOCK**				
SKPR	SWITCH-RUN/PROGRAM (KEY OP)	W7V5JIA	09N127C	KEYSW SPST 7A120VAC SCREW TERM	SWITCH PANEL
SM	**>>SWITCH-MECHANICAL OPERATED**				
SMD	SWITCH-DOOR INTERLOCK	W7V7JS+	09R025	SWITCH - MINI SNAP ACTION	DOOR LTCH BX
SME	SWITCH-DOOR IS LOCKED	W7V7JS+	09R010D	DOOR LOCK SWITCH	DOOR LTCH BX
SMVB	SWITCH-VIBRATION	W7V5JIA	09R020	SWITCH NC VIBR#WZ-2RW84429-P52	CONTROL BOX
MV	**>>>MOTOR POWER INVERTERS**				
MVDVR	RESISTOR-DYNAMIC BRAKE	W7V7JVP	09MV100RES	RESIST 100 OHM 225WATT ADJ	REAR CNT PANEL
MVINR	REACTOR - INVERTER LOW VOLTAGE	W7V7JVP	09MX075A74	INVERT RECTR 5HP 200-240V 25A	REAR CNT PANEL
MVINR	REACTOR - INVERTER HIGH VOLTAGE	W7V7JVP	09MX075A96	REACTOR 7.5HP 460V 12A	REAR CNT PANEL
MVINV	INVERTER-LOW VOLTAGE 3PH	W7V7JVP	09MWB01774	V1000 INVERTER 17.5AMP 230V	REAR CNT PANEL
MVINV	INVERTER-LOW VOLT 1PH	W7V7JVP	09MWB02574	V1000 INVERTER 25AMP 230V	REAR CNT PANEL
MVINV	INVERTER-HIGH VOLTAGE 3PH	W7V7JVP	09MWB00996	V1000 INVERTER 9.2AMP 460V	REAR CNT PANEL
ST	**>>>SWITCH-TEMPERATURE**				

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STDB	SWITCH-THERMOSTAT DYNAMIC BRAKE	W7V7JS+	30RA175T	THERMOSTAT OPENS AT 175F	BRAKING RESIST
VE	**>>VALVE-ELECTRIC OPERATED**				
VEC1	VALVE-CHEMICAL #1 FLUSH	W7V7JCF	96P013G37	3/4" 2WAYPLASTCVAL 120V60C	SUPPLY INJEC
VEC2	VALVE-CHEMICAL #2 FLUSH	W7V7JCF	96P013G37	3/4" 2WAYPLASTCVAL 120V60C	SUPPLY INJEC
VEC3	VALVE-CHEMICAL #3 FLUSH	W7V7JCF	96P013G37	3/4" 2WAYPLASTCVAL 120V60C	SUPPLY INJEC
VEC4	VALVE-CHEMICAL #4 FLUSH	W7V7JCF	96P013G37	3/4" 2WAYPLASTCVAL 120V60C	SUPPLY INJEC
VEC5	VALVE-CHEMICAL #5 FLUSH	W7V7JCF	96P013G37	3/4" 2WAYPLASTCVAL 120V60C	SUPPLY INJEC
VEDR	VALVE-OPTIONAL ELECTRIC DRAIN	W7V7JEV	96D350A37	DRINVAL 3"N/O MTRDR120V 50/60C	BELOW SHELL
VEDRR	VALVE-DRAIN TO REUSE	W7V7JEV	96D350B37	DRAINVAL 3"N/C MTRDRV120V 50/6	BELOW SHELL
VEFL	VALVE-CHEM FLUSH	W7V7JEV	96P013G37	3/4" 2WAYPLASTCVAL 120V60C	SUPPLY INJEC
VESTM	VALVE-STEAM	W7V7JEV	96R301A37	1/8" PILOT 3W-NC 110/50 120/60	AIR VALVE BX
VEWC	VALVE-COLD WATER	W7V7JEV	96P056A37	3/4"NC 110V 50/60 W/LEADSBURK	SIDE OF MACH
VEWH	VALVE-HOT WATER	W7V7JEV	96P056A37	3/4"NC 110V 50/60 W/LEADSBURK	SIDE OF MACH
VEWVX	VALVE-EXTRA WATER	W7V7JEV	96P056A37	3/4"NC 110V 50/60 W/LEADSBURK	SIDE OF MACH

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LIMITED STANDARD WARRANTY

We warrant to the original purchaser that MILNOR machines including electronic hardware/software (hereafter referred to as "equipment"), will be free from defects in material and workmanship for a period of one year from the date of shipment (unless the time period is specifically extended for certain parts pursuant to a specific MILNOR published extended warranty) from our factory with no operating hour limitation. This warranty is contingent upon the equipment being installed, operated and serviced as specified in the operating manual supplied with the equipment, and operated under normal conditions by competent operators.

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Parts damaged by exposure to weather, to aggressive water, or to chemical attack are not covered by this warranty. For parts which require routine replacement due to normal wear—such as gaskets, contact points, brake and clutch linings, belts, hoses, and similar parts—the warranty time period is 90 days.

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BIUUUD19 (Published) Book specs- Dates: 20081231 / 20081231 / 20081231 Lang: ENG01 Applic: UUU

How to Get the Necessary Repair Components

This document uses Simplified Technical English.
Learn more at http://www.asd-ste100.org.

You can get components to repair your machine from the approved supplier where you got this machine. Your supplier will usually have the necessary components in stock. You can also get components from the Milnor® factory.

Tell the supplier the machine model and serial number and this data for each necessary component:

- The component number from this manual
- The component name if known
- The necessary quantity
- The necessary transportation requirements
- If the component is an electrical component, give the schematic number if known.
- If the component is a motor or an electrical control, give the nameplate data from the used component.

To write to the Milnor factory:

Pellerin Milnor Corporation
Post Office Box 400
Kenner, LA 70063-0400
UNITED STATES

Telephone: 504-467-2787
Fax: 504-469-9777
Email: parts@milnor.com

— End of BIUUUD19 —

BIUUUK01 (Published) Book specs- Dates: 20130308 / 20130308 / 20130308 Lang: ENG01 Applic: PCR UUU

How to Use Milnor® Electrical Schematic Diagrams

Milnor® electrical schematic manuals contain a table of contents/component list and a set of schematic drawings. These documents are cross referenced and must be used together.

The table of contents/components list shows, for every component on every schematic in the manual, the component item number (explained in detail below), statement of function, parent schematic number, part number, description and electric box location. In older manuals, two component lists are provided: List 1 sorts the components by function, and List 2 by type of component. Newer schematic manuals include only the list sorted by component number.

The schematic drawings use symbols for each electromechanical component, and indicate the function of each. Integrated circuits are not shown, but the function of each microprocessor input and output is stated. Certain electrical components not pertinent to circuit logic, such as wire connectors, are not represented on the schematic.

Most machines require several schematics to describe the complete control system and all the options available on the included models. In most manuals there are some schematic pages that don't apply to your specific machine because certain options and configurations are mutually exclusive or are not necessary in all markets. You may find it helpful to mark or remove such pages. A schematic page that only applies to a subset of machines will normally state, in the title, which models and/or options it covers. Compare this with the nameplate on your machine and with your purchase records.

Each schematic is devoted to circuits with common functions (e.g., microprocessor inputs, motor contactors). Schematics appear in the manual in alphanumeric order.

1. Component Prefix Classifications and Descriptions

Component item numbers consist of up to six characters and appear as part of a component's symbol on the schematic. The first two characters indicate the general class of component, and the remaining characters are a mnemonic for the function. For example, “CD” is the code for all time delay relays, and “SR” stands for safety reset. Thus, CDSR is a time delay relay that serves as a safety reset.

The following are descriptions of electrical components used in Milnor® machines. Descriptions are in alphabetical order by the component class code (two character prefix).

> **Note 1:** Some component class codes do not have a corresponding symbol, but are represented by a box and an accompanying note describing the component. Examples of such codes are BA (printed circuit board), ED (electronic display), and ES (electronic power supply).

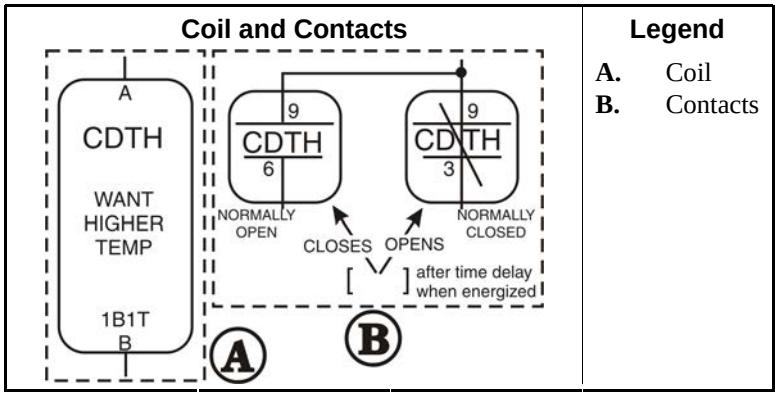
BA=Printed Circuit Board—Insulating substrate on which a thin pattern of copper conductors has been formed to connect discrete electronic components also mounted on the board.

CB=Circuit Breaker (Figure 1)—Automatic switch that opens an electric circuit in abnormal current conditions (e.g., an overload).

Figure 1: Circuit Breaker (CB)

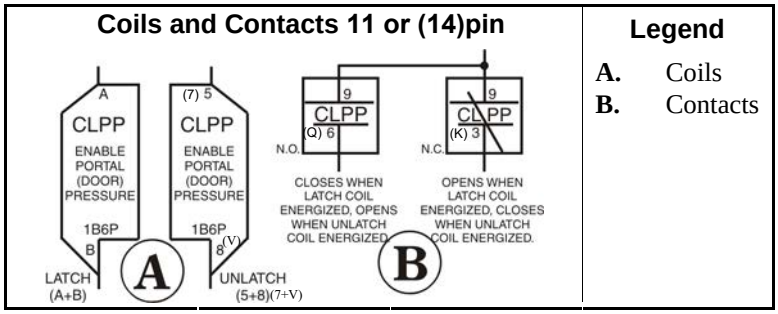
CD=Control, Time Delay Relay (Figure 2)—A relay whose contacts switch only after a fixed or adjustable delay, once voltage has been applied to its coil. The contacts switch back to normal (de-energized state) immediately when the voltage is removed.

Figure 2: Time Delay Relay (CD)



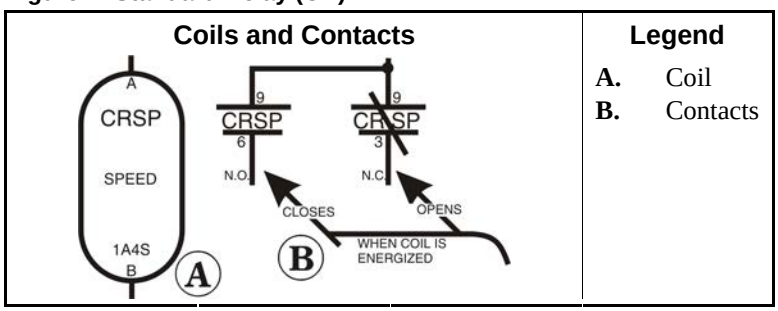
CL=Control, Latch Relay (Figure 3)—A relay which latches in an energized or set position when operated by one coil (the latch/set coil). The relay stays latched even though coil voltage is removed. The relay releases or unlatches when voltage is applied to a second coil (the unlatch/reset coil).

Figure 3: Latch Relay (CL)



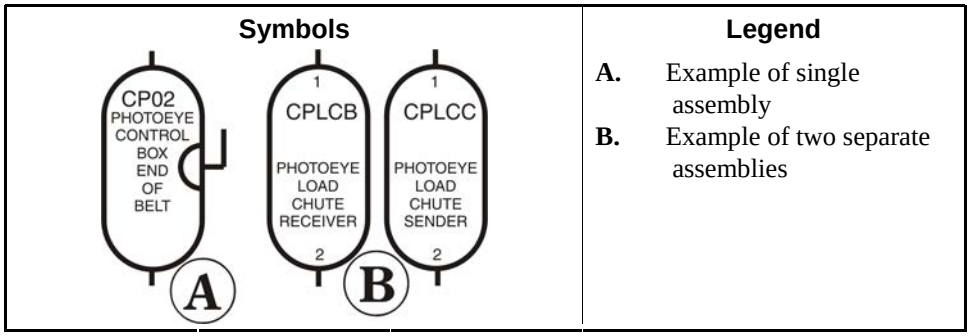
CR=Control, Relay (Figure 4)—A relay whose contacts switch immediately when voltage is applied to its coil and revert to normal when the voltage is removed.

Figure 4: Standard Relay (CR)



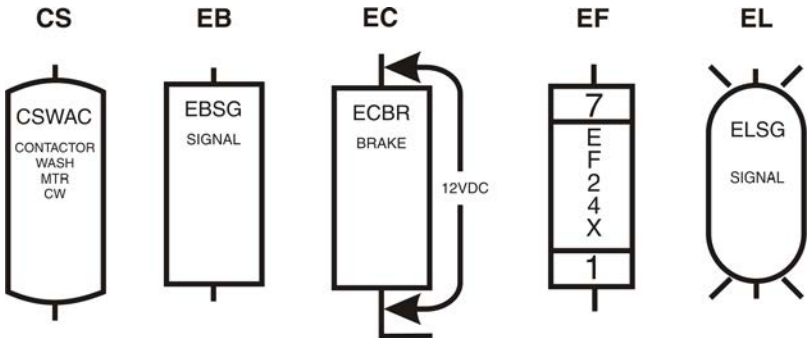
CP=Control, Photo-Eye (Figure 5)—Photo-eyes sense the presence of an object without direct physical contact. Photo-eyes consist of a transmitter, receiver, and output module. These components may be housed in one assembly with the transmitter bouncing light off of a reflector to the receiver, or these components can be housed in two separate assemblies with the transmitter pointed directly at the receiver. The photo-eye can be set to turn on its output either when the light beam becomes blocked (dark operate) or when it becomes un-blocked (light operate).

Figure 5: Photo-eye (CP)



CS=Control, Contactor/Motor Starter (Figure 6)—A relay capable of handling heavier electrical loads, usually a motor.

Figure 6: Other Control Symbols



EB=Electric Buzzer (Figure 6)—An audible signaling device.

EC=Electric Clutch (Figure 6)—A clutch consists of a coil and a rotor. The rotor has two separate rotating plates. These plates are free to rotate independent of each other until the coil is energized. Once energized the two plates turn as one.

ED=Electronic Display—A visual presentation of data, such as an LCD (liquid crystal display), LED (light emitting diode) display, or VFD (vacuum florescent display).

EF=Electric Fuse (Figure 6)—A fuse is an over-current safety device with a circuit opening fusible member which is heated and severed by the passage of over-current through it.

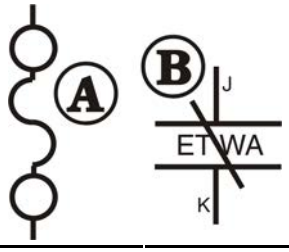
EL=Electric Light (Figure 6)—Indicator lights may be either incandescent or fluorescent.

EM=Electro Magnet Solenoid—A device consisting of a core surrounded by a wire coil through which an electric current is passed. While current is flowing, iron is attracted to the core (e.g., a pinch tube drain valve solenoid).

ES=Electronic Power Supply—A device that converts AC (alternating current) to filtered and regulated DC (direct current). The input voltage to the power supply is usually 120 or 240 VAC. The output is +5, +12, and -12 VDC.

ET=Thermal Overload (Figure 7)—A safety device designed to protect a motor. A thermal overload consists of an overload block, heaters, and an auxiliary contact. The auxiliary contact is normally installed in a safety (three-wire) circuit that stops power to the motor contactor coil when a motor overload occurs.

Figure 7: Thermal Overload (ET)

Schematic Symbol	Legend
	**A.** Heater (one per phase) **B.** Overload relay; contacts open if overload condition exists

EX=Electrical Transformer (Figure 8)—A device that transfers electrical energy from one isolated circuit to another, often raising or lowering the voltage in the process.

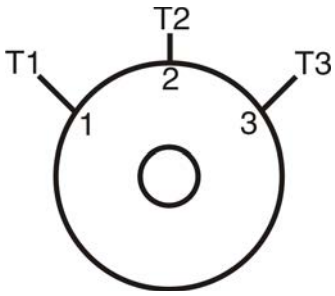
KB=Keyboard—Device similar to a typewriter for making entries to a computer.

MN=Electronic Monitor (CRT)—A cathode ray tube used for visual presentation of data.

MR=Motors (Figure 9)—Electromechanical device that converts electrical energy into mechanical energy.

Figure 8: Transformer (EX)

Figure 9: Electric Motor (MR)

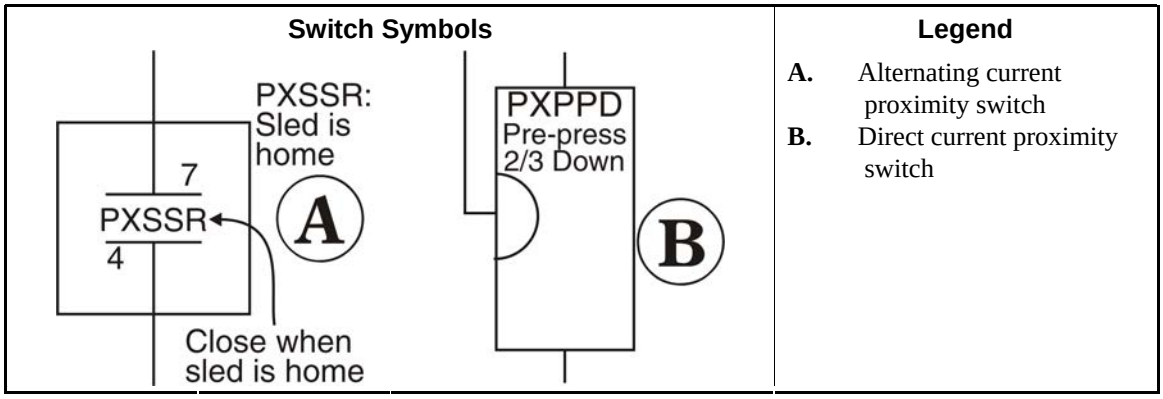


MV=Motor (Variable Speed) Inverter—To vary the speed of an AC motor, the volts to frequency ratio must be kept constant. The motor will overheat if this ratio is not maintained. The motor variable speed inverter converts three phase AC to DC. The inverter then uses this DC voltage to generate AC at the proper voltage and frequency for the commanded speed.

Note 2: Switch symbols used in the schematics and described below always depict the switch in its un-actuated state.

PX=Proximity Switch (Figure 10)—A device which reacts to the proximity of an target without physical contact or connection. The actuator or target causes a change in the inductance of the proximity switch which causes the switch to operate. Proximity switches can be two-wire (AC) or three-wire (DC) devices.

Figure 10: Proximity Switches (PX)



SC=Switch, Cam Operated (Figure 11)—A switch in which the electrical contacts are opened and/or closed by the mechanical action of a cam(s). Applications include 35-50 pound timer operated machines, Autospot, timer reversing motor assembly, and some balancing systems.

SH=Switch, Hand Operated (Figure 12)—A switch that is manually operated (e.g., *Start button*, *Master switch*, etc.).

Figure 11: Cam Switch (SC)

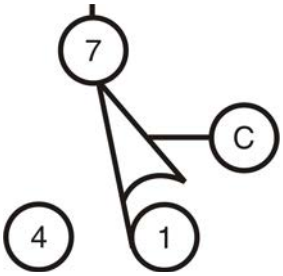
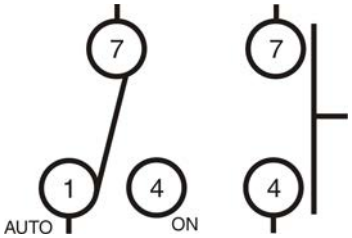


Figure 12: Hand Operated Switch (SH)



SK=Switch, Key Lock (Figure 13)—A switch that requires a key to operate. This prevents unauthorized personnel from gaining access to certain functions (e.g., the *Program menu*).

SL=Switch, Level Operated (Figure 14)—A switch connected to a float that causes the switch to open and close as the level changes.

Figure 13: Key Switch (SK)

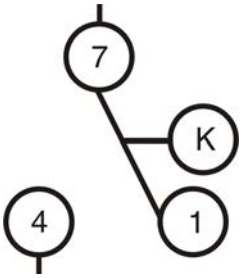
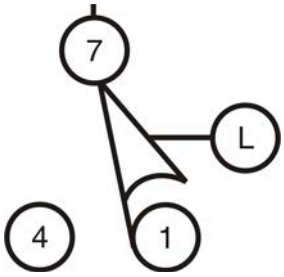


Figure 14: Level Switch (SL)



SM=Switch, Mechanically Operated (Figure 15)—A switch that is mechanically operated by a part of or the motion of the machine (e.g., door closed switch, tilt limit switches, etc.)

SP=Switch, Pressure Operated (Figure 16)—A switch in which a diaphragm presses against a switch actuator.

Figure 15: Mechanical Switch (SM)

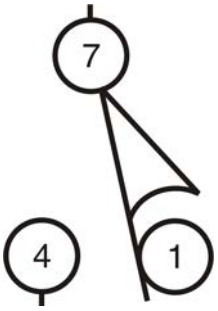
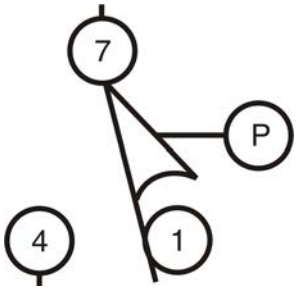


Figure 16: Pressure Switch (SP)



ST=Switch, Temperature Operated (Figure 17)—A switch that is actuated at a preset temperature (e.g., dryer safety probes) or has adjustable set points (e.g., Motometers or Combistats).

TB=Terminal Board (Figure 18)—A strip or block for attaching or terminating wires.

Figure 17: Temperature Switch (ST)

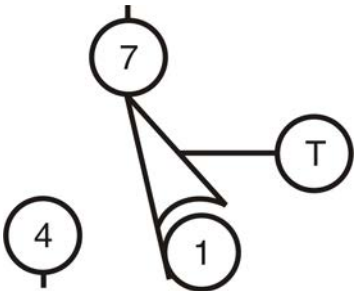
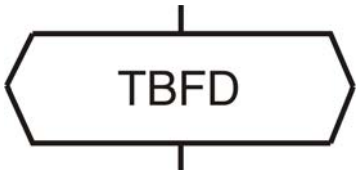


Figure 18: Terminal Board (TB)



VE=Valve, Electric Operated (Figure 19)—A valve operated by an electric coil to control the flow of fluid. The fluid can be air, water or hydraulic.

Figure 19: Electrically Operated Valve (VE)

ZF=Rectifier (Figure 20)—A solid state device that converts alternating current to direct current.

Figure 20: Bridge Rectifier (ZF)

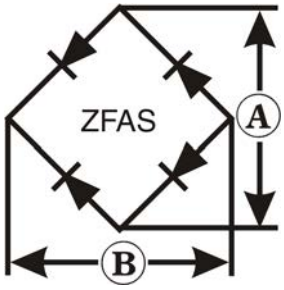
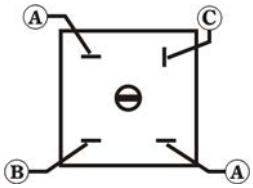
Component Symbol	Legend
	**A.** Alternating current input **B.** Direct current output

Figure 21: Bridge Rectifier

Component	Legend
	**A.** Alternating current in **B.** Negative direct current out **C.** Positive direct current out

WC=Wiring Connector—A coupling device for joining two cables or connecting a cable to an electronic circuit or piece of equipment. Connectors are male or female, according to whether they plug into or receive the mating connector.

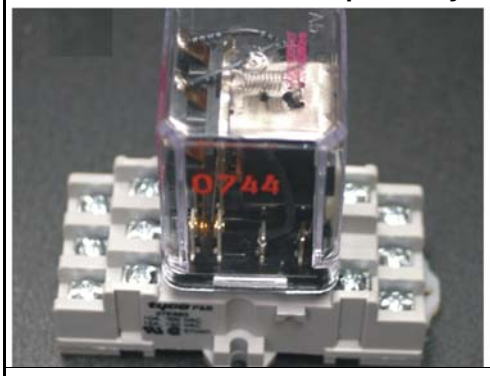
2. Component Terminal Numbering

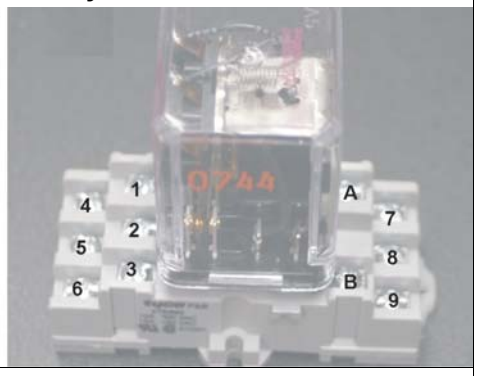
CAUTION 1: Risk of Mis-wiring—Due to electrical component manufacturing inconsistencies, the pin numbers imprinted on components such as connectors and relay bases used on Milnor machines often do not correspond to the pin numbers shown in the schematics.

- Ignore pin numbers imprinted on in-line connectors (e.g., Molex connectors) and relay bases.
- Use the pin identification illustrations herein to identify pins on these components.

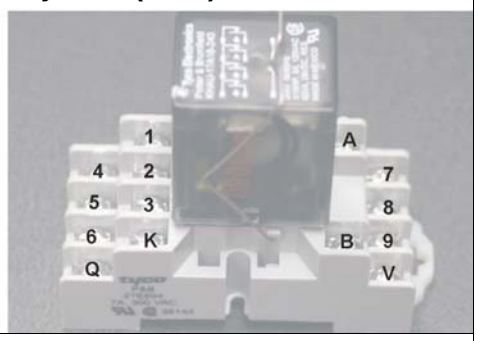
Figure 22: Plug-in Relays

11-pin Relay with Grey Base

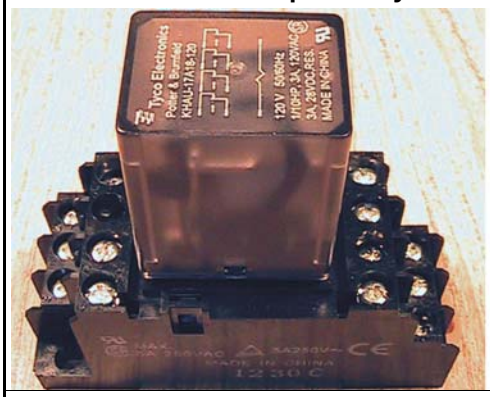


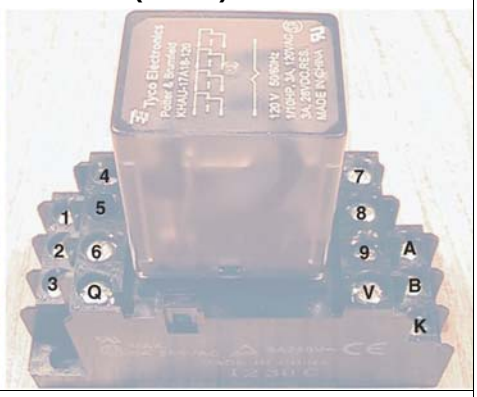


14-pin Relay with Grey Base (older)

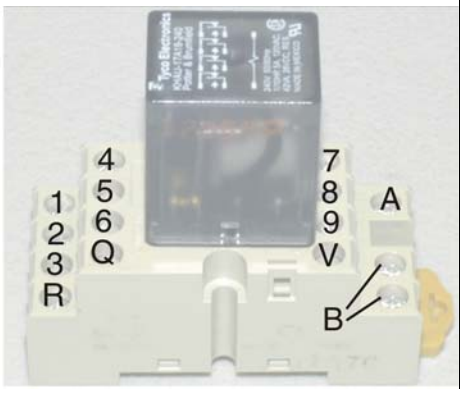


14-pin Relay with Black Base (newer)





14-pin Relay with Beige Base (rare)



Legend

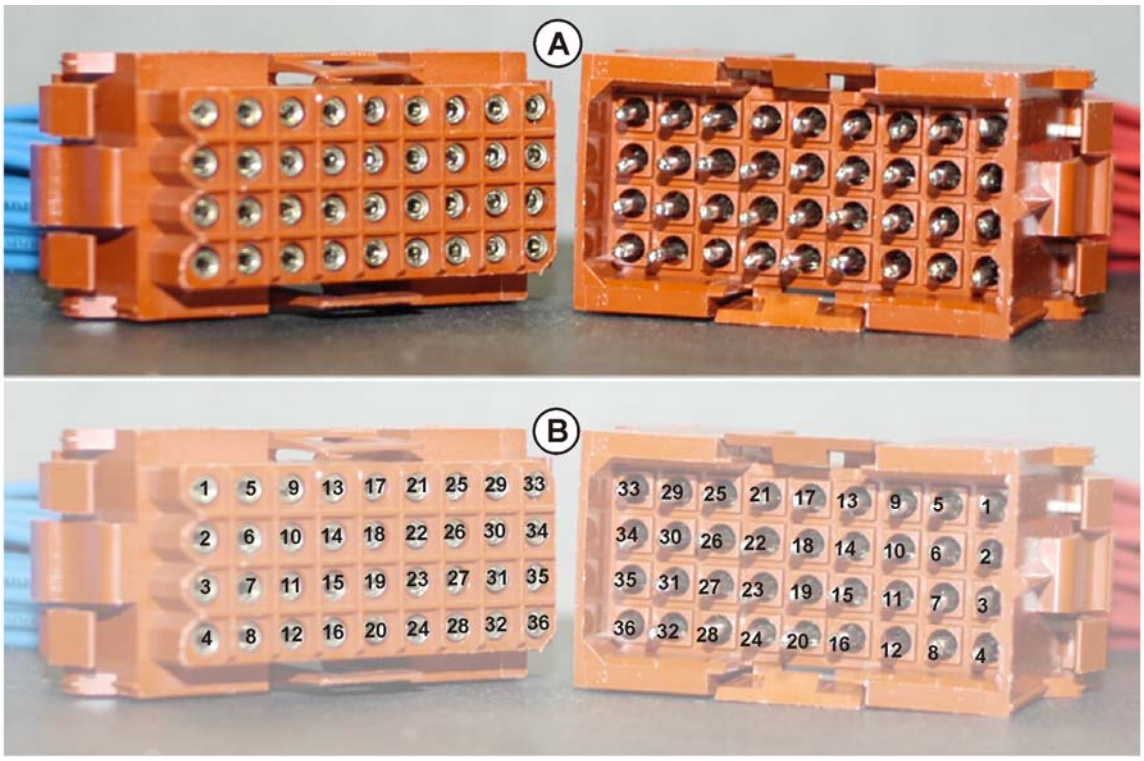
Left. View of relay and base

Right. Same view, showing pin numbers

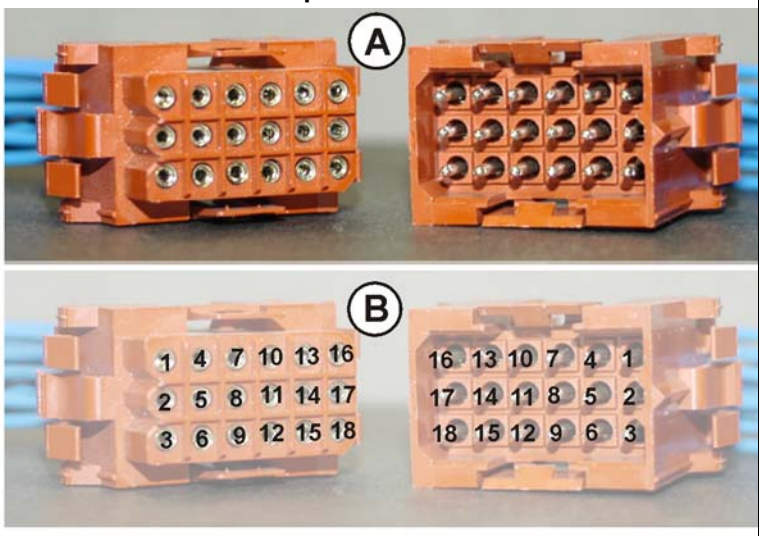
Note 3: Relay functional names ending with the letter "M" (e.g., CRxxM) are not discrete components but are a component of a printed circuit board. They are usually not individually replaceable.

Figure 23: AMP Connector Pin Locations

36-pin Connector



18-pin Connector

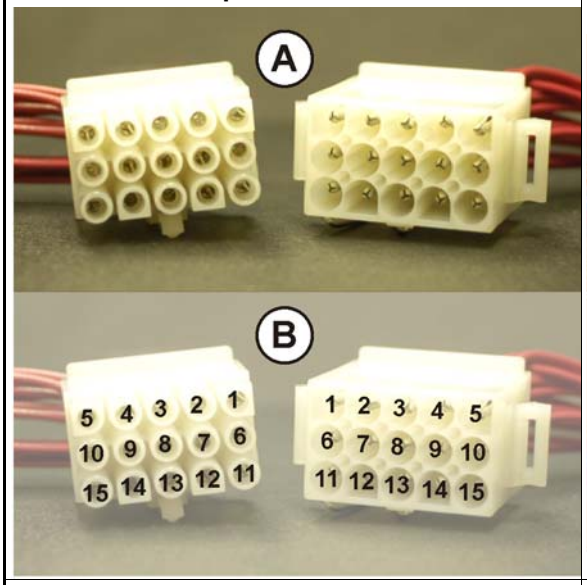


Legend

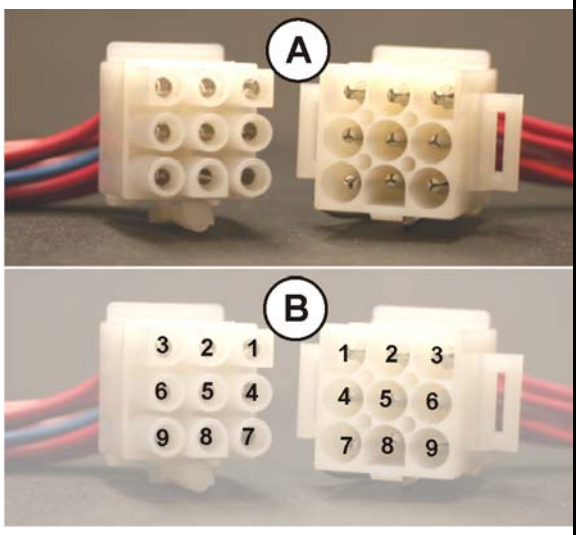
A. View of mating halves of connector
B. Same view, showing assigned pin numbers

Figure 24: Molex Connector Pin Locations

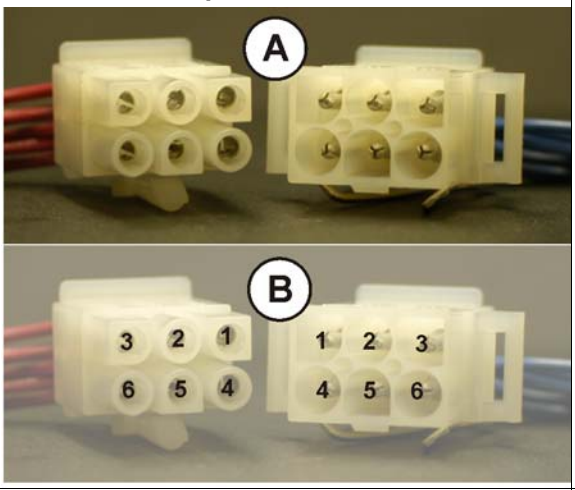
15-pin Connector



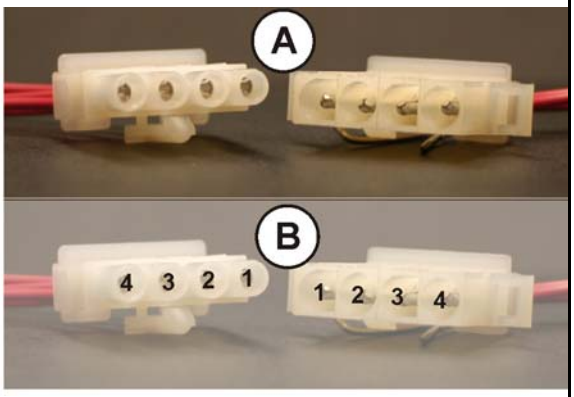
9-pin Connector



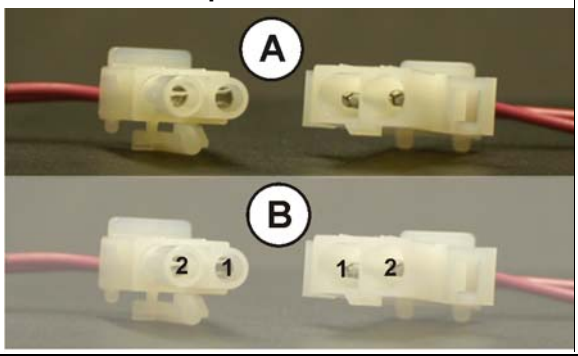
6-pin Connector



4-Pin Connector



2-pin Connector



Legend

A. View of mating halves of connector
B. Same view, showing assigned pin numbers

Figure 25: Pressure Switch

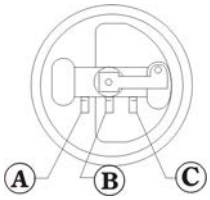
Component	Legend
	**A.** Contact 1—Normally open **B.** Contact 2—Normally closed **C.** Contact 3—Common

Figure 26: Toggle Switch

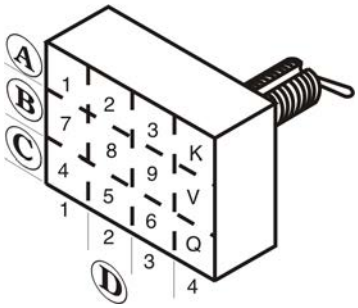
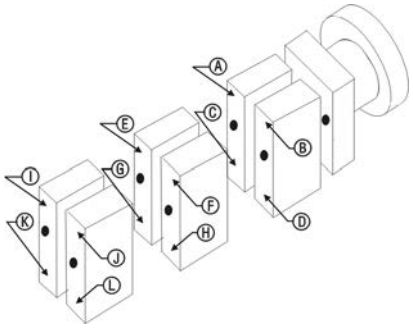
Component	Legend
	**A.** Normally closed contacts **B.** Common contacts **C.** Normally open contacts **D.** Pole

Figure 27: Switch with Replaceable Contact Blocks

Rotary or Push-button Switch Component	Legend
	**A.** Terminal 7 **B.** Terminal 8 **C.** Terminal 4 if normally open; terminal 1 if normally closed **D.** Terminal 5 if normally open; terminal 2 if normally closed **E.** Terminal V **F.** Terminal 9 **G.** Terminal Q if normally open; terminal K if normally closed **H.** Terminal 6 if normally open; terminal 3 if normally closed **I.** Terminal W **J.** Terminal X **K.** Terminal R if normally open; terminal L if normally closed **L.** Terminal S if normally open; terminal M if normally closed

3. Features of Milnor® Electrical Schematic Diagrams

Document BMP010012 (following this section) is a sample schematic, based on a schematic diagram for the Milnor® gas dryer. For the purposes of this exercise, the schematic is shown gray and explanations of the items on the schematic are shown black.

The item numbers below correspond to the circled item numbers shown on the drawing.

1. The first six characters of the drawing number (W6DRYG) indicate that this is a wiring diagram (W), identify the generation of controls (6), and identify the type of machine (DRYG=Gas Dryer). These characters appear in the drawing number of every schematic in the set.

   The characters following the first six are unique to each drawing. The two characters identified as the page number are an abbreviation for the function performed by the depicted

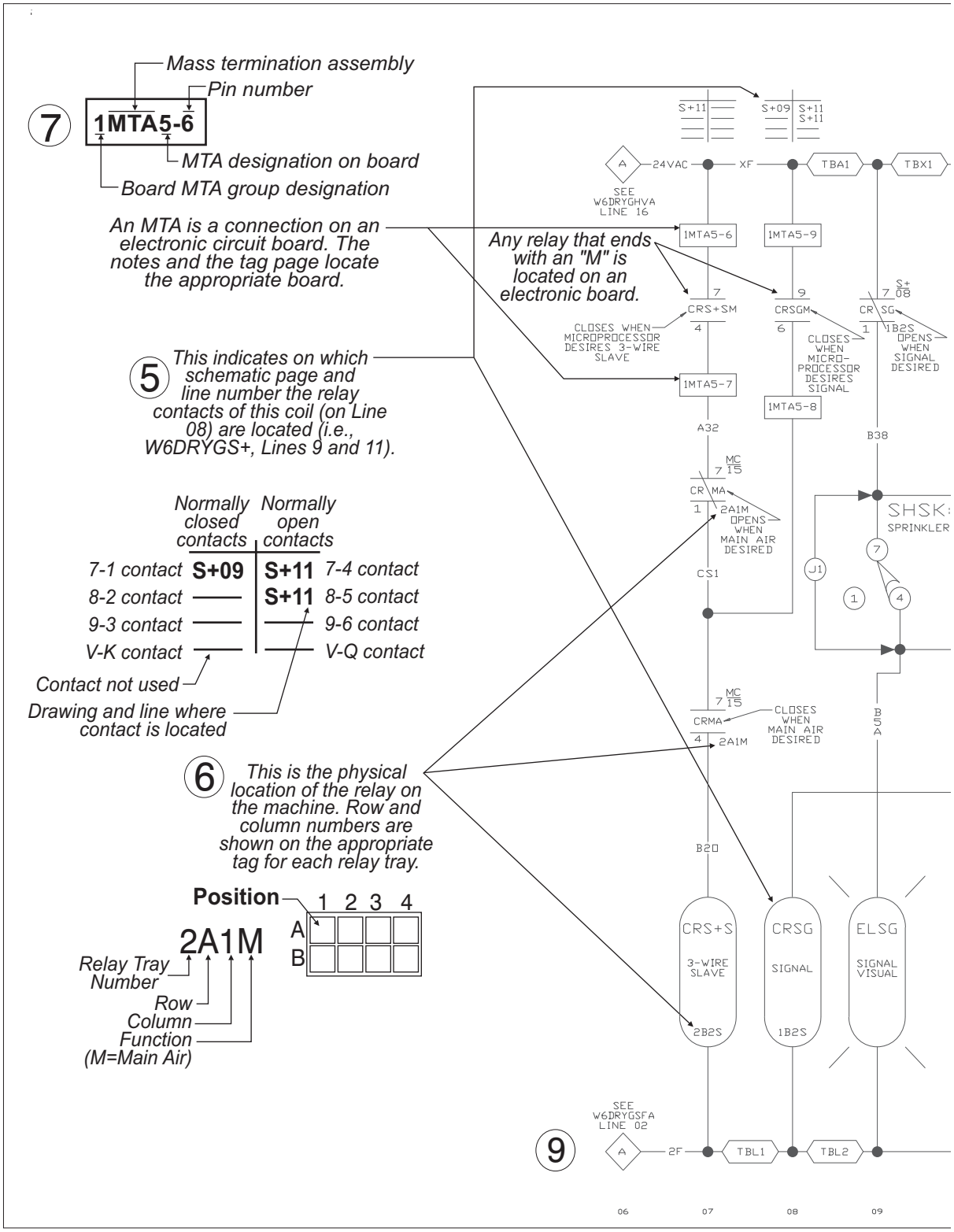
circuitry (S+=three-wire circuit) and establish the order in which the schematic occurs in the manual (schematics are arranged in alpha-numeric order in the manual).

Whenever circuitry changes are significant enough to warrant publishing a new schematic drawing, the new drawing number will be the same as the old except for the major revision letter (A in the example).

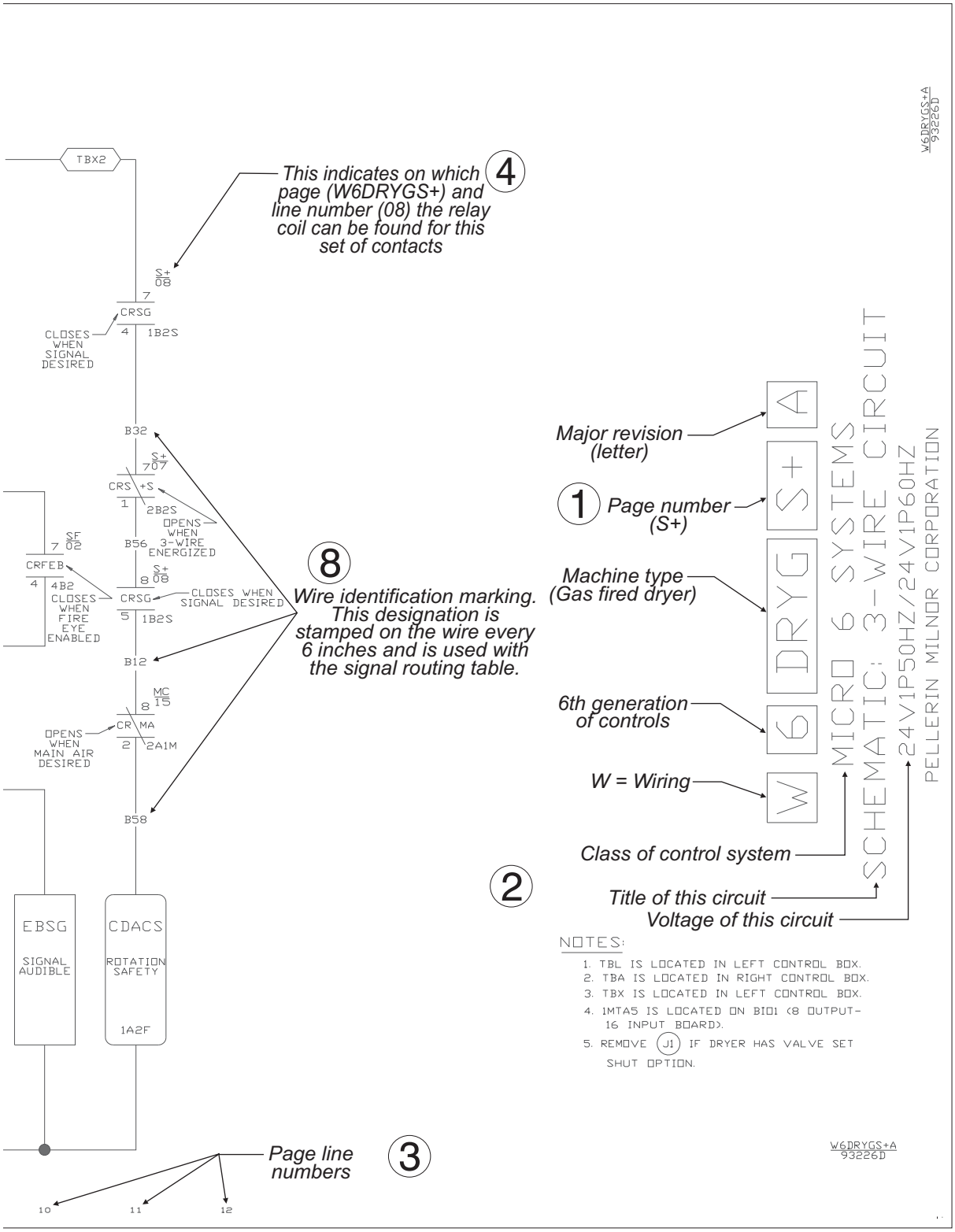
2. Included in the drawing title are the class of control system, the title of this circuit, and the circuit voltage.
3. Line numbers are provided along the bottom edge of the drawing. These permit service personnel in the field and at the Milnor® factory to quickly relate circuit locations when discussing troubleshooting over the phone. Page and line numbers are referenced on the drawing as explained in items five and six below.
4. Relay contacts show the page and line number on which the relay coil may be found. This is the type of cross referencing most frequently used in troubleshooting.
5. Relay coils show the page and line number on which its associated contacts are located.
6. Relay contacts and relay coils show the physical location of the relay.
7. The designation MTA applies to electronic circuit board connections. Typically, a control system will contain several different types of circuit boards and one or more boards of each type. A numerical suffix identifies the board type and a numerical prefix identifies which one of several boards of a given type is being depicted. For example, the designation 1MTA5 identifies this as the first I/O board (8 output, 16 input board) in the control system. As shown on the drawing, a pin number follows the board number, separated by a dash. Thus, 1MTA5-9 is pin 9 on this board. The numerical designations for board types vary from one control system to another. Some of the board types commonly encountered on the Mark V and Mark VI washer-extractor control and their designations are as follows:
   - MTM1-MTM8 = Mother board
   - MTA1-MTA5 = 8 output, 16 input (8/16) boards
   - MTA11-MTA14 = 24 output boards
   - MTA30-MTA40 = processor boards
   - MTA41-MTA43 = digital to analog (D/A) boards
   - MTA51-MTA55 = analog to digital (A/D) boards
   - MTA81-MTA85 = balance A-D board

   The complete listing of the boards utilized in a given control system can be found in the component list for that system.
8. Wire numbers, as described earlier in this section, are shown at appropriate locations on the schematic drawing.
9. Where diamond symbols appear at the end of a conductor, these are match points for continuing the schematic on another drawing. The page and line number that continues the circuit is printed adjacent to the diamond symbol. Where more than one match point appears on the referenced page, match diamonds containing corresponding letters.

— End of BIUUUK01 —

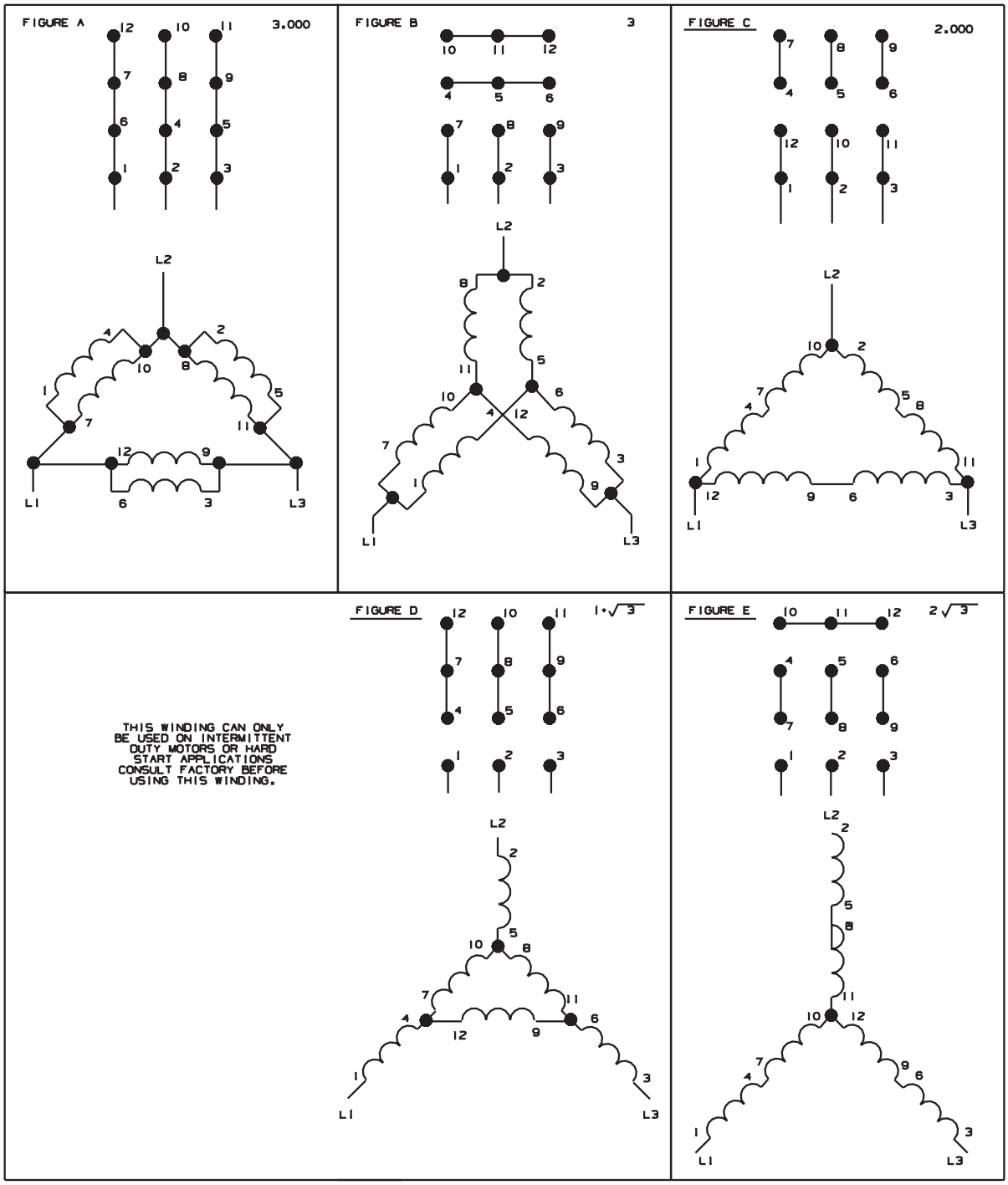


BMP010012 (left) / 2018343



BMP010012 (right) / 2018343

FIGURE	ELECTRICAL VALUES	SUFFIXES									
		B		H		M		T		U	
		50HZ	60HZ	50HZ	60HZ	50HZ	60HZ	50HZ	60HZ	50HZ	60HZ
A	1.000	208	230			200	220	220	240	200-220	208-240
B	$\sqrt{3}$				208	346	380	380		346-380	380
C	2.000	416	460	220	240	400	440	440	480	400-440	440-480
D	$1+\sqrt{3}$						600				600
E	$2\sqrt{3}$			380							



06 07 08 09 10 11 12 13 14 15 16 17

BMP850029

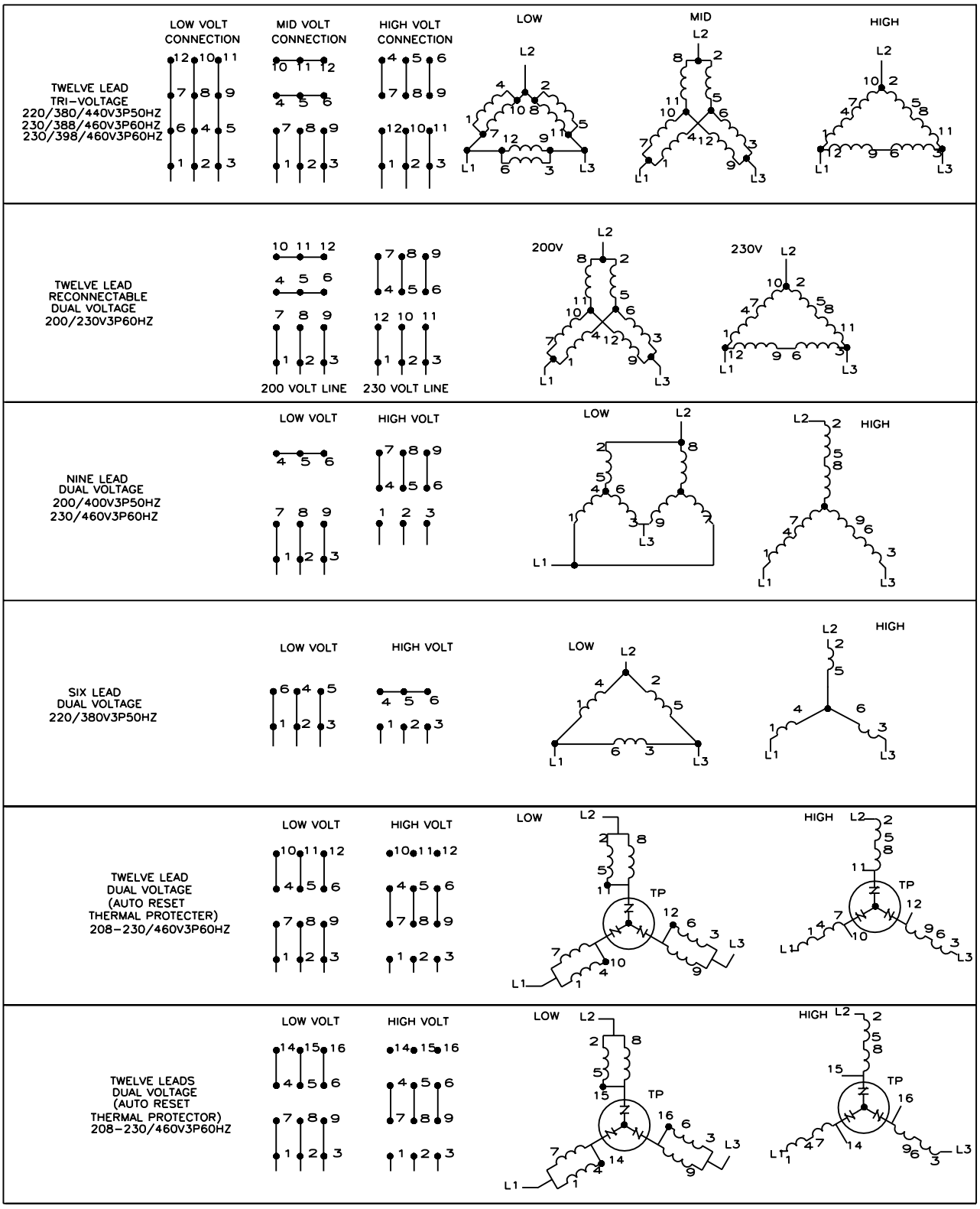
MOTOR CONNECTION DIAGRAMS

THREE PHASE SINGLE SPEED MOTORS WITH MULTIPLE VOLTAGE RATINGS

(ONLY FOR MOTOR SUFFIXES LISTED)

PELLERIN MILNOR CORPORATION

BMP850029
993628

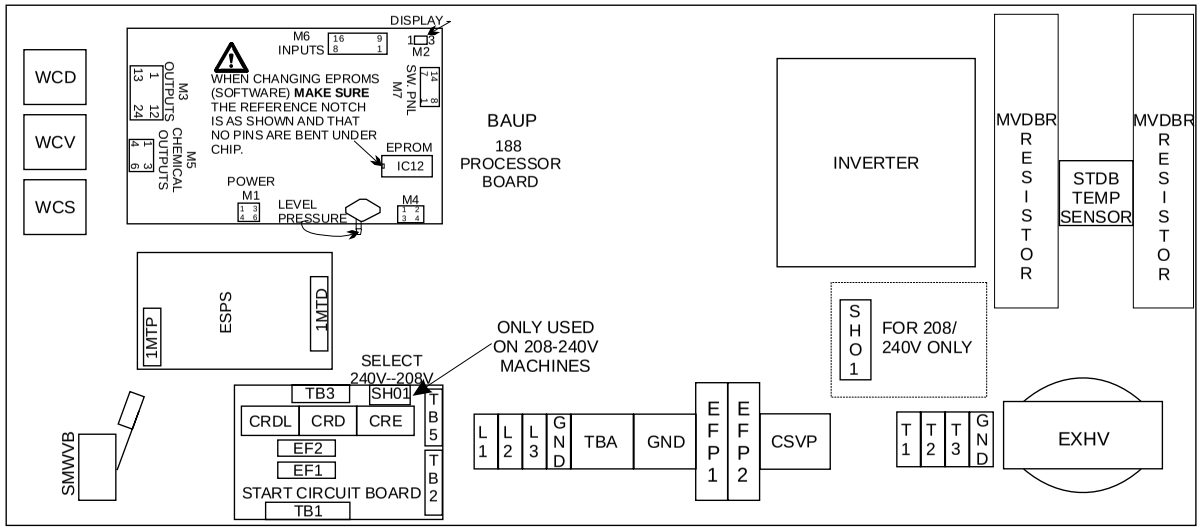


W80008

THREE PHASE
MOTOR CONNECTION DIAGRAMS
SINGLE SPEED MOTORS WITH MULTIPLE VOLTAGE RATINGS

PELLERIN MILNOR CORPORATION

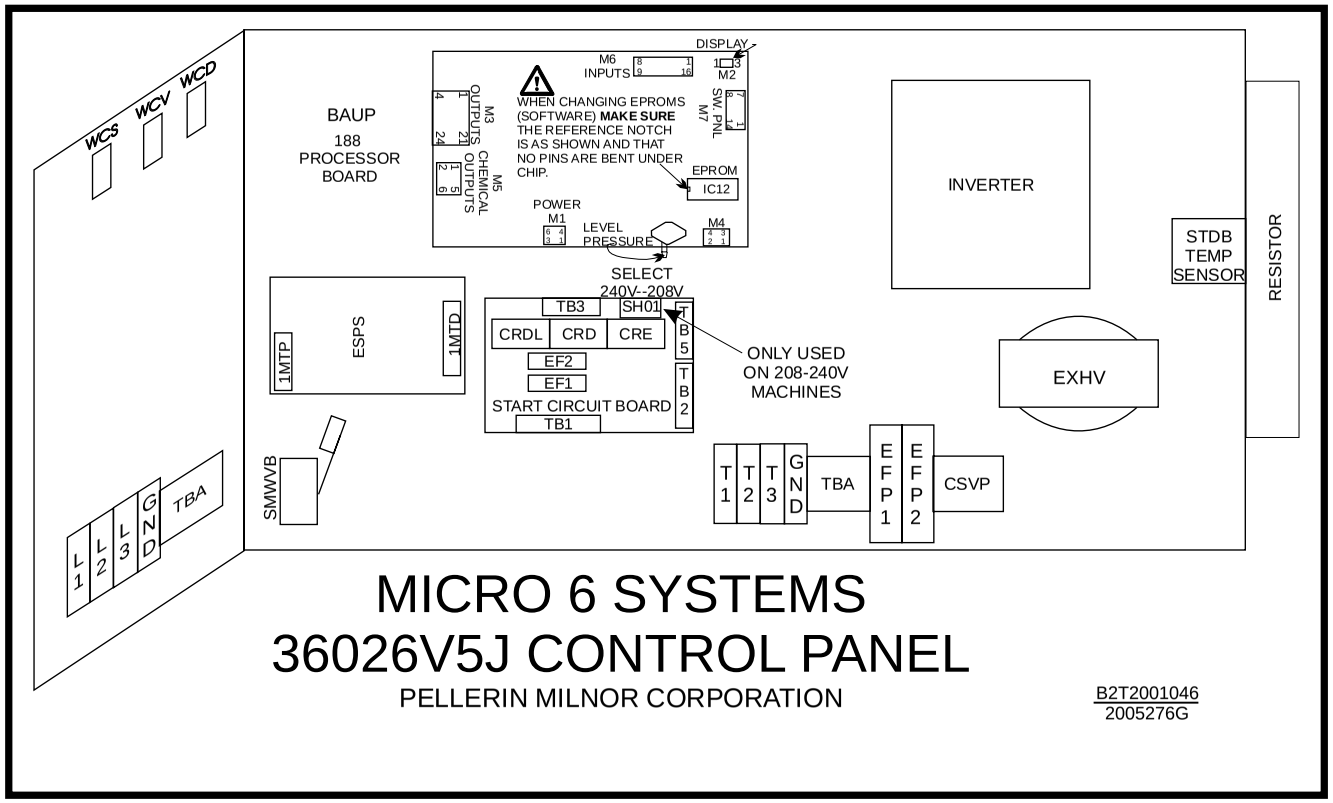
W80008
2001253A



MICRO 6 SYSTEMS
36026V7J/42026V6J CONTROL PANEL

B2T2001045
2009145G

PELLERIN MILNOR CORPORATION



MICRO 6 SYSTEMS
36026V5J CONTROL PANEL

PELLERIN MILNOR CORPORATION

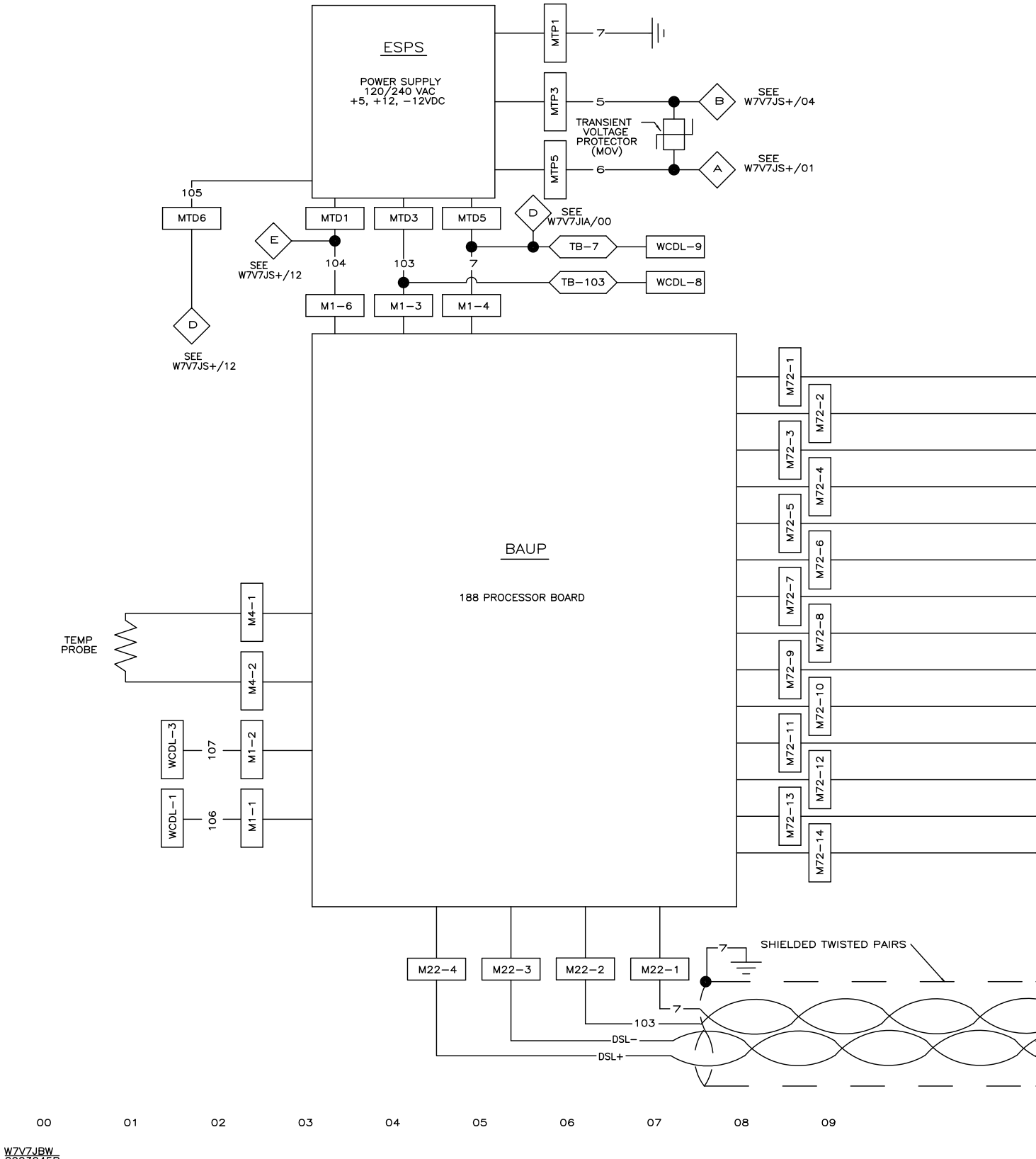
B2T2001046
2005276G

W7V6JTG1

36 AND 42 V#J MACHINE TAGS

PELLERIN MILNOR CORPORATION

W7V6JTG1
2012234B



W7V7JBW
2023045B

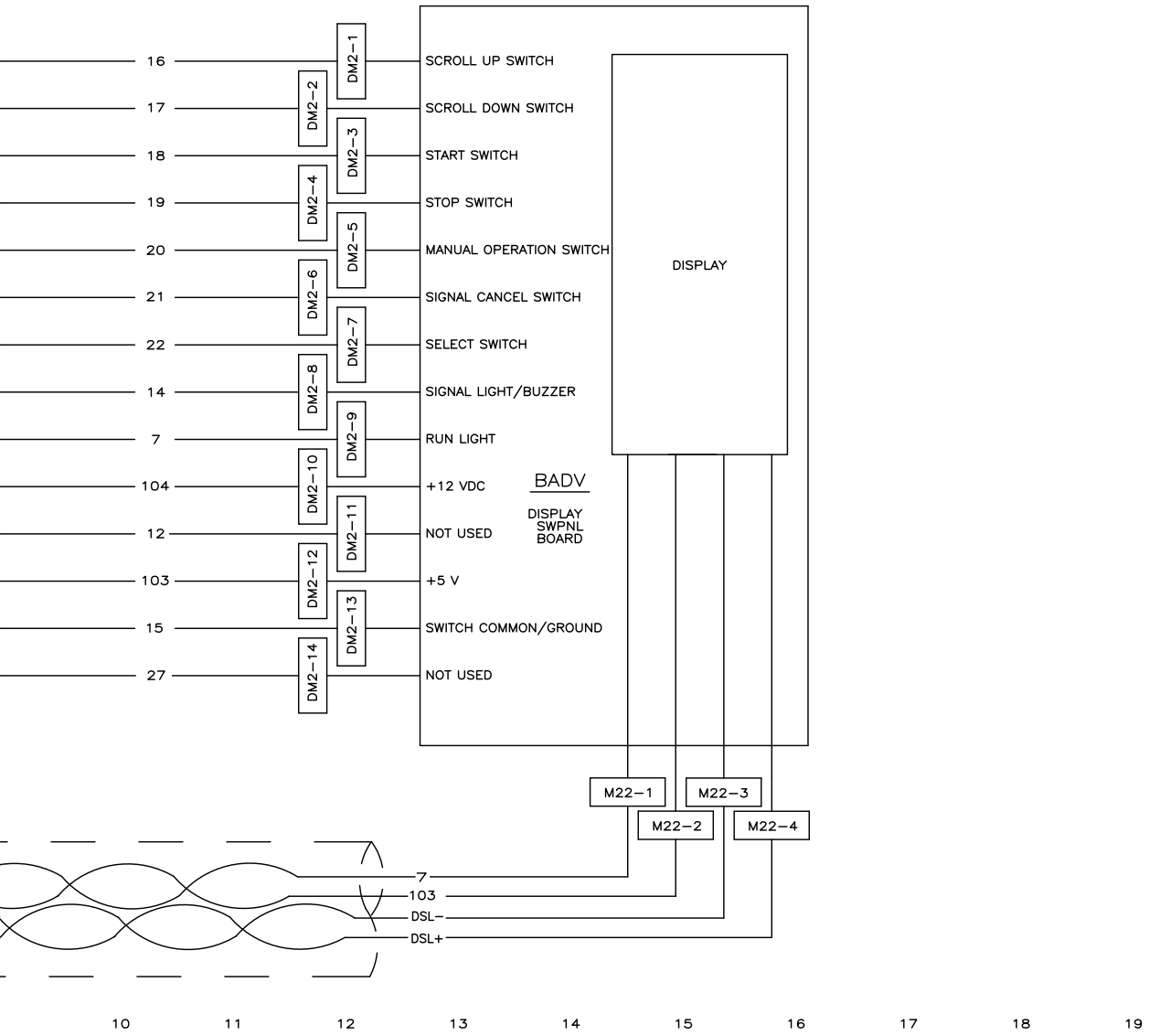
W7V7JBW
2023045B

WIRE COLOR CODE

WIRE COLOR	APPLICATION
RED	A.C. CONTROL
RED/WHITE	A.C. COMMON
BLUE –103	+5 VDC
BLUE/ORANGE –104	+12VDC
YELLOW/GREEN	GROUND
BLUE/WHITE –7	D.C. GROUND
BLUE/BLACK	D.C. CONTROL SIGNALS

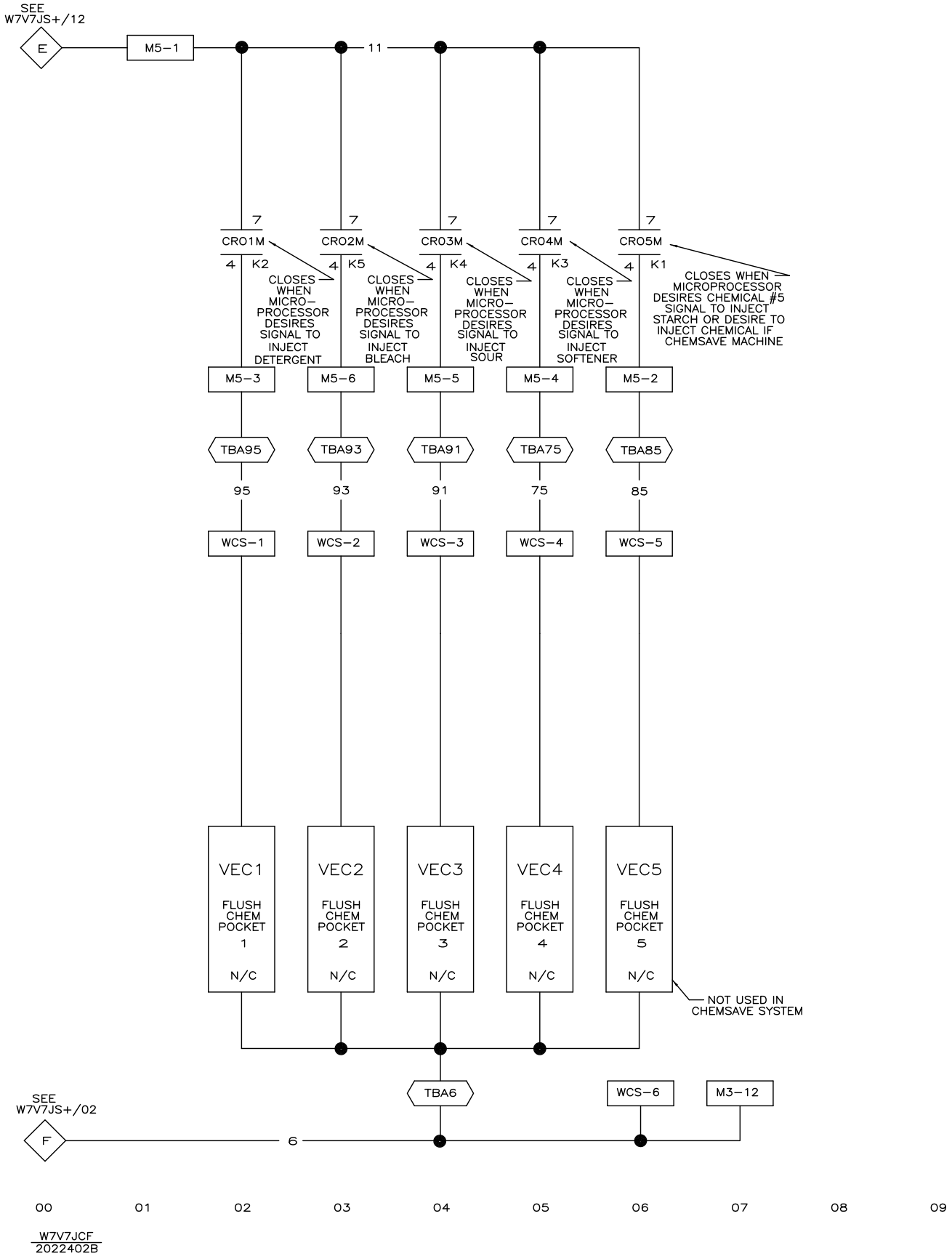
NOTES

1. M1, M2, M4, DM22 AND M72 ARE LOCATED ON BAUP 188 PROCESSOR BOARD.
2. DM21 AND DM22 ARE LOCATED ON BADU DISPLAY SWPNL BOARD.
1. WCDL IS THE DOWNLOAD CONNECTOR LOCATED ON THE REAR OF THE SWITCH PANEL CONTROL BOX.



W7V7JBW
MICRO 7 SYSTEMS
SCHEMATIC: BOARD TO BOARD WIRING

W7V7JBW
2023045B

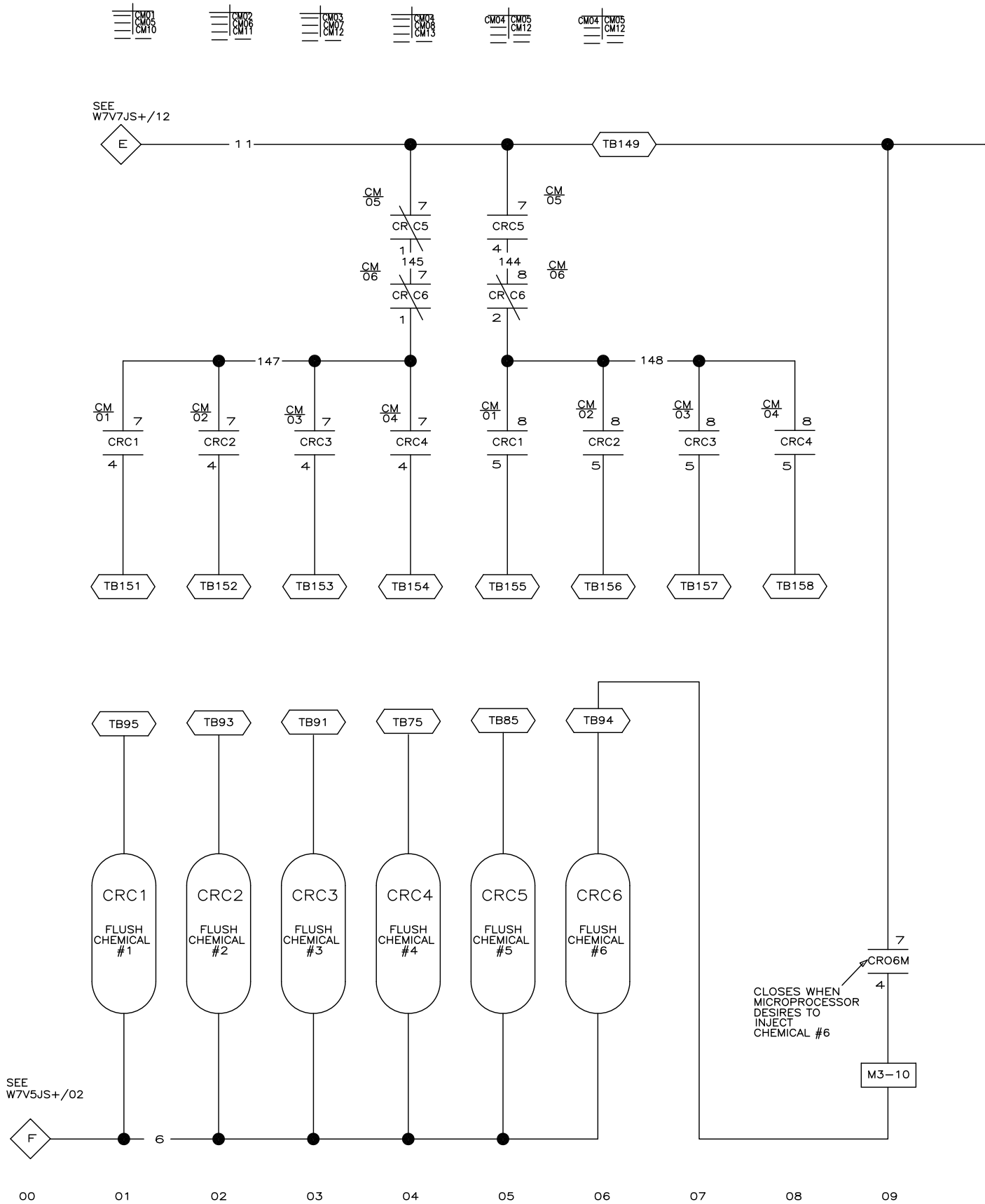

SEE W7V7JS+/12
E
M5-1
11
7
CR01M
4
K2
CLOSES WHEN MICRO-PROCESSOR DESIRES SIGNAL TO INJECT DETERGENT
CR02M
K5
CLOSES WHEN MICRO-PROCESSOR DESIRES SIGNAL TO INJECT BLEACH
CR03M
K4
CLOSES WHEN MICRO-PROCESSOR DESIRES SIGNAL TO INJECT SOUR
CR04M
K3
CLOSES WHEN MICRO-PROCESSOR DESIRES SIGNAL TO INJECT SOFTENER
CR05M
K1
CLOSES WHEN MICROPROCESSOR DESIRES CHEMICAL #5 SIGNAL TO INJECT STARCH OR DESIRE TO INJECT CHEMICAL IF CHEMSAVE MACHINE
M5-3
M5-6
M5-5
M5-4
M5-2
TBA95
TBA93
TBA91
TBA75
TBA85
95
93
91
75
85
WCS-1
WCS-2
WCS-3
WCS-4
WCS-5
VEC1
FLUSH CHEM POCKET 1
N/C
VEC2
FLUSH CHEM POCKET 2
N/C
VEC3
FLUSH CHEM POCKET 3
N/C
VEC4
FLUSH CHEM POCKET 4
N/C
VEC5
FLUSH CHEM POCKET 5
N/C
NOT USED IN CHEMSAVE SYSTEM
TBA6
WCS-6
M3-12
SEE W7V7JS+/02
F
6
00
01
02
03
04
05
06
07
08
09
W7V7JCF
2022402B

W7V7JCF

SCHEMATIC: FLUSHING SUPPLIES

110V1P50HZ/120V1P60HZ

PELLERIN MILNOR CORPORATION



W7V7JCM
2022402B

LITHO IN U.S.A.

W7V7JCM

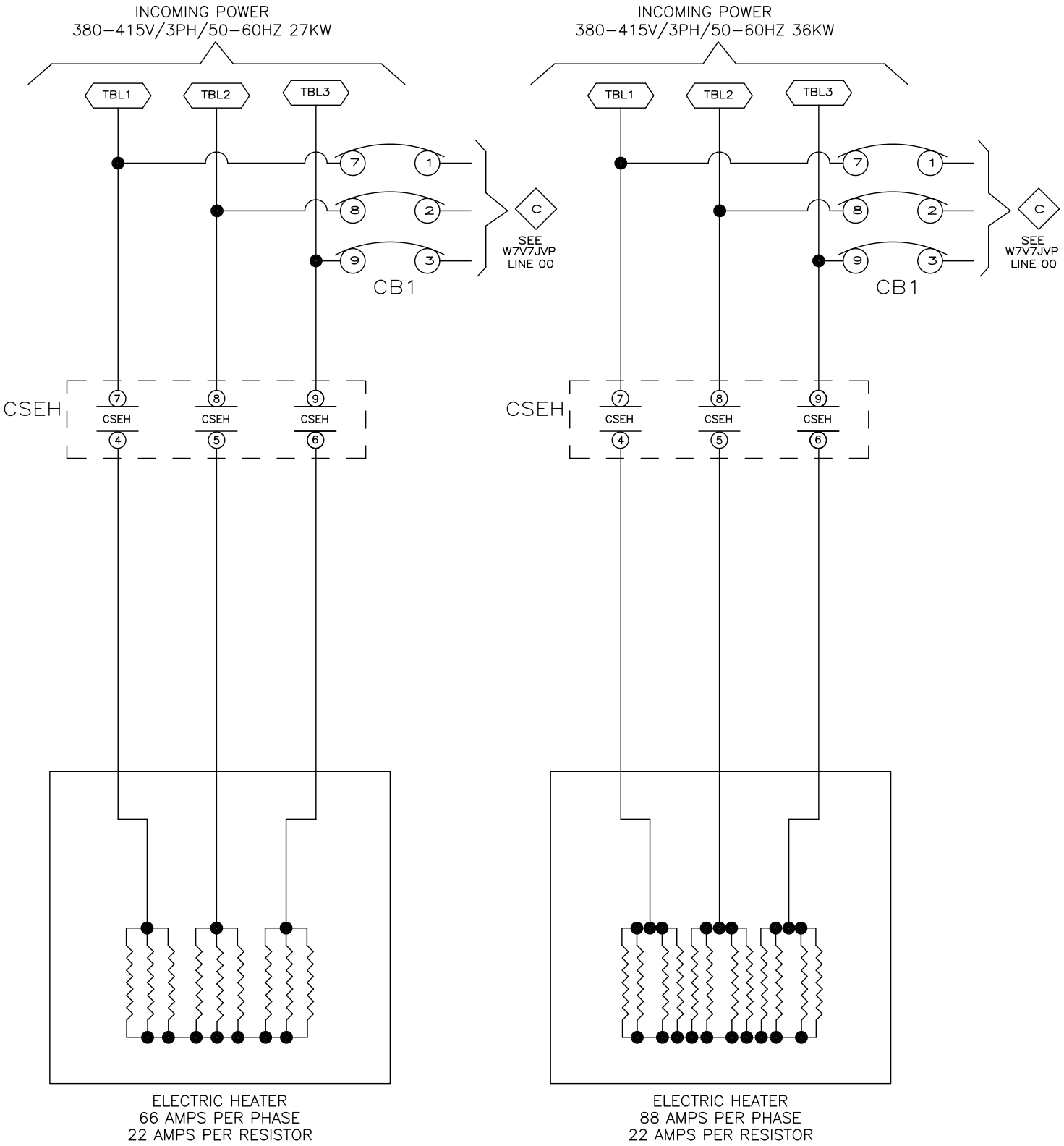
MICRO 7 SYSTEMS MARK V

SCHEMATIC: OPTIONAL 12 CHEMICAL FLUSHING

110V 1P 50HZ / 120V 1P 60HZ

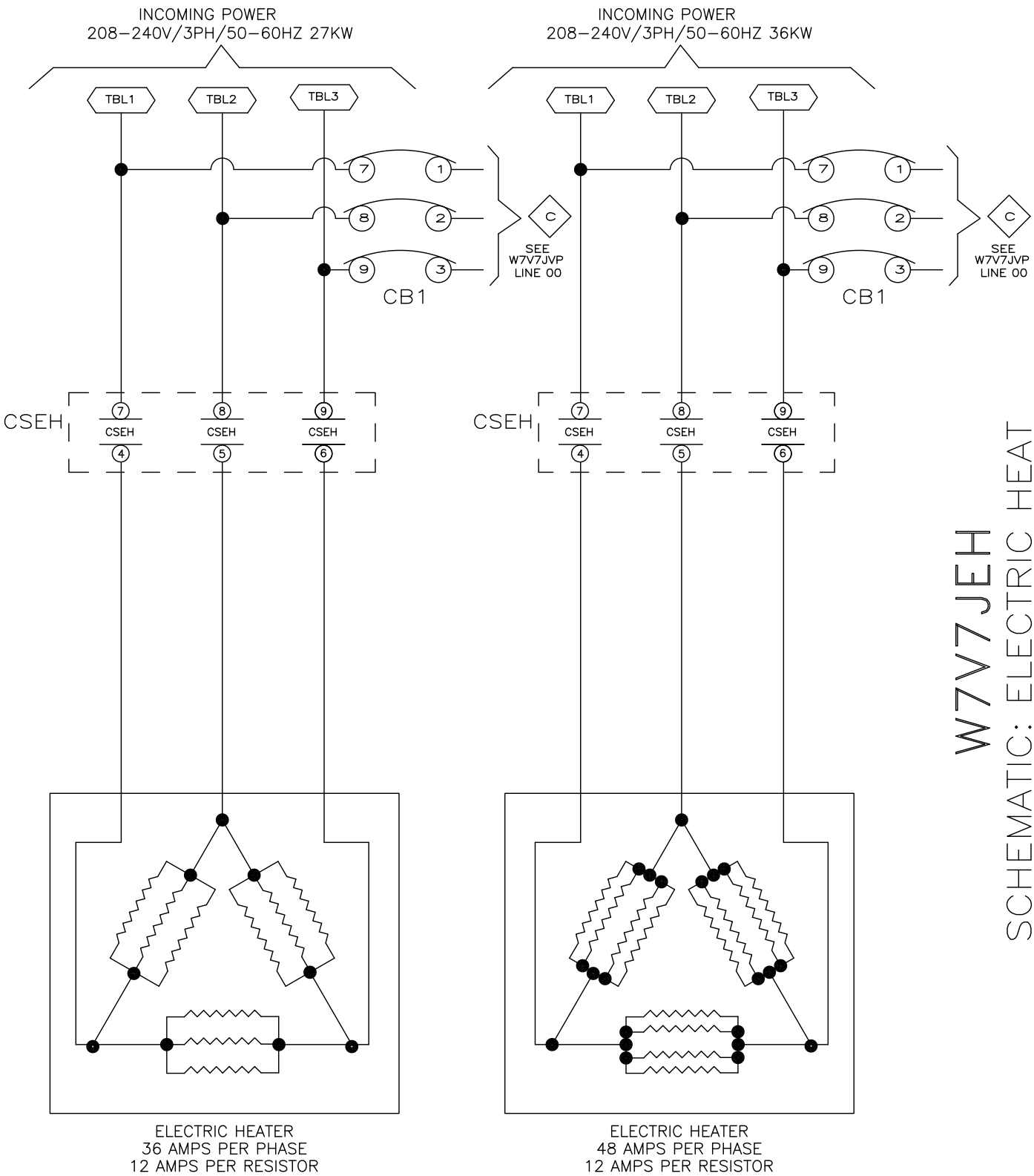
PELLERIN MILNOR CORPORATION

10 11 12 13 14



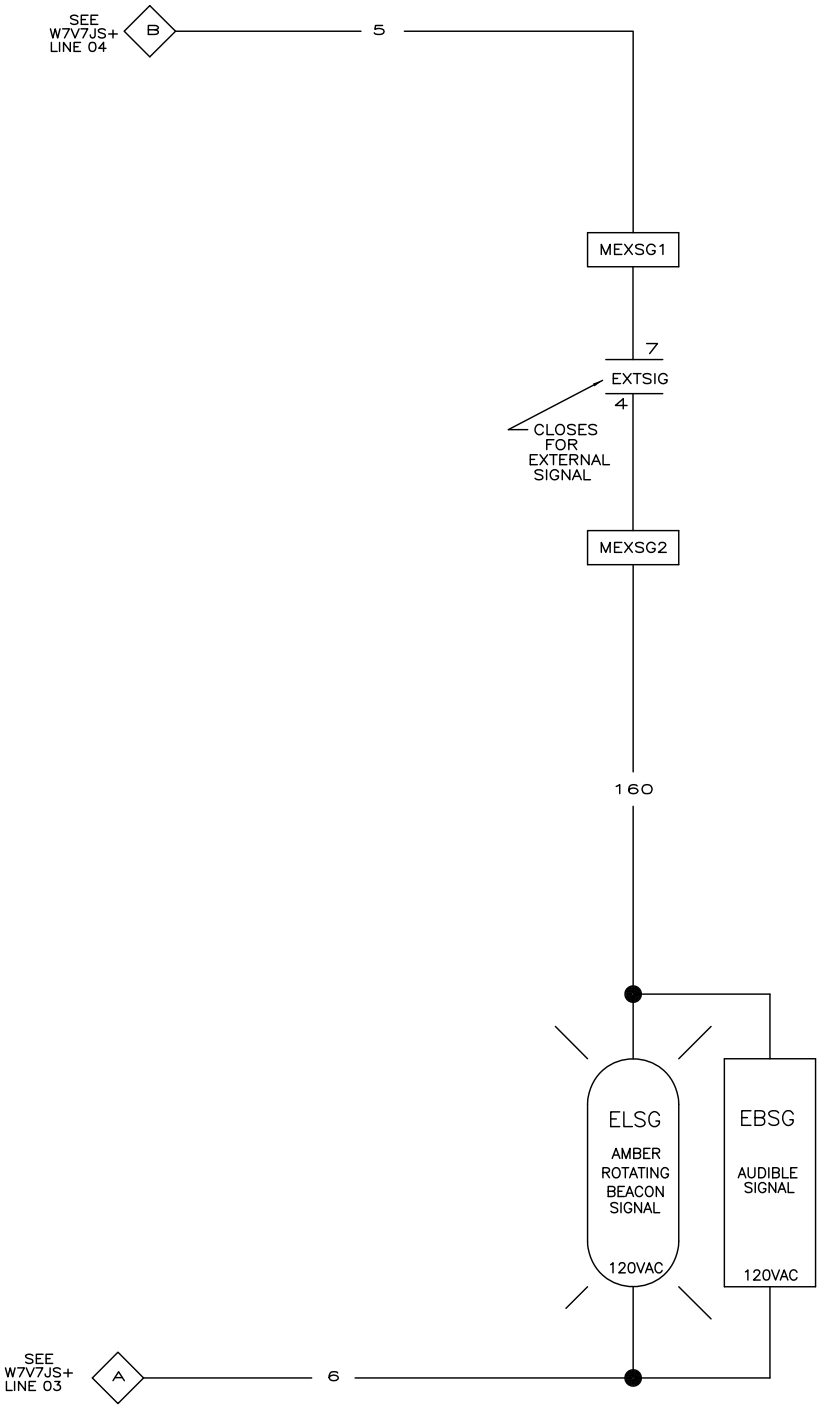
00 01 02 03 04 05 06 07 08 09

W7V7JEH
2022402B



W7V7JEH
SCHEMATIC: ELECTRIC HEAT
220V1P50HZ/240V1P60HZ
PELLERIN MILNOR CORPORATION

10 11 12 13 14 15 16 17 18 19



00 01 02 03 04 05 06 07 08 09

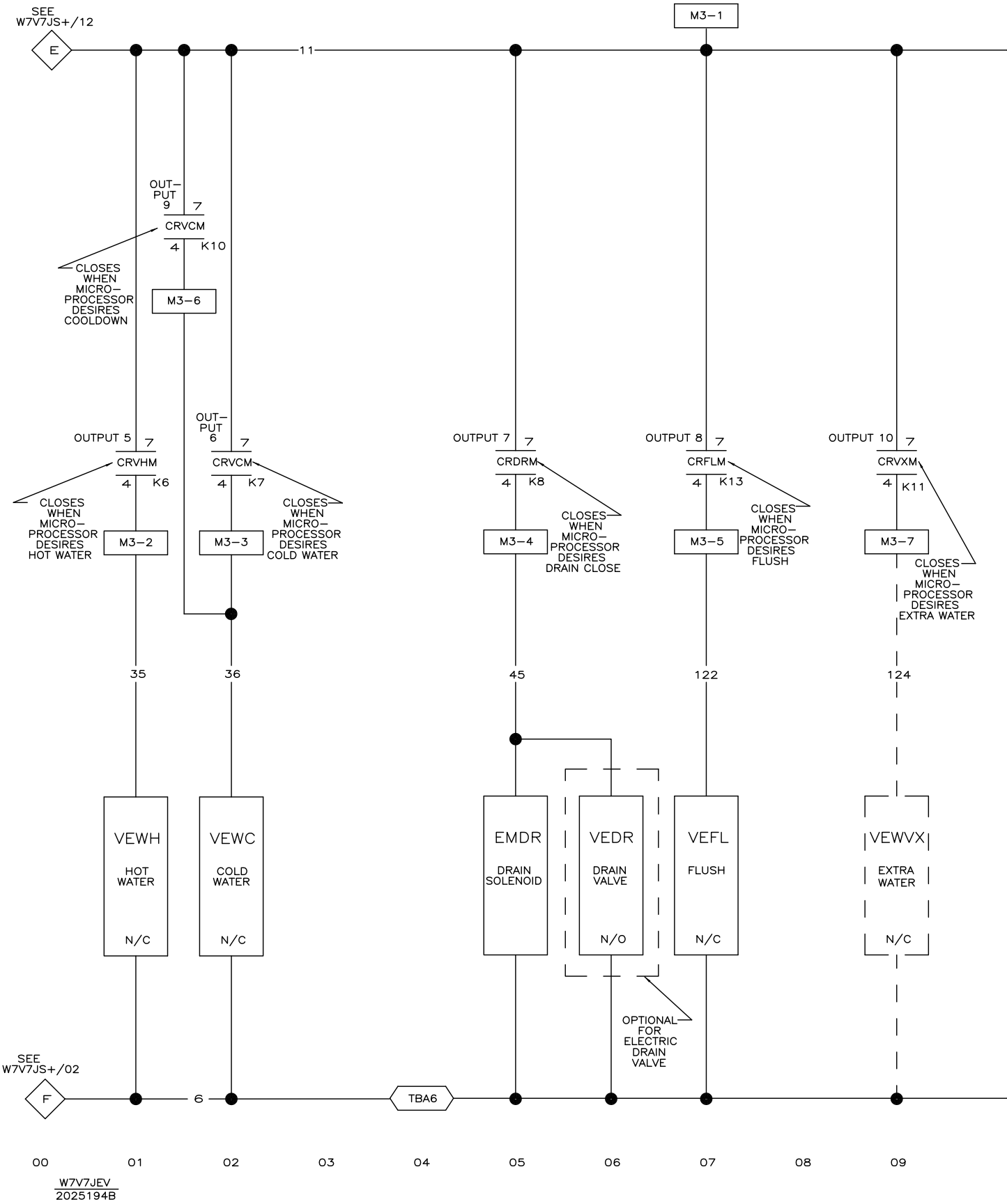
W7V7JES
2024373B

W7V7JES

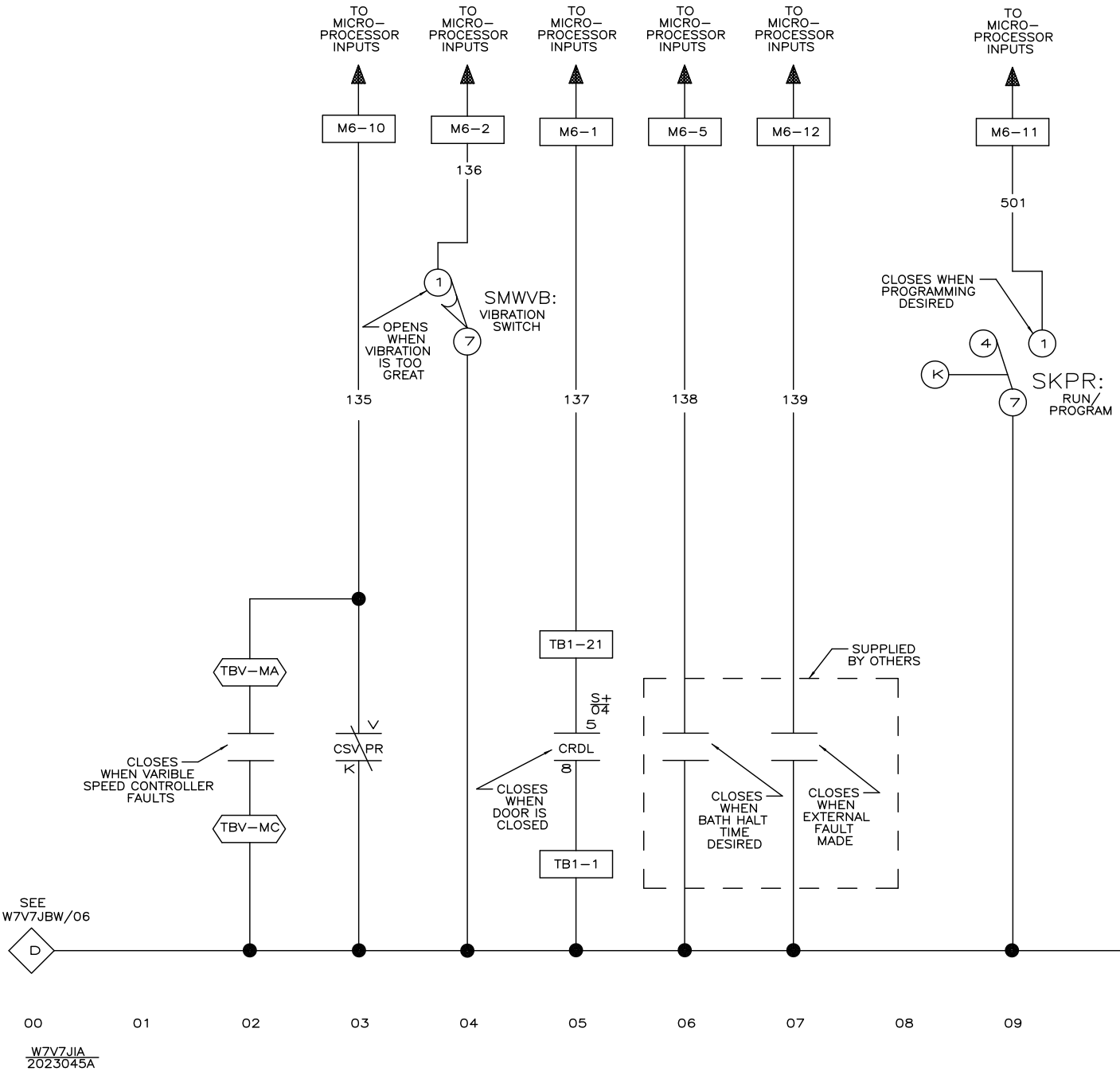
SCHEMATIC: OPTIONAL EXTERNAL SIGNAL

PELLERIN MILNOR CORPORATION

10 11 12 13 14 15 16 17 18 19


SEE W7V7JS+/12
E
11
M3–1
OUT–PUT 9
7
CRVCM
4
K10
CLOSES WHEN MICRO–PROCESSOR DESIRES COOLDOWN
M3–6
OUTPUT 5
7
CRVHM
4
K6
CLOSES WHEN MICRO–PROCESSOR DESIRES HOT WATER
M3–2
OUT–PUT 6
7
CRVCM
4
K7
CLOSES WHEN MICRO–PROCESSOR DESIRES COLD WATER
M3–3
OUTPUT 7
7
CRDRM
4
K8
CLOSES WHEN MICRO–PROCESSOR DESIRES DRAIN CLOSE
M3–4
OUTPUT 8
7
CRFLM
4
K13
CLOSES WHEN MICRO–PROCESSOR DESIRES FLUSH
M3–5
OUTPUT 10
7
CRVXM
4
K11
CLOSES WHEN MICRO–PROCESSOR DESIRES EXTRA WATER
M3–7
35
36
45
122
124
VEWH
HOT WATER
N/C
VEWC
COLD WATER
N/C
EMDR
DRAIN SOLENOID
VEDR
DRAIN VALVE
N/O
VEFL
FLUSH
N/C
VEWVX
EXTRA WATER
N/C
OPTIONAL FOR ELECTRIC DRAIN VALVE
SEE W7V7JS+/02
F
6
TBA6
00
01
02
03
04
05
06
07
08
09
W7V7JEV
2025194B

W7V7JEV
SCHEMATIC: ELECTRIC VALVES
110V1P50HZ/120V1P60HZ
PELLERIN MILNOR CORPORATION


TO MICRO– PROCESSOR INPUTS
M6–10
M6–2
M6–1
M6–5
M6–12
M6–11
136
501
135
137
138
139
SMWVB: VIBRATION SWITCH
OPENS WHEN VIBRATION IS TOO GREAT
CLOSES WHEN PROGRAMMING DESIRED
SKPR: RUN/ PROGRAM
TBV–MA
TBV–MC
CLOSES WHEN VARIBLE SPEED CONTROLLER FAULTS
CSV PR
TB1–21
TB1–1
S+ 04 5
CRDL 8
CLOSES WHEN DOOR IS CLOSED
SUPPLIED BY OTHERS
CLOSES WHEN BATH HALT TIME DESIRED
CLOSES WHEN EXTERNAL FAULT MADE
SEE W7V7JBW/06
D
00
01
02
03
04
05
06
07
08
09
W7V7JIA
2023045A

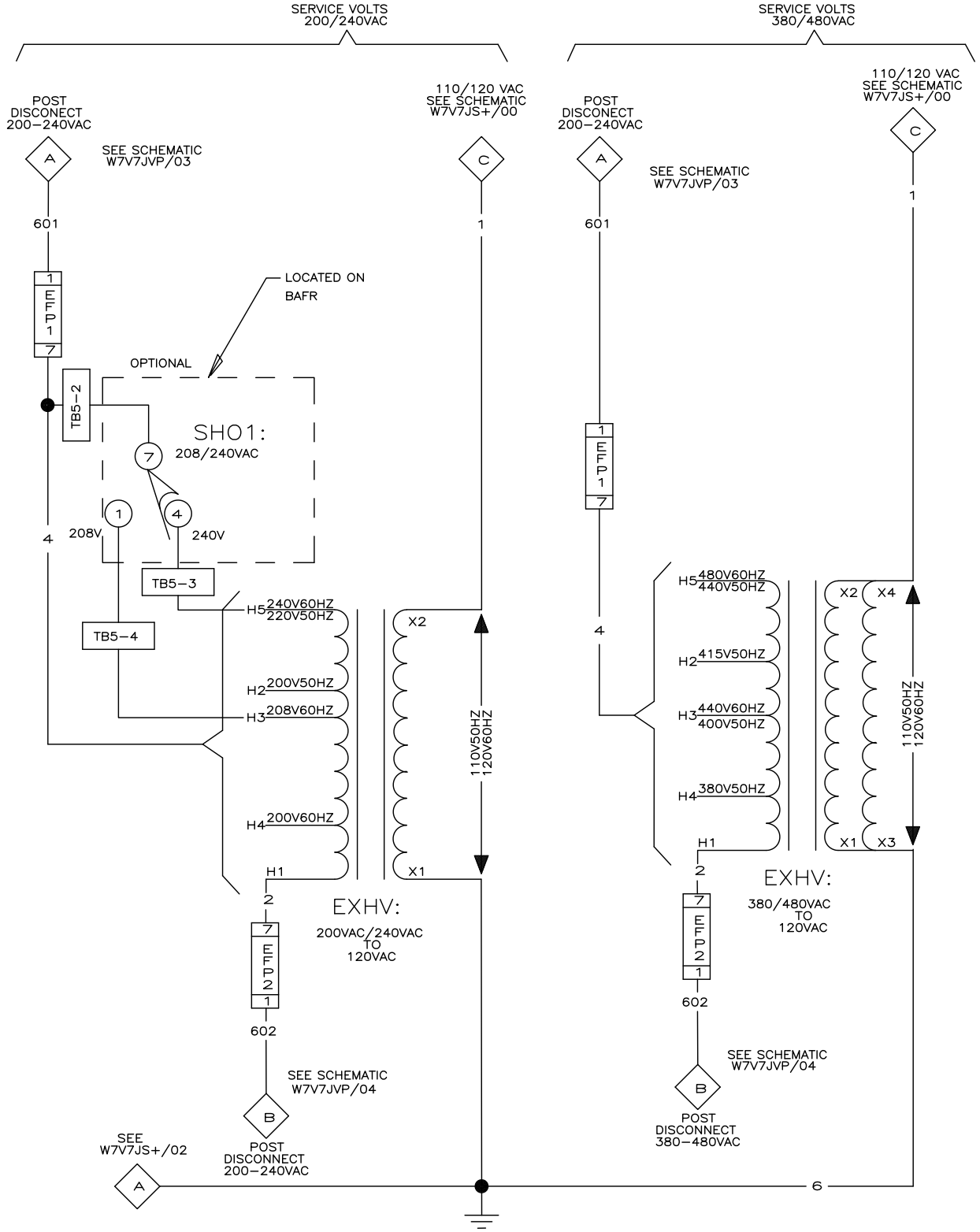
W7V7JIA

SCHEMATIC: MICROPROCESSOR INPUTS

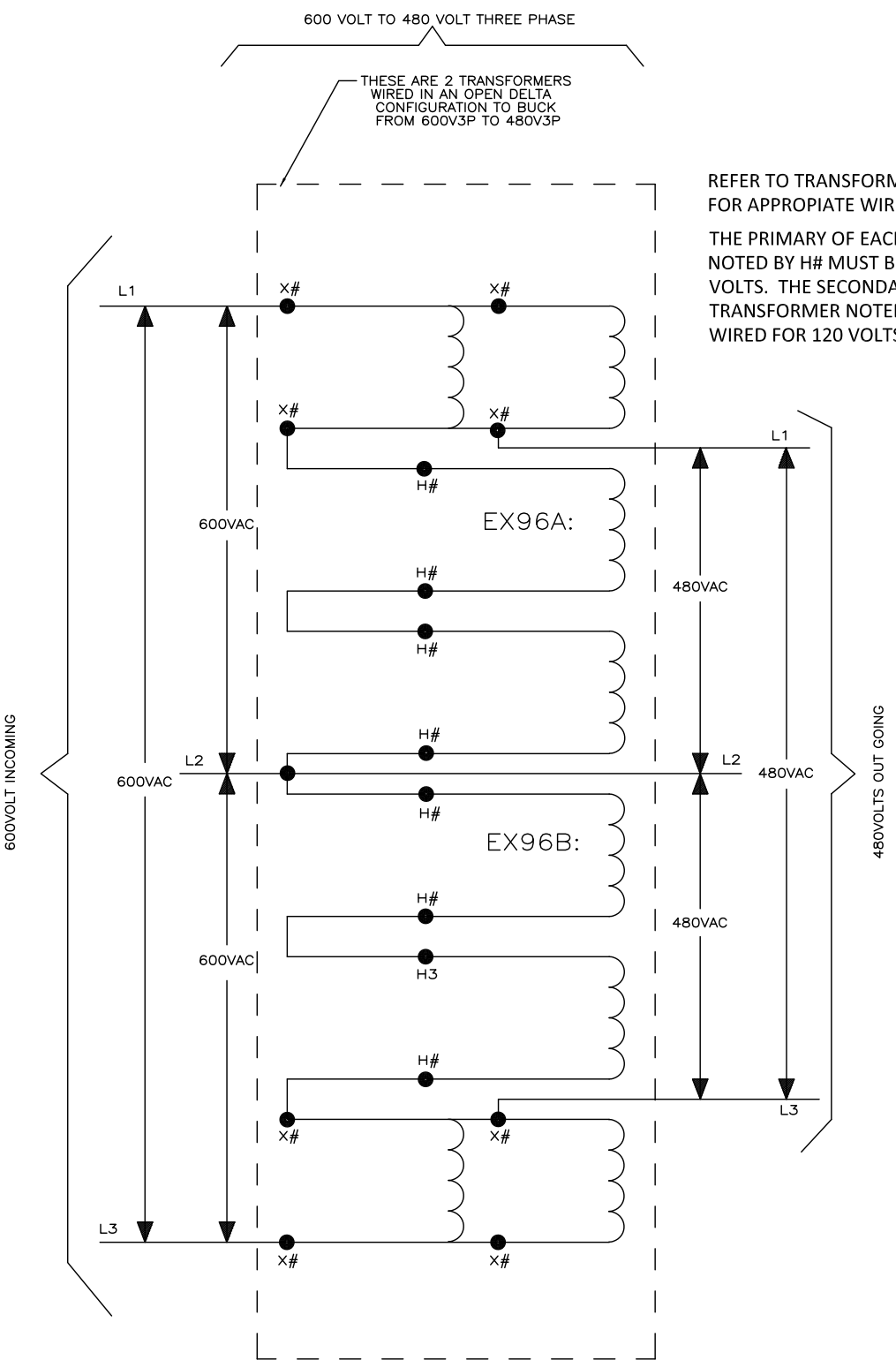
PELLERIN MILNOR CORPORATION

NOTES

1. M6 IS LOCATED ON THE PROCESSOR BOARD.
2. TBV IS LOCATED ON VARIABLE SPEED CONTROLLER.
3. TB1 IS LOCATED ON BAFR V#J START CIRCUIT BOARD.



W7V7JLV
2023092B



REFER TO TRANSFORMER WIRING DIAGRAM FOR APPROPIATE WIRE NUMBERS.

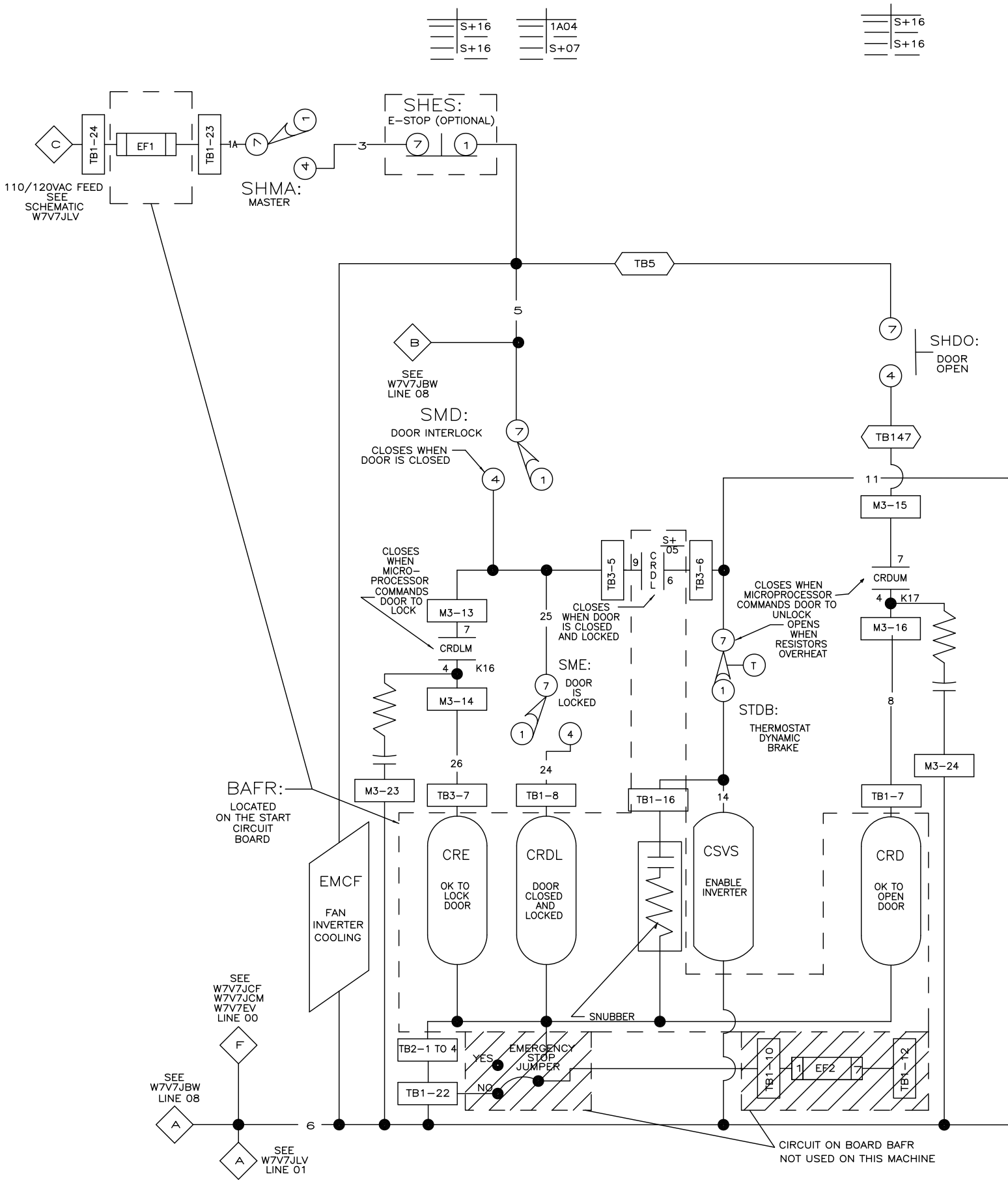
THE PRIMARY OF EACH TRANSFORMER NOTED BY H# MUST BE WIRED FOR 480 VOLTS. THE SECONDARY OF EACH TRANSFORMER NOTED BY X# MUST BE WIRED FOR 120 VOLTS.

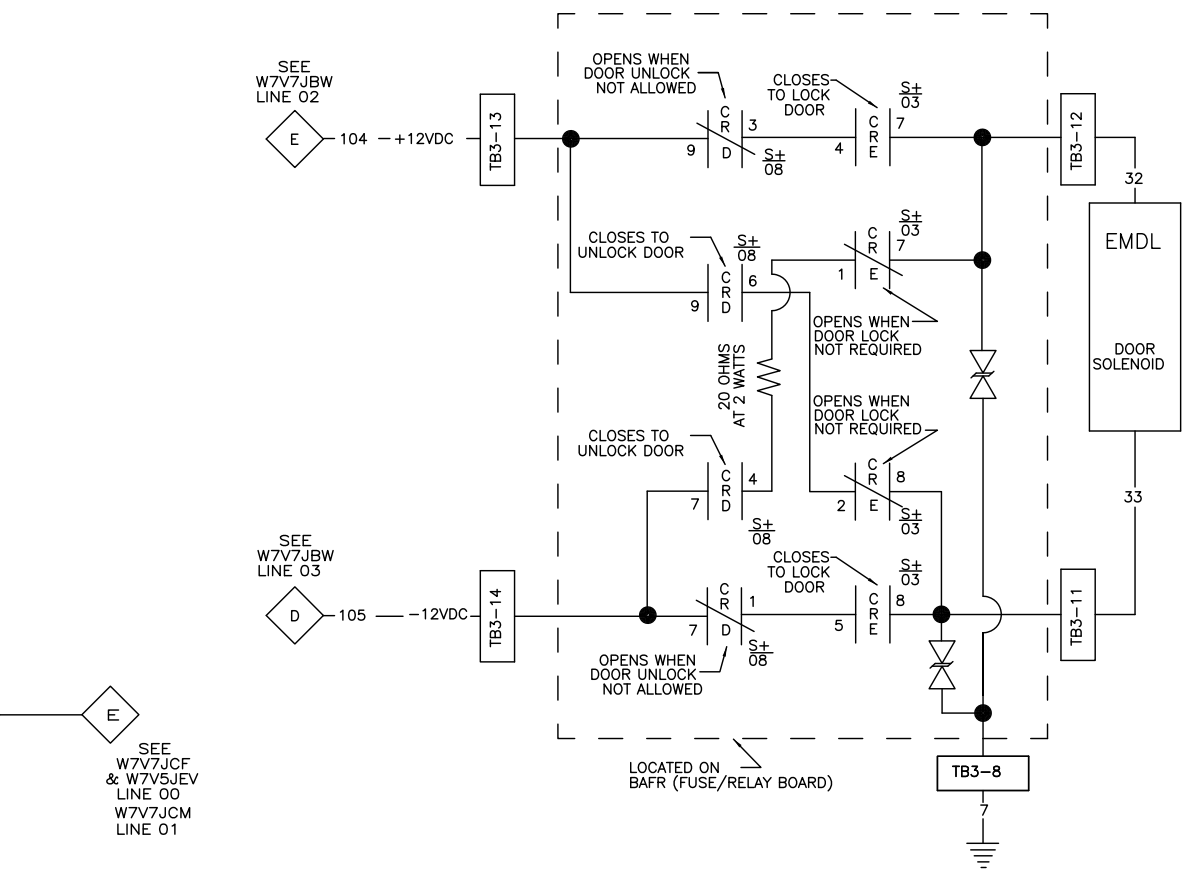
W7V7JLV
MICRO 7 SYSTEMS MARK V
SCHEMATIC:CONTROL CIRCUIT TRANSFORMER
110V1P50HZ/120V1P60HZ

PELLERIN MILNOR CORPORATION

NOTE:
WIRE NUMBERS 601 AND 602 BECOME L1 AND L2 ON 3602V5J MACHINES

09 10 11 12 13


S+16
S+16
1A04
S+07
S+16
S+16
SHES:
E–STOP (OPTIONAL)
C
TB1–24
EF1
TB1–23
1A
1
4
3
7
1
110/120VAC FEED
SEE
SCHEMATIC
W7V7JLV
SHMA:
MASTER
TB5
5
B
SEE
W7V7JBW
LINE 08
SMD:
DOOR INTERLOCK
CLOSES WHEN
DOOR IS CLOSED
7
4
1
7
SHDO:
DOOR
OPEN
4
TB147
11
M3–15
7
CRDUM
4
K17
M3–16
8
M3–24
CLOSES
WHEN
MICRO–
PROCESSOR
COMMANDS
DOOR TO
LOCK
M3–13
7
CRDLM
4
K16
M3–14
26
M3–23
TB3–5
9
CRDL
6
TB3–6
S+
05
25
CLOSES
WHEN DOOR
IS CLOSED
AND LOCKED
SME:
7
DOOR
IS
LOCKED
1
4
24
TB3–7
TB1–8
TB1–16
14
CLOSES WHEN
MICROPROCESSOR
COMMANDS DOOR TO
UNLOCK
OPENS
WHEN
RESISTORS
OVERHEAT
7
T
1
STDB:
THERMOSTAT
DYNAMIC
BRAKE
TB1–7
BAFR:
LOCATED
ON THE START
CIRCUIT
BOARD
EMCF
FAN
INVERTER
COOLING
CRE
OK TO
LOCK
DOOR
CRDL
DOOR
CLOSED
AND
LOCKED
CSVS
ENABLE
INVERTER
CRD
OK TO
OPEN
DOOR
SNUBBER
SEE
W7V7JCF
W7V7JCM
W7V7EV
LINE 00
F
TB2–1 TO 4
YES
EMERGENCY
STOP
JUMPER
NO
TB1–22
TB1–10
1
EF2
7
TB1–12
SEE
W7V7JBW
LINE 08
A
6
A
SEE
W7V7JLV
LINE 01
CIRCUIT ON BOARD BAFR
NOT USED ON THIS MACHINE
00
01
02
03
04
05
06
07
08
09
10
W7V7JS+
2023092B



E

SEE
W7V7JCF
& W7V5JEV
LINE 00
W7V7JCM
LINE 01

W7V7JS+

E–P PLUS CONTROLS

SCHEMATIC: START CIRCUIT & PULSE DOOR INTERLOCK

110V,1P,50HZ/120V,1P,60HZ

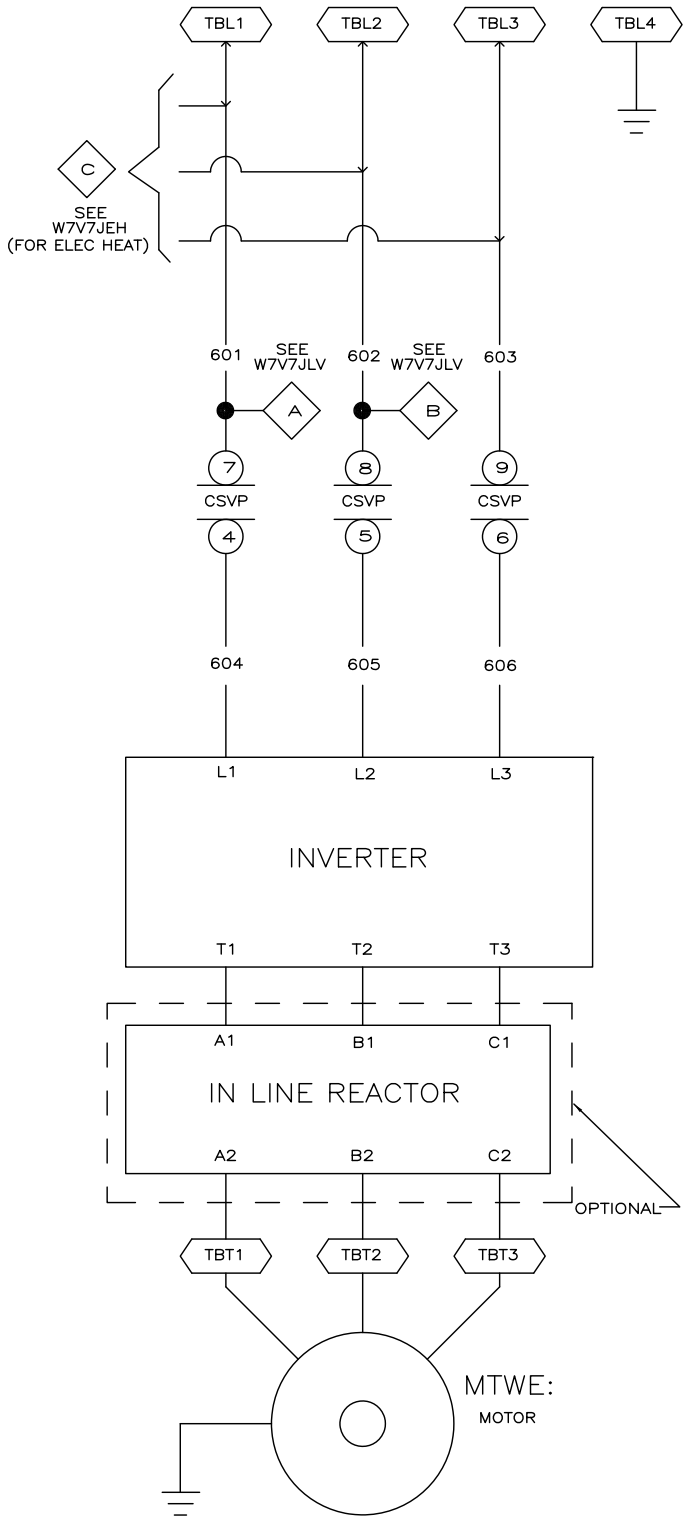
PELLERIN MILNOR CORPORATION

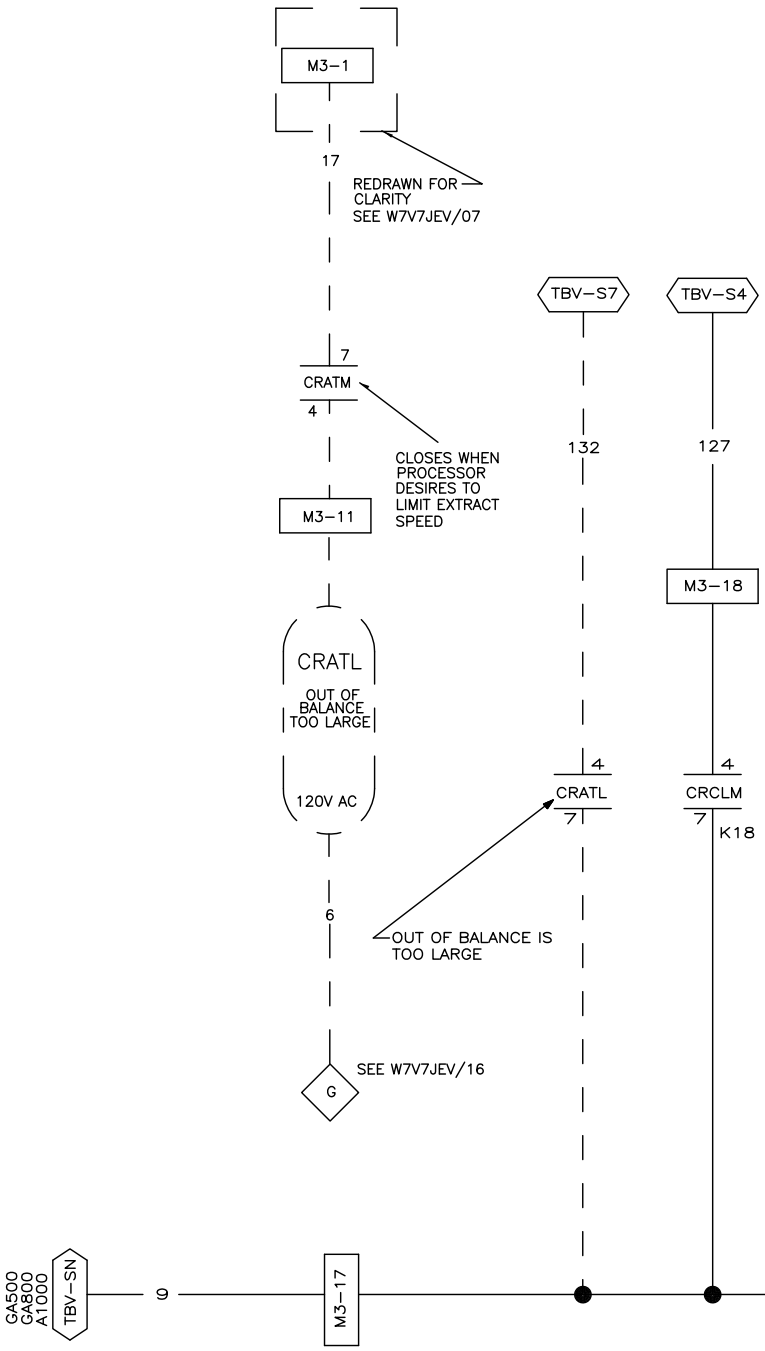
TB6

NOTES:

1. TB1 AND TB2 ARE LOCATED ON THE START CIRCUIT BOARD.
2. M3 IS LOCATED ON BIO INPUT/OUTPUT BOARD

11 12 13 14 15 16





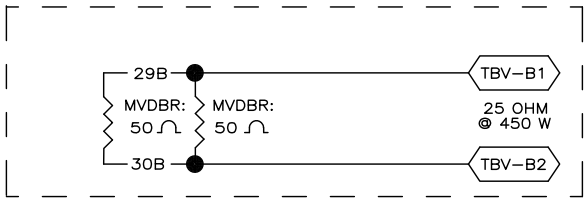
00 01 02 03 04 05 06 07 08 09 10

W7V7JVP
2023514B

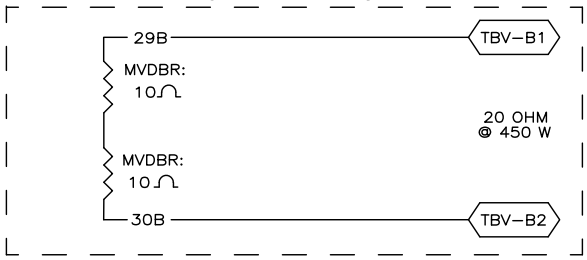
W7V7JVP
EP-PLUS CONTROLS
FOR A1000/GA500/GA800 INVERTER
SCHEMATIC: VARIABLE SPEED CONTROLLER
PELLERIN MILNOR CORPORATION

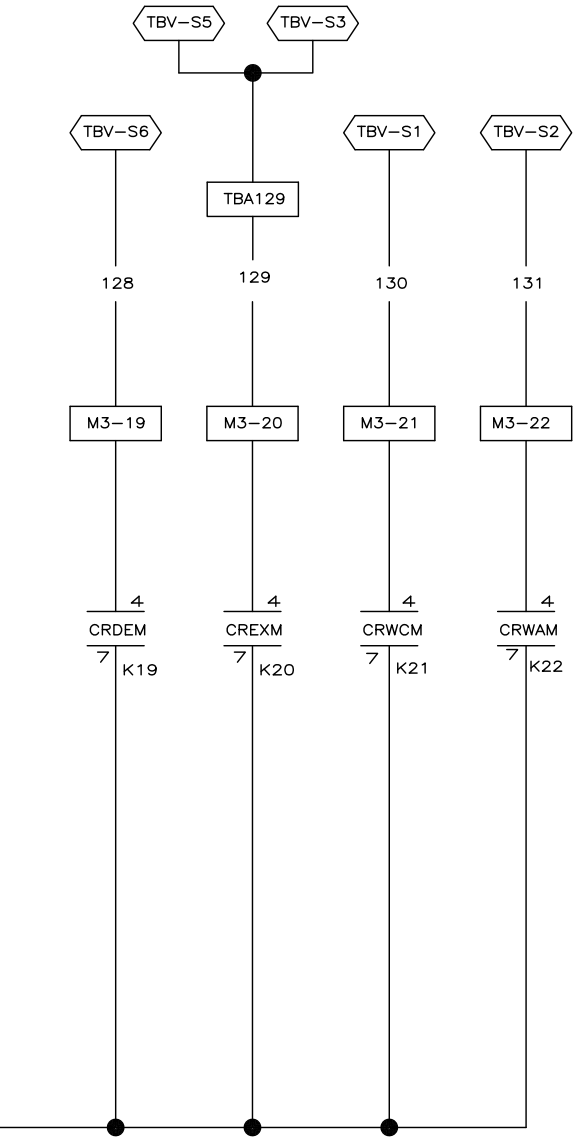
W7V7JVP
2023514B

LOW VOLTAGE 36" MACHINE

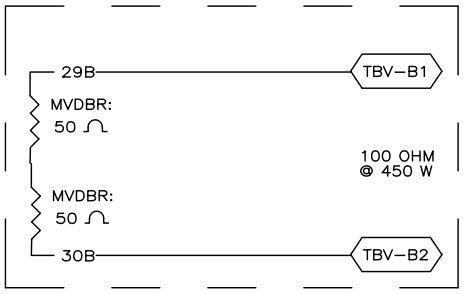


LOW VOLTAGE 42" MACHINE





HIGH VOLTAGE 36" & 42"



SPEEDS	CW	CCW			
	CRWCM	CRWAM	CRCLM	CRDEM	CREXM
WASH 1	×				
WASH 2	×		×		
DRAIN	×			×	
RINS SAVE	×		×	×	
EXTRACT 1	×				×
EXTRACT 2	×		×		×
EXTRACT 3	×			×	×
OUT OF EXTRACT					×

NOTES:

1. TBV IS LOCATED ON VARIABLE SPEED CONTROLLER CONTROLLER.
2. Kxx REFERS TO THE LABEL ON THE BOARD MOUNTED RELAY.

11 12 13 14 15 16 17 18 19

W7V7JVP
2023514B